

Supplementary FCC Test Report

Report No.: RF111028C08I

FCC ID: UZ7211486030B

Test Model: 21-148603-0B

Received Date: Jan. 09, 2019

Test Date: Jan. 19 to Feb. 27, 2019

Issued Date: Mar. 15, 2019

Applicant: Zebra Technologies Corporation

Address: 1 Zebra Plaza, Holtsville, NY 11742

Manufacturer: Symbol Technologies, Inc.

Address: 1 Zebra Plaza, Holtsville, NY 11742

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



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Report Issue History Record of EUT (21-148603-0B)

Attachment No.	Issue Date	Description	
111028C08A	Mar. 09, 2012	Original release.	
111028C08F	Apr. 27, 2016	Upgrade the standard to section 15.407 under new rule.	
111028C08H	Sep. 13, 2017	Change RF Switch (2nd source pin to pin)	
111028C08I		2 nd source changed. Component changes as listed below table.	
		Alternative Parts Location	Description
		U14	WiFi Dual Band Diplexer
		C24	20pF cap for GPS
		C55,C57,C60	8.2pF cap for WiFi
		C9, C10, C11, C12, C13	1uF cap for WiFi BT
		FLT1	Band Pass Filter for 2.4GHz WiFi
		C23	1.8pF cap for GPS
		C31	68pF cap for XTAL
		C107,C108	10pF cap for WiFi

Release Control Record

Issue No.	Description	Date Issued
RF111028C08I	Original release.	Mar. 15, 2019

1 Certificate of Conformity

Product: Radio Module

Brand: Zebra

Test Model: 21-148603-0B


Sample Status: ENGINEERING SAMPLE

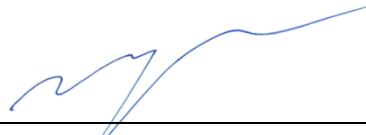
Applicant: Zebra Technologies Corporation

Test Date: Jan. 19 to Feb. 27, 2019

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:** Mar. 15, 2019
Claire Kuan / Specialist

Approved by :  , **Date:** Mar. 15, 2019
May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.205 / 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(b)	Conducted power	PASS	Meet the requirement of limit.

- NOTE:** 1. This is a supplementary report. (2nd source changed)
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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) (±)
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.1 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.1 dB
	6GHz ~ 18GHz	5.0 dB
	18GHz ~ 40GHz	5.2 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Radio Module
Brand	Zebra
Test Model	21-148603-0B
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 3.3V
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 72.2Mbps
Operating Frequency	For 2.4GHz: 2.412 ~ 2.472GHz For 5GHz: 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.5~5.7GHz, 5.745 ~ 5.825GHz
Number of Channel	For 2.4GHz: 802.11b, 802.11g, 802.11n (HT20):13 For 5GHz: 802.11a, 802.11n (HT20): 24
Output Power	For 2.4GHz: 194.089mW For 5GHz: 5.18 ~ 5.24GHz 28.774mW 5.26 ~ 5.32GHz 91.411mW 5.5~5.7GHz 85.704mW 5.745 ~ 5.825GHz 89.95mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. This report is prepared for FCC Class II permissive change. The difference compared with the Report No.: RF111028C08H design is as the following information:

- ◆ 2nd source changed. Component changes as listed below table.

Alternative Parts Location	Description
U14	WiFi Dual Band Diplexer
C24	20pF cap for GPS
C55,C57,C60	8.2pF cap for WiFi
C9, C10, C11, C12, C13	1uF cap for WiFi BT
FLT1	Band Pass Filter for 2.4GHz WiFi
C23	1.8pF cap for GPS
C31	68pF cap for XTAL
C107,C108	10pF cap for WiFi

2. According to above conditions, only Conducted power and Radiated emissions test item need to be performed. And all data was verified to meet the requirements.

3. There are Bluetooth technology, GPS technology and WLAN technology used for the EUT.

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

No.	Type	Connector	Model	Peak Gain (dBi)	Cable loss (dB)	Net Peak Gain (dBi)	Trace
1	Dipole-1	Reverse SMA	ML-2452-APA2-01 Rev C	2.4GHz : 3 5GHz : 5	2.4GHz : 0.75 5GHz : 1.3	2.4GHz : 2.25 5GHz : 3.7	WiFi
2	Dipole-2	Reverse SMA	C492-510032-A	1.8	2.35	-0.55	BT
3	Chip	Reverse SMA	NA	-	-		GPS

5. The EUT was included two SKU, which are identical to each other in all aspects except for the following table:

	P/N	Description
SKU #1	21-148603-02	Diversity version with WLAN and BT on SHARED RF paths
SKU #2	21-148603-04	NON-Diversity version with WLAN and BT on SHARED RF paths

SKU #1, the worse case one, was chosen for final test.

