FCC Test Report

Report No.:	RF180410E17
FCC ID:	NOIKBN782
Test Model:	N782
Received Date:	Apr. 10, 2018
Test Date:	May 26 to June 19, 2018
Issued Date:	July 16, 2018
Applicant:	NETRONIX, INC.
Address:	No. 945, Boai St., Jubei City, Hsin-Chu,302,Taiwan, R.O.C.
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
FCC Registration / Designation Number:	723255 / TW2022

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RF180410E17	Original release.	July 16, 2018

1 Certificate of Conformity

Product:	Electronic Display Device
Brand:	Rakuten kobo
Test Model:	N782
Sample Status:	ENGINEERING SAMPLE
Applicant:	NETRONIX, INC.
Test Date:	May 26 to June 19, 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 : Phoenix Huang , **Date:** July 16, 2018

Phoenix Huang / Specialist

Approved by : , **Date:** July 16, 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 -16.64dB at 0.20469MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.1dB at 2390.00MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is IPEX not a standard connector.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.84 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.53 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.08 dB
	6GHz ~ 18GHz	4.98 dB
	18GHz ~ 40GHz	5.19 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Electronic Display Device
Brand	Rakuten kobo
Test Model	N782
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 3.7V from battery or DC 5V from USB interface
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	45.705 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	USB cable x 1 (1m, shielded)

Note:

1. The EUT could be supplied with a rechargeable battery as the following table:

Brand Name	Model No.	Spec.
SPRINGPOWER TECHNOLOGY	SP178098- A	3.7Vdc, 1200mAh, 4.44Wh

2. When USB port is charging the rechargeable battery, the EUT has WiFi function under charging mode. And the USB port is connected to Host unit under USB communication mode, the EUT WiFi function will be disabled.
3. Three eMMC provided to the EUT, please refer to the following table:

No.	Brand	Spec.	Remark
1	Sandisk	8G	SDINBDG4-8G
2	Samsung	8G	KLM8G1GETF-B041
3	Sandisk	32G	SDINBDG4-32G
Note: From the above new eMMC, **No. 3**, the worse case one. Therefore only the test data of the mode was recorded in this report.			

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 antennas provided to the EUT, please refer to the following table:

Ant. No.	Brand	Model	Antenna Net Gain (dBi)	Frequency range (GHz)	Antenna Type	Connecter Type	Cable Length (mm)
1	Walsin Technology Corporation	RFFPA171603EMAB101	3.44	2.4~2.5	FPC	IPEX (Gold)	30
2	Walsin Technology Corporation	RFFPA181614EMAB101	3.48	2.4~2.5	FPC	IPEX (Gold)	147

6. The EUT was pre-tested under the following modes:

Test Mode	Description
Mode A	**With adapter mode**
Mode B	Power from battery
Note: From the above modes, radiated emission the worst case was found in **Mode A**. Therefore only the test data of the mode was recorded in this report.	

7. 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≥1G	RE<1G	PLC	APCM	
1	√	√	√	√	With adapter mode
2	-	-	√	-	With Laptop mode

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

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

Note: 1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane** (below 1GHz) and **Y-plane** (above 1GHz).

2. "-"means no effect.

Radiated Emission Test (Above 1GHz):

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

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

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

Radiated Emission Test (Below 1GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6

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)
802.11g	1 to 11	6	OFDM	BPSK	6

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:

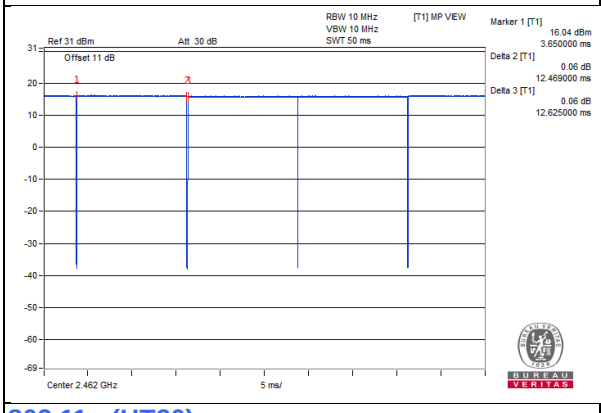
APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (System)	TESTED BY
RE≥1G	23deg. C, 67%RH	120Vac, 60Hz	Weiwei Lo
RE<1G	24deg. C, 68%RH	120Vac, 60Hz	Weiwei Lo
PLC	25deg. C, 75%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

3.3 Duty Cycle of Test Signal

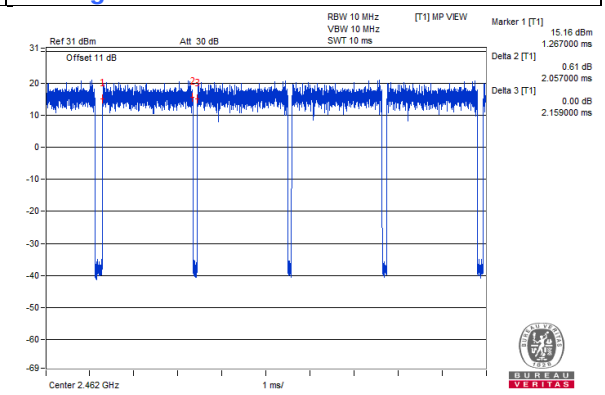
If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.

802.11b: Duty cycle = 12.469 ms/12.625 ms = 0.988
802.11g: Duty cycle = 2.057 ms/2.159 ms = 0.953, Duty factor = 10 * log (1/Duty cycle) = 0.21
802.11n (HT20): Duty cycle = 1.918 ms/2.028 ms = 0.946, Duty factor = 10 * log (1/Duty cycle) = 0.24
802.11n (HT40): Duty cycle = 0.943 ms/1.107 ms = 0.852, Duty factor = 10 * log (1/Duty cycle) = 0.7

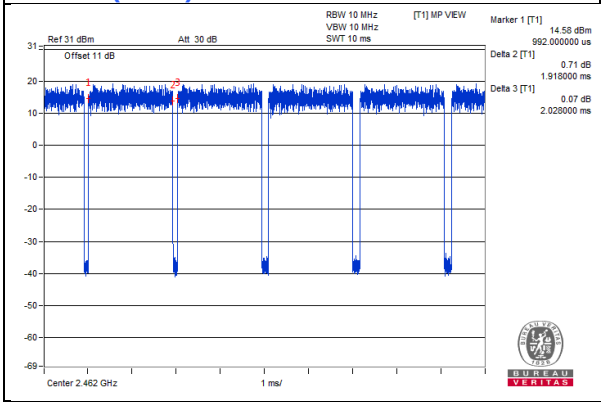
802.11b



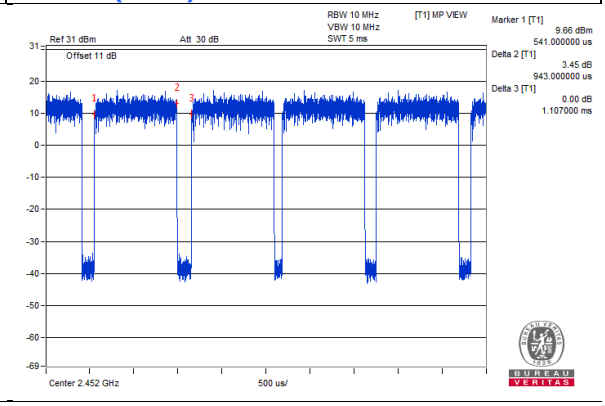
802.11g



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.	USB Adapter	ASUS	EXA1205UA	NA	NA	Provided by Lab
B.	Laptop	DELL	E6420	B92T3R1	FCC DoC	Provided by Lab

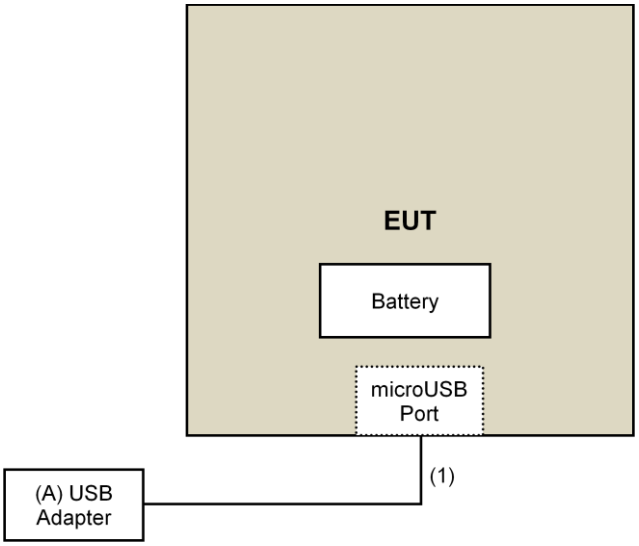
Note:

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

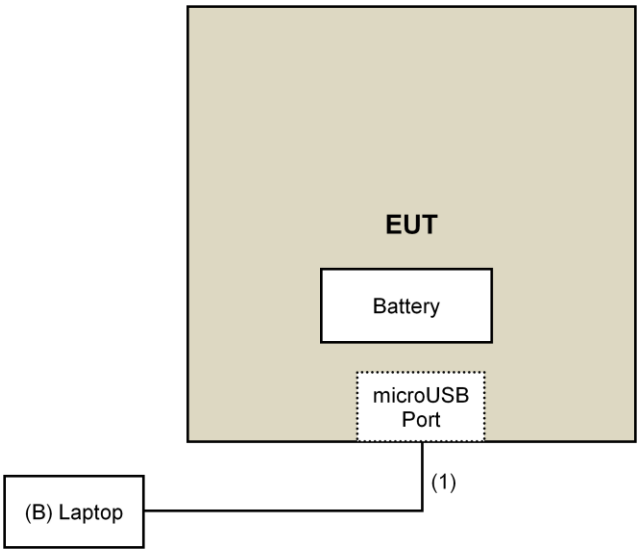
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB Cable	1	1	Yes	0	Supplied by client

3.4.1 Configuration of System under Test

For Mode 1



For Mode 2



3.5 General Description of Applied Standards

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

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

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

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 Agilent	N9038A	MY50010156	July 12, 2017	July 11, 2018
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 LOOPCAB-002	Jan. 15, 2018	Jan. 14, 2019
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-05	May 05, 2018	May 04, 2019
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Nov. 29, 2017	Nov. 28, 2018
RF Cable	8D	966-3-1 966-3-2 966-3-3	Mar. 20, 2018	Mar. 19, 2019
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	Oct. 03, 2017	Oct. 02, 2018
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Dec. 12, 2017	Dec. 11, 2018
Pre-Amplifier EMCI	EMC12630SE	980384	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-1200 EMC104-SM-SM-2000 EMC104-SM-SM-5000	160922 150317 150322	Jan. 29, 2018	Jan. 28, 2019
Spectrum Analyzer Keysight	N9030A	MY54490679	July 25, 2017	July 24, 2018
Pre-Amplifier EMCI	EMC184045SE	980386	Jan. 29, 2018	Jan. 28, 2019
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 14, 2017	Dec. 13, 2018
RF Cable	EMC102-KM-KM-1200	160924	Jan. 29, 2018	Jan. 28, 2019
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Spectrum Analyzer R&S	FSv40	100964	July 01, 2017	June 30, 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. 3.
4. The CANADA Site Registration No. is 20331-1
5. Loop antenna was used for all emissions below 30 MHz.
6. Tested Date: June 12 to 19, 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:

