FCC Test Report (WLAN)

Report No.:	RF170605E06A
FCC ID:	M82-WISE3610
Model No.:	WISE-3610XXXXXXXXXXXXXXX ("x"=0-9, A-Z, a-z, dot, diagonal, hyphen or blank.)
Received Date:	June 22, 2017
Test Date:	July 18 to 27, 2017
Issued Date:	Sep. 14, 2017
Applicant:	ADVANTECH CO., LTD
Address:	No.1, Alley 20, Lane 26, Rueiguang Rd, Neihu District, Taipei, Taiwan 114
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (1):	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, 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.

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Release Control Record

Issue No.	Description	Date Issued
RF170605E06A	Original release.	Sep. 14, 2017

1 Certificate of Conformity

Product:	IoT Gateway
Brand:	ADVANTECH
Test Model:	WISE-3610XXXXXXXXXXXXXXX ("x"=0-9, A-Z, a-z, dot, diagonal, hyphen or blank.)
Sample Status:	ENGINEERING SAMPLE
Applicant:	ADVANTECH CO., LTD
Test Date:	July 18 to 27, 2017
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.247) ANSI C63.10: 2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : _____ , **Date:** Sep. 14, 2017

Wendy Wu / Specialist

Approved by : _____ , **Date:** Sep. 14, 2017

May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (SECTION 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -14.02dB at 0.44297MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is-0.1dB at 2390MHz, 2483.5MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is Reverse SMA not a standard connector.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.84 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.30 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.16 dB
	6GHz ~ 18GHz	4.91 dB
	18GHz ~ 40GHz	5.30 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT (WLAN)

Product	IoT Gateway
Brand	ADVANTECH
Test Model	WISE-3610XXXXXXXXXXXXXXX ("x"=0-9, A-Z, a-z, dot, diagonal, hyphen or blank.)
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 12V from adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode
Modulation Technology	DSSS,OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	**2.4GHz:** 2.412 ~ 2.462GHz **5GHz:** 5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
Number of Channel	**2.4GHz:** 802.11b/g, 802.11n (HT20): 11 802.11n (HT40): 7 **5GHz:** 802.11a, 802.11n (HT20), 802.11ac (VHT20): 9 802.11n (HT40), 802.11ac (VHT40): 4 802.11ac (VHT80): 2
Output Power	**2.4GHz:**825.237mW **5.18 ~ 5.24GHz:** 632.462mW **5.745 ~ 5.825GHz:** 934.079mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	NA

Note:

1. The EUT has below type, which are identical to each other in all aspects except for the following:

Brand	Model	Type	Difference
ADVANTECH	WISE-3610XXXXXXXXXXXXXXX ("x"=0-9, A-Z, a-z, dot, diagonal, hyphen or blank.)	1	**With 3G card** : 1x WAN, 1x LAN, 1x RS232/422/485, LoRa (Module) + 3G (Telit HE-910D Module, 1x2, Rx diversity, certificated already) + Wi-Fi 2x2 IEEE 802.11a/b/g/n/ac(On board design)
		2	**Without 3G card :** 1x WAN, 1x LAN, 1x RS232/422/485, LoRa (Module) + Wi-Fi 2x2 IEEE 802.11a/b/g/n/ac (On board design)

Note:
1. Type 1 was chosen for final test.
2. From the above models, model: WISE-3610XXXXXXXXXXXXXXX was selected as representative model for the test and its data was recorded in this report.

2. The EUT is a WLAN, WWAN and LoRa device.

3. Simultaneously transmission condition.

Condition	Technology			
1	WLAN 2.4GHz	WLAN 5GHz	WWAN (3G/4G)	LoRa
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.				

4. The EUT must be supplied with a adapter as following table:

Brand	Model No.	Spec.
FSP	FSP036-RBBN2	AC Input: 100-240V, 1.2A, 50-60Hz DC Output: 12V, 3.0A DC Out put cable: Unshielded, 1.5m with one core

5. The EUT incorporates a MIMO function.

2.4GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
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
5GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11a	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
802.11ac (VHT20)	MCS0~8 Nss= 1	2TX	2RX
	MCS0~8 Nss= 2	2TX	2RX
802.11ac (VHT40)	MCS0~9 Nss= 1	2TX	2RX
	MCS0~9 Nss= 2	2TX	2RX
802.11ac (VHT80)	MCS0~9 Nss= 1	2TX	2RX
	MCS0~9 Nss= 2	2TX	2RX

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

For LoRa								
Antenna No	Brand	Model	Antenna Gain(dBi) without cable loss	Frequency	Antenna Type	Antenna Connector	Cable Loss(dB)	Cable Length (mm)
1	Cortec	AN0915-9207BSM	0.96	902~928 MHz	Dipole	Reverse SMA	0.5	160
2	Cortec	AN0915-9207BSM	0.96	902~928 MHz	Dipole	Reverse SMA	0.5	160

For WLAN								
Antenna No	Brand	Model	Antenna Gain(dBi) without cable loss	Frequency	Antenna Type	Antenna Connector	Cable Loss(dB)	Cable Length (mm)
2	Cortec	AN2450-92K01BRS	5.03	2400~2483.5 MHz	Dipole	Reverse SMA	0.5	180
			5.01	5150~5850 MHz	Dipole	Reverse SMA	0.8	180

For WWAN						
Antenna No	Brand	Model	Gain (dBi) <excluding cable loss>	Frequency	Antenna Type	Antenna Connector
3	SINBON.	1750008424- 01	-0.5	824~896 MHz	Dipole	SMA
			-0.2	880~960 MHz		
			1.5	1427~1880 MHz		
			1.95	1850~1990 MHz		

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

3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g and 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
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE≥1G:** Radiated Emission above 1GHz & Bandedge Measurement **RE<1G:** Radiated Emission below 1GHz

PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

NOTE: The EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on **X-plane.**

Radiated Emission Test (Above 1GHz):

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

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

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

Radiated Emission Test (Below 1GHz):

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

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

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

Power Line Conducted Emission Test:

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

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

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

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

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

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

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:

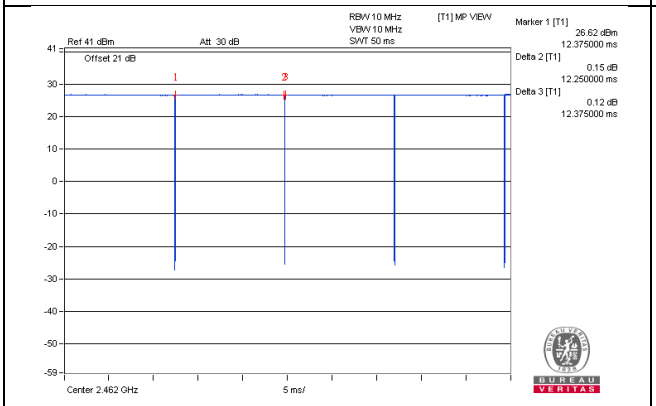
APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	24deg. C, 62%RH	120Vac, 60Hz	Jyunchun Lin
RE<1G	24deg. C, 68%RH	120Vac, 60Hz	Eason Tseng
PLC	24deg. C, 75%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

3.3 Duty Cycle of Test Signal

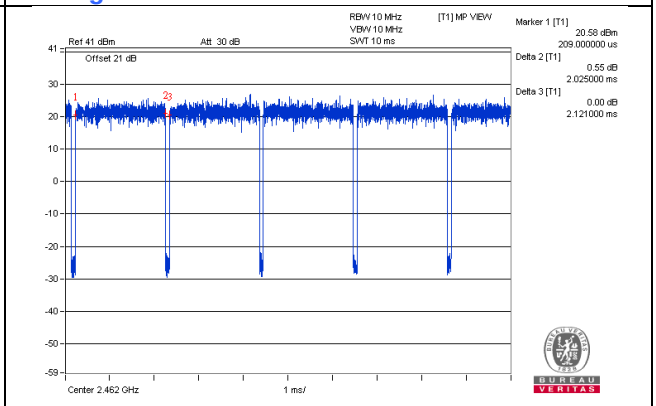
If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.

802.11b: Duty cycle = 12.25/12.375 = 0.99
802.11g: Duty cycle = 2.025/2.121 = 0.955, Duty factor = 10 * log(1/0.955) = 0.2
802.11n (HT20): Duty cycle = 4.958/5.055 = 0.981
802.11n (HT40): Duty cycle = 2.402/2.499 = 0.961, Duty factor = 10 * log(1/0.961) = 0.17

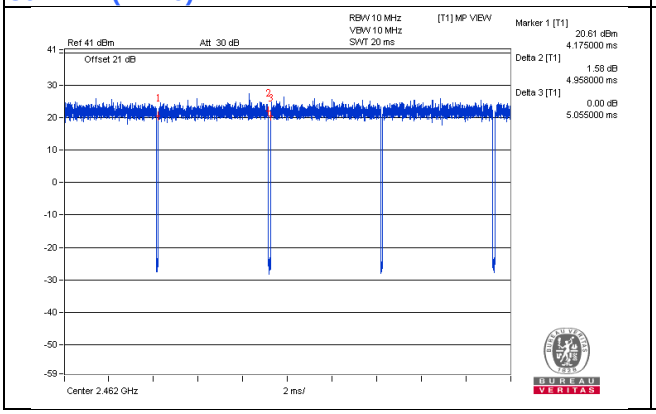
802.11b



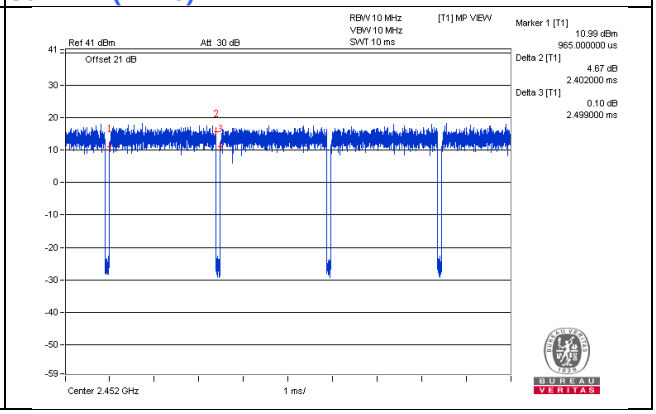
802.11g



802.11n (HT20)



802.11n (HT40)



3.4 Description of Support Units

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

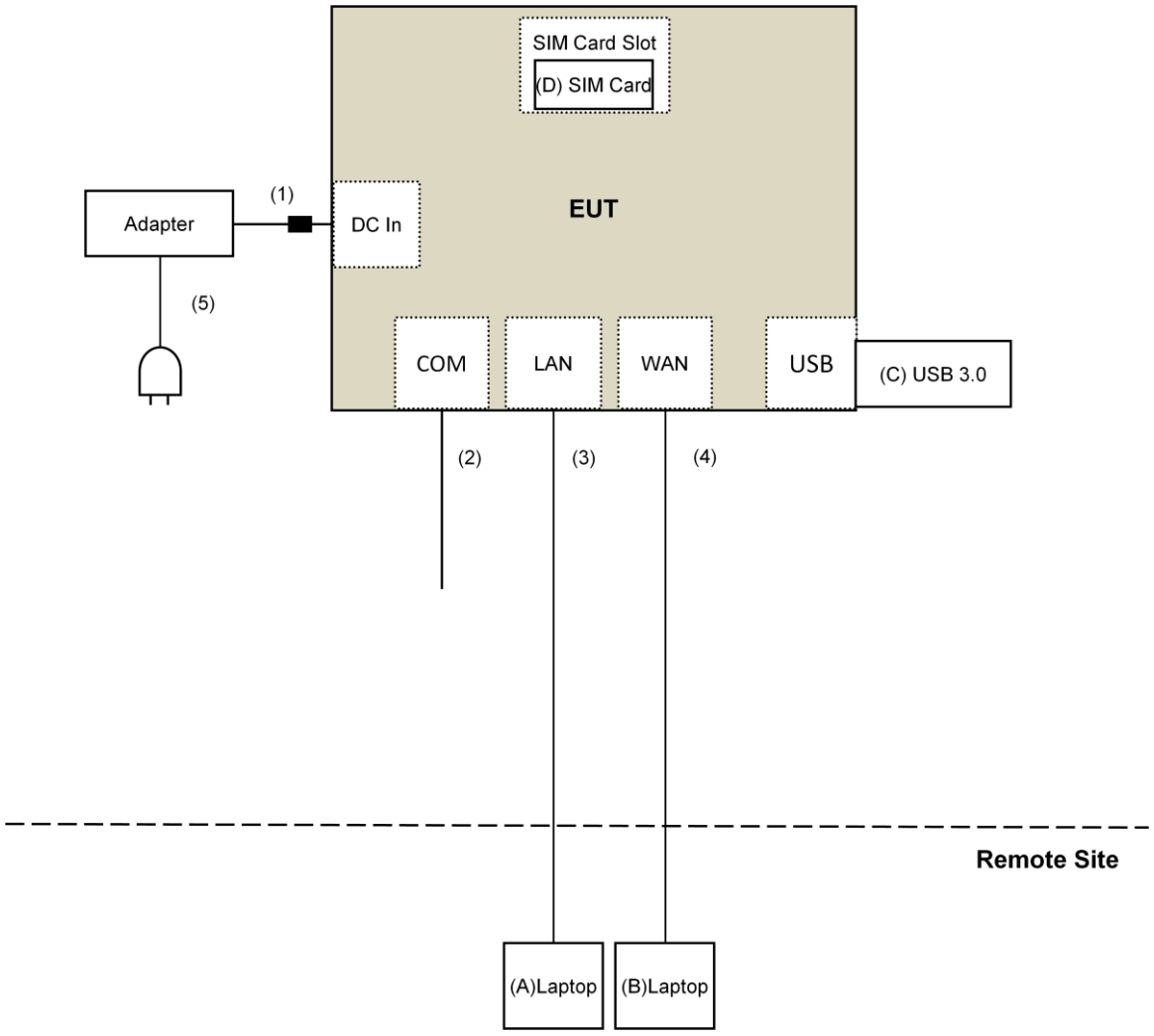
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
B.	Laptop	DELL	E6420	B92T3R1	FCC DoC	Provided by Lab
C.	USB Disk 3.0	Transcend	16GB	NA	NA	Provided by Lab
D.	Sim Card	R&S	CRT-Z3	NA	NA	Provided by Lab

