FCC TEST REPORT

REPORT NO.: RF140620E05

MODEL NO.: DWA-131

FCC ID: KA2WA131E1

RECEIVED: June 20, 2014

TESTED: June 26 to July 07, 2014

ISSUED: July 31, 2014

APPLICANT: D-Link Corporation

ADDRESS: No.289, Sinhu 3rd Rd., Neihu District, Taipei City 114, 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.

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification

Table of Contents

RELEASE CONTROL RECORD 4
1. CERTIFICATION 5
2. SUMMARY OF TEST RESULTS 6
2.1 MEASUREMENT UNCERTAINTY 7
3. GENERAL INFORMATION 8
3.1 GENERAL DESCRIPTION OF EUT 8
3.2 DESCRIPTION OF TEST MODES 10
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL 11
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS 14
3.4 DUTY CYCLE OF TEST SIGNAL 15
3.5 DESCRIPTION OF SUPPORT UNITS 16
3.6 CONFIGURATION OF SYSTEM UNDER TEST 16
4. TEST TYPES AND RESULTS 17
4.1 CONDUCTED EMISSION MEASUREMENT 17
4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT 17
4.1.2 TEST INSTRUMENTS 17
4.1.3 TEST PROCEDURES 18
4.1.4 DEVIATION FROM TEST STANDARD 18
4.1.5 TEST SETUP 18
4.1.6 EUT OPERATING CONDITIONS 19
4.1.7 TEST RESULTS 20
4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT 22
4.2.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT 22
4.2.2 TEST INSTRUMENTS 23
4.2.3 TEST PROCEDURES 24
4.2.4 DEVIATION FROM TEST STANDARD 24
4.2.5 TEST SETUP 25
4.2.6 EUT OPERATING CONDITIONS 25
4.2.7 TEST RESULTS 26
4.3 6dB BANDWIDTH MEASUREMENT 39
4.3.1 LIMITS OF 6DB BANDWIDTH MEASUREMENT 39
4.3.2 TEST INSTRUMENTS 39
4.3.3 TEST PROCEDURE 39
4.3.4 DEVIATION FROM TEST STANDARD 39
4.3.5 TEST SETUP 39
4.3.6 EUT OPERATING CONDITIONS 39
4.3.7 TEST RESULTS 40
4.4 CONDUCTED OUTPUT POWER MEASUREMENT 42
4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT 42
4.4.2 TEST INSTRUMENTS 42
4.4.3 TEST PROCEDURES 42
4.4.4 DEVIATION FROM TEST STANDARD 43
4.4.5 TEST SETUP 43
4.4.6 EUT OPERATING CONDITIONS 43
4.4.7 TEST RESULTS 44
4.5 POWER SPECTRAL DENSITY MEASUREMENT 46
4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT 46
4.5.2 TEST INSTRUMENTS 46
4.5.3 TEST PROCEDURE 46
4.5.4 DEVIATION FROM TEST STANDARD 46
4.5.5 TEST SETUP 46

4.5.6 EUT OPERATING CONDITION 46
4.5.7 TEST RESULTS 47
4.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT 49
4.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT 49
4.6.2 TEST INSTRUMENTS 49
4.6.3 TEST PROCEDURE 49
4.6.4 DEVIATION FROM TEST STANDARD 50
4.6.5 TEST SETUP 50
4.6.6 EUT OPERATING CONDITION 50
4.6.7 TEST RESULTS 50
5. PHOTOGRAPHS OF THE TEST CONFIGURATION 58
6. INFORMATION ON THE TESTING LABORATORIES 59
7. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB 60

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140620E05	Original release	July 31, 2014

1. CERTIFICATION

PRODUCT:	Wireless N Nano USB adapter
BRAND NAME:	D-LINK
MODEL NO.:	DWA-131
TEST SAMPLE:	ENGINEERING SAMPLE
APPLICANT:	D-Link Corporation
TESTED:	June 26 to July 07, 2014
STANDARDS:	**FCC Part 15, Subpart C (Section 15.247)** ANSI C63.10-2009

The above equipment (Model: DWA-131) 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:** *July 31, 2014*

(Midoli Peng, Specialist)

APPROVED BY : _____ , **DATE:** *July 31, 2014*

(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 -14.22dB at 1.92578MHz
15.247(d) 15.209	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.2dB at 2390.00MHz
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.

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)	5.37 dB
Radiated emissions (1GHz -6GHz)	3.65 dB
Radiated emissions (6GHz -18GHz)	3.88 dB
Radiated emissions (18GHz -40GHz)	4.11 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless N Nano USB adapter
MODEL NO.	DWA-131
POWER SUPPLY	DC 5V from USB interface
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS,OFDM
TRANSFER RATE	802.11b: up to 11Mbps 802.11g: up to 54Mbps 802.11n: up to 300Mbps
OPERATING FREQUENCY	2.412 ~ 2.462GHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
MAXIMUM OUTPUT POWER	802.11b: 41.879mW 802.11g: 118.814mW 802.11n (HT20): 130.554mW 802.11n (HT40): 124.172mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	NA

Note:

1. The antennas provided to the EUT, please refer to the following table:

Antenna No.	Transmitter Circuit	Brand	Model	Antenna Gain(dBi) < including cable loss>	Frequency range (GHz ~ GHz)	Antenna Type	Connecter Type
1	Chain (0)	HL	290-20127	-1.97	2.4~2.4835	PIFA	None (like solder)
2	Chain (1)	HL	290-20127	-0.17	2.4~2.4835	PIFA	None (like solder)

2. The EUT incorporates a MIMO function without beamforming.

MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	1TX (fix on Chain (0))	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

3. 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

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		

7 channels are provided for 802.11n (HT40):

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

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ³ 1G	APCM	OB	
-	√	√	√	√	√	-

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

RE ³ 1G: Radiated Emission above 1GHz **APCM:** Antenna Port Conducted Measurement

OB: Conducted Out-Band Emission Measurement

NOTE: 1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**(Below 1GHz) and **Z-plane**(Above 1GHz)

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)
802.11n (HT40)	3 to 9	9	OFDM	BPSK	13.5

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)
802.11n (HT40)	3 to 9	9	OFDM	BPSK	13.5

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
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

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
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

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
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	25deg. C, 64%RH	120Vac, 60Hz	Ping Liu
RE<1G	23deg. C, 68%RH	120Vac, 60Hz	Tim Ho
RE³1G	22deg. C, 66%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Nelson Teng
OB	25deg. C, 60%RH	120Vac, 60Hz	Nelson Teng

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 v03r01

662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2009

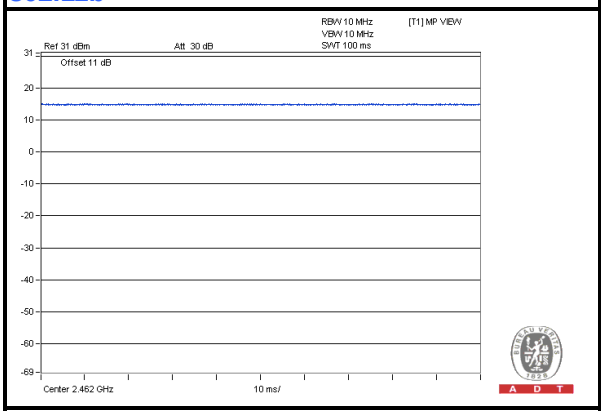
All test items have been performed and recorded as per the above standards.

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.(Wait for client confirm)

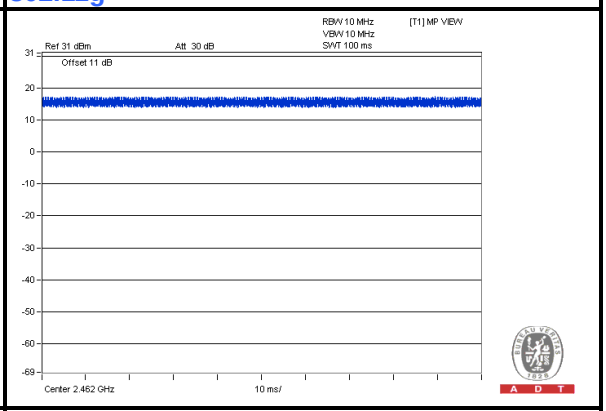
3.4 DUTY CYCLE OF TEST SIGNAL

Duty cycle of test signal is 100 %, duty factor is not required.

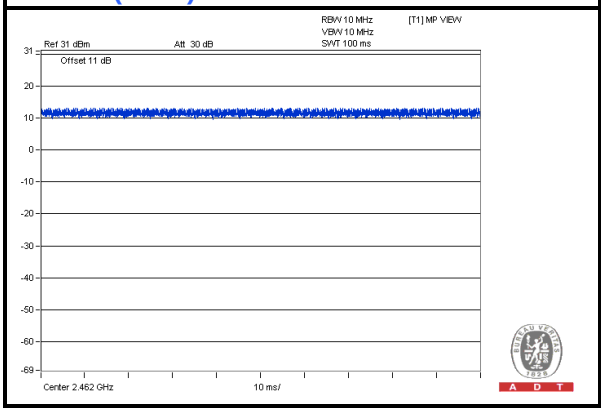
802.11b



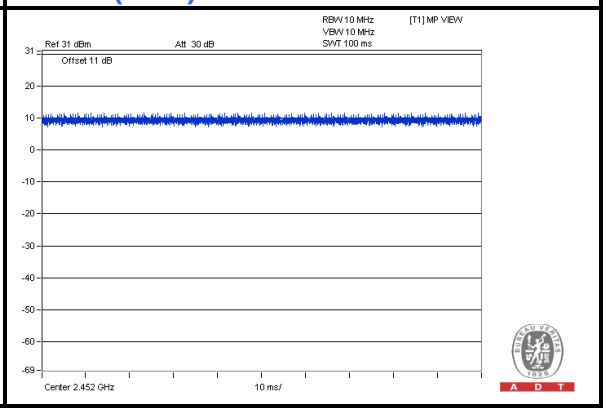
802.11g



802.11n (HT20)



802.11n (HT40)



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.

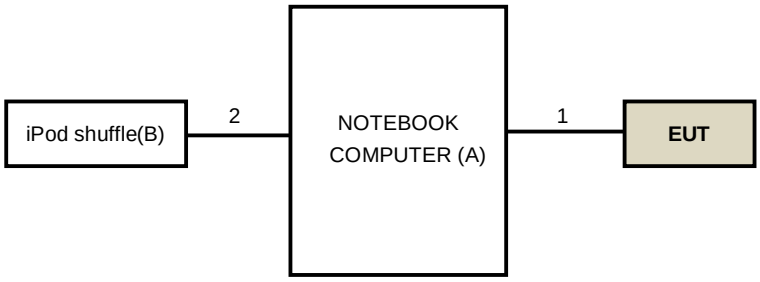
No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	NOTEBOOK COMPUTER	DELL	E5430	GM1SKV1	FCC DoC	Provided by Lab
B	iPod shuffle	Apple	MD778TA/A	CC4JMCMXF4T1	NA	Provided by Lab

NOTE:

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

No.	Cable	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Number)	Remark
1	USB	1	0.2	Yes	0	Provided by Lab
2	Audio to Audio	1	1	No	0	Provided by Lab

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 ROHDE & SCHWARZ	ESCS 30	100375	Apr. 29, 2014	Apr. 28, 2015
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 12, 2013	Sep. 11, 2014
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100071	Nov. 13, 2013	Nov. 12, 2014
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 10 , 2014	Mar. 09, 2015
50 ohms Terminator	N/A	EMC-03	Sep. 24, 2013	Sep. 23, 2014
50 ohms Terminator	N/A	EMC-02	Oct. 01, 2013	Sep. 30, 2014
Software ADT	BV ADT_Cond_V7.3.7.3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3 The VCCI Con C Registration No. is C-3611.
4 Tested Date: June 26, 2014

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.

