Supplemental “Transmit Simultaneously” Test Report

Report No.:	RFBARR-WTW-P21060023-4
FCC ID:	RAS-MT7922A12L
Test Model:	MT7922A12L
Received Date:	June 1, 2021
Test Date:	June 25 to Aug. 13, 2021
Issued Date:	Aug. 24, 2021
Applicant:	MediaTek Inc.
Address:	No. 1, Dusing 1st Rd., Hsinchu Science Park Hsinchu City 30078, Taiwan
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
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / Designation Number:	723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
RFBARR-WTW-P21060023-4	Original release.	Aug. 24, 2021

1 Certificate of Conformity

Product:	2TX 11ax (WiFi6E) BW160 + BT/BLE Combo Card
Brand:	MediaTek
Test Model:	MT7922A12L
Sample Status:	Engineering sample
Applicant:	MediaTek Inc.
Test Date:	June 25 to Aug. 13, 2021
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.247) 47 CFR FCC Part 15, Subpart E (Section 15.407) 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:** Aug. 24, 2021

Phoenix Huang / Specialist

Approved by : , **Date:** Aug. 24, 2021

Clark Lin / Technical Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C, E (SECTION 15.247, 15.407)			
FCC Clause	Test Item	Result	Remarks
15.207 15.407(b)(8)	AC Power Conducted Emission	Pass	Meet the requirement of limit. Minimum passing margin is -13.73 dB at 0.15017 MHz.
15.205 / 15.209 / 15.247(d) 15.407(b) (1/2/3/4(i/ii)/8)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -3.1 dB at 238.01 MHz.

Note:
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) (±)
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	5.5 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.1 dB
	18GHz ~ 40GHz	5.3 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	2TX 11ax (WiFi6E) BW160 + BT/BLE Combo Card
Brand	MediaTek
Test Model	MT7922A12L
Status of EUT	Engineering sample
Power Supply Rating	3.3 Vdc from host equipment
Modulation Type	**WLAN:** CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT20/40 in 2.4GHz mode 1024QAM for OFDMA in 11ax mode only **BT-EDR:** GFSK, π/4-DQPSK, 8DPSK **BT-LE:** GFSK
Modulation Technology	**WLAN:** DSSS, OFDM, OFDMA **BT-EDR:** FHSS **BT-LE:** DTS
Transfer Rate	**WLAN:** 802.11b: up to 11 Mbps 802.11a/g: up to 54 Mbps 802.11n: up to 300 Mbps 802.11ac: up to 1733.3 Mbps 802.11ax: up to 2401.9 Mbps **BT-EDR:** up to 3 Mbps **BT-LE:** up to 2 Mbps
Operating Frequency	**WLAN:** **2.4GHz:** 2.412 ~ 2.472 GHz **5GHz:** 5.18~ 5.32 GHz, 5.5 ~ 5.72 GHz, 5.745 ~ 5.825 GHz **6GHz:** 5.955 ~ 6.415GHz, 6.435 ~ 6.525GHz, 6.525 ~ 6.875GHz, 6.875 ~ 7.115GHz **BT-EDR:** 2.402 ~ 2.480 GHz **BT-LE:** 2.402 ~ 2.480 GHz
Number of Channel	**WLAN:** **2.4GHz:** 802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20): 13 802.11n (HT40), VHT40, 802.11ax (HE40): 9 **5GHz:** 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 25 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 12 802.11ac (VHT80), 802.11ax (HE80): 6 802.11ac (VHT160), 802.11ax (HE160): 2 **6GHz:** 802.11a/ax (HE20): 59 802.11ax (HE40): 29 802.11ax (HE80): 14 802.11ax (HE160): 7 **BT-EDR:** 79 **BT-LE:** 40
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. There are Bluetooth and WLAN (2.4GHz & 5GHz & 6GHz) technology used for the EUT.
2. Simultaneously transmission condition.

Condition	Technology	
1	WLAN (5GHz)	Bluetooth
2	WLAN (6GHz)	Bluetooth

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

Antenna Set	RF Chain No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type	Cable Length (mm)
1	Chain0	PSA	RFMTA340718EMLB302	3.18 4.92	2.4~2.4835 5.15~5.85	PIFA	i-pex(MHF)	200
	Chain1	PSA	RFMTA340718EMLB302	3.18 4.92	2.4~2.4835 5.15~5.85	PIFA	i-pex(MHF)	200
2	Chain0	PSA	RFMTA311020EMMB301	1.71 4.82 4.76 4.29 4.61 4.09	2.4~2.4835 5.15~5.85 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	i-pex(MHF)	200
	Chain1	PSA	RFMTA311020EMMB301	1.71 4.82 4.76 4.29 4.61 4.09	2.4~2.4835 5.15~5.85 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	i-pex(MHF)	200

4. The EUT incorporates a MIMO function:

2.4GHz Band				
MODULATION MODE	**TX & RX CONFIGURATION**			
802.11b	2TX		2RX	
802.11g	2TX		2RX	
802.11n (HT20)	2TX		2RX	
802.11n (HT40)	2TX		2RX	
VHT20	2TX		2RX	
VHT40	2TX		2RX	
802.11ax (HE20)	2TX		2RX	
802.11ax (HE40)	2TX		2RX	
802.11ax (RU26/52/106/242/484)	2TX		2RX	
MODULATION MODE	**5GHz Band**		**6GHz Band**	
	TX & RX CONFIGURATION		**TX & RX CONFIGURATION**	
802.11a	2TX	2RX	2TX	2RX
802.11n (HT20)	2TX	2RX	-	-
802.11n (HT40)	2TX	2RX	-	-
802.11ac (VHT20)	2TX	2RX	-	-
802.11ac (VHT40)	2TX	2RX	-	-
802.11ac (VHT80)	2TX	2RX	-	-
802.11ac (VHT160)	2TX	2RX	-	-
802.11ax (HE20)	2TX	2RX	2TX	2RX
802.11ax (HE40)	2TX	2RX	2TX	2RX
802.11ax (HE80)	2TX	2RX	2TX	2RX
802.11ax (HE160)	2TX	2RX	2TX	2RX
802.11ax (RU26/52/106/242/484/996/1992)	2TX	2RX	2TX	2RX

5. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.
6. 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.

