

FCC TEST REPORT (15.247)

REPORT NO.: RF140728C21

MODEL NO.: AR5B22

FCC ID: PPD-AR5B22

RECEIVED: Jul. 28, 2014

TESTED: Sep. 01 ~ Sep. 05, 2014

ISSUED: Sep. 10, 2014

APPLICANT: Qualcomm Atheros, Inc.

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ISSUED BY: Bureau Veritas Consumer Products Services
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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140728C21	Original release	Sep. 10, 2014



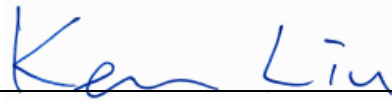
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1. CERTIFICATION

PRODUCT: PCIE 802.11a/b/g/n 2.4GHz/5GHz + USB BT 4.0 card
MODEL NO.: AR5B22
BRAND: Atheros
APPLICANT: Qualcomm Atheros, Inc.
TESTED: Sep. 01 ~ Sep. 05, 2014
TEST SAMPLE: ENGINEERING SAMPLE
STANDARDS: **FCC Part 15, Subpart C (Section 15.247)**
ANSI C63.10-2009

The above equipment (model: AR5B22) 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 :** Sep. 10, 2014
Pettie Chen / Senior Specialist

APPROVED BY :  , **DATE :** Sep. 10, 2014
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 -16.87dB at 0.16172MHz.
15.205 & 209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.2dB at 11650.00MHz.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.5dB at 5725.00MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is 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	3.63 dB
	200MHz ~1000MHz	3.64 dB
	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 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	PCIE 802.11a/b/g/n 2.4GHz/5GHz + USB BT 4.0 card
MODEL NO.	AR5B22
POWER SUPPLY	3.3Vdc (host equipment)
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	278.044mW for 2412 ~ 2462MHz 180.071mW for 5745 ~ 5825MHz
ANTENNA TYPE	Refer to Note
ANTENNA CONNECTOR	Refer to Note
DATA CABLE	N/A
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	N/A

NOTE:

1. This report is prepared for FCC class II permissive change. This report is issued as a supplementary report of BV ADT report no.: RF110907E02 R1. The differences compared with the original design are as below:

- * Adding specific host portable
- * Adding antenna (same type/low gain)
- * Software change decrease output power

Therefore, all tests had been re-tested.

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

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

3. There is one set of antenna provided to this EUT, please refer to the following table:

No	Brand	Model	Antenna Type	Connector	Antenna Gain (dBi)				
					2.4GHz	5.18 GHz	5.32 GHz	5.5 GHz	5.745 GHz
Main	PENSON	EM24580409	PIFA	IPEX	0.497932	-1.24142	-1.21835	-1.12629	1.56537
Aux		EM24580410		IPEX	2.71072	3.03969	2.23989	2.81597	3.51485

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≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

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 **X-plane**.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX FUNCTION
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	2TX
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	2TX
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	2TX
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	2TX

RADIATED EMISSION TEST (BELOW 1GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX FUNCTION
802.11g	1 to 11	6	OFDM	BPSK	6.0	2TX

POWER LINE CONDUCTED EMISSION TEST:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX FUNCTION
802.11g	1 to 11	6	OFDM	BPSK	6.0	2TX



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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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX FUNCTION
802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0	2TX
802.11g	1 to 11	1, 11	OFDM	BPSK	6.0	2TX
802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	6.5	2TX
802.11n (40MHz)	3 to 9	3, 9	OFDM	BPSK	13.5	2TX

ANTENNA PORT CONDUCTED MEASUREMENT:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX FUNCTION
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	1TX/2TX
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	1TX/2TX
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	2TX
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	2TX

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE $\geq$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Ted Chang
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Ted Chang
PLC	20deg. C, 70%RH	120Vac, 60Hz	Nick Hsu
APCM	25deg. C, 65%RH	120Vac, 60Hz	Nick Chen

FOR 5.0GHz (5745 ~ 5825MHz):

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

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 **X-plane**.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX FUNCTION
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0	1TX/2TX
802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	6.5	2TX
802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	13.5	2TX

RADIATED EMISSION TEST (BELOW 1GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX FUNCTION
802.11a	149 to 165	149	OFDM	BPSK	6.0	2TX

POWER LINE CONDUCTED EMISSION TEST:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX FUNCTION
802.11a	149 to 165	149	OFDM	BPSK	6.0	2TX

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX FUNCTION
802.11a	149 to 165	149, 165	OFDM	BPSK	6.0	1TX/2TX
802.11n (20MHz)	149 to 165	149, 165	OFDM	BPSK	6.5	2TX
802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	13.5	2TX

ANTENNA PORT CONDUCTED MEASUREMENT:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX FUNCTION
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0	1TX/2TX
802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	6.5	2TX
802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	13.5	2TX

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE $\geq$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Ted Chang
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Ted Chang
PLC	20deg. C, 70%RH	120Vac, 60Hz	Nick Hsu
APCM	25deg. C, 65%RH	120Vac, 60Hz	Nick Chen

3.3 DUTY CYCLE OF TEST SIGNAL

2.4GHz Band:

Duty cycle of test signal is > 98 %

802.11b_1TX: Duty cycle = 100%

802.11b_2TX: Duty cycle = 100%

802.11g_2TX: Duty cycle = $2.117/2.122 = 0.998 > 98 \%$

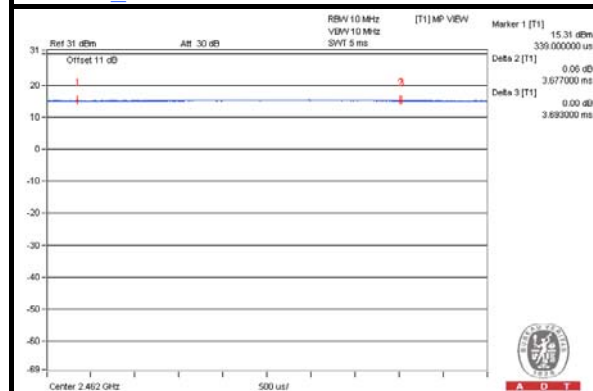
Duty cycle of test signal is < 98%

802.11g_1TX: Duty cycle = $2.021/2.091 = 0.967$, Duty factor = $10 * \log(1/0.967) = 0.15$

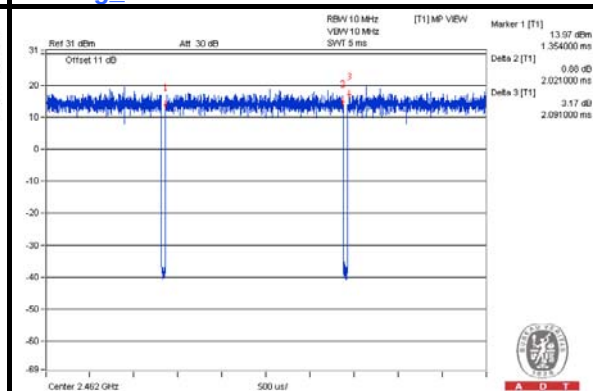
802.11n (20MHz)_2TX: Duty cycle = $1.885/1.943 = 0.970$, Duty factor = $10 * \log(1/0.970) = 0.132$

802.11n (40MHz)_2TX: Duty cycle = $0.927/0.968 = 0.958$, Duty factor = $10 * \log(1/0.958) = 0.188$

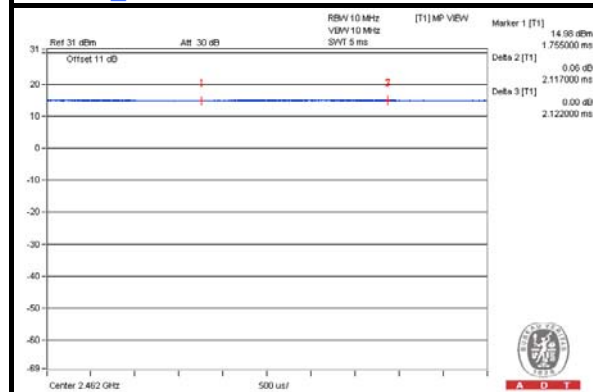
802.11b_1TX



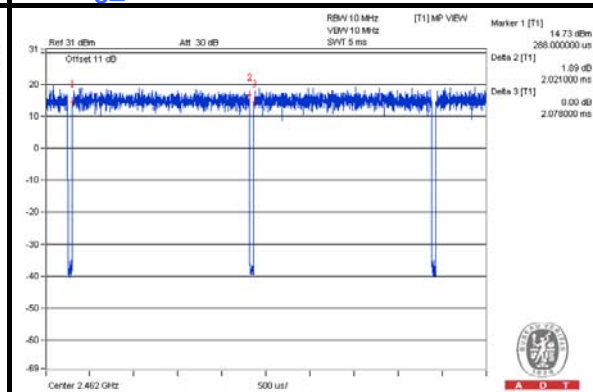
802.11g_1TX



802.11b_2TX



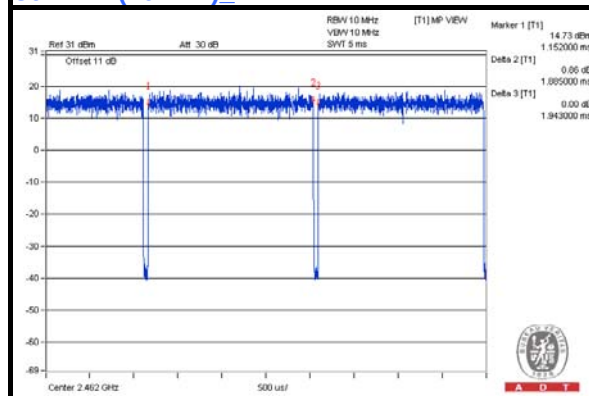
802.11g_2TX



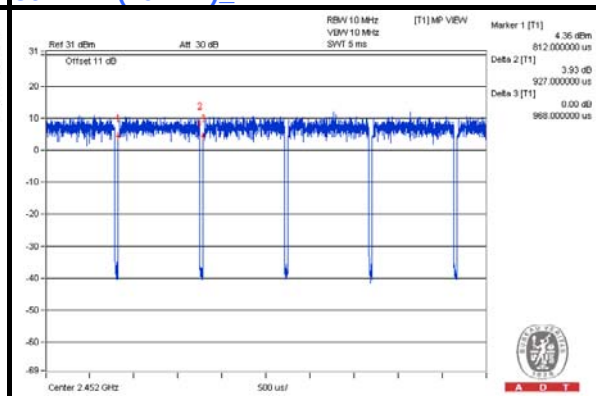


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802.11n (20MHz)_2TX



802.11n (40MHz)_2TX



5.0GHz Band:

Duty cycle of test signal is < 98%

802.11a_1TX: Duty cycle = $2.023/2.07 = 0.977$, Duty factor = $10 * \log(1/0.977) = 0.10$

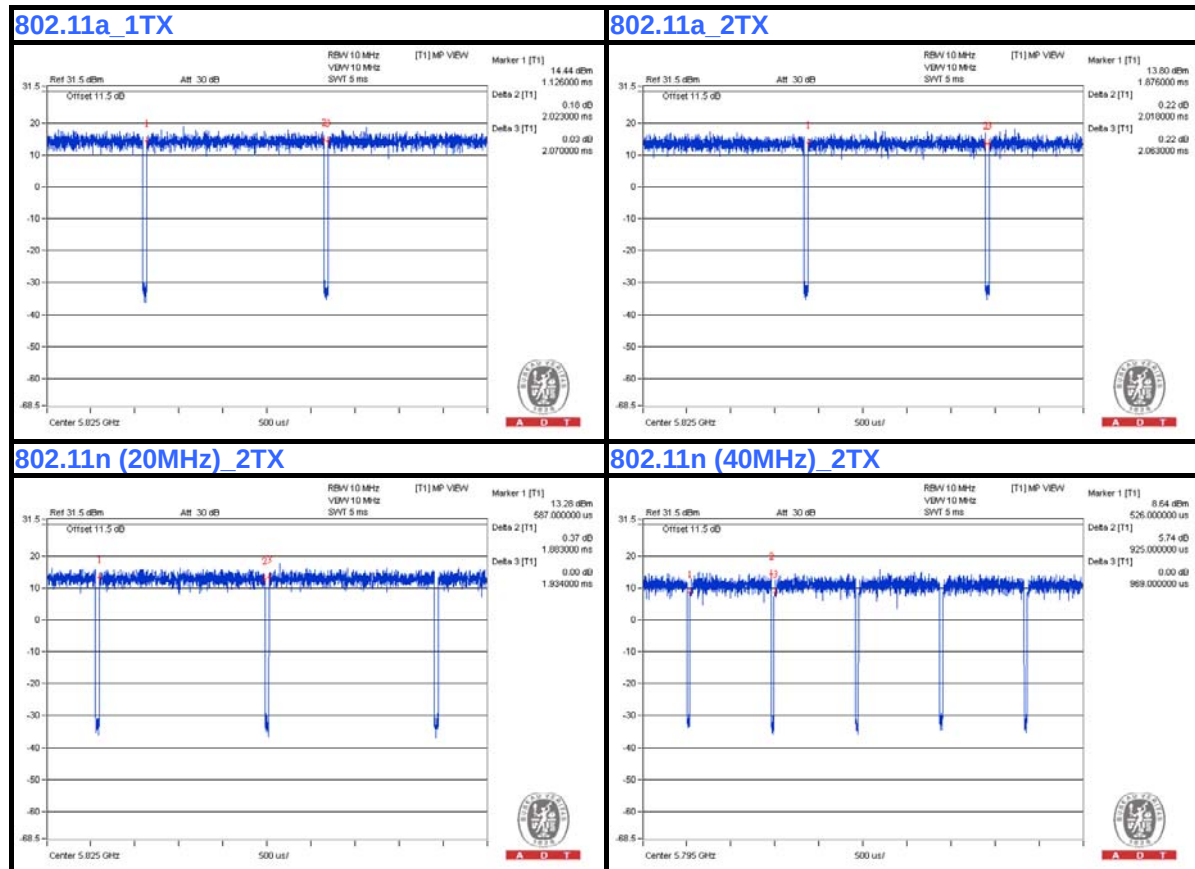
802.11a_2TX: Duty cycle = $2.018/2.063 = 0.978$, Duty factor = $10 * \log(1/0.978) = 0.096$

802.11n (20MHz)_2TX:

Duty cycle = $1.883/1.934 = 0.974$, Duty factor = $10 * \log(1/0.974) = 0.116$

802.11n (40MHz)_2TX:

Duty cycle = $0.925/0.969 = 0.955$, Duty factor = $10 * \log(1/0.955) = 0.202$



3.4 DESCRIPTION OF SUPPORT UNITS

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

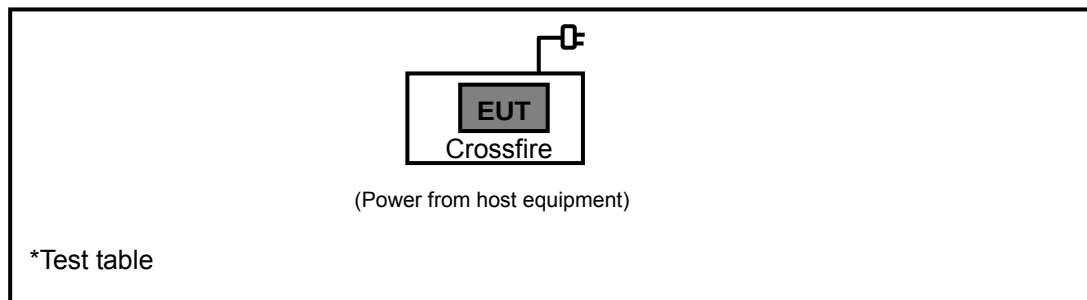
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Crossfire	entegra technologies inc.	940-10-972	NA	NA
2	Adapter of Crossfire	FSP GROUP INC.	FSP060-DBAE1	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	NA

NOTE:

1. All power cords of the above support units are non shielded (1.8m).
2. Item 1, 2 were provided by client.

3.4.1 CONFIGURATION OF SYSTEM UNDER TEST



3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (15.247)

558074 D01 DTS Meas Guidance v03r02

662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2009

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

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

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

4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

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

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

NOTE:

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 29, 2013	Nov. 28, 2014
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Feb. 11, 2014	Feb. 10, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Feb. 25, 2014	Feb. 24, 2015
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-209	Sep. 12, 2013	Sep. 11, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Feb. 17, 2014	Feb. 16, 2015
Preamplifier Agilent	8449B	3008A01961	Oct. 28, 2013	Oct. 27, 2014
Preamplifier Agilent	8447D	2944A10638	Oct. 18, 2013	Oct. 17, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4 2950114	Oct. 18, 2013	Oct. 17, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 18, 2013	Oct. 17, 2014
RF signal cable Worken	5D-FB	Cable-HYCH9-01	Aug. 11, 2014	Aug. 10, 2015
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn Table Controller EMCO	2090	NA	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 29, 2011	Oct. 28, 2012
High Speed Peak Power Meter	ML2495A	0824011	Jul. 26, 2014	Jul. 25, 2015
Power Sensor	MA2411B	0738171	Jul. 26, 2014	Jul. 25, 2015

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 9.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 460141.
5. The IC Site Registration No. is IC 7450F-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:

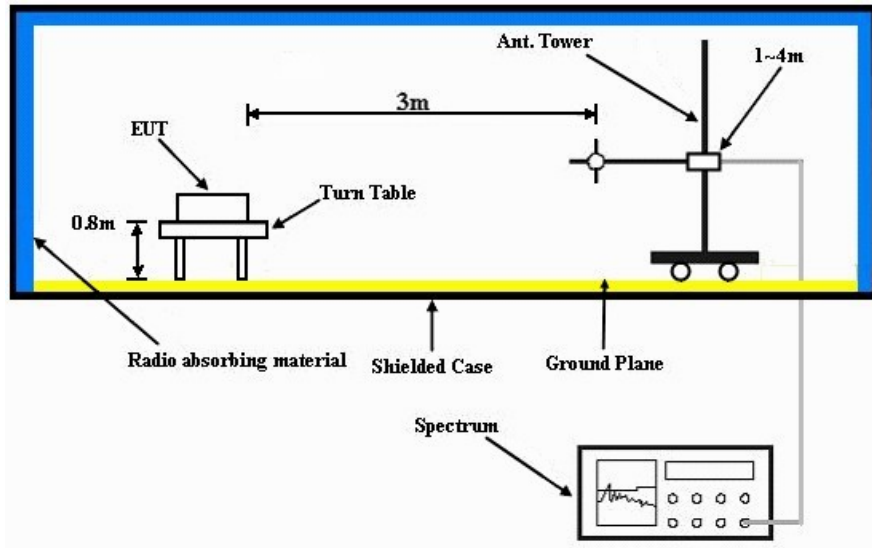
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution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

4.1.4 DEVIATION FROM TEST STANDARD

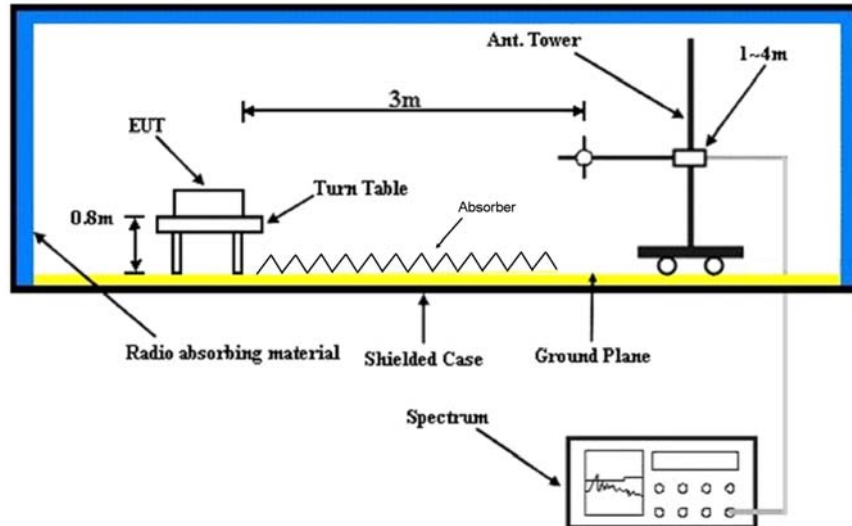
No deviation.

4.1.5 TEST SETUP

Frequency range 30MHz~1GHz



Frequency range above 1GHz



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

4.1.6 EUT OPERATING CONDITIONS

Installed the EUT in the Crossfire and set the EUT under transmission condition continuously at specific channel frequency.



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4.1.7 TEST RESULTS

ABOVE 1GHz DATA :

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.5 PK	74.0	-13.5	1.33 H	73	27.50	33.00
2	2390.00	48.1 AV	54.0	-5.9	1.33 H	73	15.10	33.00
3	*2412.00	98.0 PK			1.33 H	73	64.90	33.10
4	*2412.00	94.1 AV			1.33 H	73	61.00	33.10
5	4824.00	55.1 PK	74.0	-18.9	1.01 H	15	53.60	1.50
6	4824.00	52.5 AV	54.0	-1.5	1.01 H	15	51.00	1.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.1 PK	74.0	-13.9	1.02 V	105	27.10	33.00
2	2390.00	47.8 AV	54.0	-6.2	1.02 V	105	14.80	33.00
3	*2412.00	93.2 PK			1.02 V	105	60.10	33.10
4	*2412.00	89.3 AV			1.02 V	105	56.20	33.10
5	4824.00	54.0 PK	74.0	-20.0	1.10 V	5	52.50	1.50
6	4824.00	50.5 AV	54.0	-3.5	1.10 V	5	49.00	1.50

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.