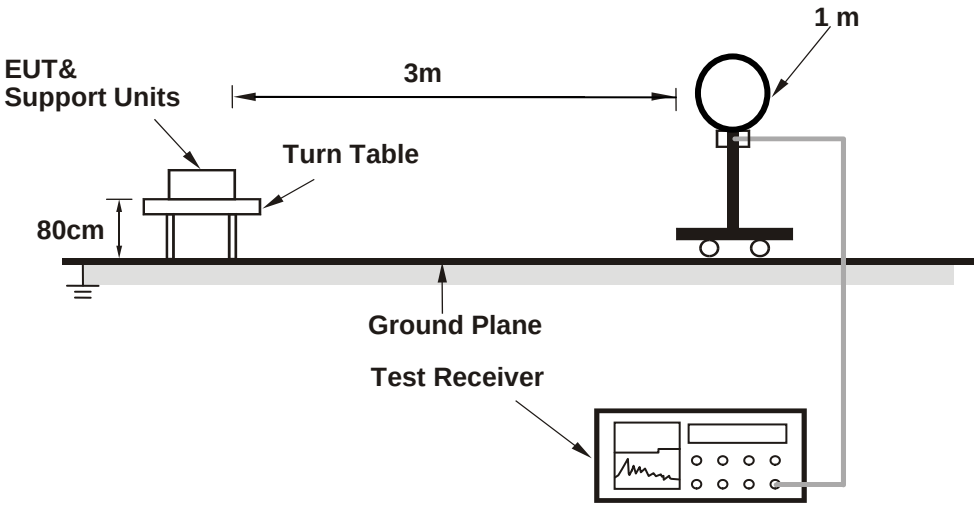
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

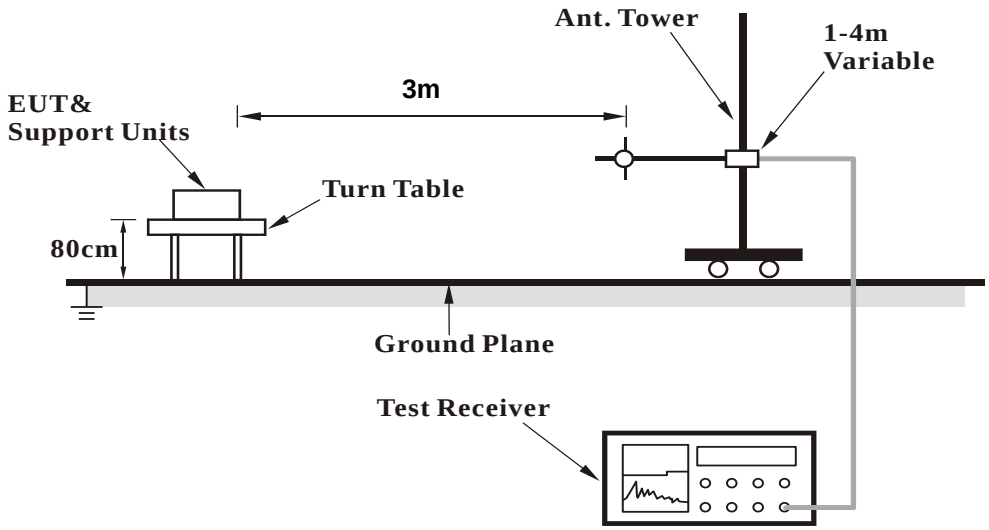
No deviation.

4.1.5 Test Setup

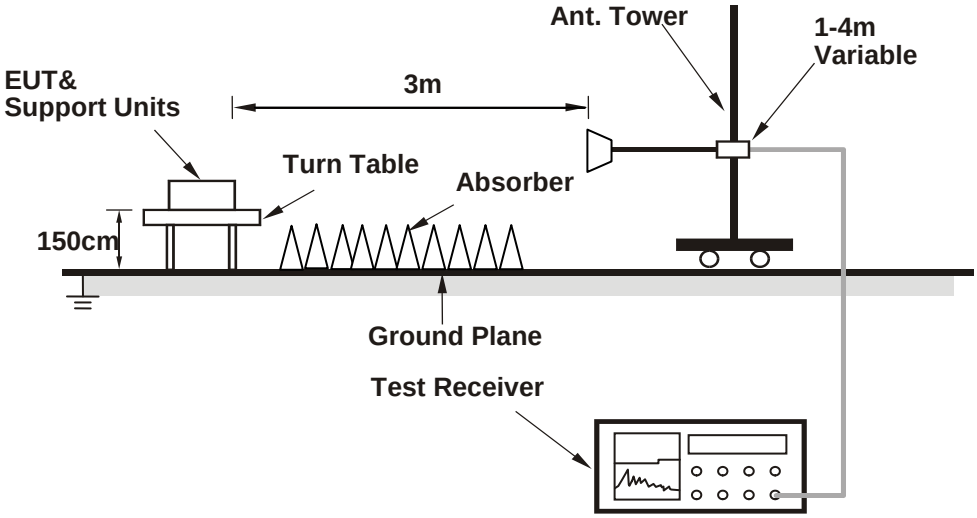
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

a. Connected the EUT with the Laptop which is placed on remote site.
b. Controlling software (HyperTerminal paste R782_RF_SOP.txt command) has been activated to set the EUT on specific status.

4.1.7 Test Results

Above 1GHz Data：

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	52.9 PK	74.0	-21.1	2.36 H	314	55.1	-2.2
2	2390.00	43.7 AV	54.0	-10.3	2.36 H	314	45.9	-2.2
3	*2412.00	107.3 PK			2.36 H	314	109.6	-2.3
4	*2412.00	104.8 AV			2.36 H	314	107.1	-2.3
5	4824.00	50.1 PK	74.0	-23.9	1.44 H	235	48.0	2.1
6	4824.00	49.4 AV	54.0	-4.6	1.44 H	235	47.3	2.1
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	49.7 PK	74.0	-24.3	1.07 V	269	51.9	-2.2
2	2390.00	39.2 AV	54.0	-14.8	1.07 V	269	41.4	-2.2
3	*2412.00	103.7 PK			1.07 V	269	106.0	-2.3
4	*2412.00	101.1 AV			1.07 V	269	103.4	-2.3
5	4824.00	46.5 PK	74.0	-27.5	1.55 V	24	44.4	2.1
6	4824.00	45.6 AV	54.0	-8.4	1.55 V	24	43.5	2.1

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	50.0 PK	74.0	-24.0	2.10 H	313	52.2	-2.2
2	2390.00	37.9 AV	54.0	-16.1	2.10 H	313	40.1	-2.2
3	*2437.00	111.4 PK			2.10 H	313	114.0	-2.6
4	*2437.00	108.6 AV			2.10 H	313	111.2	-2.6
5	2483.50	51.2 PK	74.0	-22.8	2.10 H	313	53.7	-2.5
6	2483.50	38.5 AV	54.0	-15.5	2.10 H	313	41.0	-2.5
7	4874.00	50.6 PK	74.0	-23.4	1.47 H	204	48.5	2.1
8	4874.00	49.9 AV	54.0	-4.1	1.47 H	204	47.8	2.1
9	7311.00	44.5 PK	74.0	-29.5	1.25 H	151	36.3	8.2
10	7311.00	31.5 AV	54.0	-22.5	1.25 H	151	23.3	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	53.3 PK	74.0	-20.7	1.04 V	254	55.5	-2.2
2	2390.00	42.1 AV	54.0	-11.9	1.04 V	254	44.3	-2.2
3	*2437.00	104.1 PK			1.04 V	254	106.7	-2.6
4	*2437.00	101.5 AV			1.04 V	254	104.1	-2.6
5	2483.50	50.4 PK	74.0	-23.6	1.04 V	254	52.9	-2.5
6	2483.50	39.9 AV	54.0	-14.1	1.04 V	254	42.4	-2.5
7	4874.00	46.1 PK	74.0	-27.9	1.58 V	38	44.0	2.1
8	4874.00	45.3 AV	54.0	-8.7	1.58 V	38	43.2	2.1
9	7311.00	45.4 PK	74.0	-28.6	1.54 V	169	37.2	8.2
10	7311.00	33.6 AV	54.0	-20.4	1.54 V	169	25.4	8.2

REMARKS:

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

CHANNEL	TX Channel 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	111.7 PK			2.11 H	315	114.2	-2.5
2	*2462.00	108.8 AV			2.11 H	315	111.3	-2.5
3	2483.50	50.7 PK	74.0	-23.3	2.11 H	315	53.2	-2.5
4	2483.50	38.3 AV	54.0	-15.7	2.11 H	315	40.8	-2.5
5	2487.00	49.9 PK	74.0	-24.1	2.11 H	315	52.3	-2.4
6	2487.00	38.1 AV	54.0	-15.9	2.11 H	315	40.5	-2.4
7	4924.00	50.1 PK	74.0	-23.9	1.60 H	165	47.9	2.2
8	4924.00	49.5 AV	54.0	-4.5	1.60 H	165	47.3	2.2
9	7386.00	44.5 PK	74.0	-29.5	1.26 H	159	36.2	8.3
10	7386.00	31.7 AV	54.0	-22.3	1.26 H	159	23.4	8.3
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	104.4 PK			1.00 V	243	106.9	-2.5
2	*2462.00	101.7 AV			1.00 V	243	104.2	-2.5
3	2483.50	50.2 PK	74.0	-23.8	1.00 V	243	52.7	-2.5
4	2483.50	39.7 AV	54.0	-14.3	1.00 V	243	42.2	-2.5
5	2487.00	53.1 PK	74.0	-20.9	1.00 V	243	55.5	-2.4
6	2487.00	42.1 AV	54.0	-11.9	1.00 V	243	44.5	-2.4
7	4924.00	45.5 PK	74.0	-28.5	1.56 V	27	43.3	2.2
8	4924.00	44.9 AV	54.0	-9.1	1.56 V	27	42.7	2.2
9	7386.00	45.3 PK	74.0	-28.7	1.48 V	163	37.0	8.3
10	7386.00	33.3 AV	54.0	-20.7	1.48 V	163	25.0	8.3

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.3 PK	74.0	-6.7	2.43 H	316	69.5	-2.2
2	2390.00	50.3 AV	54.0	-3.7	2.43 H	316	52.5	-2.2
3	*2412.00	112.9 PK			2.43 H	316	115.2	-2.3
4	*2412.00	102.6 AV			2.43 H	316	104.9	-2.3
5	4824.00	54.9 PK	74.0	-19.1	3.11 H	240	52.8	2.1
6	4824.00	42.7 AV	54.0	-11.3	3.11 H	240	40.6	2.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	52.0 PK	74.0	-22.0	1.16 V	270	54.2	-2.2
2	2390.00	41.3 AV	54.0	-12.7	1.16 V	270	43.5	-2.2
3	*2412.00	106.3 PK			1.16 V	270	108.6	-2.3
4	*2412.00	95.9 AV			1.16 V	270	98.2	-2.3
5	4824.00	55.0 PK	74.0	-19.0	1.19 V	246	52.9	2.1
6	4824.00	44.2 AV	54.0	-9.8	1.19 V	246	42.1	2.1