6. Spurious Emission of the simultaneous operation (WiFi & Bluetooth) have been evaluated and no non-compliance found. (The device can transmit simultaneously on WLAN (5GHz) mode and Bluetooth mode; other modes can't support simultaneously ability.)
7. The EUT is 1 * 1 spatial SISO (1Tx & 1Rx) without beam forming function.
8. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

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

Channel	Frequency	Channel	Frequency
1	2412MHz	8	2447MHz
2	2417MHz	9	2452MHz
3	2422MHz	10	2457MHz
4	2427MHz	11	2462MHz
5	2432MHz	12	2467MHz
6	2437MHz	13	2472MHz
7	2442MHz		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO			DESCRIPTION
	RE \geq 1G	RE<1G	APCM	
-	√	√	√	-

Where **RE \geq 1G:** Radiated Emission above 1GHz & Bandedge Measurement
RE<1G: Radiated Emission below 1GHz
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 13	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 13	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 13	1, 6, 11	OFDM	BPSK	6.5

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 13	6	DSSS	DBPSK	1
802.11g	1 to 13	6	OFDM	BPSK	6
802.11n (HT20)	1 to 13	6	OFDM	BPSK	6.5

Antenna Port Conducted Measurement:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 13	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 13	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 13	1, 6, 11	OFDM	BPSK	6.5

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE \geq 1G	23deg. C, 67%RH	120Vac, 60Hz	Frank Chuang
RE<1G	24deg. C, 74%RH	120Vac, 60Hz	Frank Chuang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Weiwei Lo

3.3 Description of Support Units

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

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Test Tool	Zebra	NA	NA	NA	Supplied by client
B.	DC Powersupply	GOOD WILL INSTRUMENT CO., LTD	GPC-3030D	E847076	NA	Provided by Lab
C.	Laptop	Dell	E6400	NA	NA	Supplied by client

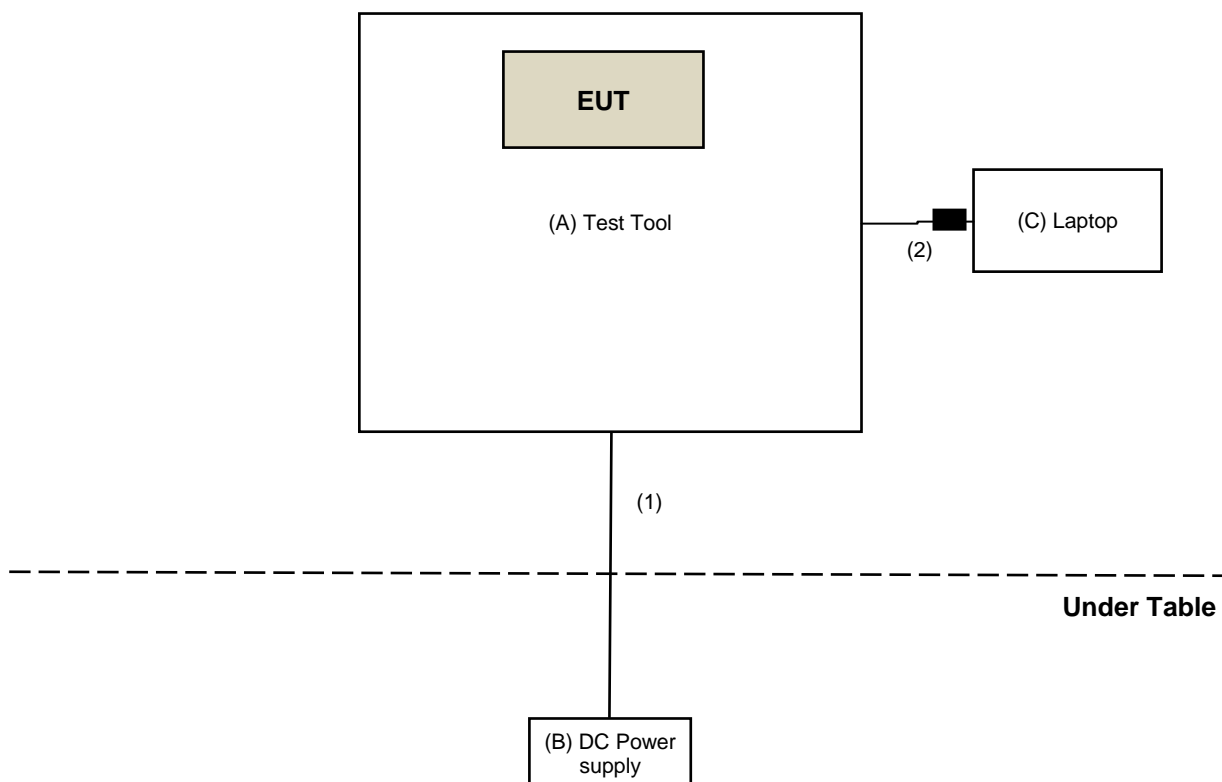
Note:

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	Provided by Lab
2.	USB Cable	1	1	Yes	1	Supplied by client

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

3.3.1 Configuration of System under Test



3.4 General Description of Applied Standards

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

FCC Part 15, Subpart C (15.247)
KDB 558074 D01 15.247 Meas Guidance v05r01
ANSI C63.10-2013

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

NOTE:

