

FCC Test Report (WLAN)

Report No.: RFBHQC-WTW-P20110170A

FCC ID: B3QT99H209

Test Model: T99H209

Received Date: 2021/12/3

Test Date: 2021/12/28

Issued Date: 2022/2/23

Applicant: BROTHER INDUSTRIES, LTD.

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

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Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
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**FCC Registration /
Designation Number:** 723255 / TW2022



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Release Control Record

Issue No.	Description	Date Issued
RFBHQC-WTW-P20110170A	Original release.	2022/2/23

1 Certificate of Conformity

Product: IEEE802.11a/b/g/n/ac (1x1)+BT 5.0 Combo Module

Brand: Brother

Test Model: T99H209

Sample Status: Engineering sample

Applicant: BROTHER INDUSTRIES, LTD.

Test Date: 2021/12/28

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 : Cherry Chuo , **Date:** 2022/2/23
Cherry Chuo / Specialist

Approved by : Clark Lin , **Date:** 2022/2/23
Clark Lin / Technical 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 -16.24dB at 0.57971MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -12.4dB at 633.03MHz.
15.247(d)	Antenna Port Emission	NA	Refer to Note 1 below
15.247(a)(2)	6dB bandwidth	NA	Refer to Note 1 below
15.247(b)	Conducted power	NA	Refer to Note 1 below
15.247(e)	Power Spectral Density	NA	Refer to Note 1 below
15.203	Antenna Requirement	PASS	No antenna connector is used.

Note:

1. AC Power Conducted Emission & Radiated Emissions Measurement were performed for this addendum. The others testing data refer to original test report.
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
3. This report is prepared for supplementary report.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (\pm)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.9 dB
Conducted emissions	-	2.5 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.1 dB
	30MHz ~ 1GHz	5.4 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT (WLAN)

Product	IEEE802.11a/b/g/n/ac (1x1)+BT 5.0 Combo Module
Brand	Brother
Test Model	T99H209
Status of EUT	Engineering sample
Power Supply Rating	3.3Vdc from host equipment
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11 Mbps 802.11a/g: up to 54 Mbps 802.11n: up to 150 Mbps
Operating Frequency	2.412 ~ 2.462GHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7
Output Power	380.189 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Cable Supplied	NA

Note:

- This is a supplementary report of Report No.: RFBHQC-WTW-P20110170. The differences between them are as below information:
 - ◆ Changed 2nd source component.
- According to above conditions, only conducted emission and radiated emissions (below 1GHz) need to be performed. And all data are verified to meet the requirements.
- The EUT has two type interface, which are identical to each other in all aspects except for the following:

Type No.	Description
Type 1	16 pin
Type 2	8 pin

In the original report, from the above pre-test types, the worse radiated emission was found in **Type 1**. Therefore only the test data of the mode was recorded in this report.

- Simultaneously transmission condition.

Condition	Technology
1	WLAN 5GHz + Bluetooth

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

5. The EUT has three Matrix as below table:

Matrix	Matrix A	Matrix B	Matrix C
PCB	TRIPOD	AVARY	TRIPOD
Main chip(CYW4373)	CYPRESS	CYPRESS	CYPRESS
Crystal	HOSONIC	TXC	HOSONIC
Power inductor	MAGLAYERS	TAI-TECH	CHILISIN
Shielding cover	FXCN(C7521)	FXCN(C7521)	FXCN(C7521)
RF Swtich connector	MURATA	MURATA	MURATA
RF SPDT	Richwave	Richwave	MAXSCEND
RF diplexer	ACX	ACX	ACX
RF Capacitor	MURATA	WALSIN	MURATA
RF Capacitor(10pF)	MURATA	WALSIN	YAGEO
RF inductor	MURATA	CHILISIN	MURATA
Resistor	WALSIN	TAI/UNI-OHM	YAGEO
Bead	MURATA	CHILISIN	MURATA
Host connector(16pin)	LONG SHONUG	LONG SHONUG	LONGSHNUG
DC Capacitor	22uF(0603/10V/X6S)--MURATA	22uF(0603/10V/X6S) --WALSIN	22uF(0603/10V/X6S) --DARFON
	4.7uF(0402/6.3V/X6S)----MURATA	4.7uF(0402/6.3V/X6S)----TAIYO	4.7uF(0402/6.3V/X6S)---HOLYSTONE
	4.7uF(0603/10V/X6S)----MURATA	4.7uF(0603/10V/X6S)----TAIYO	4.7uF(0603/10V/X6S)----DARFON
	2.2uF(0402/6.3V/X6S)---MURATA	2.2uF(0402/6.3V/X6S) ---WALSIN	2.2uF(0402/6.3V/X6S) ---DARFON
	1uF (0402/6.3V/X6S) -TAIYO	1uF (0402/6.3V/X6S) -MURATA	1uF (0402/6.3V/X6S) -EYANG
	0.47uF(0201/6.3V/X7R) -TAIYO	0.47uF(0201/6.3V/X7R) -YAGEO	0.47uF(0201/6.3V/X7R) -WALSIN
	0.22uF(0201/6.3V/X6S) --MURATA	0.22uF(0201/6.3V/X6S) --TAIYO	0.22uF(0201/6.3V/X6S) --EYANG
	0.1uF(0201/6.3V/X6S) -MURATA	0.1uF(0201/6.3V/X6S) -WALSIN	0.1uF(0201/6.3V/X6S) -EYANG
	22pF(0201)---MURATA	22pF(0201)---WALSIN	22pF(0201)---DARFON
12pF(0201)---MURATA	12pF(0201)---WALSIN	12pF(0201)---MURATA	