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Cable	1	1.5	No	1	Supplied by client
2.	Console Cable	1	1.6	No	0	Provided by Lab
3.	RJ-45 Cable	1	10	No	0	Provided by Lab
4.	RJ-45 Cable	1	10	No	0	Provided by Lab
5.	AC Cable	1	1.8	No	0	Supplied by client

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart C (15.247)
KDB 558074 D01 DTS Meas Guidance v04
KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013

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

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

NOTE:

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

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Keysight	N9038A	MY54450088	July 08, 2017	July 07, 2018
Pre-Amplifier(*) EMCI	EMC001340	980142	Jan. 20, 2016	Jan. 19, 2018
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 17, 2017	Jan. 16, 2018
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Nov. 10, 2016	Nov. 09, 2017
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Dec. 13, 2016	Dec. 12, 2017
RF Cable	8D	966-4-1 966-4-2 966-4-3	Apr. 01, 2017	Mar. 31, 2018
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Oct. 05, 2016	Oct. 04, 2017
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Dec. 27, 2016	Dec. 26, 2017
Pre-Amplifier EMCI	EMC12630SE	980385	Feb. 02, 2017	Feb. 01, 2018
RF Cable	EMC104-SM-SM-1200 EMC104-SM-SM-2000 EMC104-SM-SM-5000	160923 150318 150321	Feb. 02, 2017 Mar. 29, 2017 Mar. 29, 2017	Feb. 01, 2018 Mar. 28, 2018 Mar. 28, 2018
Pre-Amplifier EMCI	EMC184045SE	980387	Feb. 02, 2017	Feb. 01, 2018
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 15, 2016	Dec. 14, 2017
RF Cable	SUCOFLEX 102	36432/2 36433/2	Jan. 15, 2017	Jan. 14, 2018
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208410	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP02	NA	NA
Spectrum Analyzer R&S	FSP40	100060	May 11, 2017	May 10, 2018
Power meter Anritsu	ML2495A	MY48250253	Dec. 21, 2016	Dec. 20, 2017
Power sensor Anritsu	MA2411B	1014008	May 11, 2017	May 10, 2018

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 calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 4.
4. The CANADA Site Registration No. is 20331-2
5. Loop antenna was used for all emissions below 30 MHz.
6. Tested Date: July 26, 2017.

4.1.3 Test Procedures

For Radiated emission below 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. 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. Both X and Y axes of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case 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.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

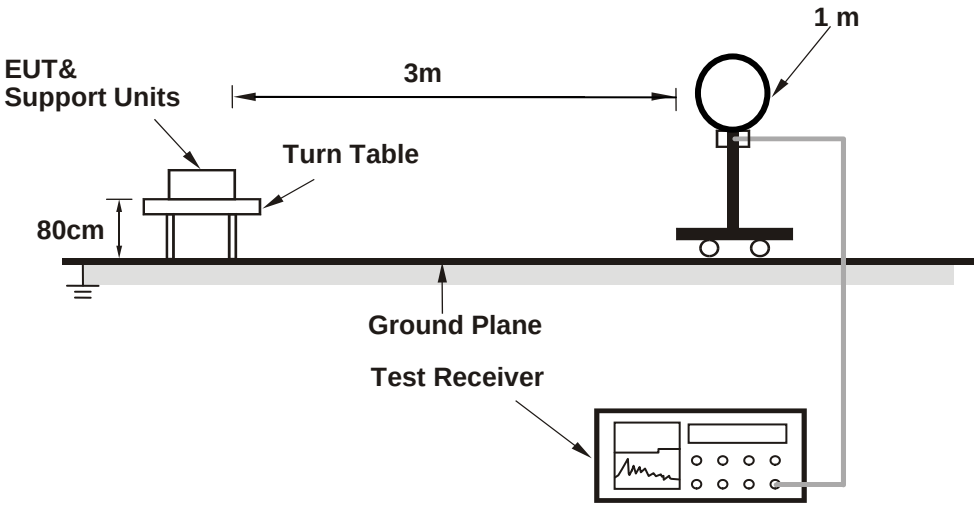
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

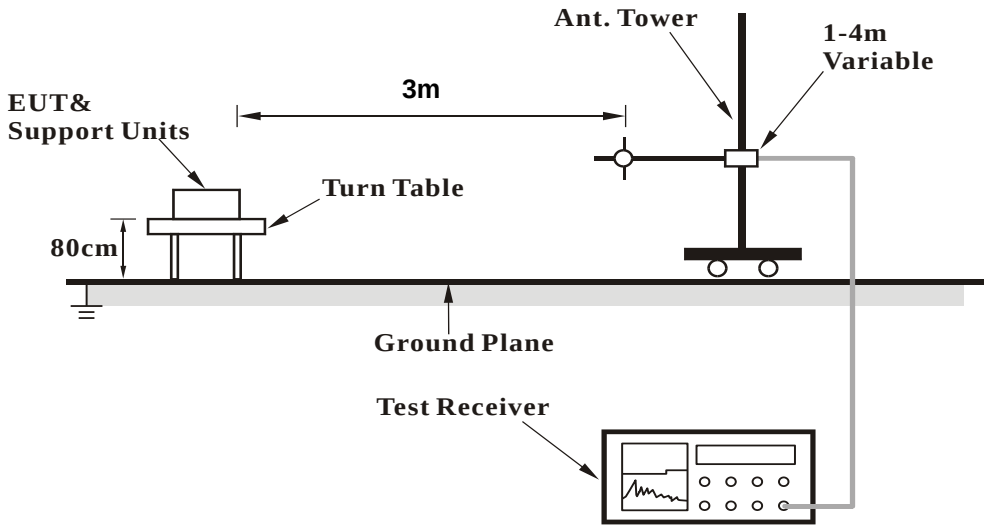
No deviation.

4.1.5 Test Setup

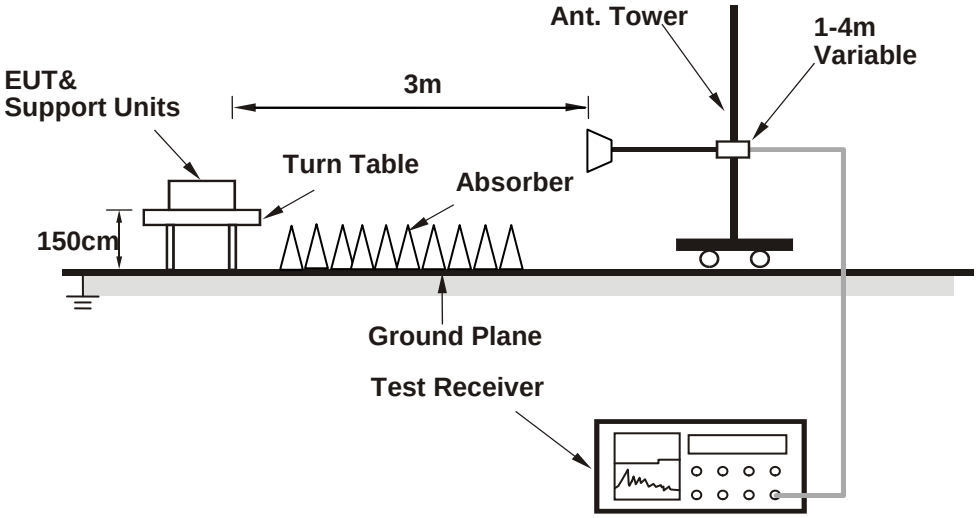
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

a. Connected the EUT with the Laptop which is placed on remote site.
b. Contorlling software (QDART_CONN.WIN.1.0 Installer-00039.1) has been activated to set the EUT on specific status.

4.1.7 Test Results

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	2390.00	57.2 PK	74.0	-16.8	1.48 H	143	58.5	-1.3
2	2390.00	43.5 AV	54.0	-10.5	1.48 H	143	44.8	-1.3
3	*2412.00	105.4 PK			1.48 H	143	106.5	-1.1
4	*2412.00	102.9 AV			1.48 H	143	104.0	-1.1
5	3665.00	54.3 PK	74.0	-19.7	3.52 H	236	53.1	1.2
6	3665.00	52.8 AV	54.0	-1.2	3.52 H	236	51.6	1.2
7	4824.00	47.3 PK	74.0	-26.7	2.57 H	144	44.1	3.2
8	4824.00	44.0 AV	54.0	-10.0	2.57 H	144	40.8	3.2
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	62.1 PK	74.0	-11.9	1.27 V	180	63.4	-1.3
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**1.27 V**	**180**	**55.2**	**-1.3**
3	*2412.00	120.0 PK			1.27 V	180	121.1	-1.1
4	*2412.00	117.8 AV			1.27 V	180	118.9	-1.1
5	3665.00	52.0 PK	74.0	-22.0	1.14 V	328	50.8	1.2
6	3665.00	50.0 AV	54.0	-4.0	1.14 V	328	48.8	1.2
7	4824.00	48.1 PK	74.0	-25.9	1.03 V	12	44.9	3.2
8	4824.00	45.1 AV	54.0	-8.9	1.03 V	12	41.9	3.2

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) 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	57.0 PK	74.0	-17.0	1.54 H	158	58.3	-1.3
2	2390.00	43.3 AV	54.0	-10.7	1.54 H	158	44.6	-1.3
3	*2437.00	108.2 PK			1.54 H	158	109.4	-1.2
4	*2437.00	105.5 AV			1.54 H	158	106.7	-1.2
5	2495.00	61.2 PK	74.0	-12.8	1.54 H	158	62.1	-0.9
6	2495.00	50.6 AV	54.0	-3.4	1.54 H	158	51.5	-0.9
7	4874.00	46.7 PK	74.0	-27.3	2.54 H	141	43.4	3.3
8	4874.00	43.5 AV	54.0	-10.5	2.54 H	141	40.2	3.3
9	7311.00	50.6 PK	74.0	-23.4	1.50 H	228	40.8	9.8
10	7311.00	44.4 AV	54.0	-9.6	1.50 H	228	34.6	9.8
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	62.1 PK	74.0	-11.9	1.12 V	178	63.4	-1.3
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**1.12 V**	**178**	**55.2**	**-1.3**
3	*2437.00	122.8 PK			1.12 V	178	124.0	-1.2
4	*2437.00	120.4 AV			1.12 V	178	121.6	-1.2
5	2495.00	59.5 PK	74.0	-14.5	1.12 V	178	60.4	-0.9
6	2495.00	48.5 AV	54.0	-5.5	1.12 V	178	49.4	-0.9
7	4874.00	48.0 PK	74.0	-26.0	1.07 V	2	44.7	3.3
8	4874.00	45.0 AV	54.0	-9.0	1.07 V	2	41.7	3.3
9	7311.00	48.7 PK	74.0	-25.3	1.46 V	309	38.9	9.8
10	7311.00	40.4 AV	54.0	-13.6	1.46 V	309	30.6	9.8

