



FCC RADIO TEST REPORT

FCC ID : 2A8B7TURBOXC865C
Equipment : Smart Module
Brand Name : TurboX
Model Name : C865C
Applicant : Multinarity Ltd.
112 Yigal Alon 3rd Floor, TEL AVIV, 6789150, Israel
Standard : FCC Part 15 Subpart C §15.247

The product was received on Sep. 14, 2022 and testing was performed from Sep. 26, 2022 to Nov. 04, 2022. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this partial report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory

No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)



Table of Contents

History of this test report.....	3
Summary of Test Result.....	4
1 General Description.....	5
1.1 Product Feature of Equipment Under Test.....	5
1.2 Modification of EUT	5
1.3 Testing Location	6
1.4 Applicable Standards.....	6
2 Test Configuration of Equipment Under Test	7
2.1 Carrier Frequency Channel	7
2.2 Test Mode.....	8
2.3 Connection Diagram of Test System.....	9
2.4 Support Unit used in test configuration and system	9
2.5 EUT Operation Test Setup	9
3 Test Result.....	10
3.1 Output Power Measurement.....	10
3.2 Radiated Band Edges and Spurious Emission Measurement	11
3.3 AC Conducted Emission Measurement.....	15
3.4 Antenna Requirements.....	17
4 List of Measuring Equipment	18
5 Uncertainty of Evaluation.....	20
Appendix A. Conducted Test Results	
Appendix B. AC Conducted Emission Test Result	
Appendix C. Radiated Spurious Emission	
Appendix D. Radiated Spurious Emission Plots	
Appendix E. Duty Cycle Plots	
Appendix F. Setup Photographs	



History of this test report

Report No.	Version	Description	Issue Date
FR290812A	01	Initial issue of report	Dec. 22, 2022
FR290812A	02	Revise appendix A	Jan. 13, 2023

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
-	15.247(a)(1)	Number of Channels	-	See Note
-	15.247(a)(1)	Hopping Channel Separation	-	See Note
-	15.247(a)(1)	Dwell Time of Each Channel	-	See Note
-	15.247(a)(1)	20dB Bandwidth	-	See Note
-	2.1049	99% Occupied Bandwidth	-	See Note
3.1	15.247(b)(1) 15.247(b)(4)	Peak Output Power	Pass	-
-	15.247(d)	Conducted Band Edges	-	See Note
-	15.247(d)	Conducted Spurious Emission	-	See Note
3.2	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	Pass	6.13 dB under the limit at 36.790 MHz
3.3	15.207	AC Conducted Emission	Pass	6.20 dB under the limit at 0.150 MHz
3.4	15.203	Antenna Requirement	Pass	-

Note: The module (Model: C865C) makes no difference after verifying output power, this report reuses test data from the module report.

Declaration of Conformity:

- The test results (PASS/FAIL) with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
- The measurement uncertainty please refer to report "Uncertainty of Evaluation".

Comments and Explanations:

The product specifications of the EUT presented in the report are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Sheng Kuo

Report Producer: Cindy Liu



1 General Description

1.1 Product Feature of Equipment Under Test

Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n/ax and Wi-Fi 5GHz 802.11a/n/ac/ax.

Product Feature	
Installed into Notebook Computer	Brand Name: spacetop Model Name: SPEA001
Antenna Type	WLAN <Ant. 0>: PIFA Antenna <Ant. 1>: PIFA Antenna Bluetooth: PIFA Antenna

Antenna information		
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	1.6

Remark: The EUT's information above is declared by manufacturer. Please refer to Comments and Explanations in report summary.

1.2 Modification of EUT

No modifications made to the EUT during the testing.

1.3 Testing Location

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	Sporton Site No.
	TH05-HY, CO07-HY, 03CH20-HY

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC designation No.: TW3786

1.4 Applicable Standards

According to the specifications declared by the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 15.247 Meas Guidance v05r02
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01
- ♦ ANSI C63.10-2013

Remark:

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. The TAF code is not including all the FCC KDB listed without accreditation.



2 Test Configuration of Equipment Under Test

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	0	2402	27	2429	54	2456
	1	2403	28	2430	55	2457
	2	2404	29	2431	56	2458
	3	2405	30	2432	57	2459
	4	2406	31	2433	58	2460
	5	2407	32	2434	59	2461
	6	2408	33	2435	60	2462
	7	2409	34	2436	61	2463
	8	2410	35	2437	62	2464
	9	2411	36	2438	63	2465
	10	2412	37	2439	64	2466
	11	2413	38	2440	65	2467
	12	2414	39	2441	66	2468
	13	2415	40	2442	67	2469
	14	2416	41	2443	68	2470
	15	2417	42	2444	69	2471
	16	2418	43	2445	70	2472
	17	2419	44	2446	71	2473
	18	2420	45	2447	72	2474
	19	2421	46	2448	73	2475
	20	2422	47	2449	74	2476
	21	2423	48	2450	75	2477
	22	2424	49	2451	76	2478
	23	2425	50	2452	77	2479
	24	2426	51	2453	78	2480
	25	2427	52	2454	-	-
	26	2428	53	2455	-	-

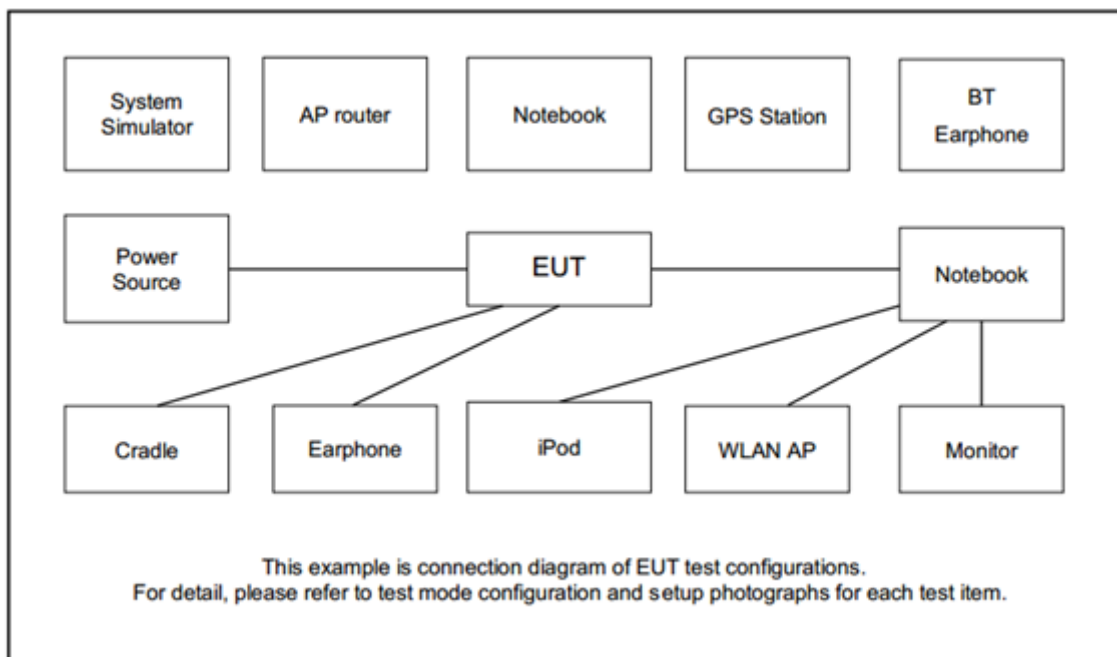
2.2 Test Mode

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and only the worst plane, and the worst mode of radiated spurious emissions is Bluetooth 1Mbps mode, and recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

The following summary table is showing all test modes to demonstrate in compliance with the standard.

