

FCC Test Report

Report No.: RF180731E05

FCC ID: NKR-LRV5-100

Test Model: LRV5-100

Received Date: Aug. 02, 2018

Test Date: Aug. 04 to 09, 2018

Issued Date: Sep. 03, 2018

Applicant: Wistron NeWeb Corp.

Address: 20 Park Avenue II, Hsinchu Science Park, Hsinchu 308, Taiwan, R.O.C.

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

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Taiwan R.O.C.

Test Location : E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
Taiwan R.O.C.

**FCC Registration /
Designation Number:** 723255 / TW2022



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Release Control Record

Issue No.	Description	Date Issued
RF180731E05	Original release.	Sep. 03, 2018

1 Certificate of Conformity

Product: Router

Brand: Verizon Wireless

Test Model: LRV5-100

Sample Status: ENGINEERING SAMPLE

Applicant: Wistron NeWeb Corp.

Test Date: Aug. 04 to 09, 2018

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 : Wendy Wu , **Date:** Sep. 03, 2018
Wendy Wu / Specialist

Approved by : May Chen , **Date:** Sep. 03, 2018
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 -6.18dB at 0.38047MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.3dB at 2390.00MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is i-pex(MHF) 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	5.33 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.10 dB
	6GHz ~ 18GHz	4.85 dB
	18GHz ~ 40GHz	5.24 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Router
Brand	Verizon Wireless
Test Model	LRV5-100
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 54V from power adapter (WLAN function) or DC 3.6V from battery (LTE function)
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 600Mbps 802.11ac: up to 1733.3Mbps
Operating Frequency	2.4GHz: 2.412 ~ 2.462GHz 5GHz: 5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
Number of Channel	2.4GHz: 802.11b, 802.11g, 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 CDD Mode: 854.346mW Beamforming Mode: 854.346mW 5GHz: CDD Mode: 5.18 ~ 5.24GHz: 673.319mW 5.745 ~ 5.825GHz: 893.395mW Beamforming Mode: 5.18 ~ 5.24GHz: 673.319mW 5.745 ~ 5.825GHz: 893.395mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x1
Data Cable Supplied	NA

Note:

1. The EUT contains certified LTE modular which FCC ID: NKR-IMG2.

2. The EUT has below radios as following table:

Radio 1	Radio 2	Radio 3	Radio 4	Radio 5
WLAN - 2.4GHz	WLAN - 5GHz Low Band	WLAN - 5GHz High Band	LTE	GPS

3. Simultaneously transmission condition.

Condition	Technology				
1	WLAN 2.4GHz	WLAN 5GHz (Low Band)	WLAN 5GHz (High Band)	LTE	GPS

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

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

Frequency Range (GHz)	Directional Antenna Gain (dBi)	Antenna Type	Antenna Connector
2.4~2.4835	3.05	Dipole	i-pex(MHF)
5.15~5.25	6.43		
5.25~5.35	6.43		
5.47~5.725	6.47		
5.725~5.85	6.47		

Note: More detailed information, please refer to operating description.

5. The EUT could be supplied from a power adapter or battery as following table:

Adapter		
Brand	Model No.	Spec.
FSP	FSP120-AWAN3-W	Input: 100-240Vac, 1.8A, 50-60Hz Output: 54V, 2.22A DC cable: Unshielded, 1.5m with one core
Battery		
Brand	Model No.	Spec.
WNC	BTY-LRV5000	3.6 V, 2280mAh

6. Power supplied from batteries condition only support WWAN function.

7. The EUT incorporates a MIMO function:

2.4GHz Band			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	1TX Fixed Chain 2	1RX
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	4TX	4RX
802.11n (HT20)	MCS 0~7	4TX	4RX
	MCS 8~15	4TX	4RX
	MCS 16~23	4TX	4RX
	MCS 24~31	4TX	4RX
	MCS 0~7	4TX	4RX
802.11n (HT40)	MCS 8~15	4TX	4RX
	MCS 16~23	4TX	4RX
	MCS 24~31	4TX	4RX
	MCS 0~7	4TX	4RX
802.11ac (VHT20)	MCS0~8 Nss=1	4TX	4RX
	MCS0~8 Nss=2	4TX	4RX
	MCS0~9 Nss=3	4TX	4RX
	MCS0~8 Nss=4	4TX	4RX
802.11ac (VHT40)	MCS0~9 Nss=1	4TX	4RX
	MCS0~9 Nss=2	4TX	4RX
	MCS0~9 Nss=3	4TX	4RX
	MCS0~9 Nss=4	4TX	4RX
802.11ac (VHT80)	MCS0~9 Nss=1	4TX	4RX
	MCS0~9 Nss=2	4TX	4RX
	MCS0~9 Nss=3	4TX	4RX
	MCS0~9 Nss=4	4TX	4RX

Note:

1. All of modulation mode support beamforming function except 802.11b modulation mode.
2. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.

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

3.2 Description of Test Modes

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

Channel	Frequency	Channel	Frequency
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

7 channels are provided for 802.11n (HT40):

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

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

Radiated Emission Test (Above 1GHz):

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

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

Radiated Emission Test (Below 1GHz):

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

CDD Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (HT20)	1 to 11	1	OFDM	BPSK	6.5

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.

CDD Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (HT20)	1 to 11	1	OFDM	BPSK	6.5

Antenna Port Conducted Measurement:

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

CDD Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
Beamforming Mode (output power only)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
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 $\geq$ 1G	22deg. C, 66%RH	120Vac, 60Hz	Frank Chuang
RE<1G	24deg. C, 67%RH	120Vac, 60Hz	Frank Chuang
PLC	24deg. C, 72%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 $\geq 98\%$, duty factor is not required.

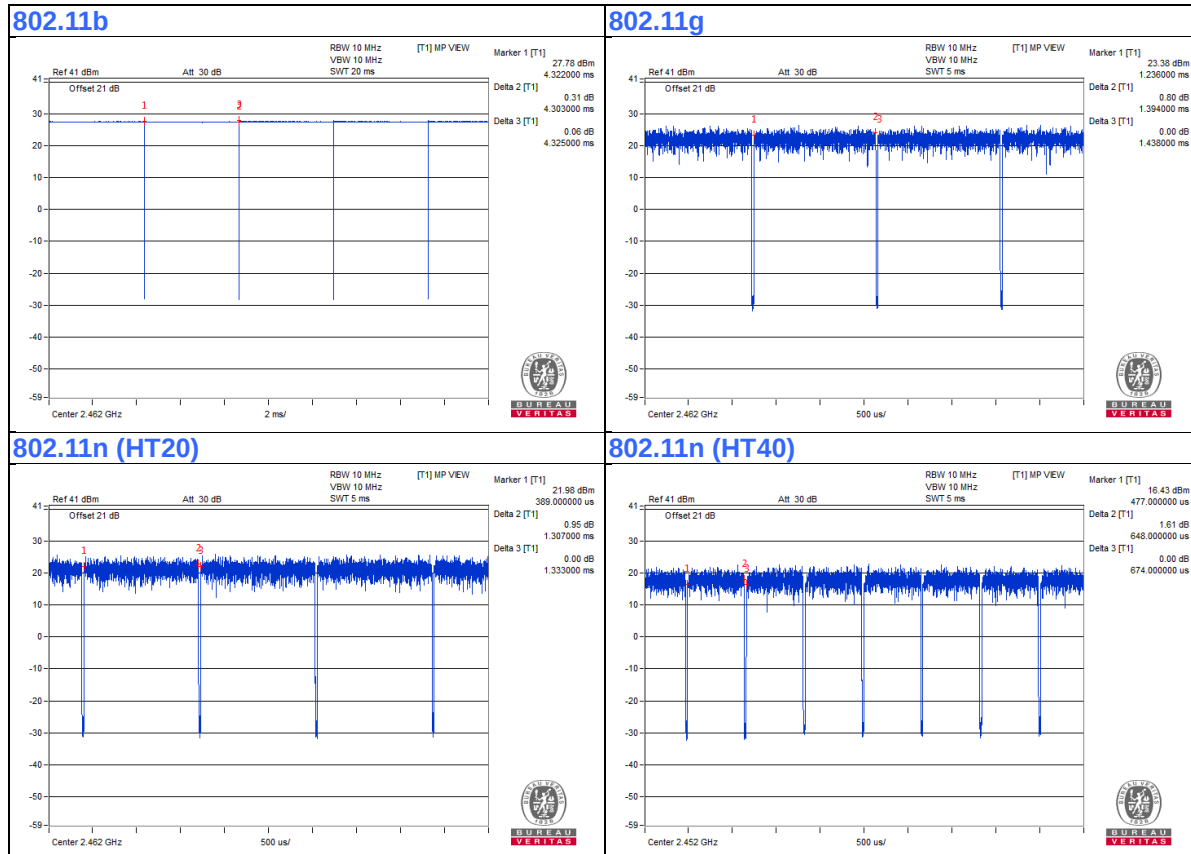
If duty cycle of test signal is $< 98\%$, duty factor shall be considered.

802.11b: Duty cycle = $4.303/4.325 = 0.995$

802.11g: Duty cycle = $1.394/1.438 = 0.969$, Duty factor = $10 * \log(1/0.969) = 0.13$

802.11n (HT20): Duty cycle = $1.307/1.333 = 0.98$

802.11n (HT40): Duty cycle = $0.648/0.674 = 0.961$, Duty factor = $10 * \log(1/0.961) = 0.17$



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.	Test Tool	NA	NA	NA	NA	Supplied by client
B.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
C.	Telephone	WONDER	WD-303	7C17KA 04011	NA	Provided by Lab
D.	SIM Card	NA	NA	NA	NA	Provided by Lab

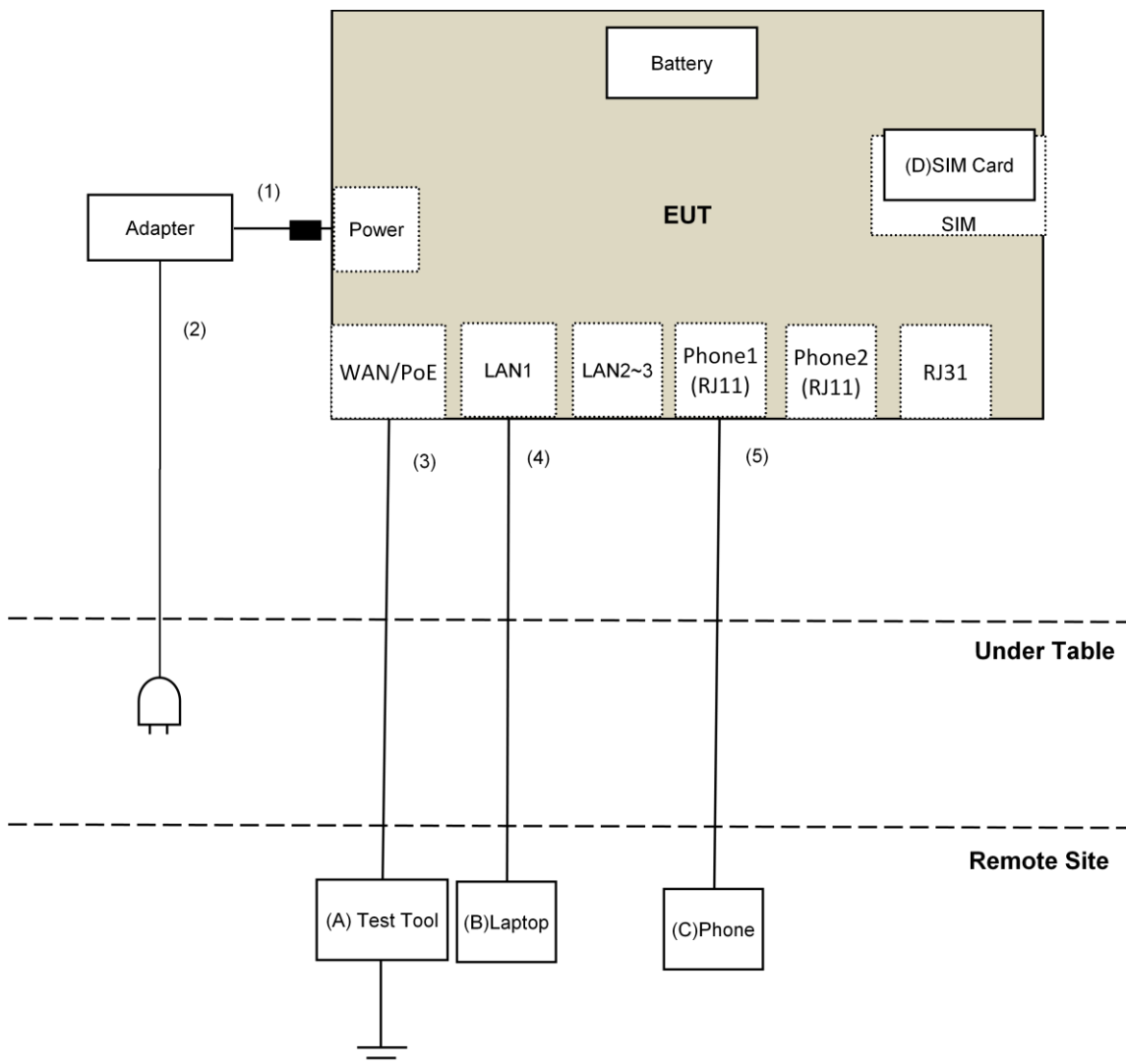
Note:

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.	AC Cable	1	1.8	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.	RJ-11 Cable	1	10	No	0	Provided by Lab

Note: The core(s) is(are) originally attached to the cable(s).