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	101.6 PK			1.06 H	34	68.30	33.30
2	*2437.00	97.7 AV			1.06 H	34	64.40	33.30
3	4874.00	55.5 PK	74.0	-18.5	1.00 H	8	54.00	1.50
4	4874.00	52.7 AV	54.0	-1.3	1.00 H	8	51.20	1.50
5	7311.00	56.1 PK	74.0	-17.9	1.00 H	9	48.00	8.10
6	7311.00	45.5 AV	54.0	-8.5	1.00 H	9	37.40	8.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	95.4 PK			1.00 V	90	62.10	33.30
2	*2437.00	92.0 AV			1.00 V	90	58.70	33.30
3	4874.00	52.8 PK	74.0	-21.2	1.00 V	352	51.30	1.50
4	4874.00	49.7 AV	54.0	-4.3	1.00 V	352	48.20	1.50
5	7311.00	53.3 PK	74.0	-20.7	1.54 V	84	45.20	8.10
6	7311.00	41.6 AV	54.0	-12.4	1.54 V	84	33.50	8.10

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.4 PK			1.05 H	37	69.00	33.40
2	*2462.00	98.6 AV			1.05 H	37	65.20	33.40
3	2483.50	61.1 PK	74.0	-12.9	1.05 H	37	27.70	33.40
4	2483.50	48.6 AV	54.0	-5.4	1.05 H	37	15.20	33.40
5	4924.00	55.3 PK	74.0	-18.7	1.00 H	15	53.70	1.60
6	4924.00	52.7 AV	54.0	-1.3	1.00 H	15	51.10	1.60
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	*2462.00	96.1 PK			1.00 V	107	62.70	33.40
2	*2462.00	92.5 AV			1.00 V	107	59.10	33.40
3	2483.50	61.0 PK	74.0	-13.0	1.00 V	107	27.60	33.40
4	2483.50	48.3 AV	54.0	-5.7	1.00 V	107	14.90	33.40
5	4924.00	53.1 PK	74.0	-20.9	1.54 V	63	51.50	1.60
6	4924.00	50.1 AV	54.0	-3.9	1.54 V	63	48.50	1.60

REMARKS:

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



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802.11g

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.2 PK	74.0	-8.8	1.33 H	78	32.20	33.00
2	2390.00	49.9 AV	54.0	-4.1	1.33 H	78	16.90	33.00
3	*2412.00	102.7 PK			1.30 H	79	69.60	33.10
4	*2412.00	93.0 AV			1.30 H	79	59.90	33.10
5	4824.00	54.1 PK	74.0	-19.9	1.00 H	14	52.60	1.50
6	4824.00	40.1 AV	54.0	-13.9	1.00 H	14	38.60	1.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.8 PK	74.0	-13.2	1.00 V	106	27.80	33.00
2	2390.00	48.3 AV	54.0	-5.7	1.00 V	106	15.30	33.00
3	*2412.00	97.1 PK			1.00 V	106	64.00	33.10
4	*2412.00	87.5 AV			1.00 V	106	54.40	33.10
5	4824.00	53.0 PK	74.0	-21.0	1.09 V	4	51.50	1.50
6	4824.00	38.3 AV	54.0	-15.7	1.09 V	4	36.80	1.50

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.



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.2 PK			1.29 H	77	73.90	33.30
2	*2437.00	96.9 AV			1.29 H	77	63.60	33.30
3	4874.00	57.2 PK	74.0	-16.8	1.01 H	8	55.70	1.50
4	4874.00	43.5 AV	54.0	-10.5	1.01 H	8	42.00	1.50
5	7311.00	59.5 PK	74.0	-14.5	1.00 H	11	51.40	8.10
6	7311.00	46.3 AV	54.0	-7.7	1.00 H	11	38.20	8.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	100.8 PK			1.00 V	106	67.50	33.30
2	*2437.00	90.7 AV			1.00 V	106	57.40	33.30
3	4874.00	54.0 PK	74.0	-20.0	1.36 V	65	52.50	1.50
4	4874.00	40.0 AV	54.0	-14.0	1.36 V	65	38.50	1.50
5	7311.00	56.8 PK	74.0	-17.2	1.01 V	74	48.70	8.10
6	7311.00	43.3 AV	54.0	-10.7	1.01 V	74	35.20	8.10

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	101.2 PK			1.05 H	19	67.80	33.40
2	*2462.00	91.7 AV			1.05 H	19	58.30	33.40
3	2483.50	66.2 PK	74.0	-7.8	1.05 H	19	32.80	33.40
4	2483.50	50.6 AV	54.0	-3.4	1.05 H	19	17.20	33.40
5	4924.00	53.5 PK	74.0	-20.5	1.00 H	14	51.90	1.60
6	4924.00	38.8 AV	54.0	-15.2	1.00 H	14	37.20	1.60
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	*2462.00	97.6 PK			1.00 V	107	64.20	33.40
2	*2462.00	87.7 AV			1.00 V	107	54.30	33.40
3	2483.50	62.5 PK	74.0	-11.5	1.00 V	107	29.10	33.40
4	2483.50	49.2 AV	54.0	-4.8	1.00 V	107	15.80	33.40
5	4924.00	48.6 PK	74.0	-25.4	1.32 V	201	47.00	1.60
6	4924.00	35.1 AV	54.0	-18.9	1.32 V	201	33.50	1.60

REMARKS:

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



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802.11n (20MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.5 PK	74.0	-11.5	1.32 H	76	29.50	33.00
2	2390.00	50.1 AV	54.0	-3.9	1.32 H	76	17.10	33.00
3	*2412.00	103.3 PK			1.32 H	76	70.20	33.10
4	*2412.00	92.8 AV			1.32 H	76	59.70	33.10
5	4824.00	52.8 PK	74.0	-21.2	1.02 H	16	51.30	1.50
6	4824.00	39.7 AV	54.0	-14.3	1.02 H	16	38.20	1.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.7 PK	74.0	-14.3	1.00 V	106	26.70	33.00
2	2390.00	48.2 AV	54.0	-5.8	1.00 V	106	15.20	33.00
3	*2412.00	97.3 PK			1.00 V	106	64.20	33.10
4	*2412.00	86.1 AV			1.00 V	106	53.00	33.10
5	4824.00	47.1 PK	74.0	-26.9	1.02 V	63	45.60	1.50
6	4824.00	35.0 AV	54.0	-19.0	1.02 V	63	33.50	1.50

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.



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	105.9 PK			1.29 H	79	72.60	33.30
2	*2437.00	95.2 AV			1.29 H	79	61.90	33.30
3	4874.00	56.6 PK	74.0	-17.4	1.01 H	8	55.10	1.50
4	4874.00	43.2 AV	54.0	-10.8	1.01 H	8	41.70	1.50
5	7311.00	59.2 PK	74.0	-14.8	1.00 H	11	51.10	8.10
6	7311.00	46.1 AV	54.0	-7.9	1.00 H	11	38.00	8.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	100.1 PK			1.00 V	106	66.80	33.30
2	*2437.00	90.0 AV			1.00 V	106	56.70	33.30
3	4874.00	54.1 PK	74.0	-19.9	1.74 V	65	52.60	1.50
4	4874.00	40.2 AV	54.0	-13.8	1.74 V	65	38.70	1.50
5	7311.00	56.7 PK	74.0	-17.3	1.35 V	62	48.60	8.10
6	7311.00	43.3 AV	54.0	-10.7	1.35 V	62	35.20	8.10

REMARKS:

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



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.5 PK			1.04 H	31	69.10	33.40
2	*2462.00	91.9 AV			1.04 H	31	58.50	33.40
3	2483.50	65.7 PK	74.0	-8.3	1.04 H	31	32.30	33.40
4	2483.50	51.0 AV	54.0	-3.0	1.04 H	31	17.60	33.40
5	4924.00	54.0 PK	74.0	-20.0	1.00 H	14	52.40	1.60
6	4924.00	39.0 AV	54.0	-15.0	1.00 H	14	37.40	1.60
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	*2462.00	97.6 PK			1.00 V	107	64.20	33.40
2	*2462.00	87.0 AV			1.00 V	107	53.60	33.40
3	2483.50	62.4 PK	74.0	-11.6	1.00 V	107	29.00	33.40
4	2483.50	49.3 AV	54.0	-4.7	1.00 V	107	15.90	33.40
5	4924.00	50.2 PK	74.0	-23.8	1.84 V	85	48.60	1.60
6	4924.00	36.1 AV	54.0	-17.9	1.84 V	85	34.50	1.60

REMARKS:

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



A D T

802.11n (40MHz)

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	64.9 PK	74.0	-9.1	1.32 H	79	31.90	33.00
2	2390.00	51.2 AV	54.0	-2.8	1.32 H	79	18.20	33.00
3	*2422.00	96.1 PK			1.32 H	79	62.90	33.20
4	*2422.00	85.7 AV			1.32 H	79	52.50	33.20
5	4844.00	50.0 PK	74.0	-24.0	1.51 H	187	48.50	1.50
6	4844.00	36.1 AV	54.0	-17.9	1.51 H	187	34.60	1.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.6 PK	74.0	-13.4	1.00 V	105	27.60	33.00
2	2390.00	48.7 AV	54.0	-5.3	1.00 V	105	15.70	33.00
3	*2422.00	90.6 PK			1.00 V	105	57.40	33.20
4	*2422.00	79.7 AV			1.00 V	105	46.50	33.20
5	4844.00	47.1 PK	74.0	-26.9	1.52 V	6	45.60	1.50
6	4844.00	35.0 AV	54.0	-19.0	1.52 V	6	33.50	1.50

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.



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.5 PK	74.0	-8.5	1.31 H	85	32.50	33.00
2	2390.00	51.8 AV	54.0	-2.2	1.31 H	85	18.80	33.00
3	*2437.00	101.4 PK			1.31 H	85	68.10	33.30
4	*2437.00	91.2 AV			1.31 H	85	57.90	33.30
5	4874.00	52.7 PK	74.0	-21.3	1.01 H	8	51.20	1.50
6	4874.00	37.6 AV	54.0	-16.4	1.01 H	8	36.10	1.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	61.2 PK	74.0	-12.8	1.00 V	106	28.20	33.00
2	2390.00	48.7 AV	54.0	-5.3	1.00 V	106	15.70	33.00
3	*2437.00	94.5 PK			1.00 V	106	61.20	33.30
4	*2437.00	84.3 AV			1.00 V	106	51.00	33.30
5	4874.00	47.0 PK	74.0	-27.0	1.54 V	84	45.50	1.50
6	4874.00	34.0 AV	54.0	-20.0	1.54 V	84	32.50	1.50

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.



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	97.1 PK			1.05 H	40	63.80	33.30
2	*2452.00	87.3 AV			1.05 H	40	54.00	33.30
3	2483.50	65.9 PK	74.0	-8.1	1.05 H	40	32.50	33.40
4	2483.50	51.9 AV	54.0	-2.1	1.05 H	40	18.50	33.40
5	4904.00	48.5 PK	74.0	-25.5	1.57 H	85	46.90	1.60
6	4904.00	36.1 AV	54.0	-17.9	1.57 H	85	34.50	1.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	93.2 PK			1.00 V	106	59.90	33.30
2	*2452.00	82.6 AV			1.00 V	106	49.30	33.30
3	2483.50	62.5 PK	74.0	-11.5	1.00 V	106	29.10	33.40
4	2483.50	49.8 AV	54.0	-4.2	1.00 V	106	16.40	33.40
5	4904.00	46.8 PK	74.0	-27.2	1.01 V	41	45.20	1.60
6	4904.00	33.8 AV	54.0	-20.2	1.01 V	41	32.20	1.60

REMARKS:

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



A D T

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	95.30	31.7 QP	43.5	-11.8	1.99 H	15	51.00	-19.30
2	143.90	37.9 QP	43.5	-5.6	1.10 H	313	52.30	-14.40
3	264.70	39.8 QP	46.0	-6.2	1.00 H	187	53.50	-13.70
4	432.60	35.8 QP	46.0	-10.2	1.99 H	215	45.30	-9.50
5	501.00	34.5 QP	46.0	-11.5	1.99 H	70	43.10	-8.60
6	575.60	33.4 QP	46.0	-12.6	1.24 H	214	40.50	-7.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	89.10	30.3 QP	43.5	-13.2	1.49 V	28	50.10	-19.80
2	143.50	30.2 QP	43.5	-13.3	1.99 V	261	44.60	-14.40
3	264.70	32.1 QP	46.0	-13.9	1.24 V	81	45.80	-13.70
4	333.10	34.6 QP	46.0	-11.4	1.24 V	15	46.30	-11.70
5	432.60	36.6 QP	46.0	-9.4	1.24 V	283	46.10	-9.50
6	583.40	37.5 QP	46.0	-8.5	1.00 V	6	44.20	-6.70

REMARKS:

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

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	100288	Apr. 24, 2014	Apr. 23, 2015
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 27, 2013	Dec. 26, 2014
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 23, 2013	Dec. 22, 2014
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 10, 2014	Jul. 09, 2015
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

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

4.2.3 TEST PROCEDURES

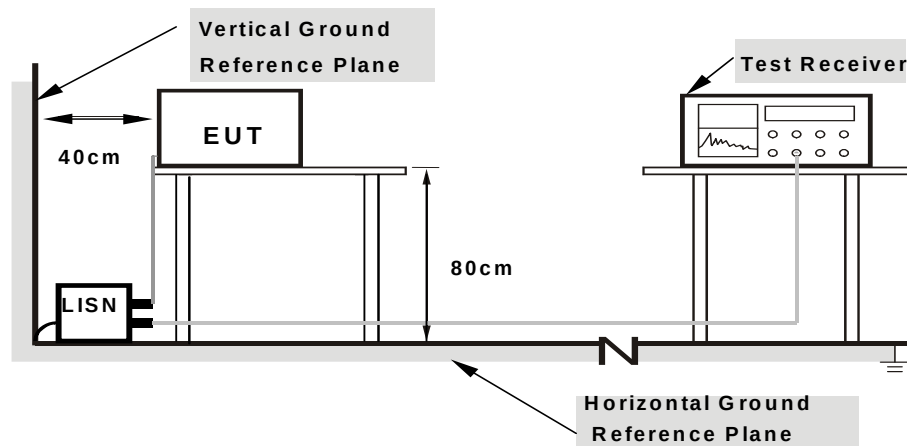
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance 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.

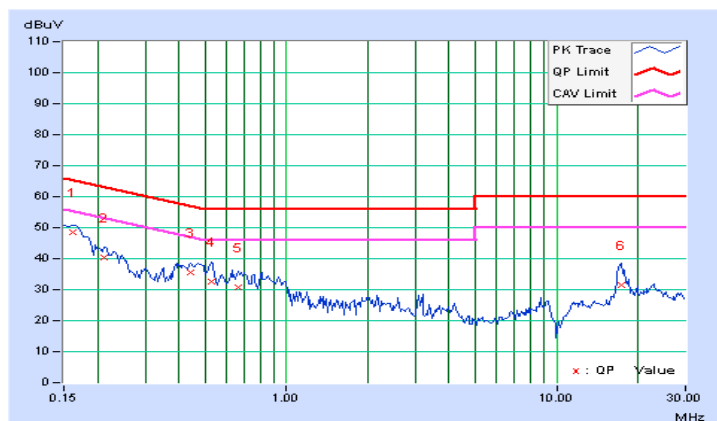
4.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA : 802.11g

PHASE	Line 1	6dB BANDWIDTH	9kHz
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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	0.16172	0.27	48.24	32.33	48.51	32.60	65.38	55.38	-16.87	-22.78
2	0.21250	0.28	39.99	25.94	40.27	26.22	63.11	53.11	-22.84	-26.89
3	0.44297	0.30	35.08	27.60	35.38	27.90	57.01	47.01	-21.62	-19.10
4	0.52500	0.31	32.14	23.93	32.45	24.24	56.00	46.00	-23.55	-21.76
5	0.66563	0.32	30.28	21.68	30.60	22.00	56.00	46.00	-25.40	-24.00
6	17.29297	0.56	30.89	22.54	31.45	23.10	60.00	50.00	-28.55	-26.90

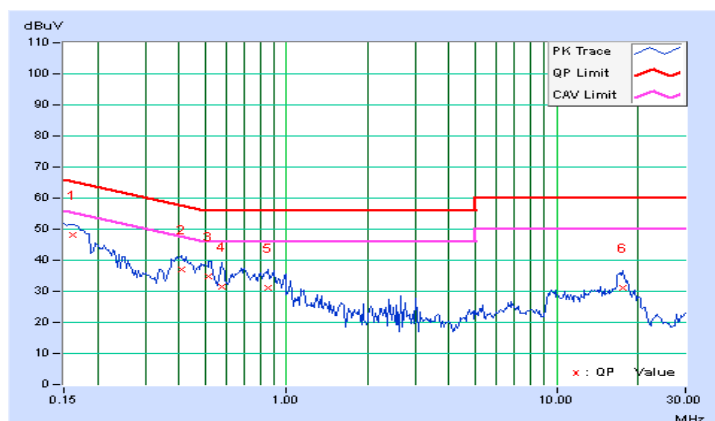
- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor +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



PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq.	Corr. Factor	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	0.16172	0.27	47.94	31.62	48.21	31.89	65.38	55.38	-17.17	-23.49
2	0.40781	0.30	36.88	27.42	37.18	27.72	57.69	47.69	-20.51	-19.97
3	0.51719	0.31	34.56	25.65	34.87	25.96	56.00	46.00	-21.13	-20.04
4	0.57578	0.31	31.33	23.45	31.64	23.76	56.00	46.00	-24.36	-22.24
5	0.85703	0.33	30.63	22.56	30.96	22.89	56.00	46.00	-25.04	-23.11
6	17.49609	0.60	30.33	22.05	30.93	22.65	60.00	50.00	-29.07	-27.35

- 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.

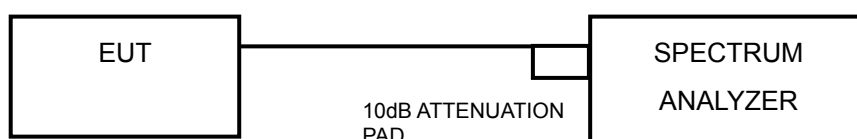


4.3 6dB BANDWIDTH MEASUREMENT

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_1TX

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.14	0.5	PASS
6	2437	10.12	0.5	PASS
11	2462	10.11	0.5	PASS

802.11b_2TX

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	10.15	10.11	0.5	PASS
6	2437	10.12	10.11	0.5	PASS
11	2462	10.12	10.13	0.5	PASS

802.11g_1TX

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.42	0.5	PASS
6	2437	16.38	0.5	PASS
11	2462	16.38	0.5	PASS

802.11g_2TX

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.40	16.38	0.5	PASS
6	2437	16.40	16.39	0.5	PASS
11	2462	16.39	16.40	0.5	PASS

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

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.61	17.61	0.5	PASS
6	2437	17.59	17.59	0.5	PASS
11	2462	17.61	17.54	0.5	PASS

802.11n (40MHz)

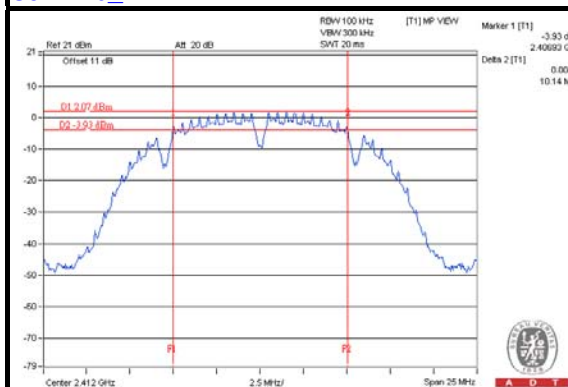
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	36.46	36.46	0.5	PASS
6	2437	36.39	36.40	0.5	PASS
9	2452	36.40	36.41	0.5	PASS



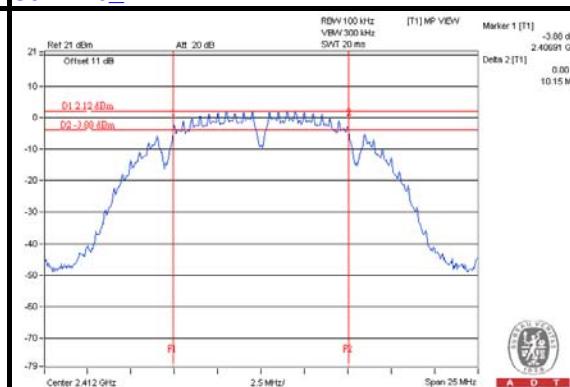
A D T

SPECTRUM PLOT OF WORST VALUE

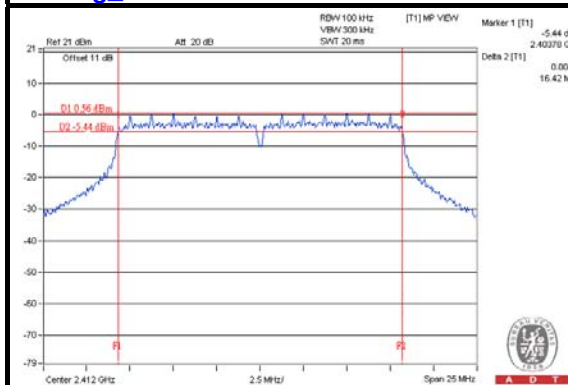
802.11b_1TX



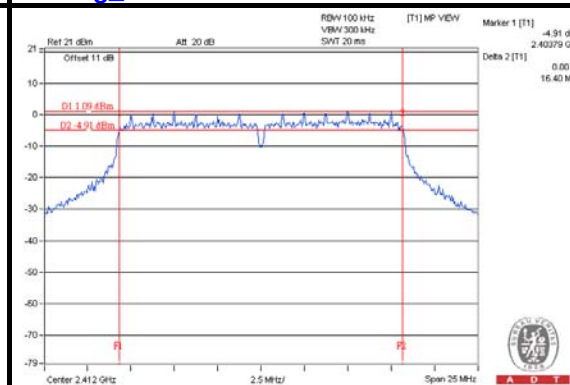
802.11b_2TX



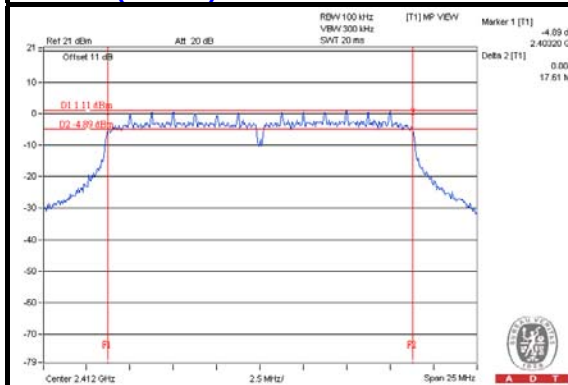
802.11g_1TX



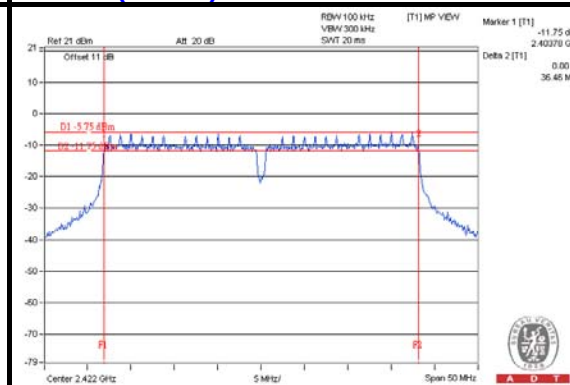
802.11g_2TX



802.11n (20MHz)



802.11n (40MHz)



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 v02r01 Method of conducted output power measurement on IEEE 802.11 devices,

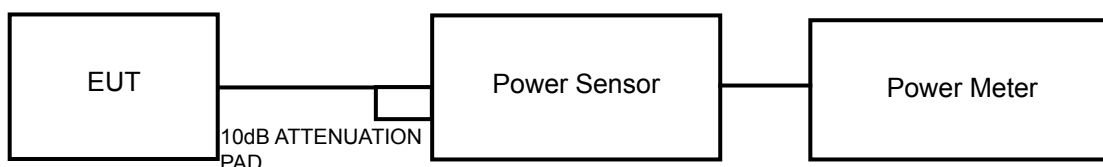
Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

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

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_1TX

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	27.353	14.37	30	PASS
6	2437	28.119	14.49	30	PASS
11	2462	31.842	15.03	30	PASS

802.11b_2TX

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	14.30	14.44	54.712	17.38	30	PASS
6	2437	14.57	14.49	56.761	17.54	30	PASS
11	2462	14.67	14.58	58.017	17.64	30	PASS

802.11g_1TX

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	139.637	21.45	30	PASS
6	2437	133.045	21.24	30	PASS
11	2462	128.825	21.10	30	PASS

802.11g_2TX

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	20.57	21.47	254.306	24.05	30	PASS
6	2437	21.65	21.20	278.044	24.44	30	PASS
11	2462	20.30	21.08	235.385	23.72	30	PASS



A D T

802.11n (20MHz)

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	20.56	19.98	213.304	23.29	30	PASS
6	2437	20.25	20.41	215.826	23.34	30	PASS
11	2462	21.40	21.37	275.126	24.40	30	PASS

802.11n (40MHz)

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	16.80	16.33	90.817	19.58	30	PASS
6	2437	17.10	16.85	99.703	19.99	30	PASS
9	2452	17.05	16.88	99.452	19.98	30	PASS

FOR AVERAGE POWER

802.11b_1TX

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	15.453	11.89
6	2437	16.293	12.12
11	2462	18.113	12.58

802.11b_2TX

CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	11.80	12.01	31.021	14.92
6	2437	12.20	12.12	32.889	15.17
11	2462	12.18	12.09	32.701	15.15

802.11g_1TX

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	16.634	12.21
6	2437	17.660	12.47
11	2462	18.281	12.62

802.11g_2TX

CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	12.93	12.64	37.999	15.80
6	2437	12.94	12.86	38.999	15.91
11	2462	12.87	12.94	39.043	15.92



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802.11n (20MHz)

CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	12.83	12.51	37.011	15.68
6	2437	12.85	12.70	37.896	15.79
11	2462	12.42	12.87	36.822	15.66

802.11n (40MHz)

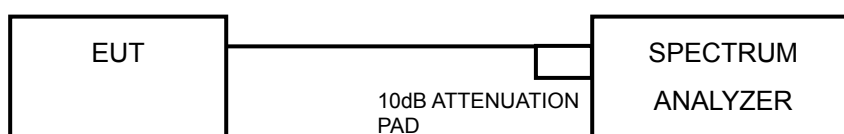
CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
3	2422	9.11	8.97	16.036	12.05
6	2437	9.37	9.54	17.645	12.47
9	2452	9.45	9.50	17.723	12.49

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

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span to 1.5 times the DTS bandwidth.
- c) Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- d) Set the VBW $\geq 3 \times \text{RBW}$.
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.

