

FCC Test Report

Report No.: RF161202E10

FCC ID: PY316400356

Test Model: D7000v2

Received Date: Dec. 02, 2016

Test Date: Jan. 06 to Mar. 27, 2017

Issued Date: Apr. 11, 2017

Applicant: NETGEAR, Inc.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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Release Control Record

Issue No.	Description	Date Issued
RF161202E10	Original release.	Apr. 11, 2017

1 Certificate of Conformity

Product: AC1900 WiFi VDSL/ADSL Modem Router

Brand: NETGEAR

Test Model: D7000v2

Sample Status: ENGINEERING SAMPLE

Applicant: NETGEAR, Inc.

Test Date: Jan. 06 to Mar. 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 : Wendy Wu , **Date:** Apr. 11, 2017
Wendy Wu / Specialist

Approved by : May Chen , **Date:** Apr. 11, 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 -3.48dB at 0.28672MHz.
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 2390.00MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is Re-SMA not a standard connector.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.84 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.30 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	4.78 dB
	6GHz ~ 18GHz	4.52 dB
	18GHz ~ 40GHz	5.08 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	AC1900 WiFi VDSL/ADSL Modem Router
Brand	NETGEAR
Test Model	D7000v2
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 12V from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT20/40 mode of 2.4GHz Band
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 1300Mbps
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), VHT20: 11 802.11n (HT40), VHT40: 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: 991.898mW 5GHz: 5.18GHz ~ 5.24GHz: CDD Mode: 804.199mW Beamforming Mode: 796.853mW 5.745GHz ~ 5.825GHz: CDD Mode: 818.141mW Beamforming Mode: 805.477mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	NA

Note:

1. The EUT must be supplied with a power adapter and following different models could be chosen as following table:

No	Brand Name	Model No.	P/N	Spec.	Plug
1	NETGEAR	2ABL030F 1	332-10758-01	Input: 100-240Vac, 50/60Hz, 1A Output: 12Vdc, 2.5A DC output cable: 1.8m, unshielded	FCC
2	NETGEAR	AD2067F10	332-10797-01	Input: 100-240Vac, 50/60Hz, 1A Output: 12Vdc, 2.5A DC output cable: 1.8m, unshielded	FCC

Note:

1. From the above adapters, the radiated emissions worse case was found in Adapter 1. Therefore only the test data of the mode was recorded in this report.

2. Simultaneously transmission condition.

Condition	Technology	
1	WLAN (2.4GHz)	WLAN (5GHz)

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

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

Antenna No.	Ant. Gain(dBi)	Frequency range (GHz)	Antenna Type	Connector Type	Cable Loss(dB)	Cable Length (mm)
1	0.82	2.4~2.4835	Dipole	Re-SMA	0.37	79
	2.76	5.15~5.85			0.57	
2	0.82	2.4~2.4835	Dipole	Re-SMA	0.37	88
	2.76	5.15~5.85			0.62	
3	0.82	2.4~2.4835	Dipole	Re-SMA	0.575	170
	2.76	5.15~5.85			0.62	

Note: For 802.11b mode, Antenna 1 was selected for final test.

4. The EUT incorporates a MIMO function.

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

Note:

1. All of modulation mode support beamforming function except 802.11a/b/g modulation mode.
2. The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

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

3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20), VHT20:

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

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

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

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	APCM	
1	√	√	√	√	With Adapter 1
2	-	-	√	-	With Adapter 2

Where RE $\geq$ 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**.
NOTE: “-” means no effect.

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)
802.11n (HT20)	1 to 11	6	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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (HT20)	1 to 11	6	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.

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 $\geq$ 1G	25deg. C, 64%RH	120Vac, 60Hz	Weiwei Lo
RE<1G	24deg. C, 63%RH	120Vac, 60Hz	Jyunchun Lin
PLC	24deg. C, 64%RH	120Vac, 60Hz	Jyunchun Lin
APCM	26deg. C, 67%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.

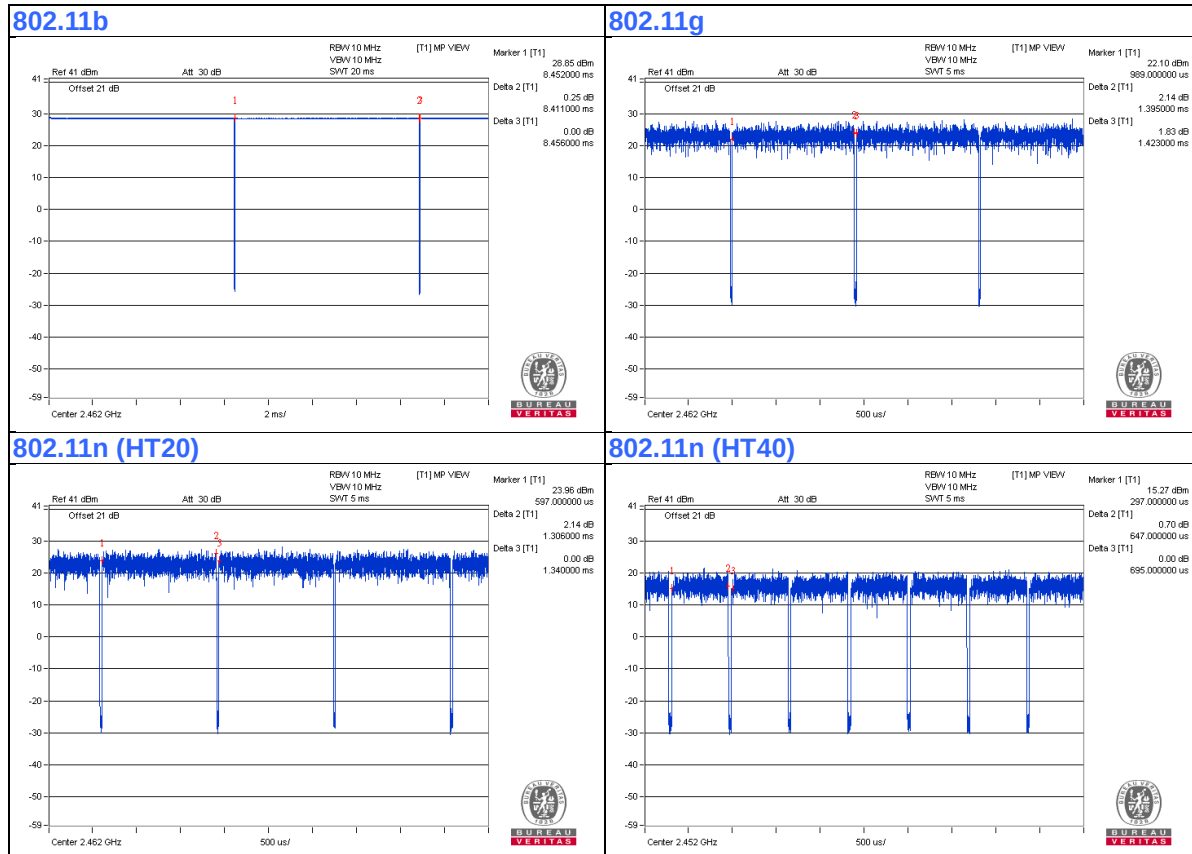
If duty cycle of test signal is $< 98\%$, duty factor shall be considered.

802.11b: Duty cycle = $8.411/8.456 = 0.995$

802.11g: Duty cycle = $1.395/1.423 = 0.98$

802.11n (HT20): Duty cycle = $1.306/1.34 = 0.975$, Duty factor = $10 * \log(1/0.975) = 0.11$

802.11n (HT40): Duty cycle = $0.647/0.673 = 0.961$, 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.

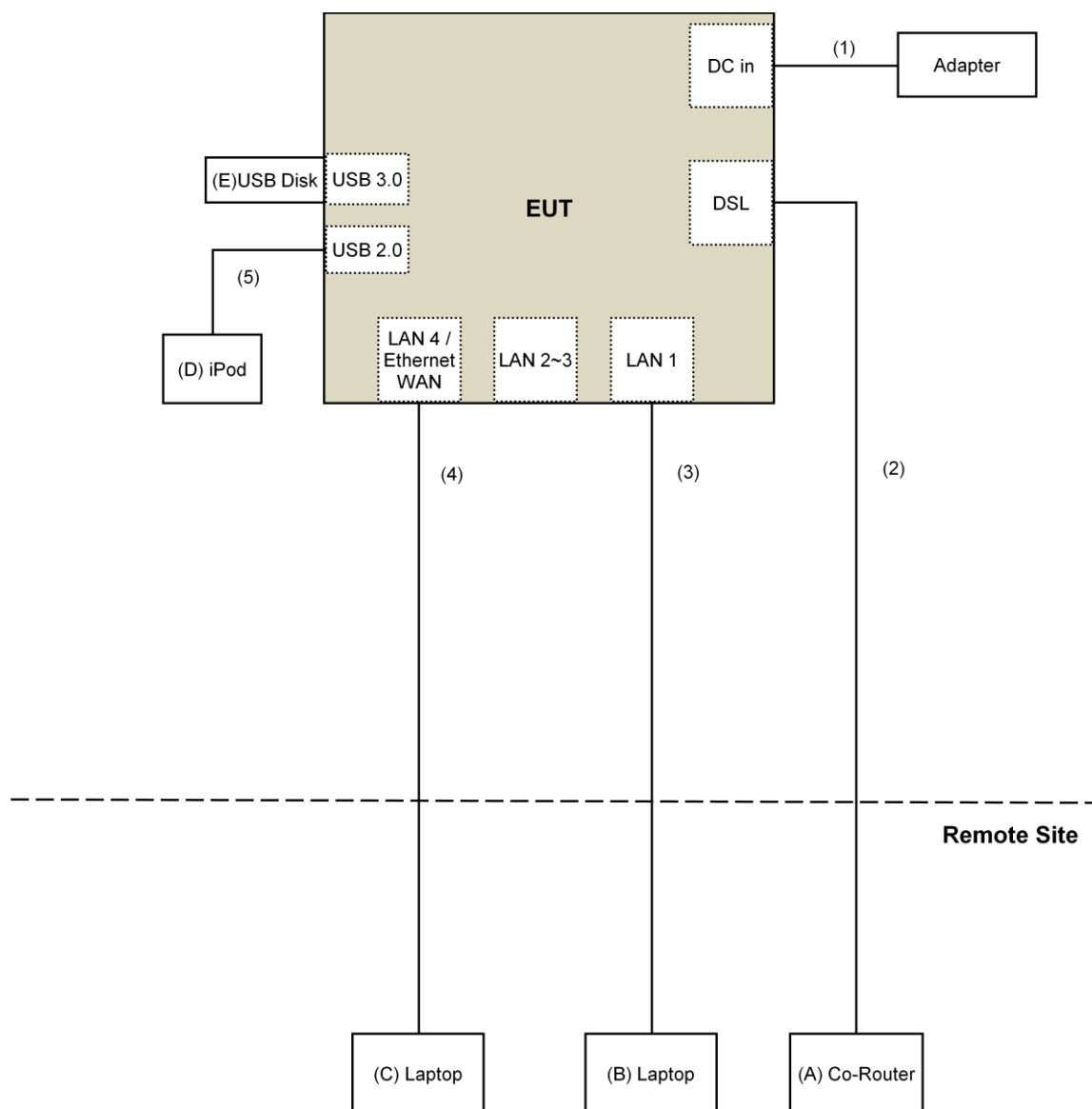
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Co-Router	ZyXel	IES-1000	S08024701597	FCC DoC	Provided by Lab
B.	Laptop	DELL	E5430	4YV4VY1	FCC DoC	Provided by Lab
C.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
D.	iPod	Apple	MC749TA/A	CC4DN25WDFDM	NA	Provided by Lab
E.	USB Disk	Transcend	16G	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	1.8	No	0	Supplied by client
2.	RJ-11 Cable	1	10	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.	USB Cable	1	0.1	Yes	0	Provided by Lab

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart C (15.247)

KDB 558074 D01 DTS Meas Guidance v03r05

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 20, 2016	July 19, 2017
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. 02, 2016	Apr. 01, 2017
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-2000 EMC104-SM-SM-5000 EMC104-SM-SM-5000	160923 150318 150323	Feb. 02, 2017 Mar. 30, 2016 Mar. 30, 2016	Feb. 01, 2018 Mar. 29, 2017 Mar. 29, 2017
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	FSv40	100964	June 28, 2016	June 27, 2017
Power meter Anritsu	ML2495A	1014008	May 5, 2016	May 4, 2017
Power sensor Anritsu	MA2411B	0917122	May 5, 2016	May 4, 2017