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

4.1.2 Test Instruments

For radiated emissions test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010156	July 12, 2018	July 11, 2019
Pre-Amplifier EMCI	EMC001340	980142	Feb. 09, 2018	Feb. 08, 2019
Loop Antenna Electro-Metrics	EM-6879	269	Sep. 07, 2018	Sep. 06, 2019
RF Cable	NA	LOOPCAB-001	Jan. 14, 2019	Jan. 13, 2020
RF Cable	NA	LOOPCAB-002	Jan. 14, 2019	Jan. 13, 2020
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-05	May 05, 2018	May 04, 2019
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Nov. 22, 2018	Nov. 21, 2019
RF Cable	8D	966-3-1	Mar. 20, 2018	Mar. 19, 2019
RF Cable	8D	966-3-2	Mar. 20, 2018	Mar. 19, 2019
RF Cable	8D	966-3-3	Mar. 20, 2018	Mar. 19, 2019
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	Sep. 27, 2018	Sep. 26, 2019
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Nov. 25, 2018	Nov. 24, 2019
Pre-Amplifier EMCI	EMC12630SE	980384	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-1200	160922	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-2000	180601	June 12, 2018	June 11, 2019
RF Cable	EMC104-SM-SM-6000	180602	June 12, 2018	June 11, 2019
Spectrum Analyzer Keysight	N9030A	MY54490679	July 23, 2018	July 22, 2019
Pre-Amplifier EMCI	EMC184045SE	980386	Jan. 29, 2018	Jan. 28, 2019
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 25, 2018	Nov. 24, 2019
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

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 test was performed in 966 Chamber No. 3.
3. The CANADA Site Registration No. is 20331-1
4. Loop antenna was used for all emissions below 30 MHz.
5. Tested Date: Jan. 19, 2019

For output power test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	100964	June 20, 2018	June 19, 2019
Power meter Anritsu	ML2495A	1014008	May 09, 2018	May 08, 2019
Power sensor Anritsu	MA2411B	0917122	May 09, 2018	May 08, 2019

Note:

1. The test was performed in Oven room 2.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: Feb. 27, 2019

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 detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

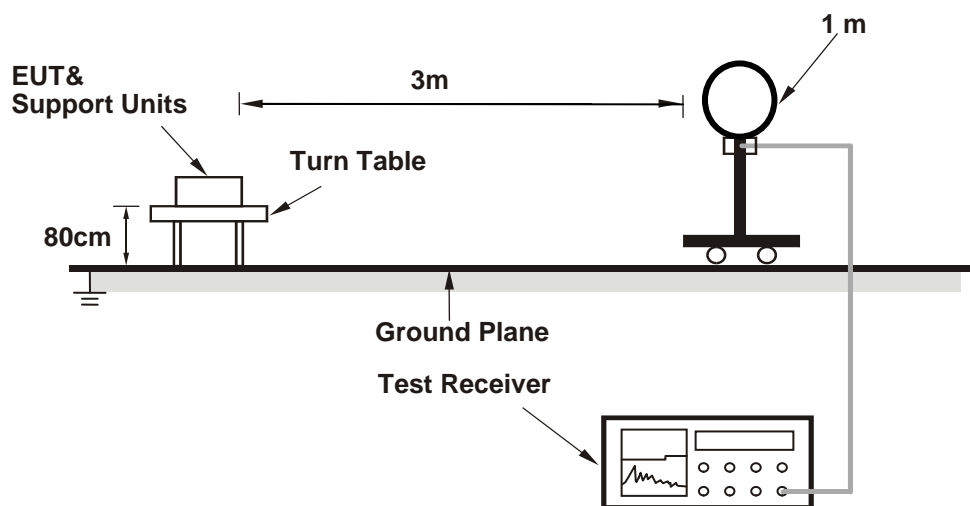
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

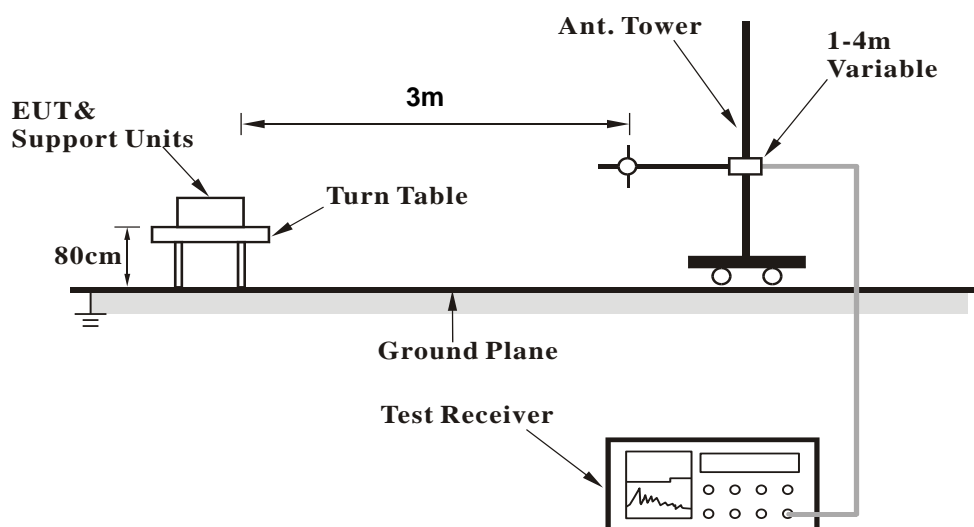
No deviation.

