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FCC TEST REPORT (WLAN 15.247)

REPORT NO.: RF131126D16A

MODEL NO.: TR10Cxy

FCC ID: WL6-TRBC1CD1

RECEIVED: Dec. 18, 2013

TESTED: Dec. 19, 2013 ~ Jan. 10, 2014

ISSUED: Jan. 17, 2014

APPLICANT: Elitegroup Computer Systems Co., Ltd

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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
RF131126D16A	Original release	Jan. 17, 2014



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1. CERTIFICATION

PRODUCT: Wireless Motherboard
BRAND NAME: ECS ELITEGROUP
MODEL NO.: TR10Cxy (x=0~9, A~Z or blank or "-";y=0~9, A~Z or blank or "-")
APPLICANT: Elitegroup Computer Systems Co., Ltd
TESTED: Dec. 19, 2013 ~ Jan. 10, 2014
TEST SAMPLE: ENGINEERING SAMPLE
STANDARDS: **FCC Part 15, Subpart C (Section 15.247)**
ANSI C63.10-2009

The above equipment (Model: TR10CD1) 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 : Annie Chang , **DATE:** Jan. 17, 2014
(Annie Chang / Supervisor)

APPROVED BY : Rex Lai , **DATE:** Jan. 17, 2014
(Rex Lai / Assistant Manager)



2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -18.75dB at 0.20469MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.5dB at 2483.50MHz.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

2.1 MEASUREMENT UNCERTAINTY

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

Measurement	Frequency	Uncertainty
Conducted emissions	150kHz~30MHz	2.41 dB
Radiated emissions	30MHz ~ 1GHz	4.30 dB
	Above 1GHz	3.36 dB

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



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Wireless Motherboard
MODEL NO.	TR10Cxy
POWER SUPPLY	5Vdc from AC adapter or 3.7V from Battery
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11/ 5.5/ 2/ 1Mbps 802.11g: 54/ 48/ 36/ 24/ 18/ 12/ 9/ 6Mbps 802.11a: 54/ 48/ 36/ 24/ 18/ 12/ 9/ 6Mbps 802.11n: up to 72Mbps
OPERATING FREQUENCY	2.4GHz: 2412 ~ 2462MHz 5.0GHz: 5745 ~ 5825MHz
NUMBER OF CHANNEL	2.4GHz: 11 5.0GHz: 5
OUTPUT POWER	99.8mW for 2412 ~ 2462MHz 171.0mW for 5745 ~ 5825MHz
ANTENNA TYPE	Ceramic Chip antenna with 4.2dBi gain
ANTENNA CONNECTOR	N/A
DATA CABLE	N/A
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Refer to Note as below

NOTE:

1. The EUT is a Wireless Motherboard with a 802.11abgn & Bluetooth 4.0 Combo module (Brand: BROADCOM, Model: BCM4330X).
2. The "x & y" in the model could be defined as 0~9, A~Z or blank for marketing differentiation. During the test, model: **TR10CD1** was selected as the representative one and therefore only its test data was recorded in this report.
3. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and one receiver.

Modulation Mode	Tx Function
802.11b	1TX
802.11g	1TX
802.11a	1TX
802.11n (20MHz)	1TX

4. The EUT consumes power from an AC adapter or battery, as follows:

Item	Brand	Model No.	Spec.
Adapter	Hunkey	HKA01005020-3H	AC I/P: 1100-240V, 0.5A, 50/60Hz DC O/P: 5V, 2A AC 2 Pin. Non-shielded DC cable (1.5m)
Battery 1	Sunwoda	LI8100	3.7Vdc, 8100mAh
Battery 2	Sunwoda	LI6300	3.7Vdc, 6300mAh

After pre-tested, the worst emission level was found when the EUT was tested under **Adapter with Battery 1** mode, therefore, only its test data was recorded in this report.

5. For Radiated Emissions test, following modes were pre-tested:

- ◆ EUT + Adapter
- ◆ EUT only

The worst emission level was found when the EUT was tested under **EUT + Adapter** mode, therefore, only its test data was recorded in this report.

6. The frequency bands used in this EUT are listed as follows:

Frequency Band (MHz)	2412~2462	5180~5320	5745~5825
802.11b	√		
802.11g	√		
802.11a		√	√
802.11n (20MHz)	√	√	√

7. 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		

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		



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3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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 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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	2412-2462	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
802.11g		1 to 11	1, 6, 11	OFDM	BPSK	6.0
802.11n (20MHz)		1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	6.5

RADIATED EMISSION TEST (BELOW 1GHz):

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (20MHz)	2412-2462	1 to 11	1	OFDM	BPSK	6.5
802.11a	5745-5825	149 to 165	149	OFDM	BPSK	6.0

POWER LINE CONDUCTED EMISSION TEST:

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (20MHz)	2412-2462	1 to 11	1	OFDM	BPSK	6.5
802.11a	5745-5825	149 to 165	149	OFDM	BPSK	6.0



BANDEDGE MEASUREMENT:

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	2412-2462	1 to 11	1, 11	DSSS	DBPSK	1.0
802.11g		1 to 11	1, 11	OFDM	BPSK	6.0
802.11n (20MHz)		1 to 11	1, 11	OFDM	BPSK	6.5
802.11a	5745-5825	149 to 165	149, 165	OFDM	BPSK	6.0
802.11n (20MHz)		149 to 165	149, 165	OFDM	BPSK	6.5

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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	2412-2462	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
802.11g		1 to 11	1, 6, 11	OFDM	BPSK	6.0
802.11n (20MHz)		1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	6.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	21deg. C, 75%RH	120Vac, 60Hz	Joey Liu
RE<1G	21deg. C, 75%RH	120Vac, 60Hz	Joey Liu
PLC	23deg. C, 75% RH	120Vac, 60Hz	Joey Liu
APCM	25deg. C, 60% RH	120Vac, 60Hz	Dalen Dai

3.3 DUTY CYCLE OF TEST SIGNAL

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

802.11b: Duty cycle = $37.6/38.4 = 0.979$, Duty factor = $10 * \log(1/0.979) = 0.09$

802.11g: Duty cycle = $2.02/2.38 = 0.849$, Duty factor = $10 * \log(1/0.849) = 0.71$

802.11n (20MHz): Duty cycle = $1.90/2.24 = 0.848$, Duty factor = $10 * \log(1/0.848) = 0.72$



3.4 DESCRIPTION OF SUPPORT UNITS

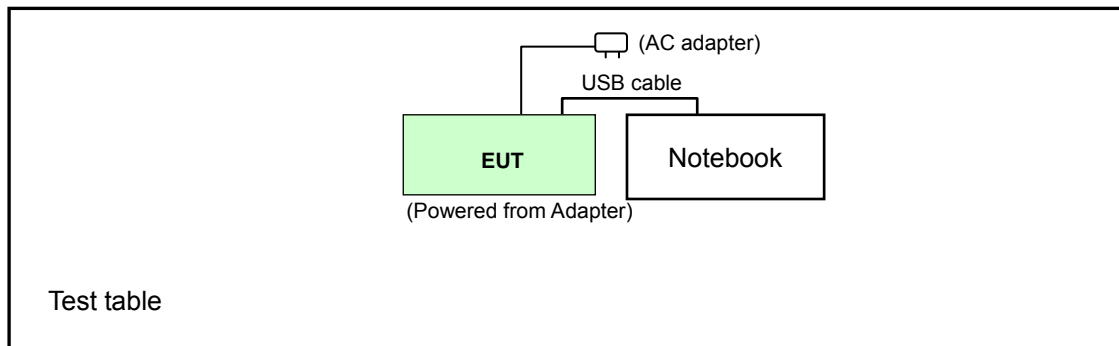
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	510m	1KZ1G1S	FCC DoC Approved

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	0.4m shielded USB cable

NOTE: All power cords of the above support units are non shielded (1.8m).

3.4.1 CONFIGURATION OF SYSTEM UNDER TEST





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3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (15.247)

558074 D01 DTS Meas Guidance v03r01

662911 D01 Multiple Transmitter Output v02

ANSI C63.10-2009

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



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4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

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

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

NOTE:

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



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4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	Feb. 26, 2013	Feb. 25, 2014
HP Preamplifier	8449B	3008A01201	Feb. 26, 2013	Feb. 25, 2014
Agilent TEST RECEIVER	N9038A	MY51210129	Jan. 03, 2013	Jan. 02, 2014
Schwarzbeck Antenna	VULB 9168	137	Mar. 20, 2013	Mar. 19, 2014
Schwarzbeck Antenna	VHBA 9123	480	May 29, 2013	May 28, 2014
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	ADT_Radiated_V 7.6.15.9.2	NA	NA	NA
SUHNER RF cable	SF102	CABLE-CH6	Aug. 19, 2013	Aug. 18, 2014
Schwarzbeck Horn Antenna	BBHA 9120-D1	D130	May 13, 2013	May 12, 2014
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	NA	NA
ROHDE & SCHWARZ Spectrum Analyzer	FSP 40	100036	May. 17, 2013	May. 16, 2014
Anritsu Power Sensor	MA2411B	0738404	Apr. 24, 2013	Apr. 23, 2014
Anritsu Power Meter	ML2495A	0842014	Apr. 25, 2013	Apr. 24, 2014

- NOTE:** 1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Chamber No. 6.
4. The Industry Canada Reference No. IC 7450E-6.
5. The FCC Site Registration No. is 447212.