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 FCC Site Registration No. is 292998
5. The CANADA Site Registration No. is 20331-2
- 6 Loop antenna was used for all emissions below 30 MHz.
7. Tested Date: Mar. 23 to 27, 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:

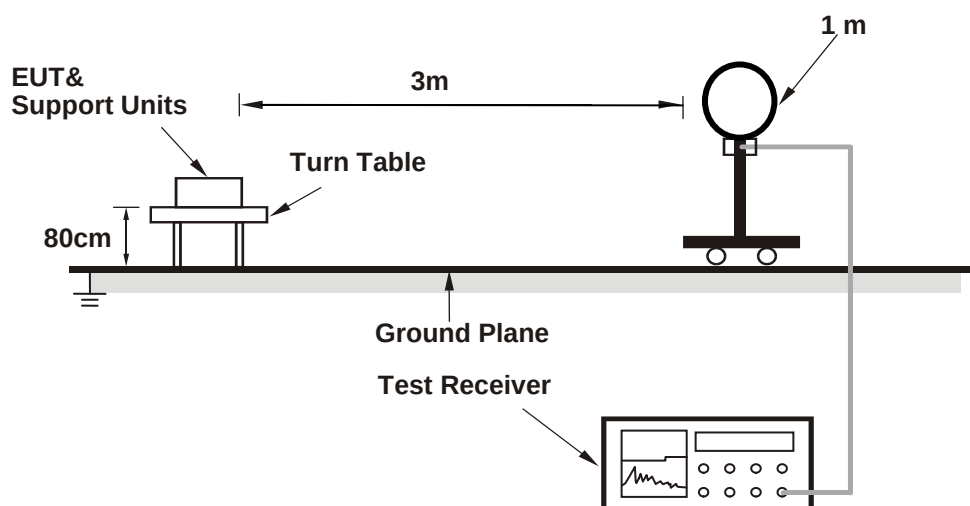
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 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

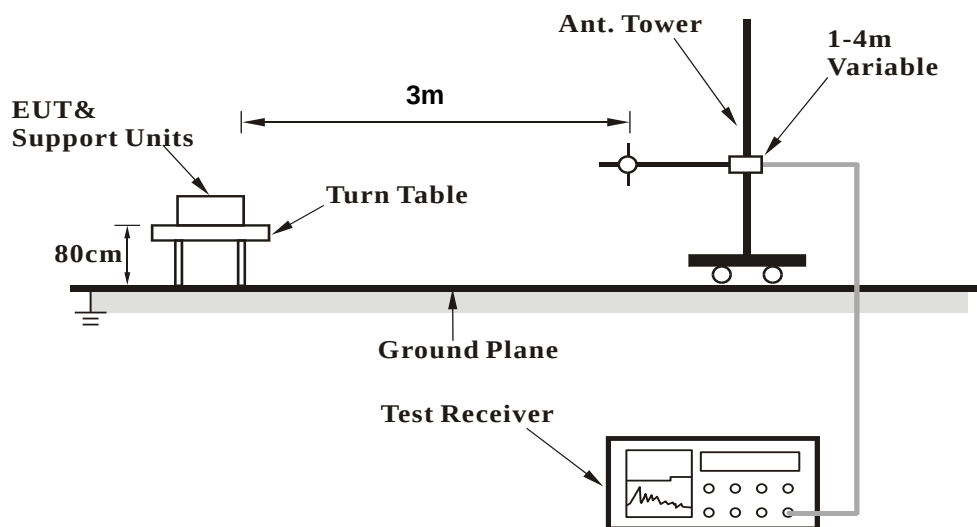
No deviation.

4.1.5 Test Setup

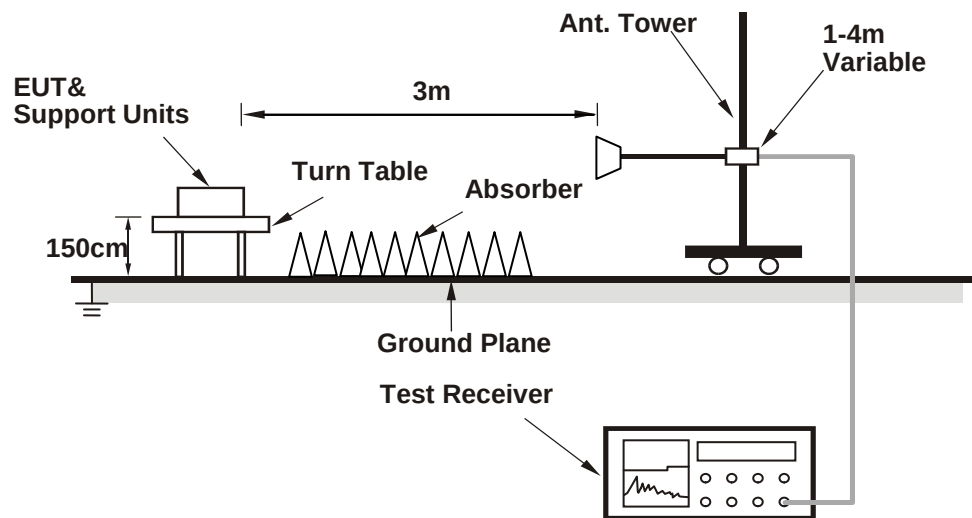
For Radiated emission below 30MHz



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.exe) 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	50.2 PK	74.0	-23.8	2.55 H	257	52.3	-2.1
2	2390.00	45.7 AV	54.0	-8.3	2.55 H	257	47.8	-2.1
3	*2412.00	103.8 PK			2.55 H	257	105.8	-2.0
4	*2412.00	101.5 AV			2.55 H	257	103.5	-2.0
5	4824.00	39.5 PK	74.0	-34.5	1.13 H	122	37.3	2.2
6	4824.00	29.9 AV	54.0	-24.1	1.13 H	122	27.7	2.2
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	58.4 PK	74.0	-15.6	1.59 V	360	60.5	-2.1
2	2390.00	53.8 AV	54.0	-0.2	1.59 V	360	55.9	-2.1
3	*2412.00	113.7 PK			1.59 V	360	115.7	-2.0
4	*2412.00	111.4 AV			1.59 V	360	113.4	-2.0
5	4824.00	40.2 PK	74.0	-33.8	1.53 V	316	38.0	2.2
6	4824.00	34.4 AV	54.0	-19.6	1.53 V	316	32.2	2.2

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	46.8 PK	74.0	-27.2	2.60 H	267	48.9	-2.1
2	2390.00	35.1 AV	54.0	-18.9	2.60 H	267	37.2	-2.1
3	*2437.00	108.9 PK			2.60 H	267	110.8	-1.9
4	*2437.00	104.9 AV			2.60 H	267	106.8	-1.9
5	2483.50	49.3 PK	74.0	-24.7	2.60 H	267	51.0	-1.7
6	2483.50	36.5 AV	54.0	-17.5	2.60 H	267	38.2	-1.7
7	4874.00	39.2 PK	74.0	-34.8	1.12 H	121	36.9	2.3
8	4874.00	32.7 AV	54.0	-21.3	1.12 H	121	30.4	2.3
9	7311.00	46.2 PK	74.0	-27.8	2.13 H	183	37.8	8.4
10	7311.00	38.9 AV	54.0	-15.1	2.13 H	183	30.5	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	52.9 PK	74.0	-21.1	3.37 V	360	55.0	-2.1
2	2390.00	43.7 AV	54.0	-10.3	3.37 V	360	45.8	-2.1
3	*2437.00	119.0 PK			3.37 V	360	120.9	-1.9
4	*2437.00	114.8 AV			3.37 V	360	116.7	-1.9
5	2483.50	56.0 PK	74.0	-18.0	3.37 V	360	57.7	-1.7
6	2483.50	45.0 AV	54.0	-9.0	3.37 V	360	46.7	-1.7
7	4874.00	41.5 PK	74.0	-32.5	1.49 V	322	39.2	2.3
8	4874.00	35.6 AV	54.0	-18.4	1.49 V	322	33.3	2.3
9	7311.00	52.3 PK	74.0	-21.7	2.45 V	203	43.9	8.4
10	7311.00	45.2 AV	54.0	-8.8	2.45 V	203	36.8	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	104.2 PK			2.52 H	263	106.0	-1.8
2	*2462.00	102.7 AV			2.52 H	263	104.5	-1.8
3	2483.50	50.6 PK	74.0	-23.4	2.52 H	263	52.3	-1.7
4	2483.50	45.5 AV	54.0	-8.5	2.52 H	263	47.2	-1.7
5	4924.00	39.6 PK	74.0	-34.4	1.14 H	112	37.2	2.4
6	4924.00	30.0 AV	54.0	-24.0	1.14 H	112	27.6	2.4
7	7386.00	45.0 PK	74.0	-29.0	2.11 H	174	36.5	8.5
8	7386.00	37.6 AV	54.0	-16.4	2.11 H	174	29.1	8.5
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	*2462.00	114.0 PK			1.58 V	360	115.8	-1.8
2	*2462.00	112.6 AV			1.58 V	360	114.4	-1.8
3	2483.50	58.9 PK	74.0	-15.1	1.58 V	360	60.6	-1.7
4	2483.50	53.7 AV	54.0	-0.3	1.58 V	360	55.4	-1.7
5	4924.00	40.0 PK	74.0	-34.0	1.52 V	301	37.6	2.4
6	4924.00	34.2 AV	54.0	-19.8	1.52 V	301	31.8	2.4
7	7386.00	51.1 PK	74.0	-22.9	2.40 V	213	42.6	8.5
8	7386.00	44.0 AV	54.0	-10.0	2.40 V	213	35.5	8.5

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	57.6 PK	74.0	-16.4	2.50 H	257	59.7	-2.1
2	2390.00	45.5 AV	54.0	-8.5	2.50 H	257	47.6	-2.1
3	*2412.00	106.4 PK			2.50 H	257	108.4	-2.0
4	*2412.00	95.8 AV			2.50 H	257	97.8	-2.0
5	4824.00	41.2 PK	74.0	-32.8	1.65 H	119	39.0	2.2
6	4824.00	30.1 AV	54.0	-23.9	1.65 H	119	27.9	2.2
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	65.7 PK	74.0	-8.3	1.64 V	185	67.8	-2.1
2	2390.00	53.6 AV	54.0	-0.4	1.64 V	185	55.7	-2.1
3	*2412.00	116.2 PK			1.64 V	185	118.2	-2.0
4	*2412.00	105.7 AV			1.64 V	185	107.7	-2.0
5	4824.00	49.3 PK	74.0	-24.7	2.00 V	23	47.1	2.2
6	4824.00	38.2 AV	54.0	-15.8	2.00 V	23	36.0	2.2

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	59.3 PK	74.0	-14.7	2.48 H	256	61.4	-2.1
2	2390.00	42.8 AV	54.0	-11.2	2.48 H	256	44.9	-2.1
3	*2437.00	112.0 PK			2.48 H	256	113.9	-1.9
4	*2437.00	101.8 AV			2.48 H	256	103.7	-1.9
5	2483.50	59.8 PK	74.0	-14.2	2.48 H	256	61.5	-1.7
6	2483.50	43.1 AV	54.0	-10.9	2.48 H	256	44.8	-1.7
7	4874.00	43.2 PK	74.0	-30.8	2.07 H	108	40.9	2.3
8	4874.00	32.0 AV	54.0	-22.0	2.07 H	108	29.7	2.3
9	7311.00	47.8 PK	74.0	-26.2	1.59 H	36	39.4	8.4
10	7311.00	37.0 AV	54.0	-17.0	1.59 H	36	28.6	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	67.5 PK	74.0	-6.5	1.64 V	189	69.6	-2.1
2	2390.00	51.0 AV	54.0	-3.0	1.64 V	189	53.1	-2.1
3	*2437.00	121.8 PK			1.64 V	189	123.7	-1.9
4	*2437.00	111.7 AV			1.64 V	189	113.6	-1.9
5	2483.50	68.2 PK	74.0	-5.8	1.64 V	189	69.9	-1.7
6	2483.50	51.3 AV	54.0	-2.7	1.64 V	189	53.0	-1.7
7	4874.00	51.6 PK	74.0	-22.4	1.95 V	33	49.3	2.3
8	4874.00	40.5 AV	54.0	-13.5	1.95 V	33	38.2	2.3
9	7311.00	52.6 PK	74.0	-21.4	2.59 V	199	44.2	8.4
10	7311.00	41.3 AV	54.0	-12.7	2.59 V	199	32.9	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	108.4 PK			2.45 H	259	110.2	-1.8
2	*2462.00	98.4 AV			2.45 H	259	100.2	-1.8
3	2483.50	62.5 PK	74.0	-11.5	2.45 H	259	64.2	-1.7
4	2483.50	45.7 AV	54.0	-8.3	2.45 H	259	47.4	-1.7
5	4924.00	42.0 PK	74.0	-32.0	1.70 H	127	39.6	2.4
6	4924.00	31.0 AV	54.0	-23.0	1.70 H	127	28.6	2.4
7	7386.00	45.6 PK	74.0	-28.4	1.63 H	30	37.1	8.5
8	7386.00	35.1 AV	54.0	-18.9	1.63 H	30	26.6	8.5
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	*2462.00	118.2 PK			1.66 V	191	120.0	-1.8
2	*2462.00	108.3 AV			1.66 V	191	110.1	-1.8
3	2483.50	70.7 PK	74.0	-3.3	1.66 V	191	72.4	-1.7
4	2483.50	53.7 AV	54.0	-0.3	1.66 V	191	55.4	-1.7
5	4924.00	49.4 PK	74.0	-24.6	1.94 V	42	47.0	2.4
6	4924.00	38.4 AV	54.0	-15.6	1.94 V	42	36.0	2.4
7	7386.00	50.5 PK	74.0	-23.5	2.62 V	200	42.0	8.5
8	7386.00	39.1 AV	54.0	-14.9	2.62 V	200	30.6	8.5