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) 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	*2462.00	107.0 PK			1.60 H	144	108.1	-1.1
2	*2462.00	104.3 AV			1.60 H	144	105.4	-1.1
3	2483.50	58.2 PK	74.0	-15.8	1.60 H	144	59.2	-1.0
4	2483.50	43.5 AV	54.0	-10.5	1.60 H	144	44.5	-1.0
5	4924.00	44.2 PK	74.0	-29.8	2.98 H	143	40.7	3.5
6	4924.00	41.2 AV	54.0	-12.8	2.98 H	143	37.7	3.5
7	7386.00	46.0 PK	74.0	-28.0	1.50 H	249	36.1	9.9
8	7386.00	39.6 AV	54.0	-14.4	1.50 H	249	29.7	9.9
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	121.6 PK			1.04 V	161	122.7	-1.1
2	*2462.00	119.2 AV			1.04 V	161	120.3	-1.1
3	2483.50	63.8 PK	74.0	-10.2	1.04 V	161	64.8	-1.0
4	**2483.50**	**53.9 AV**	**54.0**	**-0.1**	**1.04 V**	**161**	**54.9**	**-1.0**
5	4924.00	45.9 PK	74.0	-28.1	1.00 V	354	42.4	3.5
6	4924.00	42.7 AV	54.0	-11.3	1.00 V	354	39.2	3.5
7	7386.00	43.2 PK	74.0	-30.8	1.10 V	351	33.3	9.9
8	7386.00	35.4 AV	54.0	-18.6	1.10 V	351	25.5	9.9

REMARKS:

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

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CHANNEL	TX Channel 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	60.2 PK	74.0	-13.8	1.59 H	147	61.5	-1.3
2	2390.00	43.1 AV	54.0	-10.9	1.59 H	147	44.4	-1.3
3	*2412.00	102.6 PK			1.59 H	147	103.7	-1.1
4	*2412.00	92.1 AV			1.59 H	147	93.2	-1.1
5	4824.00	44.4 PK	74.0	-29.6	1.49 H	253	41.2	3.2
6	4824.00	36.1 AV	54.0	-17.9	1.49 H	253	32.9	3.2
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	69.3 PK	74.0	-4.7	1.69 V	182	70.6	-1.3
2	2390.00	53.5 AV	54.0	-0.5	1.69 V	182	54.8	-1.3
3	*2412.00	117.2 PK			1.69 V	182	118.3	-1.1
4	*2412.00	107.0 AV			1.69 V	182	108.1	-1.1
5	4824.00	46.5 PK	74.0	-27.5	1.10 V	109	43.3	3.2
6	4824.00	36.6 AV	54.0	-17.4	1.10 V	109	33.4	3.2

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) 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	58.7 PK	74.0	-15.3	1.61 H	134	60.0	-1.3
2	2390.00	41.8 AV	54.0	-12.2	1.61 H	134	43.1	-1.3
3	*2437.00	109.1 PK			1.61 H	134	110.3	-1.2
4	*2437.00	99.0 AV			1.61 H	134	100.2	-1.2
5	2483.50	61.3 PK	74.0	-12.7	1.61 H	134	62.3	-1.0
6	2483.50	41.1 AV	54.0	-12.9	1.61 H	134	42.1	-1.0
7	4874.00	43.8 PK	74.0	-30.2	1.49 H	256	40.5	3.3
8	4874.00	35.6 AV	54.0	-18.4	1.49 H	256	32.3	3.3
9	7311.00	46.9 PK	74.0	-27.1	3.04 H	139	37.1	9.8
10	7311.00	38.7 AV	54.0	-15.3	3.04 H	139	28.9	9.8
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	65.7 PK	74.0	-8.3	1.69 V	187	67.0	-1.3
2	2390.00	51.6 AV	54.0	-2.4	1.69 V	187	52.9	-1.3
3	*2437.00	123.7 PK			1.69 V	187	124.9	-1.2
4	*2437.00	113.9 AV			1.69 V	187	115.1	-1.2
5	2483.50	68.9 PK	74.0	-5.1	1.69 V	187	69.9	-1.0
6	2483.50	50.8 AV	54.0	-3.2	1.69 V	187	51.8	-1.0
7	4874.00	45.9 PK	74.0	-28.1	1.15 V	125	42.6	3.3
8	4874.00	36.2 AV	54.0	-17.8	1.15 V	125	32.9	3.3
9	7311.00	48.6 PK	74.0	-25.4	1.43 V	301	38.8	9.8
10	7311.00	40.5 AV	54.0	-13.5	1.43 V	301	30.7	9.8

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) 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	*2462.00	103.8 PK			1.63 H	140	104.9	-1.1
2	*2462.00	93.2 AV			1.63 H	140	94.3	-1.1
3	2483.50	60.8 PK	74.0	-13.2	1.63 H	140	61.8	-1.0
4	2483.50	43.6 AV	54.0	-10.4	1.63 H	140	44.6	-1.0
5	4924.00	43.6 PK	74.0	-30.4	1.44 H	252	40.1	3.5
6	4924.00	35.4 AV	54.0	-18.6	1.44 H	252	31.9	3.5
7	7386.00	46.7 PK	74.0	-27.3	3.08 H	135	36.8	9.9
8	7386.00	38.6 AV	54.0	-15.4	3.08 H	135	28.7	9.9
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	118.5 PK			1.69 V	183	119.6	-1.1
2	*2462.00	108.0 AV			1.69 V	183	109.1	-1.1
3	2483.50	67.9 PK	74.0	-6.1	1.69 V	183	68.9	-1.0
4	2483.50	53.5 AV	54.0	-0.5	1.69 V	183	54.5	-1.0
5	4924.00	45.6 PK	74.0	-28.4	1.15 V	124	42.1	3.5
6	4924.00	35.7 AV	54.0	-18.3	1.15 V	124	32.2	3.5
7	7386.00	48.2 PK	74.0	-25.8	1.45 V	299	38.3	9.9
8	7386.00	40.2 AV	54.0	-13.8	1.45 V	299	30.3	9.9

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	62.1 PK	74.0	-11.9	1.65 H	150	63.4	-1.3
2	2390.00	43.8 AV	54.0	-10.2	1.65 H	150	45.1	-1.3
3	*2412.00	103.1 PK			1.65 H	150	104.2	-1.1
4	*2412.00	92.5 AV			1.65 H	150	93.6	-1.1
5	4824.00	43.8 PK	74.0	-30.2	1.45 H	258	40.6	3.2
6	4824.00	35.9 AV	54.0	-18.1	1.45 H	258	32.7	3.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.1 PK	74.0	-3.9	1.69 V	183	71.4	-1.3
2	2390.00	53.8 AV	54.0	-0.2	1.69 V	183	55.1	-1.3
3	*2412.00	117.8 PK			1.69 V	183	118.9	-1.1
4	*2412.00	106.6 AV			1.69 V	183	107.7	-1.1
5	4824.00	46.2 PK	74.0	-27.8	1.15 V	110	43.0	3.2
6	4824.00	36.5 AV	54.0	-17.5	1.15 V	110	33.3	3.2

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) 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	*2437.00	110.0 PK			1.68 H	138	111.2	-1.2
2	*2437.00	99.1 AV			1.68 H	138	100.3	-1.2
3	4874.00	44.3 PK	74.0	-29.7	1.45 H	268	41.0	3.3
4	4874.00	35.9 AV	54.0	-18.1	1.45 H	268	32.6	3.3
5	7311.00	46.4 PK	74.0	-27.6	3.06 H	135	36.6	9.8
6	7311.00	38.5 AV	54.0	-15.5	3.06 H	135	28.7	9.8
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	124.5 PK			1.17 V	161	125.7	-1.2
2	*2437.00	113.0 AV			1.17 V	161	114.2	-1.2
3	4874.00	46.4 PK	74.0	-27.6	1.13 V	124	43.1	3.3
4	4874.00	36.6 AV	54.0	-17.4	1.13 V	124	33.3	3.3
5	7311.00	48.5 PK	74.0	-25.5	1.38 V	287	38.7	9.8
6	7311.00	40.5 AV	54.0	-13.5	1.38 V	287	30.7	9.8

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) 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	*2462.00	104.3 PK			1.70 H	123	105.4	-1.1
2	*2462.00	94.2 AV			1.70 H	123	95.3	-1.1
3	2483.50	62.5 PK	74.0	-11.5	1.70 H	123	63.5	-1.0
4	2483.50	44.1 AV	54.0	-9.9	1.70 H	123	45.1	-1.0
5	4924.00	44.4 PK	74.0	-29.6	1.49 H	257	40.9	3.5
6	4924.00	35.9 AV	54.0	-18.1	1.49 H	257	32.4	3.5
7	7386.00	46.7 PK	74.0	-27.3	3.09 H	155	36.8	9.9
8	7386.00	38.7 AV	54.0	-15.3	3.09 H	155	28.8	9.9
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	118.5 PK			1.40 V	185	119.6	-1.1
2	*2462.00	108.0 AV			1.40 V	185	109.1	-1.1
3	2483.50	69.6 PK	74.0	-4.4	1.40 V	185	70.6	-1.0
4	**2483.50**	**53.9 AV**	**54.0**	**-0.1**	**1.40 V**	**185**	**54.9**	**-1.0**
5	4924.00	46.5 PK	74.0	-27.5	1.12 V	129	43.0	3.5
6	4924.00	36.5 AV	54.0	-17.5	1.12 V	129	33.0	3.5
7	7386.00	48.7 PK	74.0	-25.3	1.42 V	287	38.8	9.9
8	7386.00	40.6 AV	54.0	-13.4	1.42 V	287	30.7	9.9

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) 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	61.1 PK	74.0	-12.9	1.68 H	125	62.4	-1.3
2	2390.00	43.8 AV	54.0	-10.2	1.68 H	125	45.1	-1.3
3	*2422.00	95.8 PK			1.68 H	125	97.1	-1.3
4	*2422.00	86.1 AV			1.68 H	125	87.4	-1.3
5	4844.00	44.1 PK	74.0	-29.9	1.44 H	254	40.8	3.3
6	4844.00	36.1 AV	54.0	-17.9	1.44 H	254	32.8	3.3
7	7266.00	46.9 PK	74.0	-27.1	2.98 H	149	37.1	9.8
8	7266.00	38.9 AV	54.0	-15.1	2.98 H	149	29.1	9.8
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	67.8 PK	74.0	-6.2	1.40 V	183	69.1	-1.3
2	2390.00	53.5 AV	54.0	-0.5	1.40 V	183	54.8	-1.3
3	*2422.00	109.4 PK			1.40 V	183	110.7	-1.3
4	*2422.00	99.8 AV			1.40 V	183	101.1	-1.3
5	4844.00	45.7 PK	74.0	-28.3	1.12 V	138	42.4	3.3
6	4844.00	36.1 AV	54.0	-17.9	1.12 V	138	32.8	3.3
7	7266.00	47.9 PK	74.0	-26.1	1.43 V	289	38.1	9.8
8	7266.00	40.0 AV	54.0	-14.0	1.43 V	289	30.2	9.8

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) 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	61.4 PK	74.0	-12.6	1.68 H	115	62.7	-1.3
2	2390.00	43.9 AV	54.0	-10.1	1.68 H	115	45.2	-1.3
3	*2437.00	100.6 PK			1.68 H	115	101.8	-1.2
4	*2437.00	91.2 AV			1.68 H	115	92.4	-1.2
5	2483.50	59.8 PK	74.0	-14.2	1.68 H	115	60.8	-1.0
6	2483.50	42.0 AV	54.0	-12.0	1.68 H	115	43.0	-1.0
7	4874.00	44.2 PK	74.0	-29.8	1.52 H	241	40.9	3.3
8	4874.00	36.1 AV	54.0	-17.9	1.52 H	241	32.8	3.3
9	7311.00	46.7 PK	74.0	-27.3	3.08 H	141	36.9	9.8
10	7311.00	38.5 AV	54.0	-15.5	3.08 H	141	28.7	9.8
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	67.3 PK	74.0	-6.7	1.30 V	179	68.6	-1.3
2	2390.00	53.7 AV	54.0	-0.3	1.30 V	179	55.0	-1.3
3	*2437.00	114.2 PK			1.30 V	179	115.4	-1.2
4	*2437.00	104.9 AV			1.30 V	179	106.1	-1.2
5	2483.50	66.5 PK	74.0	-7.5	1.30 V	179	67.5	-1.0
6	2483.50	51.7 AV	54.0	-2.3	1.30 V	179	52.7	-1.0
7	4874.00	46.0 PK	74.0	-28.0	1.15 V	136	42.7	3.3
8	4874.00	36.5 AV	54.0	-17.5	1.15 V	136	33.2	3.3
9	7311.00	48.8 PK	74.0	-25.2	1.43 V	294	39.0	9.8
10	7311.00	40.4 AV	54.0	-13.6	1.43 V	294	30.6	9.8