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4.1.3 TEST PROCEDURES

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

NOTE:

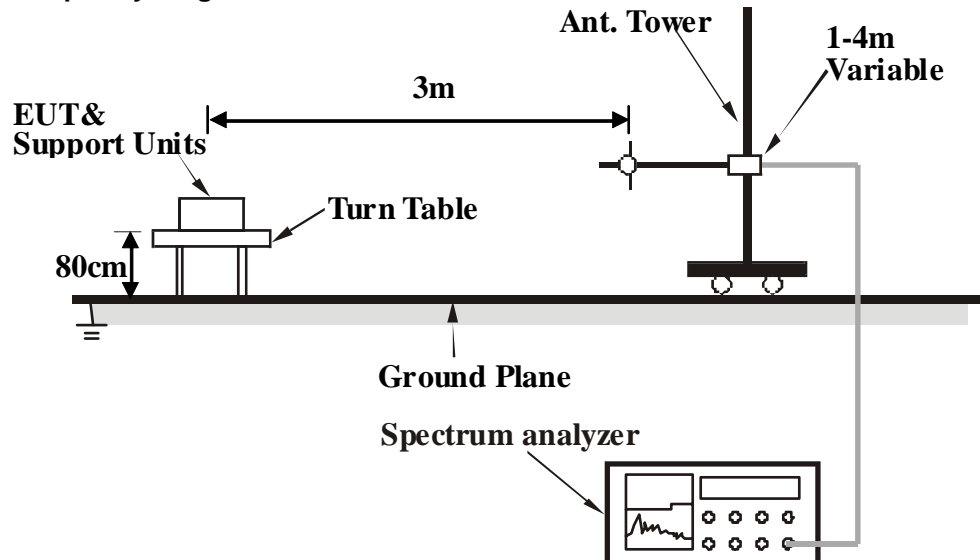
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution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

4.1.4 DEVIATION FROM TEST STANDARD

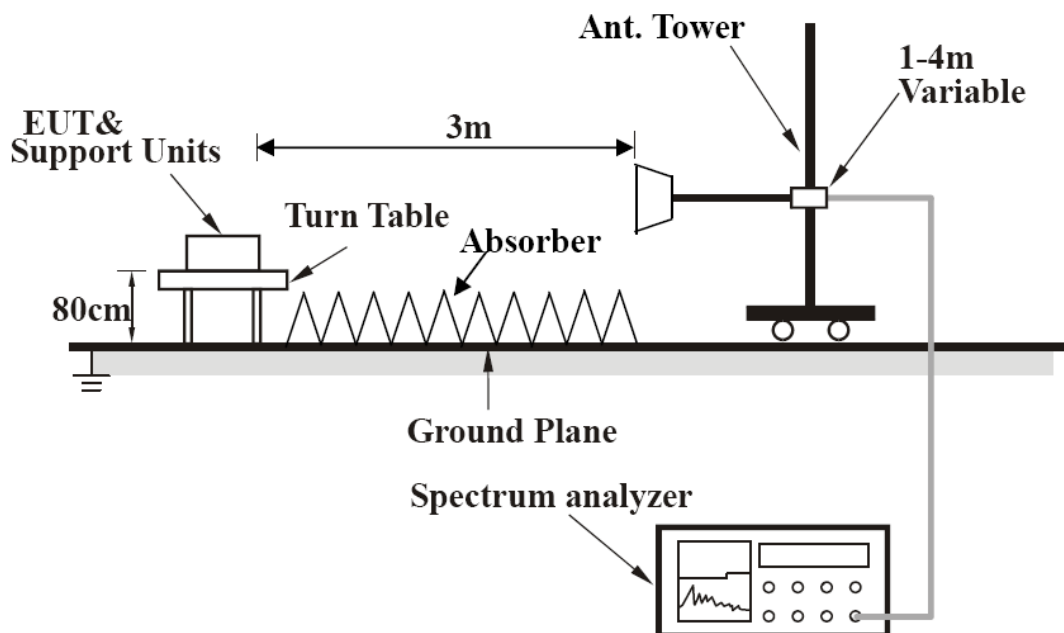
No deviation.

4.1.5 TEST SETUP

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

- a. Connected the EUT to AC adapter.
- b. The Notebook connected with EUT via a USBH cable and run a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.



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4.1.7 TEST RESULTS

ABOVE 1GHz 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	53.9 PK	74.0	-20.1	1.00 H	327	57.68	-3.75
2	2390.00	43.0 AV	54.0	-11.0	1.00 H	327	46.73	-3.75
3	*2412.00	106.9 PK			1.00 H	327	110.52	-3.64
4	*2412.00	103.1 AV			1.00 H	327	106.75	-3.64
5	4824.00	45.6 PK	74.0	-28.4	1.00 H	330	41.84	3.73
6	4824.00	36.1 AV	54.0	-17.9	1.00 H	330	32.36	3.73
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	51.3 PK	74.0	-22.7	1.00 V	53	55.02	-3.75
2	2390.00	38.7 AV	54.0	-15.3	1.00 V	53	42.41	-3.75
3	*2412.00	99.7 PK			1.00 V	53	103.29	-3.64
4	*2412.00	96.1 AV			1.00 V	53	99.71	-3.64
5	4824.00	44.3 PK	74.0	-29.7	1.00 V	55	40.55	3.73
6	4824.00	30.6 AV	54.0	-23.4	1.00 V	55	26.89	3.73

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) – Pre-Amplifier 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	106.6 PK			1.00 H	339	110.13	-3.53
2	*2437.00	103.2 AV			1.00 H	339	106.68	-3.53
3	4874.00	44.3 PK	74.0	-29.7	1.00 H	343	40.54	3.75
4	4874.00	35.4 AV	54.0	-18.6	1.00 H	343	31.68	3.75

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	100.6 PK			1.00 V	192	104.13	-3.53
2	*2437.00	97.0 AV			1.00 V	192	100.57	-3.53
3	4874.00	44.4 PK	74.0	-29.6	1.00 V	58	40.67	3.75
4	4874.00	30.7 AV	54.0	-23.3	1.00 V	58	26.97	3.75

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) – Pre-Amplifier 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	106.3 PK			1.00 H	327	109.69	-3.41
2	*2462.00	102.8 AV			1.00 H	327	106.21	-3.41
3	2483.50	56.6 PK	74.0	-17.4	1.00 H	327	59.94	-3.32
4	2483.50	45.6 AV	54.0	-8.4	1.00 H	327	48.94	-3.32
5	4924.00	45.4 PK	74.0	-28.6	1.00 H	330	41.67	3.74
6	4924.00	35.1 AV	54.0	-18.9	1.00 H	330	31.35	3.74

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	101.6 PK			1.00 V	192	105.04	-3.41
2	*2462.00	98.1 AV			1.00 V	192	101.55	-3.41
3	2483.50	53.7 PK	74.0	-20.3	1.00 V	192	57.02	-3.32
4	2483.50	42.0 AV	54.0	-12.0	1.00 V	192	45.29	-3.32
5	4924.00	44.6 PK	74.0	-29.4	1.00 V	196	40.82	3.74
6	4924.00	30.8 AV	54.0	-23.3	1.00 V	196	27.01	3.74

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) – Pre-Amplifier 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

802.11g

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	67.3 PK	74.0	-6.7	1.00 H	324	71.01	-3.75
2	2390.00	47.8 AV	54.0	-6.2	1.00 H	324	51.51	-3.75
3	*2412.00	109.7 PK			1.00 H	324	113.37	-3.64
4	*2412.00	99.2 AV			1.00 H	324	102.85	-3.64
5	4824.00	60.9 PK	74.0	-13.1	1.00 H	326	57.14	3.73
6	4824.00	45.5 AV	54.0	-8.5	1.00 H	326	41.73	3.73

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	61.4 PK	74.0	-12.6	1.06 V	204	65.17	-3.75
2	2390.00	43.4 AV	54.0	-10.6	1.06 V	204	47.15	-3.75
3	*2412.00	105.6 PK			1.06 V	204	109.24	-3.64
4	*2412.00	94.0 AV			1.06 V	204	97.63	-3.64
5	4824.00	49.0 PK	74.0	-25.0	1.00 V	53	45.29	3.73
6	4824.00	34.0 AV	54.0	-20.0	1.00 V	53	30.29	3.73

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) – Pre-Amplifier 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	*2437.00	109.8 PK			1.00 H	322	113.29	-3.53
2	*2437.00	98.9 AV			1.00 H	322	102.42	-3.53
3	4874.00	61.1 PK	74.0	-12.9	1.00 H	324	57.36	3.75
4	4874.00	45.2 AV	54.0	-8.8	1.00 H	324	41.49	3.75

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	106.8 PK			1.08 V	193	110.37	-3.53
2	*2437.00	95.9 AV			1.08 V	193	99.42	-3.53
3	4874.00	53.1 PK	74.0	-20.9	1.08 V	196	49.31	3.75
4	4874.00	38.6 AV	54.0	-15.4	1.08 V	196	34.81	3.75

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) – Pre-Amplifier 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	110.2 PK			1.00 H	324	113.58	-3.41
2	*2462.00	98.7 AV			1.00 H	324	102.10	-3.41
3	2483.50	71.3 PK	74.0	-2.7	1.00 H	324	74.64	-3.32
4	2483.50	51.1 AV	54.0	-3.0	1.00 H	324	54.37	-3.32
5	4924.00	60.4 PK	74.0	-13.6	1.00 H	325	56.66	3.74
6	4924.00	45.4 AV	54.0	-8.6	1.00 H	325	41.64	3.74

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	107.8 PK			1.06 V	192	111.23	-3.41
2	*2462.00	96.2 AV			1.06 V	192	99.65	-3.41
3	2483.50	66.7 PK	74.0	-7.3	1.06 V	192	70.06	-3.32
4	2483.50	48.6 AV	54.0	-5.4	1.06 V	192	51.91	-3.32
5	4924.00	52.7 PK	74.0	-21.3	1.06 V	200	48.97	3.74
6	4924.00	38.6 AV	54.0	-15.4	1.06 V	200	34.85	3.74

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) – Pre-Amplifier 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 (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	69.9 PK	74.0	-4.1	1.00 H	323	73.64	-3.75
2	2390.00	48.1 AV	54.0	-5.9	1.00 H	323	51.82	-3.75
3	*2412.00	109.2 PK			1.00 H	323	112.88	-3.64
4	*2412.00	98.7 AV			1.00 H	323	102.34	-3.64
5	4824.00	61.3 PK	74.0	-12.7	1.00 H	328	57.59	3.73
6	4824.00	45.9 AV	54.0	-8.1	1.00 H	328	42.21	3.73

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	-14.4	1.00 V	54	63.40	-3.75
2	2390.00	41.8 AV	54.0	-12.2	1.00 V	54	45.54	-3.75
3	*2412.00	104.1 PK			1.00 V	53	107.69	-3.64
4	*2412.00	93.1 AV			1.00 V	53	96.78	-3.64
5	4824.00	45.5 PK	74.0	-28.6	1.00 V	56	41.72	3.73
6	4824.00	31.7 AV	54.0	-22.3	1.00 V	56	27.97	3.73

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) – Pre-Amplifier 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	*2437.00	108.9 PK			1.00 H	319	112.46	-3.53
2	*2437.00	98.2 AV			1.00 H	319	101.69	-3.53
3	4874.00	61.2 PK	74.0	-12.8	1.00 H	322	57.49	3.75
4	4874.00	44.6 AV	54.0	-9.4	1.00 H	322	40.86	3.75

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	106.1 PK			1.08 V	190	109.61	-3.53
2	*2437.00	95.1 AV			1.08 V	190	98.62	-3.53
3	4874.00	53.0 PK	74.0	-21.0	1.08 V	195	49.28	3.75
4	4874.00	37.0 AV	54.0	-17.0	1.08 V	195	33.21	3.75

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) – Pre-Amplifier 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	109.4 PK			1.00 H	320	112.78	-3.41
2	*2462.00	98.3 AV			1.00 H	320	101.66	-3.41
3	2483.50	72.5 PK	74.0	-1.5	1.00 H	320	75.85	-3.32
4	2483.50	51.4 AV	54.0	-2.6	1.00 H	320	54.69	-3.32
5	4924.00	60.2 PK	74.0	-13.9	1.00 H	320	56.41	3.74
6	4924.00	44.8 AV	54.0	-9.2	1.00 H	320	41.06	3.74

