

FCC TEST REPORT

(WLAN 15.247)

REPORT NO.: RF140313E05C

MODEL NO.: QCNFA34AC

FCC ID: PPD-QCNFA34AC

RECEIVED: Aug. 07, 2014

TESTED: Aug. 19 to 26, 2014

ISSUED: Sep. 12, 2014

APPLICANT: Qualcomm Atheros, Inc.

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ISSUED BY: Bureau Veritas Consumer Products Services
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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140313E05C	Original release	Sep. 12, 2014



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1. CERTIFICATION

PRODUCT: 802.11 a/b/g/n/ac+ BT 4.1 M.2 Type Card
BRAND NAME: Qualcomm Atheros
MODEL NO.: QCNFA34AC
TEST SAMPLE: R&D SAMPLE
APPLICANT: Qualcomm Atheros, Inc.
TESTED: Aug. 19 to 26, 2014
STANDARDS: FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10-2009

The above equipment (Model: QCNFA34AC) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY :  , **DATE:** Sep. 12, 2014
(Lori Chung, Specialist)

APPROVED BY :  , **DATE:** Sep. 12, 2014
(May Chen, Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For 2.4GHz, 2400~2483.5MHz Band

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.247(d) 15.209	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -5.6dB at 906.65MHz
15.203	Antenna Requirement	PASS	Antenna connector is IPEX not a standard connector.

For 5GHz, 5725~5850MHz Band

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.247(d) 15.209	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -5.7dB at 906.64MHz
15.203	Antenna Requirement	PASS	Antenna connector is IPEX not a standard connector.

NOTE:

1. The EUT was operating in 2.400 ~ 2.4835GHz, 5.15~5.35GHz, 5.47~5.725GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 2.400 ~ 2.4835GHz and 5.725~5.850GHz. For the 5.15~5.35GHz, 5.47~5.725GHz and 5.725~5.850GHz RF parameters was recorded in another test report.
2. This report is prepared for FCC class II permissive change. Only conducted emission, radiated emission and Transmit Power were presented in this test report.

2.1 MEASUREMENT UNCERTAINTY

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

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

Measurement	Value
Radiated emissions (30MHz-1GHz)	5.37 dB
Radiated emissions (1GHz -6GHz)	3.72 dB
Radiated emissions (6GHz -18GHz)	4.00 dB
Radiated emissions (18GHz -40GHz)	4.11 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT (WLAN)

PRODUCT	802.11 a/b/g/n/ac+ BT 4.1 M.2 Type Card
MODEL NO.	QCNFA34AC
POWER SUPPLY	DC 3.3V from host equipment
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and 11n (HT20), 11n (HT40) 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 300Mbps 802.11ac: up to 866.7Mbps
OPERATING FREQUENCY	For 15.407 5GHz: 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.5~5.72GHz
	For 15.247 2.4GHz: 2.412 ~ 2.462GHz 5GHz: 5.745 ~ 5.825GHz
NUMBER OF CHANNEL	For 15.407 20 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 10 for 802.11n (HT40), 802.11ac (VHT40) 5 for 802.11ac (VHT80)
	For 15.247 (2.4GHz) 11 for 802.11b, 802.11g, 802.11n (HT20), 802.11n_256QAM(BW20) 7 for 802.11n (HT40), 802.11n_256QAM(BW40)
	For 15.247 (5GHz) 5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)
MAXIMUM OUTPUT POWER	Please see NOTE
ANTENNA TYPE	See item 3.2
ANTENNA CONNECTOR	See item 3.2
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

Note:

1. This report is prepared for FCC class II permissive change. The difference compared with the Report No.: RF140313E05 design is as the following:
 - u Change Diplexier (this component will impact all the WLAN/BT Tx patch).
2. According to above conditions, only conducted emission, radiated emission and Transmit Power need to be performed. And all data was verified to meet the requirements.
3. There are Bluetooth technology and WLAN technology used for the EUT.
4. The modular has two variant designs as following table:

Variant No.	Description
SKU #1	NFA344: This SKU supports 2T2R MIMO.
SKU #2	NFA345: This SKU supports 1T2R.

5. The maximum output power(mW) table as below table:

15.247 (2.4GHz)			
SKU #2(NFA345) - 1Tx		SKU #1 (NFA344) - 2Tx	
802.11b	151.705	802.11b	537.48
802.11g	239.883	802.11g	473.59
802.11n (HT20)	233.884	802.11n (HT20)	435.56
802.11n (HT40)	219.28	802.11n (HT40)	434.582
802.11n_256QAM(BW20)	243.781	802.11n_256QAM(BW20)	446.81
802.11n_256QAM(BW40)	230.144	802.11n_256QAM(BW40)	441.658
15.247 (5GHz)			
SKU #2(NFA345) - 1Tx		SKU #1 (NFA344) - 2Tx	
802.11a	121.06	802.11a	246.953
802.11n (HT20)	128.529	802.11n (HT20)	254.712
802.11n (HT40)	116.95	802.11n (HT40)	220.942
802.11ac (VHT20)	135.207	802.11ac (VHT20)	276.461
802.11ac (VHT40)	109.396	802.11ac (VHT40)	221.135
802.11ac (VHT80)	136.144	802.11ac (VHT80)	296.1
15.407 (5GHz)			
SKU #2(NFA345) - 1Tx		SKU #1 (NFA344) - 2Tx	
802.11a	35.81	802.11a	66.341
802.11n (HT20)	33.266	802.11n (HT20)	65.323
802.11n (HT40)	29.242	802.11n (HT40)	54.017
802.11ac (VHT20)	35.975	802.11ac (VHT20)	66.834
802.11ac (VHT40)	29.717	802.11ac (VHT40)	54.085
802.11ac (VHT80)	28.642	802.11ac (VHT80)	47.064

6. The EUT incorporates a 2T2R function SKU #1 (NFA344), 1T2R function SKU #2 (NFA345).

SKU #1 (NFA344)			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	2TX CDD	2RX
802.11g	6 ~ 54Mbps	2TX CDD	2RX
802.11n (HT20) (2.4GHz)	MCS 0~7	2TX CDD / beamforming	2RX
	MCS 8~15	2TX	2RX
	MCS 0~8, Nss=1 (256QAM)	2TX CDD / beamforming	2RX
	MCS 0~8, Nss=2 (256QAM)	2TX	2RX
802.11n (HT40) (2.4GHz)	MCS 0~7	2TX CDD / beamforming	2RX
	MCS 8~15	2TX	2RX
	MCS 0~9, Nss=1 (256QAM)	2TX CDD / beamforming	2RX
	MCS 0~9, Nss=2 (256QAM)	2TX	2RX
802.11a	6 ~ 54Mbps	2TX CDD / beamforming	2RX
802.11n (HT20) (5GHz)	MCS 0~7	2TX CDD / beamforming	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40) (5GHz)	MCS 0~7	2TX CDD / beamforming	2RX
	MCS 8~15	2TX	2RX
802.11ac (VHT20) (5GHz)	MCS 0~8, Nss=1	2TX CDD / beamforming	2RX
	MCS 0~8, Nss=2	2TX	2RX
802.11ac (VHT40) (5GHz)	MCS 0~9, Nss=1	2TX CDD / beamforming	2RX
	MCS 0~9, Nss=2	2TX	2RX
802.11ac (VHT80) (5GHz)	MCS 0~9, Nss=1	2TX CDD / beamforming	2RX
	MCS 0~9, Nss=2	2TX	2RX

SKU #2 (NFA345)			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	1TX (Fix main port)	1RX (Fix main port) or 2RX
802.11g	6 ~ 54Mbps	1TX (Fix main port)	1RX (Fix main port) or 2RX
802.11n (HT20) (2.4GHz)	MCS 0~7	1TX (Fix main port)	1RX (Fix main port) or 2RX
	MCS 0~8, Nss=1 (256QAM)	1TX (Fix main port)	1RX (Fix main port) or 2RX
802.11n (HT40) (2.4GHz)	MCS 0~7	1TX (Fix main port)	1RX (Fix main port) or 2RX
	MCS 0~9, Nss=1 (256QAM)	1TX (Fix main port)	1RX (Fix main port) or 2RX
802.11a	6 ~ 54Mbps	1TX (Fix main port)	1RX (Fix main port) or 2RX
802.11n (HT20) (5GHz)	MCS 0~7	1TX (Fix main port)	1RX (Fix main port) or 2RX
802.11n (HT40) (5GHz)	MCS 0~7	1TX (Fix main port)	1RX (Fix main port) or 2RX
802.11ac (VHT20) (5GHz)	MCS 0~8, Nss=1	1TX (Fix main port)	1RX (Fix main port) or 2RX
802.11ac (VHT40) (5GHz)	MCS 0~9, Nss=1	1TX (Fix main port)	1RX (Fix main port) or 2RX
802.11ac (VHT80) (5GHz)	MCS 0~9, Nss=1	1TX (Fix main port)	1RX (Fix main port) or 2RX

7. In original report, the EUT was pre-tested under the following modes:

Test Mode	Data rate
Mode A	400ns GI
Mode B	800ns GI

From the above modes, the worst case was found in **Mode B**. Therefore only the test data of the mode was recorded in this report.

8. The emission of the simultaneous operation (WiFi <5GHz> & Bluetooth) have been evaluated and no non-compliance found. The detail combinations of transmitters / frequencies / modes as below table

Mode	Available Channel	Tested Channel	Modulation Technology
5 GHz (802.11ac(VHT20)) + Bluetooth (GFSK)	149 to 165	157	OFDM
	0 to 78	78	FHSS

9. WLAN/BT coexistence mode:

◆ **NFA344:**

2TX 5GHz WLAN (Main + Aux) + BT (Main) concurrent.

2TX 2.4GHz WLAN+ BT timely shared at Main antenna.

◆ **NFA345:**

1TX 2.4GHz WLAN+ BT timely shared at Main antenna.

1TX 5GHz WLAN+ BT concurrent

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

3.2 DESCRIPTION OF ANTENNA

The antenna provided to the EUT, please refer to the following table:

Brand	Model	Antenna Type	2.4G Gain with cable loss (dBi)	5G Gain with cable loss (dBi)	2.4G Cable Loss (dBi)	5G Cable Loss (dBi)	Connector Type	Cable Length (mm)
WNC	81-EBJ15.005	PIFA	3.62	Band 1&2: 3.08 Band 3: 4.76 Band 4: 4.76	1.15	Band1&2: 1.70 Band 3: 1.74 Band 4: 1.79	IPEX	300

Note: 1. Above antenna gains of antenna are Total (H+V).

2. All of antenna can be application for WLAN and Bluetooth.

3.3 DESCRIPTION OF TEST MODES

Operated in 2400 ~ 2483.5MHz band:

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

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

7 channels are provided for 802.11n (HT40):

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

Operated in 5725 ~ 5850MHz band:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745 MHz	161	5805 MHz
153	5765 MHz	165	5825 MHz
157	5785 MHz		

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

CHANNEL	FREQUENCY
151	5755 MHz
159	5795 MHz

1 channel is provided for 802.11ac (VHT80):

CHANNEL	FREQUENCY
155	5775 MHz

3.3.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

WLAN MODE				
EUT CONFIGURE MODE	APPLICABLE TO			DESCRIPTION
	UE < 1G	UE ≥ 1G	APCM	
1	-	√	√	SKU #2(NFA345) - 1TX
2	√	√	√	SKU #1(NFA344) - 2TX

Where **UE < 1G**: Unwanted Emission below 1GHz **UE ≥ 1G**: Unwanted Emission above 1GHz

APCM: Antenna Port Conducted Measurement

- Note
1. In original, the EUT's antenna had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.
 2. In Unwanted Emission -Conducted measurement (below 1GHz) mode, Mode 2, the worse case one, was chosen for final test.
 3. In Unwanted Emission-Radiated measurement mode, Mode 2, the worse case one, was chosen for final test.

RADIATED EMISSION TEST (BELOW 1 GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
For 2.4 GHz 802.11n_256QAM(BW20)	1 to 11	6	OFDM	6.5
For 5 GHz 802.11ac (VHT20)	149 to 165	157	OFDM	6.5

RADIATED EMISSION TEST (ABOVE 1 GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1
802.11g	1 to 11	1, 6, 11	OFDM	6
For 2.4 GHz 802.11n_256QAM(BW20)	1 to 11	1, 6, 11	OFDM	6.5
For 2.4 GHz 802.11n_256QAM(BW40)	3 to 9	3, 6, 9	OFDM	13.5
802.11a	149 to 165	149, 157, 165	OFDM	6
For 5 GHz 802.11ac (VHT20)	149 to 165	149, 157, 165	OFDM	6.5
For 5 GHz 802.11ac (VHT40)	151 to 159	151, 159	OFDM	13.5
For 5 GHz 802.11ac (VHT80)	155	155	OFDM	29.3

ANTENNA PORT CONDUCTED MEASUREMENT:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1
802.11g	1 to 11	1, 6, 11	OFDM	6
For 2.4 GHz 802.11n (HT20)	1 to 11	1, 6, 11	OFDM	6.5
For 2.4 GHz 802.11n (HT40)	3 to 9	3, 6, 9	OFDM	13.5
For 2.4 GHz 802.11n_256QAM(BW20)	1 to 11	1, 6, 11	OFDM	6.5
For 2.4 GHz 802.11n_256QAM(BW40)	3 to 9	3, 6, 9	OFDM	13.5
802.11a	149 to 165	149, 157, 165	OFDM	6
For 5 GHz 802.11n (HT20)	149 to 165	149, 157, 165	OFDM	6.5
For 5 GHz 802.11n (HT40)	151 to 159	151, 159	OFDM	13.5
For 5 GHz 802.11ac (VHT20)	149 to 165	149, 157, 165	OFDM	6.5
For 5 GHz 802.11ac (VHT40)	151 to 159	151, 159	OFDM	13.5
For 5 GHz 802.11ac (VHT80)	155	155	OFDM	29.3

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE<1G	23deg. C, 69%RH	120Vac, 60Hz	Gary Cheng
RE ³ 1G	25deg. C, 69%RH 23deg. C, 72%RH	120Vac, 60Hz	Gary Cheng
APCM	25deg. C, 60%RH	120Vac, 60Hz	James Chan

3.4 DUTY CYCLE OF TEST SIGNAL

For 2.4GHz

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 = 56.425 ms/56.525 ms = 0.998

802.11g: Duty cycle = 9.395 ms/9.495 ms = 0.989

802.11n (HT20): Duty cycle = 8.69 ms/8.8 ms = 0.988

802.11n (HT40): Duty cycle = 4.21 ms/4.3125 ms = 0.976

802.11n_256QAM(BW20) : Duty cycle = 8.69 ms/8.8 ms = 0.988

802.11n_256QAM(BW40) : Duty cycle = 4.21 ms/4.3125 ms = 0.976



For 5GHz

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.

802.11a: Duty cycle = $9.395 \text{ ms} / 9.49 \text{ ms} = 0.99$

802.11n (HT20): Duty cycle = $8.705 \text{ ms} / 8.795 \text{ ms} = 0.99$

802.11n (HT40): Duty cycle = $4.2075 \text{ ms} / 4.3 \text{ ms} = 0.978$

802.11ac(VHT20) : Duty cycle = $8.705 \text{ ms} / 8.795 \text{ ms} = 0.99$

802.11ac(VHT40) : Duty cycle = $4.2075 \text{ ms} / 4.3 \text{ ms} = 0.978$

802.11ac(VHT80) : Duty cycle = $1.96875 \text{ ms} / 2.0575 \text{ ms} = 0.957$



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)

558074 D01 DTS Meas Guidance v03r02

662911 D01 Multiple Transmitter Output v02r01

644545 D01 Guidance for IEEE 802.11ac v01r02

ANSI C63.10-2009

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



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3.6 DESCRIPTION OF SUPPORT UNITS

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

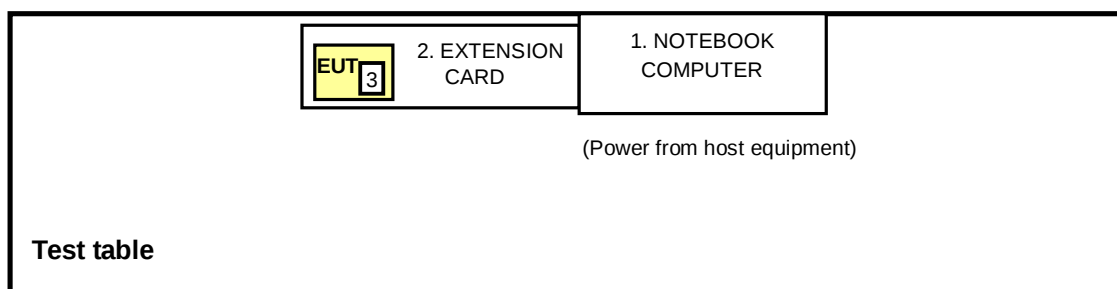
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	E6420	H62T3R1	FCC DoC
2	EXTENSION CARD	Qualcomm Atheros	HPCBM194-0	NA	NA
3	50ohm terminal resistor	NA	NA	NA	NA

No.	Signal cable description
1	NA
2	NA
3	NA

Note: The power cords of the above support units were unshielded (1.8m).

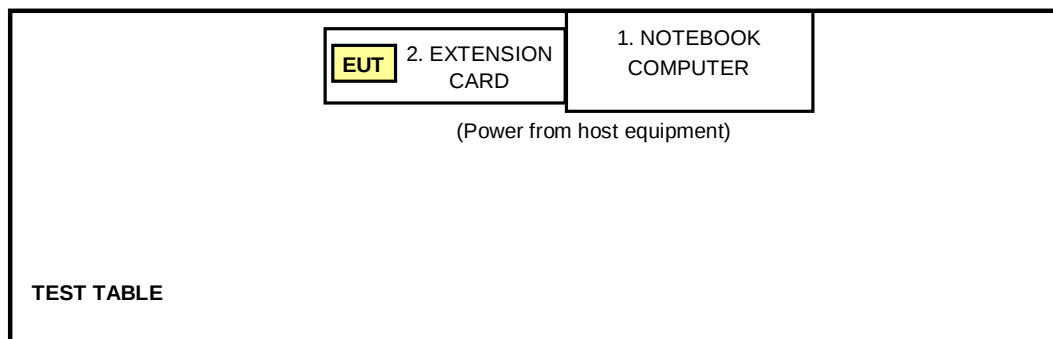
3.7 CONFIGURATION OF SYSTEM UNDER TEST

For Unwanted Emission test (Radiated Measurement)



Note: Support unit 3 is 50ohm terminal resistor.

For other test items:



4. TEST TYPES AND RESULTS (FOR 2.4GHz, 2.400 ~ 2.4835GHz Band)

4.1 CONDUCTED OUTPUT POWER MEASUREMENT

4.1.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

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

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

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

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

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

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

4.1.2 INSTRUMENTS

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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date :Aug. 25, 2014

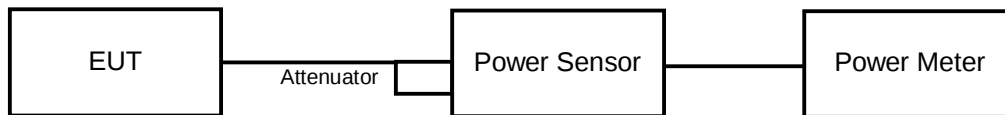
4.1.3 TEST PROCEDURES

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

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



4.1.6 EUT OPERATING CONDITIONS

The software (QCRT Version:3.0.29.0) provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.1.7 TEST RESULTS (MODE 1)

FOR PEAK POWER

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	148.936	21.73	30	PASS
6	2437	151.705	21.81	30	PASS
11	2462	147.911	21.70	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	239.883	23.80	30	PASS
6	2437	223.357	23.49	30	PASS
11	2462	204.174	23.10	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	233.884	23.69	30	PASS
6	2437	224.388	23.51	30	PASS
11	2462	156.315	21.94	30	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
3	2422	120.781	20.82	30	PASS
6	2437	219.28	23.41	30	PASS
9	2452	112.46	20.51	30	PASS



A D T

802.11n_256QAM(BW20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	243.781	23.87	30	PASS
6	2437	232.809	23.67	30	PASS
11	2462	182.39	22.61	30	PASS

802.11n_256QAM(BW40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
3	2422	129.718	21.13	30	PASS
6	2437	230.144	23.62	30	PASS
9	2452	117.761	20.71	30	PASS

FOR AVERAGE POWER

802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	86.497	19.37
6	2437	87.902	19.44
11	2462	87.700	19.43

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	69.502	18.42
6	2437	68.865	18.38
11	2462	54.576	17.37

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	66.222	18.21
6	2437	65.917	18.19
11	2462	39.902	16.01

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
3	2422	33.189	15.21
6	2437	64.714	18.11
9	2452	25.177	14.01

802.11n_256QAM(BW20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	67.143	18.27
6	2437	68.707	18.37
11	2462	40.926	16.12

802.11n_256QAM(BW40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
3	2422	33.651	15.27
6	2437	66.222	18.21
9	2452	25.468	14.06

4.1.8 TEST RESULTS (MODE 2)

FOR PEAK POWER

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	24.44	21.92	433.568	26.37	29.37	PASS
6	2437	24.46	24.12	537.48	27.30	29.37	PASS
11	2462	23.50	24.21	487.505	26.88	29.37	PASS

NOTE: Directional gain = 3.62dBi + 10log(2) = 6.63dBi > 6dBi , therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.63-6) = 29.37dBm.

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	21.17	21.15	261.235	24.17	29.37	PASS
6	2437	23.56	23.92	473.59	26.75	29.37	PASS
11	2462	20.36	20.15	212.157	23.27	29.37	PASS

NOTE: Directional gain = 3.62dBi + 10log(2) = 6.63dBi > 6dBi , therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.63-6) = 29.37dBm.

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	18.67	18.24	140.302	21.47	29.37	PASS
6	2437	23.34	23.42	435.56	26.39	29.37	PASS
11	2462	18.16	18.72	139.937	21.46	29.37	PASS

NOTE: Directional gain = 3.62dBi + 10log(2) = 6.63dBi > 6dBi , therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.63-6) = 29.37dBm.

802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
3	2422	17.21	17.16	104.602	20.20	29.37	PASS
6	2437	23.31	23.43	434.582	26.38	29.37	PASS
9	2452	15.34	16.14	75.313	18.77	29.37	PASS

NOTE: Directional gain = 3.62dBi + 10log(2) = 6.63dBi > 6dBi , therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.63-6) = 29.37dBm.

802.11n_256QAM(BW20)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	18.91	18.35	146.195	21.65	29.37	PASS
6	2437	23.40	23.58	446.81	26.50	29.37	PASS
11	2462	18.68	18.82	149.998	21.76	29.37	PASS

NOTE: Directional gain = 3.62dBi + 10log(2) = 6.63dBi > 6dBi , therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.63-6) = 29.37dBm.

802.11n_256QAM(BW40)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
3	2422	17.38	17.22	107.425	20.31	29.37	PASS
6	2437	23.37	23.51	441.658	26.45	29.37	PASS
9	2452	15.48	16.29	77.878	18.91	29.37	PASS

NOTE: Directional gain = 3.62dBi + 10log(2) = 6.63dBi > 6dBi , therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.63-6) = 29.37dBm.

FOR AVERAGE POWER

802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	20.50	19.92	210.377	23.23
6	2437	20.60	20.00	214.815	23.32
11	2462	19.30	20.00	185.114	22.67

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	15.39	14.92	65.640	18.17
6	2437	18.13	18.31	132.777	21.23
11	2462	14.30	14.25	53.522	17.29

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	12.79	12.34	36.151	15.58
6	2437	18.05	18.33	131.903	21.20
11	2462	12.24	12.51	34.573	15.39

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
3	2422	10.81	10.73	23.880	13.78
6	2437	17.41	17.49	111.186	20.46
9	2452	9.51	9.61	18.074	12.57

802.11n_256QAM(BW20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	12.84	12.44	36.770	15.65
6	2437	18.26	18.42	136.490	21.35
11	2462	12.33	12.63	35.423	15.49

802.11n_256QAM(BW40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
3	2422	10.92	10.87	24.577	13.91
6	2437	17.41	17.55	111.966	20.49
9	2452	9.67	9.76	18.730	12.73

4.2 UNWANTED EMISSION MEASUREMENT (RADIATED VERSUS CONDUCTED)

4.2.1 LIMITS OF UNWANTED EMISSION MEASUREMENT

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

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

NOTE:

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

4.2.2 TEST INSTRUMENTS

For Below 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	July 21, 2014	July 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 05, 2013	Oct. 04, 2014
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 18, 2013	Nov. 17, 2014
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKA-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5. The VCCI Site Registration No. is G-137.
6. The CANADA Site Registration No. is IC 7450H-2.
7. Tested Date: Aug. 19, 2014

**A D T****For Above 1GHz test:**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Aug. 11, 2014	Aug. 10, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 06, 2013	Oct. 05, 2014
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Dec. 06, 2013	Dec. 05, 2014
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 29, 2013	Oct. 28, 2014
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
- 3 The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
- 5 The CANADA Site Registration No. is IC 7450H-3.
- 6 Tested Date: Aug. 26, 2014

4.2.3 TEST PROCEDURES

Following FCC KDB 558074 D01 DTS Meas. Guidance :
Radiated versus Conducted Measurements.

The unwanted emission limits in both the restricted and non-restricted bands are based on antenna-port conducted measurements in conjunction with cabinet emissions tests are permitted to demonstrate compliance.

The following steps was performed:

- a. Cabinet emissions measurements. Radiated measurement was performed to ensure that cabinet emissions are below the emission limits. For the cabinet-emission measurements the antenna was replaced by a termination matching the nominal impedance of the antenna.
- b. Conducted tests was performed using equipment that matches the nominal impedance of the antenna assembly used with the EUT
- c. EIRP calculation. A value representative of an upper bound on out-of-band antenna gain (in dBi) shall be added to the measured antenna-port conducted emission power to compute EIRP within the specified measurement bandwidth. (For emissions in the restricted bands, additional calculations are required to convert EIRP to field strength at the specified distance.) The upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands or 2 dBi, whichever is greater
- d. EIRP adjustments for multiple outputs. (Follow the procedures specified in FCC KDB Publication 662911)
- e. For all of Radiation emission test
 - e-1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
 - e-2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
 - e-3. 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.
 - e-4. 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-5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
 - e-6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

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.

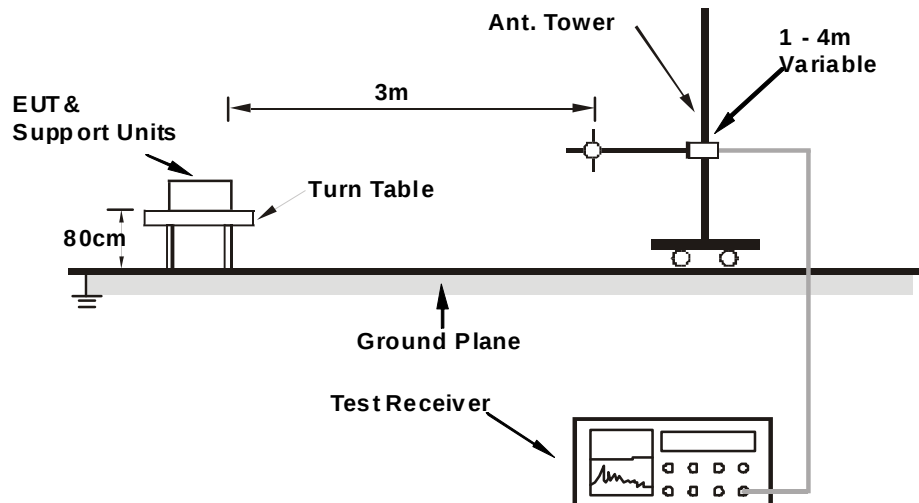
4.2.4 DEVIATION FROM TEST STANDARD

No deviation

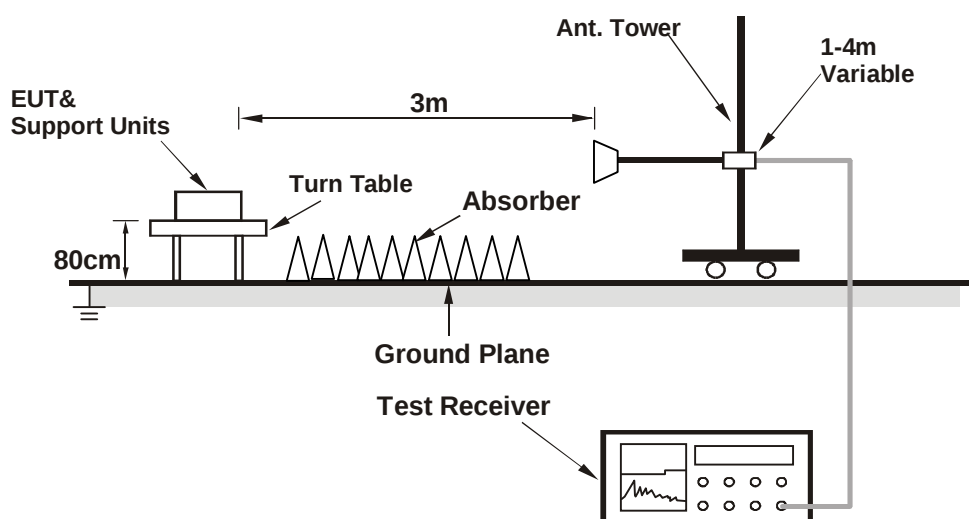
4.2.5 TEST SETUP

For radiated configuration:

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For conducted configuration:



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

4.2.6 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit 1 (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “QCRT Version:3.0.29.0” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.2.7 TEST RESULTS (MODE 2, RADIATED MEASUREMENT)

Radiated versus Conducted Measurement	
☐ Conducted measurement	☒ Radiated measurement
<u>For Radiated measurement:</u> The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation) <u>For Conducted measurement:</u> The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).	