Summary table of Test Cases			
Test Item	Data Rate / Modulation		
Conducted Test Cases	Bluetooth BR 1Mbps GFSK	Bluetooth EDR 2Mbps $\pi/4$ -DQPSK	Bluetooth EDR 3Mbps 8-DPSK
	Mode 1: CH00_2402 MHz	Mode 4: CH00_2402 MHz	Mode 7: CH00_2402 MHz
	Mode 2: CH39_2441 MHz	Mode 5: CH39_2441 MHz	Mode 8: CH39_2441 MHz
	Mode 3: CH78_2480 MHz	Mode 6: CH78_2480 MHz	Mode 9: CH78_2480 MHz
Radiated Test Cases	Bluetooth BR 1Mbps GFSK		
	Mode 1: CH00_2402 MHz		
	Mode 2: CH39_2441 MHz		
	Mode 3: CH78_2480 MHz		
AC Conducted Emission	Mode 1 :WLAN (2.4GHz) Link + Bluetooth Link + Earphone + USB HD + AR glasses		
Remark: For Radiated Test Cases, the worst mode data rate 1Mbps was reported only since the highest RF output power in the preliminary tests. The conducted spurious emissions and conducted band edge measurement for other data rates were not worse than 1Mbps, and no other significantly frequencies found in conducted spurious emission.			

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Earphone	Kinyo	BTE-3622	N/A	N/A	N/A
2.	WLAN AP	ASUS	RT-AC52	N/A	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Latitude5310	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Notebook	DELL	P79G	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A
6.	Earphone + Mic	Samsung	Ecouteur	N/A	Unshielded, 1.8 m	N/A
7.	USB HD	ADATA	HV620S-1T	N/A	nonshielded 1.2m	N/A

2.5 EUT Operation Test Setup

The RF test items, utility "QRCT 4.0.00158.0" was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

3 Test Result

3.1 Output Power Measurement

3.1.1 Limit of Output Power

The maximum peak conducted output power of the intentional radiator shall not exceed the following:
For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band 0.125 watts.

If directional gain of transmitting antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi.

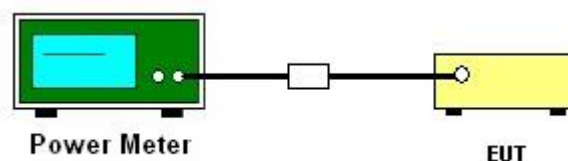
3.1.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.1.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 7.8.5.
2. The RF output of EUT is connected to the power meter by RF cable and attenuator. The path loss is compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit continuously.
4. Measure the conducted output power with cable loss and record the results in the test report.
5. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of Peak Output Power

Please refer to Appendix A.

3.1.6 Test Result of Average Output Power (Reporting Only)

Please refer to Appendix A.

3.2 Radiated Band Edges and Spurious Emission Measurement

3.2.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics / spurious must be at least 20 dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

Frequency (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

3.2.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

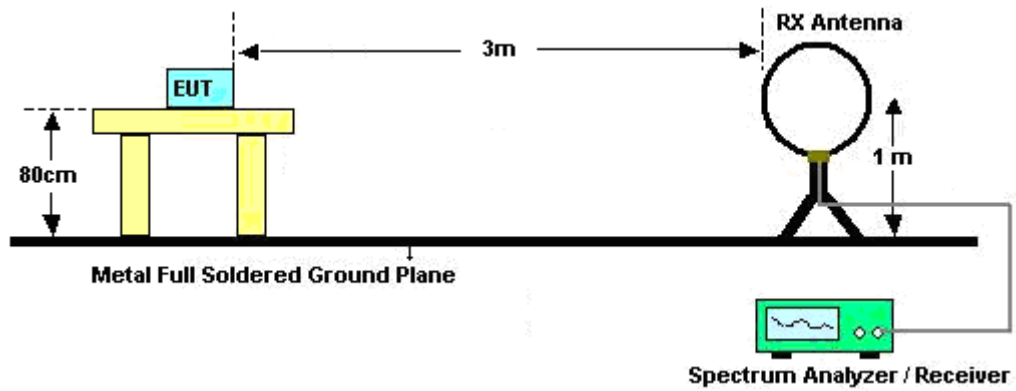
3.2.3 Test Procedures

1. The EUT is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
2. The EUT is set 3 meters away from the receiving antenna, which is mounted on the top of a variable height antenna tower.
3. For each suspected emission, the EUT is arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
4. Set the maximum power setting and enable the EUT to transmit continuously.
5. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW = 100 kHz for $f < 1$ GHz, RBW = 1 MHz for $f > 1$ GHz ; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
 - (3) For average measurement: use duty cycle correction factor method per 15.35(c).
Duty cycle = On time/100 milliseconds
On time = $N_1 * L_1 + N_2 * L_2 + \dots + N_{n-1} * L_{n-1} + N_n * L_n$
Where N_1 is number of type 1 pulses, L_1 is length of type 1 pulses, etc.
Average Emission Level = Peak Emission Level + $20 * \log$ (Duty cycle)
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
7. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as “-”.
8. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as “-”.