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	106.5 PK			1.07 V	192	109.95	-3.41
2	*2462.00	95.8 AV			1.07 V	192	99.22	-3.41
3	2483.50	69.4 PK	74.0	-4.6	1.07 V	192	72.70	-3.32
4	2483.50	47.6 AV	54.0	-6.4	1.07 V	192	50.94	-3.32
5	4924.00	55.1 PK	74.0	-18.9	1.07 V	193	51.33	3.74
6	4924.00	39.0 AV	54.0	-15.0	1.07 V	193	35.24	3.74

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) – Pre-Amplifier 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

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	71.1 PK	80.7	-9.6	1.00 H	122	65.71	5.39
2	#5725.00	47.5 AV	68.8	-21.3	1.00 H	122	42.07	5.39
3	*5745.00	100.7 PK			1.00 H	122	95.26	5.41
4	*5745.00	88.8 AV			1.00 H	122	83.36	5.41
5	11490.00	55.2 PK	74.0	-18.8	1.00 H	126	38.74	16.43
6	11490.00	41.7 AV	54.0	-12.3	1.00 H	126	25.30	16.43

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	72.8 PK	85.3	-12.5	1.03 V	218	67.44	5.39
2	#5725.00	50.5 AV	73.2	-22.6	1.03 V	218	45.15	5.39
3	*5745.00	105.3 PK			1.03 V	218	99.91	5.41
4	*5745.00	93.2 AV			1.03 V	218	87.75	5.41
5	11490.00	57.3 PK	74.0	-16.7	1.03 V	221	40.85	16.43
6	11490.00	43.5 AV	54.0	-10.5	1.03 V	221	27.03	16.43

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) – Pre-Amplifier 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	99.2 PK			1.00 H	122	93.77	5.47
2	*5785.00	87.8 AV			1.00 H	122	82.35	5.47
3	11570.00	55.8 PK	74.0	-18.2	1.00 H	130	39.38	16.45
4	11570.00	41.8 AV	54.0	-12.2	1.00 H	130	25.35	16.45

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	105.2 PK			1.03 V	218	99.74	5.47
2	*5785.00	93.3 AV			1.03 V	218	87.81	5.47
3	11570.00	57.2 PK	74.0	-16.8	1.03 V	222	40.72	16.45
4	11570.00	43.5 AV	54.0	-10.5	1.03 V	222	27.07	16.45

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) – Pre-Amplifier 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	99.9 PK			1.00 H	115	94.36	5.57
2	*5825.00	88.3 AV			1.00 H	115	82.73	5.57
3	#5850.00	59.0 PK	79.9	-21.0	1.00 H	115	53.33	5.63
4	#5850.00	43.3 AV	68.3	-25.1	1.00 H	115	37.62	5.63
5	11650.00	55.8 PK	74.0	-18.2	1.00 H	122	39.68	16.12
6	11650.00	42.2 AV	54.0	-11.8	1.00 H	122	26.09	16.12

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	104.8 PK			1.02 V	219	99.25	5.57
2	*5825.00	93.4 AV			1.02 V	219	87.83	5.57
3	#5850.00	66.7 PK	84.8	-18.1	1.02 V	219	61.04	5.63
4	#5850.00	45.2 AV	73.4	-28.2	1.02 V	219	39.56	5.63
5	11650.00	57.6 PK	74.0	-16.4	1.02 V	221	41.51	16.12
6	11650.00	44.1 AV	54.0	-9.9	1.02 V	221	28.01	16.12

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) – Pre-Amplifier 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	71.2 PK	78.6	-7.3	1.05 H	123	65.83	5.39
2	#5725.00	45.5 AV	67.8	-22.2	1.05 H	123	40.13	5.39
3	*5745.00	98.6 PK			1.05 H	123	93.14	5.41
4	*5745.00	87.8 AV			1.05 H	123	82.34	5.41
5	11490.00	52.9 PK	74.0	-21.1	1.05 H	125	36.43	16.43
6	11490.00	41.9 AV	54.0	-12.1	1.05 H	125	25.49	16.43
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	72.6 PK	82.0	-9.3	1.00 V	203	67.22	5.39
2	#5725.00	47.6 AV	71.6	-24.0	1.00 V	203	42.21	5.39
3	*5745.00	102.0 PK			1.00 V	203	96.54	5.41
4	*5745.00	91.6 AV			1.00 V	203	86.22	5.41
5	11490.00	53.7 PK	74.0	-20.3	1.00 V	203	37.24	16.43
6	11490.00	41.7 AV	54.0	-12.3	1.00 V	203	25.28	16.43

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) – Pre-Amplifier 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	98.8 PK			1.00 H	124	93.34	5.47
2	*5785.00	87.8 AV			1.00 H	124	82.28	5.47
3	11570.00	52.6 PK	74.0	-21.4	1.00 H	128	36.16	16.45
4	11570.00	41.9 AV	54.0	-12.1	1.00 H	128	25.42	16.45
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	101.9 PK			1.00 V	220	96.38	5.47
2	*5785.00	91.0 AV			1.00 V	220	85.57	5.47
3	11570.00	53.6 PK	74.0	-20.4	1.00 V	225	37.14	16.45
4	11570.00	41.8 AV	54.0	-12.2	1.00 V	225	25.31	16.45

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) – Pre-Amplifier 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	98.5 PK			1.00 H	124	92.92	5.57
2	*5825.00	87.1 AV			1.00 H	124	81.51	5.57
3	#5850.00	60.1 PK	78.5	-18.4	1.00 H	124	54.47	5.63
4	#5850.00	41.3 AV	67.1	-25.8	1.00 H	124	35.66	5.63
5	11650.00	53.7 PK	74.0	-20.3	1.00 H	128	37.55	16.12
6	11650.00	41.7 AV	54.0	-12.3	1.00 H	128	25.62	16.12

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	102.8 PK			1.00 V	216	97.25	5.57
2	*5825.00	91.9 AV			1.00 V	216	86.36	5.57
3	#5850.00	66.7 PK	82.8	-16.1	1.00 V	216	61.09	5.63
4	#5850.00	44.7 AV	71.9	-27.2	1.00 V	216	39.07	5.63
5	11650.00	54.4 PK	74.0	-19.6	1.00 V	220	38.28	16.12
6	11650.00	41.3 AV	54.0	-12.7	1.00 V	220	25.18	16.12

REMARKS:

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



A D T

BELOW 1GHz WORST-CASE DATA

802.11n (20MHz)

CHANNEL	TX Channel 1	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	82.33	32.8 QP	40.0	-7.3	1.37 H	21	51.27	-18.52
2	112.98	32.4 QP	43.5	-11.1	1.44 H	275	48.88	-16.51
3	199.90	35.9 QP	43.5	-7.6	1.17 H	88	51.82	-15.94
4	240.00	33.5 QP	46.0	-12.5	1.53 H	108	47.58	-14.06
5	307.03	30.2 QP	46.0	-15.8	1.62 H	209	41.48	-11.29
6	380.17	29.0 QP	46.0	-17.0	1.19 H	355	38.78	-9.78
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	43.00	32.6 QP	40.0	-7.4	1.17 V	66	46.47	-13.89
2	82.33	31.9 QP	40.0	-8.1	1.58 V	92	50.45	-18.52
3	166.58	36.3 QP	43.5	-7.2	1.35 V	347	49.81	-13.53
4	199.94	31.7 QP	43.5	-11.9	1.47 V	360	47.60	-15.95
5	422.56	32.2 QP	46.0	-13.8	1.27 V	30	41.31	-9.09
6	528.00	30.0 QP	46.0	-16.0	1.68 V	92	36.94	-6.90

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



A D T

802.11a

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	82.33	32.4 QP	40.0	-7.7	1.78 H	32	50.87	-18.52
2	115.89	31.6 QP	43.5	-11.9	1.53 H	291	47.63	-16.00
3	199.94	35.6 QP	43.5	-7.9	1.66 H	93	51.55	-15.95
4	240.00	33.5 QP	46.0	-12.5	1.82 H	104	47.54	-14.06
5	298.59	30.2 QP	46.0	-15.8	1.14 H	204	41.72	-11.51
6	378.23	29.8 QP	46.0	-16.2	1.25 H	164	39.65	-9.83
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	42.61	32.8 QP	40.0	-7.3	1.17 V	360	46.81	-14.06
2	82.33	32.2 QP	40.0	-7.9	1.53 V	102	50.67	-18.52
3	166.58	35.2 QP	43.5	-8.3	1.88 V	342	48.69	-13.53
4	199.94	31.2 QP	43.5	-12.3	1.67 V	360	47.12	-15.95
5	385.17	27.7 QP	46.0	-18.3	1.56 V	61	37.49	-9.81
6	424.26	31.5 QP	46.0	-14.5	1.37 V	360	40.52	-9.04

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) – Pre-Amplifier 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 (dBµV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

- NOTE:** 1. The lower limit shall apply at the transition frequencies.
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
ROHDE & SCHWARZ TEST RECEIVER	ESCS 30	100276	Jan. 07, 2014	Jan. 06, 2015
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	100219	Nov. 17, 2013	Nov. 16, 2014
LISN With Adapter (for EUT)	AD10	C10Ada-001	Nov. 17, 2013	Nov. 16, 2014
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100218	Nov. 25, 2013	Nov. 24, 2014
Software	ADT_Cond_V7.3.7	NA	NA	NA
Software	ADT_ISN_V7.3.7	NA	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C10.01	Feb. 19, 2013	Feb. 18, 2014
SUHNER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010773	Feb. 06, 2013	Feb. 05, 2014
Isolation Transformer (Erika Fiedler)	D-65396	017	Jul. 29, 2013	Jul. 28, 2014

- Notes: 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 Shielded Room No. 10.
 3. The VCCI Site Registration No. C-1852

4.2.3 TEST PROCEDURES

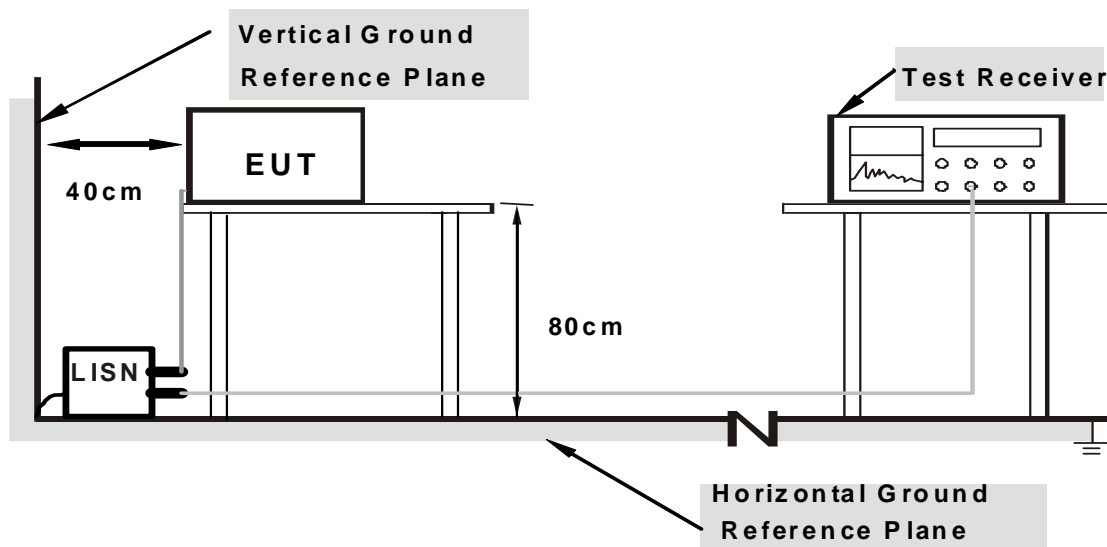
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



Note: Support units were connected to second LISN.

