

## FCC Test Report

**Report No.:** RF150708E07

**FCC ID:** PY315200307

**Test Model:** R7300

**Received Date:** July 08, 2015

**Test Date:** July 15 to 31, 2015

**Issued Date:** Aug. 11, 2015

**Applicant:** NETGEAR, Inc.

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**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Hsin Chu Laboratory

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A D T

### Release Control Record

Issue No.	Description	Date Issued
RF150708E07	Original release.	Aug. 11, 2015



A D T

## 1 Certificate of Conformity

**Product:** Nighthawk AC1900 DST Router

**Brand:** NETGEAR

**Test Model:** R7300

**Sample Status:** ENGINEERING SAMPLE


**Applicant:** NETGEAR, Inc.

**Test Date:** July 15 to 31, 2015

**Standards:** 47 CFR FCC Part 15, Subpart C (Section 15.247)  
ANSI C63.10: 2013

The above equipment 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:** Aug. 11, 2015  
Midoli Peng / Specialist

**Approved by :**  , **Date:** Aug. 11, 2015  
May Chen / Manager

## 2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (SECTION 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -7.05dB at 0.33359MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.2dB at 2483.50MHz & 2390.00MHz.
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 Re-SMA 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	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.86 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.37 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.65 dB
	6GHz ~ 18GHz	3.88 dB
	18GHz ~ 40GHz	4.11 dB

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT

Product	Nighthawk AC1900 DST Router
Brand	NETGEAR
Test Model	R7300
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	AC 100-240V, 1.3A, 50/60Hz
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT (20/40) mode in 2.4GHz
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a: up to 54Mbps 802.11n: up to 450Mbps 802.11ac: up to 1300Mbps
Operating Frequency	<b>For 15.407</b> 5.18 ~ 5.24GHz
	<b>For 15.247</b> <b>2.4GHz:</b> 2.412 ~ 2.462GHz <b>5GHz:</b> 5.745 ~ 5.825GHz
Number of Channel	<b>For 15.407</b> 4 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)
	<b>For 15.247 (2.4GHz)</b> 11 for 802.11b, 802.11g, 802.11n (HT20), VHT20 7 for 802.11n (HT40), VHT40
	<b>For 15.247 (5GHz)</b> 5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)



Output Power	<b>For 15.407</b> <b>CDD Mode:</b> 802.11a: 436.228mW 802.11ac (VHT20): 436.723mW 802.11ac (VHT40): 888.181mW 802.11ac (VHT80): 293.206mW <b>Beamforming Mode:</b> 802.11ac (VHT20): 393.736mW 802.11ac (VHT40): 674.757mW 802.11ac (VHT80): 219.7mW
	<b>For 15.247(5GHz)</b> <b>CDD Mode:</b> 802.11a: 932.093mW <b>Beamforming Mode:</b> 802.11ac (VHT20): 931.687mW 802.11ac (VHT40): 916.556mW 802.11ac (VHT80): 539.77mW
	<b>For 15.247(2.4GHz)</b> <b>CDD Mode:</b> 802.11b: 983.43mW 802.11g: 922.959mW 802.11n(HT20): 917.129mW 802.11n(HT40): 252.703mW <b>Beamforming Mode:</b> VHT20: 917.129mW VHT40: 225.567mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

**Note:**

- The EUT must be supplied with internal power supply as following spec:
  - ◆ AC 100-240V, 1.3A, 50/60Hz
- The antennas provided to the EUT, please refer to the following table:

Antenna No.	Ant. Gain(dBi)	Frequency range (GHz to GHz)	Antenna Type	Connector Type
1	0.5	2.4~2.4835	Dipole	Re-SMA
	0.9	5.15~5.25	Dipole	Re-SMA
	0.4	5.725~5.85	Dipole	Re-SMA
2	0.5	2.4~2.4835	Dipole	Re-SMA
	0.9	5.15~5.25	Dipole	Re-SMA
	0.4	5.725~5.85	Dipole	Re-SMA
3	0.5	2.4~2.4835	Dipole	Re-SMA
	0.9	5.15~5.25	Dipole	Re-SMA
	0.4	5.725~5.85	Dipole	Re-SMA

3. The EUT incorporates a MIMO function with beamforming.(Except for 802.11a/b/g)

<b>For 2.4GHz Band</b>			
<b>MODULATION MODE</b>	<b>DATA RATE (MCS)</b>	<b>TX &amp; RX CONFIGURATION</b>	
<b>802.11b</b>	1 ~ 11Mbps	3TX	3RX
<b>802.11g</b>	1 ~ 11Mbps	3TX	3RX
<b>802.11n (HT20)</b>	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
<b>802.11n (HT40)</b>	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
<b>VHT20</b>	MCS0~8 Nss=1	3TX	3RX
	MCS0~8 Nss=2	3TX	3RX
	MCS0~9 Nss=3	3TX	3RX
<b>VHT40</b>	MCS0~9 Nss=1	3TX	3RX
	MCS0~9 Nss=2	3TX	3RX
	MCS0~9 Nss=3	3TX	3RX
<b>For 5GHz Band</b>			
<b>MODULATION MODE</b>	<b>DATA RATE (MCS)</b>	<b>TX &amp; RX CONFIGURATION</b>	
<b>802.11a</b>	6 ~ 54Mbps	3TX	3RX
<b>802.11n (HT20)</b>	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
<b>802.11n (HT40)</b>	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
<b>802.11ac (VHT20)</b>	MCS 0~8, Nss=1	3TX	3RX
	MCS 0~8, Nss=2	3TX	3RX
	MCS 0~9, Nss=3	3TX	3RX
<b>802.11ac (VHT40)</b>	MCS 0~9, Nss=1	3TX	3RX
	MCS 0~9, Nss=2	3TX	3RX
	MCS 0~9, Nss=3	3TX	3RX
<b>802.11ac (VHT80)</b>	MCS 0~9, Nss=1	3TX	3RX
	MCS 0~9, Nss=2	3TX	3RX
	MCS 0~9, Nss=3	3TX	3RX

Note: The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

4. The emission of the simultaneous operation (2.4GHz & 5GHz) has been evaluated and no non-compliance was found.
5. 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, 802.11n (HT20), VHT20:

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 (HT40), VHT40:

Channel	Frequency	Channel	Frequency
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

#### FOR 5GHz (5745 ~ 5825MHz):

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775MHz

### 3.2.1 Test Mode Applicability and Tested Channel Detail

#### For 2.4GHz:

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

Where **RE $\geq$ 1G**: Radiated Emission above 1GHz

**RE<1G**: Radiated Emission below 1GHz

**PLC**: Power Line Conducted Emission

**APCM**: Antenna Port Conducted Measurement

#### Radiated Emission Test (Above 1GHz):

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

CDD Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n(HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n(HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

#### 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.

CDD Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	6	DSSS	DBPSK	1

**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.

<b>CDD Mode</b>					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	6	DSSS	DBPSK	1

**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.

<b>CDD Mode</b>					
<b>For Conducted Output Power / Power Spectral Density / 6dB Bandwidth Measurement</b>					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n(HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n(HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
<b>Beamforming Mode</b>					
<b>For Conducted Output Power Measurement</b>					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
VHT20	1 to 11	1, 6, 11	OFDM	BPSK	6.5
VHT40	3 to 9	3, 6, 9	OFDM	BPSK	13.5

**Test Condition:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	21deg. C, 68%RH	120Vac, 60Hz	Andy Ho
RE<1G	20deg. C, 66%RH	120Vac, 60Hz	Weiwei Lo
PLC	30deg. C, 65%RH	120Vac, 60Hz	Jyunchun Lin
APCM	25deg. C, 60%RH	120Vac, 60Hz	Gary Cheng

**For 5GHz (5745 ~ 5825MHz):**

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	-	√	-

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

**Radiated Emission Test (Above 1GHz):**

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

<b>CDD Mode</b>					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
<b>Beamforming Mode</b>					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)	151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

**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.

<b>CDD Mode</b>					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 165	157	OFDM	BPSK	6

**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.

<b>CDD Mode</b>					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 165	157	OFDM	BPSK	6

**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.

<b>CDD Mode</b>					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
<b>Beamforming Mode</b>					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)	151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

**Test Condition:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	23deg. C, 66%RH	120Vac, 60Hz	Tim Ho
RE<1G	20deg. C,66%RH	120Vac, 60Hz	Weiwei Lo
PLC	30deg. C, 65%RH	120Vac, 60Hz	Jyunchun Lin
APCM	25deg. C, 60%RH	120Vac, 60Hz	Gary Cheng

### 3.3 Duty Cycle of Test Signal

#### 2.4GHz Band:

If duty cycle of test signal is  $\geq 98\%$ , duty factor is not required.

If duty cycle of test signal is  $< 98\%$ , duty factor shall be considered.

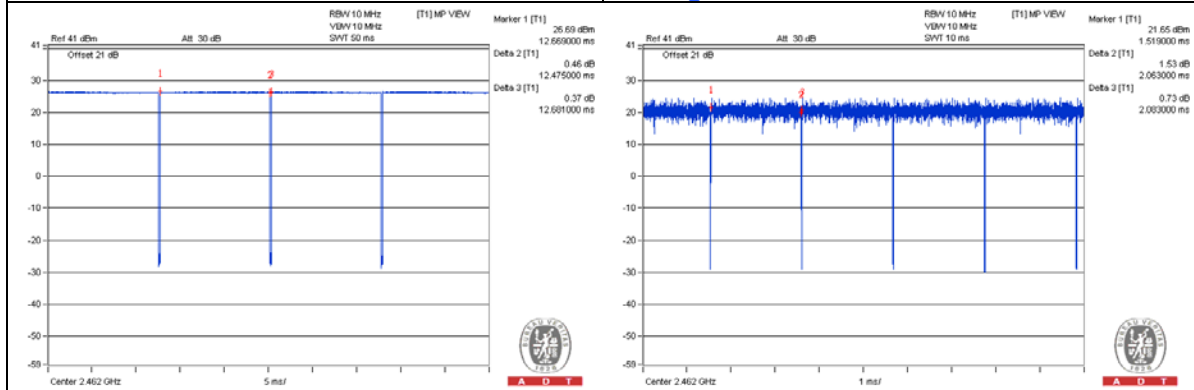
**802.11b:** Duty cycle =  $12.475\text{ ms}/12.681\text{ ms} = 0.984$

**802.11g:** Duty cycle =  $2.063\text{ ms}/2.083\text{ ms} = 0.99$

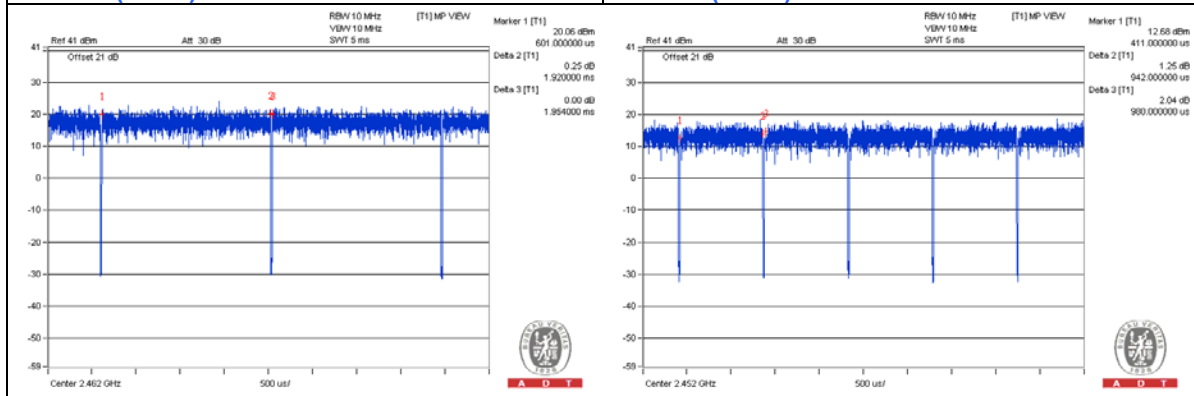
**802.11n (HT20):** Duty cycle =  $1.92\text{ ms}/1.954\text{ ms} = 0.983$

**802.11n (HT40):** Duty cycle =  $0.942\text{ ms}/0.98\text{ ms} = 0.961$ , Duty factor =  $10 * \log(1/0.961) = 0.17$

**802.11b** **802.11g**



**802.11n (HT20)** **802.11n (HT40)**





**For 5GHz (5745 ~ 5825MHz):**

If duty cycle of test signal is  $\geq 98\%$ , duty factor is not required.

If duty cycle of test signal is  $< 98\%$ , duty factor shall be considered.

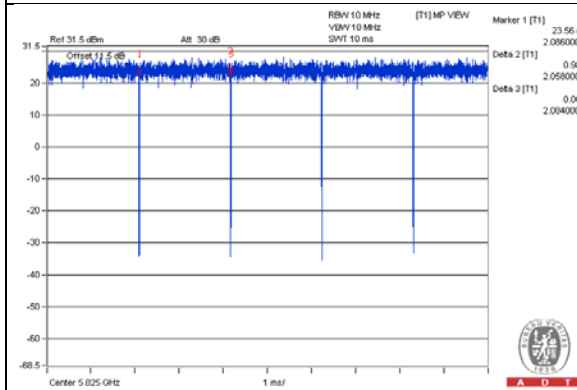
**802.11a:** Duty cycle = 2.058 ms/2.084 ms = 0.988

**802.11ac (VHT20):** Duty cycle = 1.926 ms/1.948 ms = 0.989

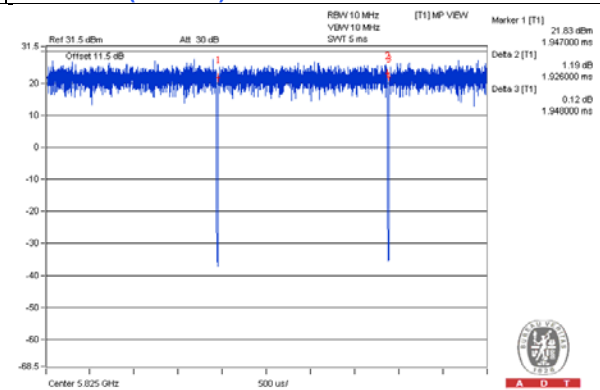
**802.11ac (VHT40):** Duty cycle = 0.953 ms/0.970 ms = 0.982

**802.11ac (VHT80):** Duty cycle = 0.457 ms/0.48 ms = 0.952, Duty factor =  $10 * \log(1/0.952) = 0.21$

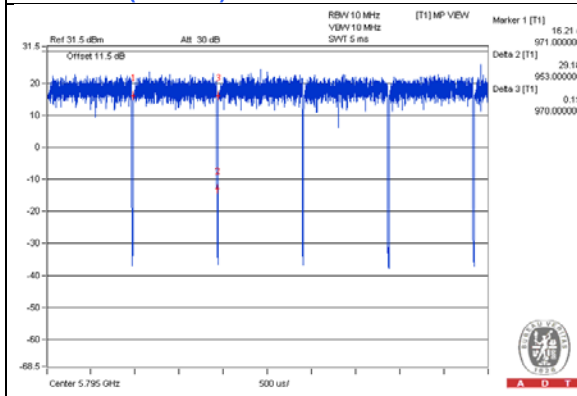
**802.11a**



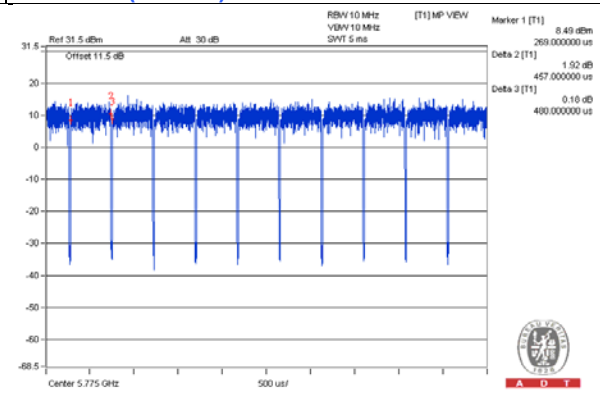
**802.11ac (VHT20)**



**802.11ac (VHT40)**



**802.11ac (VHT80)**



### 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.

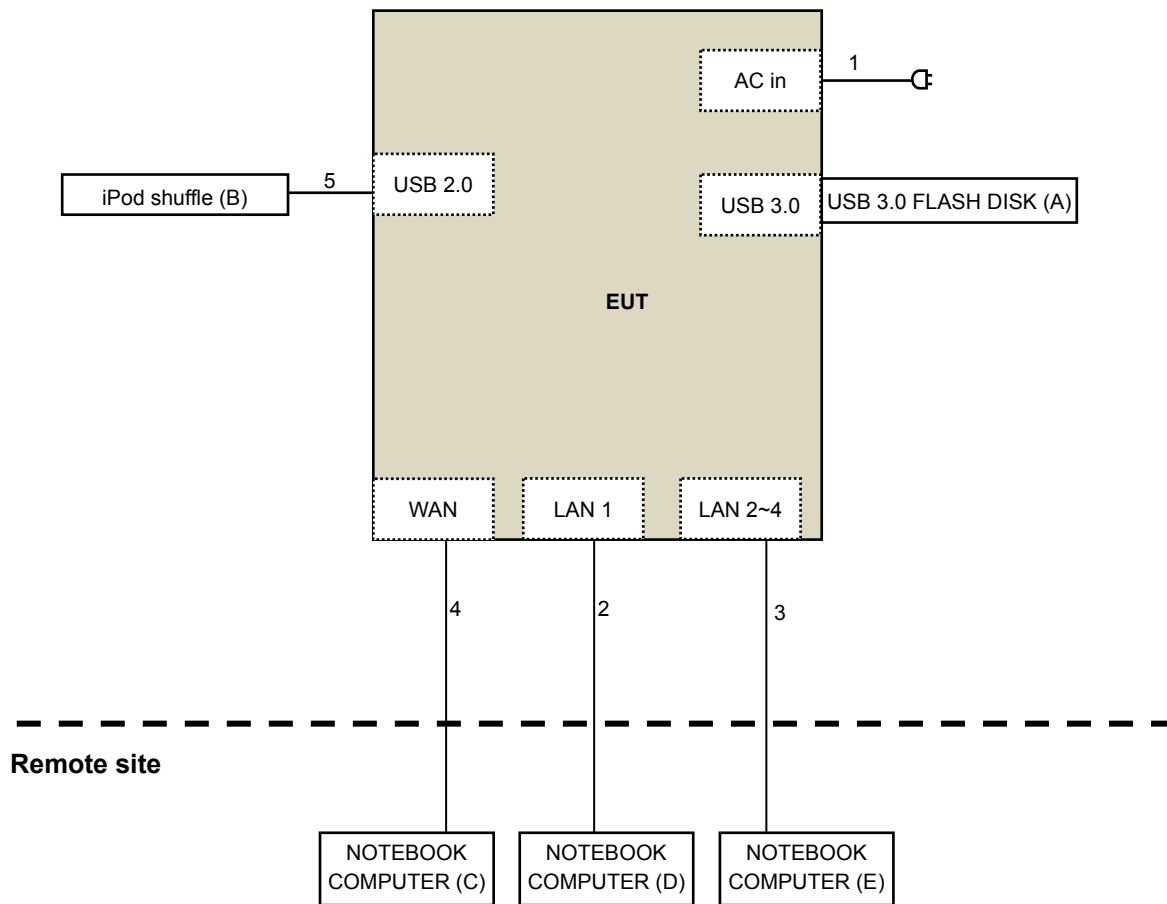
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	USB 3.0 FLASH DISK	Transcend	NA	NA	NA	Provided by Lab
B.	iPod shuffle	Apple	MC749TA/A	CC4DMFJUDFDM	NA	Provided by Lab
C.	NOTEBOOK COMPUTER	DELL	PP27L	6YLB32S	FCC DoC	Provided by Lab
D.	NOTEBOOK COMPUTER	DELL	PP27L	7YLB32S	FCC DoC	Provided by Lab
E.	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC	Provided by Lab

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	AC	1	1.8	No	0	Supplied by Client
2.	RJ-45	1	1	No	0	Provided by Lab
3.	RJ-45	3	10	No	0	Provided by Lab
4.	RJ-45	1	10	No	0	Provided by Lab
5.	USB	1	0.1	Yes	0	Provided by Lab

### 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 v03r03**

**662911 D01 Multiple Transmitter Output v02r01**

ANSI C63.10-2013

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

**NOTE:** The EUT 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 30dB 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**

<b>DESCRIPTION &amp; MANUFACTURER</b>	<b>MODEL NO.</b>	<b>SERIAL NO.</b>	<b>CALIBRATED DATE</b>	<b>CALIBRATED UNTIL</b>
Test Receiver Agilent	N9038A	MY51210202	Dec. 12, 2014	Dec. 11, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 06, 2015	Feb. 05, 2016
RF Cable	8D-FB	CHGCAB-001 -1 CHGCAB-001 -2	Oct. 04, 2014	Oct. 03, 2015
	RF-141	CHGCAB-004	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISI	AIH.8018	000032009111 0	Feb. 09, 2015	Feb. 08, 2016
Pre-Amplifier Agilent	8449B	3008A02578	June 23, 2015	June 22, 2016
RF Cable	NA	131205 131216 131217 SNMY23684/ 4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	June 26, 2015	June 25, 2016
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Dec. 12, 2014	Dec. 11, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Feb. 05, 2015	Feb. 04, 2016
RF Cable	NA	329751/4 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA
SPECTRUM ANALYZER R&S	FSV 40	100964	June 26, 2015	June 25, 2016
Power Meter Anritsu	ML2495A	1014008	Apr. 28, 2015	Apr. 27, 2016
Power Sensor Anritsu	MA2411B	0917122	Apr. 28, 2015	Apr. 27, 2016

**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 966 Chamber No. G.
3. The FCC Site Registration No. is 966073.
4. The VCCI Site Registration No. is G-137.
5. The CANADA Site Registration No. is IC 7450H-2.
6. Tested Date: July 21 to 31, 2015

#### 4.1.3 Test Procedures

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. 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 height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

#### Note:

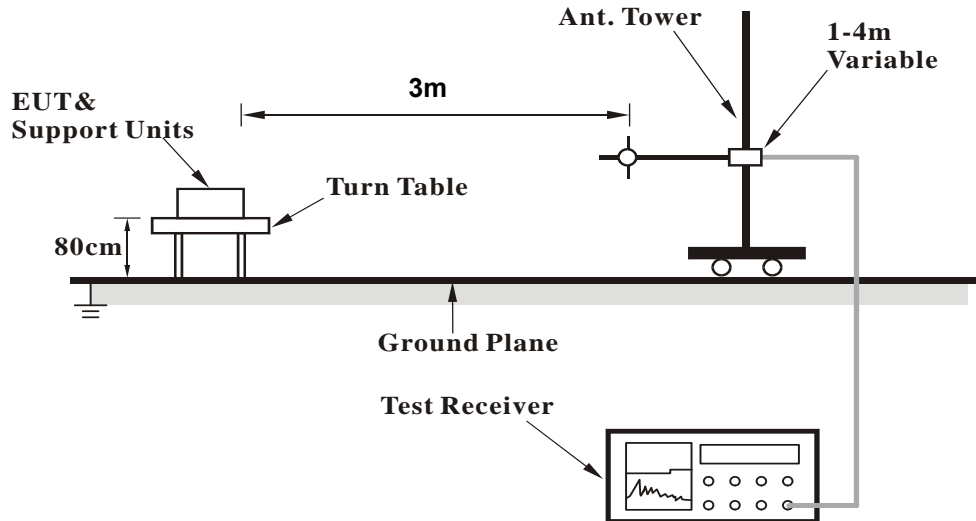
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ( $10 \log(1/\text{duty cycle})$ ).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

#### 4.1.4 Deviation from Test Standard

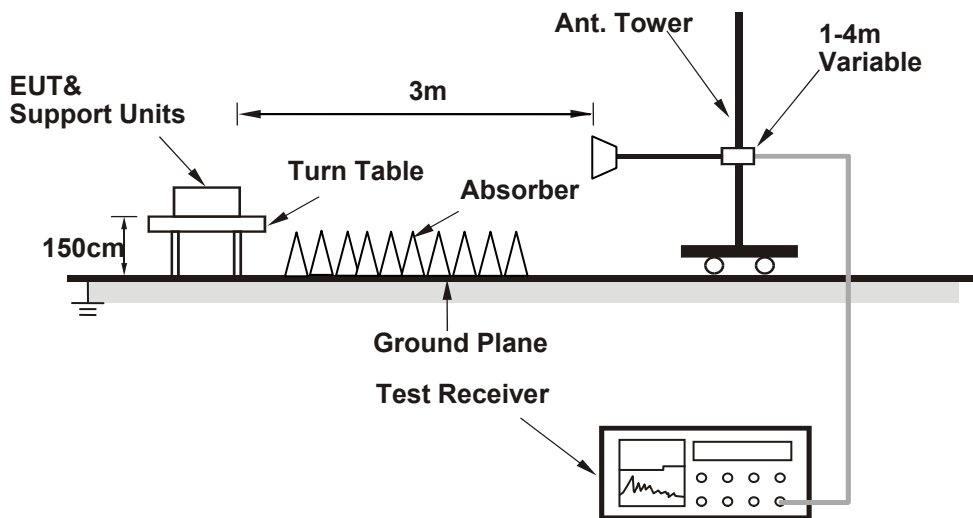
No deviation.