3.1.1 Test Mode Applicability and Tested Channel Detail

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

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

PLC: Power Line Conducted Emission **OB:** Conducted Out-Band Emission Measurement

Note: The EUT's PIFA antenna had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-place.**

Radiated Emission Test (Above 1GHz):

☒ The tested configurations represent the worst-case mode from all possible combinations by the maximum power.

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE
802.11a + BT-EDR	36 to 64 149 to 165	157	OFDM	BPSK
	0 to 78	78	FHSS	GFSK
802.11ax (HE160) + BT-EDR	15 to 79, 111, 143, 207	15	OFDMA	BPSK
	0 to 78	78	FHSS	GFSK

Radiated Emission Test (Below 1GHz):

☒ The tested configurations represent the worst-case mode from all possible combinations by the maximum power.

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE
802.11a + BT-EDR	36 to 64 149 to 165	157	OFDM	BPSK
	0 to 78	78	FHSS	GFSK
802.11ax (HE160) + BT-EDR	15 to 79, 111, 143, 207	15	OFDMA	BPSK
	0 to 78	78	FHSS	GFSK

Power Line Conducted Emission Test:

☒ The tested configurations represent the worst-case mode from all possible combinations by the maximum power.

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE
802.11a + BT-EDR	36 to 64 149 to 165	157	OFDM	BPSK
	0 to 78	78	FHSS	GFSK
802.11ax (HE160) + BT-EDR	15 to 79, 111, 143, 207	15	OFDMA	BPSK
	0 to 78	78	FHSS	GFSK

Conducted Out-Band Emission Measurement:

☒ The tested configurations represent the worst-case mode from all possible combinations by the maximum power.

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE
802.11a + BT-EDR	36 to 64 149 to 165	157	OFDM	BPSK
	0 to 78	78	FHSS	GFSK
802.11ax (HE160) + BT-EDR	15 to 79, 111, 143, 207	15	OFDMA	BPSK
	0 to 78	78	FHSS	GFSK

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (System)	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Tom Yang
RE<1G	25deg. C, 66%RH	120Vac, 60Hz	Tom Yang
PLC	25deg. C, 66%RH	120Vac, 60Hz	Tom Yang
OB	25deg. C, 60%RH	120Vac, 60Hz	Kevin.Ko

3.2 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.

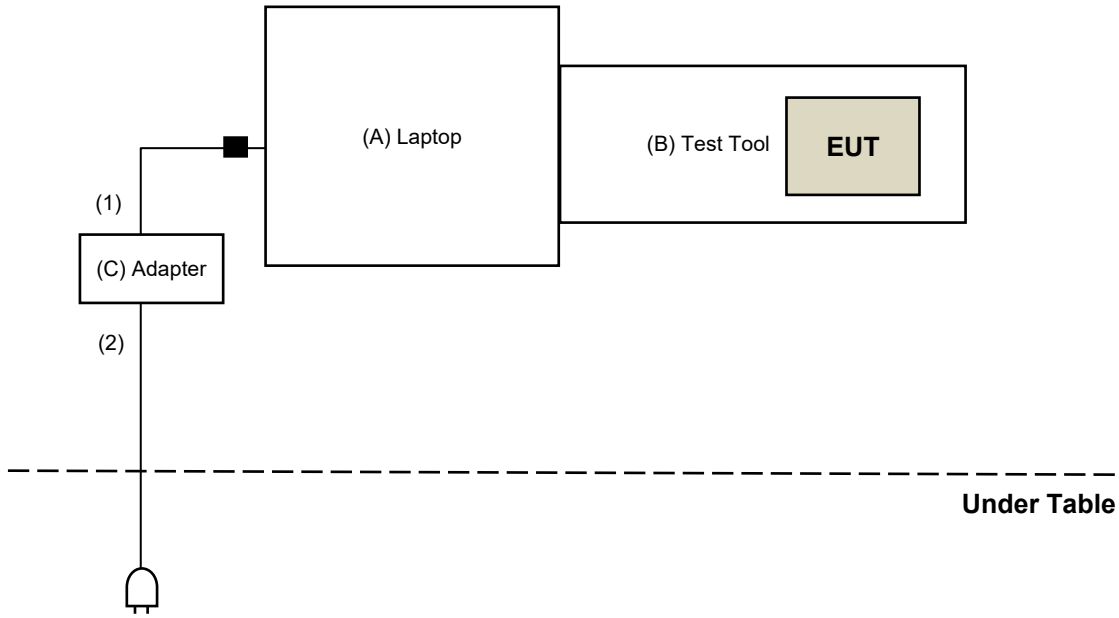
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E5430	HYV4VY1	DoC	Provided by Lab
B.	Test Tool	MediaTek	MTK1849	NA	NA	Supplied by client
C.	Adapter	Dell	LA65NS2-01	NA	NA	Provided by Lab

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Cable	1	1.8	No	1	Provided by Lab
2.	AC Cable	1	1.8	No	0	Provided by Lab