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	66.3 PK	74.0	-7.7	2.43 H	315	68.5	-2.2
2	2390.00	51.2 AV	54.0	-2.8	2.43 H	315	53.4	-2.2
3	*2437.00	112.5 PK			2.43 H	315	115.1	-2.6
4	*2437.00	102.3 AV			2.43 H	315	104.9	-2.6
5	2483.50	66.7 PK	74.0	-7.3	2.43 H	315	69.2	-2.5
6	2483.50	46.6 AV	54.0	-7.4	2.43 H	315	49.1	-2.5
7	4874.00	55.3 PK	74.0	-18.7	3.14 H	235	53.2	2.1
8	4874.00	43.2 AV	54.0	-10.8	3.14 H	235	41.1	2.1
9	7311.00	46.3 PK	74.0	-27.7	2.25 H	168	38.1	8.2
10	7311.00	34.3 AV	54.0	-19.7	2.25 H	168	26.1	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	52.7 PK	74.0	-21.3	1.17 V	256	54.9	-2.2
2	2390.00	41.8 AV	54.0	-12.2	1.17 V	256	44.0	-2.2
3	*2437.00	105.1 PK			1.17 V	256	107.7	-2.6
4	*2437.00	94.8 AV			1.17 V	256	97.4	-2.6
5	2483.50	50.2 PK	74.0	-23.8	1.17 V	256	52.7	-2.5
6	2483.50	39.4 AV	54.0	-14.6	1.17 V	256	41.9	-2.5
7	4874.00	55.2 PK	74.0	-18.8	1.15 V	261	53.1	2.1
8	4874.00	44.3 AV	54.0	-9.7	1.15 V	261	42.2	2.1
9	7311.00	42.6 PK	74.0	-31.4	1.44 V	356	34.4	8.2
10	7311.00	30.3 AV	54.0	-23.7	1.44 V	356	22.1	8.2

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	112.3 PK			1.26 H	315	114.8	-2.5
2	*2462.00	101.8 AV			1.26 H	315	104.3	-2.5
3	2483.50	67.4 PK	74.0	-6.6	1.26 H	315	69.9	-2.5
4	2483.50	50.4 AV	54.0	-3.6	1.26 H	315	52.9	-2.5
5	4924.00	55.4 PK	74.0	-18.6	3.09 H	229	53.2	2.2
6	4924.00	43.4 AV	54.0	-10.6	3.09 H	229	41.2	2.2
7	7386.00	46.6 PK	74.0	-27.4	2.28 H	162	38.3	8.3
8	7386.00	34.8 AV	54.0	-19.2	2.28 H	162	26.5	8.3
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	104.8 PK			1.21 V	254	107.3	-2.5
2	*2462.00	94.6 AV			1.21 V	254	97.1	-2.5
3	2483.50	52.5 PK	74.0	-21.5	1.21 V	254	55.0	-2.5
4	2483.50	41.9 AV	54.0	-12.1	1.21 V	254	44.4	-2.5
5	4924.00	55.4 PK	74.0	-18.6	1.13 V	249	53.2	2.2
6	4924.00	44.6 AV	54.0	-9.4	1.13 V	249	42.4	2.2
7	7386.00	42.9 PK	74.0	-31.1	1.50 V	341	34.6	8.3
8	7386.00	30.5 AV	54.0	-23.5	1.50 V	341	22.2	8.3

REMARKS:

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

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.3 PK	74.0	-6.7	2.42 H	322	69.5	-2.2
2	2390.00	50.3 AV	54.0	-3.7	2.42 H	322	52.5	-2.2
3	*2412.00	112.2 PK			2.39 H	326	114.5	-2.3
4	*2412.00	101.9 AV			2.39 H	326	104.2	-2.3
5	4824.00	54.4 PK	74.0	-19.6	3.15 H	256	52.3	2.1
6	4824.00	42.2 AV	54.0	-11.8	3.15 H	256	40.1	2.1
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	51.7 PK	74.0	-22.3	1.20 V	266	53.9	-2.2
2	2390.00	41.0 AV	54.0	-13.0	1.20 V	266	43.2	-2.2
3	*2412.00	105.2 PK			1.21 V	254	107.5	-2.3
4	*2412.00	95.2 AV			1.21 V	254	97.5	-2.3
5	4824.00	55.6 PK	74.0	-18.4	1.18 V	253	53.5	2.1
6	4824.00	44.5 AV	54.0	-9.5	1.18 V	253	42.4	2.1

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	66.4 PK	74.0	-7.6	2.45 H	324	68.6	-2.2
2	2390.00	51.2 AV	54.0	-2.8	2.45 H	324	53.4	-2.2
3	*2437.00	111.2 PK			2.47 H	320	113.8	-2.6
4	*2437.00	100.8 AV			2.47 H	320	103.4	-2.6
5	2483.50	66.6 PK	74.0	-7.4	2.48 H	327	69.1	-2.5
6	2483.50	46.8 AV	54.0	-7.2	2.48 H	327	49.3	-2.5
7	4874.00	54.8 PK	74.0	-19.2	3.10 H	241	52.7	2.1
8	4874.00	42.9 AV	54.0	-11.1	3.10 H	241	40.8	2.1
9	7311.00	46.4 PK	74.0	-27.6	2.30 H	173	38.2	8.2
10	7311.00	34.3 AV	54.0	-19.7	2.30 H	173	26.1	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	52.2 PK	74.0	-21.8	1.18 V	256	54.4	-2.2
2	2390.00	41.6 AV	54.0	-12.4	1.18 V	256	43.8	-2.2
3	*2437.00	104.0 PK			1.12 V	253	106.6	-2.6
4	*2437.00	93.8 AV			1.12 V	253	96.4	-2.6
5	2483.50	49.5 PK	74.0	-24.5	1.20 V	256	52.0	-2.5
6	2483.50	38.9 AV	54.0	-15.1	1.20 V	256	41.4	-2.5
7	4874.00	55.6 PK	74.0	-18.4	1.14 V	247	53.5	2.1
8	4874.00	44.4 AV	54.0	-9.6	1.14 V	247	42.3	2.1
9	7311.00	43.0 PK	74.0	-31.0	1.41 V	360	34.8	8.2
10	7311.00	30.7 AV	54.0	-23.3	1.41 V	360	22.5	8.2

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	111.0 PK			1.29 H	322	113.5	-2.5
2	*2462.00	100.1 AV			1.29 H	322	102.6	-2.5
3	2483.50	66.6 PK	74.0	-7.4	1.22 H	310	69.1	-2.5
4	2483.50	49.9 AV	54.0	-4.1	1.22 H	310	52.4	-2.5
5	4924.00	56.0 PK	74.0	-18.0	3.13 H	242	53.8	2.2
6	4924.00	43.9 AV	54.0	-10.1	3.13 H	242	41.7	2.2
7	7386.00	46.8 PK	74.0	-27.2	2.30 H	149	38.5	8.3
8	7386.00	35.1 AV	54.0	-18.9	2.30 H	149	26.8	8.3
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	103.8 PK			1.25 V	239	106.3	-2.5
2	*2462.00	93.7 AV			1.25 V	239	96.2	-2.5
3	2483.50	53.0 PK	74.0	-21.0	1.22 V	264	55.5	-2.5
4	2483.50	42.1 AV	54.0	-11.9	1.22 V	264	44.6	-2.5
5	4924.00	55.5 PK	74.0	-18.5	1.10 V	255	53.3	2.2
6	4924.00	44.4 AV	54.0	-9.6	1.10 V	255	42.2	2.2
7	7386.00	42.7 PK	74.0	-31.3	1.45 V	352	34.4	8.3
8	7386.00	30.5 AV	54.0	-23.5	1.45 V	352	22.2	8.3

REMARKS:

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

802.11n (HT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.3 PK	74.0	-6.7	1.90 H	317	69.5	-2.2
2	**2390.00**	**52.9 AV**	**54.0**	**-1.1**	**1.90 H**	**317**	**55.1**	**-2.2**
3	*2422.00	105.8 PK			1.90 H	317	108.3	-2.5
4	*2422.00	96.3 AV			1.90 H	317	98.8	-2.5
5	4844.00	55.3 PK	74.0	-18.7	3.11 H	253	53.2	2.1
6	4844.00	43.5 AV	54.0	-10.5	3.11 H	253	41.4	2.1
7	7266.00	47.5 PK	74.0	-26.5	2.35 H	155	39.2	8.3
8	7266.00	35.6 AV	54.0	-18.4	2.35 H	155	27.3	8.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	52.0 PK	74.0	-22.0	1.27 V	224	54.2	-2.2
2	2390.00	41.3 AV	54.0	-12.7	1.27 V	224	43.5	-2.2
3	*2422.00	99.0 PK			1.27 V	224	101.5	-2.5
4	*2422.00	89.6 AV			1.27 V	224	92.1	-2.5
5	4844.00	55.6 PK	74.0	-18.4	1.09 V	257	53.5	2.1
6	4844.00	44.8 AV	54.0	-9.2	1.09 V	257	42.7	2.1
7	7266.00	42.7 PK	74.0	-31.3	1.40 V	344	34.4	8.3
8	7266.00	30.7 AV	54.0	-23.3	1.40 V	344	22.4	8.3

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	64.5 PK	74.0	-9.5	2.27 H	315	66.7	-2.2
2	2390.00	50.4 AV	54.0	-3.6	2.27 H	315	52.6	-2.2
3	*2437.00	105.6 PK			2.27 H	315	108.2	-2.6
4	*2437.00	95.5 AV			2.27 H	315	98.1	-2.6
5	2483.50	64.6 PK	74.0	-9.4	2.27 H	315	67.1	-2.5
6	2483.50	51.4 AV	54.0	-2.6	2.27 H	315	53.9	-2.5
7	4874.00	56.2 PK	74.0	-17.8	3.19 H	252	54.1	2.1
8	4874.00	43.9 AV	54.0	-10.1	3.19 H	252	41.8	2.1
9	7311.00	46.5 PK	74.0	-27.5	2.30 H	142	38.3	8.2
10	7311.00	34.9 AV	54.0	-19.1	2.30 H	142	26.7	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	51.7 PK	74.0	-22.3	1.25 V	251	53.9	-2.2
2	2390.00	41.2 AV	54.0	-12.8	1.25 V	251	43.4	-2.2
3	*2437.00	99.2 PK			1.25 V	251	101.8	-2.6
4	*2437.00	89.2 AV			1.25 V	251	91.8	-2.6
5	2483.50	49.1 PK	74.0	-24.9	1.25 V	251	51.6	-2.5
6	2483.50	38.8 AV	54.0	-15.2	1.25 V	251	41.3	-2.5
7	4874.00	55.6 PK	74.0	-18.4	1.14 V	255	53.5	2.1
8	4874.00	44.7 AV	54.0	-9.3	1.14 V	255	42.6	2.1
9	7311.00	42.9 PK	74.0	-31.1	1.41 V	357	34.7	8.2
10	7311.00	30.5 AV	54.0	-23.5	1.41 V	357	22.3	8.2

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	105.3 PK			1.89 H	317	107.9	-2.6
2	*2452.00	95.3 AV			1.89 H	317	97.9	-2.6
3	2483.50	67.3 PK	74.0	-6.7	1.89 H	317	69.8	-2.5
4	2483.50	52.7 AV	54.0	-1.3	1.89 H	317	55.2	-2.5
5	4904.00	55.6 PK	74.0	-18.4	3.13 H	247	53.4	2.2
6	4904.00	43.7 AV	54.0	-10.3	3.13 H	247	41.5	2.2
7	7356.00	46.7 PK	74.0	-27.3	2.29 H	158	38.4	8.3
8	7356.00	35.1 AV	54.0	-18.9	2.29 H	158	26.8	8.3
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	98.7 PK			1.25 V	228	101.3	-2.6
2	*2452.00	89.0 AV			1.25 V	228	91.6	-2.6
3	2483.50	51.1 PK	74.0	-22.9	1.25 V	228	53.6	-2.5
4	2483.50	40.8 AV	54.0	-13.2	1.25 V	228	43.3	-2.5
5	4904.00	55.4 PK	74.0	-18.6	1.08 V	270	53.2	2.2
6	4904.00	44.3 AV	54.0	-9.7	1.08 V	270	42.1	2.2
7	7356.00	42.7 PK	74.0	-31.3	1.47 V	358	34.4	8.3
8	7356.00	30.8 AV	54.0	-23.2	1.47 V	358	22.5	8.3

