FCC TEST REPORT
(WLAN 15.247)

REPORT NO.:	RF140515E03B R1
MODEL NO.:	J20H086
FCC ID:	MCLJ20H086
RECEIVED:	May 16, 2014
TESTED:	June 12, 2014 to June 08, 2015
ISSUED:	July 24, 2015

APPLICANT:	HON HAI PRECISION IND.CO.,LTD
ADDRESS:	5F-1, Hsin-An Road, Hsinchu, Science Industrial Park, Taiwan, R.O.C.

ISSUED BY:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
LAB ADDRESS :	No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.
TEST LOCATION (1):	No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.
TEST LOCATION (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.

This report should not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140515E03B	Original release	July 10, 2015
RF140515E03B R1	Modified the antennas specifications.	July 24, 2015

1. CERTIFICATION

PRODUCT:	WLAN Module
BRAND NAME:	FOXCONN
MODEL NO.:	J20H086
TEST SAMPLE:	ENGINEERING SAMPLE
APPLICANT:	HON HAI PRECISION IND.CO.,LTD
TESTED:	June 12, 2014 to June 08, 2015
STANDARDS:	**FCC Part 15, Subpart C (Section 15.247)** ANSI C63.10-2009

The above equipment (Model: J20H086) 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 : Phoenix Huang , **Date:** July 24, 2015

(Phoenix Huang, Specialist)

Approved by : , **Date:** July 24, 2015

(May Chen, Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	**TEST TYPE**	**RESULT**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -14.87dB at 0.37300MHz
15.247(d) 15.209	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.2dB at 4874MHz & 2483.50MHz
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted Output power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

NOTE: 1. For WLAN: The EUT was operating in 2.4 ~ 2.4835GHz, 5.15~5.35GHz, 5.47~5.725GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 2.4 ~ 2.4835GHz. For the 5.15~5.35GHz, 5.47~5.725GHz and 5.725~5.850GHz RF parameters was recorded in another test report.

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:

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

Measurement	Value
Conducted emissions	2.86 dB
Radiated emissions (30MHz-1GHz) for Chamber G	5.37 dB
Radiated emissions (1GHz -6GHz) for Chamber G	3.65 dB
Radiated emissions (6GHz -18GHz) for Chamber H	3.88 dB
Radiated emissions (18GHz -40GHz)	4.11 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT (WLAN)

PRODUCT	WLAN Module
MODEL NO.	J20H086
POWER SUPPLY	3.3Vdc ± 10% (from host equipment)
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS,OFDM
TRANSFER RATE	802.11b: up to 11Mbps 802.11a / g: up to 54Mbps 802.11n: up to 300Mbps
OPERATING FREQUENCY	**For 15.407** 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.50 ~ 5.70GHz, 5.745 ~ 5.825GHz
	For 15.247 2.412 ~ 2.462GHz
NUMBER OF CHANNEL	**For 15.407** 24 for 802.11a, 802.11n (HT20) 11 for 802.11n (HT40)
	For 15.247 11 for 802.11b, 802.11g, 802.11n (HT20)
MAXIMUM OUTPUT POWER	**For 15.407** 802.11a: 233.91mW 802.11n (HT20): 328.794mW 802.11n (HT40): 145.631mW **For 15.247** 802.11b: 325.835mW 802.11g: 709.261mW 802.11n (HT20): 700.427mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	NA

NOTE:

1. There are Bluetooth and WLAN technology used for the EUT.
2. For WLAN, 2.4GHz and 5GHz technology can not transmit at same time.
3. WLAN and Bluetooth technology can transmit at same time.
4. The emissions of the simultaneous operation (WLAN & Bluetooth) has been evaluated and no non-compliance was found.
5. The antennas provided to the EUT, please refer to the following table:

For WLAN								
Ant. No.	Transmitter Circuit	Brand	Ant. Model	Ant. Gain(dBi) <Including cable loss>	Freq. range (GHz)	Ant. Type	Connecter Type	Cable Length (mm)
1	Chain (0)	Foxconn WiFi	J20H086	2.81	2.4	PCB printing	NA	NA
				3.03	2.45			
				3.40	2.5			
				3.47	5.15			
				3.2	5.45			
				3.79	5.85			
2	Chain (1)	Foxconn WiFi	J20H086	2.93	2.4	PCB printing	NA	NA
				2.91	2.45			
				2.76	2.5			
				2.96	5.15			
				2.57	5.45			
				2.82	5.85			

For Bluetooth								
Ant. No.	Brand	Ant. Model	Ant. Gain(dBi) <Excluding cable loss>	Freq. range (GHz)	Ant. Type	Connecter Type	Cable Loss (dB)	Cable Length (mm)
3	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	0.86	220 (Model No.: 822EKQ2200000001H1)
				2.45			0.89	
				2.5			0.89	
4	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	0.89	230 (Model No.: 822EKQ2300000001H1)
				2.45			0.92	
				2.5			0.92	
5	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	0.92	240 (Model No.: 822EKQ2400000001H1)
				2.45			0.95	
				2.5			0.95	
6	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	0.95	250 (Model No.: 822EKQ2500000001H1)
				2.45			0.98	
				2.5			0.98	
7	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	0.98	260 (Model No.: 822EKQ2600000001H1)
				2.45			1.00	
				2.5			1.01	
8	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.01	270 (Model No.: 822EKQ2700000001H1)
				2.45			1.03	
				2.5			1.04	
9	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.04	280 (Model No.: 822EKQ2800000001H1)
				2.45			1.06	
				2.5			1.06	
10	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.07	290 (Model No.: 822EKQ2900000001H1)
				2.45			1.09	
				2.5			1.09	

Ant. No.	Brand	Ant. Model	Ant. Gain(dBi) <Excluding cable loss>	Freq. range (GHz)	Ant. Type	Connecter Type	Cable Loss (dB)	Cable Length (mm)
11	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.10	300 (Model No.: 822EKQ3000000001H1)
				2.45			1.12	
				2.5			1.12	
12	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.13	310 (Model No.: 822EKQ3100000001H1)
				2.45			1.15	
				2.5			1.15	
13	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.16	320 (Model No.: 822EKQ3200000001H1)
				2.45			1.18	
				2.5			1.18	
14	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.19	330 (Model No.: 822EKQ3300000001H1)
				2.45			1.21	
				2.5			1.21	
15	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.21	340 (Model No.: 822EKQ3400000001H1)
				2.45			1.23	
				2.5			1.24	
16	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.24	350 (Model No.: 822EKQ3500000001H1)
				2.45			1.26	
				2.5			1.27	
17	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.27	360 (Model No.: 822EKQ3600000001H1)
				2.45			1.29	
				2.5			1.30	
18	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.30	370 (Model No.: 822EKQ3700000001H1)
				2.45			1.32	
				2.5			1.33	
19	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.33	380 (Model No.: 822EKQ3800000001H1)
				2.45			1.35	
				2.5			1.36	
20	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.36	390 (Model No.: 822EKQ3900000001H1)
				2.45			1.38	
				2.5			1.39	

Ant. No.	Brand	Ant. Model	Ant. Gain(dBi) <Excluding cable loss>	Freq. range (GHz)	Ant. Type	Connecter Type	Cable Loss (dB)	Cable Length (mm)
21	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.39	400 (Model No.: 822EKQ4000000001H1)
				2.45			1.41	
				2.5			1.41	
22	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.42	410 (Model No.: 822EKQ4100000001H1)
				2.45			1.44	
				2.5			1.44	
23	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.45	420 (Model No.: 822EKQ4200000001H1)
				2.45			1.46	
				2.5			1.47	
24	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.48	430 (Model No.: 822EKQ4300000001H1)
				2.45			1.49	
				2.5			1.50	
25	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.51	440 (Model No.: 822EKQ4400000001H1)
				2.45			1.52	
				2.5			1.53	
26	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.54	450 (Model No.: 822EKQ4500000001H1)
				2.45			1.55	
				2.5			1.56	
27	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	0.88	220 (Model No.: 822MN82200000001H1)
				2.45			0.93	
				2.5			0.93	
28	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	0.91	230 (Model No.: 822MN82300000001H1)
				2.45			0.95	
				2.5			0.96	
29	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	0.94	240 (Model No.: 822MN82400000001H1)
				2.45			0.98	
				2.5			0.99	
30	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	0.97	250 (Model No.: 822MN82500000001H1)
				2.45			1.01	
				2.5			1.02	

Ant. No.	Brand	Ant. Model	Ant. Gain(dBi) <Excluding cable loss>	Freq. range (GHz)	Ant. Type	Connecter Type	Cable Loss (dB)	Cable Length (mm)
31	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.00	260 (Model No.: 822MN82600000001H1)
				2.45			1.04	
				2.5			1.05	
32	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.03	270 (Model No.: 822MN82700000001H1)
				2.45			1.07	
				2.5			1.08	
33	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.07	280 (Model No.: 822MN82800000001H1)
				2.45			1.10	
				2.5			1.11	
34	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.10	290 (Model No.: 822MN82900000001H1)
				2.45			1.13	
				2.5			1.14	
35	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.13	300 (Model No.: 822MN83000000001H1)
				2.45			1.16	
				2.5			1.17	
36	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.16	310 (Model No.: 822MN83100000001H1)
				2.45			1.19	
				2.5			1.20	
37	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.19	320 (Model No.: 822MN83200000001H1)
				2.45			1.22	
				2.5			1.23	
38	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.22	330 (Model No.: 822MN83300000001H1)
				2.45			1.25	
				2.5			1.26	
39	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.25	340 (Model No.: 822MN83400000001H1)
				2.45			1.29	
				2.5			1.30	
40	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.28	350 (Model No.: 822MN83500000001H1)
				2.45			1.32	
				2.5			1.33	

Ant. No.	Brand	Ant. Model	Ant. Gain(dBi) <Excluding cable loss>	Freq. range (GHz)	Ant. Type	Connecter Type	Cable Loss (dB)	Cable Length (mm)
41	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.31	360 (Model No.: 822MN83600000001H1)
				2.45			1.35	
				2.5			1.36	
42	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.34	370 (Model No.: 822MN83700000001H1)
				2.45			1.38	
				2.5			1.39	
43	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.37	380 (Model No.: 822MN83800000001H1)
				2.45			1.41	
				2.5			1.42	
44	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.40	390 (Model No.: 822MN83900000001H1)
				2.45			1.44	
				2.5			1.45	
45	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.44	400 (Model No.: 822MN84000000001H1)
				2.45			1.47	
				2.5			1.48	
46	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.47	410 (Model No.: 822MN84100000001H1)
				2.45			1.50	
				2.5			1.51	
47	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.50	420 (Model No.: 822MN84200000001H1)
				2.45			1.53	
				2.5			1.54	
48	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.53	430 (Model No.: 822MN84300000001H1)
				2.45			1.56	
				2.5			1.57	
49	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.56	440 (Model No.: 822MN84400000001H1)
				2.45			1.59	
				2.5			1.60	
50	SONY	BT-1504 (1-980-185-11)	1.71	2.4	PCB	MHF	1.59	450 (Model No.: 822MN84500000001H1)
				2.45			1.62	
				2.5			1.63	
Note: From the above antennas for BT used, the **Ant. No.: 3** (BT max antenna gain: 0.85dBi) was selected as representative value for the test and its data was recorded in this report.								