Radiated test was done with 50ohm terminator on antenna port

BELOW 1GHz WORST-CASE DATA

802.11n_256QAM(BW20)

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	54.11	25.3 QP	40.0	-14.7	2.00 H	93	38.87	-13.55
2	166.05	35.1 QP	43.5	-8.4	2.00 H	118	48.59	-13.49
3	233.20	38.1 QP	46.0	-7.9	1.00 H	11	53.56	-15.46
4	439.65	32.4 QP	46.0	-13.6	2.00 H	4	40.84	-8.44
5	666.47	31.4 QP	46.0	-14.6	1.00 H	42	35.41	-3.99
6	770.70	33.2 QP	46.0	-12.8	2.00 H	107	34.85	-1.63
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	49.42	22.9 QP	40.0	-17.1	1.00 V	32	36.42	-13.52
2	166.56	24.7 QP	43.5	-18.8	2.00 V	202	38.22	-13.52
3	311.74	26.3 QP	46.0	-19.7	1.50 V	181	38.30	-11.98
4	428.30	26.6 QP	46.0	-19.4	2.00 V	133	35.37	-8.75
5	663.85	32.3 QP	46.0	-13.7	1.50 V	130	36.36	-4.03
6	906.65	40.4 QP	46.0	-5.6	1.50 V	116	40.17	0.23

REMARKS:

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

ABOVE 1GHz DATA

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4824.00	49.2 PK	74.0	-24.8	1.55 H	273	10.31	38.89
2	4824.00	42.8 AV	54.0	-11.2	1.55 H	273	3.91	38.89
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4824.00	48.8 PK	74.0	-25.2	1.00 V	180	9.91	38.89
2	4824.00	42.1 AV	54.0	-11.9	1.00 V	180	3.21	38.89

REMARKS:

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

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	4874.00	50.6 PK	74.0	-23.4	1.49 H	260	11.55	39.05
2	4874.00	45.6 AV	54.0	-8.4	1.49 H	260	6.55	39.05
3	7311.00	53.5 PK	74.0	-20.5	1.30 H	284	7.08	46.42
4	7311.00	42.4 AV	54.0	-11.6	1.30 H	284	-4.02	46.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4874.00	50.1 PK	74.0	-23.9	1.04 V	188	11.05	39.05
2	4874.00	43.5 AV	54.0	-10.5	1.04 V	188	4.45	39.05
3	7311.00	53.0 PK	74.0	-21.0	1.01 V	141	6.58	46.42
4	7311.00	41.2 AV	54.0	-12.8	1.01 V	141	-5.22	46.42

REMARKS:

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

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	4924.00	48.3 PK	74.0	-25.7	1.53 H	274	9.09	39.21
2	4924.00	42.4 AV	54.0	-11.6	1.53 H	274	3.19	39.21
3	7386.00	51.8 PK	74.0	-22.2	1.33 H	287	5.35	46.45
4	7386.00	40.1 AV	54.0	-13.9	1.33 H	287	-6.35	46.45
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4924.00	46.4 PK	74.0	-27.6	1.00 V	180	7.19	39.21
2	4924.00	40.2 AV	54.0	-13.8	1.00 V	180	0.99	39.21
3	7386.00	51.0 PK	74.0	-23.0	1.00 V	133	4.55	46.45
4	7386.00	39.2 AV	54.0	-14.8	1.00 V	133	-7.25	46.45

REMARKS:

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

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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	4824.00	46.3 PK	74.0	-27.7	1.64 H	264	7.41	38.89
2	4824.00	35.4 AV	54.0	-18.6	1.64 H	264	-3.49	38.89
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4824.00	47.2 PK	74.0	-26.8	1.00 V	194	8.31	38.89
2	4824.00	35.4 AV	54.0	-18.6	1.00 V	194	-3.49	38.89

REMARKS:

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

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	4874.00	46.3 PK	74.0	-27.7	1.59 H	275	7.25	39.05
2	4874.00	35.0 AV	54.0	-19.0	1.59 H	275	-4.05	39.05
3	7311.00	53.4 PK	74.0	-20.6	1.37 H	300	6.98	46.42
4	7311.00	42.1 AV	54.0	-11.9	1.37 H	300	-4.32	46.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4874.00	46.4 PK	74.0	-27.6	1.00 V	180	7.35	39.05
2	4874.00	35.2 AV	54.0	-18.8	1.00 V	180	-3.85	39.05
3	7311.00	51.3 PK	74.0	-22.7	1.00 V	137	4.88	46.42
4	7311.00	42.0 AV	54.0	-12.0	1.00 V	137	-4.42	46.42

REMARKS:

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

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	4924.00	45.8 PK	74.0	-28.2	1.68 H	249	6.59	39.21
2	4924.00	35.1 AV	54.0	-18.9	1.68 H	249	-4.11	39.21
3	7386.00	53.9 PK	74.0	-20.1	1.33 H	312	7.45	46.45
4	7386.00	42.5 AV	54.0	-11.5	1.33 H	312	-3.95	46.45
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4924.00	47.2 PK	74.0	-26.8	1.00 V	199	7.99	39.21
2	4924.00	35.0 AV	54.0	-19.0	1.00 V	199	-4.21	39.21
3	7386.00	51.4 PK	74.0	-22.6	1.06 V	153	4.95	46.45
4	7386.00	42.4 AV	54.0	-11.6	1.06 V	153	-4.05	46.45

REMARKS:

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

802.11n_256QAM(BW20)

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	4824.00	45.3 PK	74.0	-28.7	1.76 H	268	6.41	38.89
2	4824.00	34.2 AV	54.0	-19.8	1.76 H	268	-4.69	38.89
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4824.00	46.3 PK	74.0	-27.7	1.05 V	181	7.41	38.89
2	4824.00	33.4 AV	54.0	-20.6	1.05 V	181	-5.49	38.89

REMARKS:

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

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	4874.00	46.3 PK	74.0	-27.7	1.53 H	226	7.25	39.05
2	4874.00	34.2 AV	54.0	-19.8	1.53 H	226	-4.85	39.05
3	7311.00	53.3 PK	74.0	-20.7	1.29 H	286	6.88	46.42
4	7311.00	42.1 AV	54.0	-11.9	1.29 H	286	-4.32	46.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4874.00	47.6 PK	74.0	-26.4	1.01 V	194	8.55	39.05
2	4874.00	33.4 AV	54.0	-20.6	1.01 V	194	-5.65	39.05
3	7311.00	51.6 PK	74.0	-22.4	1.04 V	136	5.18	46.42
4	7311.00	41.3 AV	54.0	-12.7	1.04 V	136	-5.12	46.42

REMARKS:

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

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	4924.00	45.6 PK	74.0	-28.4	1.77 H	259	6.39	39.21
2	4924.00	34.5 AV	54.0	-19.5	1.77 H	259	-4.71	39.21
3	7386.00	53.0 PK	74.0	-21.0	1.23 H	284	6.55	46.45
4	7386.00	42.1 AV	54.0	-11.9	1.23 H	284	-4.35	46.45
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4924.00	46.8 PK	74.0	-27.2	1.02 V	180	7.59	39.21
2	4924.00	33.8 AV	54.0	-20.2	1.02 V	180	-5.41	39.21
3	7386.00	47.2 PK	74.0	-26.8	1.07 V	192	0.75	46.45
4	7386.00	33.0 AV	54.0	-21.0	1.07 V	192	-13.45	46.45

REMARKS:

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

802.11n_256QAM(BW40)

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	4844.00	47.2 PK	74.0	-26.8	1.60 H	234	8.25	38.95
2	4844.00	35.4 AV	54.0	-18.6	1.60 H	234	-3.55	38.95
3	7266.00	52.2 PK	74.0	-21.8	1.33 H	278	5.78	46.42
4	7266.00	40.3 AV	54.0	-13.7	1.33 H	278	-6.12	46.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4844.00	46.2 PK	74.0	-27.8	1.05 V	165	7.25	38.95
2	4844.00	34.1 AV	54.0	-19.9	1.05 V	165	-4.85	38.95
3	7266.00	51.0 PK	74.0	-23.0	1.07 V	112	4.58	46.42
4	7266.00	40.3 AV	54.0	-13.7	1.07 V	112	-6.12	46.42

REMARKS:

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

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	4874.00	46.3 PK	74.0	-27.7	1.65 H	259	7.25	39.05
2	4874.00	35.4 AV	54.0	-18.6	1.65 H	259	-3.65	39.05
3	7311.00	53.2 PK	74.0	-20.8	1.30 H	282	6.78	46.42
4	7311.00	41.0 AV	54.0	-13.0	1.30 H	282	-5.42	46.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4874.00	47.2 PK	74.0	-26.8	1.02 V	176	8.15	39.05
2	4874.00	34.3 AV	54.0	-19.7	1.02 V	176	-4.75	39.05
3	7311.00	52.3 PK	74.0	-21.7	1.04 V	129	5.88	46.42
4	7311.00	42.0 AV	54.0	-12.0	1.04 V	129	-4.42	46.42

REMARKS:

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

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	4904.00	46.7 PK	74.0	-27.3	1.61 H	223	7.55	39.15
2	4904.00	35.1 AV	54.0	-18.9	1.61 H	223	-4.05	39.15
3	7356.00	52.6 PK	74.0	-21.4	1.32 H	273	6.16	46.44
4	7356.00	40.7 AV	54.0	-13.3	1.32 H	273	-5.74	46.44
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4904.00	46.0 PK	74.0	-28.0	1.06 V	162	6.85	39.15
2	4904.00	33.8 AV	54.0	-20.2	1.06 V	162	-5.35	39.15
3	7356.00	50.7 PK	74.0	-23.3	1.10 V	117	4.26	46.44
4	7356.00	40.1 AV	54.0	-13.9	1.10 V	117	-6.34	46.44

REMARKS:

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



A D T

4.2.8 TEST RESULTS (MODE 1, CONDUCTED MEASUREMENT)

Radiated versus Conducted Measurement	
☒ Conducted measurement	☐ Radiated measurement
<u>For Radiated measurement:</u> The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation) <u>For Conducted measurement:</u> The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).	

Conducted Measurement Factor
a. The antenna gain will be used. (antenna gain = 3.62dBi) b. For the out of band spurious the gain for the specific band may have been used rather than the highest gain across all bands. c. For the band edge the gain for the specific band may have been used. d. In restricted bands below 1000 MHz, add upper bound on ground plane reflection: For $f = 30 - 1000$ MHz, add 4.7 dB. Note: The conducted emission test was considered some factor to compute test result.

ABOVE 1GHz DATA

802.11b - Channel 1

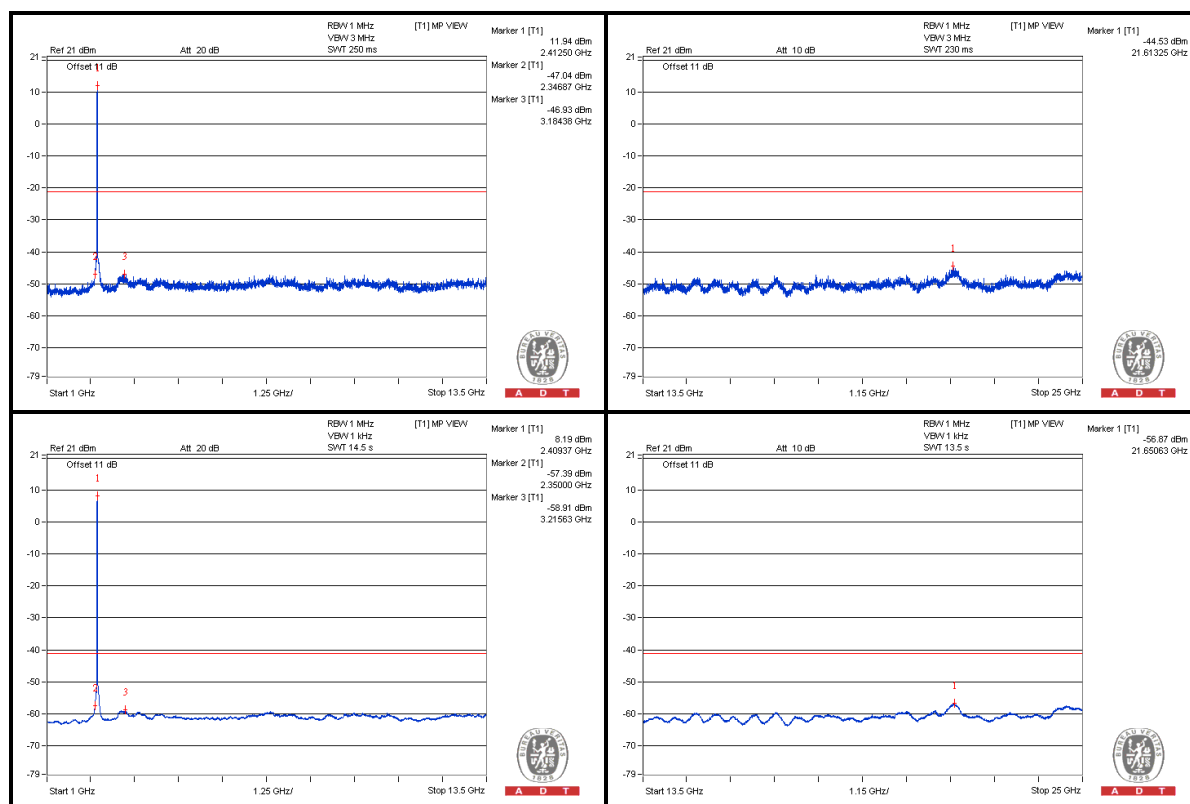
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	1609.375 PK	46.42	74	-27.58	-52.46	3.62	-48.84
2	1606.25 AV	35.96	54	-18.04	-62.92	3.62	-59.3
3	4825 PK	47.46	74	-26.54	-51.42	3.62	-47.8
4	4825 AV	37.53	54	-16.47	-61.35	3.62	-57.73

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



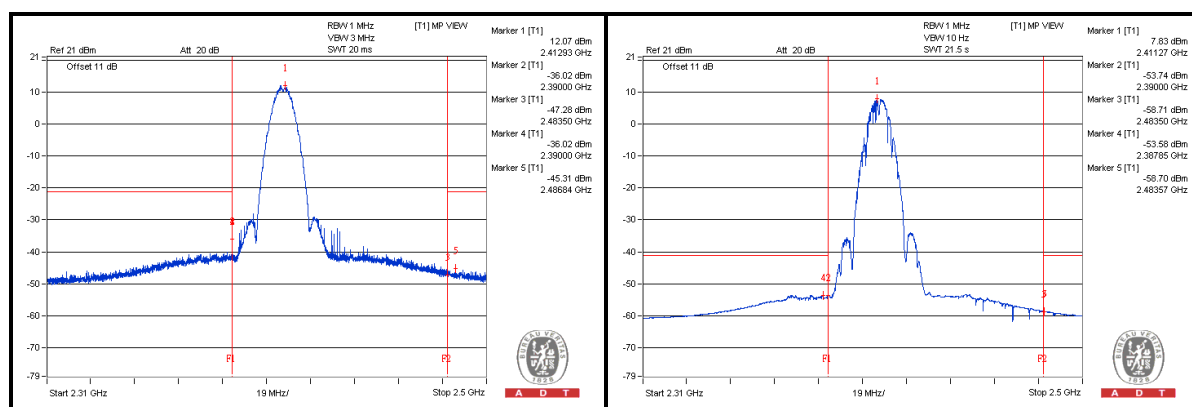
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2390 PK	62.86	74	-11.14	-36.02	3.62	-32.4
2	2387.85 AV	45.3	54	-8.7	-53.58	3.62	-49.96
3	2486.84 PK	53.57	74	-20.43	-45.31	3.62	-41.69
4	2483.57 AV	40.18	54	-13.82	-58.7	3.62	-55.08

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



802.11b - Channel 6

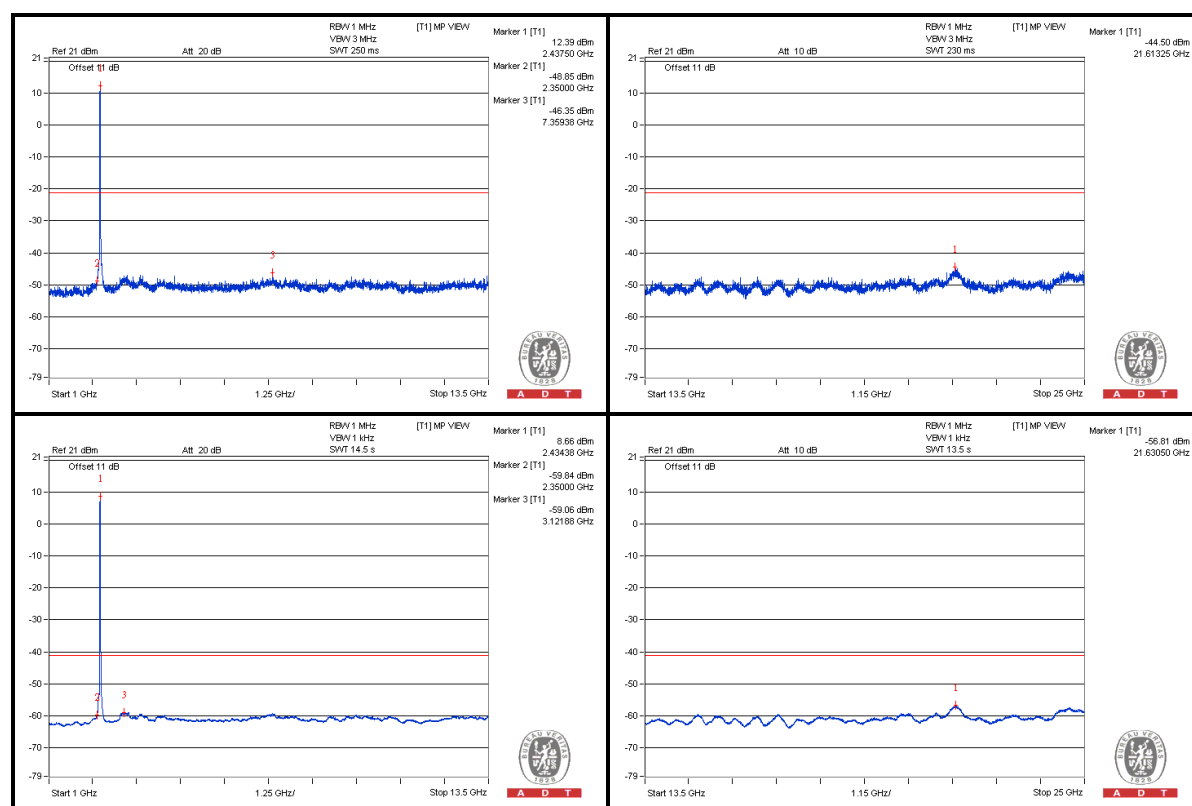
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	1625 PK	45.73	74	-28.27	-53.15	3.62	-49.53
2	1625 AV	35.93	54	-18.07	-62.95	3.62	-59.33
3	4875 PK	48.33	74	-25.67	-50.55	3.62	-46.93
4	4875 AV	37.28	54	-16.72	-61.6	3.62	-57.98
5	7309.375 PK	49.58	74	-24.42	-49.3	3.62	-45.68
6	7312.5 AV	38.83	54	-15.17	-60.05	3.62	-56.43

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



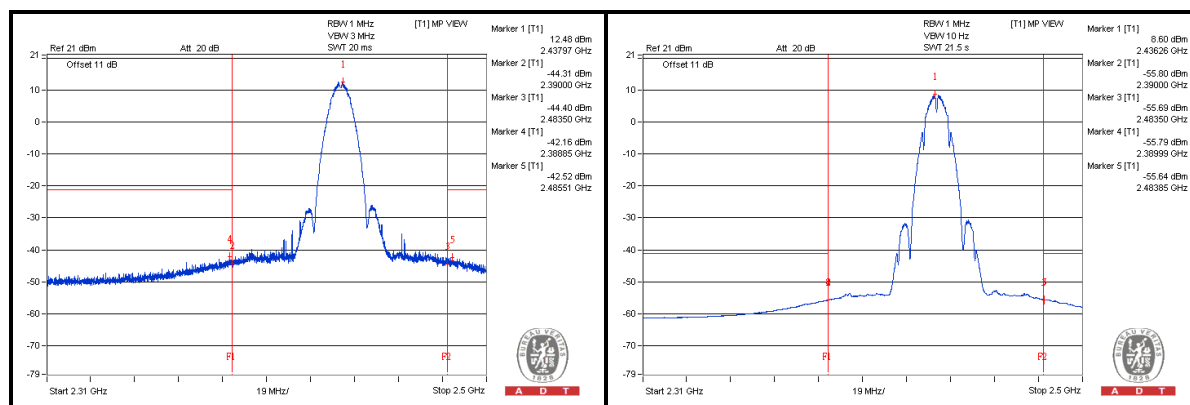
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2388.85 PK	56.72	74	-17.28	-42.16	3.62	-38.54
2	2389.99 AV	43.09	54	-10.91	-55.79	3.62	-52.17
3	2485.51 PK	56.36	74	-17.64	-42.52	3.62	-38.9
4	2483.85 AV	43.24	54	-10.76	-55.64	3.62	-52.02

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



802.11b - Channel 11

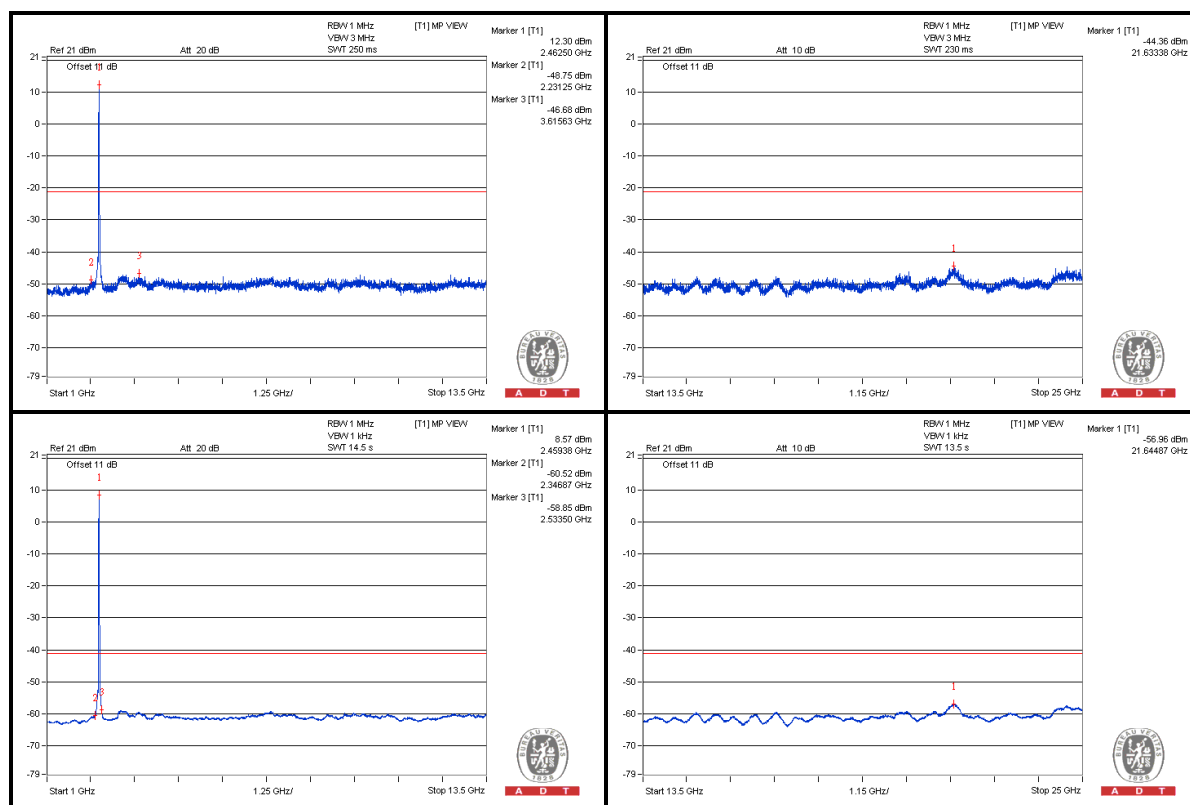
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	4925 PK	47.22	74	-26.78	-51.66	3.62	-48.04
2	4925 AV	37.25	54	-16.75	-61.63	3.62	-58.01
3	7387.5 PK	50.2	74	-23.8	-48.68	3.62	-45.06
4	7384.375 AV	39.13	54	-14.87	-59.75	3.62	-56.13

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



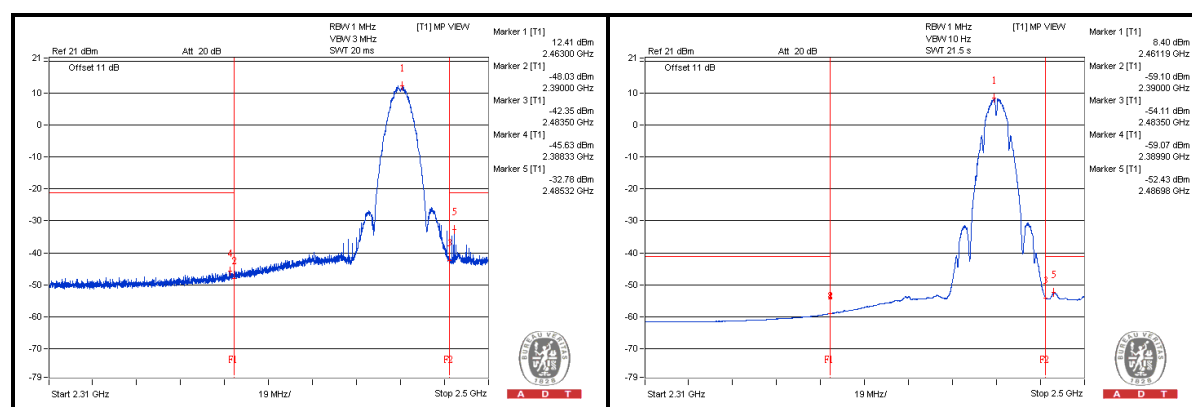
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2388.33 PK	53.25	74	-20.75	-45.63	3.62	-42.01
2	2389.89 AV	39.81	54	-14.19	-59.07	3.62	-55.45
3	2485.32 PK	66.1	74	-7.9	-32.78	3.62	-29.16
4	2486.99 AV	46.45	54	-7.55	-52.43	3.62	-48.81

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



802.11g - Channel 1

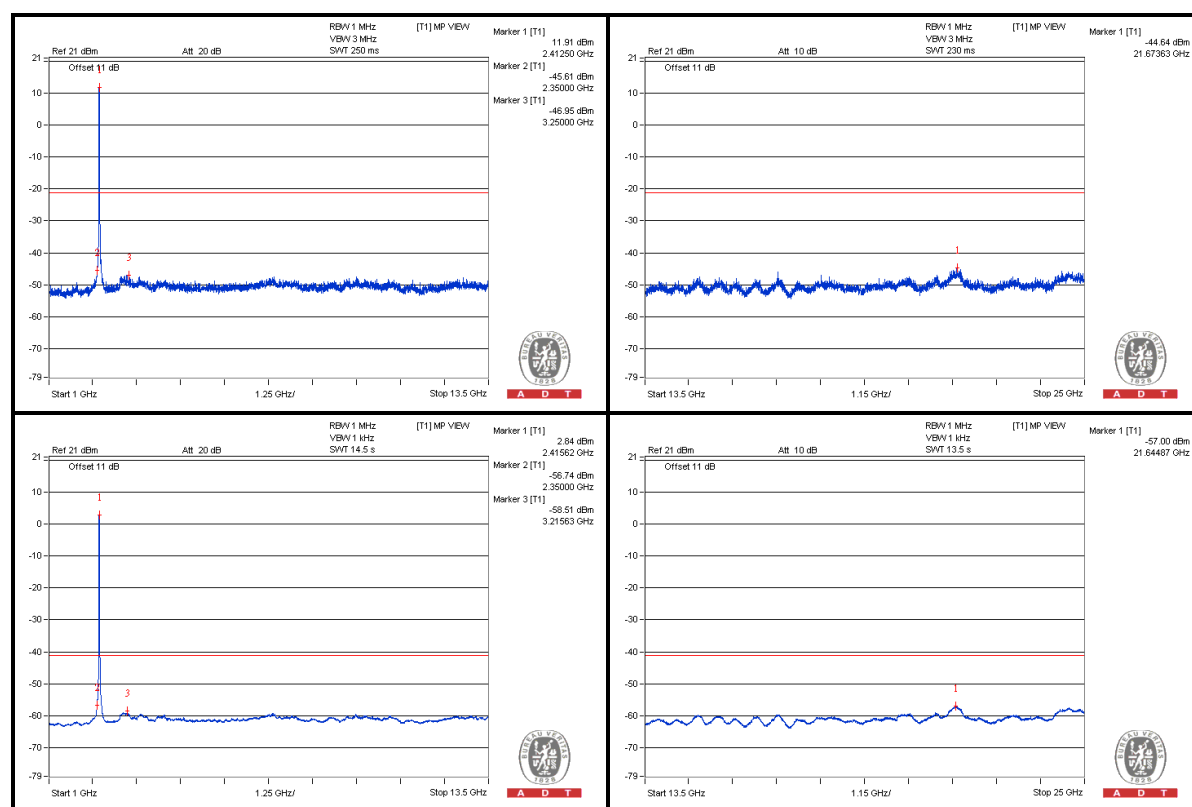
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	1609.375 PK	45.97	74	-28.03	-52.91	3.62	-49.29
2	1606.25 AV	36.06	54	-17.94	-62.82	3.62	-59.2
3	4825 PK	48.71	74	-25.29	-50.17	3.62	-46.55
4	4825 AV	38.13	54	-15.87	-60.75	3.62	-57.13

Note :

Emission Level (dBUV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



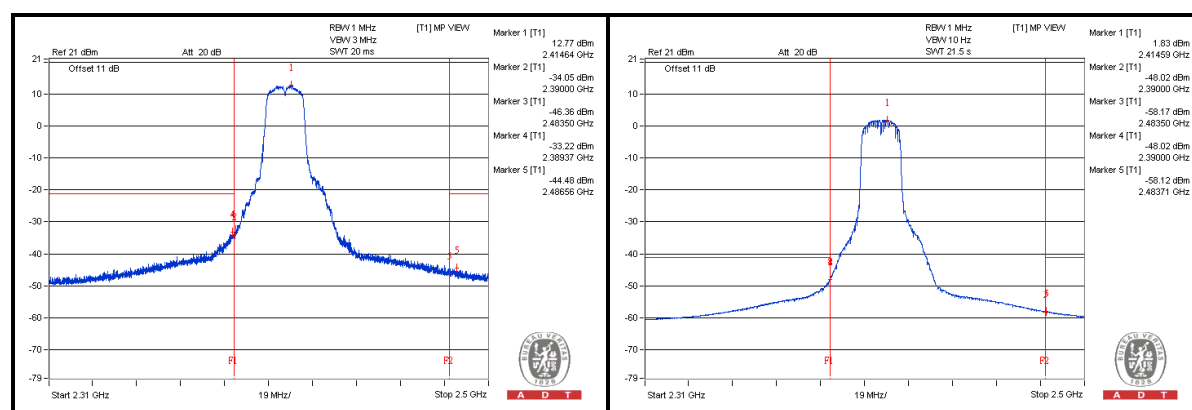
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2389.37 PK	65.66	74	-8.34	-33.22	3.62	-29.6
2	2390 AV	50.86	54	-3.14	-48.02	3.62	-44.4
3	2486.56 PK	54.4	74	-19.6	-44.48	3.62	-40.86
4	2483.71 AV	40.76	54	-13.24	-58.12	3.62	-54.5

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



802.11g - Channel 6

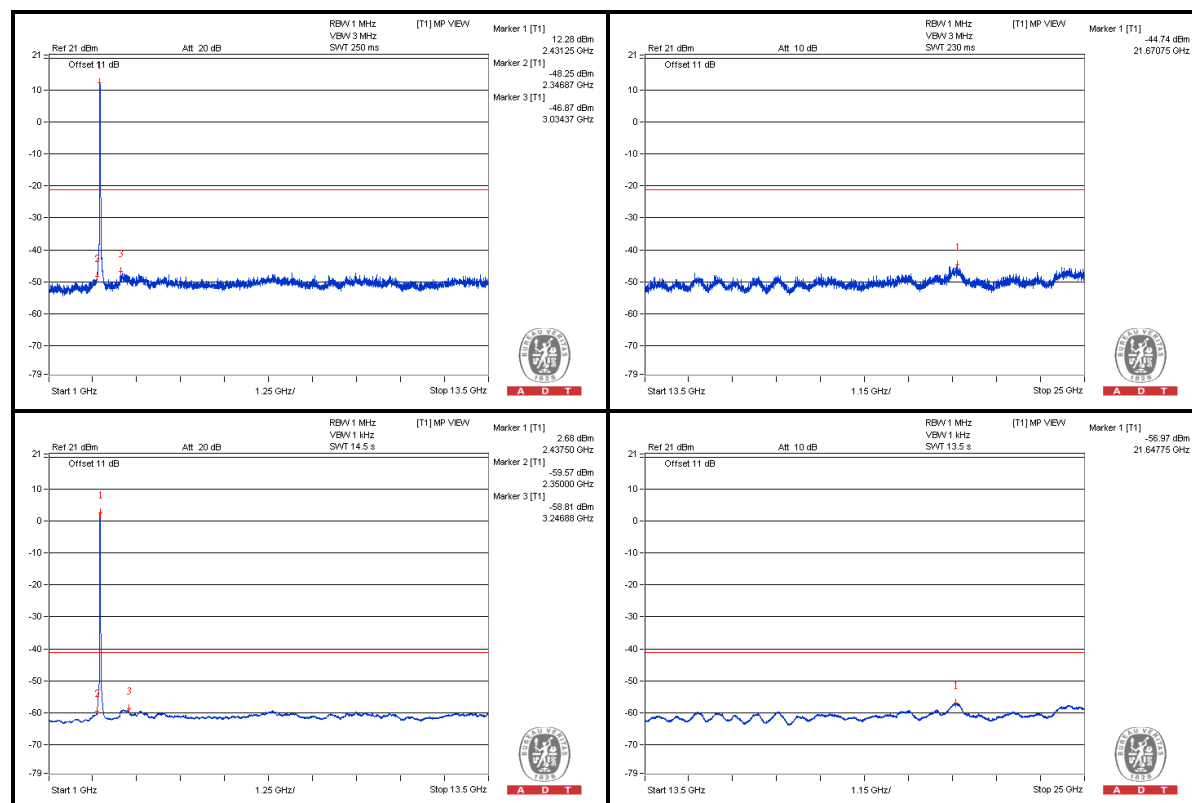
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	1625 PK	45.61	74	-28.39	-53.27	3.62	-49.65
2	1625 AV	35.98	54	-18.02	-62.9	3.62	-59.28
3	4875 PK	49.2	74	-24.8	-49.68	3.62	-46.06
4	4875 AV	37.94	54	-16.06	-60.94	3.62	-57.32
5	7309.375 PK	49.08	74	-24.92	-49.8	3.62	-46.18
6	7309.375 AV	38.69	54	-15.31	-60.19	3.62	-56.57

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



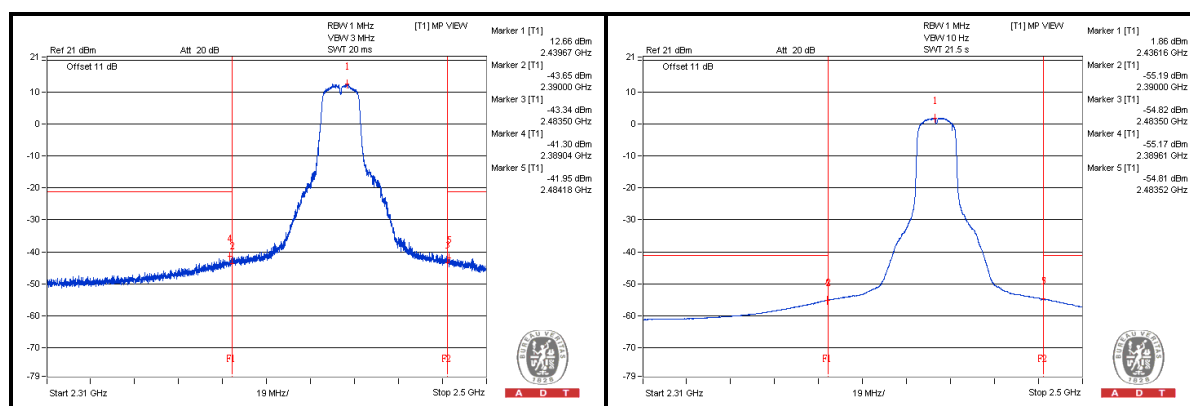
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2389.04 PK	57.58	74	-16.42	-41.3	3.62	-37.68
2	2389.61 AV	43.71	54	-10.29	-55.17	3.62	-51.55
3	2484.18 PK	56.93	74	-17.07	-41.95	3.62	-38.33
4	2483.52 AV	44.07	54	-9.93	-54.81	3.62	-51.19