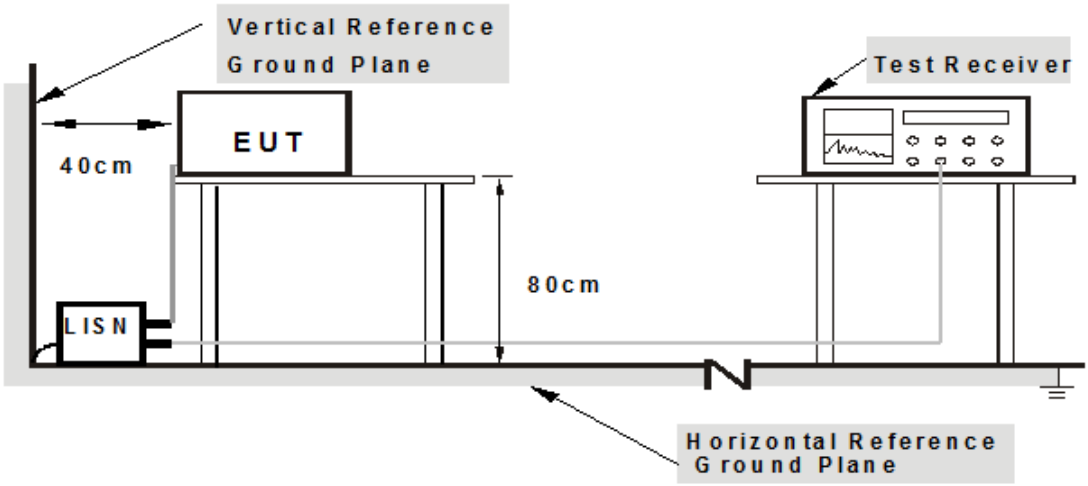
NOTE:

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 "MP_Kit_RTL11n_8192EU_USB_v21.07_20140304(BETA).exe" to enable EUT under transmission/receiving condition continuously at specific channel frequency.

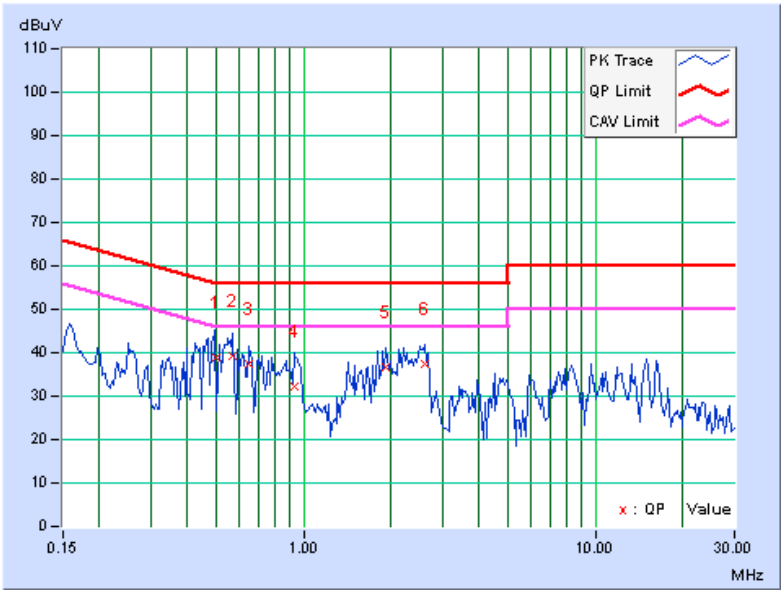
4.1.7 TEST RESULTS

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	0.50000	0.10	38.91	23.92	39.01	24.02	56.00	46.00	-16.99	-21.98
2	0.56797	0.10	38.98	22.98	39.08	23.08	56.00	46.00	-16.92	-22.92
3	0.65391	0.11	37.24	26.87	37.35	26.98	56.00	46.00	-18.65	-19.02
4	0.93125	0.13	32.26	26.33	32.39	26.46	56.00	46.00	-23.61	-19.54
5	**1.92578**	**0.17**	**36.47**	**31.61**	**36.64**	**31.78**	**56.00**	**46.00**	**-19.36**	**-14.22**
6	2.59375	0.20	37.33	30.45	37.53	30.65	56.00	46.00	-18.47	-15.35

REMARKS:

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

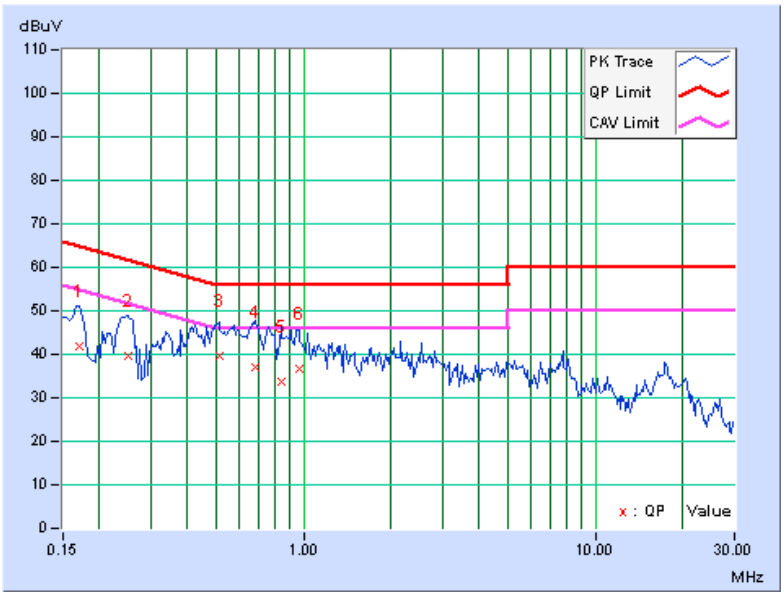


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	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	0.16953	0.07	41.78	34.58	41.85	34.65	64.98	54.98	-23.13	-20.33
2	0.25156	0.08	39.44	32.70	39.52	32.78	61.71	51.71	-22.19	-18.93
3	0.51328	0.10	39.51	27.62	39.61	27.72	56.00	46.00	-16.39	-18.28
4	0.68125	0.11	36.87	27.08	36.98	27.19	56.00	46.00	-19.02	-18.81
5	0.83750	0.12	33.48	24.36	33.60	24.48	56.00	46.00	-22.40	-21.52
6	0.96250	0.13	36.56	26.38	36.69	26.51	56.00	46.00	-19.31	-19.49

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.

4.2.2 TEST INSTRUMENTS

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 24, 2014	June 23, 2015
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 horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5 The VCCI Site Registration No. is G-137.
6 The CANADA Site Registration No. is IC 7450H-2.
7 Tested Date: June 26 to July 02, 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:

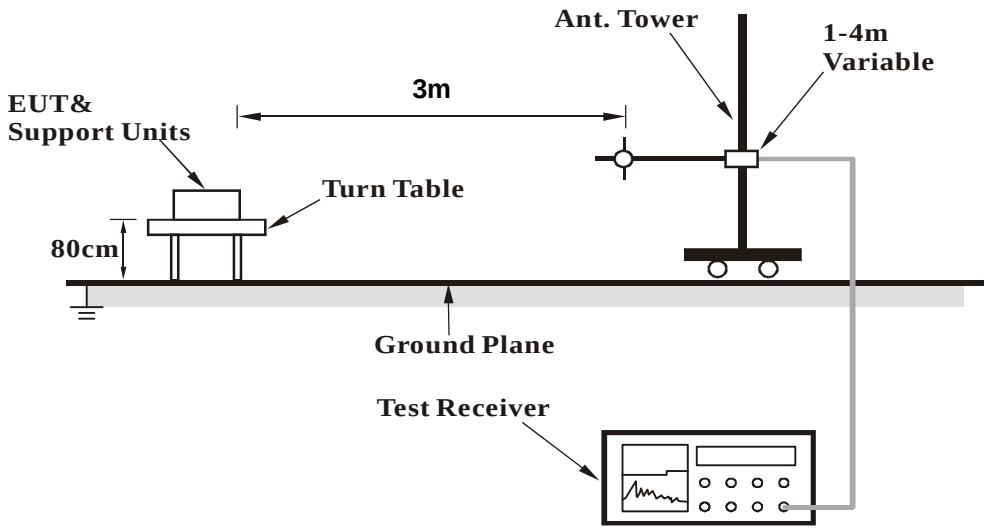
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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/duty cycle)).
4. 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.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

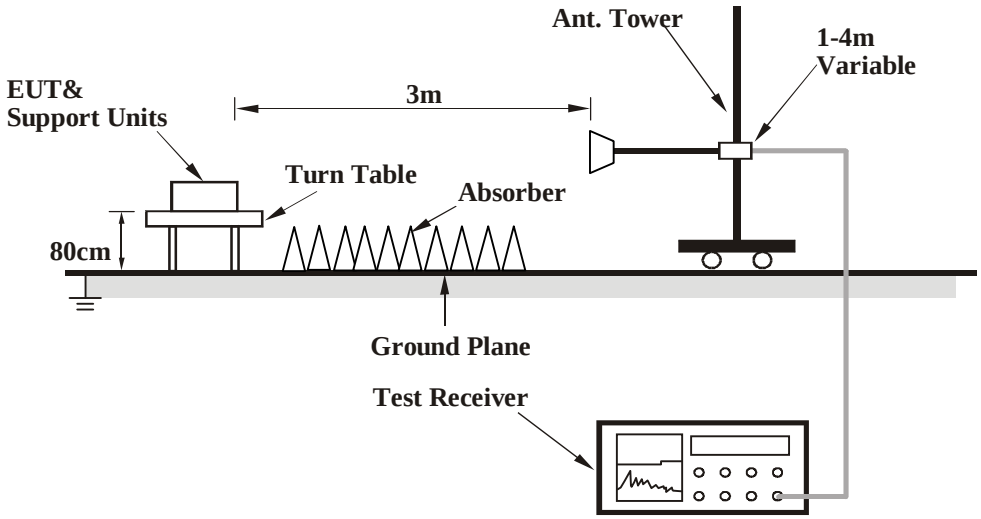
No deviation

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

802.11n (HT40)

CHANNEL	TX Channel 9	**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	60.45	36.5 QP	40.0	-3.5	2.00 H	298	50.69	-14.18
2	240.01	36.5 QP	46.0	-9.6	1.00 H	193	51.22	-14.77
3	698.38	40.7 QP	46.0	-5.3	1.00 H	209	44.22	-3.54
4	769.29	41.7 QP	46.0	-4.3	1.00 H	34	43.38	-1.65
5	796.58	43.9 QP	46.0	-2.1	1.00 H	246	45.31	-1.40
6	826.18	42.4 QP	46.0	-3.6	1.00 H	243	43.45	-1.01
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	60.49	33.8 QP	40.0	-6.2	1.00 V	230	47.97	-14.19
2	165.99	33.0 QP	43.5	-10.5	1.00 V	302	46.45	-13.49
3	720.74	40.1 QP	46.0	-5.9	1.50 V	0	43.38	-3.26
4	774.62	38.0 QP	46.0	-8.0	1.50 V	113	39.56	-1.55
5	796.60	43.9 QP	46.0	-2.1	1.50 V	333	45.27	-1.40
6	898.54	41.0 QP	46.0	-5.0	1.00 V	287	40.96	0.03

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	2386.00	53.4 PK	74.0	-20.6	1.05 H	37	21.77	31.63
2	2386.00	41.7 AV	54.0	-12.3	1.05 H	37	10.07	31.63
3	*2412.00	106.3 PK			1.05 H	37	74.57	31.73
4	*2412.00	103.4 AV			1.05 H	37	71.67	31.73
5	4824.00	55.1 PK	74.0	-18.9	1.06 H	305	16.21	38.89
6	4824.00	53.5 AV	54.0	-0.5	1.06 H	305	14.61	38.89
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	2386.00	53.0 PK	74.0	-21.0	1.01 V	301	21.37	31.63
2	2386.00	40.2 AV	54.0	-13.8	1.01 V	301	8.57	31.63
3	*2412.00	103.8 PK			1.01 V	301	72.07	31.73
4	*2412.00	100.3 AV			1.01 V	301	68.57	31.73
5	4824.00	51.6 PK	74.0	-22.4	1.05 V	298	12.71	38.89
6	4824.00	48.1 AV	54.0	-5.9	1.05 V	298	9.21	38.89