Note: From the above Matrix, the worst radiated emissions was found in **Matrix C**. Therefore only the test data of the mode was recorded in this report.

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

Antenna No.	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type
1	3.65	2.4~2.4835	PCB	None
	3.98	5.15~5.85		

7. The EUT incorporates a SISO function:

2.4GHz Band			
MODULATION MODE	TX & RX CONFIGURATION		
802.11b	1TX		1RX
802.11g	1TX		1RX
802.11n (HT20)	1TX		1RX
802.11n (HT40)	1TX		1RX

Note: The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report.

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

9. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

3.2 Description of Test Modes

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

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

7 channels are provided for 802.11n (HT40)

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

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO		DESCRIPTION
	RE<1G	PLC	
-	√	√	-

Where **RE<1G**: Radiated Emission below 1GHz **PLC**: Power Line Conducted Emission

Note: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane**.

Radiated Emission Test (Below 1GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (HT20)	1 to 11	6	OFDM	BPSK	6.5

Power Line Conducted Emission Test:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (HT20)	1 to 11	6	OFDM	BPSK	6.5

Test Condition:

Applicable To	Environmental Conditions	Input Power (System)	Tested By
RE<1G	24deg. C, 66%RH	120Vac, 60Hz	Tom Yang
PLC	24deg. C, 66%RH	120Vac, 60Hz	Tom Yang

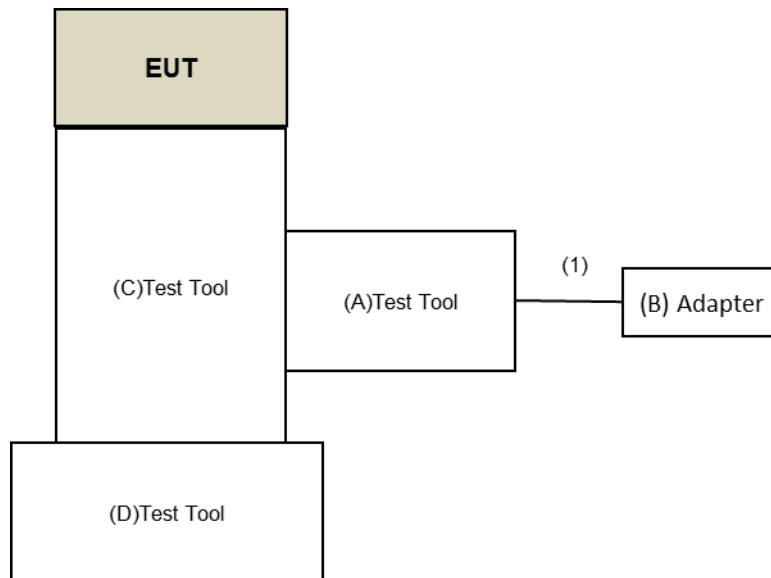
3.3 Description of Support Units

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	soliton technologies	NA	NA	NA	Supplied by client(for RF Setup)
B.	Adapter	ASUS	EXA1205UA	NA	NA	Provided by Lab
C.	Test Tool	soliton technologies	NA	NA	NA	Supplied by client(for RF Setup)
D.	Test Tool	soliton technologies	NA	NA	NA	Supplied by client(for RF Setup)

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Micro USB to USB Cable	1	1.4	Yes	0	Provided by Lab

3.3.1 Configuration of System under Test



3.4 General Description of Applied Standards and references

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

Test standard:

FCC Part 15, Subpart C (15.247)
ANSI C63.10-2013

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

References Test Guidance :

KDB 558074 D01 15.247 Meas Guidance v05r02

All test items have been performed as a reference to the above KDB test guidance.