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	60.5 PK	74.0	-13.5	2.49 H	243	62.6	-2.1
2	2390.00	45.7 AV	54.0	-8.3	2.49 H	243	47.8	-2.1
3	*2412.00	105.5 PK			2.49 H	243	107.5	-2.0
4	*2412.00	94.8 AV			2.49 H	243	96.8	-2.0
5	4824.00	41.3 PK	74.0	-32.7	1.64 H	126	39.1	2.2
6	4824.00	30.3 AV	54.0	-23.7	1.64 H	126	28.1	2.2
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	67.8 PK	74.0	-6.2	1.66 V	186	69.9	-2.1
2	2390.00	53.9 AV	54.0	-0.1	1.66 V	186	56.0	-2.1
3	*2412.00	115.3 PK			1.66 V	186	117.3	-2.0
4	*2412.00	104.5 AV			1.66 V	186	106.5	-2.0
5	4824.00	49.7 PK	74.0	-24.3	2.02 V	14	47.5	2.2
6	4824.00	38.7 AV	54.0	-15.3	2.02 V	14	36.5	2.2

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	59.6 PK	74.0	-14.4	2.53 H	240	61.7	-2.1
2	2390.00	43.1 AV	54.0	-10.9	2.53 H	240	45.2	-2.1
3	*2437.00	112.3 PK			2.53 H	240	114.2	-1.9
4	*2437.00	102.1 AV			2.53 H	240	104.0	-1.9
5	2483.50	60.4 PK	74.0	-13.6	2.53 H	240	62.1	-1.7
6	2483.50	43.3 AV	54.0	-10.7	2.53 H	240	45.0	-1.7
7	4874.00	42.7 PK	74.0	-31.3	2.05 H	100	40.4	2.3
8	4874.00	31.8 AV	54.0	-22.2	2.05 H	100	29.5	2.3
9	7311.00	47.8 PK	74.0	-26.2	1.55 H	31	39.4	8.4
10	7311.00	36.9 AV	54.0	-17.1	1.55 H	31	28.5	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	67.2 PK	74.0	-6.8	1.65 V	189	69.3	-2.1
2	2390.00	50.8 AV	54.0	-3.2	1.65 V	189	52.9	-2.1
3	*2437.00	121.7 PK			1.64 V	200	123.6	-1.9
4	*2437.00	111.7 AV			1.64 V	200	113.6	-1.9
5	2483.50	68.1 PK	74.0	-5.9	1.59 V	201	69.8	-1.7
6	2483.50	51.1 AV	54.0	-2.9	1.59 V	201	52.8	-1.7
7	4874.00	51.6 PK	74.0	-22.4	1.98 V	38	49.3	2.3
8	4874.00	40.5 AV	54.0	-13.5	1.98 V	38	38.2	2.3
9	7311.00	52.0 PK	74.0	-22.0	2.55 V	195	43.6	8.4
10	7311.00	41.0 AV	54.0	-13.0	2.55 V	195	32.6	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	108.4 PK			2.56 H	233	110.2	-1.8
2	*2462.00	97.3 AV			2.56 H	233	99.1	-1.8
3	2483.50	64.3 PK	74.0	-9.7	2.56 H	233	66.0	-1.7
4	2483.50	45.9 AV	54.0	-8.1	2.56 H	233	47.6	-1.7
5	4924.00	41.6 PK	74.0	-32.4	1.67 H	115	39.2	2.4
6	4924.00	30.6 AV	54.0	-23.4	1.67 H	115	28.2	2.4
7	7386.00	45.8 PK	74.0	-28.2	1.65 H	28	37.3	8.5
8	7386.00	35.5 AV	54.0	-18.5	1.65 H	28	27.0	8.5
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	*2462.00	117.7 PK			1.66 V	188	119.5	-1.8
2	*2462.00	106.9 AV			1.66 V	188	108.7	-1.8
3	2483.50	72.1 PK	74.0	-1.9	1.66 V	188	73.8	-1.7
4	2483.50	53.7 AV	54.0	-0.3	1.66 V	188	55.4	-1.7
5	4924.00	49.1 PK	74.0	-24.9	2.00 V	32	46.7	2.4
6	4924.00	38.0 AV	54.0	-16.0	2.00 V	32	35.6	2.4
7	7386.00	50.5 PK	74.0	-23.5	2.65 V	212	42.0	8.5
8	7386.00	39.0 AV	54.0	-15.0	2.65 V	212	30.5	8.5

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	61.0 PK	74.0	-13.0	2.56 H	227	63.1	-2.1
2	2390.00	45.7 AV	54.0	-8.3	2.56 H	227	47.8	-2.1
3	*2422.00	100.8 PK			2.56 H	227	102.9	-2.1
4	*2422.00	89.6 AV			2.56 H	227	91.7	-2.1
5	4844.00	41.8 PK	74.0	-32.2	1.71 H	91	39.5	2.3
6	4844.00	30.7 AV	54.0	-23.3	1.71 H	91	28.4	2.3
7	7266.00	58.7 PK	74.0	-15.3	1.55 H	15	50.3	8.4
8	7266.00	33.2 AV	54.0	-20.8	1.55 H	15	24.8	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	67.4 PK	74.0	-6.6	2.18 V	192	69.5	-2.1
2	2390.00	53.9 AV	54.0	-0.1	2.18 V	192	56.0	-2.1
3	*2422.00	110.1 PK			2.18 V	193	112.2	-2.1
4	*2422.00	99.2 AV			2.18 V	193	101.3	-2.1
5	4844.00	46.3 PK	74.0	-27.7	1.97 V	44	44.0	2.3
6	4844.00	35.5 AV	54.0	-18.5	1.97 V	44	33.2	2.3
7	7266.00	48.1 PK	74.0	-25.9	2.66 V	202	39.7	8.4
8	7266.00	36.5 AV	54.0	-17.5	2.66 V	202	28.1	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 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	61.1 PK	74.0	-12.9	2.58 H	223	63.2	-2.1
2	2390.00	45.5 AV	54.0	-8.5	2.58 H	223	47.6	-2.1
3	*2437.00	103.6 PK			2.58 H	223	105.5	-1.9
4	*2437.00	93.0 AV			2.58 H	223	94.9	-1.9
5	2483.50	63.0 PK	74.0	-11.0	2.58 H	223	64.7	-1.7
6	2483.50	45.3 AV	54.0	-8.7	2.58 H	223	47.0	-1.7
7	4874.00	42.1 PK	74.0	-31.9	1.70 H	104	39.8	2.3
8	4874.00	30.8 AV	54.0	-23.2	1.70 H	104	28.5	2.3
9	7311.00	45.7 PK	74.0	-28.3	1.60 H	16	37.3	8.4
10	7311.00	35.4 AV	54.0	-18.6	1.60 H	16	27.0	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	67.6 PK	74.0	-6.4	1.23 V	347	69.7	-2.1
2	2390.00	53.8 AV	54.0	-0.2	1.23 V	347	55.9	-2.1
3	*2437.00	112.9 PK			1.23 V	347	114.8	-1.9
4	*2437.00	102.5 AV			1.23 V	347	104.4	-1.9
5	2483.50	70.7 PK	74.0	-3.3	1.23 V	347	72.4	-1.7
6	2483.50	53.6 AV	54.0	-0.4	1.23 V	347	55.3	-1.7
7	4874.00	48.7 PK	74.0	-25.3	2.02 V	37	46.4	2.3
8	4874.00	37.9 AV	54.0	-16.1	2.02 V	37	35.6	2.3
9	7311.00	50.8 PK	74.0	-23.2	2.64 V	200	42.4	8.4
10	7311.00	39.2 AV	54.0	-14.8	2.64 V	200	30.8	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 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	101.3 PK			2.55 H	236	103.1	-1.8
2	*2452.00	90.2 AV			2.55 H	236	92.0	-1.8
3	2490.00	62.5 PK	74.0	-11.5	2.55 H	236	64.2	-1.7
4	2490.00	45.4 AV	54.0	-8.6	2.55 H	236	47.1	-1.7
5	4904.00	42.6 PK	74.0	-31.4	1.65 H	118	40.2	2.4
6	4904.00	31.3 AV	54.0	-22.7	1.65 H	118	28.9	2.4
7	7356.00	59.8 PK	74.0	-14.2	1.58 H	2	51.3	8.5
8	7356.00	34.2 AV	54.0	-19.8	1.58 H	2	25.7	8.5
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	*2452.00	110.6 PK			1.21 V	344	112.4	-1.8
2	*2452.00	99.7 AV			1.21 V	344	101.5	-1.8
3	2490.00	69.2 PK	74.0	-4.8	1.21 V	344	70.9	-1.7
4	2490.00	53.7 AV	54.0	-0.3	1.21 V	344	55.4	-1.7
5	4904.00	47.2 PK	74.0	-26.8	2.04 V	38	44.8	2.4
6	4904.00	36.5 AV	54.0	-17.5	2.04 V	38	34.1	2.4
7	7356.00	49.3 PK	74.0	-24.7	2.69 V	190	40.8	8.5
8	7356.00	37.7 AV	54.0	-16.3	2.69 V	190	29.2	8.5

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 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	88.18	39.6 QP	43.5	-3.9	2.00 H	0	54.1	-14.5
2	432.02	42.5 QP	46.0	-3.5	1.01 H	0	46.7	-4.2
3	506.97	41.7 QP	46.0	-4.3	1.50 H	360	44.4	-2.7
4	540.03	42.1 QP	46.0	-3.9	2.00 H	0	44.3	-2.2
5	780.03	41.8 QP	46.0	-4.2	1.00 H	44	39.3	2.5
6	857.99	41.6 QP	46.0	-4.4	1.50 H	242	38.4	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	41.64	36.5 QP	40.0	-3.5	1.01 V	354	45.0	-8.5
2	312.03	41.8 QP	46.0	-4.2	1.50 V	360	49.1	-7.3
3	507.02	40.2 QP	46.0	-5.8	1.50 V	218	42.9	-2.7
4	600.04	40.4 QP	46.0	-5.6	1.00 V	47	40.8	-0.4
5	780.10	41.0 QP	46.0	-5.0	2.00 V	119	38.5	2.5
6	900.04	41.3 QP	46.0	-4.7	1.00 V	34	37.4	3.9

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

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	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 13, 2016	June 12, 2017
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 20, 2016	June 19, 2017
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: Jan. 06, 2017

4.2.3 Test Procedures

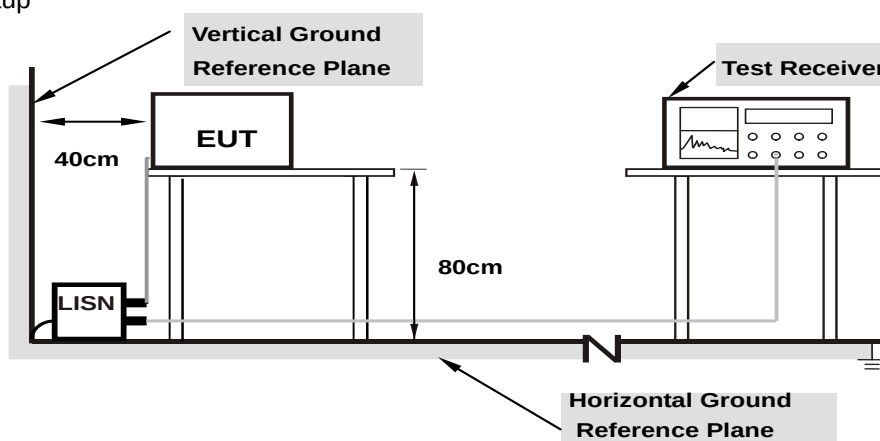
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