4.1.5 Test Setup

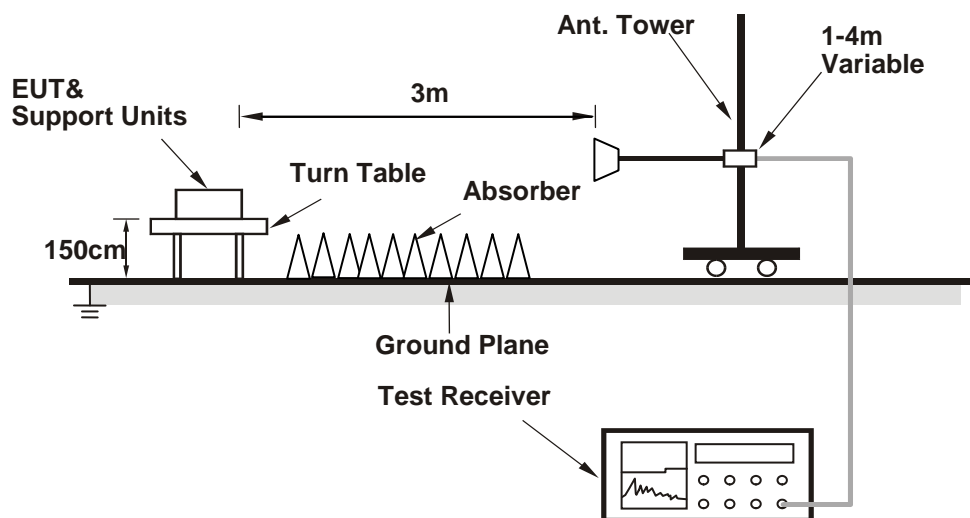
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

1. Connect the EUT with the support unit C (Laptop) which is placed on a testing table.
2. The communication partner run test program "HCITester (3.0.0.12) load BT Script.txt" to enable EUT under transmission/receiving condition continuously at specific channel frequency.

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	55.0 PK	74.0	-19.0	1.02 H	250	57.4	-2.4
2	2390.00	44.0 AV	54.0	-10.0	1.02 H	250	46.4	-2.4
3	*2412.00	106.7 PK			1.02 H	250	109.0	-2.3
4	*2412.00	103.8 AV			1.02 H	250	106.1	-2.3
5	4824.00	39.2 PK	74.0	-34.8	1.28 H	42	37.3	1.9
6	4824.00	27.7 AV	54.0	-26.3	1.28 H	42	25.8	1.9
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	55.5 PK	74.0	-18.5	1.47 V	14	57.9	-2.4
2	2390.00	45.1 AV	54.0	-8.9	1.47 V	14	47.5	-2.4
3	*2412.00	109.3 PK			1.47 V	14	111.6	-2.3
4	*2412.00	106.3 AV			1.47 V	14	108.6	-2.3
5	4824.00	44.3 PK	74.0	-29.7	1.05 V	71	42.4	1.9
6	4824.00	38.0 AV	54.0	-16.0	1.05 V	71	36.1	1.9

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
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	53.0 PK	74.0	-21.0	1.03 H	228	55.4	-2.4
2	2390.00	40.0 AV	54.0	-14.0	1.03 H	228	42.4	-2.4
3	*2437.00	107.6 PK			1.03 H	228	110.1	-2.5
4	*2437.00	104.4 AV			1.03 H	228	106.9	-2.5
5	2483.50	54.5 PK	74.0	-19.5	1.03 H	228	57.1	-2.6
6	2483.50	42.3 AV	54.0	-11.7	1.03 H	228	44.9	-2.6
7	4874.00	39.0 PK	74.0	-35.0	1.21 H	46	37.1	1.9
8	4874.00	28.1 AV	54.0	-25.9	1.21 H	46	26.2	1.9
9	7311.00	46.1 PK	74.0	-27.9	1.28 H	73	38.3	7.8
10	7311.00	38.5 AV	54.0	-15.5	1.28 H	73	30.7	7.8

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	55.1 PK	74.0	-18.9	1.56 V	314	57.5	-2.4
2	2390.00	42.2 AV	54.0	-11.8	1.56 V	314	44.6	-2.4
3	*2437.00	109.4 PK			1.56 V	314	111.9	-2.5
4	*2437.00	106.7 AV			1.56 V	314	109.2	-2.5
5	2483.50	55.2 PK	74.0	-18.8	1.56 V	314	57.8	-2.6
6	2483.50	43.7 AV	54.0	-10.3	1.56 V	314	46.3	-2.6
7	4874.00	43.7 PK	74.0	-30.3	1.05 V	102	41.8	1.9
8	4874.00	37.5 AV	54.0	-16.5	1.05 V	102	35.6	1.9
9	7311.00	48.9 PK	74.0	-25.1	2.46 V	153	41.1	7.8
10	7311.00	45.2 AV	54.0	-8.8	2.46 V	153	37.4	7.8