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) 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	*2452.00	96.8 PK			1.64 H	126	97.9	-1.1
2	*2452.00	86.6 AV			1.64 H	126	87.7	-1.1
3	2483.50	61.5 PK	74.0	-12.5	1.64 H	126	62.5	-1.0
4	2483.50	43.7 AV	54.0	-10.3	1.64 H	126	44.7	-1.0
5	4904.00	43.9 PK	74.0	-30.1	1.50 H	260	40.4	3.5
6	4904.00	35.5 AV	54.0	-18.5	1.50 H	260	32.0	3.5
7	7356.00	46.6 PK	74.0	-27.4	3.00 H	153	36.7	9.9
8	7356.00	38.5 AV	54.0	-15.5	3.00 H	153	28.6	9.9
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	110.5 PK			1.30 V	158	111.6	-1.1
2	*2452.00	100.5 AV			1.30 V	158	101.6	-1.1
3	2483.50	67.9 PK	74.0	-6.1	1.30 V	158	68.9	-1.0
4	2483.50	53.5 AV	54.0	-0.5	1.30 V	158	54.5	-1.0
5	4904.00	45.6 PK	74.0	-28.4	1.10 V	116	42.1	3.5
6	4904.00	35.9 AV	54.0	-18.1	1.10 V	116	32.4	3.5
7	7356.00	48.8 PK	74.0	-25.2	1.40 V	289	38.9	9.9
8	7356.00	40.6 AV	54.0	-13.4	1.40 V	289	30.7	9.9

REMARKS:

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

Below 1GHz Data:

802.11b

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 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	61.06	29.7 QP	40.0	-10.3	2.00 H	287	38.5	-8.8
2	142.28	34.1 QP	43.5	-9.4	2.00 H	99	42.2	-8.1
3	191.55	34.6 QP	43.5	-8.9	1.00 H	48	45.6	-11.0
4	342.22	35.2 QP	46.0	-10.8	1.00 H	2	41.8	-6.6
5	671.97	38.6 QP	46.0	-7.4	1.00 H	360	38.2	0.4
6	811.31	36.6 QP	46.0	-9.4	1.00 H	327	34.0	2.6
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	36.04	34.4 QP	40.0	-5.6	3.00 V	135	43.8	-9.4
2	63.39	29.7 QP	40.0	-10.3	2.50 V	144	38.5	-8.8
3	142.35	30.5 QP	43.5	-13.0	1.00 V	245	38.6	-8.1
4	191.14	34.1 QP	43.5	-9.4	1.00 V	248	45.1	-11.0
5	672.07	42.3 QP	46.0	-3.7	1.50 V	72	41.9	0.4
6	814.34	37.2 QP	46.0	-8.8	2.00 V	0	34.5	2.7

REMARKS:

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

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

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test ReceiverR&S	ESCS 30	847124/029	Oct. 24, 2016	Oct. 23, 2017
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 26, 2016	Oct. 25, 2017
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 03, 2017	June 02, 2018
50 ohms Terminator	N/A	EMC-02	Sep. 29, 2016	Sep. 28, 2017
RF Cable	5D-FB	COCCAB-001	Sep. 30, 2016	Sep. 29, 2017
10 dB PAD Mini-Circuits	HAT-10+	CONATT-004	June 18, 2017	June 17, 2018
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note:
1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. 1.
3. Tested Date: July 18, 2017.

4.2.3 Test Procedures

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

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

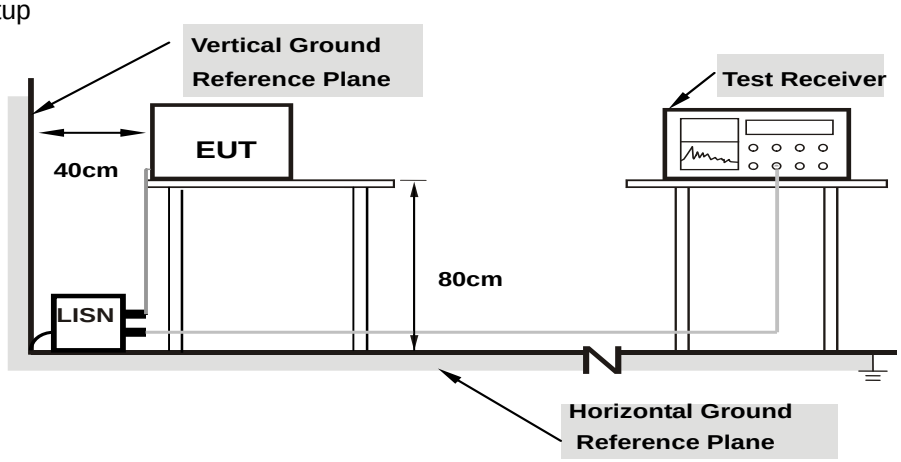
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

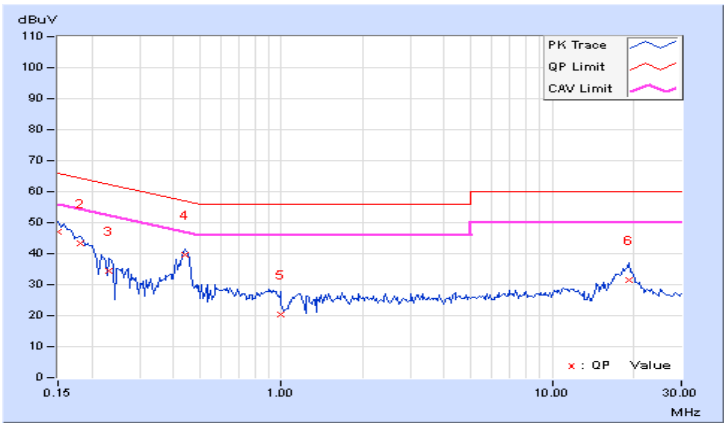
4.2.7 Test Results

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.07	37.13	21.08	47.20	31.15	66.00	56.00	-18.80	-24.85
2	0.18125	10.06	33.09	19.44	43.15	29.50	64.43	54.43	-21.28	-24.93
3	0.23203	10.07	24.50	12.26	34.57	22.33	62.38	52.38	-27.81	-30.05
4	**0.44297**	**10.11**	**29.48**	**22.88**	**39.59**	**32.99**	**57.01**	**47.01**	**-17.42**	**-14.02**
5	0.99766	10.14	10.23	5.53	20.37	15.67	56.00	46.00	-35.63	-30.33
6	19.12891	11.23	20.18	14.97	31.41	26.20	60.00	50.00	-28.59	-23.80

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.

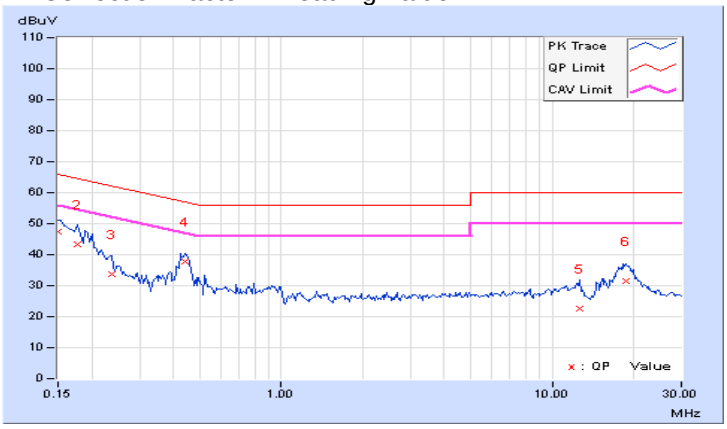


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.06	37.19	19.89	47.25	29.95	66.00	56.00	-18.75	-26.05
2	0.17734	10.04	33.35	17.27	43.39	27.31	64.61	54.61	-21.22	-27.30
3	0.23594	10.04	23.79	9.45	33.83	19.49	62.24	52.24	-28.41	-32.75
4	0.43906	10.10	27.68	20.77	37.78	30.87	57.08	47.08	-19.30	-16.21
5	12.58203	10.67	11.99	7.95	22.66	18.62	60.00	50.00	-37.34	-31.38
6	18.78906	10.96	20.39	15.20	31.35	26.16	60.00	50.00	-28.65	-23.84

REMARKS:

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

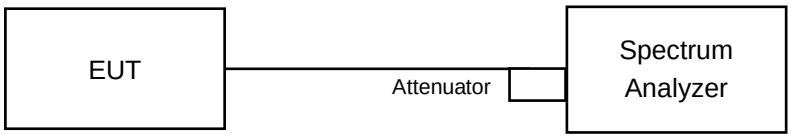


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

a. Set resolution bandwidth (RBW) = 100kHz
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.3.5 Deviation fromTest Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	8.11	8.58	0.5	PASS
6	2437	8.10	8.56	0.5	PASS
11	2462	8.09	8.59	0.5	PASS

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.44	16.42	0.5	PASS
6	2437	16.40	16.37	0.5	PASS
11	2462	16.40	16.40	0.5	PASS

802.11n (HT20)

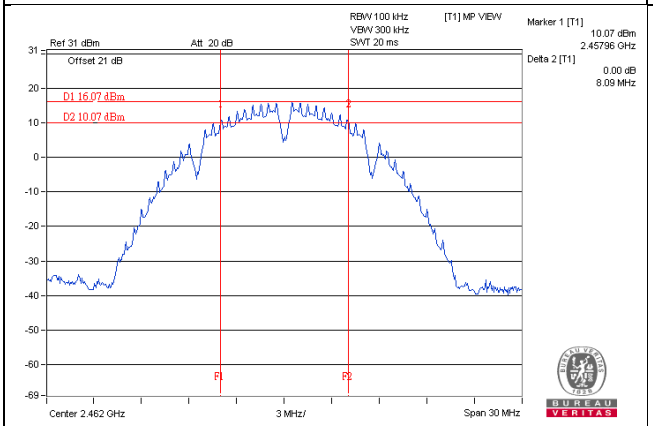
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	17.66	17.62	0.5	PASS
6	2437	17.66	17.67	0.5	PASS
11	2462	17.67	17.67	0.5	PASS

802.11n (HT40)

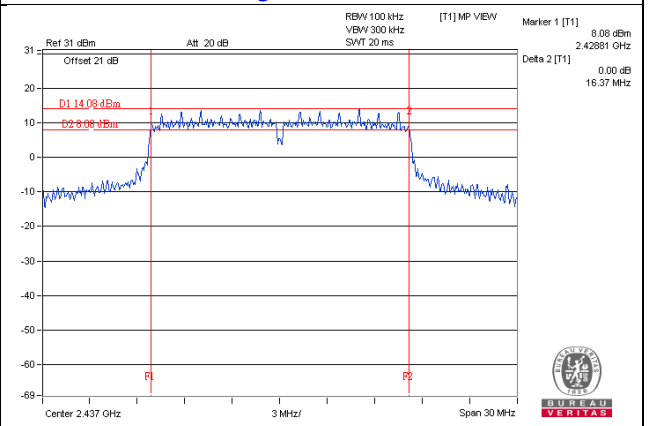
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.21	35.30	0.5	PASS
6	2437	35.20	35.44	0.5	PASS
9	2452	35.48	35.38	0.5	PASS

Spectrum Plot of Worst Value

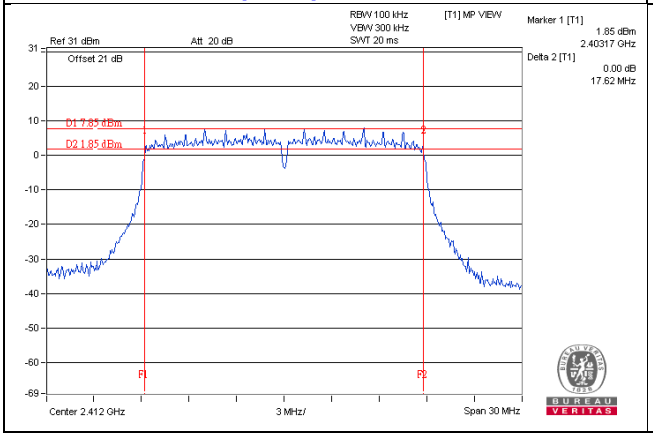
802.11b / Chain 0 : CH11



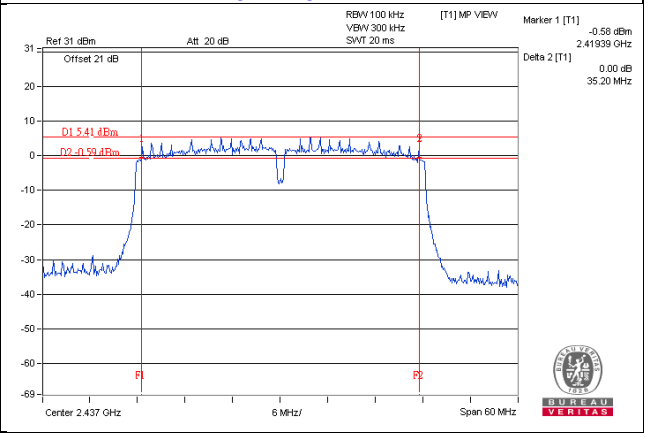
802.11g / Chain 1 : CH6



802.11n (HT20) / Chain 1 : CH1



802.11n (HT40) / Chain 0 : CH6



4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

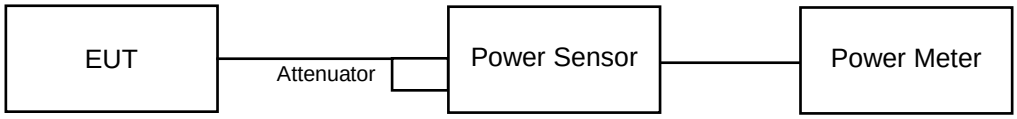
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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 $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