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	103.2 PK			1.07 H	27	71.38	31.82
2	*2437.00	100.2 AV			1.07 H	27	68.38	31.82
3	4874.00	55.5 PK	74.0	-18.5	1.04 H	306	16.45	39.05
4	4874.00	53.4 AV	54.0	-0.6	1.04 H	306	14.35	39.05
5	7311.00	54.7 PK	74.0	-19.3	1.00 H	236	8.28	46.42
6	7311.00	41.8 AV	54.0	-12.2	1.00 H	236	-4.62	46.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	100.3 PK			1.01 V	311	68.48	31.82
2	*2437.00	97.2 AV			1.01 V	311	65.38	31.82
3	4874.00	52.2 PK	74.0	-21.8	1.16 V	360	13.15	39.05
4	4874.00	49.6 AV	54.0	-4.4	1.16 V	360	10.55	39.05
5	7311.00	54.1 PK	74.0	-19.9	1.05 V	127	7.68	46.42
6	7311.00	40.9 AV	54.0	-13.1	1.05 V	127	-5.52	46.42

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	101.3 PK			1.03 H	38	69.39	31.91
2	*2462.00	98.0 AV			1.03 H	38	66.09	31.91
3	2483.50	51.4 PK	74.0	-22.6	1.03 H	38	19.41	31.99
4	2483.50	38.1 AV	54.0	-15.9	1.03 H	38	6.11	31.99
5	4924.00	55.1 PK	74.0	-18.9	1.04 H	296	15.89	39.21
6	4924.00	53.5 AV	54.0	-0.5	1.04 H	296	14.29	39.21
7	7386.00	54.3 PK	74.0	-19.7	1.00 H	245	7.85	46.45
8	7386.00	41.3 AV	54.0	-12.7	1.00 H	245	-5.15	46.45
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	98.8 PK			1.04 V	293	66.89	31.91
2	*2462.00	94.9 AV			1.04 V	293	62.99	31.91
3	2483.50	51.2 PK	74.0	-22.8	1.04 V	293	19.21	31.99
4	2483.50	38.0 AV	54.0	-16.0	1.04 V	293	6.01	31.99
5	4924.00	52.4 PK	74.0	-21.6	1.12 V	360	13.19	39.21
6	4924.00	49.6 AV	54.0	-4.4	1.12 V	360	10.39	39.21
7	7386.00	54.2 PK	74.0	-19.8	1.00 V	125	7.75	46.45
8	7386.00	41.0 AV	54.0	-13.0	1.00 V	125	-5.45	46.45

REMARKS:

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

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	69.5 PK	74.0	-4.5	1.33 H	123	37.85	31.65
2	**2390.00**	**53.8 AV**	**54.0**	**-0.2**	**1.33 H**	**123**	**22.15**	**31.65**
3	*2412.00	112.9 PK			1.33 H	123	81.17	31.73
4	*2412.00	103.7 AV			1.33 H	123	71.97	31.73
5	4824.00	63.0 PK	74.0	-11.0	1.45 H	139	24.11	38.89
6	4824.00	49.9 AV	54.0	-4.1	1.45 H	139	11.01	38.89
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	62.0 PK	74.0	-12.0	1.02 V	107	30.35	31.65
2	2390.00	47.1 AV	54.0	-6.9	1.02 V	107	15.45	31.65
3	*2412.00	106.8 PK			1.08 V	94	75.07	31.73
4	*2412.00	97.4 AV			1.08 V	94	65.67	31.73
5	4824.00	53.8 PK	74.0	-20.2	1.07 V	128	14.91	38.89
6	4824.00	42.3 AV	54.0	-11.7	1.07 V	128	3.41	38.89

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	111.8 PK			1.32 H	302	79.98	31.82
2	*2437.00	102.6 AV			1.32 H	302	70.78	31.82
3	4874.00	66.2 PK	74.0	-7.8	1.48 H	290	27.15	39.05
4	4874.00	53.6 AV	54.0	-0.4	1.48 H	290	14.55	39.05
5	7311.00	54.6 PK	74.0	-19.4	1.48 H	187	8.18	46.42
6	7311.00	42.3 AV	54.0	-11.7	1.48 H	187	-4.12	46.42
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	105.6 PK			1.09 V	95	73.78	31.82
2	*2437.00	96.2 AV			1.09 V	95	64.38	31.82
3	4874.00	54.1 PK	74.0	-19.9	1.08 V	135	15.05	39.05
4	4874.00	42.7 AV	54.0	-11.3	1.08 V	135	3.65	39.05
5	7311.00	54.9 PK	74.0	-19.1	1.04 V	91	8.48	46.42
6	7311.00	41.2 AV	54.0	-12.8	1.04 V	91	-5.22	46.42

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	111.2 PK			1.28 H	124	79.29	31.91
2	*2462.00	102.0 AV			1.28 H	124	70.09	31.91
3	2483.50	67.5 PK	74.0	-6.5	1.28 H	124	35.51	31.99
4	2483.50	53.6 AV	54.0	-0.4	1.28 H	124	21.61	31.99
5	4924.00	61.2 PK	74.0	-12.8	1.41 H	136	21.99	39.21
6	4924.00	49.6 AV	54.0	-4.4	1.41 H	136	10.39	39.21
7	7386.00	54.8 PK	74.0	-19.2	1.52 H	185	8.35	46.45
8	7386.00	42.5 AV	54.0	-11.5	1.52 H	185	-3.95	46.45
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.0 PK			1.06 V	110	73.09	31.91
2	*2462.00	95.6 AV			1.06 V	110	63.69	31.91
3	2483.50	61.8 PK	74.0	-12.2	1.06 V	110	29.81	31.99
4	2483.50	46.7 AV	54.0	-7.3	1.06 V	110	14.71	31.99
5	4924.00	54.7 PK	74.0	-19.3	1.12 V	139	15.49	39.21
6	4924.00	43.1 AV	54.0	-10.9	1.12 V	139	3.89	39.21
7	7386.00	54.6 PK	74.0	-19.4	1.00 V	75	8.15	46.45
8	7386.00	41.2 AV	54.0	-12.8	1.00 V	75	-5.25	46.45

REMARKS:

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

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.6 PK	74.0	-4.4	1.30 H	301	37.95	31.65
2	2390.00	53.7 AV	54.0	-0.3	1.30 H	301	22.05	31.65
3	*2412.00	109.8 PK			1.30 H	301	78.07	31.73
4	*2412.00	100.0 AV			1.30 H	301	68.27	31.73
5	4824.00	66.7 PK	74.0	-7.3	1.81 H	276	27.81	38.89
6	4824.00	53.4 AV	54.0	-0.6	1.81 H	276	14.51	38.89
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	62.5 PK	74.0	-11.5	1.01 V	126	30.85	31.65
2	2390.00	46.5 AV	54.0	-7.5	1.01 V	126	14.85	31.65
3	*2412.00	102.9 PK			1.01 V	126	71.17	31.73
4	*2412.00	93.3 AV			1.01 V	126	61.57	31.73
5	4824.00	54.8 PK	74.0	-19.2	1.15 V	110	15.91	38.89
6	4824.00	43.6 AV	54.0	-10.4	1.15 V	110	4.71	38.89

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	112.1 PK			1.32 H	300	80.28	31.82
2	*2437.00	102.2 AV			1.32 H	300	70.38	31.82
3	4874.00	66.8 PK	74.0	-7.2	1.77 H	283	27.75	39.05
4	4874.00	53.4 AV	54.0	-0.6	1.77 H	283	14.35	39.05
5	7311.00	55.2 PK	74.0	-18.8	1.56 H	170	8.78	46.42
6	7311.00	43.0 AV	54.0	-11.0	1.56 H	170	-3.42	46.42
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	105.2 PK			1.03 V	113	73.38	31.82
2	*2437.00	95.3 AV			1.03 V	113	63.48	31.82
3	4874.00	55.1 PK	74.0	-18.9	1.12 V	118	16.05	39.05
4	4874.00	43.8 AV	54.0	-10.2	1.12 V	118	4.75	39.05
5	7311.00	54.2 PK	74.0	-19.8	1.04 V	73	7.78	46.42
6	7311.00	41.0 AV	54.0	-13.0	1.04 V	73	-5.42	46.42

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	109.2 PK			1.31 H	130	77.29	31.91
2	*2462.00	99.4 AV			1.31 H	130	67.49	31.91
3	2483.50	70.0 PK	74.0	-4.0	1.31 H	130	38.01	31.99
4	2483.50	53.4 AV	54.0	-0.6	1.31 H	130	21.41	31.99
5	4924.00	66.7 PK	74.0	-7.3	1.74 H	282	27.49	39.21
6	4924.00	53.3 AV	54.0	-0.7	1.74 H	282	14.09	39.21
7	7386.00	55.1 PK	74.0	-18.9	1.58 H	181	8.65	46.45
8	7386.00	42.6 AV	54.0	-11.4	1.58 H	181	-3.85	46.45
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.4 PK			1.05 V	119	70.49	31.91
2	*2462.00	92.5 AV			1.05 V	119	60.59	31.91
3	2483.50	62.8 PK	74.0	-11.2	1.05 V	119	30.81	31.99
4	2483.50	46.1 AV	54.0	-7.9	1.05 V	119	14.11	31.99
5	4924.00	54.7 PK	74.0	-19.3	1.16 V	131	15.49	39.21
6	4924.00	43.3 AV	54.0	-10.7	1.16 V	131	4.09	39.21
7	7386.00	54.5 PK	74.0	-19.5	1.00 V	83	8.05	46.45
8	7386.00	41.1 AV	54.0	-12.9	1.00 V	83	-5.35	46.45

REMARKS:

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

802.11n (HT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.2 PK	74.0	-6.8	1.32 H	302	35.55	31.65
2	2390.00	53.7 AV	54.0	-0.3	1.32 H	302	22.05	31.65
3	*2422.00	104.9 PK			1.32 H	302	73.13	31.77
4	*2422.00	95.0 AV			1.32 H	302	63.23	31.77
5	4844.00	59.6 PK	74.0	-14.4	1.42 H	285	20.65	38.95
6	4844.00	48.7 AV	54.0	-5.3	1.42 H	285	9.75	38.95
7	7266.00	55.8 PK	74.0	-18.2	1.58 H	182	9.38	46.42
8	7266.00	43.4 AV	54.0	-10.6	1.58 H	182	-3.02	46.42
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	62.9 PK	74.0	-11.1	1.07 V	134	31.25	31.65
2	2390.00	46.8 AV	54.0	-7.2	1.07 V	134	15.15	31.65
3	*2422.00	98.0 PK			1.07 V	134	66.23	31.77
4	*2422.00	89.2 AV			1.07 V	134	57.43	31.77
5	4844.00	55.0 PK	74.0	-19.0	1.10 V	121	16.05	38.95
6	4844.00	43.6 AV	54.0	-10.4	1.10 V	121	4.65	38.95
7	7266.00	55.0 PK	74.0	-19.0	1.01 V	73	8.58	46.42
8	7266.00	41.4 AV	54.0	-12.6	1.01 V	73	-5.02	46.42

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	67.9 PK	74.0	-6.1	1.30 H	302	36.25	31.65
2	2390.00	51.9 AV	54.0	-2.1	1.30 H	302	20.25	31.65
3	*2437.00	108.3 PK			1.30 H	302	76.48	31.82
4	*2437.00	98.6 AV			1.30 H	302	66.78	31.82
5	2483.50	68.2 PK	74.0	-5.8	1.30 H	302	36.21	31.99
6	2483.50	53.6 AV	54.0	-0.4	1.30 H	302	21.61	31.99
7	4874.00	59.5 PK	74.0	-14.5	1.45 H	287	20.45	39.05
8	4874.00	48.9 AV	54.0	-5.1	1.45 H	287	9.85	39.05
9	7311.00	55.3 PK	74.0	-18.7	1.62 H	170	8.88	46.42
10	7311.00	43.0 AV	54.0	-11.0	1.62 H	170	-3.42	46.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.9 PK	74.0	-13.1	1.12 V	144	29.25	31.65
2	2390.00	45.0 AV	54.0	-9.0	1.12 V	144	13.35	31.65
3	*2437.00	101.4 PK			1.12 V	144	69.58	31.82
4	*2437.00	92.8 AV			1.12 V	144	60.98	31.82
5	2483.50	63.9 PK	74.0	-10.1	1.12 V	144	31.91	31.99
6	2483.50	46.7 AV	54.0	-7.3	1.12 V	144	14.71	31.99
7	4874.00	55.6 PK	74.0	-18.4	1.12 V	110	16.55	39.05
8	4874.00	44.0 AV	54.0	-10.0	1.12 V	110	4.95	39.05
9	7311.00	55.0 PK	74.0	-19.0	1.00 V	75	8.58	46.42
10	7311.00	41.6 AV	54.0	-12.4	1.00 V	75	-4.82	46.42