6. The EUT incorporates a MIMO function.

MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11a	6 ~ 54Mbps	2TX	2RX
802.11b	1 ~ 11Mbps	2TX	2RX
802.11g	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX

7. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Operated in 2400 ~ 2483.5MHz band:

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20):

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		

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

Where **PLC:** Power Line Conducted Emission **RE < 1G:** Radiated Emission below 1GHz

RE ≥ 1G: Radiated Emission above 1GHz **APCM:** Antenna Port Conducted Measurement

OB: Conducted Out-Band Emission Measurement

NOTE: 1. The EUT's antenna (PCB) had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**

POWER LINE CONDUCTED EMISSION TEST:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

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

RADIATED EMISSION TEST (BELOW 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

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

RADIATED EMISSION TEST (ABOVE 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
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

ANTENNA PORT CONDUCTED MEASUREMENT:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

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

CONDUCTED OUT-BAND EMISSION MEASUREMENT:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
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

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	25deg. C, 54%RH	120Vac, 60Hz	Jyunchun Lin
RE<1G	18deg. C, 67%RH	120Vac, 60Hz	Weiwei Lo
RE≥1G	24deg. C, 67%RH	120Vac, 60Hz	Nelson Teng
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng
OB	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (15.247)

558074 D01 DTS Meas Guidance v03r02

662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2009

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

Note: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

3.4 DUTY CYCLE OF TEST SIGNAL

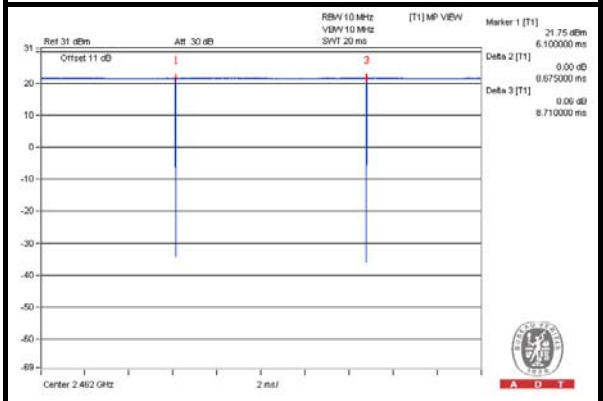
Duty cycle of test signal is ≥ 98 %, duty factor is not required.

802.11b: Duty cycle = 8.675 ms/8.71 ms = 0.996

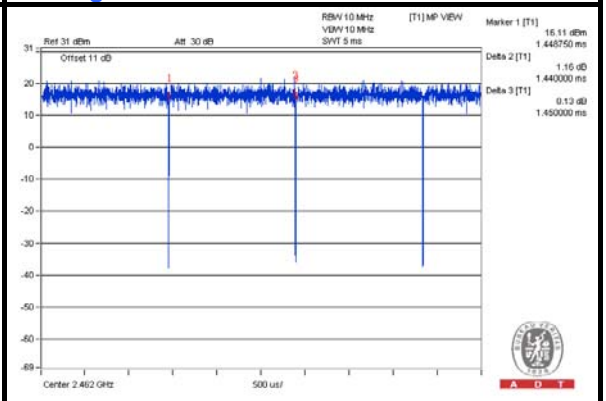
802.11g: Duty cycle = 1.44 ms/1.45 ms = 0.993

802.11n (HT20): Duty cycle = 1.346 ms/1.356 ms= 0.992

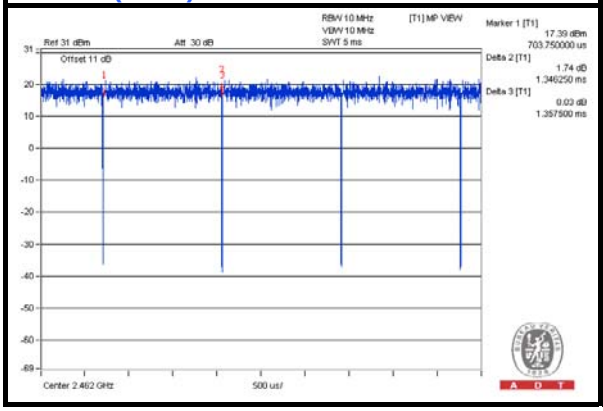
802.11b



802.11g



802.11n (HT20)



3.5 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.

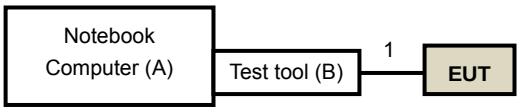
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook Computer	DELL	PP32LA	HSLB32S	FCC DoC	Provided by Lab
B.	Test Tool	Foxconn	NA	NA	NA	Provided by Client

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.	Data Cable	1	0.1	No	0	Provided by Client

3.6 CONFIGURATION OF SYSTEM UNDER TEST



4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

4.1.2 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	100071	Nov. 10, 2014	Nov. 09, 2015
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 is 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: June 08, 2015

4.1.3 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.
b. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
c. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
d. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

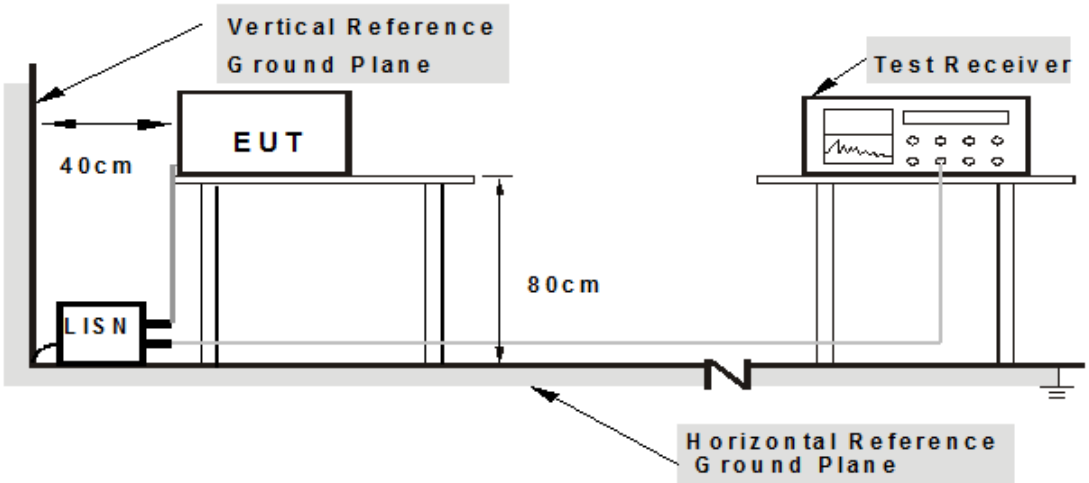
NOTE:

1. The resolution bandwidth of test receiver is 9kHz for Quasi-peak detection (QP) & Average detection (AV).

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.1.6 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit A (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “QA Tool[V 1.0.3.0]” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

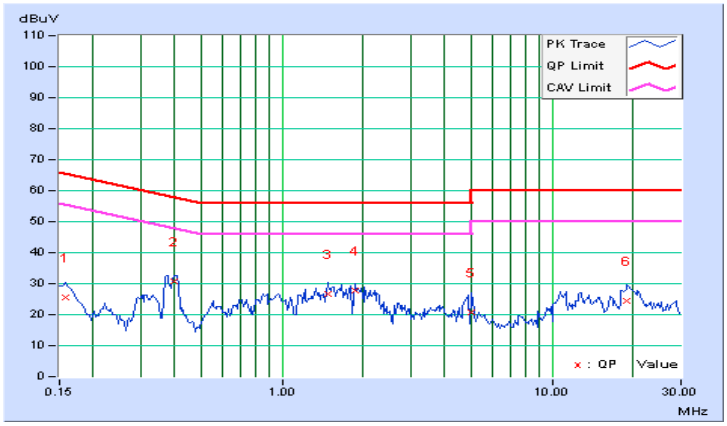
4.1.7 TEST RESULTS

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	0.08	25.52	17.59	25.60	17.67	65.58	55.58	-39.98	-37.91
2	0.39609	0.10	30.73	28.72	30.83	28.82	57.93	47.93	-27.11	-19.12
3	1.47656	0.15	26.40	19.75	26.55	19.90	56.00	46.00	-29.45	-26.10
4	1.85547	0.16	27.63	18.29	27.79	18.45	56.00	46.00	-28.21	-27.55
5	5.02344	0.26	20.39	7.37	20.65	7.63	60.00	50.00	-39.35	-42.37
6	19.00000	0.68	23.84	18.05	24.52	18.73	60.00	50.00	-35.48	-31.27

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

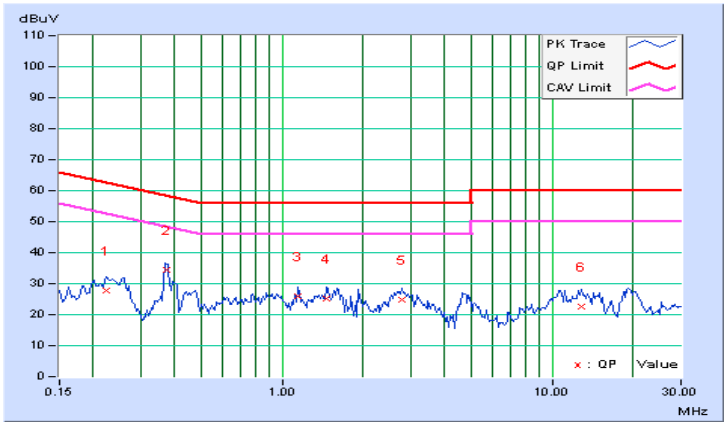


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.22422	0.08	27.73	22.76	27.81	22.84	62.66	52.66	-34.85	-29.82
2	**0.37300**	**0.10**	**34.40**	**33.47**	**34.50**	**33.57**	**58.43**	**48.43**	**-23.94**	**-14.87**
3	1.14453	0.14	25.81	21.26	25.95	21.40	56.00	46.00	-30.05	-24.60
4	1.45703	0.15	25.06	18.62	25.21	18.77	56.00	46.00	-30.79	-27.23
5	2.78906	0.19	24.60	18.93	24.79	19.12	56.00	46.00	-31.21	-26.88
6	12.75781	0.54	22.14	16.25	22.68	16.79	60.00	50.00	-37.32	-33.21

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



4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

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

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

NOTE:

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

4.2.2 TEST INSTRUMENTS

For Below 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210105	July 21,2014	July 20,2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	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
Software	ADT_Radiated_V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. G.
3. The FCC Site Registration No. is 966073.
4. The CANADA Site Registration No. is IC 7450H-2.
5. Tested Date: June 04, 2015

For Above 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 21,2014	Jan. 20,2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 05, 2013	Oct. 04, 2014
Spectrum Analyzer R&S	FSV40	100964	July 15, 2013	July 14, 2014
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 18, 2013	Nov. 17, 2014
Pre-Amplifier Agilent	8449B	3008A02578	June 25, 2013	June 24, 2014
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 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: June 12, 2014

4.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters 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:

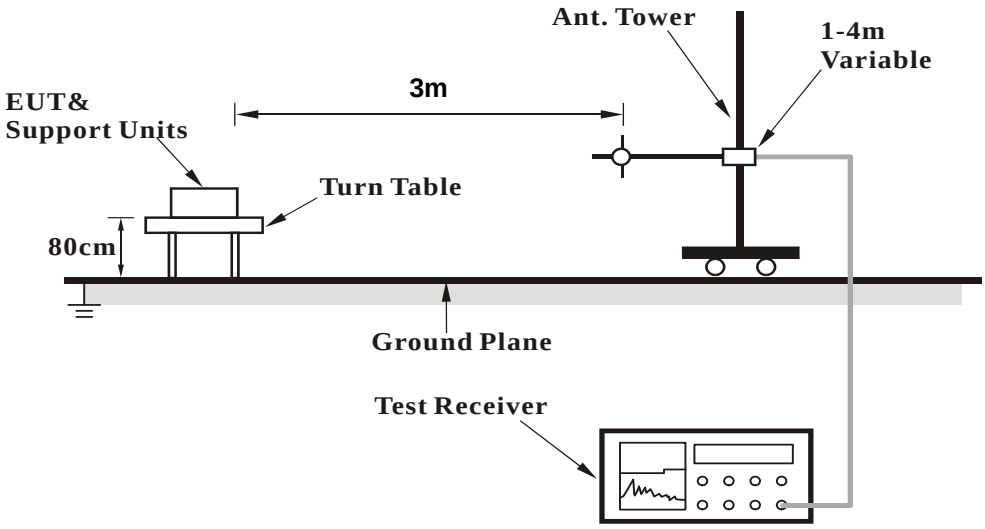
1. For emission measurements above 1 GHz, the EUT shall be placed at a height of 1.5 m above the ground at 3 meter chamber room for test
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
4. 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/duty cycle)).
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
6. All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

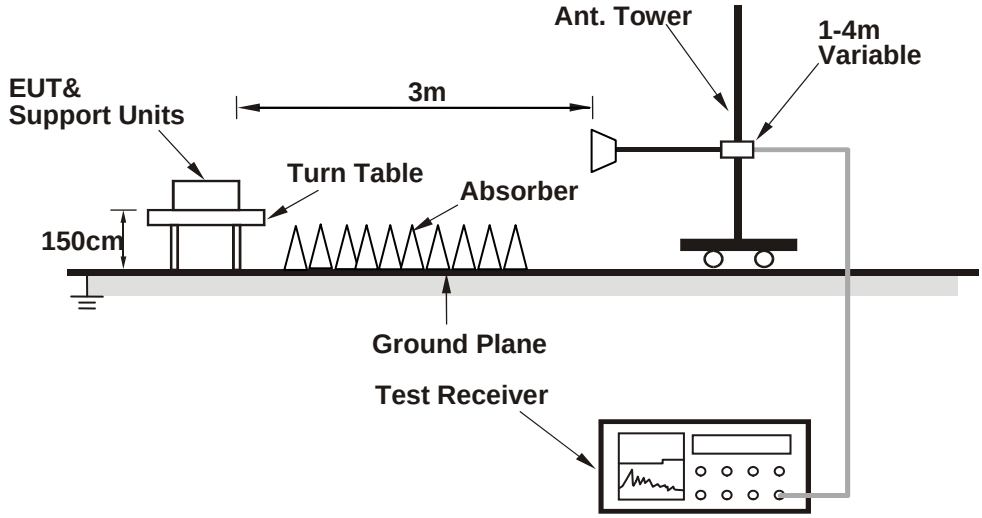
No deviation

4.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

802.11g

CHANNEL	TX Channel 6	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	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	134.57	34.5 QP	43.5	-9.0	2.00 H	24	48.12	-13.64
2	361.50	35.5 QP	46.0	-10.5	1.00 H	33	45.96	-10.44
3	480.03	39.2 QP	46.0	-6.8	2.00 H	136	46.45	-7.28
4	609.24	34.8 QP	46.0	-11.2	1.55 H	258	38.74	-3.92
5	940.20	40.0 QP	46.0	-6.0	1.55 H	360	38.51	1.47
6	959.99	34.8 QP	46.0	-11.2	1.55 H	103	33.10	1.69
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	178.31	38.6 QP	43.5	-5.0	2.00 V	280	52.81	-14.26
2	241.90	37.5 QP	46.0	-8.5	1.55 V	254	51.84	-14.33
3	480.03	35.1 QP	46.0	-10.9	2.00 V	255	42.37	-7.28
4	604.82	30.8 QP	46.0	-15.2	1.55 V	209	34.89	-4.12
5	781.70	41.2 QP	46.0	-4.8	1.00 V	114	41.91	-0.75
6	942.43	38.4 QP	46.0	-7.6	1.00 V	302	36.87	1.51

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

ABOVE 1GHz DATA

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2387.26	65.1 PK	74.0	-8.9	1.28 H	121	35.23	29.87
2	2387.26	52.0 AV	54.0	-2.0	1.28 H	121	22.13	29.87
3	*2412.00	108.6 PK			1.28 H	121	78.69	29.91
4	*2412.00	106.4 AV			1.28 H	121	76.49	29.91
5	4824.00	56.2 PK	74.0	-17.8	1.43 H	111	18.34	37.86
6	4824.00	52.6 AV	54.0	-1.4	1.43 H	111	14.74	37.86
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	64.5 PK	74.0	-9.5	1.33 V	194	34.62	29.88
2	2390.00	50.0 AV	54.0	-4.0	1.33 V	194	20.12	29.88
3	*2412.00	103.5 PK			1.33 V	184	73.59	29.91
4	*2412.00	101.4 AV			1.33 V	184	71.49	29.91
5	4824.00	57.0 PK	74.0	-17.0	1.30 V	135	19.14	37.86
6	4824.00	53.6 AV	54.0	-0.4	1.30 V	135	15.74	37.86

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	109.4 PK			1.33 H	111	79.45	29.95
2	*2437.00	107.3 AV			1.33 H	111	77.35	29.95
3	4874.00	55.9 PK	74.0	-18.1	1.45 H	286	18.09	37.81
4	4874.00	52.1 AV	54.0	-1.9	1.45 H	286	14.29	37.81
5	7311.00	52.5 PK	74.0	-21.5	1.00 H	46	10.72	41.78
6	7311.00	40.0 AV	54.0	-14.0	1.00 H	46	-1.78	41.78
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	104.3 PK			1.27 V	192	74.35	29.95
2	*2437.00	102.1 AV			1.27 V	192	72.15	29.95
3	4874.00	56.9 PK	74.0	-17.1	1.27 V	133	19.09	37.81
4	**4874.00**	**53.8 AV**	**54.0**	**-0.2**	**1.27 V**	**133**	**15.99**	**37.81**
5	7311.00	52.1 PK	74.0	-21.9	1.29 V	288	10.32	41.78
6	7311.00	39.5 AV	54.0	-14.5	1.29 V	288	-2.28	41.78

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	112.1 PK			1.24 H	280	82.10	30.00
2	*2462.00	109.8 AV			1.24 H	280	79.80	30.00
3	2483.50	70.0 PK	74.0	-4.0	1.24 H	280	39.96	30.04
4	2483.50	50.2 AV	54.0	-3.8	1.24 H	280	20.16	30.04
5	4924.00	56.7 PK	74.0	-17.3	1.33 H	329	18.93	37.77
6	4924.00	53.5 AV	54.0	-0.5	1.33 H	329	15.73	37.77
7	7386.00	52.6 PK	74.0	-21.4	1.02 H	52	10.56	42.04
8	7386.00	40.0 AV	54.0	-14.0	1.02 H	52	-2.04	42.04
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.1 PK			1.33 V	194	77.10	30.00
2	*2462.00	104.9 AV			1.33 V	194	74.90	30.00
3	4924.00	56.4 PK	74.0	-17.6	1.11 V	132	18.63	37.77
4	4924.00	53.3 AV	54.0	-0.7	1.11 V	132	15.53	37.77
5	7386.00	52.7 PK	74.0	-21.3	1.33 V	278	10.66	42.04
6	7386.00	39.9 AV	54.0	-14.1	1.33 V	278	-2.14	42.04

REMARKS:

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

802.11g

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	70.9 PK	74.0	-3.1	1.25 H	236	41.02	29.88
2	2390.00	53.4 AV	54.0	-0.6	1.25 H	236	23.52	29.88
3	*2412.00	112.0 PK			1.25 H	236	82.09	29.91
4	*2412.00	101.5 AV			1.25 H	236	71.59	29.91
5	4824.00	42.6 PK	74.0	-31.4	1.29 H	333	4.74	37.86
6	4824.00	40.1 AV	54.0	-13.9	1.29 H	333	2.24	37.86
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	65.3 PK	74.0	-8.7	1.30 V	203	35.42	29.88
2	2390.00	51.1 AV	54.0	-2.9	1.30 V	203	21.22	29.88
3	*2412.00	107.3 PK			1.30 V	203	77.39	29.91
4	*2412.00	96.4 AV			1.30 V	203	66.49	29.91
5	4824.00	43.6 PK	74.0	-30.4	1.14 V	122	5.74	37.86
6	4824.00	41.0 AV	54.0	-13.0	1.14 V	122	3.14	37.86

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	73.1 PK	74.0	-0.9	1.21 H	289	43.22	29.88
2	2390.00	53.2 AV	54.0	-0.8	1.21 H	289	23.32	29.88
3	*2437.00	118.2 PK			1.26 H	283	88.25	29.95
4	*2437.00	108.6 AV			1.26 H	283	78.65	29.95
5	2483.50	72.5 PK	74.0	-1.5	1.22 H	275	42.46	30.04
6	2483.50	53.4 AV	54.0	-0.6	1.22 H	275	23.36	30.04
7	4874.00	46.2 PK	74.0	-27.8	1.31 H	322	8.39	37.81
8	4874.00	43.5 AV	54.0	-10.5	1.31 H	322	5.69	37.81
9	7311.00	52.7 PK	74.0	-21.3	1.05 H	44	10.92	41.78
10	7311.00	40.1 AV	54.0	-13.9	1.05 H	44	-1.68	41.78
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.2 PK	74.0	-5.8	1.35 V	219	38.32	29.88
2	2390.00	51.2 AV	54.0	-2.8	1.35 V	219	21.32	29.88
3	*2437.00	113.4 PK			1.35 V	219	83.45	29.95
4	*2437.00	103.4 AV			1.35 V	219	73.45	29.95
5	2483.50	67.3 PK	74.0	-6.7	1.35 V	219	37.26	30.04
6	2483.50	51.6 AV	54.0	-2.4	1.35 V	219	21.56	30.04
7	4874.00	46.2 PK	74.0	-27.8	1.11 V	118	8.39	37.81
8	4874.00	43.4 AV	54.0	-10.6	1.11 V	118	5.59	37.81
9	7311.00	51.9 PK	74.0	-22.1	1.36 V	271	10.12	41.78
10	7311.00	39.1 AV	54.0	-14.9	1.36 V	271	-2.68	41.78