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 15.247 Meas Guidance v05
KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

NOTE:

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

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Keysight	N9038A	MY54450088	July 05, 2018	July 04, 2019
Pre-Amplifier EMCI	EMC001340	980142	Feb. 09, 2018	Feb. 08, 2019
Loop Antenna ^(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001	Jan. 15, 2018	Jan. 14, 2019
RF Cable	NA	LOOPCAB-002	Jan. 15, 2018	Jan. 14, 2019
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Nov. 09, 2017	Nov. 08, 2018
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Nov. 29, 2017	Nov. 28, 2018
RF Cable	8D	966-4-1	Mar. 21, 2018	Mar. 20, 2019
RF Cable	8D	966-4-2	Mar. 21, 2018	Mar. 20, 2019
RF Cable	8D	966-4-3	Mar. 21, 2018	Mar. 20, 2019
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Oct. 03, 2017	Oct. 02, 2018
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Dec. 12, 2017	Dec. 11, 2018
Pre-Amplifier Mini-Circuits	ZVA-183-S+	AMP-ZVA-03	May 10, 2018	May 09, 2019
RF Cable	EMC104-SM-SM-1200	160923	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-2000	150318	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-5000	150321	Jan. 29, 2018	Jan. 28, 2019
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 29, 2018	Jan. 28, 2019
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 14, 2017	Dec. 13, 2018
RF Cable	EMC102-KM-KM-1200	160925	Jan. 29, 2018	Jan. 28, 2019
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA
Spectrum Analyzer R&S	FSV40	100964	June 20, 2018	June 19, 2019
Power meter Anritsu	ML2495A	1014008	May 09, 2018	May 08, 2019
Power sensor Anritsu	MA2411B	0917122	May 09, 2018	May 08, 2019

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: Aug. 06 to 09, 2018

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. Parallel, perpendicular, and ground-parallel orientations 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 detects 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:

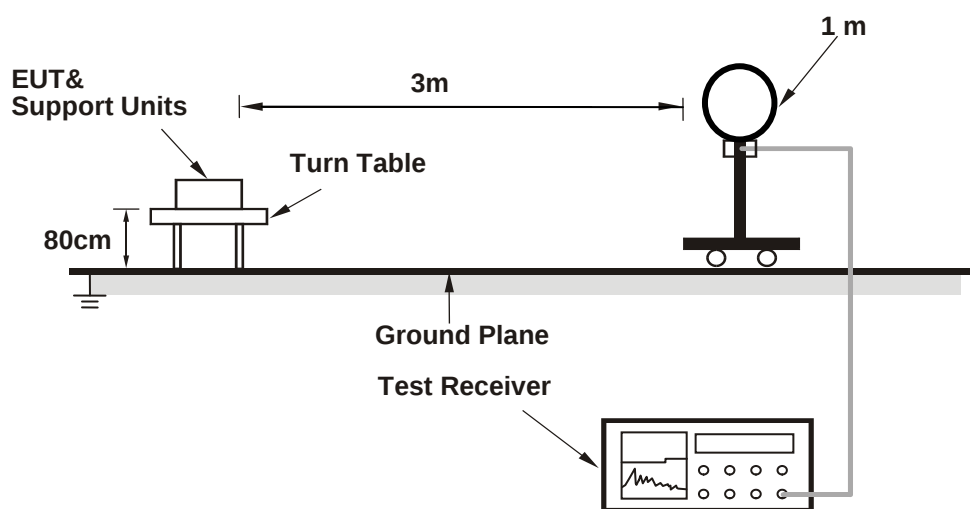
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $\geq 98\%$) 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

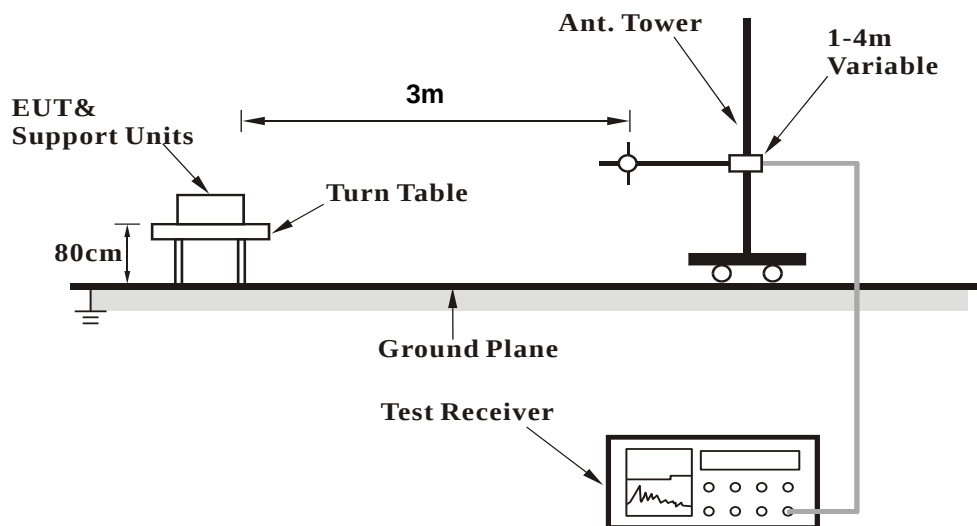
No deviation.

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

- Connected the EUT with the Laptop which is placed on remote site.
- Controlling software (Lantiq DUT Ver.541.41) 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)
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	54.3 PK	74.0	-19.7	2.23 H	300	56.5	-2.2
2	2390.00	45.1 AV	54.0	-8.9	2.23 H	300	47.3	-2.2
3	*2412.00	113.8 PK			2.23 H	300	116.2	-2.4
4	*2412.00	106.7 AV			2.23 H	300	109.1	-2.4
5	4824.00	43.7 PK	74.0	-30.3	1.59 H	203	41.9	1.8
6	4824.00	39.2 AV	54.0	-14.8	1.59 H	203	37.4	1.8
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	57.9 PK	74.0	-16.1	2.09 V	139	60.1	-2.2
2	2390.00	48.8 AV	54.0	-5.2	2.09 V	139	51.0	-2.2
3	*2412.00	116.9 PK			2.09 V	139	119.3	-2.4
4	*2412.00	109.7 AV			2.09 V	139	112.1	-2.4
5	4824.00	44.5 PK	74.0	-29.5	1.30 V	22	42.7	1.8
6	4824.00	41.2 AV	54.0	-12.8	1.30 V	22	39.4	1.8

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)
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	113.2 PK			2.21 H	321	115.8	-2.6
2	*2437.00	106.3 AV			2.21 H	321	108.9	-2.6
3	4874.00	45.1 PK	74.0	-28.9	1.51 H	196	43.1	2.0
4	4874.00	41.3 AV	54.0	-12.7	1.51 H	196	39.3	2.0
5	7311.00	54.2 PK	74.0	-19.8	1.10 H	250	45.8	8.4
6	7311.00	50.6 AV	54.0	-3.4	1.10 H	250	42.2	8.4
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	116.3 PK			2.06 V	141	118.9	-2.6
2	*2437.00	109.1 AV			2.06 V	141	111.7	-2.6
3	4874.00	45.9 PK	74.0	-28.1	1.33 V	19	43.9	2.0
4	4874.00	42.7 AV	54.0	-11.3	1.33 V	19	40.7	2.0
5	7311.00	51.4 PK	74.0	-22.6	3.80 V	322	43.0	8.4
6	7311.00	46.7 AV	54.0	-7.3	3.80 V	322	38.3	8.4

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	114.2 PK			2.19 H	319	116.8	-2.6
2	*2462.00	107.1 AV			2.19 H	319	109.7	-2.6
3	2483.50	54.9 PK	74.0	-19.1	2.19 H	319	57.3	-2.4
4	2483.50	45.6 AV	54.0	-8.4	2.19 H	319	48.0	-2.4
5	4924.00	46.4 PK	74.0	-27.6	1.68 H	198	44.4	2.0
6	4924.00	44.2 AV	54.0	-9.8	1.68 H	198	42.2	2.0
7	7386.00	56.7 PK	74.0	-17.3	1.02 H	248	48.1	8.6
8	7386.00	53.6 AV	54.0	-0.4	1.02 H	248	45.0	8.6
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	*2462.00	117.5 PK			2.05 V	142	120.1	-2.6
2	*2462.00	110.2 AV			2.05 V	142	112.8	-2.6
3	2483.50	57.7 PK	74.0	-16.3	2.05 V	142	60.1	-2.4
4	2483.50	48.6 AV	54.0	-5.4	2.05 V	142	51.0	-2.4
5	4924.00	49.1 PK	74.0	-24.9	1.61 V	11	47.1	2.0
6	4924.00	47.3 AV	54.0	-6.7	1.61 V	11	45.3	2.0
7	7386.00	51.8 PK	74.0	-22.2	3.84 V	324	43.2	8.6
8	7386.00	47.4 AV	54.0	-6.6	3.84 V	324	38.8	8.6

REMARKS:

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

802.11g

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.7 PK	74.0	-3.3	2.22 H	319	72.9	-2.2
2	2390.00	51.6 AV	54.0	-2.4	2.22 H	319	53.8	-2.2
3	*2412.00	112.1 PK			2.22 H	319	114.5	-2.4
4	*2412.00	101.2 AV			2.22 H	319	103.6	-2.4
5	4824.00	48.1 PK	74.0	-25.9	1.63 H	182	46.3	1.8
6	4824.00	35.1 AV	54.0	-18.9	1.63 H	182	33.3	1.8
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	70.0 PK	74.0	-4.0	2.06 V	106	72.2	-2.2
2	2390.00	53.7 AV	54.0	-0.3	2.06 V	106	55.9	-2.2
3	*2412.00	115.4 PK			2.06 V	106	117.8	-2.4
4	*2412.00	104.7 AV			2.06 V	106	107.1	-2.4
5	4824.00	53.0 PK	74.0	-21.0	1.65 V	9	51.2	1.8
6	4824.00	40.0 AV	54.0	-14.0	1.65 V	9	38.2	1.8

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)
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	59.9 PK	74.0	-14.1	2.17 H	302	62.1	-2.2
2	2390.00	42.7 AV	54.0	-11.3	2.17 H	302	44.9	-2.2
3	*2437.00	113.8 PK			2.17 H	302	116.4	-2.6
4	*2437.00	103.4 AV			2.17 H	302	106.0	-2.6
5	2483.50	64.5 PK	74.0	-9.5	2.17 H	302	66.9	-2.4
6	2483.50	45.6 AV	54.0	-8.4	2.17 H	302	48.0	-2.4
7	4874.00	48.8 PK	74.0	-25.2	1.68 H	214	46.8	2.0
8	4874.00	35.9 AV	54.0	-18.1	1.68 H	214	33.9	2.0
9	7311.00	52.4 PK	74.0	-21.6	1.02 H	252	44.0	8.4
10	7311.00	39.2 AV	54.0	-14.8	1.02 H	252	30.8	8.4

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	1.99 V	105	64.3	-2.2
2	2390.00	45.4 AV	54.0	-8.6	1.99 V	105	47.6	-2.2
3	*2437.00	117.1 PK			1.99 V	105	119.7	-2.6
4	*2437.00	106.6 AV			1.99 V	105	109.2	-2.6
5	2483.50	61.7 PK	74.0	-12.3	1.99 V	105	64.1	-2.4
6	2483.50	46.6 AV	54.0	-7.4	1.99 V	105	49.0	-2.4
7	4874.00	55.1 PK	74.0	-18.9	1.31 V	35	53.1	2.0
8	4874.00	42.6 AV	54.0	-11.4	1.31 V	35	40.6	2.0
9	7311.00	56.5 PK	74.0	-17.5	3.74 V	306	48.1	8.4
10	7311.00	43.2 AV	54.0	-10.8	3.74 V	306	34.8	8.4

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	110.2 PK			2.21 H	313	112.8	-2.6
2	*2462.00	100.1 AV			2.21 H	313	102.7	-2.6
3	2483.50	70.6 PK	74.0	-3.4	2.21 H	313	73.0	-2.4
4	2483.50	50.5 AV	54.0	-3.5	2.21 H	313	52.9	-2.4
5	4924.00	48.0 PK	74.0	-26.0	1.69 H	208	46.0	2.0
6	4924.00	35.1 AV	54.0	-18.9	1.69 H	208	33.1	2.0
7	7386.00	52.1 PK	74.0	-21.9	1.00 H	262	43.5	8.6
8	7386.00	39.3 AV	54.0	-14.7	1.00 H	262	30.7	8.6
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	*2462.00	113.8 PK			2.17 V	100	116.4	-2.6
2	*2462.00	103.2 AV			2.17 V	100	105.8	-2.6
3	2483.50	71.9 PK	74.0	-2.1	2.17 V	100	74.3	-2.4
4	2483.50	53.1 AV	54.0	-0.9	2.17 V	100	55.5	-2.4
5	4924.00	52.8 PK	74.0	-21.2	1.35 V	45	50.8	2.0
6	4924.00	39.6 AV	54.0	-14.4	1.35 V	45	37.6	2.0
7	7386.00	54.2 PK	74.0	-19.8	3.70 V	301	45.6	8.6
8	7386.00	41.1 AV	54.0	-12.9	3.70 V	301	32.5	8.6