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	104.4 PK			1.28 H	304	72.52	31.88
2	*2452.00	94.2 AV			1.28 H	304	62.32	31.88
3	2483.50	66.4 PK	74.0	-7.6	1.28 H	304	34.41	31.99
4	2483.50	53.6 AV	54.0	-0.4	1.28 H	304	21.61	31.99
5	4904.00	59.4 PK	74.0	-14.6	1.42 H	278	20.25	39.15
6	4904.00	48.9 AV	54.0	-5.1	1.42 H	278	9.75	39.15
7	7356.00	55.7 PK	74.0	-18.3	1.64 H	161	9.26	46.44
8	7356.00	43.2 AV	54.0	-10.8	1.64 H	161	-3.24	46.44
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	97.5 PK			1.16 V	150	65.62	31.88
2	*2452.00	88.4 AV			1.16 V	150	56.52	31.88
3	2483.50	62.1 PK	74.0	-11.9	1.16 V	150	30.11	31.99
4	2483.50	46.6 AV	54.0	-7.4	1.16 V	150	14.61	31.99
5	4904.00	55.3 PK	74.0	-18.7	1.17 V	125	16.15	39.15
6	4904.00	43.7 AV	54.0	-10.3	1.17 V	125	4.55	39.15
7	7356.00	54.4 PK	74.0	-19.6	1.01 V	71	7.96	46.44
8	7356.00	41.1 AV	54.0	-12.9	1.01 V	71	-5.34	46.44

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 : July 07, 2014

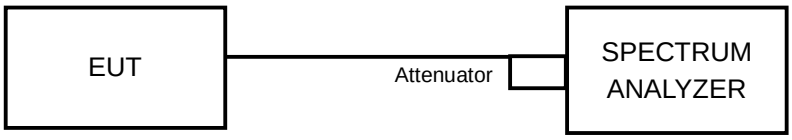
4.3.3 TEST PROCEDURE

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
1	2412	10.12	0.5	PASS
6	2437	9.10	0.5	PASS
11	2462	10.13	0.5	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.63	16.56	0.5	PASS
6	2437	16.65	16.67	0.5	PASS
11	2462	16.64	16.62	0.5	PASS

802.11n (HT20)

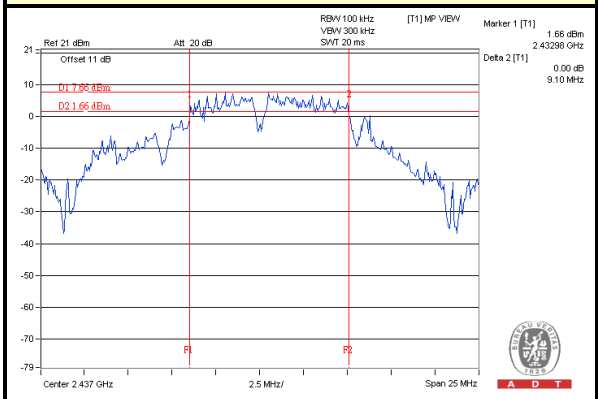
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.88	17.81	0.5	PASS
6	2437	17.88	17.87	0.5	PASS
11	2462	17.88	17.87	0.5	PASS

802.11n (HT40)

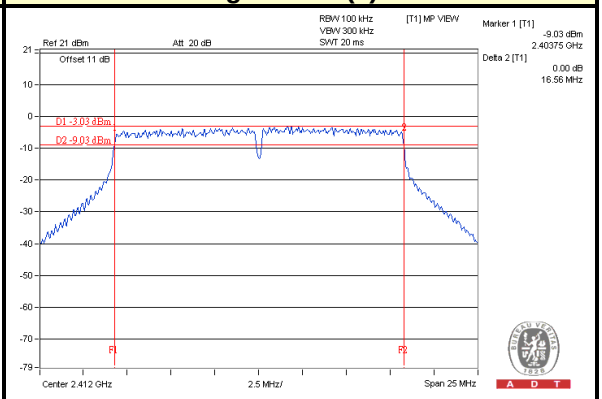
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	36.57	36.59	0.5	PASS
6	2437	36.58	36.59	0.5	PASS
9	2452	36.60	36.61	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

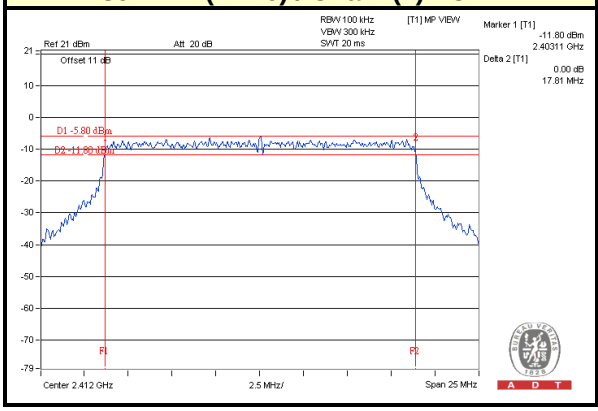
802.11b / CH6



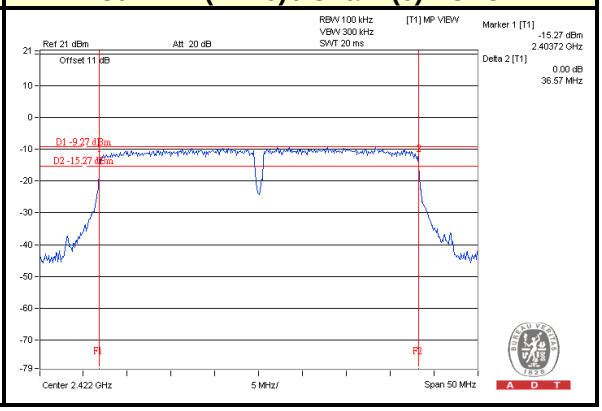
802.11g / Chain (1) : CH1



802.11n (HT20) / Chain (1) : CH1



802.11n (HT40) / Chain (0) : CH3



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 : July 07, 2014

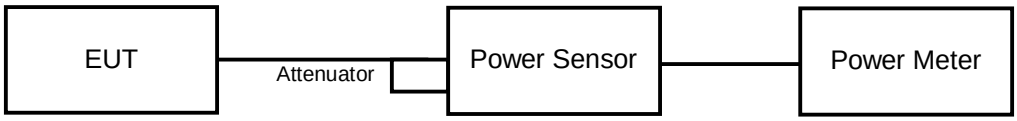
4.4.3 TEST PROCEDURES

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 (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	40.832	16.11	30	PASS
6	2437	41.879	16.22	30	PASS
11	2462	26.182	14.18	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	17.32	18.12	118.814	20.75	30	PASS
6	2437	17.08	17.31	104.877	20.21	30	PASS
11	2462	17.36	16.04	94.629	19.76	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	17.45	16.41	99.342	19.97	30	PASS
6	2437	17.12	16.86	100.052	20.00	30	PASS
11	2462	17.63	18.61	130.554	21.16	30	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	17.25	17.65	111.298	20.46	30	PASS
6	2437	17.50	18.08	120.503	20.81	30	PASS
9	2452	17.30	18.48	124.172	20.94	30	PASS

FOR AVERAGE POWER

802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	24.946	13.97
6	2437	25.177	14.01
11	2462	16.032	12.05

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	7.84	7.91	12.261	10.89
6	2437	7.73	7.81	11.968	10.78
11	2462	7.63	7.85	11.889	10.75

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	7.88	7.54	11.813	10.72
6	2437	7.81	7.79	12.051	10.81
11	2462	7.82	7.64	11.861	10.74

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
3	2422	7.92	7.86	12.303	10.90
6	2437	7.98	8.21	12.903	11.11
9	2452	7.86	8.19	12.701	11.04

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 : July 07, 2014

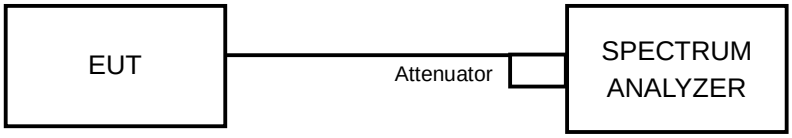
4.5.3 TEST PROCEDURE

1. Set the RBW = 3 kHz, VBW =10 kHz, Detector = peak.
2. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
3. Use the peak marker function to determine the maximum amplitude level.

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

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	LIMIT (dBm)	PASS /FAIL
1	2412	-8.96	8	PASS
6	2437	-10.73	8	PASS
11	2462	-10.97	8	PASS

802.11g

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	1	2412	-16.51	3.01	-13.50	8	PASS
	6	2437	-14.06	3.01	-11.05	8	PASS
	11	2462	-15.36	3.01	-12.35	8	PASS
1	1	2412	-16.23	3.01	-13.22	8	PASS
	6	2437	-14.60	3.01	-11.59	8	PASS
	11	2462	-15.41	3.01	-12.40	8	PASS

NOTE: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 1.99$dBi < 6dBi , so the power density limit shall not be reduced.

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	-19.93	3.01	-16.92	8	PASS
	6	2437	-19.95	3.01	-16.94	8	PASS
	11	2462	-18.87	3.01	-15.86	8	PASS
1	1	2412	-18.75	3.01	-15.74	8	PASS
	6	2437	-19.40	3.01	-16.39	8	PASS
	11	2462	-17.63	3.01	-14.62	8	PASS

NOTE: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 1.99$dBi < 6dBi , so the power density limit shall not be reduced.

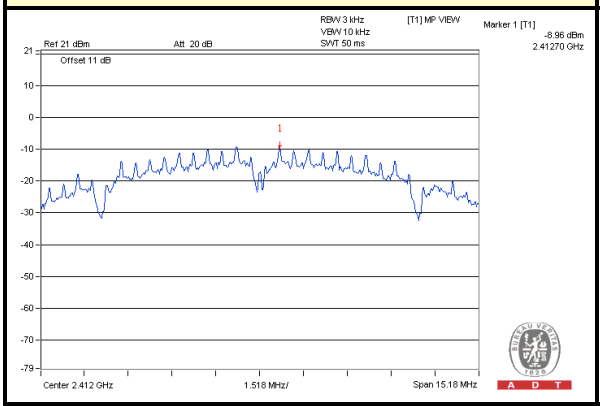
802.11n (HT40)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	3	2422	-22.09	3.01	-19.08	8	PASS
	6	2437	-22.76	3.01	-19.75	8	PASS
	9	2452	-22.28	3.01	-19.27	8	PASS
1	3	2422	-20.88	3.01	-17.87	8	PASS
	6	2437	-21.40	3.01	-18.39	8	PASS
	9	2452	-22.08	3.01	-19.07	8	PASS

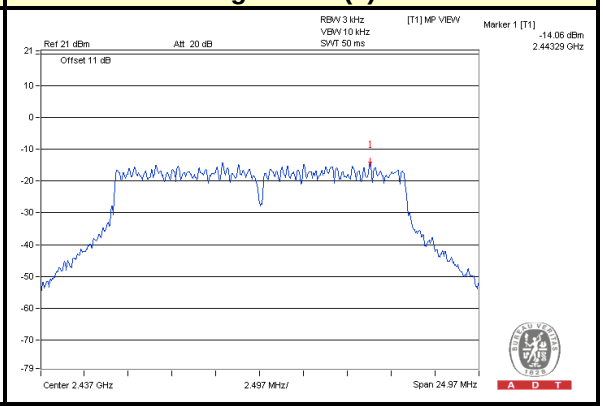
NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 1.99dBi < 6dBi , so the power density limit shall not be reduced.