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:

802.11g

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	40.84	26.6 QP	40.0	-13.4	1.50 H	282	34.8	-8.2
2	158.72	22.8 QP	43.5	-20.7	1.50 H	238	30.5	-7.7
3	422.49	27.3 QP	46.0	-18.7	1.50 H	347	31.0	-3.7
4	661.81	29.9 QP	46.0	-16.1	1.00 H	86	28.6	1.3
5	867.43	33.2 QP	46.0	-12.8	1.00 H	190	28.8	4.4
6	962.68	34.6 QP	54.0	-19.4	1.00 H	191	28.8	5.8
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	41.19	33.4 QP	40.0	-6.6	1.50 V	360	41.6	-8.2
2	73.80	27.6 QP	40.0	-12.4	1.00 V	2	38.6	-11.0
3	106.02	23.8 QP	43.5	-19.7	1.50 V	87	35.1	-11.3
4	169.83	22.7 QP	43.5	-20.8	1.50 V	165	31.0	-8.3
5	529.79	26.9 QP	46.0	-19.1	1.50 V	360	28.5	-1.6
6	771.98	32.1 QP	46.0	-13.9	1.00 V	179	28.5	3.6

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

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 03, 2017	June 02, 2018
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
10 dB PAD Mini-Circuits	HAT-10+	CONATT-004	June 18, 2017	June 17, 2018
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note:
1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Conduction 1.
3 Tested Date: May 26, 2018

4.2.3 Test Procedures

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

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

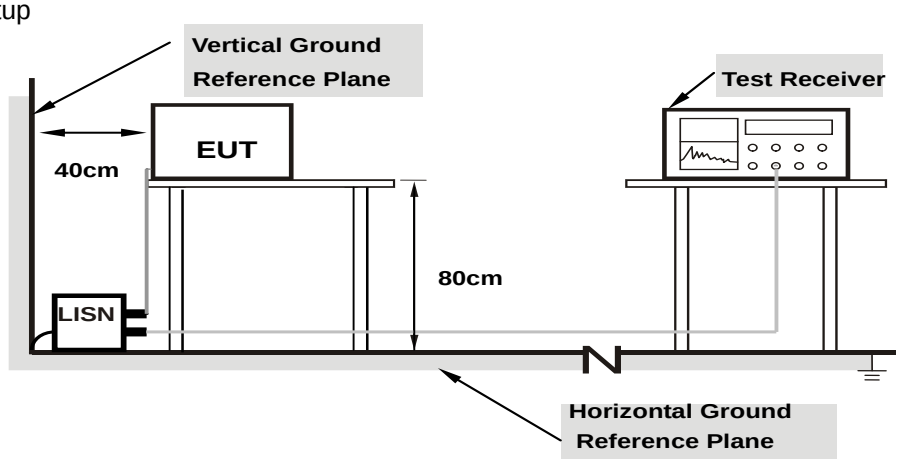
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

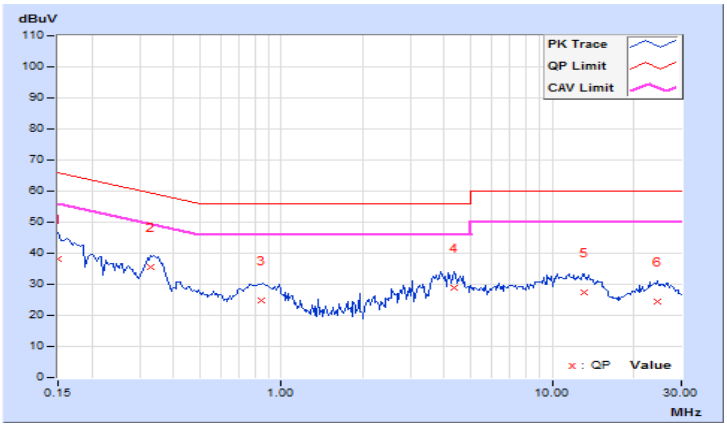
4.2.7 Test Results (Mode 1)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.05	28.20	9.90	38.25	19.95	66.00	56.00	-27.75	-36.05
2	0.32969	10.10	25.31	14.66	35.41	24.76	59.46	49.46	-24.05	-24.70
3	0.84531	10.16	14.70	2.92	24.86	13.08	56.00	46.00	-31.14	-32.92
4	4.37500	10.36	18.52	4.10	28.88	14.46	56.00	46.00	-27.12	-31.54
5	13.12109	10.93	16.50	9.15	27.43	20.08	60.00	50.00	-32.57	-29.92
6	24.53516	11.47	12.93	1.36	24.40	12.83	60.00	50.00	-35.60	-37.17

Remarks:

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

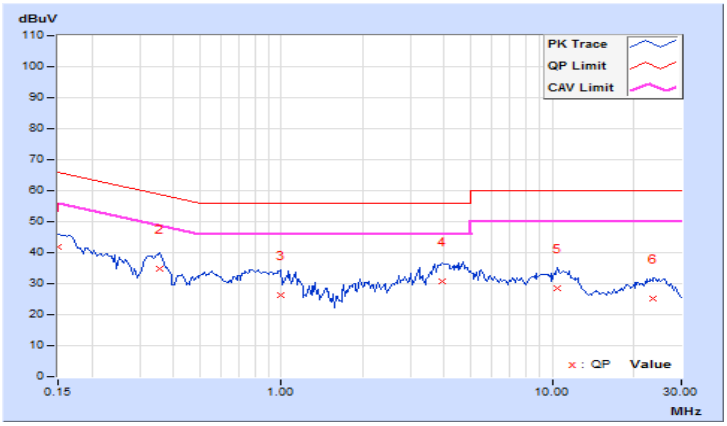


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.95	31.84	14.15	41.79	24.10	66.00	56.00	-24.21	-31.90
2	0.35703	10.01	24.80	12.69	34.81	22.70	58.80	48.80	-23.99	-26.10
3	0.99375	10.04	16.28	2.44	26.32	12.48	56.00	46.00	-29.68	-33.52
4	3.91406	10.19	20.64	6.44	30.83	16.63	56.00	46.00	-25.17	-29.37
5	10.49219	10.57	17.90	5.90	28.47	16.47	60.00	50.00	-31.53	-33.53
6	23.67188	11.21	13.89	0.95	25.10	12.16	60.00	50.00	-34.90	-37.84

Remarks:

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



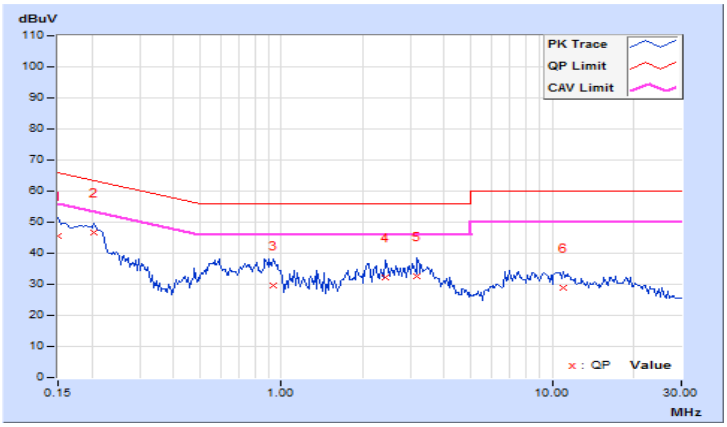
4.2.8 Test Results (Mode 2)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.03	35.60	17.16	45.63	27.19	66.00	56.00	-20.37	-28.81
2	**0.20469**	**10.06**	**36.72**	**18.57**	**46.78**	**28.63**	**63.42**	**53.42**	**-16.64**	**-24.79**
3	0.93516	10.15	19.66	8.54	29.81	18.69	56.00	46.00	-26.19	-27.31
4	2.42969	10.21	22.06	14.12	32.27	24.33	56.00	46.00	-23.73	-21.67
5	3.16406	10.24	22.17	15.11	32.41	25.35	56.00	46.00	-23.59	-20.65
6	10.93750	10.59	18.20	11.66	28.79	22.25	60.00	50.00	-31.21	-27.75

Remarks:

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

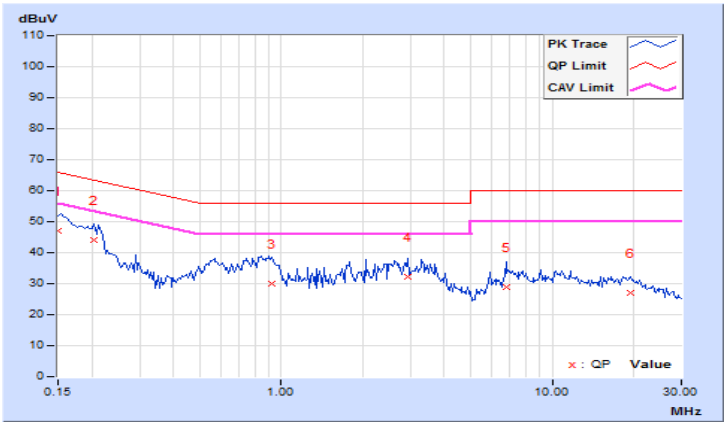


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.94	37.28	20.16	47.22	30.10	66.00	56.00	-18.78	-25.90
2	0.20469	9.96	34.17	19.34	44.13	29.30	63.42	53.42	-19.29	-24.12
3	0.92344	10.03	20.03	8.81	30.06	18.84	56.00	46.00	-25.94	-27.16
4	2.94531	10.10	22.20	14.94	32.30	25.04	56.00	46.00	-23.70	-20.96
5	6.75000	10.25	18.52	12.26	28.77	22.51	60.00	50.00	-31.23	-27.49
6	19.53516	10.88	16.33	8.07	27.21	18.95	60.00	50.00	-32.79	-31.05

Remarks:

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

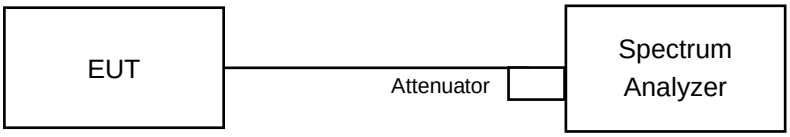


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	9.62	10.09	0.5	Pass
6	2437	10.09	10.09	0.5	Pass
11	2462	10.09	10.09	0.5	Pass