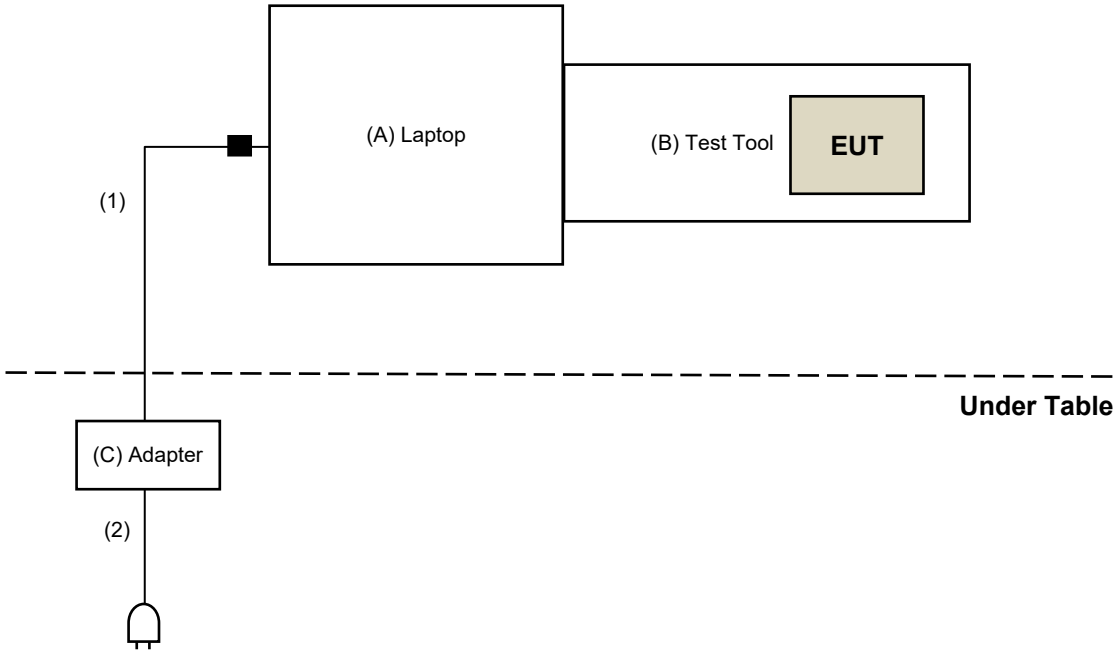
Note: The core(s) is(are) originally attached to the cable(s).

3.2.1 Configuration of System under Test

For AC Power Conducted Emission test:



For Radiated Emission test:



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.

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.

Limits of unwanted emission out of the restricted bands

Applicable To		Limit	
789033 D02 General UNII Test Procedure New Rules v02r01		Field Strength at 3m	
		PK:74 (dBμV/m)	AV:54 (dBμV/m)
Frequency Band	Applicable To	EIRP Limit	Equivalent Field Strength at 3m
5150~5250 MHz	15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2(dBμV/m)
5250~5350 MHz	15.407(b)(2)		
5470~5725 MHz	15.407(b)(3)		
5725~5850 MHz	15.407(b)(4)(i)	PK: -27 (dBm/MHz) *1 PK: 10 (dBm/MHz) *2 PK: 15.6 (dBm/MHz) *3 PK: 27 (dBm/MHz) *4	PK: 68.2(dBμV/m) *1 PK: 105.2 (dBμV/m) *2 PK: 110.8(dBμV/m) *3 PK: 122.2 (dBμV/m) *4
5725~5850 MHz	15.407(b)(4)(i)	PK: -27 (dBm/MHz) *1 PK: 10 (dBm/MHz) *2 PK: 15.6 (dBm/MHz) *3 PK: 27 (dBm/MHz) *4	PK: 68.2(dBμV/m) *1 PK: 105.2 (dBμV/m) *2 PK: 110.8(dBμV/m) *3 PK: 122.2 (dBμV/m) *4

*1 beyond 75 MHz or more above of the band edge.

*2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.

*3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.

*4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Frequencies (MHz)	EIRP Limit	Equivalent Field Strength at 3m
5925MHz > F > 7125MHz	Peak:-7 (dBm/MHz)	88.2(dBμV/m)
	Average: -27 (dBm/MHz)	68.2(dBμV/m)

Note:

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$E = \frac{1000000\sqrt{30P}}{3}$ μV/m, where P is the eirp (Watts).

4.1.2 Test Instruments

For Radiated Emission test:

Description & Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Test Receiver Agilent	N9038A	MY51210202	Dec. 1, 2020	Nov. 30, 2021
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	May 24, 2021	May 23, 2022
LOOP ANTENNA Electro-Metrics	EM-6879	264	Mar. 5, 2021	Mar. 4, 2022
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-001	Jan. 7, 2021	Jan. 6, 2022
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-002	Jan. 7, 2021	Jan. 6, 2022
Pre_Amplifier EMCI	EMC330N	980701	Mar. 10, 2021	Mar. 9, 2022
Trilog Broadband Antenna Schwarzbeck	VULB 9168	9168-406	Nov. 6, 2020	Nov. 5, 2021
RF Coaxial Cable COMMATE/PEWC	8D	966-4-1	Mar. 17, 2021	Mar. 16, 2022
RF Coaxial Cable COMMATE/PEWC	8D	966-4-2	Mar. 17, 2021	Mar. 16, 2022
RF Coaxial Cable COMMATE/PEWC	8D	966-4-3	Mar. 17, 2021	Mar. 16, 2022
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-03	Jan. 11, 2021	Jan. 10, 2022
Horn Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Nov. 22, 2020	Nov. 21, 2021
Pre_Amplifier EMCI	EMC 12630 SE	980638	Apr. 7, 2021	Apr. 6, 2022
RF Cable-Frequency Range : 1-26.5GHz EMCI	EMC104-SM-SM-1200	160922	Dec. 25, 2020	Dec. 24, 2021
RF Coaxial Cable EMCI	EMC104-SM-SM-2000	180502	Apr. 26, 2021	Apr. 25, 2022
RF Coaxial Cable EMCI	EMC104-SM-SM-6000	180418	Apr. 26, 2021	Apr. 25, 2022
Pre_Amplifier EMCI	EMC184045SE	980387	Jan. 11, 2021	Jan. 10, 2022
SHF-EHF Horn Schwarzbeck	BBHA 9170	BBHA9170519	Nov. 22, 2020	Nov. 21, 2021
RF Cable-Frequency range: 1-40GHz EMCI	EMC102-KM-KM-1200	160924	Jan. 11, 2021	Jan. 10, 2022
RF cable (40GHz) EMCI	EMC-KM-KM-4000	200214	Mar. 10, 2021	Mar. 9, 2022