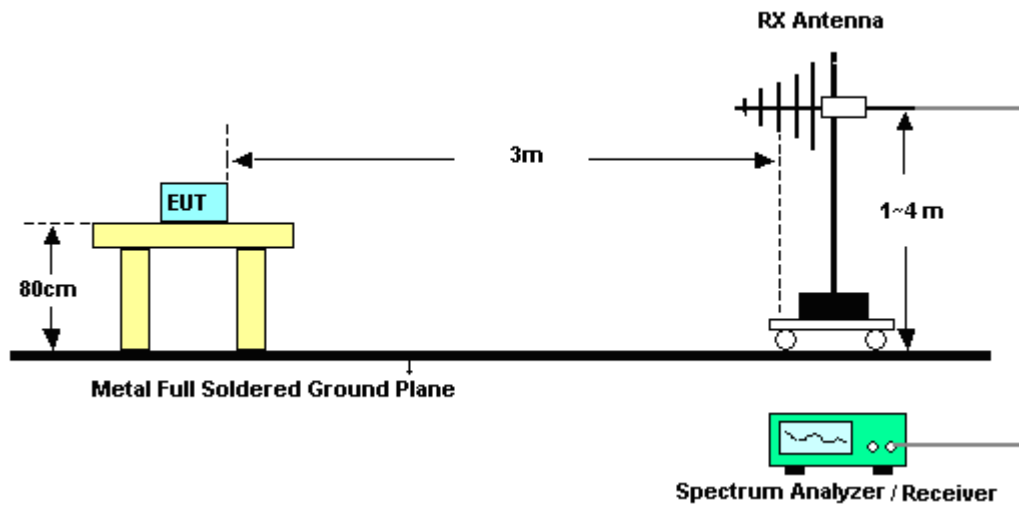
Note: The average levels are calculated from the peak level corrected with duty cycle correction factor (-24.79dB) derived from $20 \log$ (dwell time/100ms). This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals that are independent of the hopping signal would not use this correction.

3.2.4 Test Setup

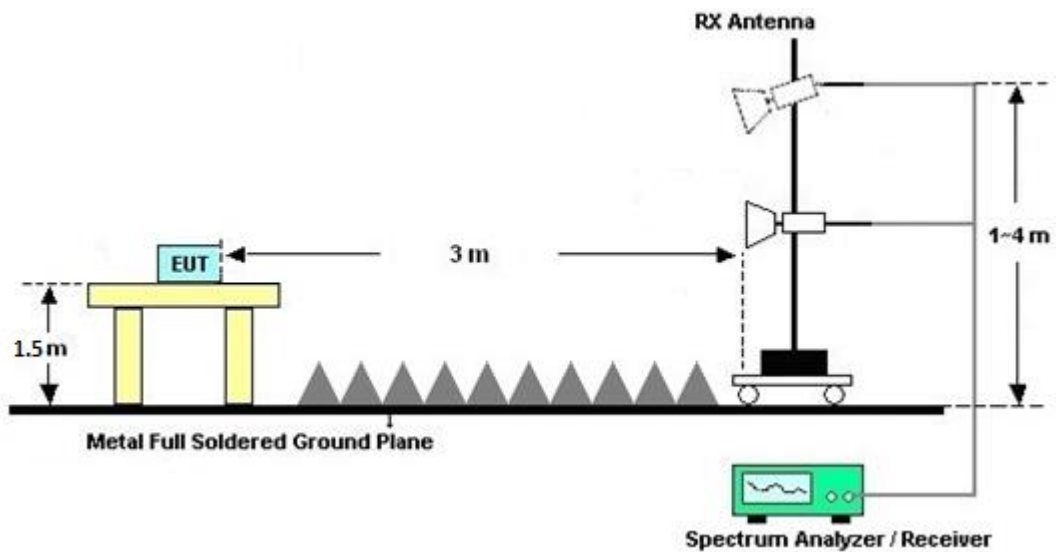
For radiated test below 30MHz



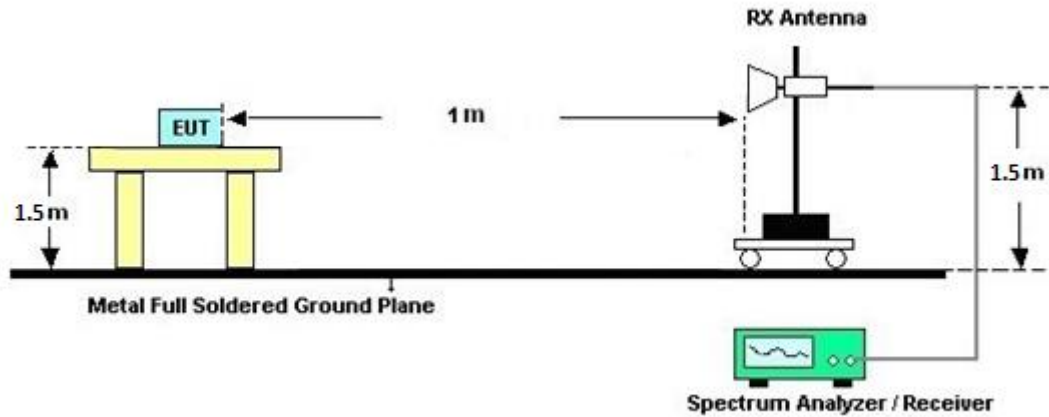
For radiated test from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



3.2.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which starts from 9 kHz to 30 MHz, is pre-scanned and the result which is 20 dB lower than the limit line is not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result comes out very similar.

3.2.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C and D.

3.2.7 Duty Cycle

Please refer to Appendix E.

3.2.8 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix C and D.

3.3 AC Conducted Emission Measurement

3.3.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

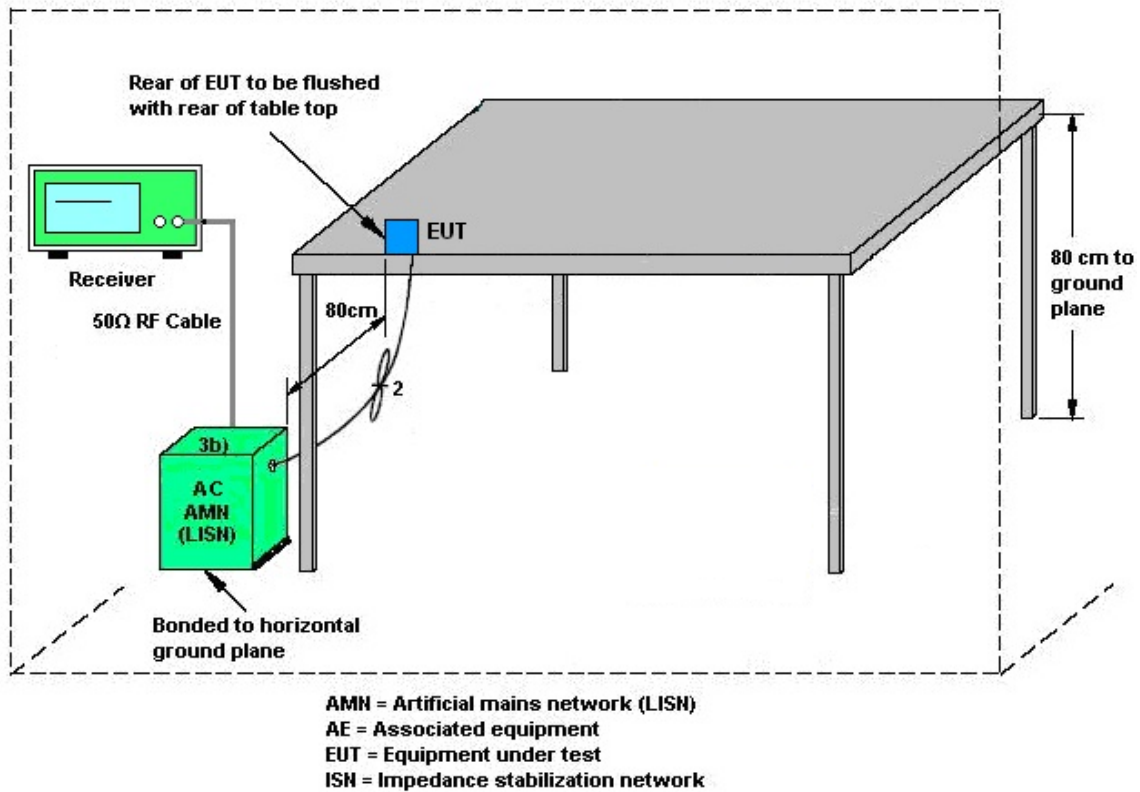
3.3.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.3.3 Test Procedures

