

FCC Test Report

Report No.: RF180823E02

FCC ID: 2APLE18300391

Test Model: VMB4500

Series Model: VMB4500v2

Received Date: Aug. 23, 2018

Test Date: Sep. 03 to 17, 2018

Issued Date: Sep. 28, 2018

Applicant: Arlo Technologies, Inc.

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

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



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Release Control Record

Issue No.	Description	Date Issued
RF180823E02	Original release.	Sep. 28, 2018

1 Certificate of Conformity

Product: Arlo Base Station

Brand: Arlo

Test Model: VMB4500

Series Model: VMB4500v2

Sample Status: ENGINEERING SAMPLE

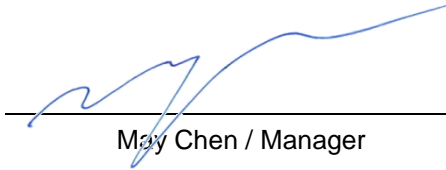
Applicant: Arlo Technologies, Inc.

Test Date: Sep. 03 to 17, 2018

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10: 2013

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

Prepared by :  , **Date:** Sep. 28, 2018
Claire Kuan / Specialist

Approved by :  , **Date:** Sep. 28, 2018
May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -12.45dB at 0.15000MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 2366.00MHz & 2390.00MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is i-pex(MHF)not a standard connector.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (\pm)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.84 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.33 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.10 dB
	6GHz ~ 18GHz	4.85 dB
	18GHz ~ 40GHz	5.24 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Arlo Base Station
Brand	Arlo
Test Model	VMB4500
Series Model	VMB4500v2
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 12V from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11g: up to 54Mbps 802.11n: up to 300Mbps
Operating Frequency	2.412 ~ 2.462GHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7
Output Power	983.182mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	NA

Note:

1. All models are listed as below.

Brand	Model	Difference
Arlo	VMB4500	With siren function and related components
	VMB4500v2	Without siren function (remove the related components of siren function , no layout changed)

From the above models, model: VMB4500 was selected as representative model for the test and its data was recorded in this report.

2. The EUT power needs to be supplied from one power adapter, the information is as below table:

No	Brand	Model No.	Spec.	P/N
1	NETGEAR	AD2071F10	Input: 100-120V, 0.3A, 50/60Hz Output: 12V, 1A DC output cable (unshielded, 1.8m)	332-10992-01
2	NETGEAR	AD2071F20	Input: 100-120V, 0.3A, 50/60Hz Output: 12V, 1A DC output cable (unshielded, 1.8m)	332-10837-01
3	NETGEAR	2AAJ012F NA	Input: 100-120V, 0.35A, 50/60Hz Output: 12V, 1A DC output cable (unshielded, 1.8m)	332-10743-01
4	NETGEAR	2AAJ012F 1 NA	Input: 100-120V, 0.35A, 50/60Hz Output: 12V, 1A DC output cable (unshielded, 1.8m)	332-10742-01

The EUT was pre-tested with above adapters, the conducted emission worst case was found in adapter 3 and the radiated emission worst case was found in adapter 2. Therefore only the test data of the adapter was recorded in this report.

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

Antenna No.	Antenna Net Gain (dBi)	Frequency range (GHz)	Antenna Type	Antenna Connector
Antenna R	2.32	2.4 ~ 2.4835	PIFA	i-pex(MHF)
Antenna L	2.38	2.4 ~ 2.4835	PIFA	i-pex(MHF)

4. The EUT incorporates a MIMO function

MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	2TX	2RX
802.11g	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX

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

3.2 Description of Test Modes

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

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

7 channels are provided for 802.11n (HT40):

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

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE \geq 1G	RE $<$ 1G	PLC	APCM	
1	√	√	-	√	With adapter 2
2	-	-	√	-	With adapter 3

Where **RE \geq 1G**: Radiated Emission above 1GHz & Bandedge Measurement
RE $<$ 1G: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission
APCM: Antenna Port Conducted Measurement

Radiated Emission Test (Above 1GHz):

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

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

Radiated Emission Test (Below 1GHz):

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

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

Power Line Conducted Emission Test:

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

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

Antenna Port Conducted Measurement:

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

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

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE \geq 1G	24deg. C, 65%RH	120Vac, 60Hz	Eason Tseng
RE $<$ 1G	22deg. C, 67%RH	120Vac, 60Hz	Andy Ho
PLC	24deg. C, 76%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

3.3 Duty Cycle of Test Signal

If duty cycle of test signal is $\geq 98\%$, duty factor is not required.

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

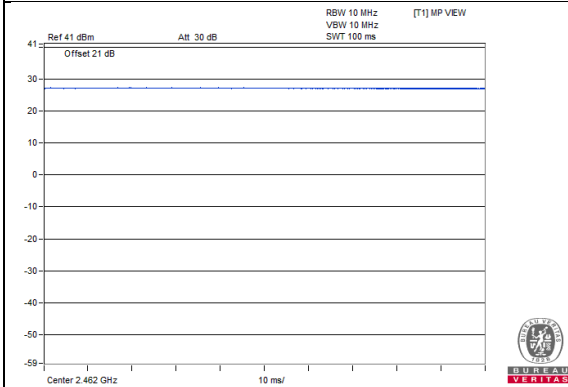
802.11b: Duty cycle of test signal is 100%, duty factor is not required.

802.11g: Duty cycle = $2.02 \text{ ms} / 2.075 \text{ ms} = 0.973$ Duty factor = $10 * \log(1/\text{Duty cycle}) = 0.12$

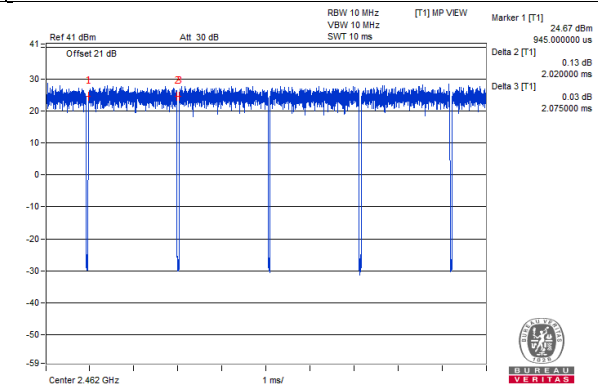
802.11n (HT20): Duty cycle = $2.02 \text{ ms} / 2.074 \text{ ms} = 0.974$ Duty factor = $10 * \log(1/\text{Duty cycle}) = 0.11$

802.11n (HT40): Duty cycle = $0.926 \text{ ms} / 0.967 \text{ ms} = 0.958$ Duty factor = $10 * \log(1/\text{Duty cycle}) = 0.19$

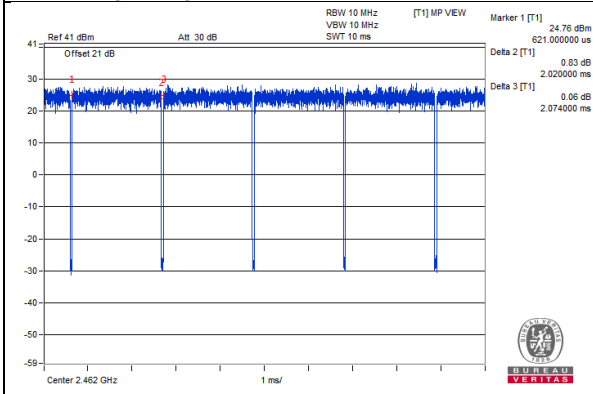
802.11b



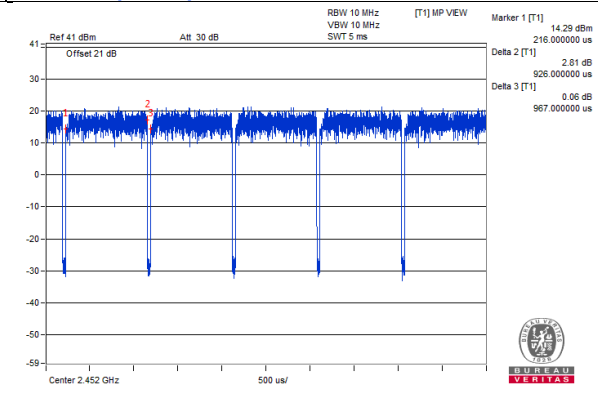
802.11g



802.11n (HT20)



802.11n (HT40)



3.4 Description of Support Units

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

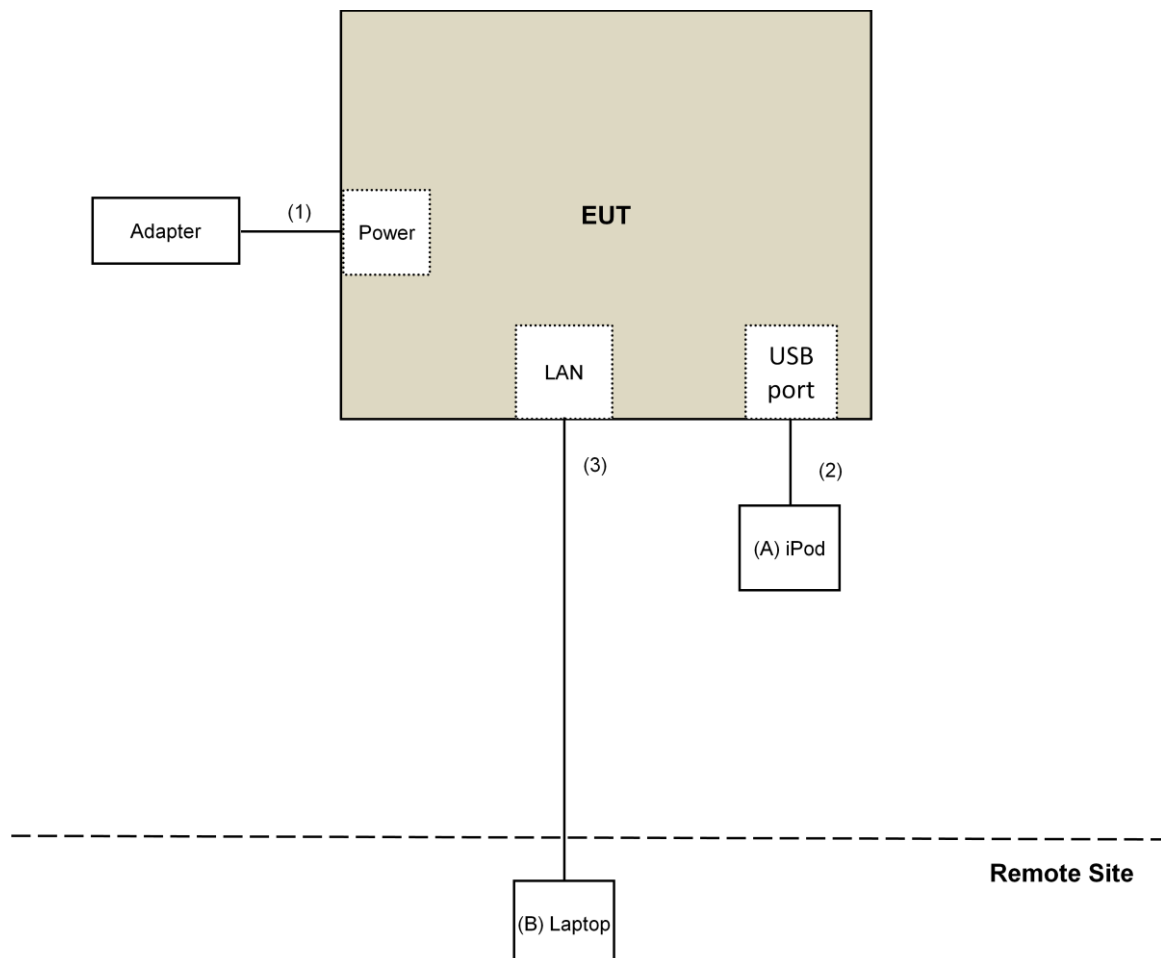
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	iPod	Apple	MC749TA/A	CC4DN25WDFDM	NA	Provided by Lab
B.	Laptop	HP	Pavilion 14-ab023TU	5CD5340WXZ	NA	Provided by Lab