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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESR3	102528	2021/3/2	2022/3/1
Spectrum Analyzer KEYSIGHT	N9030B	MY57141948	2021/5/21	2022/5/20
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA
Pre_Amplifier EMCI	EMC001340	980142	2021/5/24	2022/5/23
LOOP ANTENNA Electro-Metrics	EM-6879	264	2021/3/5	2022/3/4
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-001	2021/1/7	2022/1/6
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-002	2021/1/7	2022/1/6
Pre_Amplifier EMCI	EMC330N	980538	2021/4/26	2022/4/25
Bilog Antenna Schwarzbeck	VULB 9168	9168-0842	2021/10/26	2022/10/25
RF Coaxial Cable COMMATE/PEWC	8D	966-5-1	2021/4/26	2022/4/25
RF Coaxial Cable COMMATE/PEWC	8D	966-5-2	2021/4/26	2022/4/25
RF Coaxial Cable COMMATE/PEWC	8D	966-5-3	2021/4/26	2022/4/25
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-02	2021/1/11	2022/1/10

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. 5.
3. Tested Date: 2021/12/28

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) 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.

Note:

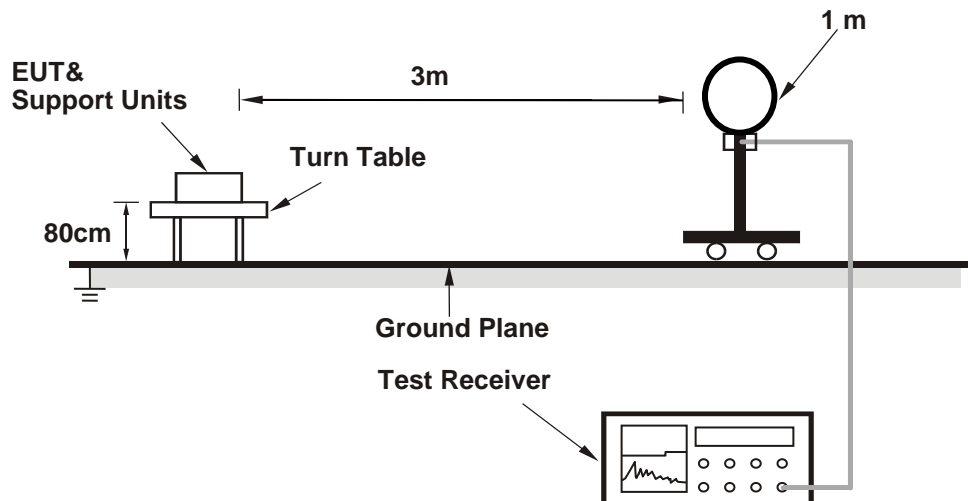
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

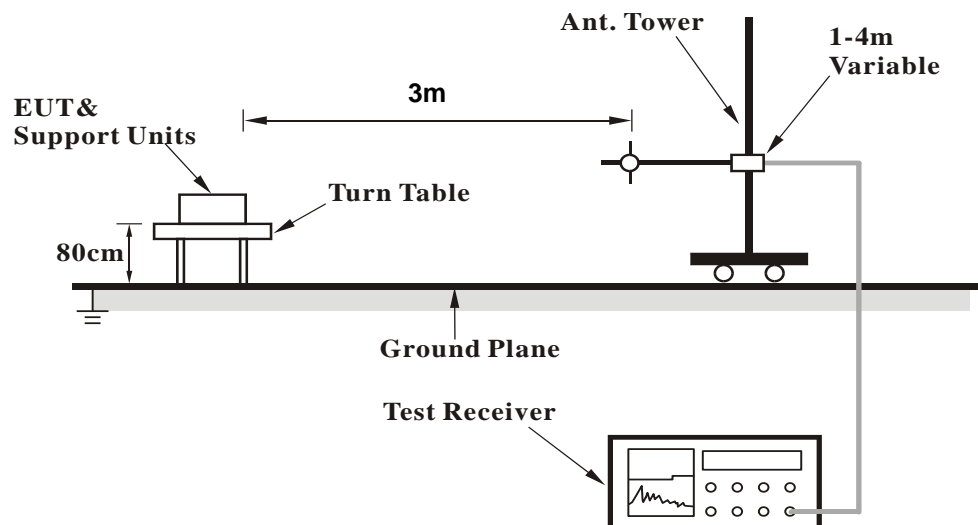
No deviation.