1. The EUT is placed 0.4 meter away from the conducting wall of the shielding room, and is kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN shall be used.
6. Both Line and Neutral shall be tested in order to find out the maximum conducted emission.
7. The frequency range from 150 kHz to 30 MHz is scanned.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9 kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

3.3.4 Test Setup



3.3.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



3.4 Antenna Requirements

3.4.1 Standard Applicable

The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

3.4.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	Keysight	N9038A	MY59053012	10Hz~44GHz	Nov. 18, 2021	Oct. 09, 2022~ Nov. 04, 2022	Nov. 17, 2022	Radiation (03CH20-HY)
Preamplifier	COM-POWER	PAM-103	18020201	1MHz-1000MHz	Jan. 03, 2022	Oct. 09, 2022~ Nov. 04, 2022	Jan. 02, 2023	Radiation (03CH20-HY)
Amplifier	EMCI	EMC118A45SE	980792	N/A	Nov. 15, 2021	Oct. 09, 2022~ Nov. 04, 2022	Nov. 14, 2022	Radiation (03CH20-HY)
Preamplifier	EMEC	EM18G40G	060801	18GHz~40GHz	Jun. 28, 2022	Oct. 09, 2022~ Nov. 04, 2022	Jun. 27, 2023	Radiation (03CH20-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jan. 07, 2022	Oct. 09, 2022~ Nov. 04, 2022	Jan. 06, 2023	Radiation (03CH20-HY)
Bilog Antenna	TESEQ	CBL 6111D&00802 N1D01N-06	54682 & AT-N0603	30MHz~1GHz	Sep. 18, 2022	Oct. 09, 2022~ Nov. 04, 2022	Sep. 17, 2023	Radiation (03CH20-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	02360	1GHz~18GHz	Nov. 02, 2021	Oct. 09, 2022~ Oct. 31, 2022	Nov. 01, 2022	Radiation (03CH20-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-02038	1GHz~18GHz	Aug. 09, 2022	Nov. 01, 2022~ Nov. 04, 2022	Aug. 08, 2023	Radiation (03CH20-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00994	18GHz-40GHz	Nov. 04, 2021	Oct. 09, 2022~ Nov. 02, 2022	Nov. 03, 2022	Radiation (03CH20-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00993	18GHz-40GHz	Nov. 30, 2021	Nov. 02, 2022~ Nov. 04, 2022	Nov. 29, 2022	Radiation (03CH20-HY)
Hygrometer	TECEPIL	DTM-303B	TP200879	N/A	Mar. 22, 2022	Oct. 09, 2022~ Nov. 04, 2022	Mar. 21, 2023	Radiation (03CH20-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	519229/2,804 015/2,804027 /2	N/A	Jan. 19, 2022	Oct. 09, 2022~ Nov. 04, 2022	Jan. 18, 2023	Radiation (03CH20-HY)
Software	Audix	E3 6.2009-8-24	RK-002156	N/A	N/A	Oct. 09, 2022~ Nov. 04, 2022	N/A	Radiation (03CH20-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Oct. 09, 2022~ Nov. 04, 2022	N/A	Radiation (03CH20-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Oct. 09, 2022~ Nov. 04, 2022	N/A	Radiation (03CH20-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Oct. 09, 2022~ Nov. 04, 2022	N/A	Radiation (03CH20-HY)
AC Power Source	ACPOWER	AFC-11003G	F317040033	N/A	N/A	Sep. 26, 2022	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Sep. 26, 2022	N/A	Conduction (CO07-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	9561-F N00373	9kHz-200MHz	Oct. 29, 2021	Sep. 26, 2022	Oct. 28, 2022	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	Mar. 16, 2022	Sep. 26, 2022	Mar. 15, 2023	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 51	45051	N/A	Feb. 16, 2022	Sep. 26, 2022	Feb. 15, 2023	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102317	9kHz~3.6GHz	Oct. 21, 2021	Sep. 26, 2022	Oct. 20, 2022	Conduction (CO07-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 16, 2021	Oct. 25, 2022	Nov. 15, 2022	Conducted (TH05-HY)
Power Meter	Anritsu	ML2495A	1036004	N/A	Aug. 08, 2022	Oct. 25, 2022	Aug. 07, 2023	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz z	Aug. 08, 2022	Oct. 25, 2022	Aug. 07, 2023	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101905	10Hz - 40GHz	Aug. 03, 2022	Oct. 25, 2022	Aug. 02, 2023	Conducted (TH05-HY)



5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.30 dB
---	---------

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.50 dB
---	---------

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.20 dB
---	---------

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.70 dB
---	---------

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Mina Liu	Temperature:	21~25	°C
Test Date:	2022/10/25	Relative Humidity:	51~54	%

TEST RESULTS DATA**Peak Power Table**

DH	CH.	NTX	Peak Power (dBm)	Power Limit (dBm)	Test Result
DH1	0	1	7.06	20.97	Pass
	39	1	8.06	20.97	Pass
	78	1	6.10	20.97	Pass
2DH1	0	1	6.68	20.97	Pass
	39	1	7.51	20.97	Pass
	78	1	5.28	20.97	Pass
3DH1	0	1	6.88	20.97	Pass
	39	1	7.65	20.97	Pass
	78	1	5.43	20.97	Pass

TEST RESULTS DATA**Average Power Table**
(Reporting Only)

DH	CH.	NTX	Average Power (dBm)	Duty Factor (dB)
DH1	0	1	7.03	5.16
	39	1	7.74	5.16
	78	1	5.71	5.16
2DH1	0	1	4.72	5.12
	39	1	5.69	5.12
	78	1	3.78	5.12
3DH1	0	1	4.72	5.12
	39	1	5.65	5.12
	78	1	3.83	5.12