802.11g

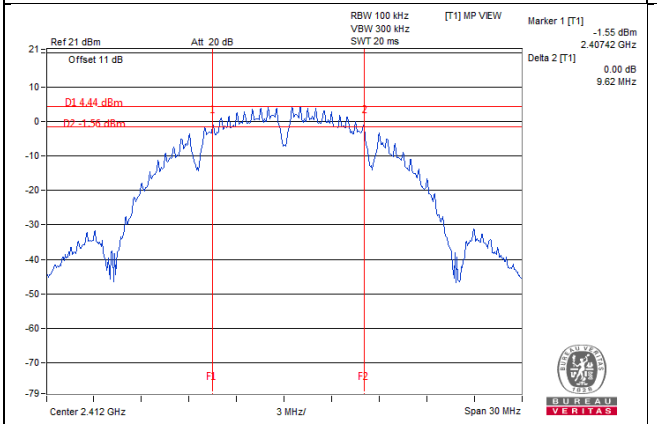
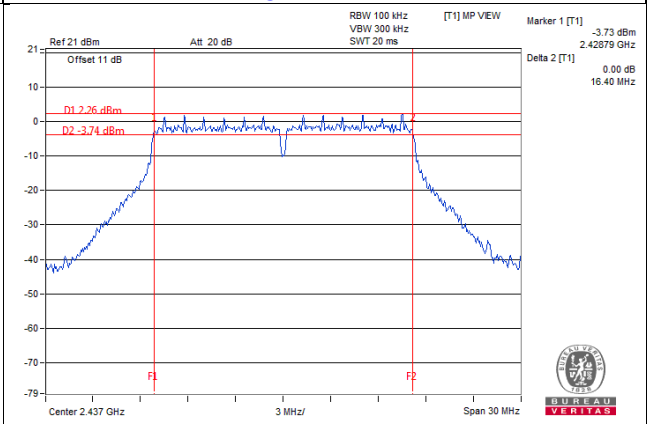
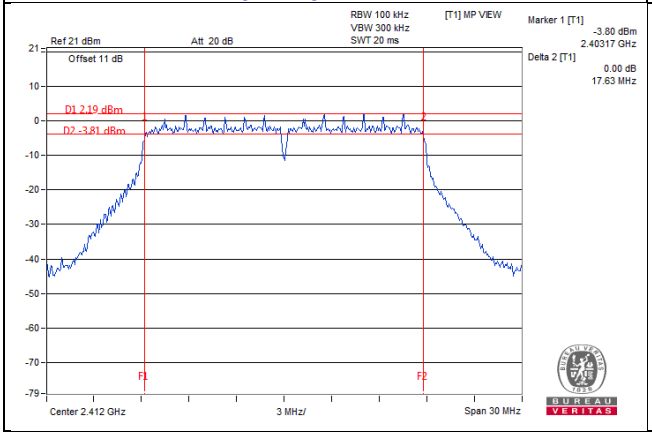
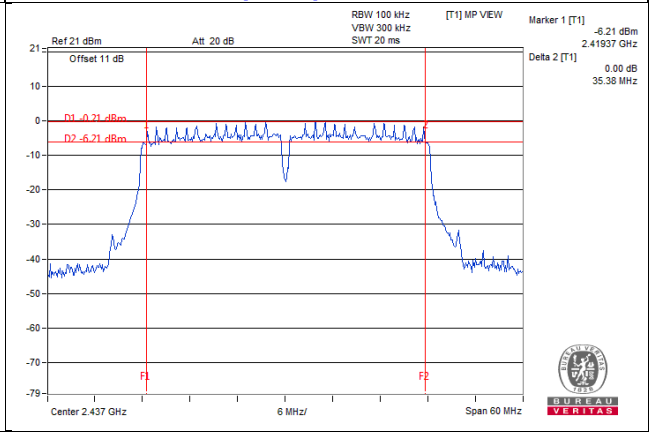
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.46	16.44	0.5	Pass
6	2437	16.40	16.44	0.5	Pass
11	2462	16.40	16.42	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	17.65	17.63	0.5	Pass
6	2437	17.66	17.64	0.5	Pass
11	2462	17.68	17.68	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.43	35.41	0.5	Pass
6	2437	35.38	35.49	0.5	Pass
9	2452	35.46	35.58	0.5	Pass

Spectrum Plot of Worst Value	
802.11b_Chain 0 / CH1	**802.11g_Chain 0 / CH6**
	
802.11n (HT20) _Chain 1 / CH1	**802.11n (HT40) _Chain 0 / CH6**
	

4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

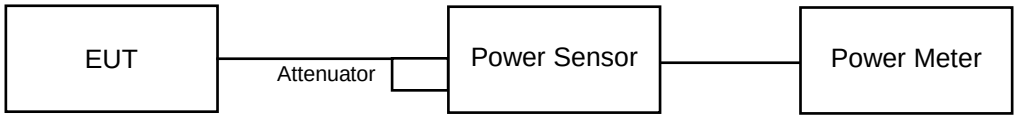
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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

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

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

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	13.42	13.31	43.408	16.38	30	Pass
6	2437	13.78	13.39	45.705	16.60	30	Pass
11	2462	13.72	13.28	44.831	16.52	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	13.62	13.22	44.003	16.43	30	Pass
6	2437	13.68	13.09	43.705	16.41	30	Pass
11	2462	13.71	13.04	43.633	16.40	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	13.59	13.26	44.04	16.44	30	Pass
6	2437	13.55	13.03	42.737	16.31	30	Pass
11	2462	13.48	13.05	42.468	16.28	30	Pass

802.11n (HT40)

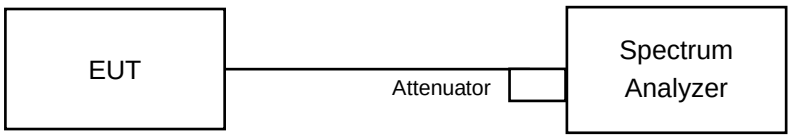
Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	13.28	13.33	42.809	16.32	30	Pass
6	2437	13.50	13.04	42.524	16.29	30	Pass
9	2452	13.66	13.07	43.504	16.39	30	Pass

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 kHz ≤ RBW ≤ 100 kHz. .
d. Set VBW ≥3 x RBW.
e. Detector = power averaging (RMS) or sample detector (when RMS not available).
f. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
g. Sweep time = auto couple.
h. Employ trace averaging (RMS) mode over a minimum of 100 traces.
i. Use the peak marker function to determine the maximum amplitude level.

For other modulation

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6

4.5.7 Test Results

802.11b

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-17.16	3.01	-14.15	7.53	Pass
	6	2437	-16.74	3.01	-13.73	7.53	Pass
	11	2462	-17.61	3.01	-14.60	7.53	Pass
1	1	2412	-17.32	3.01	-14.31	7.53	Pass
	6	2437	-16.91	3.01	-13.90	7.53	Pass
	11	2462	-17.11	3.01	-14.10	7.53	Pass

Note: 1. The directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2] = 6.47dBi > 6dBi , so the power density limit shall be reduced to 8-(6.47-6) = 7.53dBm.

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	-17.95	3.01	0.21	-14.73	7.53	Pass
	6	2437	-17.73	3.01	0.21	-14.51	7.53	Pass
	11	2462	-17.92	3.01	0.21	-14.70	7.53	Pass
1	1	2412	-17.96	3.01	0.21	-14.74	7.53	Pass
	6	2437	-18.81	3.01	0.21	-15.59	7.53	Pass
	11	2462	-18.73	3.01	0.21	-15.51	7.53	Pass

Note: 1. The directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2] = 6.47dBi > 6dBi , so the power density limit shall be reduced to 8-(6.47-6) = 7.53dBm.

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	-17.55	3.01	0.24	-14.30	7.53	Pass
	6	2437	-19.24	3.01	0.24	-15.99	7.53	Pass
	11	2462	-18.01	3.01	0.24	-14.76	7.53	Pass
1	1	2412	-18.83	3.01	0.24	-15.58	7.53	Pass
	6	2437	-18.02	3.01	0.24	-14.77	7.53	Pass
	11	2462	-18.59	3.01	0.24	-15.34	7.53	Pass

Note: 1. The directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$)^2 / 2] = 6.47dBi > 6dBi , so the power density limit shall be reduced to 8-(6.47-6) = 7.53dBm.

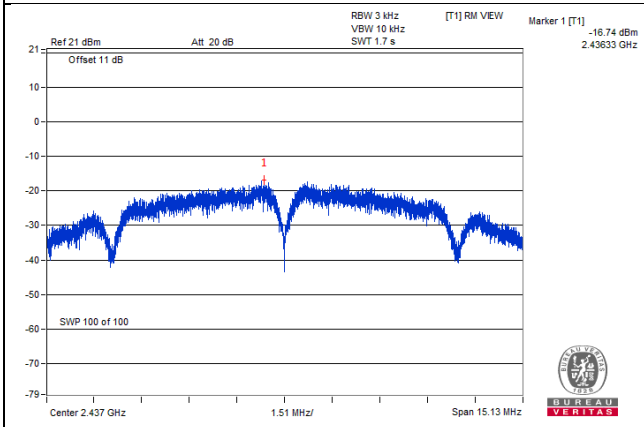
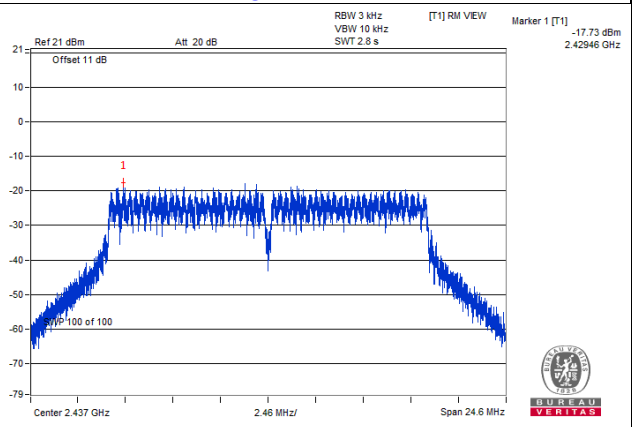
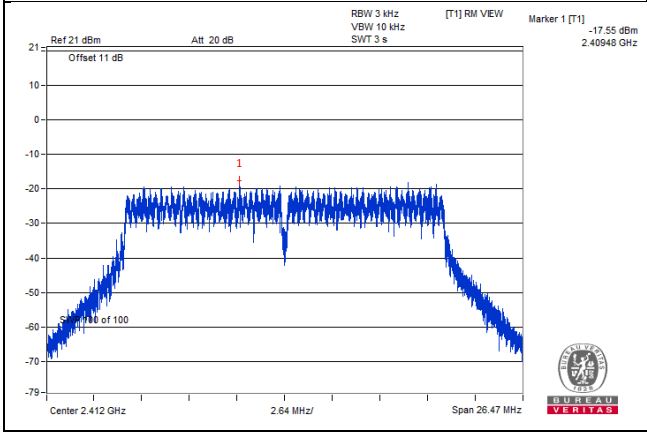
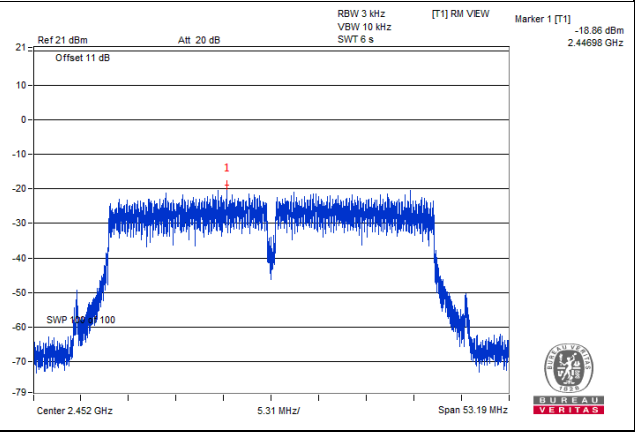
2. Refer to section 3.3 for duty cycle spectrum plot.

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	-20.46	3.01	0.70	-16.75	7.53	Pass
	6	2437	-20.52	3.01	0.70	-16.81	7.53	Pass
	9	2452	-18.86	3.01	0.70	-15.15	7.53	Pass
1	3	2422	-20.42	3.01	0.70	-16.71	7.53	Pass
	6	2437	-20.28	3.01	0.70	-16.57	7.53	Pass
	9	2452	-21.70	3.01	0.70	-17.99	7.53	Pass

Note: 1. The directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$)^2 / 2] = 6.47dBi > 6dBi , so the power density limit shall be reduced to 8-(6.47-6) = 7.53dBm.