REMARKS:

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

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.0 PK	74.0	-4.0	2.18 H	314	72.2	-2.2
2	2390.00	49.9 AV	54.0	-4.1	2.18 H	314	52.1	-2.2
3	*2412.00	111.8 PK			2.18 H	314	114.2	-2.4
4	*2412.00	100.2 AV			2.18 H	314	102.6	-2.4
5	4824.00	48.2 PK	74.0	-25.8	1.66 H	206	46.4	1.8
6	4824.00	35.0 AV	54.0	-19.0	1.66 H	206	33.2	1.8
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	72.7 PK	74.0	-1.3	2.47 V	102	74.9	-2.2
2	2390.00	52.8 AV	54.0	-1.2	2.47 V	102	55.0	-2.2
3	*2412.00	113.8 PK			2.47 V	102	116.2	-2.4
4	*2412.00	103.1 AV			2.47 V	102	105.5	-2.4
5	4824.00	53.1 PK	74.0	-20.9	1.26 V	30	51.3	1.8
6	4824.00	40.3 AV	54.0	-13.7	1.26 V	30	38.5	1.8

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)
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	59.8 PK	74.0	-14.2	2.23 H	308	62.0	-2.2
2	2390.00	42.6 AV	54.0	-11.4	2.23 H	308	44.8	-2.2
3	*2437.00	113.9 PK			2.23 H	308	116.5	-2.6
4	*2437.00	103.0 AV			2.23 H	308	105.6	-2.6
5	2483.50	64.5 PK	74.0	-9.5	2.23 H	308	66.9	-2.4
6	2483.50	45.8 AV	54.0	-8.2	2.23 H	308	48.2	-2.4
7	4874.00	48.3 PK	74.0	-25.7	1.71 H	200	46.3	2.0
8	4874.00	35.5 AV	54.0	-18.5	1.71 H	200	33.5	2.0
9	7311.00	52.1 PK	74.0	-21.9	1.05 H	257	43.7	8.4
10	7311.00	39.1 AV	54.0	-14.9	1.05 H	257	30.7	8.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.3 PK	74.0	-10.7	2.00 V	112	65.5	-2.2
2	2390.00	46.3 AV	54.0	-7.7	2.00 V	112	48.5	-2.2
3	*2437.00	117.2 PK			2.00 V	112	119.8	-2.6
4	*2437.00	106.3 AV			2.00 V	112	108.9	-2.6
5	2483.50	66.4 PK	74.0	-7.6	2.00 V	112	68.8	-2.4
6	2483.50	48.1 AV	54.0	-5.9	2.00 V	112	50.5	-2.4
7	4874.00	54.7 PK	74.0	-19.3	1.30 V	41	52.7	2.0
8	4874.00	42.1 AV	54.0	-11.9	1.30 V	41	40.1	2.0
9	7311.00	56.9 PK	74.0	-17.1	3.78 V	305	48.5	8.4
10	7311.00	43.5 AV	54.0	-10.5	3.78 V	305	35.1	8.4

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	109.5 PK			2.16 H	320	112.1	-2.6
2	*2462.00	98.7 AV			2.16 H	320	101.3	-2.6
3	2483.50	70.4 PK	74.0	-3.6	2.16 H	320	72.8	-2.4
4	2483.50	50.1 AV	54.0	-3.9	2.16 H	320	52.5	-2.4
5	4924.00	48.9 PK	74.0	-25.1	1.72 H	199	46.9	2.0
6	4924.00	35.5 AV	54.0	-18.5	1.72 H	199	33.5	2.0
7	7386.00	52.8 PK	74.0	-21.2	1.05 H	237	44.2	8.6
8	7386.00	40.0 AV	54.0	-14.0	1.05 H	237	31.4	8.6
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	*2462.00	112.7 PK			2.14 V	106	115.3	-2.6
2	*2462.00	102.0 AV			2.14 V	106	104.6	-2.6
3	2483.50	72.2 PK	74.0	-1.8	2.14 V	106	74.6	-2.4
4	2483.50	52.1 AV	54.0	-1.9	2.14 V	106	54.5	-2.4
5	4924.00	52.8 PK	74.0	-21.2	1.30 V	42	50.8	2.0
6	4924.00	39.4 AV	54.0	-14.6	1.30 V	42	37.4	2.0
7	7386.00	53.9 PK	74.0	-20.1	3.71 V	298	45.3	8.6
8	7386.00	41.0 AV	54.0	-13.0	3.71 V	298	32.4	8.6

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	70.8 PK	74.0	-3.2	2.15 H	315	73.0	-2.2
2	2390.00	50.4 AV	54.0	-3.6	2.15 H	315	52.6	-2.2
3	*2422.00	106.1 PK			2.15 H	315	108.6	-2.5
4	*2422.00	96.9 AV			2.15 H	315	99.4	-2.5
5	4844.00	48.5 PK	74.0	-25.5	1.72 H	188	46.7	1.8
6	4844.00	35.3 AV	54.0	-18.7	1.72 H	188	33.5	1.8
7	7266.00	53.0 PK	74.0	-21.0	1.00 H	242	44.8	8.2
8	7266.00	39.8 AV	54.0	-14.2	1.00 H	242	31.6	8.2
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	71.6 PK	74.0	-2.4	2.01 V	106	73.8	-2.2
2	2390.00	52.8 AV	54.0	-1.2	2.01 V	106	55.0	-2.2
3	*2422.00	109.5 PK			2.01 V	106	112.0	-2.5
4	*2422.00	100.1 AV			2.01 V	106	102.6	-2.5
5	4844.00	49.2 PK	74.0	-24.8	1.31 V	29	47.4	1.8
6	4844.00	36.0 AV	54.0	-18.0	1.31 V	29	34.2	1.8
7	7266.00	50.3 PK	74.0	-23.7	3.77 V	313	42.1	8.2
8	7266.00	36.6 AV	54.0	-17.4	3.77 V	313	28.4	8.2

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)
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	68.3 PK	74.0	-5.7	2.22 H	318	70.5	-2.2
2	2390.00	46.1 AV	54.0	-7.9	2.22 H	318	48.3	-2.2
3	*2437.00	106.9 PK			2.22 H	318	109.5	-2.6
4	*2437.00	98.2 AV			2.22 H	318	100.8	-2.6
5	2483.50	69.1 PK	74.0	-4.9	2.22 H	318	71.5	-2.4
6	2483.50	49.7 AV	54.0	-4.3	2.22 H	318	52.1	-2.4
7	4874.00	48.4 PK	74.0	-25.6	1.64 H	202	46.4	2.0
8	4874.00	35.1 AV	54.0	-18.9	1.64 H	202	33.1	2.0
9	7311.00	53.1 PK	74.0	-20.9	1.03 H	243	44.7	8.4
10	7311.00	39.7 AV	54.0	-14.3	1.03 H	243	31.3	8.4

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	66.6 PK	74.0	-7.4	2.18 V	111	68.8	-2.2
2	2390.00	49.5 AV	54.0	-4.5	2.18 V	111	51.7	-2.2
3	*2437.00	110.0 PK			2.18 V	111	112.6	-2.6
4	*2437.00	101.5 AV			2.18 V	111	104.1	-2.6
5	2483.50	72.3 PK	74.0	-1.7	2.18 V	111	74.7	-2.4
6	2483.50	53.3 AV	54.0	-0.7	2.18 V	111	55.7	-2.4
7	4874.00	48.8 PK	74.0	-25.2	1.32 V	28	46.8	2.0
8	4874.00	35.7 AV	54.0	-18.3	1.32 V	28	33.7	2.0
9	7311.00	53.3 PK	74.0	-20.7	3.71 V	303	44.9	8.4
10	7311.00	39.7 AV	54.0	-14.3	3.71 V	303	31.3	8.4

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	106.2 PK			2.26 H	302	108.8	-2.6
2	*2452.00	97.5 AV			2.26 H	302	100.1	-2.6
3	2483.50	70.4 PK	74.0	-3.6	2.26 H	302	72.8	-2.4
4	2483.50	50.3 AV	54.0	-3.7	2.26 H	302	52.7	-2.4
5	4904.00	48.5 PK	74.0	-25.5	1.72 H	192	46.5	2.0
6	4904.00	35.4 AV	54.0	-18.6	1.72 H	192	33.4	2.0
7	7356.00	52.7 PK	74.0	-21.3	1.00 H	237	44.1	8.6
8	7356.00	39.6 AV	54.0	-14.4	1.00 H	237	31.0	8.6
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	*2452.00	109.7 PK			2.00 V	107	112.3	-2.6
2	*2452.00	100.8 AV			2.00 V	107	103.4	-2.6
3	2483.50	71.8 PK	74.0	-2.2	2.00 V	107	74.2	-2.4
4	2483.50	53.6 AV	54.0	-0.4	2.00 V	107	56.0	-2.4
5	4904.00	48.8 PK	74.0	-25.2	1.32 V	51	46.8	2.0
6	4904.00	35.5 AV	54.0	-18.5	1.32 V	51	33.5	2.0
7	7356.00	52.8 PK	74.0	-21.2	3.79 V	303	44.2	8.6
8	7356.00	39.5 AV	54.0	-14.5	3.79 V	303	30.9	8.6

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:

802.11n (HT20)

CHANNEL	TX Channel 1	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	35.70	28.2 QP	40.0	-11.8	2.00 H	271	37.0	-8.8
2	102.39	26.1 QP	43.5	-17.4	2.00 H	100	38.0	-11.9
3	169.68	26.8 QP	43.5	-16.7	1.50 H	279	35.1	-8.3
4	204.92	27.0 QP	43.5	-16.5	2.00 H	95	38.1	-11.1
5	295.97	27.5 QP	46.0	-18.5	1.00 H	246	34.7	-7.2
6	424.67	38.6 QP	46.0	-7.4	2.00 H	35	42.1	-3.5
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	87.59	30.4 QP	40.0	-9.6	2.00 V	0	44.0	-13.6
2	136.92	26.6 QP	43.5	-16.9	1.00 V	298	35.0	-8.4
3	170.46	27.0 QP	43.5	-16.5	1.00 V	16	35.3	-8.3
4	266.17	27.5 QP	46.0	-18.5	1.00 V	360	35.8	-8.3
5	289.48	29.0 QP	46.0	-17.0	1.50 V	345	36.4	-7.4
6	426.80	38.9 QP	46.0	-7.1	1.00 V	84	42.3	-3.4

REMARKS:

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

Note: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Nov. 01, 2017	Oct. 31, 2018
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Nov. 15, 2017	Nov. 14, 2018
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 04, 2018	June 03, 2019
50 ohms Terminator	N/A	EMC-02	Sep. 22, 2017	Sep. 21, 2018
RF Cable	5D-FB	COCCAB-001	Sep. 29, 2017	Sep. 28, 2018
Fixed attenuator EMCI	STI02-2200-10	003	Mar. 16, 2018	Mar. 15, 2019
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 Conduction 1.
- 3 Tested Date: Aug. 04, 2018

4.2.3 Test Procedures

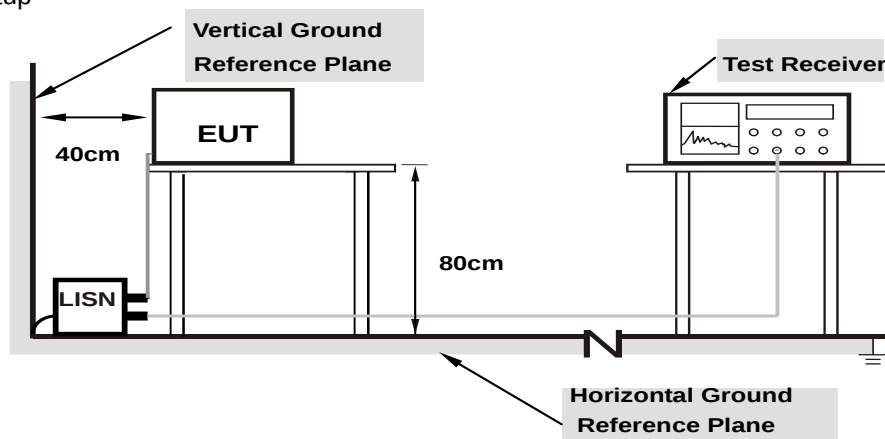
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