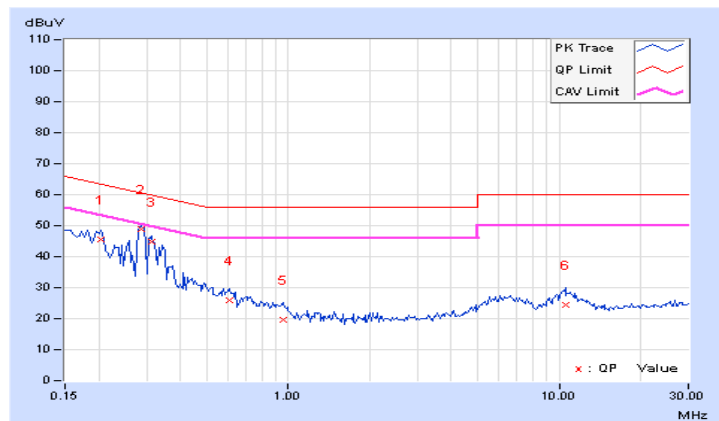
4.2.7 Test Results (Mode 1)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.20469	10.20	35.22	28.88	45.42	39.08	63.42	53.42	-18.00	-14.34
2	0.28672	10.22	38.78	36.92	49.00	47.14	60.62	50.62	-11.62	-3.48
3	0.31406	10.22	34.69	31.47	44.91	41.69	59.86	49.86	-14.95	-8.17
4	0.60703	10.26	15.66	9.23	25.92	19.49	56.00	46.00	-30.08	-26.51
5	0.95469	10.30	9.38	4.43	19.68	14.73	56.00	46.00	-36.32	-31.27
6	10.53125	10.79	13.76	9.59	24.55	20.38	60.00	50.00	-35.45	-29.62

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.

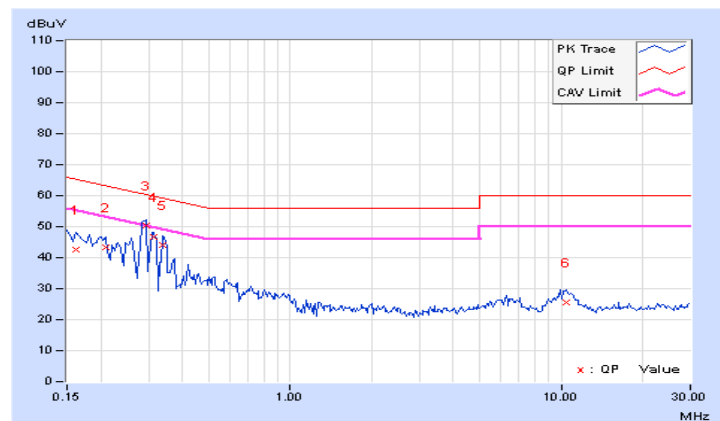


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	10.19	32.27	23.31	42.46	33.50	65.38	55.38	-22.92	-21.88
2	0.20859	10.17	33.14	25.88	43.31	36.05	63.26	53.26	-19.95	-17.21
3	0.29453	10.20	40.03	31.65	50.23	41.85	60.40	50.40	-10.17	-8.55
4	0.31406	10.21	36.31	33.68	46.52	43.89	59.86	49.86	-13.34	-5.97
5	0.33750	10.22	33.87	27.03	44.09	37.25	59.26	49.26	-15.17	-12.01
6	10.50781	10.68	15.01	10.07	25.69	20.75	60.00	50.00	-34.31	-29.25

REMARKS:

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



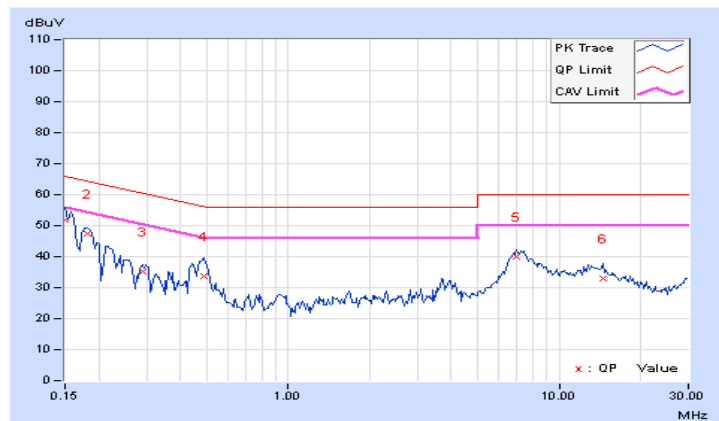
4.2.8 Test Results (Mode 2)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.20	41.74	28.61	51.94	38.81	66.00	56.00	-14.06	-17.19
2	0.18125	10.20	37.34	26.42	47.54	36.62	64.43	54.43	-16.89	-17.81
3	0.29063	10.22	24.97	16.75	35.19	26.97	60.51	50.51	-25.32	-23.54
4	0.48594	10.25	23.38	13.51	33.63	23.76	56.24	46.24	-22.61	-22.48
5	6.98828	10.52	29.42	24.10	39.94	34.62	60.00	50.00	-20.06	-15.38
6	14.58984	11.25	21.68	16.09	32.93	27.34	60.00	50.00	-27.07	-22.66

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.

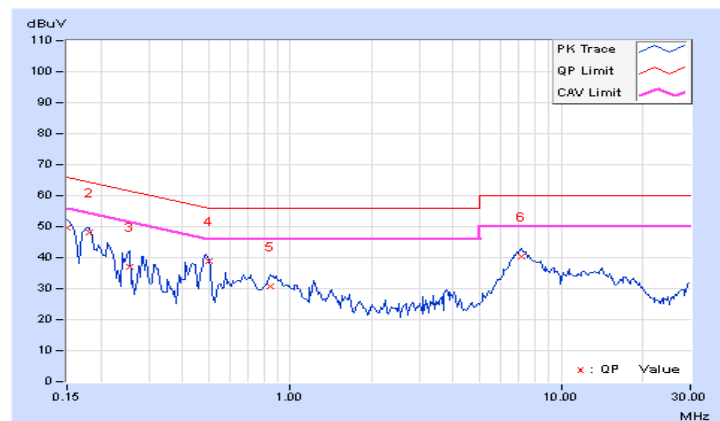


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.19	39.49	26.41	49.68	36.60	66.00	56.00	-16.32	-19.40
2	0.18125	10.18	37.82	27.88	48.00	38.06	64.43	54.43	-16.43	-16.37
3	0.25547	10.19	26.93	18.77	37.12	28.96	61.58	51.58	-24.46	-22.62
4	0.49909	10.24	28.63	25.60	38.87	35.84	56.02	46.02	-17.15	-10.18
5	0.84922	10.25	20.65	15.46	30.90	25.71	56.00	46.00	-25.10	-20.29
6	7.12500	10.43	29.77	24.33	40.20	34.76	60.00	50.00	-19.80	-15.24

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.

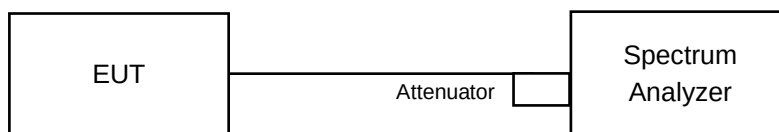


4.3 6dB Bandwidth Measurement

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
1	2412	8.08	0.5	PASS
6	2437	8.06	0.5	PASS
11	2462	8.08	0.5	PASS

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
1	2412	16.37	16.39	16.39	0.5	PASS
6	2437	16.34	16.36	16.36	0.5	PASS
11	2462	16.35	16.37	16.35	0.5	PASS

802.11n (HT20)

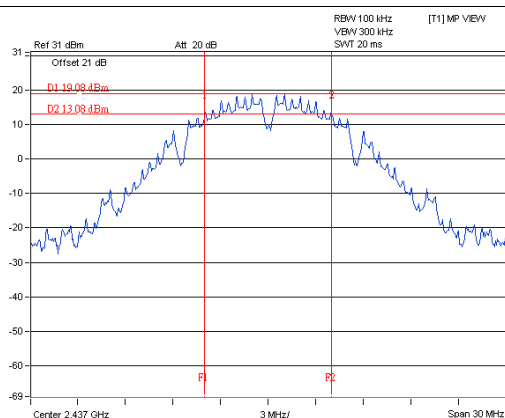
Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
1	2412	17.29	17.59	17.56	0.5	Pass
6	2437	17.33	17.61	17.59	0.5	Pass
11	2462	17.59	17.65	17.64	0.5	Pass

802.11n (HT40)

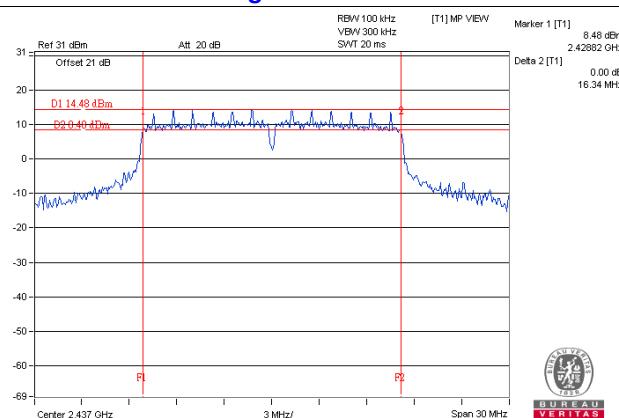
Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
3	2422	35.77	36.11	35.75	0.5	Pass
6	2437	35.70	35.92	35.58	0.5	Pass
9	2452	35.80	35.80	36.04	0.5	Pass

Spectrum Plot of Worst Value

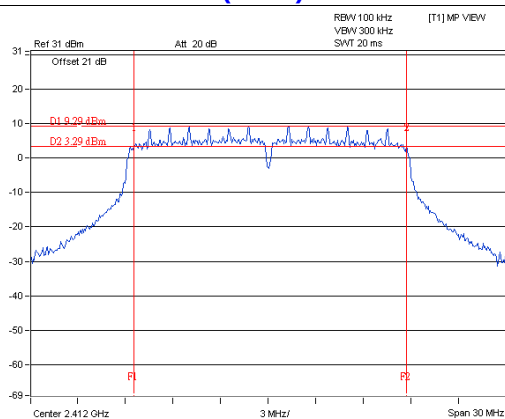
802.11b / Chain 0 : CH6



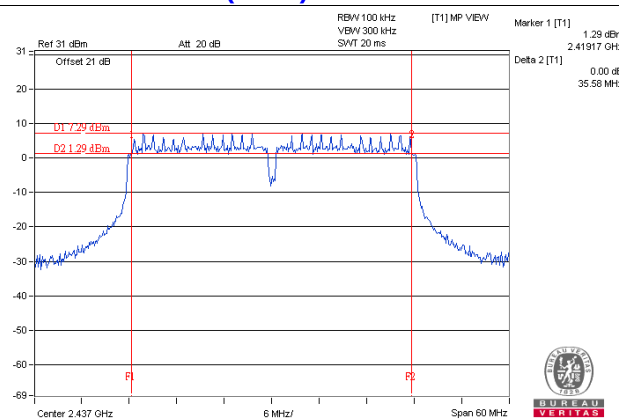
802.11g / Chain 0 : CH6



802.11n (HT20) / Chain 0 : CH1



802.11n (HT40) / Chain 2 : 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,

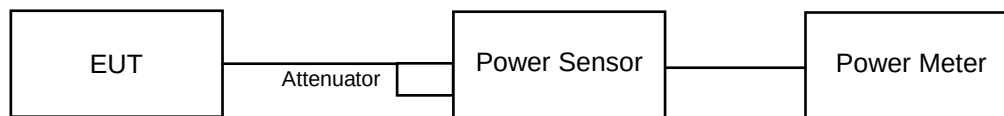
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

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	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	519.996	27.16	30	Pass
6	2437	704.693	28.48	30	Pass
11	2462	523.6	27.19	30	Pass

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	21.21	21.58	21.63	421.556	26.25	30	Pass
6	2437	25.20	25.16	25.13	985.063	29.93	30	Pass
11	2462	23.52	23.13	23.16	637.508	28.04	30	Pass

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	21.23	20.87	20.73	373.223	25.72	30	Pass
6	2437	25.20	25.23	25.15	991.898	29.96	30	Pass
11	2462	22.37	22.04	21.86	486.002	26.87	30	Pass

802.11n (HT40)

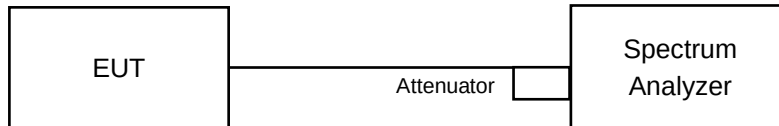
Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
3	2422	17.18	16.48	16.72	143.692	21.57	30	Pass
6	2437	22.82	22.31	22.19	527.219	27.22	30	Pass
9	2452	19.87	18.87	19.17	256.745	24.10	30	Pass

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 802.11b, 802.11g:

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

For 802.11n (HT20), 802.11n (HT40):

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6

4.5.7 Test Results

802.11b

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-3.24	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=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-10.83	4.77	-6.06	8.00	Pass
	6	2437	-7.65	4.77	-2.88	8.00	Pass
	11	2462	-9.42	4.77	-4.65	8.00	Pass
1	1	2412	-12.02	4.77	-7.25	8.00	Pass
	6	2437	-7.25	4.77	-2.48	8.00	Pass
	11	2462	-10.01	4.77	-5.24	8.00	Pass
2	1	2412	-11.29	4.77	-6.52	8.00	Pass
	6	2437	-7.12	4.77	-2.35	8.00	Pass
	11	2462	-9.82	4.77	-5.05	8.00	Pass

Note: 1. Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 5.15\text{dBi} > 6\text{dBi}$, so the power density limit shall not be reduced.