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Cable	1	1.8	No	0	Supplied by client
2.	USB Cable	1	0.1	Yes	0	Provided by Lab
3.	RJ-45 Cable	1	10	No	0	Provided by Lab

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart C (15.247)
KDB 558074 D01 DTS Meas Guidance v05
KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

Note:

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

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Keysight	N9038A	MY54450088	July 05, 2018	July 04, 2019
Pre-Amplifier EMCI	EMC001340	980142	Feb. 09, 2018	Feb. 08, 2019
Loop Antenna ^(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001	Jan. 15, 2018	Jan. 14, 2019
RF Cable	NA	LOOPCAB-002	Jan. 15, 2018	Jan. 14, 2019
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Nov. 09, 2017	Nov. 08, 2018
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Nov. 29, 2017	Nov. 28, 2018
RF Cable	8D	966-4-1	Mar. 21, 2018	Mar. 20, 2019
RF Cable	8D	966-4-2	Mar. 21, 2018	Mar. 20, 2019
RF Cable	8D	966-4-3	Mar. 21, 2018	Mar. 20, 2019
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Oct. 03, 2017	Oct. 02, 2018
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Dec. 12, 2017	Dec. 11, 2018
Pre-Amplifier Mini-Circuits	ZVA-183-S+	AMP-ZVA-03	May 10, 2018	May 09, 2019
RF Cable	EMC104-SM-SM-1200	160923	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-2000	150318	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-5000	150321	Jan. 29, 2018	Jan. 28, 2019
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 29, 2018	Jan. 28, 2019
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 14, 2017	Dec. 13, 2018
RF Cable	EMC102-KM-KM-1200	160925	Jan. 29, 2018	Jan. 28, 2019
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA
Spectrum Analyzer Agilent	E4446A	MY48250254	Nov. 21, 2017	Nov. 20, 2018
Power meter Anritsu	ML2495A	1014008	May 09, 2018	May 08, 2019
Power sensor Anritsu	MA2411B	0917122	May 09, 2018	May 08, 2019

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. *The calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 4.
4. The CANADA Site Registration No. is 20331-2
5. Loop antenna was used for all emissions below 30 MHz.
6. Tested Date: Sep. 03 to 17, 2018

4.1.3 Test Procedures

For Radiated emission below 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

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

For Radiated emission above 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

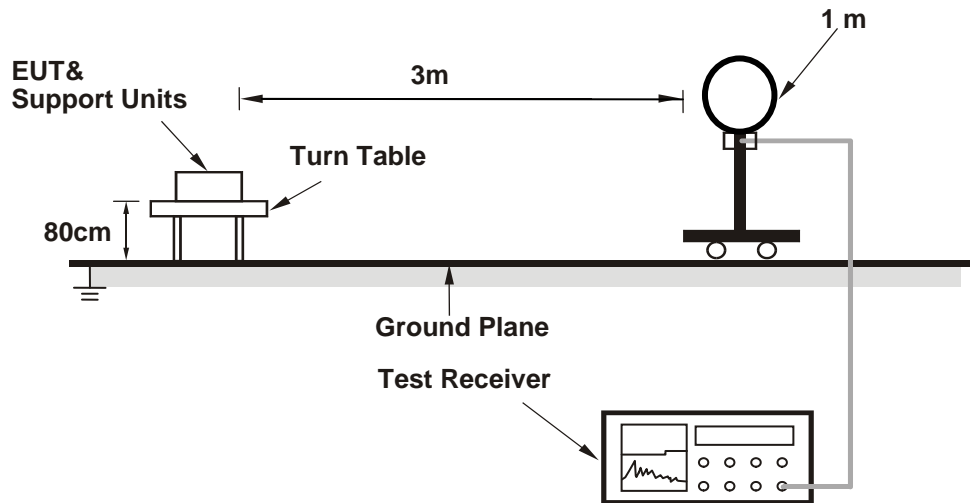
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

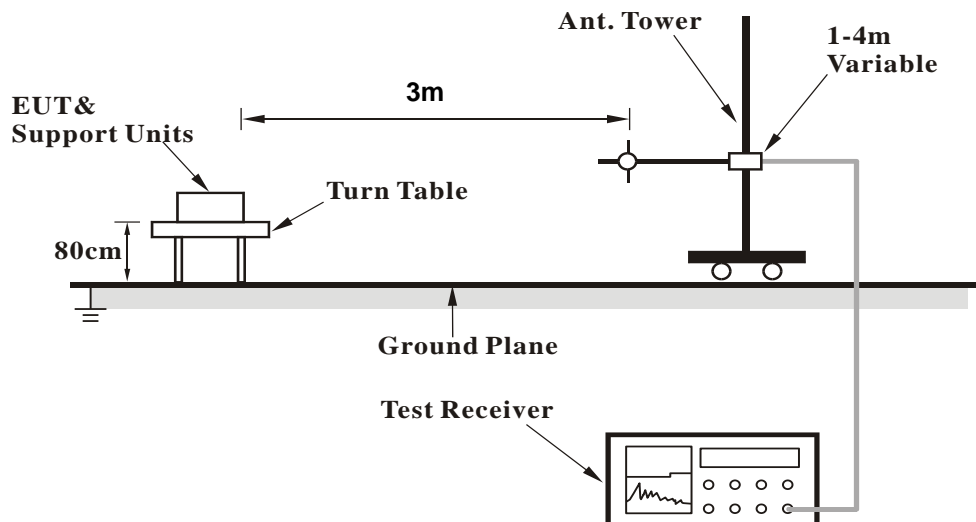
No deviation.

4.1.5 Test Setup

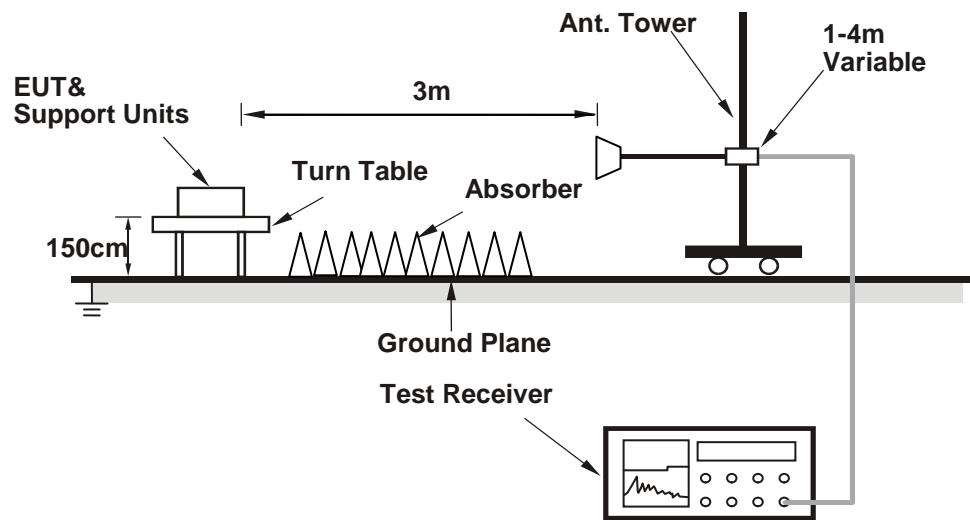
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

- Connected the EUT with the Laptop which is placed on remote site.
- Controlling software (art.exe [v4_9_849]) has been activated to set the EUT on specific status.

4.1.7 Test Results

Above 1GHz Data :

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	61.4 PK	74.0	-12.6	2.21 H	358	63.6	-2.2
2	2390.00	52.2 AV	54.0	-1.8	2.21 H	358	54.4	-2.2
3	*2412.00	115.1 PK			2.21 H	358	117.5	-2.4
4	*2412.00	112.8 AV			2.21 H	358	115.2	-2.4
5	4824.00	43.3 PK	74.0	-30.7	2.13 H	26	41.5	1.8
6	4824.00	39.5 AV	54.0	-14.5	2.13 H	26	37.7	1.8

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.8 PK	74.0	-10.2	1.31 V	17	66.0	-2.2
2	2390.00	53.5 AV	54.0	-0.5	1.31 V	17	55.7	-2.2
3	*2412.00	115.3 PK			1.31 V	17	117.7	-2.4
4	*2412.00	113.1 AV			1.31 V	17	115.5	-2.4
5	4824.00	45.3 PK	74.0	-28.7	2.09 V	72	43.5	1.8
6	4824.00	41.9 AV	54.0	-12.1	2.09 V	72	40.1	1.8

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.2 PK	74.0	-8.8	2.16 H	11	67.4	-2.2
2	2390.00	52.3 AV	54.0	-1.7	2.16 H	11	54.5	-2.2
3	*2437.00	118.0 PK			2.16 H	11	120.6	-2.6
4	*2437.00	115.8 AV			2.16 H	11	118.4	-2.6
5	2483.50	63.0 PK	74.0	-11.0	2.16 H	11	65.4	-2.4
6	2483.50	51.8 AV	54.0	-2.2	2.16 H	11	54.2	-2.4
7	4874.00	46.3 PK	74.0	-27.7	2.15 H	41	44.3	2.0
8	4874.00	44.8 AV	54.0	-9.2	2.15 H	41	42.8	2.0
9	7311.00	44.1 PK	74.0	-29.9	2.81 H	28	35.7	8.4
10	7311.00	33.8 AV	54.0	-20.2	2.81 H	28	25.4	8.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.5 PK	74.0	-7.5	1.48 V	34	68.7	-2.2
2	2390.00	53.6 AV	54.0	-0.4	1.48 V	34	55.8	-2.2
3	*2437.00	118.5 PK			1.48 V	34	121.1	-2.6
4	*2437.00	116.3 AV			1.48 V	34	118.9	-2.6
5	2483.50	63.5 PK	74.0	-10.5	1.48 V	34	65.9	-2.4
6	2483.50	52.1 AV	54.0	-1.9	1.48 V	34	54.5	-2.4
7	4874.00	47.7 PK	74.0	-26.3	2.13 V	91	45.7	2.0
8	4874.00	46.2 AV	54.0	-7.8	2.13 V	91	44.2	2.0
9	7311.00	45.8 PK	74.0	-28.2	3.33 V	354	37.4	8.4
10	7311.00	35.5 AV	54.0	-18.5	3.33 V	354	27.1	8.4

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	114.3 PK			2.21 H	356	116.9	-2.6
2	*2462.00	112.2 AV			2.21 H	356	114.8	-2.6
3	2483.50	59.4 PK	74.0	-14.6	2.21 H	356	61.8	-2.4
4	2483.50	52.6 AV	54.0	-1.4	2.21 H	356	55.0	-2.4
5	4924.00	43.5 PK	74.0	-30.5	2.14 H	34	41.5	2.0
6	4924.00	39.5 AV	54.0	-14.5	2.14 H	34	37.5	2.0
7	7386.00	43.6 PK	74.0	-30.4	2.82 H	27	35.0	8.6
8	7386.00	30.9 AV	54.0	-23.1	2.82 H	27	22.3	8.6

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	114.6 PK			1.63 V	16	117.2	-2.6
2	*2462.00	112.5 AV			1.63 V	16	115.1	-2.6
3	2483.50	60.3 PK	74.0	-13.7	1.63 V	16	62.7	-2.4
4	2483.50	53.5 AV	54.0	-0.5	1.63 V	16	55.9	-2.4
5	4924.00	45.0 PK	74.0	-29.0	2.08 V	78	43.0	2.0
6	4924.00	41.7 AV	54.0	-12.3	2.08 V	78	39.7	2.0
7	7386.00	44.8 PK	74.0	-29.2	3.47 V	359	36.2	8.6
8	7386.00	32.6 AV	54.0	-21.4	3.47 V	359	24.0	8.6

REMARKS:

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

802.11g

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2366.00	65.6 PK	74.0	-8.4	2.23 H	3	67.6	-2.0
2	2366.00	53.4 AV	54.0	-0.6	2.23 H	3	55.4	-2.0
3	2390.00	64.1 PK	74.0	-9.9	2.23 H	3	66.3	-2.2
4	2390.00	50.8 AV	54.0	-3.2	2.23 H	3	53.0	-2.2
5	*2412.00	116.5 PK			2.23 H	3	118.9	-2.4
6	*2412.00	106.1 AV			2.23 H	3	108.5	-2.4
7	4824.00	43.5 PK	74.0	-30.5	2.18 H	20	41.7	1.8
8	4824.00	39.5 AV	54.0	-14.5	2.18 H	20	37.7	1.8

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2366.00	66.0 PK	74.0	-8.0	1.20 V	357	68.0	-2.0
2	2366.00	53.9 AV	54.0	-0.1	1.20 V	357	55.9	-2.0
3	2390.00	64.6 PK	74.0	-9.4	1.20 V	357	66.8	-2.2
4	2390.00	51.3 AV	54.0	-2.7	1.20 V	357	53.5	-2.2
5	*2412.00	116.8 PK			1.20 V	357	119.2	-2.4
6	*2412.00	106.3 AV			1.20 V	357	108.7	-2.4
7	4824.00	44.6 PK	74.0	-29.4	2.04 V	80	42.8	1.8
8	4824.00	41.5 AV	54.0	-12.5	2.04 V	80	39.7	1.8

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	64.8 PK	74.0	-9.2	2.17 H	0	67.0	-2.2
2	2390.00	53.2 AV	54.0	-0.8	2.17 H	0	55.4	-2.2
3	*2437.00	115.9 PK			2.17 H	0	118.5	-2.6
4	*2437.00	106.0 AV			2.17 H	0	108.6	-2.6
5	2483.50	63.8 PK	74.0	-10.2	2.17 H	0	66.2	-2.4
6	2483.50	51.5 AV	54.0	-2.5	2.17 H	0	53.9	-2.4
7	4874.00	43.2 PK	74.0	-30.8	2.14 H	43	41.2	2.0
8	4874.00	39.4 AV	54.0	-14.6	2.14 H	43	37.4	2.0
9	7311.00	43.4 PK	74.0	-30.6	2.85 H	31	35.0	8.4
10	7311.00	30.6 AV	54.0	-23.4	2.85 H	31	22.2	8.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.2 PK	74.0	-7.8	1.50 V	13	68.4	-2.2
2	2390.00	53.9 AV	54.0	-0.1	1.50 V	13	56.1	-2.2
3	*2437.00	116.2 PK			1.50 V	13	118.8	-2.6
4	*2437.00	106.0 AV			1.50 V	13	108.6	-2.6
5	2483.50	62.8 PK	74.0	-11.2	1.50 V	13	65.2	-2.4
6	2483.50	50.4 AV	54.0	-3.6	1.50 V	13	52.8	-2.4
7	4874.00	44.6 PK	74.0	-29.4	2.14 V	87	42.6	2.0
8	4874.00	41.4 AV	54.0	-12.6	2.14 V	87	39.4	2.0
9	7311.00	45.3 PK	74.0	-28.7	3.48 V	359	36.9	8.4
10	7311.00	33.1 AV	54.0	-20.9	3.48 V	359	24.7	8.4

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	116.8 PK			2.16 H	351	119.4	-2.6
2	*2462.00	106.6 AV			2.16 H	351	109.2	-2.6
3	2483.50	66.7 PK	74.0	-7.3	2.16 H	351	69.1	-2.4
4	2483.50	52.7 AV	54.0	-1.3	2.16 H	351	55.1	-2.4
5	4924.00	43.9 PK	74.0	-30.1	2.12 H	20	41.9	2.0
6	4924.00	39.7 AV	54.0	-14.3	2.12 H	20	37.7	2.0
7	7386.00	43.7 PK	74.0	-30.3	2.85 H	29	35.1	8.6
8	7386.00	31.1 AV	54.0	-22.9	2.85 H	29	22.5	8.6

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	117.1 PK			1.63 V	13	119.7	-2.6
2	*2462.00	106.8 AV			1.63 V	13	109.4	-2.6
3	2483.50	67.7 PK	74.0	-6.3	1.63 V	13	70.1	-2.4
4	2483.50	53.5 AV	54.0	-0.5	1.63 V	13	55.9	-2.4
5	4924.00	44.7 PK	74.0	-29.3	2.03 V	63	42.7	2.0
6	4924.00	41.4 AV	54.0	-12.6	2.03 V	63	39.4	2.0
7	7386.00	45.1 PK	74.0	-28.9	3.52 V	354	36.5	8.6
8	7386.00	32.7 AV	54.0	-21.3	3.52 V	354	24.1	8.6

REMARKS:

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

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.2 PK	74.0	-8.8	2.22 H	358	67.4	-2.2
2	2390.00	51.9 AV	54.0	-2.1	2.22 H	358	54.1	-2.2
3	*2412.00	116.9 PK			2.22 H	358	119.3	-2.4
4	*2412.00	106.4 AV			2.22 H	358	108.8	-2.4
5	4824.00	42.9 PK	74.0	-31.1	2.18 H	20	41.1	1.8
6	4824.00	39.2 AV	54.0	-14.8	2.18 H	20	37.4	1.8

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.9 PK	74.0	-8.1	1.26 V	355	68.1	-2.2
2	2390.00	53.7 AV	54.0	-0.3	1.26 V	355	55.9	-2.2
3	*2412.00	117.2 PK			1.26 V	355	119.6	-2.4
4	*2412.00	106.6 AV			1.26 V	355	109.0	-2.4
5	4824.00	44.9 PK	74.0	-29.1	2.13 V	92	43.1	1.8
6	4824.00	41.9 AV	54.0	-12.1	2.13 V	92	40.1	1.8

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	64.7 PK	74.0	-9.3	2.17 H	359	66.9	-2.2
2	2390.00	51.4 AV	54.0	-2.6	2.17 H	359	53.6	-2.2
3	*2437.00	117.6 PK			2.17 H	359	120.2	-2.6
4	*2437.00	107.2 AV			2.17 H	359	109.8	-2.6
5	2483.50	63.7 PK	74.0	-10.3	2.17 H	359	66.1	-2.4
6	2483.50	51.2 AV	54.0	-2.8	2.17 H	359	53.6	-2.4
7	4874.00	43.3 PK	74.0	-30.7	2.12 H	19	41.3	2.0
8	4874.00	39.2 AV	54.0	-14.8	2.12 H	19	37.2	2.0
9	7311.00	43.4 PK	74.0	-30.6	2.77 H	23	35.0	8.4
10	7311.00	30.9 AV	54.0	-23.1	2.77 H	23	22.5	8.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	64.5 PK	74.0	-9.5	1.52 V	20	66.7	-2.2
2	2390.00	53.7 AV	54.0	-0.3	1.52 V	20	55.9	-2.2
3	*2437.00	117.7 PK			1.52 V	20	120.3	-2.6
4	*2437.00	107.3 AV			1.52 V	20	109.9	-2.6
5	2483.50	62.2 PK	74.0	-11.8	1.52 V	20	64.6	-2.4
6	2483.50	50.2 AV	54.0	-3.8	1.52 V	20	52.6	-2.4
7	4874.00	45.4 PK	74.0	-28.6	2.04 V	74	43.4	2.0
8	4874.00	42.1 AV	54.0	-11.9	2.04 V	74	40.1	2.0
9	7311.00	44.9 PK	74.0	-29.1	3.41 V	12	36.5	8.4
10	7311.00	32.8 AV	54.0	-21.2	3.41 V	12	24.4	8.4

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	116.8 PK			2.18 H	5	119.4	-2.6
2	*2462.00	106.5 AV			2.18 H	5	109.1	-2.6
3	2483.50	65.0 PK	74.0	-9.0	2.18 H	5	67.4	-2.4
4	2483.50	51.7 AV	54.0	-2.3	2.18 H	5	54.1	-2.4
5	4924.00	43.2 PK	74.0	-30.8	2.11 H	45	41.2	2.0
6	4924.00	39.1 AV	54.0	-14.9	2.11 H	45	37.1	2.0
7	7386.00	44.0 PK	74.0	-30.0	2.86 H	28	35.4	8.6
8	7386.00	31.2 AV	54.0	-22.8	2.86 H	28	22.6	8.6

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	117.2 PK			1.43 V	340	119.8	-2.6
2	*2462.00	106.9 AV			1.43 V	340	109.5	-2.6
3	2483.50	68.2 PK	74.0	-5.8	1.43 V	340	70.6	-2.4
4	2483.50	53.7 AV	54.0	-0.3	1.43 V	340	56.1	-2.4
5	4924.00	45.3 PK	74.0	-28.7	2.14 V	77	43.3	2.0
6	4924.00	42.0 AV	54.0	-12.0	2.14 V	77	40.0	2.0
7	7386.00	44.6 PK	74.0	-29.4	3.45 V	11	36.0	8.6
8	7386.00	32.3 AV	54.0	-21.7	3.45 V	11	23.7	8.6

REMARKS:

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

802.11n (HT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.5 PK	74.0	-8.5	2.23 H	354	67.7	-2.2
2	2390.00	52.1 AV	54.0	-1.9	2.23 H	354	54.3	-2.2
3	*2422.00	109.4 PK			2.23 H	354	111.9	-2.5
4	*2422.00	101.1 AV			2.23 H	354	103.6	-2.5
5	4844.00	43.6 PK	74.0	-30.4	2.08 H	42	41.8	1.8
6	4844.00	39.4 AV	54.0	-14.6	2.08 H	42	37.6	1.8
7	7266.00	44.3 PK	74.0	-29.7	2.81 H	41	36.1	8.2
8	7266.00	31.4 AV	54.0	-22.6	2.81 H	41	23.2	8.2

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.5 PK	74.0	-7.5	1.40 V	0	68.7	-2.2
2	2390.00	53.8 AV	54.0	-0.2	1.40 V	0	56.0	-2.2
3	*2422.00	109.8 PK			1.40 V	0	112.3	-2.5
4	*2422.00	101.8 AV			1.40 V	0	104.3	-2.5
5	4844.00	44.8 PK	74.0	-29.2	2.18 V	76	43.0	1.8
6	4844.00	41.7 AV	54.0	-12.3	2.18 V	76	39.9	1.8
7	7266.00	44.1 PK	74.0	-29.9	3.45 V	23	35.9	8.2
8	7266.00	32.0 AV	54.0	-22.0	3.45 V	23	23.8	8.2

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.2 PK	74.0	-8.8	2.21 H	14	67.4	-2.2
2	2390.00	52.1 AV	54.0	-1.9	2.21 H	14	54.3	-2.2
3	*2437.00	111.8 PK			2.21 H	14	114.4	-2.6
4	*2437.00	103.2 AV			2.21 H	14	105.8	-2.6
5	2483.50	63.8 PK	74.0	-10.2	2.21 H	14	66.2	-2.4
6	2483.50	50.7 AV	54.0	-3.3	2.21 H	14	53.1	-2.4
7	4874.00	43.5 PK	74.0	-30.5	2.06 H	40	41.5	2.0
8	4874.00	39.2 AV	54.0	-14.8	2.06 H	40	37.2	2.0
9	7311.00	43.4 PK	74.0	-30.6	2.92 H	20	35.0	8.4
10	7311.00	30.8 AV	54.0	-23.2	2.92 H	20	22.4	8.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.0 PK	74.0	-8.0	1.43 V	348	68.2	-2.2
2	2390.00	53.6 AV	54.0	-0.4	1.43 V	348	55.8	-2.2
3	*2437.00	112.5 PK			1.43 V	348	115.1	-2.6
4	*2437.00	104.0 AV			1.43 V	348	106.6	-2.6
5	2483.50	62.4 PK	74.0	-11.6	1.43 V	348	64.8	-2.4
6	2483.50	50.3 AV	54.0	-3.7	1.43 V	348	52.7	-2.4
7	4874.00	45.7 PK	74.0	-28.3	2.14 V	88	43.7	2.0
8	4874.00	42.2 AV	54.0	-11.8	2.14 V	88	40.2	2.0
9	7311.00	44.5 PK	74.0	-29.5	3.46 V	15	36.1	8.4
10	7311.00	32.1 AV	54.0	-21.9	3.46 V	15	23.7	8.4