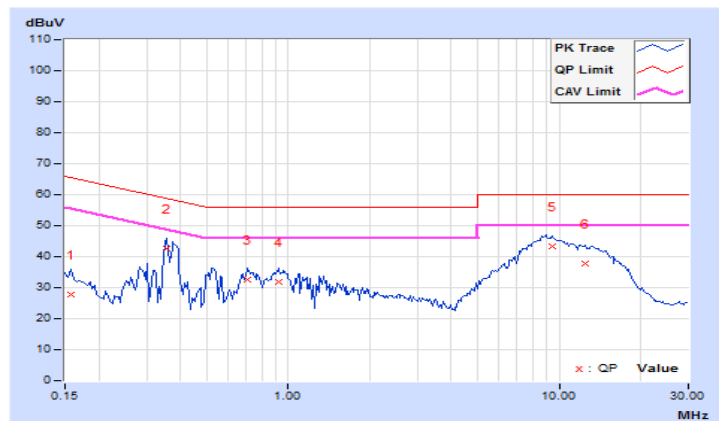
4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	10.04	17.62	2.86	27.66	12.90	65.58	55.58	-37.92	-42.68
2	0.35703	10.10	32.42	21.27	42.52	31.37	58.80	48.80	-16.28	-17.43
3	0.70859	10.13	22.57	12.05	32.70	22.18	56.00	46.00	-23.30	-23.82
4	0.91953	10.14	21.61	12.78	31.75	22.92	56.00	46.00	-24.25	-23.08
5	9.43750	10.51	32.76	26.85	43.27	37.36	60.00	50.00	-16.73	-12.64
6	12.41016	10.68	27.24	21.34	37.92	32.02	60.00	50.00	-22.08	-17.98

REMARKS:

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

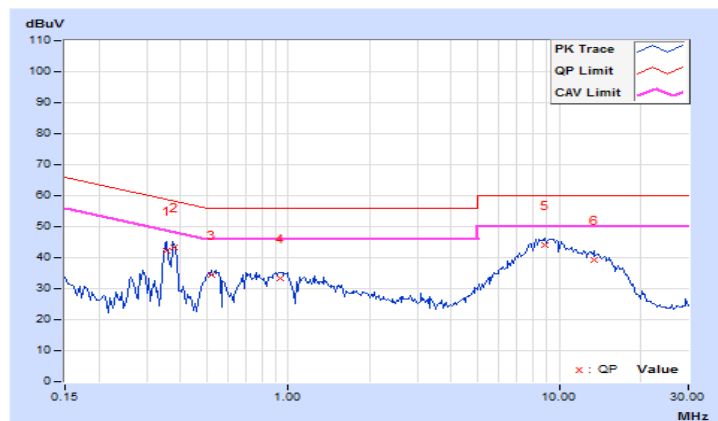


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.35703	9.99	32.28	27.13	42.27	37.12	58.80	48.80	-16.53	-11.68
2	0.38047	10.00	33.37	32.09	43.37	42.09	58.27	48.27	-14.90	-6.18
3	0.52109	10.01	24.46	20.67	34.47	30.68	56.00	46.00	-21.53	-15.32
4	0.93516	10.03	23.37	18.86	33.40	28.89	56.00	46.00	-22.60	-17.11
5	8.89844	10.34	33.71	27.81	44.05	38.15	60.00	50.00	-15.95	-11.85
6	13.53516	10.58	28.50	21.83	39.08	32.41	60.00	50.00	-20.92	-17.59

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.

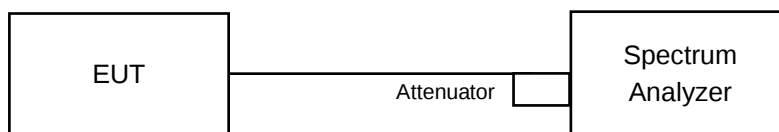


4.3 6dB Bandwidth Measurement

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

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
		Chain 2		
1	2412	7.66	0.5	PASS
6	2437	7.99	0.5	PASS
11	2462	8.16	0.5	PASS

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 2	Chain 3		
1	2412	15.38	15.79	0.5	PASS
6	2437	15.79	15.80	0.5	PASS
11	2462	16.35	16.40	0.5	PASS

802.11n (HT20)

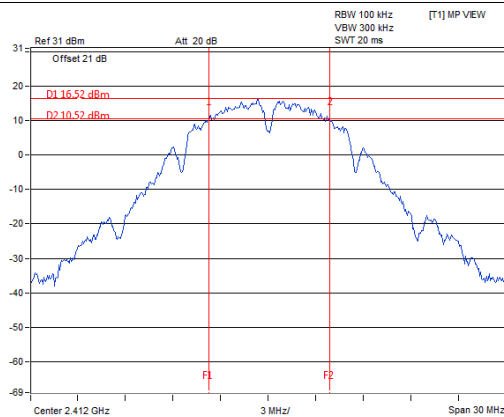
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 2	Chain 3		
1	2412	15.68	16.35	0.5	Pass
6	2437	16.42	16.40	0.5	Pass
11	2462	17.25	17.64	0.5	Pass

802.11n (HT40)

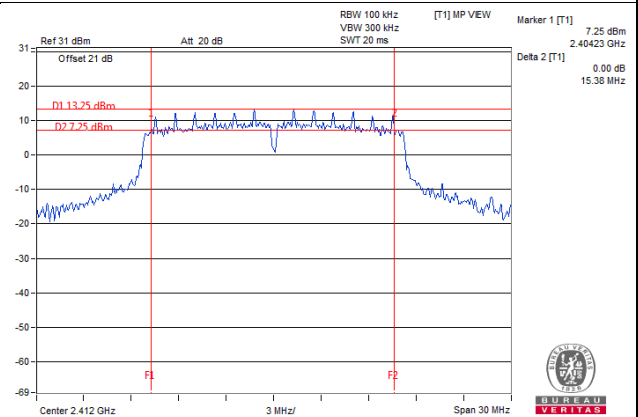
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 2	Chain 3		
3	2422	35.30	35.25	0.5	Pass
6	2437	35.29	35.43	0.5	Pass
9	2452	35.37	35.30	0.5	Pass

Spectrum Plot of Worst Value

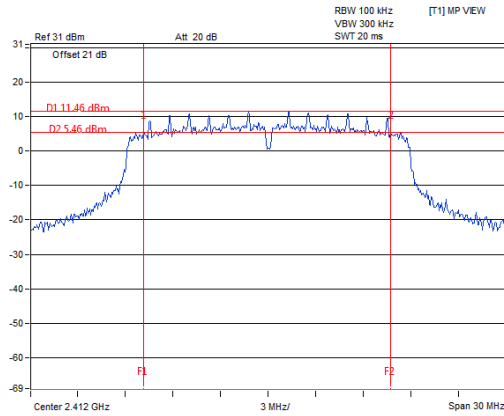
802.11b / Chain 2 : CH1



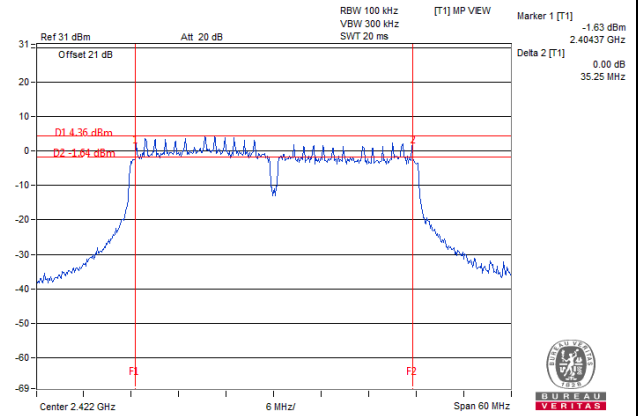
802.11g / Chain 2 : CH1



802.11n (HT20) / Chain 2 : CH1



802.11n (HT40) / Chain 3 : 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,

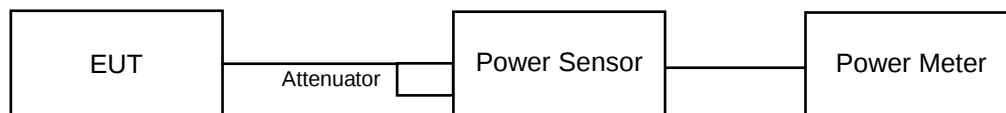
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

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

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

Average power sensor was used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value..

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

CDD Mode

FOR PEAK POWER

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	379.315	25.79	30	Pass
6	2437	295.801	24.71	30	Pass
11	2462	373.25	25.72	30	Pass

802.11g

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 2	Chain 3				
1	2412	26.11	25.20	739.45	28.69	30.00	Pass
6	2437	26.37	25.73	807.622	29.07	30.00	Pass
11	2462	25.81	25.58	742.476	28.71	30.00	Pass

802.11n (HT20)

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 2	Chain 3				
1	2412	26.21	26.40	854.346	29.32	30.00	Pass
6	2437	26.43	25.71	811.934	29.10	30.00	Pass
11	2462	25.41	25.25	682.501	28.34	30.00	Pass

802.11n (HT40)

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 2	Chain 3				
3	2422	24.32	24.65	562.139	27.50	30.00	Pass
6	2437	25.51	24.81	658.322	28.18	30.00	Pass
9	2452	25.41	24.51	630.024	27.99	30.00	Pass

FOR AVERAGE POWER

802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	210.863	23.24
6	2437	175.388	22.44
11	2462	219.786	23.42

802.11g

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 2	Chain 3		
1	2412	20.51	20.81	232.964	23.67
6	2437	22.19	21.50	306.831	24.87
11	2462	19.63	19.51	181.164	22.58

802.11n (HT20)

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 2	Chain 3		
1	2412	20.53	20.48	224.666	23.52
6	2437	22.07	21.66	307.62	24.88
11	2462	18.81	18.91	153.837	21.87

802.11n (HT40)

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 2	Chain 3		
3	2422	17.86	17.31	114.921	20.60
6	2437	18.92	17.84	138.797	21.42
9	2452	18.73	17.67	133.124	21.24

Beamforming Mode

FOR PEAK POWER

802.11g

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 2	Chain 3				
1	2412	26.11	25.20	739.45	28.69	30.00	Pass
6	2437	26.37	25.73	807.622	29.07	30.00	Pass
11	2462	25.81	25.58	742.476	28.71	30.00	Pass

Note: 1. Directional gain = 3.05dB < 6dBi , so the power limit shall not be reduced.

802.11n (HT20)

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 2	Chain 3				
1	2412	26.21	26.40	854.346	29.32	30.00	Pass
6	2437	26.43	25.71	811.934	29.10	30.00	Pass
11	2462	25.41	25.25	682.501	28.34	30.00	Pass

Note: 1. Directional gain = 3.05dB < 6dBi , so the power limit shall not be reduced.

802.11n (HT40)

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 2	Chain 3				
3	2422	24.32	24.65	562.139	27.50	30.00	Pass
6	2437	25.51	24.81	658.322	28.18	30.00	Pass
9	2452	25.41	24.51	630.024	27.99	30.00	Pass

Note: 1. Directional gain = 3.05dB < 6dBi , so the power limit shall not be reduced.

FOR AVERAGE POWER

802.11g

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 2	Chain 3		
1	2412	20.51	20.81	232.964	23.67
6	2437	22.19	21.50	306.831	24.87
11	2462	19.63	19.51	181.164	22.58

802.11n (HT20)

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 2	Chain 3		
1	2412	20.53	20.48	224.666	23.52
6	2437	22.07	21.66	307.62	24.88
11	2462	18.81	18.91	153.837	21.87

802.11n (HT40)

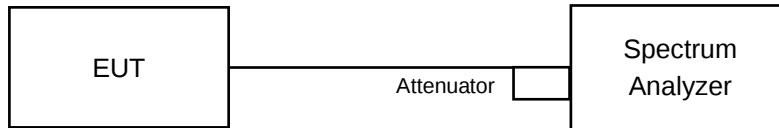
Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 2	Chain 3		
3	2422	17.86	17.31	114.921	20.60
6	2437	18.92	17.84	138.797	21.42
9	2452	18.73	17.67	133.124	21.24

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm in any 3 kHz.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set the VBW $\geq 3 \times \text{RBW}$.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.

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

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	3.77	8.00	Pass
6	2437	2.17	8.00	Pass
11	2462	3.22	8.00	Pass

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
2	1	2412	-2.74	3.01	0.27	8.00	Pass
	6	2437	-1.29	3.01	1.72	8.00	Pass
	11	2462	-5.12	3.01	-2.11	8.00	Pass
3	1	2412	-6.29	3.01	-3.28	8.00	Pass
	6	2437	-4.28	3.01	-1.27	8.00	Pass
	11	2462	-7.45	3.01	-4.44	8.00	Pass

Note: 1. Directional gain = 3.05dB < 6dBi, so the power density limit shall not be reduced.

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
2	1	2412	-5.44	3.01	-2.43	8.00	Pass
	6	2437	-2.65	3.01	0.36	8.00	Pass
	11	2462	-5.93	3.01	-2.92	8.00	Pass
3	1	2412	-7.36	3.01	-4.35	8.00	Pass
	6	2437	-3.91	3.01	-0.90	8.00	Pass
	11	2462	-8.81	3.01	-5.80	8.00	Pass

Note: 1. Directional gain = 3.05dB < 6dBi, so the power density limit shall not be reduced.