#### 4.1.5 Test Set Up

##### <Frequency Range below 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

1. Connect the EUT with the support units C-E (NOTEBOOK COMPUTER) which is placed on remote site.
2. Controlling software (Mtool 2.0.1.8.msi) has been activated to set the EUT on specific status.



**4.1.7 Test Results**
**Above 1GHz Data**
**CDD Mode**
**802.11b**

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	51.4 PK	74.0	-22.6	1.19 H	174	56.63	-5.23
2	2390.00	40.9 AV	54.0	-13.1	1.19 H	174	46.13	-5.23
3	*2412.00	107.6 PK			1.19 H	174	112.75	-5.15
4	*2412.00	105.1 AV			1.19 H	174	110.25	-5.15
5	4824.00	50.0 PK	74.0	-24.0	1.51 H	194	48.87	1.13
6	4824.00	48.1 AV	54.0	-5.9	1.51 H	194	46.97	1.13

**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	63.3 PK	74.0	-10.7	2.46 V	53	68.53	-5.23
2	2390.00	53.4 AV	54.0	-0.6	2.46 V	53	58.63	-5.23
3	*2412.00	119.7 PK			2.46 V	53	124.85	-5.15
4	*2412.00	115.7 AV			2.46 V	53	120.88	-5.15
5	4824.00	54.5 PK	74.0	-19.5	1.50 V	216	53.37	1.13
6	4824.00	52.9 AV	54.0	-1.1	1.50 V	216	51.77	1.13

**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.

<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	107.8 PK			1.23 H	181	112.88	-5.08
2	*2437.00	105.0 AV			1.23 H	181	110.08	-5.08
3	4874.00	50.2 PK	74.0	-23.8	1.56 H	181	48.83	1.37
4	4874.00	48.3 AV	54.0	-5.7	1.56 H	181	46.93	1.37
5	7311.00	40.1 PK	74.0	-33.9	1.57 H	203	31.98	8.12
6	7311.00	33.2 AV	54.0	-20.8	1.57 H	203	25.08	8.12

**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	*2437.00	119.9 PK			2.08 V	55	124.98	-5.08
2	*2437.00	115.8 AV			2.08 V	55	120.88	-5.08
3	4874.00	54.7 PK	74.0	-19.3	1.48 V	232	53.33	1.37
4	4874.00	53.0 AV	54.0	-1.0	1.48 V	232	51.63	1.37
5	7311.00	44.6 PK	74.0	-29.4	1.22 V	218	36.48	8.12
6	7311.00	34.1 AV	54.0	-19.9	1.22 V	218	25.98	8.12

**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.

<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	107.4 PK			1.22 H	171	112.40	-5.00
2	*2462.00	104.7 AV			1.22 H	171	109.70	-5.00
3	2483.50	50.0 PK	74.0	-24.0	1.22 H	171	54.92	-4.92
4	2483.50	41.3 AV	54.0	-12.7	1.22 H	171	46.22	-4.92
5	4924.00	49.8 PK	74.0	-24.2	1.53 H	167	48.27	1.53
6	4924.00	48.0 AV	54.0	-6.0	1.53 H	167	46.47	1.53
7	7386.00	40.2 PK	74.0	-33.8	1.59 H	192	31.98	8.22
8	7386.00	33.4 AV	54.0	-20.6	1.59 H	192	25.18	8.22

**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	119.5 PK			2.06 V	334	124.50	-5.00
2	*2462.00	115.5 AV			2.06 V	334	120.50	-5.00
3	2483.50	61.9 PK	74.0	-12.1	2.06 V	334	66.82	-4.92
<b>4</b>	<b>2483.50</b>	<b>53.8 AV</b>	<b>54.0</b>	<b>-0.2</b>	<b>2.06 V</b>	<b>334</b>	<b>58.72</b>	<b>-4.92</b>
5	4924.00	54.6 PK	74.0	-19.4	1.45 V	205	53.07	1.53
6	4924.00	52.8 AV	54.0	-1.2	1.45 V	205	51.27	1.53
7	7386.00	44.5 PK	74.0	-29.5	1.23 V	207	36.28	8.22
8	7386.00	34.1 AV	54.0	-19.9	1.23 V	207	25.88	8.22

**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.

802.11g

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	2388.00	61.7 PK	74.0	-12.3	1.22 H	184	66.93	-5.23
2	2388.00	38.4 AV	54.0	-15.6	1.22 H	184	43.63	-5.23
3	*2412.00	109.1 PK			1.22 H	184	114.25	-5.15
4	*2412.00	98.3 AV			1.22 H	184	103.45	-5.15
5	4824.00	49.6 PK	74.0	-24.4	1.48 H	161	48.47	1.13
6	4824.00	47.8 AV	54.0	-6.2	1.48 H	161	46.67	1.13

**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	2388.00	73.7 PK	74.0	-0.3	2.06 V	360	78.93	-5.23
2	2388.00	50.9 AV	54.0	-3.1	2.06 V	360	56.13	-5.23
3	*2412.00	119.9 PK			2.06 V	360	125.05	-5.15
4	*2412.00	109.1 AV			2.06 V	360	114.25	-5.15
5	4824.00	53.0 PK	74.0	-21.0	1.62 V	244	51.87	1.13
6	4824.00	40.9 AV	54.0	-13.1	1.62 V	244	39.77	1.13

**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.

<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	59.6 PK	74.0	-14.4	1.21 H	179	64.83	-5.23
2	2390.00	41.1 AV	54.0	-12.9	1.21 H	179	46.33	-5.23
3	*2437.00	113.3 PK			1.21 H	179	118.38	-5.08
4	*2437.00	102.4 AV			1.21 H	179	107.48	-5.08
5	2483.50	58.0 PK	74.0	-16.0	1.21 H	179	62.92	-4.92
6	2483.50	38.7 AV	54.0	-15.3	1.21 H	179	43.62	-4.92
7	4874.00	45.6 PK	74.0	-28.4	1.45 H	158	44.23	1.37
8	4874.00	37.2 AV	54.0	-16.8	1.45 H	158	35.83	1.37
9	7311.00	40.5 PK	74.0	-33.5	1.38 H	267	32.38	8.12
10	7311.00	33.2 AV	54.0	-20.8	1.38 H	267	25.08	8.12

**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	2390.00	72.1 PK	74.0	-1.9	2.04 V	360	77.33	-5.23
2	2390.00	53.6 AV	54.0	-0.4	2.04 V	360	58.83	-5.23
3	*2437.00	124.1 PK			2.04 V	360	129.18	-5.08
4	*2437.00	113.2 AV			2.04 V	360	118.28	-5.08
5	2483.50	70.5 PK	74.0	-3.5	2.04 V	360	75.42	-4.92
6	2483.50	51.2 AV	54.0	-2.8	2.04 V	360	56.12	-4.92
7	4874.00	52.4 PK	74.0	-21.6	1.58 V	231	51.03	1.37
8	4874.00	40.4 AV	54.0	-13.6	1.58 V	231	39.03	1.37
9	7311.00	44.4 PK	74.0	-29.6	1.26 V	200	36.28	8.12
10	7311.00	33.7 AV	54.0	-20.3	1.26 V	200	25.58	8.12

**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.

<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	44.2 PK	74.0	-29.8	1.24 H	172	49.43	-5.23
2	2390.00	33.6 AV	54.0	-20.4	1.24 H	172	38.83	-5.23
3	*2462.00	107.2 PK			1.24 H	172	112.20	-5.00
4	*2462.00	95.8 AV			1.24 H	172	100.80	-5.00
5	2483.50	61.2 PK	74.0	-12.8	1.24 H	172	66.12	-4.92
6	2483.50	36.0 AV	54.0	-18.0	1.24 H	172	40.92	-4.92
7	4924.00	45.8 PK	74.0	-28.2	1.47 H	154	44.27	1.53
8	4924.00	37.1 AV	54.0	-16.9	1.47 H	154	35.57	1.53
9	7386.00	40.7 PK	74.0	-33.3	1.41 H	257	32.48	8.22
10	7386.00	33.5 AV	54.0	-20.5	1.41 H	257	25.28	8.22

**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	56.7 PK	74.0	-17.3	2.00 V	263	61.93	-5.23
2	2390.00	44.5 AV	54.0	-9.5	2.00 V	263	49.73	-5.23
3	*2462.00	118.0 PK			2.00 V	360	123.00	-5.00
4	*2462.00	106.6 AV			2.00 V	360	111.60	-5.00
5	2483.50	73.7 PK	74.0	-0.3	2.00 V	263	78.62	-4.92
6	2483.50	48.5 AV	54.0	-5.5	2.00 V	263	53.42	-4.92
7	4924.00	52.0 PK	74.0	-22.0	1.61 V	216	50.47	1.53
8	4924.00	40.3 AV	54.0	-13.7	1.61 V	216	38.77	1.53
9	7386.00	44.4 PK	74.0	-29.6	1.22 V	202	36.18	8.22
10	7386.00	33.5 AV	54.0	-20.5	1.22 V	202	25.28	8.22

**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.

802.11n (HT20)

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	60.7 PK	74.0	-13.3	1.27 H	166	65.93	-5.23
2	2390.00	39.6 AV	54.0	-14.4	1.27 H	166	44.83	-5.23
3	*2412.00	105.9 PK			1.27 H	166	111.05	-5.15
4	*2412.00	94.8 AV			1.27 H	166	99.95	-5.15
5	4824.00	45.6 PK	74.0	-28.4	1.45 H	225	44.47	1.13
6	4824.00	36.8 AV	54.0	-17.2	1.45 H	225	35.67	1.13

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	73.2 PK	74.0	-0.8	2.07 V	360	78.43	-5.23
2	2390.00	52.1 AV	54.0	-1.9	2.07 V	360	57.33	-5.23
3	*2412.00	116.7 PK			2.07 V	360	121.85	-5.15
4	*2412.00	105.6 AV			2.07 V	360	110.75	-5.15
5	4824.00	52.3 PK	74.0	-21.7	1.58 V	206	51.17	1.13
6	4824.00	40.5 AV	54.0	-13.5	1.58 V	206	39.37	1.13

**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.

<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	59.8 PK	74.0	-14.2	1.26 H	180	65.03	-5.23
2	2390.00	41.2 AV	54.0	-12.8	1.26 H	180	46.43	-5.23
3	*2437.00	112.9 PK			1.26 H	180	117.98	-5.08
4	*2437.00	101.4 AV			1.26 H	180	106.48	-5.08
5	2483.50	58.1 PK	74.0	-15.9	1.26 H	180	63.02	-4.92
6	2483.50	39.1 AV	54.0	-14.9	1.26 H	180	44.02	-4.92
7	4874.00	46.0 PK	74.0	-28.0	1.44 H	142	44.63	1.37
8	4874.00	37.5 AV	54.0	-16.5	1.44 H	142	36.13	1.37
9	7311.00	40.6 PK	74.0	-33.4	1.45 H	261	32.48	8.12
10	7311.00	33.6 AV	54.0	-20.4	1.45 H	261	25.48	8.12

**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	2390.00	72.3 PK	74.0	-1.7	2.04 V	360	77.53	-5.23
2	2390.00	53.7 AV	54.0	-0.3	2.04 V	360	58.93	-5.23
3	*2437.00	123.7 PK			2.04 V	360	128.78	-5.08
4	*2437.00	112.2 AV			2.04 V	360	117.28	-5.08
5	2483.50	70.6 PK	74.0	-3.4	2.04 V	360	75.52	-4.92
6	2483.50	51.6 AV	54.0	-2.4	2.04 V	360	56.52	-4.92
7	4874.00	52.2 PK	74.0	-21.8	1.60 V	230	50.83	1.37
8	4874.00	40.3 AV	54.0	-13.7	1.60 V	230	38.93	1.37
9	7311.00	43.8 PK	74.0	-30.2	1.21 V	194	35.68	8.12
10	7311.00	33.1 AV	54.0	-20.9	1.21 V	194	24.98	8.12

**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.



<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	104.8 PK			1.21 H	190	109.80	-5.00
2	*2462.00	93.7 AV			1.21 H	190	98.70	-5.00
3	2483.50	60.9 PK	74.0	-13.1	1.21 H	190	65.82	-4.92
4	2483.50	33.7 AV	54.0	-20.3	1.21 H	190	38.62	-4.92
5	4924.00	46.0 PK	74.0	-28.0	1.41 H	139	44.47	1.53
6	4924.00	37.8 AV	54.0	-16.2	1.41 H	139	36.27	1.53
7	7386.00	40.5 PK	74.0	-33.5	1.43 H	245	32.28	8.22
8	7386.00	33.7 AV	54.0	-20.3	1.43 H	245	25.48	8.22

**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	115.6 PK			2.01 V	360	120.60	-5.00
2	*2462.00	104.5 AV			2.01 V	360	109.50	-5.00
3	2483.50	73.4 PK	74.0	-0.6	2.01 V	360	78.32	-4.92
4	2483.50	46.2 AV	54.0	-7.8	2.01 V	360	51.12	-4.92
5	4924.00	51.5 PK	74.0	-22.5	1.56 V	237	49.97	1.53
6	4924.00	39.8 AV	54.0	-14.2	1.56 V	237	38.27	1.53
7	7386.00	43.8 PK	74.0	-30.2	1.21 V	205	35.58	8.22
8	7386.00	33.3 AV	54.0	-20.7	1.21 V	205	25.08	8.22

**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.

**802.11n (HT40)**

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

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	63.2 PK	74.0	-10.8	1.25 H	175	68.43	-5.23
2	2390.00	41.3 AV	54.0	-12.7	1.25 H	175	46.53	-5.23
3	*2422.00	102.8 PK			1.25 H	175	107.92	-5.12
4	*2422.00	90.9 AV			1.25 H	175	96.02	-5.12
5	4844.00	46.3 PK	74.0	-27.7	1.43 H	141	45.08	1.22
6	4844.00	37.9 AV	54.0	-16.1	1.43 H	141	36.68	1.22
7	7266.00	41.0 PK	74.0	-33.0	1.46 H	259	32.95	8.05
8	7266.00	34.0 AV	54.0	-20.0	1.46 H	259	25.95	8.05

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	73.7 PK	74.0	-0.3	1.69 V	360	78.93	-5.23
2	<b>2390.00</b>	<b>53.8 AV</b>	<b>54.0</b>	<b>-0.2</b>	<b>1.69 V</b>	<b>360</b>	<b>59.03</b>	<b>-5.23</b>
3	*2422.00	113.6 PK			1.69 V	360	118.72	-5.12
4	*2422.00	101.7 AV			1.69 V	360	106.82	-5.12
5	4844.00	51.9 PK	74.0	-22.1	1.52 V	249	50.68	1.22
6	4844.00	40.2 AV	54.0	-13.8	1.52 V	249	38.98	1.22
7	7266.00	44.5 PK	74.0	-29.5	1.16 V	203	36.45	8.05
8	7266.00	33.8 AV	54.0	-20.2	1.16 V	203	25.75	8.05

**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.

<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	58.4 PK	74.0	-15.6	1.19 H	163	63.63	-5.23
2	2390.00	38.6 AV	54.0	-15.4	1.19 H	163	43.83	-5.23
3	*2437.00	104.2 PK			1.19 H	163	109.28	-5.08
4	*2437.00	92.8 AV			1.19 H	163	97.88	-5.08
5	2483.50	60.9 PK	74.0	-13.1	1.19 H	163	65.82	-4.92
6	2483.50	38.1 AV	54.0	-15.9	1.19 H	163	43.02	-4.92
7	4874.00	45.7 PK	74.0	-28.3	1.40 H	136	44.33	1.37
8	4874.00	37.6 AV	54.0	-16.4	1.40 H	136	36.23	1.37
9	7311.00	40.3 PK	74.0	-33.7	1.45 H	263	32.18	8.12
10	7311.00	33.5 AV	54.0	-20.5	1.45 H	263	25.38	8.12

**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	2390.00	70.9 PK	74.0	-3.1	1.67 V	360	76.13	-5.23
2	2390.00	51.1 AV	54.0	-2.9	1.67 V	360	56.33	-5.23
3	*2437.00	115.0 PK			1.67 V	360	120.08	-5.08
4	*2437.00	103.7 AV			1.67 V	360	108.78	-5.08
5	2483.50	73.4 PK	74.0	-0.6	1.67 V	360	78.32	-4.92
6	2483.50	50.6 AV	54.0	-3.4	1.67 V	360	55.52	-4.92
7	4874.00	52.1 PK	74.0	-21.9	1.50 V	264	50.73	1.37
8	4874.00	40.4 AV	54.0	-13.6	1.50 V	264	39.03	1.37
9	7311.00	44.8 PK	74.0	-29.2	1.16 V	188	36.68	8.12
10	7311.00	33.9 AV	54.0	-20.1	1.16 V	188	25.78	8.12

**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.

<b>CHANNEL</b>	TX Channel 9	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	100.6 PK			1.24 H	155	105.63	-5.03
2	*2452.00	89.8 AV			1.24 H	155	94.83	-5.03
3	2483.50	63.3 PK	74.0	-10.7	1.24 H	155	68.22	-4.92
4	2483.50	39.9 AV	54.0	-14.1	1.24 H	155	44.82	-4.92
5	4904.00	45.4 PK	74.0	-28.6	1.44 H	147	43.91	1.49
6	4904.00	37.3 AV	54.0	-16.7	1.44 H	147	35.81	1.49
7	7356.00	40.1 PK	74.0	-33.9	1.49 H	248	31.92	8.18
8	7356.00	33.2 AV	54.0	-20.8	1.49 H	248	25.02	8.18

**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	111.4 PK			1.68 V	360	116.43	-5.03
2	*2452.00	100.6 AV			1.68 V	360	105.63	-5.03
<b>3</b>	<b>2483.50</b>	<b>73.8 PK</b>	<b>74.0</b>	<b>-0.2</b>	<b>1.68 V</b>	<b>360</b>	<b>78.72</b>	<b>-4.92</b>
4	2483.50	50.4 AV	54.0	-3.6	1.68 V	360	55.32	-4.92
5	4904.00	51.9 PK	74.0	-22.1	1.54 V	263	50.41	1.49
6	4904.00	40.1 AV	54.0	-13.9	1.54 V	263	38.61	1.49
7	7356.00	44.5 PK	74.0	-29.5	1.13 V	195	36.32	8.18
8	7356.00	33.6 AV	54.0	-20.4	1.13 V	195	25.42	8.18

**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.

**Below 1GHz Data**

**CDD Mode**

**802.11b**

<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	Below 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	131.22	32.8 QP	43.5	-10.7	2.00 H	291	46.94	-14.10
2	179.67	36.0 QP	43.5	-7.5	2.00 H	36	50.39	-14.41
3	210.71	34.7 QP	43.5	-8.9	1.00 H	246	50.67	-16.02
4	479.98	30.1 QP	46.0	-15.9	2.00 H	103	37.42	-7.28
5	625.00	33.2 QP	46.0	-12.8	1.00 H	0	36.92	-3.74
6	750.03	36.5 QP	46.0	-9.5	1.00 H	360	37.73	-1.21

**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	167.21	32.3 QP	43.5	-11.2	1.00 V	317	45.64	-13.36
2	210.27	31.0 QP	43.5	-12.5	1.00 V	249	47.03	-16.02
3	375.03	25.9 QP	46.0	-20.1	1.50 V	0	35.88	-9.97
4	500.01	28.3 QP	46.0	-17.7	1.00 V	51	35.15	-6.83
5	749.98	34.1 QP	46.0	-11.9	1.50 V	0	35.31	-1.21
6	874.97	33.8 QP	46.0	-12.3	1.00 V	48	33.50	0.25

**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 (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	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.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	100375	May 06, 2015	May 05, 2016
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Sep. 15, 2014	Sep. 14, 2015
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 11, 2015	June 10, 2016
RF Cable	5D-FB	COCCAB-001	Mar. 09, 2015	Mar. 08, 2016
50 ohms Terminator	N/A	EMC-03	Sep. 22, 2014	Sep. 21, 2015
50 ohms Terminator	N/A	EMC-02	Sep. 30, 2014	Sep. 29, 2015
Software BVADT	BVADT_Cond_ V7.3.7.3	NA	NA	NA

#### Note:

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: July 15, 2015

4.2.3 Test Procedures

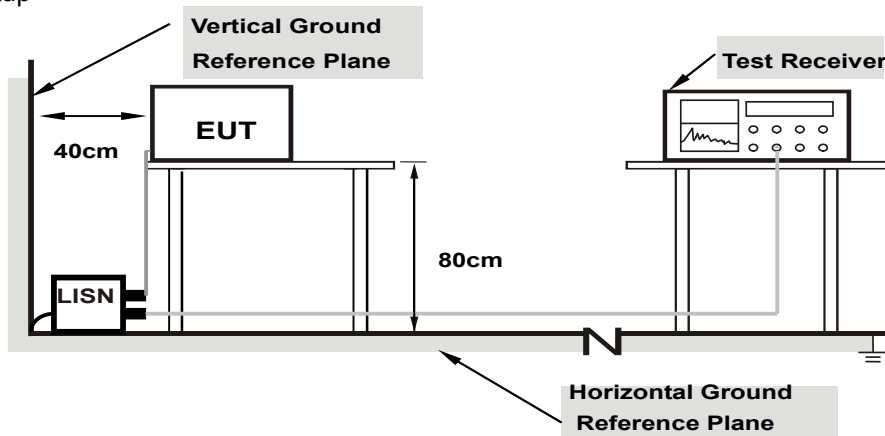
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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:** The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