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	109.7 PK			2.19 H	10	112.3	-2.6
2	*2452.00	101.3 AV			2.19 H	10	103.9	-2.6
3	2483.50	65.5 PK	74.0	-8.5	2.19 H	10	67.9	-2.4
4	2483.50	52.2 AV	54.0	-1.8	2.19 H	10	54.6	-2.4
5	4904.00	43.6 PK	74.0	-30.4	2.14 H	46	41.6	2.0
6	4904.00	39.5 AV	54.0	-14.5	2.14 H	46	37.5	2.0
7	7356.00	43.8 PK	74.0	-30.2	2.86 H	32	35.2	8.6
8	7356.00	30.9 AV	54.0	-23.1	2.86 H	32	22.3	8.6

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	110.3 PK			1.42 V	6	112.9	-2.6
2	*2452.00	101.9 AV			1.42 V	6	104.5	-2.6
3	2483.50	66.2 PK	74.0	-7.8	1.42 V	6	68.6	-2.4
4	2483.50	53.7 AV	54.0	-0.3	1.42 V	6	56.1	-2.4
5	4904.00	45.0 PK	74.0	-29.0	2.12 V	63	43.0	2.0
6	4904.00	41.9 AV	54.0	-12.1	2.12 V	63	39.9	2.0
7	7356.00	44.8 PK	74.0	-29.2	3.44 V	17	36.2	8.6
8	7356.00	32.7 AV	54.0	-21.3	3.44 V	17	24.1	8.6

REMARKS:

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

Below 1GHz Data:

802.11b

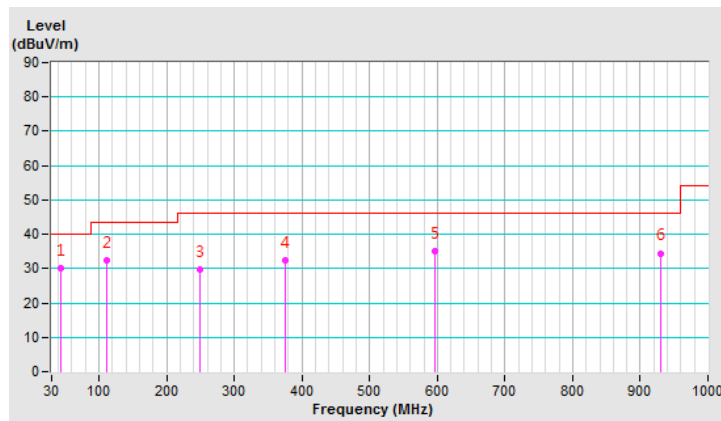
CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	43.82	30.2 QP	40.0	-9.8	2.00 H	263	38.2	-8.0
2	110.80	32.4 QP	43.5	-11.1	1.50 H	79	43.1	-10.7
3	250.02	29.8 QP	46.0	-16.2	1.00 H	88	38.7	-8.9
4	375.00	32.5 QP	46.0	-13.5	1.00 H	62	37.3	-4.8
5	597.40	35.2 QP	46.0	-10.8	2.00 H	360	34.5	0.7
6	931.08	34.5 QP	46.0	-11.5	1.00 H	26	28.5	6.0

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. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



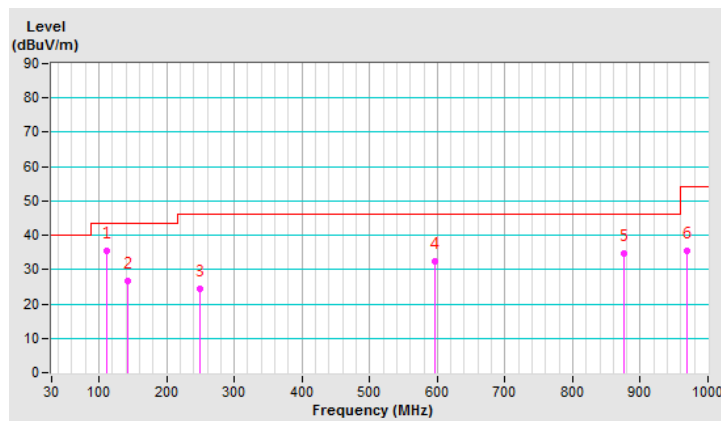
CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	110.78	35.4 QP	43.5	-8.1	1.00 V	30	46.1	-10.7
2	143.32	26.8 QP	43.5	-16.7	2.00 V	360	34.8	-8.0
3	250.00	24.3 QP	46.0	-21.7	1.00 V	265	33.2	-8.9
4	597.06	32.3 QP	46.0	-13.7	1.00 V	73	31.7	0.6
5	875.02	34.7 QP	46.0	-11.3	1.00 V	344	29.7	5.0
6	969.42	35.5 QP	54.0	-18.5	2.00 V	118	29.0	6.5

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

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

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Nov. 01, 2017	Oct. 31, 2018
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Nov. 15, 2017	Nov. 14, 2018
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 04, 2018	June 03, 2019
50 ohms Terminator	N/A	EMC-02	Sep. 22, 2017	Sep. 21, 2018
RF Cable	5D-FB	COCCAB-001	Sep. 29, 2017	Sep. 28, 2018
Fixed attenuator EMCI	STI02-2200-10	003	Mar. 16, 2018	Mar. 15, 2019
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note:

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Conduction 1.
3. Tested Date: Sep. 05, 2018

4.2.3 Test Procedures

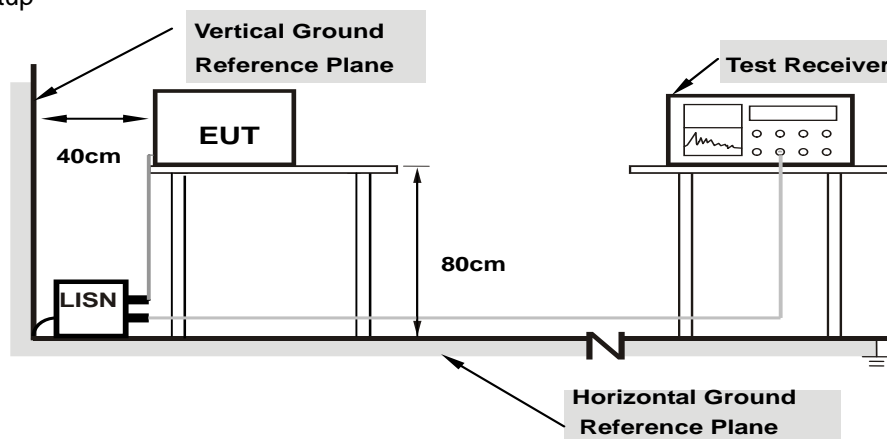
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

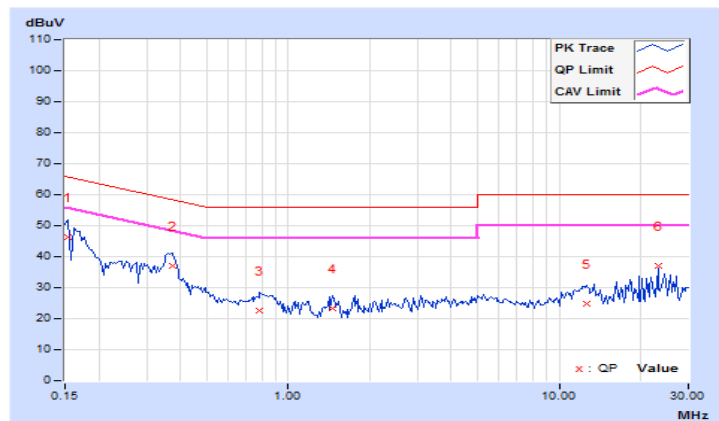
4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1	0.15391	10.05	36.31	17.52	46.36	27.57	65.79	55.79	-19.43
2	0.37266	10.11	26.89	19.61	37.00	29.72	58.44	48.44	-21.44	-18.72
3	0.78672	10.15	12.36	5.57	22.51	15.72	56.00	46.00	-33.49	-30.28
4	1.44922	10.19	12.99	5.44	23.18	15.63	56.00	46.00	-32.82	-30.37
5	12.59375	10.89	13.92	4.28	24.81	15.17	60.00	50.00	-35.19	-34.83
6	23.12891	11.44	25.60	16.82	37.04	28.26	60.00	50.00	-22.96	-21.74

Remarks:

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

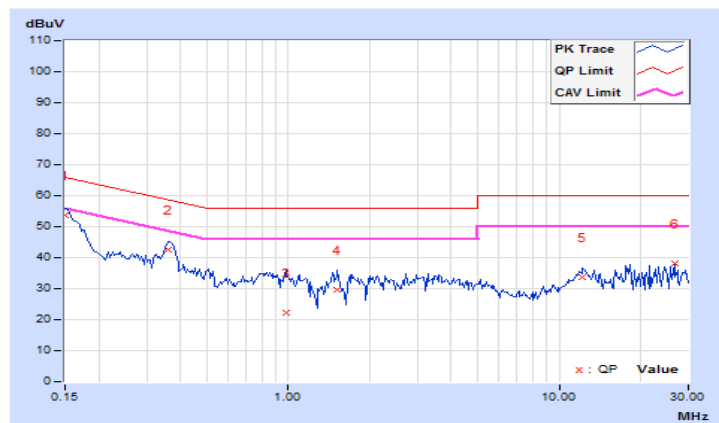


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	
1	0.15000	9.95	43.60	32.06	53.55	42.01	66.00	56.00	-12.45	-13.99
2	0.36094	10.01	32.58	24.66	42.59	34.67	58.71	48.71	-16.12	-14.04
3	0.98203	10.04	12.36	0.87	22.40	10.91	56.00	46.00	-33.60	-35.09
4	1.52344	10.07	19.39	10.12	29.46	20.19	56.00	46.00	-26.54	-25.81
5	12.19922	10.68	23.12	15.71	33.80	26.39	60.00	50.00	-26.20	-23.61
6	26.60938	11.25	26.85	21.14	38.10	32.39	60.00	50.00	-21.90	-17.61

Remarks:

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

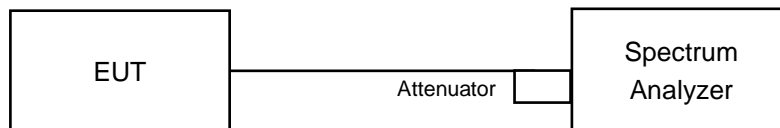


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.3.7 Test Result

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	9.63	10.03	0.5	Pass
6	2437	9.62	10.10	0.5	Pass
11	2462	10.03	10.10	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.15	15.17	0.5	Pass
6	2437	15.13	15.15	0.5	Pass
11	2462	15.15	15.15	0.5	Pass

802.11n (HT20)

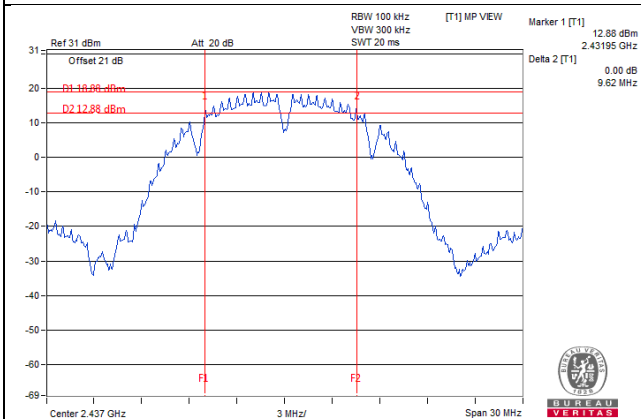
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.74	15.17	0.5	Pass
6	2437	15.14	15.15	0.5	Pass
11	2462	15.16	15.16	0.5	Pass

802.11n (HT40)

