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
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History of this test report

Report No.	Version	Description	Issue Date
FR290812B	01	Initial issue of report	Dec. 22, 2022

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
-	15.247(a)(2)	6dB Bandwidth	-	See Note
-	2.1049	99% Occupied Bandwidth	-	See Note
3.1	15.247(b)(3) 15.247(b)(4)	Output Power	Pass	-
-	15.247(e)	Power Spectral Density	-	See Note
-	15.247(d)	Conducted Band Edges and Spurious Emission	-	See Note
3.2	15.247(d)	Radiated Band Edges and Spurious Emission	Pass	5.32 dB under the limit at 2483.520 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:
1. 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. 2. 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: Lucy Wu

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)
2400-2483.5 MHz	0	2402	21	2444
	1	2404	22	2446
	2	2406	23	2448
	3	2408	24	2450
	4	2410	25	2452
	5	2412	26	2454
	6	2414	27	2456
	7	2416	28	2458
	8	2418	29	2460
	9	2420	30	2462
	10	2422	31	2464
	11	2424	32	2466
	12	2426	33	2468
	13	2428	34	2470
	14	2430	35	2472
	15	2432	36	2474
	16	2434	37	2476
	17	2436	38	2478
	18	2438	39	2480
	19	2440	-	-
	20	2442	-	-

2.2 Test Mode

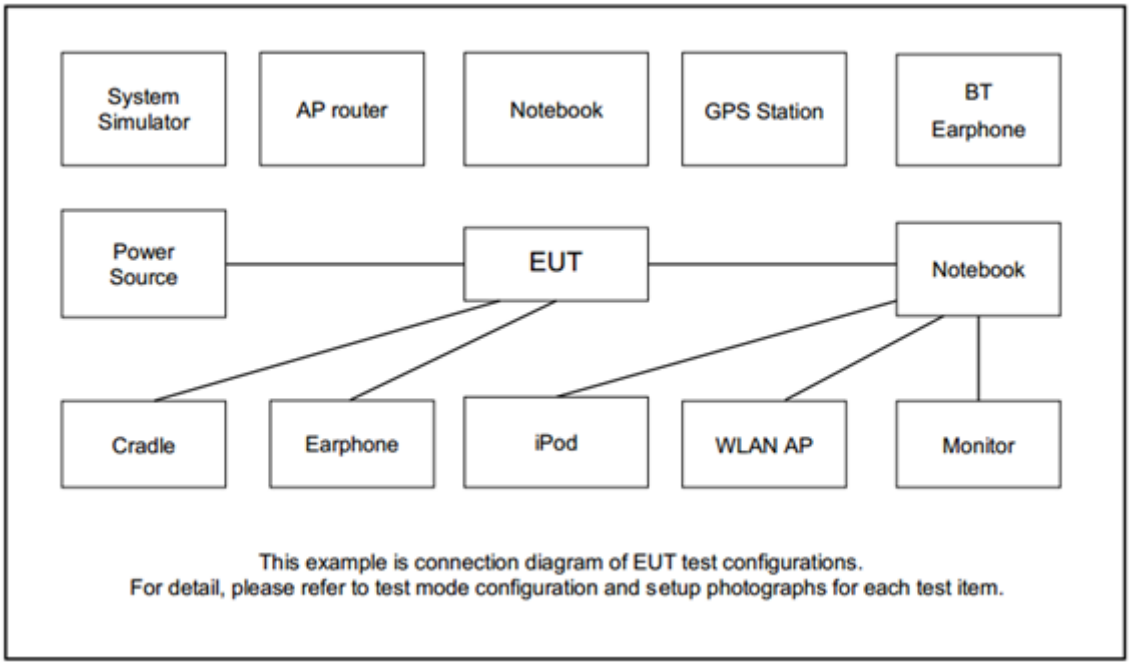
a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental 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 case emissions were reported 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**
	Bluetooth – LE / GFSK
Radiated Test Cases	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps Mode 4: Bluetooth Tx CH00_2402 MHz_2Mbps Mode 5: Bluetooth Tx CH19_2440 MHz_2Mbps Mode 6: Bluetooth Tx CH39_2480 MHz_2Mbps
AC Conducted Emission	Mode 1: WLAN (2.4GHz) Link + Bluetooth Link + Earphone + Hard Disk + AR Glasses

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	P79G	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Notebook	DELL	Latitude5310	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Earphone + Mic	Samsung	Ecouteur	N/A	Unshielded, 1.8 m	N/A
6.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A
7.	Hard Disk	ADATA	HV620S-1T	N/A	Unshielded, 1.2m	N/A

2.5 EUT Operation Test Setup

The RF test items, utility “QRCT 4.00158.0” 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

For systems using digital modulation in the 2400-2483.5 MHz, the limit for output power is 30 dBm. If transmitting antenna of directional gain greater than 6 dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

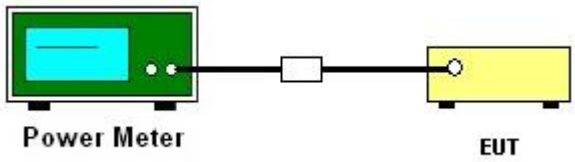
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

1. For Average Power, the testing follows ANSI C63.10 Section 11.9.2.3.2 Method AVGPM-G
2. The RF output of EUT is connected to the power meter by RF cable and attenuator.
3. The path loss is compensated to the results for each measurement.
4. Set the maximum power setting and enable the EUT to transmit continuously.
5. Measure the conducted output power and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of Average Output Power

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. If the output power of this device is measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. 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

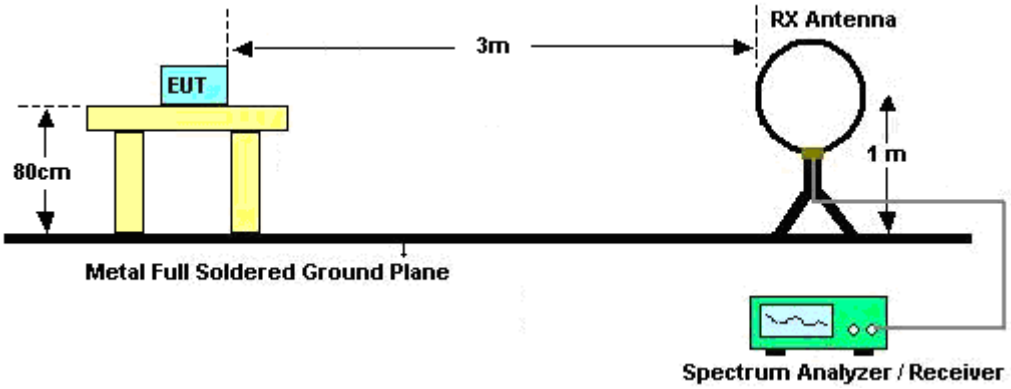
Please refer to the measuring equipment list in this test report.