**Note:** 1.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.

4.2.7 Test Results

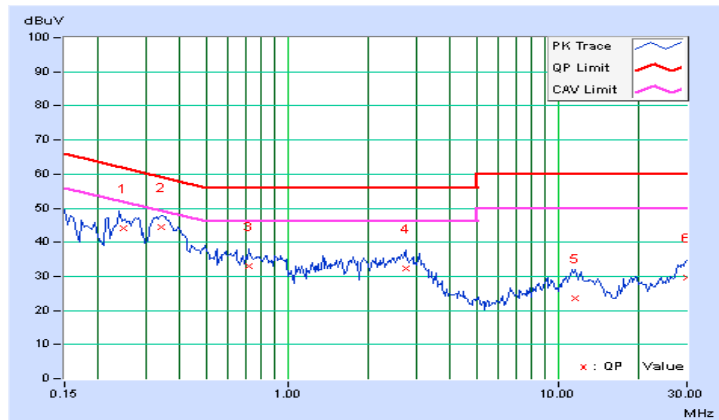
**CDD Mode**

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	----------	-------------------	--------------------------------

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.24872	0.09	43.91	37.01	44.00	37.10	61.80	51.80	-17.80	-14.70
2	0.34141	0.10	44.49	34.82	44.59	34.92	59.17	49.17	-14.58	-14.25
3	0.71641	0.12	32.99	24.58	33.11	24.70	56.00	46.00	-22.89	-21.30
4	2.72656	0.19	32.24	26.26	32.43	26.45	56.00	46.00	-23.57	-19.55
5	11.64453	0.49	23.15	17.01	23.64	17.50	60.00	50.00	-36.36	-32.50
6	29.84766	0.92	28.72	23.70	29.64	24.62	60.00	50.00	-30.36	-25.38

**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



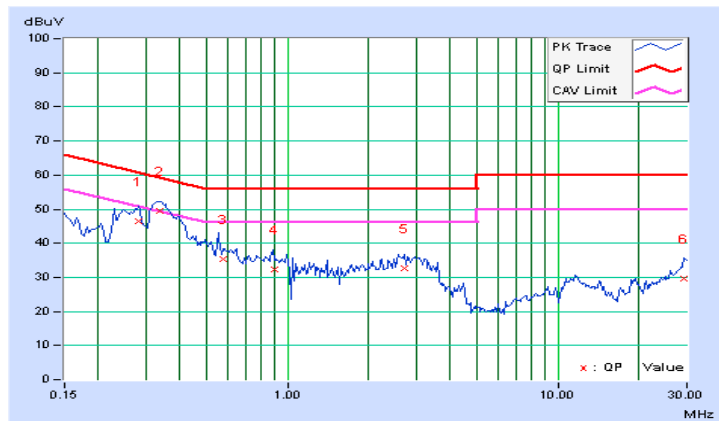


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.28281	0.09	46.40	36.30	46.49	36.39	60.73	50.73	-14.24	-14.34
2	0.33750	0.09	49.43	41.15	49.52	41.24	59.26	49.26	-9.74	-8.02
3	0.57512	0.11	35.22	27.50	35.33	27.61	56.00	46.00	-20.67	-18.39
4	0.89425	0.12	32.25	23.73	32.37	23.85	56.00	46.00	-23.63	-22.15
5	2.71875	0.19	32.48	26.34	32.67	26.53	56.00	46.00	-23.33	-19.47
6	29.30859	0.96	28.69	23.54	29.65	24.50	60.00	50.00	-30.35	-25.50

**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

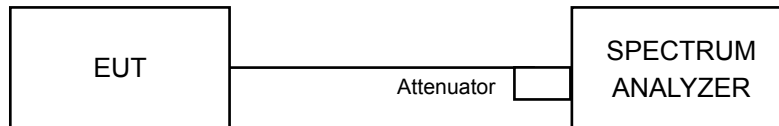


### 4.3 6dB Bandwidth Measurement

#### 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.

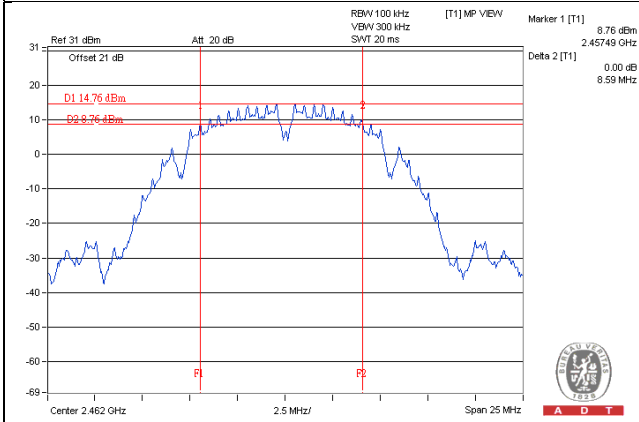
#### 4.3.7 Test Result

##### CDD Mode

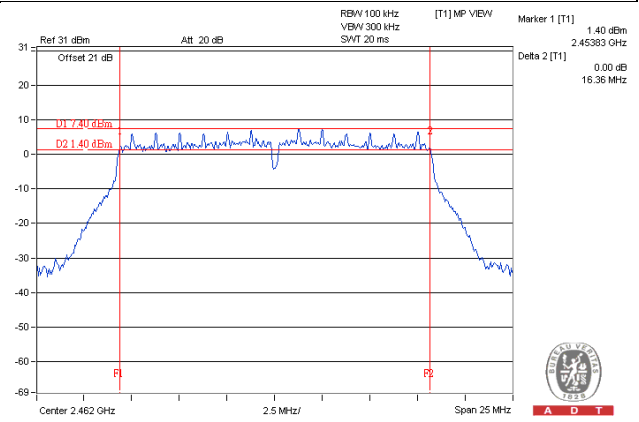
Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
<b>802.11b</b>						
1	2412	9.08	9.07	9.06	0.5	Pass
6	2437	9.13	8.62	9.10	0.5	Pass
11	2462	8.61	9.05	8.59	0.5	Pass
<b>802.11g</b>						
1	2412	16.43	16.41	16.40	0.5	Pass
6	2437	16.39	16.38	16.40	0.5	Pass
11	2462	16.42	16.41	16.36	0.5	Pass
<b>802.11n (HT20)</b>						
1	2412	17.66	17.68	17.63	0.5	Pass
6	2437	17.64	17.64	17.62	0.5	Pass
11	2462	17.63	17.64	17.59	0.5	Pass
<b>802.11n (HT40)</b>						
3	2422	35.84	36.48	36.46	0.5	Pass
6	2437	36.43	36.41	36.45	0.5	Pass
9	2452	36.40	36.38	36.11	0.5	Pass

### Spectrum Plot of Worst Value

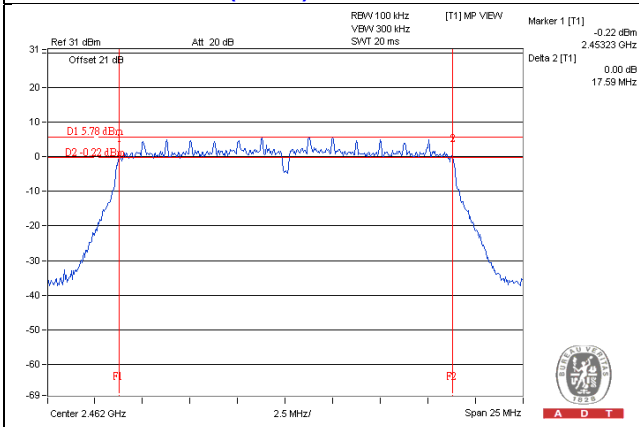
#### 802.11b – Chain 2: CH 11



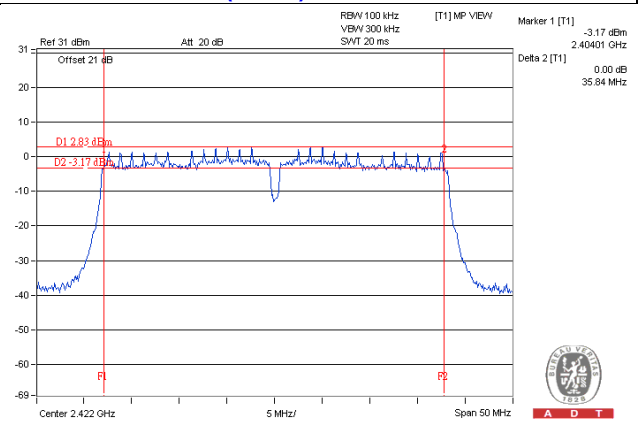
#### 802.11g – Chain 2: CH 11



#### 802.11n (HT20) – Chain 2: CH 11



#### 802.11n (HT40) – Chain 0: CH 3



## 4.4 Conducted Output Power Measurement

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

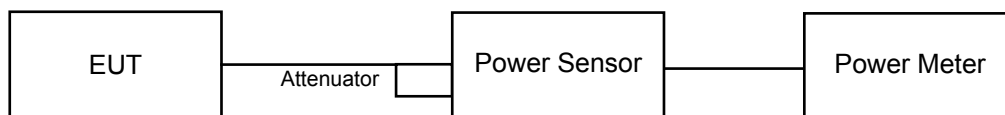
Array Gain = 0 dB (i.e., no array gain) for  $NANT \leq 4$ ;

Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq 40$  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

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

##### CDD Mode

Channel	Frequency (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
<b>802.11b</b>								
1	2412	24.44	24.80	25.25	914.931	29.61	30	Pass
6	2437	25.70	25.31	24.35	983.43	29.93	30	Pass
11	2462	24.01	24.19	24.79	815.491	29.11	30	Pass
<b>802.11g</b>								
1	2412	19.49	20.25	20.72	312.877	24.95	30	Pass
6	2437	25.44	24.80	24.33	922.959	29.65	30	Pass
11	2462	18.83	19.49	20.08	267.163	24.27	30	Pass
<b>802.11n (HT20)</b>								
1	2412	17.22	17.60	18.41	179.61	22.54	30	Pass
6	2437	25.36	24.79	24.35	917.129	29.62	30	Pass
11	2462	17.49	17.70	18.67	188.61	22.76	30	Pass
<b>802.11n (HT40)</b>								
3	2422	16.57	16.95	17.93	157.026	21.96	30	Pass
6	2437	18.66	19.23	19.80	252.703	24.03	30	Pass
9	2452	16.10	16.53	17.04	136.298	21.34	30	Pass

##### Beamforming Mode

Channel	Frequency (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
<b>VHT20</b>								
1	2412	16.75	17.15	17.96	161.712	22.09	30	Pass
6	2437	25.36	24.79	24.35	917.129	29.62	30	Pass
11	2462	17.04	17.24	18.26	170.536	22.32	30	Pass
<b>VHT40</b>								
3	2422	16.07	16.45	17.45	140.205	21.47	30	Pass
6	2437	18.16	18.75	19.30	225.567	23.53	30	Pass
9	2452	15.60	16.07	16.54	121.848	20.86	30	Pass

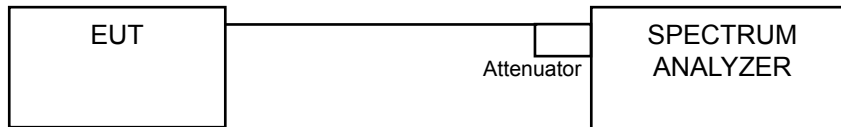
**NOTE:** Directional gain =  $0.5\text{dBi} + 10\log(3) = 5.27\text{dBi} < 6\text{dBi}$  , so the power limit shall not be reduced.

## 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

#### For AVG. power (duty cycle $\geq$ 98%)

- Set instrument center frequency to DTS channel center frequency.
- Set span to at least 1.5 times the OBW.
- Set RBW to:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- Set VBW  $\geq 3 \times \text{RBW}$ .
- Detector = power averaging (RMS) or sample detector (when RMS not available).
- Ensure that the number of measurement points in the sweep  $\geq 2 \times \text{span}/\text{RBW}$ .
- Sweep time = auto couple.
- Employ trace averaging (RMS) mode over a minimum of 100 traces.
- Use the peak marker function to determine the maximum amplitude level.

#### For AVG. power (duty cycle $<$ 98%)

- Measure the duty cycle (x).
- Set instrument center frequency to DTS channel center frequency.
- Set span to at least 1.5 times the OBW.
- Set RBW to:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- Set VBW  $\geq 3 \times \text{RBW}$ .
- Detector = power averaging (RMS) or sample detector (when RMS not available).
- Ensure that the number of measurement points in the sweep  $\geq 2 \times \text{span}/\text{RBW}$ .
- Sweep time = auto couple.
- Do not use sweep triggering. Allow sweep to "free run".
- Employ trace averaging (RMS) mode over a minimum of 100 traces.
- Use the peak marker function to determine the maximum amplitude level.
- Add  $10 \log(1/x)$ , where x is the duty cycle measured in step (a), to the measured PSD to compute the average PSD during the actual transmission time.

### 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**
**CDD Mode**

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
<b>802.11b</b>							
0	1	2412	-3.54	4.77	1.23	8	Pass
	6	2437	-3.04	4.77	1.73	8	Pass
	11	2462	-4.18	4.77	0.59	8	Pass
1	1	2412	-4.13	4.77	0.64	8	Pass
	6	2437	-3.02	4.77	1.75	8	Pass
	11	2462	-4.58	4.77	0.19	8	Pass
2	1	2412	-4.16	4.77	0.61	8	Pass
	6	2437	-2.93	4.77	1.84	8	Pass
	11	2462	-4.69	4.77	0.08	8	Pass
<b>802.11g</b>							
0	1	2412	-9.54	4.77	-4.77	8	Pass
	6	2437	-3.44	4.77	1.33	8	Pass
	11	2462	-9.70	4.77	-4.93	8	Pass
1	1	2412	-9.39	4.77	-4.62	8	Pass
	6	2437	-4.47	4.77	0.30	8	Pass
	11	2462	-10.30	4.77	-5.53	8	Pass
2	1	2412	-10.43	4.77	-5.66	8	Pass
	6	2437	-4.80	4.77	-0.03	8	Pass
	11	2462	-10.91	4.77	-6.14	8	Pass
<b>802.11n (HT20)</b>							
0	1	2412	-12.73	4.77	-7.96	8	Pass
	6	2437	-5.31	4.77	-0.54	8	Pass
	11	2462	-12.51	4.77	-7.74	8	Pass
1	1	2412	-13.30	4.77	-8.53	8	Pass
	6	2437	-6.23	4.77	-1.46	8	Pass
	11	2462	-13.08	4.77	-8.31	8	Pass
2	1	2412	-13.32	4.77	-8.55	8	Pass
	6	2437	-6.03	4.77	-1.26	8	Pass
	11	2462	-13.68	4.77	-8.91	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 = 0.5dBi + 10log(3) = 5.27dBi < 6dBi , so the power density limit shall not be reduced.

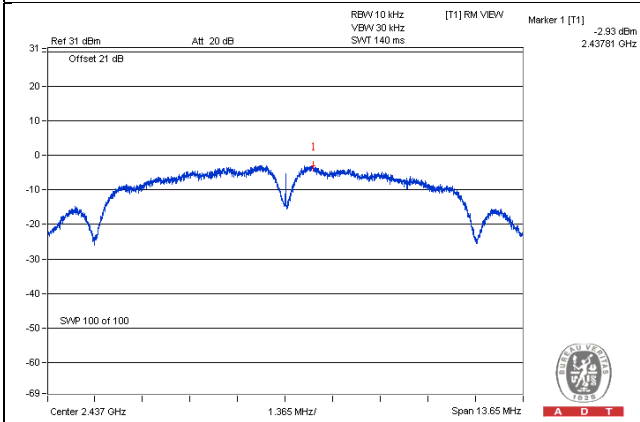


TX chain	Channel	Freq. (MHz)	PSD w/o Duty Factor (dBm)	10 log (N=3) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm)	Limit (dBm)	Pass /Fail
<b>802.11n (HT40)</b>								
0	3	2422	-16.12	4.77	0.17	-11.18	8	Pass
	6	2437	-14.31	4.77	0.17	-9.37	8	Pass
	9	2452	-16.81	4.77	0.17	-11.87	8	Pass
1	3	2422	-16.01	4.77	0.17	-11.07	8	Pass
	6	2437	-14.08	4.77	0.17	-9.14	8	Pass
	9	2452	-16.73	4.77	0.17	-11.79	8	Pass
2	3	2422	-14.98	4.77	0.17	-10.04	8	Pass
	6	2437	-14.56	4.77	0.17	-9.62	8	Pass
	9	2452	-15.81	4.77	0.17	-10.87	8	Pass

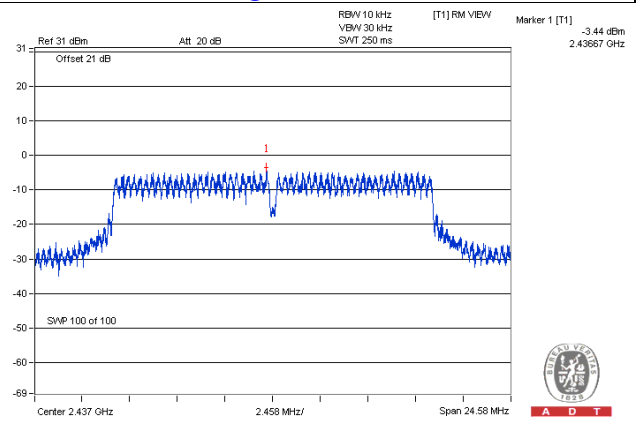
- Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain =  $0.5\text{dBi} + 10\log(3) = 5.27\text{dBi} < 6\text{dBi}$  , so the power density limit shall not be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

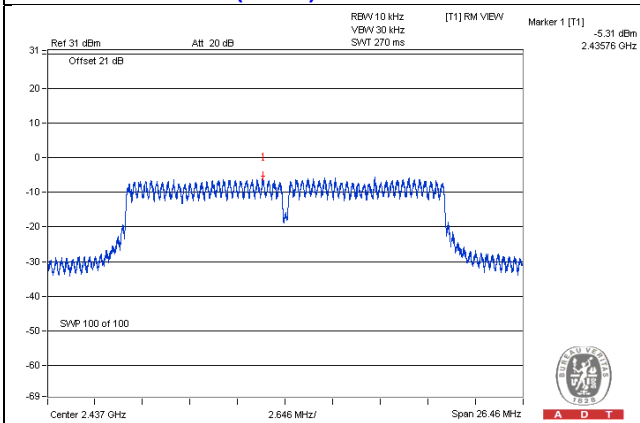
802.11b – Chain 2: CH 6



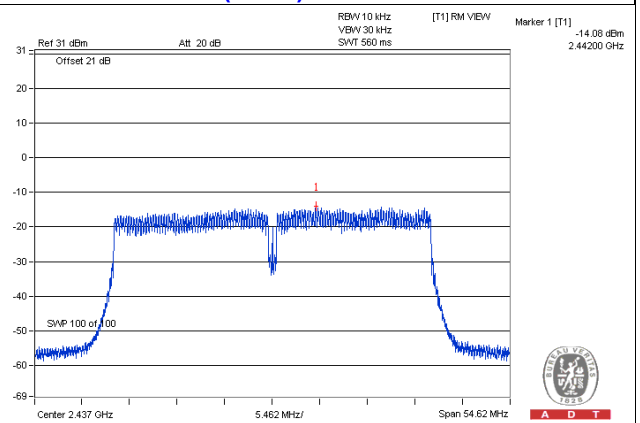
802.11g – Chain 0: CH 6



802.11n (HT20) – Chain 0: CH 6



802.11n (HT40) – Chain 1: CH 6

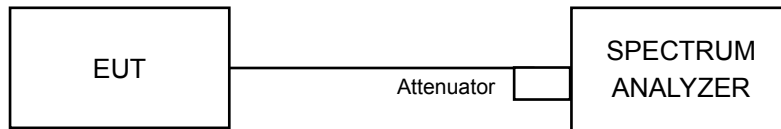


## 4.6 Conducted Out of Band Emission Measurement

### 4.6.1 Limits of Conducted Out of Band Emission Measurement

Below 30dB 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 OOBE

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.

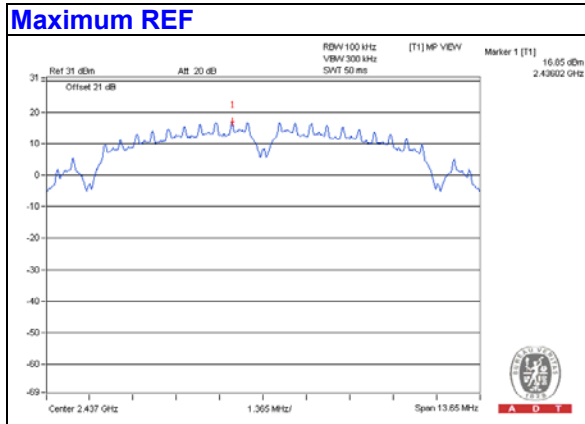
### 4.6.6 EUT Operating Condition

Same as Item 4.3.6

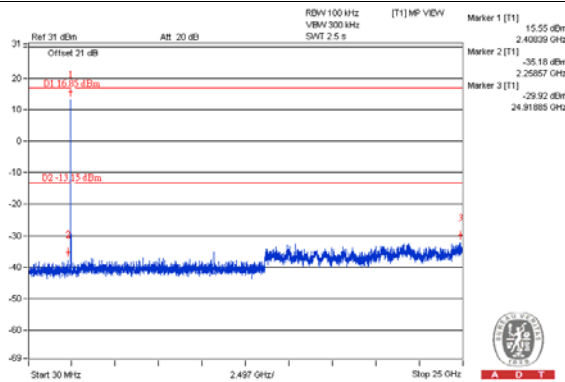
### 4.6.7 Test Results

The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

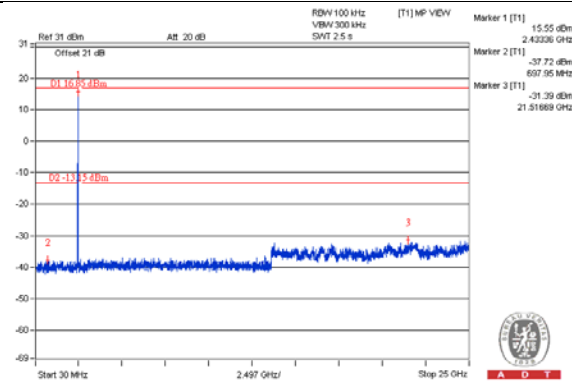
**CDD Mode**  
**802.11b**



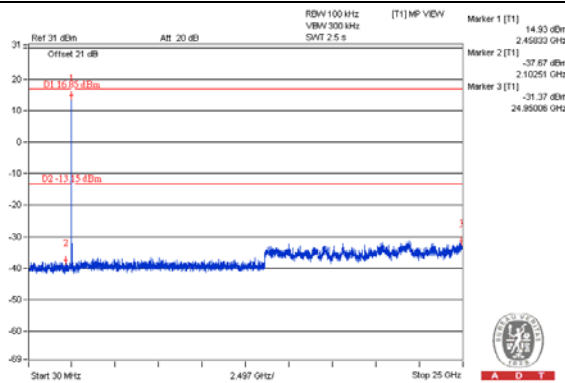
**Chain 0**  
**CH 1**



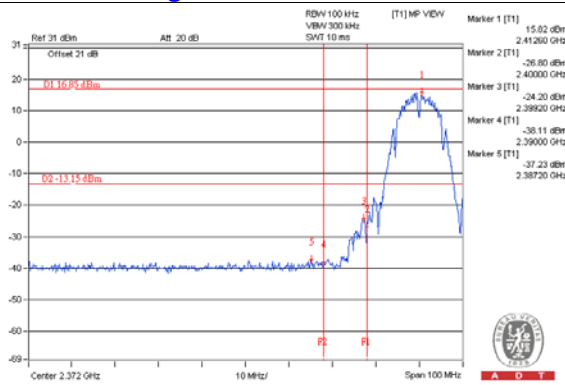
**CH 6**



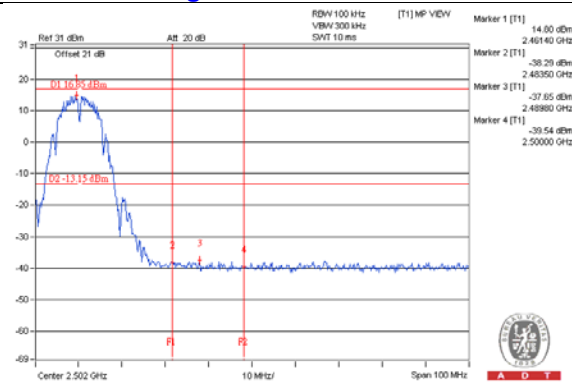
**CH 11**



**CH 1 Band edge**



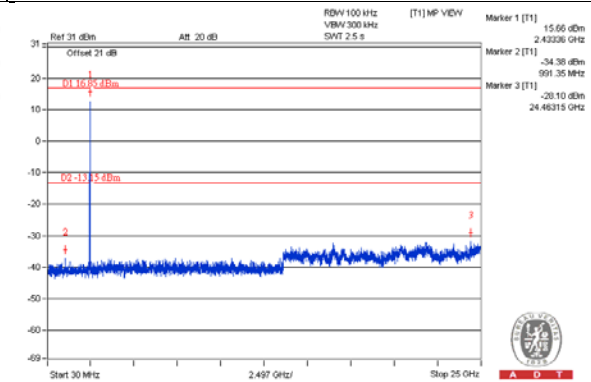
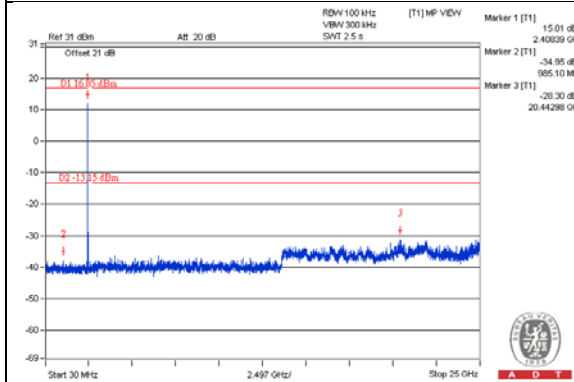
**CH 11 Band edge**