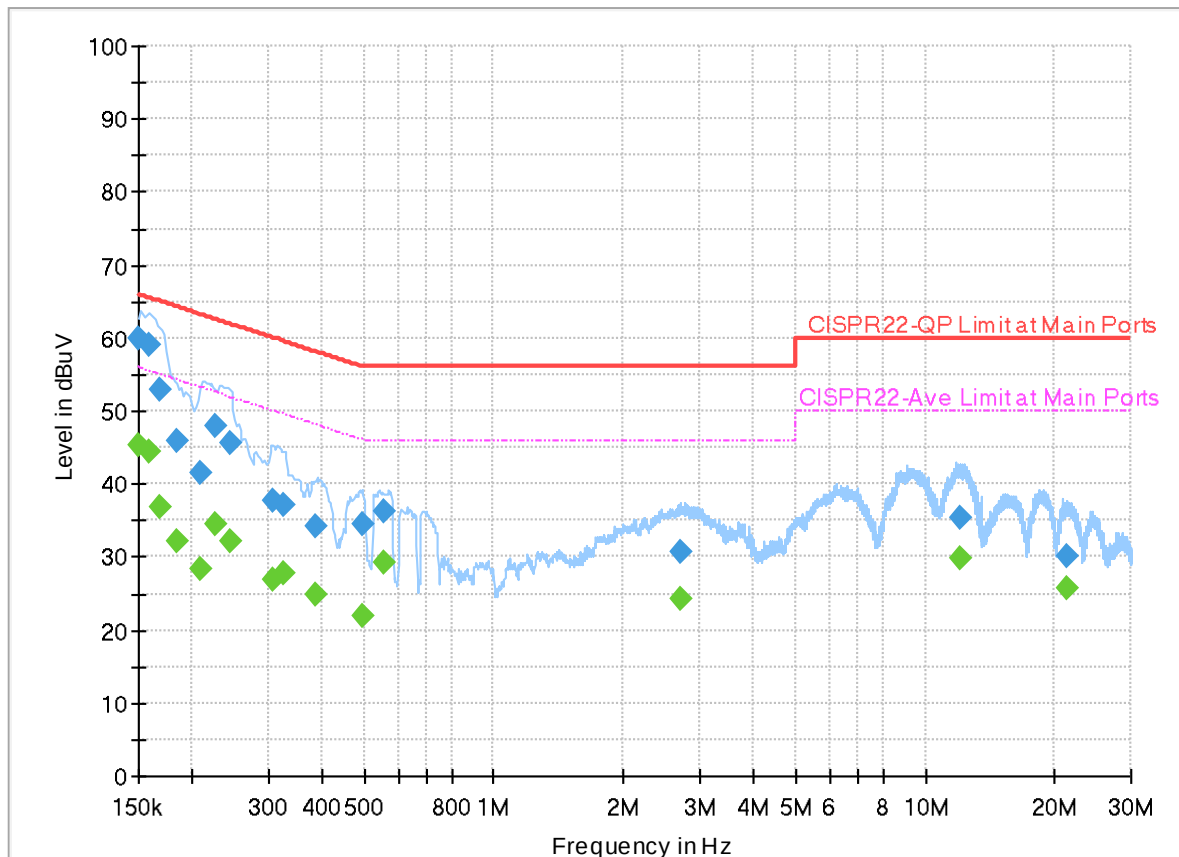
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Louis Chung	Temperature :	23.2~25.7℃
		Relative Humidity :	53.1~66.2%

EUT Information

Report NO : 290812
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Line

Full Spectrum



Final_Result

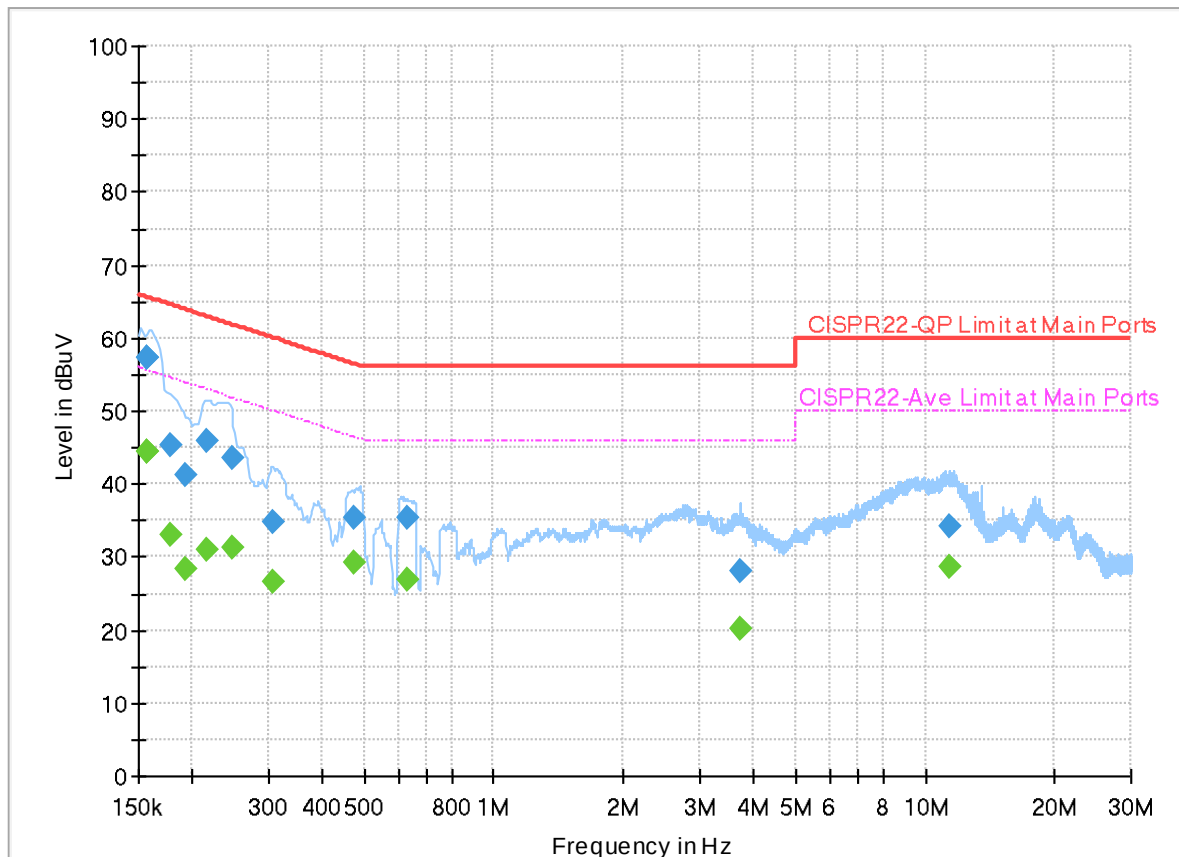
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	---	45.43	56.00	10.57	L1	OFF	20.0
0.150000	59.80	---	66.00	6.20	L1	OFF	20.0
0.159090	---	44.38	55.51	11.13	L1	OFF	20.0
0.159090	59.14	---	65.51	6.37	L1	OFF	20.0
0.168540	---	36.95	55.03	18.08	L1	OFF	20.0
0.168540	52.99	---	65.03	12.04	L1	OFF	20.0
0.183750	---	32.27	54.31	22.04	L1	OFF	20.0
0.183750	45.81	---	64.31	18.50	L1	OFF	20.0
0.208680	---	28.34	53.26	24.92	L1	OFF	20.0
0.208680	41.52	---	63.26	21.74	L1	OFF	20.0
0.227040	---	34.42	52.56	18.14	L1	OFF	20.0
0.227040	47.95	---	62.56	14.61	L1	OFF	20.0
0.244860	---	32.18	51.93	19.75	L1	OFF	20.0
0.244860	45.69	---	61.93	16.24	L1	OFF	20.0
0.308400	---	26.93	50.01	23.08	L1	OFF	20.0
0.308400	37.60	---	60.01	22.41	L1	OFF	20.0
0.324870	---	27.89	49.58	21.69	L1	OFF	20.0
0.324870	37.06	---	59.58	22.52	L1	OFF	20.0
0.387420	---	24.92	48.12	23.20	L1	OFF	20.0