4.1.5 Test Setup

For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



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

4.1.6 EUT Operating Conditions

- Placed the EUT on the testing table.
- Controlling software (Terminal paste "TX/RX script command (OS: Fedora)) has been activated to set the EUT under transmission condition continuously.

4.1.7 Test Results

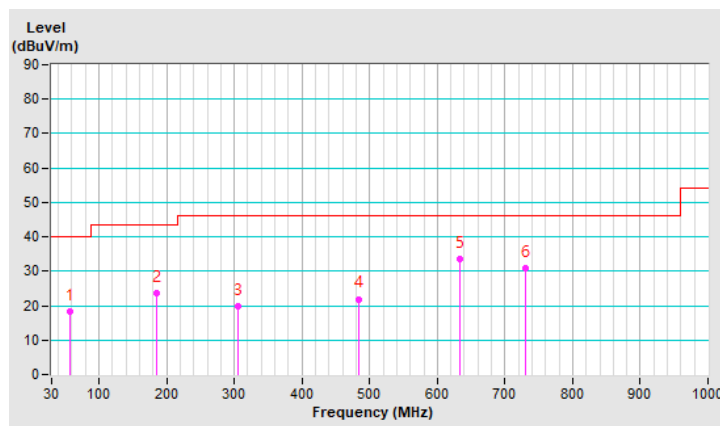
Below 1GHz Data:

RF Mode	TX 802.11n (HT20)	Channel	CH 6 : 2437 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	56.97	18.3 QP	40.0	-21.7	1.50 H	360	31.5	-13.2
2	186.03	23.6 QP	43.5	-19.9	1.50 H	317	38.8	-15.2
3	305.11	19.9 QP	46.0	-26.1	1.00 H	315	32.0	-12.1
4	484.23	21.9 QP	46.0	-24.1	2.00 H	83	29.7	-7.8
5	633.03	33.6 QP	46.0	-12.4	1.50 H	360	38.3	-4.7
6	730.62	31.0 QP	46.0	-15.0	1.00 H	341	34.3	-3.3

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. 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.

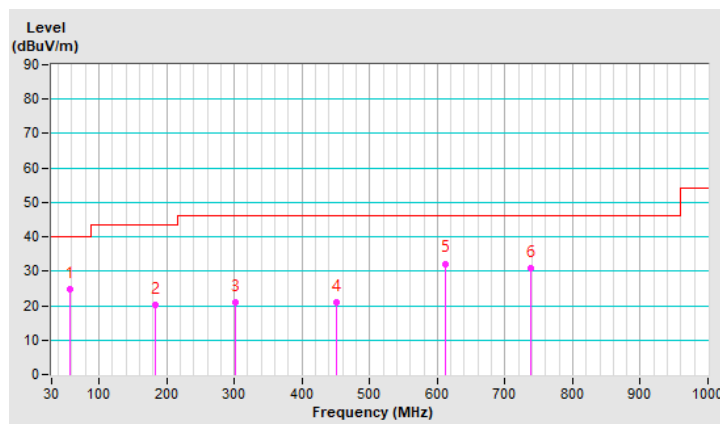


RF Mode	TX 802.11n (HT20)	Channel	CH 6 : 2437 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	57.69	24.7 QP	40.0	-15.3	1.00 V	360	38.0	-13.3
2	182.93	20.3 QP	43.5	-23.2	1.00 V	92	35.1	-14.8
3	302.05	21.0 QP	46.0	-25.0	1.50 V	190	33.2	-12.2
4	450.27	20.9 QP	46.0	-25.1	1.50 V	90	29.1	-8.2
5	612.17	32.2 QP	46.0	-13.8	1.00 V	325	37.1	-4.9
6	738.14	30.8 QP	46.0	-15.2	1.50 V	131	34.0	-3.2

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

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

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	2021/10/13	2022/10/12
LISN R&S	ESH3-Z5	848773/004	2021/10/29	2022/10/28
LISN R & S	ESH3-Z5	835239/001	2021/3/26	2022/3/25
50 ohms Terminator NA	50	3	2021/10/27	2022/10/26
RF Coaxial Cable JYEBO	5D-FB	COCCAB-001	2021/9/25	2022/9/24
Fixed attenuator STI	STI02-2200-10	005	2021/8/27	2022/8/26
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: 2021/12/28