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.



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4.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA :

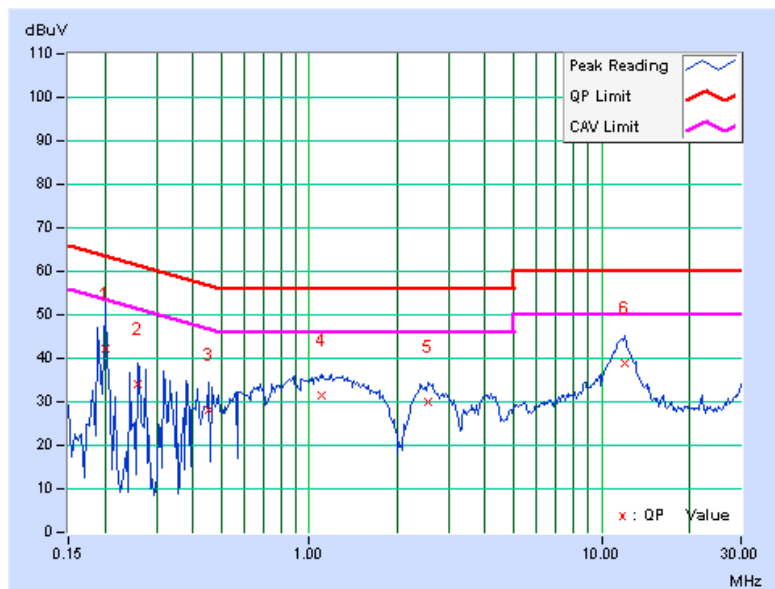
For 2.4GHz: 802.11n (20MHz)

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	0.20078	0.15	41.99	26.55	42.14	26.70	63.58	53.58	-21.44	-26.88
2	0.25938	0.16	33.90	17.14	34.06	17.30	61.45	51.45	-27.40	-34.16
3	0.45078	0.17	27.85	12.38	28.02	12.55	56.86	46.86	-28.84	-34.31
4	1.10938	0.17	31.19	18.07	31.36	18.24	56.00	46.00	-24.64	-27.76
5	2.56641	0.25	29.77	18.41	30.02	18.66	56.00	46.00	-25.98	-27.34
6	11.98047	0.87	37.95	28.21	38.82	29.08	60.00	50.00	-21.18	-20.92

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





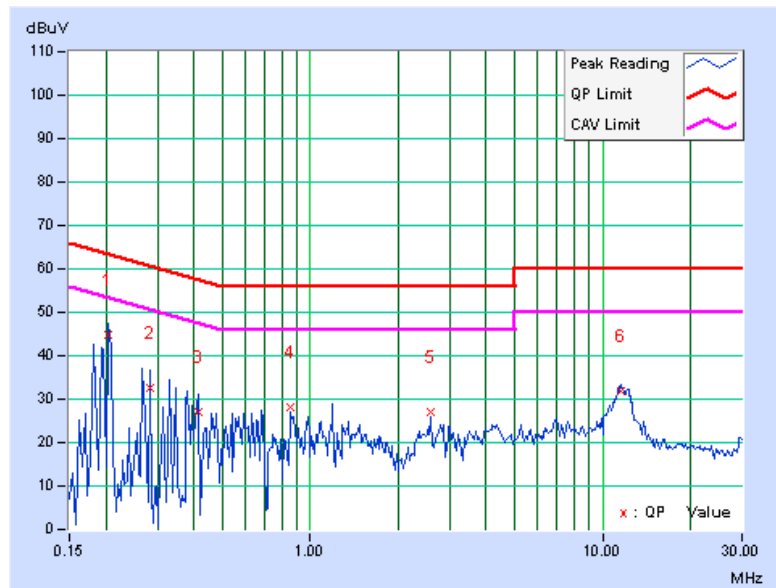
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PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.20469	0.53	44.14	25.18	44.67	25.71	63.42	53.42	-18.75	-27.71
2	0.28281	0.53	32.03	8.32	32.56	8.85	60.73	50.73	-28.17	-41.88
3	0.41563	0.54	26.55	8.50	27.09	9.04	57.54	47.54	-30.44	-38.49
4	0.85703	0.56	27.44	10.95	28.00	11.51	56.00	46.00	-28.00	-34.49
5	2.59375	0.57	26.55	15.06	27.12	15.63	56.00	46.00	-28.88	-30.37
6	11.60547	1.02	30.73	21.97	31.75	22.99	60.00	50.00	-28.25	-27.01

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



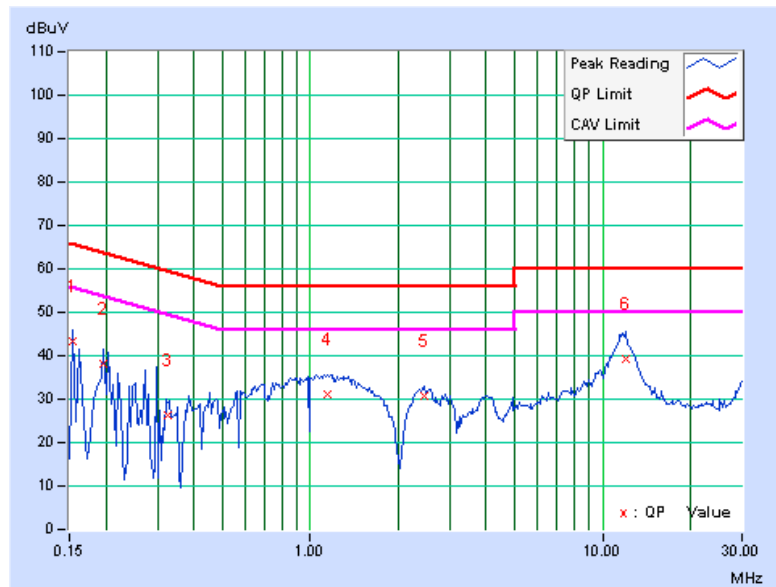
For 5.0GHz: 802.11a

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.14	43.12	13.49	43.26	13.63	65.79	55.79	-22.53	-42.16
2	0.19687	0.15	38.14	24.37	38.29	24.52	63.74	53.74	-25.45	-29.22
3	0.32644	0.16	26.22	11.14	26.38	11.30	59.54	49.54	-33.16	-38.24
4	1.14453	0.17	30.86	16.30	31.03	16.47	56.00	46.00	-24.97	-29.53
5	2.44141	0.24	30.51	18.62	30.75	18.86	56.00	46.00	-25.25	-27.14
6	12.06250	0.88	38.40	28.52	39.28	29.40	60.00	50.00	-20.72	-20.60

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





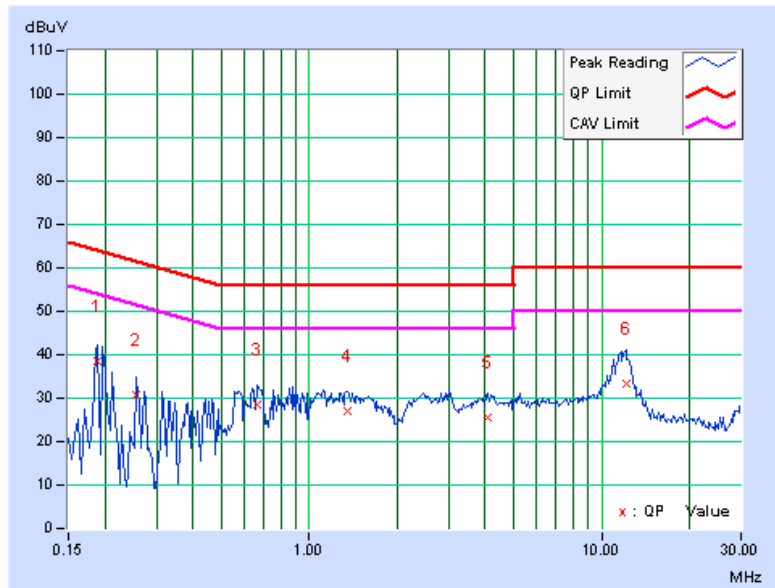
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PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.18906	0.53	37.81	20.68	38.34	21.21	64.08
2	0.25547	0.53	30.24	13.17	30.77	13.70	61.58	51.58	-30.80	-37.87
3	0.66172	0.55	28.01	10.94	28.56	11.49	56.00	46.00	-27.44	-34.51
4	1.34766	0.57	26.40	12.35	26.97	12.92	56.00	46.00	-29.03	-33.08
5	4.10547	0.50	25.04	16.47	25.54	16.97	56.00	46.00	-30.46	-29.03
6	12.13672	1.04	32.22	23.35	33.26	24.39	60.00	50.00	-26.74	-25.61

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

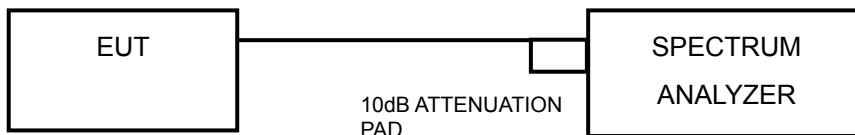


4.3 6dB BANDWIDTH MEASUREMENT

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

- a. Set resolution bandwidth (RBW) = 100kHz
- b. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- c. Trace mode = max hold.
- d. Sweep = auto couple.
- e. 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

For 2.4GHz:

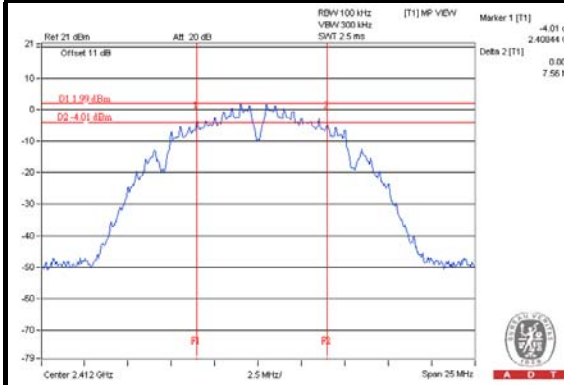
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
802.11b				
1	2412	7.56	0.5	PASS
6	2437	7.14	0.5	PASS
11	2462	7.12	0.5	PASS
802.11g				
1	2412	15.09	0.5	PASS
6	2437	15.03	0.5	PASS
11	2462	15.15	0.5	PASS
802.11n (20MHz)				
1	2412	13.39	0.5	PASS
6	2437	15.14	0.5	PASS
11	2462	15.98	0.5	PASS



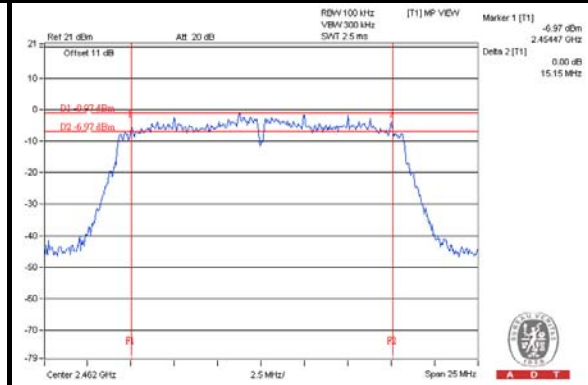
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SPECTRUM PLOT OF WORST VALUE

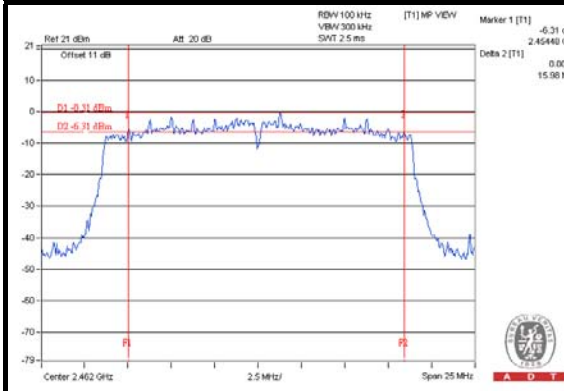
802.11b



802.11g



802.11n (20MHz)





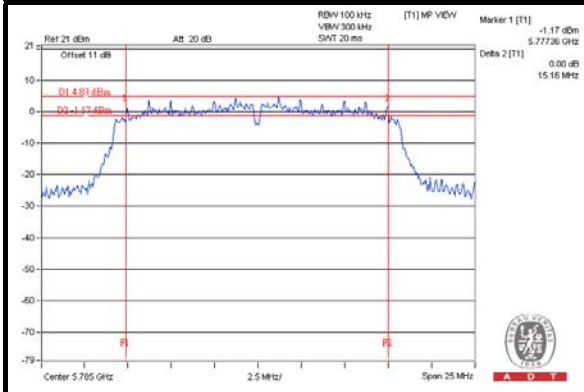
A D T

For 5.0GHz:

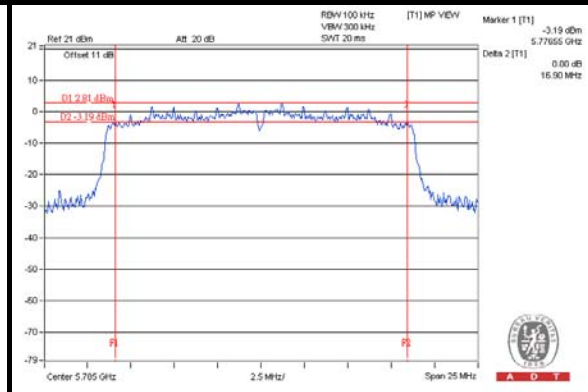
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
802.11a				
149	5745	15.14	0.5	PASS
157	5785	15.16	0.5	PASS
165	5825	15.14	0.5	PASS
802.11n (20MHz)				
149	5745	16.08	0.5	PASS
157	5785	16.90	0.5	PASS
165	5825	15.18	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

802.11a



802.11n (20MHz)



4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation: 1 Watt (30dBm)

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

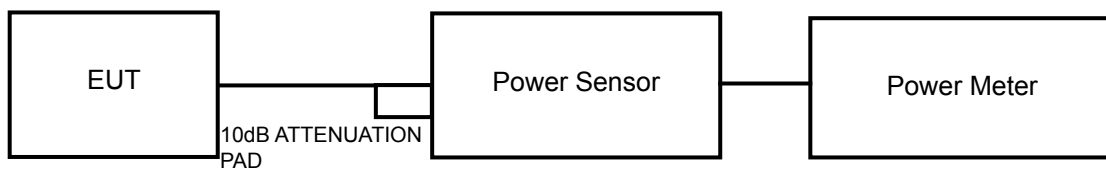
Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

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

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

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

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.4.4 TEST PROCEDURES

A peak / average power sensor 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.



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4.4.7 TEST RESULTS - FOR PEAK POWER

For 2.4GHz:

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	LIMIT (dBm)	PASS/FAIL
802.11b					
1	2412	13.82	24.1	30	PASS
6	2437	13.52	22.5	30	PASS
11	2462	13.73	23.6	30	PASS
802.11g					
1	2412	19.86	96.8	30	PASS
6	2437	19.77	94.8	30	PASS
11	2462	19.74	94.2	30	PASS
802.11n (20MHz)					
1	2412	19.99	99.8	30	PASS
6	2437	18.91	77.8	30	PASS
11	2462	19.89	97.5	30	PASS



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For 5.0GHz:

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	LIMIT (dBm)	PASS/FAIL
802.11a					
149	5745	22.33	171.0	30	PASS
157	5785	22.28	169.0	30	PASS
165	5825	21.98	157.8	30	PASS
802.11n (20MHz)					
149	5745	21.88	154.2	30	PASS
157	5785	21.61	144.9	30	PASS
165	5825	21.52	141.9	30	PASS



4.4.8 TEST RESULTS - FOR AVERAGE POWER

For 2.4GHz:

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)
802.11b		
1	2412	10.88
6	2437	10.40
11	2462	10.73
802.11g		
1	2412	11.33
6	2437	11.20
11	2462	11.23
802.11n (20MHz)		
1	2412	11.55
6	2437	11.21
11	2462	11.35

For 5.0GHz:

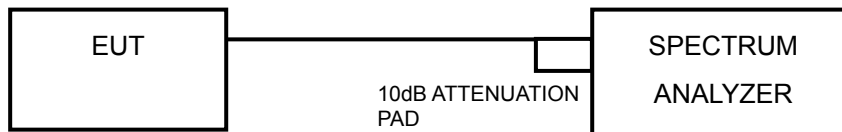
CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)
802.11a		
149	5745	16.73
157	5785	16.61
165	5825	16.21
802.11n (20MHz)		
149	5745	14.23
157	5785	14.11
165	5825	14.11

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.5.4 TEST PROCEDURE

- Set the RBW = 3 kHz, VBW = 10 kHz, Detector = peak.
- Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
- Record the max value and add 10 log (1/duty cycle)

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6



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4.5.7 TEST RESULTS

For 2.4GHz:

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
802.11b				
1	2412	-12.62	8	PASS
6	2437	-12.40	8	PASS
11	2462	-11.68	8	PASS
802.11g				
1	2412	-13.82	8	PASS
6	2437	-14.33	8	PASS
11	2462	-13.75	8	PASS
802.11n (20MHz)				
1	2412	-14.54	8	PASS
6	2437	-13.52	8	PASS
11	2462	-14.62	8	PASS

NOTE:

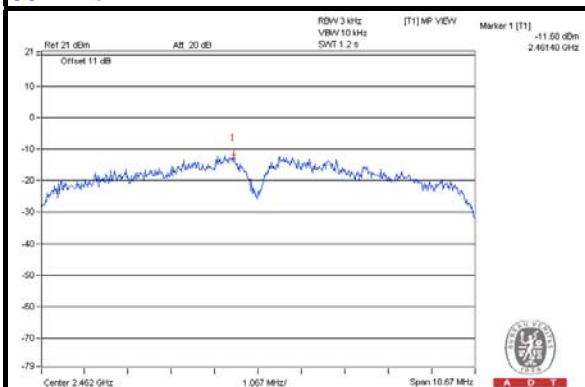
1. Method a of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain =2dBi + 10log(2)<6dBi which meet the requirement of antenna gain, so the conducted power limit is not reduced.



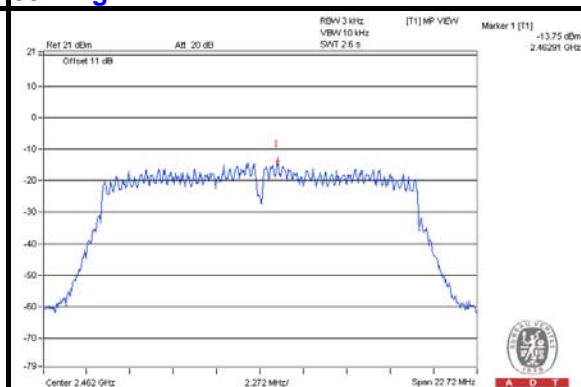
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SPECTRUM PLOT OF WORST VALUE

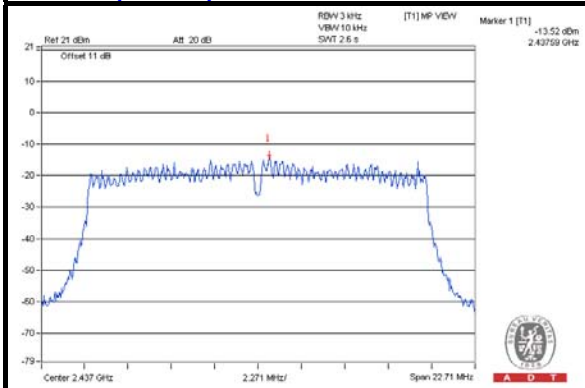
802.11b



802.11g



802.11n (20MHz)