0.387420	34.25	---	58.12	23.87	L1	OFF	20.0
0.494250	---	21.87	46.10	24.23	L1	OFF	20.0
0.494250	34.47	---	56.10	21.63	L1	OFF	20.0
0.555000	---	29.21	46.00	16.79	L1	OFF	20.0
0.555000	36.23	---	56.00	19.77	L1	OFF	20.0
2.703840	---	24.33	46.00	21.67	L1	OFF	20.0
2.703840	30.62	---	56.00	25.38	L1	OFF	20.0
12.107580	---	29.93	50.00	20.07	L1	OFF	20.2
12.107580	35.25	---	60.00	24.75	L1	OFF	20.2
21.302250	---	25.68	50.00	24.32	L1	OFF	20.2
21.302250	30.21	---	60.00	29.79	L1	OFF	20.2

EUT Information

Report NO : 290812
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.156750	---	44.38	55.63	11.25	N	OFF	20.0
0.156750	57.45	---	65.63	8.18	N	OFF	20.0
0.157290	---	44.30	55.61	11.31	N	OFF	20.0
0.157290	57.37	---	65.61	8.24	N	OFF	20.0
0.177180	---	32.95	54.62	21.67	N	OFF	20.0
0.177180	45.29	---	64.62	19.33	N	OFF	20.0
0.192570	---	28.43	53.93	25.50	N	OFF	20.0
0.192570	41.29	---	63.93	22.64	N	OFF	20.0
0.216330	---	30.91	52.96	22.05	N	OFF	20.0
0.216330	45.82	---	62.96	17.14	N	OFF	20.0
0.246750	---	31.24	51.87	20.63	N	OFF	20.0
0.246750	43.59	---	61.87	18.28	N	OFF	20.0
0.306780	---	26.60	50.06	23.46	N	OFF	20.0
0.306780	34.89	---	60.06	25.17	N	OFF	20.0
0.476250	---	29.16	46.40	17.24	N	OFF	20.0
0.476250	35.37	---	56.40	21.03	N	OFF	20.0
0.629880	---	26.95	46.00	19.05	N	OFF	20.0
0.629880	35.33	---	56.00	20.67	N	OFF	20.0
3.734340	---	20.23	46.00	25.77	N	OFF	20.1

3.734340	28.00	---	56.00	28.00	N	OFF	20.1
11.332500	---	28.71	50.00	21.29	N	OFF	20.2
11.332500	34.28	---	60.00	25.72	N	OFF	20.2



Appendix C. Radiated Spurious Emission

Test Engineer :	Leo Li, JC Liang and John Chuang	Temperature :	19~22°C
		Relative Humidity :	65~70%

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BT CH00 2402MHz		2389.485	46.92	-27.08	74	47.28	27.26	8.65	36.27	144	351	P	H
		2389.485	22.13	-31.87	54	-	-	-	-	-	-	A	H
	*	2402	102.96	-	-	103.26	27.31	8.67	36.28	144	351	P	H
	*	2402	78.17	-	-	-	-	-	-	-	-	A	H
													H
													H
		2390	48.44	-25.56	74	48.8	27.26	8.65	36.27	140	354	P	V
		2390	23.65	-30.35	54	-	-	-	-	-	-	A	V
	*	2402	104.46	-	-	104.76	27.31	8.67	36.28	140	354	P	V
	*	2402	79.67	-	-	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		2389.8	41.65	-32.35	74	42.01	27.26	8.65	36.27	131	351	P	H
		2389.8	16.86	-37.14	54	-	-	-	-	-	-	A	H
	*	2441	103.83	-	-	103.91	27.46	8.75	36.29	131	351	P	H
	*	2441	79.04	-	-	-	-	-	-	-	-	A	H
		2488.8	43.65	-30.35	74	43.47	27.66	8.84	36.32	131	351	P	H
		2488.8	18.86	-35.14	54	-	-	-	-	-	-	A	H
		2389.66	43.38	-30.62	74	43.74	27.26	8.65	36.27	100	356	P	V
		2389.66	18.59	-35.41	54	-	-	-	-	-	-	A	V
	*	2441	104.88	-	-	104.96	27.46	8.75	36.29	100	356	P	V
	*	2441	80.09	-	-	-	-	-	-	-	-	A	V
		2488.94	45.54	-28.46	74	45.36	27.66	8.84	36.32	100	356	P	V
		2488.94	20.75	-33.25	54	-	-	-	-	-	-	A	V



BT CH 78 2480MHz	*	2480	101.32	-	-	101.19	27.62	8.82	36.31	123	0	P	H
	*	2480	76.53	-	-	-	-	-	-	-	-	A	H
		2483.84	45.68	-28.32	74	45.52	27.64	8.83	36.31	123	0	P	H
		2483.84	20.89	-33.11	54	-	-	-	-	-	-	A	H
													H
													H
	*	2480	103.4	-	-	103.27	27.62	8.82	36.31	100	353	P	V
	*	2480	78.61	-	-	-	-	-	-	-	-	A	V
		2483.72	47.34	-26.66	74	47.19	27.63	8.83	36.31	100	353	P	V
		2483.72	22.55	-31.45	54	-	-	-	-	-	-	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												