3.2.3 Test Procedures

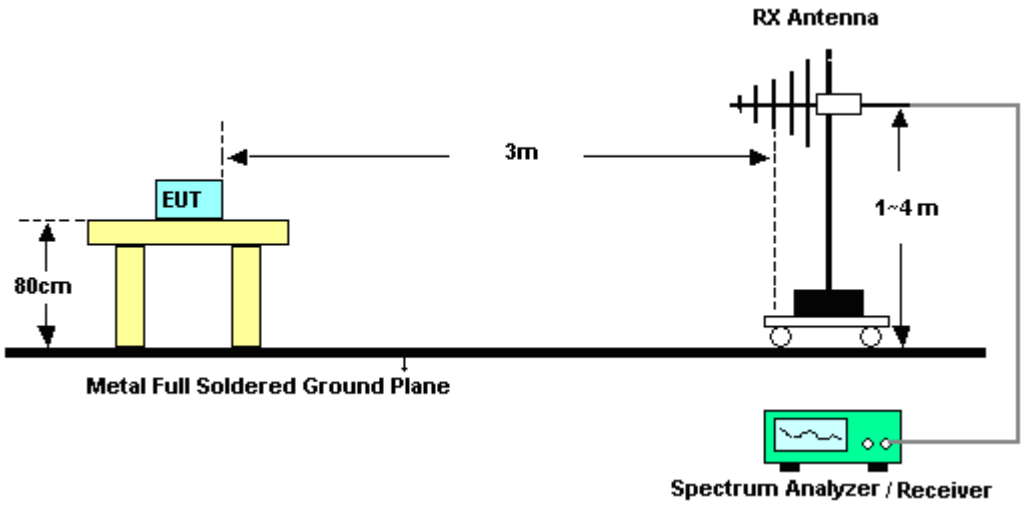
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT is arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. 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.
4. The EUT is set 3 meters away from the receiving antenna, which is mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. 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 "-".
7. 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 "-".
8. 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; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW = 3 MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.2.4 Test Setup

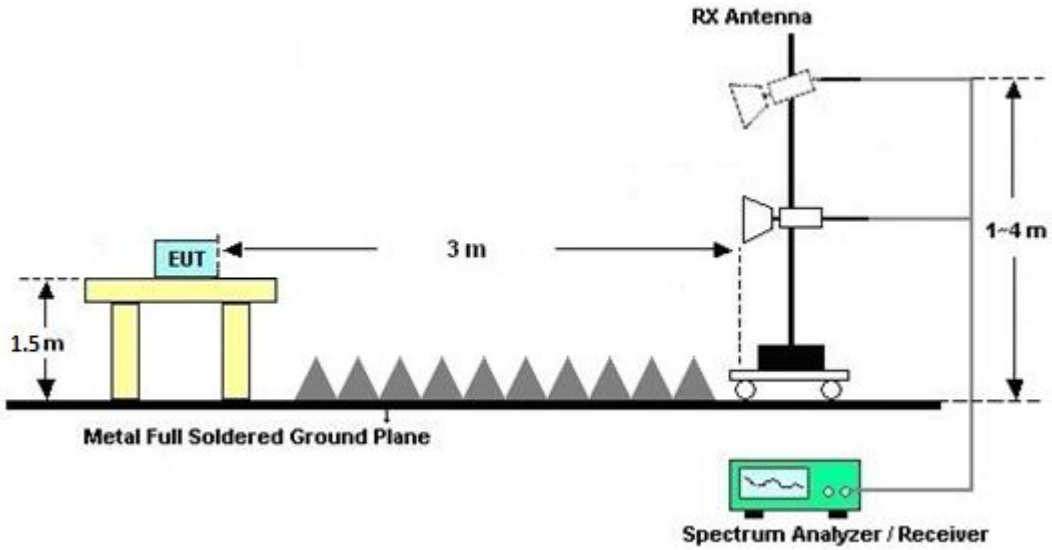
For radiated test below 30MHz



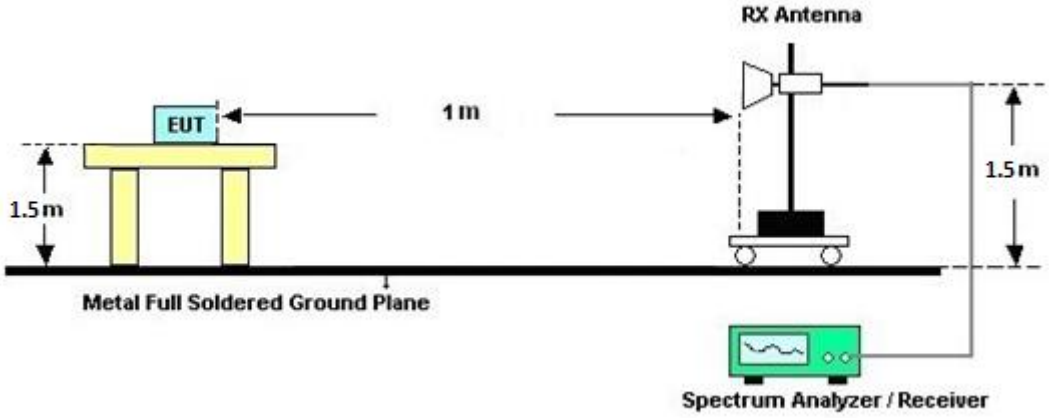
For radiated test from 30MHz to 1GHz



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 (30 MHz ~ 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.