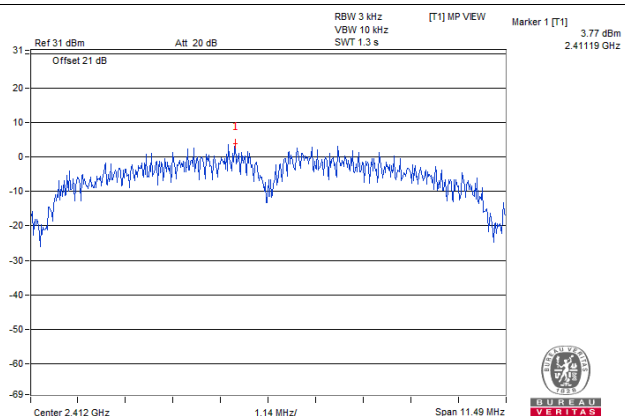
802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
2	3	2422	-9.74	3.01	-6.73	8.00	Pass
	6	2437	-9.71	3.01	-6.70	8.00	Pass
	9	2452	-9.72	3.01	-6.71	8.00	Pass
3	3	2422	-10.37	3.01	-7.36	8.00	Pass
	6	2437	-10.38	3.01	-7.37	8.00	Pass
	9	2452	-9.96	3.01	-6.95	8.00	Pass

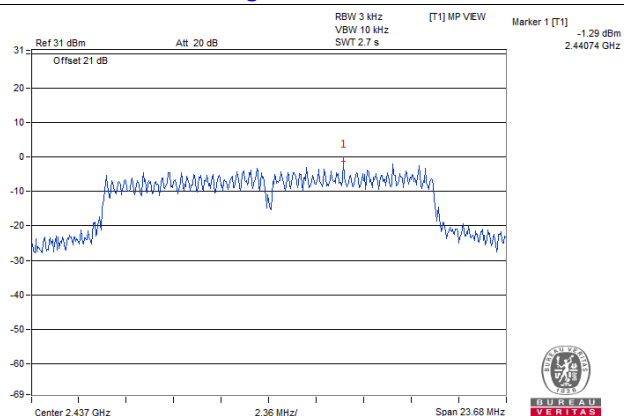
Note: 1. Directional gain = 3.05dB < 6dBi, so the power density limit shall not be reduced.

Spectrum Plot of Worst Value

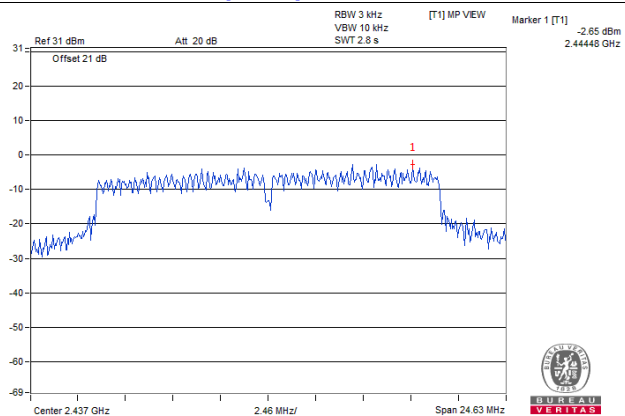
802.11b / Chain 2 : CH1



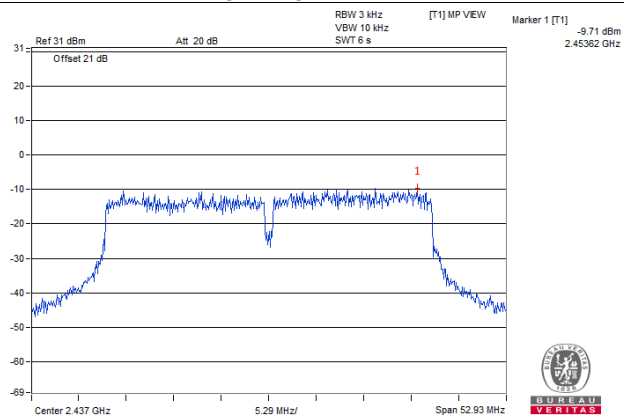
802.11g / Chain 2 : CH6



802.11n (HT20) / Chain 2 : CH6



802.11n (HT40) / Chain 2 : CH6

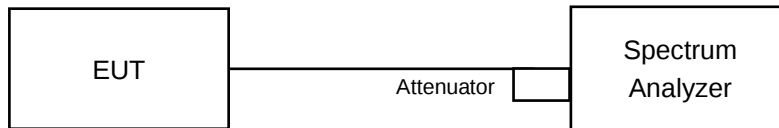


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOB

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

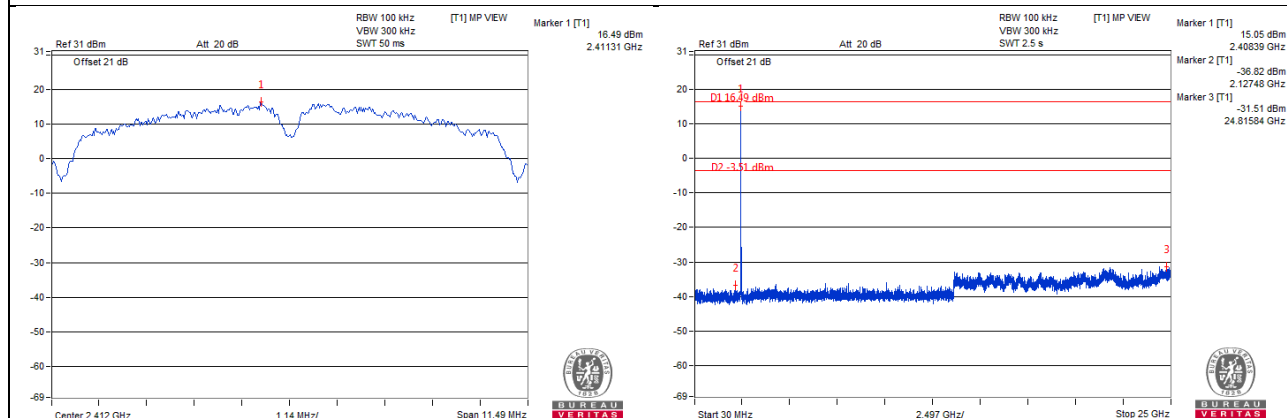
Same as Item 4.3.6

4.6.7 Test Results

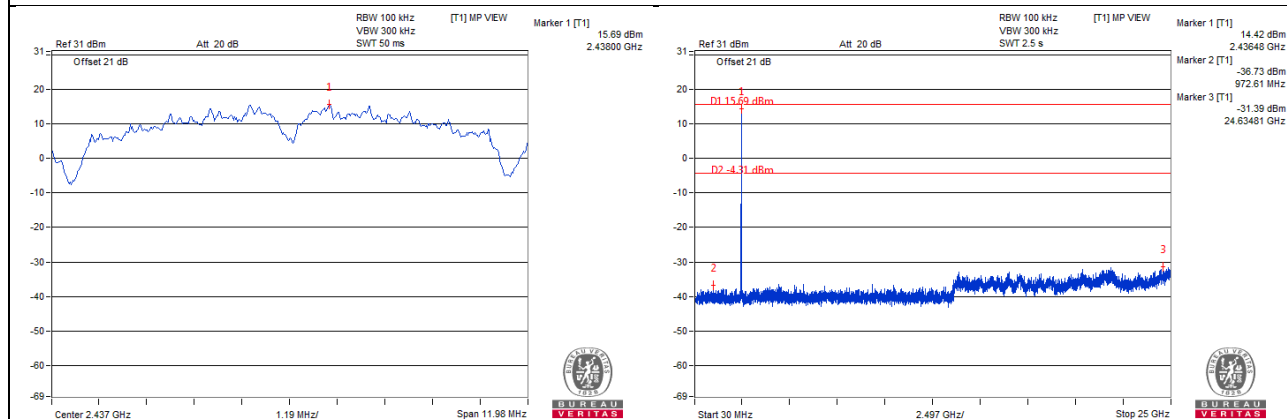
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b - Chain 2

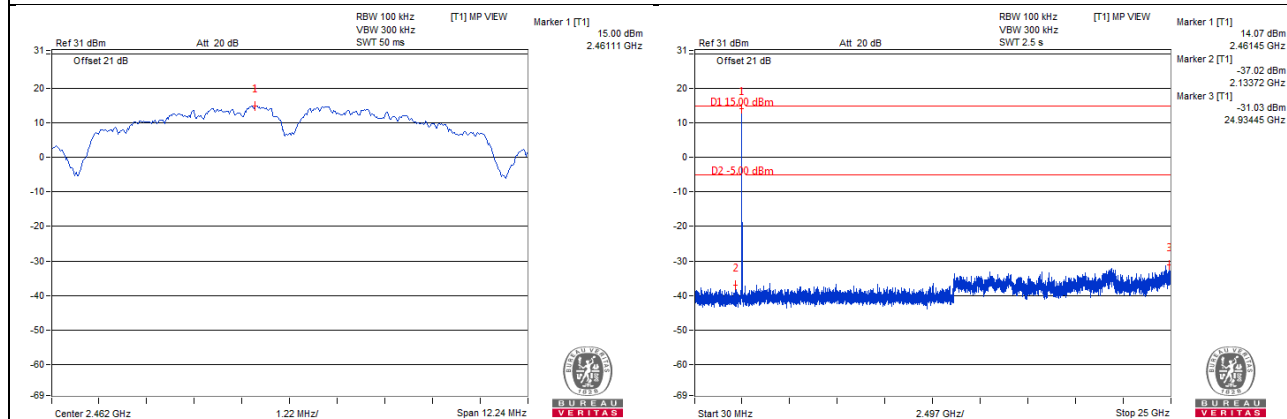
CH 1



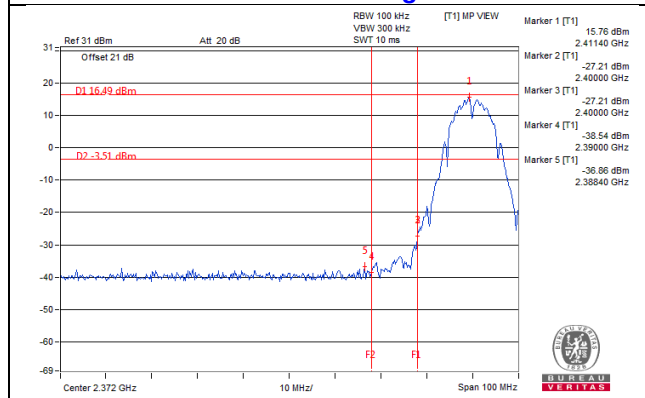
CH 6



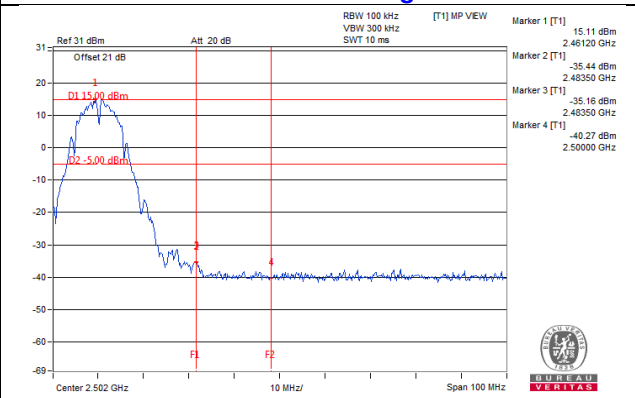
CH 11



CH 1 Band edge

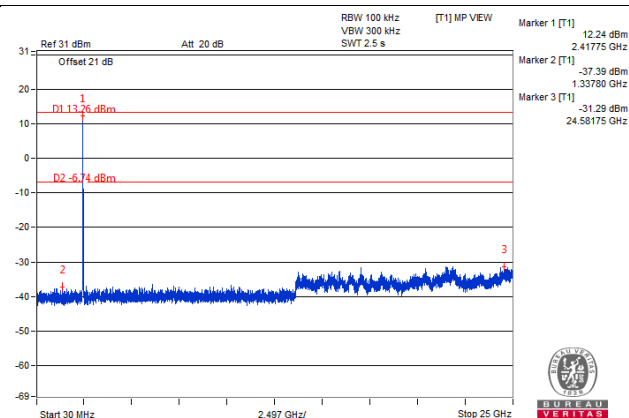
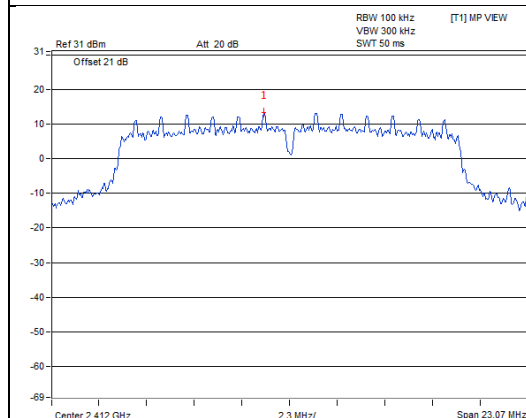