802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD W/O Duty Factor (dBm/10kHz)	10 log (N=3) dB	Duty Factor (dB)	TOTAL PSD With Duty Factor (dBm/10kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-12.53	4.77	0.11	-7.65	8.00	Pass
	6	2437	-8.13	4.77	0.11	-3.25	8.00	Pass
	11	2462	-10.52	4.77	0.11	-5.64	8.00	Pass
1	1	2412	-12.62	4.77	0.11	-7.74	8.00	Pass
	6	2437	-8.55	4.77	0.11	-3.67	8.00	Pass
	11	2462	-11.67	4.77	0.11	-6.79	8.00	Pass
2	1	2412	-12.58	4.77	0.11	-7.70	8.00	Pass
	6	2437	-7.81	4.77	0.11	-2.93	8.00	Pass
	11	2462	-10.98	4.77	0.11	-6.10	8.00	Pass

Note: 1. Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 5.15\text{dBi} > 6\text{dBi}$, so the power density limit shall not be reduced.

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

802.11n (HT40)

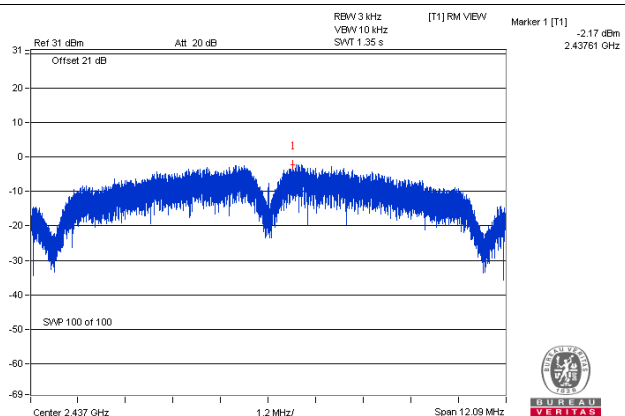
TX chain	Channel	Freq. (MHz)	PSD W/O Duty Factor (dBm/10kHz)	10 log (N=3) dB	Duty Factor (dB)	TOTAL PSD With Duty Factor (dBm/10kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-18.59	4.77	0.17	-13.65	8.00	Pass
	6	2437	-12.80	4.77	0.17	-7.86	8.00	Pass
	11	2462	-15.74	4.77	0.17	-10.80	8.00	Pass
1	1	2412	-18.90	4.77	0.17	-13.96	8.00	Pass
	6	2437	-11.90	4.77	0.17	-6.96	8.00	Pass
	11	2462	-16.25	4.77	0.17	-11.31	8.00	Pass
2	1	2412	-18.21	4.77	0.17	-13.27	8.00	Pass
	6	2437	-14.61	4.77	0.17	-9.67	8.00	Pass
	11	2462	-16.42	4.77	0.17	-11.48	8.00	Pass

Note: 1. Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 5.15\text{dBi} > 6\text{dBi}$, so the power density limit shall not be reduced.

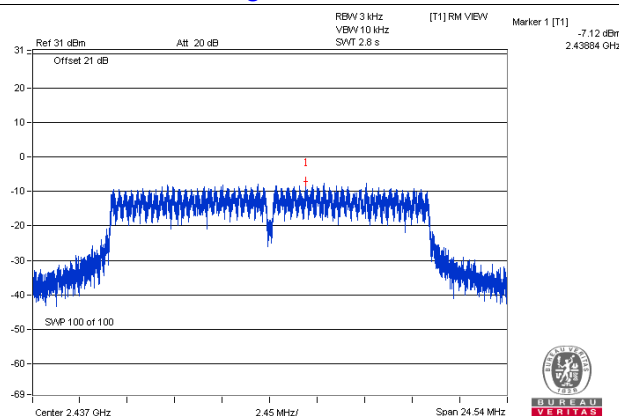
2. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

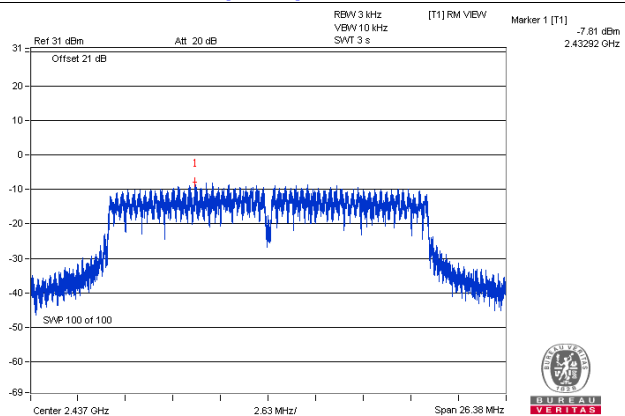
802.11b / Chain 0 : CH6



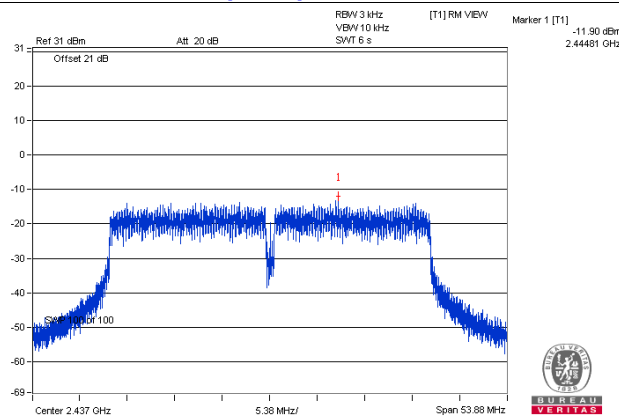
802.11g / Chain 2 : CH6



802.11n (HT20) / Chain 2 : CH6



802.11n (HT40) / Chain 1 : CH6

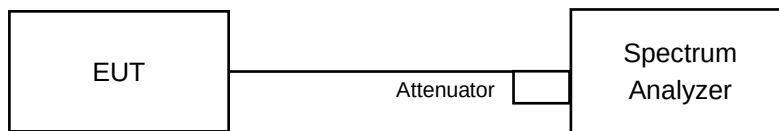


4.6 Conducted Out of Band Emission Measurement

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 $\geq$ 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.

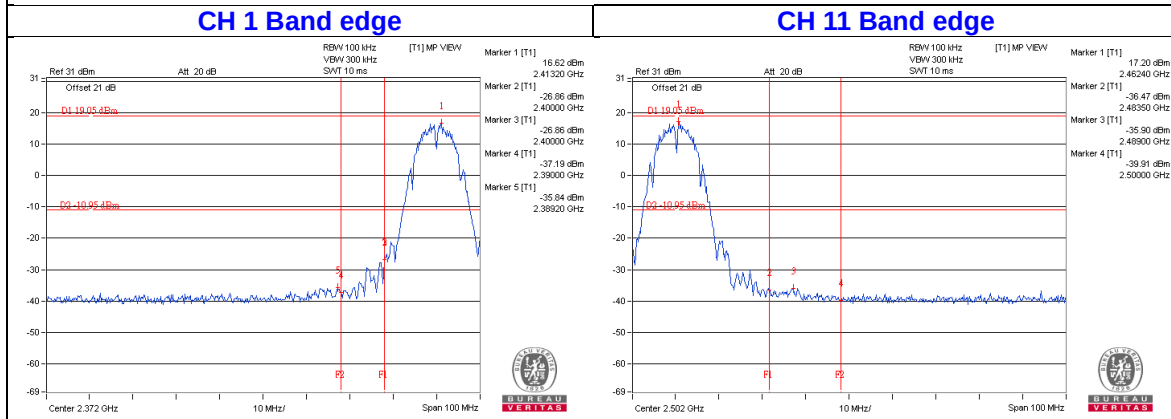
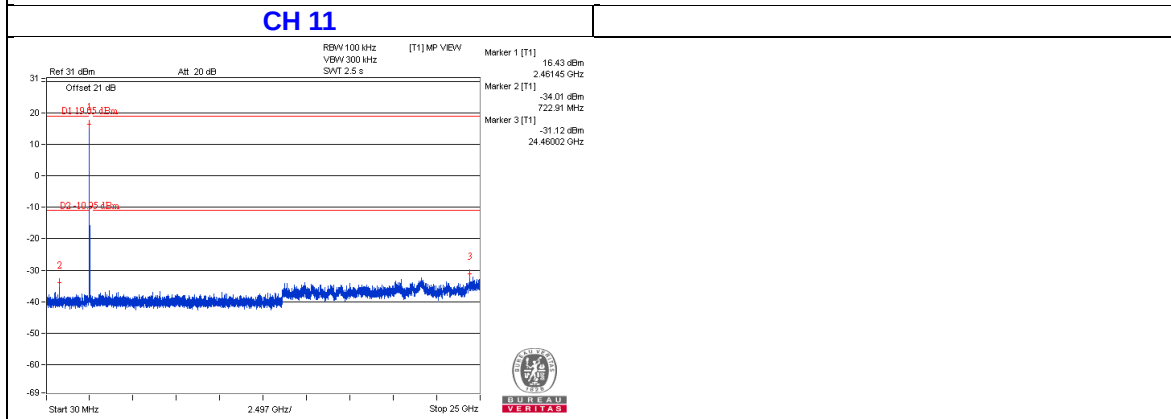
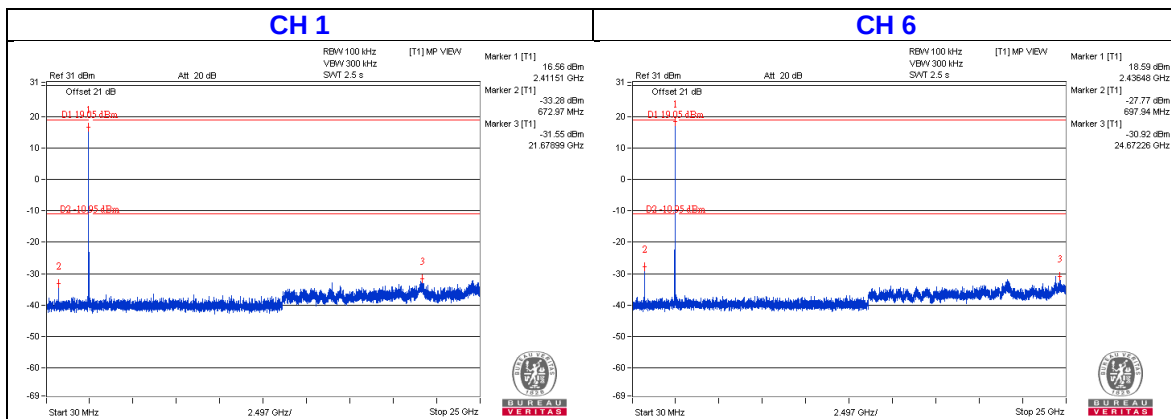
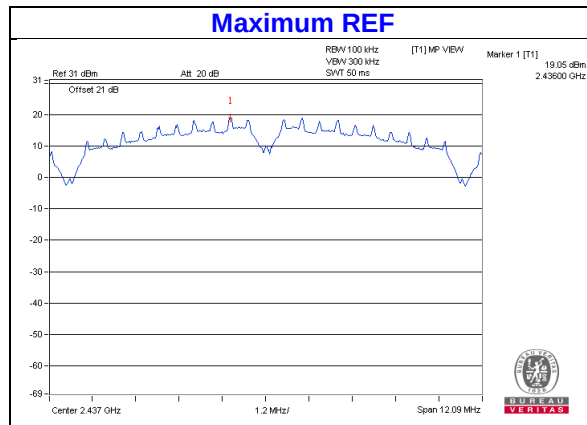
4.6.6 EUT Operating Condition