SPECTRUM PLOT OF WORST VALUE

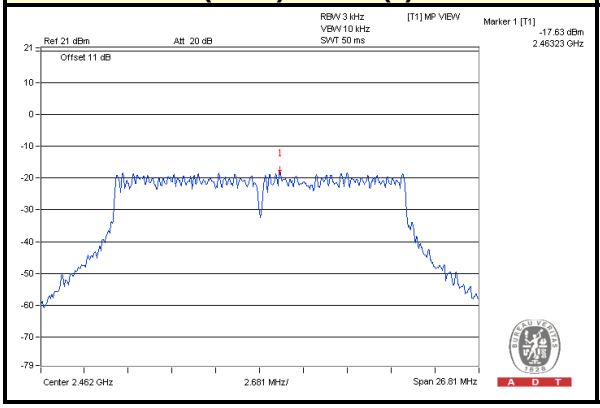
802.11b / CH1



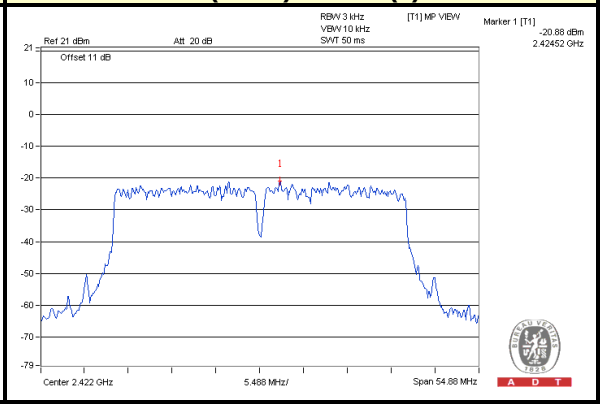
802.11g / Chain(0) : CH6



802.11n (HT20) / Chain(1) : CH11



802.11n (HT40) / Chain(1) : CH3



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 : July 07, 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.

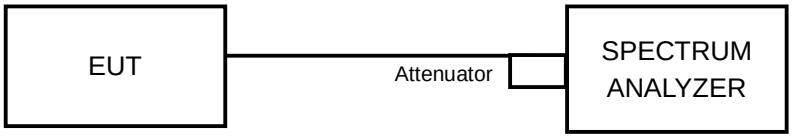
Measurement Procedure –Unwanted Emission Level

1. Set RBW = 100 kHz.
2. Set VBW ≥ 300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

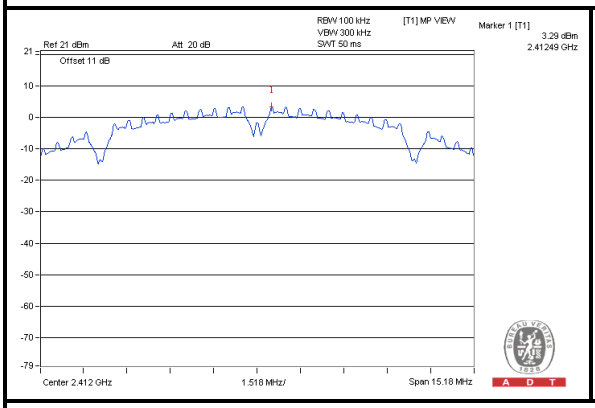
Same as Item 4.3.6

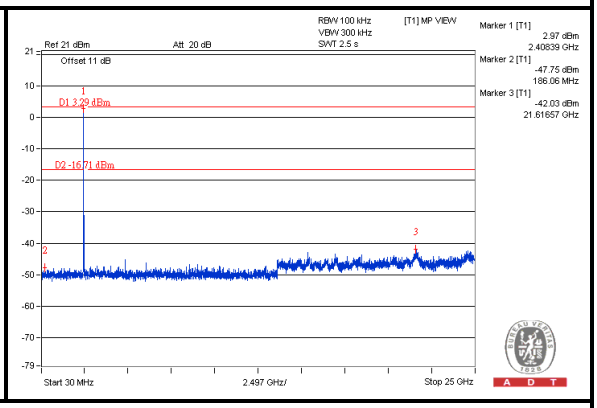
4.6.7 TEST RESULTS

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.

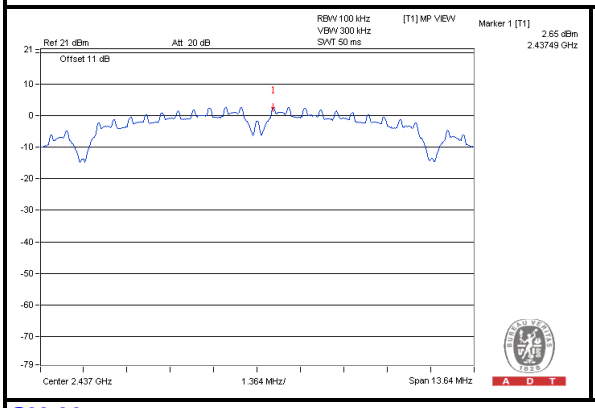
802.11b

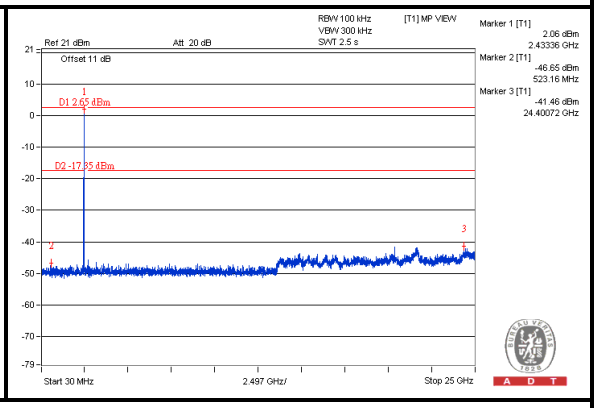
CH 1



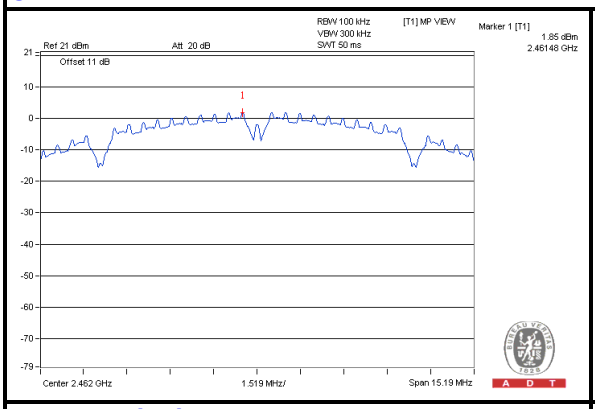


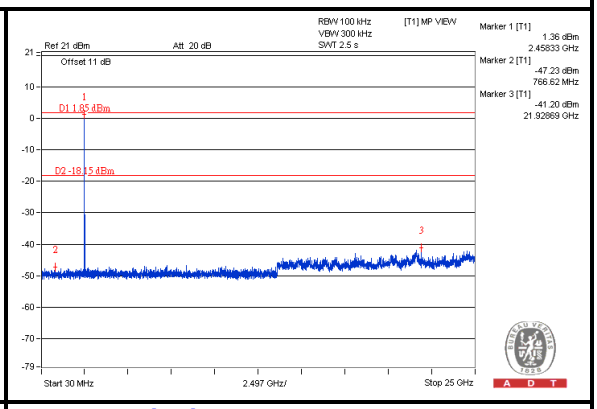
CH 6



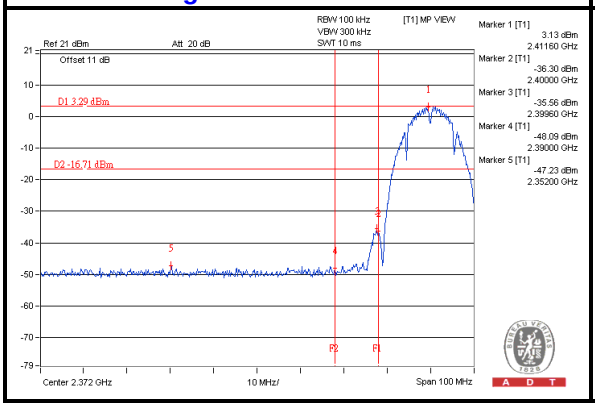


CH 11

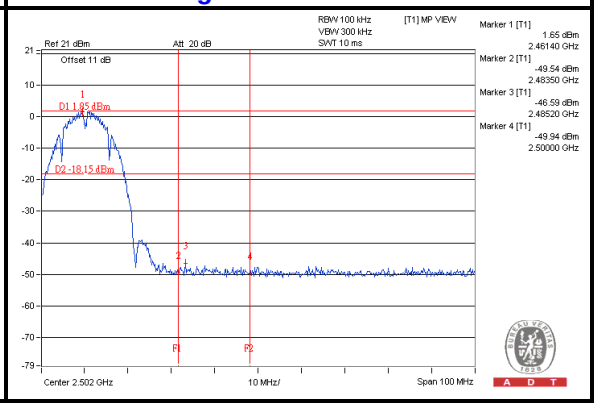




CH 1 Band edge



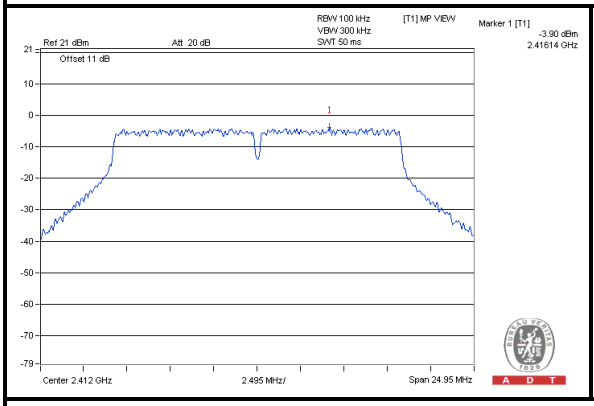
CH 11 Band edge

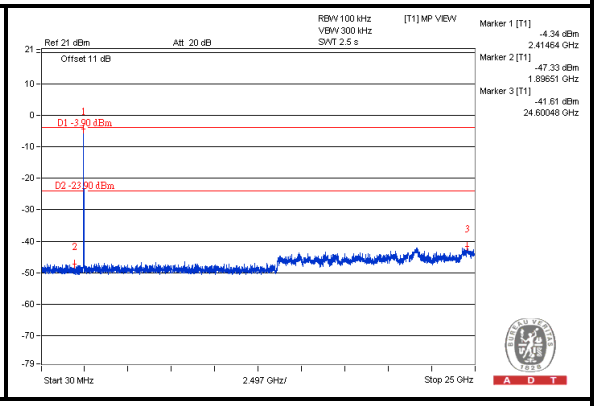


802.11g

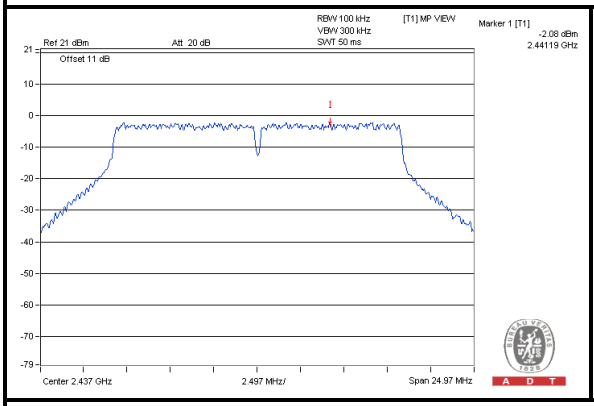
Chain (0)