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_1TX

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-11.87	8	PASS
6	2437	-11.63	8	PASS
11	2462	-11.34	8	PASS

802.11b_2TX

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-12.33	3.01	-9.32	8	PASS
	6	2437	-11.96	3.01	-8.95	8	PASS
	11	2462	-10.69	3.01	-7.68	8	PASS
1	1	2412	-13.13	3.01	-10.12	8	PASS
	6	2437	-12.84	3.01	-9.83	8	PASS
	11	2462	-11.04	3.01	-8.03	8	PASS

NOTE: Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{ANT}] = 4.69\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.

802.11g_1TX

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-13.34	8	PASS
6	2437	-13.99	8	PASS
11	2462	-13.05	8	PASS

802.11g_2TX

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-13.36	3.01	-10.35	8	PASS
	6	2437	-13.71	3.01	-10.70	8	PASS
	11	2462	-12.75	3.01	-9.74	8	PASS
1	1	2412	-14.33	3.01	-11.32	8	PASS
	6	2437	-13.12	3.01	-10.11	8	PASS
	11	2462	-11.96	3.01	-8.95	8	PASS

NOTE: Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{ANT}] = 4.69\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.

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

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-13.08	3.01	-10.07	8	PASS
	6	2437	-13.20	3.01	-10.19	8	PASS
	11	2462	-13.64	3.01	-10.63	8	PASS
1	1	2412	-13.67	3.01	-10.66	8	PASS
	6	2437	-14.23	3.01	-11.22	8	PASS
	11	2462	-13.75	3.01	-10.74	8	PASS

NOTE: Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{ANT}] = 4.69\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.

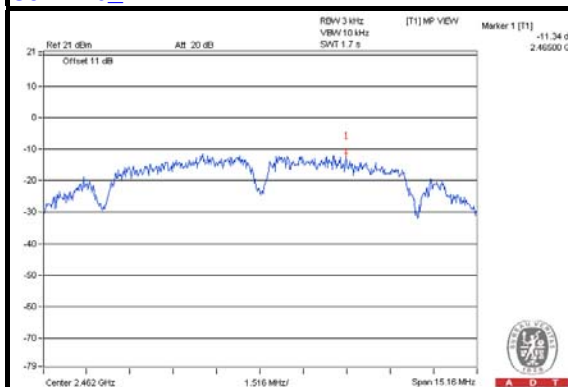
802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-19.79	3.01	-16.78	8	PASS
	6	2437	-20.47	3.01	-17.46	8	PASS
	9	2452	-19.60	3.01	-16.59	8	PASS
1	3	2422	-21.24	3.01	-18.23	8	PASS
	6	2437	-20.37	3.01	-17.36	8	PASS
	9	2452	-18.44	3.01	-15.43	8	PASS

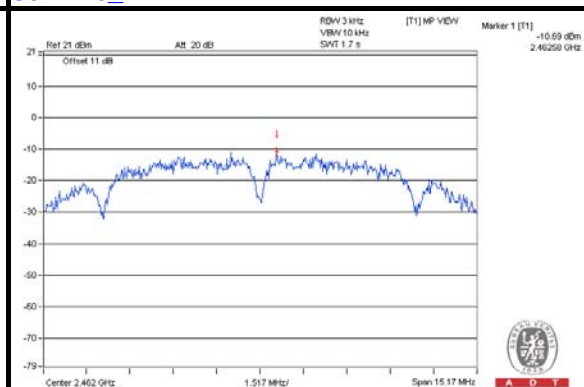
NOTE: Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{ANT}] = 4.69\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.

SPECTRUM PLOT OF WORST VALUE

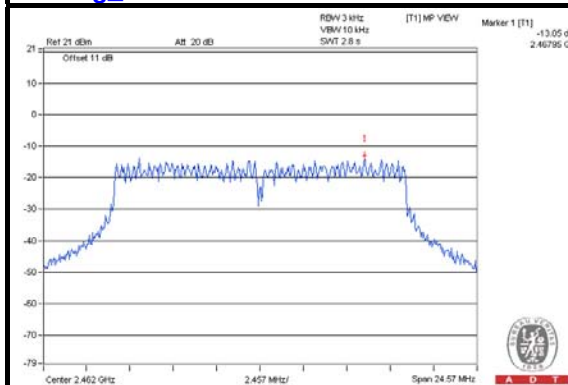
802.11b_1TX



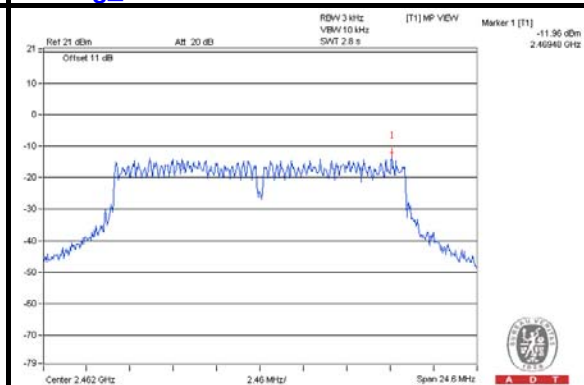
802.11b_2TX



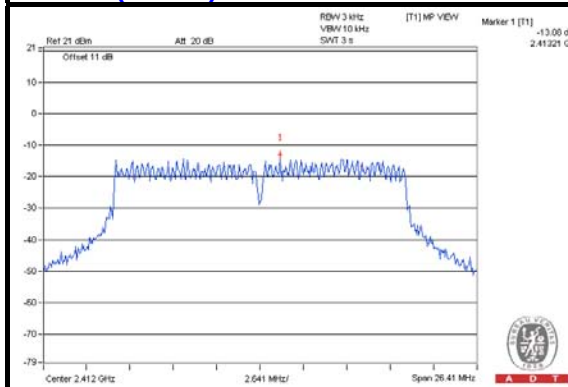
802.11g_1TX



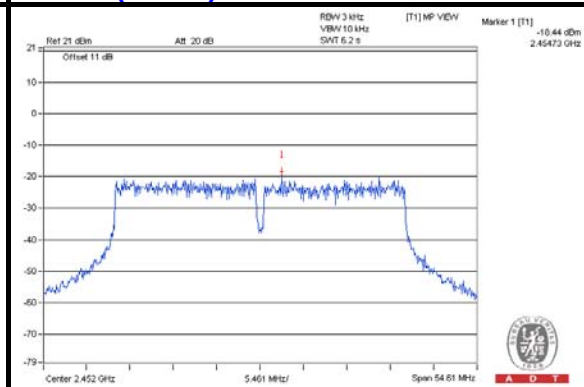
802.11g_2TX



802.11n (20MHz)



802.11n (40MHz)

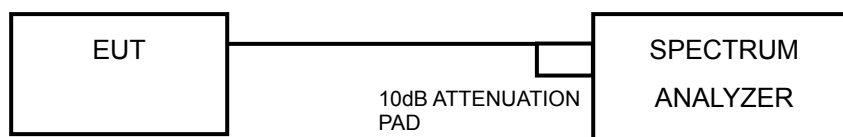


4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.7 TEST RESULTS

The 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.

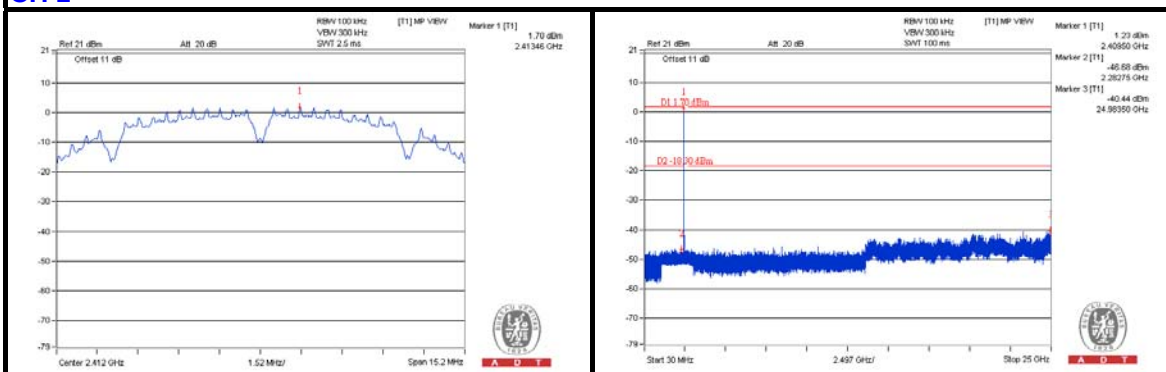
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



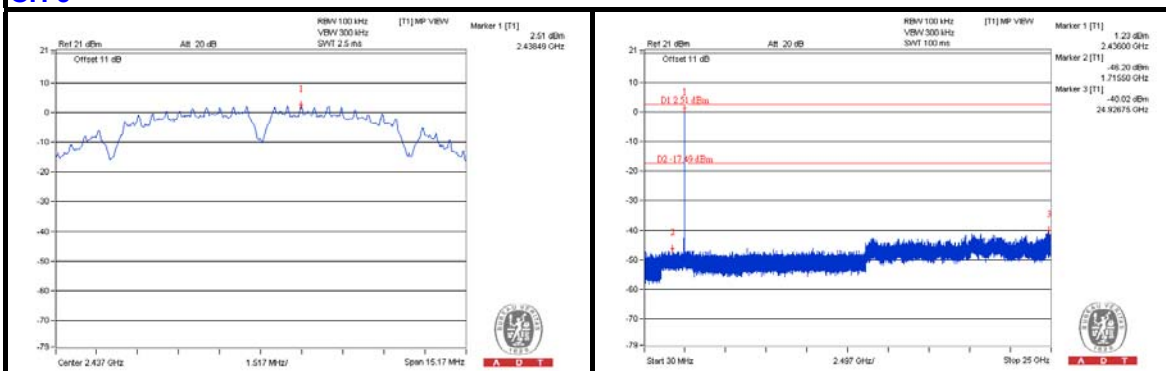
A D T

802.11b_1TX

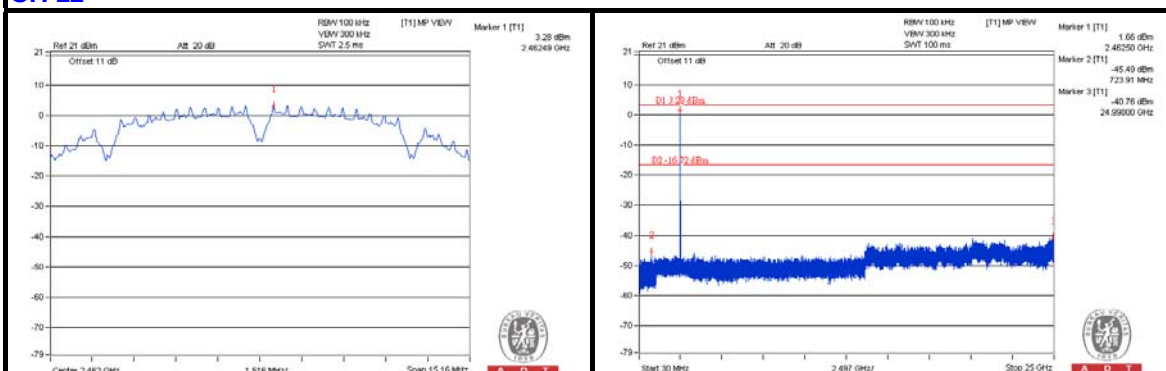
CH 1



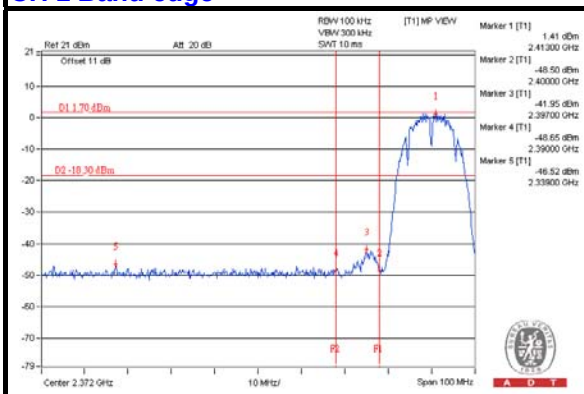
CH 6



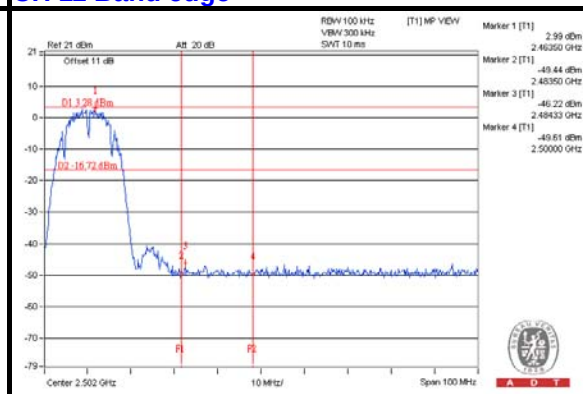
CH 11



CH 1 Band edge



CH 11 Band edge

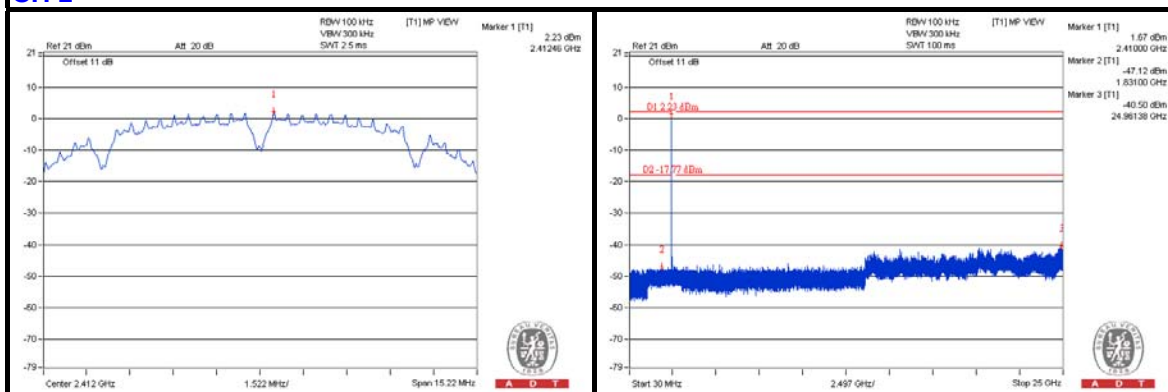




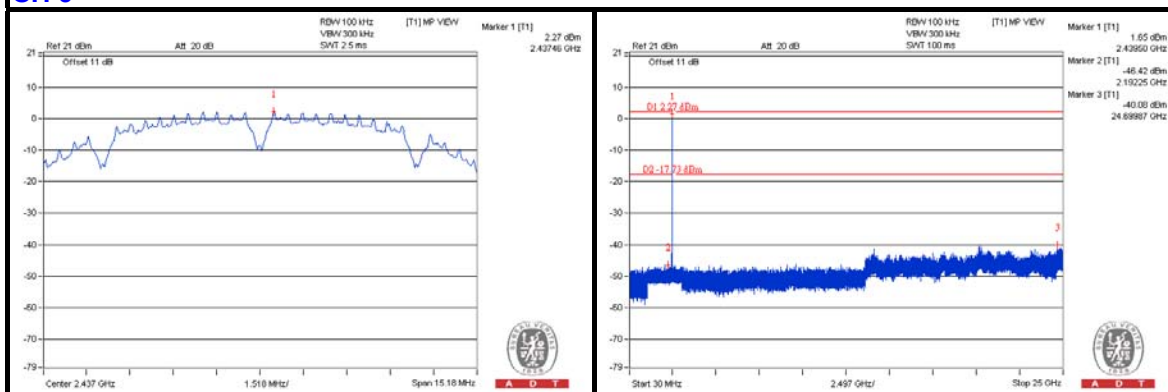
A D T

802.11b_2TX CHAIN 0

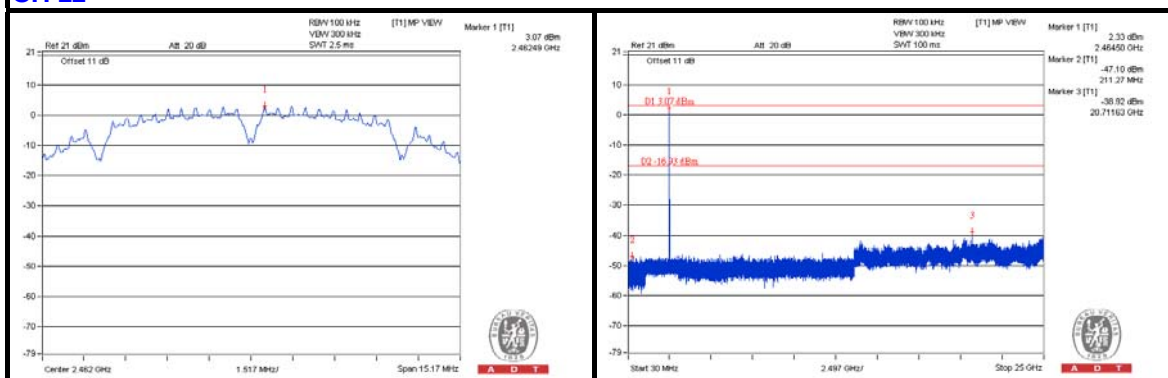
CH 1



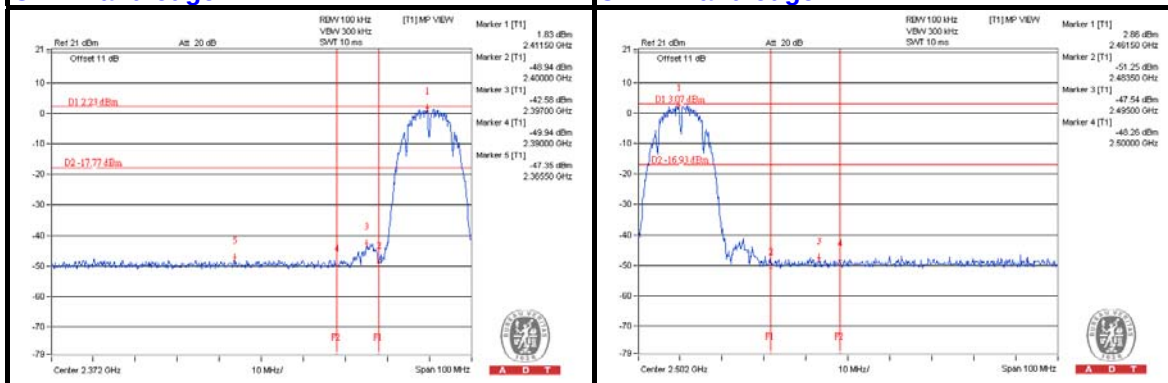
CH 6



CH 11



CH 1 Band edge

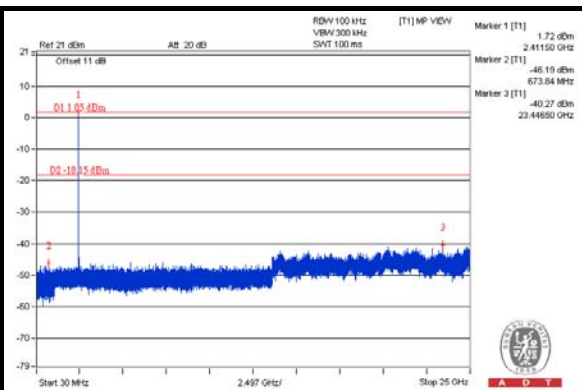
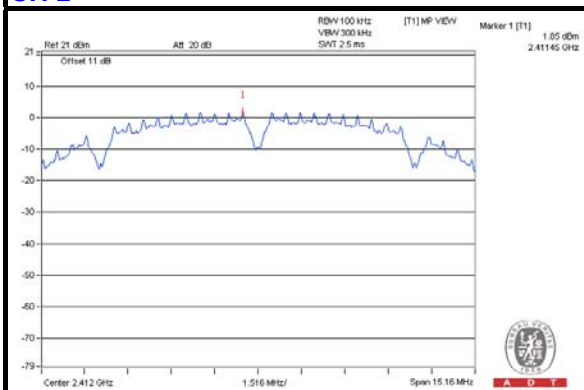