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	111.7 PK			1.27 H	280	81.70	30.00
2	*2462.00	101.4 AV			1.27 H	280	71.40	30.00
3	2483.50	73.7 PK	74.0	-0.3	1.27 H	280	43.66	30.04
4	2483.50	52.1 AV	54.0	-1.9	1.27 H	280	22.06	30.04
5	4924.00	43.0 PK	74.0	-31.0	1.32 H	349	5.23	37.77
6	4924.00	40.6 AV	54.0	-13.4	1.32 H	349	2.83	37.77
7	7386.00	52.7 PK	74.0	-21.3	1.01 H	56	10.66	42.04
8	7386.00	40.3 AV	54.0	-13.7	1.01 H	56	-1.74	42.04
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.1 PK			1.24 V	191	77.10	30.00
2	*2462.00	96.5 AV			1.24 V	191	66.50	30.00
3	2483.50	65.8 PK	74.0	-8.2	1.24 V	191	35.76	30.04
4	2483.50	51.5 AV	54.0	-2.5	1.24 V	191	21.46	30.04
5	4924.00	43.4 PK	74.0	-30.6	1.20 V	120	5.63	37.77
6	4924.00	40.5 AV	54.0	-13.5	1.20 V	120	2.73	37.77
7	7386.00	52.3 PK	74.0	-21.7	1.33 V	276	10.26	42.04
8	7386.00	39.2 AV	54.0	-14.8	1.33 V	276	-2.84	42.04

REMARKS:

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

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	71.2 PK	74.0	-2.8	1.22 H	246	41.32	29.88
2	2390.00	53.7 AV	54.0	-0.3	1.22 H	246	23.82	29.88
3	*2412.00	112.1 PK			1.22 H	246	82.19	29.91
4	*2412.00	101.7 AV			1.22 H	246	71.79	29.91
5	4824.00	42.4 PK	74.0	-31.6	1.26 H	326	4.54	37.86
6	4824.00	39.9 AV	54.0	-14.1	1.26 H	326	2.04	37.86
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	65.0 PK	74.0	-9.0	1.29 V	213	35.12	29.88
2	2390.00	50.9 AV	54.0	-3.1	1.29 V	213	21.02	29.88
3	*2412.00	107.3 PK			1.33 V	216	77.39	29.91
4	*2412.00	96.4 AV			1.33 V	216	66.49	29.91
5	4824.00	43.1 PK	74.0	-30.9	1.14 V	114	5.24	37.86
6	4824.00	40.6 AV	54.0	-13.4	1.14 V	114	2.74	37.86

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	73.0 PK	74.0	-1.0	1.26 H	295	43.12	29.88
2	2390.00	53.0 AV	54.0	-1.0	1.26 H	295	23.12	29.88
3	*2437.00	118.3 PK			1.24 H	286	88.35	29.95
4	*2437.00	108.5 AV			1.24 H	286	78.55	29.95
5	2483.50	72.5 PK	74.0	-1.5	1.21 H	279	42.46	30.04
6	2483.50	53.4 AV	54.0	-0.6	1.21 H	279	23.36	30.04
7	4874.00	46.9 PK	74.0	-27.1	1.37 H	330	9.09	37.81
8	4874.00	43.9 AV	54.0	-10.1	1.37 H	330	6.09	37.81
9	7311.00	52.9 PK	74.0	-21.1	1.09 H	46	11.12	41.78
10	7311.00	40.1 AV	54.0	-13.9	1.09 H	46	-1.68	41.78
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.7 PK	74.0	-5.3	1.35 V	233	38.82	29.88
2	2390.00	51.6 AV	54.0	-2.4	1.35 V	233	21.72	29.88
3	*2437.00	114.0 PK			1.32 V	230	84.05	29.95
4	*2437.00	103.7 AV			1.32 V	230	73.75	29.95
5	2483.50	67.1 PK	74.0	-6.9	1.34 V	215	37.06	30.04
6	2483.50	51.4 AV	54.0	-2.6	1.34 V	215	21.36	30.04
7	4874.00	46.1 PK	74.0	-27.9	1.11 V	124	8.29	37.81
8	4874.00	43.4 AV	54.0	-10.6	1.11 V	124	5.59	37.81
9	7311.00	52.0 PK	74.0	-22.0	1.35 V	266	10.22	41.78
10	7311.00	39.1 AV	54.0	-14.9	1.35 V	266	-2.68	41.78

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	111.3 PK			1.24 H	272	81.30	30.00
2	*2462.00	101.0 AV			1.24 H	272	71.00	30.00
3	**2483.50**	**73.8 PK**	**74.0**	**-0.2**	**1.24 H**	**272**	**43.76**	**30.04**
4	2483.50	51.8 AV	54.0	-2.2	1.24 H	272	21.76	30.04
5	4924.00	42.7 PK	74.0	-31.3	1.34 H	346	4.93	37.77
6	4924.00	40.6 AV	54.0	-13.4	1.34 H	346	2.83	37.77
7	7386.00	52.5 PK	74.0	-21.5	1.00 H	58	10.46	42.04
8	7386.00	40.2 AV	54.0	-13.8	1.00 H	58	-1.84	42.04
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	105.2 PK			1.30 V	183	75.20	30.00
2	*2462.00	95.4 AV			1.30 V	183	65.40	30.00
3	2483.50	69.4 PK	74.0	-4.6	1.30 V	183	39.36	30.04
4	2483.50	47.1 AV	54.0	-6.9	1.30 V	183	17.06	30.04
5	4924.00	43.0 PK	74.0	-31.0	1.17 V	128	5.23	37.77
6	4924.00	40.3 AV	54.0	-13.7	1.17 V	128	2.53	37.77
7	7386.00	52.1 PK	74.0	-21.9	1.37 V	261	10.06	42.04
8	7386.00	39.0 AV	54.0	-15.0	1.37 V	261	-3.04	42.04

REMARKS:

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

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 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 12, 2014

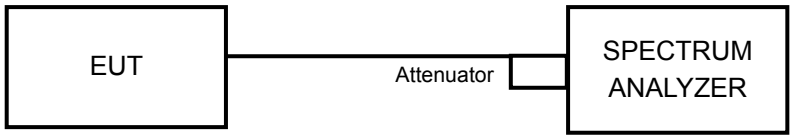
4.3.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = 100kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. 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

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

802.11b

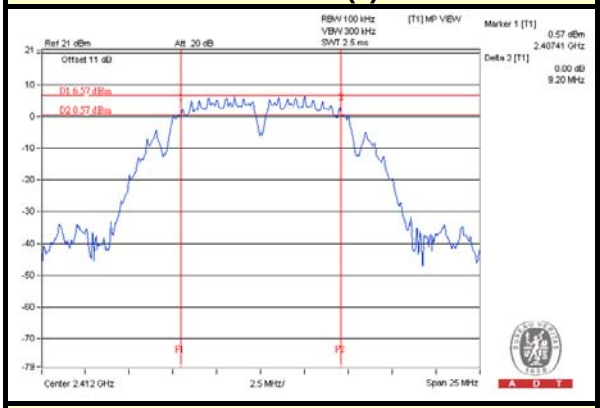
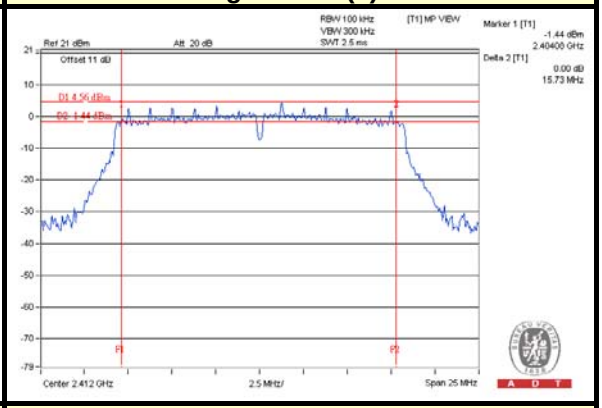
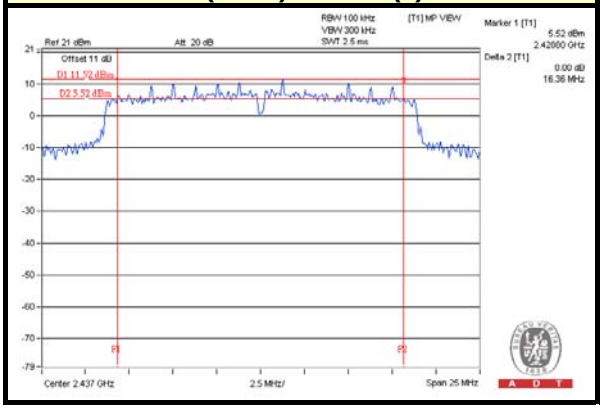
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	10.11	9.20	0.5	PASS
6	2437	9.66	10.11	0.5	PASS
11	2462	10.07	10.08	0.5	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.34	15.73	0.5	PASS
6	2437	16.35	16.42	0.5	PASS
11	2462	16.41	16.36	0.5	PASS

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.02	17.16	0.5	PASS
6	2437	17.44	16.36	0.5	PASS
11	2462	16.96	17.00	0.5	PASS

SPECTRUM PLOT OF WORST VALUE	
802.11b / Chain (1) : CH1	**802.11g / Chain (1) : CH1**
	
802.11n (HT20) / Chain (1) : CH6	
	

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 ≤ 4;

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

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

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

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power meter Anritsu	ML2495A	1014008	Apr. 30, 2014	Apr. 29, 2015
Power sensor Anritsu	MA2411B	0917122	Apr. 30, 2014	Apr. 29, 2015

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 12, 2014

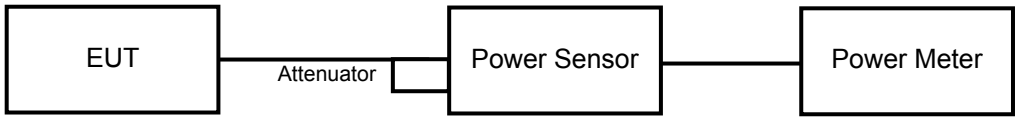
4.4.3 TEST PROCEDURES

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

4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.4.7 TEST RESULTS

FOR PEAK POWER

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	20.56	19.34	199.664	23.00	30	PASS
6	2437	21.52	20.11	244.471	23.88	30	PASS
11	2462	22.83	21.27	325.835	25.13	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	23.15	23.64	437.744	26.41	30	PASS
6	2437	25.65	25.34	709.261	28.51	30	PASS
11	2462	23.55	23.69	460.348	26.63	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	23.01	23.28	412.8	26.16	30	PASS
6	2437	25.61	25.27	700.427	28.45	30	PASS
11	2462	23.12	22.81	396.101	25.98	30	PASS

FOR AVERAGE POWER

802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	17.11	15.97	90.941	19.59
6	2437	18.13	16.71	111.894	20.49
11	2462	19.56	17.97	153.026	21.85

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	15.14	15.28	66.388	18.22
6	2437	22.07	21.95	317.740	25.02
11	2462	14.46	14.98	59.402	17.74

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	15.04	14.65	61.089	17.86
6	2437	22.06	21.88	314.864	24.98
11	2462	14.72	14.68	59.024	17.71

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 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 12, 2014

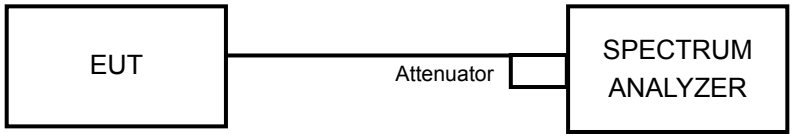
4.5.3 TEST PROCEDURE

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

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.5.7 TEST RESULTS

802.11b

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	TOTAL PSD (dBm)	LIMIT (dBm)	PASS /FAIL
0	1	2412	-6.42	3.01	-3.41	7.82	PASS
	6	2437	-6.71	3.01	-3.70	7.82	PASS
	11	2462	-4.22	3.01	-1.21	7.82	PASS
1	1	2412	-8.55	3.01	-5.54	7.82	PASS
	6	2437	-7.02	3.01	-4.01	7.82	PASS
	11	2462	-5.14	3.01	-2.13	7.82	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.18dBi > 6dBi , so the power density limit shall be reduced to 8-(6.18-6) = 7.82dBm.