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

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

802.11b

Channel	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	24.07	24.24	520.731	27.17	30	Pass
6	2437	26.09	26.22	825.237	29.17	30	Pass
11	2462	25.48	26.02	753.128	28.77	30	Pass

802.11g

Channel	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	18.23	18.57	138.472	21.41	30	Pass
6	2437	25.52	25.96	750.908	28.76	30	Pass
11	2462	19.54	19.95	188.805	22.76	30	Pass

802.11n (HT20)

Channel	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	19.27	19.49	173.448	22.39	30	Pass
6	2437	25.68	25.89	757.978	28.80	30	Pass
11	2462	19.51	19.96	188.414	22.75	30	Pass

802.11n (HT40)

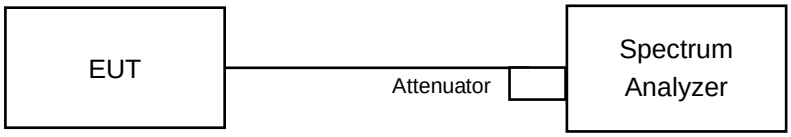
Channel	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	14.52	14.57	56.956	17.56	30	Pass
6	2437	19.56	19.66	182.835	22.62	30	Pass
9	2452	15.48	16.12	76.244	18.82	30	Pass

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

For AVG. power (duty cycle ≥ 98%)
a) Set instrument center frequency to DTS channel center frequency.
b) Set span to at least 1.5 times the OBW.
c) Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz. .
d) Set VBW ≥3 x RBW.
e) Detector = power averaging (RMS) or sample detector (when RMS not available).
f) Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
g) Sweep time = auto couple.
h) Employ trace averaging (RMS) mode over a minimum of 100 traces.
i) Use the peak marker function to determine the maximum amplitude level.

For AVG. power (duty cycle < 98%)
a) Measure the duty cycle (x).
b) Set instrument center frequency to DTS channel center frequency.
c) Set span to at least 1.5 times the OBW.
d) Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz..
e) Set VBW ≥3 x RBW.
f) Detector = power averaging (RMS) or sample detector (when RMS not available).
g) Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
h) Sweep time = auto couple.
i) Do not use sweep triggering. Allow sweep to “free run”.
j) Employ trace averaging (RMS) mode over a minimum of 100 traces.
k) Use the peak marker function to determine the maximum amplitude level.
l) Add 10 log (1/x), where x is the duty cycle measured in step (a, to the measured PSD to compute the average PSD during the actual transmission time.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6

4.5.7 Test Results

802.11b

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-7.20	3.01	-4.19	6.46	Pass
	6	2437	-5.26	3.01	-2.25	6.46	Pass
	11	2462	-6.09	3.01	-3.08	6.46	Pass
1	1	2412	-7.52	3.01	-4.51	6.46	Pass
	6	2437	-4.67	3.01	-1.66	6.46	Pass
	11	2462	-5.50	3.01	-2.49	6.46	Pass

NOTE: Directional gain = 4.53dBi + 10log(2) = 7.54dBi > 6dBi , so the power density limit shall be reduced to 8-(7.54-6) = 6.46dBm.

802.11g

TX chain	Channel	Freq. (MHz)	PSD W/O Duty Factor (dBm/3kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-15.48	3.01	0.20	-12.27	6.46	Pass
	6	2437	-7.85	3.01	0.20	-4.64	6.46	Pass
	11	2462	-12.77	3.01	0.20	-9.56	6.46	Pass
1	1	2412	-14.68	3.01	0.20	-11.47	6.46	Pass
	6	2437	-7.91	3.01	0.20	-4.70	6.46	Pass
	11	2462	-12.66	3.01	0.20	-9.45	6.46	Pass

NOTE: 1. Directional gain = 4.53dBi + 10log(2) = 7.54dBi > 6dBi , so the power density limit shall be reduced to 8-(7.54-6) = 6.46dBm.

2. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-13.01	3.01	-10.00	6.46	Pass
	6	2437	-8.41	3.01	-5.40	6.46	Pass
	11	2462	-13.83	3.01	-10.82	6.46	Pass
1	1	2412	-13.41	3.01	-10.40	6.46	Pass
	6	2437	-7.33	3.01	-4.32	6.46	Pass
	11	2462	-13.30	3.01	-10.29	6.46	Pass

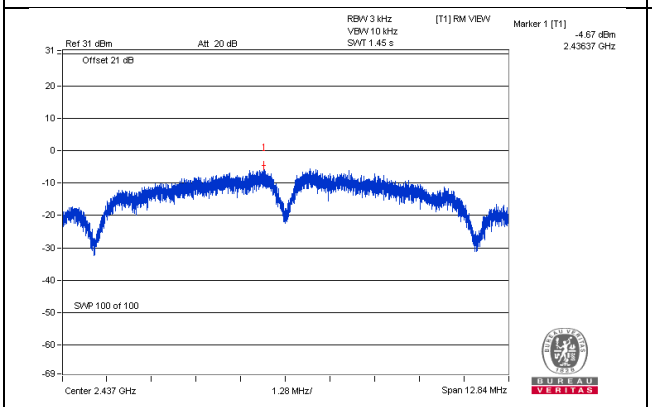
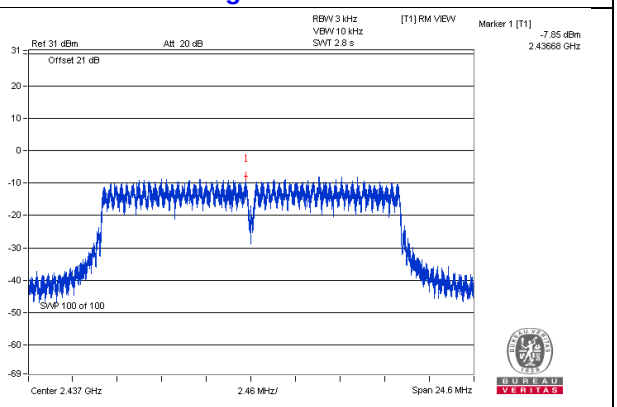
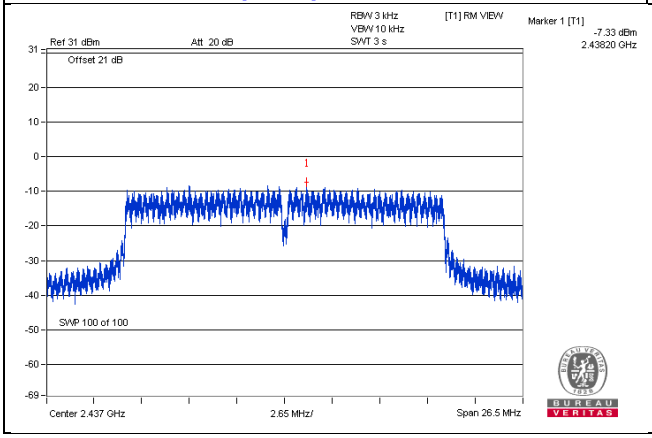
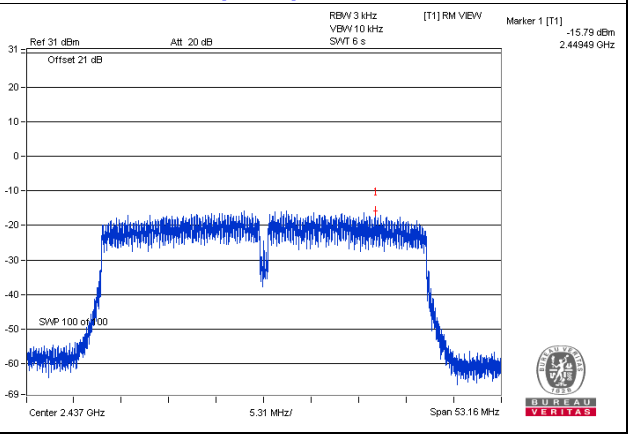
NOTE: Directional gain = 4.53dBi + 10log(2) = 7.54dBi > 6dBi , so the power density limit shall be reduced to 8-(7.54-6) = 6.46dBm.

802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD W/O Duty Factor (dBm/3kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-21.03	3.01	0.17	-17.85	6.46	Pass
	6	2437	-16.09	3.01	0.17	-12.91	6.46	Pass
	11	2462	-19.14	3.01	0.17	-15.96	6.46	Pass
1	1	2412	-21.24	3.01	0.17	-18.06	6.46	Pass
	6	2437	-15.79	3.01	0.17	-12.61	6.46	Pass
	11	2462	-19.03	3.01	0.17	-15.85	6.46	Pass

NOTE: 1. Directional gain = 4.53dBi + 10log(2) = 7.54dBi > 6dBi , so the power density limit shall be reduced to 8-(7.54-6) = 6.46dBm.

2. Refer to section 3.3 for duty cycle spectrum plot.

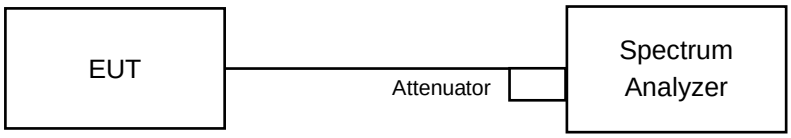
Spectrum Plot of Worst Value	
802.11b / Chain 1 : CH6	**802.11g / Chain 0 : CH6**
	