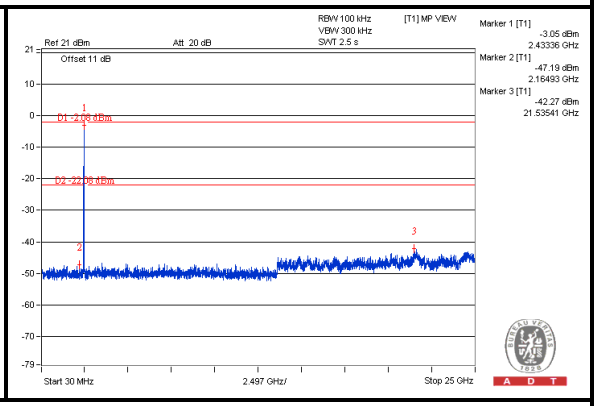
CH 1



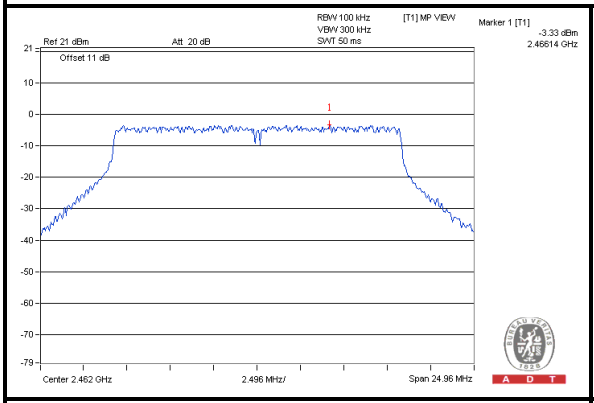


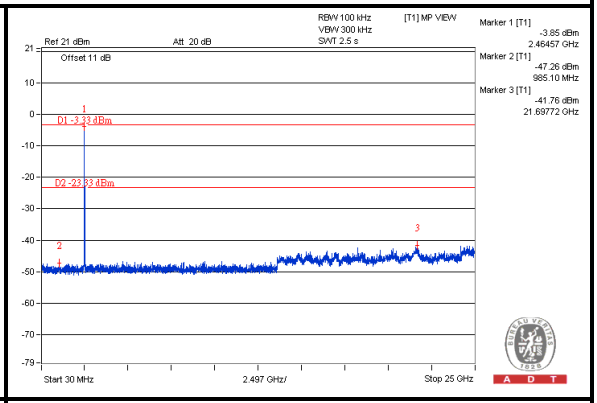
CH 6



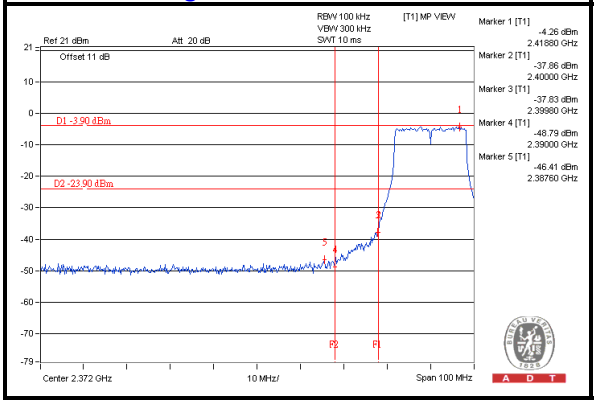


CH 11

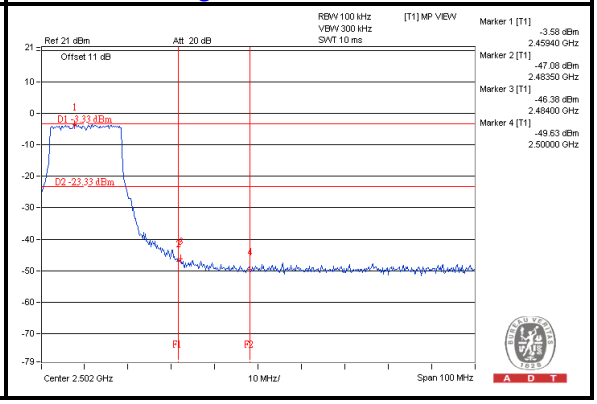




CH 1 Band edge

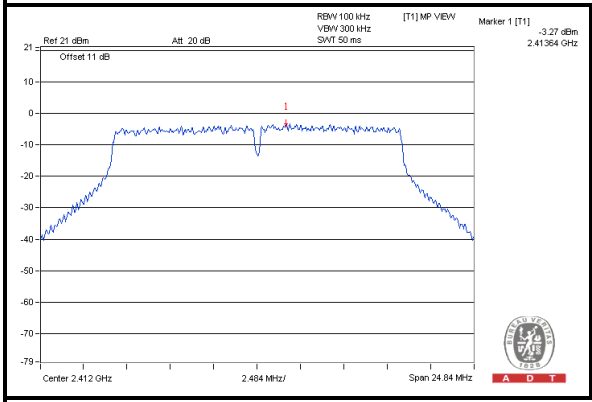


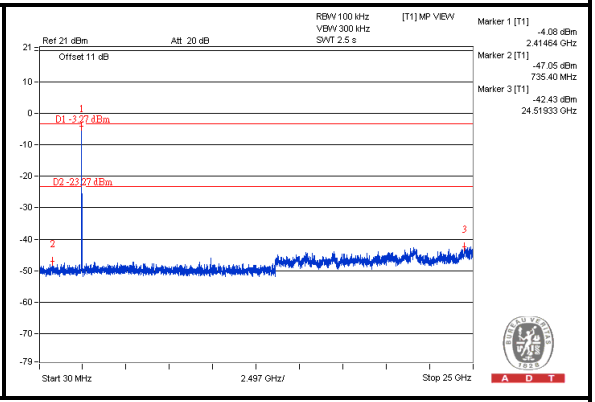
CH 11 Band edge



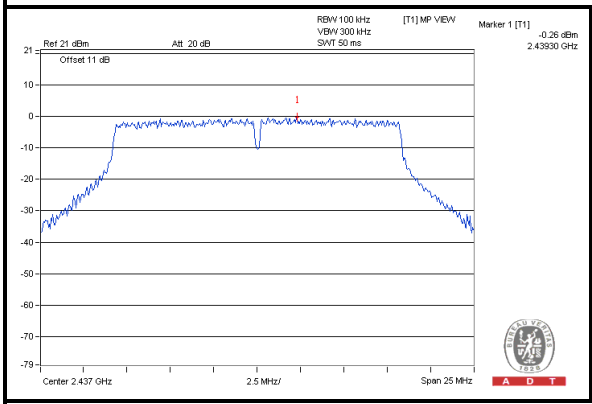
Chain (1)

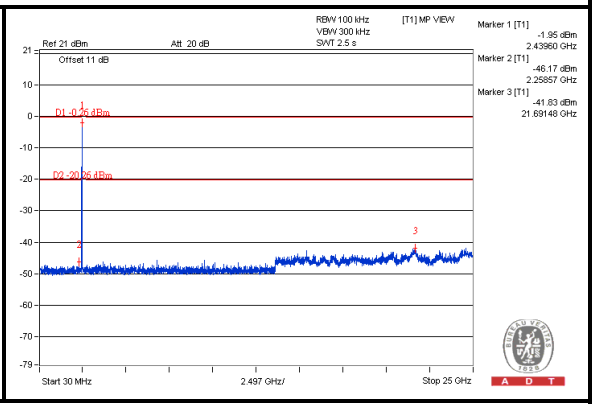
CH 1



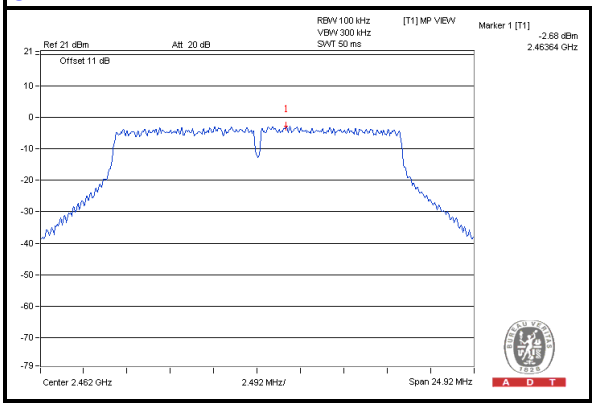


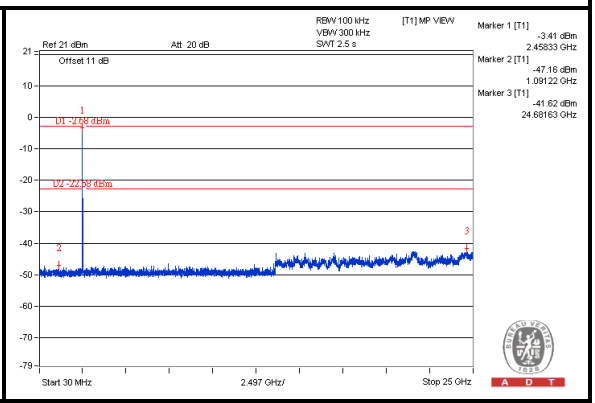
CH 6



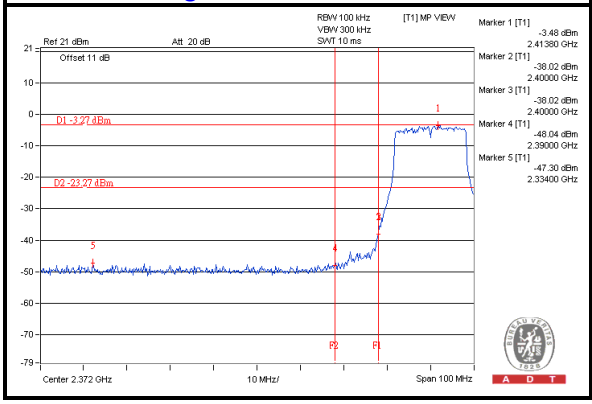


CH 11

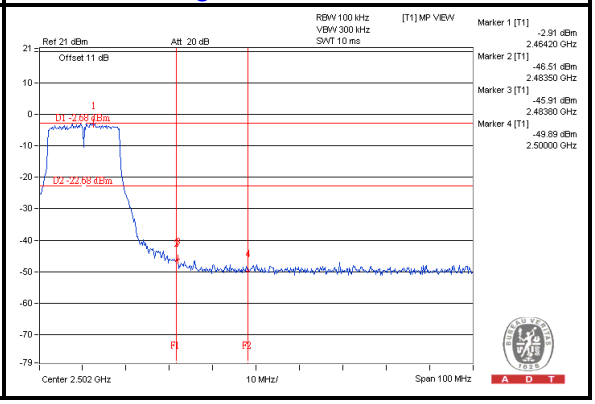




CH 1 Band edge



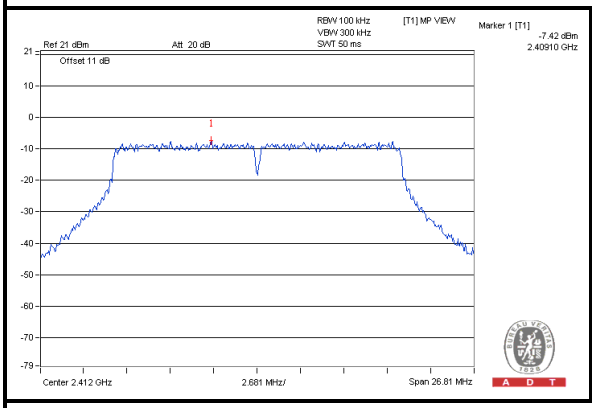
CH 11 Band edge

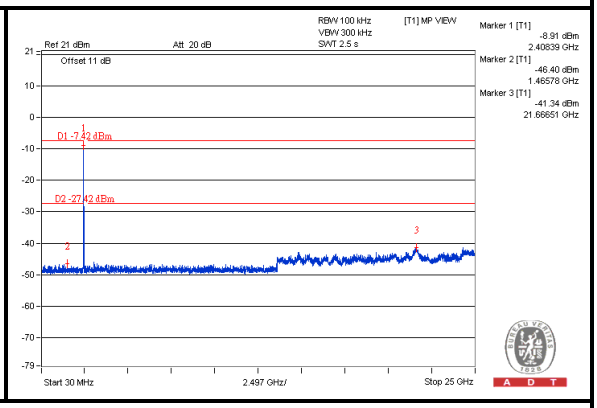


802.11n (HT20)

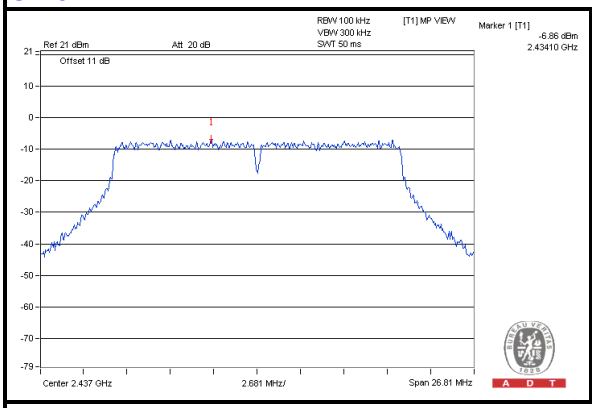
Chain (0)