802.11g

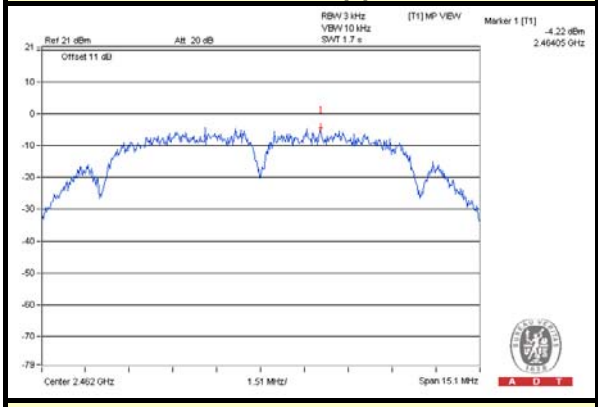
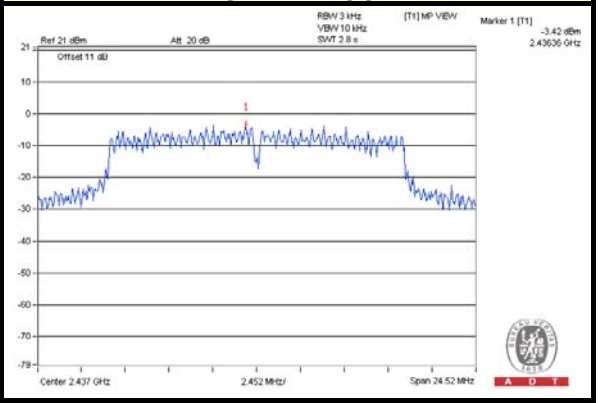
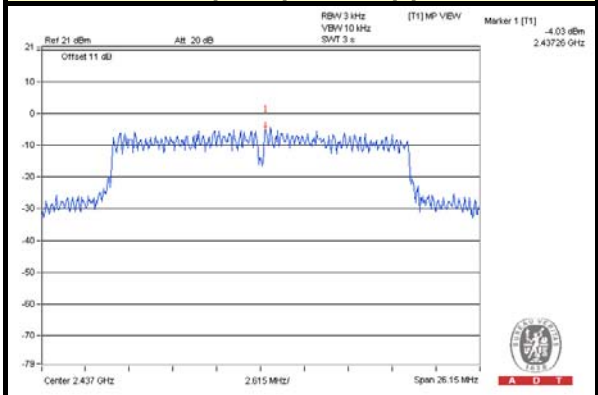
TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	TOTAL PSD (dBm)	LIMIT (dBm)	PASS /FAIL
0	1	2412	-8.85	3.01	-5.84	7.82	PASS
	6	2437	-3.42	3.01	-0.41	7.82	PASS
	11	2462	-11.97	3.01	-8.96	7.82	PASS
1	1	2412	-10.44	3.01	-7.43	7.82	PASS
	6	2437	-3.82	3.01	-0.81	7.82	PASS
	11	2462	-9.81	3.01	-6.80	7.82	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.18dBi > 6dBi , so the power density limit shall be reduced to 8-(6.18-6) = 7.82dBm.

802.11n (HT20)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	1	2412	-10.04	3.01	-7.03	7.82	PASS
	6	2437	-4.03	3.01	-1.02	7.82	PASS
	11	2462	-10.47	3.01	-7.46	7.82	PASS
1	1	2412	-11.84	3.01	-8.83	7.82	PASS
	6	2437	-4.92	3.01	-1.91	7.82	PASS
	11	2462	-11.23	3.01	-8.22	7.82	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.18dBi > 6dBi , so the power density limit shall be reduced to 8-(6.18-6) = 7.82dBm.

SPECTRUM PLOT OF WORST VALUE	
802.11b / Chain (0) : CH11	**802.11g / Chain (0) : CH6**
	
802.11n (HT20) / Chain(0) : CH6	
	

4.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 12, 2014

4.6.3 TEST PROCEDURE

Measurement Procedure - Reference Level

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 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.

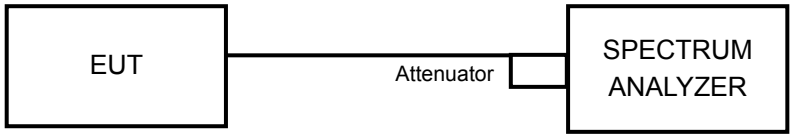
Measurement Procedure –Unwanted Emission Level

1. Set RBW = 100 kHz.
2. Set VBW ≥ 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.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

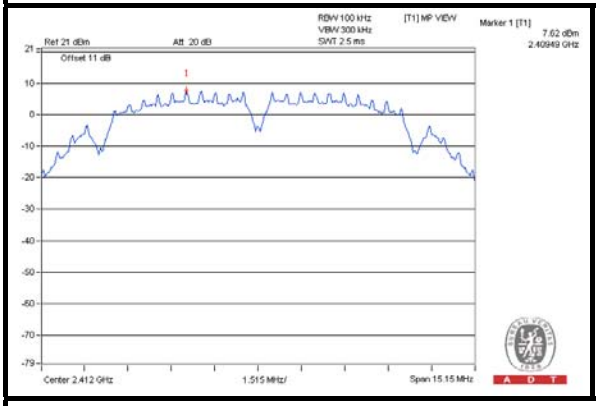
4.6.7 TEST RESULTS

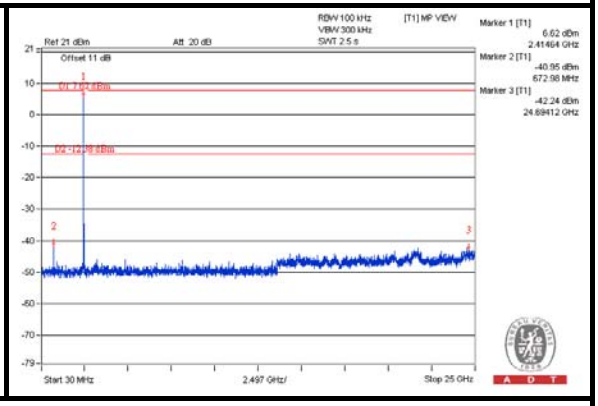
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b

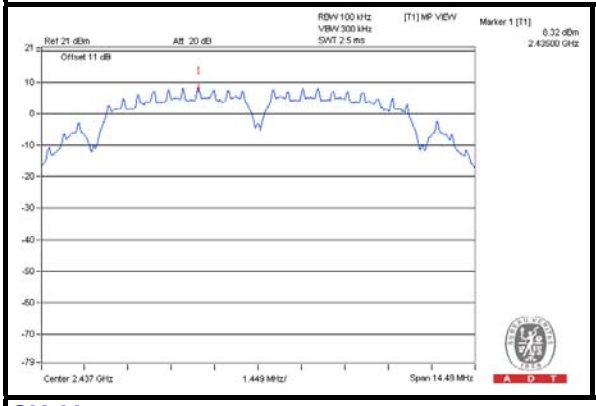
Chain (0)