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

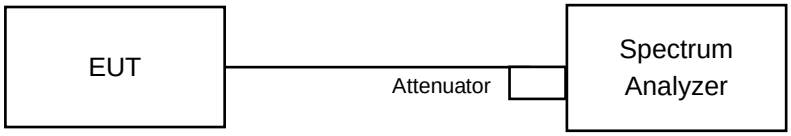
Spectrum Plot of Worst Value	
802.11b_Chain 0 / CH6	**802.11g_Chain 0 / CH6**
	
802.11n (HT20)_Chain 0 / CH1	**802.11n (HT40)_Chain 0 / CH9**
	

4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOBE

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

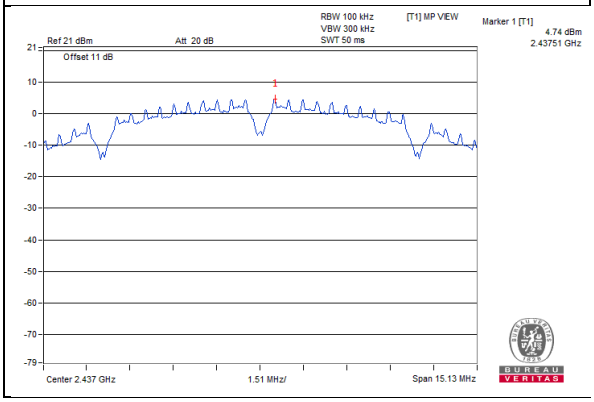
Same as Item 4.3.6

4.6.7 Test Results

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

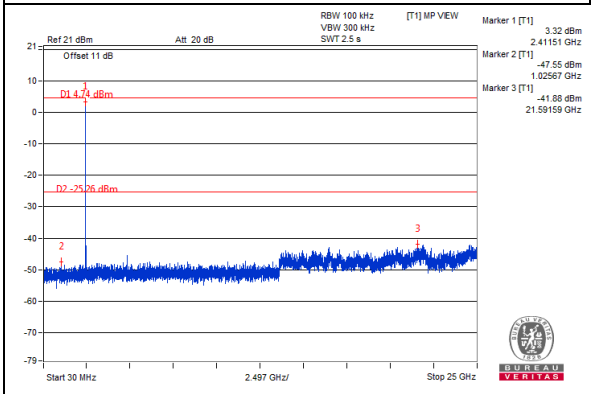
802.11b

Maximum REF

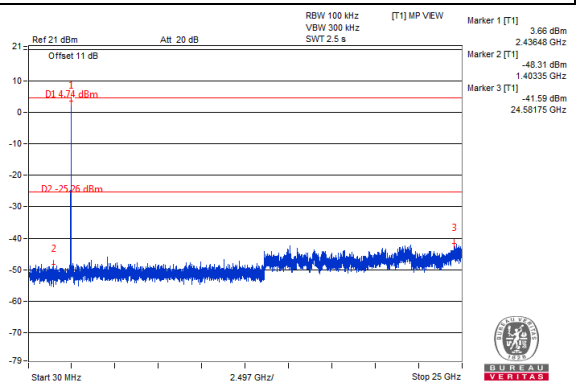


Chain 0

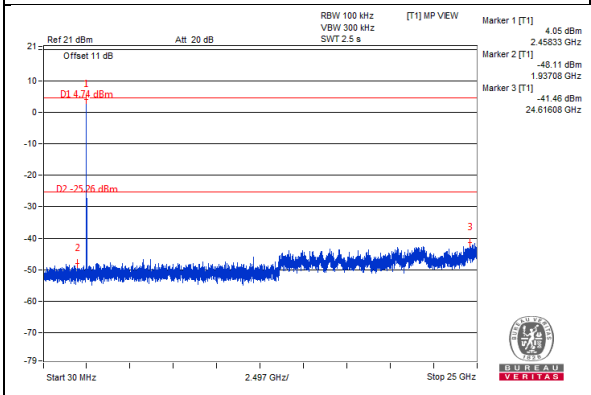
CH 1



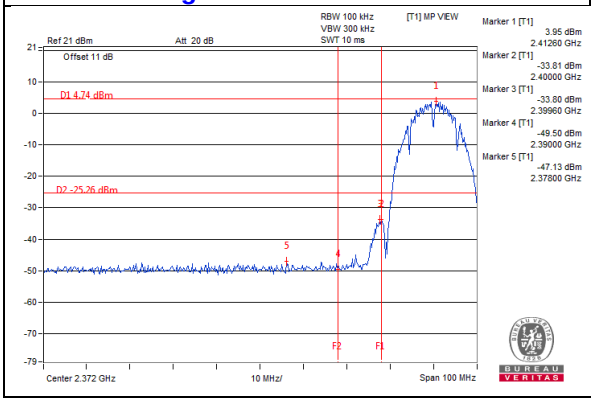
CH 6



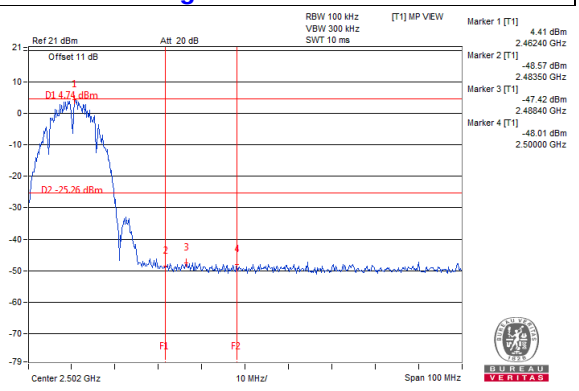
CH 11



CH 1 Band edge

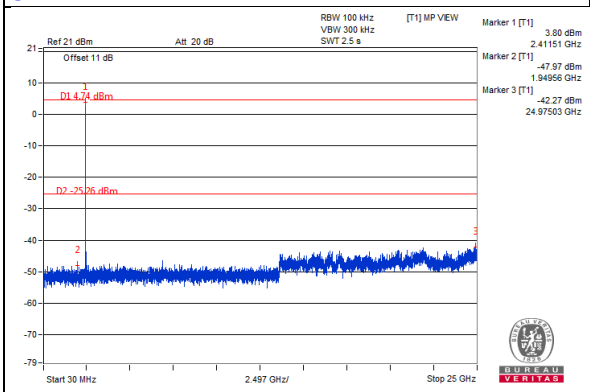


CH 11 Band edge

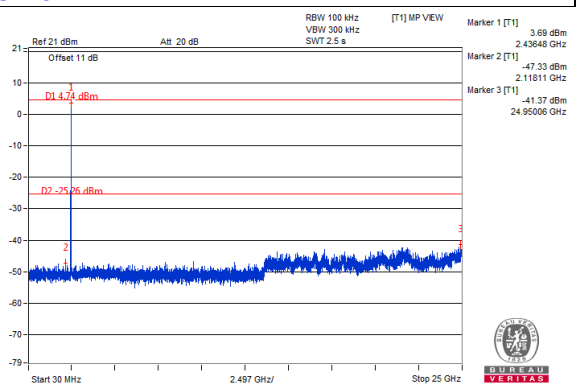