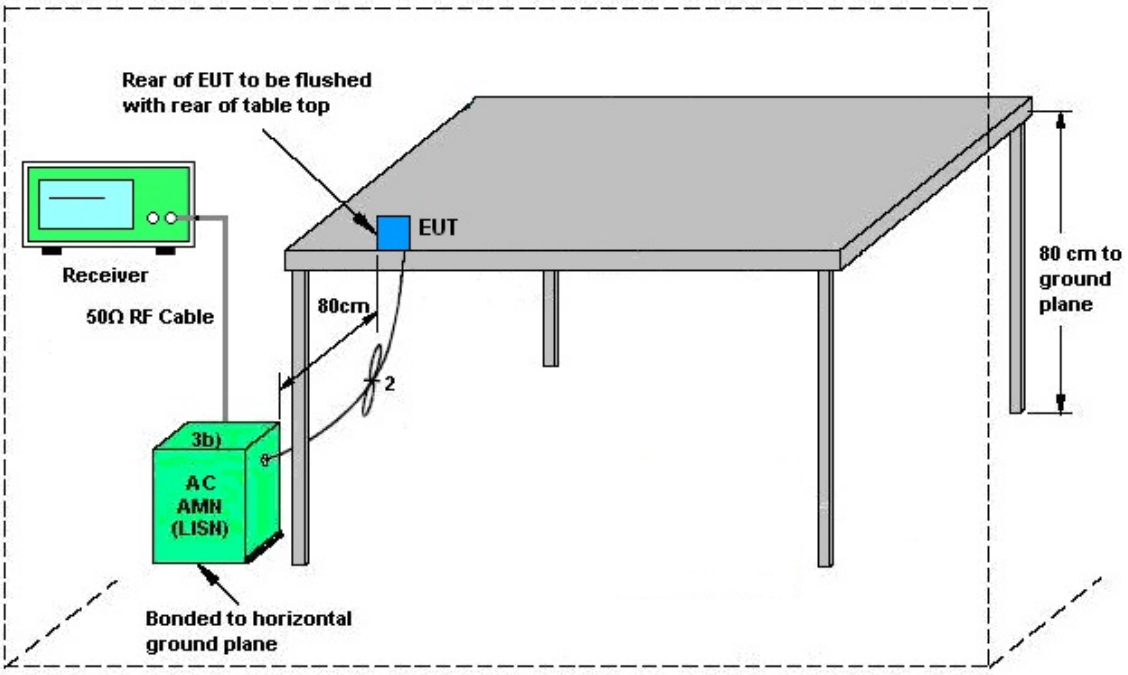
3.3.2 Measuring Instruments

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



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

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 Receicver	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&00802N 1D01N-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	TECPEL	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	519229/2,8040 15/2,804027/2	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)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 16, 2021	Sep. 28, 2022~ Oct. 13, 2022	Nov. 15, 2022	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	15I00041SNO10 (NO:248)	10MHz~6GHz	Dec. 29, 2021	Sep. 28, 2022~ Oct. 13, 2022	Dec. 28, 2022	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101905	10Hz - 40GHz	Aug. 03, 2022	Sep. 28, 2022~ Oct. 13, 2022	Aug. 02, 2023	Conducted (TH05-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)

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))	**2.3 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**6.5 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.2 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.7 dB**

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Mina Liu	Temperature:	21~25	°C
Test Date:	2022/9/28~2022/10/13	Relative Humidity:	51~54	%

TEST RESULTS DATA
Average Power Table

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
BLE	1Mbps	1	0	2402	0.30	30.00	1.60	1.90	36.00	Pass
BLE	1Mbps	1	19	2440	1.20	30.00	1.60	2.80	36.00	Pass
BLE	1Mbps	1	39	2480	-1.20	30.00	1.60	0.40	36.00	Pass

TEST RESULTS DATA
Average Power Table

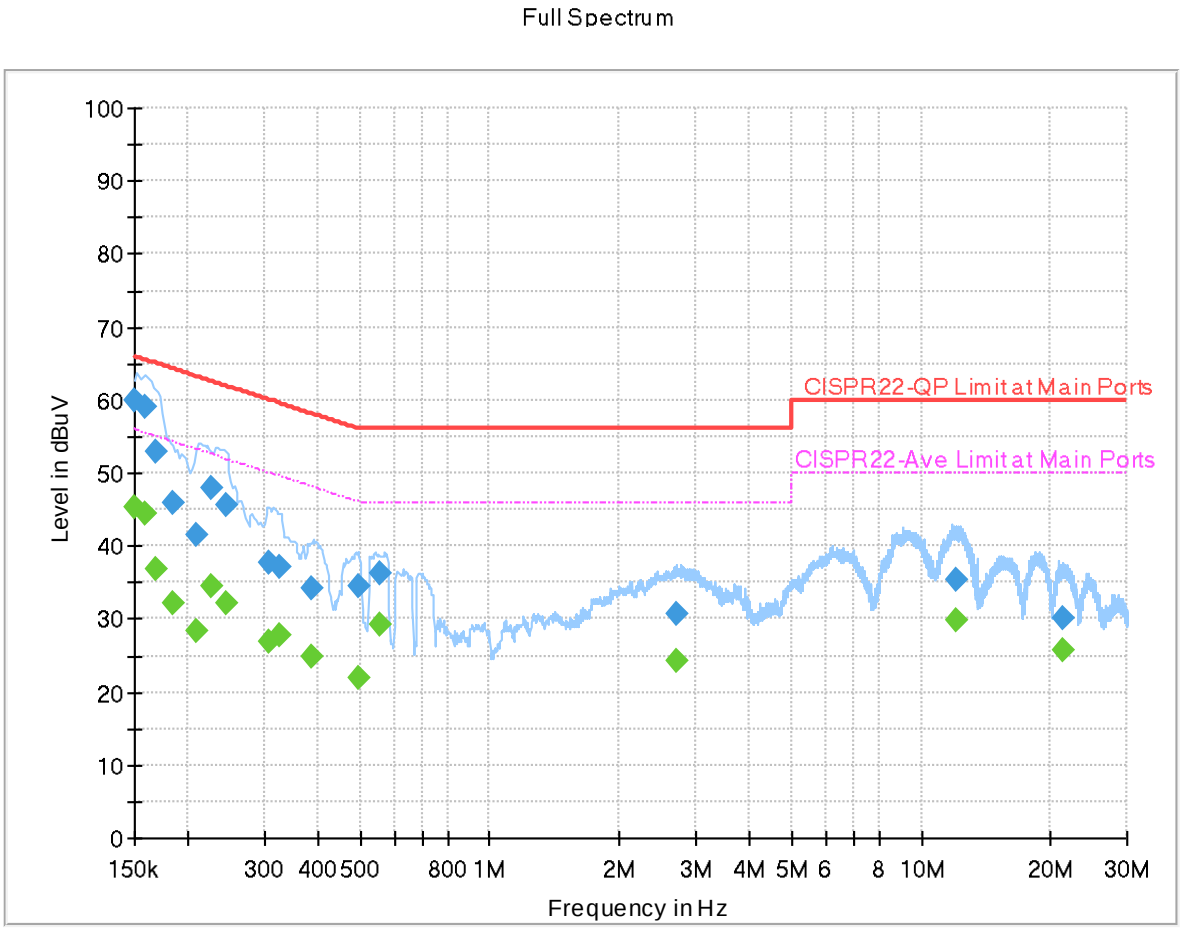
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
BLE	2Mbps	1	0	2402	0.30	30.00	1.60	1.90	36.00	Pass
BLE	2Mbps	1	19	2440	1.30	30.00	1.60	2.90	36.00	Pass
BLE	2Mbps	1	39	2480	-1.20	30.00	1.60	0.40	36.00	Pass