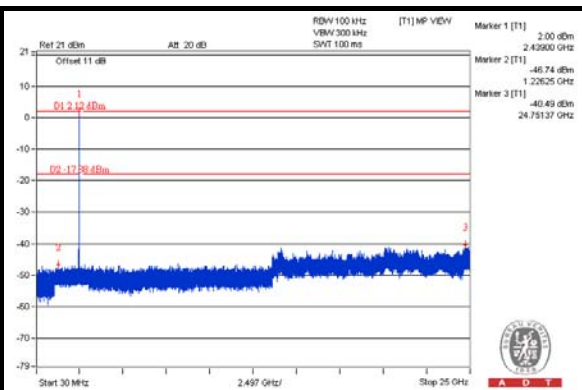
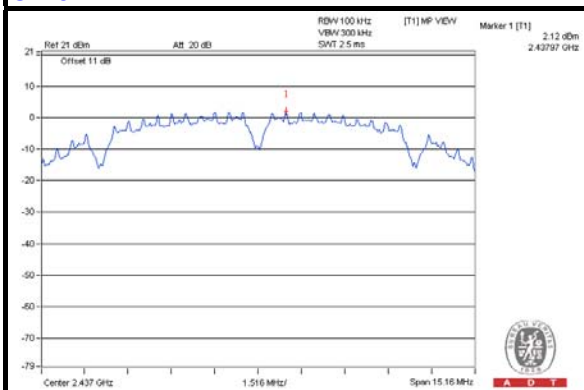
A D T

CHAIN 1

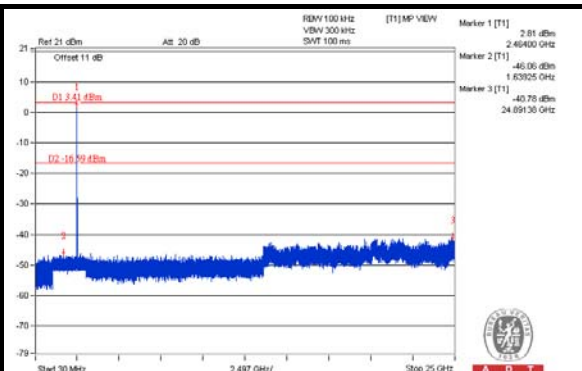
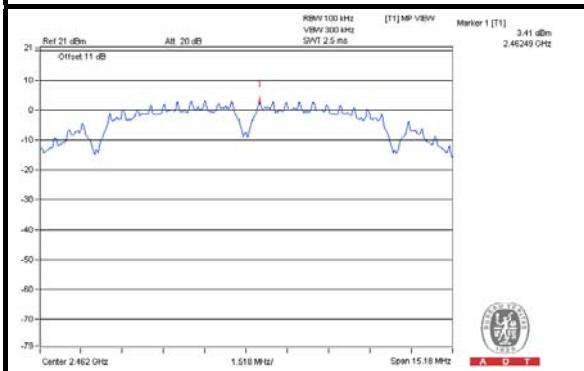
CH 1