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 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	106.7 PK			1.00 H	242	109.2	-2.5
2	*2462.00	104.1 AV			1.00 H	242	106.6	-2.5
3	2483.50	55.3 PK	74.0	-18.7	1.00 H	247	57.9	-2.6
4	2483.50	44.4 AV	54.0	-9.6	1.00 H	247	47.0	-2.6
5	4924.00	38.1 PK	74.0	-35.9	1.23 H	57	36.1	2.0
6	4924.00	27.2 AV	54.0	-26.8	1.23 H	57	25.2	2.0
7	7386.00	45.9 PK	74.0	-28.1	1.34 H	79	38.0	7.9
8	7386.00	38.4 AV	54.0	-15.6	1.34 H	79	30.5	7.9
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	109.2 PK			1.06 V	347	111.7	-2.5
2	*2462.00	106.4 AV			1.06 V	347	108.9	-2.5
3	2483.50	56.7 PK	74.0	-17.3	1.01 V	356	59.3	-2.6
4	2483.50	46.2 AV	54.0	-7.8	1.01 V	356	48.8	-2.6
5	4924.00	43.5 PK	74.0	-30.5	1.16 V	102	41.5	2.0
6	4924.00	37.5 AV	54.0	-16.5	1.16 V	102	35.5	2.0
7	7386.00	49.6 PK	74.0	-24.4	2.48 V	115	41.7	7.9
8	7386.00	45.8 AV	54.0	-8.2	2.48 V	115	37.9	7.9

REMARKS:

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

802.11g

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.5 PK	74.0	-4.5	1.11 H	232	71.9	-2.4
2	2390.00	49.6 AV	54.0	-4.4	1.11 H	232	52.0	-2.4
3	*2412.00	106.4 PK			1.11 H	232	108.7	-2.3
4	*2412.00	96.0 AV			1.11 H	232	98.3	-2.3
5	4824.00	39.3 PK	74.0	-34.7	1.22 H	60	37.4	1.9
6	4824.00	28.0 AV	54.0	-26.0	1.22 H	60	26.1	1.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.3 PK	74.0	-3.7	1.51 V	297	72.7	-2.4
2	2390.00	52.9 AV	54.0	-1.1	1.51 V	297	55.3	-2.4
3	*2412.00	110.9 PK			1.51 V	297	113.2	-2.3
4	*2412.00	99.5 AV			1.51 V	297	101.8	-2.3
5	4824.00	42.9 PK	74.0	-31.1	1.15 V	109	41.0	1.9
6	4824.00	37.3 AV	54.0	-16.7	1.15 V	109	35.4	1.9

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
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	56.1 PK	74.0	-17.9	1.08 H	247	58.5	-2.4
2	2390.00	41.3 AV	54.0	-12.7	1.08 H	247	43.7	-2.4
3	*2437.00	108.6 PK			1.08 H	247	111.1	-2.5
4	*2437.00	98.2 AV			1.08 H	247	100.7	-2.5
5	2483.50	57.8 PK	74.0	-16.2	1.08 H	247	60.4	-2.6
6	2483.50	42.5 AV	54.0	-11.5	1.08 H	247	45.1	-2.6
7	4874.00	38.9 PK	74.0	-35.1	1.22 H	50	37.0	1.9
8	4874.00	27.8 AV	54.0	-26.2	1.22 H	50	25.9	1.9
9	7311.00	45.2 PK	74.0	-28.8	1.33 H	90	37.4	7.8
10	7311.00	37.3 AV	54.0	-16.7	1.33 H	90	29.5	7.8

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.8 PK	74.0	-16.2	1.54 V	304	60.2	-2.4
2	2390.00	43.0 AV	54.0	-11.0	1.54 V	304	45.4	-2.4
3	*2437.00	112.8 PK			1.54 V	304	115.3	-2.5
4	*2437.00	102.1 AV			1.54 V	304	104.6	-2.5
5	2483.50	58.0 PK	74.0	-16.0	1.54 V	304	60.6	-2.6
6	2483.50	43.4 AV	54.0	-10.6	1.54 V	304	46.0	-2.6
7	4874.00	43.2 PK	74.0	-30.8	1.07 V	115	41.3	1.9
8	4874.00	37.6 AV	54.0	-16.4	1.07 V	115	35.7	1.9
9	7311.00	49.7 PK	74.0	-24.3	2.51 V	134	41.9	7.8
10	7311.00	45.1 AV	54.0	-8.9	2.51 V	134	37.3	7.8

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 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	105.8 PK			1.05 H	229	108.3	-2.5
2	*2462.00	95.4 AV			1.05 H	229	97.9	-2.5
3	2483.50	68.5 PK	74.0	-5.5	1.05 H	229	71.1	-2.6
4	2483.50	49.2 AV	54.0	-4.8	1.05 H	229	51.8	-2.6
5	4924.00	38.6 PK	74.0	-35.4	1.31 H	86	36.6	2.0
6	4924.00	27.5 AV	54.0	-26.5	1.31 H	86	25.5	2.0
7	7386.00	45.2 PK	74.0	-28.8	1.16 H	80	37.3	7.9
8	7386.00	37.4 AV	54.0	-16.6	1.16 H	80	29.5	7.9
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	108.3 PK			1.48 V	304	110.8	-2.5
2	*2462.00	98.2 AV			1.48 V	304	100.7	-2.5
3	2483.50	69.8 PK	74.0	-4.2	1.48 V	304	72.4	-2.6
4	2483.50	52.2 AV	54.0	-1.8	1.48 V	304	54.8	-2.6
5	4924.00	42.1 PK	74.0	-31.9	1.19 V	119	40.1	2.0
6	4924.00	36.4 AV	54.0	-17.6	1.19 V	119	34.4	2.0
7	7386.00	48.5 PK	74.0	-25.5	2.52 V	126	40.6	7.9
8	7386.00	44.6 AV	54.0	-9.4	2.52 V	126	36.7	7.9