2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

BT	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
BT CH 00 2402MHz		4804	43.66	-30.34	74	35.75	32.4	13.05	37.54	-	-	P	H
		4804	18.87	-35.13	54	-	-	-	-	-	-	A	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4804	42.58	-31.42	74	34.67	32.4	13.05	37.54	-	-	P	V
		4804	17.79	-36.21	54	-	-	-	-	-	-	A	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V



BT	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
BT CH 39 2441MHz		4882	43.52	-30.48	74	35.55	32.53	13.04	37.6	-	-	P	H
		4882	18.73	-35.27	54	-	-	-	-	-	-	A	H
		7323	48.31	-25.69	74	34.06	36.9	15.88	38.53	-	-	P	H
		7323	23.52	-30.48	54	-	-	-	-	-	-	A	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4882	43.25	-30.75	74	35.28	32.53	13.04	37.6	-	-	P	V
		4882	18.46	-35.54	54	-	-	-	-	-	-	A	V
		7323	47.44	-26.56	74	33.19	36.9	15.88	38.53	-	-	P	V
		7323	22.65	-31.35	54	-	-	-	-	-	-	A	V
													V
													V
													V
													V
													V
													V
													V
													V
													V

BT	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
BT CH 78 2480MHz		4960	44.32	-29.68	74	36.01	32.94	13.03	37.66	-	-	P	H
		4960	19.53	-34.47	54	-	-	-	-	-	-	A	H
		7440	47.51	-26.49	74	33.71	36.52	15.91	38.63	-	-	P	H
		7440	22.72	-31.28	54	-	-	-	-	-	-	A	H
													H
													H
													H
													H
													H
													H
													H
													H
		4960	44.63	-29.37	74	36.32	32.94	13.03	37.66	-	-	P	V
		4960	19.84	-34.16	54	-	-	-	-	-	-	A	V
		7440	46.49	-27.51	74	32.69	36.52	15.91	38.63	-	-	P	V
		7440	21.7	-32.3	54	-	-	-	-	-	-	A	V
													V
													V
													V
													V
													V
													V
												V	
												V	
												V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												

Emission above 18GHz

2.4GHz BT (SHF)

BT	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz BT SHF		24825	41.68	-32.32	74	35.65	39.67	19.56	53.2	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		24055	41.6	-32.4	74	36.89	39.19	18.72	53.2	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	
												V	

Emission below 1GHz

2.4GHz BT (LF)

[illegible]



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is Margin line.
P/A	Peak or Average
H/V	Horizontal or Vertical



A calculation example for radiated spurious emission is shown as below:

BT	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BT CH 00 2402MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) =
Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
3. Margin(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)
= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)
= 55.45 (dBμV/m)
2. Margin(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= -18.55(dB)

Peak measured complies with the limit line, so test result is “PASS”.

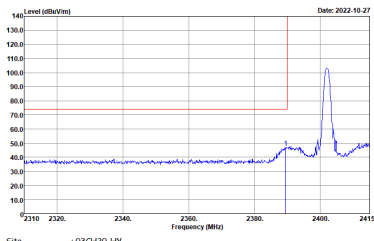
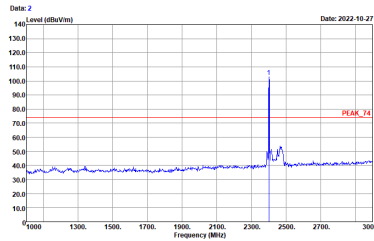


Appendix D. Radiated Spurious Emission Plots

Test Engineer :	Leo Li, JC Liang and John Chuang	Temperature :	19~22°C
		Relative Humidity :	65~70%

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BT CH00 2402MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BT CH00 2402MHz	
	Vertical	Fundamental
Peak	Data: 3 Date: 2022.10.27 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Data: 4 Date: 2022.10.27 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BT CH39 2441MHz	
	Horizontal	Fundamental
Peak	Data: 1 Level (dBm/100kHz) Date: 2022-10-27 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_211102 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Data: 2 Level (dBm/100kHz) Date: 2022-10-27 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02360_211102 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Peak	Data: 3 Level (dBm/100kHz) Date: 2022-10-27 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_211102 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Left blank



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BT CH39 2441MHz	
	Vertical	Fundamental
Peak	Data: 4 Level (dBm/100kHz) Date: 2022-10-27 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Data: 5 Level (dBm/100kHz) Date: 2022-10-27 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Peak	Data: 6 Level (dBm/100kHz) Date: 2022-10-27 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BT CH78 2480MHz	
	Horizontal	Fundamental
Peak	Graph 1: Horizontal spectrum plot showing a peak at 2480 MHz. The y-axis is Level (dBm/100kHz) from 10.0 to 140.0. The x-axis is Frequency (MHz) from 2460 to 2500. A red line indicates the peak level at approximately 100.0 dBm/100kHz. The peak is labeled PEAK_BE_74. Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Graph 2: Fundamental spectrum plot showing a peak at 2480 MHz. The y-axis is Level (dBm/100kHz) from 10.0 to 140.0. The x-axis is Frequency (MHz) from 2460 to 2500. A red line indicates the peak level at approximately 100.0 dBm/100kHz. The peak is labeled PEAK_74. Site : 03CH20-HY Condition : PEAK_74 3m 91200_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

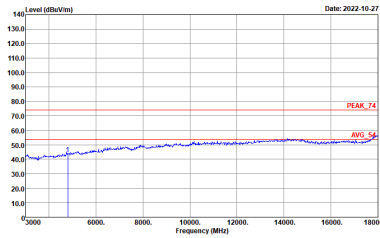
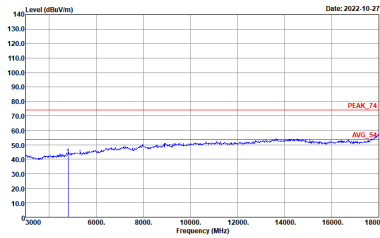


BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BT CH78 2480MHz	
	Vertical	Fundamental
Peak	Data: 4 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Data: 3 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BT CH00 2402MHz	
	Horizontal	Vertical
Peak Avg.	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02360_211102 HORIZONTAL	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02360_211102 VERTICAL

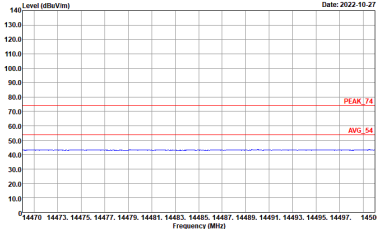
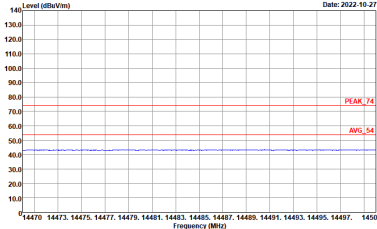
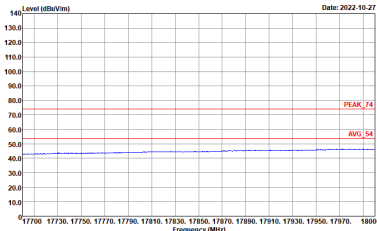
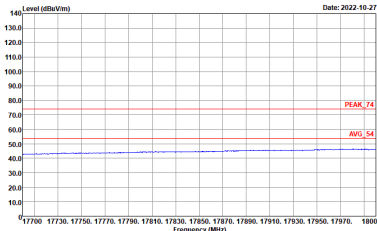


BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BT CH00 2402MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.	Site : 03CH20-HV Condition : PEAK_74 3m 9120D_02360_211102 HORIZONTAL	Site : 03CH20-HV Condition : PEAK_74 3m 9120D_02360_211102 VERTICAL
17.7G ~18G Avg	Site : 03CH20-HV Condition : PEAK_74 3m 9120D_02360_211102 HORIZONTAL	Site : 03CH20-HV Condition : PEAK_74 3m 9120D_02360_211102 VERTICAL



BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BT CH39 2441MHz	
	Horizontal	Vertical
Peak Avg.	Level (dBuV/m) Date: 2022-10-27 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_211102 HORIZONTAL	Level (dBuV/m) Date: 2022-10-27 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_211102 VERTICAL



BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BT CH39 2441MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.	 Site : 03CH20-HV Condition : PEAK_74 3m 9120D_02360_211102 HORIZONTAL	 Site : 03CH20-HV Condition : PEAK_74 3m 9120D_02360_211102 VERTICAL
17.7G ~18G Avg	 Site : 03CH20-HV Condition : PEAK_74 3m 9120D_02360_211102 HORIZONTAL	 Site : 03CH20-HV Condition : PEAK_74 3m 9120D_02360_211102 VERTICAL



BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BT CH78 2480MHz	
	Horizontal	Vertical
Peak Avg.	Level (dBuV/m) Date: 2022-10-27 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_211102 HORIZONTAL	Level (dBuV/m) Date: 2022-10-27 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_211102 VERTICAL



BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BT CH78 2480MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.	Site : 03CH20-HV Condition : PEAK_74 3m 9120D_02360_211102 HORIZONTAL	Site : 03CH20-HV Condition : PEAK_74 3m 9120D_02360_211102 VERTICAL
17.7G ~18G Avg	Site : 03CH20-HV Condition : PEAK_74 3m 9120D_02360_211102 HORIZONTAL	Site : 03CH20-HV Condition : PEAK_74 3m 9120D_02360_211102 VERTICAL



Emission above 18GHz

2.4GHz BT (SHF @ 1m)

BT	2.4GHz 2400~2483.5MHz	
	BT SHF	
	Horizontal	Vertical
Peak Avg.	Date: 1 Level (dBm/Vm) Date: 2022-10-27 Site : 03CH20-HY Condition : PEAK_74 1m SHF_00994_211104 HORIZONTAL	Date: 2022-10-27 Site : 03CH20-HY Condition : PEAK_74 1m SHF_00994_211104 VERTICAL

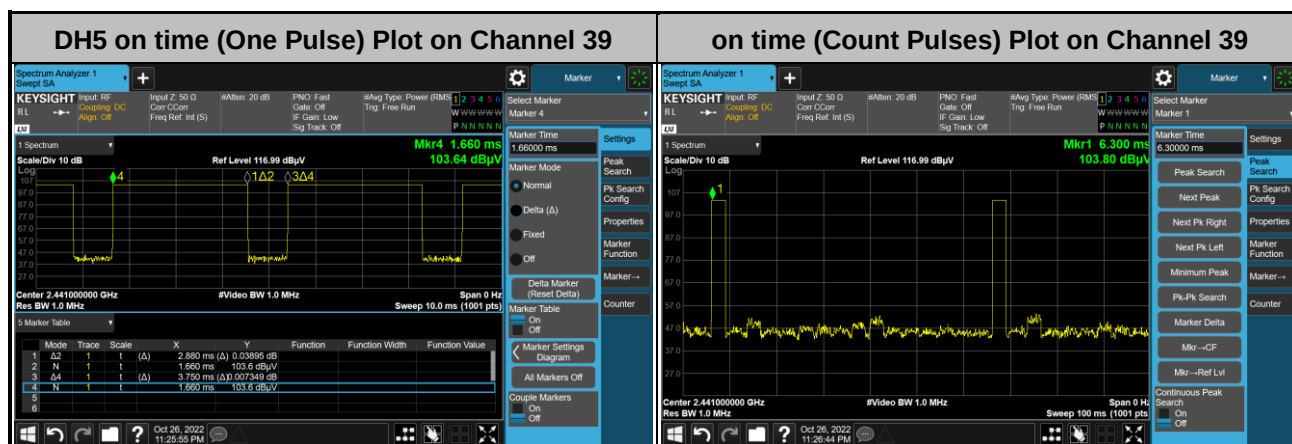


Emission below 1GHz

2.4GHz BT (LF)

BT	2.4GHz 2400~2483.5MHz	
	BT LF	
	Horizontal	Vertical
QP / Peak	Data: 1 Level (dBuV/m) Date: 2022-10-27 Site : 03CH20-HY Condition : QP 3m BIL06_41912_20220206 HORIZONTAL	Level (dBuV/m) Date: 2022-10-27 Site : 03CH20-HY Condition : QP 3m BIL06_41912_20220206 VERTICAL

Appendix E. Duty Cycle Plots



Note:

1. Worst case Duty cycle = on time/100 milliseconds = $2 * 2.88 / 100 = 5.76 \%$
2. Worst case Duty cycle correction factor = $20 * \log(\text{Duty cycle}) = -24.79 \text{ dB}$
3. **DH5** has the highest duty cycle worst case and is reported.

Duty Cycle Correction Factor Consideration for AFH mode:

Bluetooth normal hopping rate is 1600Hz and reduced to 800Hz in AFH mode; due to the reduced number of hopping frequencies, with the same packet configuration the dwell time in each channel frequency within 100msec period is longer in AFH mode than normal mode.

In AFH mode, the minimum hopping frequencies are 20, to get the longest dwell time DH5 packet is observed; the on time period to have DH5 packet completing one hopping sequence is

$$2.88 \text{ ms} \times 20 \text{ channels} = 57.6 \text{ ms}$$

There cannot be 2 complete hopping sequences within 100ms period, considering the random hopping behavior, maximum 2 hops can be possibly observed within the period. $[100 \text{ ms} / 57.6 \text{ ms}] = 2 \text{ hops}$
Thus, the maximum possible ON time:

$$2.88 \text{ ms} \times 2 = 5.76 \text{ ms}$$

Worst case Duty Cycle Correction factor, which is derived from the maximum possible ON time,

$$20 \times \log(5.76 \text{ ms}/100 \text{ ms}) = -24.79 \text{ dB}$$