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



802.11g - Channel 11

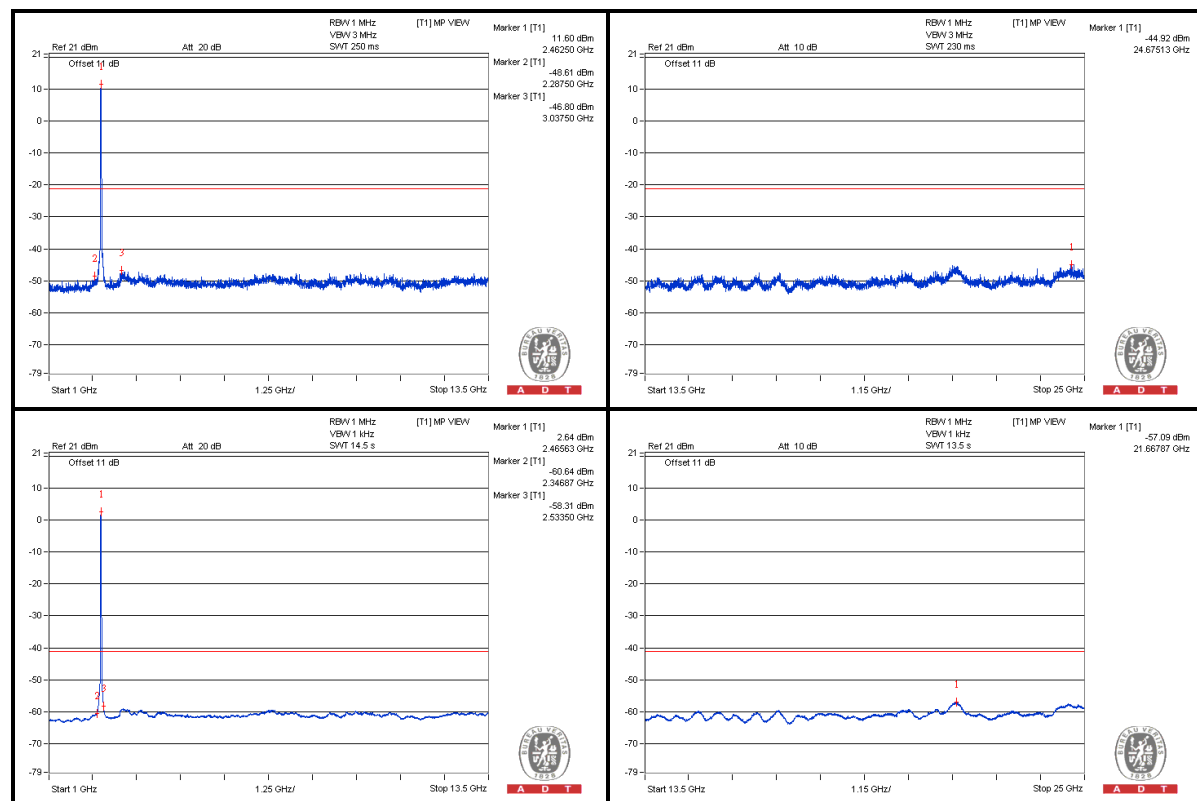
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	4925 PK	47.98	74	-26.02	-50.9	3.62	-47.28
2	4925 AV	37.9	54	-16.1	-60.98	3.62	-57.36
3	7384.375 PK	50.14	74	-23.86	-48.74	3.62	-45.12
4	7384.375 AV	39.02	54	-14.98	-59.86	3.62	-56.24

Note :

Emission Level (dBUV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



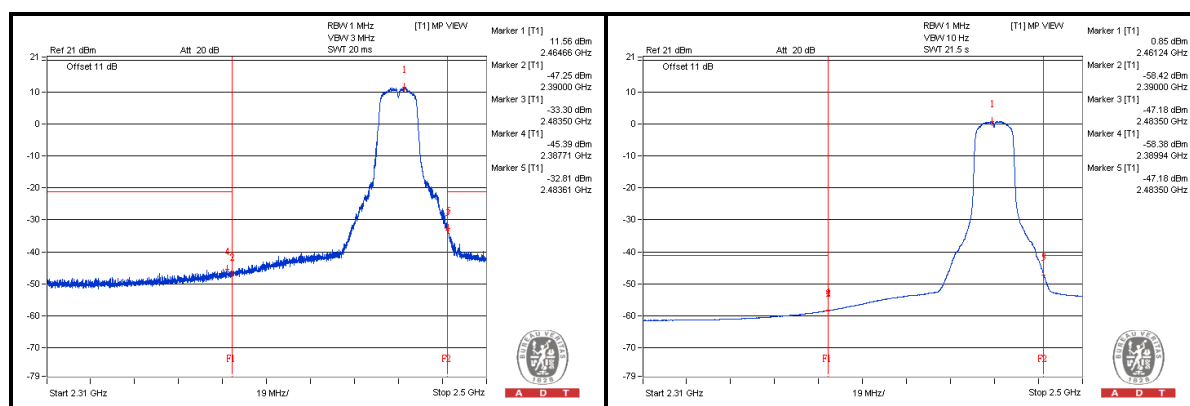
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2387.71 PK	53.49	74	-20.51	-45.39	3.62	-41.77
2	2389.94 AV	40.5	54	-13.5	-58.38	3.62	-54.76
3	2483.61 PK	66.07	74	-7.93	-32.81	3.62	-29.19
4	2483.5 AV	51.7	54	-2.3	-47.18	3.62	-43.56

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



802.11n_256QAM(BW20) - Channel 1

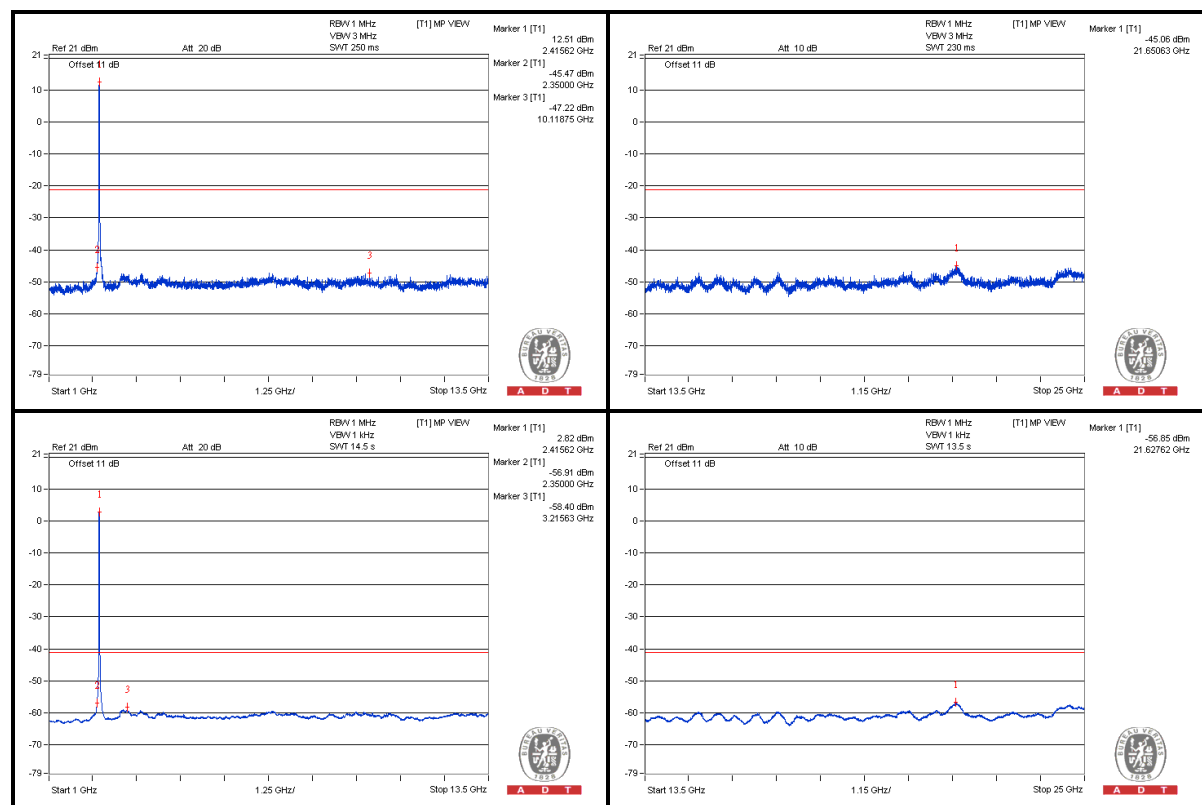
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	1606.25 PK	45.59	74	-28.41	-53.29	3.62	-49.67
2	1609.375 AV	35.94	54	-18.06	-62.94	3.62	-59.32
3	4825 PK	49.22	74	-24.78	-49.66	3.62	-46.04
4	4825 AV	38.24	54	-15.76	-60.64	3.62	-57.02

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



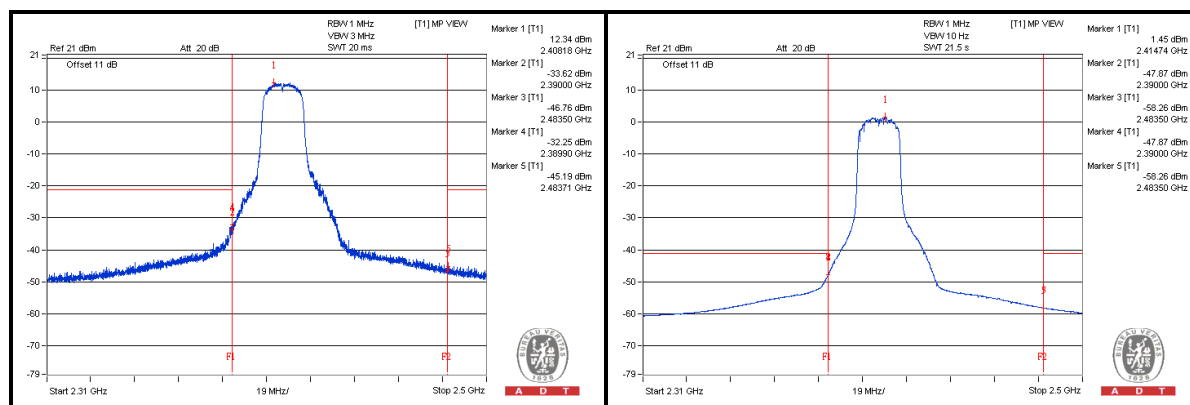
Bandedge table

No.	Frequency (MHz)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2389.89 PK	66.63	74	-7.37	-32.25	3.62	-28.63
2	2390 AV	51.01	54	-2.99	-47.87	3.62	-44.25
3	2483.71 PK	53.69	74	-20.31	-45.19	3.62	-41.57
4	2483.5 AV	40.62	54	-13.38	-58.26	3.62	-54.64

Note :

Emission Level (dBUV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



802.11n_256QAM(BW20) - Channel 6

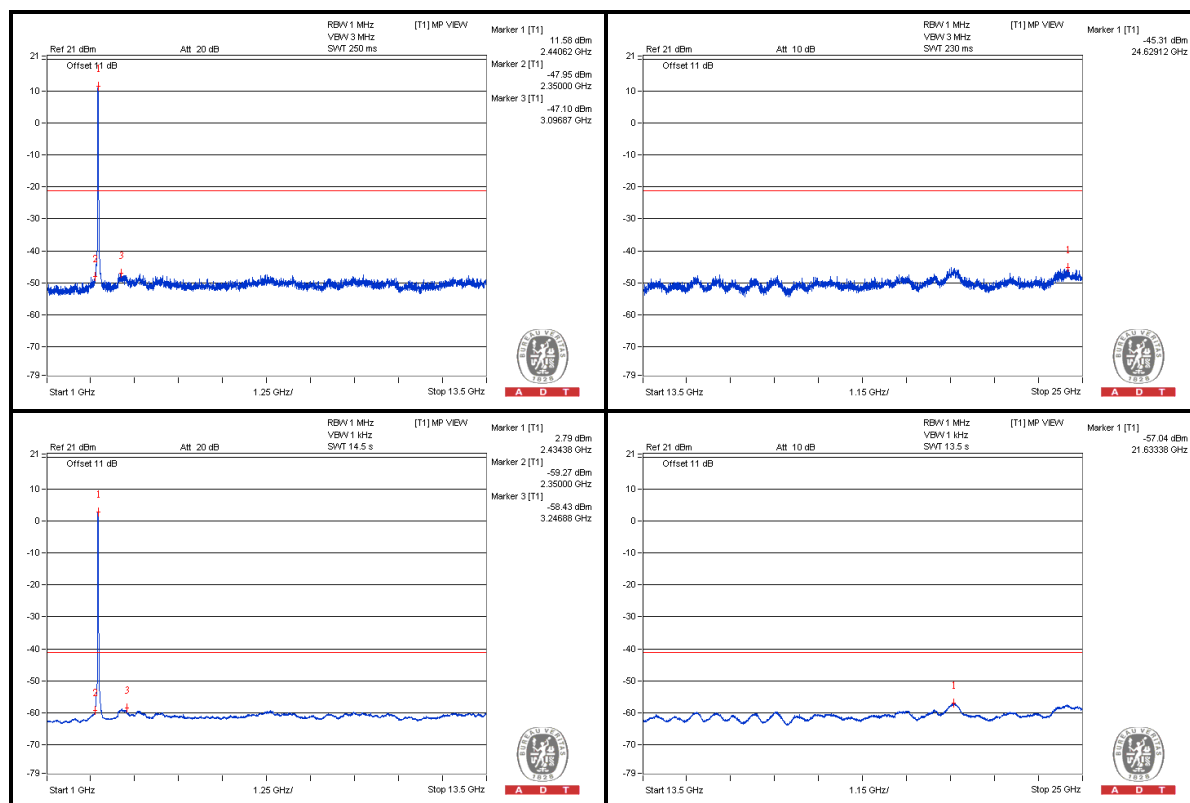
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	1625 PK	46.71	74	-27.29	-52.17	3.62	-48.55
2	1625 AV	35.97	54	-18.03	-62.91	3.62	-59.29
3	4875 PK	49.68	74	-24.32	-49.2	3.62	-45.58
4	4875 AV	38.23	54	-15.77	-60.65	3.62	-57.03
5	7309.375 PK	49.25	74	-24.75	-49.63	3.62	-46.01
6	7312.5 AV	38.85	54	-15.15	-60.03	3.62	-56.41

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



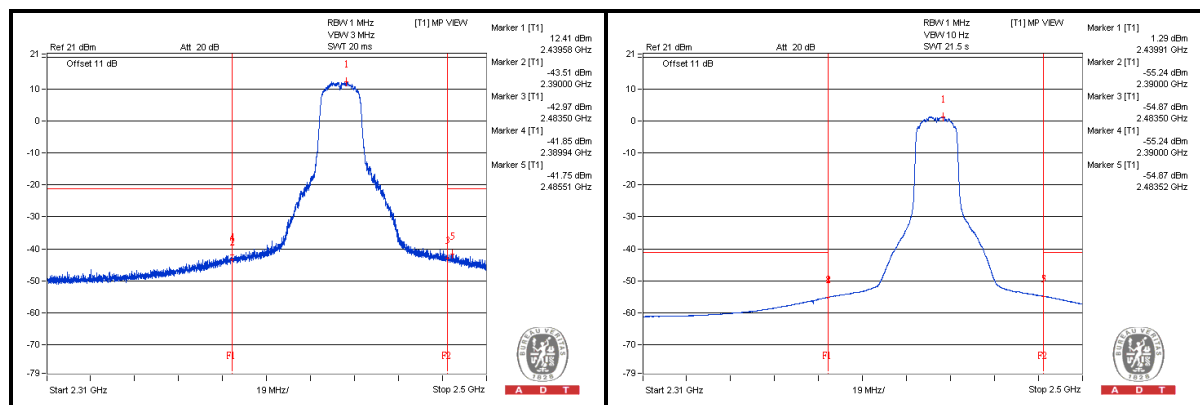
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2389.94 PK	57.03	74	-16.97	-41.85	3.62	-38.23
2	2390 AV	43.64	54	-10.36	-55.24	3.62	-51.62
3	2485.51 PK	57.13	74	-16.87	-41.75	3.62	-38.13
4	2483.52 AV	44.01	54	-9.99	-54.87	3.62	-51.25

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



802.11n_256QAM(BW20) - Channel 11

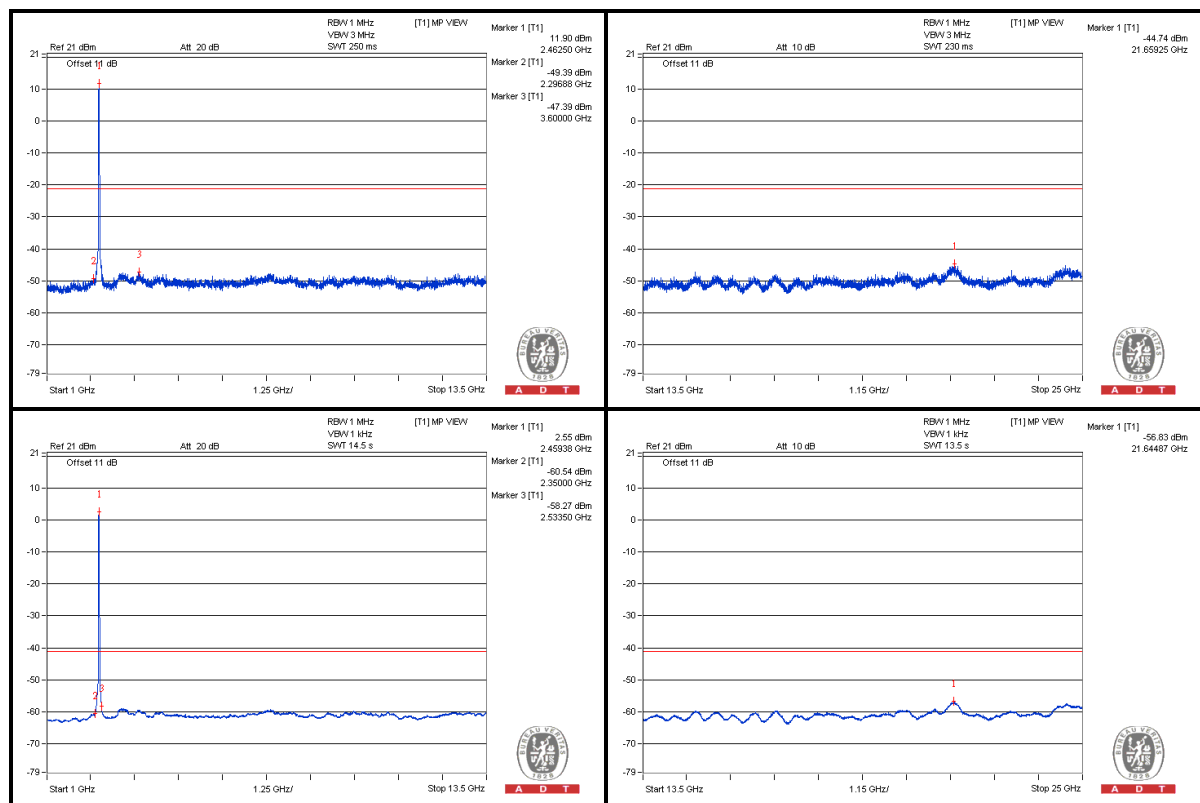
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	4925 PK	48.57	74	-25.43	-50.31	3.62	-46.69
2	4925 AV	37.93	54	-16.07	-60.95	3.62	-57.33
3	7387.5 PK	49.4	74	-24.6	-49.48	3.62	-45.86
4	7384.375 AV	39.31	54	-14.69	-59.57	3.62	-55.95

Note :

Emission Level (dBUV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



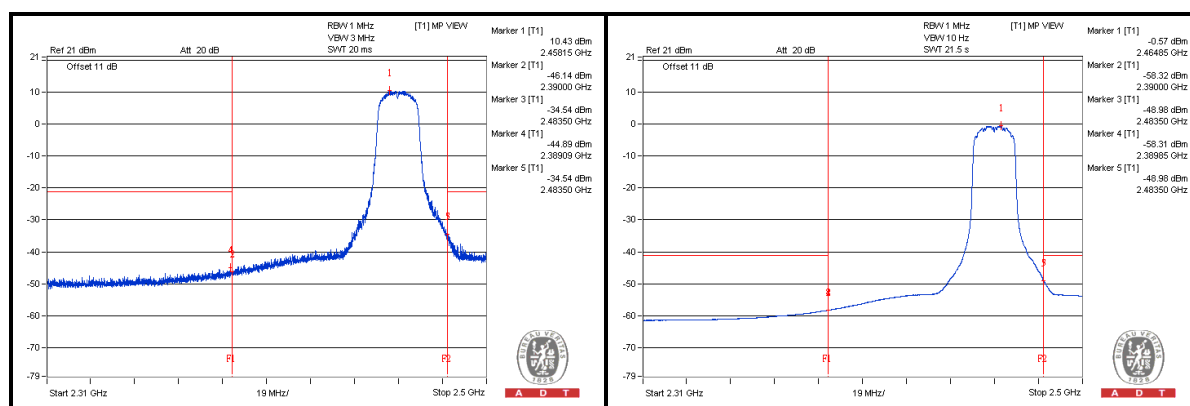
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2389.09 PK	53.99	74	-20.01	-44.89	3.62	-41.27
2	2389.85 AV	40.57	54	-13.43	-58.31	3.62	-54.69
3	2483.5 PK	64.34	74	-9.66	-34.54	3.62	-30.92
4	2483.5 AV	49.9	54	-4.1	-48.98	3.62	-45.36

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



802.11n_256QAM(BW40) - Channel 3

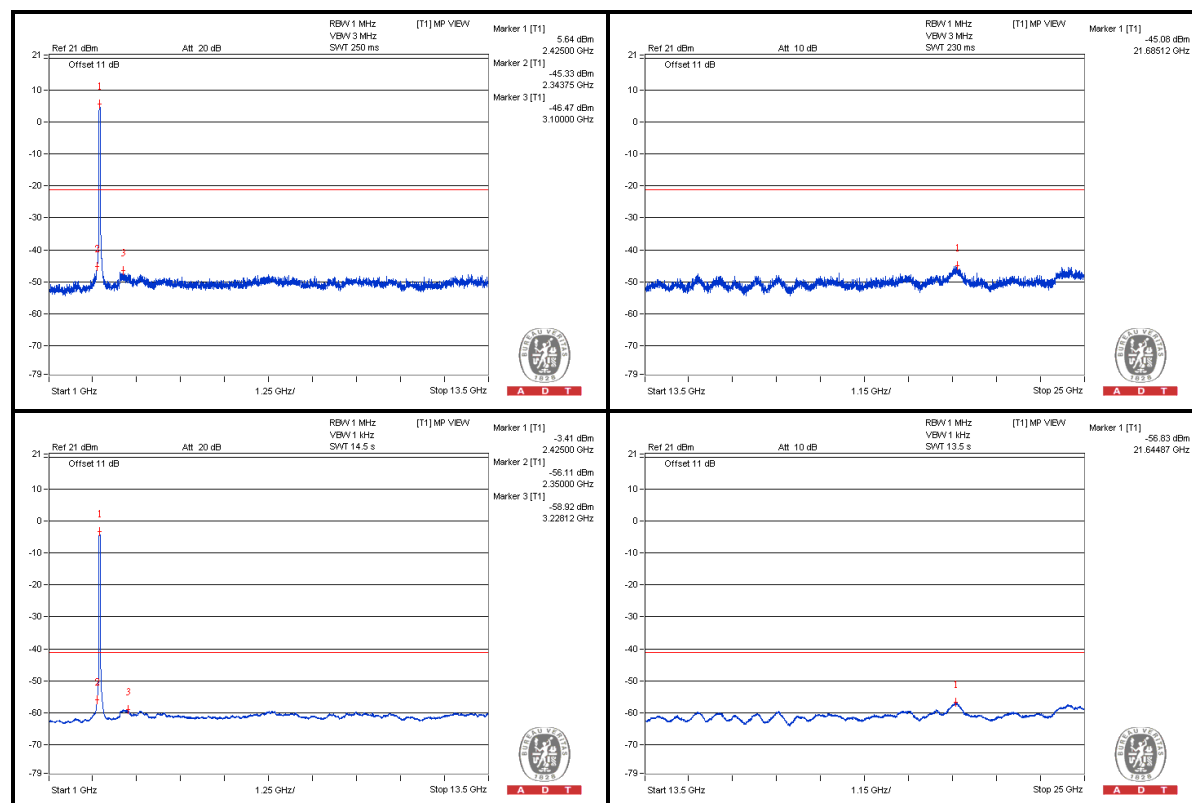
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	1615.625 PK	47.09	74	-26.91	-51.79	3.62	-48.17
2	1615.625 AV	35.82	54	-18.18	-63.06	3.62	-59.44
3	4843.75 PK	47.13	74	-26.87	-51.75	3.62	-48.13
4	4843.75 AV	37.35	54	-16.65	-61.53	3.62	-57.91
5	7265.625 PK	49.64	74	-24.36	-49.24	3.62	-45.62
6	7265.625 AV	39.08	54	-14.92	-59.8	3.62	-56.18

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



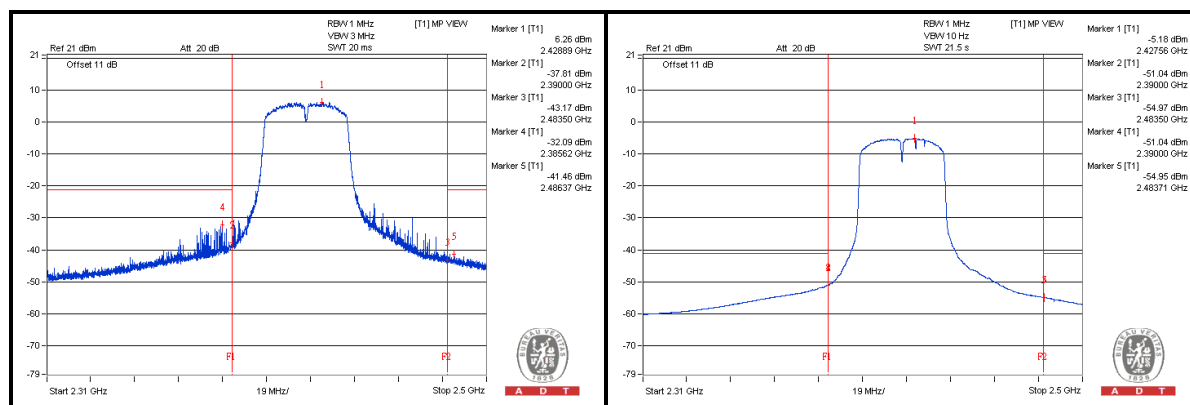
Bandedge table

No.	Frequency (MHz)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2385.62 PK	66.79	74	-7.21	-32.09	3.62	-28.47
2	2390 AV	47.84	54	-6.16	-51.04	3.62	-47.42
3	2486.37 PK	57.42	74	-16.58	-41.46	3.62	-37.84
4	2483.71 AV	43.93	54	-10.07	-54.95	3.62	-51.33

Note :

Emission Level (dBUV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



802.11n_256QAM(BW40) - Channel 6

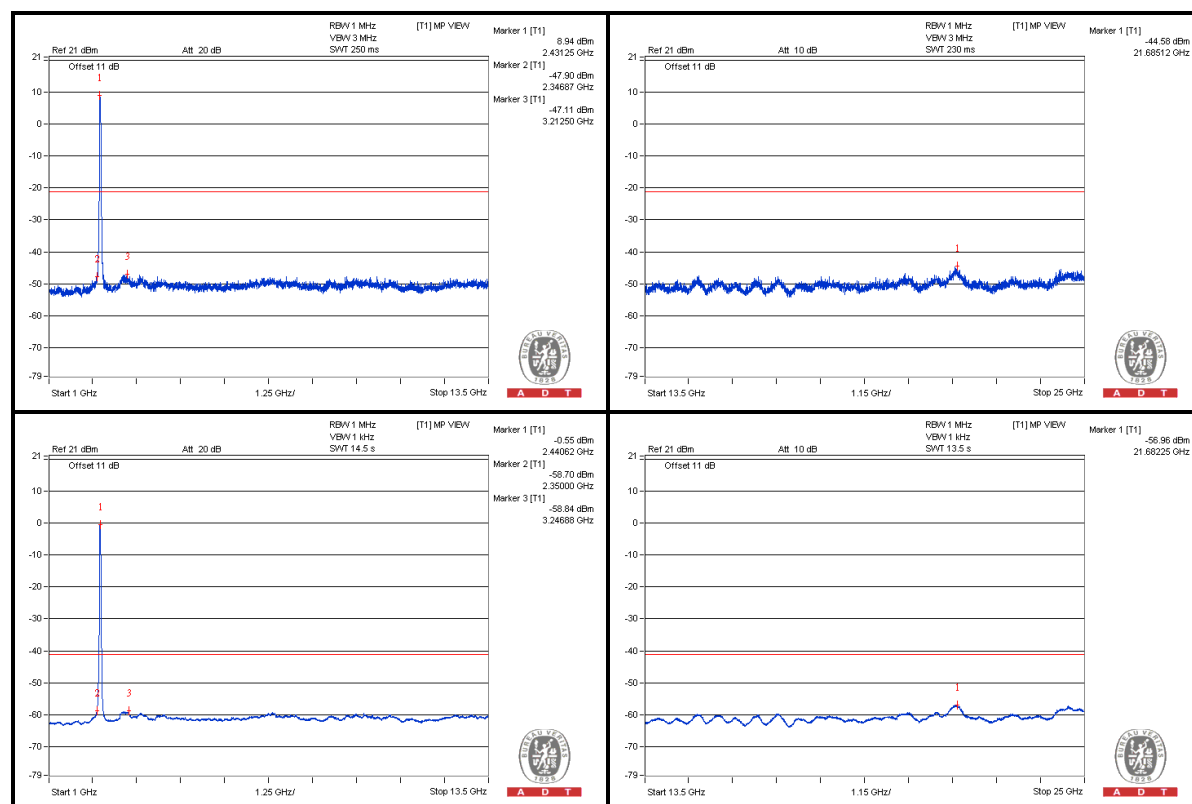
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	1625 PK	46.27	74	-27.73	-52.61	3.62	-48.99
2	1625 AV	36.09	54	-17.91	-62.79	3.62	-59.17
3	4875 PK	49.5	74	-24.5	-49.38	3.62	-45.76
4	4875 AV	38.02	54	-15.98	-60.86	3.62	-57.24
5	7312.5 PK	49.13	74	-24.87	-49.75	3.62	-46.13
6	7309.375 AV	38.84	54	-15.16	-60.04	3.62	-56.42

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



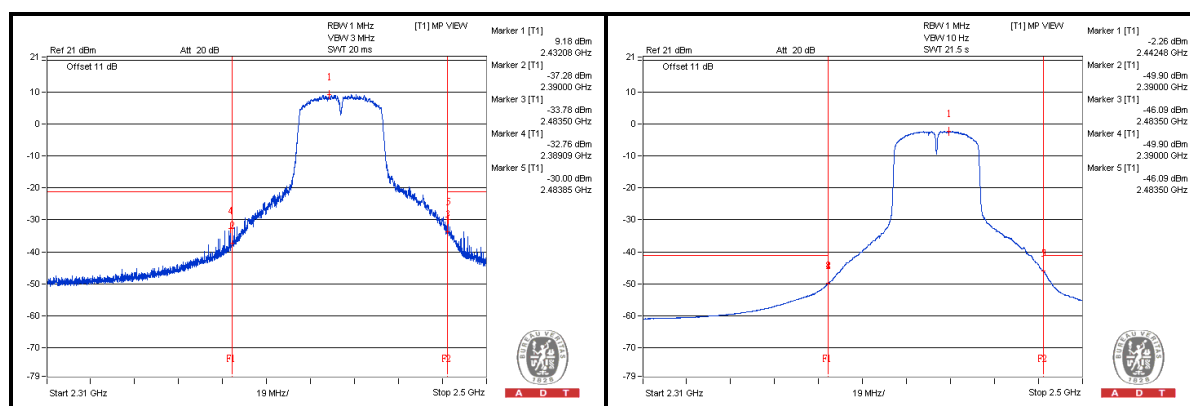
Bandedge table

No.	Frequency (MHz)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2389.09 PK	66.12	74	-7.88	-32.76	3.62	-29.14
2	2390 AV	48.98	54	-5.02	-49.9	3.62	-46.28
3	2483.85 PK	68.88	74	-5.12	-30	3.62	-26.38
4	2483.5 AV	52.39	54	-1.61	-46.49	3.62	-42.87

Note :