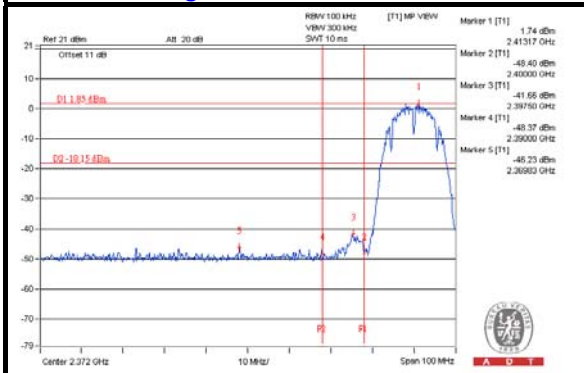
CH 6



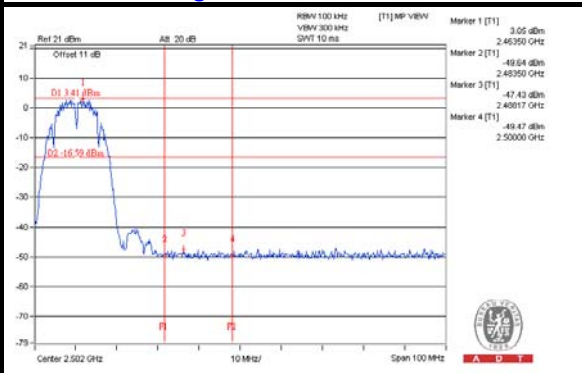
CH 11



CH 1 Band edge



CH 11 Band edge

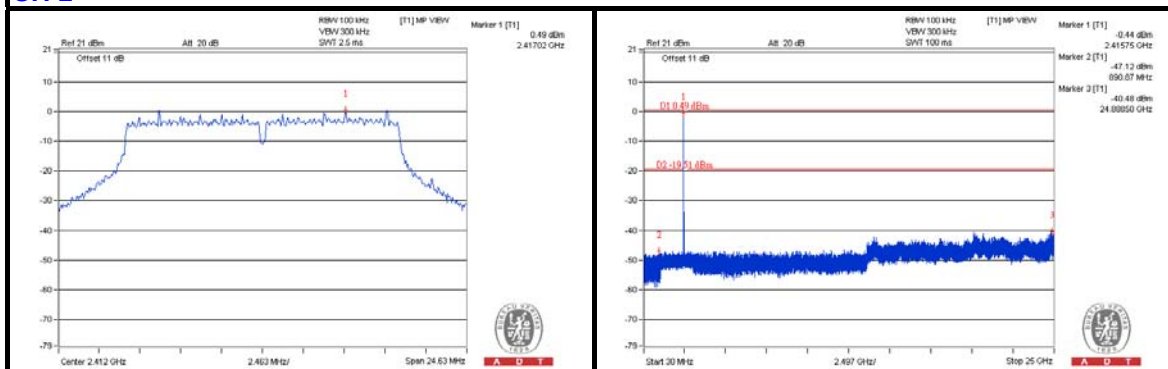




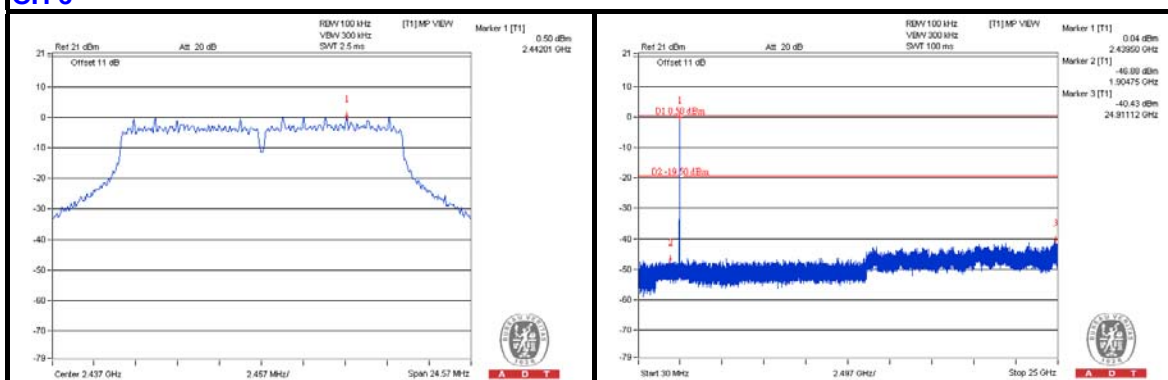
A D T

802.11g_1TX

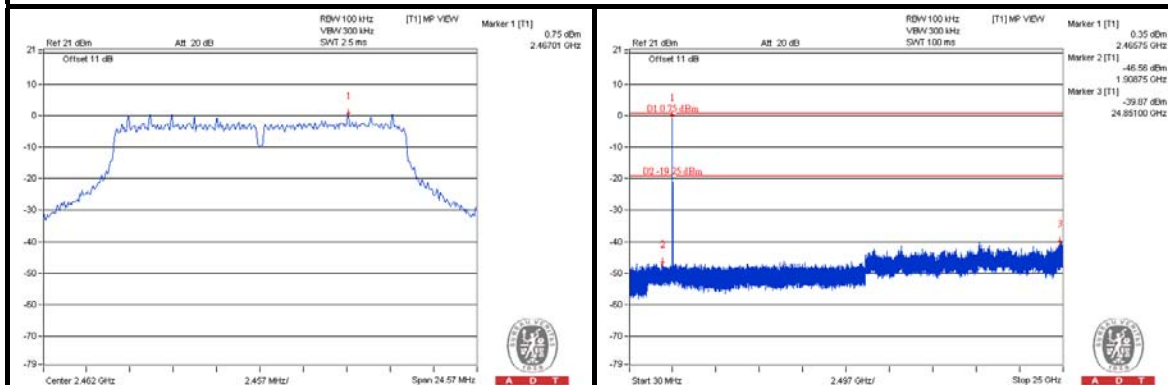
CH 1



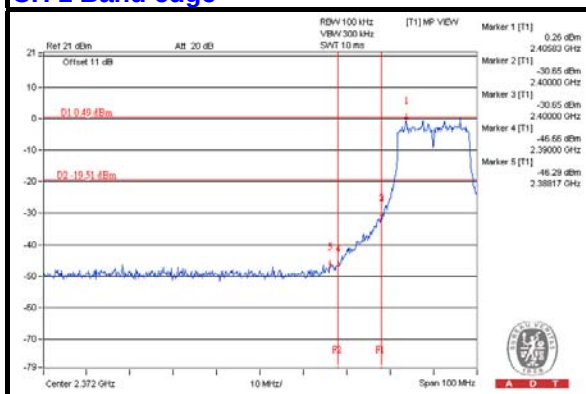
CH 6



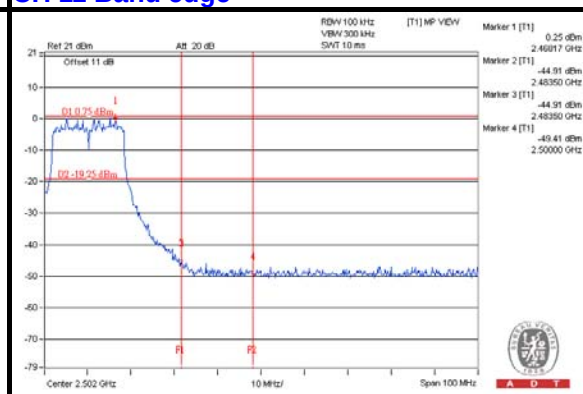
CH 11



CH 1 Band edge



CH 11 Band edge

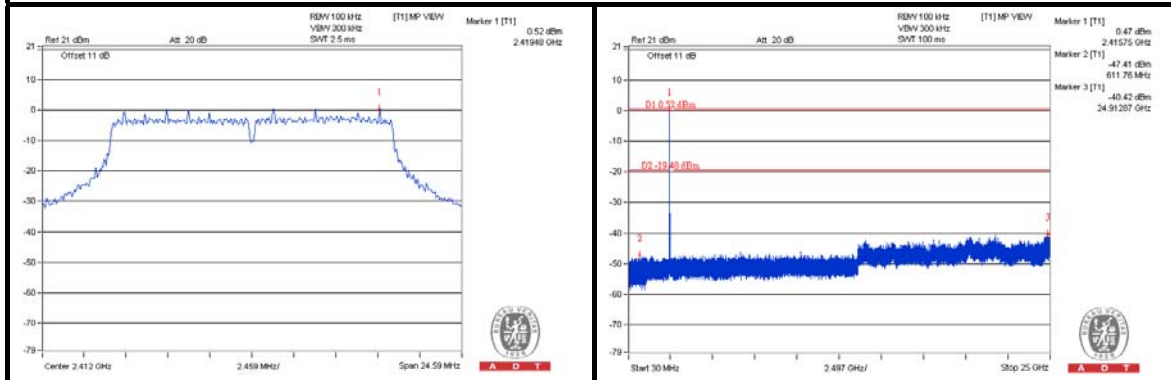




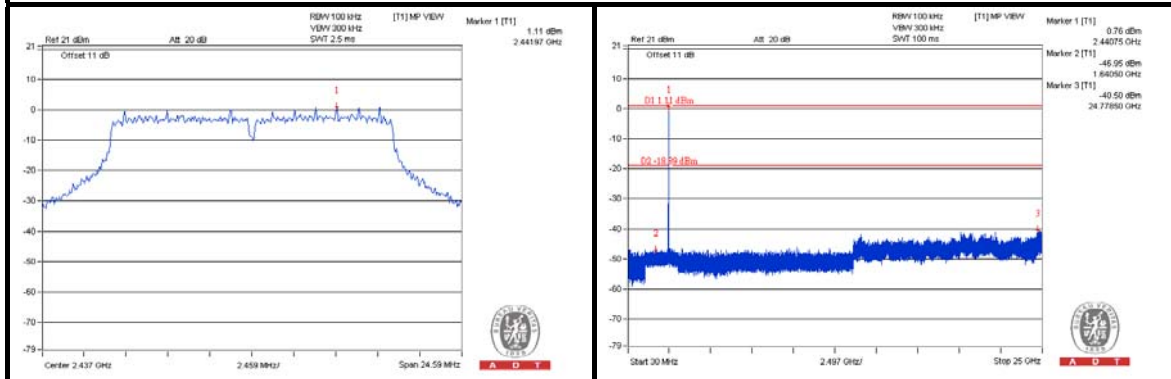
A D T

802.11g_2TX CHAIN 0

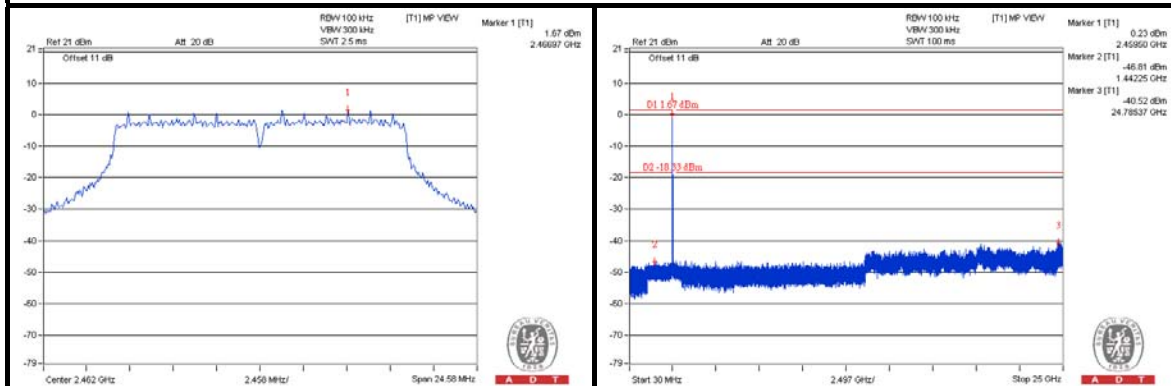
CH 1



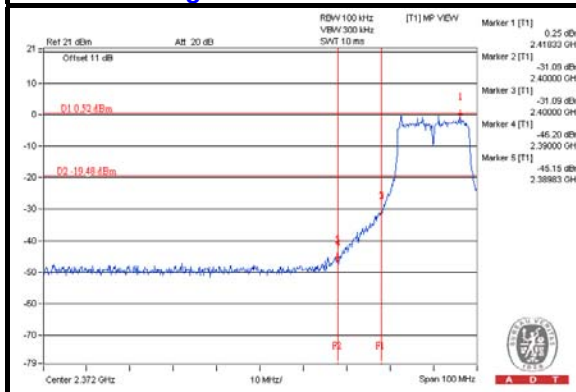
CH 6



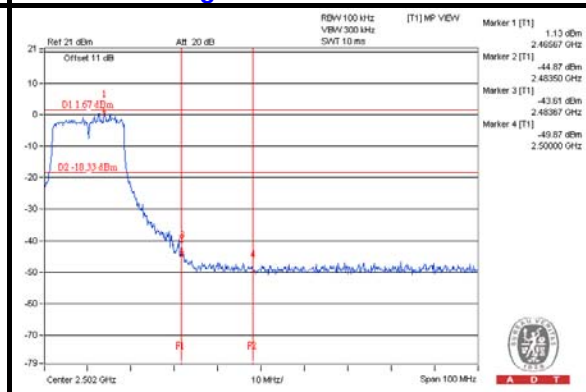
CH 11



CH 1 Band edge



CH 11 Band edge

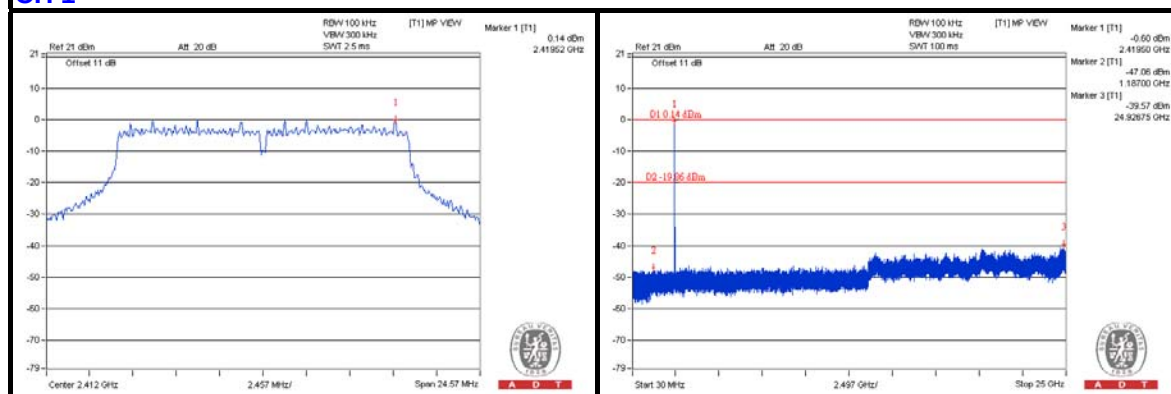




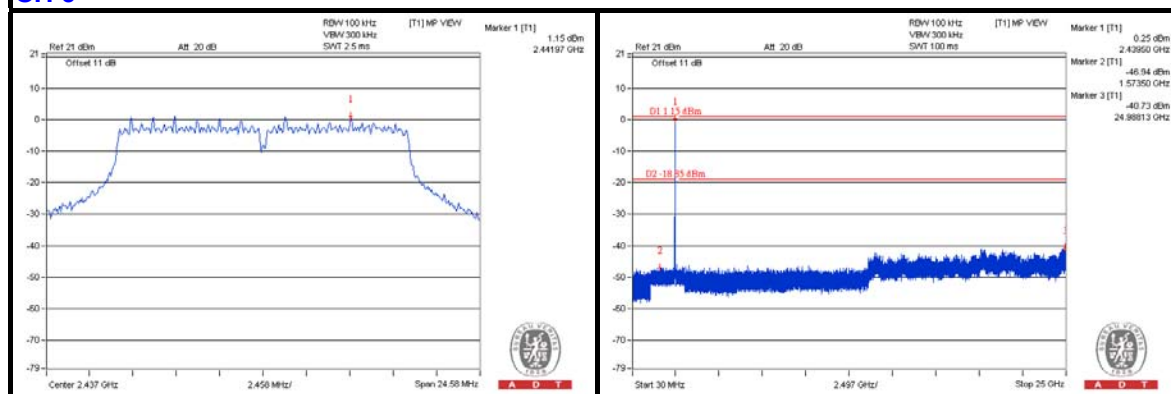
A D T

CHAIN 1

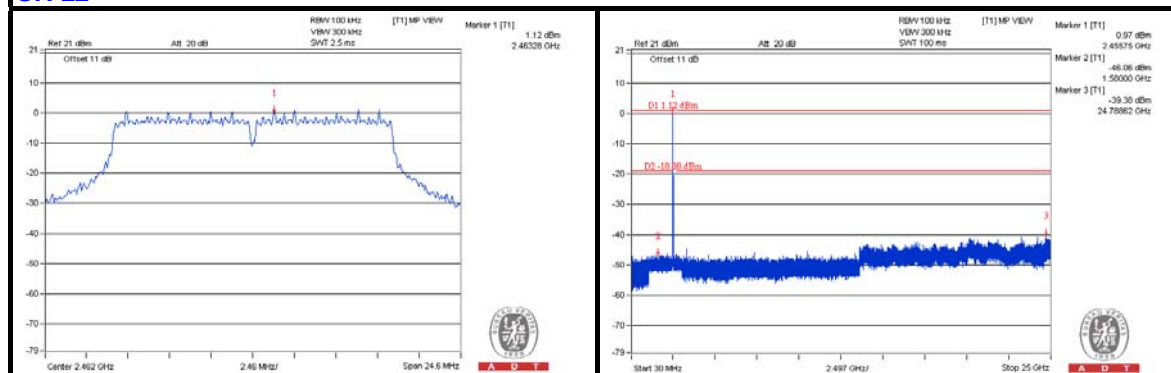
CH 1



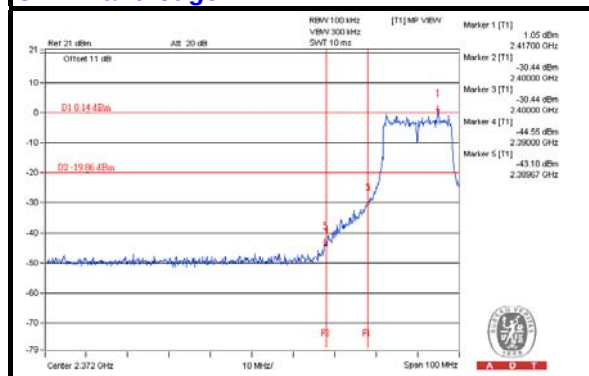
CH 6



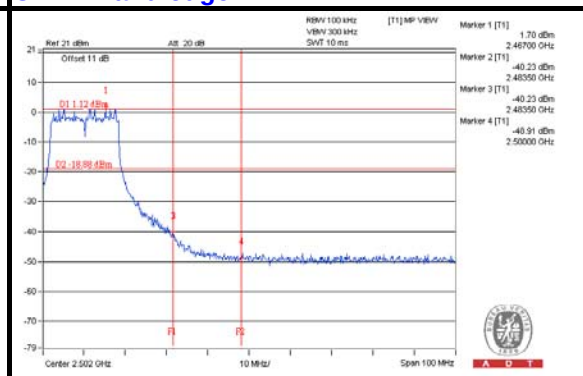
CH 11



CH 1 Band edge



CH 11 Band edge

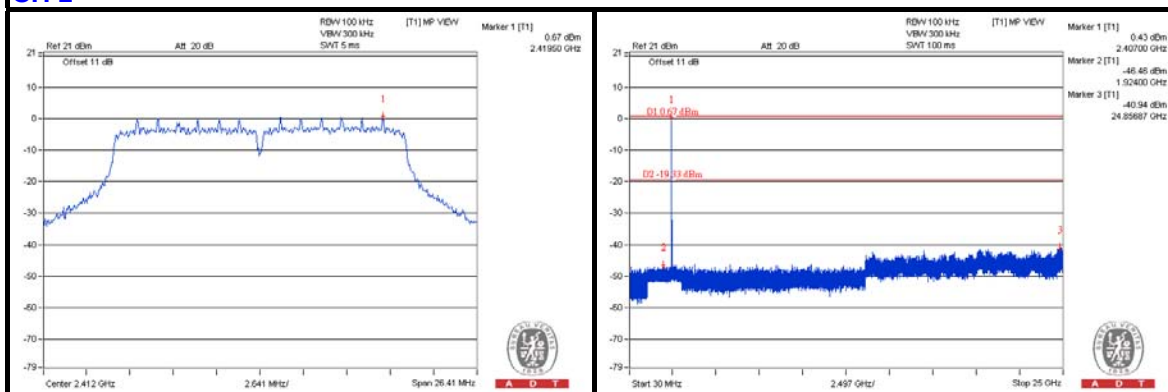




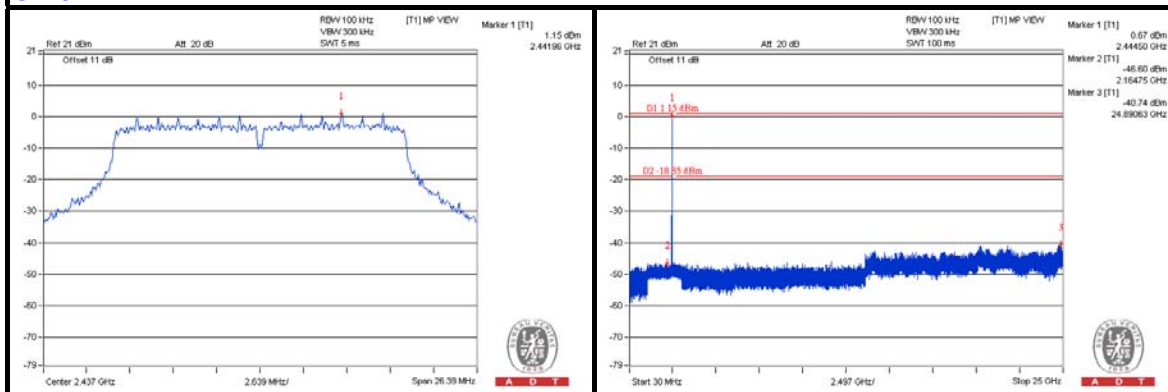
A D T

802.11n (20MHz)
CHAIN 0

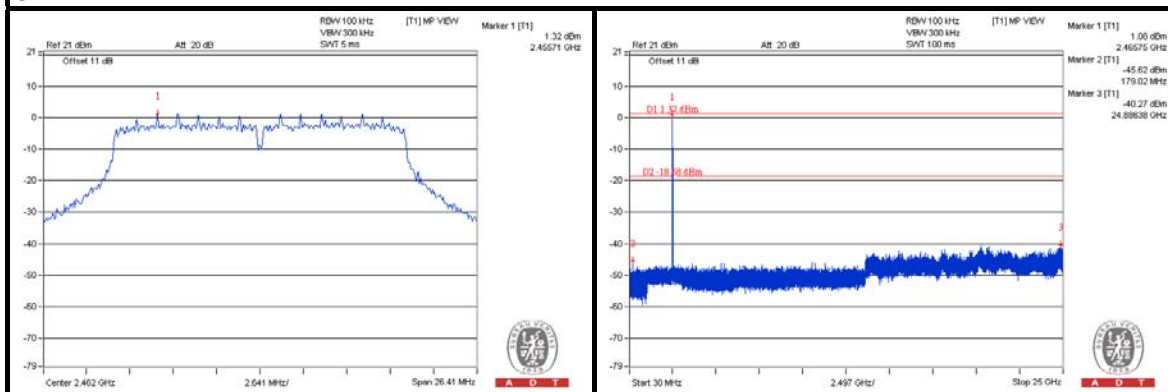
CH 1



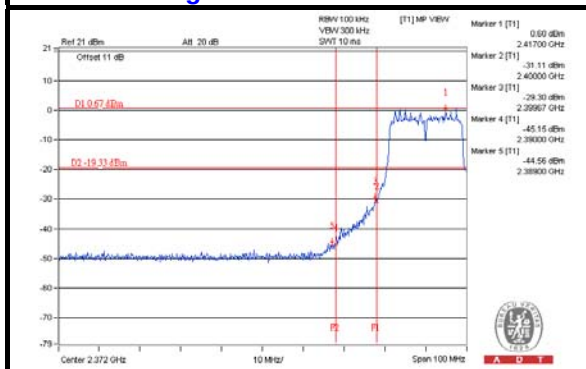
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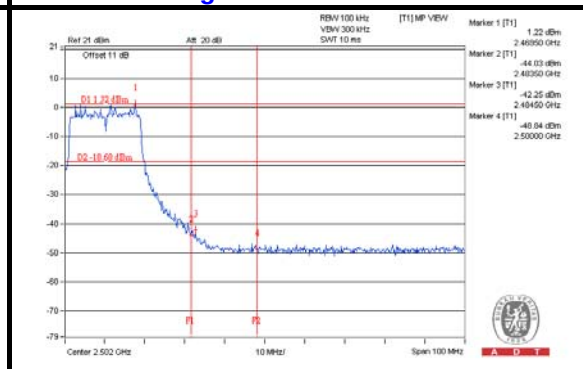
CH 11



CH 1 Band edge



CH 11 Band edge

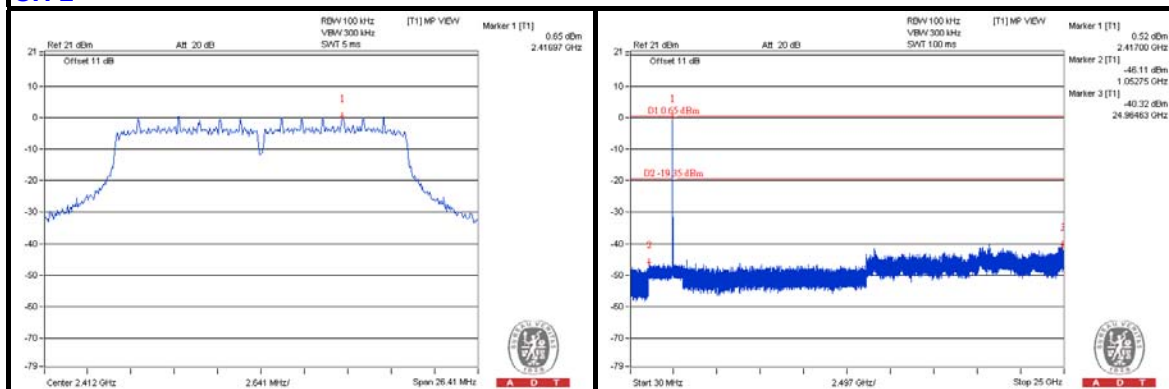




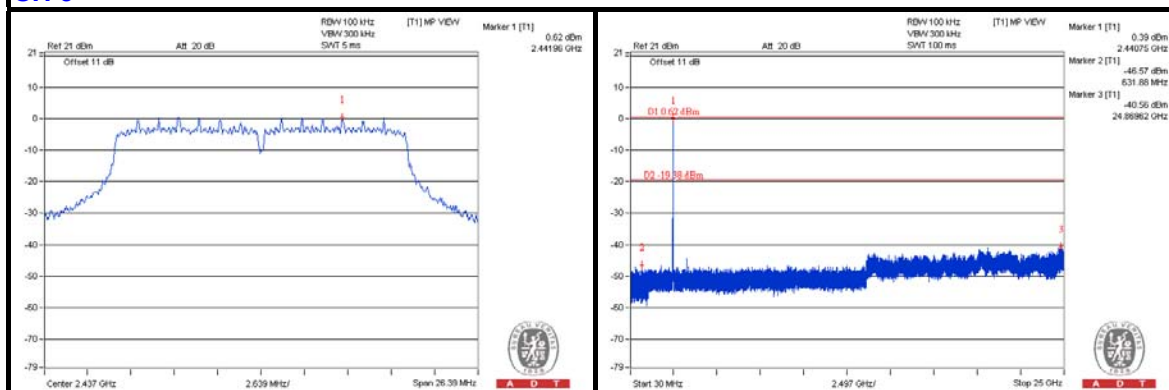
A D T

CHAIN 1

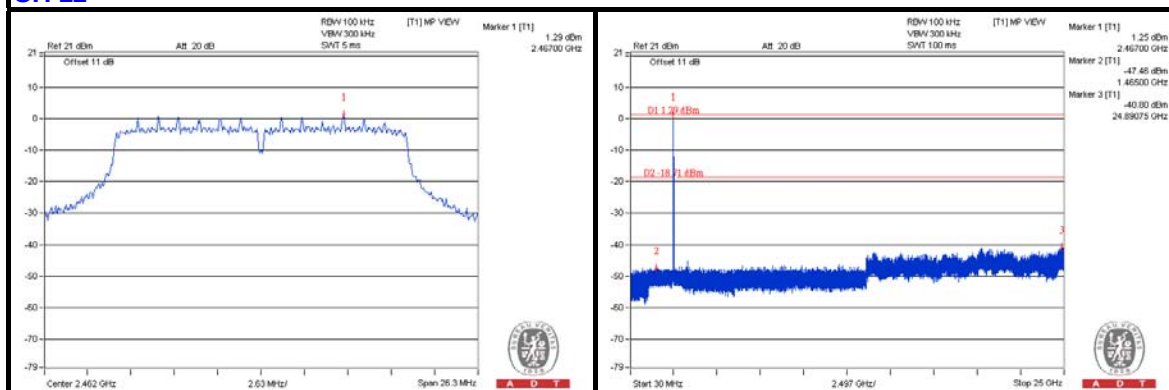
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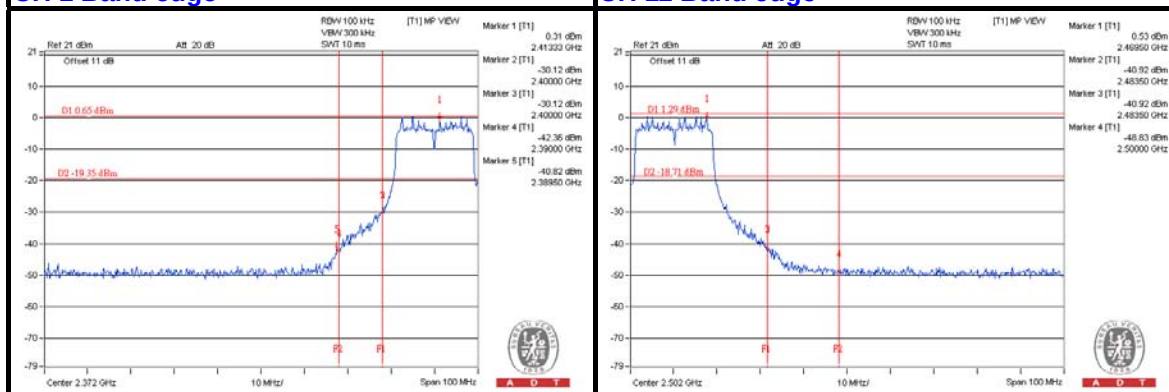
CH 6



CH 11

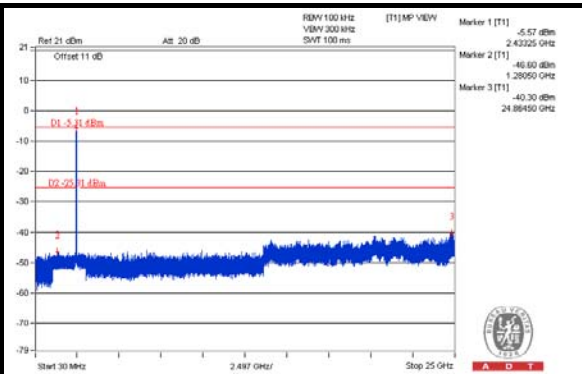
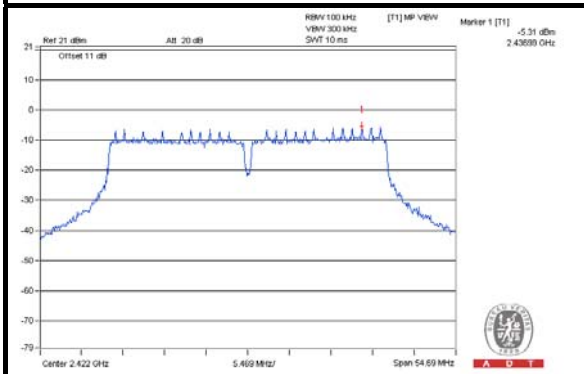


CH 1 Band edge

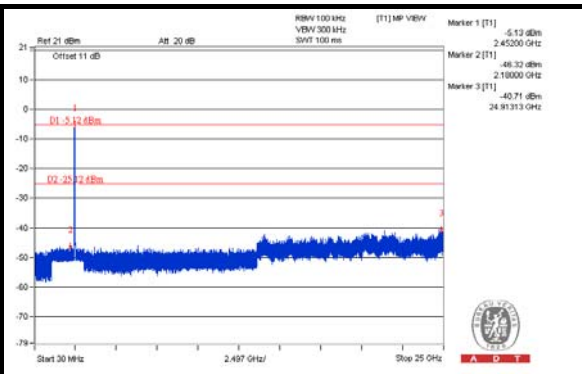
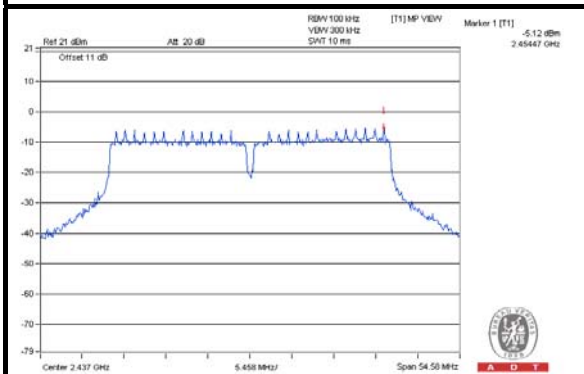


802.11n (40MHz) CHAIN 0

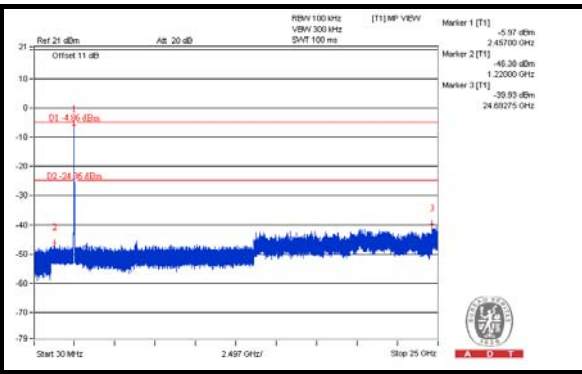
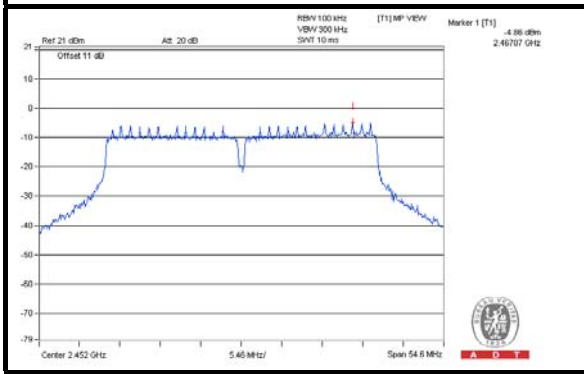
CH 3



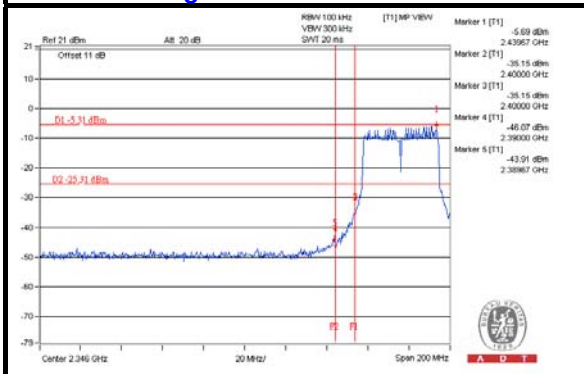
CH 6



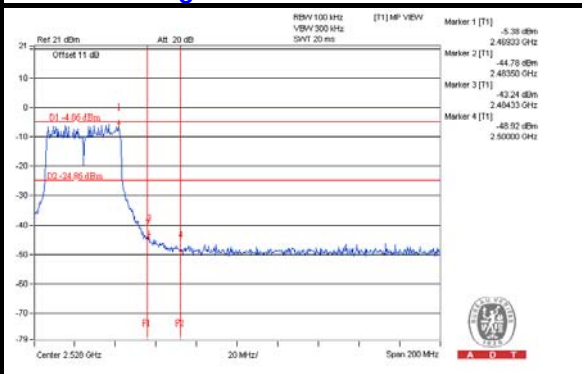
CH 9



CH 3 Band edge



CH 9 Band edge

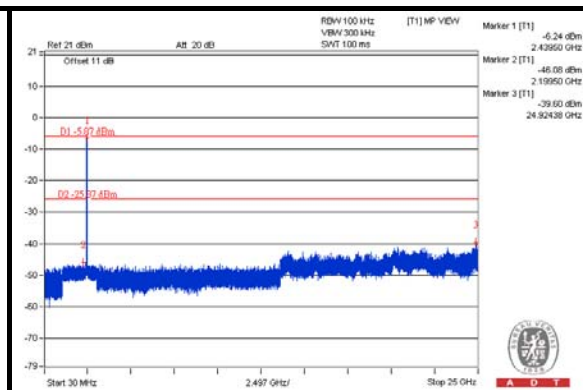
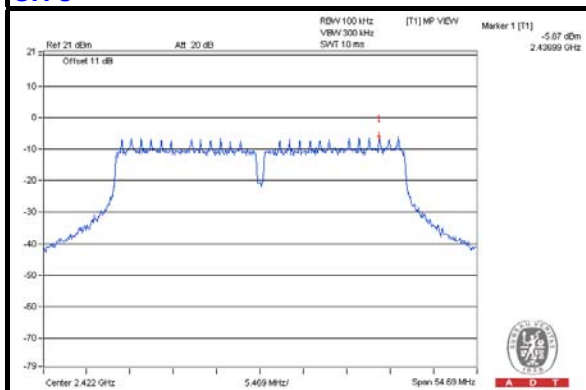




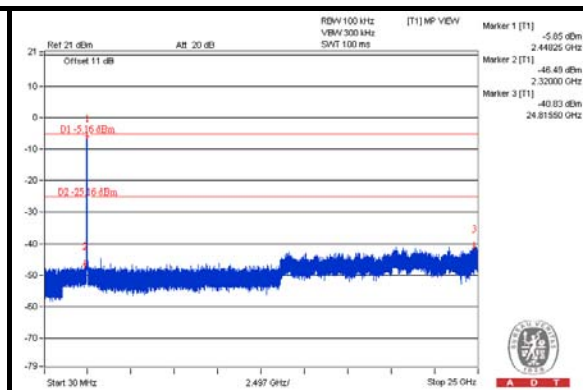
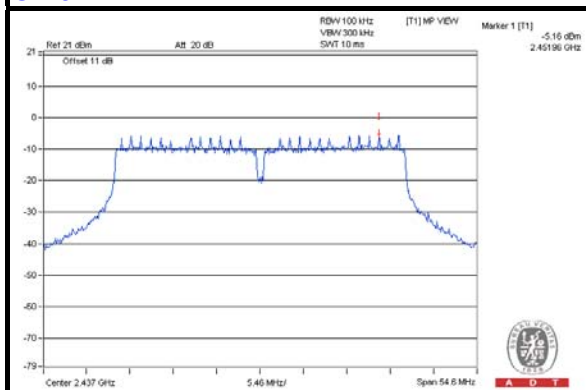
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CHAIN 1

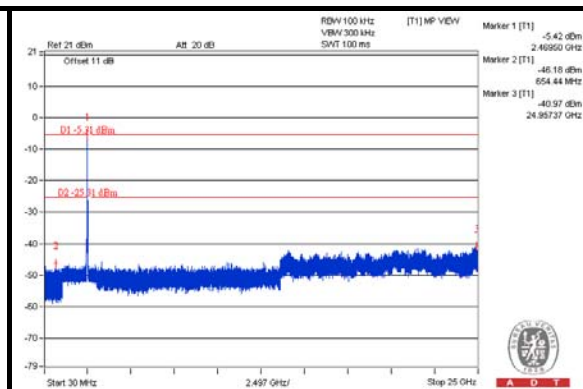
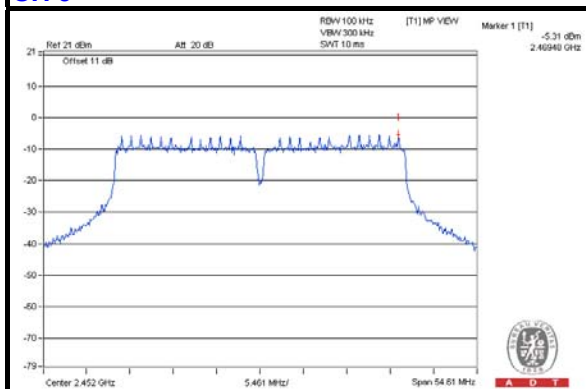
CH 3



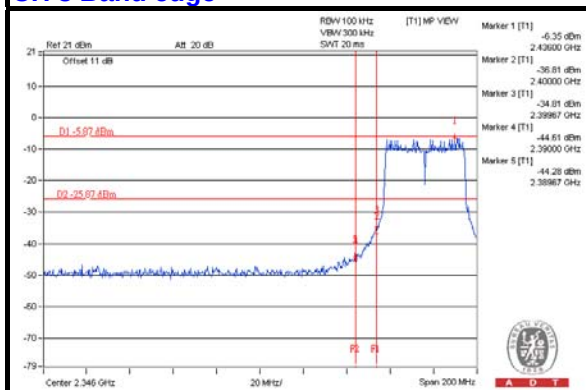
CH 6



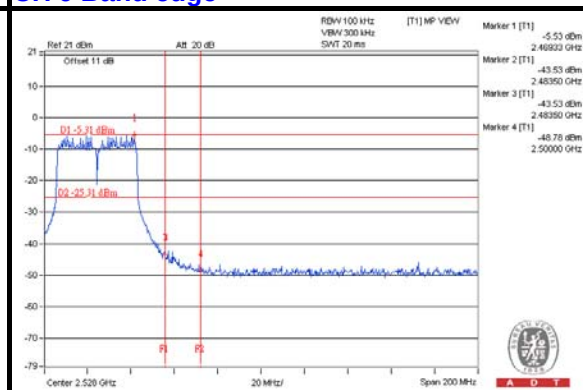
CH 9



CH 3 Band edge



CH 9 Band edge



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

5.1 RADIATED EMISSION 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.

5.1.7 TEST RESULTS

ABOVE 1GHz DATA :

802.11a_1TX

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	68.1 PK	75.6	-7.5	1.15 H	95	27.20	40.90
2	#5725.00	57.2 AV	64.7	-7.5	1.15 H	95	16.30	40.90
3	*5745.00	95.6 PK			1.16 H	94	54.60	41.00
4	*5745.00	84.7 AV			1.16 H	94	43.70	41.00
5	11490.00	65.5 PK	74.0	-8.5	1.57 H	68	48.50	17.00
6	11490.00	51.1 AV	54.0	-2.9	1.57 H	68	34.10	17.00
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	#5725.00	70.9 PK	78.4	-7.5	1.15 V	95	30.00	40.90
2	#5725.00	60.1 AV	67.6	-7.5	1.15 V	95	19.20	40.90
3	*5745.00	98.4 PK			1.00 V	341	57.40	41.00
4	*5745.00	87.6 AV			1.00 V	341	46.60	41.00
5	11490.00	68.7 PK	74.0	-5.3	1.00 V	353	51.70	17.00
6	11490.00	52.7 AV	54.0	-1.3	1.00 V	353	35.70	17.00

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 radiated frequency is out of the restricted band.
7. The limit value is defined as per 15.247.