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



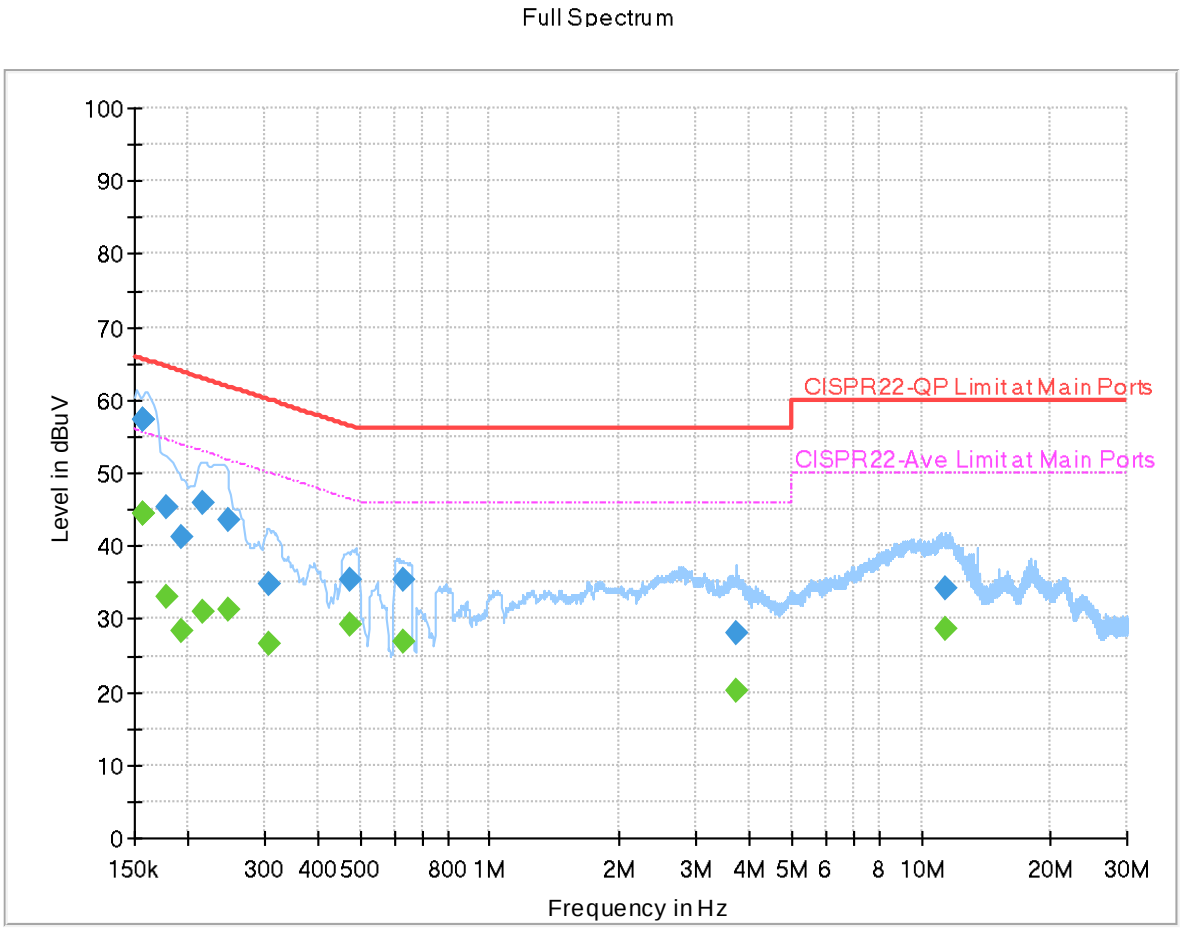
Final_Result

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



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%

<1Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 00 2402MHz		2389.905	49.9	-24.1	74	40.23	27.26	18.68	36.27	212	301	P	H
		2389.905	41.04	-12.96	54	31.37	27.26	18.68	36.27	212	301	A	H
	*	2402	110.53	-	-	100.8	27.31	18.7	36.28	212	301	P	H
	*	2402	109.86	-	-	100.13	27.31	18.7	36.28	212	301	A	H
													H
													H
		2390	51.29	-22.71	74	41.62	27.26	18.68	36.27	100	350	P	V
		2389.8	41.75	-12.25	54	32.08	27.26	18.68	36.27	100	350	A	V
	*	2402	112.36	-	-	102.63	27.31	18.7	36.28	100	350	P	V
	*	2402	111.86	-	-	102.13	27.31	18.7	36.28	100	350	A	V
													V
													V
BLE CH 19 2440MHz		2350	49.47	-24.53	74	40.01	27.1	18.61	36.25	197	307	P	H
		2384.4	39.77	-14.23	54	30.13	27.24	18.67	36.27	197	307	A	H
	*	2440	112.04	-	-	102.09	27.46	18.78	36.29	197	307	P	H
	*	2440	111.46	-	-	101.51	27.46	18.78	36.29	197	307	A	H
		2483.92	50.51	-23.49	74	40.32	27.64	18.86	36.31	197	307	P	H
		2492.24	40.45	-13.55	54	30.22	27.67	18.88	36.32	197	307	A	H
		2386.64	49.46	-24.54	74	39.8	27.25	18.68	36.27	131	349	P	V
		2356.88	40.03	-13.97	54	30.54	27.13	18.62	36.26	131	349	A	V
	*	2440	113.91	-	-	103.96	27.46	18.78	36.29	131	349	P	V
	*	2440	113.28	-	-	103.33	27.46	18.78	36.29	131	349	A	V
		2483.76	49.7	-24.3	74	39.51	27.64	18.86	36.31	131	349	P	V
		2487.92	41.06	-12.94	54	30.85	27.65	18.87	36.31	131	349	A	V

BLE CH 39 2480MHz	*	2480	110.36	-	-	100.2	27.62	18.85	36.31	199	310	P	H
	*	2480	109.81	-	-	99.65	27.62	18.85	36.31	199	310	A	H
		2483.56	54.68	-19.32	74	44.5	27.63	18.86	36.31	199	310	P	H
		2483.52	42.64	-11.36	54	32.46	27.63	18.86	36.31	199	310	A	H
													H
													H
	*	2480	113.12	-	-	102.96	27.62	18.85	36.31	100	346	P	V
	*	2480	112.59	-	-	102.43	27.62	18.85	36.31	100	346	A	V
		2483.56	56.89	-17.11	74	46.71	27.63	18.86	36.31	100	346	P	V
		2483.6	44.98	-9.02	54	34.8	27.63	18.86	36.31	100	346	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	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)
BLE CH 00 2402MHz		4804	43.84	-30.16	74	35.93	32.4	13.05	37.54	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4804	43.42	-30.58	74	35.51	32.4	13.05	37.54	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

BLE	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)
		4880	42.89	-31.11	74	34.93	32.52	13.04	37.6	-	-	P	H
		7320	47.83	-26.17	74	33.58	36.9	15.88	38.53	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
BLE CH 19 2440MHz													H
		4880	43.38	-30.62	74	35.42	32.52	13.04	37.6	-	-	P	V
		7320	47.97	-26.03	74	33.72	36.9	15.88	38.53	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

BLE	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)
BLE CH 39 2480MHz		4960	43.43	-30.57	74	35.12	32.94	13.03	37.66	-	-	P	H
		7440	47.77	-26.23	74	33.97	36.52	15.91	38.63	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4960	43.94	-30.06	74	35.63	32.94	13.03	37.66	-	-	P	V
		7440	47.25	-26.75	74	33.45	36.52	15.91	38.63	-	-	P	V
													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.