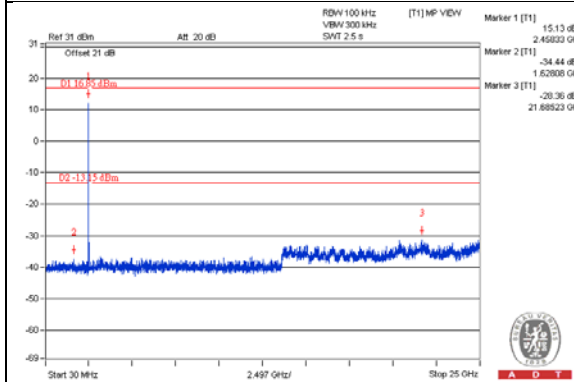
**Chain 1**

**CH 1**

**CH 6**

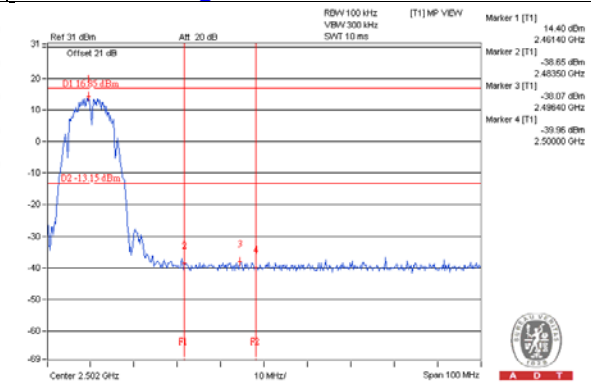
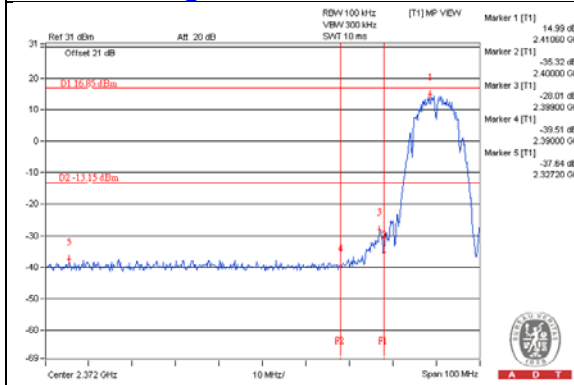


**CH 11**



**CH 1 Band edge**

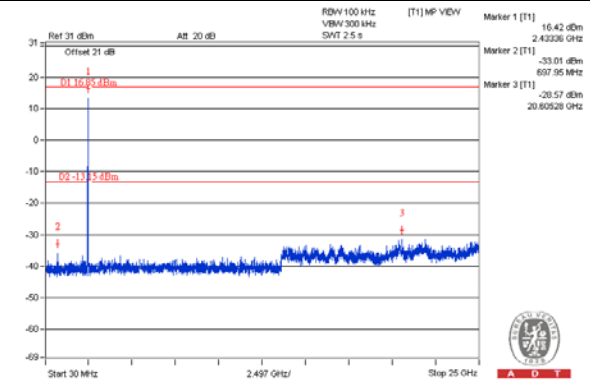
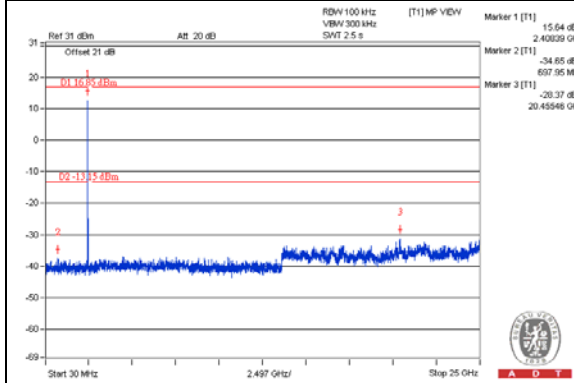
**CH 11 Band edge**



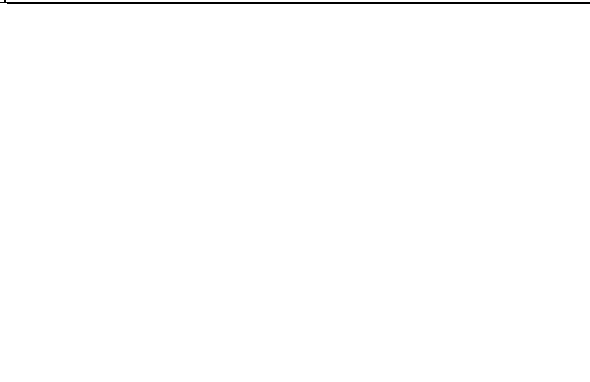
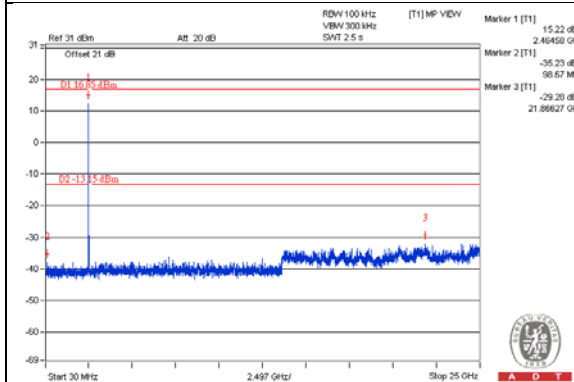
**Chain 2**

**CH 1**

**CH 6**

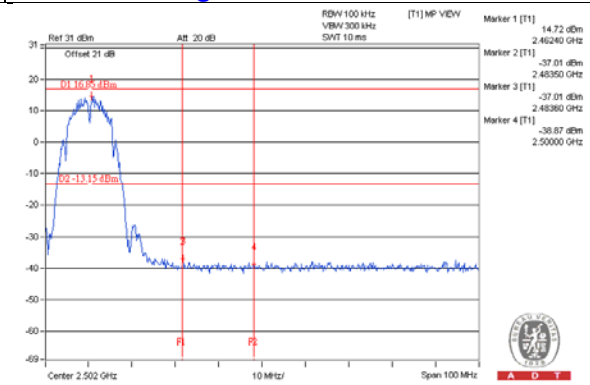
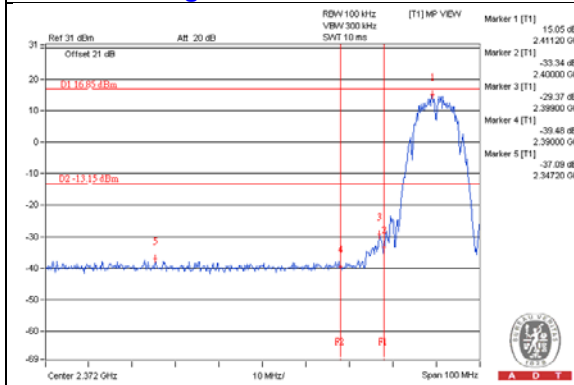


**CH 11**

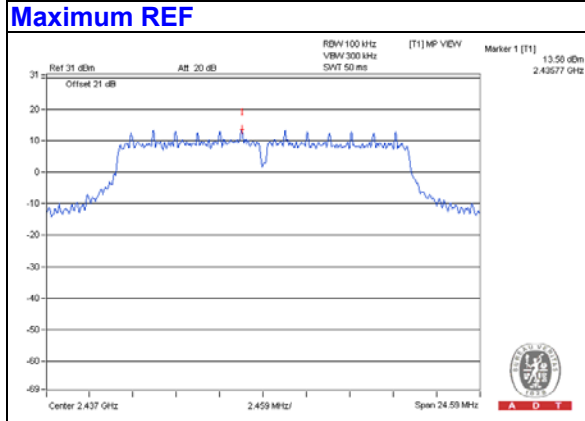


**CH 1 Band edge**

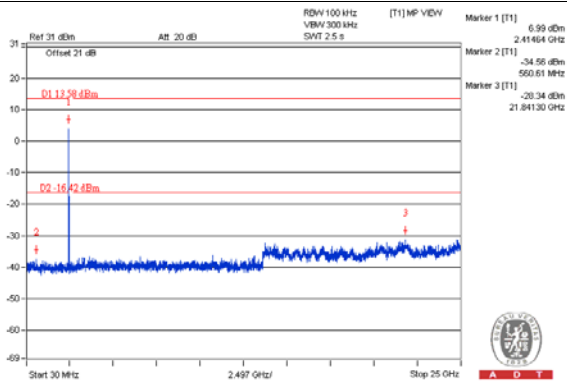
**CH 11 Band edge**



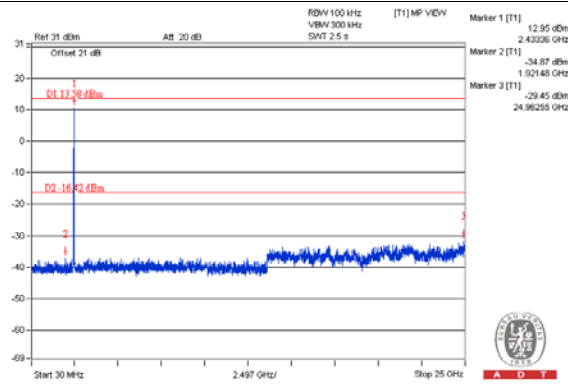
802.11g



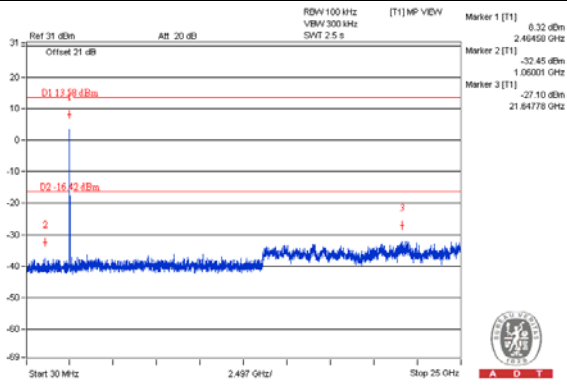
**Chain 0**  
**CH 1**



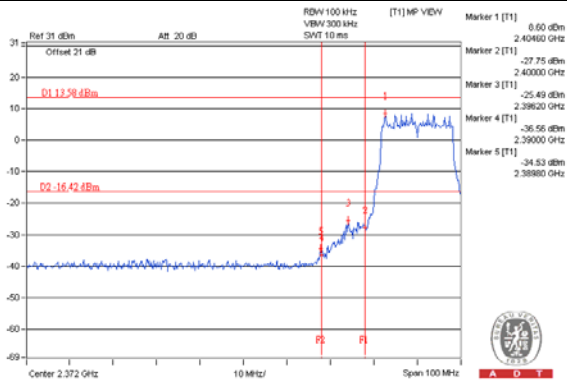
**CH 6**



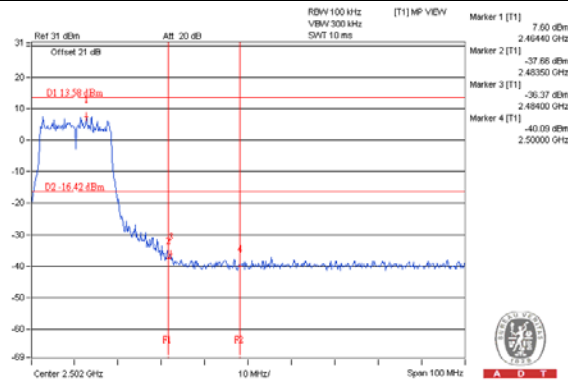
**CH 11**



**CH 1 Band edge**



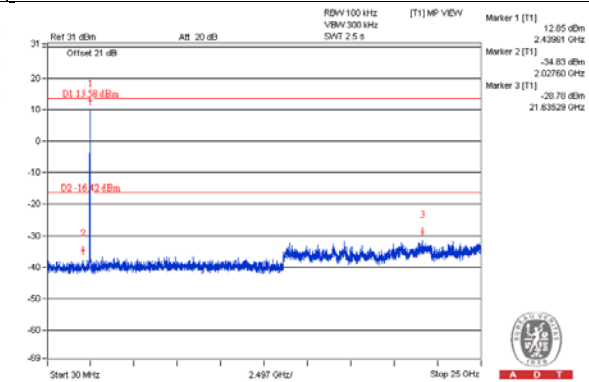
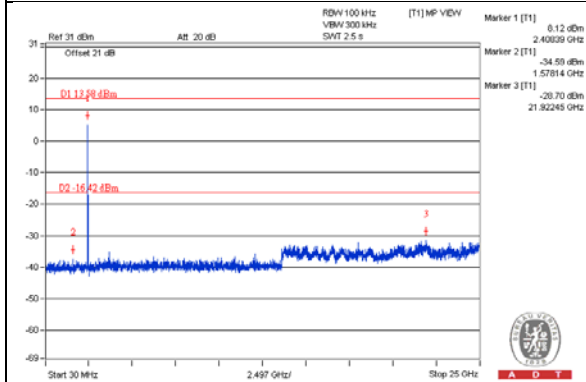
**CH 11 Band edge**



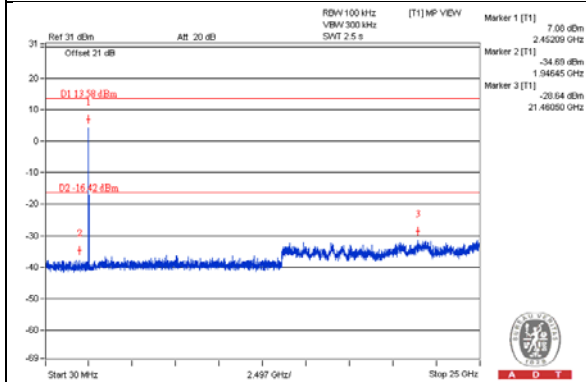
**Chain 1**

**CH 1**

**CH 6**

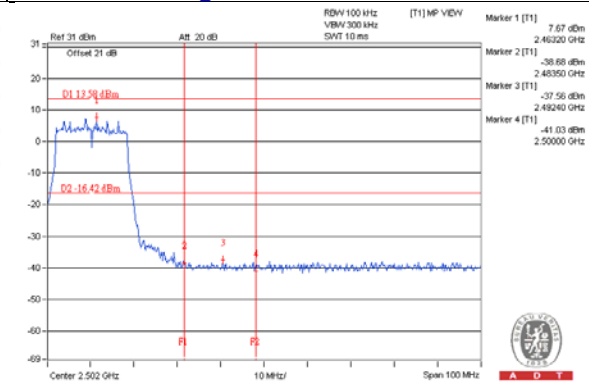
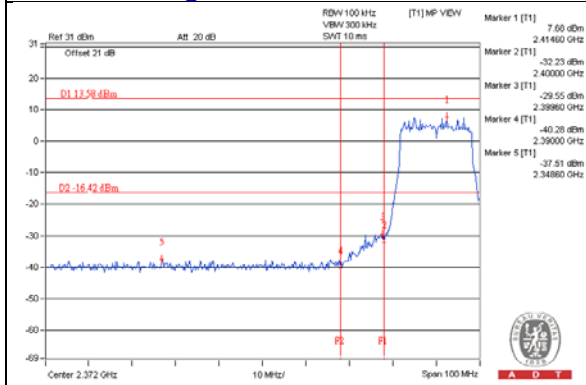


**CH 11**



**CH 1 Band edge**

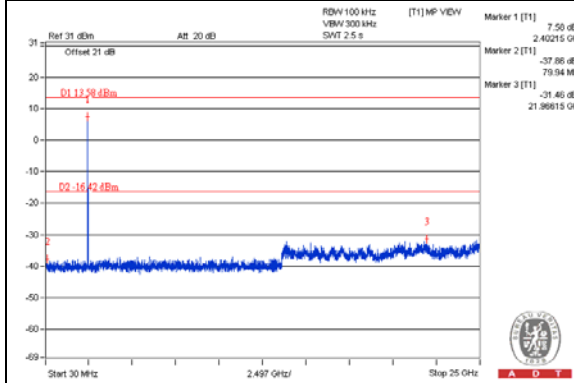
**CH 11 Band edge**



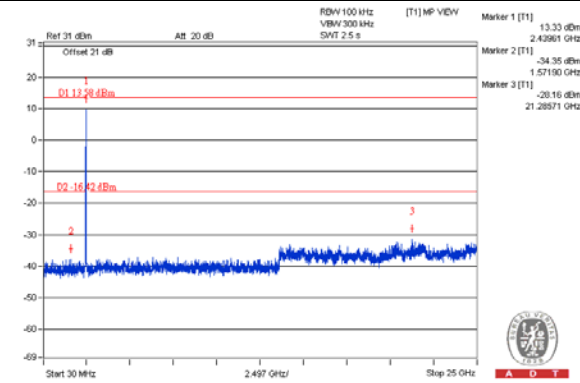


**Chain 2**

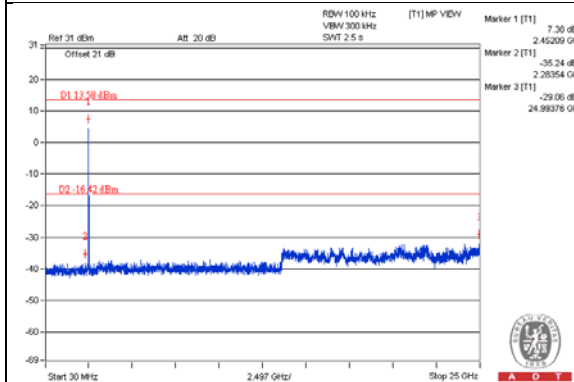
**CH 1**



**CH 6**

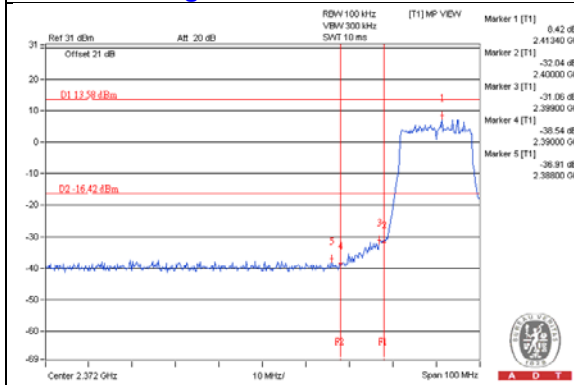


**CH 11**

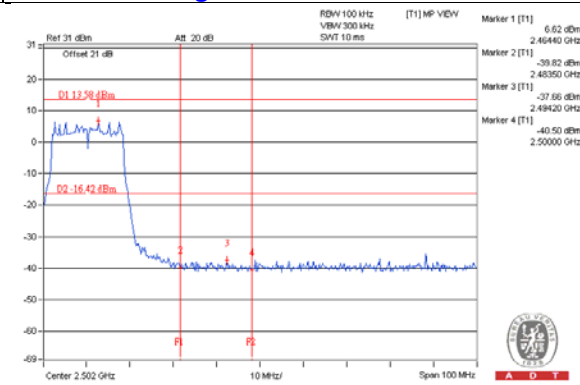


**CH 11 Band edge**

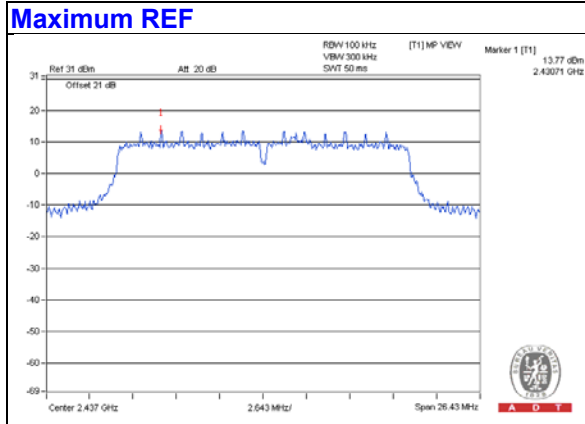
**CH 1 Band edge**



**CH 11 Band edge**

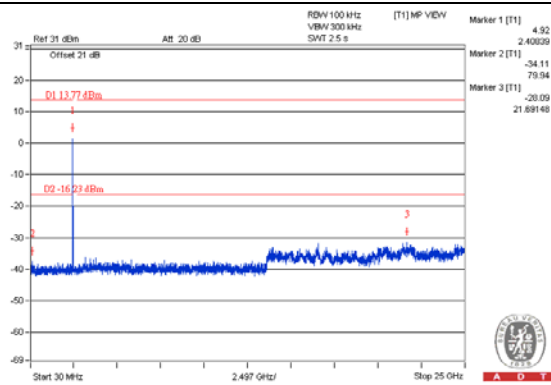


802.11n (HT20)