Emission Level (dBUV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



802.11n_256QAM(BW40) - Channel 9

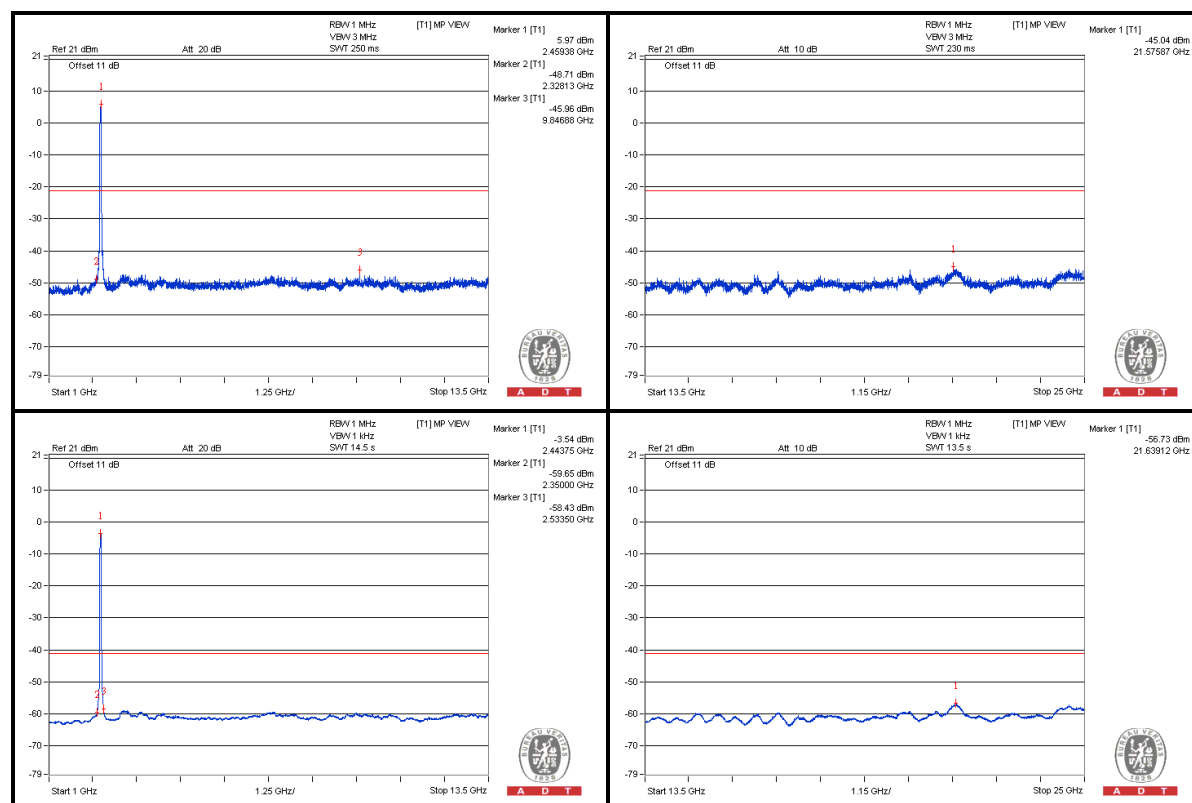
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	4903.125 PK	48.31	74	-25.69	-50.57	3.62	-46.95
2	4903.125 AV	37.26	54	-16.74	-61.62	3.62	-58
3	7356.25 PK	48.95	74	-25.05	-49.93	3.62	-46.31
4	7356.25 AV	39.09	54	-14.91	-59.79	3.62	-56.17

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



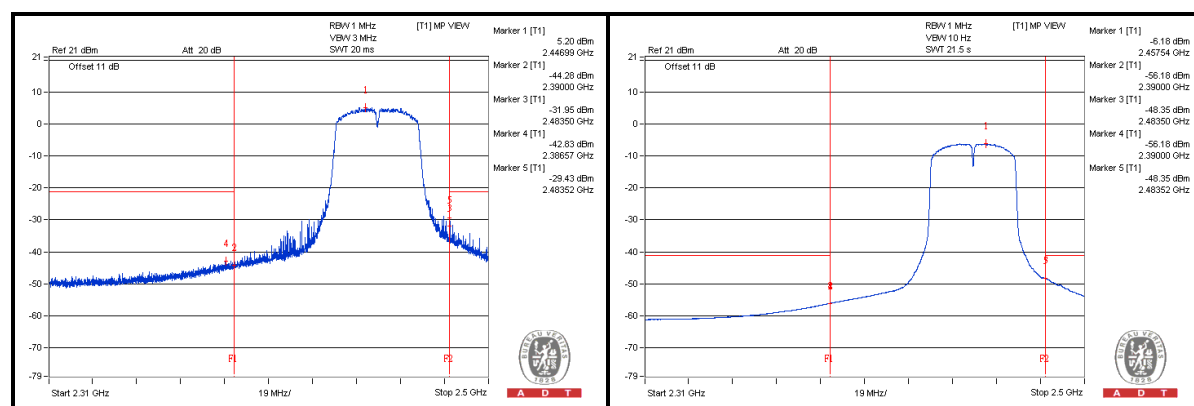
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2386.57 PK	56.05	74	-17.95	-42.83	3.62	-39.21
2	2390 AV	42.7	54	-11.3	-56.18	3.62	-52.56
3	2483.52 PK	69.45	74	-4.55	-29.43	3.62	-25.81
4	2483.52 AV	50.53	54	-3.47	-48.35	3.62	-44.73

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



4.2.9 TEST RESULTS (MODE 2, CONDUCTED MEASUREMENT)

Radiated versus Conducted Measurement	
☒ Conducted measurement	☐ Radiated measurement
<u>For Radiated measurement:</u> The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation) <u>For Conducted measurement:</u> The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).	

Conducted Measurement Factor
a. The composite gain will be used when signal support the correlated signal. (Composite gain = $3.62\text{dBi} + 10\log(2) = 6.63\text{dBi}$) b. For the out of band spurious the gain for the specific band may have been used rather than the highest gain across all bands. c. For the band edge the gain for the specific band may have been used. d. In restricted bands below 1000 MHz, add upper bound on ground plane reflection: For $f = 30 - 1000$ MHz, add 4.7 dB. Note: The conducted emission test was considered some factor to compute test result.

BELOW 1GHz WORST-CASE DATA

802.11n_256QAM(BW20) - Channel 6

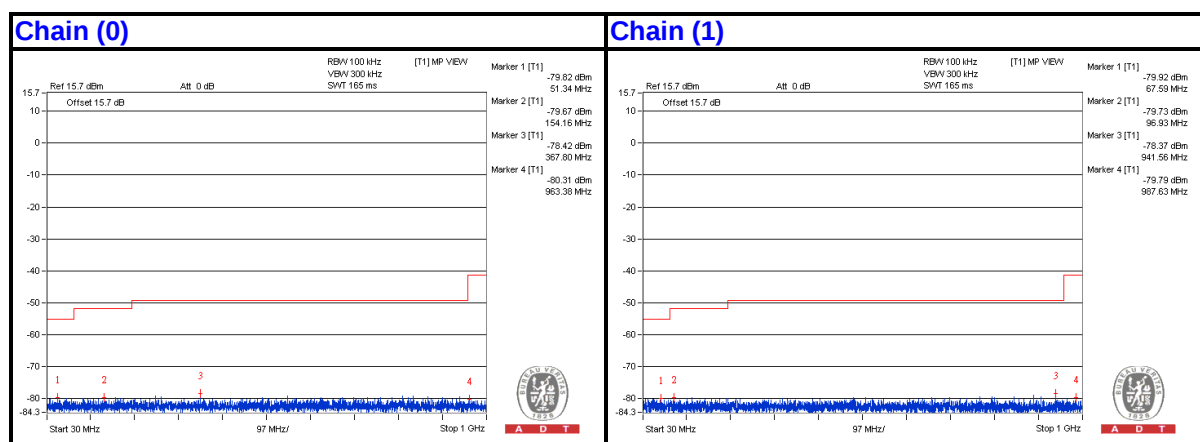
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	67.5875	24.41	40	-15.59	-81.14	-79.92	6.63	-70.85
2	197.81	24.74	43.5	-18.76	-80.16	-80.16	6.63	-70.52
3	367.8025	24.52	46	-21.48	-78.42	-84.03	6.63	-70.74
4	536.0975	24.78	46	-21.22	-80.11	-80.13	6.63	-70.48
5	766.715	24.87	46	-21.13	-79.75	-80.34	6.63	-70.39
6	941.5575	24.95	46	-21.05	-82.47	-78.37	6.63	-70.31

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



ABOVE 1GHz DATA

802.11b - Channel 1

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1606.25 PK	52.96	74	-21.04	-52.88	-51.16	6.63	-42.3
2	1609.375 AV	42.14	54	-11.86	-62.8	-62.73	6.63	-53.12
3	4825 PK	62.92	74	-11.08	-39.26	-50.93	6.63	-32.34
4	4825 AV	60.29	54	* 6.29	-41.65	-60.67	6.63	-34.97

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

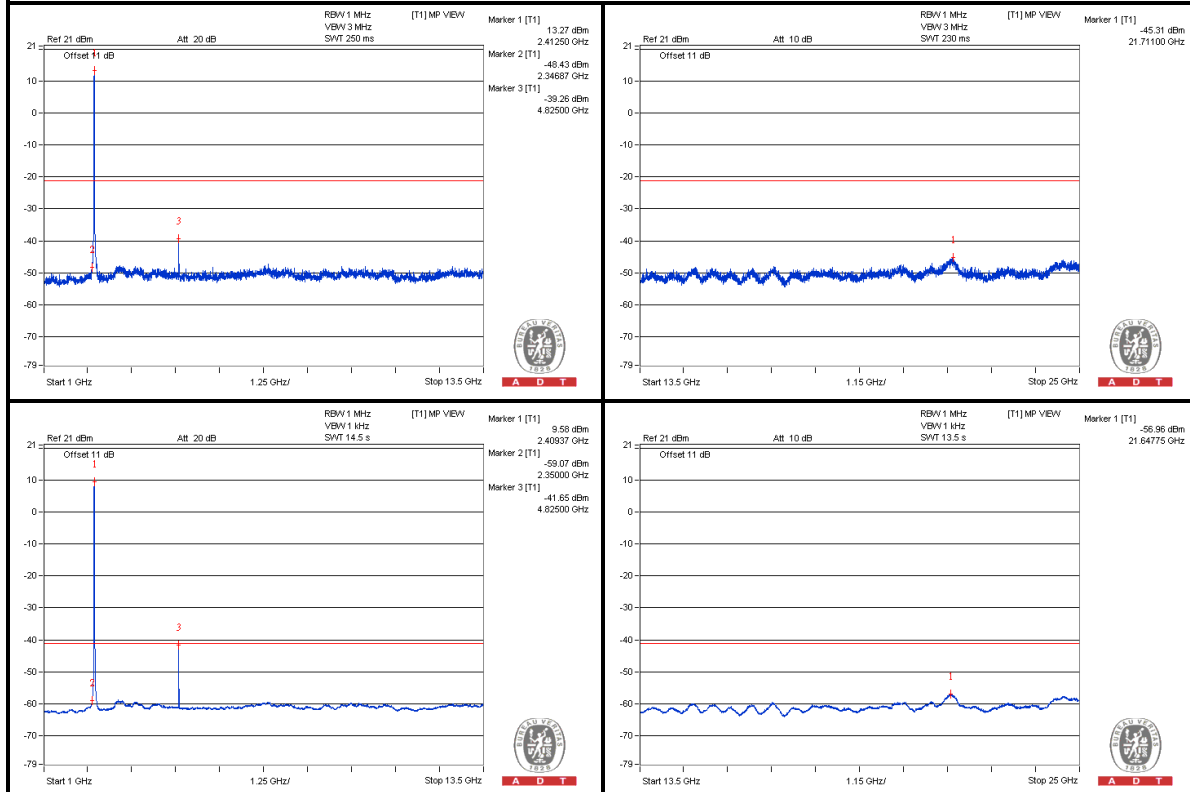
d = measurement distance in 3 meters.

* The unwanted emission was verified and the test result was passed by radiated measurement.
(Please refer APPENDIX A)

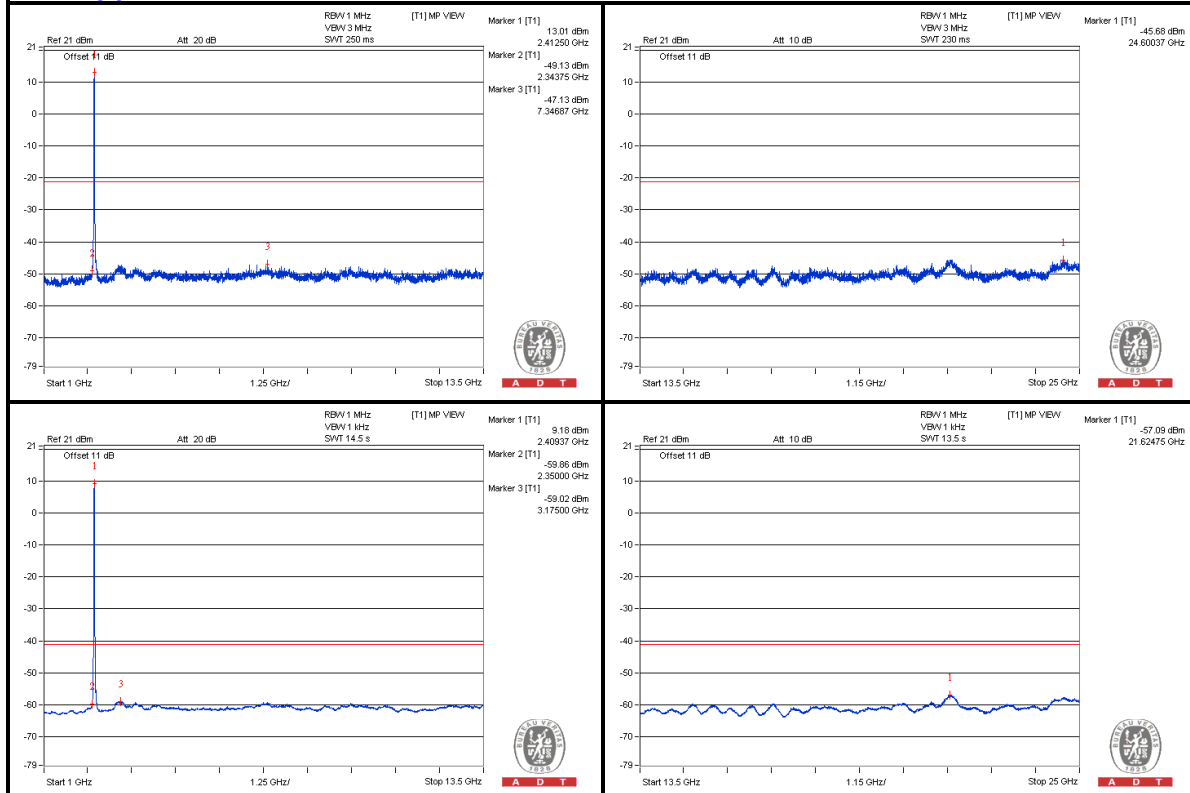


A D T

Chain (0)



Chain (1)



Bandedge table

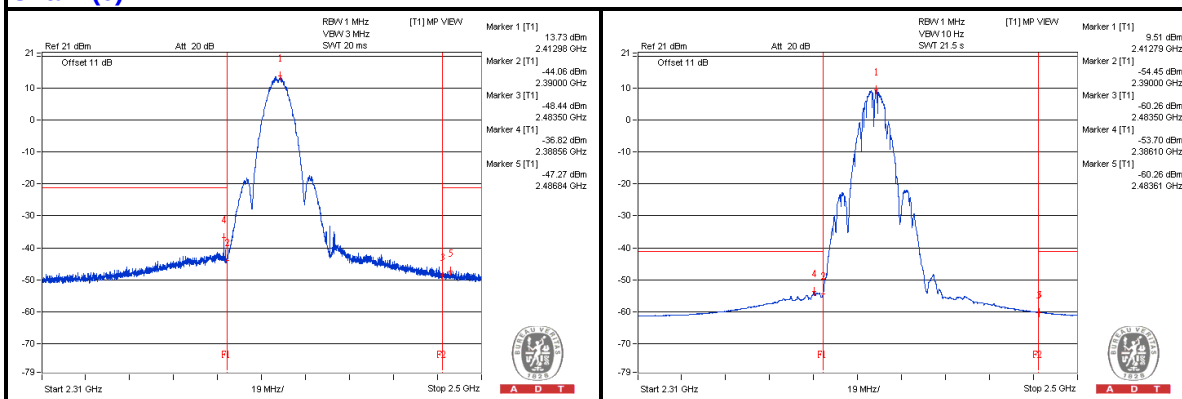
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2389.99 PK	68.11	74	-5.89	-44.25	-34.19	6.63	-27.15
2	2387.2825 AV	52.12	54	-1.88	-54.21	-51.71	6.63	-43.14
3	2484.6575 PK	58.19	74	-15.81	-47.98	-45.73	6.63	-37.07
4	2483.8975 AV	44.72	54	-9.28	-60.28	-60.08	6.63	-50.54

Note :

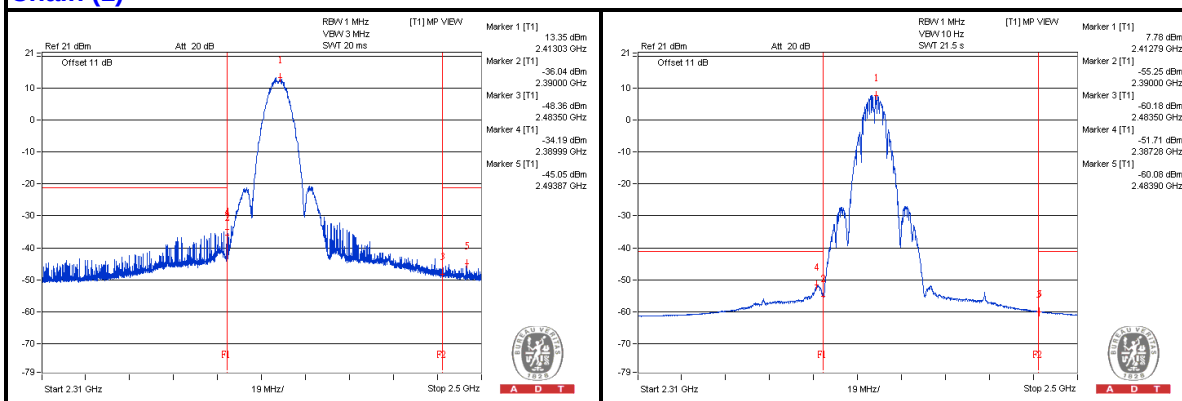
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain (0)



Chain (1)



802.11b - Channel 6

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1625 PK	52.02	74	-21.98	-52.73	-53.03	6.63	-43.24
2	1625 AV	42.14	54	-11.86	-62.66	-62.86	6.63	-53.12
3	4875 PK	64.2	74	-9.8	-37.85	-52.17	6.63	-31.06
4	4875 AV	62.7	54	* 8.7	-39.22	-60.74	6.63	-32.56
5	7309.375 PK	55.43	74	-18.57	-49.06	-49.92	6.63	-39.83
6	7312.5 AV	45.19	54	-8.81	-59.88	-59.54	6.63	-50.07

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

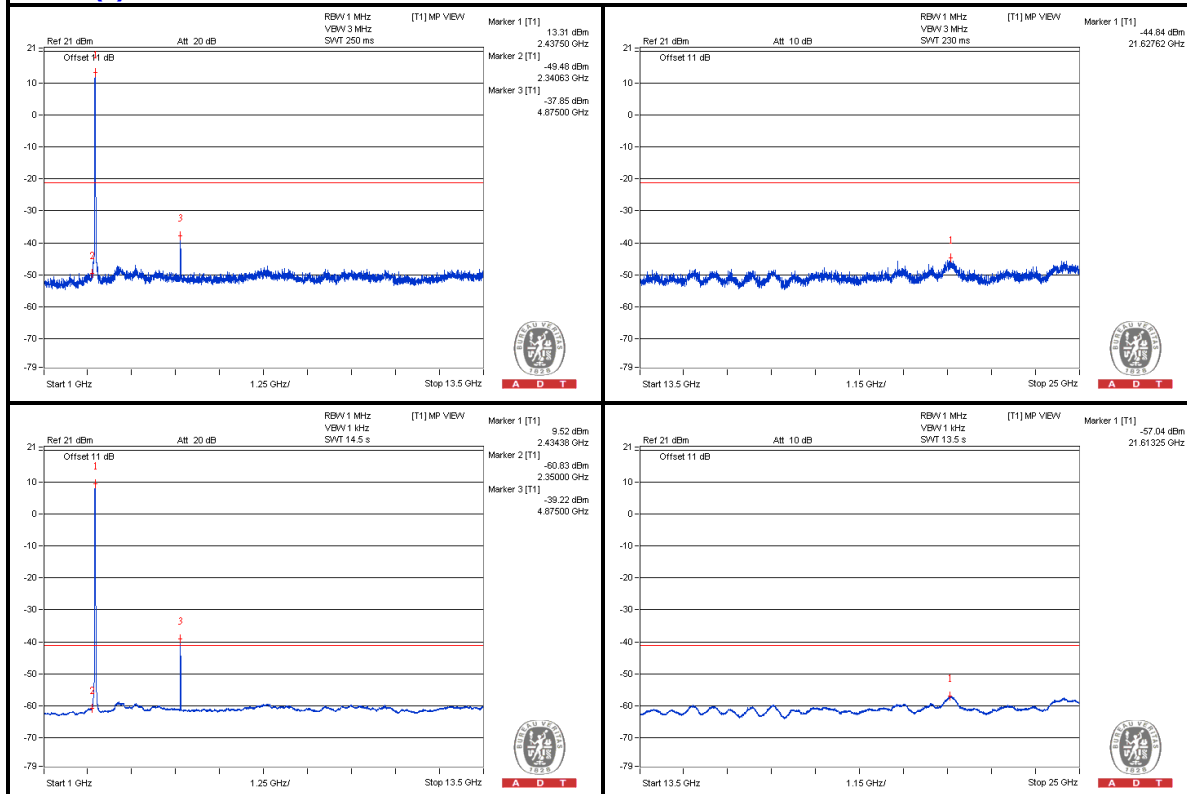
d = measurement distance in 3 meters.

* The unwanted emission was verified and the test result was passed by radiated measurement. (Please refer APPENDIX A)

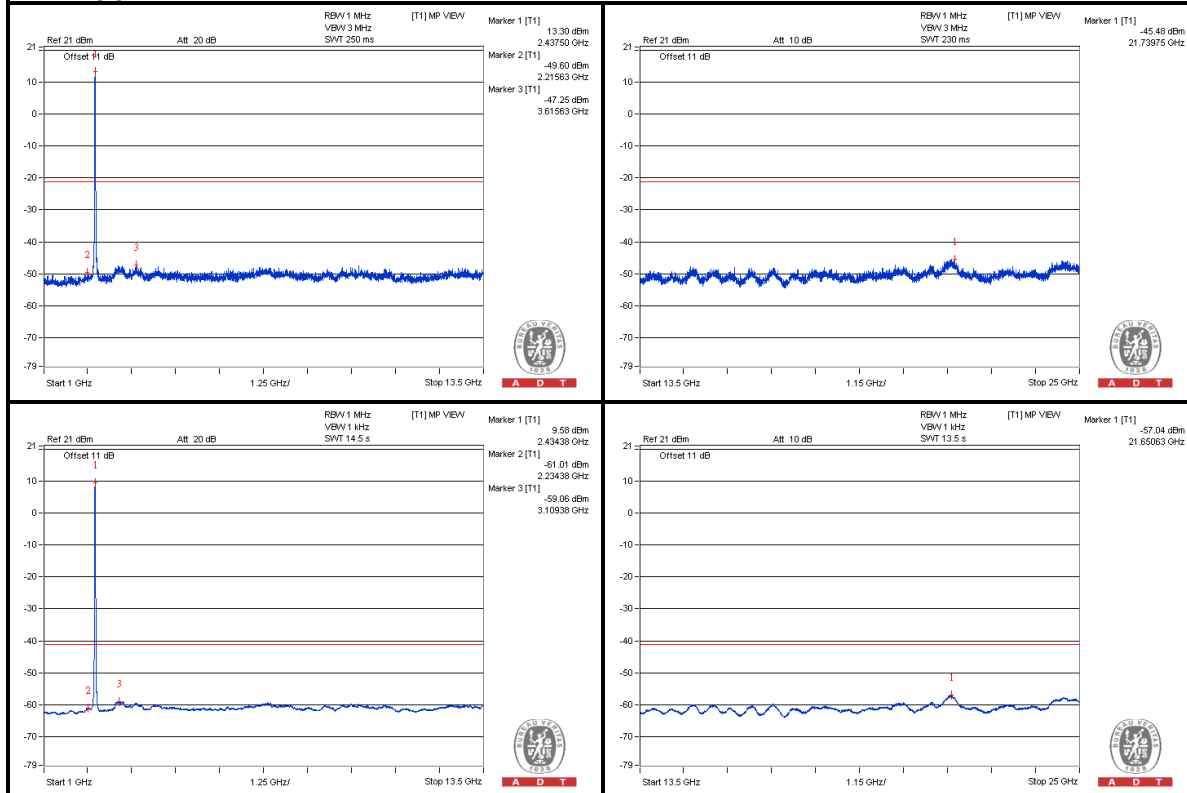


A D T

Chain (0)



Chain (1)



Bandedge table

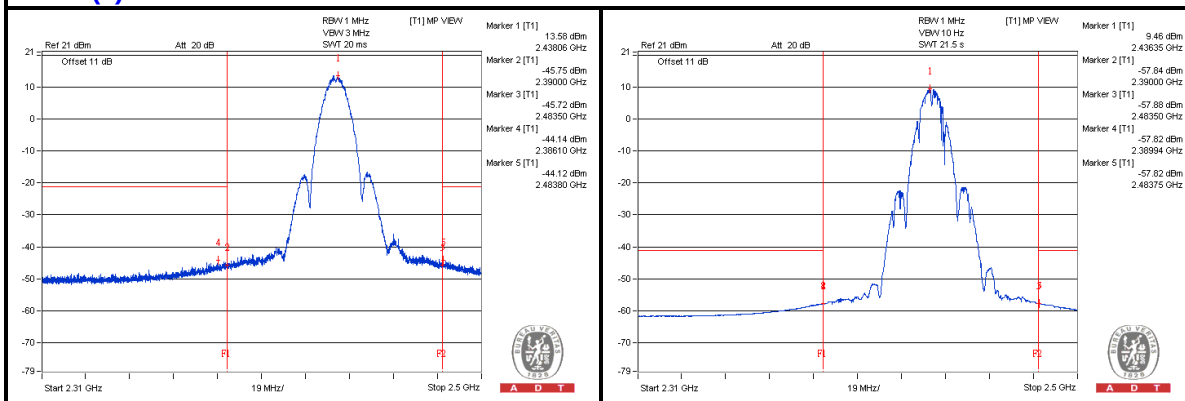
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2388.375 PK	62.33	74	-11.67	-45.37	-40.88	6.63	-32.93
2	2389.04 AV	47.06	54	-6.94	-58.01	-57.67	6.63	-48.2
3	2484.9425 PK	61.24	74	-12.76	-44.52	-42.94	6.63	-34.02
4	2485.0375 AV	47.96	54	-6.04	-57.94	-56.12	6.63	-47.3
5	2490.975 PK	59.05	74	-14.95	-45.38	-46.38	6.63	-36.21
6	2490.025 AV	46.25	54	-7.75	-58.57	-58.74	6.63	-49.01

Note :

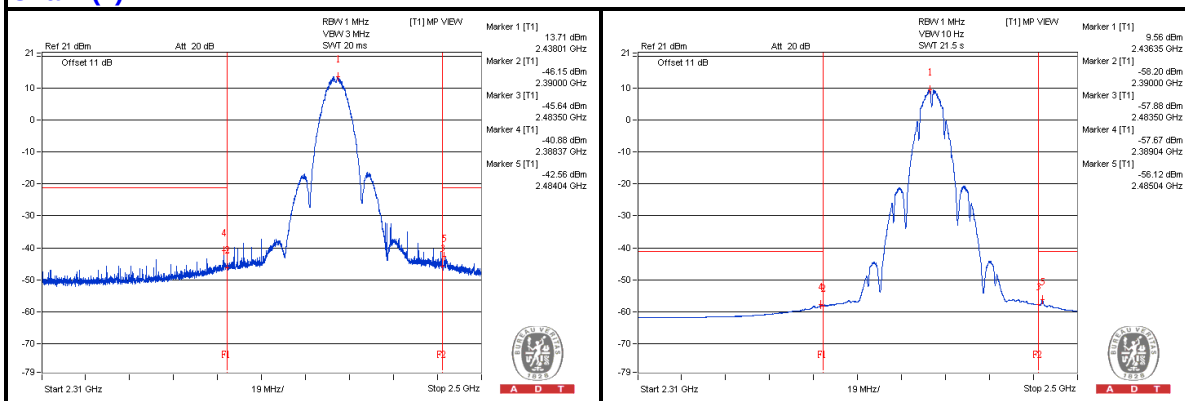
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain (0)



Chain (1)



802.11b - Channel 11

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	4925 PK	63.75	74	-10.25	-38.35	-51.42	6.63	-31.51
2	4925 AV	62.12	54	* 8.12	-39.8	-61.33	6.63	-33.14
3	7384.375 PK	55.53	74	-18.47	-49.61	-49.14	6.63	-39.73
4	7384.375 AV	45.19	54	-8.81	-59.68	-59.75	6.63	-50.07

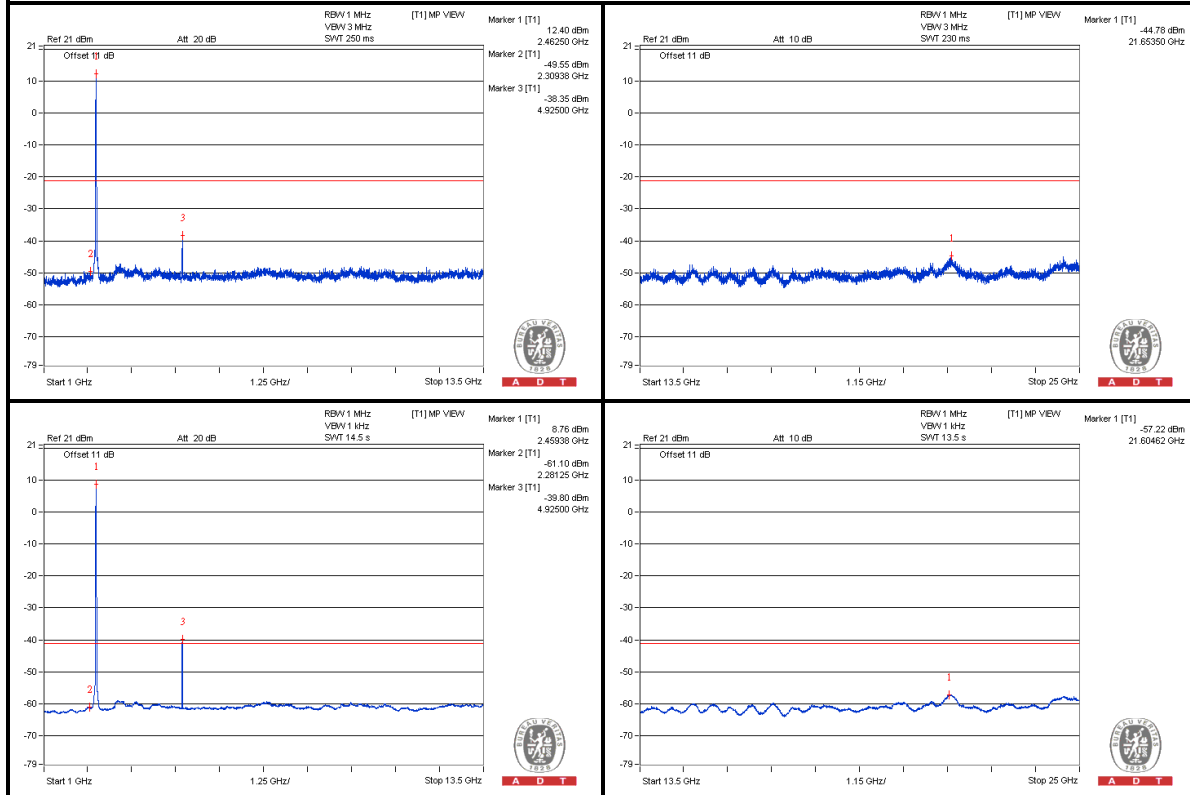
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

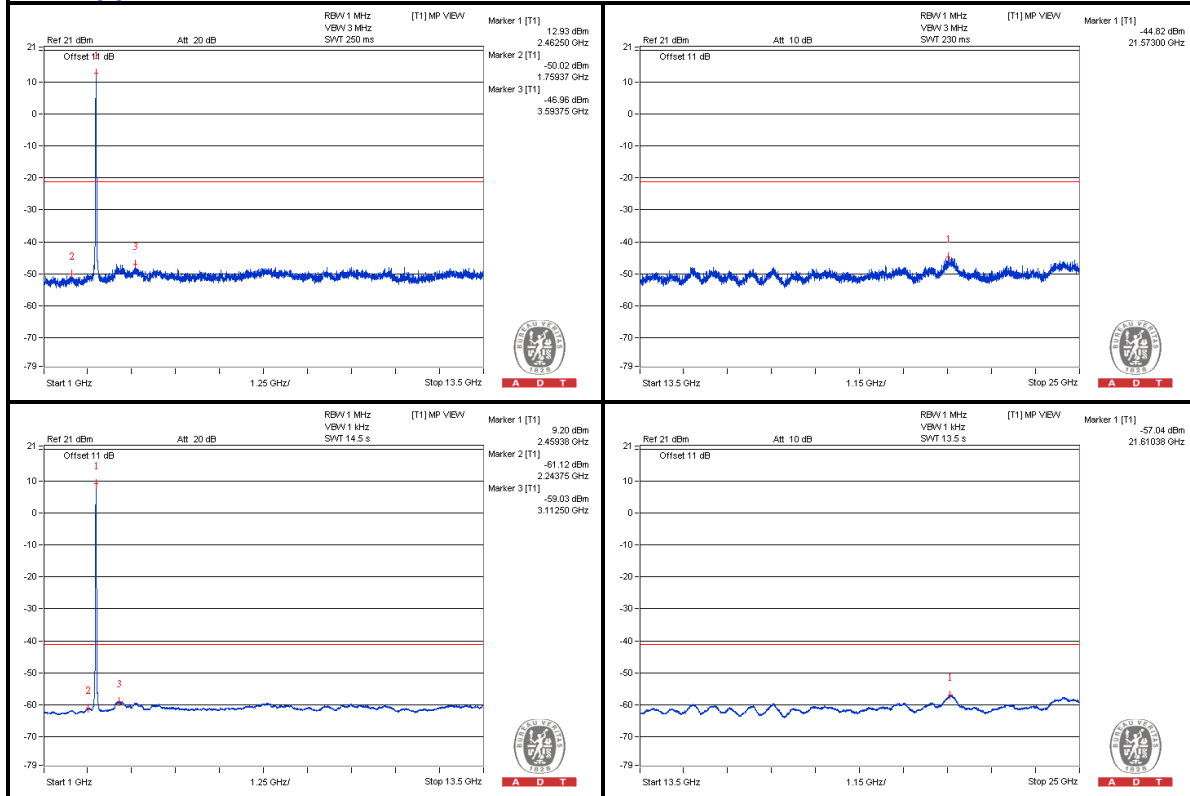
d = measurement distance in 3 meters.