Note: 1. The test was performed in 966 Chamber No. 4.
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: June 25 to Aug. 07, 2021

For other test items:

Description & Manufacturer	Model no.	Serial No.	Calibrated Date	Calibrated Until
Spectrum Analyzer R&S	FSV40	101516	Mar. 8, 2021	Mar. 7, 2022
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	Apr. 13, 2021	Apr. 12, 2022
Software	ADT_RF Test Software V6.6.5.4	NA	NA	NA

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: Aug. 13, 2021

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:

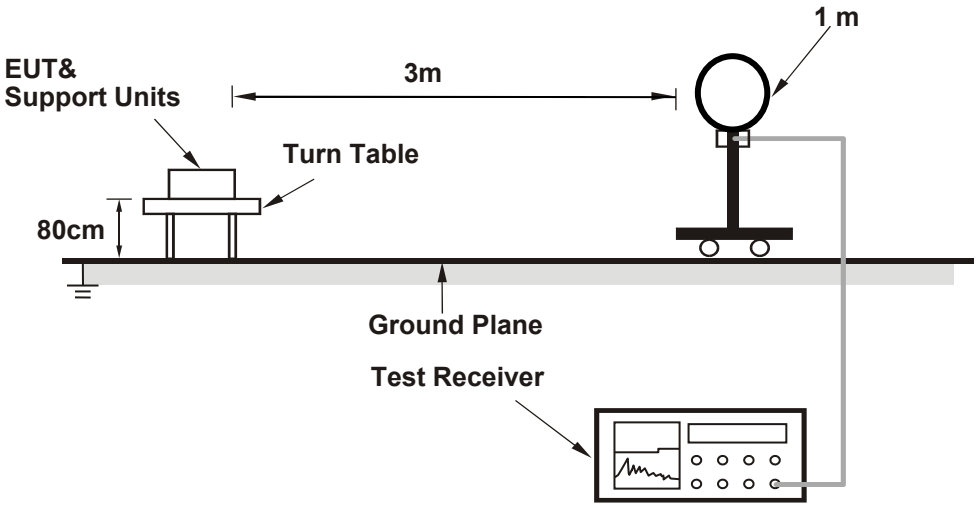
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 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

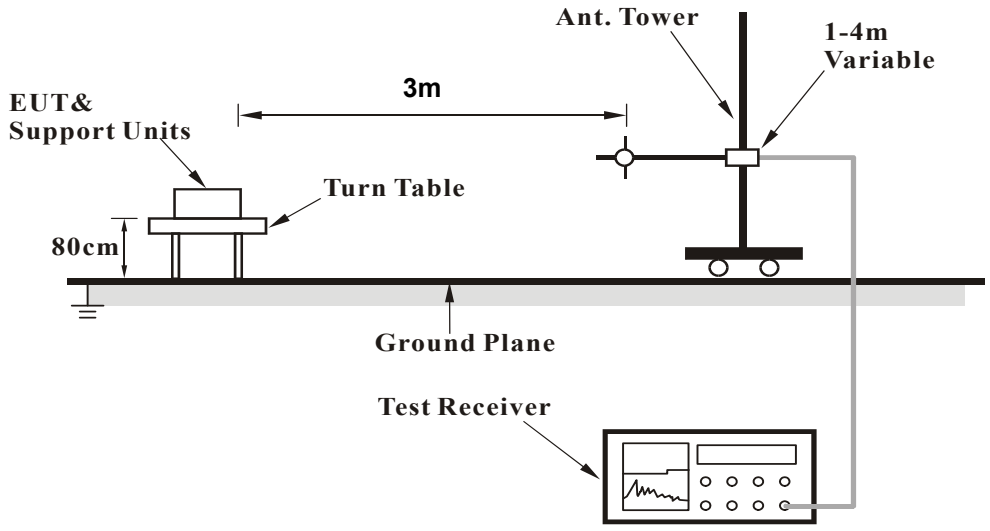
No deviation.

4.1.5 Test Setup

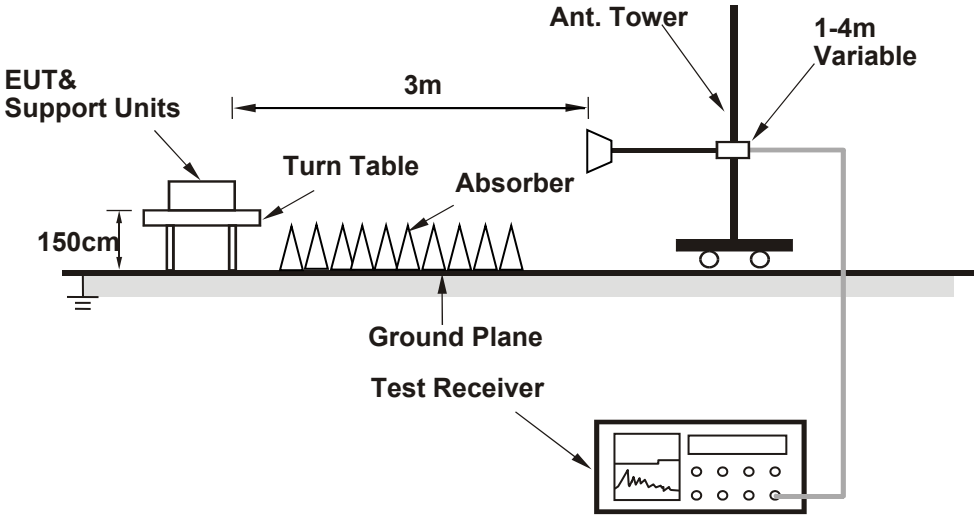
For Radiated emission below 30MHz



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. Placed the EUT on the testing table.
b. Controlling software (WLAN: MT7922 QA 0.0.2.55 / BT-EDR: WCN Combo tool W2049) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