802.11n (HT20) / Chain 1 : CH6	**802.11n (HT40) / Chain 1 : CH6**
	

4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOBE

1. Set RBW = 100 kHz.
2. Set VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

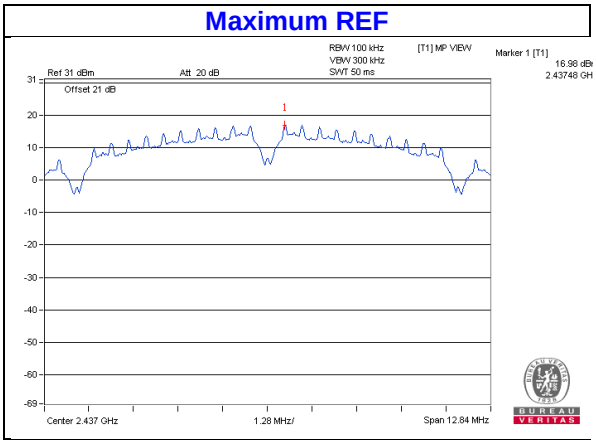
Same as Item 4.3.6

4.6.7 Test Results

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

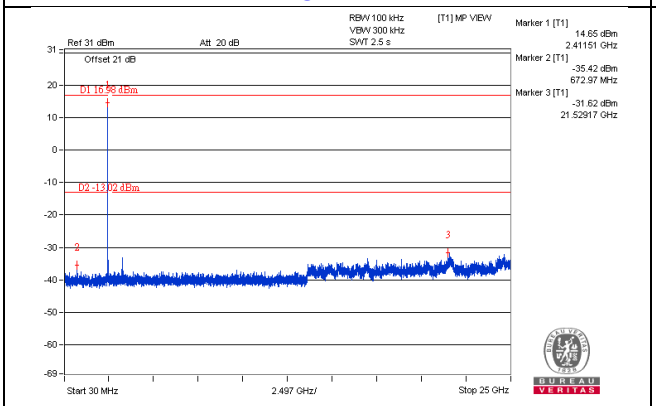
802.11b

Maximum REF

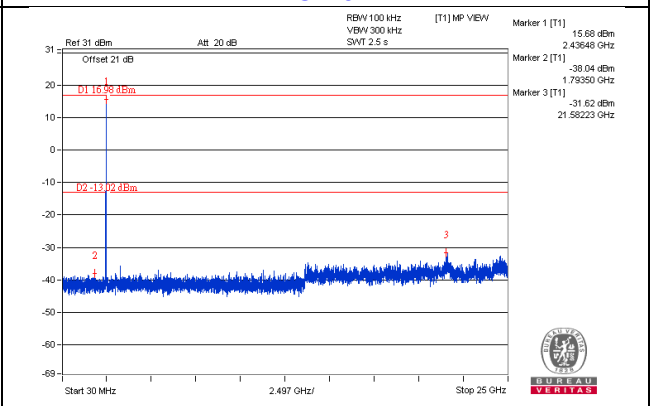


CHAIN 0

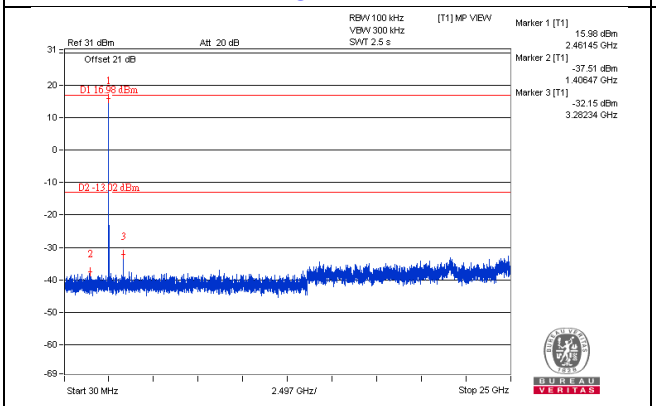
CH 1



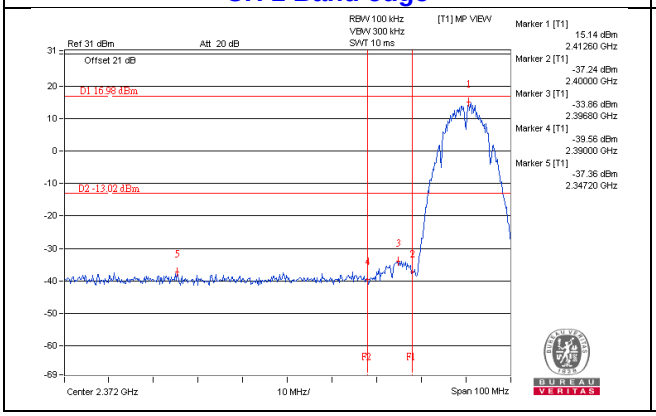
CH 6



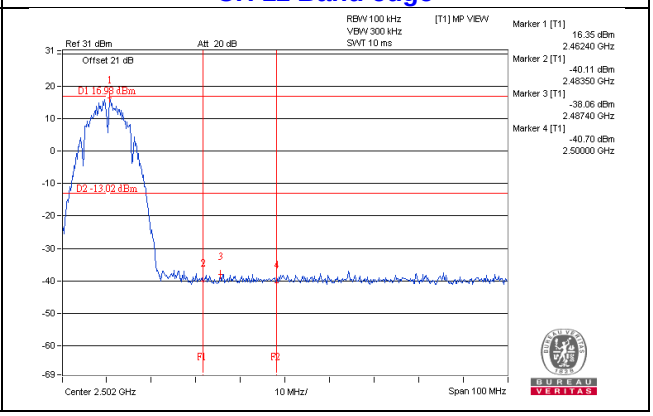
CH 11



CH 1 Band edge

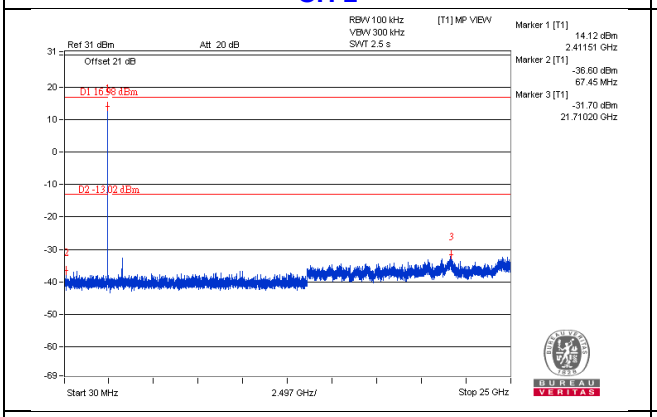


CH 11 Band edge

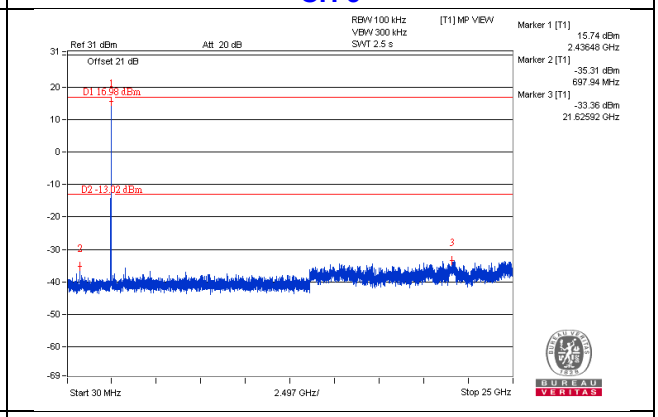


CHAIN 1

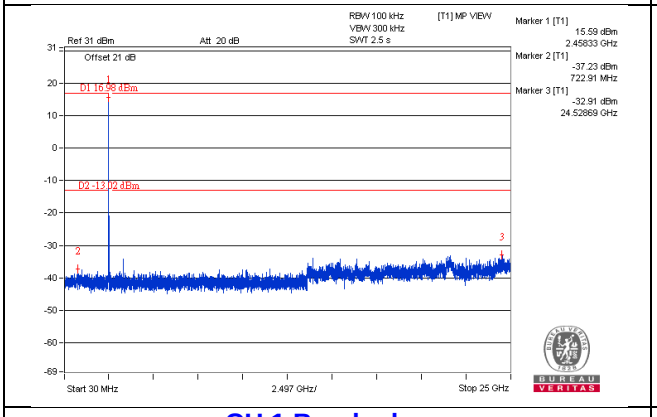
CH 1



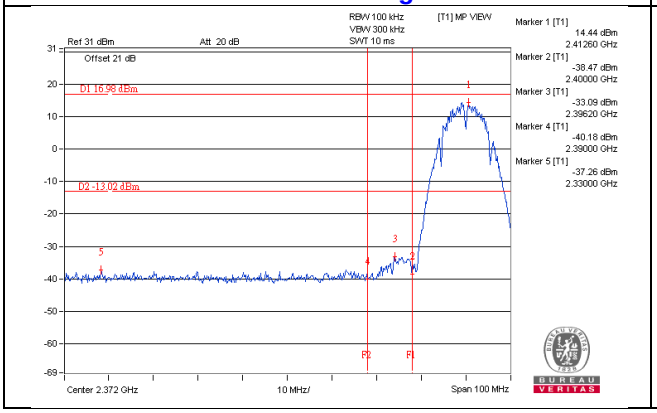