* The unwanted emission was verified and the test result was passed by radiated measurement.
(Please refer APPENDIX A)

Chain (0)



Chain (1)



Bandedge table

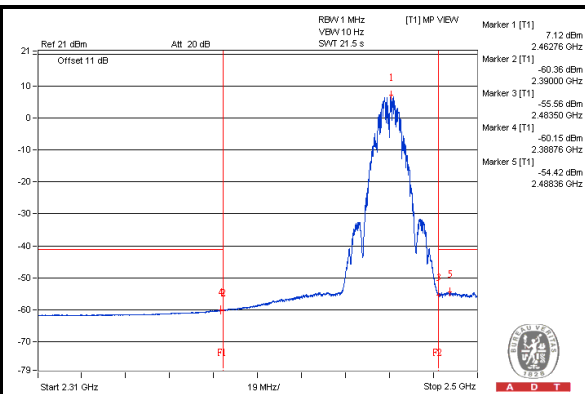
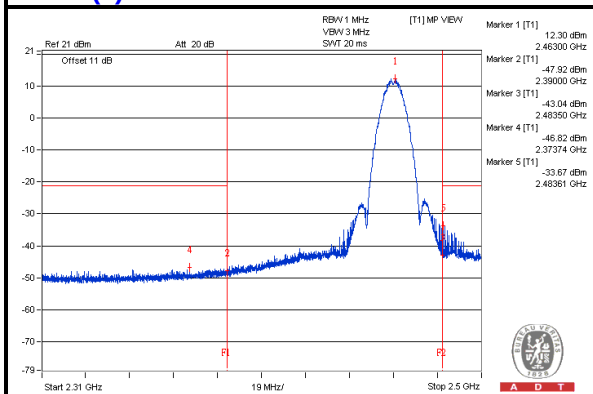
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2389.895 PK	58.52	74	-15.48	-48.46	-44.98	6.63	-36.74
2	2389.8475 AV	44.53	54	-9.47	-60.17	-60.58	6.63	-50.73
3	2488.695 PK	69.23	74	-4.77	-42.1	-33.18	6.63	-26.03
4	2486.9375 AV	51.27	54	-2.73	-54.64	-52.81	6.63	-43.99
5	2490.975 PK	68.65	74	-5.35	-43.54	-33.67	6.63	-26.61
6	2490.31 AV	50.25	54	-3.75	-54.98	-54.35	6.63	-45.01

Note :

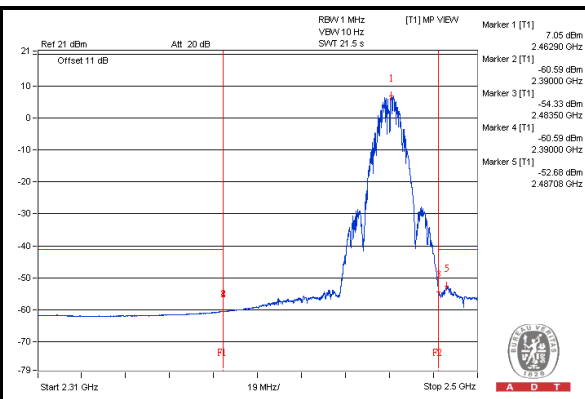
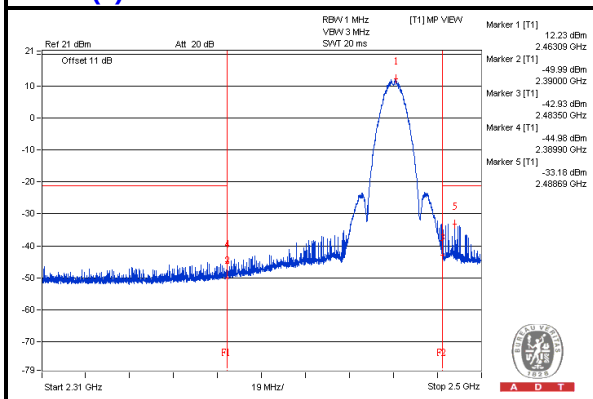
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain (0)



Chain (1)



802.11g - Channel 1

Conducted spurious emission table

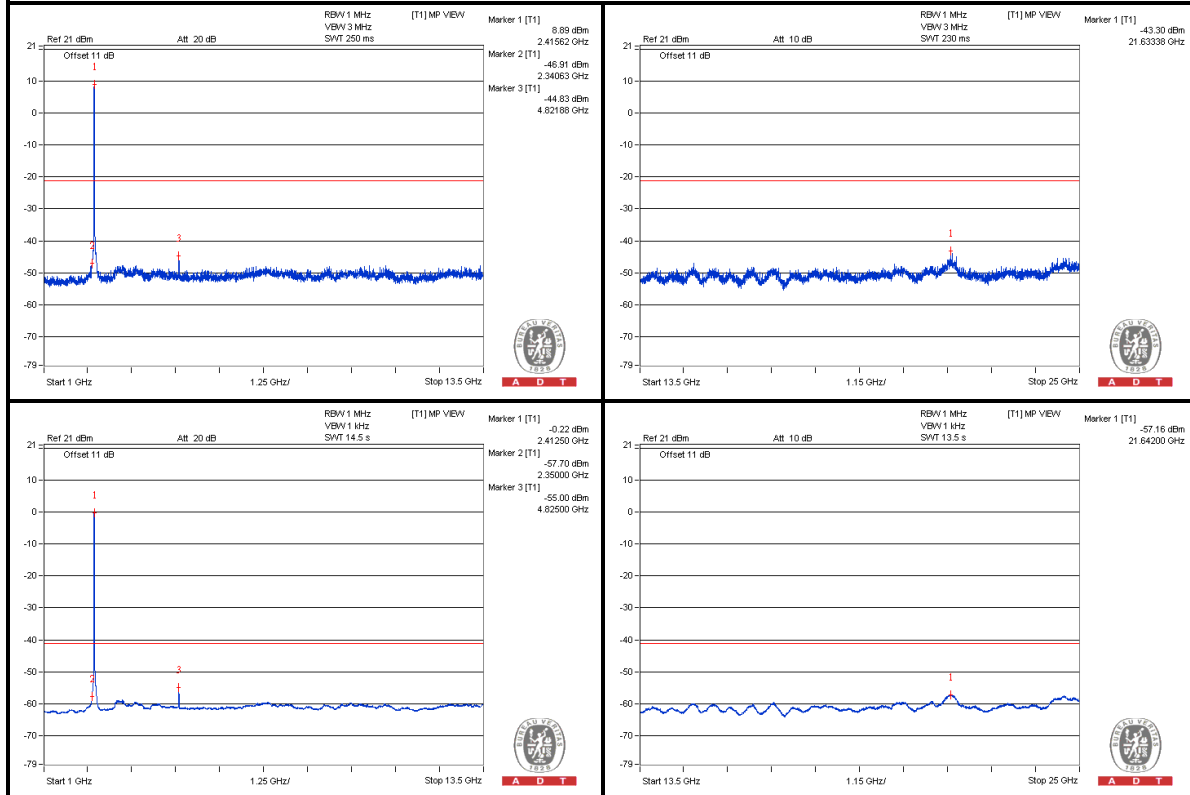
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1609.375 PK	52.35	74	-21.65	-51.96	-53.24	6.63	-42.91
2	1606.25 AV	42.11	54	-11.89	-62.78	-62.8	6.63	-53.15
3	4825 PK	57.17	74	-16.83	-46.03	-50.57	6.63	-38.09
4	4825 AV	47.86	54	-6.14	-55	-61.03	6.63	-47.4

Note :

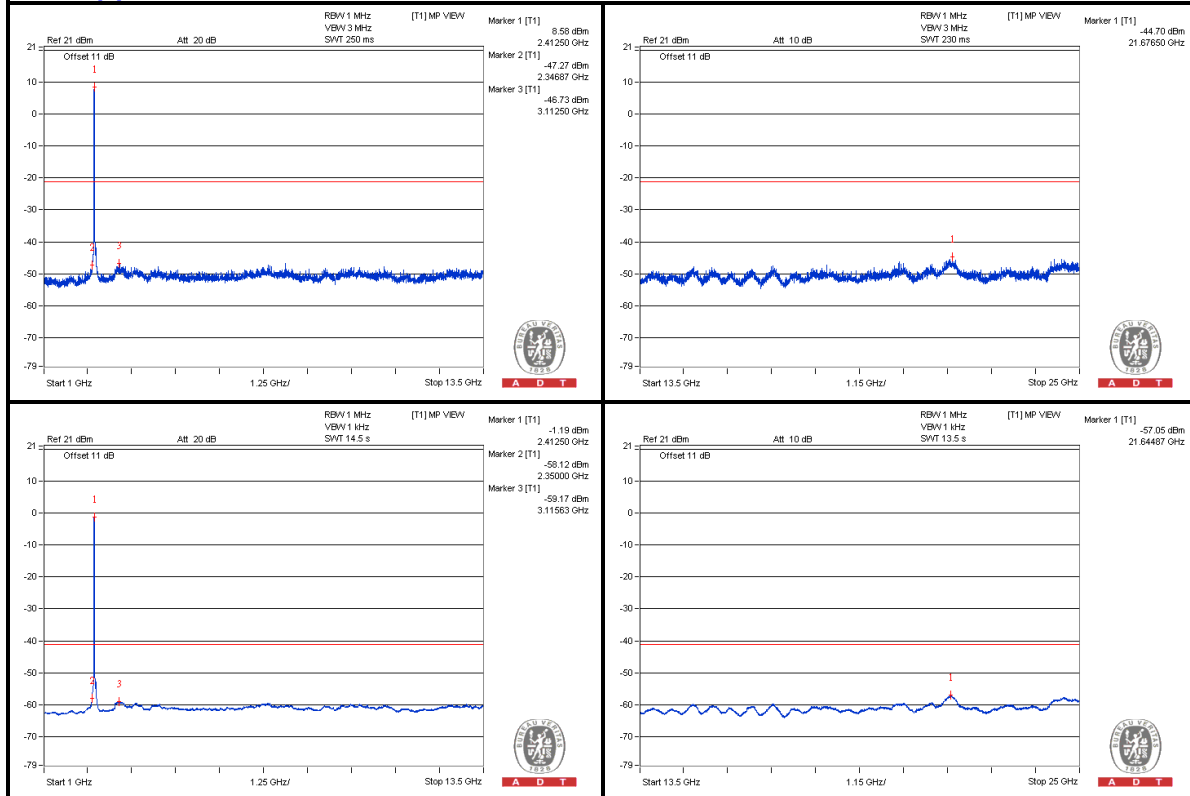
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain (0)



Chain (1)



Bandedge table

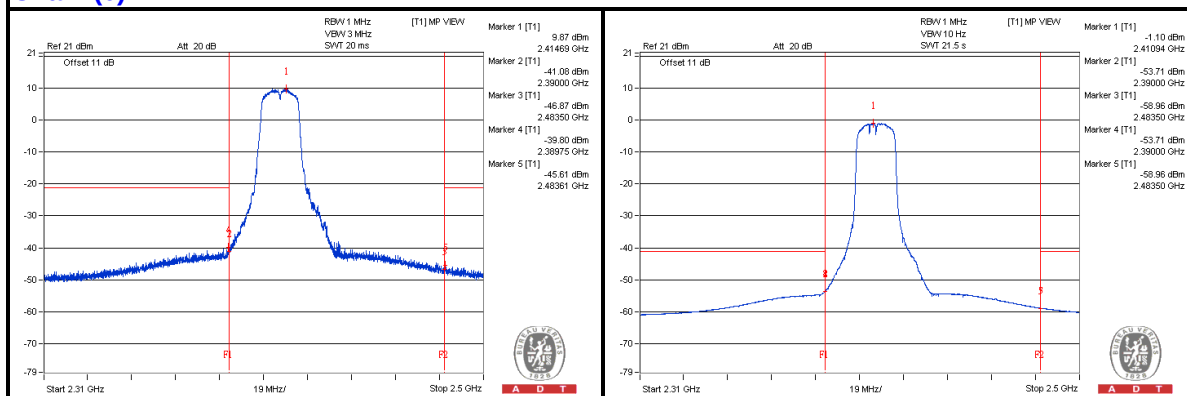
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2389.7525 PK	64.91	74	-9.09	-39.8	-40.19	6.63	-30.35
2	2389.99 AV	51.08	54	-2.92	-53.73	-53.92	6.63	-44.18
3	2483.5175 PK	58.36	74	-15.64	-46.46	-46.63	6.63	-36.9
4	2483.5175 AV	45.83	54	-8.17	-58.96	-59.19	6.63	-49.43

Note :

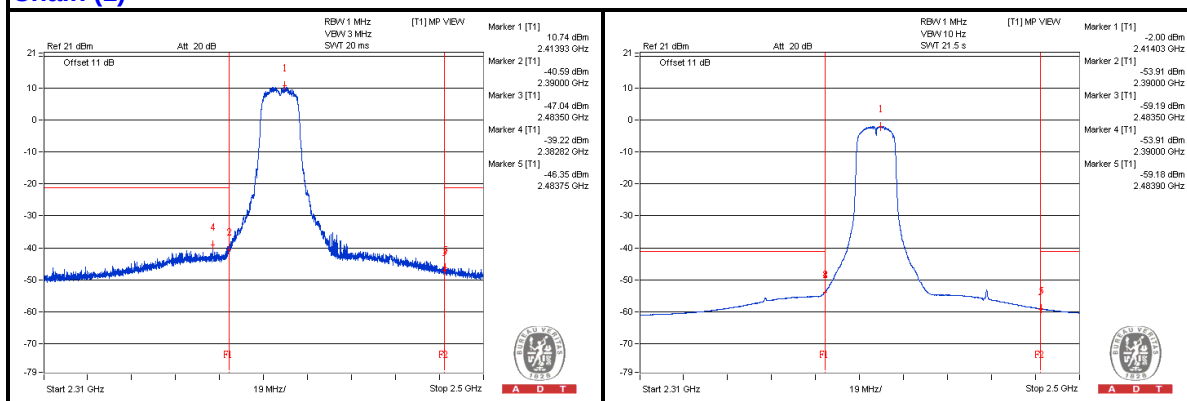
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain (0)



Chain (1)



802.11g - Channel 6

Conducted spurious emission table

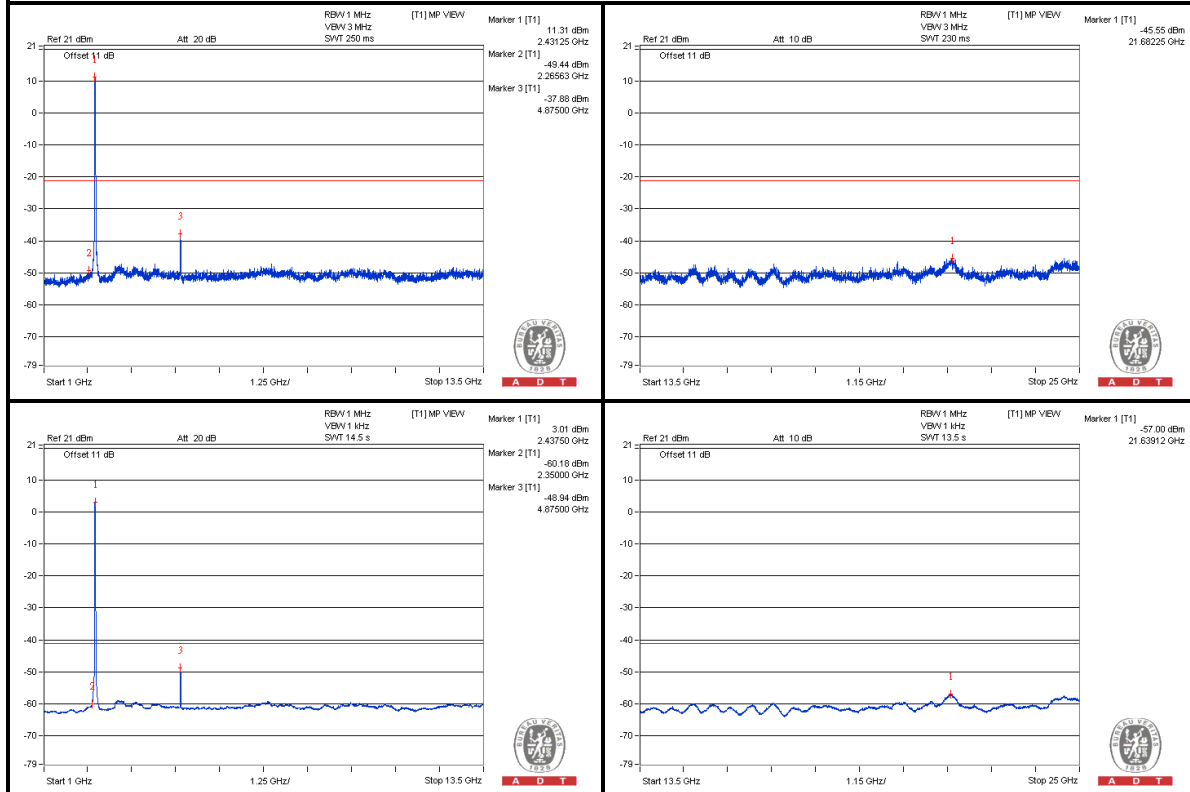
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1625 PK	51.51	74	-22.49	-53.64	-53.16	6.63	-43.75
2	1625 AV	42.18	54	-11.82	-62.62	-62.82	6.63	-53.08
3	4875 PK	64.22	74	-9.78	-37.88	-50.85	6.63	-31.04
4	4875 AV	53.2	54	-0.8	-48.94	-61.25	6.63	-42.06
5	7312.5 PK	54.96	74	-19.04	-49.46	-50.48	6.63	-40.3
6	7312.5 AV	44.94	54	-9.06	-59.84	-60.09	6.63	-50.32

Note :

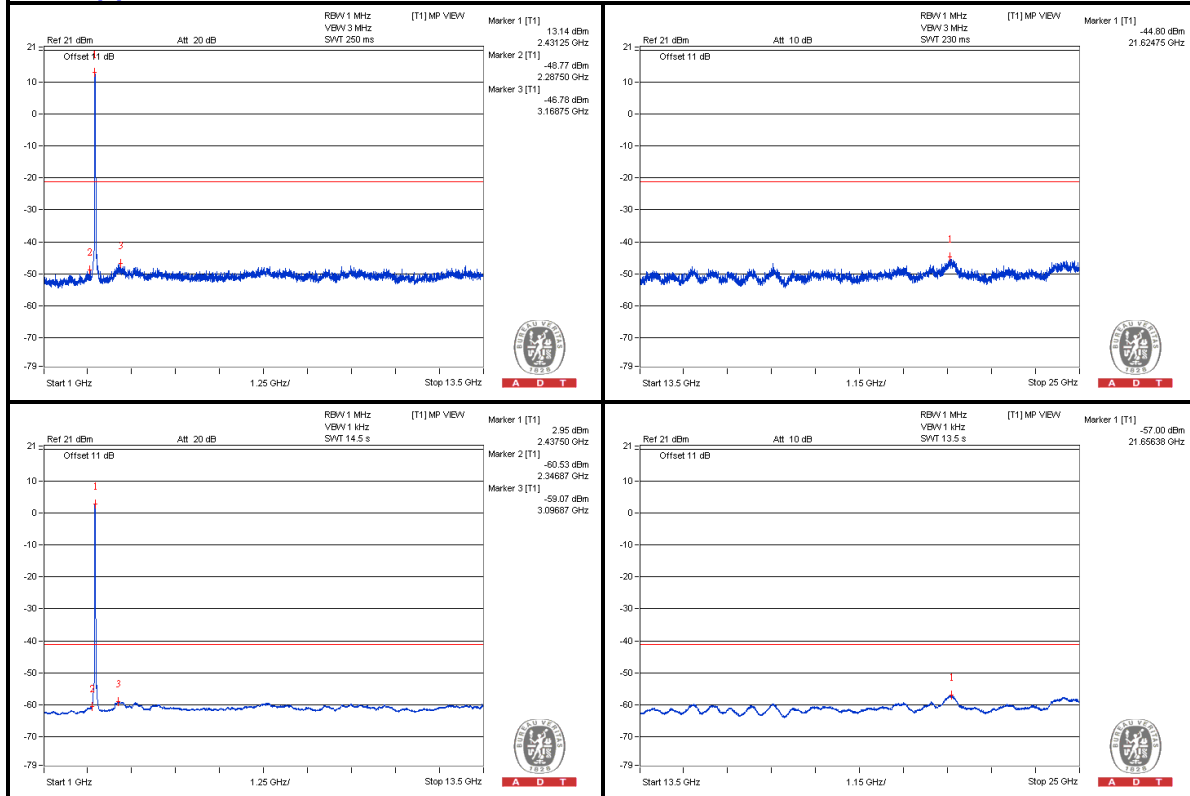
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain (0)



Chain (1)



Bandedge table

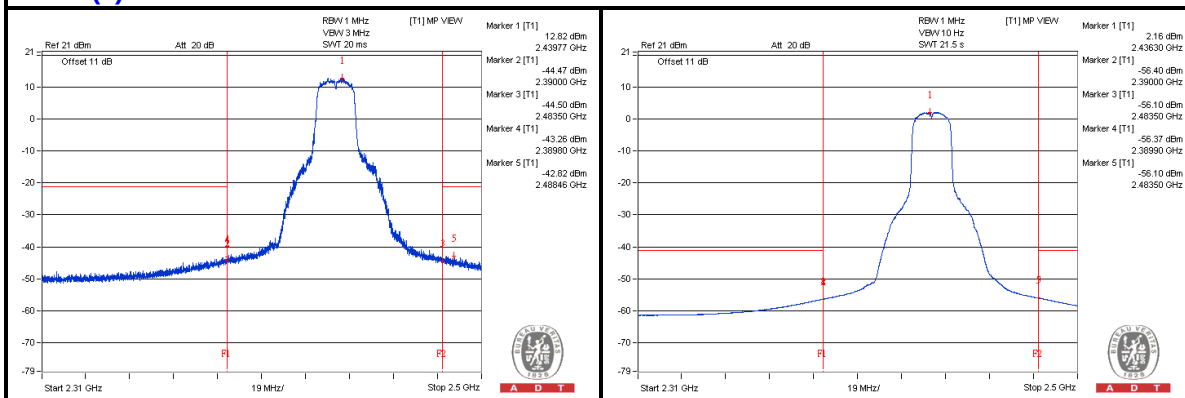
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2389.8475 PK	61.85	74	-12.15	-44.24	-42.11	6.63	-33.41
2	2389.0875 AV	48.91	54	-5.09	-56.48	-55.55	6.63	-46.35
3	2484.99 PK	62.69	74	-11.31	-42.97	-41.56	6.63	-32.57
4	2485.085 AV	50.2	54	-3.8	-56.28	-53.55	6.63	-45.06

Note :

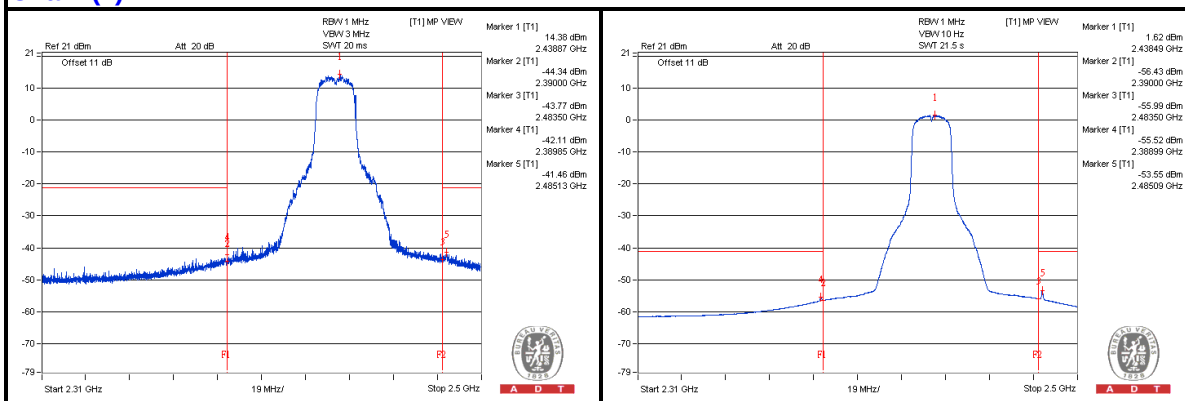
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain (0)



Chain (1)



802.11g - Channel 11

Conducted spurious emission table

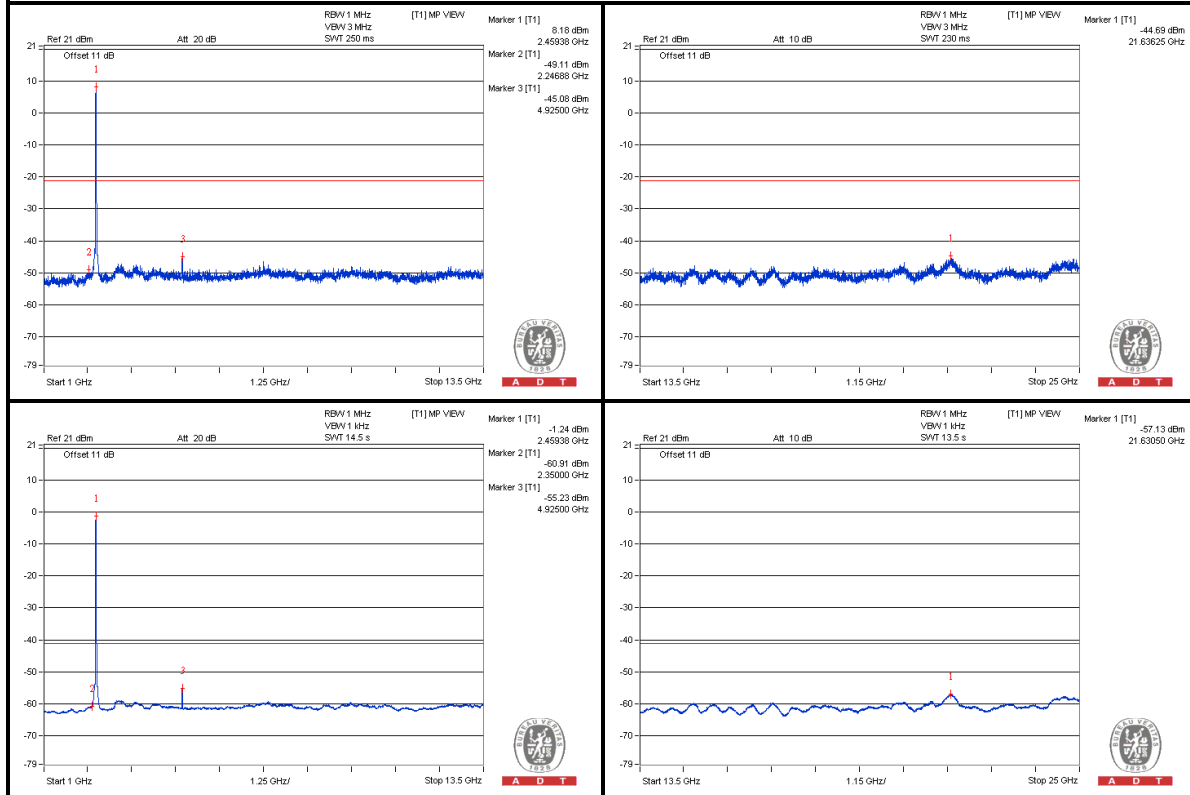
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	4925 PK	57.69	74	-16.31	-45.08	-51.55	6.63	-37.57
2	4925 AV	47.59	54	-6.41	-55.23	-61.46	6.63	-47.67
3	7387.5 PK	56.33	74	-17.67	-50.37	-47.3	6.63	-38.93
4	7384.375 AV	45.16	54	-8.84	-59.59	-59.89	6.63	-50.1

Note :

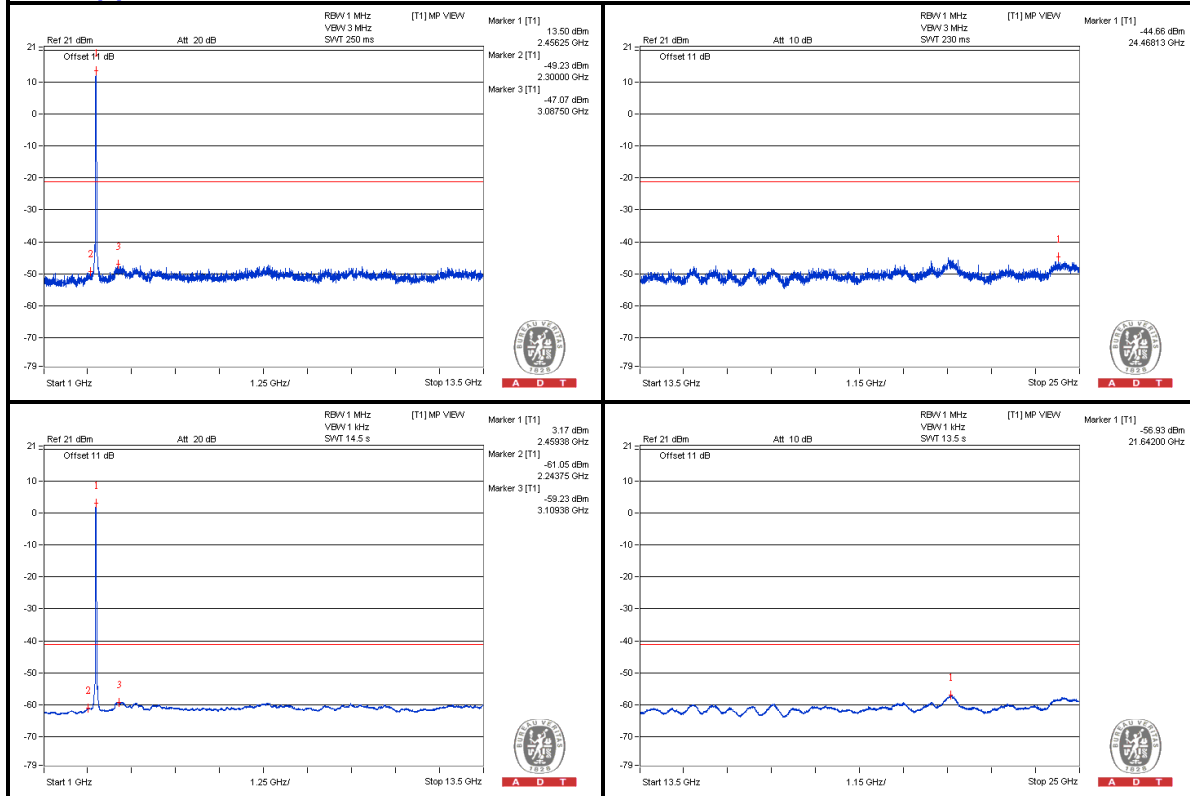
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain (0)



Chain (1)