WLAN (5GHz) + Bluetooth

Above 1GHz Data:

Frequency Range	1GHz ~ 40GHz	**Detector Function**	Peak (PK) Average (AV)

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	4960.00	49.6 PK	74.0	-24.4	2.02 H	54	48.7	0.9
2	4960.00	45.7 AV	54.0	-8.3	2.02 H	54	44.8	0.9
3	7440.00	42.7 PK	74.0	-31.3	1.47 H	187	35.4	7.3
4	7440.00	31.7 AV	54.0	-22.3	1.47 H	187	24.4	7.3
5	11570.00	54.5 PK	74.0	-19.5	1.17 H	65	42.1	12.4
6	11570.00	42.3 AV	54.0	-11.7	1.17 H	65	29.9	12.4
7	#17355.00	53.5 PK	68.2	-14.7	1.55 H	21	36.0	17.5
8	#17355.00	43.3 AV	54.0	-10.7	1.55 H	21	25.8	17.5
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	4960.00	48.4 PK	74.0	-25.6	2.64 V	80	47.5	0.9
2	4960.00	45.1 AV	54.0	-8.9	2.64 V	80	44.2	0.9
3	7440.00	42.4 PK	74.0	-31.6	1.43 V	197	35.1	7.3
4	7440.00	31.0 AV	54.0	-23.0	1.43 V	197	23.7	7.3
5	11570.00	52.1 PK	74.0	-21.9	2.14 V	58	39.7	12.4
6	11570.00	41.4 AV	54.0	-12.6	2.14 V	58	29.0	12.4
7	#17355.00	53.8 PK	68.2	-14.4	3.64 V	69	36.3	17.5
8	#17355.00	43.4 AV	54.0	-10.6	3.64 V	69	25.9	17.5

Remarks:

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

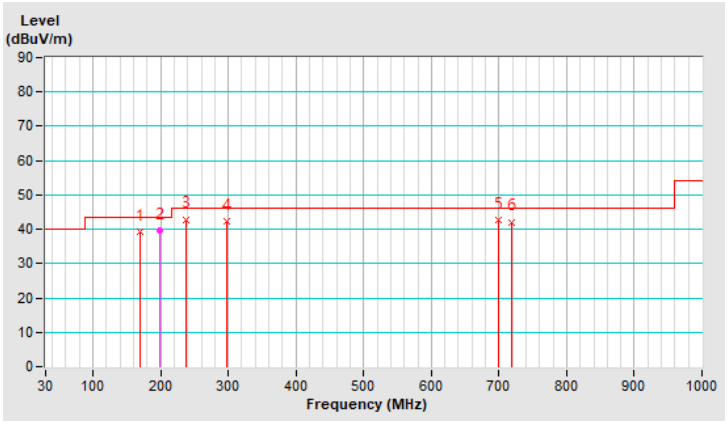
Below 1GHz Data:

Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	169.76	39.1 QP	43.5	-4.4	2.00 H	223	51.6	-12.5
2	197.99	39.8 QP	43.5	-3.7	1.50 H	92	54.9	-15.1
3	**238.01**	**42.9 QP**	**46.0**	**-3.1**	**1.50 H**	**232**	**56.2**	**-13.3**
4	297.51	42.2 QP	46.0	-3.8	1.00 H	347	53.0	-10.8
5	699.97	42.6 QP	46.0	-3.4	1.00 H	243	43.0	-0.4
6	717.86	42.1 QP	46.0	-3.9	1.50 H	242	42.3	-0.2

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.

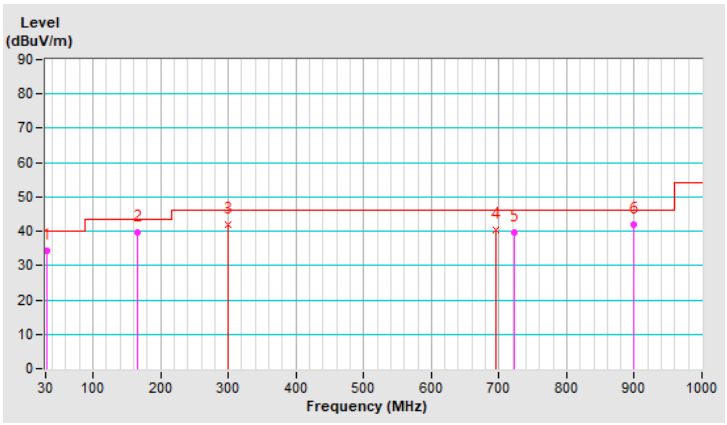


Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	31.99	34.4 QP	40.0	-5.6	1.00 V	339	47.9	-13.5
2	165.48	39.6 QP	43.5	-3.9	1.50 V	323	51.9	-12.3
3	299.66	42.0 QP	46.0	-4.0	2.00 V	308	52.7	-10.7
4	695.01	40.5 QP	46.0	-5.5	1.50 V	303	41.0	-0.5
5	723.01	39.7 QP	46.0	-6.3	1.00 V	249	39.9	-0.2
6	898.84	41.9 QP	46.0	-4.1	1.50 V	266	38.4	3.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The 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.