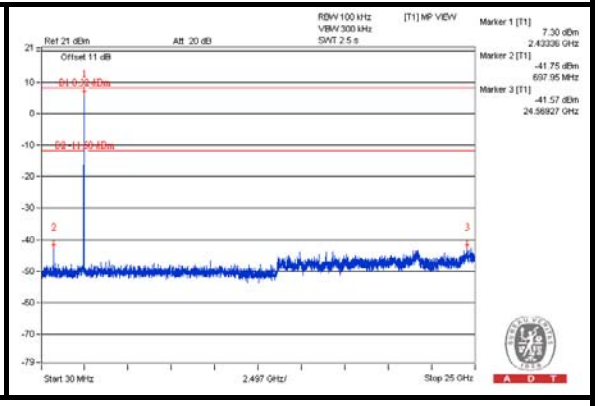
CH 1



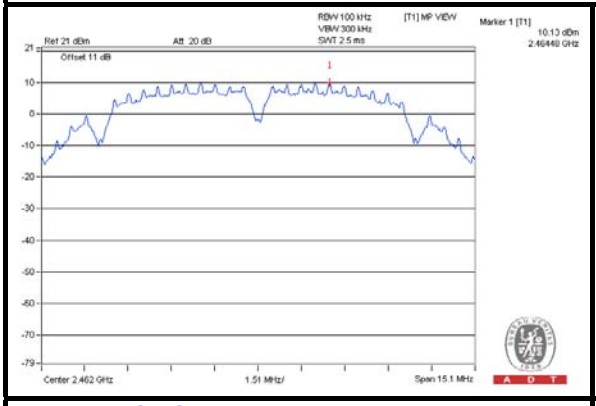


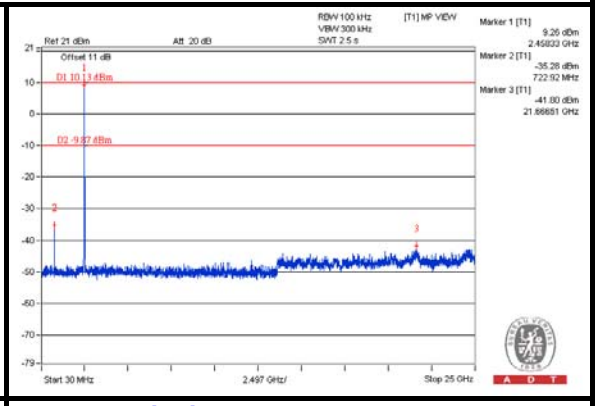
CH 6



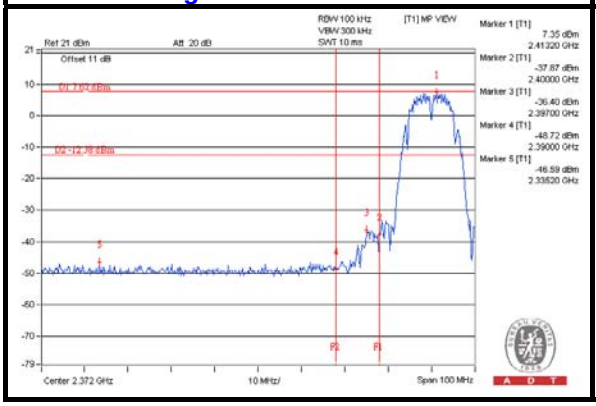


CH 11

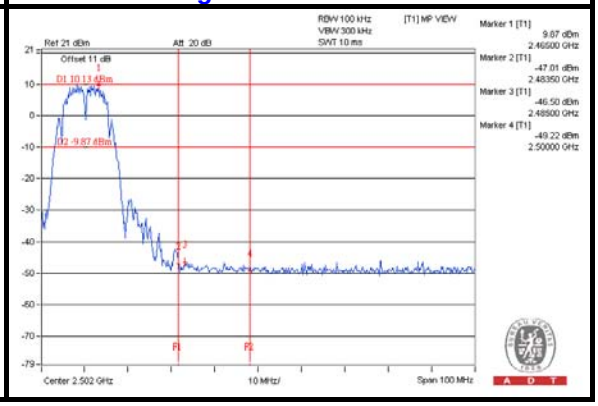




CH 1 Band edge

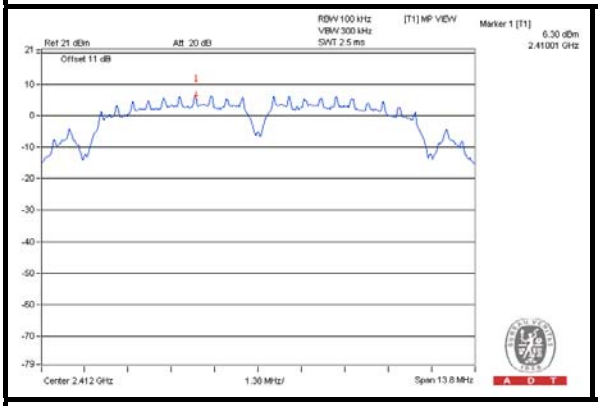


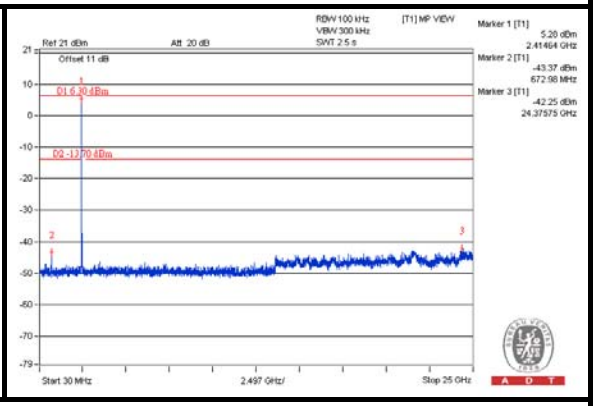
CH 11 Band edge



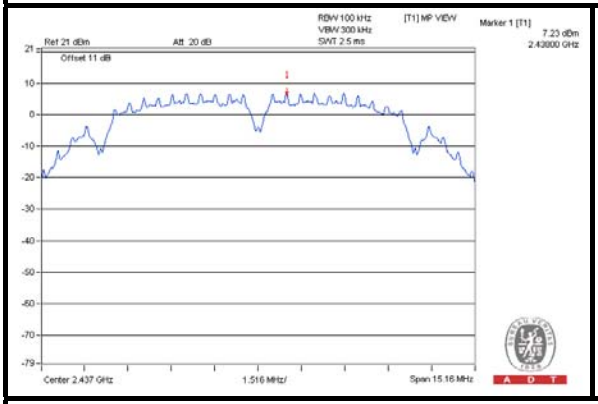
Chain (1)

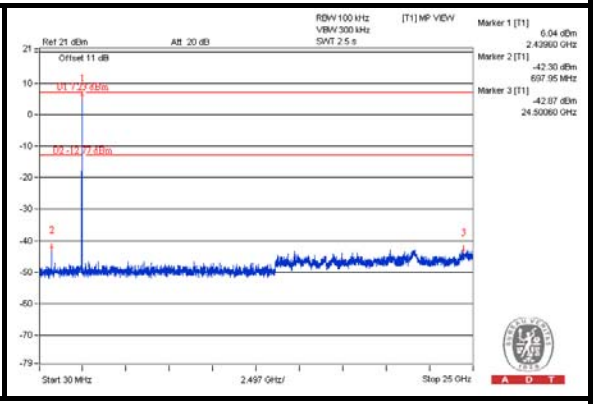
CH 1



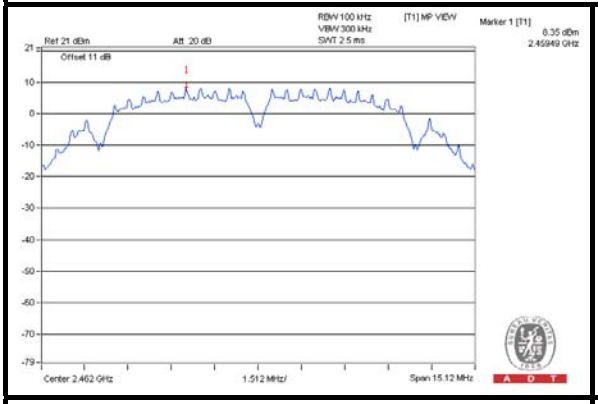


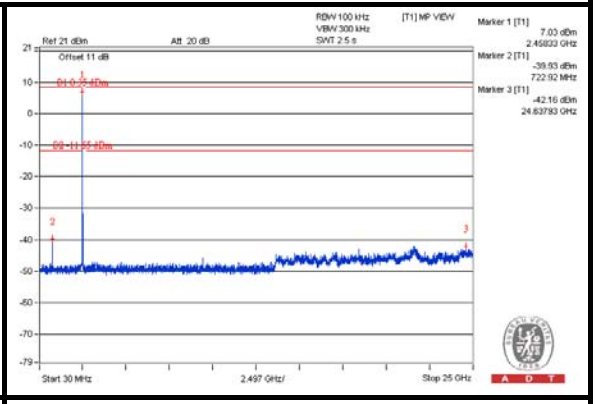
CH 6



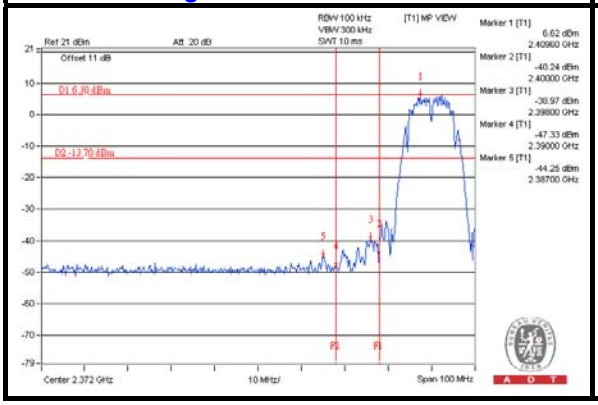


CH 11

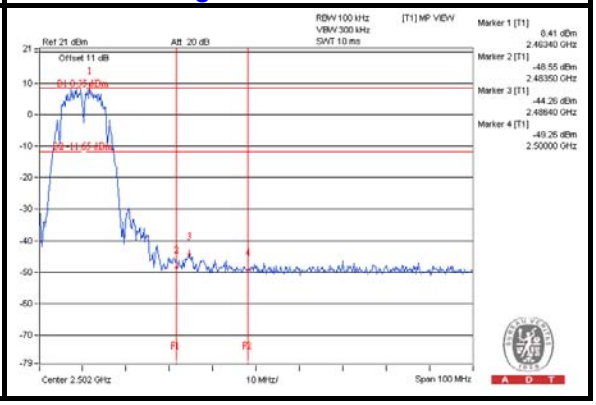




CH 1 Band edge



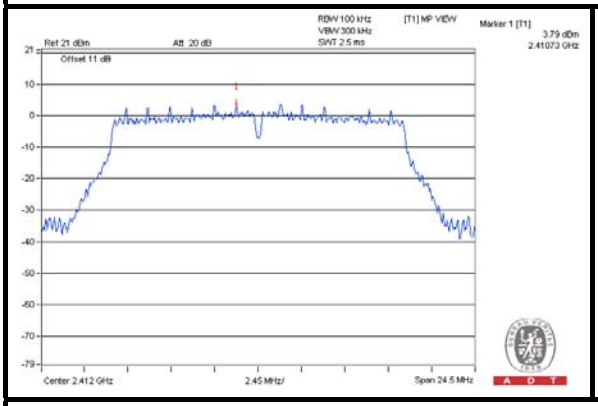
CH 11 Band edge

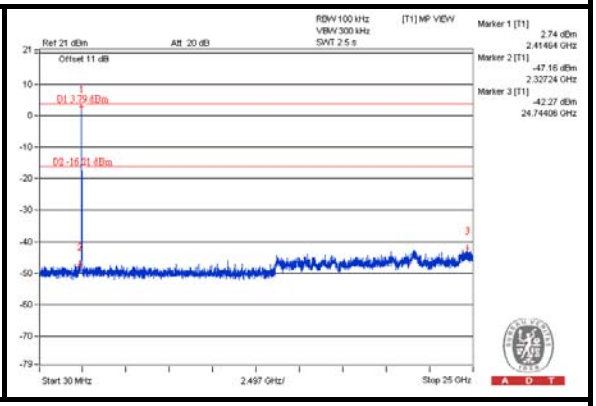


802.11g

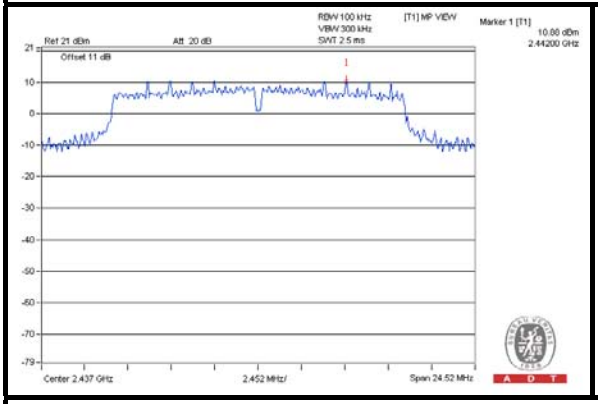
Chain (0)