CH 11 Band edge

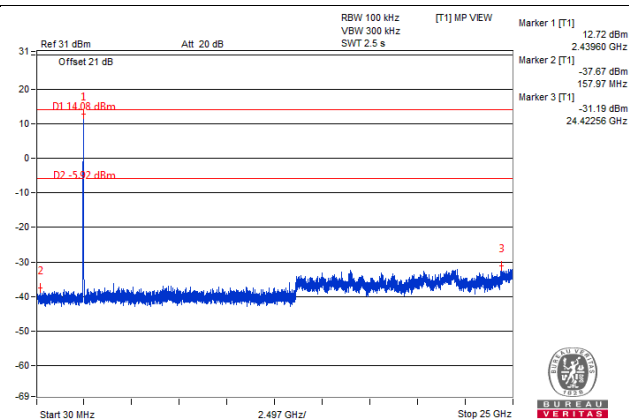
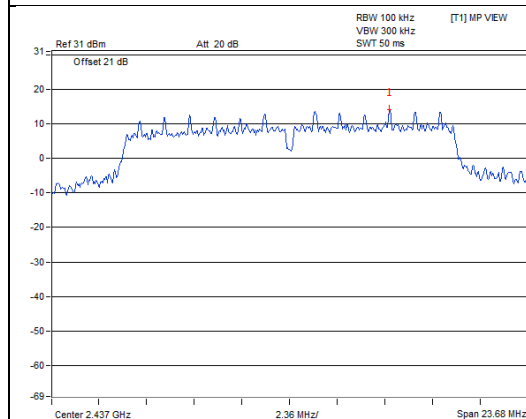


802.11g - Chain 2

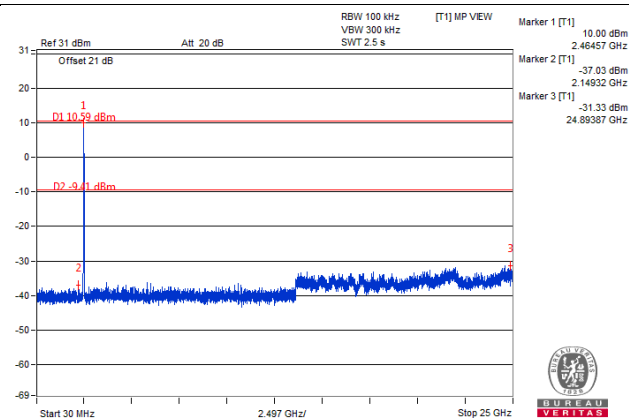
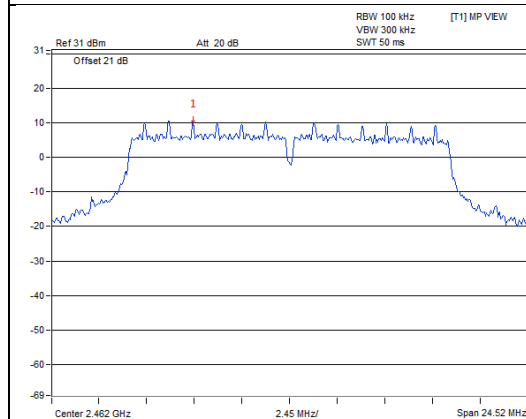
CH 1