Bandedge table

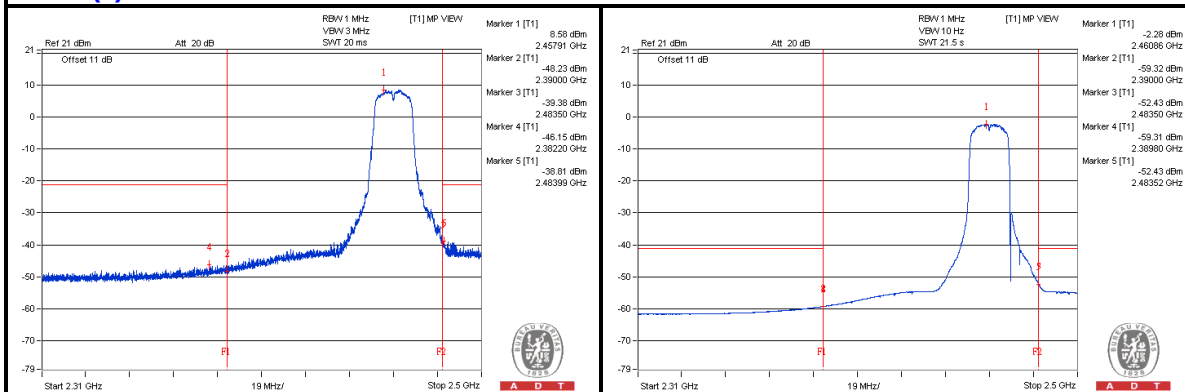
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2382.2 PK	58.21	74	-15.79	-46.15	-47.3	6.63	-37.05
2	2389.8 AV	45.47	54	-8.53	-59.31	-59.56	6.63	-49.79
3	2484.8475 PK	67.2	74	-6.8	-42.79	-35.42	6.63	-28.06
4	2483.5175 AV	52.16	54	-1.84	-52.43	-53.08	6.63	-43.1

Note :

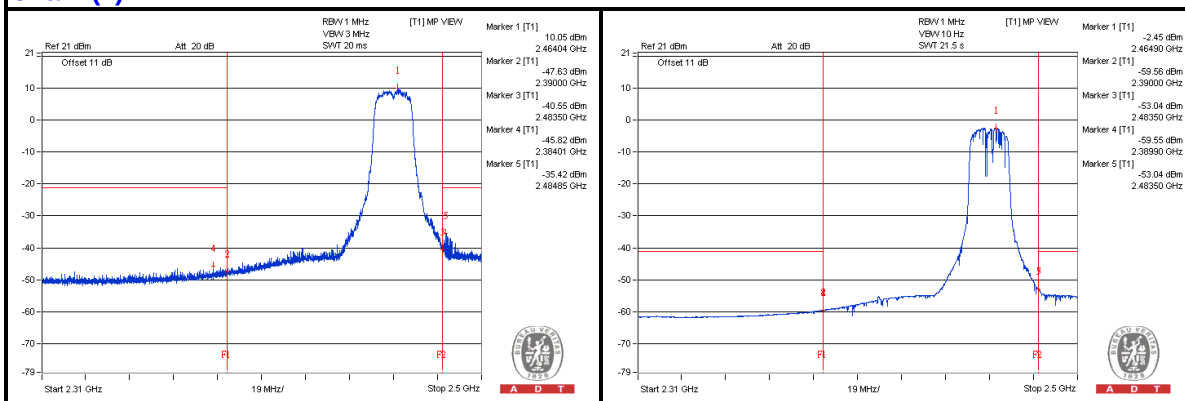
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain (0)



Chain (1)



802.11n_256QAM(BW20) - Channel 1

Conducted spurious emission table

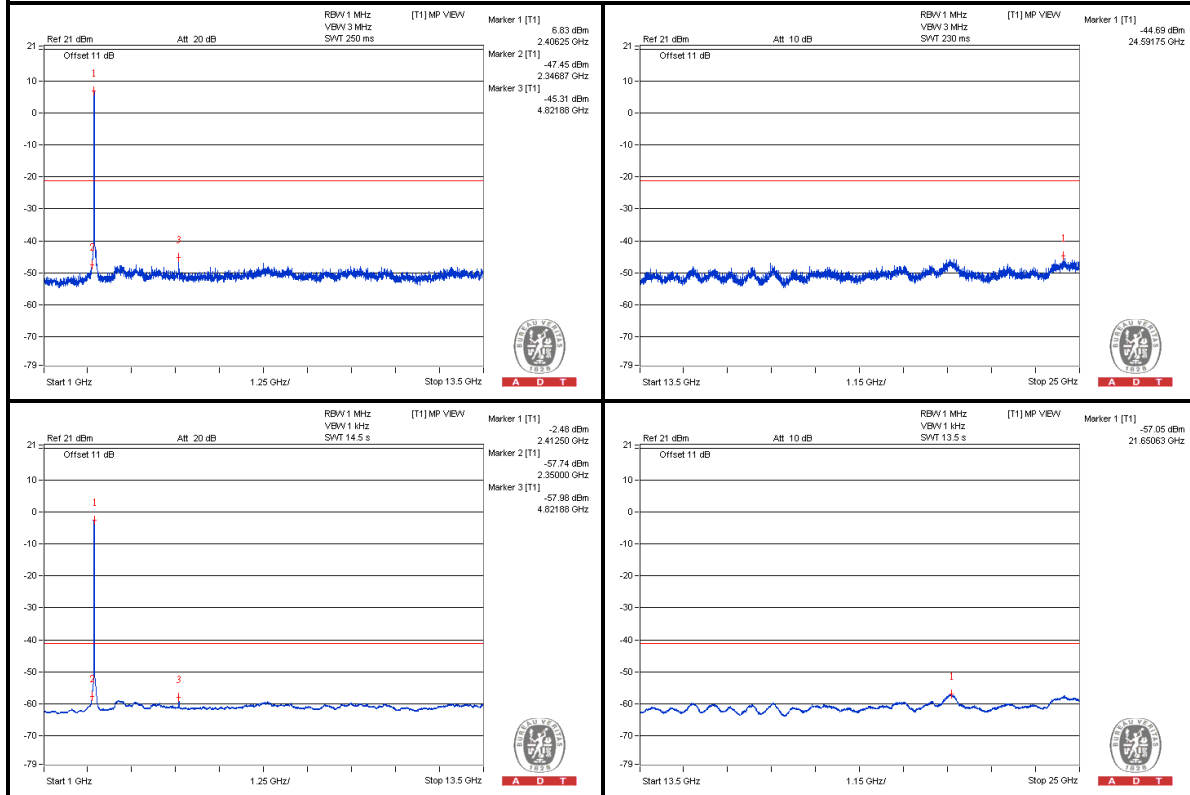
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1609.375 PK	52.03	74	-21.97	-52.89	-52.86	6.63	-43.23
2	1606.25 AV	42.09	54	-11.91	-62.76	-62.86	6.63	-53.17
3	4825 PK	56.4	74	-17.6	-46.72	-51.58	6.63	-38.86
4	4825 AV	45.72	54	-8.28	-58.04	-60.73	6.63	-49.54

Note :

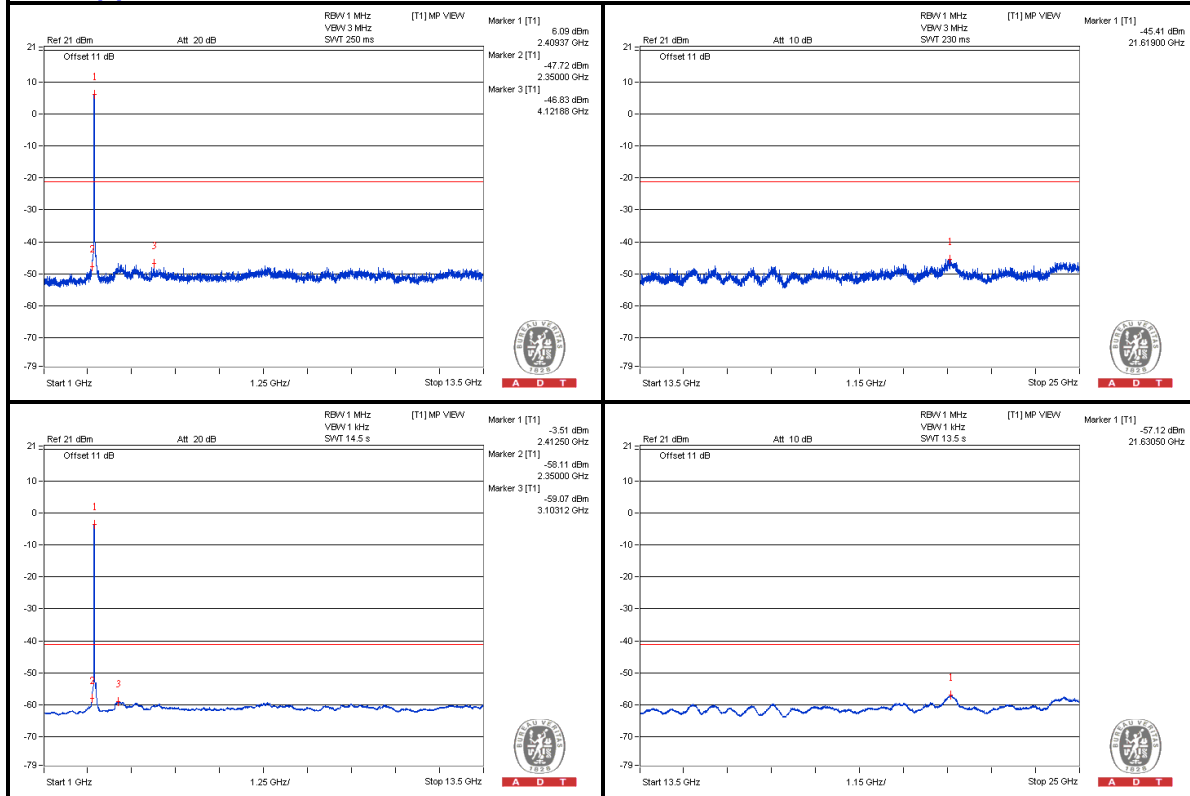
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain (0)



Chain (1)



Bandedge table

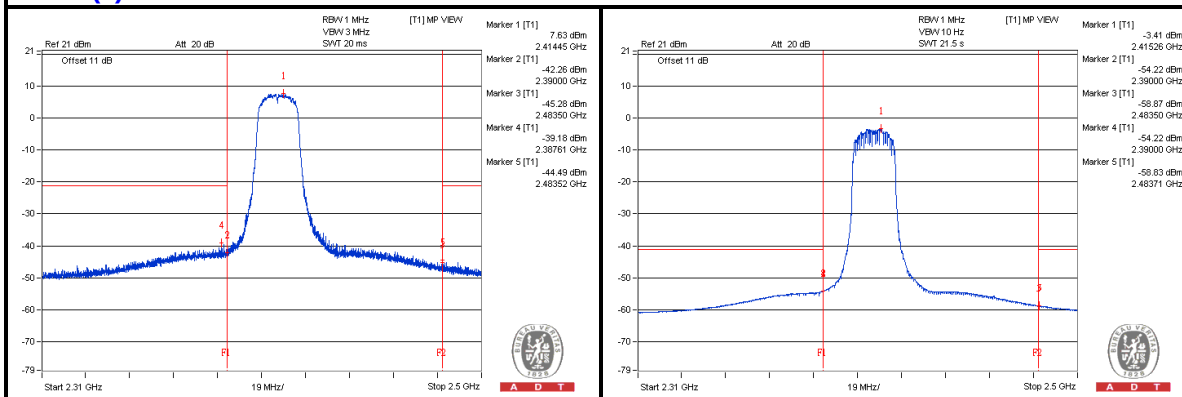
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2387.615 PK	65.32	74	-8.68	-39.18	-40.03	6.63	-29.94
2	2389.99 AV	50.5	54	-3.5	-54.23	-54.58	6.63	-44.76
3	2484.3725 PK	59.26	74	-14.74	-45.41	-45.88	6.63	-36
4	2483.66 AV	45.89	54	-8.11	-58.84	-59.19	6.63	-49.37

Note :

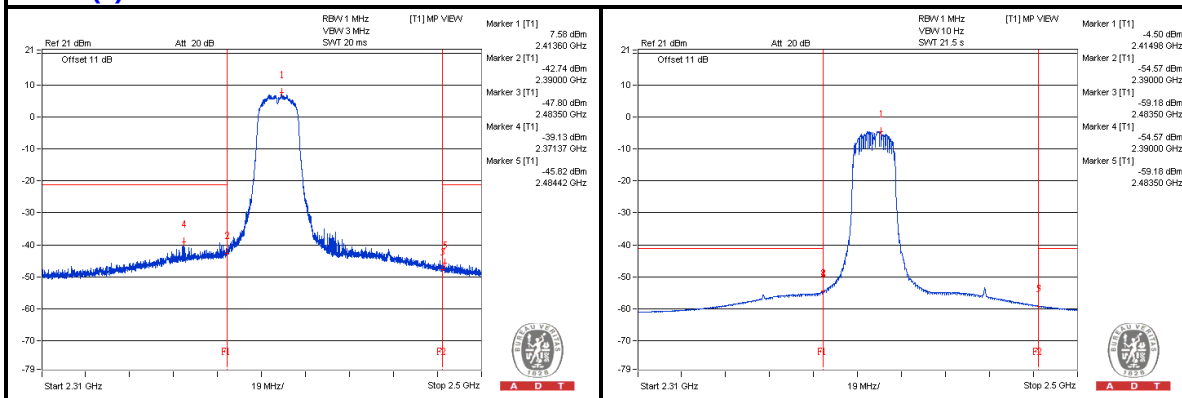
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain (0)



Chain (1)



802.11n_256QAM(BW20) - Channel 6

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1625 PK	52.13	74	-21.87	-53.9	-51.87	6.63	-43.13
2	1625 AV	42.18	54	-11.82	-62.6	-62.85	6.63	-53.08
3	4875 PK	63.17	74	-10.83	-39.02	-50.54	6.63	-32.09
4	4875 AV	52.51	54	-1.49	-49.71	-60.78	6.63	-42.75
5	7309.375 PK	55.24	74	-18.76	-49.1	-50.3	6.63	-40.02
6	7309.375 AV	45.18	54	-8.82	-59.78	-59.66	6.63	-50.08

Note :

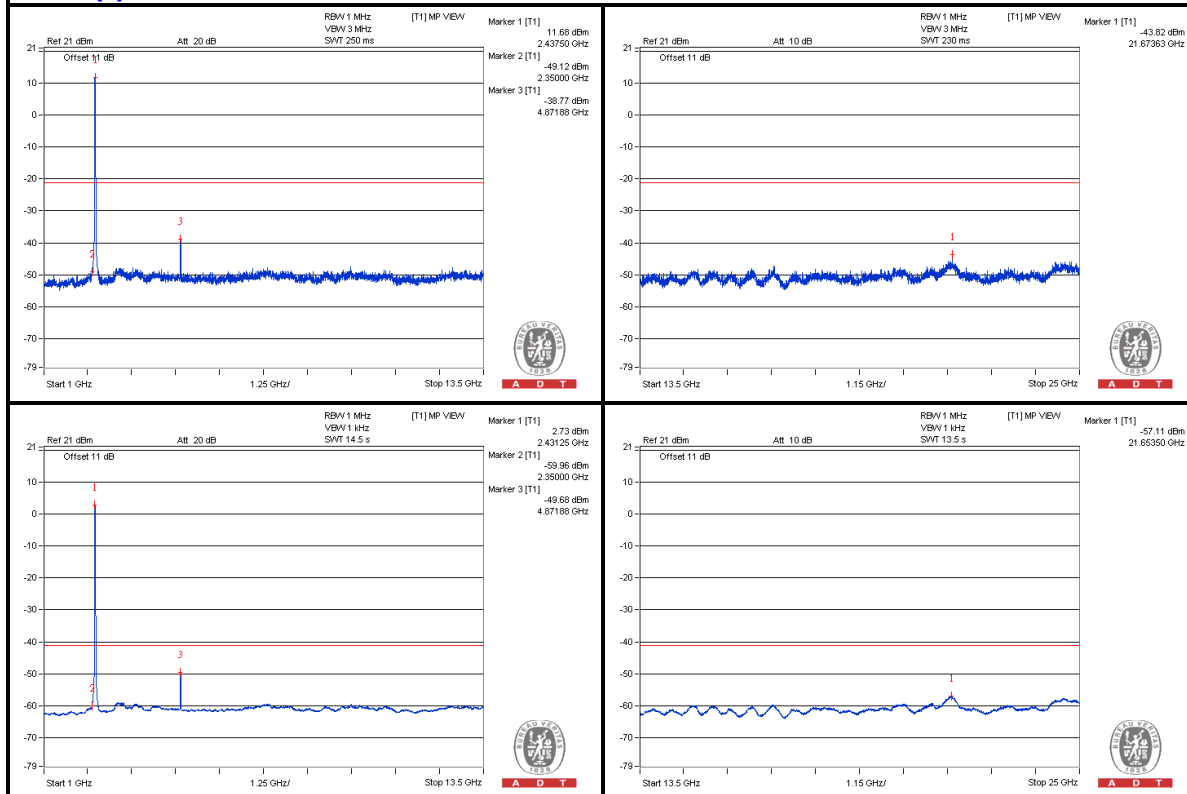
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

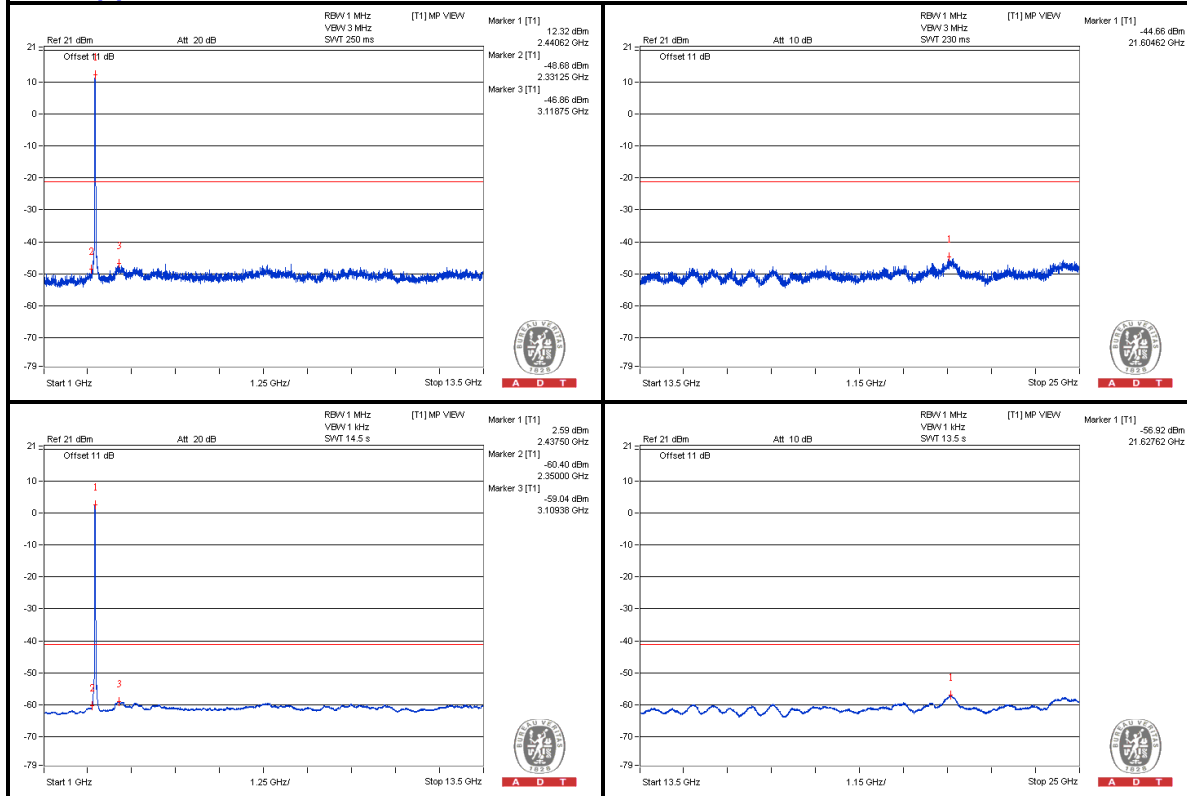


A D T

Chain (0)



Chain (1)



Bandedge table

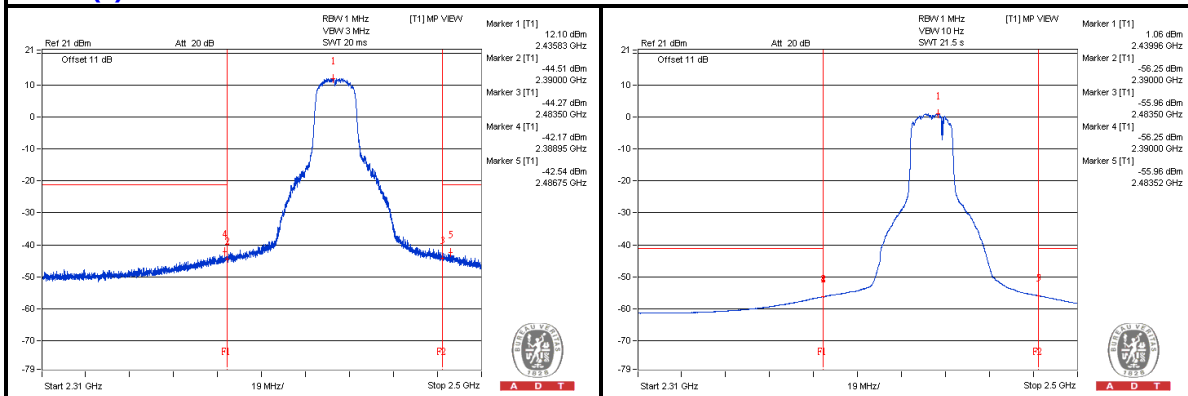
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2388.945 PK	61.5	74	-12.5	-42.17	-45.12	6.63	-33.76
2	2388.9925 AV	48.67	54	-5.33	-56.4	-56.07	6.63	-46.59
3	2485.465 PK	62.02	74	-11.98	-44.75	-41.58	6.63	-33.24
4	2485.1325 AV	49.79	54	-4.21	-56.19	-54.24	6.63	-45.47

Note :

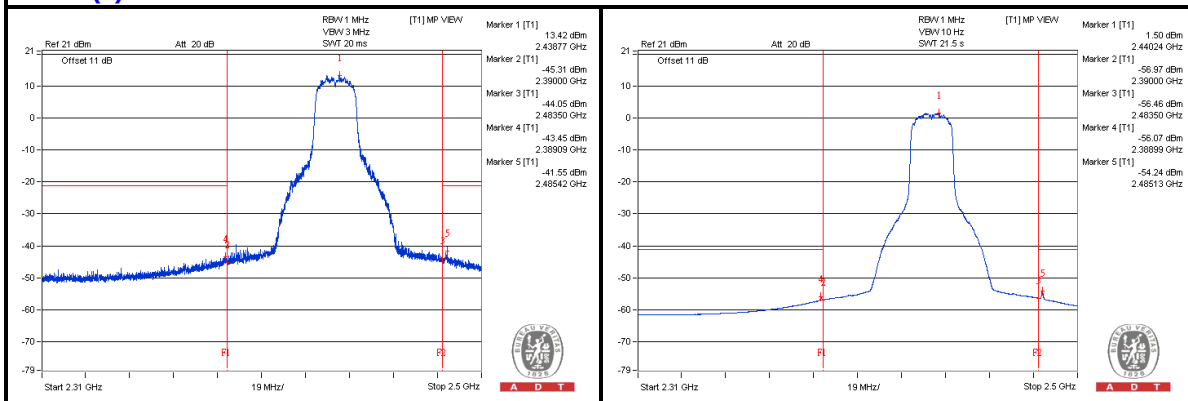
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain (0)



Chain (1)



802.11n 256QAM(BW20) - Channel 11

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	4925 PK	56.16	74	-17.84	-47.08	-51.46	6.63	-39.1
2	4925 AV	46.3	54	-7.7	-56.99	-61.18	6.63	-48.96
3	7384.375 PK	54.97	74	-19.03	-49.9	-49.97	6.63	-40.29
4	7384.375 AV	45.09	54	-8.91	-59.69	-59.93	6.63	-50.17

Note :

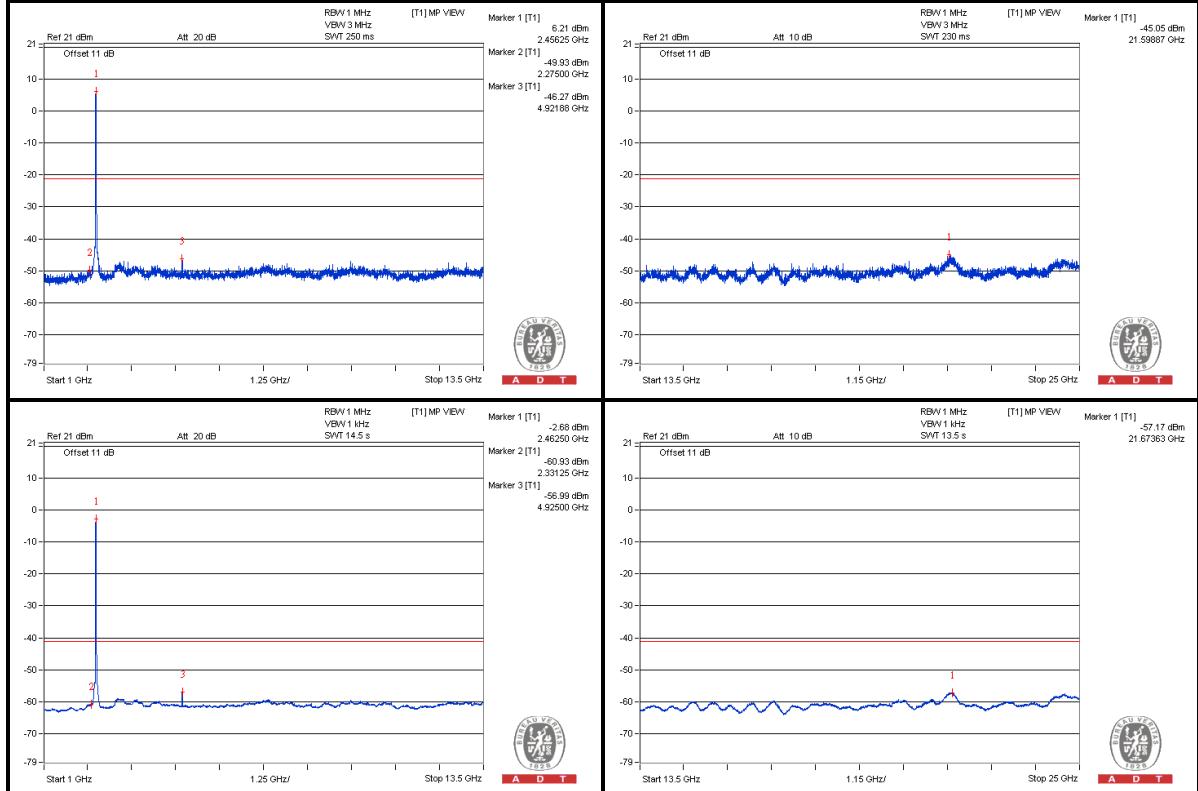
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

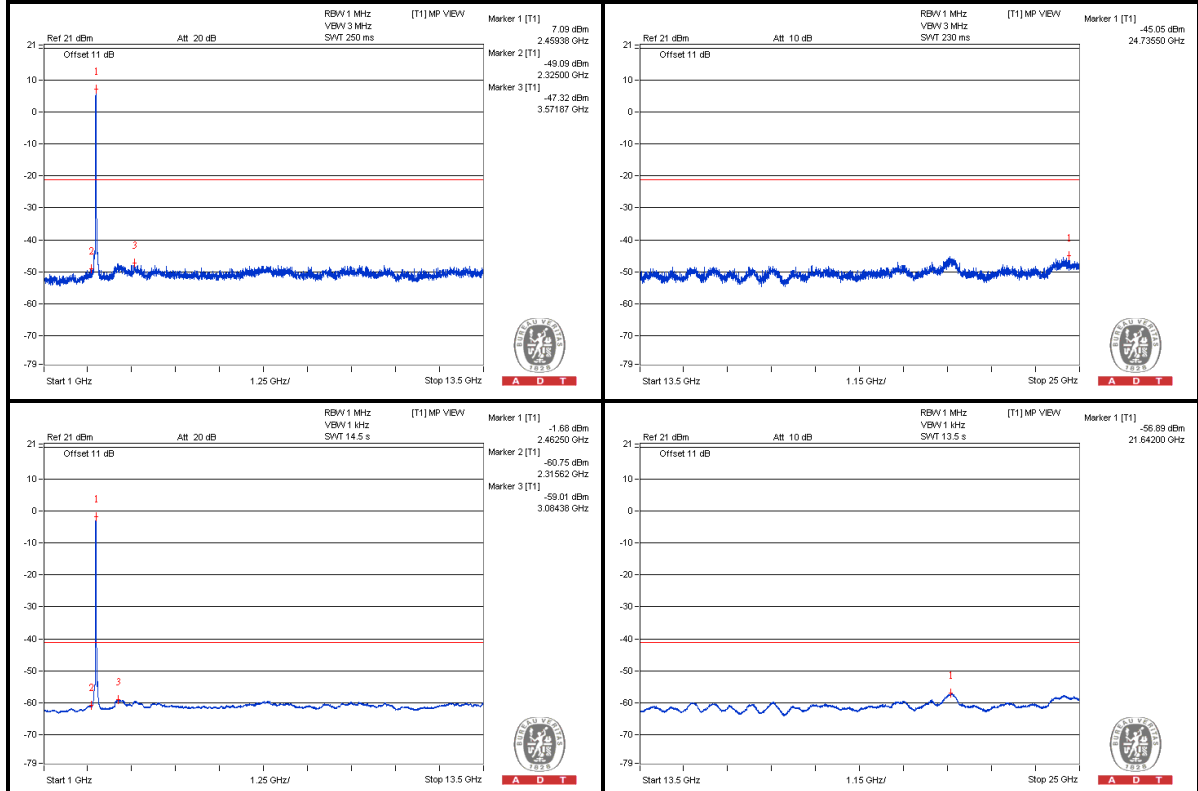


A D T

Chain (0)



Chain (1)



Bandedge table

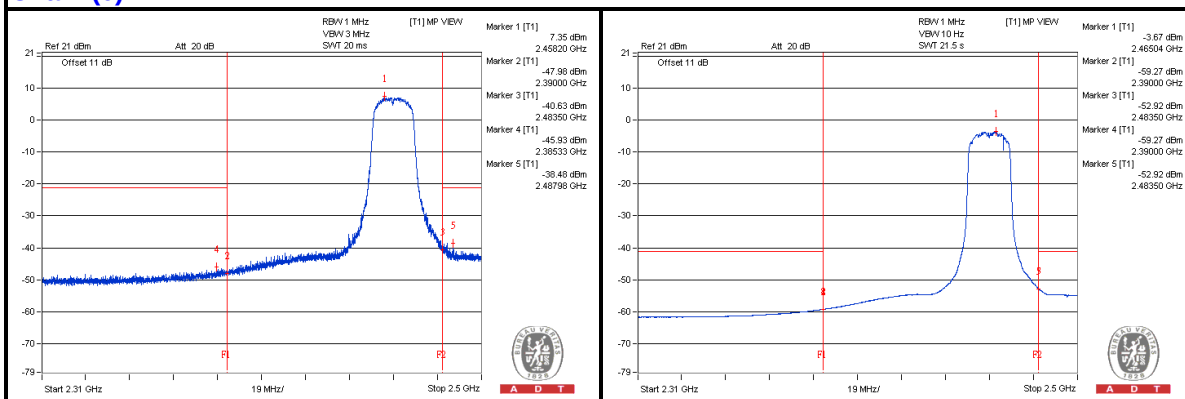
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2387.6625 PK	57.71	74	-16.29	-46.4	-48.15	6.63	-37.55
2	2389.99 AV	45.41	54	-8.59	-59.27	-59.72	6.63	-49.85
3	2483.66 PK	67.17	74	-6.83	-41.04	-35.88	6.63	-28.09
4	2483.5175 AV	51.7	54	-2.3	-52.93	-53.49	6.63	-43.56

Note :

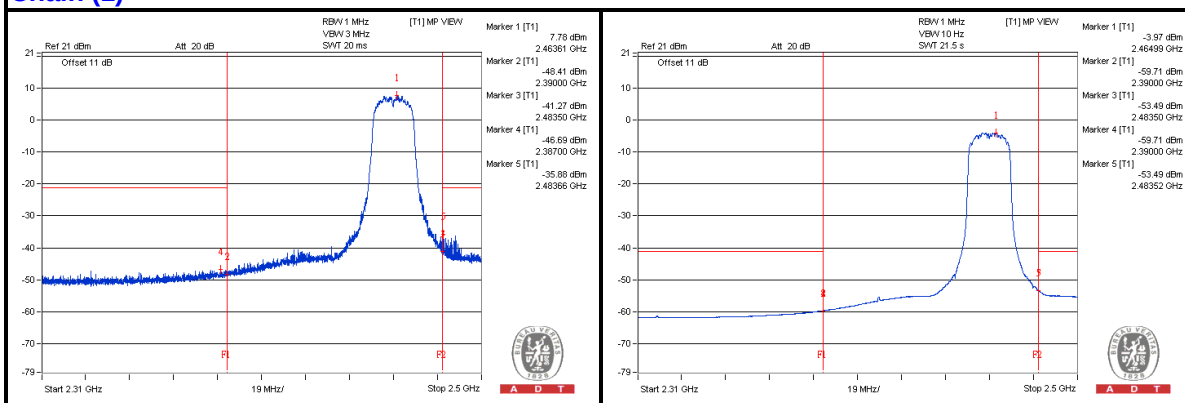
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain (0)