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
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	66.0 PK	74.0	-8.0	1.11 H	232	68.4	-2.4
2	2390.00	47.1 AV	54.0	-6.9	1.11 H	232	49.5	-2.4
3	*2412.00	105.3 PK			1.11 H	232	107.6	-2.3
4	*2412.00	95.5 AV			1.11 H	232	97.8	-2.3
5	4824.00	38.7 PK	74.0	-35.3	1.25 H	97	36.8	1.9
6	4824.00	27.4 AV	54.0	-26.6	1.25 H	97	25.5	1.9
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	69.2 PK	74.0	-4.8	1.48 V	355	71.6	-2.4
2	2390.00	51.8 AV	54.0	-2.2	1.48 V	355	54.2	-2.4
3	*2412.00	108.5 PK			1.48 V	355	110.8	-2.3
4	*2412.00	98.0 AV			1.48 V	355	100.3	-2.3
5	4824.00	42.1 PK	74.0	-31.9	1.11 V	88	40.2	1.9
6	4824.00	36.7 AV	54.0	-17.3	1.11 V	88	34.8	1.9

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
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	54.7 PK	74.0	-19.3	1.13 H	225	57.1	-2.4
2	2390.00	41.3 AV	54.0	-12.7	1.13 H	225	43.7	-2.4
3	*2437.00	108.9 PK			1.13 H	225	111.4	-2.5
4	*2437.00	97.6 AV			1.13 H	225	100.1	-2.5
5	2483.50	58.3 PK	74.0	-15.7	1.13 H	225	60.9	-2.6
6	2483.50	43.0 AV	54.0	-11.0	1.13 H	225	45.6	-2.6
7	4874.00	38.9 PK	74.0	-35.1	1.20 H	55	37.0	1.9
8	4874.00	28.0 AV	54.0	-26.0	1.20 H	55	26.1	1.9
9	7311.00	46.0 PK	74.0	-28.0	1.36 H	50	38.2	7.8
10	7311.00	38.2 AV	54.0	-15.8	1.36 H	50	30.4	7.8

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	56.1 PK	74.0	-17.9	1.52 V	310	58.5	-2.4
2	2390.00	43.3 AV	54.0	-10.7	1.52 V	310	45.7	-2.4
3	*2437.00	112.2 PK			1.52 V	310	114.7	-2.5
4	*2437.00	101.4 AV			1.52 V	310	103.9	-2.5
5	2483.50	59.3 PK	74.0	-14.7	1.52 V	310	61.9	-2.6
6	2483.50	44.3 AV	54.0	-9.7	1.52 V	310	46.9	-2.6
7	4874.00	42.4 PK	74.0	-31.6	1.02 V	88	40.5	1.9
8	4874.00	36.8 AV	54.0	-17.2	1.02 V	88	34.9	1.9
9	7311.00	50.4 PK	74.0	-23.6	2.55 V	117	42.6	7.8
10	7311.00	45.9 AV	54.0	-8.1	2.55 V	117	38.1	7.8

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 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	107.8 PK			1.09 H	228	110.3	-2.5
2	*2462.00	97.3 AV			1.09 H	228	99.8	-2.5
3	2483.50	66.9 PK	74.0	-7.1	1.09 H	228	69.5	-2.6
4	2483.50	46.6 AV	54.0	-7.4	1.09 H	228	49.2	-2.6
5	4924.00	38.4 PK	74.0	-35.6	1.20 H	95	36.4	2.0
6	4924.00	27.2 AV	54.0	-26.8	1.20 H	95	25.2	2.0
7	7386.00	46.0 PK	74.0	-28.0	1.38 H	62	38.1	7.9
8	7386.00	37.7 AV	54.0	-16.3	1.38 H	62	29.8	7.9
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	110.3 PK			1.47 V	346	112.8	-2.5
2	*2462.00	99.9 AV			1.47 V	346	102.4	-2.5
3	2483.50	69.3 PK	74.0	-4.7	1.47 V	346	71.9	-2.6
4	2483.50	52.1 AV	54.0	-1.9	1.47 V	346	54.7	-2.6
5	4924.00	42.2 PK	74.0	-31.8	1.09 V	97	40.2	2.0
6	4924.00	36.9 AV	54.0	-17.1	1.09 V	97	34.9	2.0
7	7386.00	49.9 PK	74.0	-24.1	2.44 V	122	42.0	7.9
8	7386.00	45.6 AV	54.0	-8.4	2.44 V	122	37.7	7.9

REMARKS:

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

Below 1GHz Data:

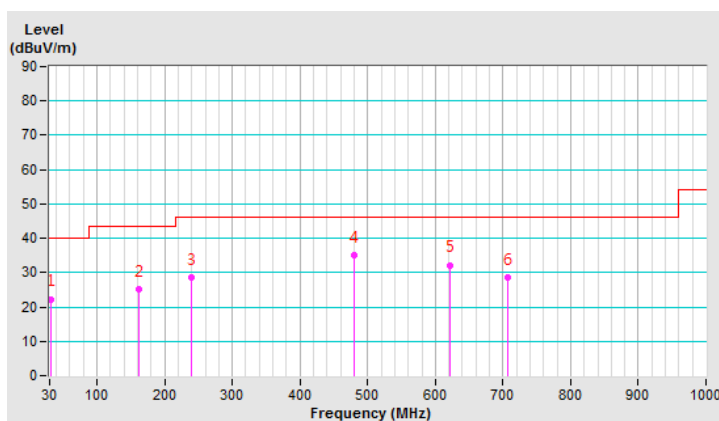
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CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	31.77	22.3 QP	40.0	-17.7	1.00 H	129	32.1	-9.8
2	162.13	25.3 QP	43.5	-18.2	1.50 H	263	33.9	-8.6
3	240.10	28.7 QP	46.0	-17.3	1.50 H	59	38.0	-9.3
4	479.99	35.1 QP	46.0	-10.9	1.50 H	264	37.9	-2.8
5	622.12	32.2 QP	46.0	-13.8	1.50 H	152	31.7	0.5
6	706.97	28.7 QP	46.0	-17.3	1.00 H	235	27.0	1.7

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.

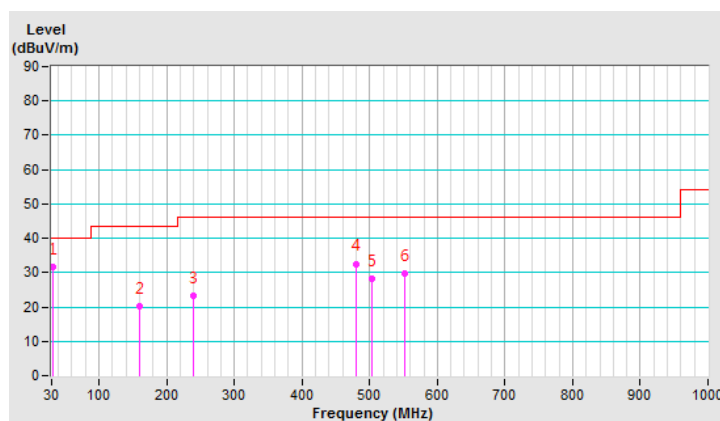


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	32.03	31.5 QP	40.0	-8.5	1.00 V	135	41.3	-9.8
2	160.94	20.2 QP	43.5	-23.3	1.00 V	326	28.7	-8.5
3	239.98	23.2 QP	46.0	-22.8	1.00 V	117	32.5	-9.3
4	480.03	32.6 QP	46.0	-13.4	1.50 V	236	35.3	-2.7
5	503.97	28.1 QP	46.0	-17.9	1.50 V	336	30.0	-1.9
6	551.99	29.8 QP	46.0	-16.2	2.00 V	254	31.2	-1.4

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. 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.



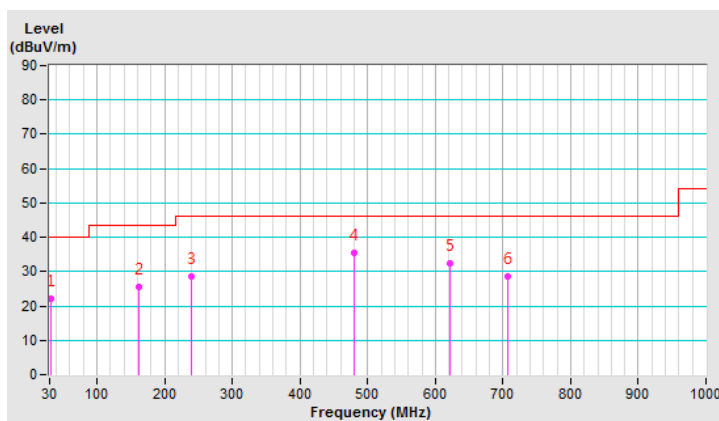
802.11g

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	31.79	22.2 QP	40.0	-17.8	1.50 H	149	32.0	-9.8
2	162.15	25.5 QP	43.5	-18.0	1.50 H	233	34.1	-8.6
3	239.90	28.6 QP	46.0	-17.4	1.00 H	9	37.9	-9.3
4	480.01	35.4 QP	46.0	-10.6	1.00 H	324	38.1	-2.7
5	622.14	32.4 QP	46.0	-13.6	1.50 H	142	31.9	0.5
6	706.95	28.6 QP	46.0	-17.4	1.50 H	205	26.9	1.7

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.

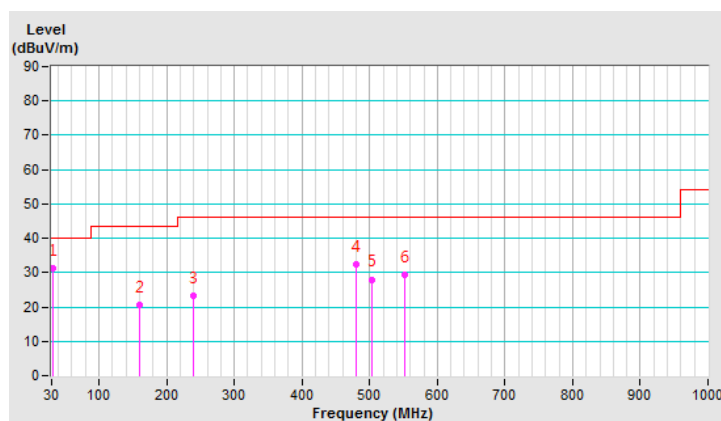


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	32.02	31.3 QP	40.0	-8.7	1.50 V	265	41.1	-9.8
2	160.92	20.5 QP	43.5	-23.0	1.00 V	357	29.0	-8.5
3	240.00	23.4 QP	46.0	-22.6	1.00 V	147	32.7	-9.3
4	480.05	32.5 QP	46.0	-13.5	1.50 V	26	35.2	-2.7
5	503.94	28.0 QP	46.0	-18.0	1.00 V	357	29.9	-1.9
6	552.01	29.4 QP	46.0	-16.6	1.00 V	34	30.8	-1.4

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. 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.