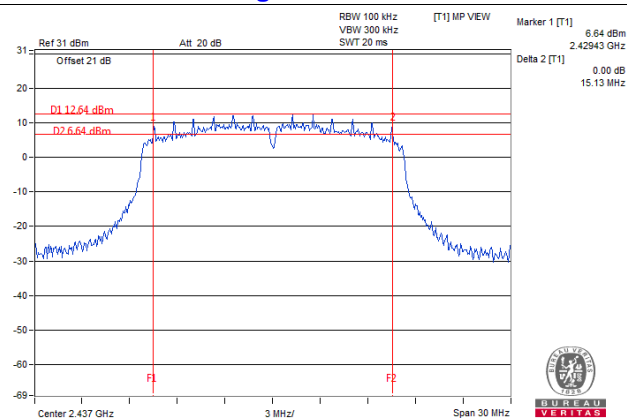
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.05	32.72	0.5	Pass
6	2437	33.88	35.09	0.5	Pass
9	2452	33.92	35.07	0.5	Pass

Spectrum Plot of Worst Value

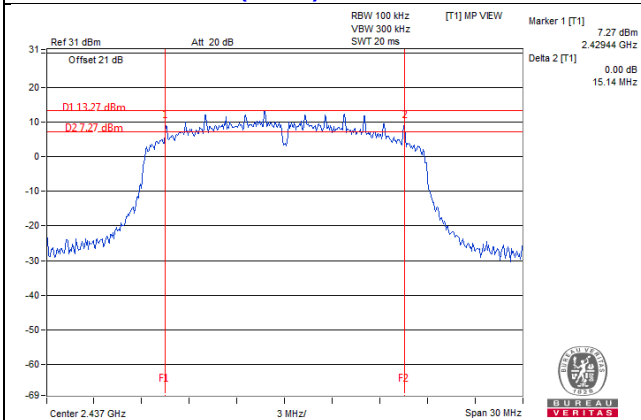
802.11b_Chain 0 / CH6



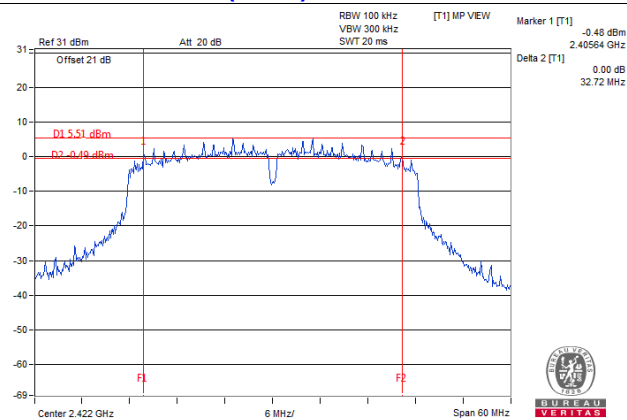
802.11g_Chain 0 / CH6



802.11n (HT20) _Chain 0 / CH6



802.11n (HT40) _Chain 1 / CH3



4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

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

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

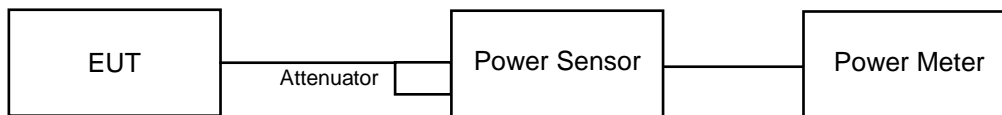
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

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

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

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

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	23.80	24.41	515.941	27.13	30	Pass
6	2437	27.01	26.82	983.182	29.93	30	Pass
11	2462	24.02	23.69	486.232	26.87	30	Pass

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	21.41	21.56	281.576	24.50	30	Pass
6	2437	21.43	21.72	287.589	24.59	30	Pass
11	2462	21.52	21.72	290.5	24.63	30	Pass

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	21.46	22.22	306.684	24.87	30	Pass
6	2437	21.85	22.24	320.603	25.06	30	Pass
11	2462	21.84	22.13	316.062	25.00	30	Pass

802.11n (HT40)

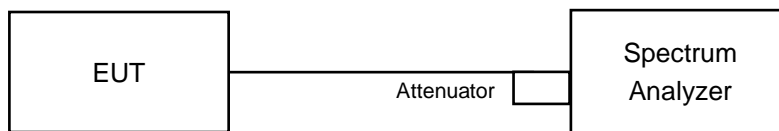
Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	18.93	18.13	143.176	21.56	30	Pass
6	2437	21.48	21.66	287.16	24.58	30	Pass
9	2452	18.89	18.10	142.011	21.52	30	Pass

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

For 802.11b:

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

For 802.11g/802.11n(HT20)/802.11n(HT40):

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6

4.5.7 Test Results

802.11b

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-6.82	3.01	-3.81	8.00	Pass
	6	2437	-3.29	3.01	-0.28	8.00	Pass
	11	2462	-6.94	3.01	-3.93	8.00	Pass
1	1	2412	-6.56	3.01	-3.55	8.00	Pass
	6	2437	-3.24	3.01	-0.23	8.00	Pass
	11	2462	-7.13	3.01	-4.12	8.00	Pass

Note: 1. The directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2] = 5.36\text{dBi} < 6\text{dBi}$, so the power density limit shall not be reduced.

802.11g

TX chain	Channel	Freq. (MHz)	PSD W/O Duty Factor (dBm/3kHz)	10 log (N=2) dB	Duty Factor (dB)	TOTAL PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-10.49	3.01	0.12	-7.36	8.00	Pass
	6	2437	-8.85	3.01	0.12	-5.72	8.00	Pass
	11	2462	-9.62	3.01	0.12	-6.49	8.00	Pass
1	1	2412	-11.02	3.01	0.12	-7.89	8.00	Pass
	6	2437	-10.41	3.01	0.12	-7.28	8.00	Pass
	11	2462	-9.56	3.01	0.12	-6.43	8.00	Pass

Note: 1. The directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2] = 5.36\text{dBi} < 6\text{dBi}$, so the power density limit shall not be reduced.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD W/O Duty Factor (dBm/3kHz)	10 log (N=2) dB	Duty Factor (dB)	TOTAL PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-8.45	3.01	0.11	-5.33	8.00	Pass
	6	2437	-8.64	3.01	0.11	-5.52	8.00	Pass
	11	2462	-9.66	3.01	0.11	-6.54	8.00	Pass
1	1	2412	-10.36	3.01	0.11	-7.24	8.00	Pass
	6	2437	-9.20	3.01	0.11	-6.08	8.00	Pass
	11	2462	-9.61	3.01	0.11	-6.49	8.00	Pass

Note: 1. The directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2] = 5.36\text{dBi} < 6\text{dBi}$, so the power density limit shall not be reduced.
2. Refer to section 3.3 for duty cycle spectrum plot.

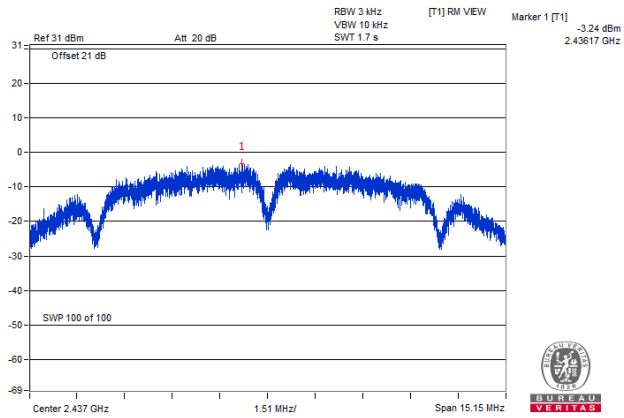
802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD W/O Duty Factor (dBm/3kHz)	10 log (N=2) dB	Duty Factor (dB)	TOTAL PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	3	2422	-17.05	3.01	0.19	-13.85	8.00	Pass
	6	2437	-14.55	3.01	0.19	-11.35	8.00	Pass
	9	2452	-16.83	3.01	0.19	-13.63	8.00	Pass
1	3	2422	-17.21	3.01	0.19	-14.01	8.00	Pass
	6	2437	-13.78	3.01	0.19	-10.58	8.00	Pass
	9	2452	-16.83	3.01	0.19	-13.63	8.00	Pass

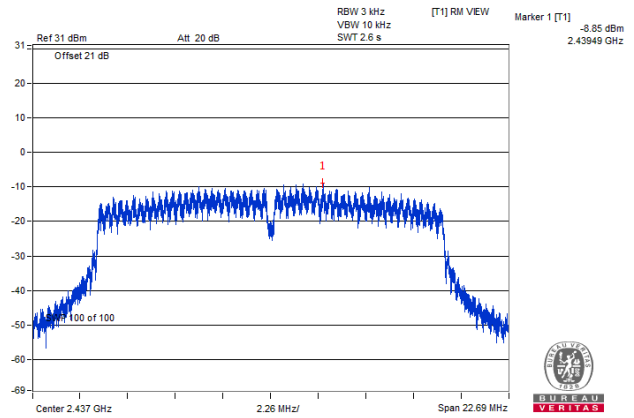
- Note: 1. The directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2] = 5.36\text{dBi} < 6\text{dBi}$, so the power density limit shall not be reduced.
2. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

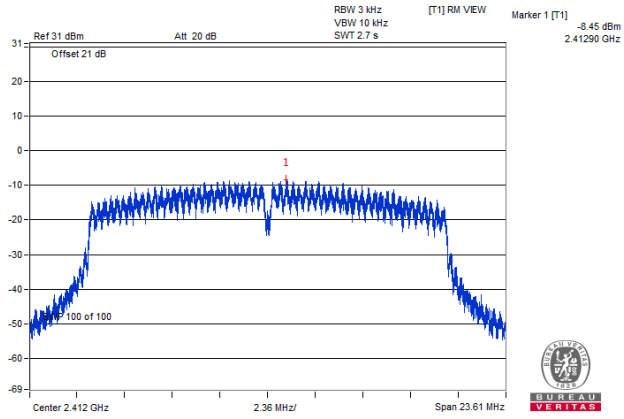
802.11b_Chain 1 / CH6



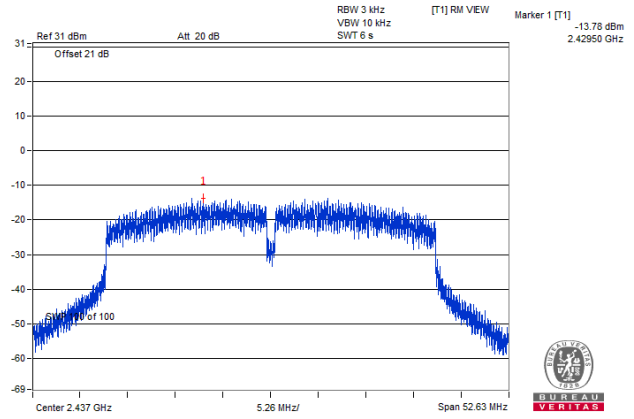
802.11g_Chain 0 / CH6



802.11n (HT20)_Chain 0 / CH1



802.11n (HT40)_Chain 1 / CH6

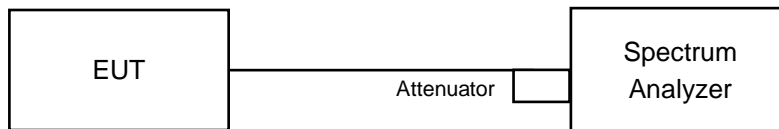


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOB

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

4.6.5 Deviation from Test Standard

No deviation.