Chain (1)



802.11n_256QAM(BW40) - Channel 3

Conducted spurious emission table

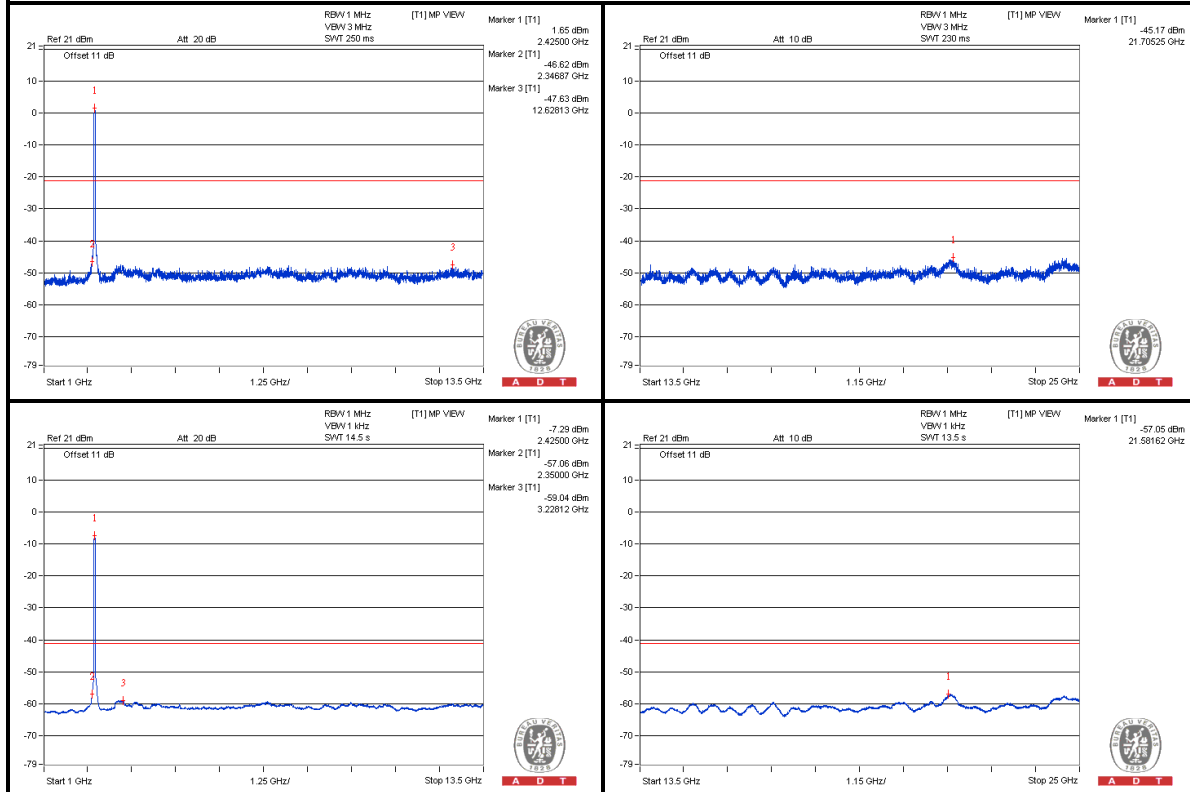
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1615.625 PK	51.91	74	-22.09	-53.2	-52.79	6.63	-43.35
2	1615.625 AV	42.02	54	-11.98	-62.94	-62.82	6.63	-53.24
3	4843.75 PK	54.02	74	-19.98	-50.18	-51.72	6.63	-41.24
4	4843.75 AV	44.37	54	-9.63	-60.06	-61.05	6.63	-50.89
5	7265.625 PK	55.12	74	-18.88	-49.75	-49.81	6.63	-40.14
6	7265.625 AV	44.97	54	-9.03	-59.93	-59.93	6.63	-50.29

Note :

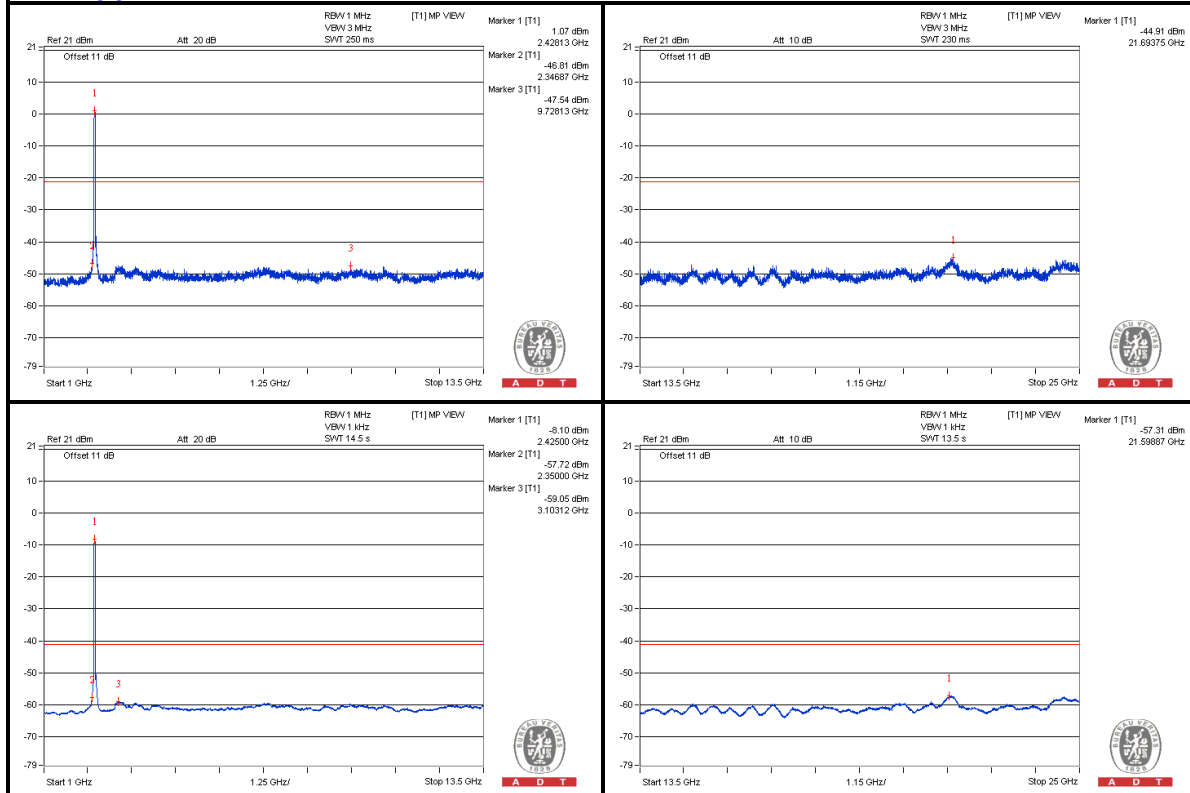
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain (0)



Chain (1)



Bandedge table

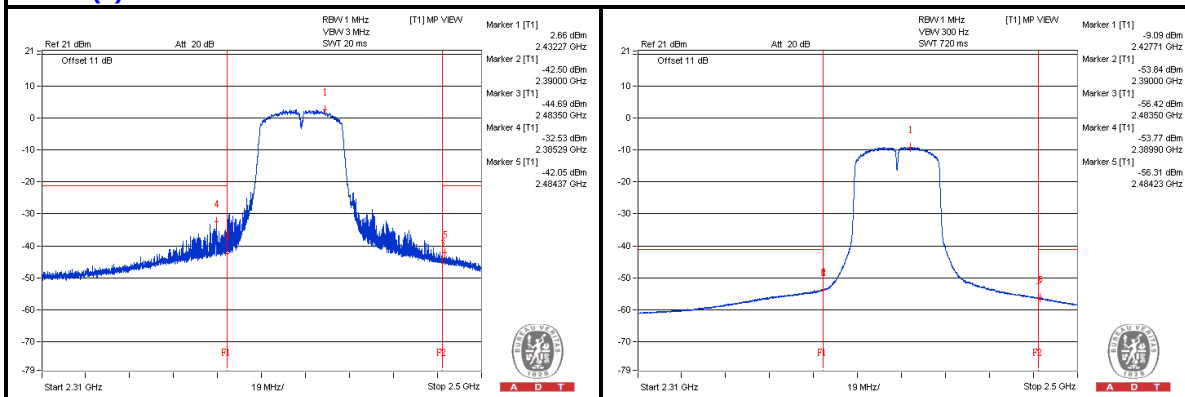
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2389.895 PK	70.72	74	-3.28	-38.79	-31.99	6.63	-24.54
2	2389.99 AV	51.63	54	-2.37	-53.84	-52.76	6.63	-43.63
3	2484.23 PK	62.1	74	-11.9	-45.34	-41.21	6.63	-33.16
4	2483.945 AV	48.49	54	-5.51	-56.51	-56.31	6.63	-46.77

Note :

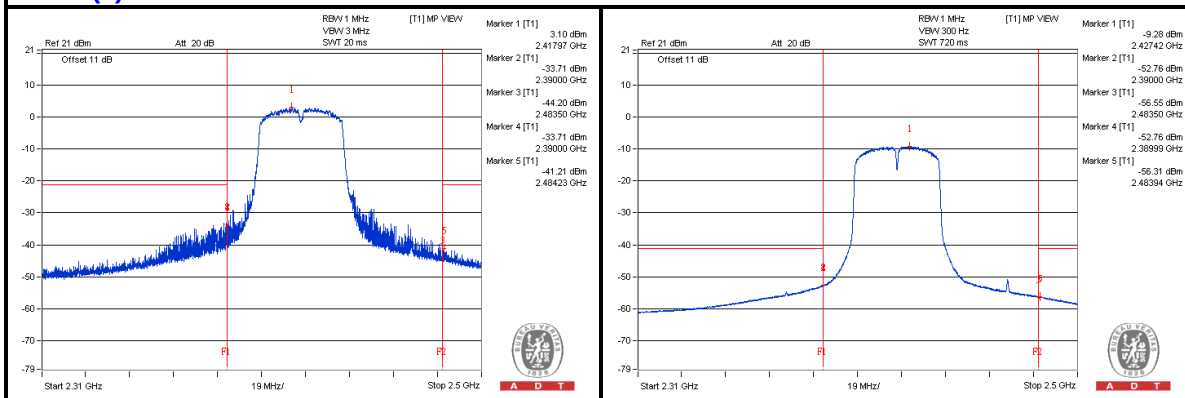
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain (0)



Chain (1)



802.11n 256QAM(BW40) - Channel 6

Conducted spurious emission table

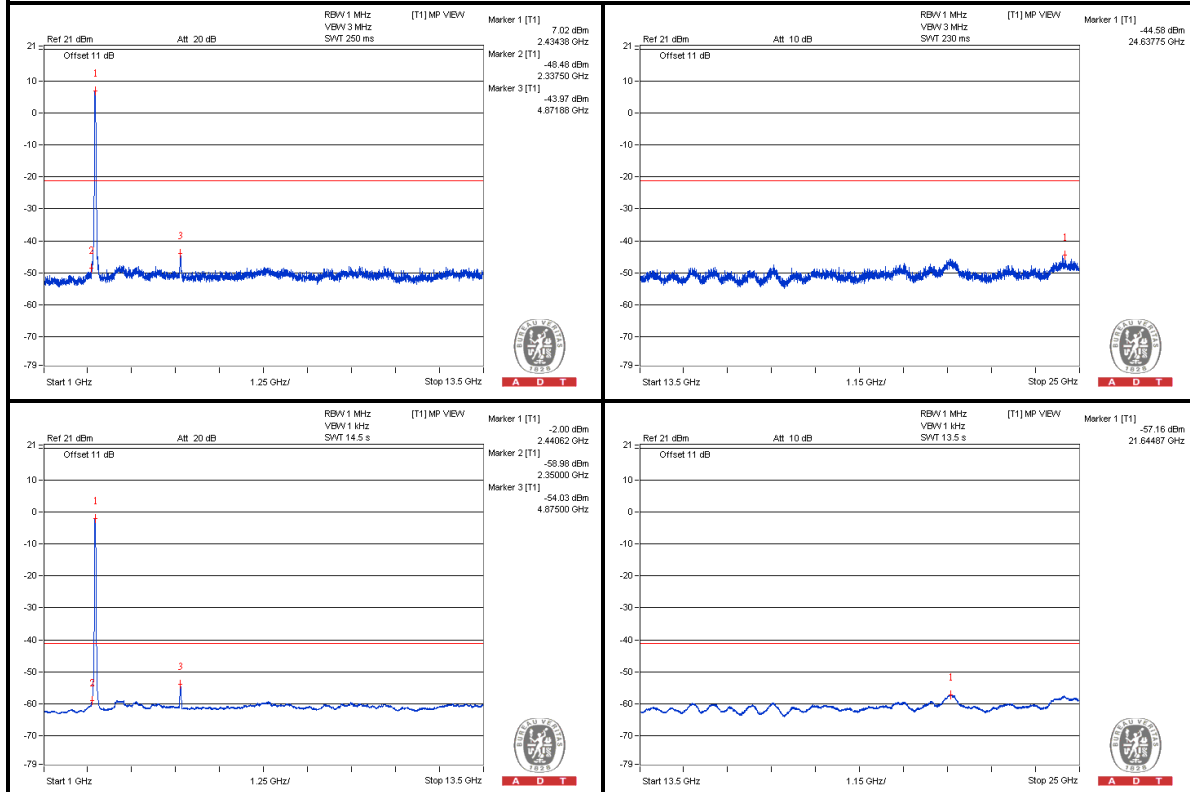
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1625 PK	51.99	74	-22.01	-52.97	-52.85	6.63	-43.27
2	1625 AV	42.05	54	-11.95	-62.85	-62.85	6.63	-53.21
3	4875 PK	58.45	74	-15.55	-44.33	-50.78	6.63	-36.81
4	4875 AV	48.66	54	-5.34	-54.03	-61	6.63	-46.6
5	7309.375 PK	54.78	74	-19.22	-50.06	-50.19	6.63	-40.48
6	7312.5 AV	44.96	54	-9.04	-59.88	-60	6.63	-50.3

Note :

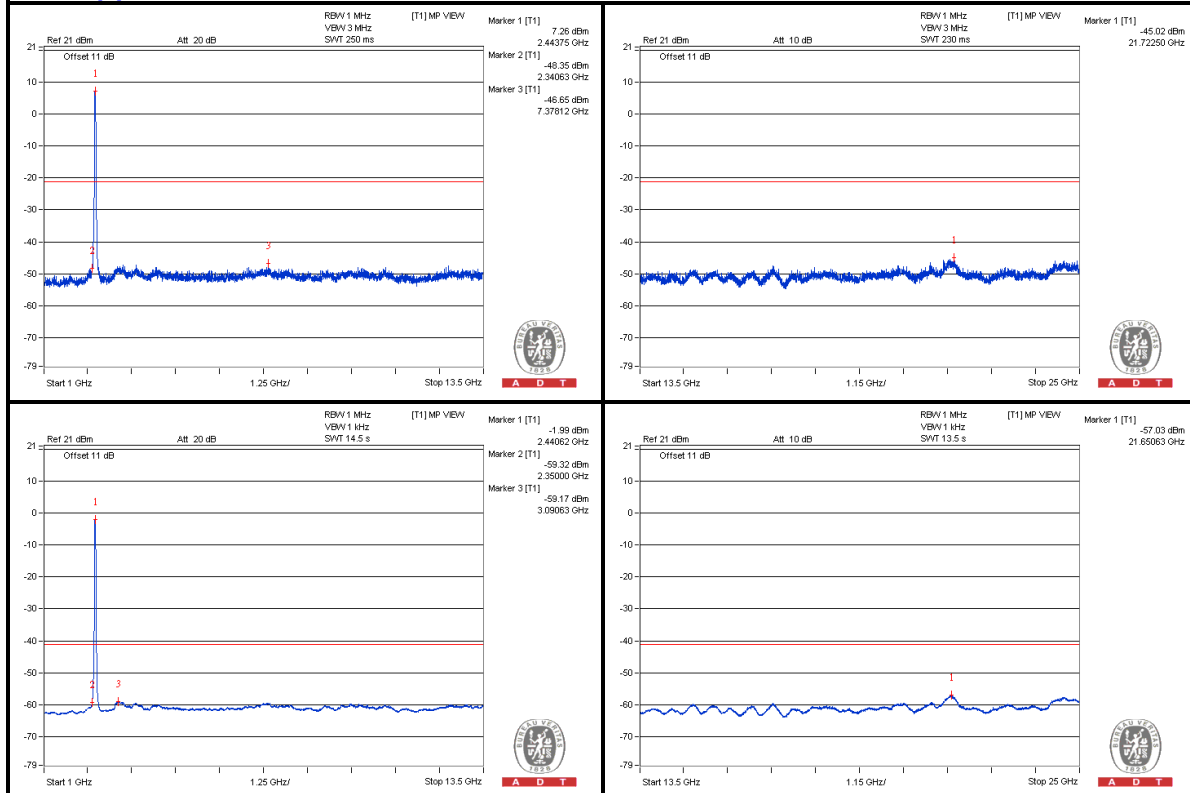
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain (0)



Chain (1)



Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2388.2325 PK	70.4	74	-3.6	-35.56	-33.65	6.63	-24.86
2	2389.99 AV	52.31	54	-1.69	-53.74	-51.68	6.63	-42.95
3	2483.66 PK	71.42	74	-2.58	-36.43	-31.74	6.63	-23.84
4	2483.6125 AV	54.62	54	* 0.62	-50.57	-50.01	6.63	-40.64

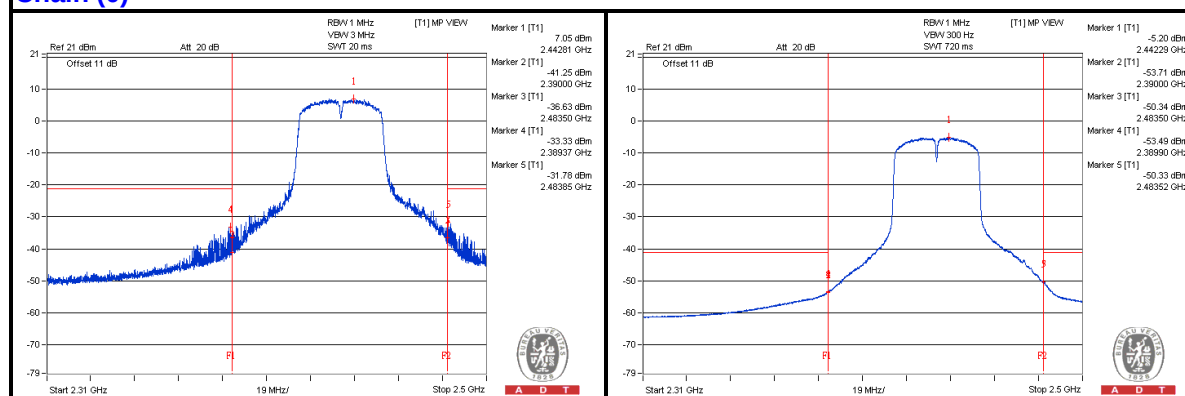
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

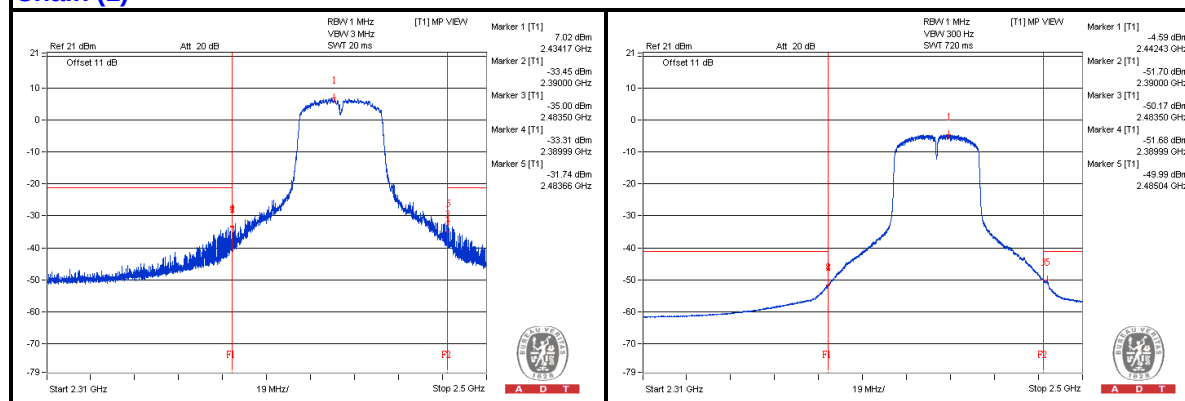
d = measurement distance in 3 meters.

* The unwanted emission was verified and the test result was passed by radiated measurement.
(Please refer APPENDIX A)

Chain (0)



Chain (1)



802.11n 256QAM(BW40) - Channel 9

Conducted spurious emission table

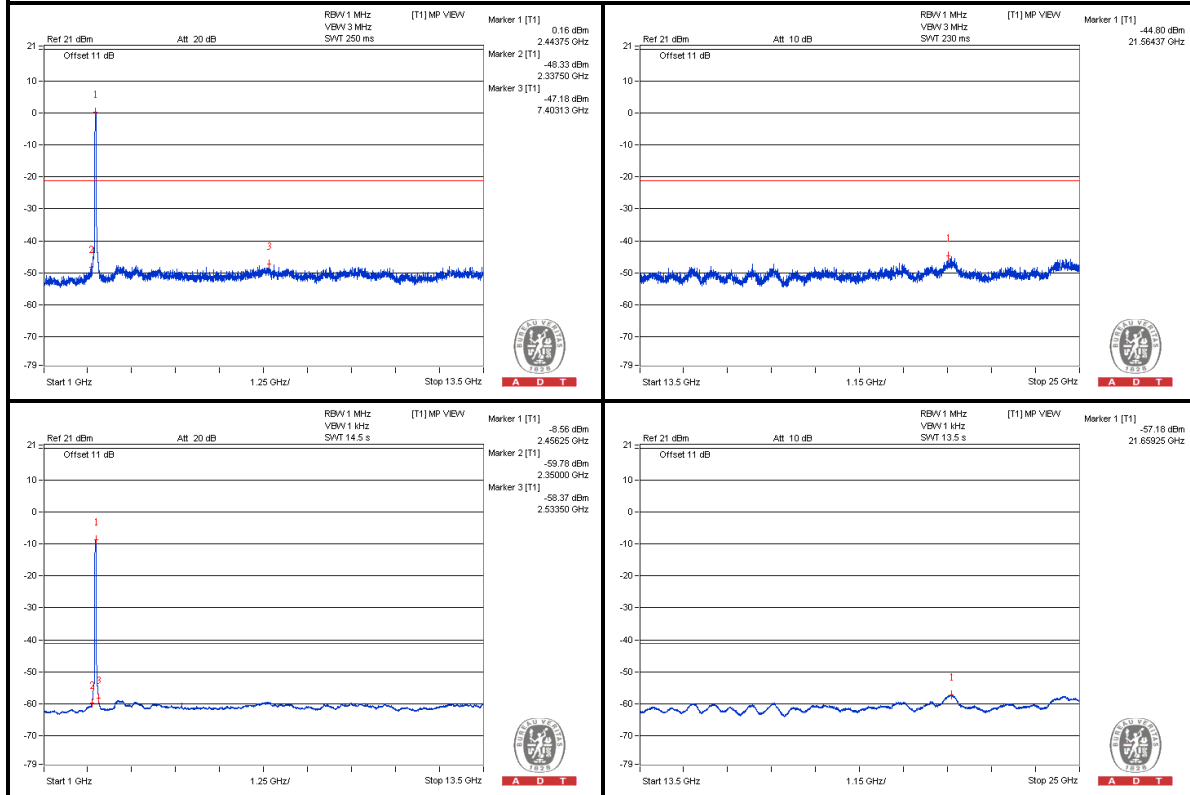
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	4903.125 PK	54.75	74	-19.25	-50.44	-49.87	6.63	-40.51
2	4903.125 AV	44.37	54	-9.63	-59.93	-61.22	6.63	-50.89
3	7356.25 PK	55.02	74	-18.98	-49.58	-50.2	6.63	-40.24
4	7356.25 AV	45.29	54	-8.71	-59.71	-59.51	6.63	-49.97

Note :

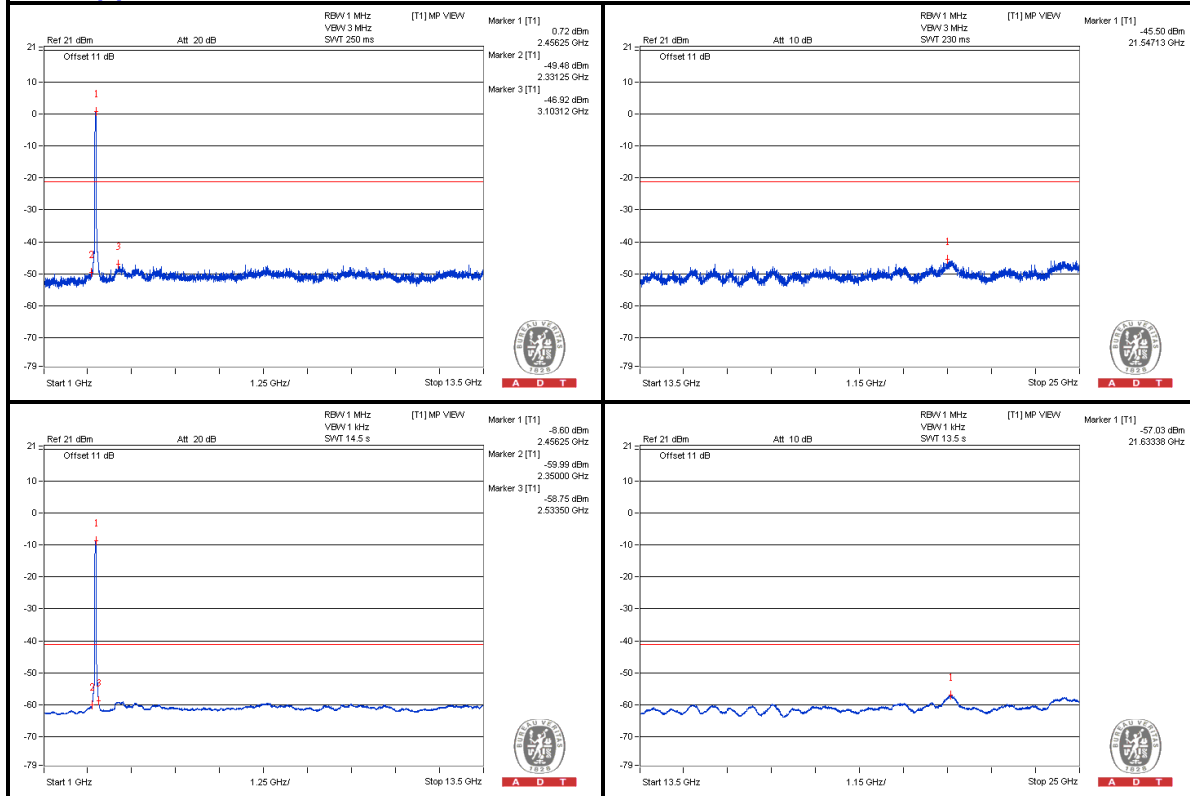
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain (0)



Chain (1)



Bandedge table

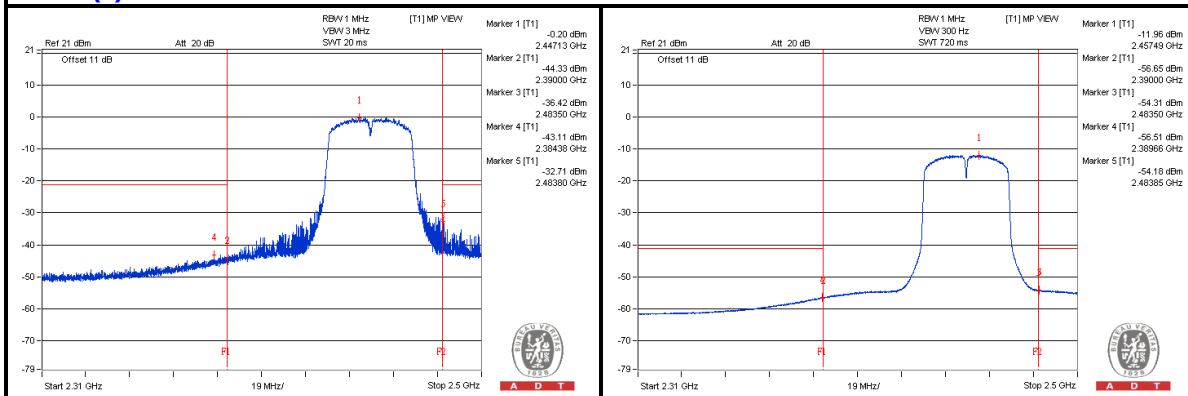
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2384.385 PK	60.87	74	-13.13	-43.11	-45.2	6.63	-34.39
2	2389.99 AV	48.03	54	-5.97	-56.62	-57.13	6.63	-47.23
3	2484.135 PK	71.73	74	-2.27	-33.35	-32.99	6.63	-23.53
4	2500 AV	51.74	54	-2.26	-55.04	-51.86	6.63	-43.52

Note :

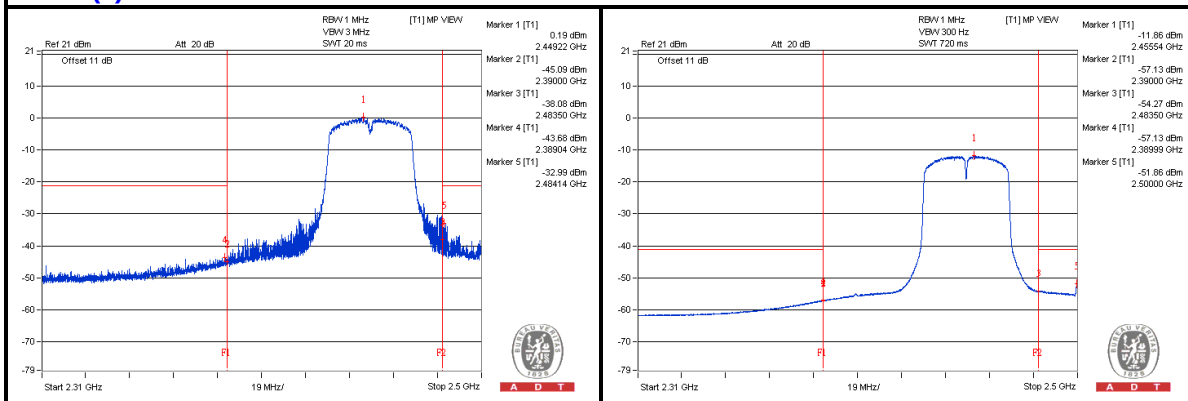
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain (0)



Chain (1)



5. TEST TYPES AND RESULTS (FOR 5GHz, 5.725~5.850GHz Band)

5.1 CONDUCTED OUTPUT POWER MEASUREMENT

5.1.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 5725 –5850 MHz band: 1 Watt (30dBm)

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

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

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

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

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

5.1.2 INSTRUMENTS

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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date :Aug. 25, 2014

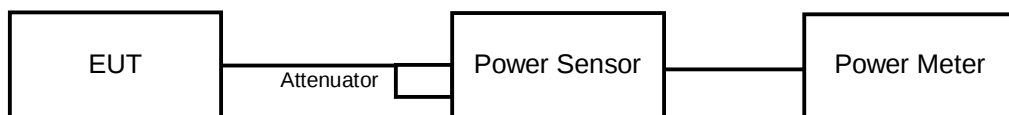
5.1.3 TEST PROCEDURES

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

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 TEST SETUP



5.1.6 EUT OPERATING CONDITIONS

Same as Item 4.1.6

5.1.7 TEST RESULTS (MODE 1)

FOR PEAK POWER

802.11a

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	121.06	20.83	30	PASS
157	5785	108.643	20.36	30	PASS
165	5825	103.039	20.13	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	128.529	21.09	30	PASS
157	5785	122.744	20.89	30	PASS
165	5825	102.802	20.12	30	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
151	5755	108.143	20.34	30	PASS
159	5795	116.95	20.68	30	PASS



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802.11ac (VHT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	135.207	21.31	30	PASS
157	5785	131.522	21.19	30	PASS
165	5825	123.027	20.90	30	PASS

802.11ac (VHT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
151	5755	109.396	20.39	30	PASS
159	5795	107.895	20.33	30	PASS

802.11ac (VHT80)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
155	5775	136.144	21.34	30	PASS

FOR AVERAGE POWER

802.11a

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
149	5745	33.113	15.20
157	5785	30.269	14.81
165	5825	29.174	14.65

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
149	5745	32.509	15.12
157	5785	31.989	15.05
165	5825	31.046	14.92

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
151	5755	26.062	14.16
159	5795	25.527	14.07

802.11ac (VHT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
149	5745	32.509	15.12
157	5785	32.211	15.08
165	5825	30.761	14.88

802.11ac (VHT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
151	5755	25.763	14.11
159	5795	25.882	14.13

802.11ac (VHT80)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
155	5775	26.977	14.31

5.1.8 TEST RESULTS (MODE 2)

FOR PEAK POWER

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
149	5745	20.83	21.00	246.953	23.93	28.23	PASS
157	5785	20.36	20.33	216.538	23.36	28.23	PASS
165	5825	20.13	20.47	214.468	23.31	28.23	PASS

NOTE: Directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, therefore the limit needs to reduce, so the power limit shall be reduced to $30-(7.77-6) = 28.23\text{dBm}$.