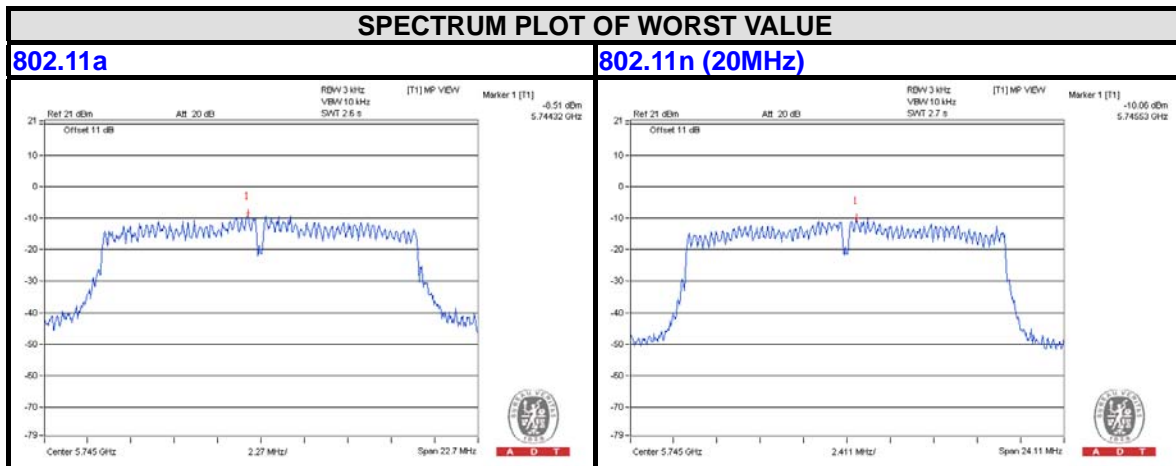
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For 5.0GHz:

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
802.11a				
149	5745	-8.51	8	PASS
157	5785	-9.15	8	PASS
165	5825	-9.19	8	PASS
802.11n (20MHz)				
149	5745	-10.06	8	PASS
157	5785	-10.81	8	PASS
165	5825	-11.34	8	PASS

NOTE:

1. Method a of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 2dBi + 10log(2) < 6dBi which meet the requirement of antenna gain, so the conducted power limit is not reduced.

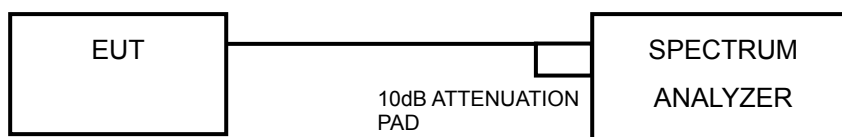


4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.6.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

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



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MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW \geq 300 kHz.
3. Ensure that the number of measurement points \geq span/RBW
4. According to measurement points to set differ measurement span.
5. Detector = peak.
6. Trace Mode = max hold.
7. Sweep = auto couple.

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.7 TEST RESULTS

The 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.

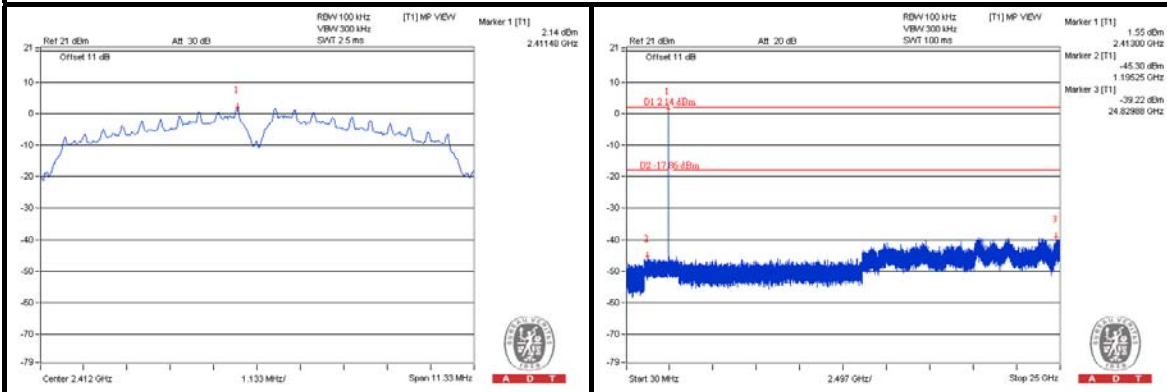
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