WLAN (6GHz) + Bluetooth

Above 1GHz Data:

Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

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	4960.00	49.9 PK	74.0	-24.1	2.00 H	81	49.0	0.9
2	4960.00	46.5 AV	54.0	-7.5	2.00 H	81	45.6	0.9
3	7440.00	42.1 PK	74.0	-31.9	1.58 H	185	34.8	7.3
4	7440.00	30.8 AV	54.0	-23.2	1.58 H	185	23.5	7.3
5	12050.00	51.4 PK	74.0	-22.6	2.36 H	118	39.7	11.7
6	12050.00	40.3 AV	54.0	-13.7	2.36 H	118	28.6	11.7
7	18075.00	55.2 PK	74.0	-18.8	1.64 H	69	79.3	-24.1
8	18075.00	44.8 AV	54.0	-9.2	1.64 H	69	68.9	-24.1
9	#24100.00	45.3 PK	88.2	-42.9	2.17 H	177	66.6	-21.3
10	#24100.00	36.0 AV	68.2	-32.2	2.17 H	177	57.3	-21.3
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	4960.00	48.2 PK	74.0	-25.8	2.51 V	102	47.3	0.9
2	4960.00	44.9 AV	54.0	-9.1	2.51 V	102	44.0	0.9
3	7440.00	41.5 PK	74.0	-32.5	1.53 V	199	34.2	7.3
4	7440.00	30.1 AV	54.0	-23.9	1.53 V	199	22.8	7.3
5	12050.00	55.3 PK	74.0	-18.7	1.24 V	239	43.6	11.7
6	12050.00	42.1 AV	54.0	-11.9	1.24 V	239	30.4	11.7
7	18075.00	56.9 PK	74.0	-17.1	2.38 V	254	81.0	-24.1
8	18075.00	45.8 AV	54.0	-8.2	2.38 V	254	69.9	-24.1
9	#24100.00	47.8 PK	88.2	-40.4	2.13 V	245	69.1	-21.3
10	#24100.00	38.1 AV	68.2	-30.1	2.13 V	245	59.4	-21.3

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.
5. " # ": The radiated frequency is out of the restricted band.

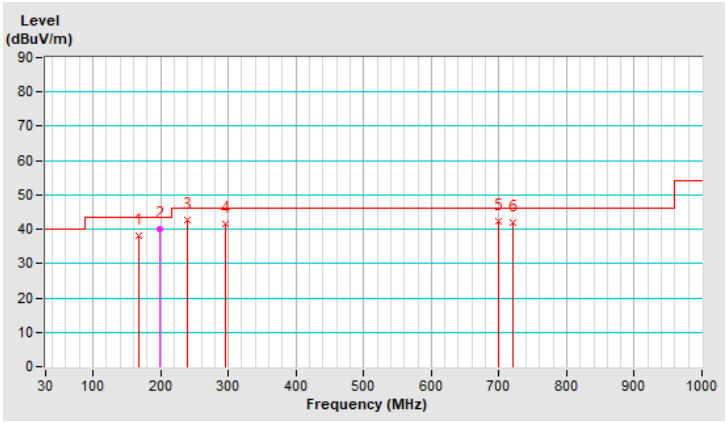
Below 1GHz Data:

Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	167.52	38.1 QP	43.5	-5.4	1.50 H	197	50.4	-12.3
2	198.44	40.1 QP	43.5	-3.4	2.00 H	92	55.1	-15.0
3	240.04	42.6 QP	46.0	-3.4	1.00 H	308	55.7	-13.1
4	295.89	41.5 QP	46.0	-4.5	2.00 H	303	52.4	-10.9
5	699.53	42.3 QP	46.0	-3.7	1.50 H	264	42.7	-0.4
6	720.68	41.9 QP	46.0	-4.1	1.50 H	207	42.1	-0.2

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.

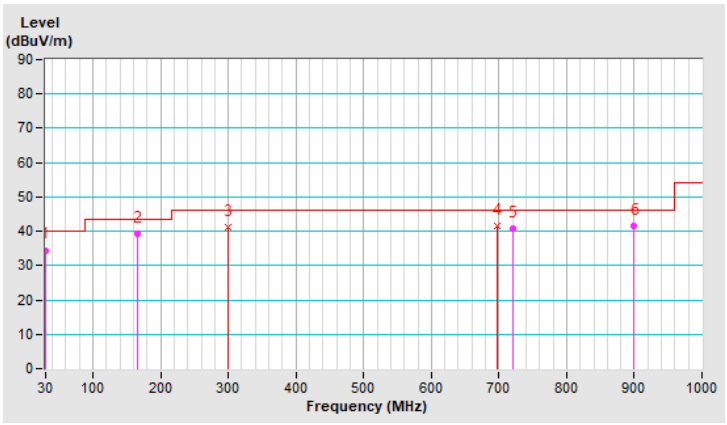


Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	30.19	34.5 QP	40.0	-5.5	1.00 V	312	48.0	-13.5
2	165.69	39.2 QP	43.5	-4.3	1.50 V	357	51.5	-12.3
3	299.03	41.2 QP	46.0	-4.8	1.00 V	278	51.9	-10.7
4	697.61	41.4 QP	46.0	-4.6	1.50 V	196	41.9	-0.5
5	721.02	40.7 QP	46.0	-5.3	1.00 V	293	40.9	-0.2
6	900.09	41.6 QP	46.0	-4.4	1.50 V	267	38.1	3.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The 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	Oct. 20, 2020	Oct. 19, 2021
LISN R&S	ESH3-Z5	848773/004	Oct. 27, 2020	Oct. 26, 2021
LISN R & S	ESH3-Z5	835239/001	Mar. 26, 2021	Mar. 25, 2022
50 ohms Terminator	50	3	Oct. 26, 2020	Oct. 25, 2021
RF Coaxial Cable JYEBO	5D-FB	COCCAB-001	Sep. 26, 2020	Sep. 25, 2021
Fixed attenuator STI	STI02-2200-10	005	Aug. 29, 2020	Aug. 28, 2021
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note: 1. The test was performed in Conduction 1.
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: June 25, 2021

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.