<2Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 00 2402MHz		2365.65	49.36	-24.64	74	39.82	27.16	18.64	36.26	211	350	P	H
		2389.905	43.32	-10.68	54	33.65	27.26	18.68	36.27	211	350	A	H
	*	2402	112.34	-	-	102.61	27.31	18.7	36.28	211	350	P	H
	*	2402	111.02	-	-	101.29	27.31	18.7	36.28	211	350	A	H
													H
													H
		2389.065	50.66	-23.34	74	40.99	27.26	18.68	36.27	100	347	P	V
		2389.59	43.4	-10.6	54	33.73	27.26	18.68	36.27	100	347	A	V
	*	2402	113.75	-	-	104.02	27.31	18.7	36.28	100	347	P	V
	*	2402	112.53	-	-	102.8	27.31	18.7	36.28	100	347	A	V
													V
													V
BLE CH 19 2440MHz		2380.98	49.39	-24.61	74	39.77	27.22	18.67	36.27	233	322	P	H
		2372.44	41.66	-12.34	54	32.08	27.19	18.65	36.26	233	322	A	H
	*	2440	113.66	-	-	103.71	27.46	18.78	36.29	233	322	P	H
	*	2440	112.37	-	-	102.42	27.46	18.78	36.29	233	322	A	H
		2493.14	50.21	-23.79	74	39.98	27.67	18.88	36.32	233	322	P	H
		2487.89	41.93	-12.07	54	31.72	27.65	18.87	36.31	233	322	A	H
		2364.74	49.35	-24.65	74	39.81	27.16	18.64	36.26	100	347	P	V
		2388.12	42.15	-11.85	54	32.49	27.25	18.68	36.27	100	347	A	V
	*	2440	114.83	-	-	104.88	27.46	18.78	36.29	100	347	P	V
	*	2440	113.57	-	-	103.62	27.46	18.78	36.29	100	347	A	V
		2484.32	50.23	-23.77	74	40.04	27.64	18.86	36.31	100	347	P	V
		2487.75	42.49	-11.51	54	32.28	27.65	18.87	36.31	100	347	A	V

BLE CH 39 2480MHz	*	2480	112.76	-	-	102.6	27.62	18.85	36.31	197	324	P	H
	*	2480	111.48	-	-	101.32	27.62	18.85	36.31	197	324	A	H
		2483.52	59.27	-14.73	74	49.09	27.63	18.86	36.31	197	324	P	H
		2483.56	47.34	-6.66	54	37.16	27.63	18.86	36.31	197	324	A	H
													H
													H
	*	2480	114.2	-	-	104.04	27.62	18.85	36.31	100	347	P	V
	*	2480	112.96	-	-	102.8	27.62	18.85	36.31	100	347	A	V
		2483.56	60.86	-13.14	74	50.68	27.63	18.86	36.31	100	347	P	V
		2483.52	48.68	-5.32	54	38.5	27.63	18.86	36.31	100	347	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	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)
BLE CH 00 2402MHz		4804	43.98	-30.02	74	36.07	32.4	13.05	37.54	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4804	44.04	-29.96	74	36.13	32.4	13.05	37.54	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

BLE	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)
		4880	43.63	-30.37	74	35.67	32.52	13.04	37.6	-	-	P	H
		7320	47.62	-26.38	74	33.37	36.9	15.88	38.53	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
BLE CH 19 2440MHz													H
		4880	43.21	-30.79	74	35.25	32.52	13.04	37.6	-	-	P	V
		7320	47.52	-26.48	74	33.27	36.9	15.88	38.53	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

BLE	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)
BLE CH 39 2480MHz		4960	43.55	-30.45	74	35.24	32.94	13.03	37.66	-	-	P	H
		7440	47.04	-26.96	74	33.24	36.52	15.91	38.63	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4960	44.11	-29.89	74	35.8	32.94	13.03	37.66	-	-	P	V
		7440	47.21	-26.79	74	33.41	36.52	15.91	38.63	-	-	P	V
													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 BLE (SHF)

BLE	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 BLE SHF		24853	42.97	-31.03	74	36.91	39.66	19.59	53.19	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		24979	43.26	-30.74	74	37.03	39.61	19.73	53.11	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

Emission below 1GHz

2.4GHz BLE (LF)

BLE	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 BLE LF		35.82	25.11	-14.89	40	37.89	21.49	1.38	35.65	-	-	P	H
		108.57	30.55	-12.95	43.5	47.05	16.9	2.12	35.52	-	-	P	H
		147.37	28.51	-14.99	43.5	44.14	17.35	2.49	35.47	-	-	P	H
		277.35	36.68	-9.32	46	49.76	18.89	3.25	35.22	-	-	P	H
		359.8	37.78	-8.22	46	48.43	20.66	3.66	34.97	-	-	P	H
		746.83	38.6	-7.4	46	39.53	27.67	5.15	33.75	-	-	P	H
													H
													H
													H
													H
													H
													H
		38.73	32.08	-7.92	40	46.36	19.93	1.42	35.63	-	-	P	V
		112.45	28.47	-15.03	43.5	44.57	17.26	2.16	35.52	-	-	P	V
		238.55	31.96	-14.04	46	47.2	17.04	3.03	35.31	-	-	P	V
		359.8	32.98	-13.02	46	43.63	20.66	3.66	34.97	-	-	P	V
		386.96	30.91	-15.09	46	40.56	21.43	3.8	34.88	-	-	P	V
		746.83	38.61	-7.39	46	39.54	27.67	5.15	33.75	-	-	P	V
													V
													V
													V
													V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against limit line.
3. The emission position marked as “-” means no suspected emission found and emission level has at least 6dB margin against limit or emission is noise floor only.