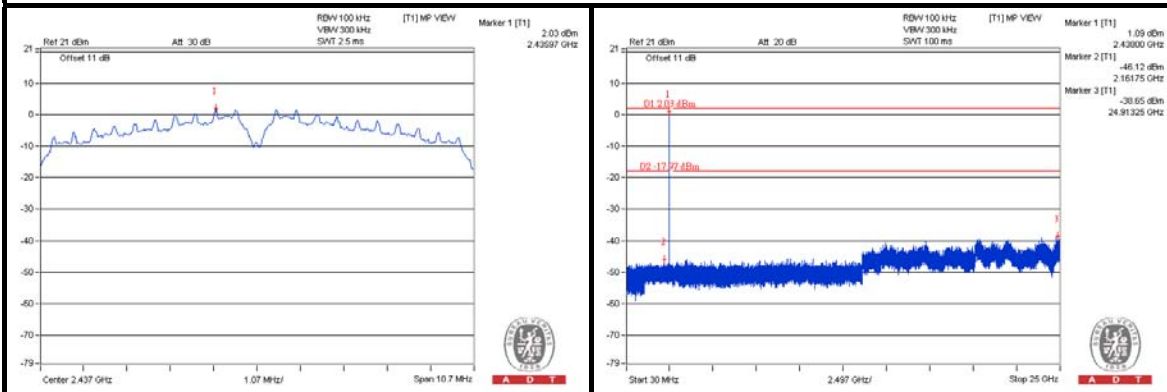
A D T

802.11b

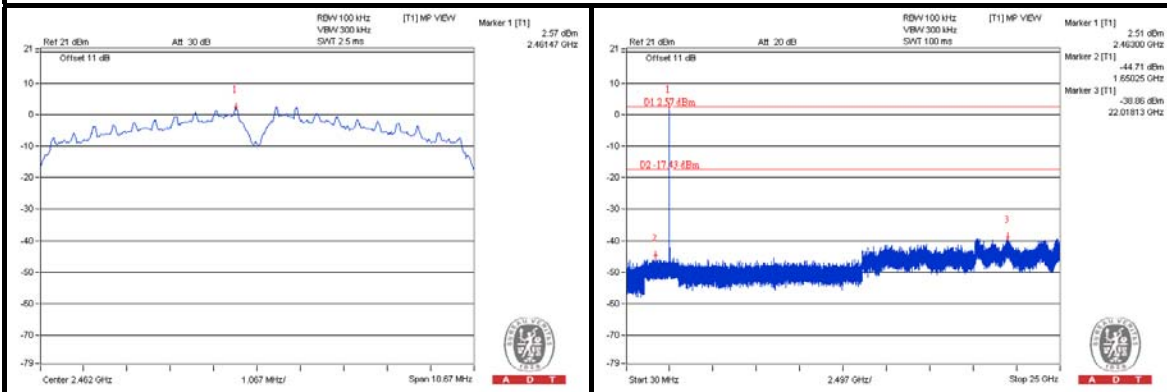
CH 1



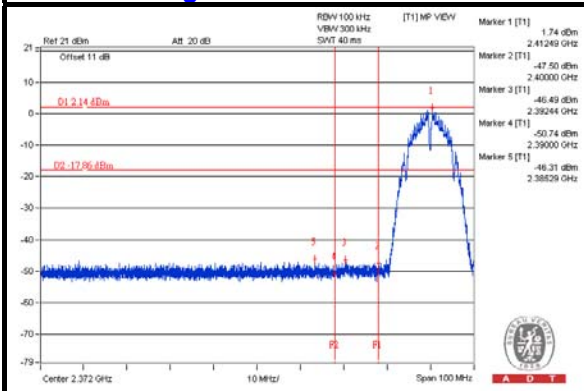
CH 6



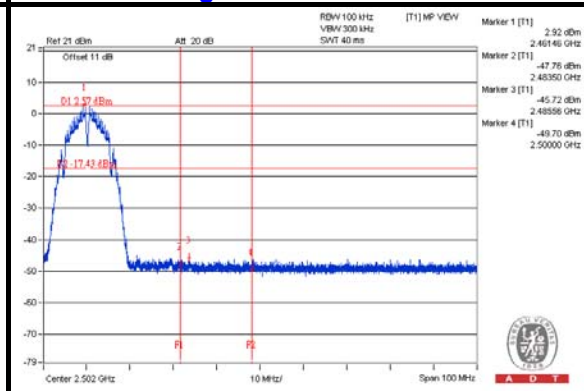
CH 11



CH 1 Band edge

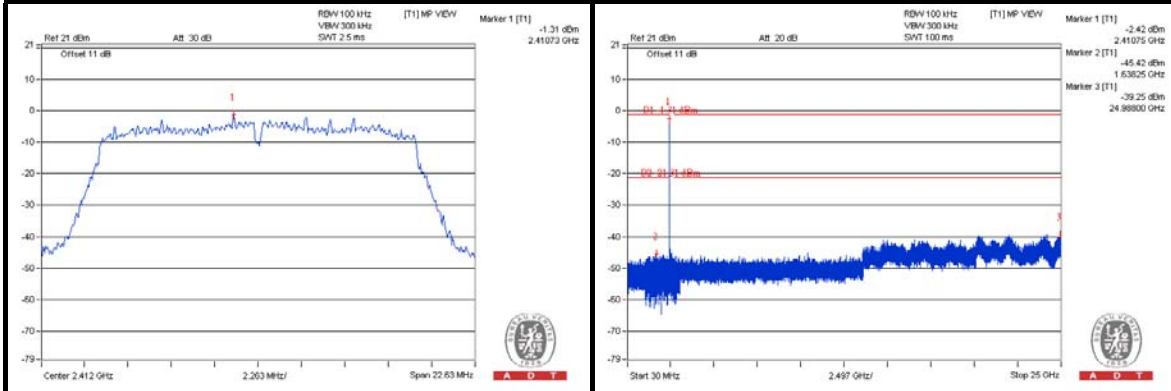


CH 11 Band edge

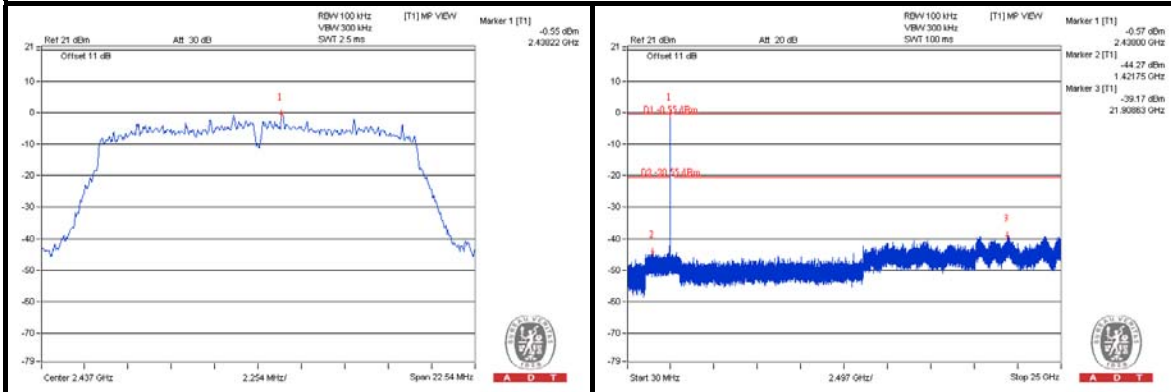


802.11g

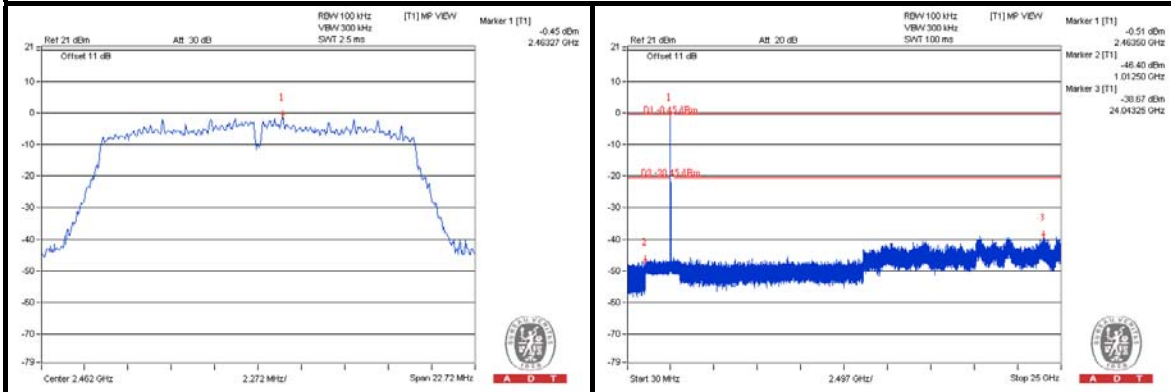
CH 1



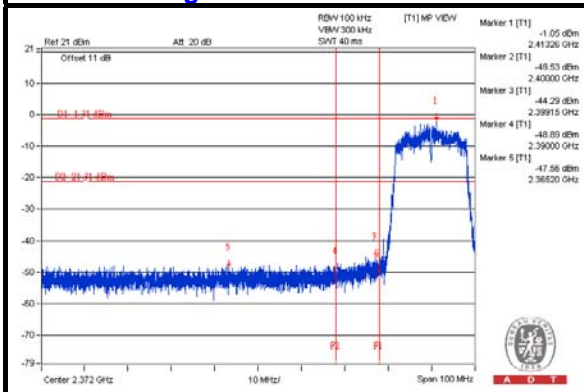
CH 6



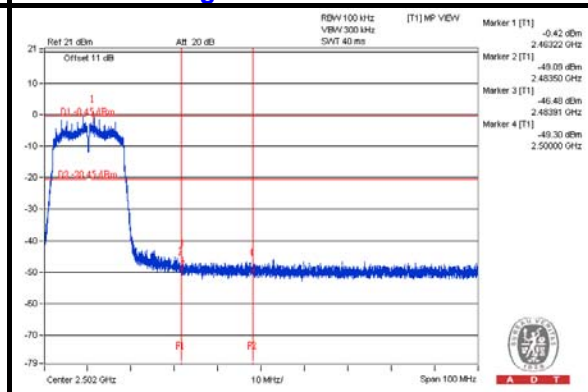
CH 11



CH 1 Band edge



CH 11 Band edge

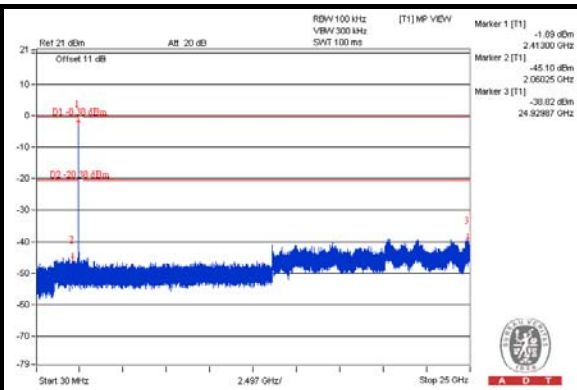
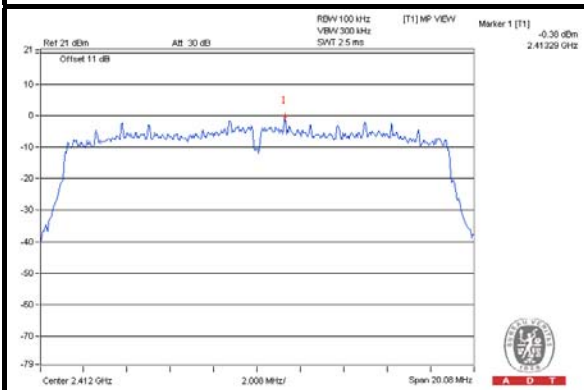




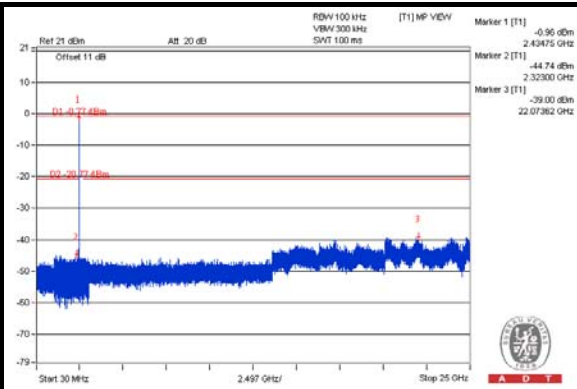
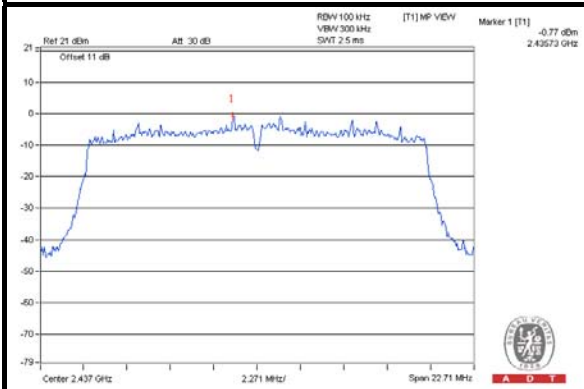
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802.11n (20MHz)

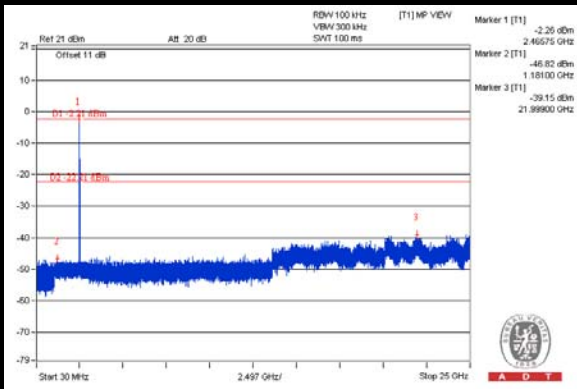
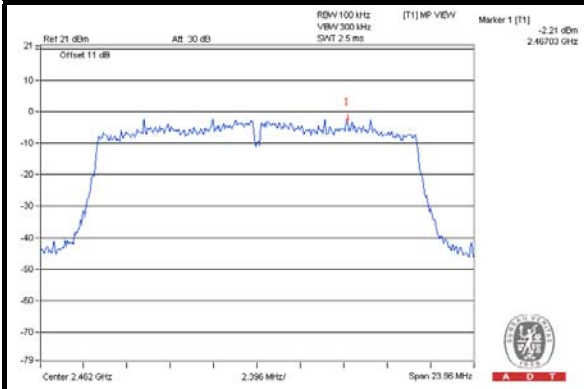
CH 1



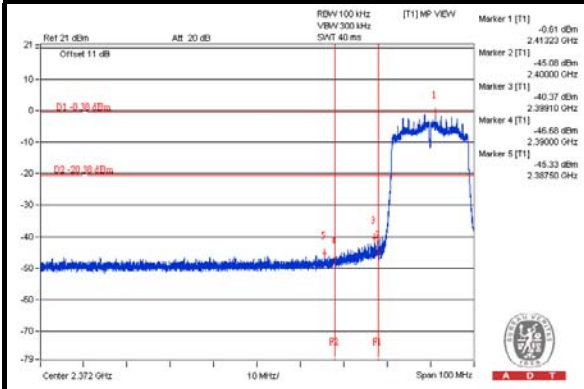
CH 6



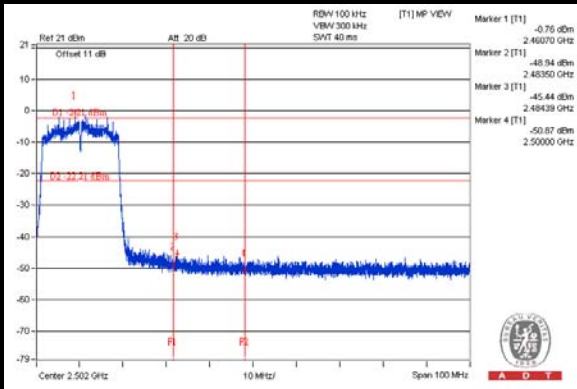
CH 11



CH 1 Band edge



CH 11 Band edge

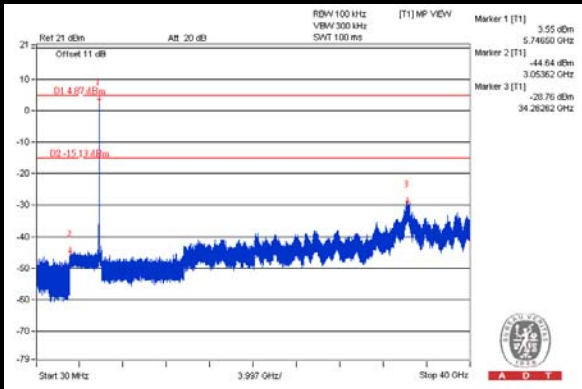
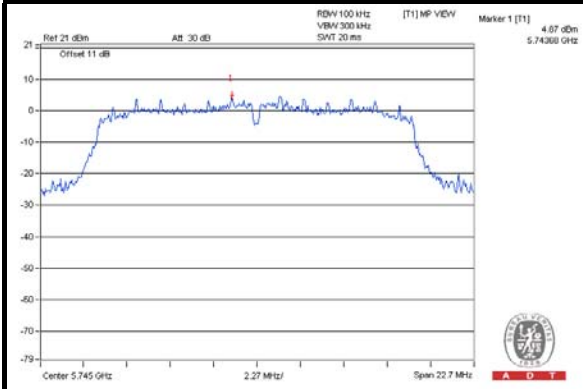