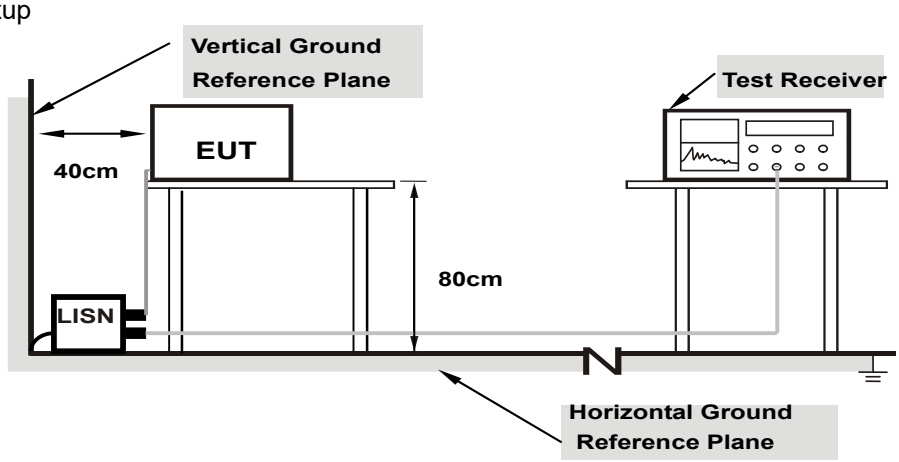
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

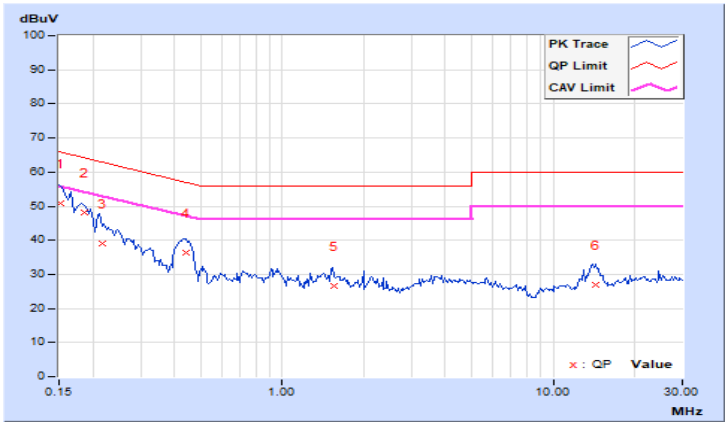
WLAN (5GHz) + Bluetooth

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

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	0.15249	9.95	40.83	20.14	50.78	30.09	65.86	55.86	-15.08	-25.77
2	0.18708	9.96	38.30	28.71	48.26	38.67	64.17	54.17	-15.91	-15.50
3	0.21547	9.97	28.95	16.43	38.92	26.40	62.99	52.99	-24.07	-26.59
4	0.44126	9.99	26.46	11.40	36.45	21.39	57.04	47.04	-20.59	-25.65
5	1.54741	10.05	16.47	11.11	26.52	21.16	56.00	46.00	-29.48	-24.84
6	14.29970	10.79	16.25	8.50	27.04	19.29	60.00	50.00	-32.96	-30.71

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

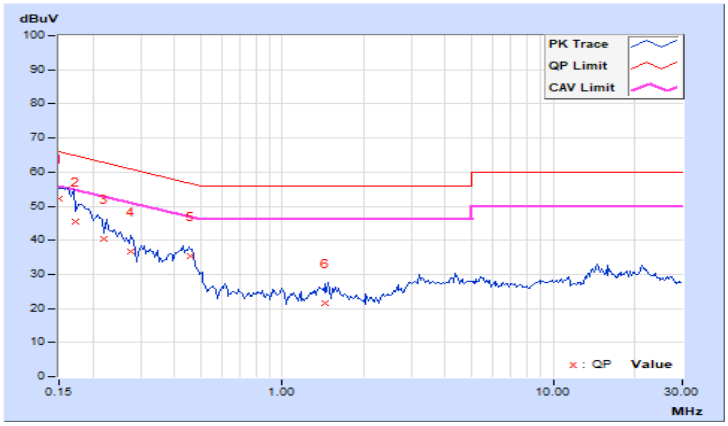


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

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	**0.15017**	**9.92**	**42.34**	**23.28**	**52.26**	**33.20**	**65.99**	**55.99**	**-13.73**	**-22.79**
2	0.17213	9.93	35.62	13.61	45.55	23.54	64.86	54.86	-19.31	-31.32
3	0.22034	9.95	30.45	16.68	40.40	26.63	62.81	52.81	-22.41	-26.18
4	0.27503	9.95	26.66	19.81	36.61	29.76	60.96	50.96	-24.35	-21.20
5	0.45947	9.96	25.52	18.43	35.48	28.39	56.70	46.70	-21.22	-18.31
6	1.44147	10.02	11.40	4.61	21.42	14.63	56.00	46.00	-34.58	-31.37