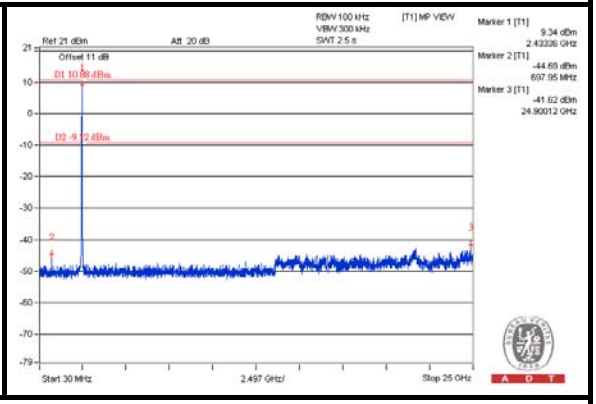
CH 1



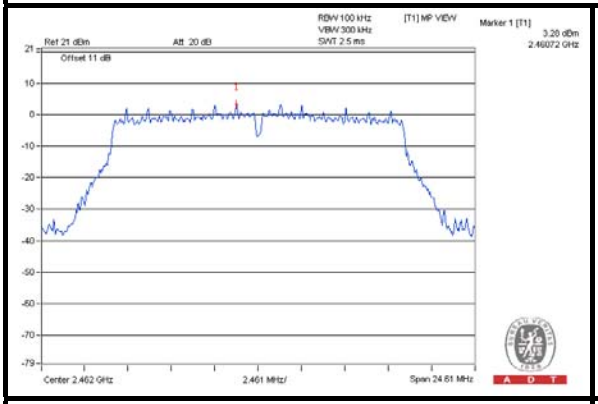


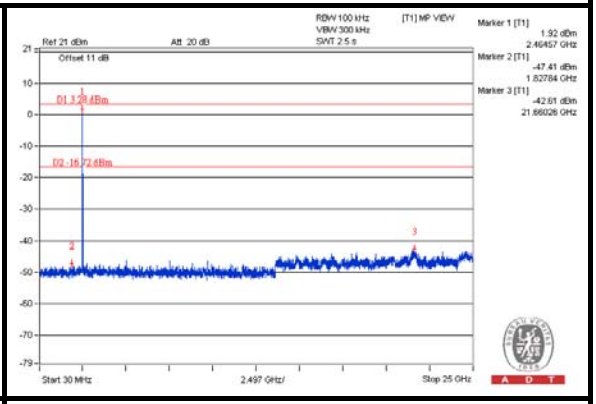
CH 6



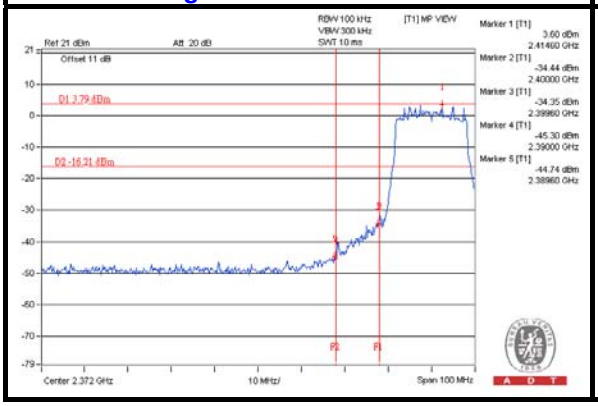


CH 11

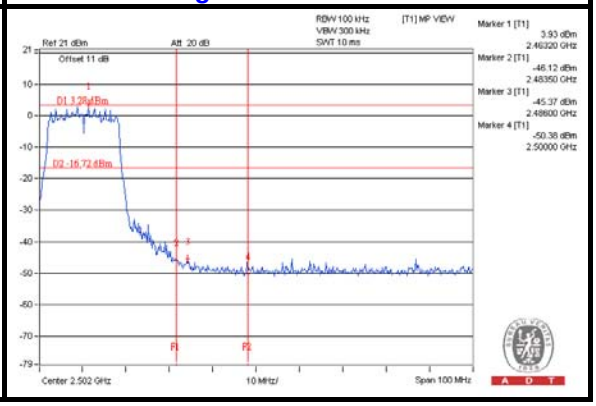




CH 1 Band edge

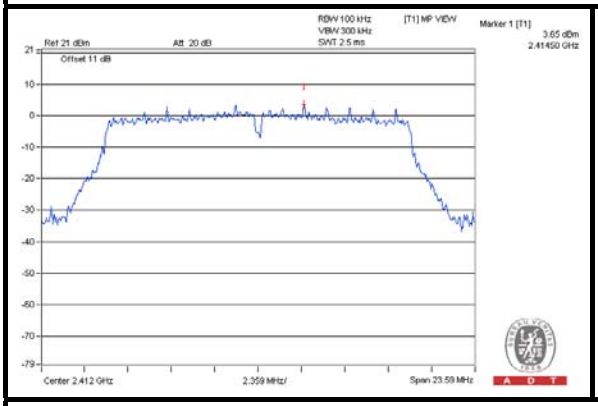


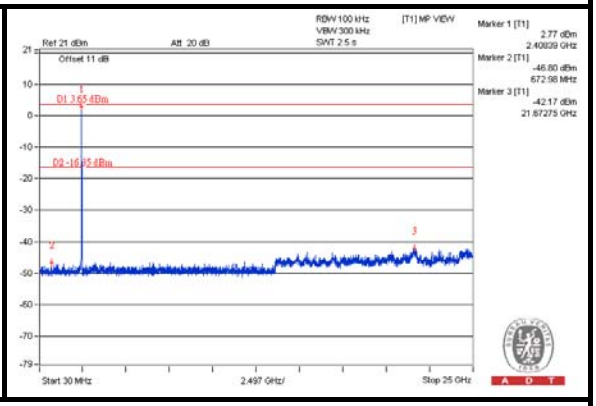
CH 11 Band edge



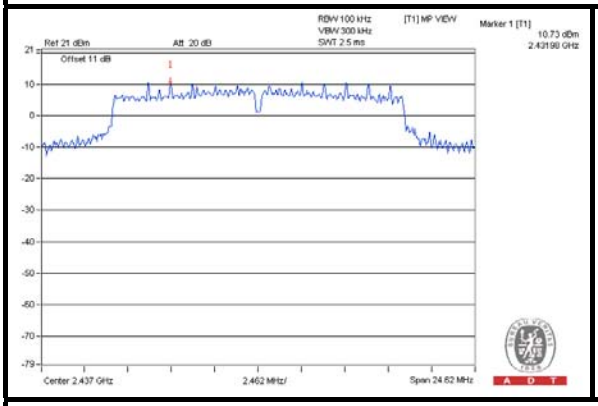
Chain (1)

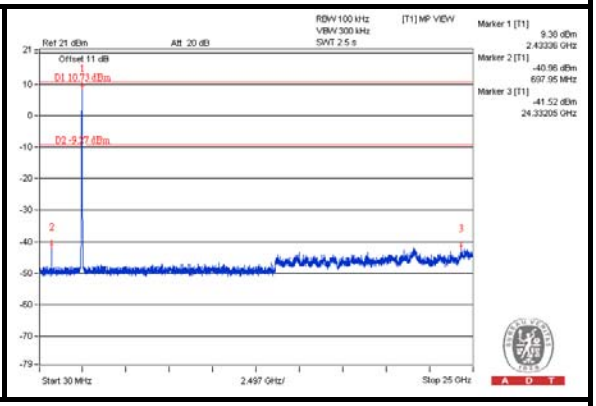
CH 1



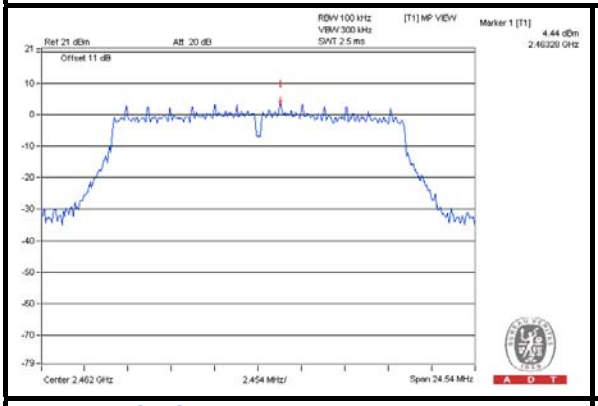


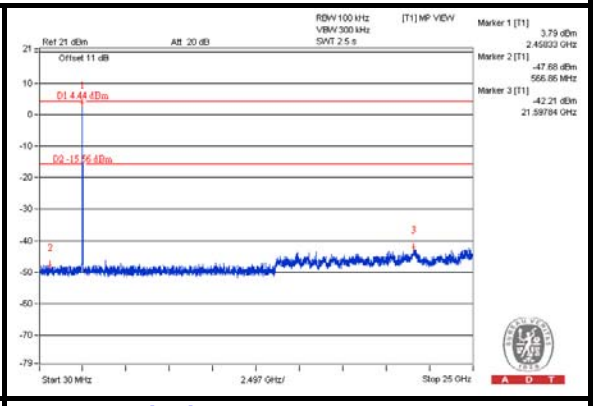
CH 6



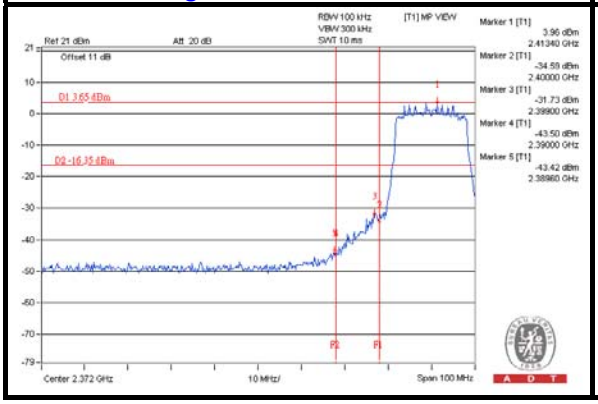


CH 11

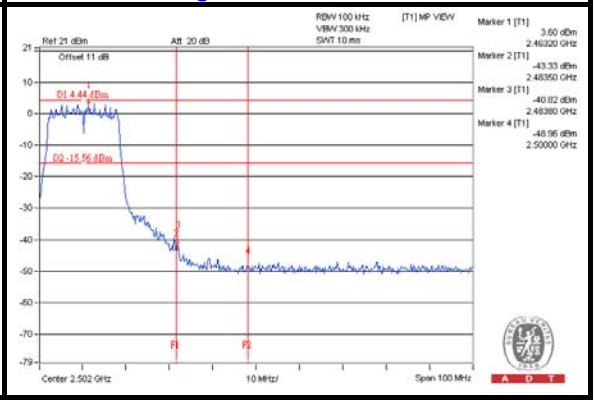




CH 1 Band edge



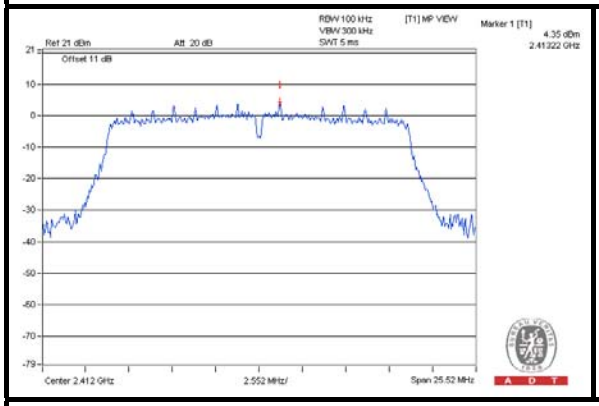
CH 11 Band edge

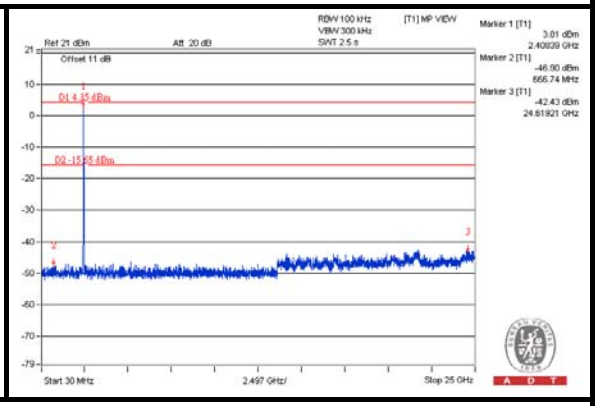


802.11n (HT20)

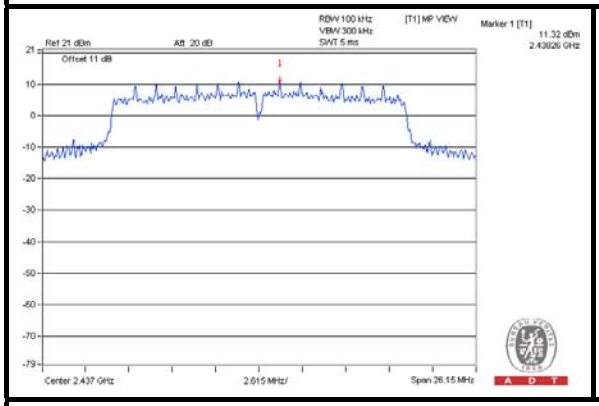
Chain (0)