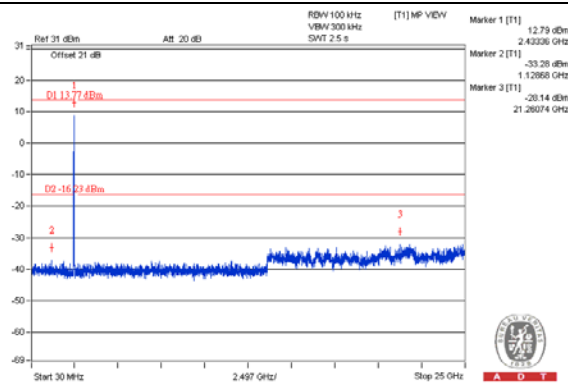


### Chain 0

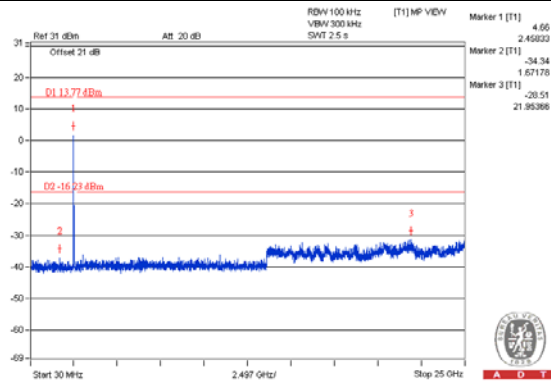
#### CH 1



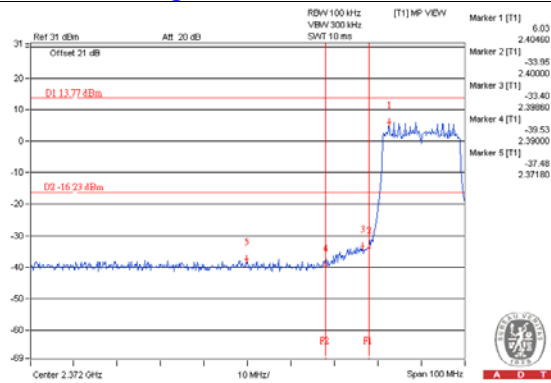
#### CH 6



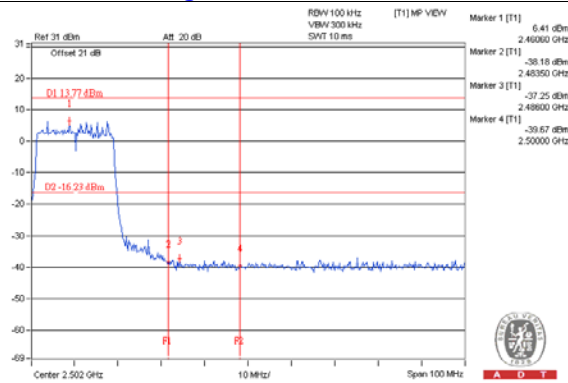
#### CH 11



#### CH 1 Band edge



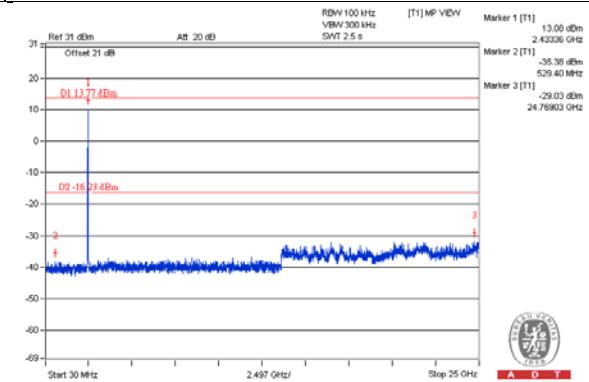
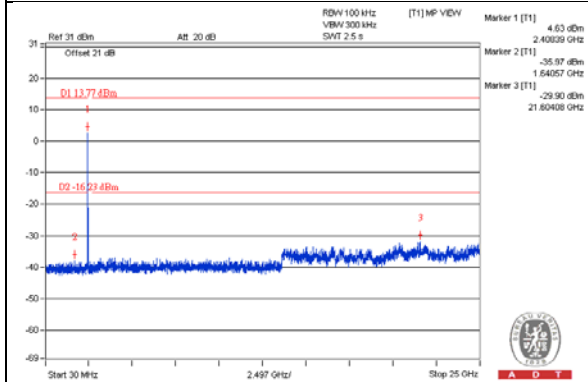
#### CH 11 Band edge



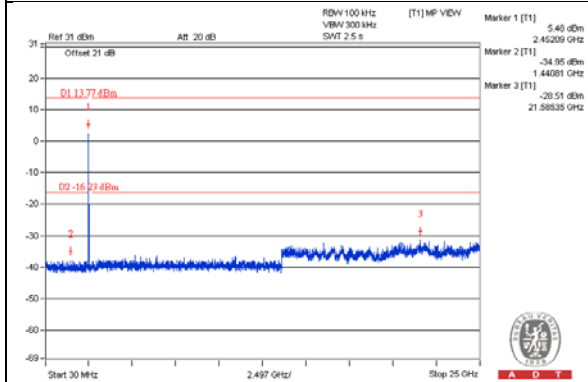
**Chain 1**

**CH 1**

**CH 6**

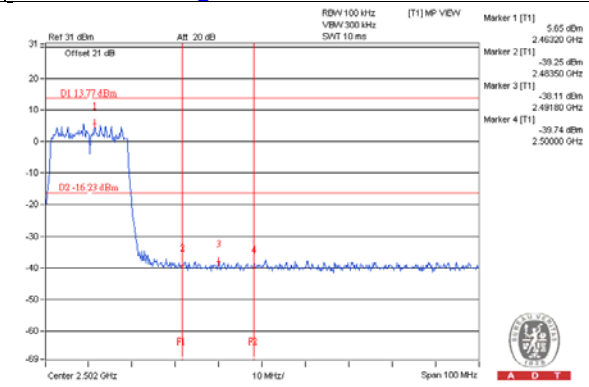
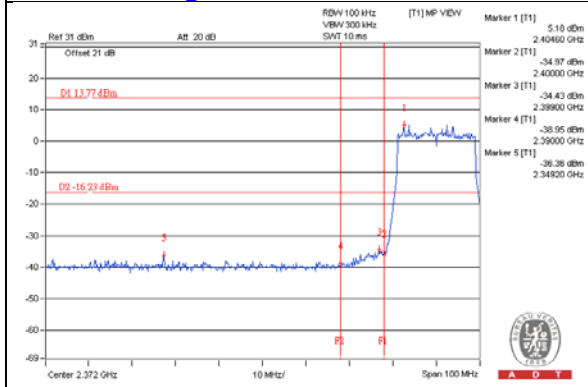


**CH 11**



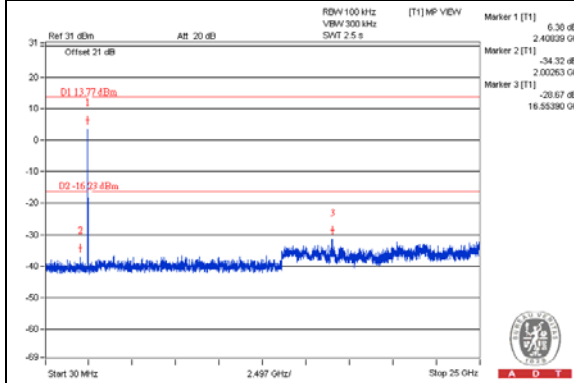
**CH 1 Band edge**

**CH 11 Band edge**

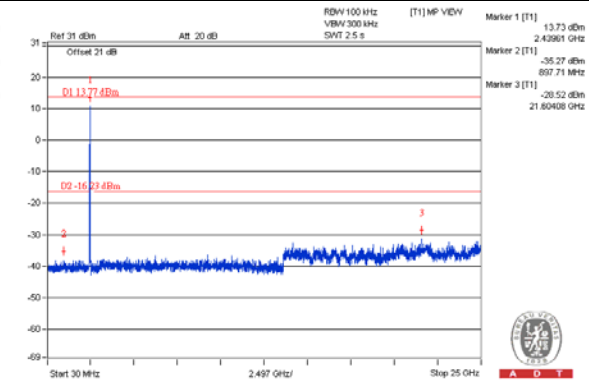


**Chain 2**

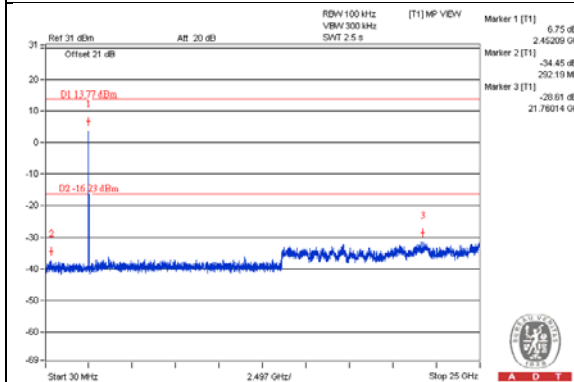
**CH 1**



**CH 6**

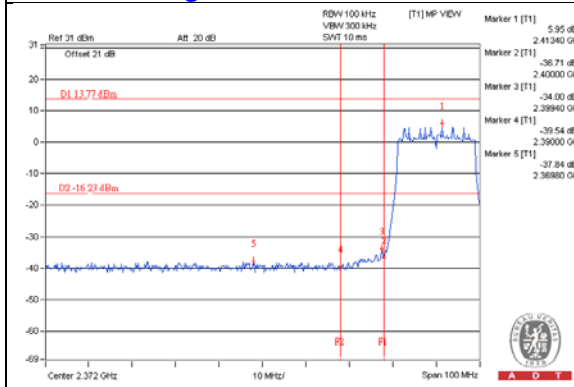


**CH 11**

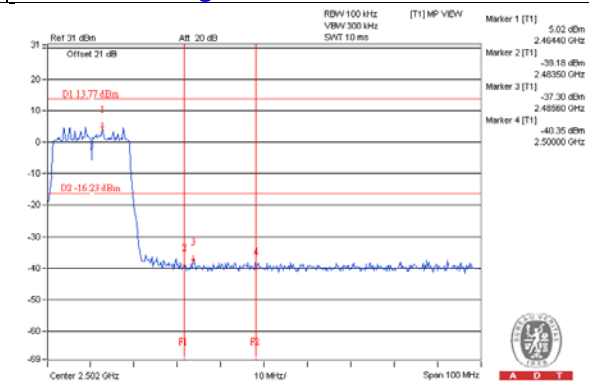


**CH 11 Band edge**

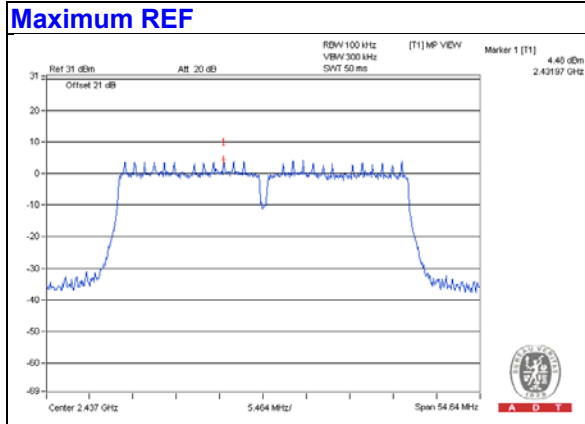
**CH 1 Band edge**



**CH 11 Band edge**

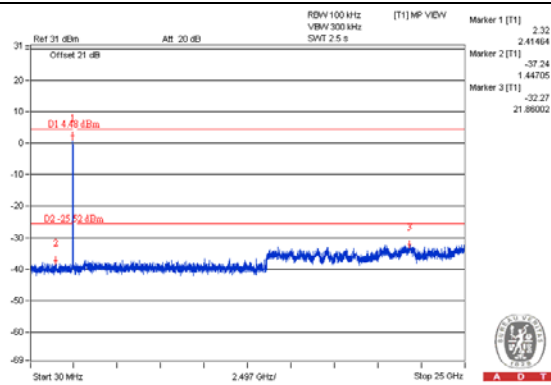


802.11n (HT40)

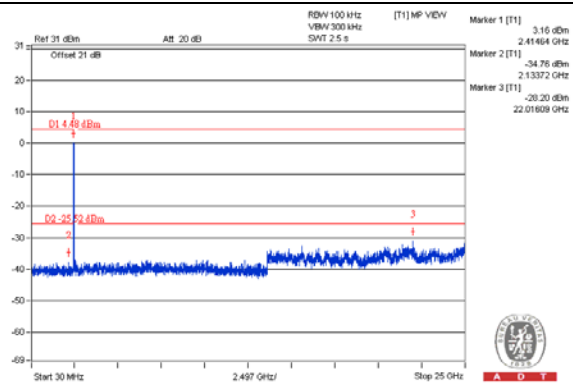


**Chain 0**

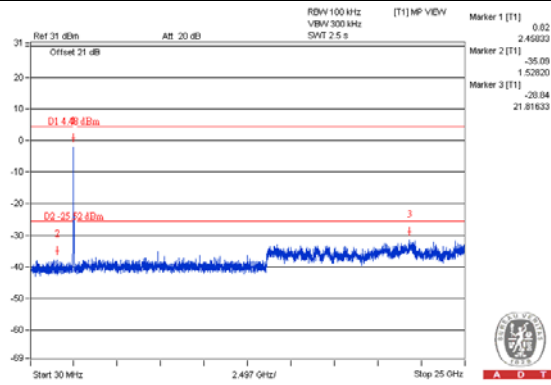
**CH 3**



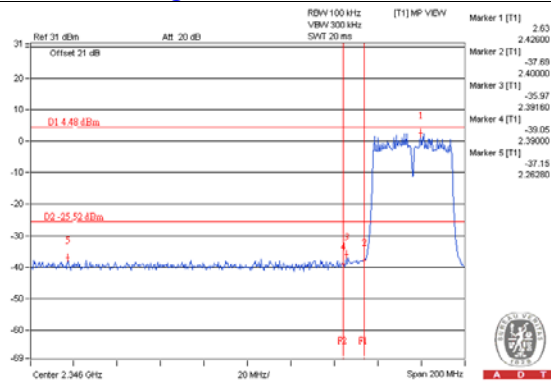
**CH 6**



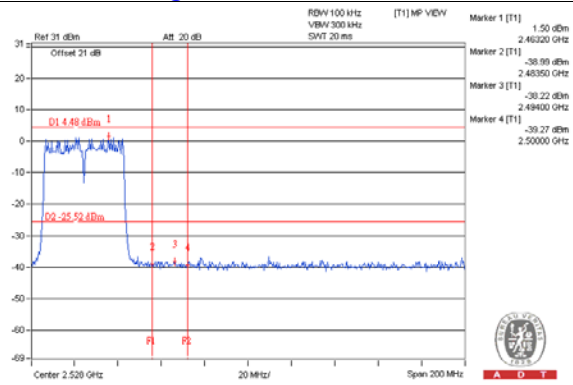
**CH 9**



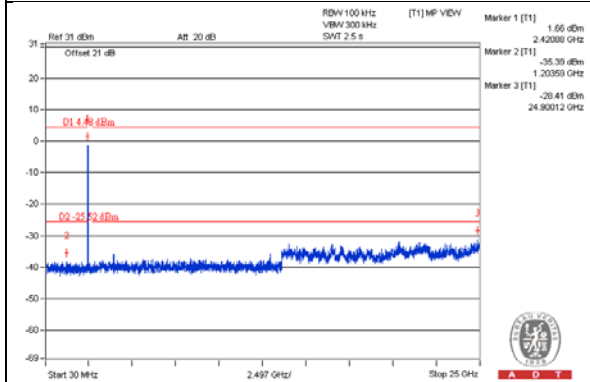
**CH 3 Band edge**



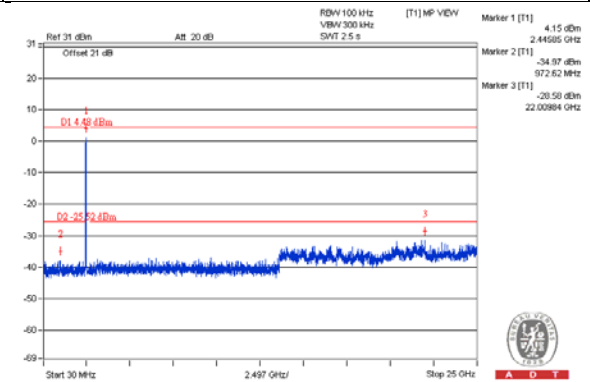
**CH 9 Band edge**



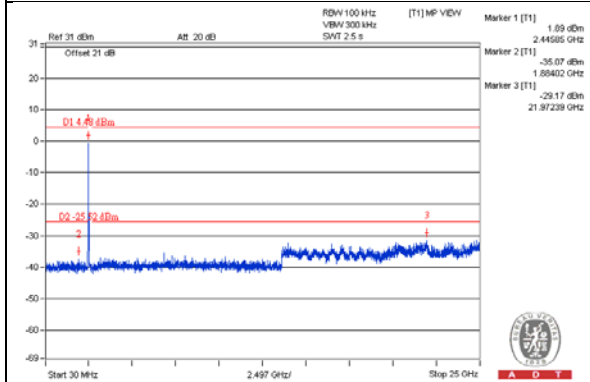
**Chain 1**  
**CH 3**



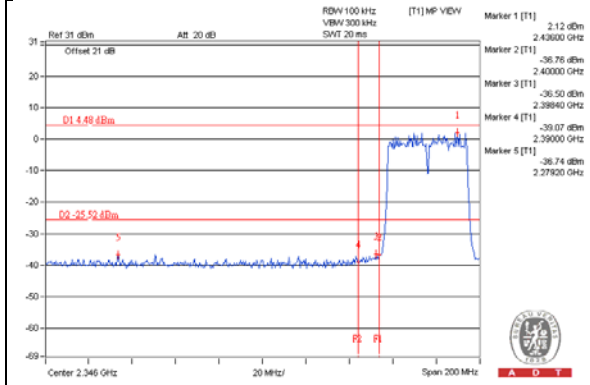
**CH 6**



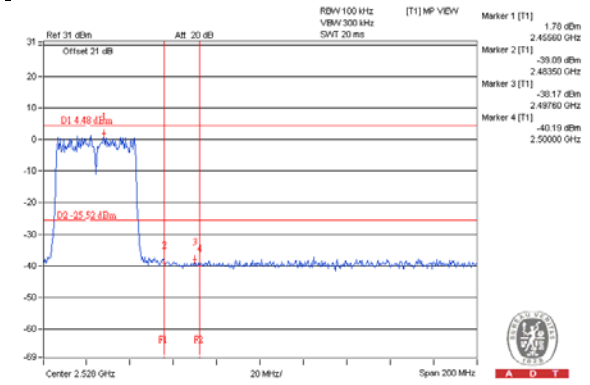
**CH 9**



**CH 3 Band edge**



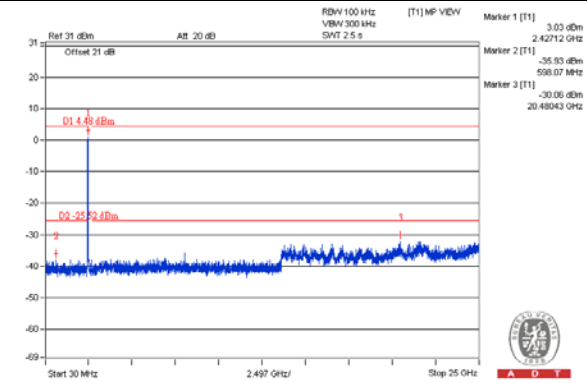
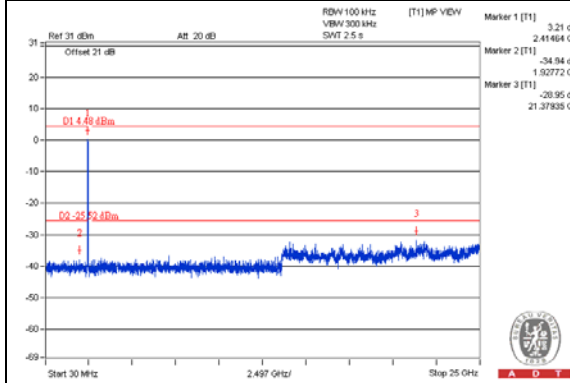
**CH 9 Band edge**



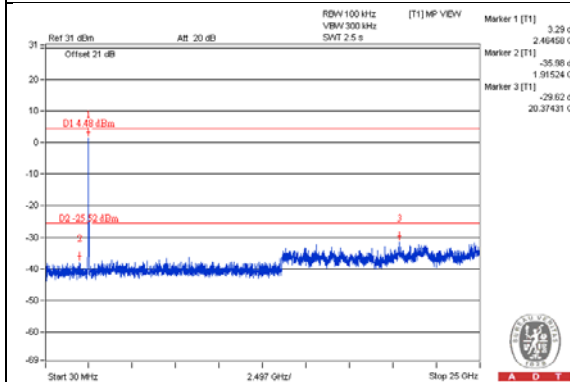
**Chain 2**

**CH 3**

**CH 6**

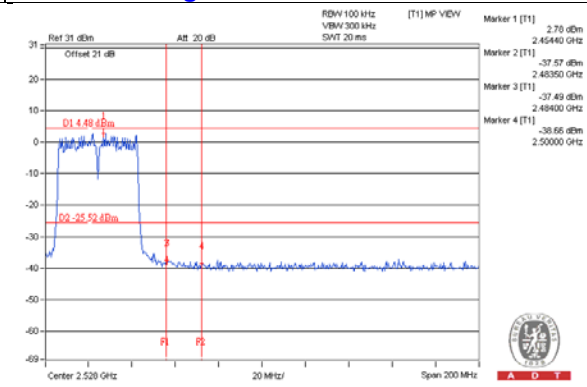
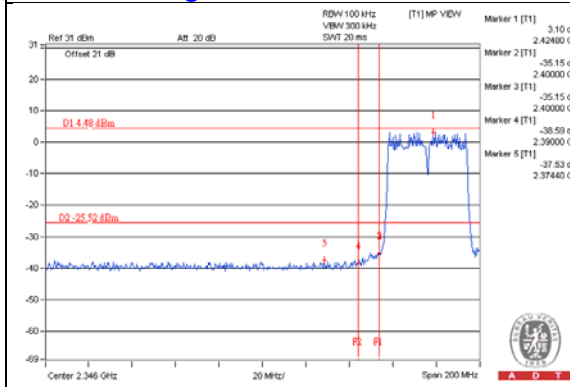


**CH 9**



**CH 3 Band edge**

**CH 9 Band edge**



## 5 Test Types and Results (For 5GHz Band)

### 5.1 Radiated Emission and Bandedge Measurement

#### 5.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 30dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

**NOTE:**

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

#### 5.1.2 Test Instruments

Same as item 4.1.2.

#### 5.1.3 Test Procedures

Same as item 4.1.3.

#### 5.1.4 Deviation from Test Standard

No deviation.

#### 5.1.5 Test Setup

Same as item 4.1.5.





5.1.6 EUT Operating Conditions

Same as item 4.1.6.