CH 6



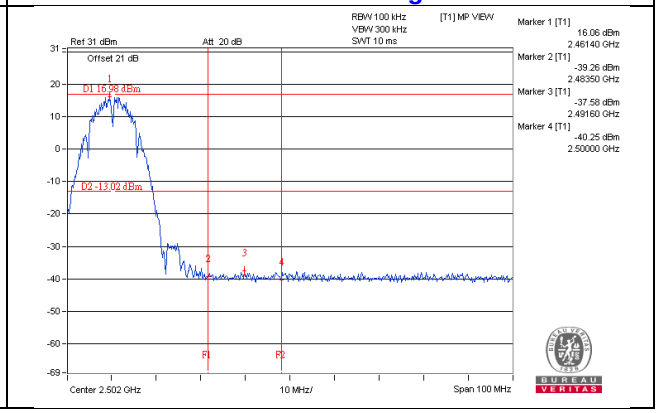
CH 11



CH 1 Band edge

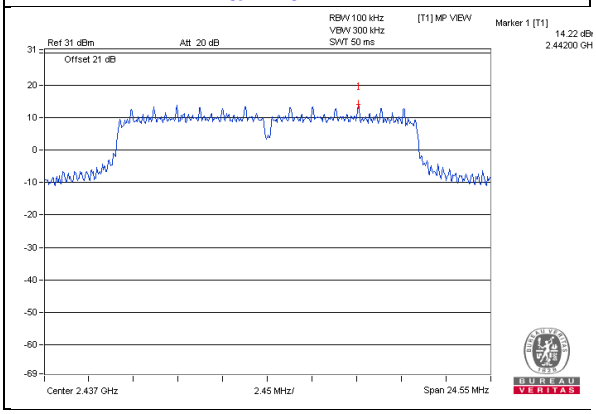


CH 11 Band edge



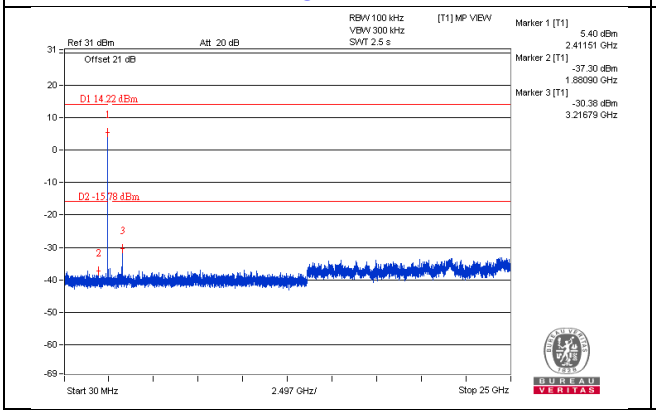
802.11g

Maximum REF

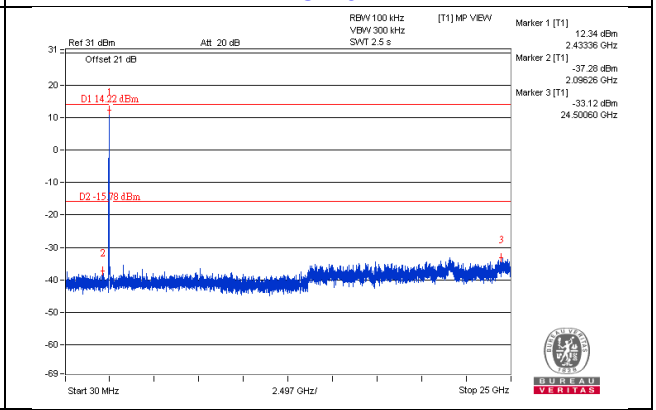


CHAIN 0

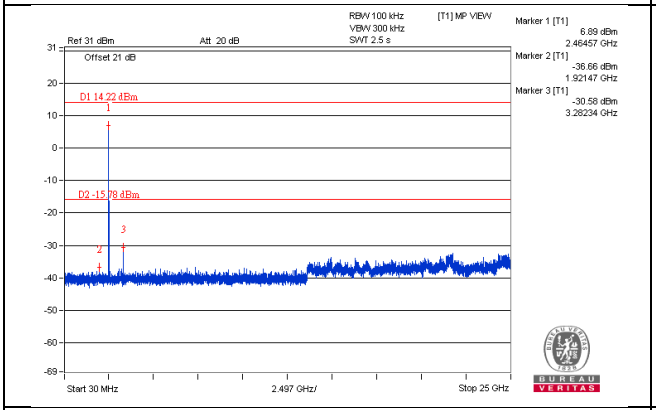
CH 1



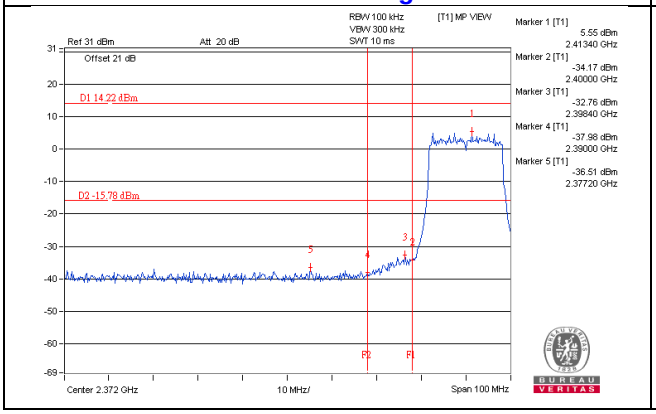
CH 6



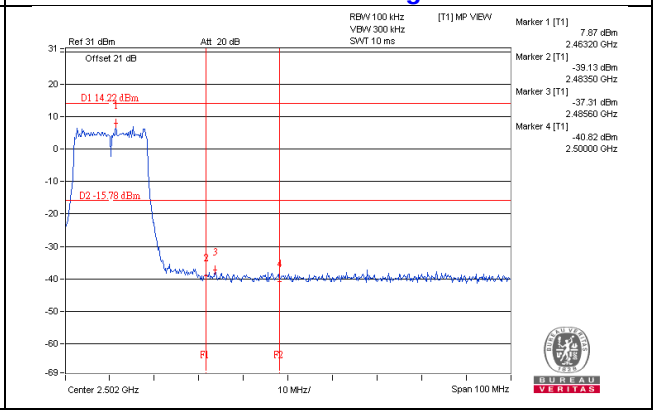
CH 11



CH 1 Band edge

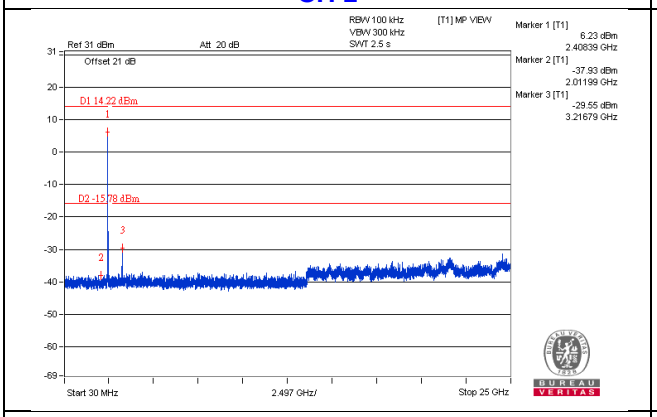


CH 11 Band edge

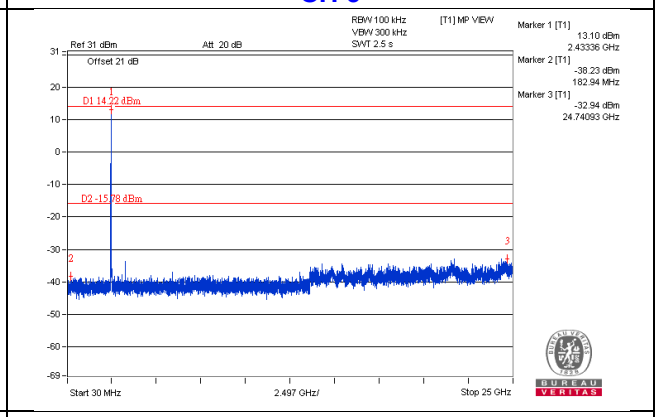


CHAIN 1

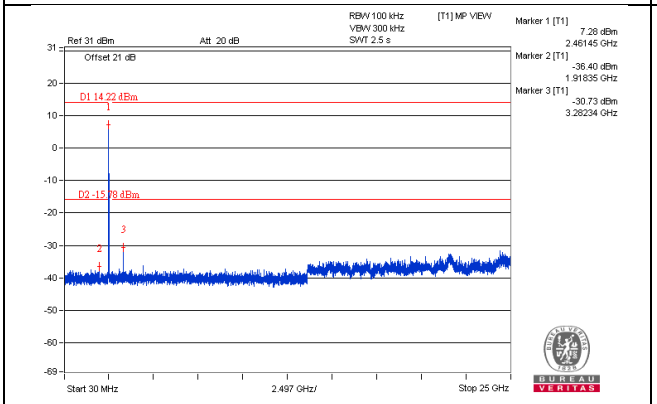
CH 1



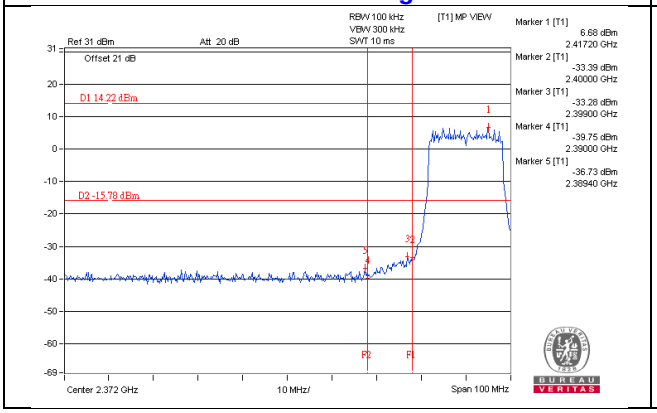
CH 6



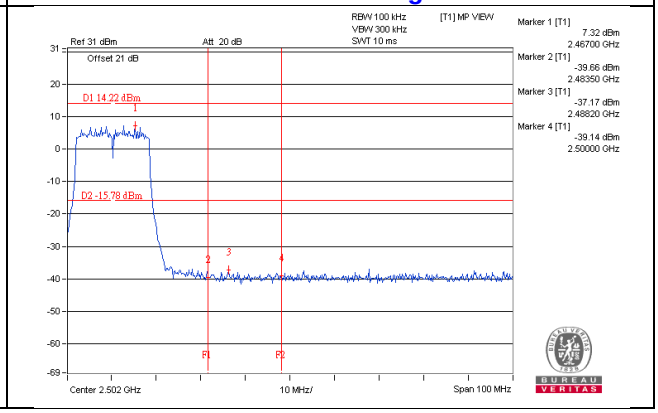
CH 11



CH 1 Band edge

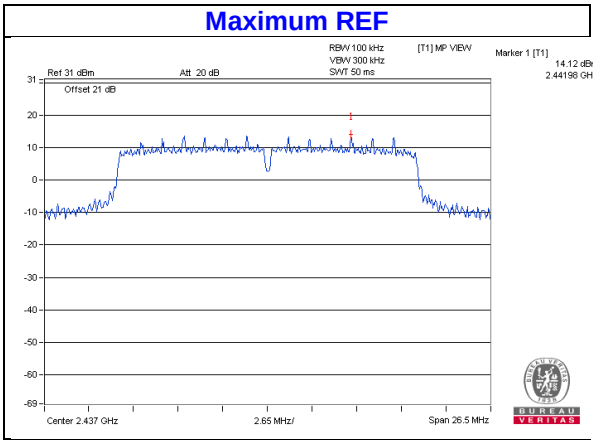


CH 11 Band edge



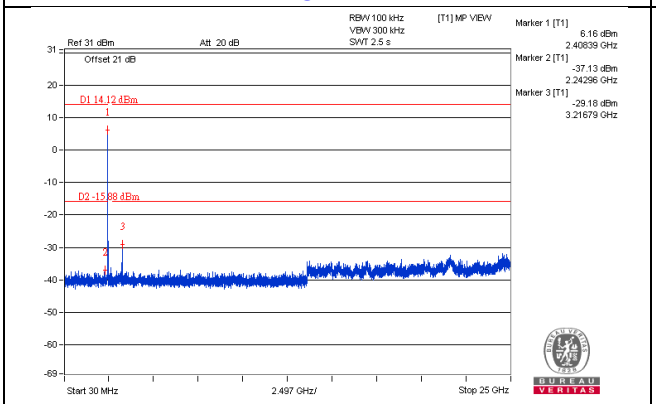
802.11n (HT20)