A D T

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	96.8 PK			1.13 H	94	55.70	41.10
2	*5785.00	85.6 AV			1.13 H	94	44.50	41.10
3	11570.00	67.8 PK	74.0	-6.2	1.31 H	347	51.10	16.70
4	11570.00	52.1 AV	54.0	-1.9	1.31 H	347	35.40	16.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	99.6 PK			1.00 V	354	58.50	41.10
2	*5785.00	88.8 AV			1.00 V	354	47.70	41.10
3	11570.00	70.3 PK	74.0	-3.7	1.09 V	350	53.60	16.70
4	11570.00	53.7 AV	54.0	-0.3	1.09 V	350	37.00	16.70

REMARKS:

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



A D T

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	95.7 PK			1.41 H	91	54.60	41.10
2	*5825.00	84.8 AV			1.41 H	91	43.70	41.10
3	#5850.00	57.5 PK	75.7	-18.2	1.00 H	352	16.30	41.20
4	#5850.00	46.6 AV	64.8	-18.2	1.00 H	352	5.40	41.20
5	11650.00	63.6 PK	74.0	-10.4	1.66 H	78	47.10	16.50
6	11650.00	49.1 AV	54.0	-4.9	1.66 H	78	32.60	16.50
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	*5825.00	98.5 PK			1.00 V	352	57.40	41.10
2	*5825.00	88.0 AV			1.00 V	352	46.90	41.10
3	#5850.00	60.3 PK	78.5	-18.2	1.00 V	352	19.10	41.20
4	#5850.00	49.8 AV	68.0	-18.2	1.00 V	352	8.60	41.20
5	11650.00	70.4 PK	74.0	-3.6	1.00 V	1	53.90	16.50
6	11650.00	53.6 AV	54.0	-0.4	1.00 V	1	37.10	16.50

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 radiated frequency is out of the restricted band.
7. The limit value is defined as per 15.247.



A D T

802.11a_2TX

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	81.1 PK	83.3	-2.2	1.00 H	333	78.50	2.60
2	#5725.00	63.3 AV	73.4	-10.1	1.00 H	333	60.70	2.60
3	*5745.00	103.3 PK			1.00 H	41	62.30	41.00
4	*5745.00	93.4 AV			1.00 H	41	52.40	41.00
5	11490.00	68.8 PK	74.0	-5.2	1.44 H	70	51.80	17.00
6	11490.00	53.5 AV	54.0	-0.5	1.44 H	70	36.50	17.00
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	#5725.00	77.1 PK	82.2	-5.1	1.00 V	15	74.50	2.60
2	#5725.00	60.1 AV	72.2	-12.1	1.00 V	15	57.50	2.60
3	*5745.00	102.2 PK			1.00 V	16	61.20	41.00
4	*5745.00	92.2 AV			1.00 V	16	51.20	41.00
5	11490.00	69.0 PK	74.0	-5.0	1.42 V	350	52.00	17.00
6	11490.00	53.6 AV	54.0	-0.4	1.42 V	350	36.60	17.00

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 radiated frequency is out of the restricted band.
7. The limit value is defined as per 15.247.



A D T

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	103.0 PK			1.00 H	333	61.90	41.10
2	*5785.00	92.9 AV			1.00 H	333	51.80	41.10
3	11570.00	65.6 PK	74.0	-8.4	1.21 H	16	48.90	16.70
4	11570.00	51.8 AV	54.0	-2.2	1.21 H	16	35.10	16.70
5	#17355.00	71.3 PK	83.0	-11.7	1.09 H	309	49.70	21.60
6	#17355.00	57.6 AV	72.9	-15.3	1.09 H	309	36.00	21.60
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	*5785.00	100.4 PK			1.00 V	18	59.30	41.10
2	*5785.00	90.8 AV			1.00 V	18	49.70	41.10
3	11570.00	67.9 PK	74.0	-6.1	1.57 V	350	51.20	16.70
4	11570.00	52.0 AV	54.0	-2.0	1.57 V	350	35.30	16.70
5	#17355.00	72.3 PK	80.4	-8.1	1.00 V	32	50.70	21.60
6	#17355.00	58.1 AV	70.8	-12.7	1.00 V	32	36.50	21.60

REMARKS:

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



A D T

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	101.5 PK			1.16 H	335	60.40	41.10
2	*5825.00	91.3 AV			1.16 H	335	50.20	41.10
3	#5850.00	67.0 PK	81.5	-14.5	1.00 H	54	64.00	3.00
4	#5850.00	48.5 AV	71.3	-22.8	1.00 H	54	45.50	3.00
5	11650.00	64.4 PK	74.0	-9.6	1.52 H	14	47.90	16.50
6	11650.00	49.9 AV	54.0	-4.1	1.52 H	14	33.40	16.50
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	*5825.00	99.1 PK			1.00 V	18	58.00	41.10
2	*5825.00	89.1 AV			1.00 V	18	48.00	41.10
3	#5850.00	65.3 PK	79.1	-13.8	1.00 V	21	62.30	3.00
4	#5850.00	48.8 AV	69.1	-20.3	1.00 V	21	45.80	3.00
5	11650.00	70.1 PK	74.0	-3.9	1.05 V	357	53.60	16.50
6	11650.00	53.5 AV	54.0	-0.5	1.05 V	357	37.00	16.50

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 radiated frequency is out of the restricted band.
7. The limit value is defined as per 15.247.



A D T

802.11n (20MHz)

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	82.4 PK	83.9	-1.5	1.18 H	333	79.80	2.60
2	#5725.00	64.2 AV	73.5	-9.3	1.18 H	333	61.60	2.60
3	*5745.00	103.9 PK			1.00 H	19	62.90	41.00
4	*5745.00	93.5 AV			1.00 H	19	52.50	41.00
5	11490.00	68.0 PK	74.0	-6.0	1.44 H	71	51.00	17.00
6	11490.00	53.7 AV	54.0	-0.3	1.44 H	71	36.70	17.00
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	#5725.00	76.5 PK	81.3	-4.8	1.03 V	355	73.90	2.60
2	#5725.00	58.1 AV	71.2	-13.1	1.03 V	355	55.50	2.60
3	*5745.00	101.3 PK			1.00 V	17	60.30	41.00
4	*5745.00	91.2 AV			1.00 V	17	50.20	41.00
5	11490.00	67.8 PK	74.0	-6.2	1.76 V	357	50.80	17.00
6	11490.00	53.6 AV	54.0	-0.4	1.76 V	357	36.60	17.00

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 radiated frequency is out of the restricted band.
7. The limit value is defined as per 15.247.



A D T

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	103.7 PK			1.19 H	337	62.60	41.10
2	*5785.00	92.6 AV			1.19 H	337	51.50	41.10
3	11570.00	67.0 PK	74.0	-7.0	1.50 H	22	50.30	16.70
4	11570.00	53.0 AV	54.0	-1.0	1.50 H	22	36.30	16.70
5	#17355.00	72.1 PK	83.7	-11.6	1.09 H	313	50.50	21.60
6	#17355.00	57.7 AV	72.6	-14.9	1.09 H	313	36.10	21.60
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	*5785.00	101.3 PK			1.00 V	25	60.20	41.10
2	*5785.00	90.7 AV			1.00 V	25	49.60	41.10
3	11570.00	67.7 PK	74.0	-6.3	1.00 V	352	51.00	16.70
4	11570.00	53.2 AV	54.0	-0.8	1.00 V	352	36.50	16.70
5	#17355.00	72.4 PK	81.3	-8.9	1.00 V	30	50.80	21.60
6	#17355.00	58.4 AV	70.7	-12.3	1.00 V	30	36.80	21.60

REMARKS:

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



A D T

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	103.0 PK			1.04 H	29	61.90	41.10
2	*5825.00	92.2 AV			1.04 H	29	51.10	41.10
3	#5850.00	71.7 PK	83.0	-11.3	1.00 H	312	68.70	3.00
4	#5850.00	54.7 AV	72.2	-17.5	1.00 H	312	51.70	3.00
5	11650.00	62.9 PK	74.0	-11.1	1.00 H	156	46.40	16.50
6	11650.00	49.8 AV	54.0	-4.2	1.00 H	156	33.30	16.50
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	*5825.00	99.6 PK			1.00 V	291	58.50	41.10
2	*5825.00	89.2 AV			1.00 V	291	48.10	41.10
3	#5850.00	69.3 PK	79.6	-10.3	1.00 V	26	66.30	3.00
4	#5850.00	51.8 AV	69.2	-17.4	1.00 V	26	48.80	3.00
5	11650.00	68.5 PK	74.0	-5.5	1.00 V	218	52.00	16.50
6	11650.00	53.8 AV	54.0	-0.2	1.98 V	358	37.30	16.50

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 radiated frequency is out of the restricted band.
7. The limit value is defined as per 15.247.



A D T

802.11n (40MHz)

CHANNEL	TX Channel 151	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	80.4 PK	80.9	-0.5	1.00 H	337	77.80	2.60
2	#5725.00	64.0 AV	70.5	-6.5	1.00 H	337	61.40	2.60
3	*5755.00	100.9 PK			1.00 H	18	59.90	41.00
4	*5755.00	90.5 AV			1.00 H	18	49.50	41.00
5	11510.00	65.6 PK	74.0	-8.4	1.62 H	19	48.70	16.90
6	11510.00	52.1 AV	54.0	-1.9	1.62 H	19	35.20	16.90
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	#5725.00	78.1 PK	79.0	-0.9	1.00 V	21	75.50	2.60
2	#5725.00	64.1 AV	68.3	-4.2	1.00 V	21	61.50	2.60
3	*5755.00	99.0 PK			1.00 V	15	58.00	41.00
4	*5755.00	88.3 AV			1.00 V	15	47.30	41.00
5	11510.00	68.2 PK	74.0	-5.8	1.16 V	354	51.30	16.90
6	11510.00	52.9 AV	54.0	-1.1	1.16 V	354	36.00	16.90

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



A D T

CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	102.7 PK			1.05 H	333	61.60	41.10
2	*5795.00	90.8 AV			1.05 H	333	49.70	41.10
3	#5850.00	61.5 PK	82.7	-21.2	1.00 H	333	20.30	41.20
4	#5850.00	49.6 AV	70.8	-21.2	1.00 H	333	8.40	41.20
5	11590.00	64.4 PK	74.0	-9.6	1.55 H	18	47.70	16.70
6	11590.00	50.8 AV	54.0	-3.2	1.55 H	18	34.10	16.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	97.9 PK			1.00 V	289	56.80	41.10
2	*5795.00	88.0 AV			1.00 V	289	46.90	41.10
3	#5850.00	56.5 PK	77.9	-21.4	1.00 V	333	15.30	41.20
4	#5850.00	46.6 AV	68.0	-21.4	1.00 V	333	5.40	41.20
5	11590.00	67.1 PK	74.0	-6.9	1.10 V	351	50.40	16.70
6	11590.00	53.0 AV	54.0	-1.0	1.10 V	351	36.30	16.70

REMARKS:

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



A D T

BELOW 1GHz WORST-CASE DATA

802.11a_2TX

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	95.50	32.1 QP	43.5	-11.4	1.99 H	15	51.40	-19.30
2	143.70	38.2 QP	43.5	-5.3	1.10 H	313	52.60	-14.40
3	264.50	39.7 QP	46.0	-6.3	1.00 H	187	53.40	-13.70
4	432.20	36.1 QP	46.0	-9.9	1.99 H	215	45.70	-9.60
5	501.20	34.7 QP	46.0	-11.3	1.99 H	70	43.30	-8.60
6	575.80	33.6 QP	46.0	-12.4	1.24 H	214	40.70	-7.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	89.50	30.7 QP	43.5	-12.8	1.49 V	28	50.50	-19.80
2	143.80	30.2 QP	43.5	-13.3	1.99 V	261	44.60	-14.40
3	264.90	31.8 QP	46.0	-14.2	1.24 V	81	45.50	-13.70
4	333.30	34.7 QP	46.0	-11.3	1.24 V	15	46.40	-11.70
5	432.60	36.7 QP	46.0	-9.3	1.24 V	283	46.20	-9.50
6	583.50	37.9 QP	46.0	-8.1	1.00 V	6	44.60	-6.70

REMARKS:

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

5.2 CONDUCTED EMISSION MEASUREMENT

5.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

- NOTE:** 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

5.2.2 TEST INSTRUMENTS

Same as item 4.2.2.

5.2.3 TEST PROCEDURES

Same as item 4.2.3.

5.2.4 DEVIATION FROM TEST STANDARD

No deviation.

5.2.5 TEST SETUP

Same as item 4.2.5.

5.2.6 EUT OPERATING CONDITIONS

Same as item 4.1.6.

5.2.7 TEST RESULTS

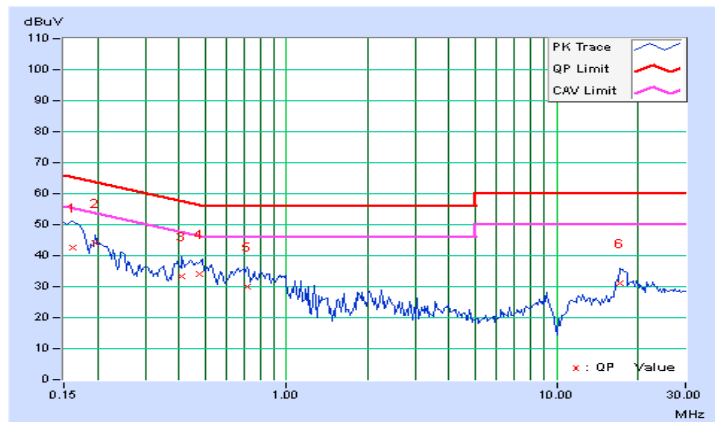
CONDUCTED WORST-CASE DATA : 802.11a_2TX

PHASE	Line 1	6dB BANDWIDTH	9kHz
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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	0.16172	0.27	42.47	24.63	42.74	24.90	65.38	55.38	-22.64	-30.48
2	0.19687	0.28	43.85	26.57	44.13	26.85	63.74	53.74	-19.61	-26.89
3	0.41172	0.30	33.05	24.67	33.35	24.97	57.61	47.61	-24.26	-22.64
4	0.47422	0.30	33.64	26.67	33.94	26.97	56.44	46.44	-22.49	-19.46
5	0.71250	0.32	29.65	21.61	29.97	21.93	56.00	46.00	-26.03	-24.07
6	17.12891	0.56	30.57	22.73	31.13	23.29	60.00	50.00	-28.87	-26.71

REMARKS:

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

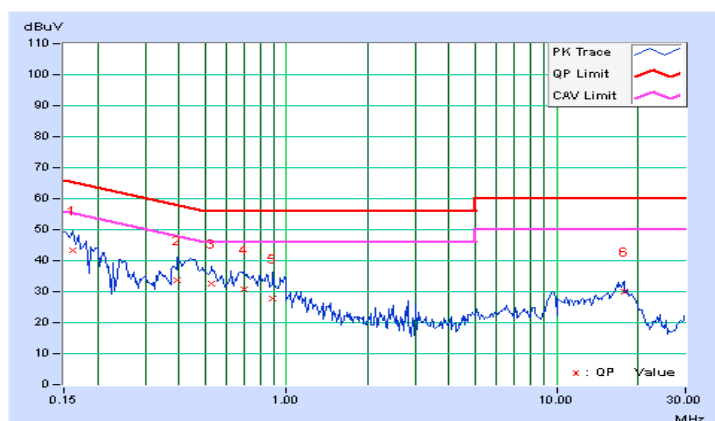


PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.27	42.95	26.71	43.22	26.98	65.38	55.38	-22.16	-28.40
2	0.39609	0.30	33.44	25.03	33.74	25.33	57.93	47.93	-24.20	-22.61
3	0.52891	0.31	32.32	24.17	32.63	24.48	56.00	46.00	-23.37	-21.52
4	0.70078	0.32	30.33	22.35	30.65	22.67	56.00	46.00	-25.35	-23.33
5	0.88828	0.33	27.58	20.43	27.91	20.76	56.00	46.00	-28.09	-25.24
6	17.71875	0.61	29.50	21.44	30.11	22.05	60.00	50.00	-29.89	-27.95

REMARKS:

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



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_1TX

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.40	0.5	PASS
157	5785	16.39	0.5	PASS
165	5825	16.39	0.5	PASS

802.11a_2TX

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	16.40	16.42	0.5	PASS
157	5785	16.38	16.40	0.5	PASS
165	5825	16.39	16.39	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.63	17.63	0.5	PASS
157	5785	17.63	17.61	0.5	PASS
165	5825	17.58	17.62	0.5	PASS

802.11n (40MHz)

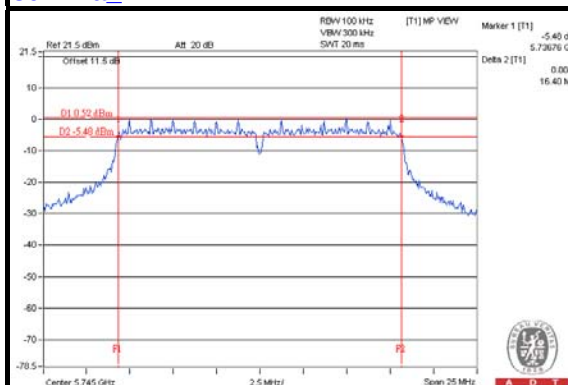
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	35.21	35.18	0.5	PASS
159	5795	35.20	35.21	0.5	PASS



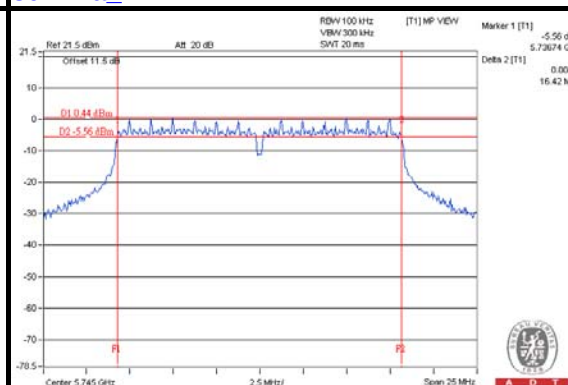
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SPECTRUM PLOT OF WORST VALUE

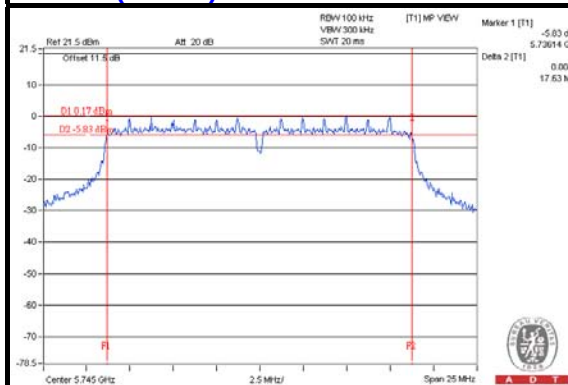
802.11a_1TX



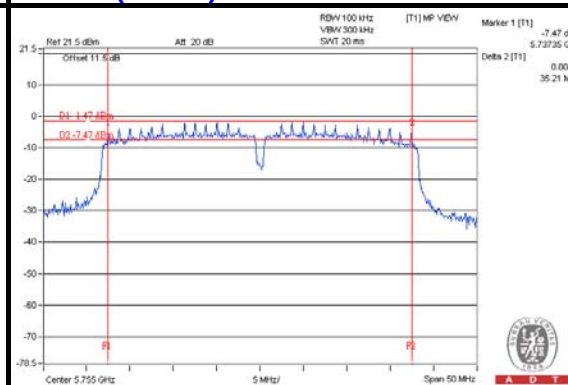
802.11a_2TX



802.11n (20MHz)



802.11n (40MHz)



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 v02r01 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

FOR PEAK POWER

802.11a_1TX

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	95.060	19.78	30	PASS
157	5785	92.257	19.65	30	PASS
165	5825	69.984	18.45	30	PASS

802.11a_2TX

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	19.35	19.73	180.071	22.55	30	PASS
157	5785	18.42	19.68	162.399	22.11	30	PASS
165	5825	18.61	18.39	141.635	21.51	30	PASS

802.11n (20MHz)

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	18.67	18.82	149.829	21.76	30	PASS
157	5785	18.19	19.59	156.908	21.96	30	PASS
165	5825	19.09	18.10	145.661	21.63	30	PASS

802.11n (40MHz)

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
151	5755	18.35	18.83	144.775	21.61	30	PASS
159	5795	18.96	18.74	153.522	21.86	30	PASS

FOR AVERAGE POWER

802.11a_1TX

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
149	5745	15.382	11.87
157	5785	15.276	11.84
165	5825	16.866	12.27

802.11a_2TX

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
149	5745	10.85	11.25	25.497	14.06
157	5785	11.33	11.39	27.355	14.37
165	5825	10.98	10.91	24.862	13.96

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
149	5745	10.61	11.13	24.480	13.89
157	5785	10.58	11.05	24.164	13.83
165	5825	11.18	10.68	24.817	13.95

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
151	5755	11.97	11.95	31.408	14.97
159	5795	11.96	11.99	31.516	14.99

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_1TX

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	-14.78	8	PASS
157	5785	-13.73	8	PASS
165	5825	-12.68	8	PASS

802.11a_2TX

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-14.63	3.01	-11.62	8	PASS
	157	5785	-14.33	3.01	-11.32	8	PASS
	165	5825	-14.32	3.01	-11.31	8	PASS
1	149	5745	-14.73	3.01	-11.72	8	PASS
	157	5785	-14.83	3.01	-11.82	8	PASS
	165	5825	-14.94	3.01	-11.93	8	PASS

NOTE: Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{ANT}] = 5.60\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.