**5.1.7 Test Results**
**Above 1GHz Data**
**CDD Mode**
**802.11a**

<b>CHANNEL</b>	TX Channel 149	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5423.00	55.6 PK	74.0	-18.4	2.25 H	319	52.94	2.66
2	5423.00	43.8 AV	54.0	-10.2	2.25 H	319	41.14	2.66
3	*5745.00	123.5 PK			2.08 H	322	120.27	3.23
4	*5745.00	113.1 AV			2.08 H	322	109.87	3.23
5	11490.00	47.4 PK	74.0	-26.6	1.52 H	220	32.61	14.79
6	11490.00	35.5 AV	54.0	-18.5	1.52 H	220	20.71	14.79

**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	5423.00	59.2 PK	74.0	-14.8	2.25 V	181	56.54	2.66
2	5423.00	46.2 AV	54.0	-7.8	2.25 V	181	43.54	2.66
3	*5745.00	125.5 PK			1.80 V	15	122.27	3.23
4	*5745.00	115.5 AV			1.80 V	15	112.27	3.23
5	11490.00	46.1 PK	74.0	-27.9	1.59 V	211	31.31	14.79
6	11490.00	33.9 AV	54.0	-20.1	1.59 V	211	19.11	14.79

**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.

<b>CHANNEL</b>	TX Channel 157	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	124.0 PK			2.05 H	310	120.77	3.23
2	*5785.00	113.7 AV			2.05 H	310	110.47	3.23
3	11570.00	47.2 PK	74.0	-26.8	1.58 H	213	32.71	14.49
4	11570.00	35.0 AV	54.0	-19.0	1.58 H	213	20.51	14.49

**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	126.0 PK			1.81 V	0	122.77	3.23
2	*5785.00	115.9 AV			1.81 V	0	112.67	3.23
3	11570.00	46.6 PK	74.0	-27.4	1.59 V	205	32.11	14.49
4	11570.00	34.2 AV	54.0	-19.8	1.59 V	205	19.71	14.49

**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.

<b>CHANNEL</b>	TX Channel 165	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	123.5 PK			2.08 H	296	120.27	3.23
2	*5825.00	112.9 AV			2.08 H	296	109.67	3.23
3	11650.00	47.7 PK	74.0	-26.3	1.61 H	215	33.41	14.29
4	11650.00	35.4 AV	54.0	-18.6	1.61 H	215	21.11	14.29

**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	125.6 PK			1.70 V	10	122.37	3.23
2	*5825.00	115.2 AV			1.70 V	10	111.97	3.23
3	11650.00	46.8 PK	74.0	-27.2	1.60 V	219	32.51	14.29
4	11650.00	34.2 AV	54.0	-19.8	1.60 V	219	19.91	14.29

**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.

**Beamforming Mode**

**802.11ac (VHT20)**

<b>CHANNEL</b>	TX Channel 149	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	*5745.00	122.1 PK			2.10 H	298	118.87	3.23
2	*5745.00	110.6 AV			2.10 H	298	107.37	3.23
3	11490.00	47.5 PK	74.0	-26.5	1.59 H	216	32.71	14.79
4	11490.00	35.1 AV	54.0	-18.9	1.59 H	216	20.31	14.79

**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	*5745.00	124.4 PK			1.72 V	4	121.17	3.23
2	*5745.00	112.9 AV			1.72 V	4	109.67	3.23
3	11490.00	47.4 PK	74.0	-26.6	1.64 V	219	32.61	14.79
4	11490.00	34.5 AV	54.0	-19.5	1.64 V	219	19.71	14.79

**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.

<b>CHANNEL</b>	TX Channel 157	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	122.7 PK			2.04 H	313	119.47	3.23
2	*5785.00	111.3 AV			2.04 H	313	108.07	3.23
3	11570.00	47.9 PK	74.0	-26.1	1.63 H	201	33.41	14.49
4	11570.00	35.4 AV	54.0	-18.6	1.63 H	201	20.91	14.49

**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	125.1 PK			1.70 V	2	121.87	3.23
2	*5785.00	113.6 AV			1.70 V	2	110.37	3.23
3	11570.00	47.6 PK	74.0	-26.4	1.59 V	210	33.11	14.49
4	11570.00	35.0 AV	54.0	-19.0	1.59 V	210	20.51	14.49

**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.

<b>CHANNEL</b>	TX Channel 165	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	122.6 PK			2.09 H	302	119.37	3.23
2	*5825.00	111.4 AV			2.09 H	302	108.17	3.23
3	11650.00	48.0 PK	74.0	-26.0	1.69 H	196	33.71	14.29
4	11650.00	35.8 AV	54.0	-18.2	1.69 H	196	21.51	14.29

**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	125.1 PK			1.72 V	9	121.87	3.23
2	*5825.00	113.7 AV			1.72 V	9	110.47	3.23
3	11650.00	47.3 PK	74.0	-26.7	1.53 V	201	33.01	14.29
4	11650.00	34.9 AV	54.0	-19.1	1.53 V	201	20.61	14.29

**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.

**802.11ac (VHT40)**

<b>CHANNEL</b>	TX Channel 151	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	*5755.00	119.7 PK			2.14 H	310	116.48	3.22
2	*5755.00	107.9 AV			2.14 H	310	104.68	3.22
3	11510.00	47.6 PK	74.0	-26.4	1.74 H	205	32.87	14.73
4	11510.00	35.4 AV	54.0	-18.6	1.74 H	205	20.67	14.73

**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	*5755.00	122.1 PK			1.73 V	360	118.88	3.22
2	*5755.00	110.2 AV			1.73 V	360	106.98	3.22
3	11510.00	46.9 PK	74.0	-27.1	1.58 V	207	32.17	14.73
4	11510.00	34.4 AV	54.0	-19.6	1.58 V	207	19.67	14.73

**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.



<b>CHANNEL</b>	TX Channel 159	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	120.0 PK			2.13 H	308	116.77	3.23
2	*5795.00	108.2 AV			2.13 H	308	104.97	3.23
3	11590.00	47.2 PK	74.0	-26.8	1.75 H	210	32.81	14.39
4	11590.00	34.9 AV	54.0	-19.1	1.75 H	210	20.51	14.39

**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	122.6 PK			1.74 V	360	119.37	3.23
2	*5795.00	110.4 AV			1.74 V	360	107.17	3.23
3	11590.00	47.2 PK	74.0	-26.8	1.54 V	216	32.81	14.39
4	11590.00	34.6 AV	54.0	-19.4	1.54 V	216	20.21	14.39

**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.

802.11ac (VHT80)

<b>CHANNEL</b>	TX Channel 155	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	*5775.00	114.0 PK			2.08 H	306	110.77	3.23
2	*5775.00	101.7 AV			2.08 H	306	98.47	3.23
3	11550.00	47.7 PK	74.0	-26.3	1.70 H	224	33.14	14.56
4	11550.00	35.1 AV	54.0	-18.9	1.70 H	224	20.54	14.56

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	*5775.00	116.3 PK			1.75 V	353	113.07	3.23
2	*5775.00	104.1 AV			1.75 V	353	100.87	3.23
3	11550.00	46.8 PK	74.0	-27.2	1.58 V	221	32.24	14.56
4	11550.00	34.4 AV	54.0	-19.6	1.58 V	221	19.84	14.56

**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.

**Below 1GHz Data**

**CDD Mode**

**802.11a**

<b>CHANNEL</b>	TX Channel 157	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	Below 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	132.77	33.7 QP	43.5	-9.8	2.00 H	267	47.56	-13.87
2	162.89	35.2 QP	43.5	-8.3	1.50 H	104	48.27	-13.04
3	211.15	34.8 QP	43.5	-8.7	1.50 H	245	50.78	-16.01
4	374.98	28.9 QP	46.0	-17.1	1.00 H	167	38.86	-9.98
5	500.01	31.0 QP	46.0	-15.0	2.00 H	330	37.81	-6.83
6	625.00	32.9 QP	46.0	-13.1	1.50 H	51	36.68	-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	164.88	30.6 QP	43.5	-12.9	1.50 V	321	43.74	-13.17
2	200.04	30.1 QP	43.5	-13.4	1.00 V	332	46.12	-16.01
3	500.01	28.2 QP	46.0	-17.8	1.00 V	46	35.03	-6.83
4	625.00	29.5 QP	46.0	-16.5	1.50 V	69	33.22	-3.74
5	749.98	32.4 QP	46.0	-13.6	1.00 V	0	33.62	-1.21
6	874.97	33.3 QP	46.0	-12.7	1.00 V	56	33.02	0.25

**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

## 5.2 Conducted Emission Measurement

### 5.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	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.

### 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

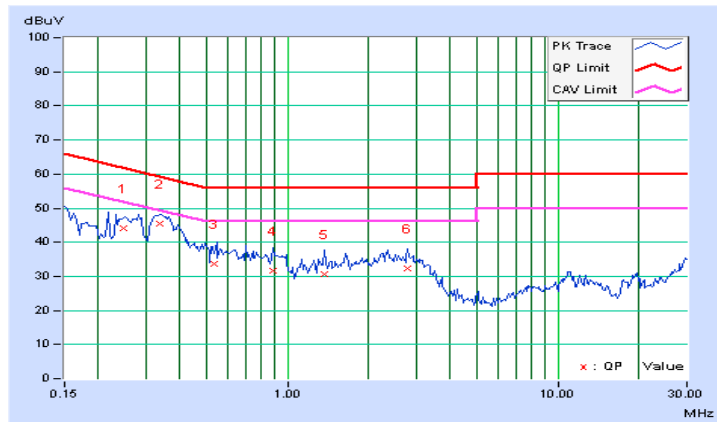
**CDD Mode**

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.24831	0.09	44.13	36.50	44.22	36.59	61.81	51.81	-17.59	-15.22
2	0.33750	0.10	45.24	36.76	45.34	36.86	59.26	49.26	-13.93	-12.41
3	0.53556	0.11	33.52	24.64	33.63	24.75	56.00	46.00	-22.37	-21.25
4	0.88828	0.12	31.57	22.82	31.69	22.94	56.00	46.00	-24.31	-23.06
5	1.36328	0.14	30.41	23.46	30.55	23.60	56.00	46.00	-25.45	-22.40
6	2.77344	0.19	32.12	26.12	32.31	26.31	56.00	46.00	-23.69	-19.69

**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

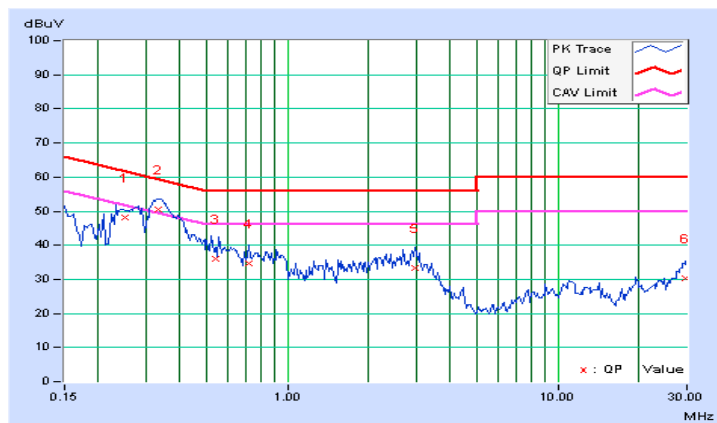


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.25122	0.09	47.98	42.30	48.07	42.39	61.72	51.72	-13.65	-9.33
<b>2</b>	<b>0.33359</b>	<b>0.09</b>	<b>50.41</b>	<b>42.22</b>	<b>50.50</b>	<b>42.31</b>	<b>59.36</b>	<b>49.36</b>	<b>-8.86</b>	<b>-7.05</b>
3	0.53959	0.11	35.83	28.03	35.94	28.14	56.00	46.00	-20.06	-17.86
4	0.71641	0.12	34.42	25.94	34.54	26.06	56.00	46.00	-21.46	-19.94
5	2.96875	0.20	33.09	26.97	33.29	27.17	56.00	46.00	-22.71	-18.83
6	29.67578	0.97	29.25	24.10	30.22	25.07	60.00	50.00	-29.78	-24.93

**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 0.5 MHz.

#### 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.

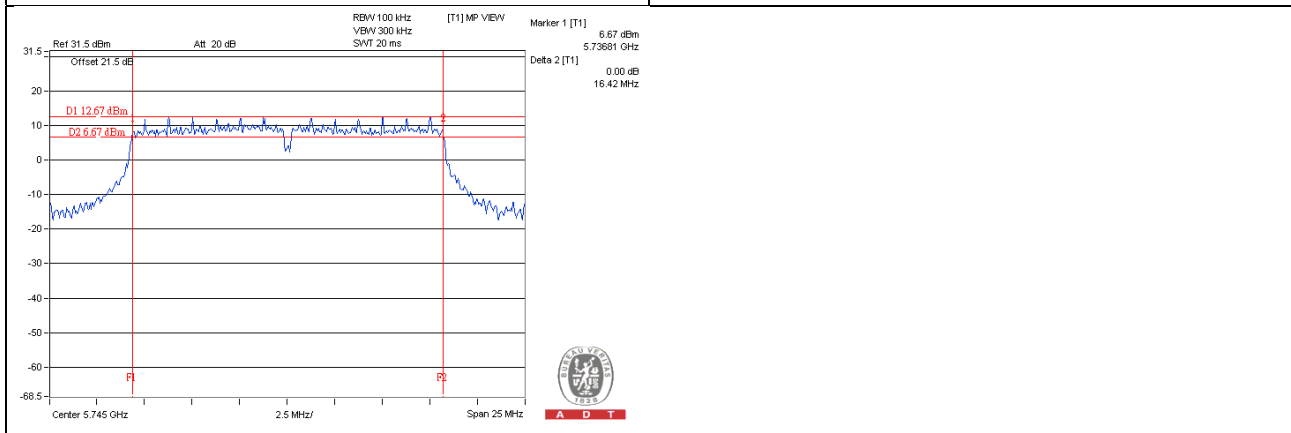
### 5.3.7 Test Result

#### CDD Mode

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
<b>802.11a</b>						
149	5745	16.46	16.42	16.45	0.5	Pass
157	5785	16.43	16.43	16.46	0.5	Pass
165	5825	16.45	16.42	16.46	0.5	Pass

#### Spectrum Plot of Worst Value

##### 802.11a – Chain 1: CH 149





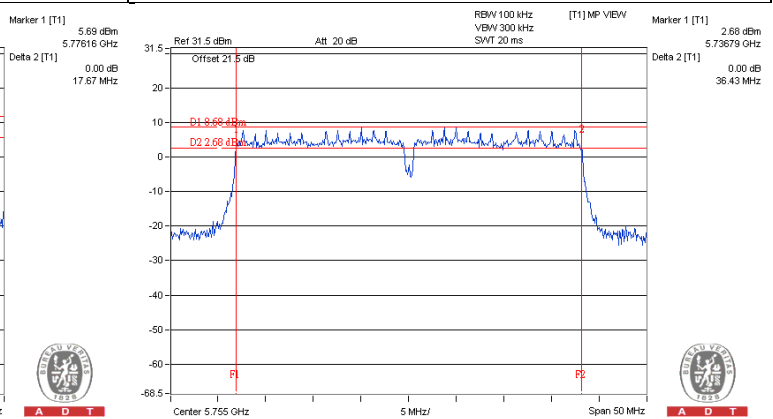
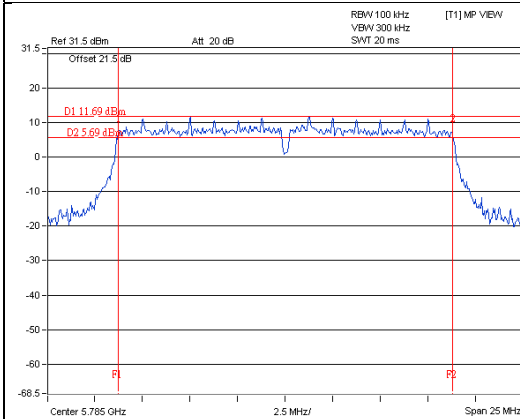
**CDD Mode**

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
<b>802.11ac (VHT20)</b>						
149	5745	17.70	17.70	17.70	0.5	Pass
157	5785	17.67	17.71	17.70	0.5	Pass
165	5825	17.68	17.69	17.68	0.5	Pass
<b>802.11ac (VHT40)</b>						
151	5755	36.43	36.46	36.44	0.5	Pass
159	5795	36.45	36.49	36.47	0.5	Pass
<b>802.11ac (VHT80)</b>						
155	5775	75.84	76.15	76.41	0.5	Pass

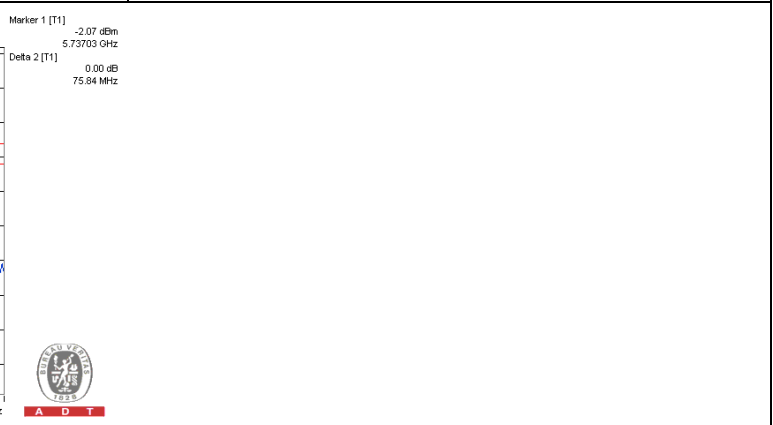
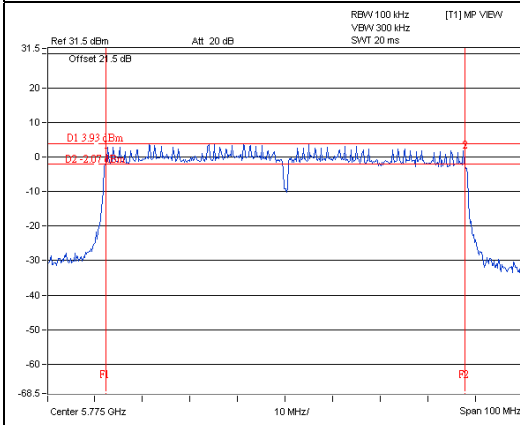
**SPECTRUM PLOT OF WORST VALUE**

**802.11ac (VHT20) – Chain 0: CH157**

**802.11ac (VHT40) – Chain 0: CH151**



**802.11ac (VHT80) – Chain 0: CH155**



## 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  $\geq 40$  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 4.5.2.

### 5.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 5.4.4 Test Procedures

Same as Item 4.5.4.

### 5.4.5 Deviation from Test Standard

No deviation.

### 5.4.6 EUT Operating Conditions

Same as Item 4.5.6.

**5.4.7 Test Results**
**CDD Mode**

Channel	Frequency (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
<b>802.11a</b>								
149	5745	23.71	25.27	24.92	881.931	29.45	30	Pass
157	5785	24.00	25.25	25.39	932.093	29.69	30	Pass
165	5825	23.72	25.33	24.90	885.728	29.47	30	Pass

**Beamforming Mode**

Channel	Frequency (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
<b>802.11ac (VHT20)</b>								
149	5745	24.17	24.25	24.63	817.691	29.13	30	Pass
157	5785	24.02	25.24	25.38	931.687	29.69	30	Pass
165	5825	23.63	25.51	25.03	904.726	29.57	30	Pass
<b>802.11ac (VHT40)</b>								
151	5755	23.72	25.19	25.05	885.765	29.47	30	Pass
159	5795	23.56	25.44	25.31	916.556	29.62	30	Pass
<b>802.11ac (VHT80)</b>								
155	5775	21.68	22.75	23.10	539.77	27.32	30	Pass

**NOTE:** Directional gain =  $0.4\text{dBi} + 10\log(3) = 5.17\text{dBi} < 6\text{dBi}$  , so the power limit shall not be reduced.

## **5.5 Power Spectral Density Measurement**

### 5.5.1 Limits of Power Spectral Density Measurement

Same as item 4.6.1.

### 5.5.2 Test Setup

Same as item 4.6.2.

### 5.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 5.5.4 Test Procedure

Same as item 4.6.4.

### 5.5.5 Deviation from Test Standard

No deviation.

### 5.5.6 EUT Operating Condition

Same as Item 4.3.6

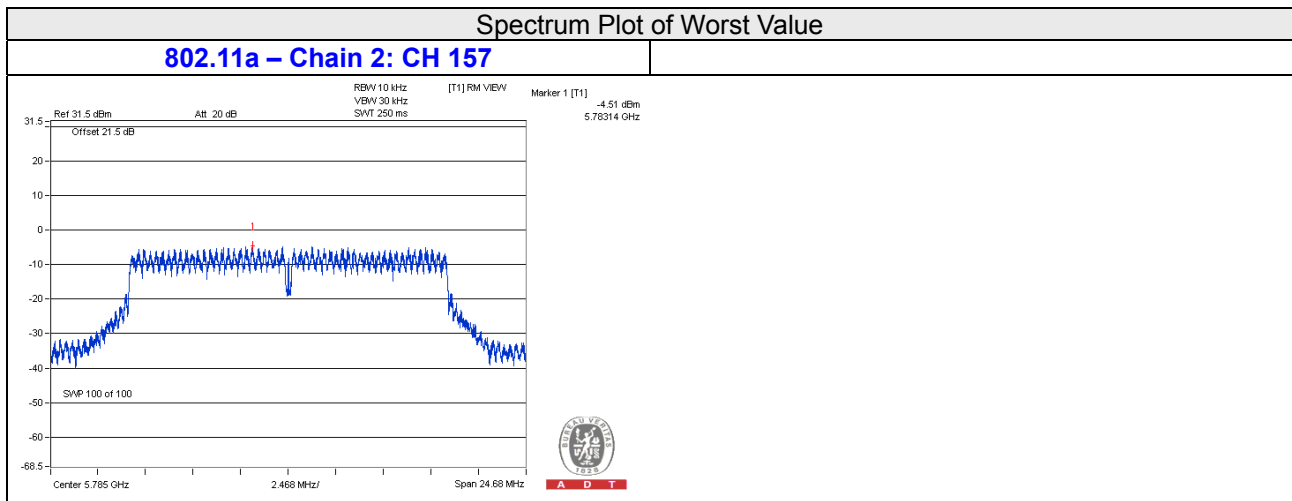
### 5.5.7 Test Results

#### CDD Mode

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
<b>802.11a</b>							
0	149	5745	-6.38	4.77	-1.61	8	Pass
	157	5785	-6.42	4.77	-1.65	8	Pass
	165	5825	-6.54	4.77	-1.77	8	Pass
1	149	5745	-4.63	4.77	0.14	8	Pass
	157	5785	-5.07	4.77	-0.30	8	Pass
	165	5825	-4.92	4.77	-0.15	8	Pass
2	149	5745	-5.27	4.77	-0.50	8	Pass
	157	5785	-4.51	4.77	0.26	8	Pass
	165	5825	-5.12	4.77	-0.35	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 =  $0.4\text{dBi} + 10\log(3) = 5.17\text{dBi} < 6\text{dBi}$  , so the power density limit shall be not reduced.



**Beamforming Mode**

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
<b>802.11ac (VHT20)</b>							
0	149	5745	-6.64	4.77	-1.87	8	Pass
	157	5785	-7.14	4.77	-2.37	8	Pass
	165	5825	-6.90	4.77	-2.13	8	Pass
1	149	5745	-6.82	4.77	-2.05	8	Pass
	157	5785	-5.65	4.77	-0.88	8	Pass
	165	5825	-6.42	4.77	-1.65	8	Pass
2	149	5745	-5.94	4.77	-1.17	8	Pass
	157	5785	-5.39	4.77	-0.62	8	Pass
	165	5825	-6.52	4.77	-1.75	8	Pass
<b>802.11ac (VHT40)</b>							
0	151	5755	-9.60	4.77	-4.83	8	Pass
	159	5795	-9.23	4.77	-4.46	8	Pass
1	151	5755	-8.28	4.77	-3.51	8	Pass
	159	5795	-8.33	4.77	-3.56	8	Pass
2	151	5755	-8.45	4.77	-3.68	8	Pass
	159	5795	-8.44	4.77	-3.67	8	Pass

TX chain	Channel	Freq. (MHz)	PSD w/o Duty Factor (dBm)	10 log (N=3) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm)	Limit (dBm)	Pass /Fail
<b>802.11ac (VHT80)</b>								
0	155	5775	-14.21	4.77	0.21	-9.23	8	Pass
1	155	5775	-12.41	4.77	0.21	-7.43	8	Pass
2	155	5775	-13.20	4.77	0.21	-8.22	8	Pass

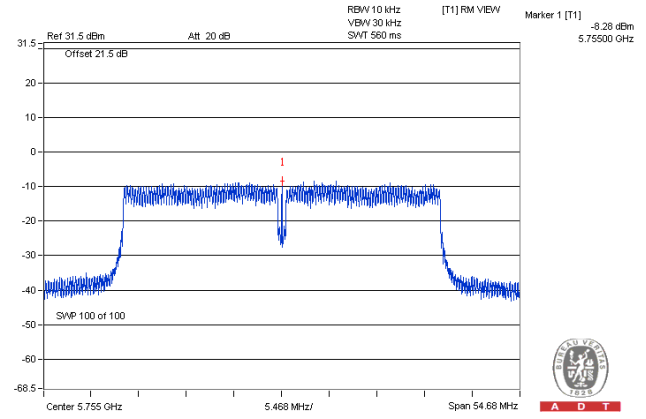
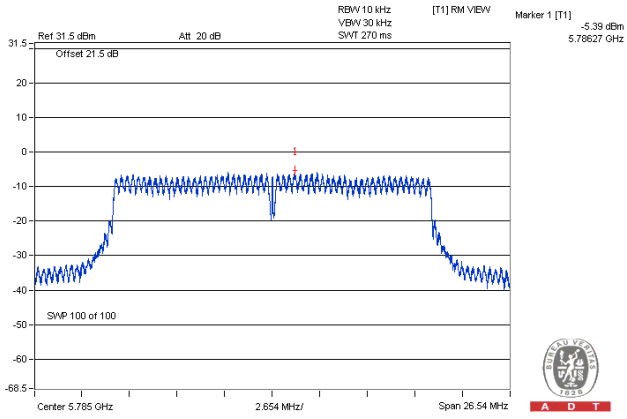
Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. Directional gain = 0.4dBi + 10log(3) = 5.17dBi < 6dBi , so the power density limit shall be not reduced.