Maximum REF

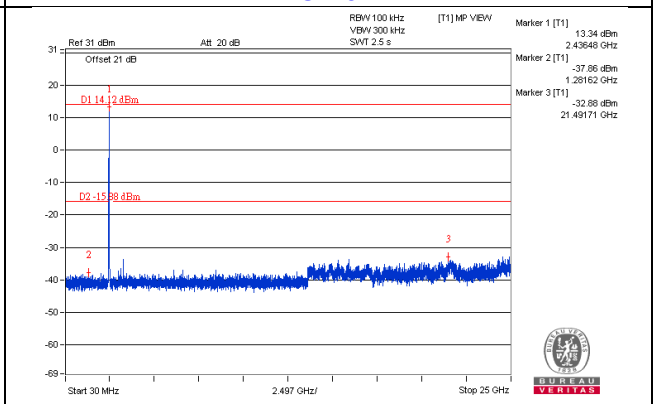


CHAIN 0

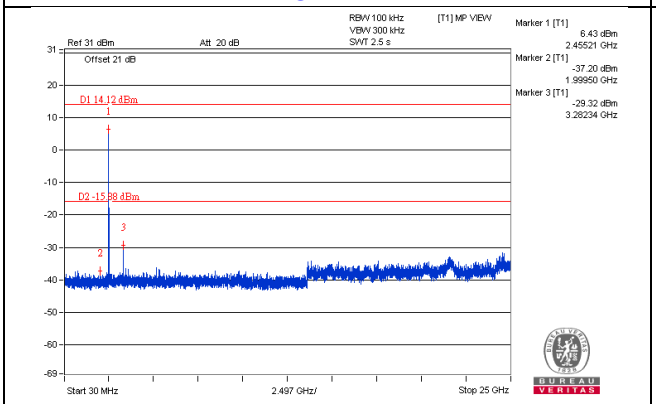
CH 1



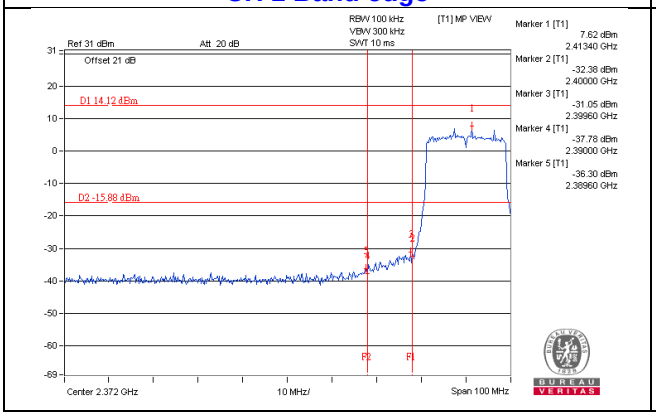
CH 6



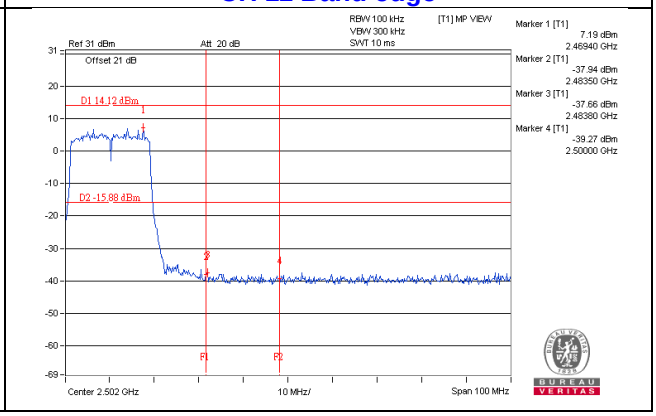
CH 11



CH 1 Band edge

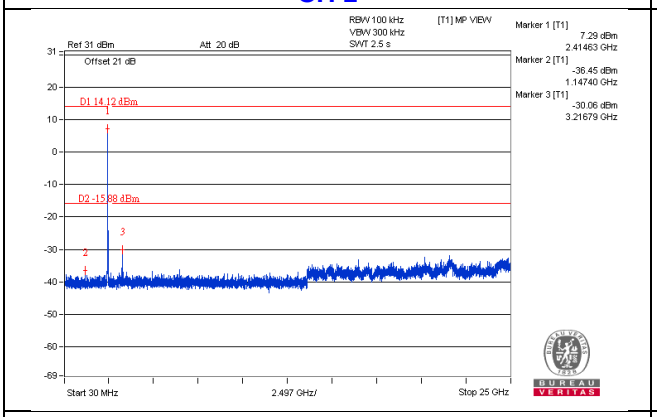


CH 11 Band edge

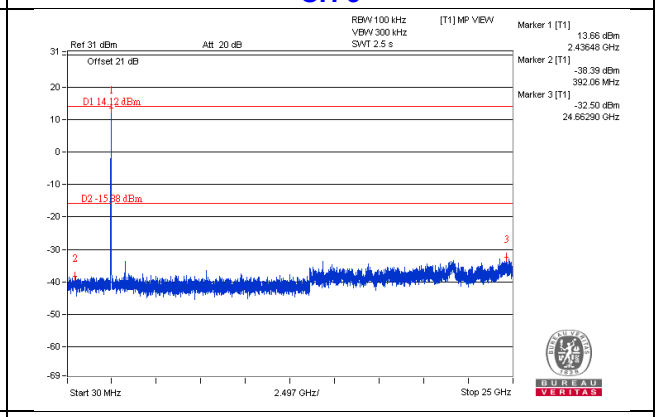


CHAIN 1

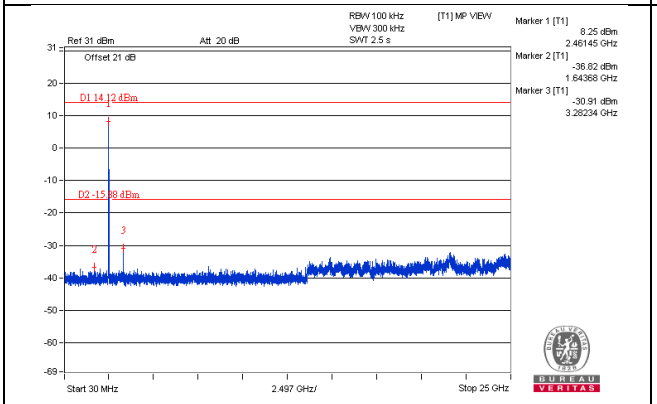
CH 1



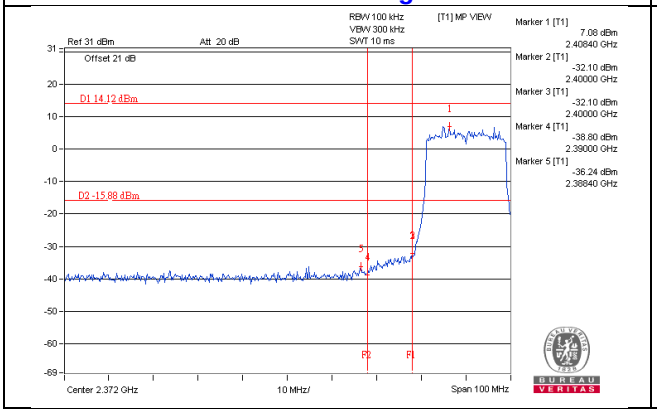
CH 6



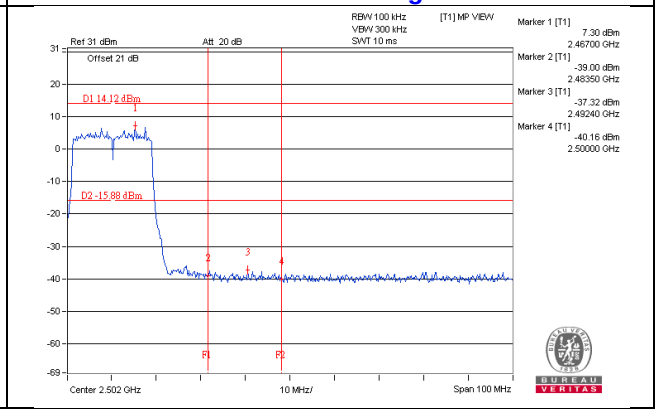
CH 11



CH 1 Band edge

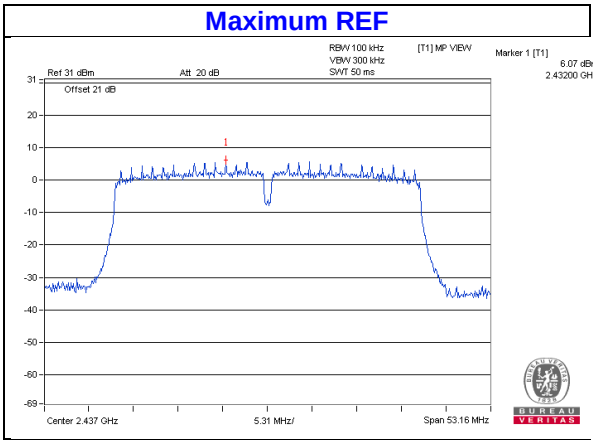


CH 11 Band edge



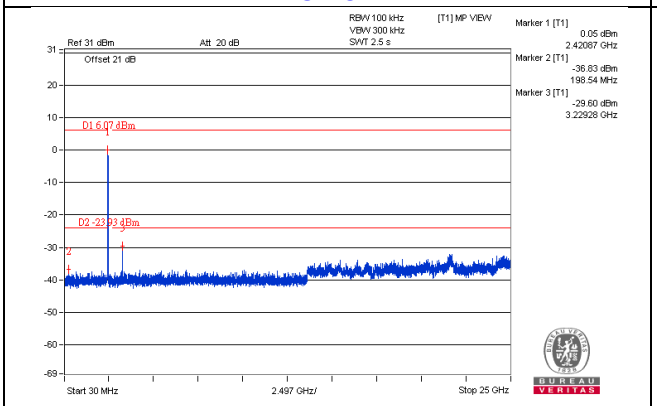
802.11n (HT40)

Maximum REF

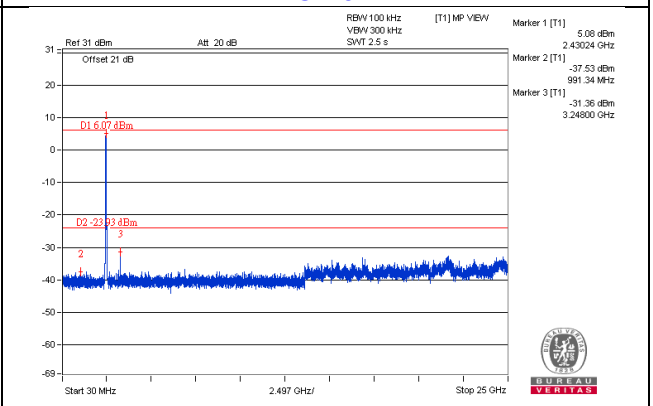


CHAIN 0

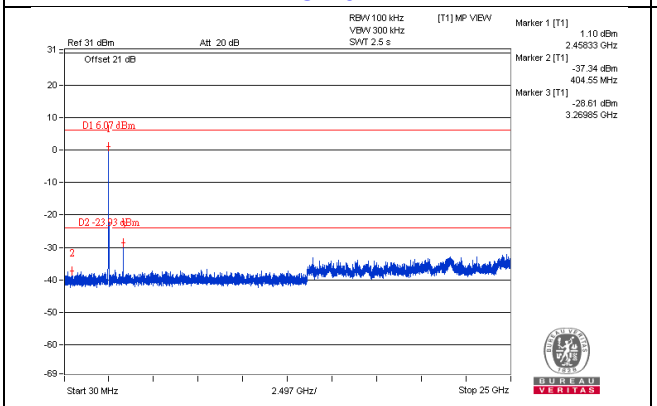
CH 3



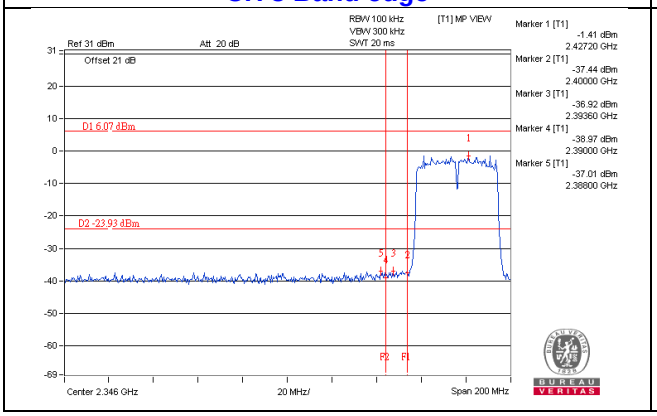
CH 6



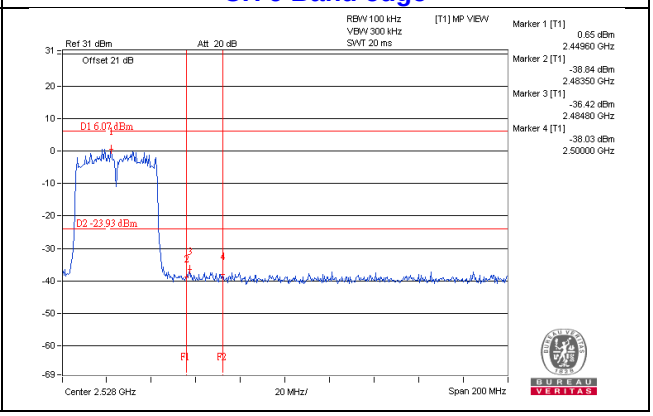
CH 9



CH 3 Band edge

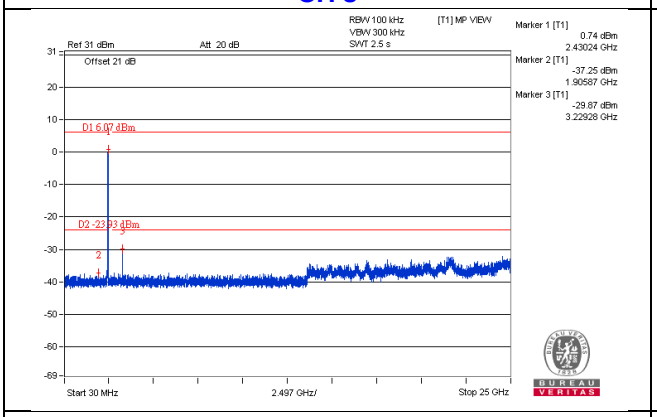


CH 9 Band edge

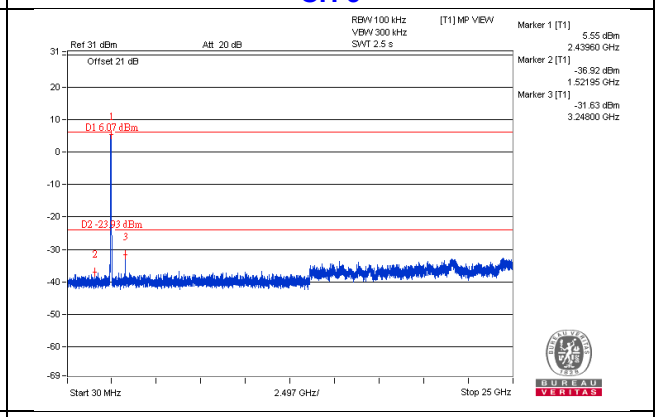


CHAIN 1

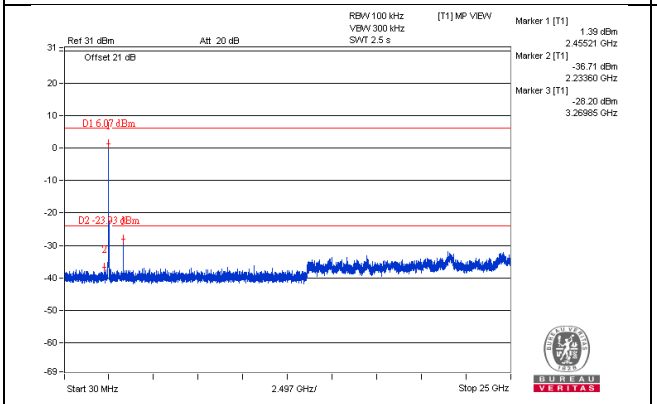
CH 3



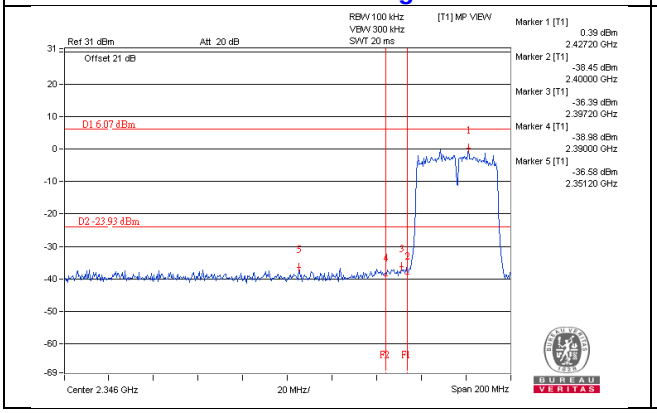
CH 6



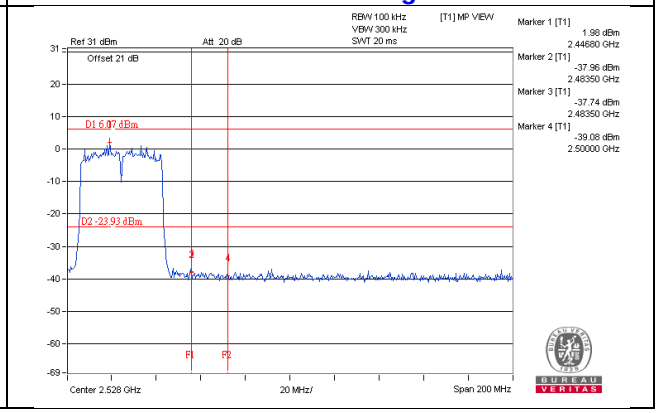
CH 9



CH 3 Band edge



CH 9 Band edge



5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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

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Web Site: www.bureauveritas-adt.com

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

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