Same as Item 4.3.6

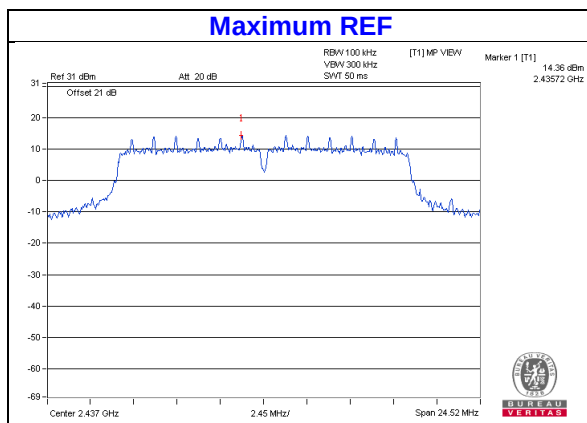
4.6.7 Test Results

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

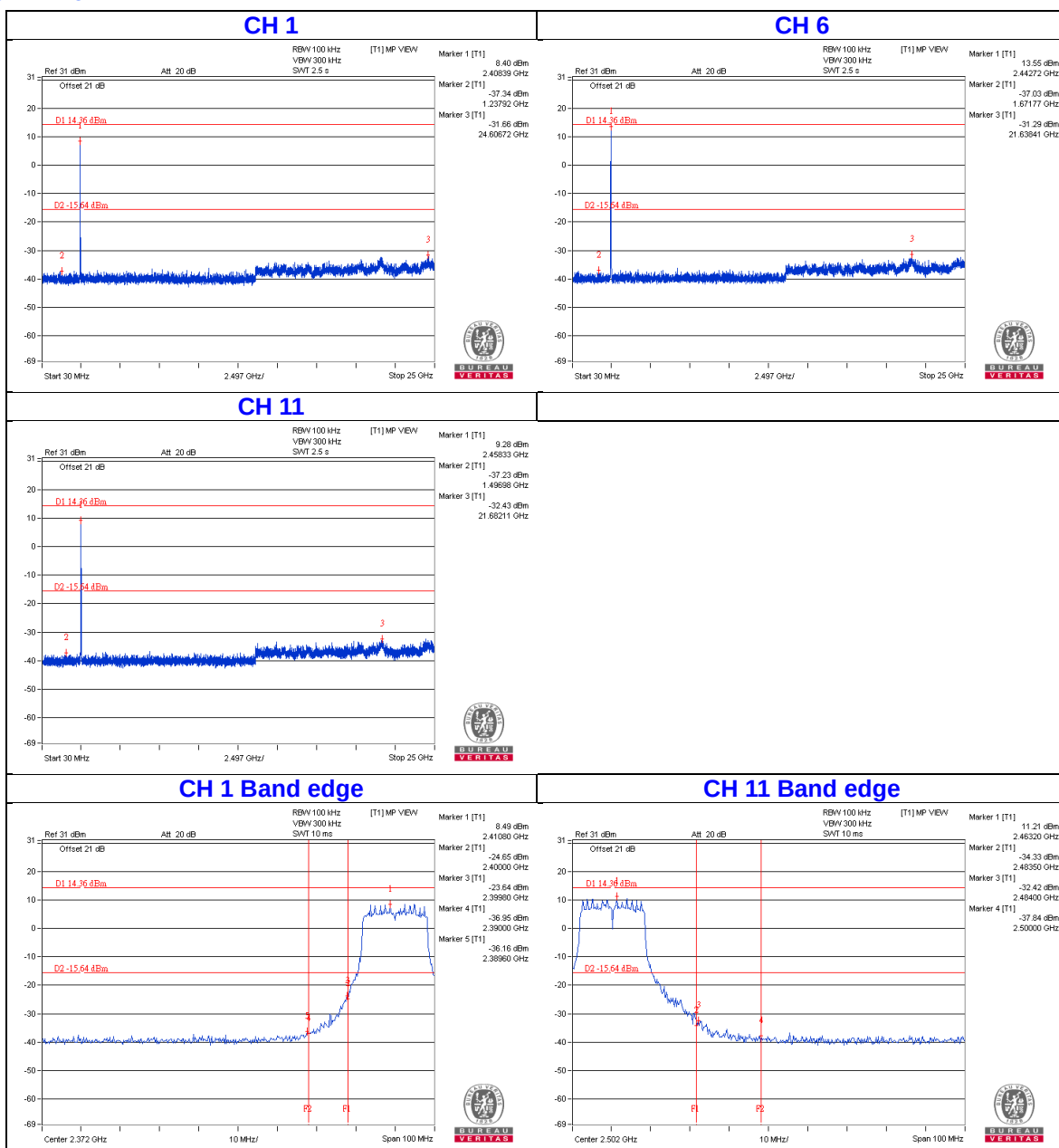
802.11b



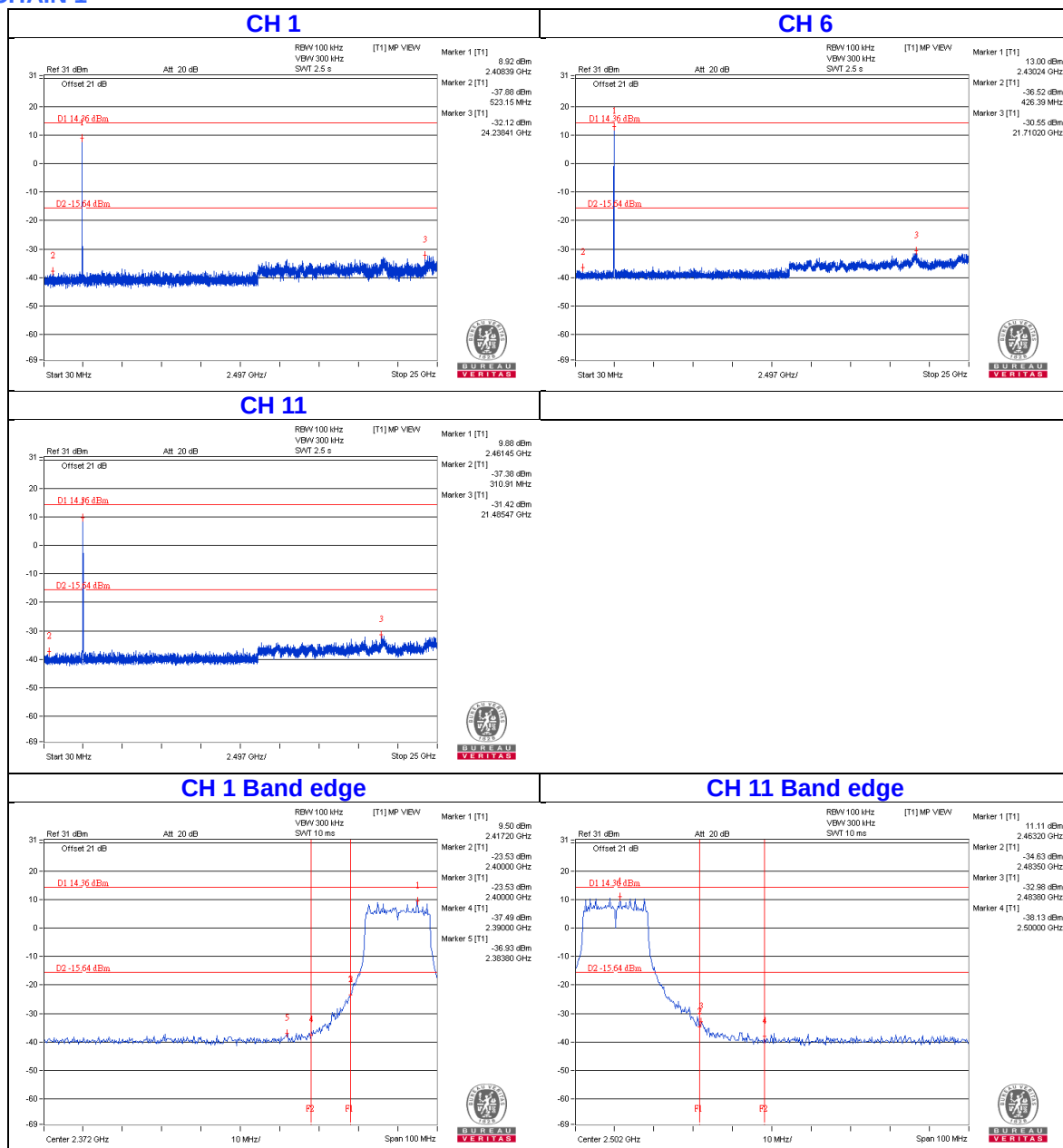