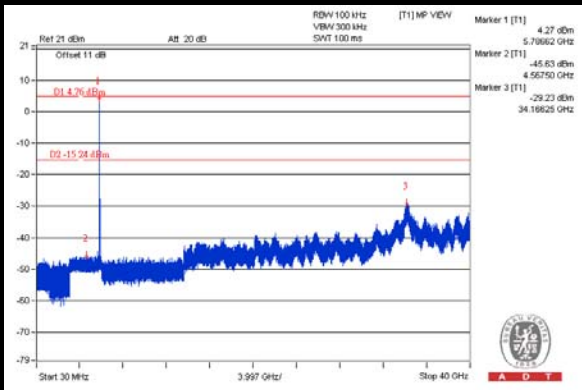
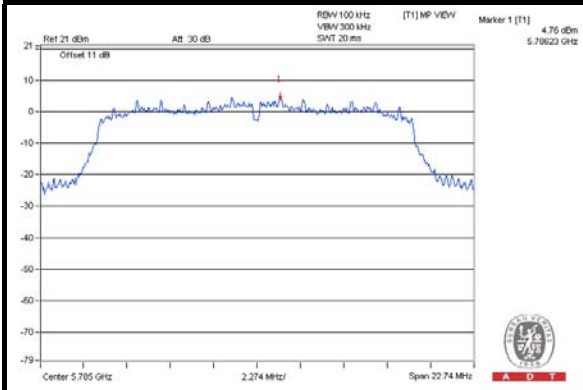
A D T

802.11a

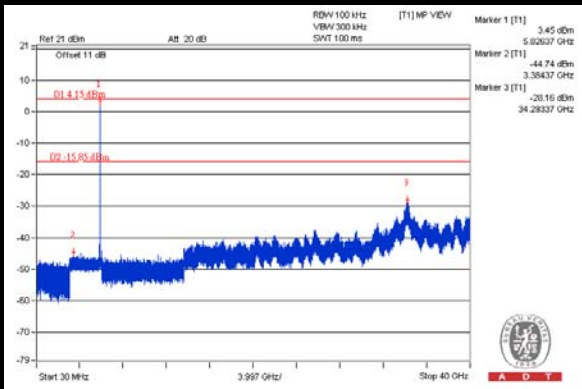
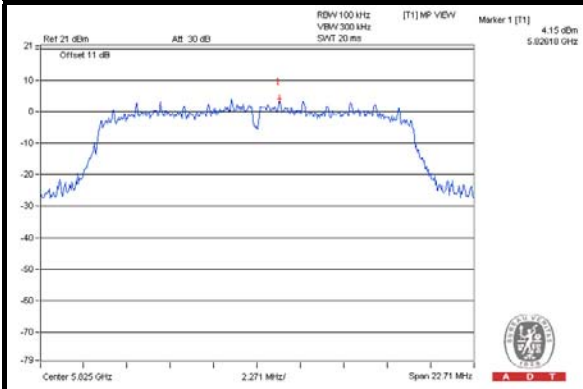
CH 149



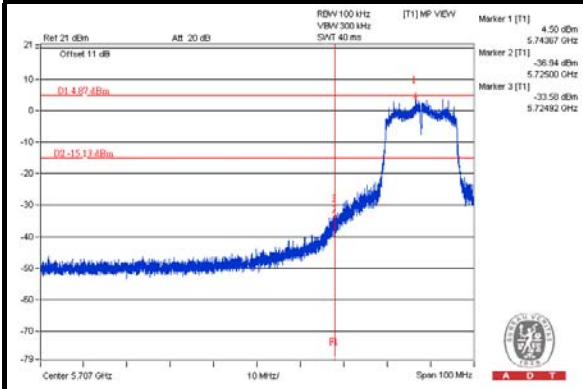
CH 157



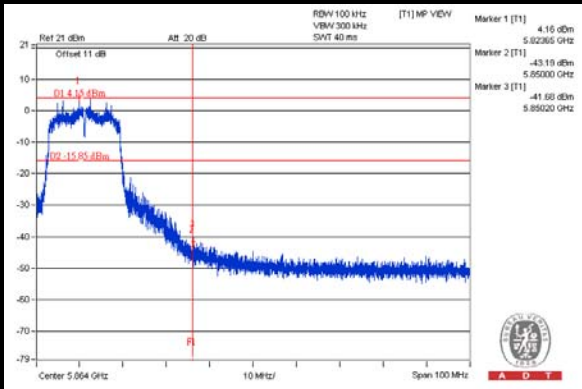
CH 165



CH 149 Band edge



CH 165 Band edge

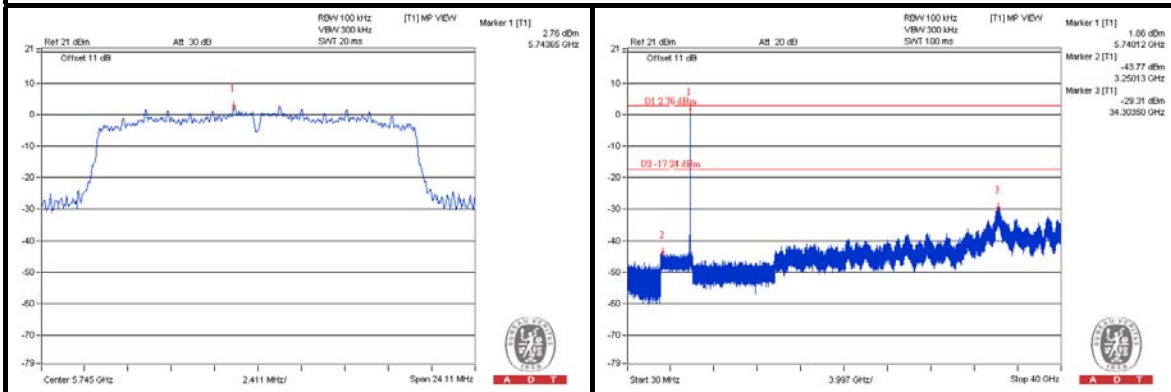




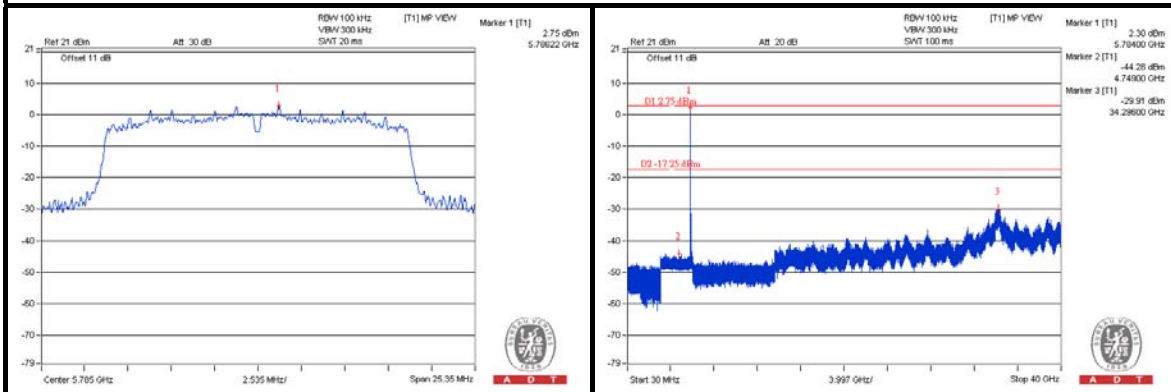
A D T

802.11n (20MHz)

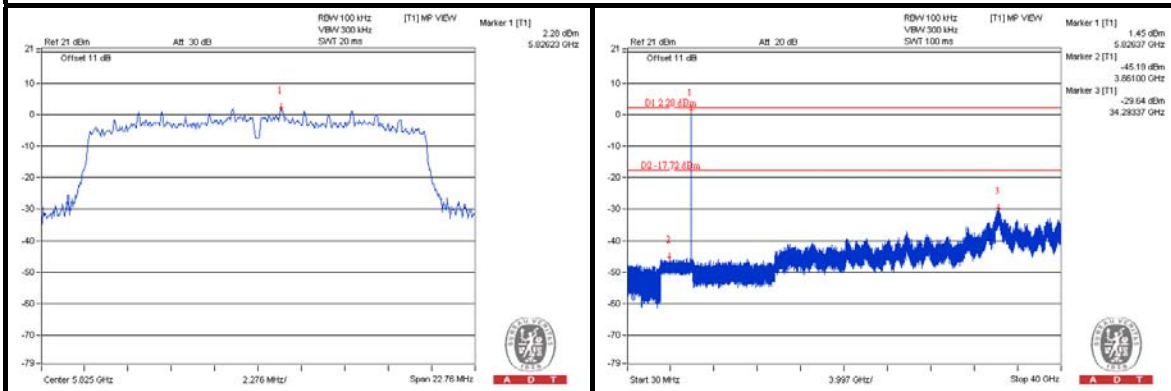
CH 149



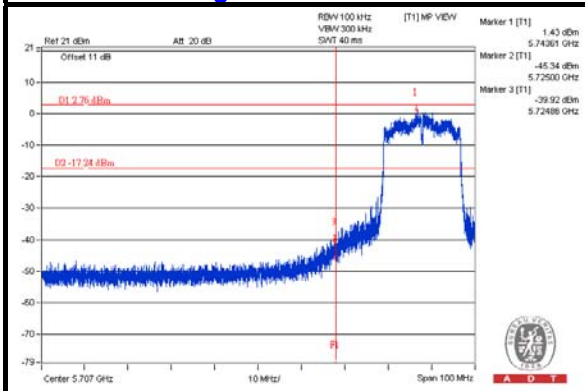
CH 157



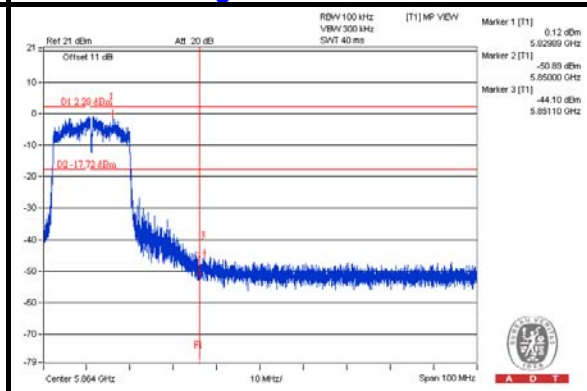
CH 165



CH 149 Band edge



CH 165 Band edge





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5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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6. 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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Fax: 886-2-26051924

Hsin Chu EMC/RF Lab

Tel: 886-3-5935343

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Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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



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7. 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---