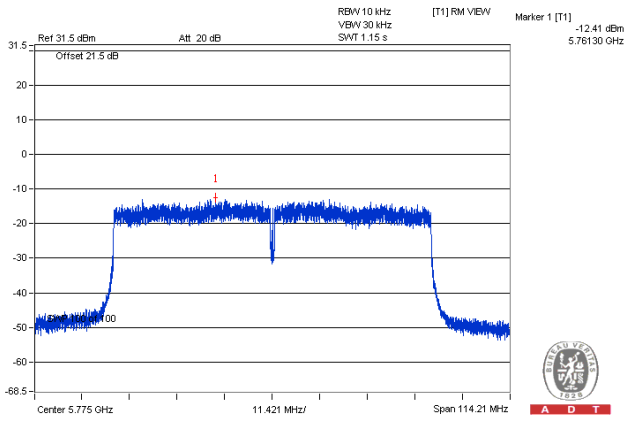
Spectrum Plot of Worst Value

802.11ac (VHT20) – Chain 2: CH 157

802.11ac (VHT40) – Chain 1: CH 151



802.11ac (VHT80) – Chain 1: CH 155



## 5.6 Conducted Out of Band Emission Measurement

### 5.6.1 Limits of Conducted Out of Band Emission Measurement

Below 30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

### 5.6.2 Test Setup

Same as Item 4.7.2

### 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 4.7.4

### 5.6.5 Deviation from Test Standard

No deviation.

### 5.6.6 EUT Operating Condition

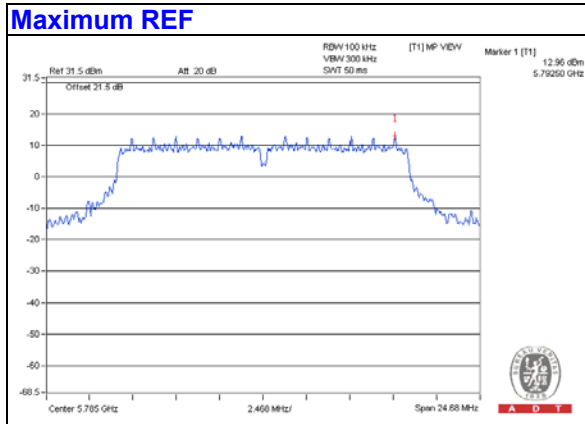
Same as Item 4.3.6

### 5.6.7 Test Results

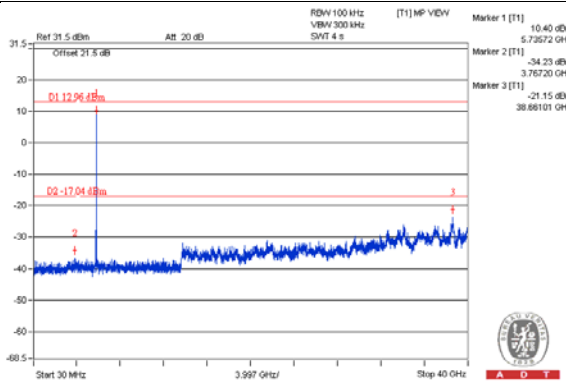
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.



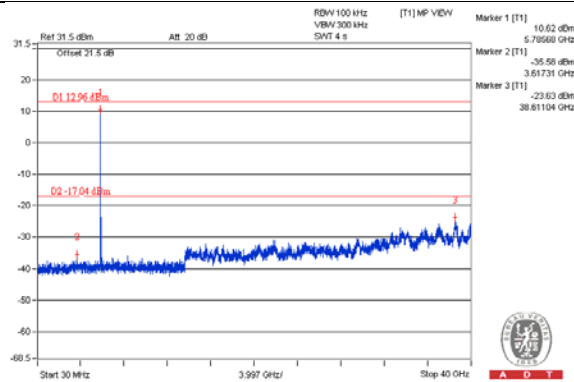
**CDD Mode**  
**802.11a**



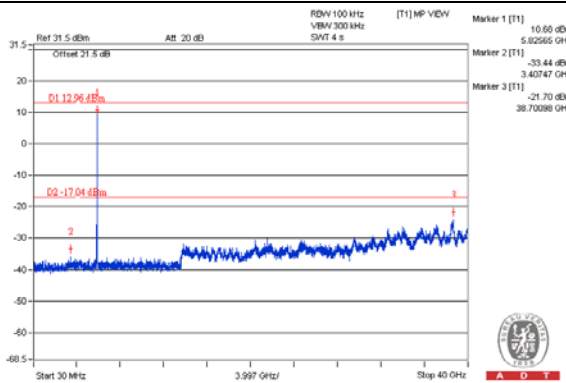
**Chain 0**  
**CH 149**



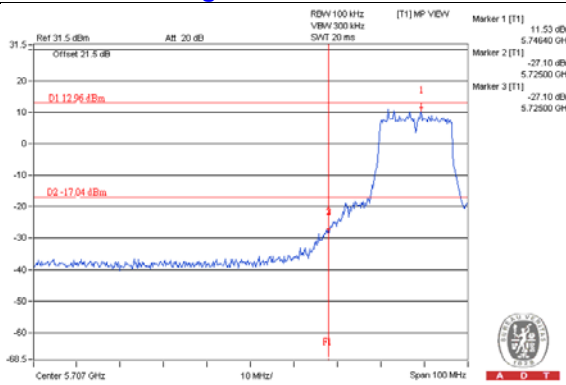
**CH 157**



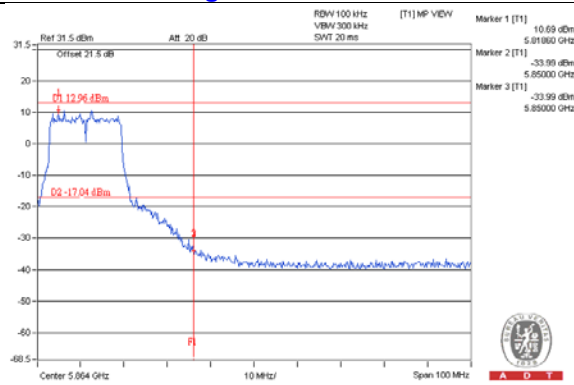
**CH 165**



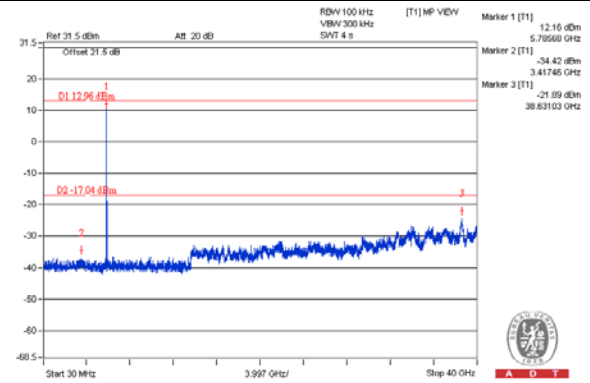
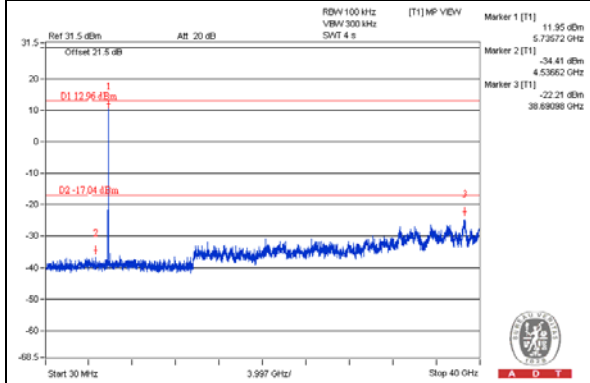
**CH 149 Band edge**



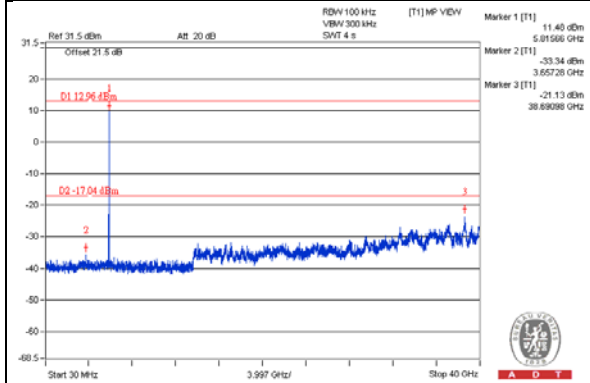
**CH 165 Band edge**



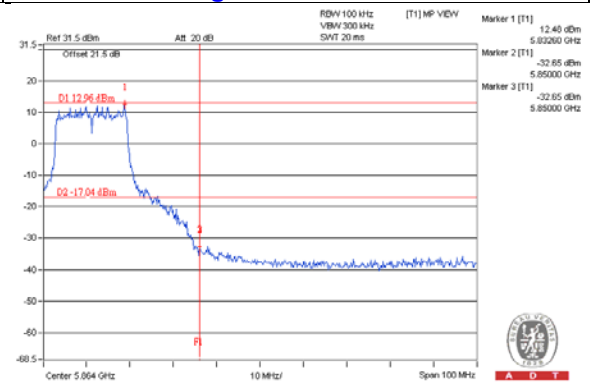
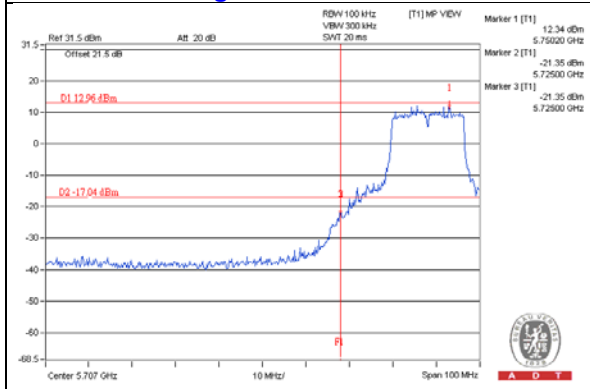
**Chain 1**  
**CH 149** **CH 157**



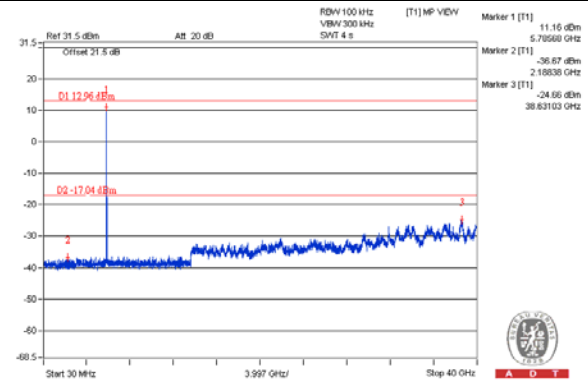
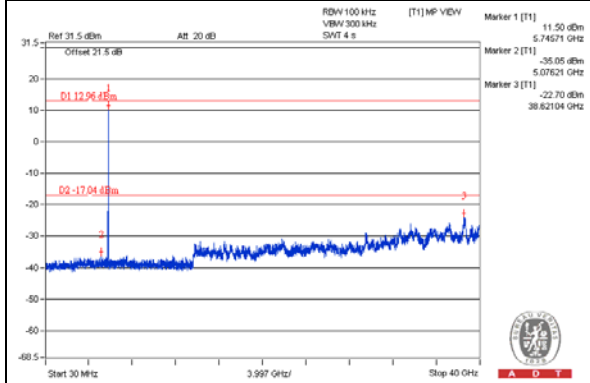
**CH 165**



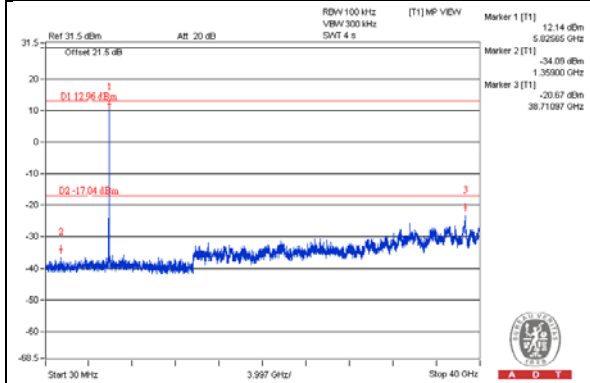
**CH 149 Band edge** **CH 165 Band edge**



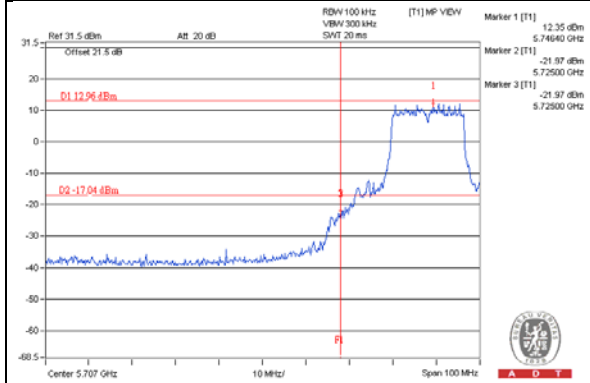
**Chain 2**  
**CH 149** **CH 157**



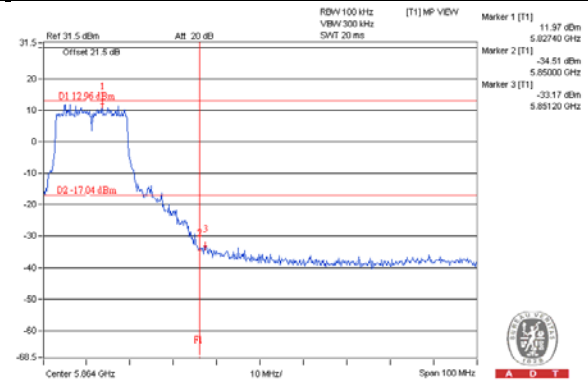
**CH 165**



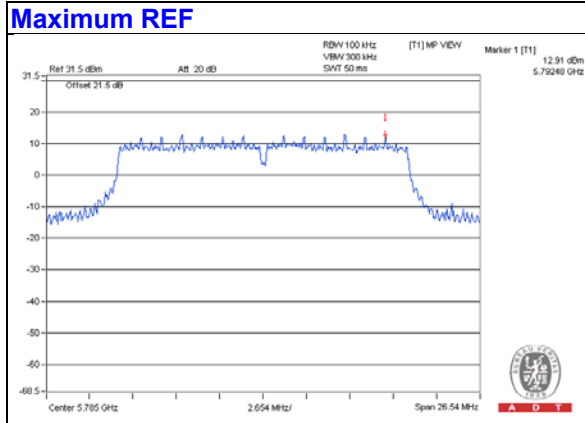
**CH 149 Band edge**



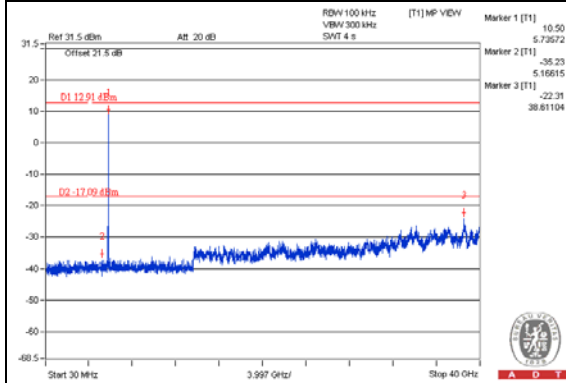
**CH 165 Band edge**



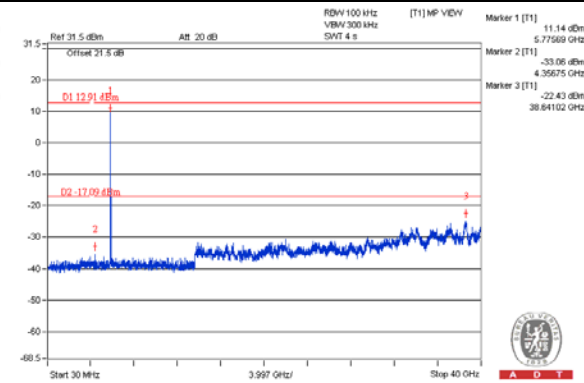
**Beamforming Mode**  
802.11ac (VHT20)



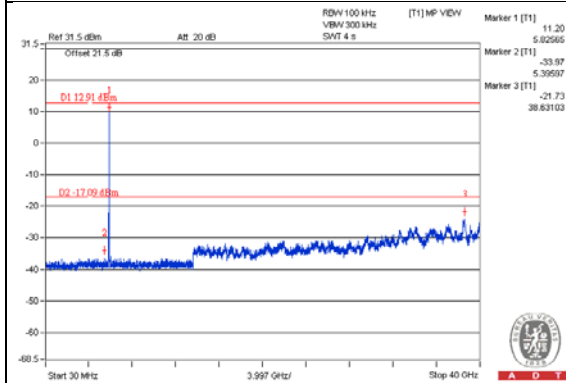
**Chain 0**  
**CH 149**



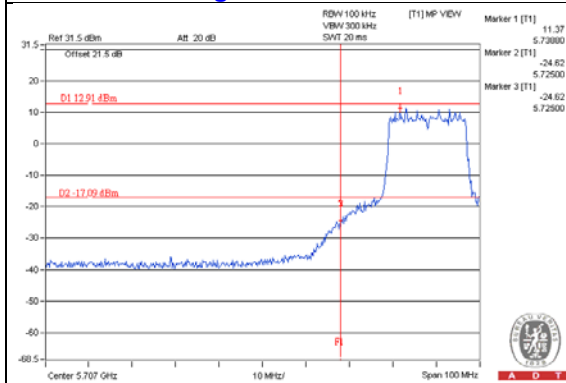
**CH 157**



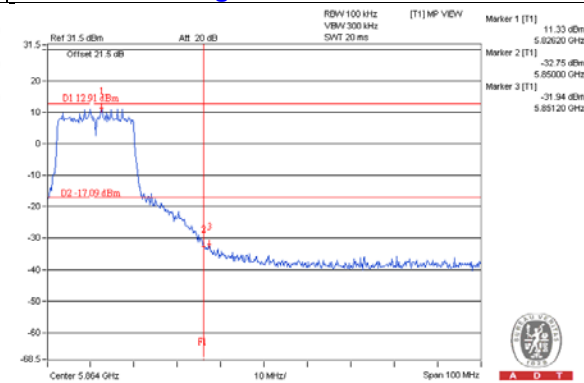
**CH 165**



**CH 149 Band edge**

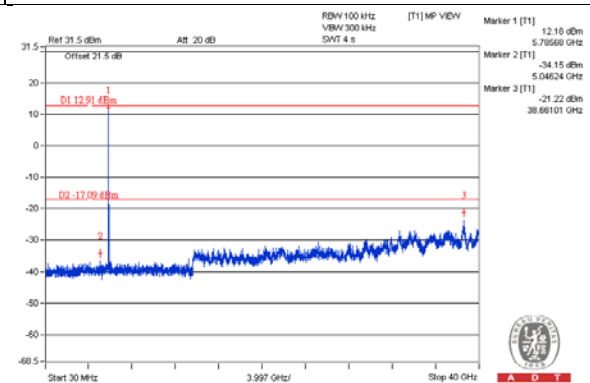
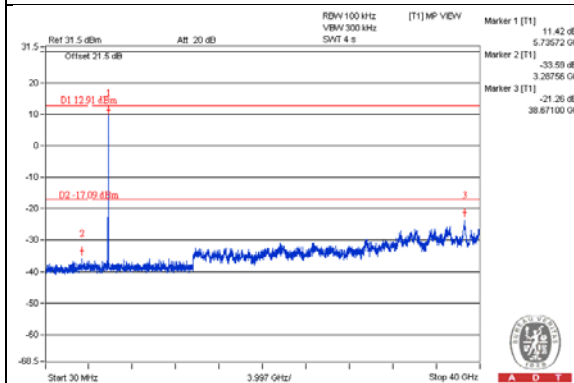


**CH 165 Band edge**

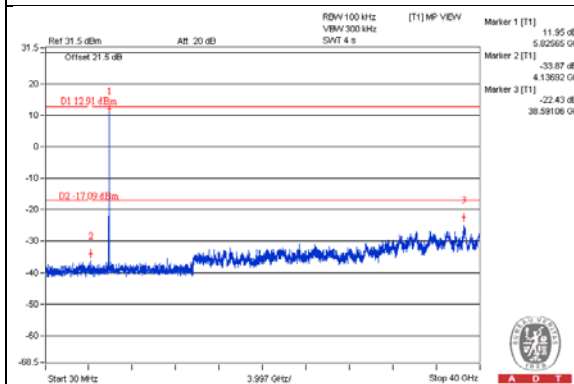


**Chain 1**  
**CH 149**

**CH 157**

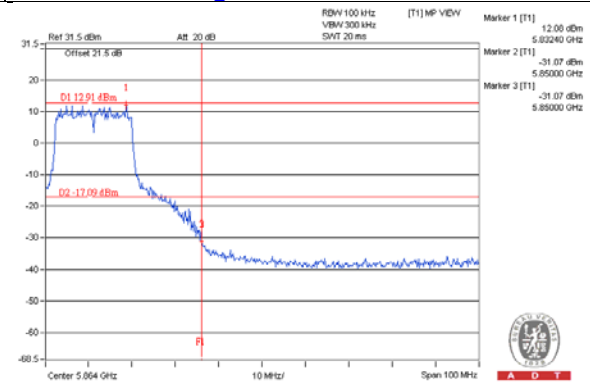
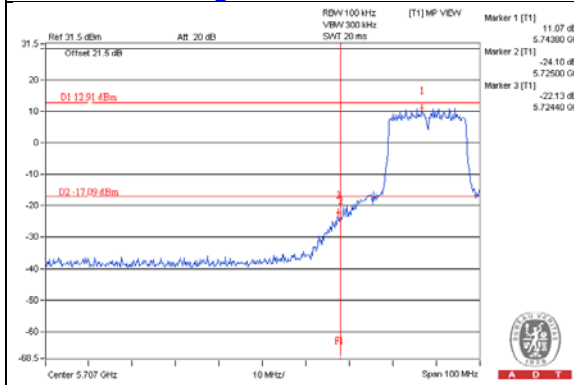