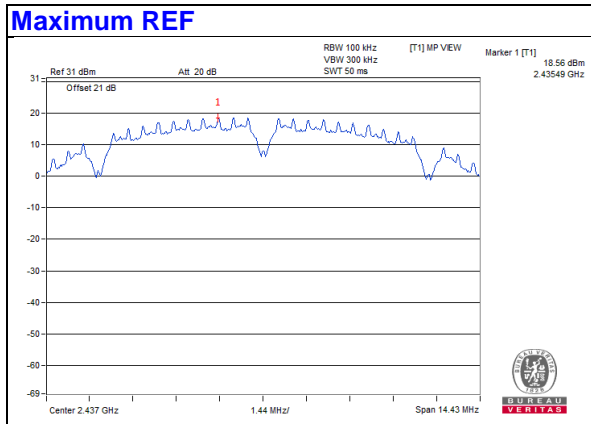
4.6.6 EUT Operating Condition

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

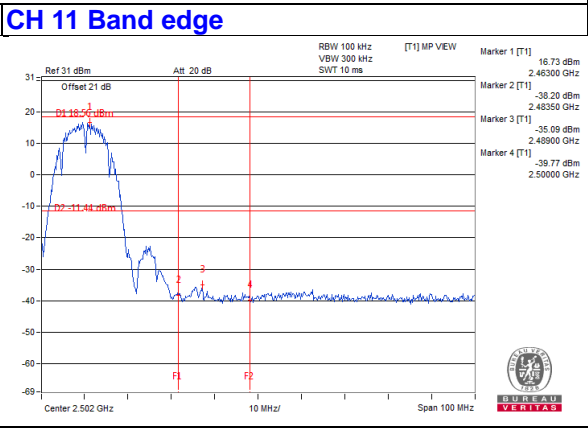
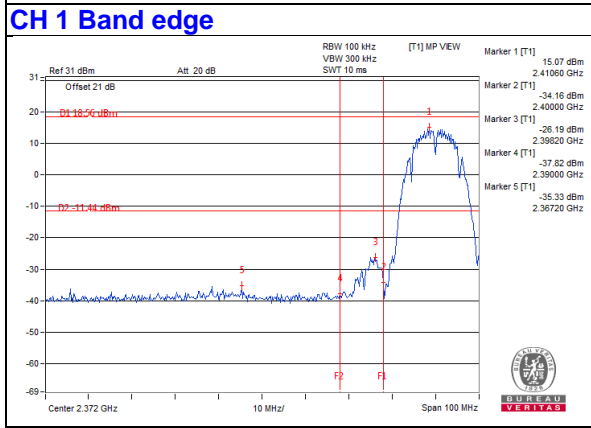
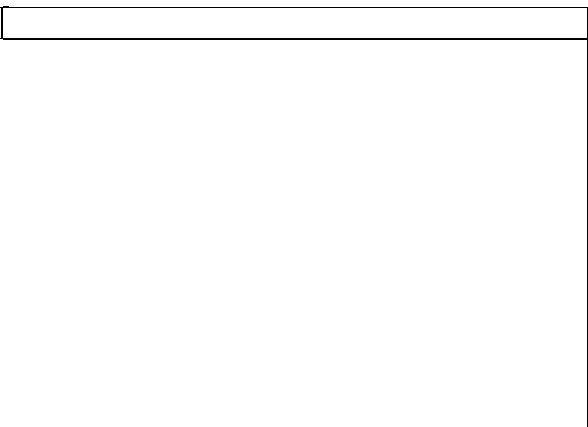
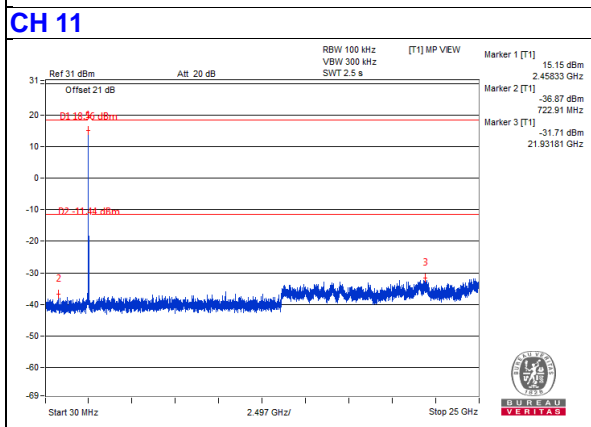
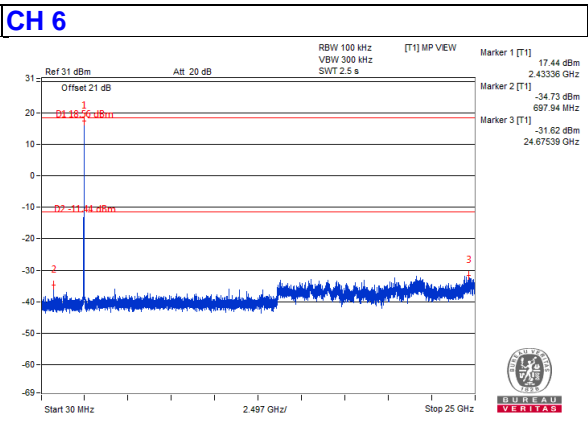
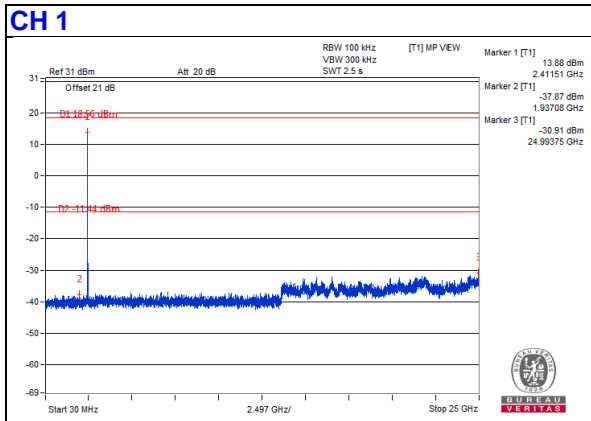
4.6.7 Test Results