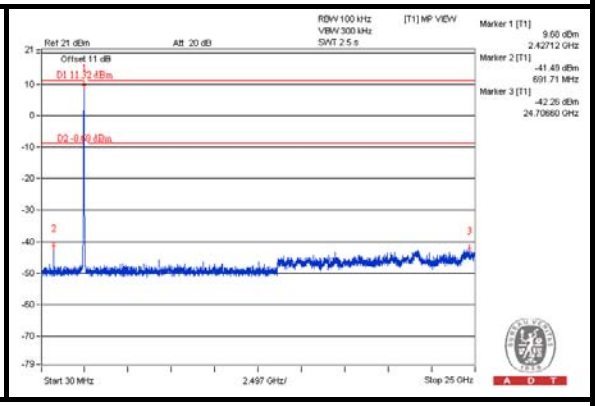
CH 1



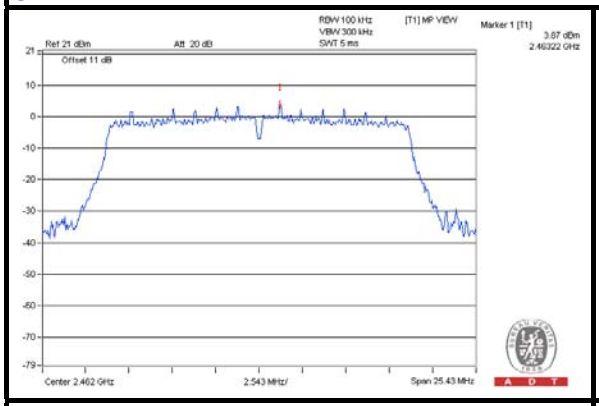


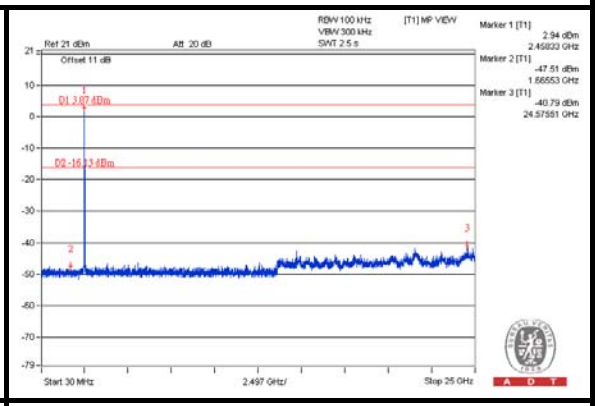
CH 6



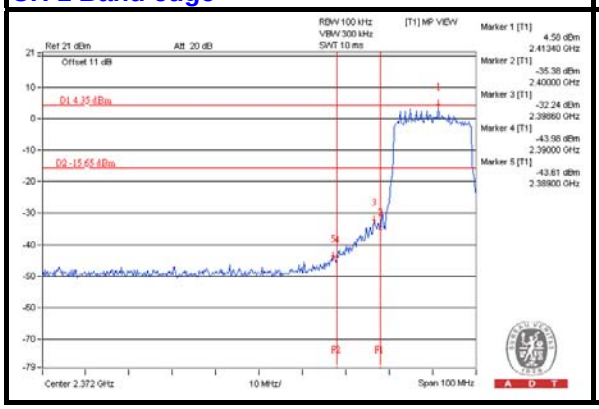


CH 11

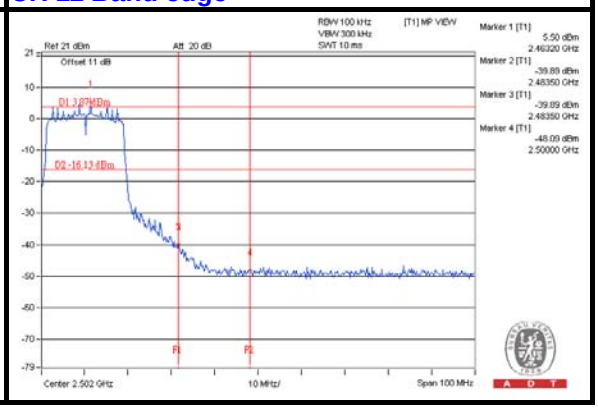




CH 1 Band edge

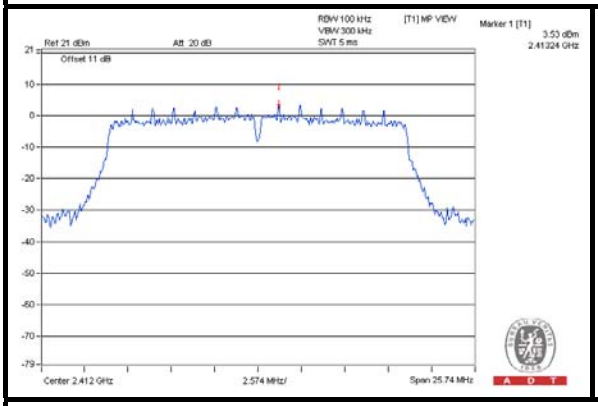


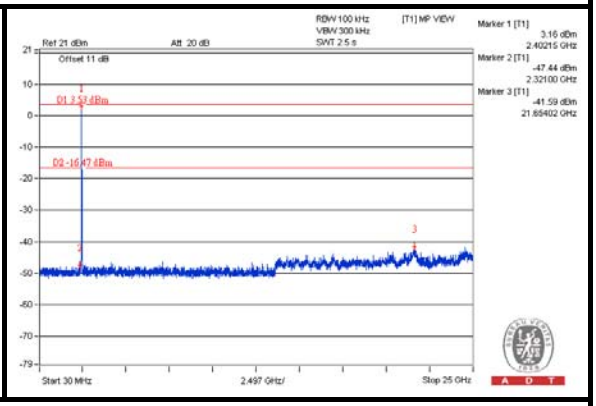
CH 11 Band edge



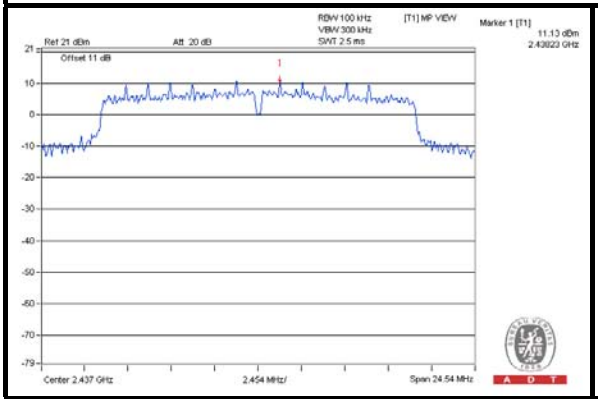
Chain (1)

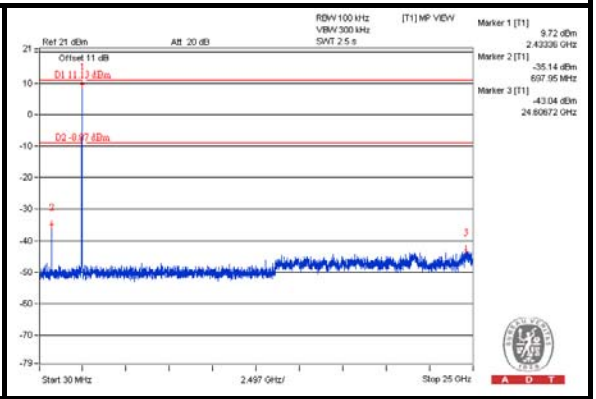
CH 1



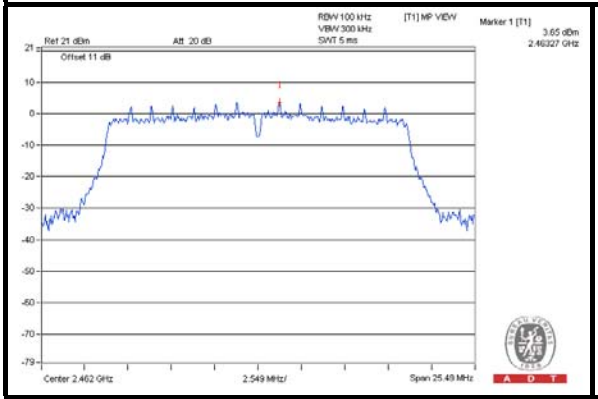


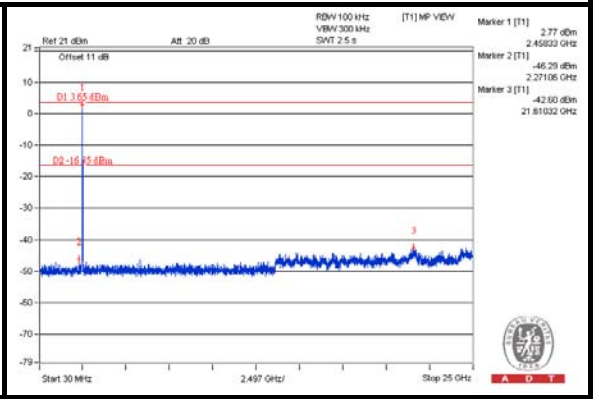
CH 6



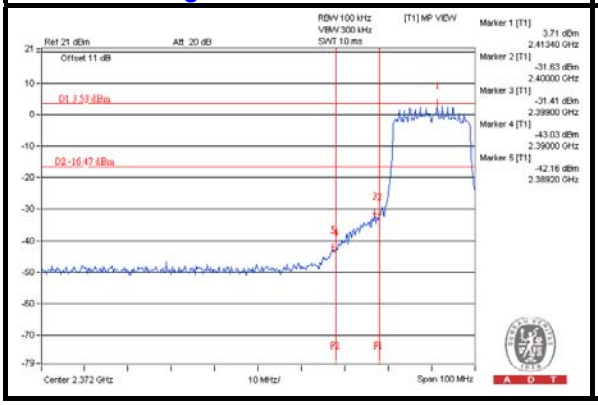


CH 11

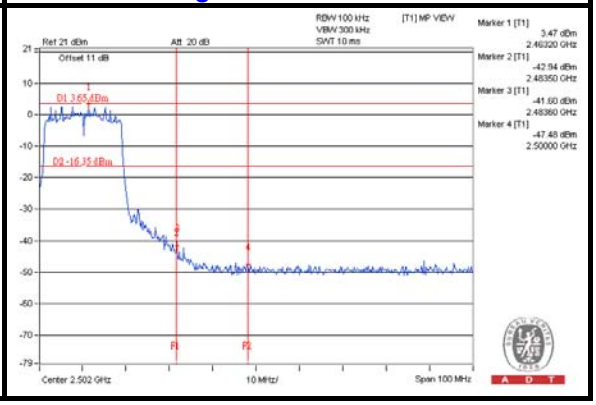




CH 1 Band edge



CH 11 Band edge



5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6. INFORMATION ON THE TESTING LABORATORIES

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

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

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

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

No modifications were made to the EUT by the lab during the test.

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