**CH 165**

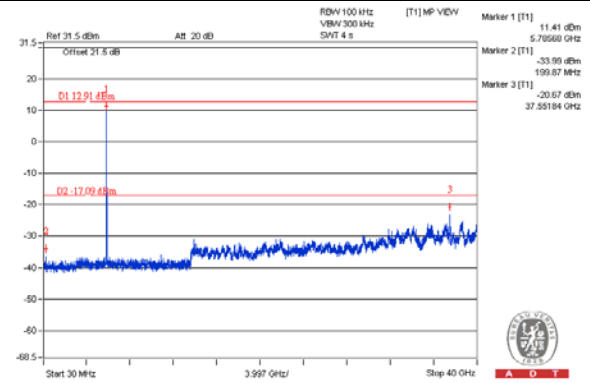
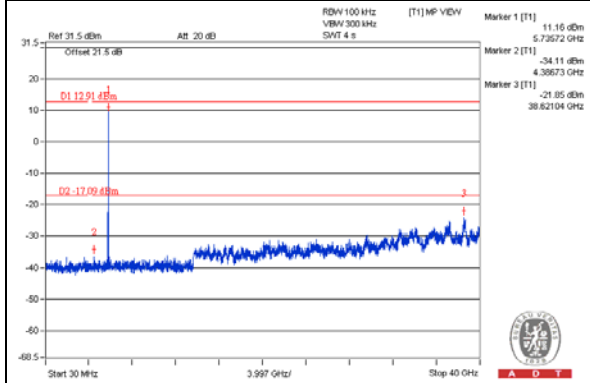


**CH 149 Band edge**

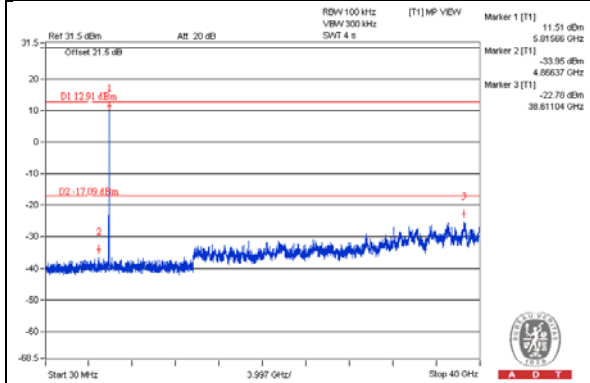
**CH 165 Band edge**



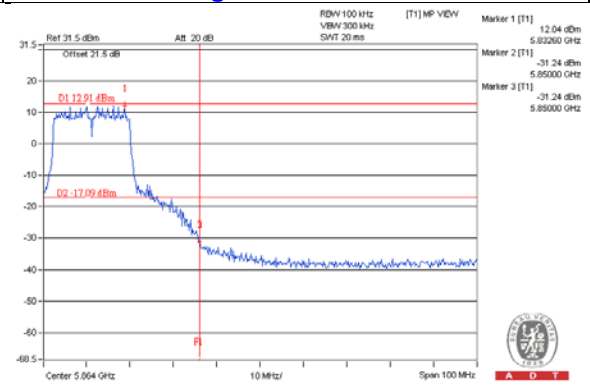
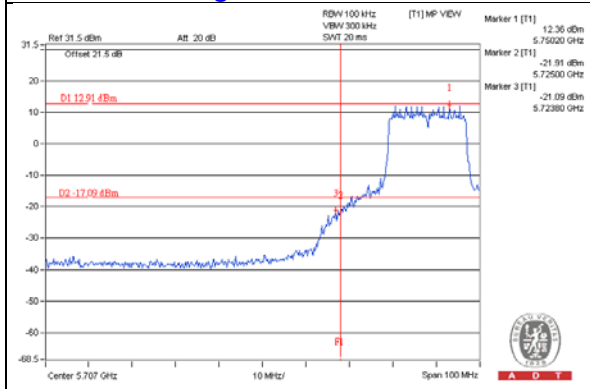
**Chain 2**  
**CH 149** **CH 157**



**CH 165**

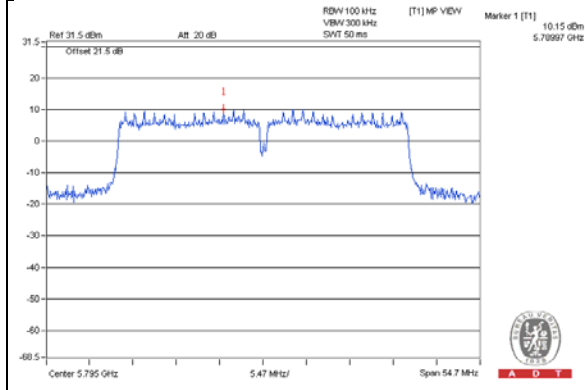


**CH 149 Band edge** **CH 165 Band edge**

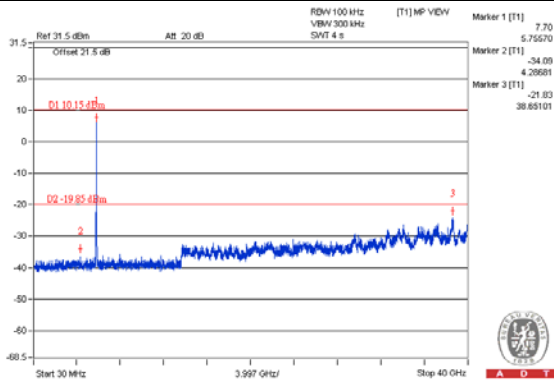


802.11ac (VHT40)

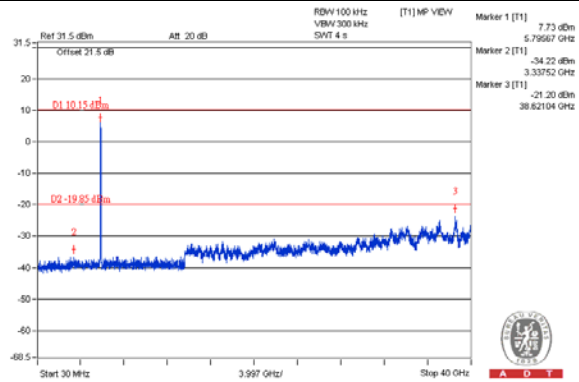
Maximum REF



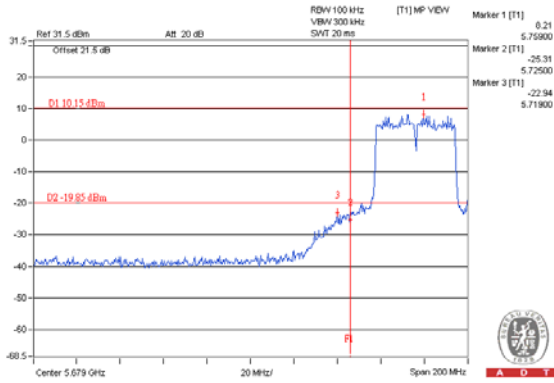
Chain 0  
CH 151



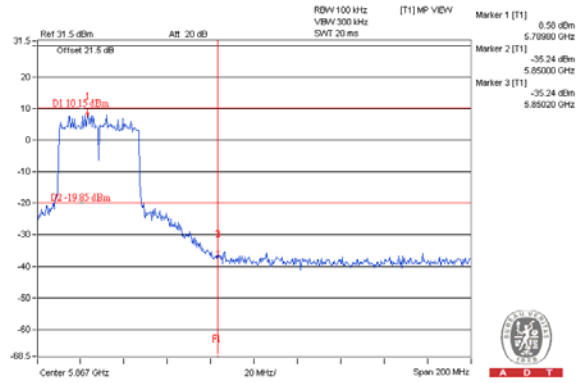
CH 159



CH 151 Band edge

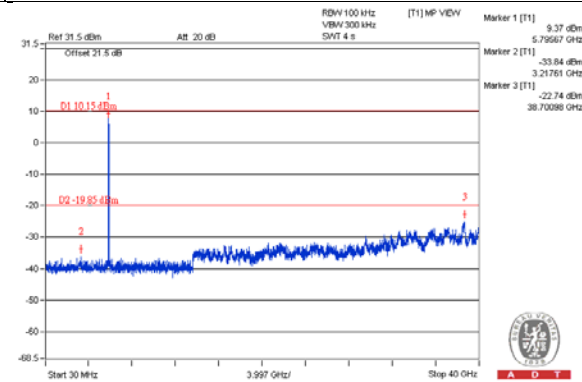
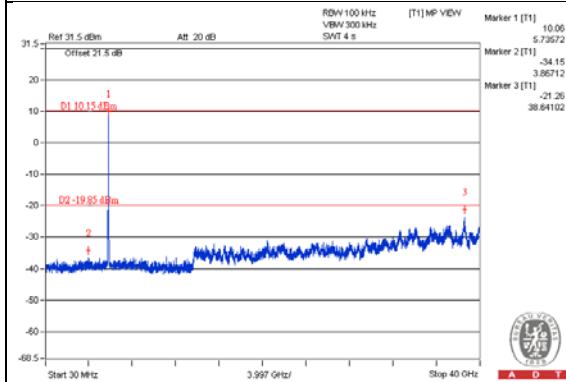


CH 159 Band edge



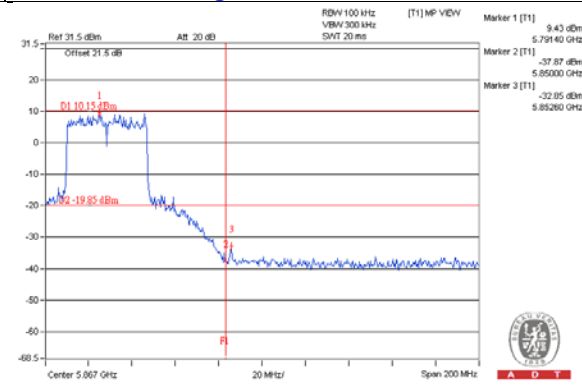
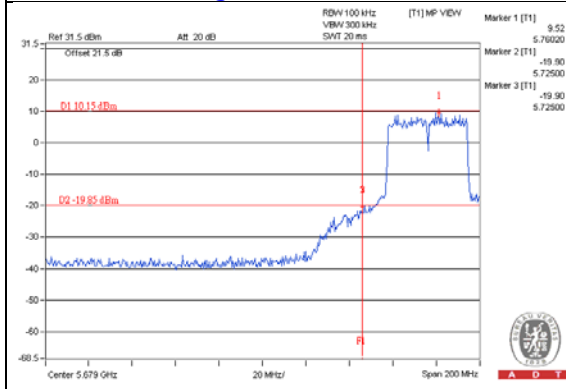
**Chain 1**  
**CH 151**

**CH 159**



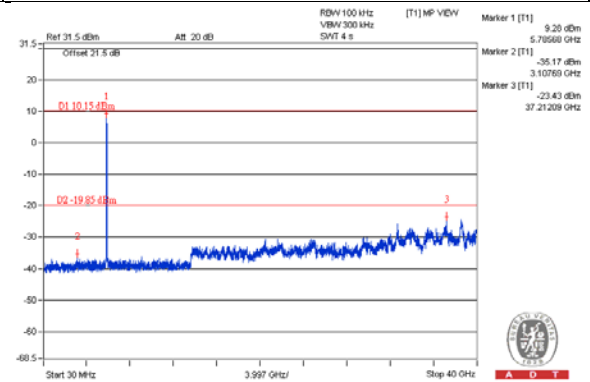
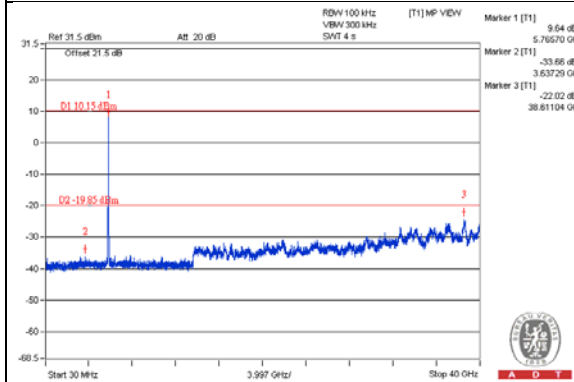
**CH 151 Band edge**

**CH 159 Band edge**

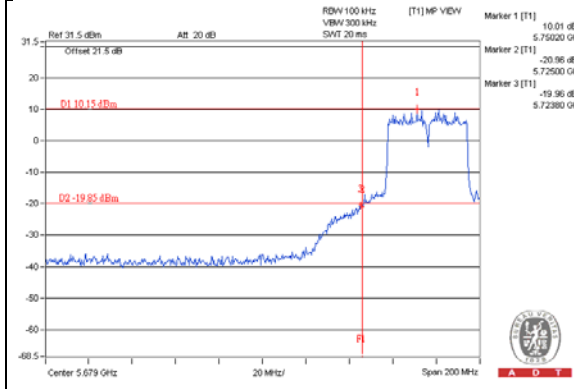




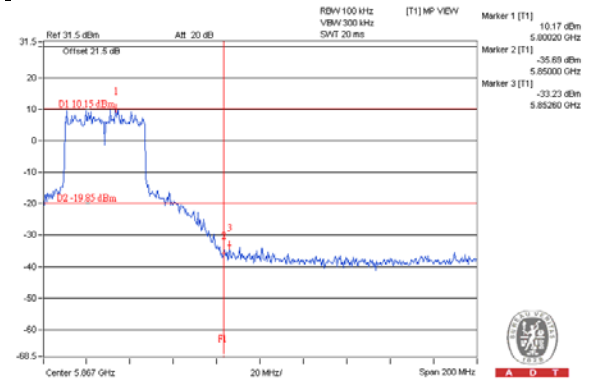
**Chain 2**  
**CH 151** **CH 159**



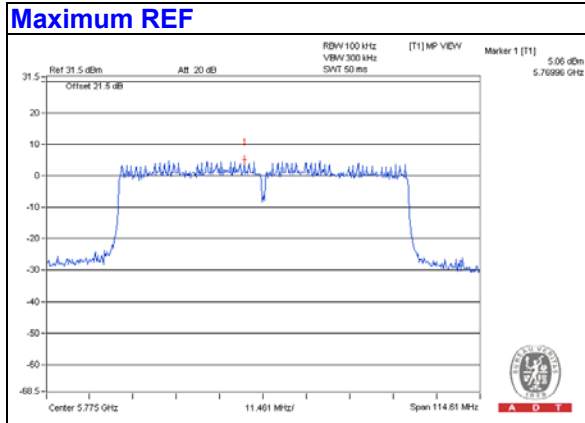
**CH 151 Band edge**



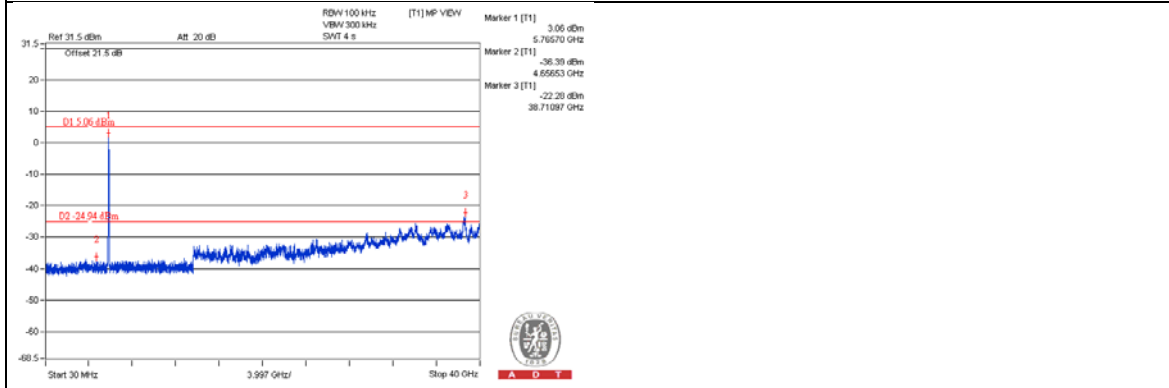
**CH 159 Band edge**



802.11ac (VHT80)

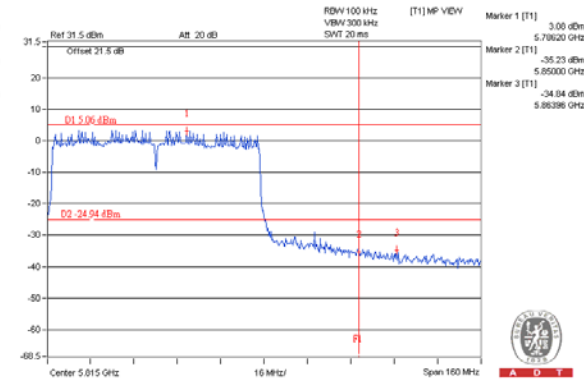
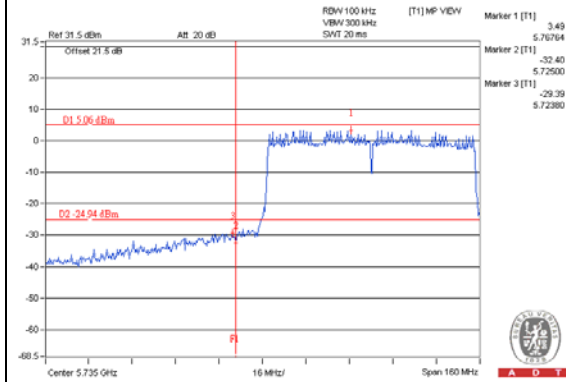


**Chain 0**  
**CH 155**

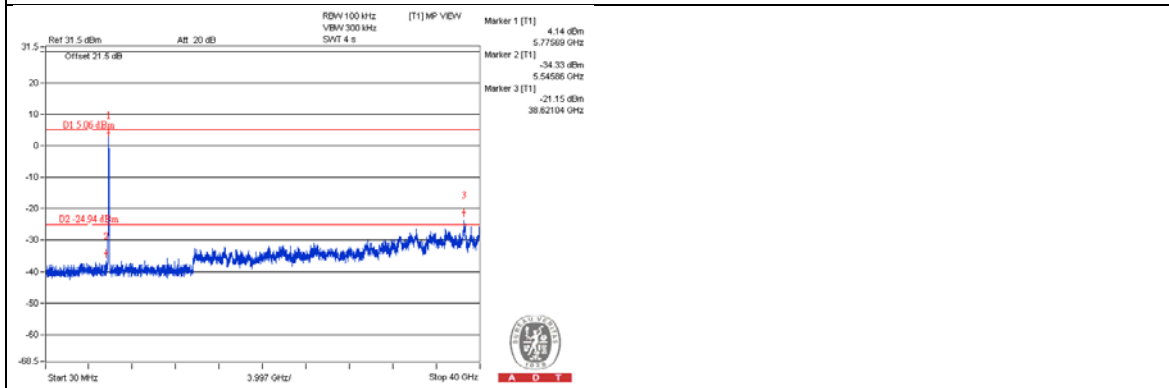


**CH 155 Band edge (Left)**

**CH 155 Band edge (Right)**

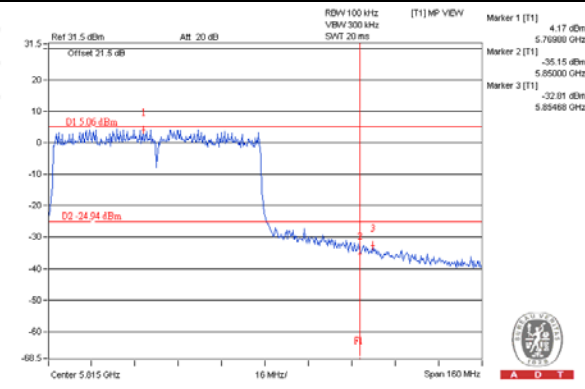
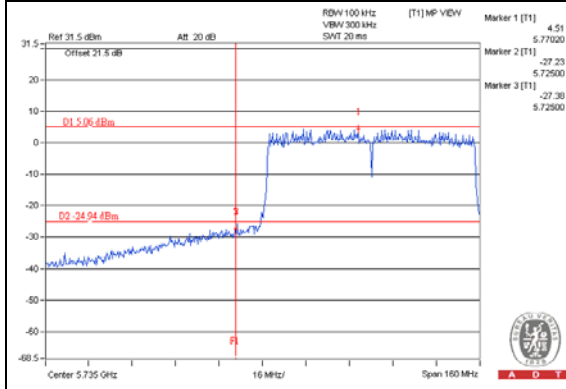


**Chain 1**  
**CH 155**

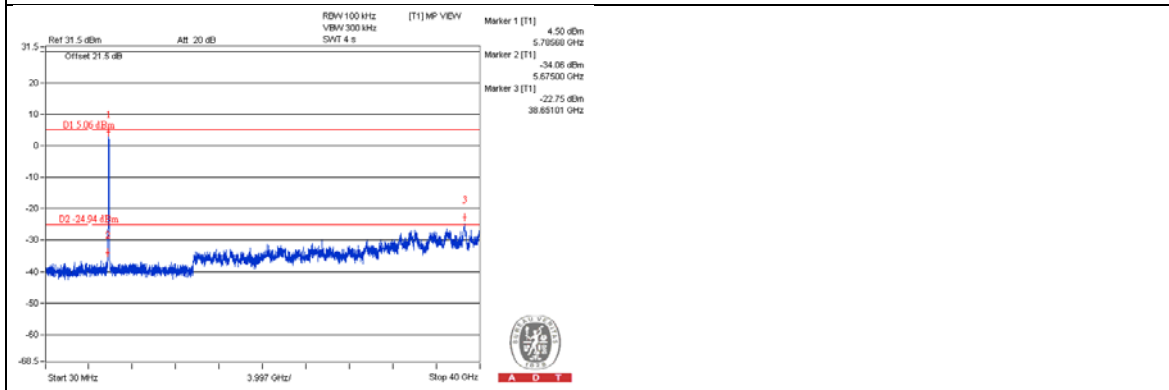


**CH 155 Band edge (Left)**

**CH 155 Band edge (Right)**

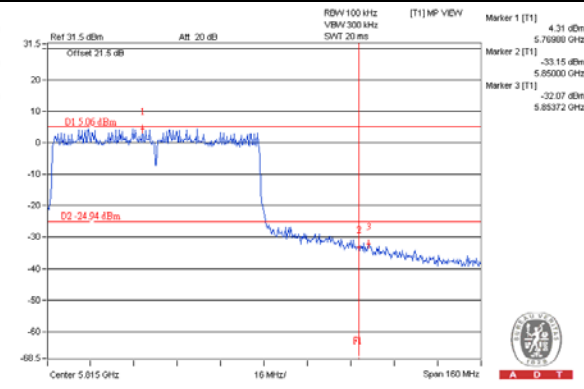
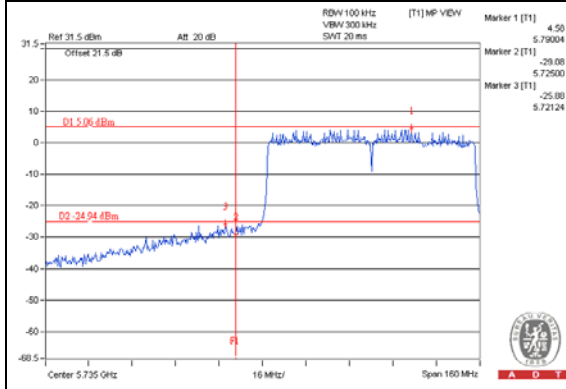


**Chain 2**  
**CH 155**



**CH 155 Band edge (Left)**

**CH 155 Band edge (Right)**





## 6 Pictures of Test Arrangements

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



## Appendix – 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.

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**Web Site:** [www.bureauveritas-adt.com](http://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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