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

802.11b

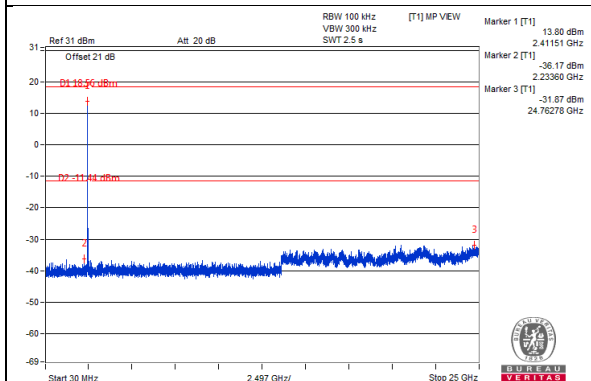


Chain 0

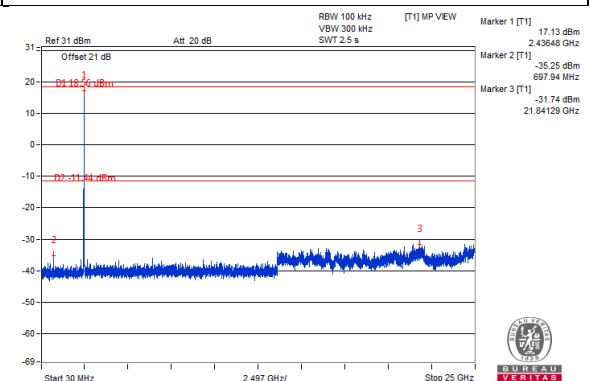


Chain 1

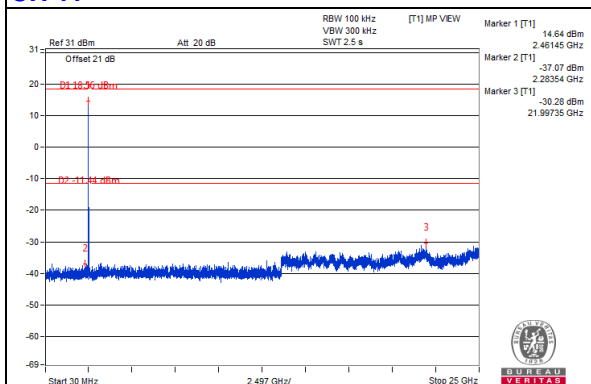
CH 1



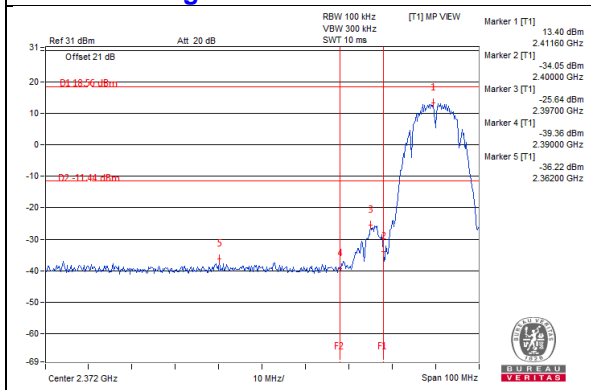
CH 6



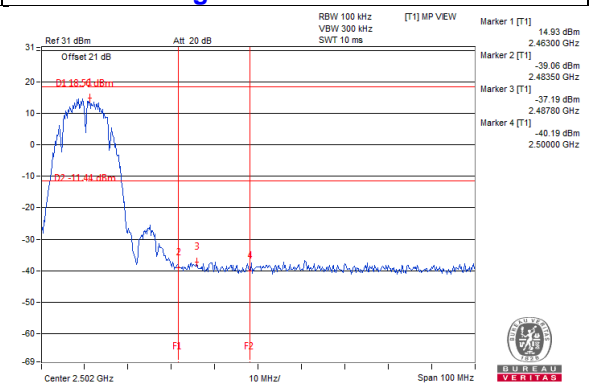
CH 11



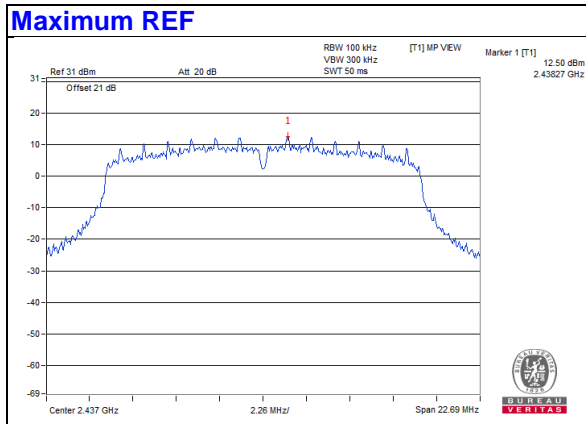
CH 1 Band edge



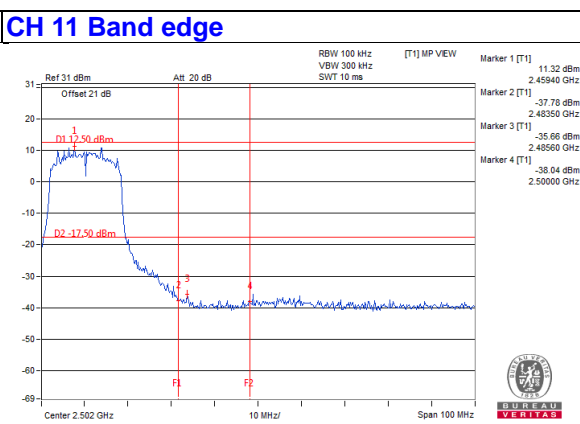
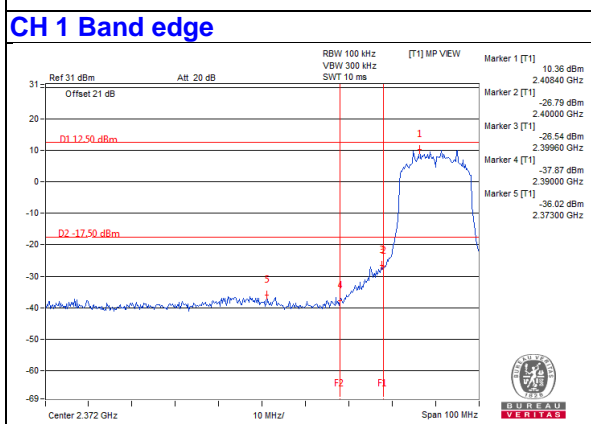
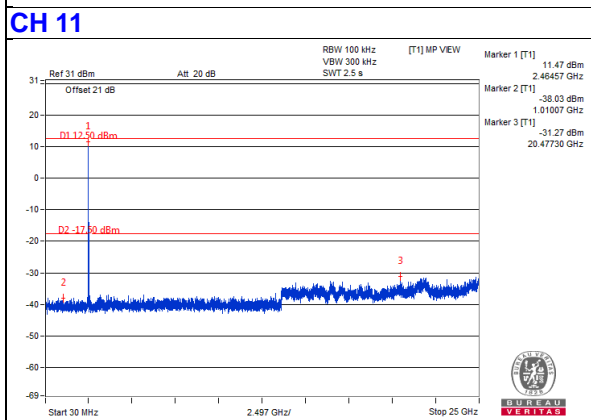
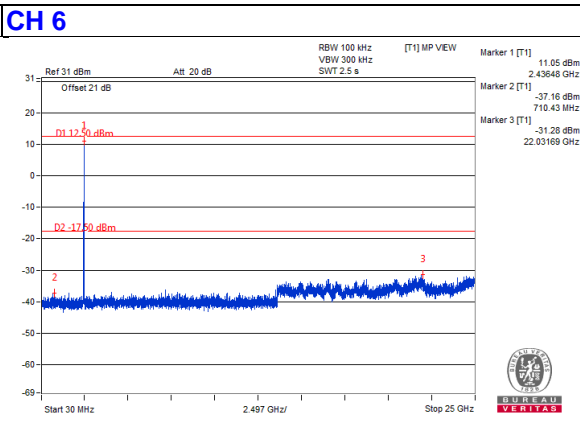
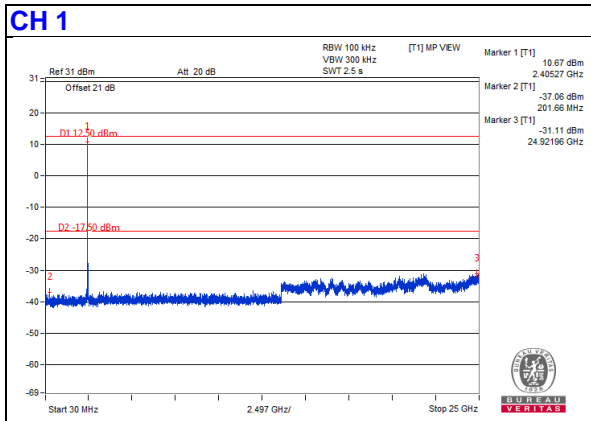
CH 11 Band edge



802.11g

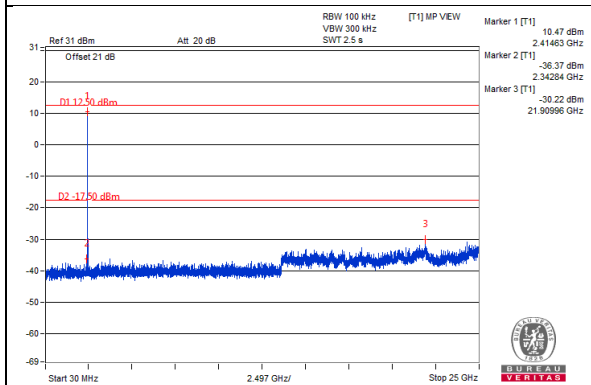


Chain 0

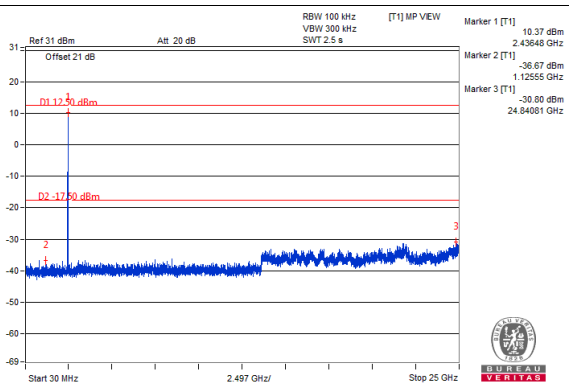


Chain 1

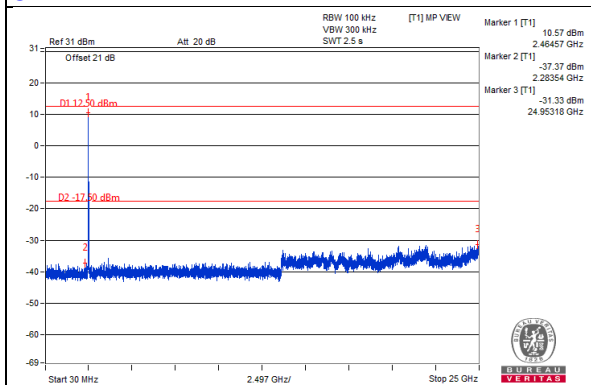
CH 1



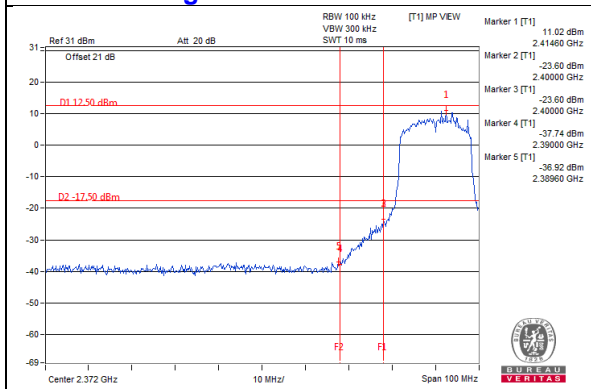
CH 6



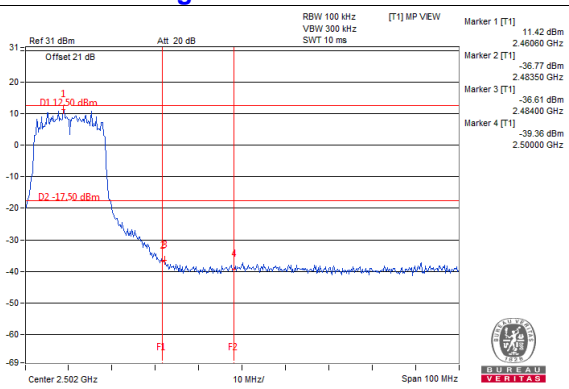
CH 11



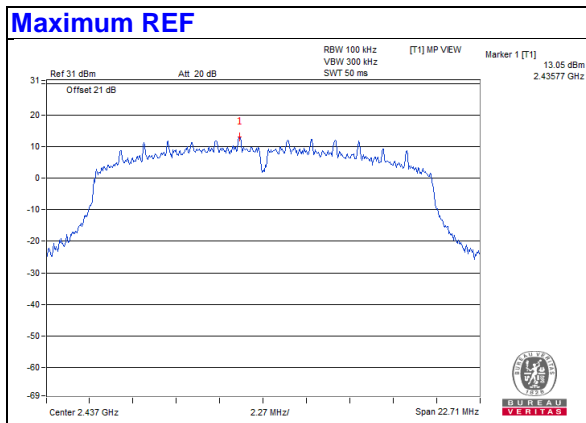
CH 1 Band edge



CH 11 Band edge

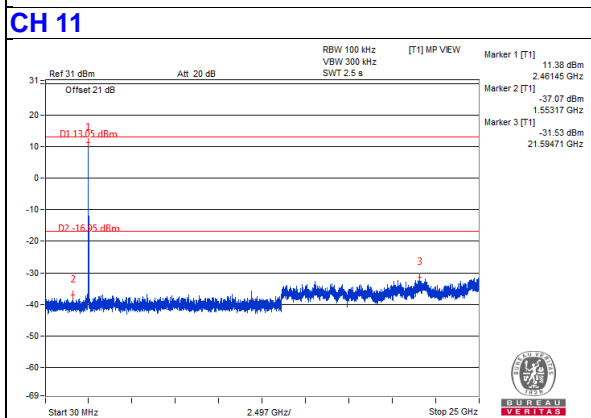
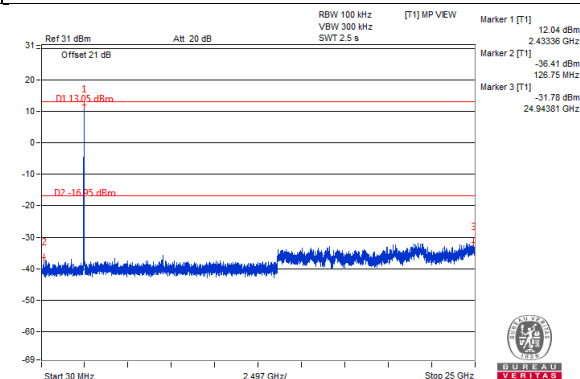
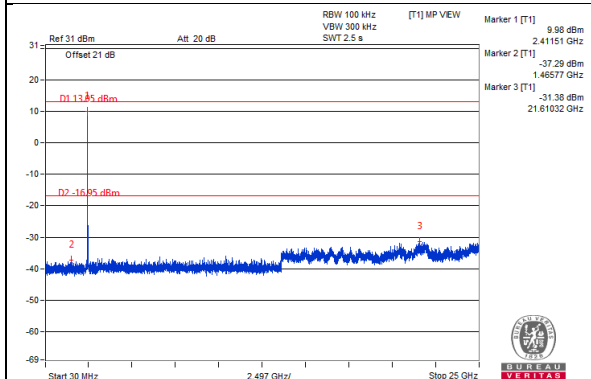


802.11n (HT20)



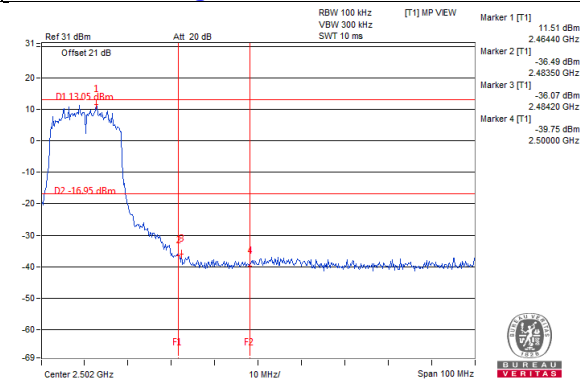
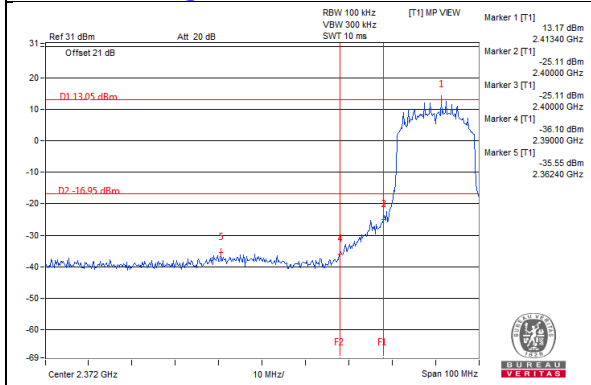
Chain 0