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 **over limit** line.
P/A	**P**eak or **A**verage
H/V	**H**orizontal or **V**ertical

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

BLE	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)
BLE CH 00 2402MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	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)

For Average 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) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Margin(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

Both peak and average 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%

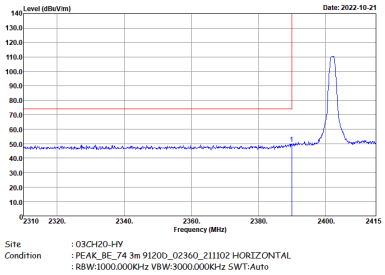
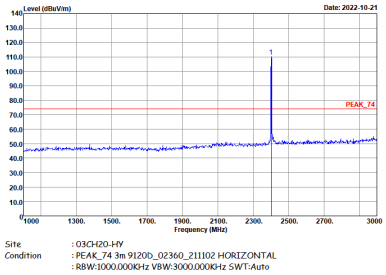
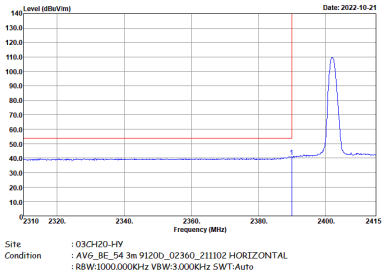
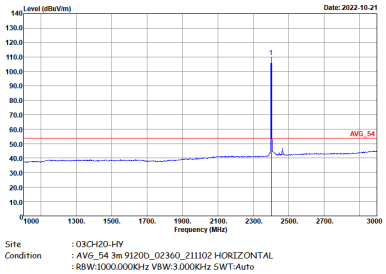
Note symbol

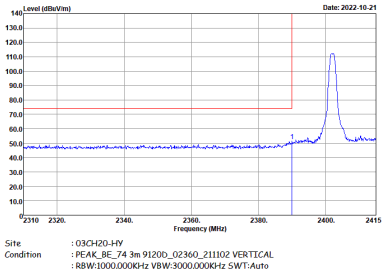
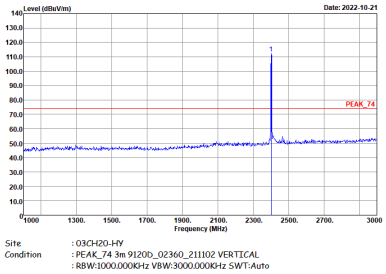
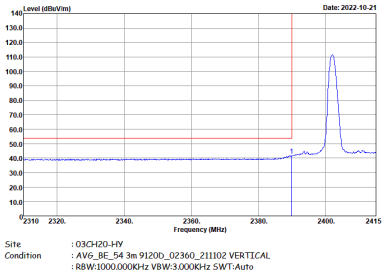
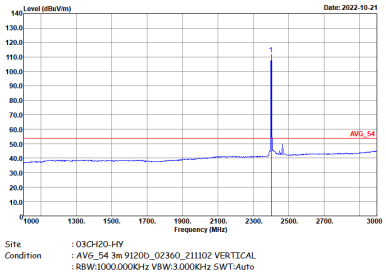
-L	**Low channel location**
-R	**High channel location**

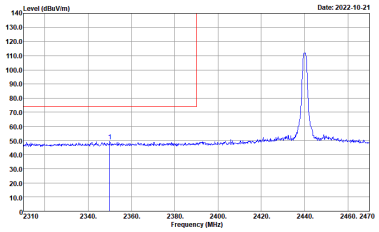
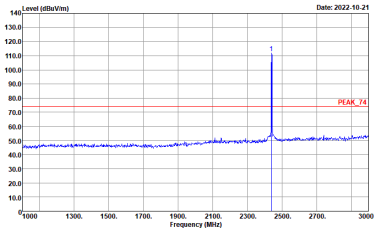
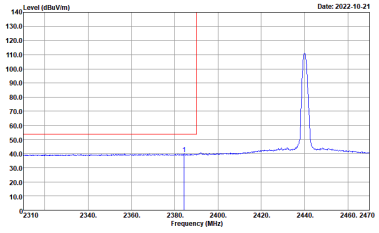
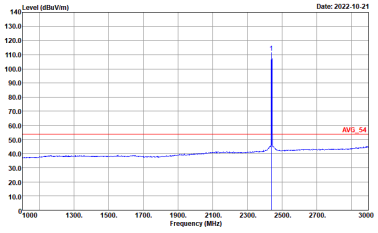
<1Mbps>

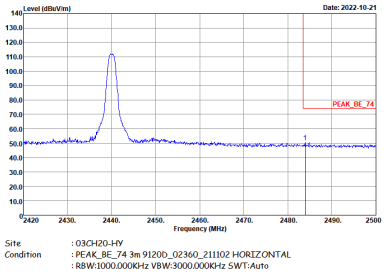
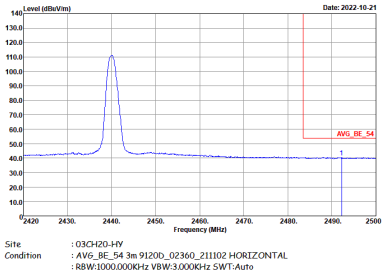
2.4GHz 2400~2483.5MHz

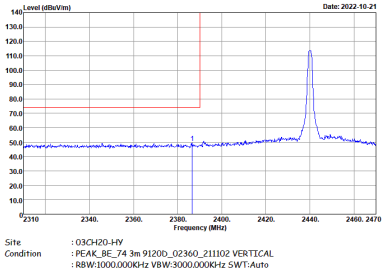
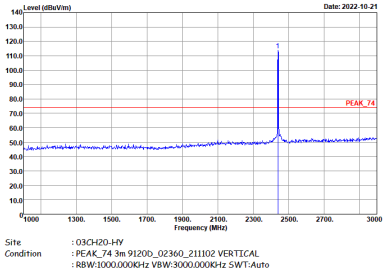
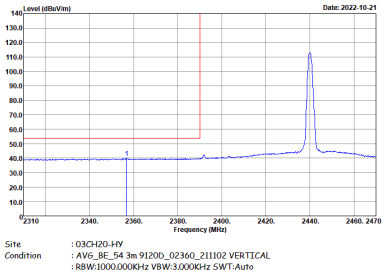
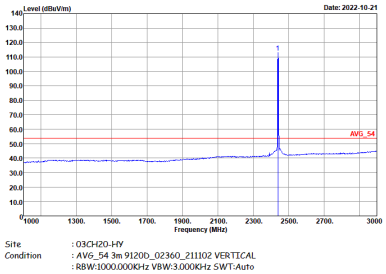
BLE (Band Edge @ 3m)

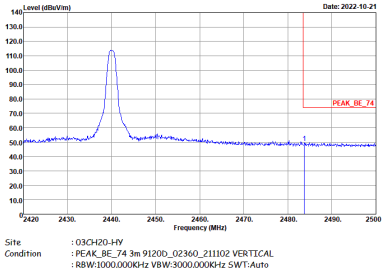
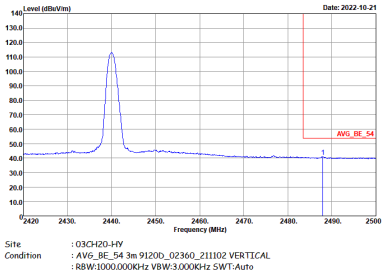
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Fundamental
Peak		
Avg.		