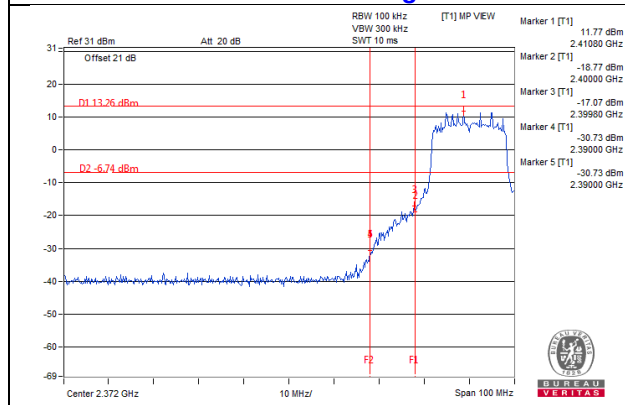
CH 6



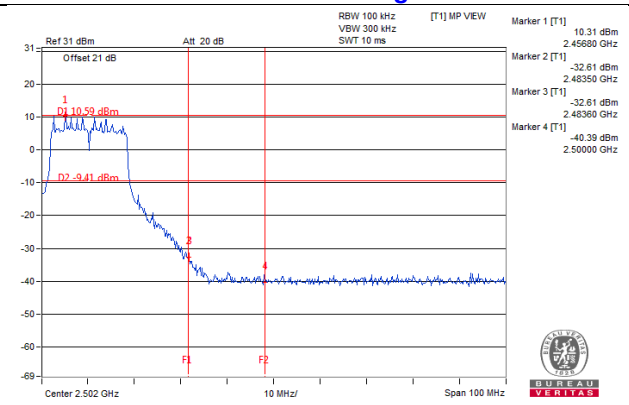
CH 11



CH 1 Band edge

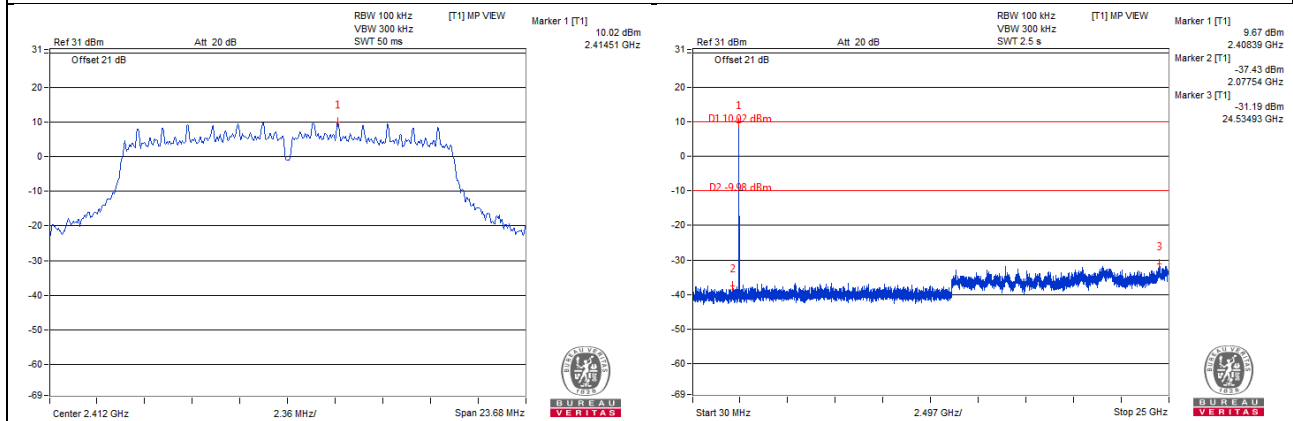


CH 11 Band edge

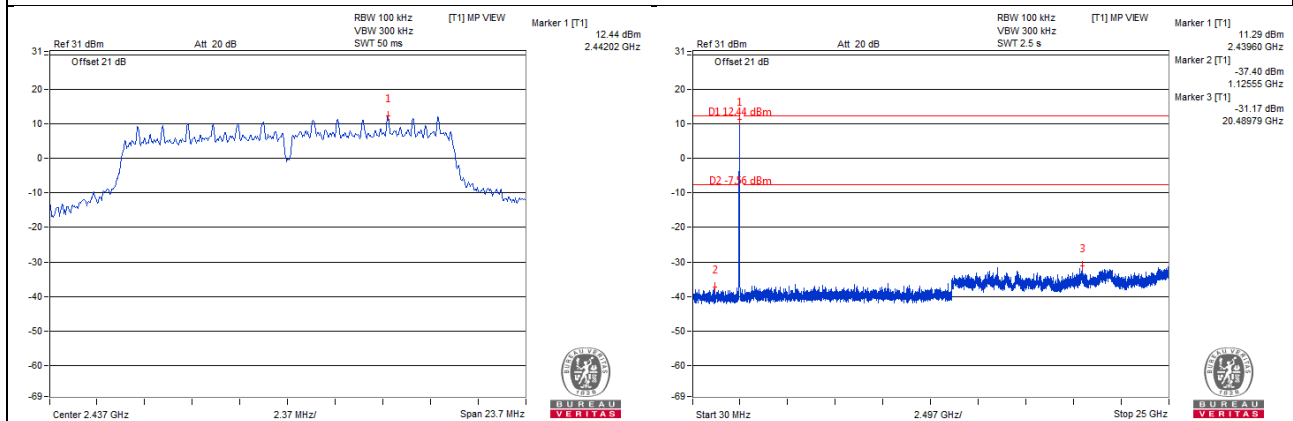


Chain 3

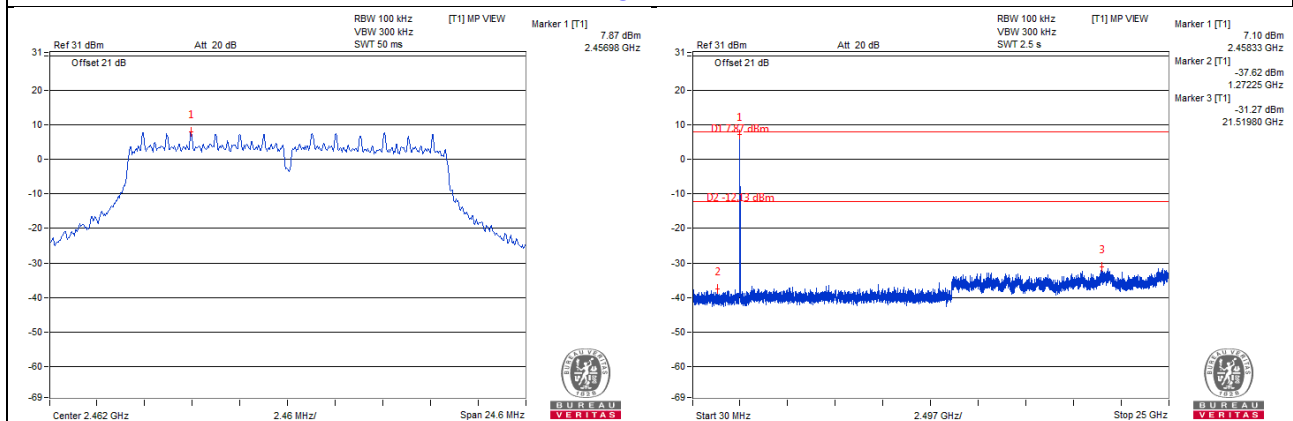
CH 1



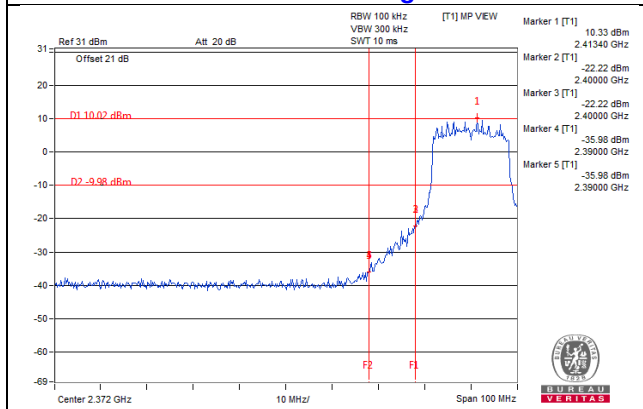
CH 6



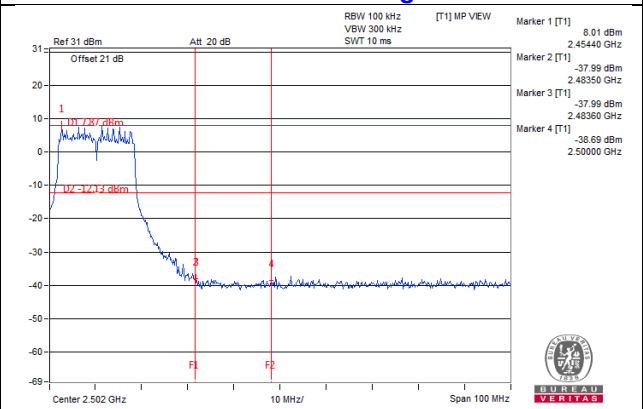
CH 11



CH 1 Band edge

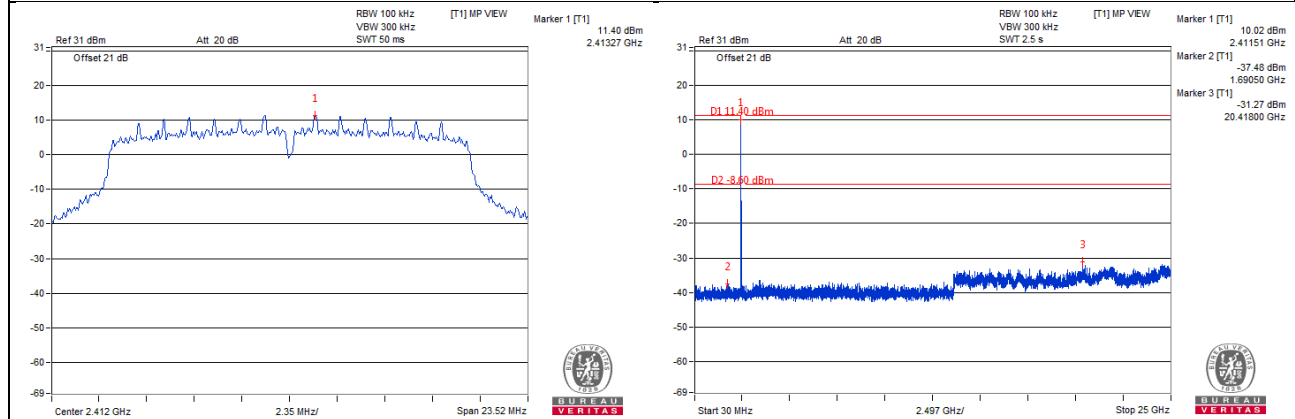


CH 11 Band edge

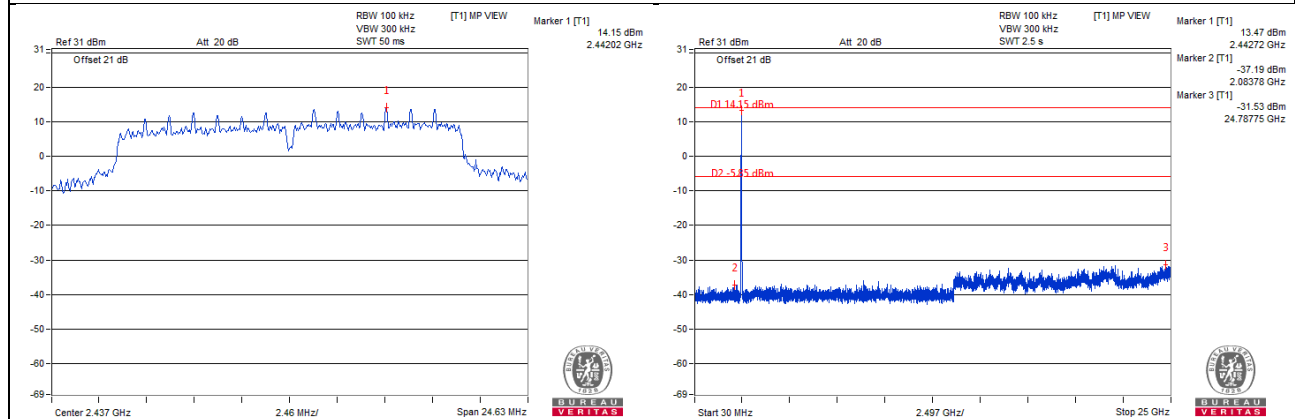


802.11n (HT20) - Chain 2

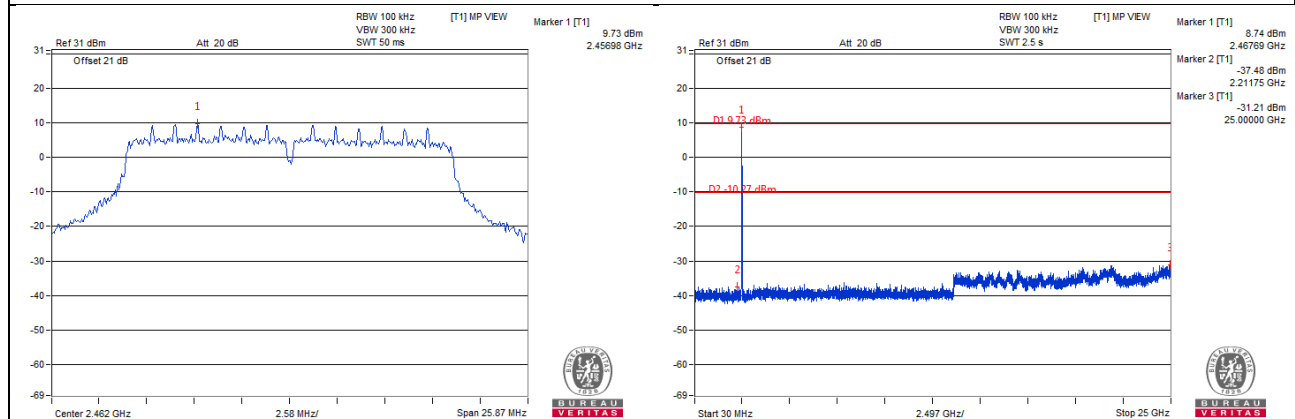
CH 1



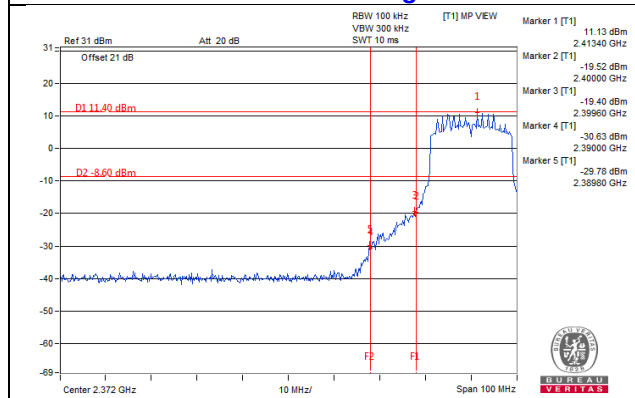
CH 6



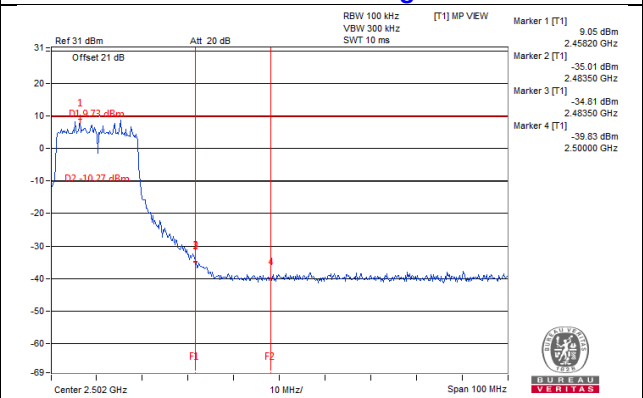
CH 11



CH 1 Band edge

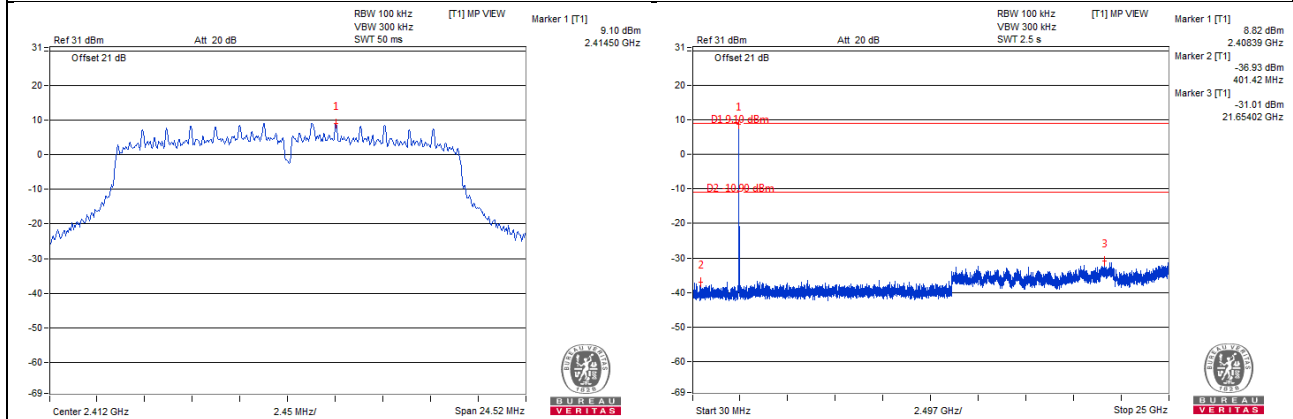


CH 11 Band edge

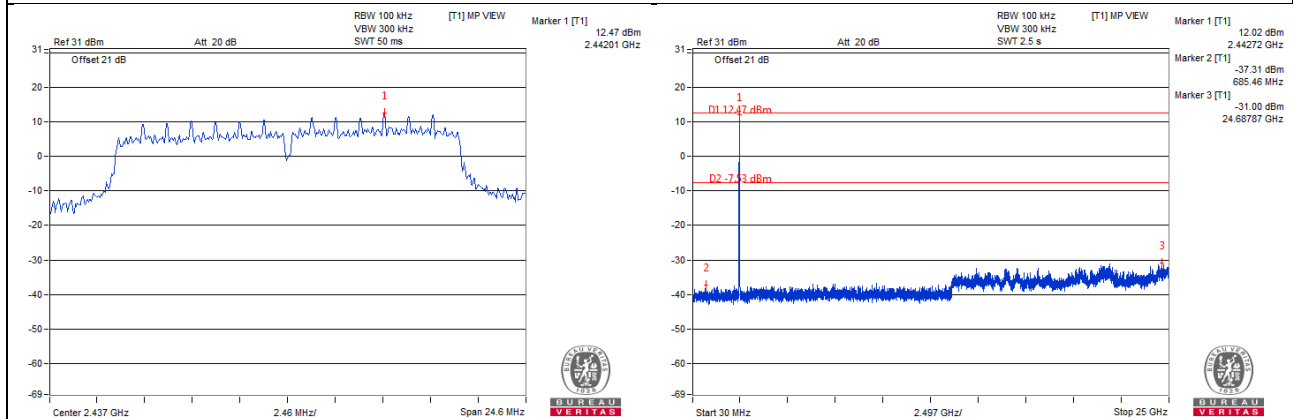


Chain 3

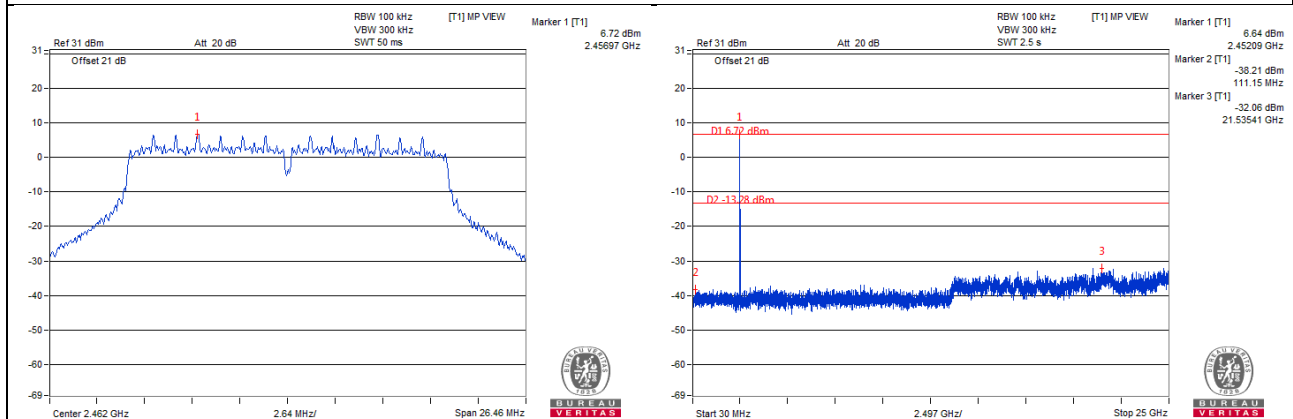
CH 1



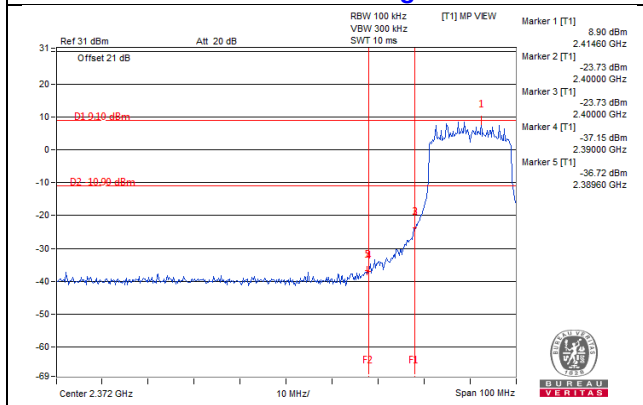
CH 6



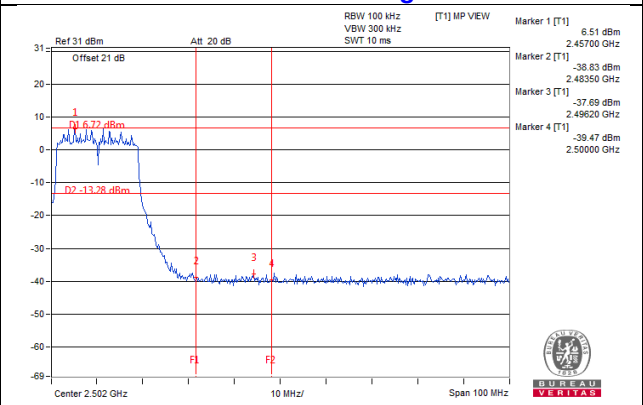
CH 11



CH 1 Band edge

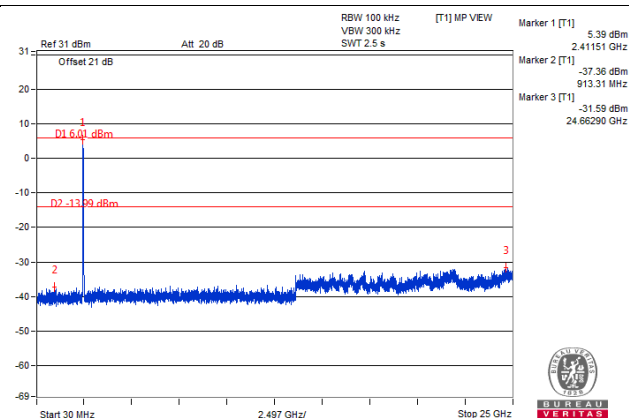
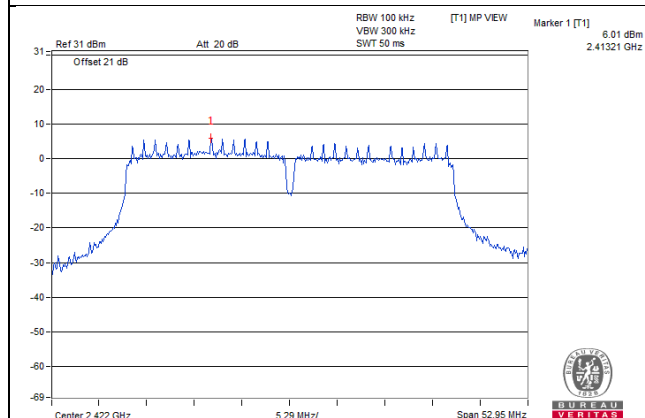