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



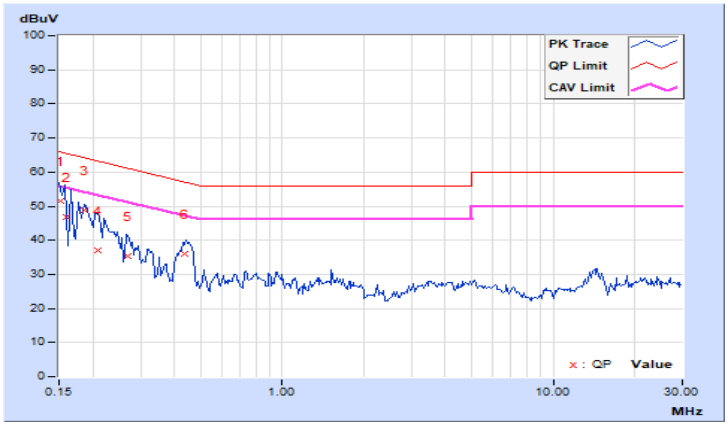
WLAN (6GHz) + Bluetooth

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

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	0.15214	9.95	41.63	20.25	51.58	30.20	65.88	55.88	-14.30	-25.68
2	0.15937	9.95	37.01	16.56	46.96	26.51	65.50	55.50	-18.54	-28.99
3	0.18708	9.96	38.75	29.31	48.71	39.27	64.17	54.17	-15.46	-14.90
4	0.20979	9.97	27.13	15.33	37.10	25.30	63.21	53.21	-26.11	-27.91
5	0.26796	9.98	25.46	12.68	35.44	22.66	61.18	51.18	-25.74	-28.52
6	0.43671	9.99	25.89	9.76	35.88	19.75	57.12	47.12	-21.24	-27.37

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

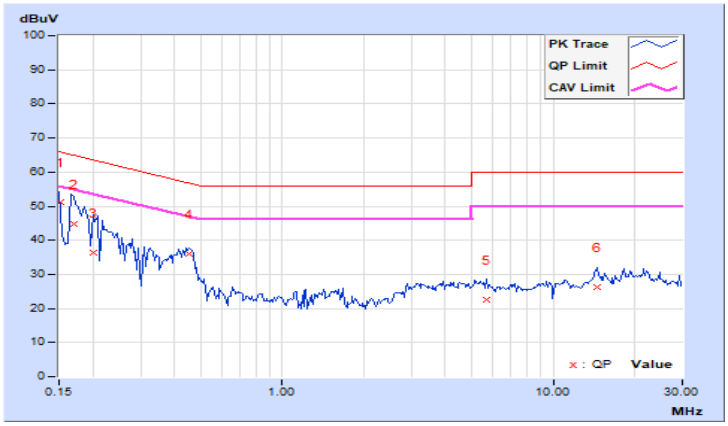


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

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	0.15153	9.92	41.16	25.00	51.08	34.92	65.92	55.92	-14.84	-21.00
2	0.17043	9.93	34.91	15.90	44.84	25.83	64.94	54.94	-20.10	-29.11
3	0.20217	9.95	26.54	14.96	36.49	24.91	63.52	53.52	-27.03	-28.61
4	0.45172	9.96	25.91	19.18	35.87	29.14	56.84	46.84	-20.97	-17.70
5	5.68788	10.20	12.20	6.66	22.40	16.86	60.00	50.00	-37.60	-33.14
6	14.52271	10.61	15.74	8.18	26.35	18.79	60.00	50.00	-33.65	-31.21

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

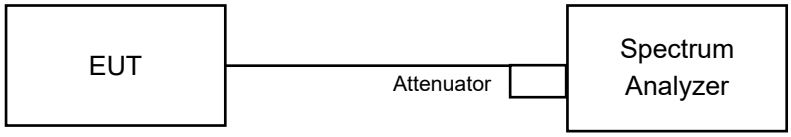


4.3 Conducted Out of Band Emission Measurement

4.3.1 Limits of Conducted Out of Band Emission Measurement

Below 20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

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 Procedures

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.

4.3.5 Deviation from Test Standard

No deviation.

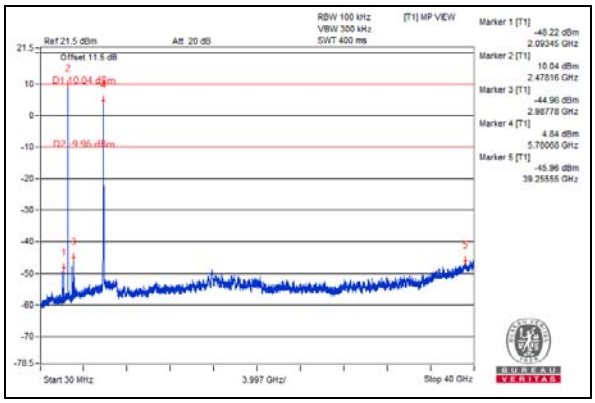
4.3.6 EUT Operating Conditions

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

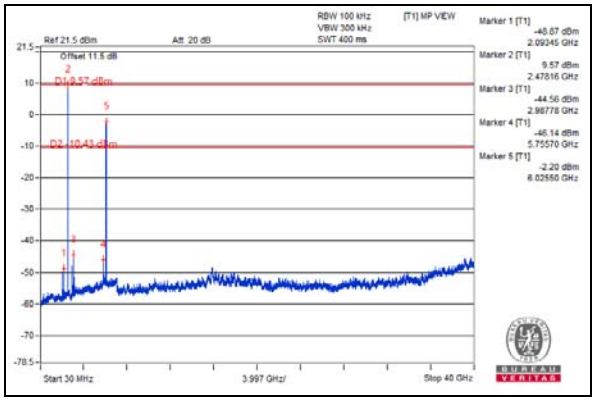
4.3.7 Test Results

The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20 offset below D1. It shows compliance with the requirement.

5GHz_802.11a CH157 + BT-EDR (GFSK) CH78



6GHz_802.11ax (HE160) CH15 + BT-EDR (GFSK) CH78



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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