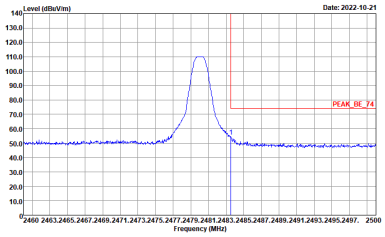
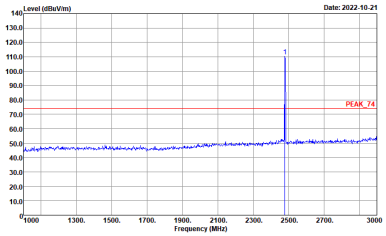
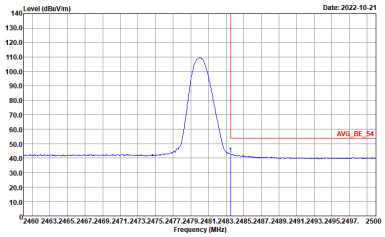
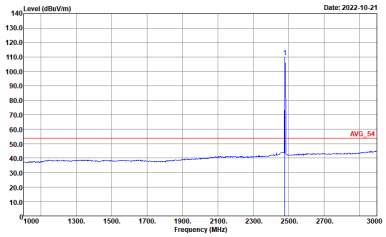
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto

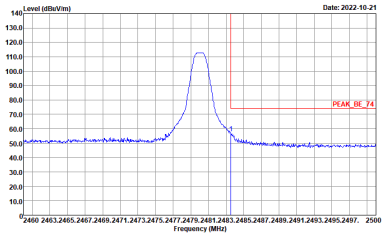
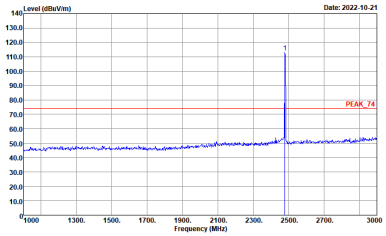
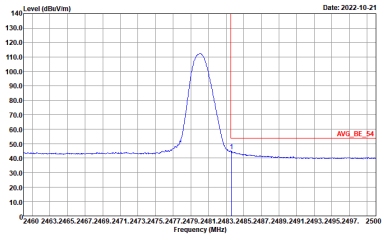
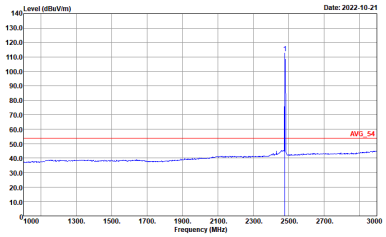
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Vertical	Fundamental
Peak		
Avg.		

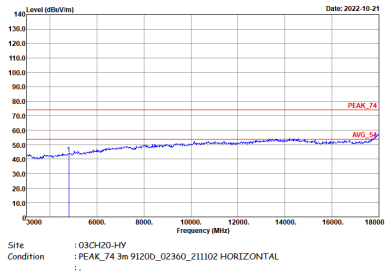
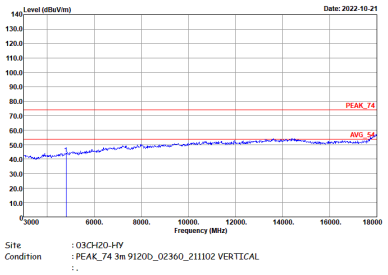
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

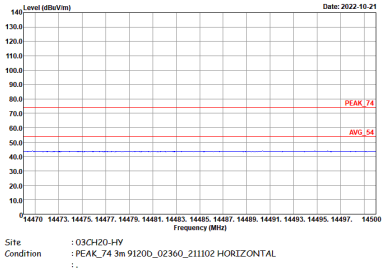
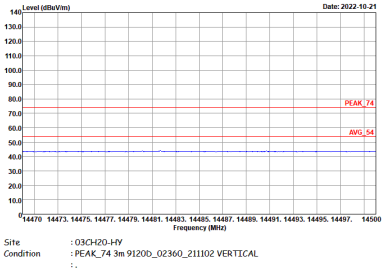
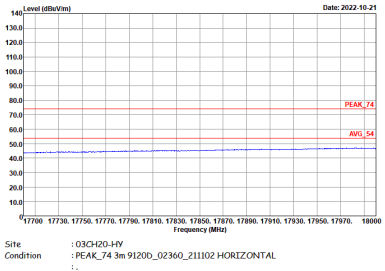
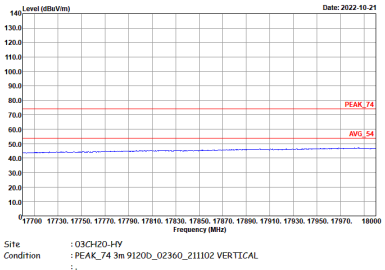
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto

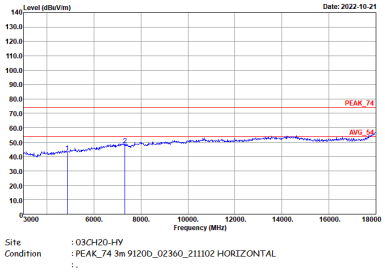
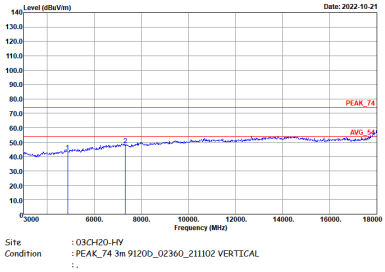
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto

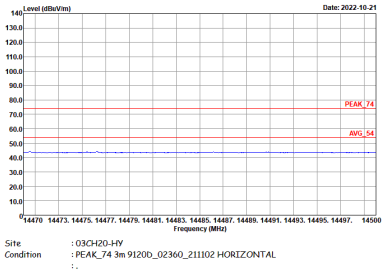
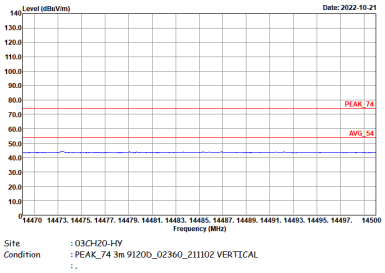
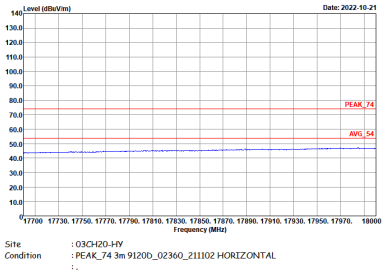
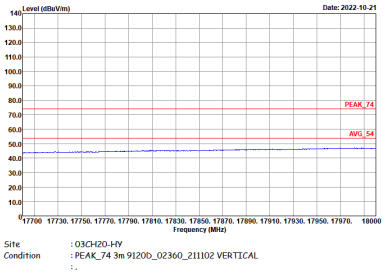
2.4GHz 2400~2483.5MHz