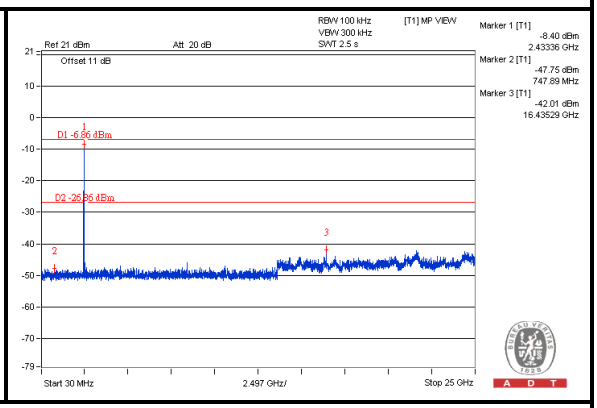
CH 1



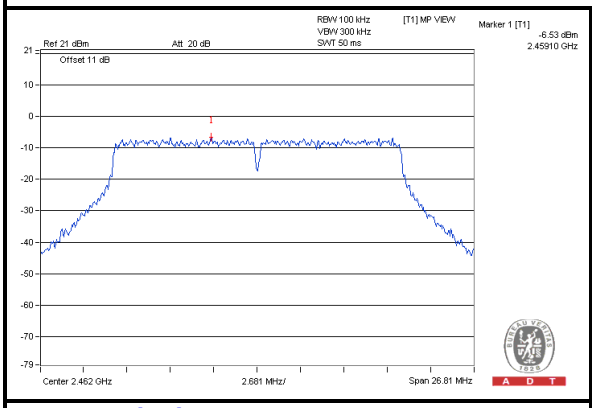


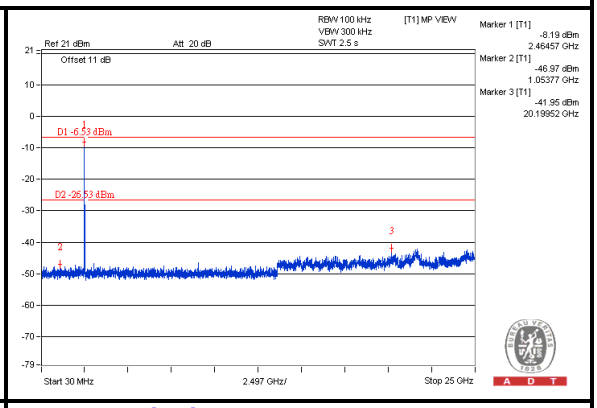
CH 6



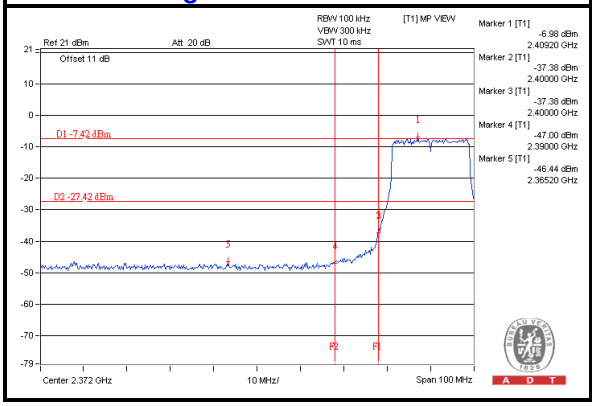


CH 11

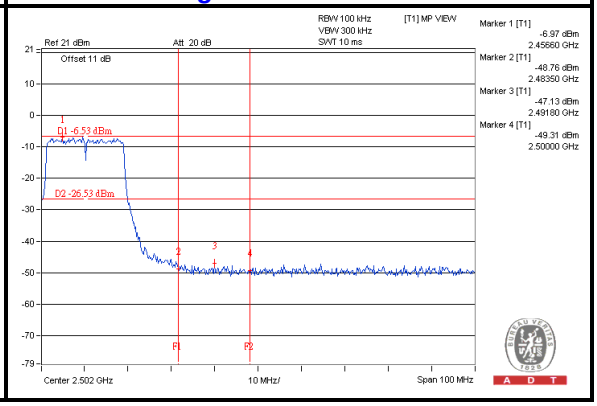




CH 1 Band edge

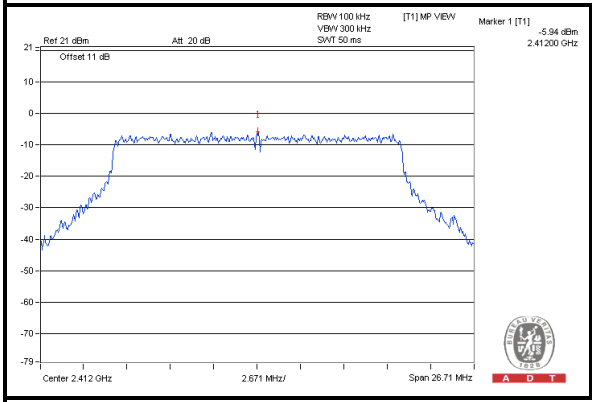


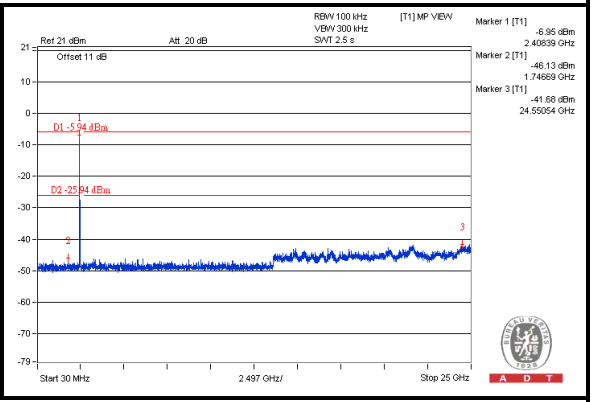
CH 11 Band edge



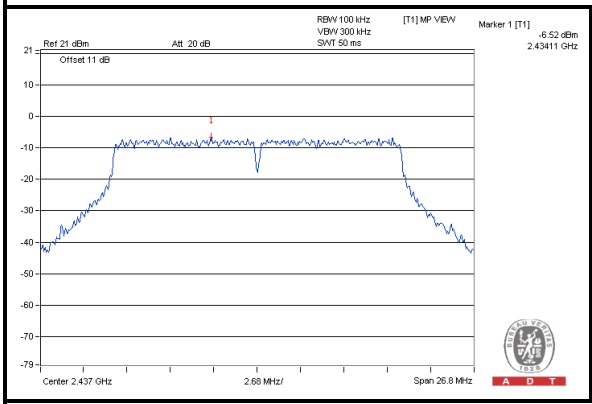
Chain (1)

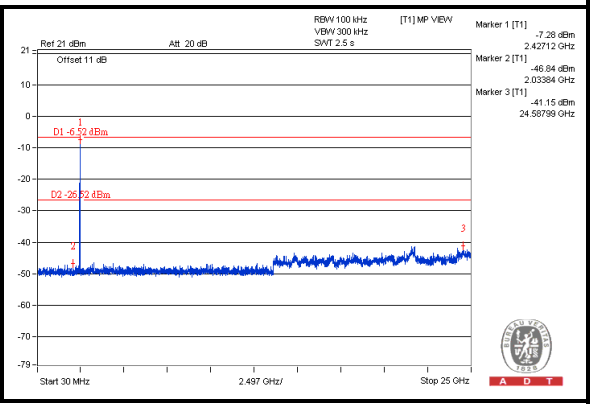
CH 1



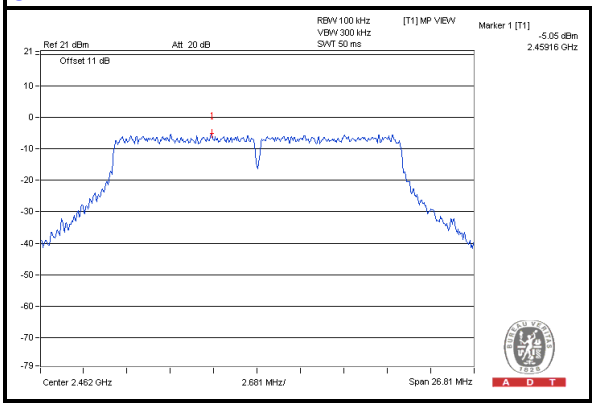


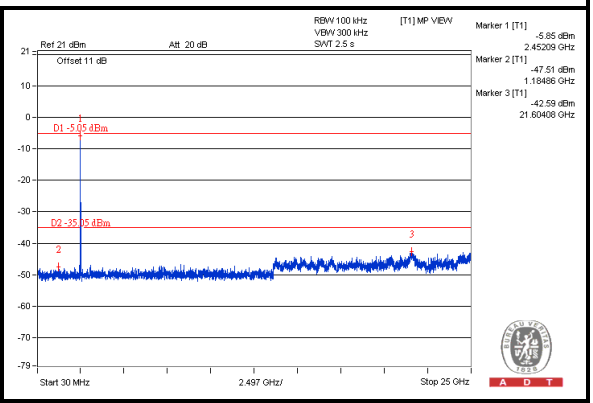
CH 6



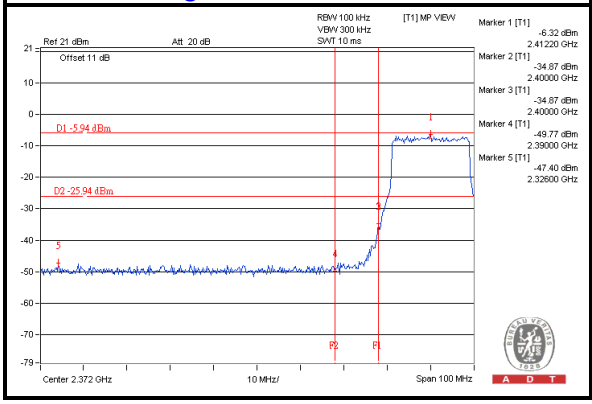


CH 11

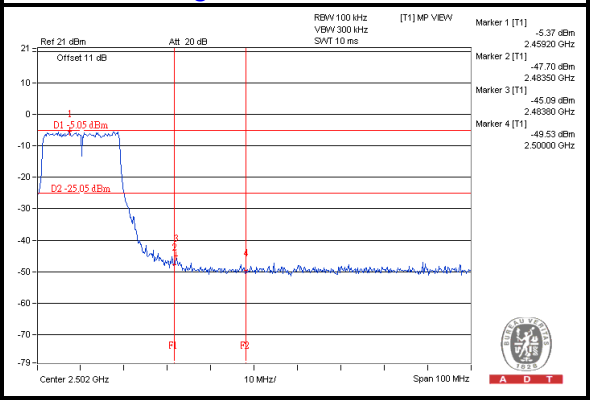




CH 1 Band edge



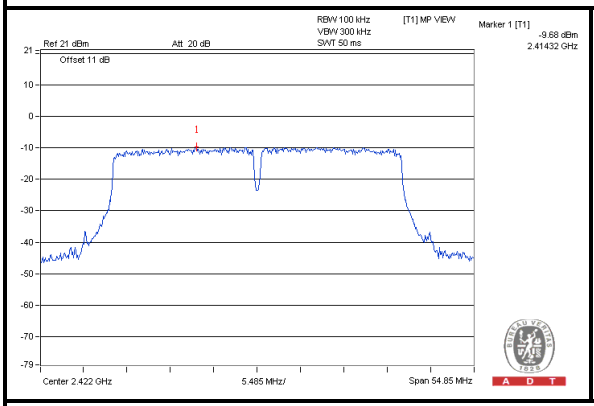
CH 11 Band edge

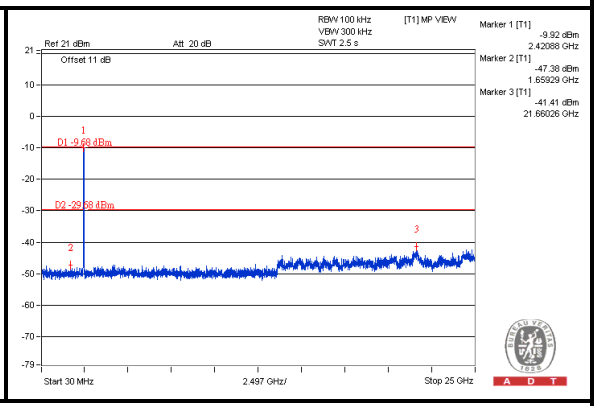


802.11n (HT40)