802.11g



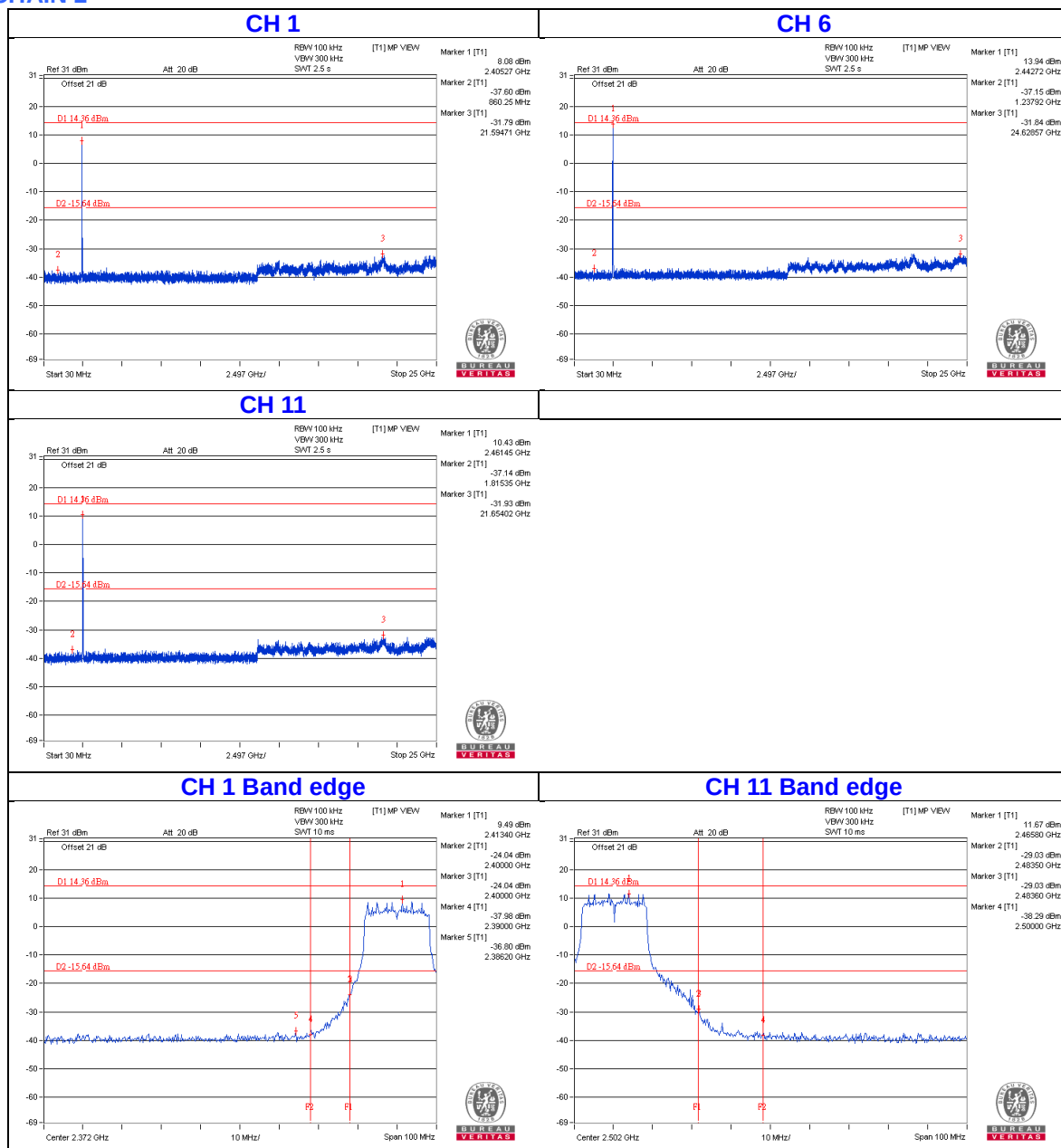
CHAIN 0



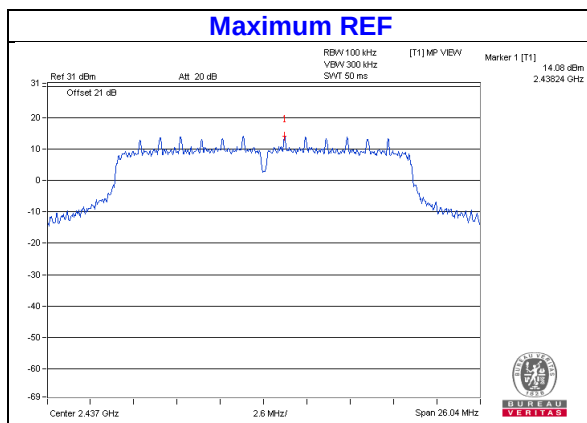
CHAIN 1



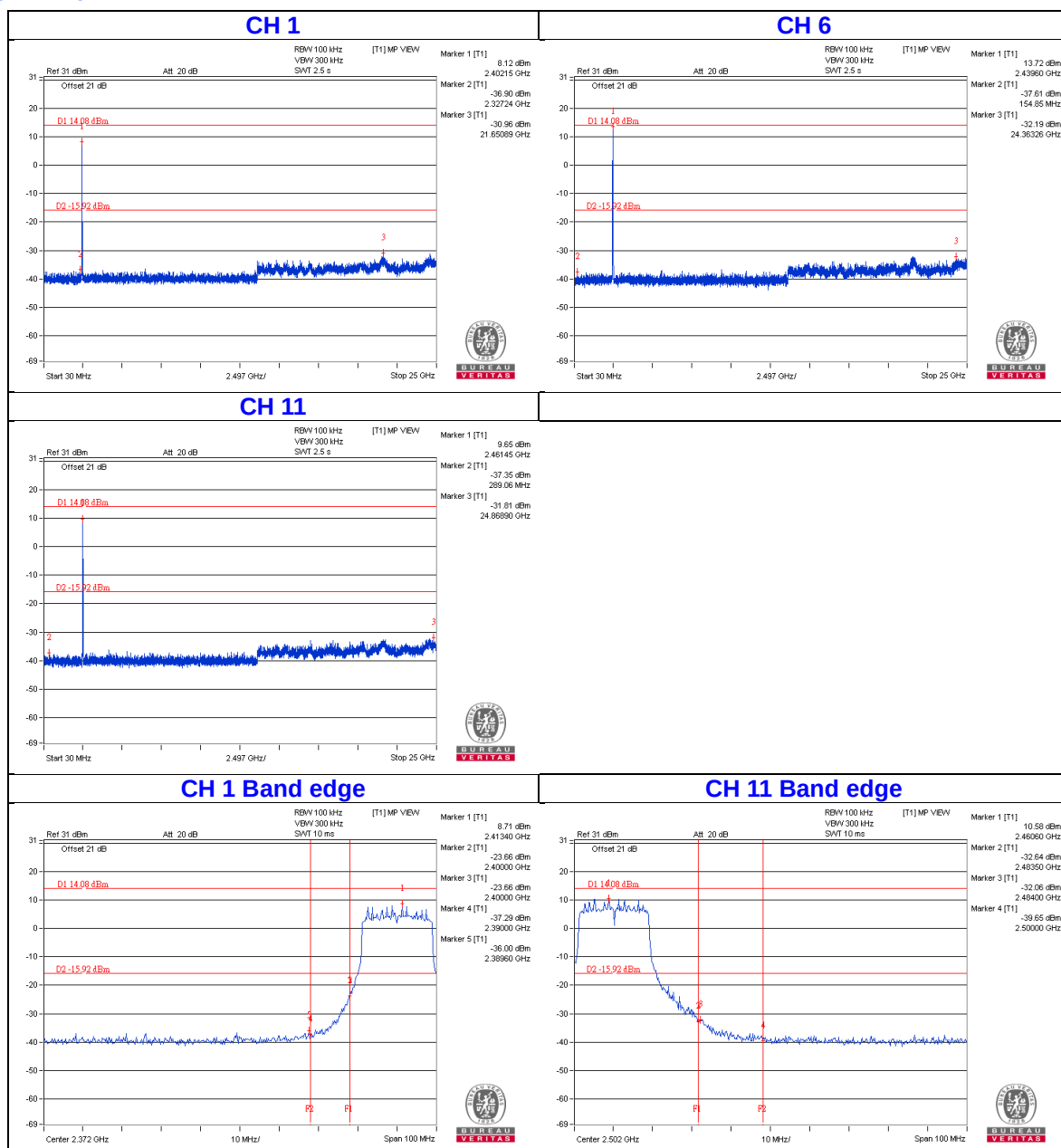
CHAIN 2



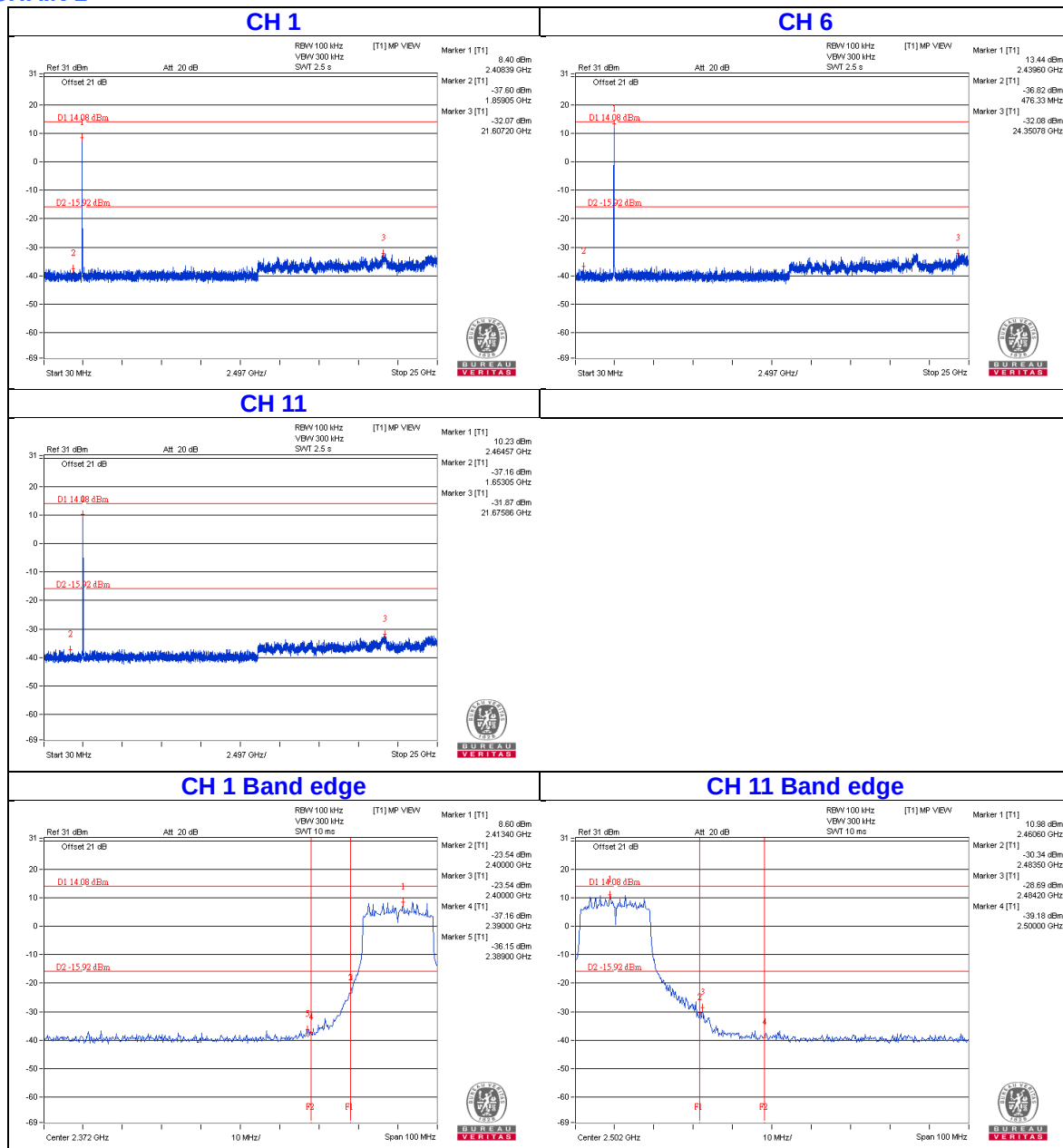
802.11n (HT20)