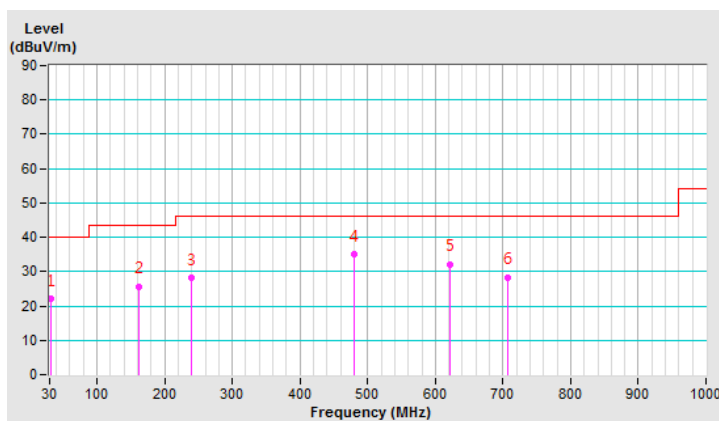
802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	31.81	22.1 QP	40.0	-17.9	1.00 H	109	31.9	-9.8
2	162.17	25.7 QP	43.5	-17.8	1.50 H	33	34.3	-8.6
3	239.92	28.3 QP	46.0	-17.7	1.50 H	19	37.6	-9.3
4	479.99	35.1 QP	46.0	-10.9	1.50 H	24	37.9	-2.8
5	622.12	32.2 QP	46.0	-13.8	1.50 H	122	31.7	0.5
6	706.92	28.4 QP	46.0	-17.6	1.00 H	185	26.7	1.7

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.

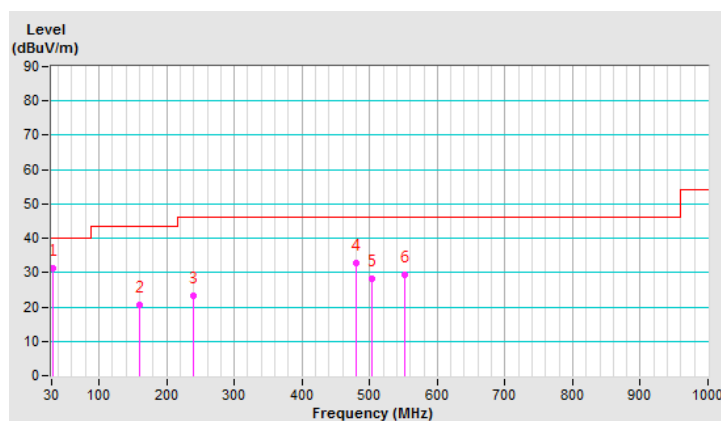


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	32.00	31.1 QP	40.0	-8.9	1.00 V	295	40.9	-9.8
2	160.91	20.7 QP	43.5	-22.8	1.50 V	327	29.2	-8.5
3	240.02	23.3 QP	46.0	-22.7	1.00 V	37	32.6	-9.3
4	480.07	32.7 QP	46.0	-13.3	1.50 V	336	35.4	-2.7
5	503.96	28.2 QP	46.0	-17.8	1.50 V	337	30.1	-1.9
6	552.00	29.2 QP	46.0	-16.8	1.00 V	24	30.6	-1.4

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. 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.

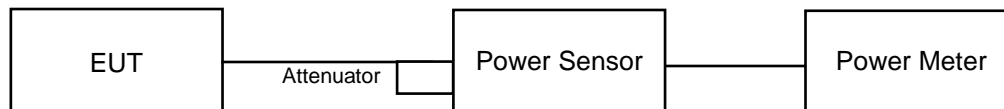


4.2 Conducted Output Power Measurement

4.2.1 Limits of Conducted Output Power Measurement

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

4.2.2 Test Setup



4.2.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.2.4 Test Procedures

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

4.2.5 Deviation from Test Standard

No deviation.

4.2.6 EUT Operating Conditions

Same as Item 4.3.6.

4.2.7 Test Results

FOR PEAK POWER

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	143.219	21.56	30.00	Pass
6	2437	151.705	21.81	30.00	Pass
11	2462	159.221	22.02	30.00	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	163.305	22.13	30.00	Pass
6	2437	194.089	22.88	30.00	Pass
11	2462	179.473	22.54	30.00	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	160.694	22.06	30.00	Pass
6	2437	182.39	22.61	30.00	Pass
11	2462	160.325	22.05	30.00	Pass

5 Pictures of Test Arrangements

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

Appendix – Information of 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:

Lin Kou EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

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