Chain 1

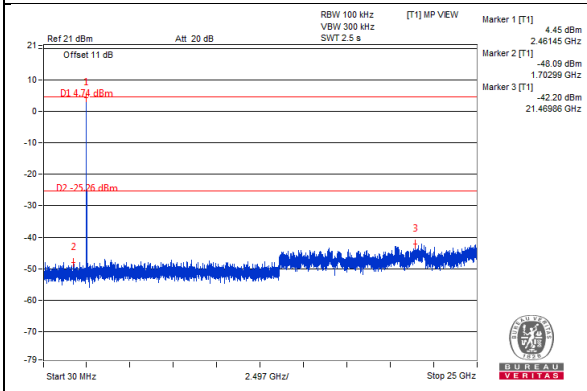
CH 1



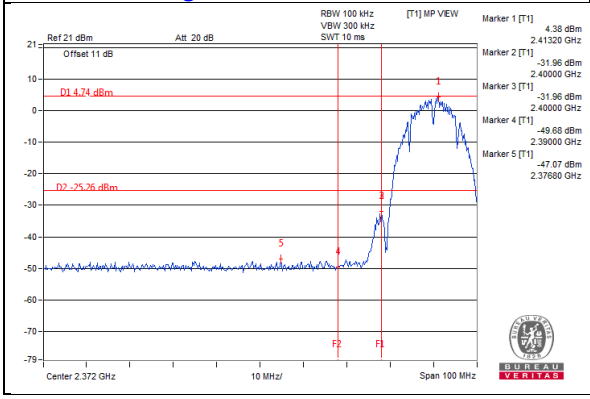
CH 6



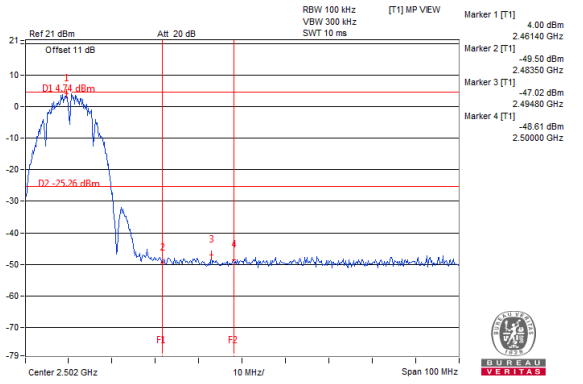
CH 11



CH 1 Band edge

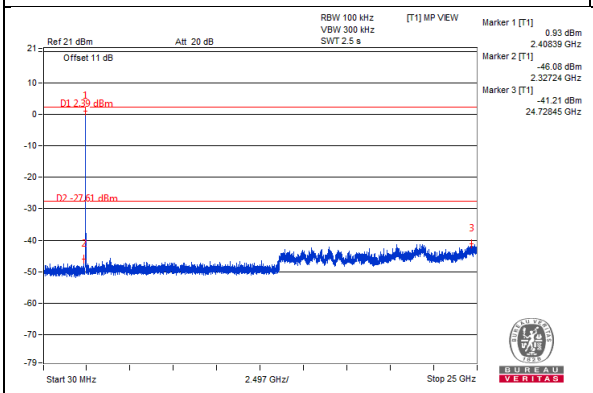


CH 11 Band edge

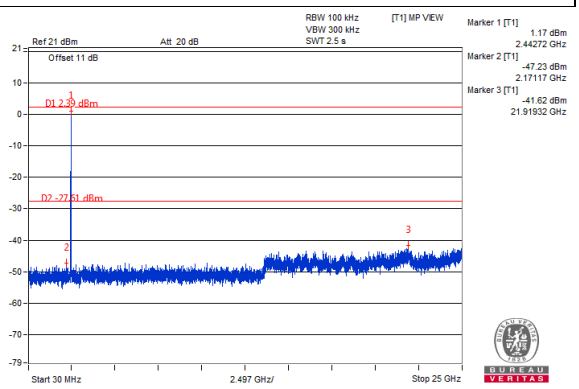


Chain 0

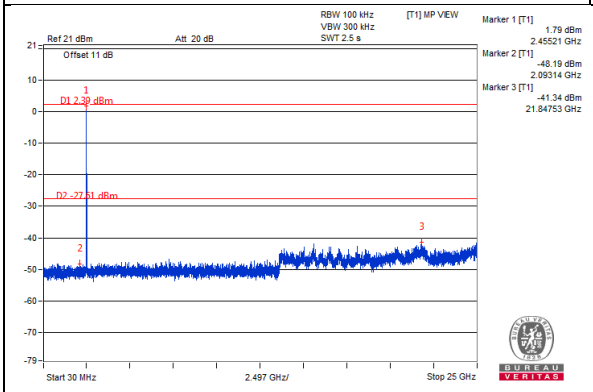
CH 1



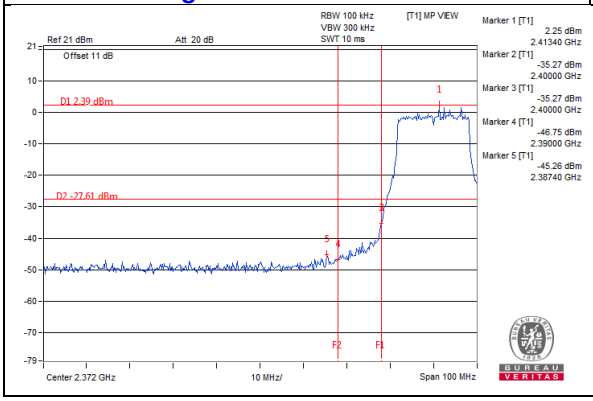
CH 6



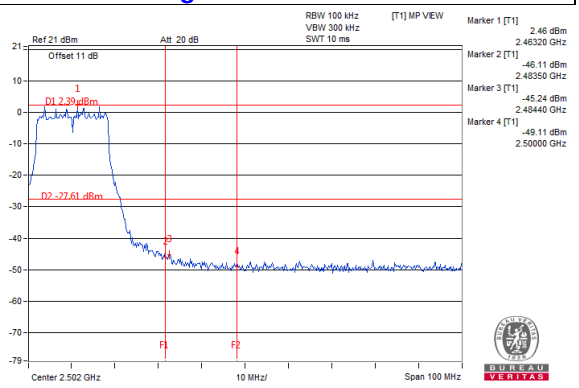
CH 11



CH 1 Band edge

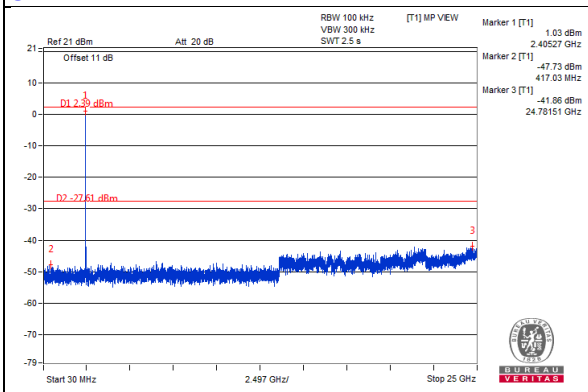


CH 11 Band edge

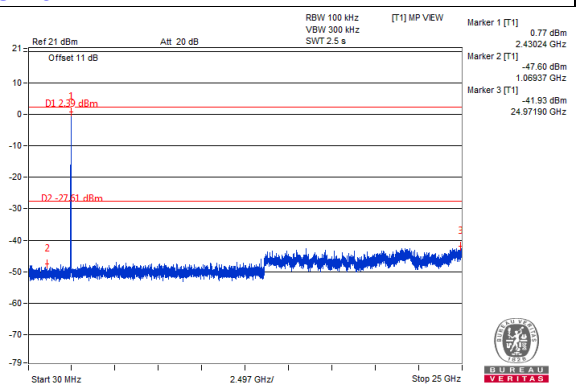


Chain 1

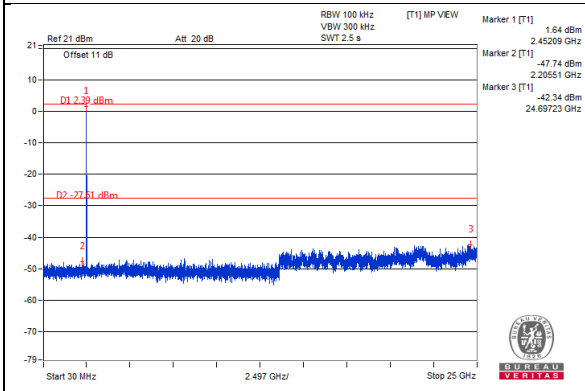
CH 1



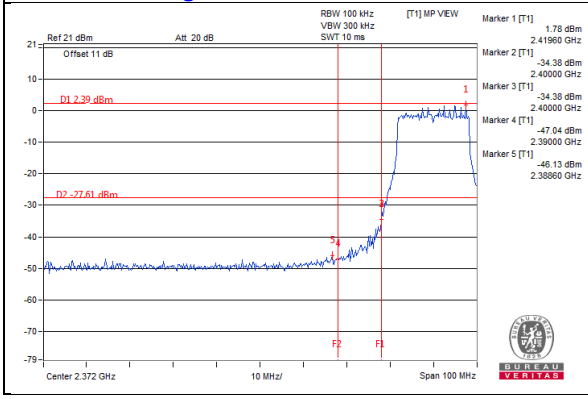
CH 6



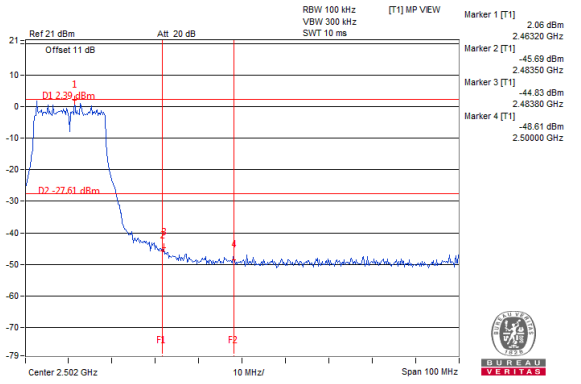
CH 11



CH 1 Band edge

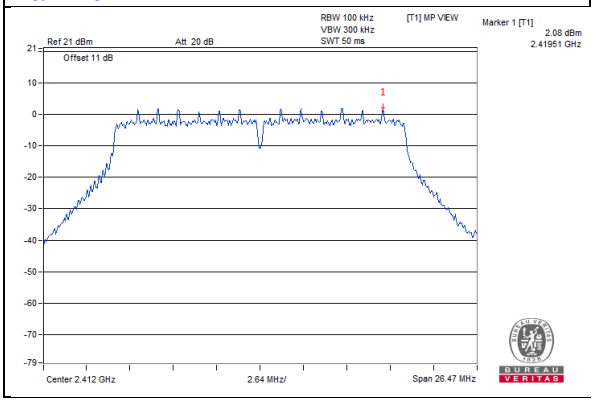


CH 11 Band edge



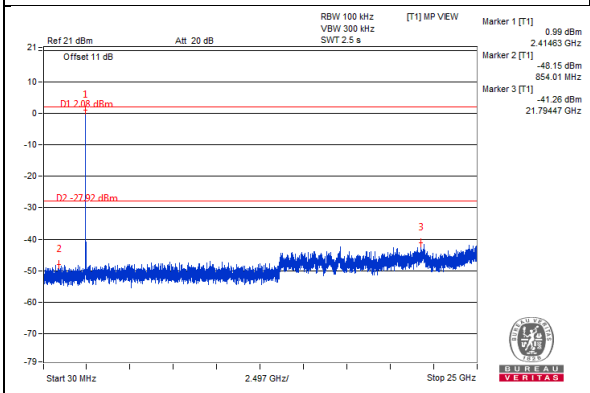
802.11n (HT20)