CH 1 CH 6



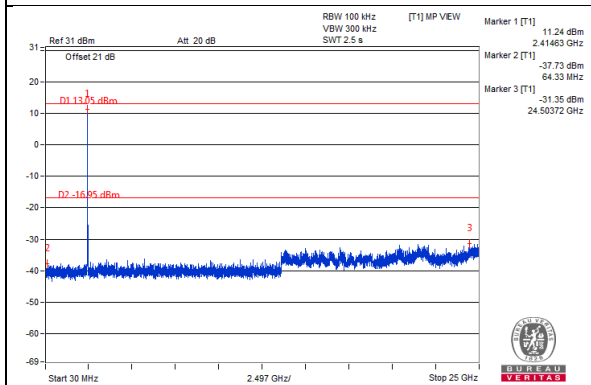
CH 1 Band edge

CH 11 Band edge

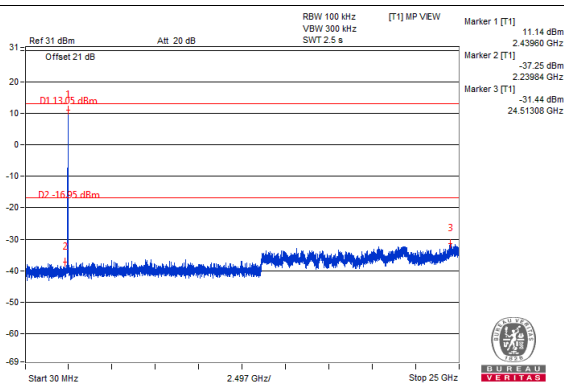


Chain 1

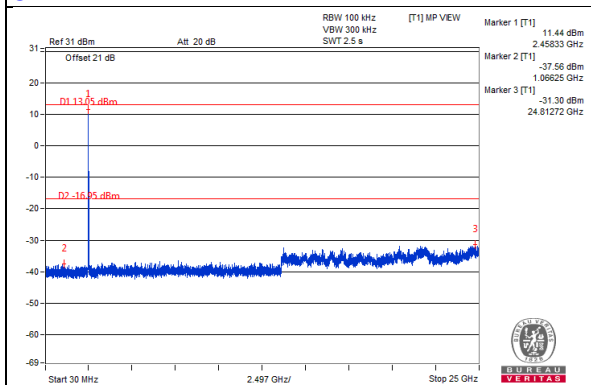
CH 1



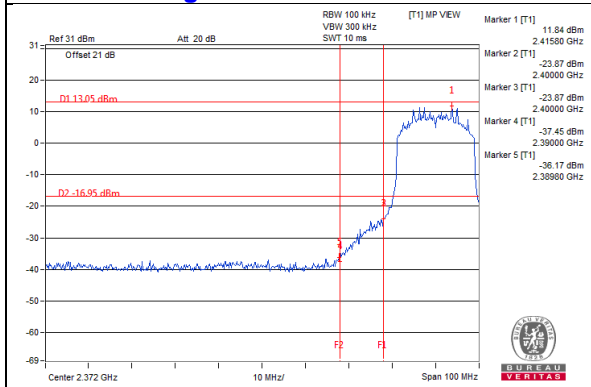
CH 6



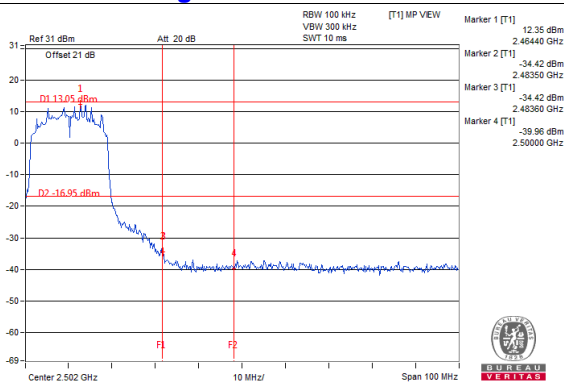
CH 11



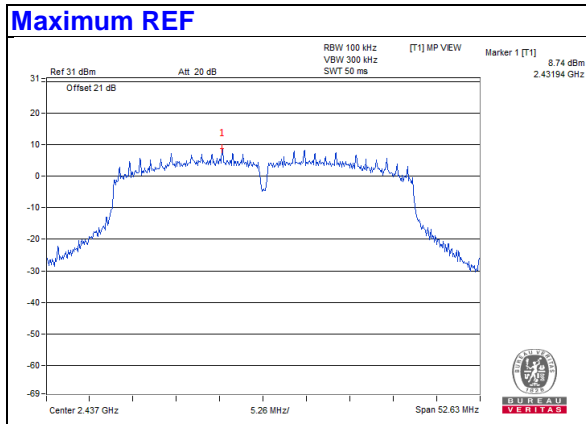
CH 1 Band edge



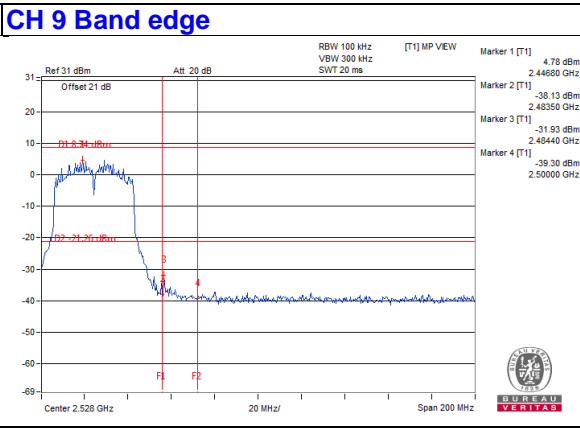
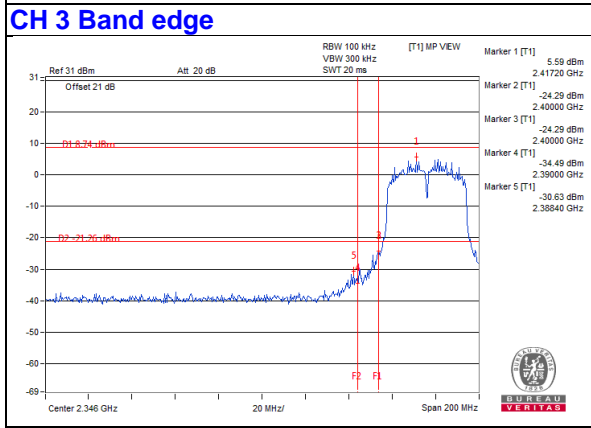
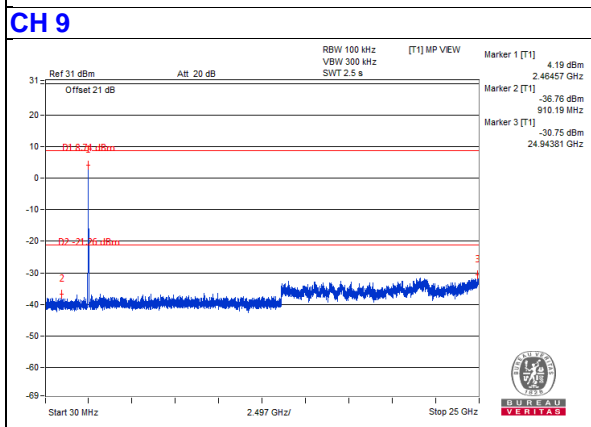
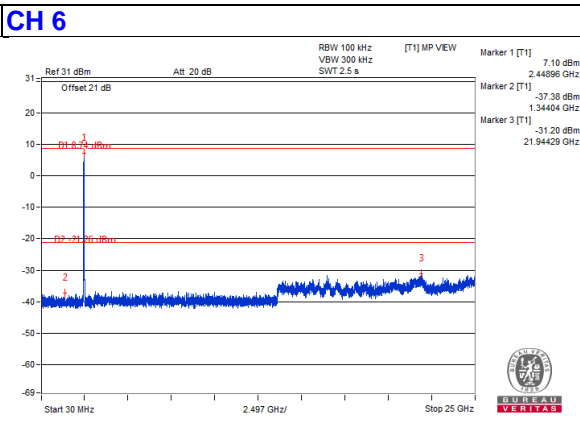
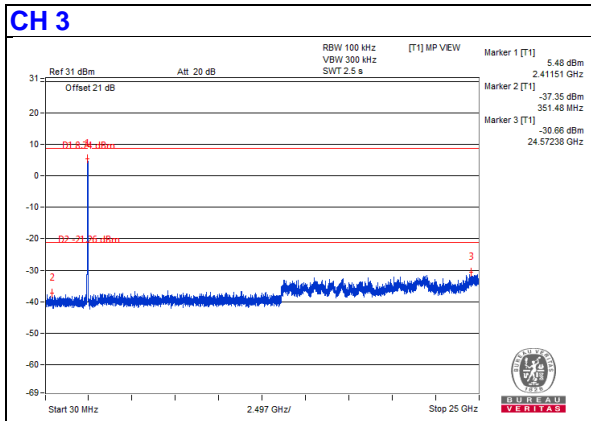
CH 11 Band edge



802.11n (HT40)

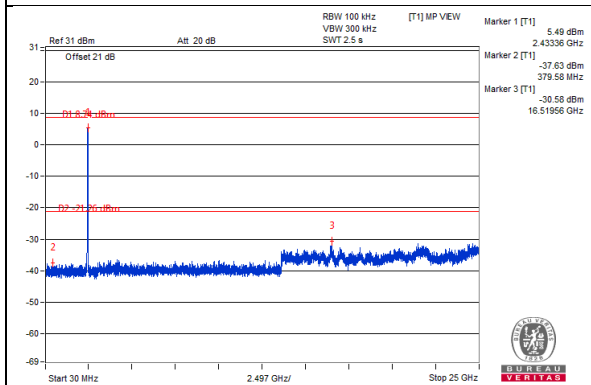


Chain 0

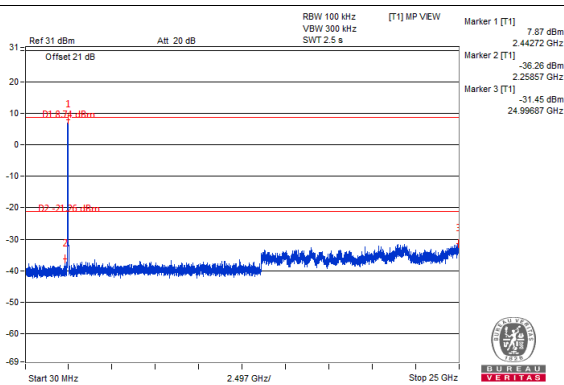


Chain 1

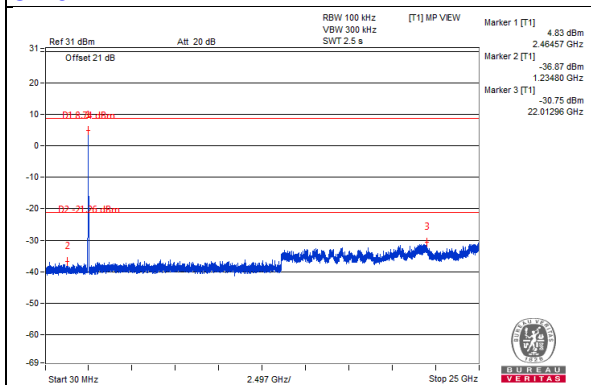
CH 3



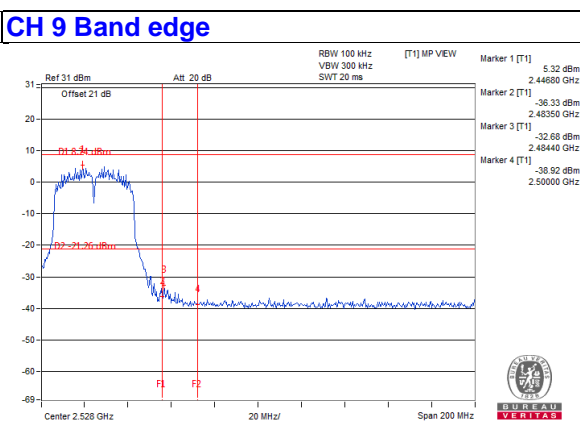
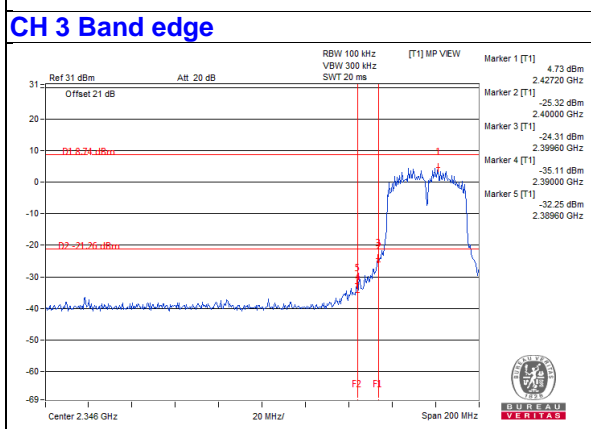
CH 6



CH 9



CH 9 Band edge



5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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

Linkou EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

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Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

--- END ---