CH 11 Band edge

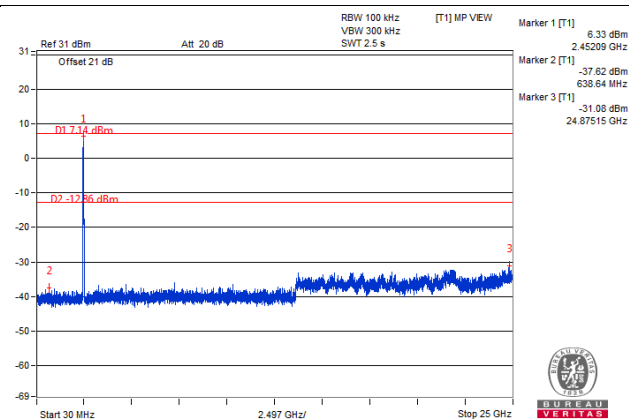
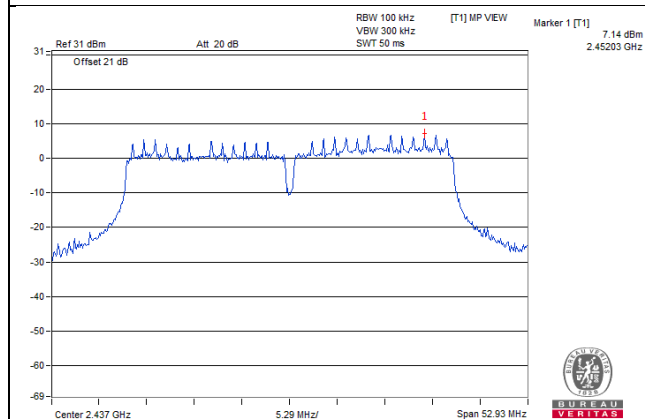


802.11n (HT40) - Chain 2

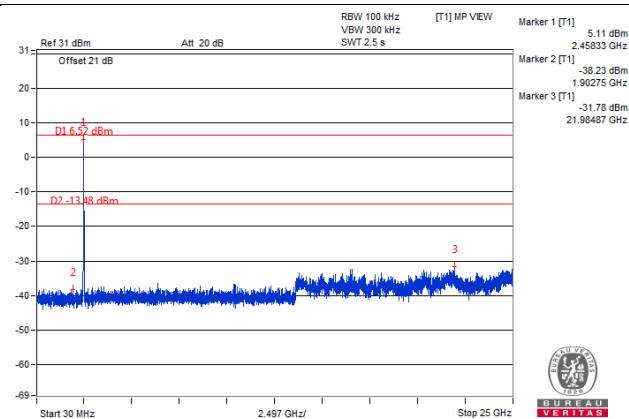
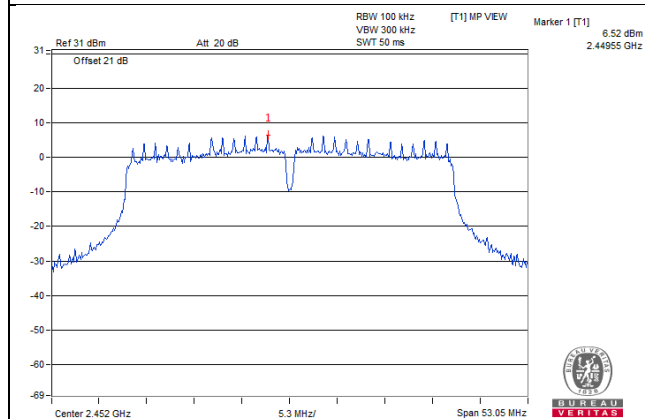
CH 3



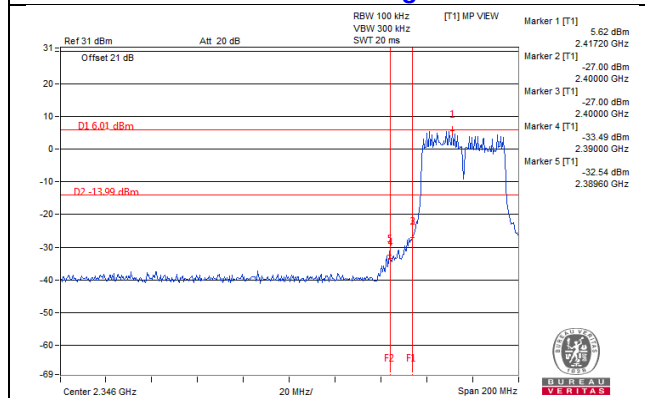
CH 6



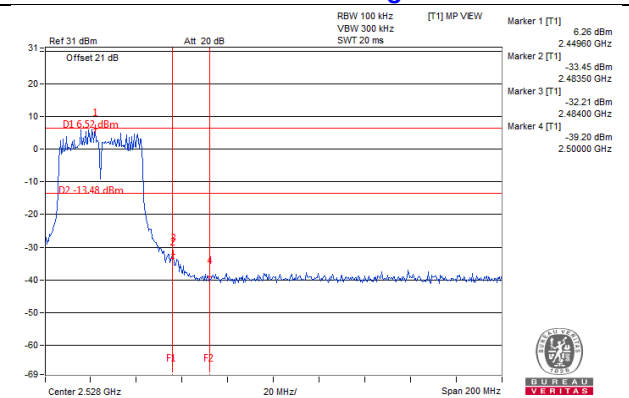
CH 9



CH 3 Band edge

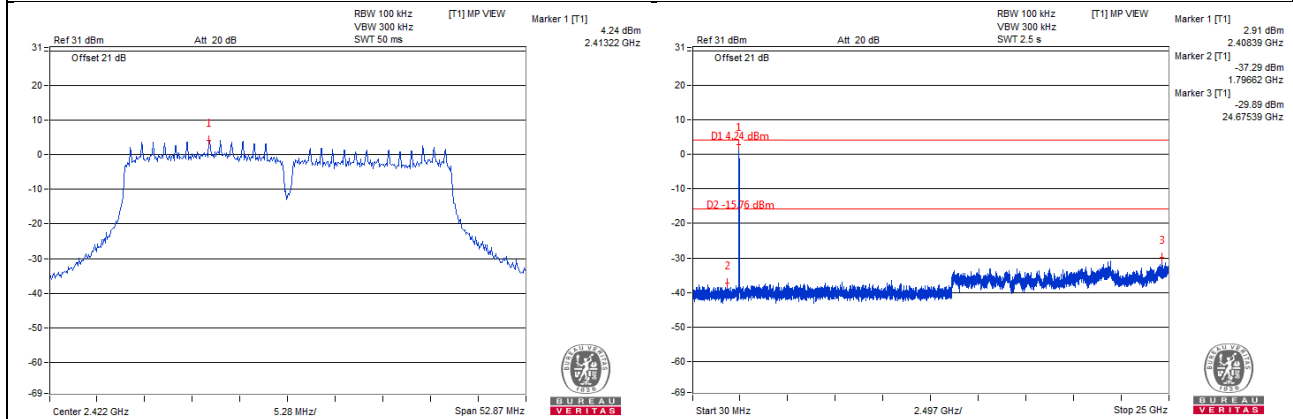


CH 9 Band edge

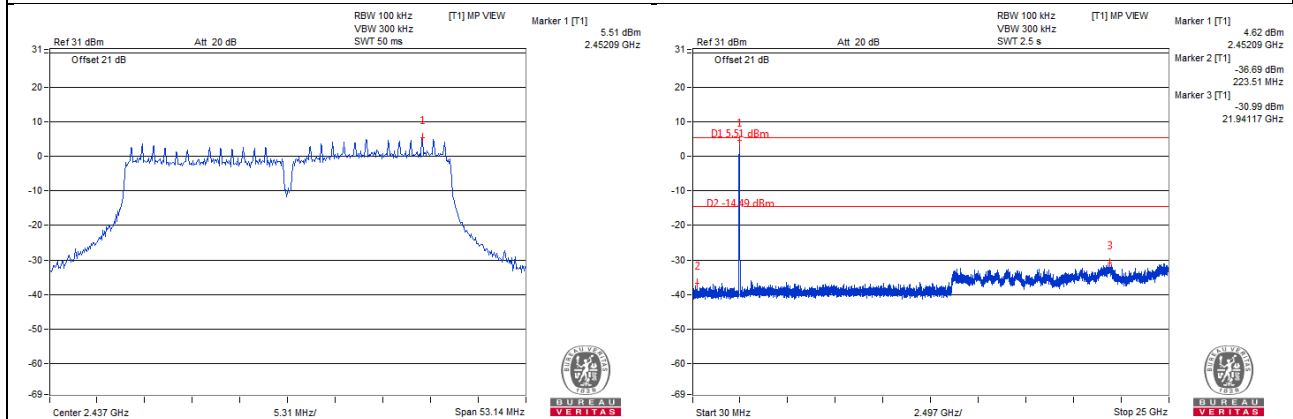


Chain 3

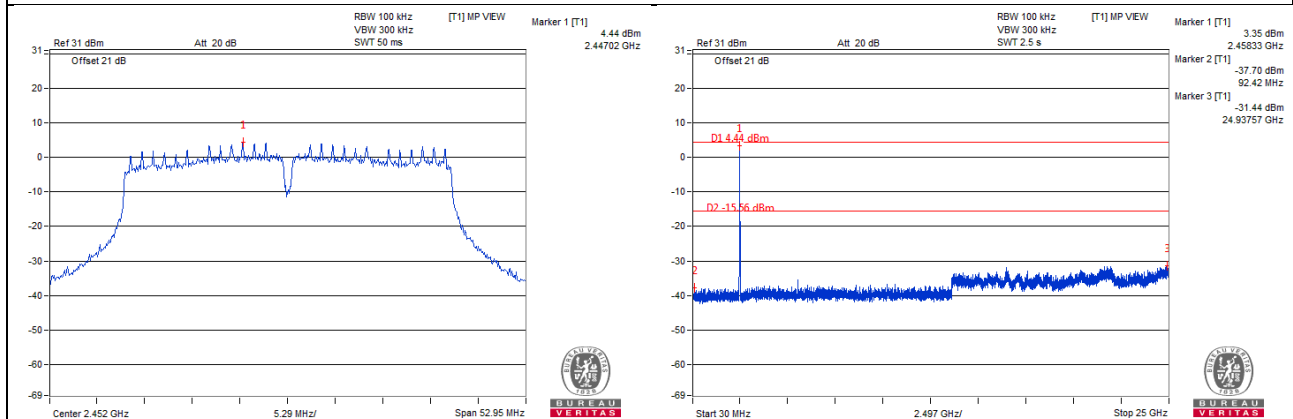
CH 3



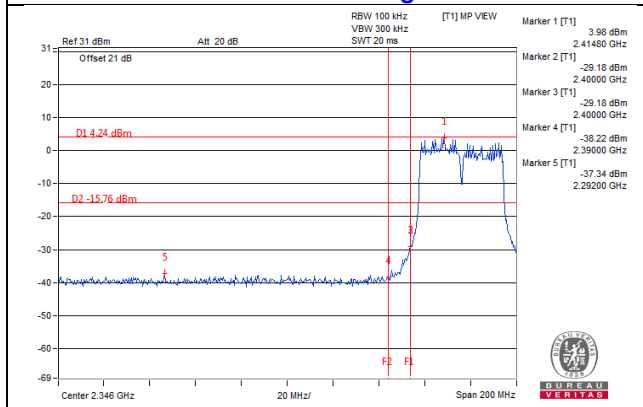
CH 6



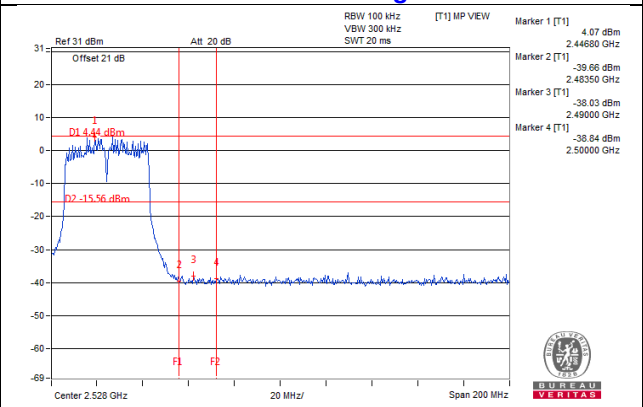
CH 9



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:

Linkou EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

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Tel: 886-3-3183232

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Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

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