Maximum REF

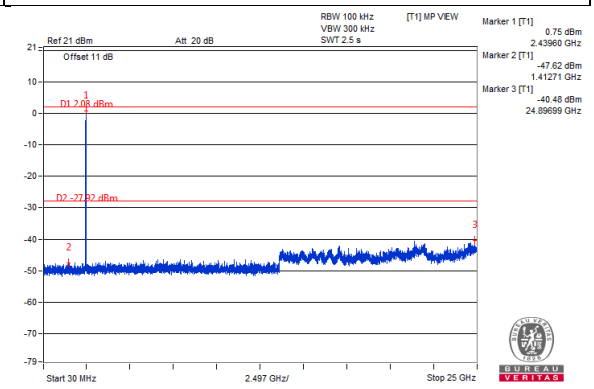


Chain 0

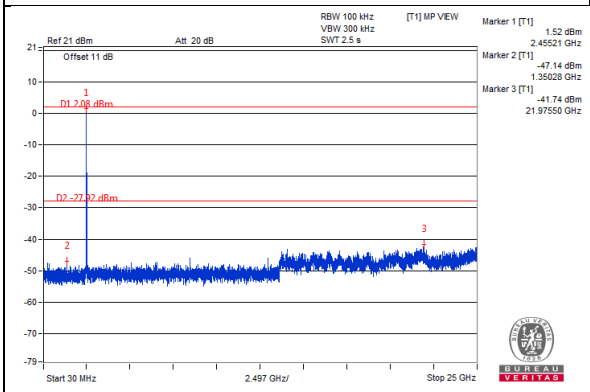
CH 1



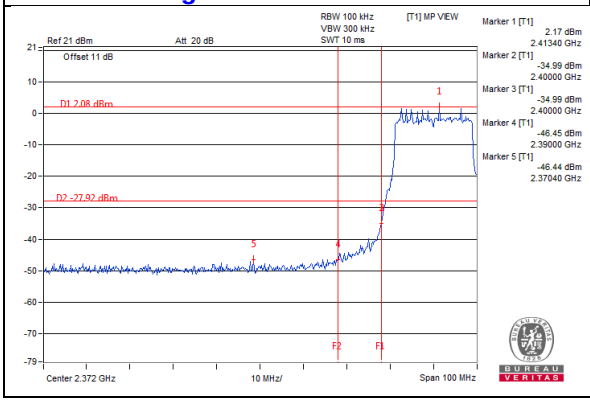
CH 6



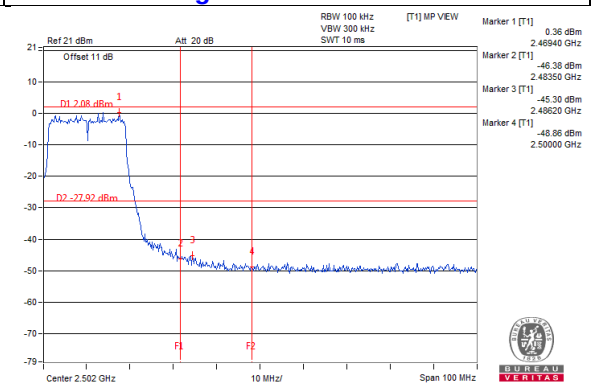
CH 11



CH 1 Band edge

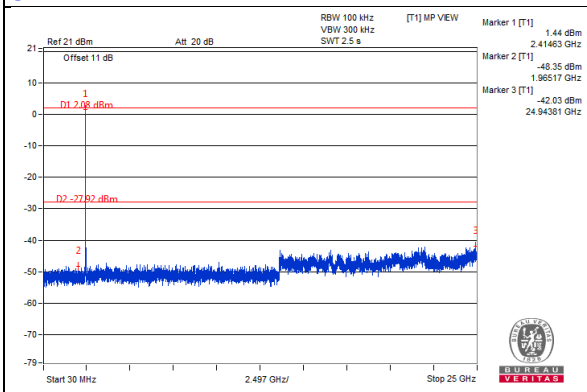


CH 11 Band edge

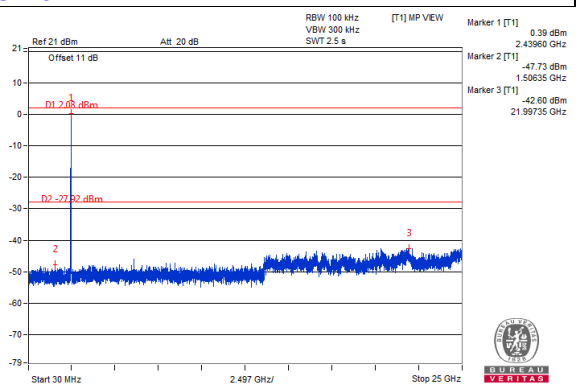


Chain 1

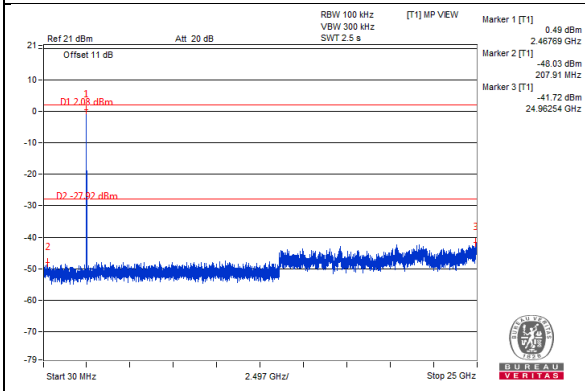
CH 1



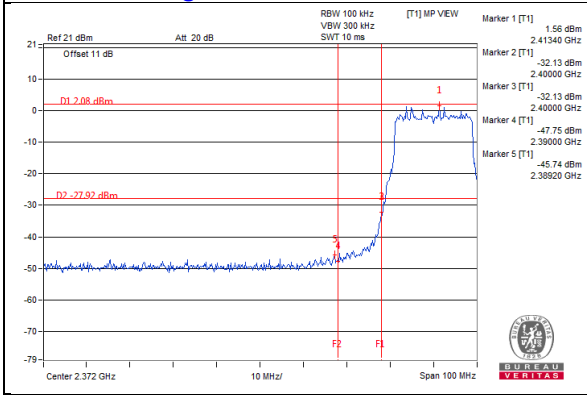
CH 6



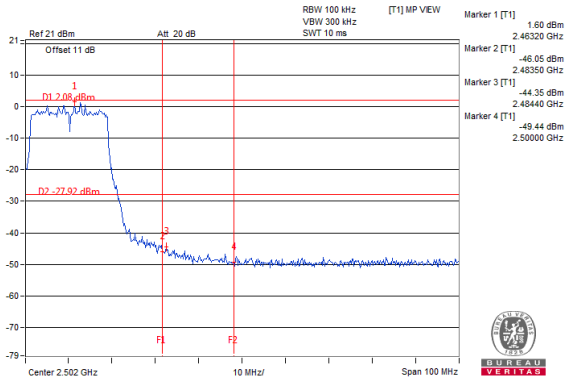
CH 11



CH 1 Band edge

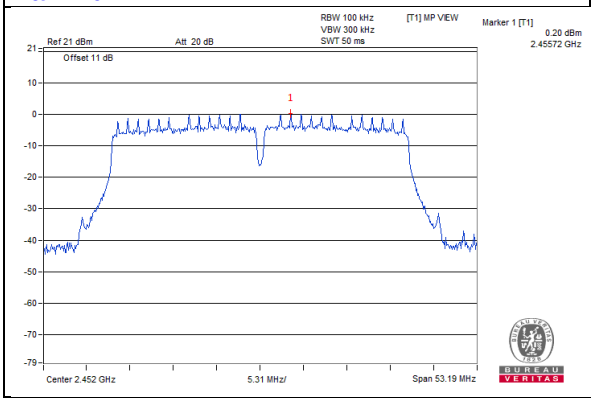


CH 11 Band edge



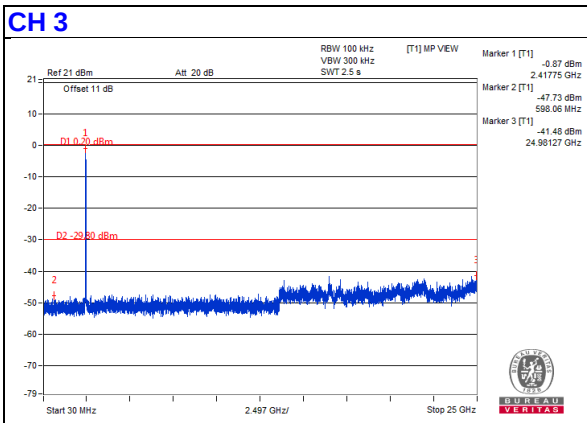
802.11n (HT40)

Maximum REF

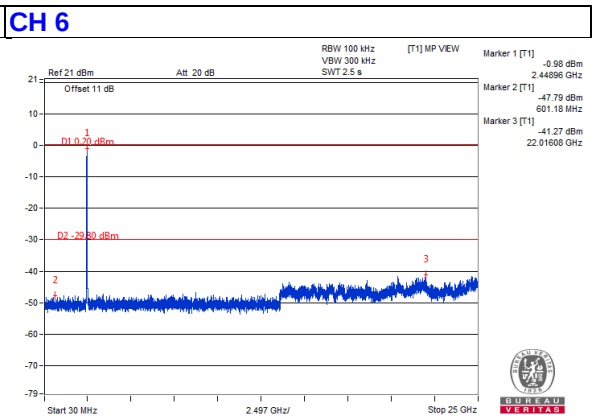


Chain 0

CH 3



CH 6



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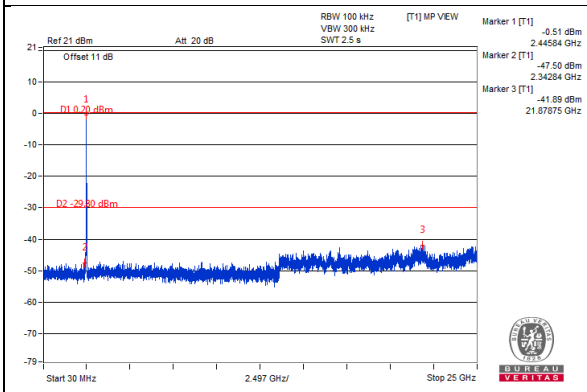
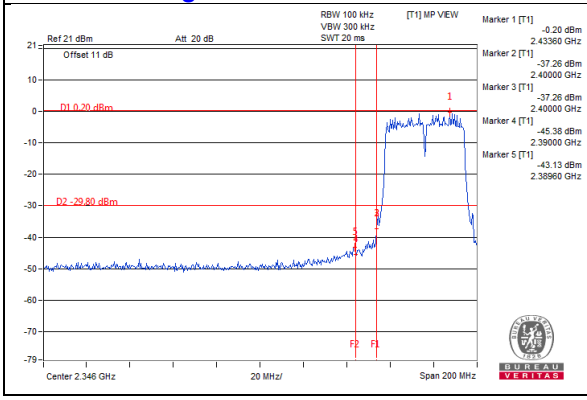
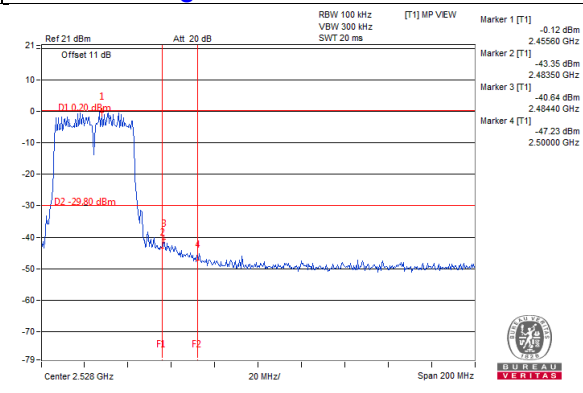


CH 3 Band edge

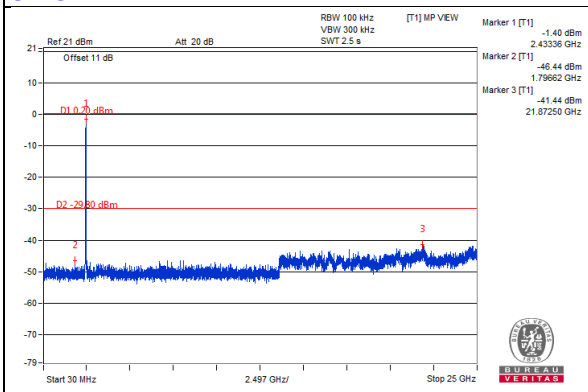


CH 9 Band edge

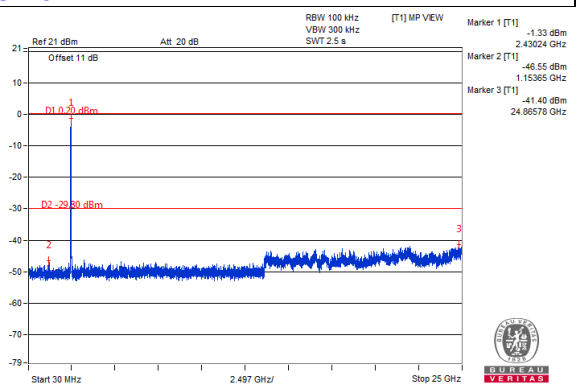


Chain 1

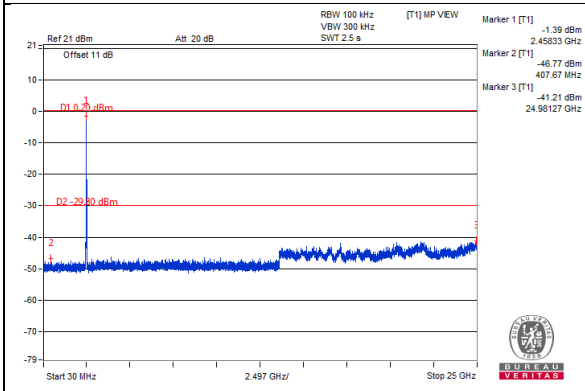
CH 3



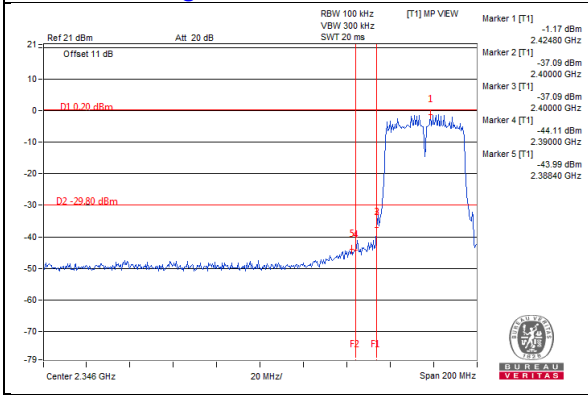
CH 6



CH 9



CH 3 Band edge



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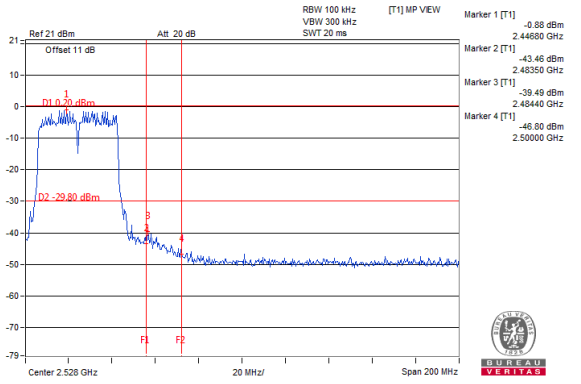

5 Pictures of Test Arrangements

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.

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Web Site: www.bureauveritas-adt.com

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

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