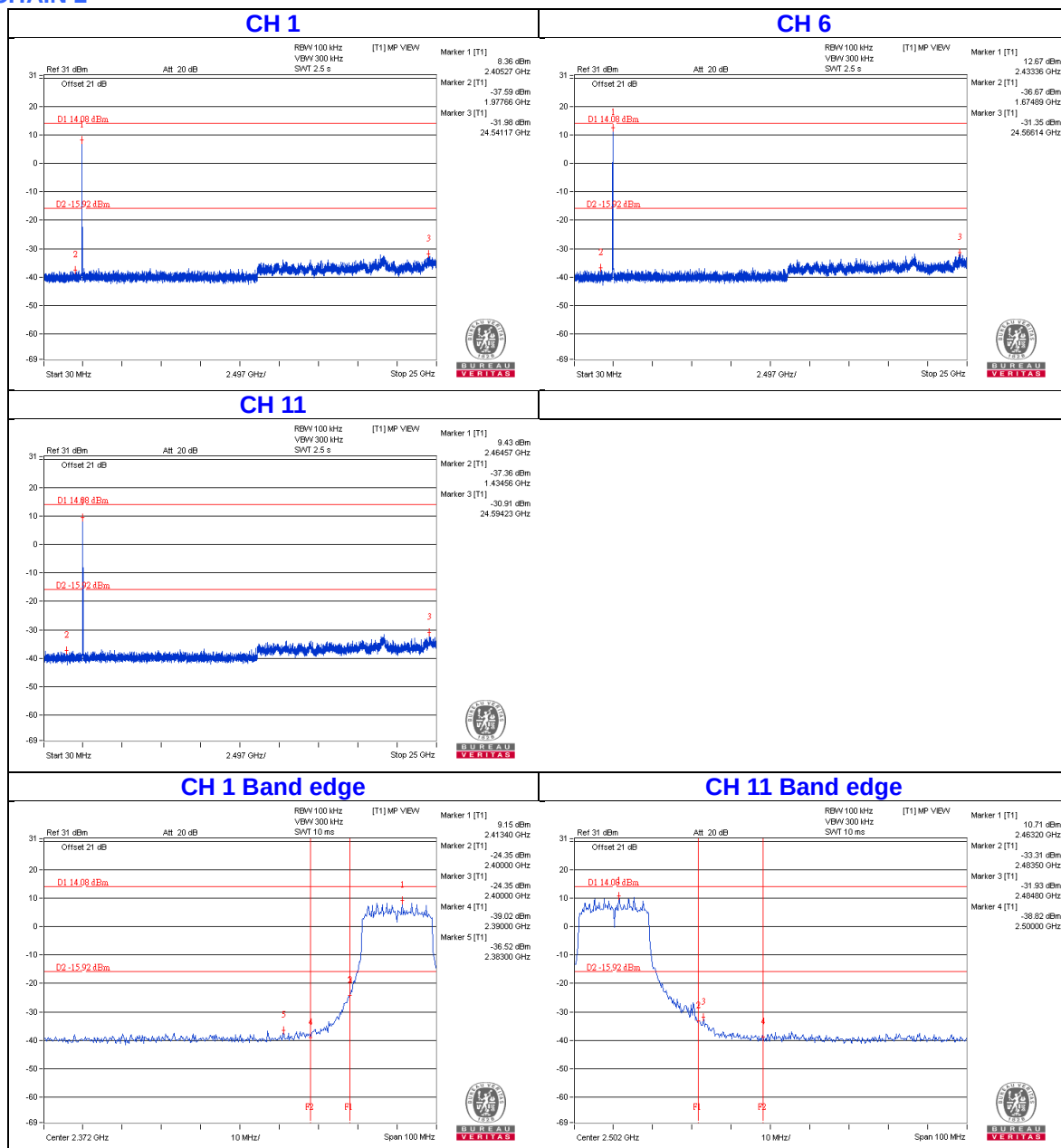
CHAIN 0



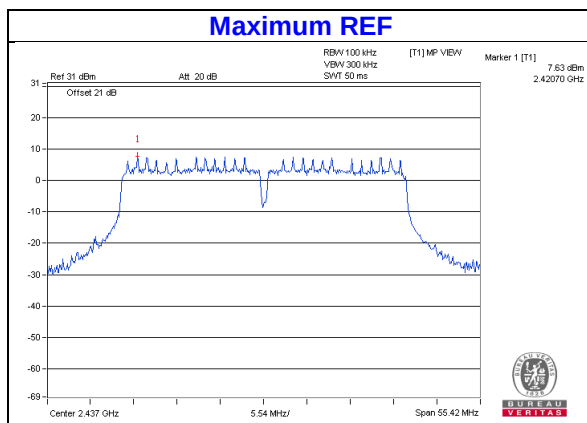
CHAIN 1



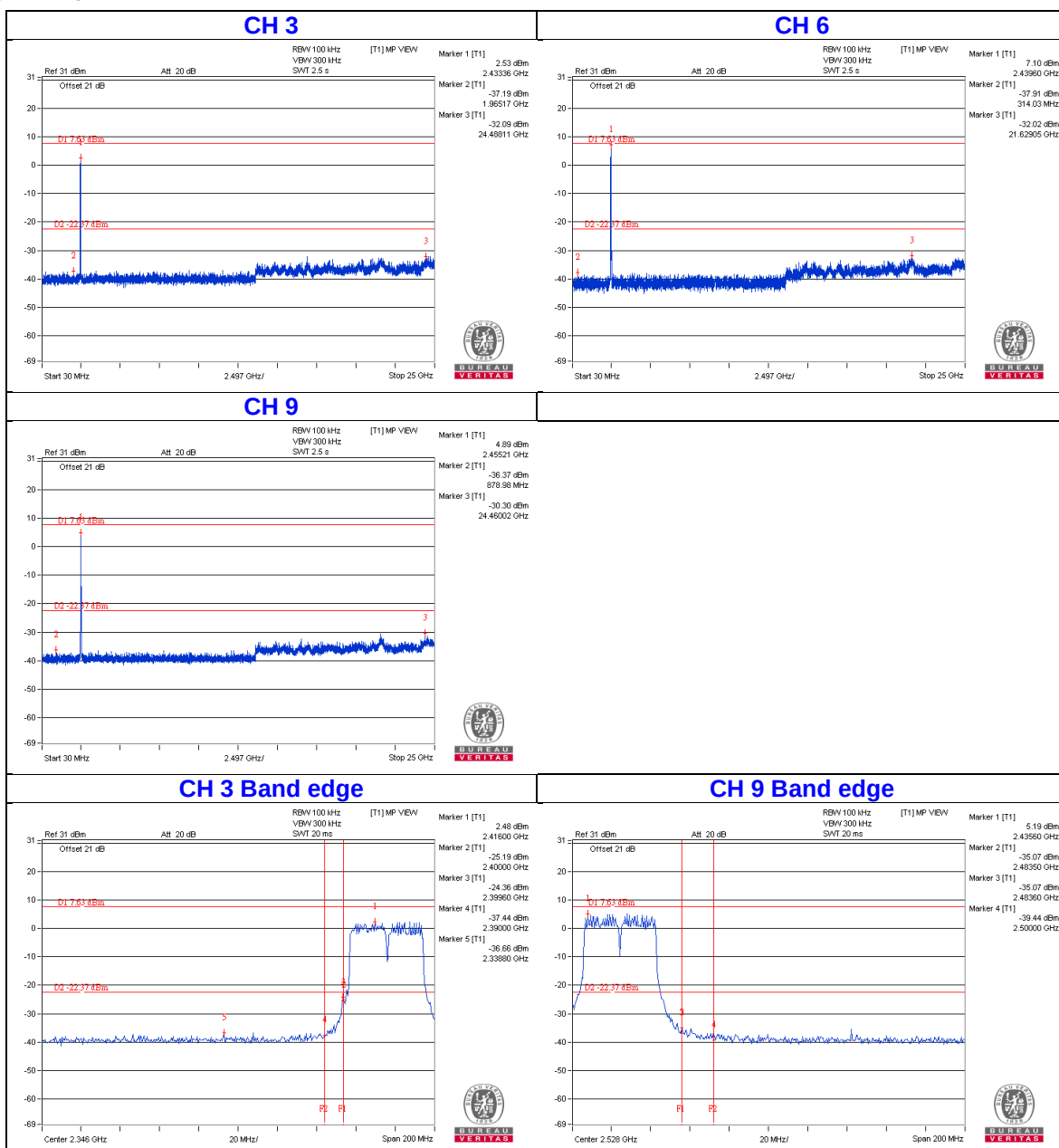
CHAIN 2



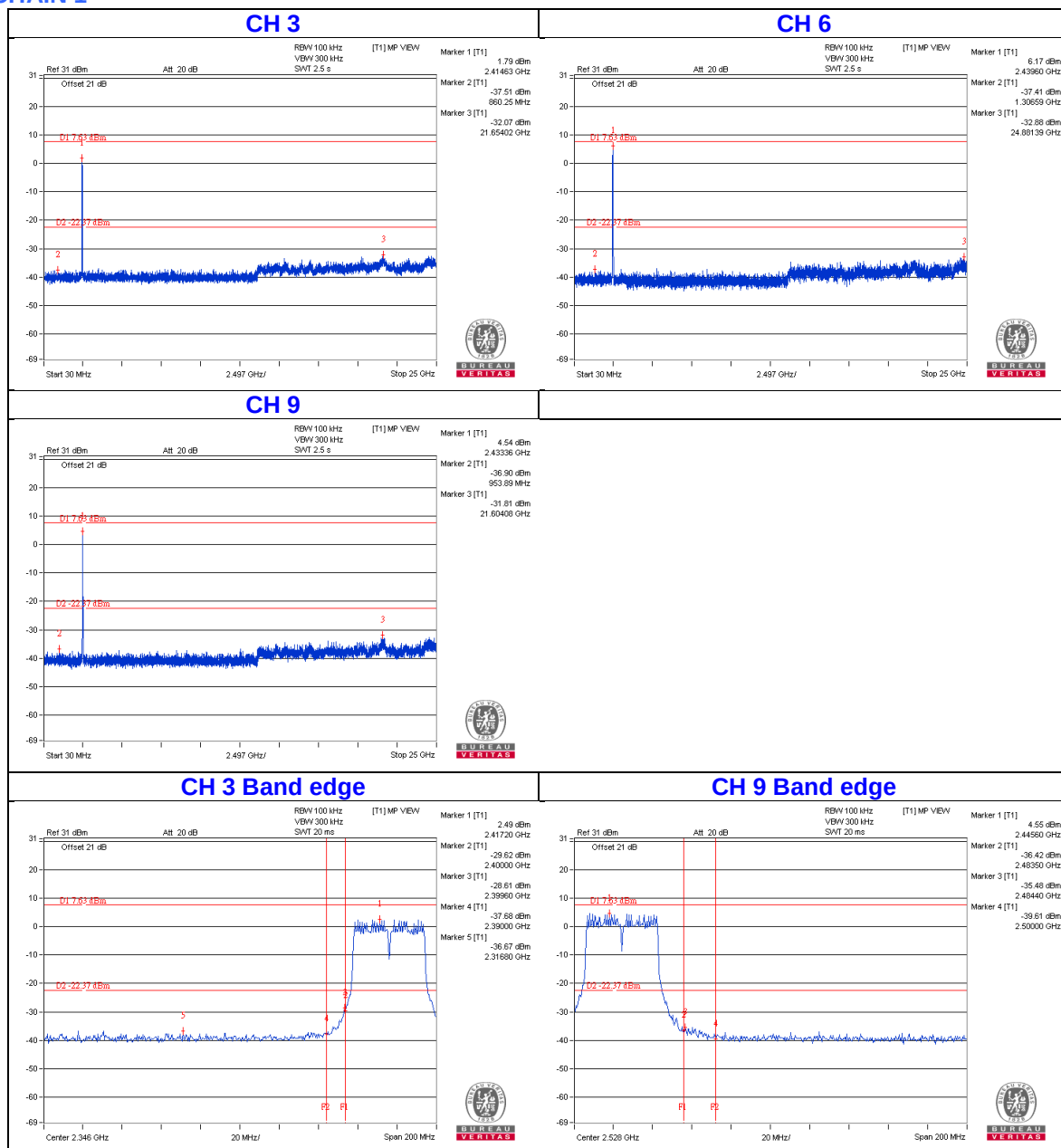
802.11n (HT40)



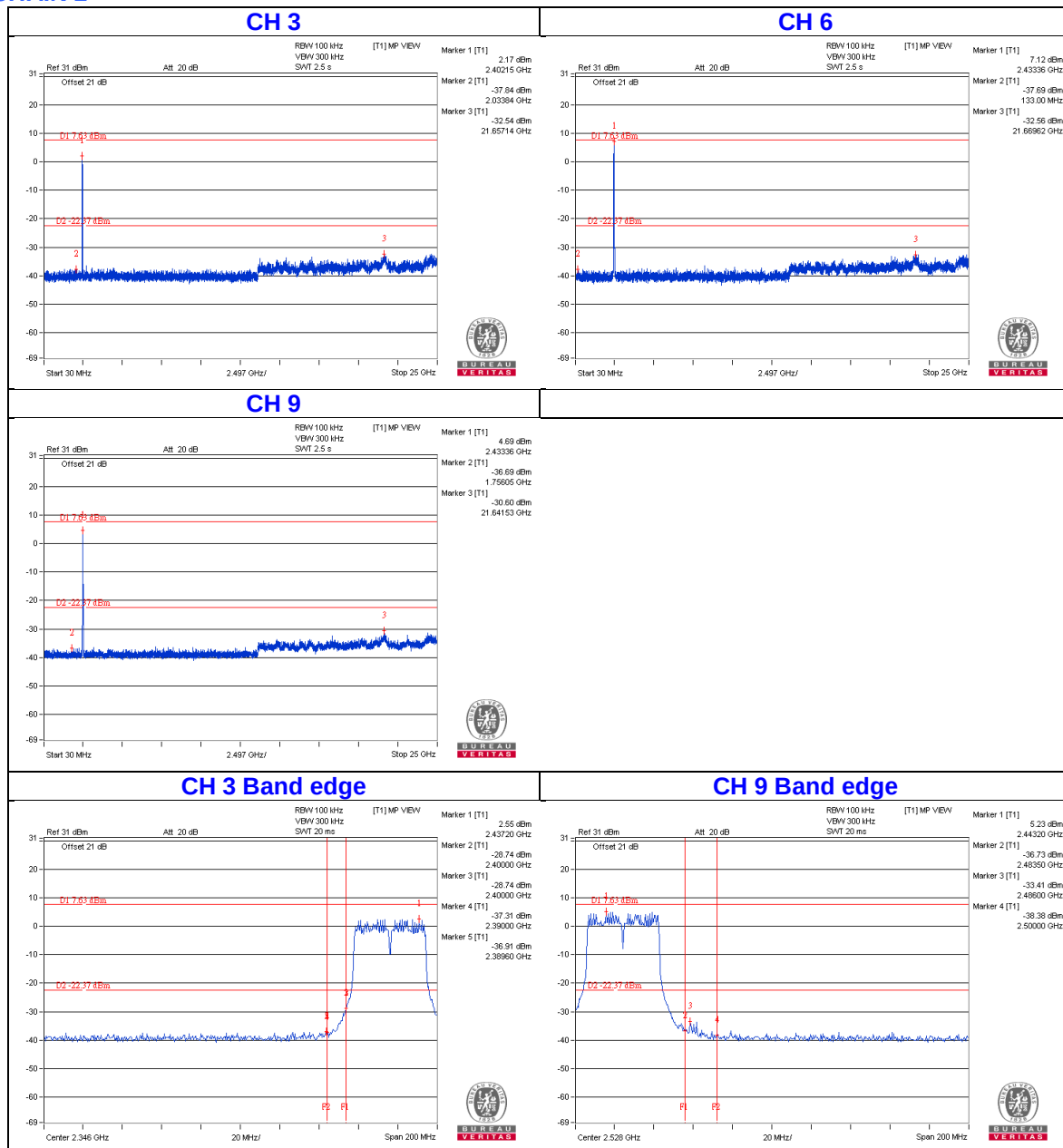
CHAIN 0



CHAIN 1



CHAIN 2



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 accredited and approved according to ISO/IEC 17025.

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

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

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