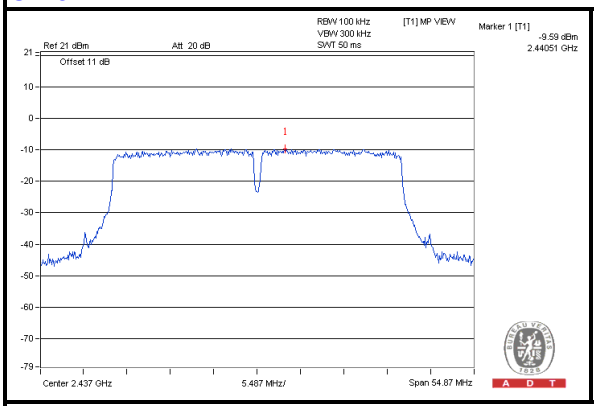
Chain (0)

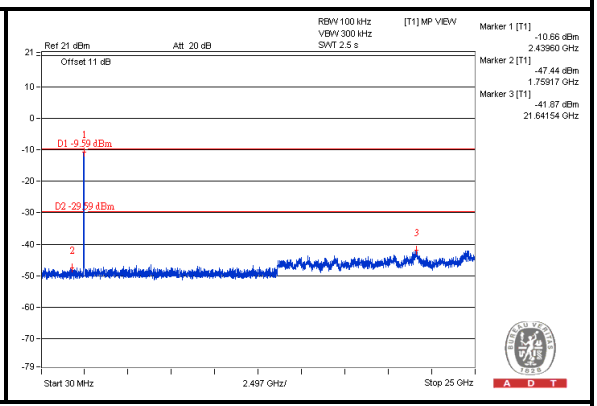
CH 3



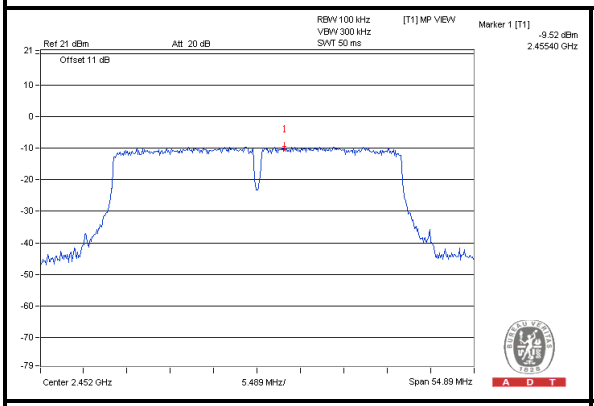


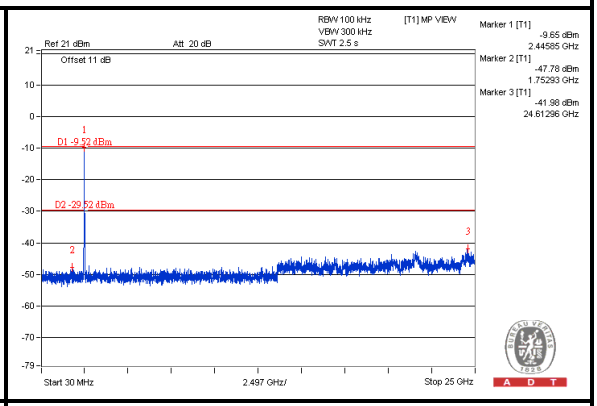
CH 6



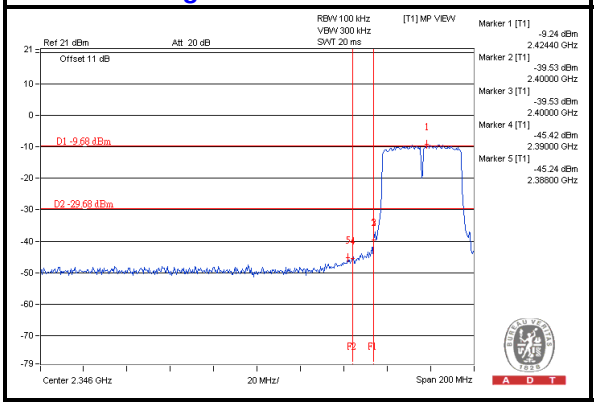


CH 9

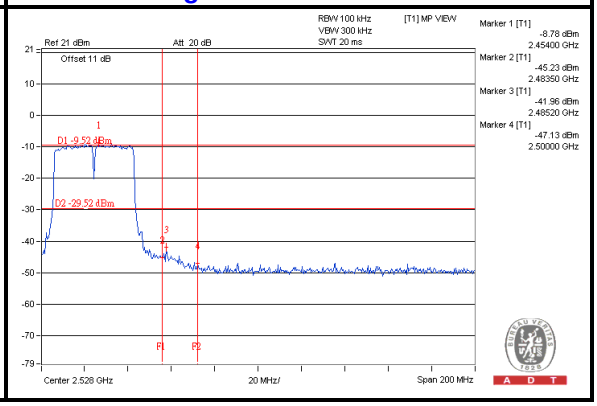




CH 3 Band edge

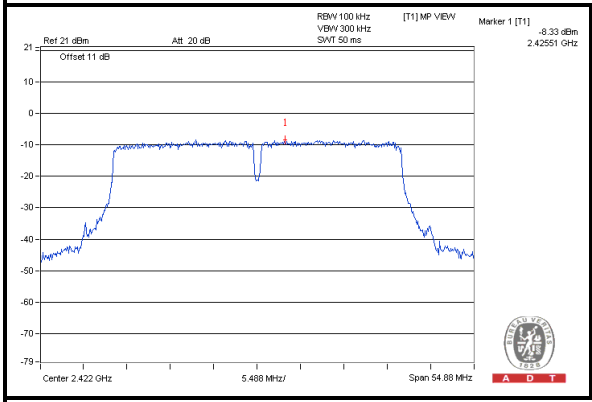


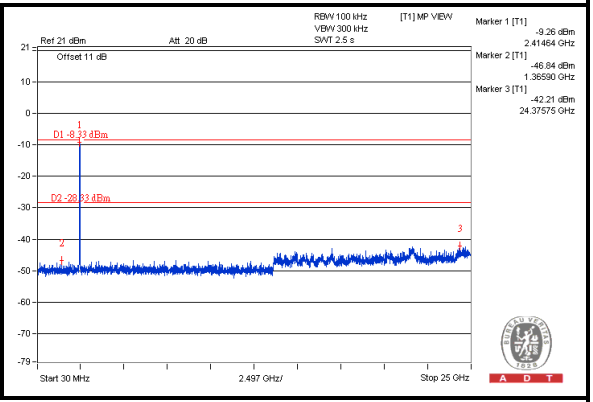
CH 9 Band edge



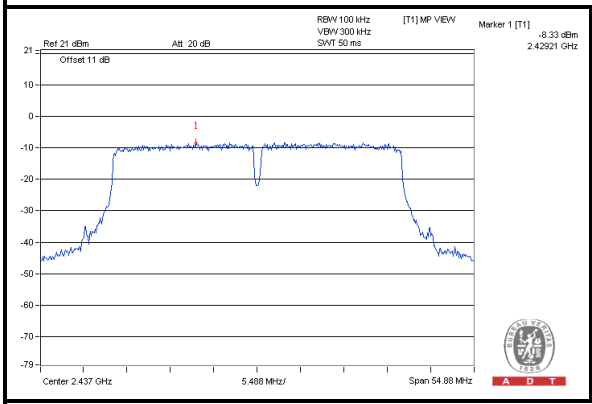
Chain (1)

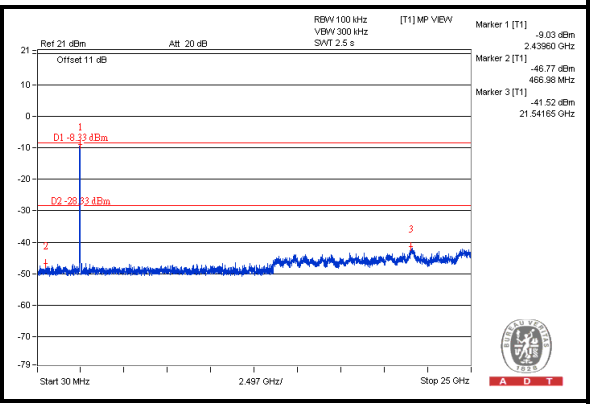
CH 3



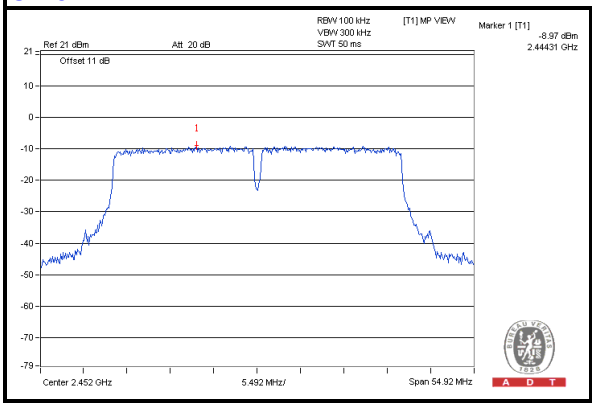


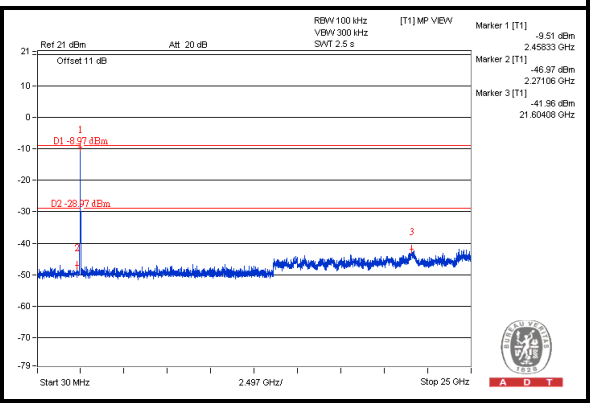
CH 6



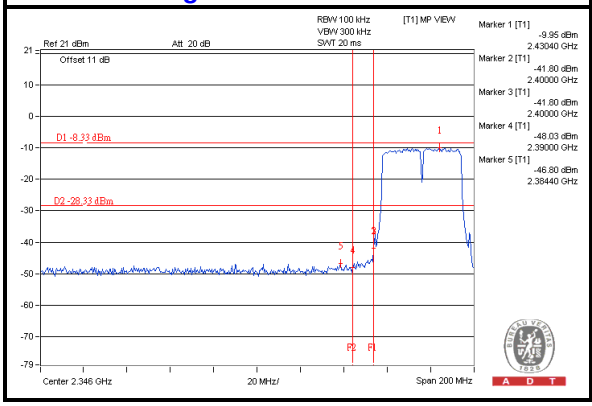


CH 9

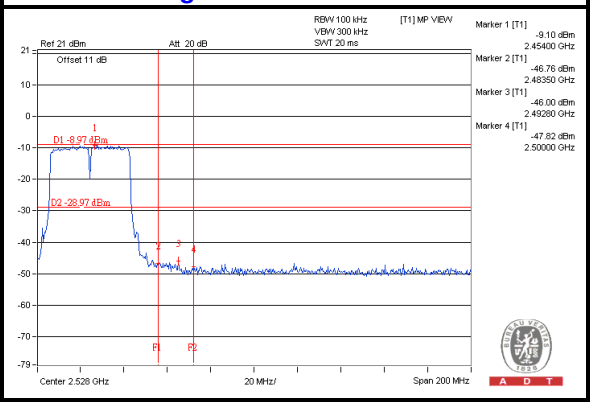




CH 3 Band edge



CH 9 Band edge



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:

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

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

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

--- END ---