802.11n (20MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-15.03	3.01	-12.02	8	PASS
	157	5785	-14.34	3.01	-11.33	8	PASS
	165	5825	-14.46	3.01	-11.45	8	PASS
1	149	5745	-14.63	3.01	-11.62	8	PASS
	157	5785	-14.55	3.01	-11.54	8	PASS
	165	5825	-15.58	3.01	-12.57	8	PASS

NOTE: Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{ANT}] = 5.60\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.

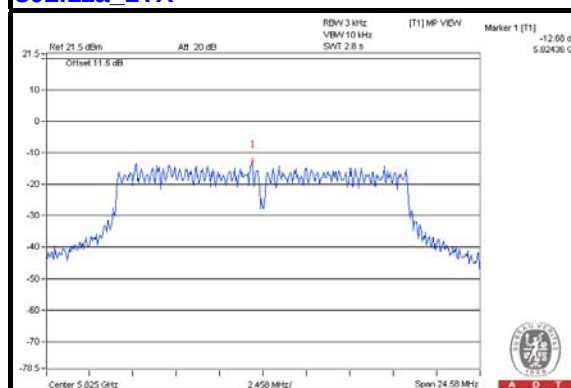
802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	151	5755	-15.76	3.01	-12.75	8	PASS
	159	5795	-15.58	3.01	-12.57	8	PASS
1	151	5755	-17.05	3.01	-14.04	8	PASS
	159	5795	-17.46	3.01	-14.45	8	PASS

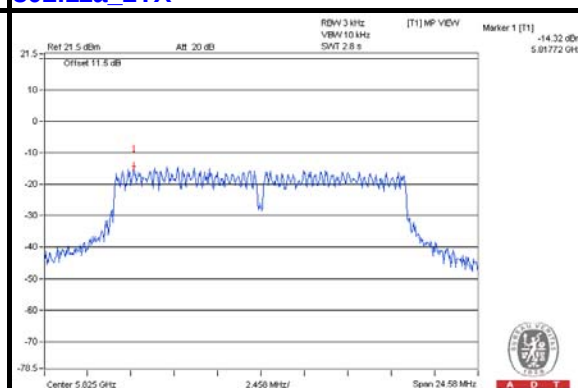
NOTE: Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{ANT}] = 5.60\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.

SPECTRUM PLOT OF WORST VALUE

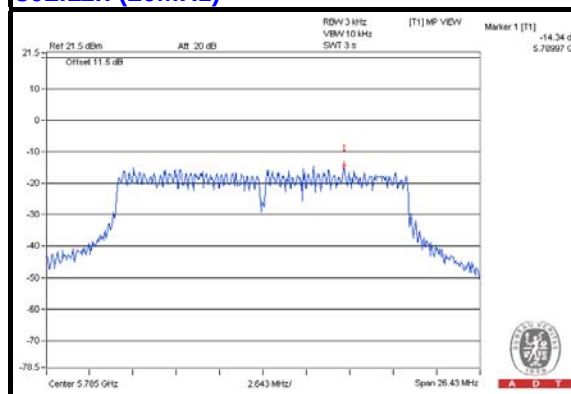
802.11a_1TX



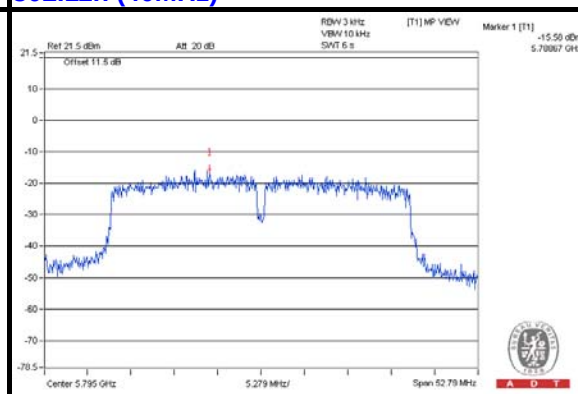
802.11a_2TX



802.11n (20MHz)



802.11n (40MHz)



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.

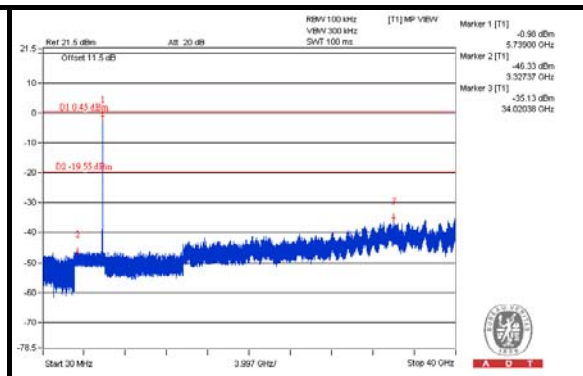
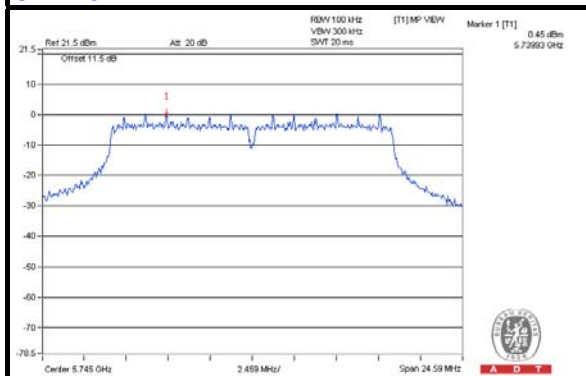
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



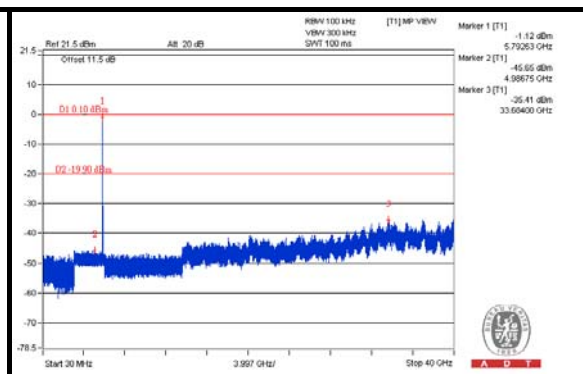
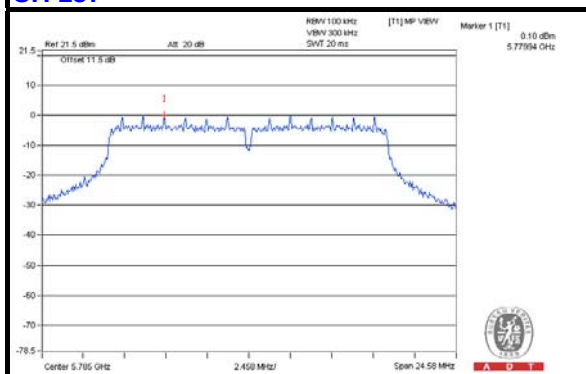
A D T

802.11a_1TX

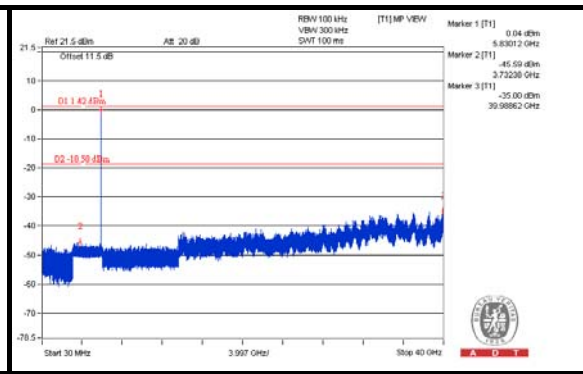
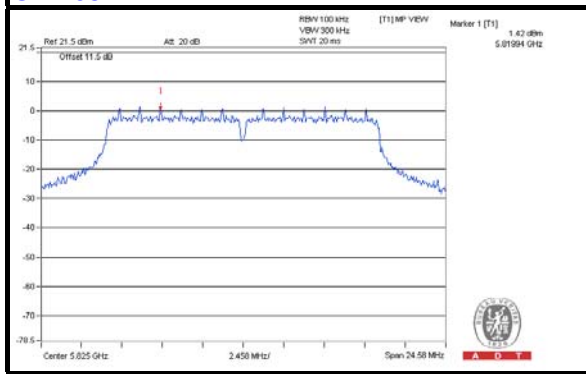
CH 149



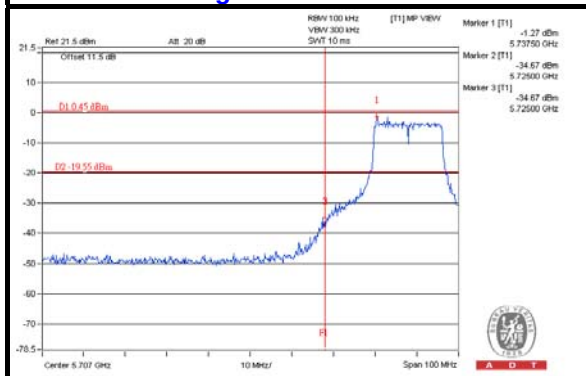
CH 157



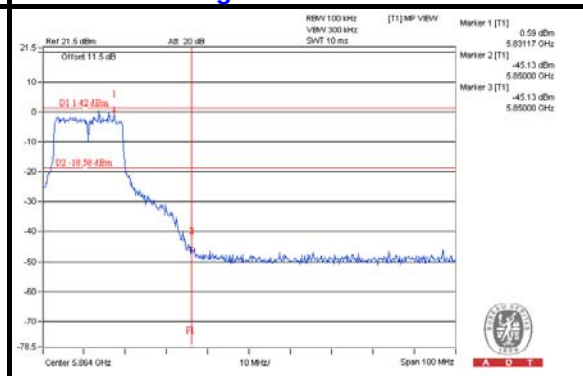
CH 165



CH 149 Band edge



CH 165 Band edge



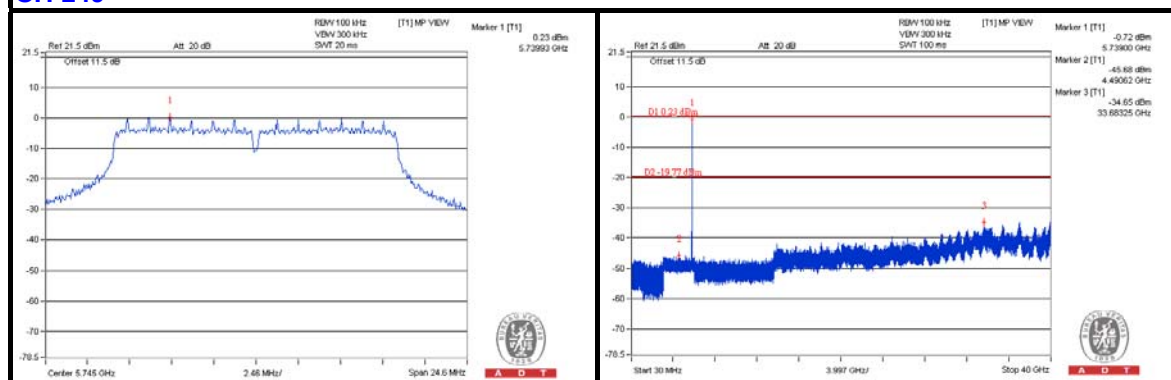


A D T

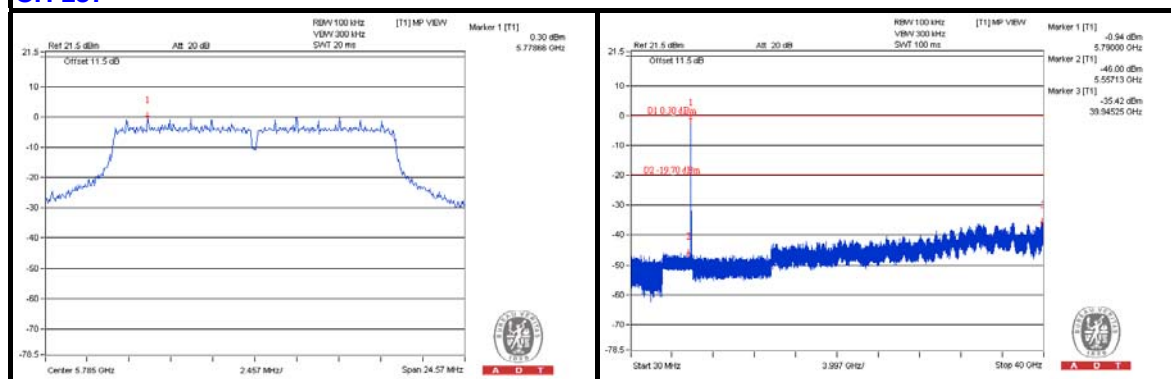
802.11a_2TX

CHAIN 0

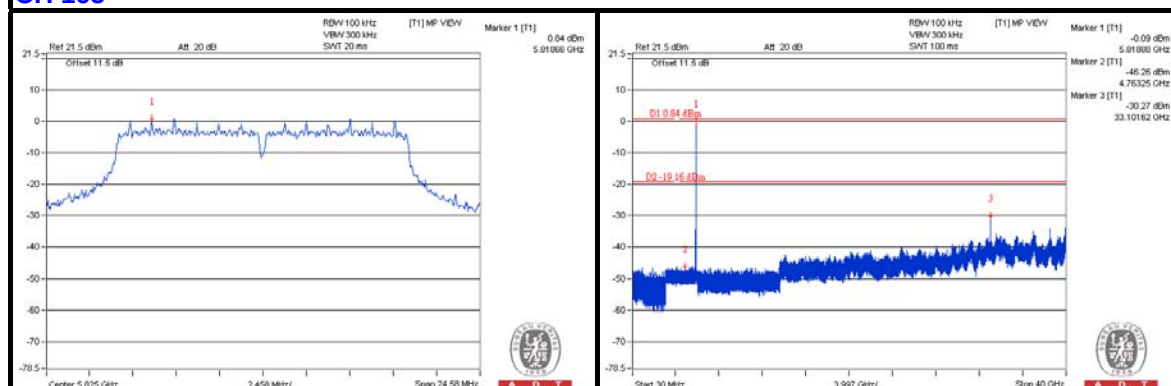
CH 149



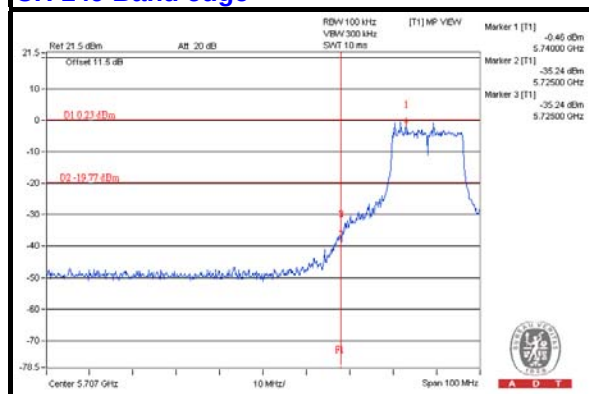
CH 157



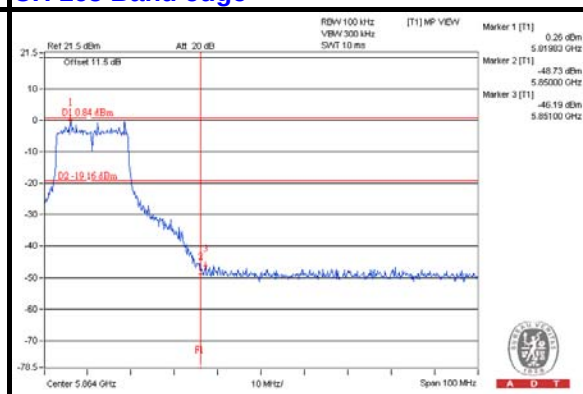
CH 165



CH 149 Band edge



CH 165 Band edge

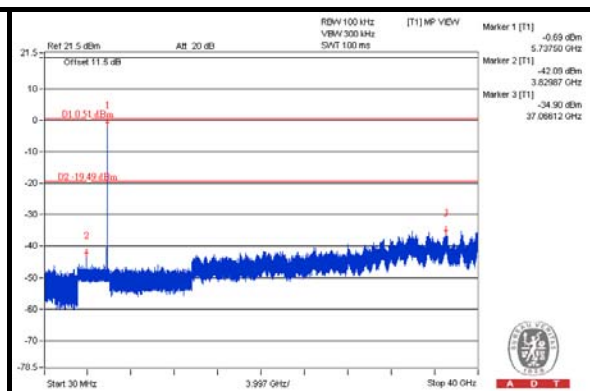
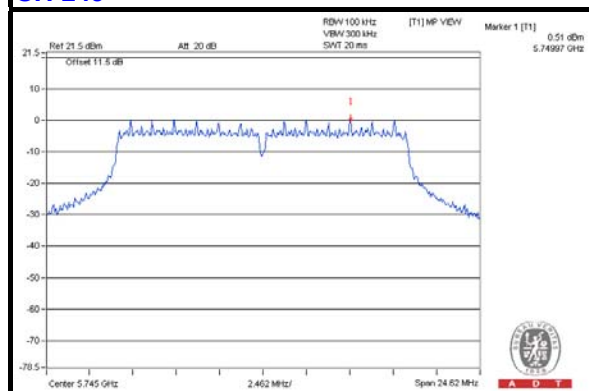




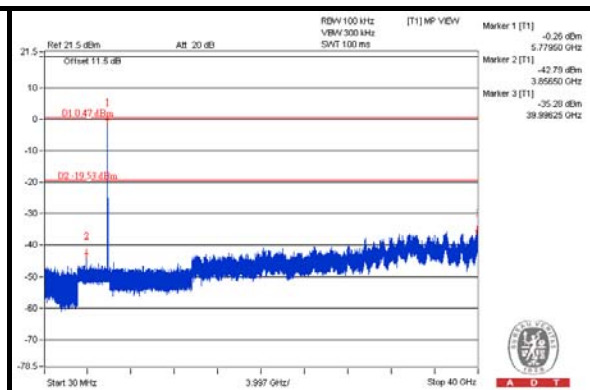
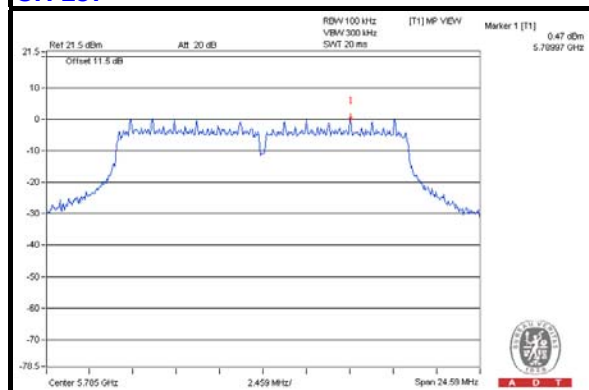
A D T

CHAIN 1

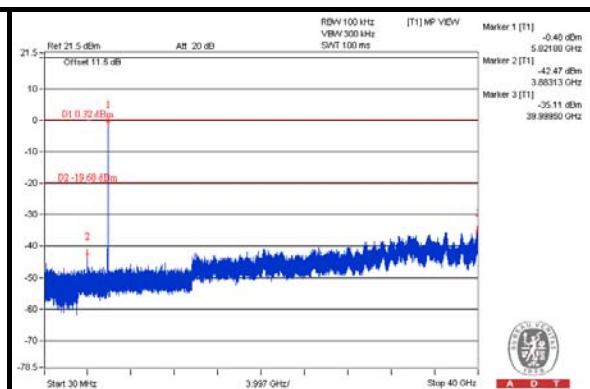
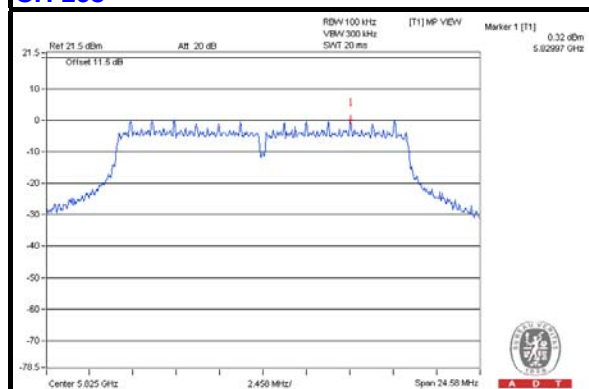
CH 149