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
149	5745	21.09	21.01	254.712	24.06	28.23	PASS
157	5785	20.89	20.59	237.295	23.75	28.23	PASS
165	5825	20.12	20.21	207.756	23.18	28.23	PASS

NOTE: Directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, therefore the limit needs to reduce, so the power limit shall be reduced to $30-(7.77-6) = 28.23\text{dBm}$.

802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
151	5755	20.34	20.23	213.582	23.30	28.23	PASS
159	5795	20.68	20.17	220.942	23.44	28.23	PASS

NOTE: Directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, therefore the limit needs to reduce, so the power limit shall be reduced to $30-(7.77-6) = 28.23\text{dBm}$.

802.11ac (VHT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
149	5745	21.31	21.50	276.461	24.42	28.23	PASS
157	5785	21.19	21.39	269.243	24.30	28.23	PASS
165	5825	20.90	21.28	257.303	24.10	28.23	PASS

NOTE: Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dBi , therefore the limit needs to reduce, so the power limit shall be reduced to 30-(7.77-6) = 28.23dBm.

802.11ac (VHT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
151	5755	20.39	20.36	218.039	23.39	28.23	PASS
159	5795	20.33	20.54	221.135	23.45	28.23	PASS

NOTE: Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dBi , therefore the limit needs to reduce, so the power limit shall be reduced to 30-(7.77-6) = 28.23dBm.

802.11ac (VHT80)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
155	5775	21.34	22.04	296.1	24.71	28.23	PASS

NOTE: Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dBi , therefore the limit needs to reduce, so the power limit shall be reduced to 30-(7.77-6) = 28.23dBm.

FOR AVERAGE POWER

802.11a :

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
149	5745	15.20	15.40	67.787	18.31
157	5785	14.81	14.81	60.538	17.82
165	5825	14.65	14.81	59.443	17.74

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
149	5745	15.12	15.03	64.351	18.09
157	5785	14.95	15.03	63.103	18.00
165	5825	14.92	14.69	60.490	17.82

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
151	5755	14.16	14.00	51.181	17.09
159	5795	14.07	13.95	50.358	17.02

802.11ac (VHT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
149	5745	15.12	15.34	66.707	18.24
157	5785	14.98	15.12	63.986	18.06
165	5825	14.88	15.03	62.603	17.97

802.11ac (VHT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
151	5755	14.11	14.04	51.114	17.09
159	5795	14.13	14.31	52.859	17.23

802.11ac (VHT80)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
155	5775	14.51	14.62	57.222	17.58

5.2 UNWANTED EMISSION MEASUREMENT (RADIATED VERSUS CONDUCTED)

5.2.1 LIMITS OF RADIATED EMISSION 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	$2400/F(\text{kHz})$	300
0.490-1.705	$24000/F(\text{kHz})$	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.

5.2.2 TEST INSTRUMENTS

For Below 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	July 21, 2014	July 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 05, 2013	Oct. 04, 2014
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 18, 2013	Nov. 17, 2014
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKA-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5. The VCCI Site Registration No. is G-137.
6. The CANADA Site Registration No. is IC 7450H-2.
7. Tested Date: Aug. 19, 2014



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For Above 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Aug. 11, 2014	Aug. 10, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 06, 2013	Oct. 05, 2014
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Dec. 06, 2013	Dec. 05, 2014
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 29, 2013	Oct. 28, 2014
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
- 3 The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
- 5 The CANADA Site Registration No. is IC 7450H-3.
- 6 Tested Date: Aug. 26, 2014

5.2.3 TEST PROCEDURES

Following FCC KDB 558074 D01 DTS Meas. Guidance :
Radiated versus Conducted Measurements.

The unwanted emission limits in both the restricted and non-restricted bands are based on antenna-port conducted measurements in conjunction with cabinet emissions tests are permitted to demonstrate compliance.

The following steps was performed:

- a. Cabinet emissions measurements. Radiated measurement was performed to ensure that cabinet emissions are below the emission limits. For the cabinet-emission measurements the antenna was replaced by a termination matching the nominal impedance of the antenna.
- b. Conducted tests was performed using equipment that matches the nominal impedance of the antenna assembly used with the EUT
- c. EIRP calculation. A value representative of an upper bound on out-of-band antenna gain (in dBi) shall be added to the measured antenna-port conducted emission power to compute EIRP within the specified measurement bandwidth. (For emissions in the restricted bands, additional calculations are required to convert EIRP to field strength at the specified distance.) The upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands or 2 dBi, whichever is greater
- d. EIRP adjustments for multiple outputs. (Follow the procedures specified in FCC KDB Publication 662911)
- e. For all of Radiation emission test
 - e-1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
 - e-2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
 - e-3. 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.
 - e-4. 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-5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
 - e-6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($10 \log(1/\text{duty cycle})$).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

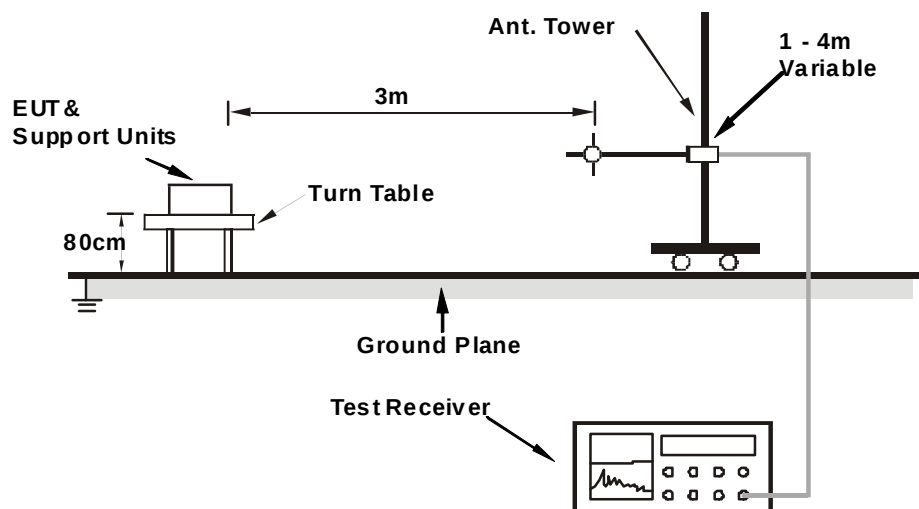
5.2.4 DEVIATION FROM TEST STANDARD

No deviation

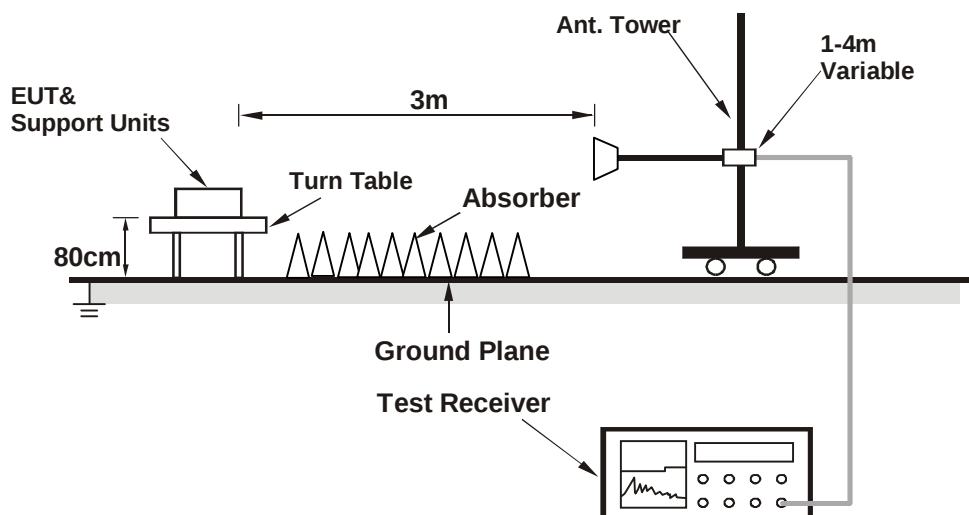
5.2.5 TEST SETUP

For radiated configuration:

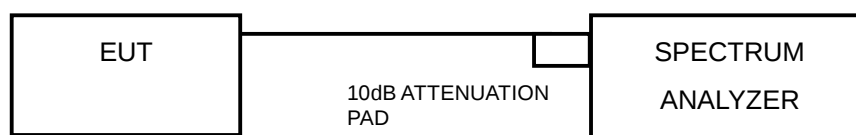
<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For conducted configuration:



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

5.2.6 EUT OPERATING CONDITIONS

Same as the 4.2.6

5.2.7 TEST RESULTS (MODE 2, RADIATED MEASUREMENT)

Radiated versus Conducted Measurement	
☐ Conducted measurement	☒ Radiated measurement
<u>For Radiated measurement:</u> The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation) <u>For Conducted measurement:</u> The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).	

Radiated test was done with 50ohm terminator on antenna port

BELOW 1GHz WORST-CASE DATA

802.11ac (VHT20)

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	54.12	25.3 QP	40.0	-14.7	2.00 H	93	38.85	-13.55
2	166.09	35.1 QP	43.5	-8.4	2.00 H	118	48.62	-13.50
3	233.25	38.1 QP	46.0	-7.9	1.00 H	11	53.58	-15.46
4	428.38	33.2 QP	46.0	-12.8	2.00 H	66	41.99	-8.75
5	666.45	31.4 QP	46.0	-14.6	1.00 H	42	35.39	-3.99
6	770.72	33.3 QP	46.0	-12.7	2.00 H	107	34.95	-1.63
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	49.42	22.9 QP	40.0	-17.1	1.00 V	32	36.42	-13.52
2	166.57	24.7 QP	43.5	-18.8	2.00 V	202	38.20	-13.52
3	311.75	26.3 QP	46.0	-19.7	1.50 V	181	38.28	-11.98
4	428.32	26.6 QP	46.0	-19.4	2.00 V	133	35.35	-8.75
5	663.86	32.3 QP	46.0	-13.7	1.50 V	130	36.37	-4.03
6	906.64	40.3 QP	46.0	-5.7	1.50 V	116	40.05	0.23

REMARKS:

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

ABOVE 1GHz DATA

802.11a

CHANNEL	TX Channel 149	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	11490.00	53.0 PK	74.0	-21.0	1.68 H	51	5.91	47.09
2	11490.00	40.2 AV	54.0	-13.8	1.68 H	51	-6.89	47.09
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	11490.00	54.4 PK	74.0	-19.6	1.09 V	209	7.31	47.09
2	11490.00	41.8 AV	54.0	-12.2	1.09 V	209	-5.29	47.09

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

CHANNEL	TX Channel 157	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	11570.00	53.0 PK	74.0	-21.0	1.71 H	42	5.93	47.07
2	11570.00	40.4 AV	54.0	-13.6	1.71 H	42	-6.67	47.07
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	11570.00	54.6 PK	74.0	-19.4	1.02 V	209	43.92	10.68
2	11570.00	41.7 AV	54.0	-12.3	1.02 V	209	31.02	10.68

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

CHANNEL	TX Channel 165	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	11650.00	53.1 PK	74.0	-20.9	1.71 H	38	42.51	10.59
2	11650.00	40.5 AV	54.0	-13.5	1.71 H	38	29.91	10.59
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	11650.00	54.6 PK	74.0	-19.4	1.12 V	215	44.01	10.59
2	11650.00	41.7 AV	54.0	-12.3	1.12 V	215	31.11	10.59

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

802.11ac (VHT20)

CHANNEL	TX Channel 149	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	11490.00	53.4 PK	74.0	-20.6	1.72 H	12	42.75	10.65
2	11490.00	40.5 AV	54.0	-13.5	1.72 H	12	29.85	10.65
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	11490.00	54.7 PK	74.0	-19.3	1.15 V	181	44.05	10.65
2	11490.00	41.7 AV	54.0	-12.3	1.15 V	181	31.05	10.65

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

CHANNEL	TX Channel 157	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	11570.00	53.6 PK	74.0	-20.4	1.76 H	24	42.92	10.68
2	11570.00	40.8 AV	54.0	-13.2	1.76 H	24	30.12	10.68
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	11570.00	54.5 PK	74.0	-19.5	1.15 V	217	43.82	10.68
2	11570.00	41.5 AV	54.0	-12.5	1.15 V	217	30.82	10.68

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

CHANNEL	TX Channel 165	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	11650.00	52.9 PK	74.0	-21.1	1.75 H	52	42.31	10.59
2	11650.00	40.0 AV	54.0	-14.0	1.75 H	52	29.41	10.59
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	11650.00	54.9 PK	74.0	-19.1	1.04 V	198	44.31	10.59
2	11650.00	42.0 AV	54.0	-12.0	1.04 V	198	31.41	10.59

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

802.11ac (VHT40)

CHANNEL	TX Channel 151	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	11510.00	51.9 PK	74.0	-22.1	1.50 H	28	41.24	10.66
2	11510.00	39.9 AV	54.0	-14.1	1.50 H	28	29.24	10.66
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	11510.00	53.2 PK	74.0	-20.8	1.01 V	206	42.54	10.66
2	11510.00	40.8 AV	54.0	-13.2	1.01 V	206	30.14	10.66

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

CHANNEL	TX Channel 159	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	11590.00	53.0 PK	74.0	-21.0	1.56 H	28	42.31	10.69
2	11590.00	40.7 AV	54.0	-13.3	1.56 H	28	30.01	10.69
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	11590.00	53.3 PK	74.0	-20.7	1.02 V	233	42.61	10.69
2	11590.00	40.8 AV	54.0	-13.2	1.02 V	233	30.11	10.69

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

802.11ac (VHT80)

CHANNEL	TX Channel 155	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	11550.00	51.0 PK	74.0	-23.0	1.55 H	55	40.33	10.67
2	11550.00	39.2 AV	54.0	-14.8	1.55 H	55	28.53	10.67
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	11550.00	53.9 PK	74.0	-20.1	1.04 V	198	43.23	10.67
2	11550.00	41.1 AV	54.0	-12.9	1.04 V	198	30.43	10.67

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

5.2.8 TEST RESULTS (MODE 1, CONDUCTED MEASUREMENT)

Radiated versus Conducted Measurement	
☒ Conducted measurement	☐ Radiated measurement
<u>For Radiated measurement:</u> The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation) <u>For Conducted measurement:</u> The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).	

Conducted Measurement Factor
a. The antenna gain will be used. (antenna gain = 4.76dBi) b. For the out of band spurious the gain for the specific band may have been used rather than the highest gain across all bands. c. For the band edge the gain for the specific band may have been used. d. In restricted bands below 1000 MHz, add upper bound on ground plane reflection: For $f = 30 - 1000$ MHz, add 4.7 dB. Note: The conducted emission test was considered some factor to compute test result.



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ABOVE 1GHz DATA

802.11a - Channel 149

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	3831.25 PK	51.29	74	-22.71	-48.73	4.76	-43.97
2	3828.125 AV	30.29	54	-23.71	-69.73	4.76	-64.97
3	7662.5 PK	51.2	74	-22.8	-48.82	4.76	-44.06
4	7659.375 AV	30.68	54	-23.32	-69.34	4.76	-64.58
5	11490.625 PK	54.28	74	-19.72	-45.74	4.76	-40.98
6	11490.625 AV	39.16	54	-14.84	-60.86	4.76	-56.1

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



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802.11a- Channel 157

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	3865.625 PK	50.25	74	-23.75	-49.77	4.76	-45.01
2	3856.25 AV	31.62	54	-22.38	-68.4	4.76	-63.64
3	7715.625 PK	51.79	74	-22.21	-48.23	4.76	-43.47
4	7712.5 AV	31.08	54	-22.92	-68.94	4.76	-64.18
5	11565.625 PK	52.47	74	-21.53	-47.55	4.76	-42.79
6	11571.875 AV	38.26	54	-15.74	-61.76	4.76	-57

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



A D T





A D T

802.11a- Channel 165

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	3881.25 PK	50.49	74	-23.51	-49.53	4.76	-44.77
2	3881.25 AV	33.93	54	-20.07	-66.09	4.76	-61.33
3	11653.125 PK	52.4	74	-21.6	-47.62	4.76	-42.86
4	11650 AV	37.39	54	-16.61	-62.63	4.76	-57.87

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



A D T



802.11ac(VHT20) - Channel 149

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	3837.5 PK	50.97	74	-23.03	-49.05	4.76	-44.29
2	3828.125 AV	30.37	54	-23.63	-69.65	4.76	-64.89
3	7656.25 PK	51.52	74	-22.48	-48.5	4.76	-43.74
4	7659.375 AV	30.84	54	-23.16	-69.18	4.76	-64.42
5	11493.75 PK	52.96	74	-21.04	-47.06	4.76	-42.3
6	11490.625 AV	39.3	54	-14.7	-60.72	4.76	-55.96

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



A D T



802.11ac(VHT20)- Channel 157

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	3846.875 PK	51.07	74	-22.93	-48.95	4.76	-44.19
2	3856.25 AV	31.96	54	-22.04	-68.06	4.76	-63.3
3	7715.625 PK	51.73	74	-22.27	-48.29	4.76	-43.53
4	7712.5 AV	31.27	54	-22.73	-68.75	4.76	-63.99
5	11571.875 PK	52.52	74	-21.48	-47.5	4.76	-42.74
6	11568.75 AV	37.64	54	-16.36	-62.38	4.76	-57.62

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



A D T





A D T

802.11ac(VHT20)- Channel 165

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	3881.25 PK	50.06	74	-23.94	-49.96	4.76	-45.2
2	3881.25 AV	33.86	54	-20.14	-66.16	4.76	-61.4
3	11653.125 PK	53.02	74	-20.98	-47	4.76	-42.24
4	11650 AV	37.13	54	-16.87	-62.89	4.76	-58.13

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



A D T



802.11ac(VHT40) - Channel 151

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	3843.75 PK	50.45	74	-23.55	-49.57	4.76	-44.81
2	3834.375 AV	30.7	54	-23.3	-69.32	4.76	-64.56
3	7671.875 PK	50.86	74	-23.14	-49.16	4.76	-44.4
4	7675 AV	30.54	54	-23.46	-69.48	4.76	-64.72
5	11509.375 PK	50.98	74	-23.02	-49.04	4.76	-44.28
6	11512.5 AV	35.04	54	-18.96	-64.98	4.76	-60.22

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



A D T



802.11ac(VHT40)- Channel 159

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	3868.75 PK	50.78	74	-23.22	-49.24	4.76	-44.48
2	3862.5 AV	32.6	54	-21.4	-67.42	4.76	-62.66
3	7721.875 PK	52.31	74	-21.69	-47.71	4.76	-42.95
4	7728.125 AV	30.96	54	-23.04	-69.06	4.76	-64.3
5	11590.625 PK	50.03	74	-23.97	-49.99	4.76	-45.23
6	11590.625 AV	33.46	54	-20.54	-66.56	4.76	-61.8

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



A D T



802.11ac(VHT80)- Channel 155

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	3859.375 PK	51.42	74	-22.58	-48.6	4.76	-43.84
2	3850 AV	31.34	54	-22.66	-68.68	4.76	-63.92
3	7690.625 PK	52.5	74	-21.5	-47.52	4.76	-42.76
4	7700 AV	30.88	54	-23.12	-69.14	4.76	-64.38
5	11546.875 PK	50.79	74	-23.21	-49.23	4.76	-44.47
6	11550 AV	32.27	54	-21.73	-67.75	4.76	-62.99

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



A D T



5.2.9 TEST RESULTS (MODE 2, CONDUCTED MEASUREMENT)

Radiated versus Conducted Measurement	
☒ Conducted measurement	☐ Radiated measurement
<u>For Radiated measurement:</u> The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation) <u>For Conducted measurement:</u> The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).	

Conducted Measurement Factor
a. The composite gain will be used when signal support the correlated signal. (Composite gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi}$) b. For the out of band spurious the gain for the specific band may have been used rather than the highest gain across all bands. c. For the band edge the gain for the specific band may have been used. d. In restricted bands below 1000 MHz, add upper bound on ground plane reflection: For $f = 30 - 1000$ MHz, add 4.7 dB. Note: The conducted emission test was considered some factor to compute test result.

BELOW 1GHz WORST-CASE DATA

802.11ac(VHT20) – Channel 157

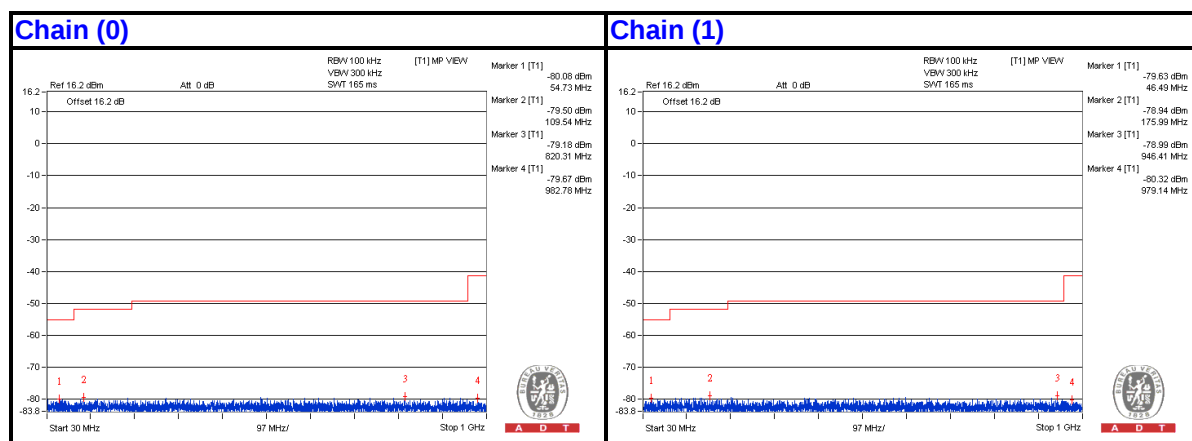
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	66.6175	25.51	40	-14.49	-80.67	-80.4	7.77	-69.75
2	175.985	26.35	43.5	-17.15	-80.59	-78.94	7.77	-68.91
3	223.515	25.76	46	-20.24	-81.33	-79.43	7.77	-69.5
4	501.6625	25.48	46	-20.52	-79.47	-82.01	7.77	-69.78
5	706.8175	25.41	46	-20.59	-81.4	-79.98	7.77	-69.85
6	893.5425	25.84	46	-20.16	-80.35	-80.06	7.77	-69.42

Note :

Emission Level (dBUV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.





A D T

ABOVE 1GHz DATA

802.11a - Channel 149

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3837.5 PK	57.69	74	-16.31	-47.18	-49.97	7.77	-37.57
2	3828.125 AV	43.64	54	-10.36	-63.12	-61.78	7.77	-51.62
3	7659.375 PK	58.73	74	-15.27	-47.81	-46.86	7.77	-36.53
4	7653.125 AV	37.35	54	-16.65	-68.53	-68.86	7.77	-57.91
5	11490.625 PK	61.62	74	-12.38	-43.64	-45.37	7.77	-33.64
6	11490.625 AV	42.27	54	-11.73	-64.46	-63.18	7.77	-52.99

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



A D T

Chain (0)





A D T

Chain (1)





A D T

802.11a- Channel 157

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3859.375 PK	56.58	74	-17.42	-49.94	-49.02	7.77	-38.68
2	3856.25 AV	42.25	54	-11.75	-68.4	-61.61	7.77	-53.01
3	7721.875 PK	57.52	74	-16.48	-49.12	-48	7.77	-37.74
4	7712.5 AV	36.83	54	-17.17	-68.94	-69.49	7.77	-58.43
5	11565.625 PK	57.55	74	-16.45	-47.55	-49.69	7.77	-37.71
6	11571.875 AV	42.8	54	-11.2	-61.76	-65.5	7.77	-52.46

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



A D T

Chain (0)





A D T

Chain (1)





A D T

802.11a- Channel 165

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3884.375 PK	57.22	74	-16.78	-49.95	-47.93	7.77	-38.04
2	3881.25 AV	44.5	54	-9.5	-66.09	-59.37	7.77	-50.76
3	11653.125 PK	57.32	74	-16.68	-47.62	-50.21	7.77	-37.94
4	11653.125 AV	41.76	54	-12.24	-62.63	-66.97	7.77	-53.5

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



A D T

Chain (0)





A D T

Chain (1)



802.11ac(VHT20) - Channel 149

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3834.375 PK	56.81	74	-17.19	-50.27	-48.4	7.77	-38.45
2	3828.125 AV	40.43	54	-13.57	-69.65	-63.55	7.77	-54.83
3	7659.375 PK	57.29	74	-16.71	-48.92	-48.58	7.77	-37.97
4	7659.375 AV	36.59	54	-17.41	-69.18	-69.73	7.77	-58.67
5	11490.625 PK	57.83	74	-16.17	-47.24	-49.46	7.77	-37.43
6	11490.625 AV	44.1	54	-9.9	-60.72	-63.64	7.77	-51.16

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



A D T

Chain (0)





A D T

Chain (1)



802.11ac(VHT20)- Channel 157

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3856.25 PK	56.48	74	-17.52	-50.34	-48.9	7.77	-38.78
2	3856.25 AV	41.97	54	-12.03	-68.06	-62.03	7.77	-53.29
3	7712.5 PK	57.72	74	-16.28	-49.21	-47.58	7.77	-37.54
4	7712.5 AV	36.98	54	-17.02	-68.75	-69.4	7.77	-58.28
5	11571.875 PK	57.65	74	-16.35	-47.5	-49.52	7.77	-37.61
6	11568.75 AV	42.05	54	-11.95	-62.38	-66.57	7.77	-53.21

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



A D T

Chain (0)



Chain (1)





A D T

802.11ac(VHT20)- Channel 165

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3884.375 PK	56.73	74	-17.27	-50.6	-48.32	7.77	-38.53
2	3881.25 AV	45.01	54	-8.99	-66.16	-58.74	7.77	-50.25
3	11650 PK	57.99	74	-16.01	-47.32	-48.94	7.77	-37.27
4	11650 AV	41.38	54	-12.62	-62.89	-67.71	7.77	-53.88

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



A D T

Chain (0)





A D T

Chain (1)



802.11ac(VHT40) - Channel 151

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3843.75 PK	56.57	74	-17.43	-49.57	-49.37	7.77	-38.69
2	3837.5 AV	41.01	54	-12.99	-69.37	-62.9	7.77	-54.25
3	7671.875 PK	57.17	74	-16.83	-49.16	-48.6	7.77	-38.09
4	7681.25 AV	36.43	54	-17.57	-69.61	-69.61	7.77	-58.83
5	11509.375 PK	56.39	74	-17.61	-49.04	-50.35	7.77	-38.87
6	11512.5 AV	40.36	54	-13.64	-64.98	-66.52	7.77	-54.9

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



A D T

Chain (0)





A D T

Chain (1)



802.11ac(VHT40)- Channel 159

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3868.75 PK	56.75	74	-17.25	-49.24	-49.35	7.77	-38.51
2	3862.5 AV	43.53	54	-10.47	-67.42	-60.27	7.77	-51.73
3	7718.75 PK	57.44	74	-16.56	-48.27	-48.95	7.77	-37.82
4	7728.125 AV	36.74	54	-17.26	-69.06	-69.55	7.77	-58.52
5	11600 PK	55.73	74	-18.27	-50.31	-50.32	7.77	-39.53
6	11590.625 AV	39.12	54	-14.88	-66.56	-67.32	7.77	-56.14

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



A D T

Chain (0)





A D T

Chain (1)





A D T

802.11ac (VHT80)- Channel 155

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3859.375 PK	56.93	74	-17.07	-48.6	-49.7	7.77	-38.33
2	3850 AV	44.12	54	-9.88	-68.68	-59.39	7.77	-51.14
3	7690.625 PK	57.83	74	-16.17	-47.52	-49.03	7.77	-37.43
4	7700 AV	36.68	54	-17.32	-69.14	-69.6	7.77	-58.58
5	11546.875 PK	56.05	74	-17.95	-49.23	-50.92	7.77	-39.21
6	11550 AV	38.31	54	-15.69	-67.75	-67.71	7.77	-56.95

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.



A D T

Chain (0)





A D T

Chain (1)



6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



A D T

7. INFORMATION ON THE TESTING LABORATORIES

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

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

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:

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Fax: 886-3-5935342

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Web Site: www.bureauveritas-adt.com

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

8. APPENDIX A - RADIATED EMISSION MEASUREMENT

8.1.1 LIMITS OF RADIATED EMISSION 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:

- The lower limit shall apply at the transition frequencies.
- Emission level (dBuV/m) = 20 log Emission level (uV/m).
- 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.

8.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Aug. 11, 2014	Aug. 10, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 06, 2013	Oct. 05, 2014
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Dec. 06, 2013	Dec. 05, 2014
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 29, 2013	Oct. 28, 2014
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
- 3 The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
- 5 The CANADA Site Registration No. is IC 7450H-3.
- 6 Tested Date: Aug. 25, 2014

8.1.3 TEST PROCEDURES

- 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. 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.

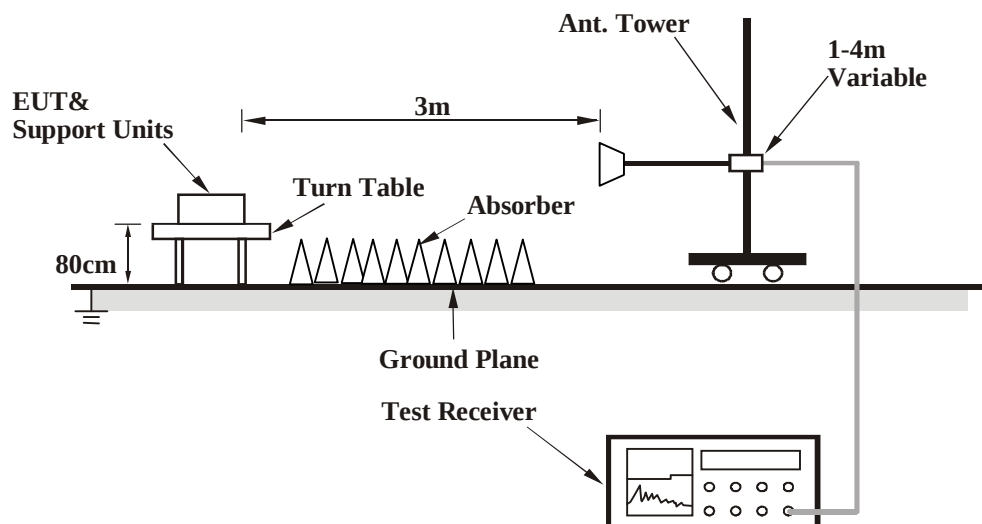
NOTE:

1. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.
3. All modes of operation were investigated and the worst-case emissions are reported.

8.1.4 DEVIATION FROM TEST STANDARD

No deviation

8.1.5 TEST SETUP



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

8.1.6 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit 1 (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “QCRT Version: 3.0.29.0” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

8.1.7 TEST RESULTS (MODE 2)

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	4824.00	46.2 PK	74.0	-27.8	1.12 H	210	42.34	3.86
2	4824.00	35.4 AV	54.0	-18.6	1.12 H	210	31.54	3.86
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4824.00	47.8 PK	74.0	-26.2	1.61 V	130	43.94	3.86
2	4824.00	37.5 AV	54.0	-16.5	1.61 V	130	33.64	3.86

REMARKS:

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

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	4874.00	48.3 PK	74.0	-25.7	1.23 H	189	44.49	3.81
2	4874.00	40.3 AV	54.0	-13.7	1.23 H	189	36.49	3.81
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	4874.00	51.9 PK	74.0	-22.1	1.31 V	8	48.09	3.81
2	4874.00	45.6 AV	54.0	-8.4	1.31 V	8	41.79	3.81

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

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	4924.00	47.8 PK	74.0	-26.2	1.17 H	203	44.00	3.80
2	4924.00	39.2 AV	54.0	-14.8	1.17 H	203	35.40	3.80
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	4924.00	54.0 PK	74.0	-20.0	1.25 V	165	50.20	3.80
2	4924.00	44.2 AV	54.0	-9.8	1.25 V	165	40.40	3.80

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

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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	2483.50	67.6 PK	74.0	-6.4	1.00 H	151	72.80	-5.20
2	2483.50	49.3 AV	54.0	-4.7	1.00 H	151	54.50	-5.20
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	2483.50	69.3 PK	74.0	-4.7	1.00 V	246	74.50	-5.20
2	2483.50	51.0 AV	54.0	-3.0	1.00 V	246	56.20	-5.20

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



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

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

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