4.2.3 Test Procedures

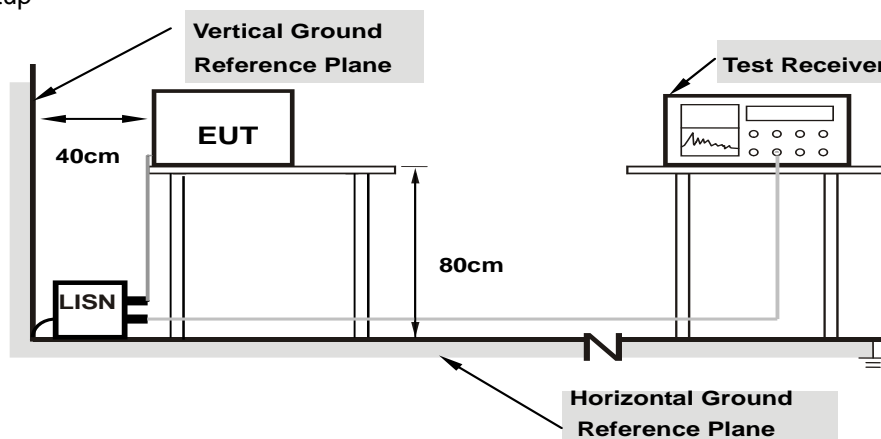
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

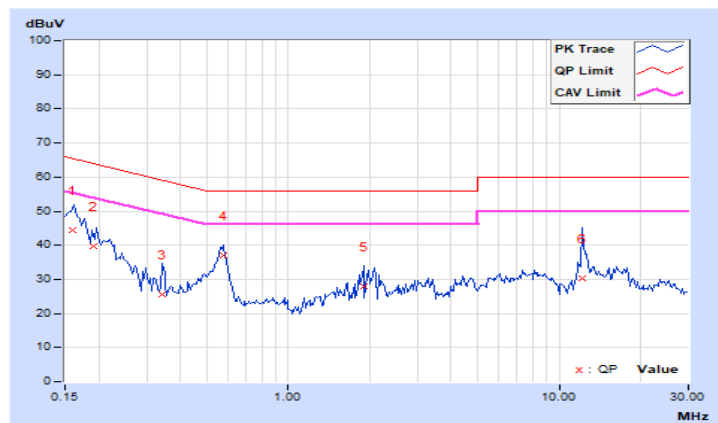
4.2.7 Test Results

RF Mode	TX 802.11n (HT20)	Channel	CH 6 : 2437 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15962	10.07	34.53	17.73	44.60	27.80	65.48	55.48	-20.88	-27.68
2	0.19171	10.08	29.63	13.65	39.71	23.73	63.96	53.96	-24.25	-30.23
3	0.34308	10.10	15.35	3.23	25.45	13.33	59.13	49.13	-33.68	-35.80
4	0.57971	10.12	26.83	19.64	36.95	29.76	56.00	46.00	-19.05	-16.24
5	1.91162	10.20	17.61	5.63	27.81	15.83	56.00	46.00	-28.19	-30.17
6	12.19017	10.96	19.43	11.70	30.39	22.66	60.00	50.00	-29.61	-27.34

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

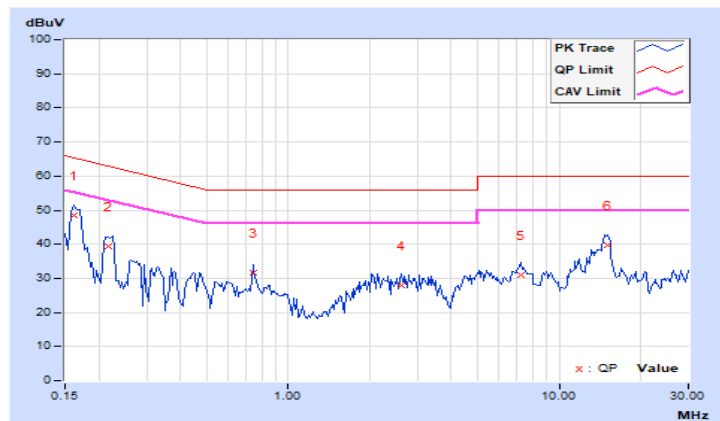


RF Mode	TX 802.11n (HT20)	Channel	CH 6 : 2437 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16181	10.06	38.43	25.62	48.49	35.68	65.37	55.37	-16.88	-19.69
2	0.21703	10.08	29.35	16.37	39.43	26.45	62.93	52.93	-23.50	-26.48
3	0.74062	10.12	21.60	18.53	31.72	28.65	56.00	46.00	-24.28	-17.35
4	2.61274	10.25	17.77	9.64	28.02	19.89	56.00	46.00	-27.98	-26.11
5	7.19082	10.52	20.43	15.30	30.95	25.82	60.00	50.00	-29.05	-24.18
6	15.12977	10.99	28.59	17.42	39.58	28.41	60.00	50.00	-20.42	-21.59

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



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.

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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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