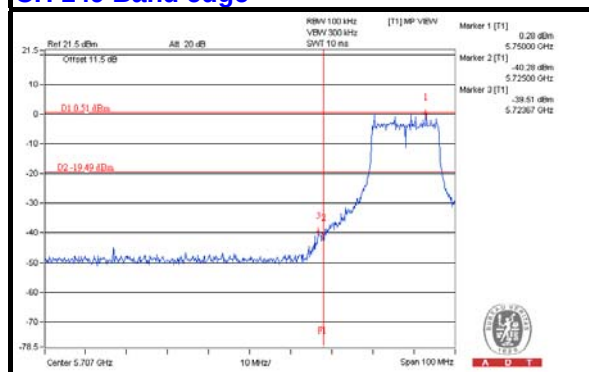
CH 157



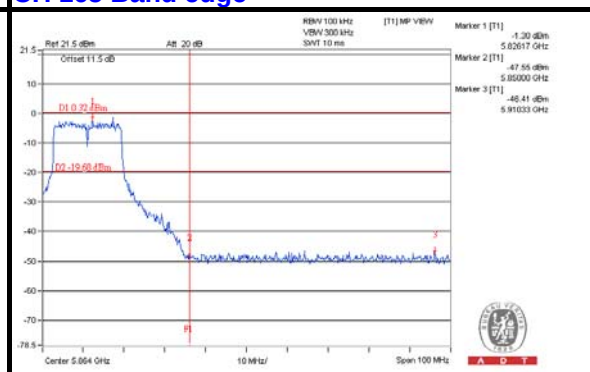
CH 165



CH 149 Band edge



CH 165 Band edge

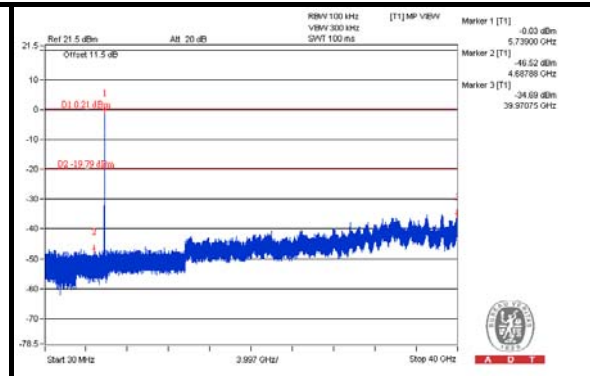
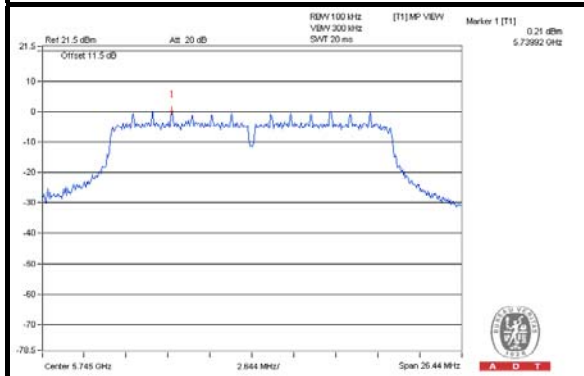




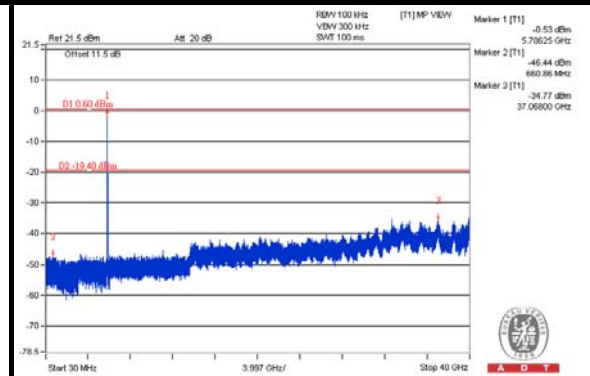
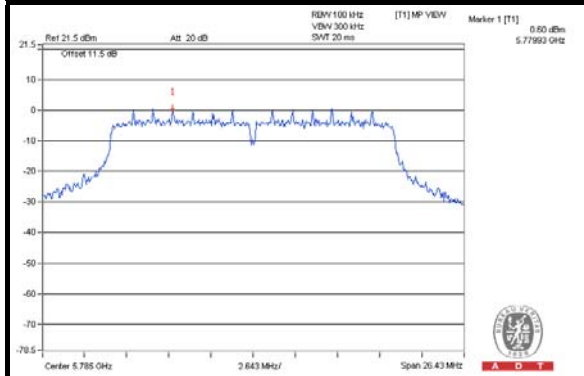
A D T

802.11n (20MHz)
CHAIN 0

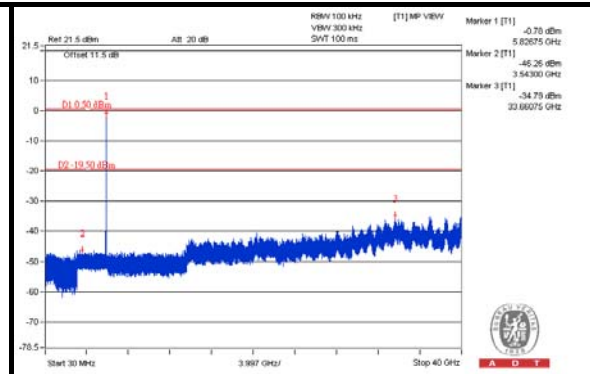
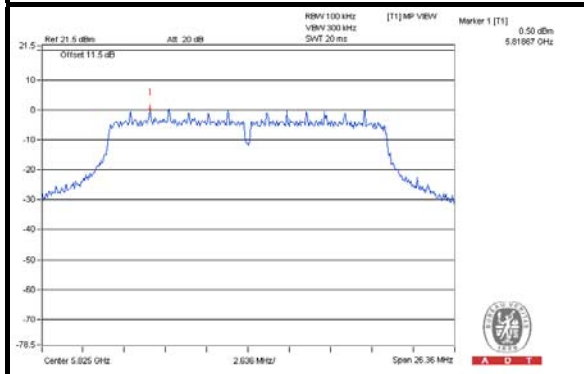
CH 149



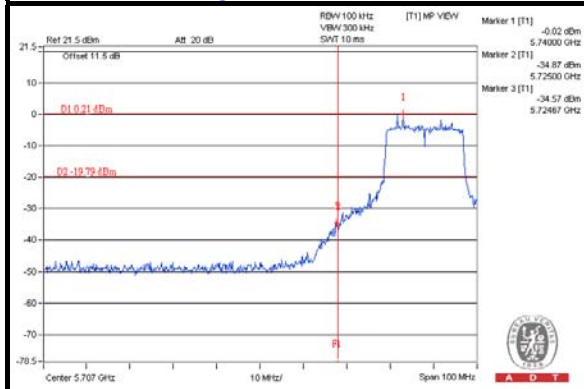
CH 157



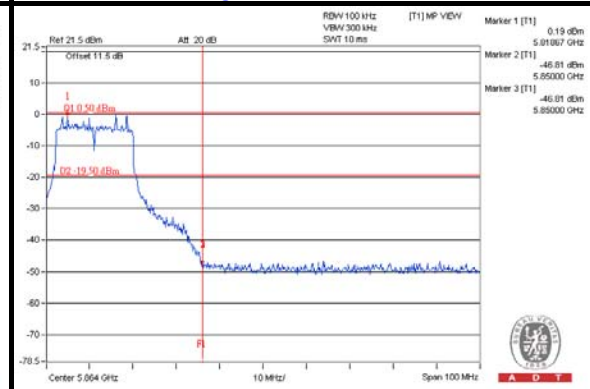
CH 165



CH 149 Band edge



CH 165 Band edge

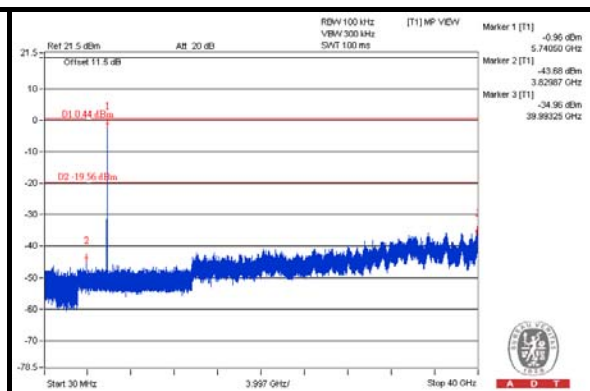
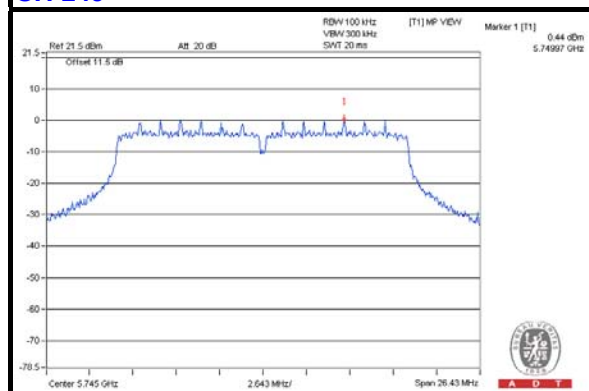




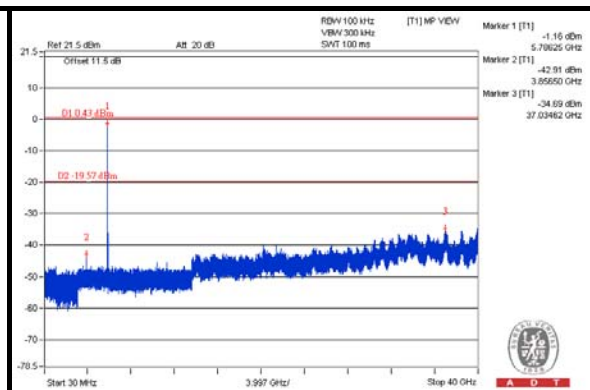
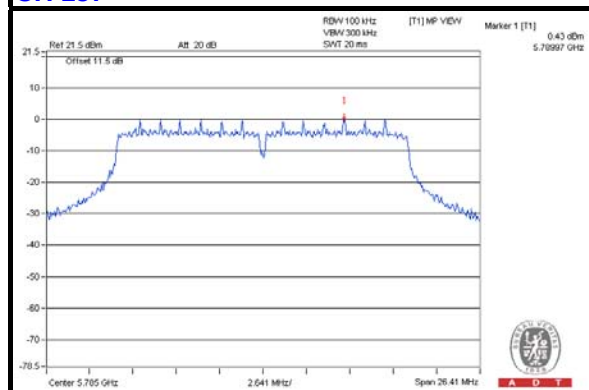
A D T

CHAIN 1

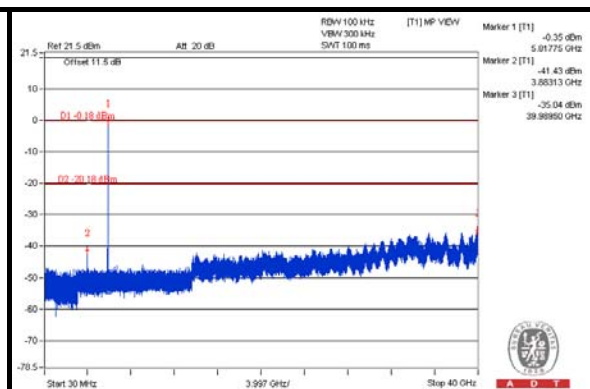
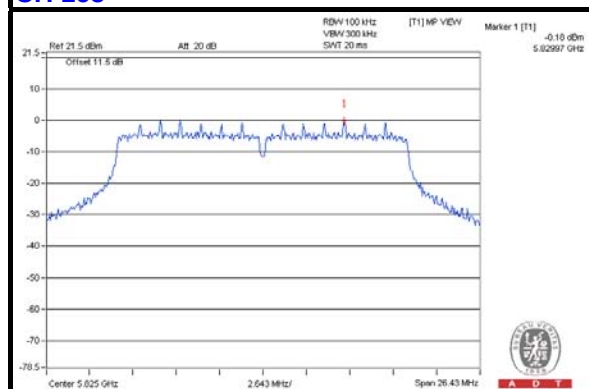
CH 149



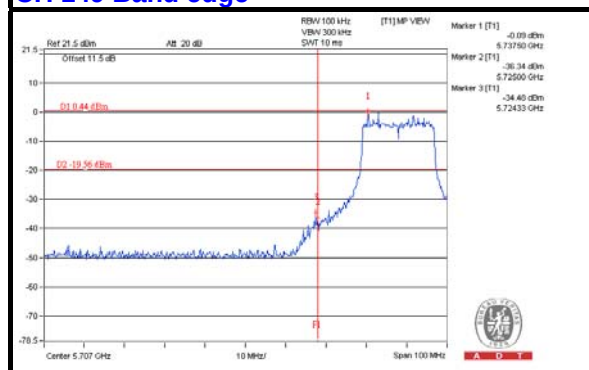
CH 157



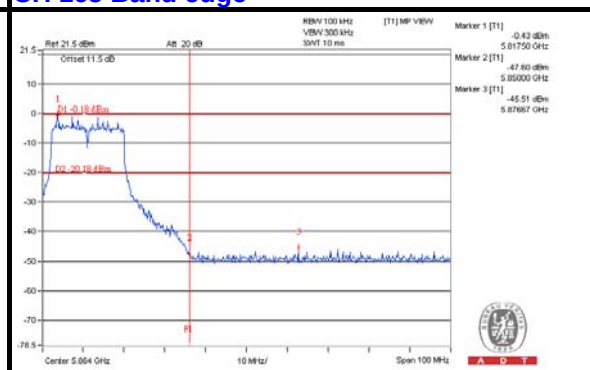
CH 165



CH 149 Band edge



CH 165 Band edge



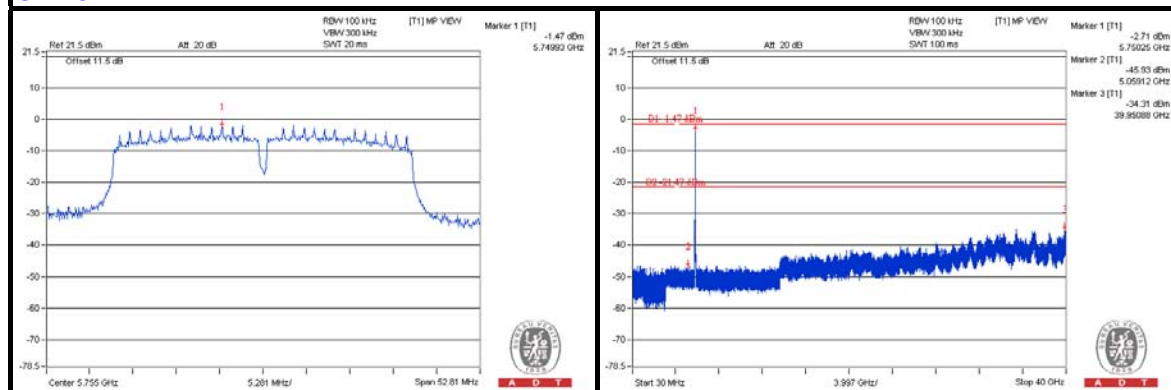


A D T

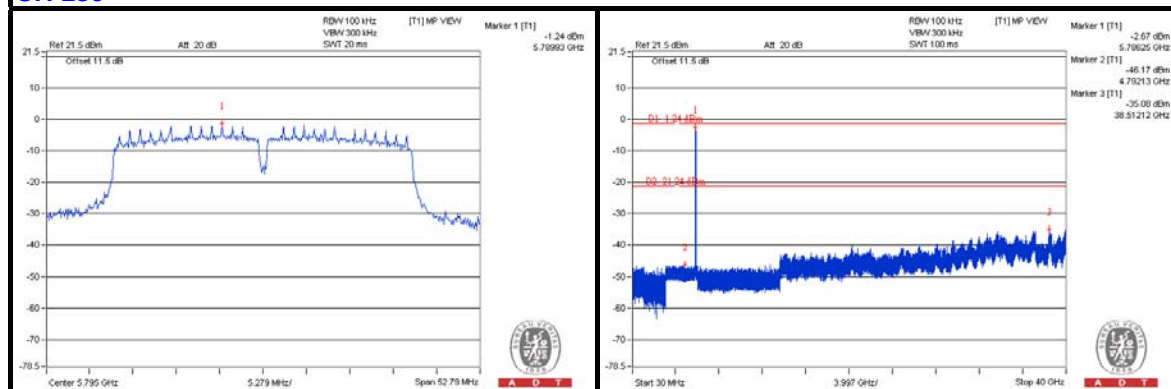
802.11n (40MHz)

CHAIN 0

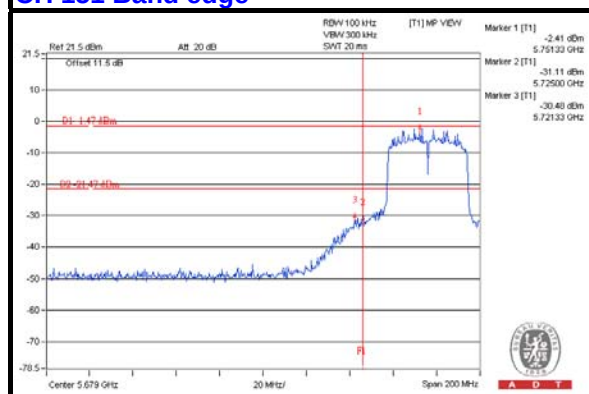
CH 151



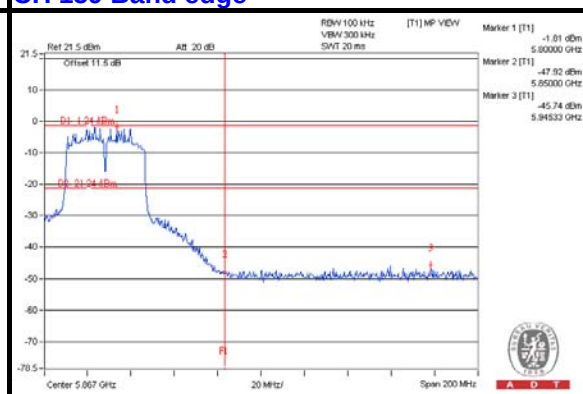
CH 159



CH 151 Band edge



CH 159 Band edge

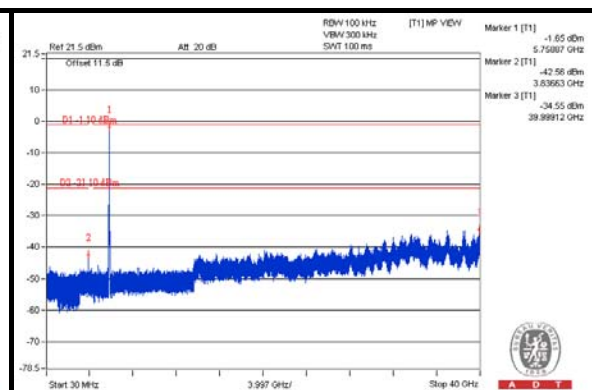
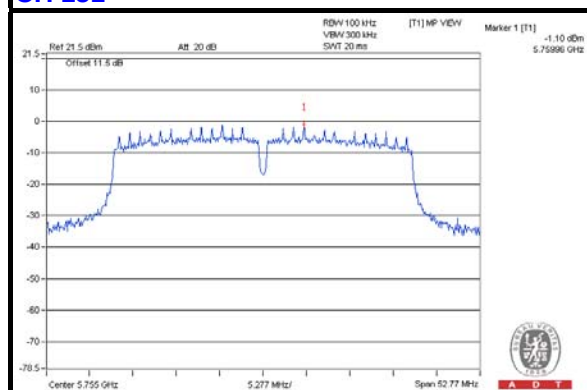




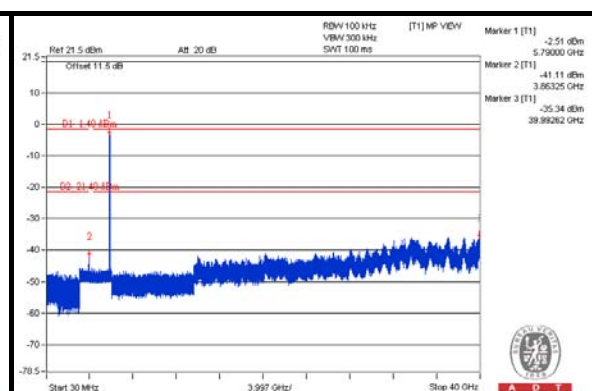
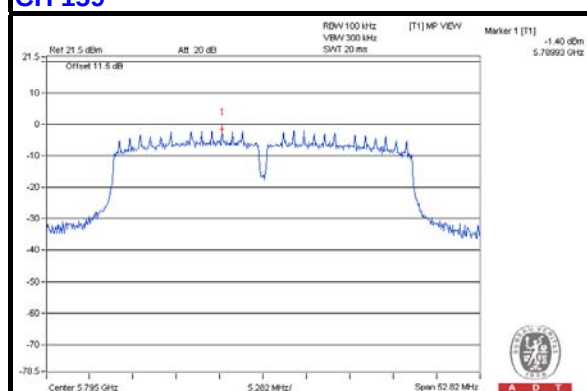
A D T

CHAIN 1

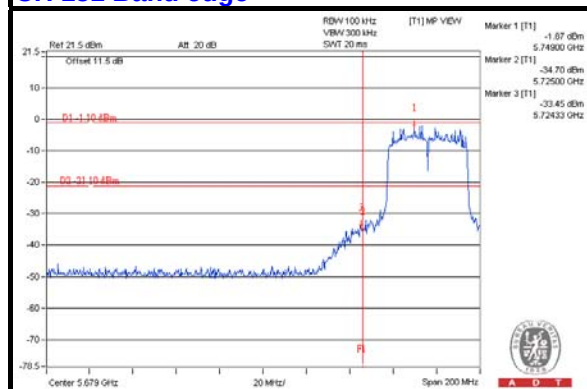
CH 151



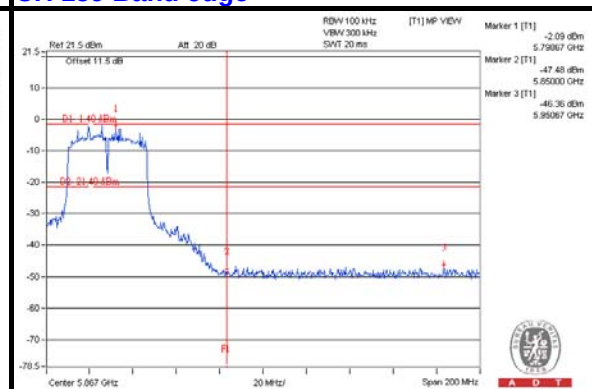
CH 159



CH 151 Band edge



CH 159 Band edge





A D T

6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

7. INFORMATION ON THE TESTING LABORATORIES

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

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

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Web Site: www.bureauveritas-adt.com

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



A D T

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---