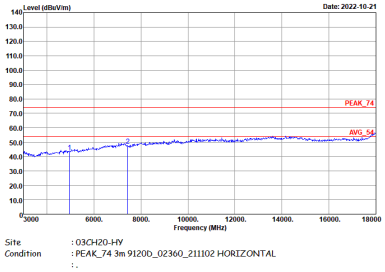
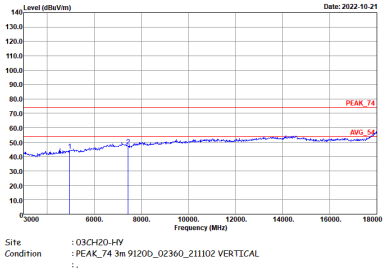
BLE (Harmonic @ 3m)

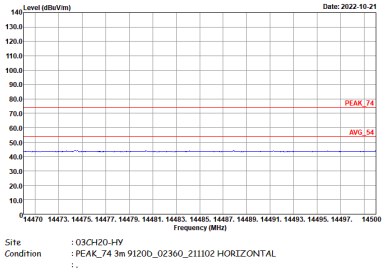
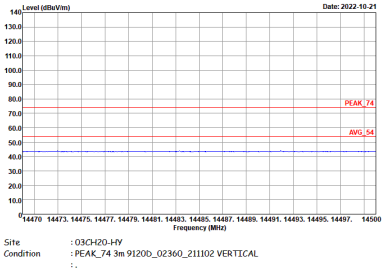
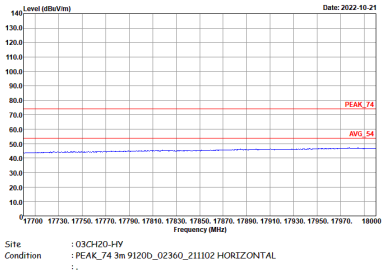
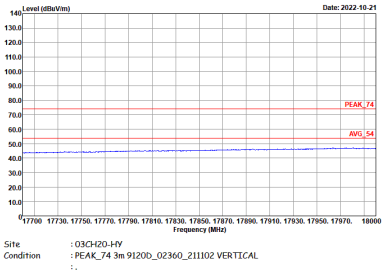
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Vertical
Peak Avg.		

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.		
17.7G ~18G Avg		

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak Avg.		

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.		
17.7G ~18G Avg		

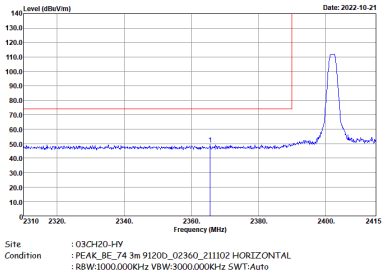
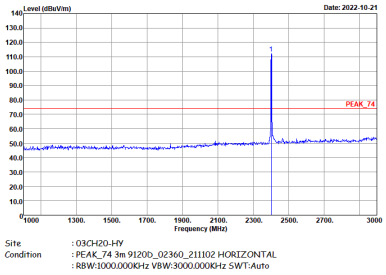
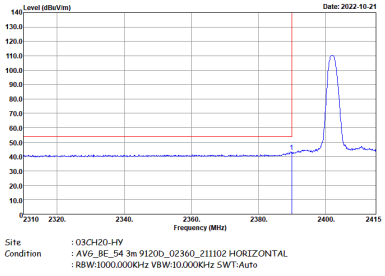
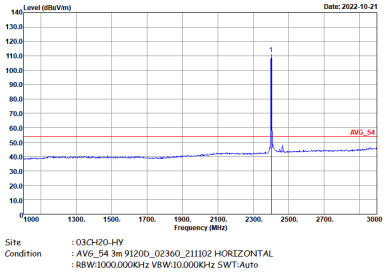
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak		

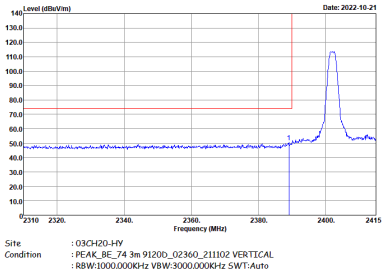
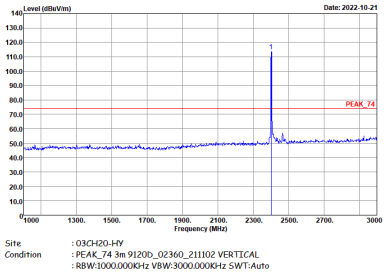
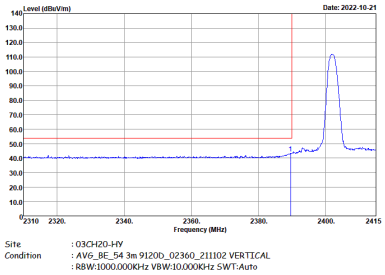
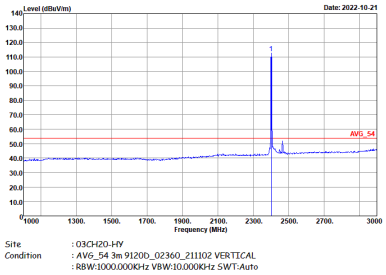
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.		
17.7G ~18G Avg		

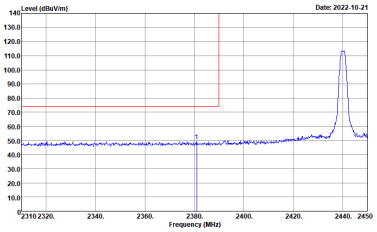
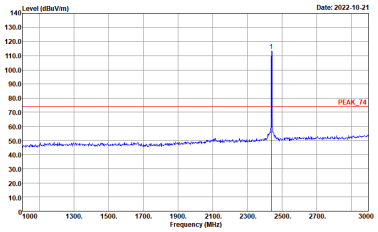
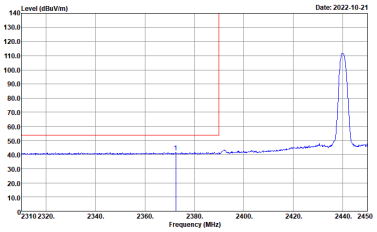
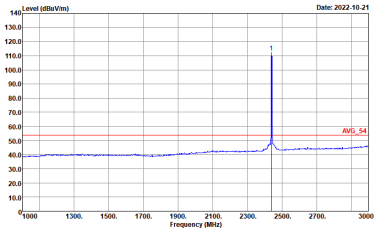
<2Mbps>

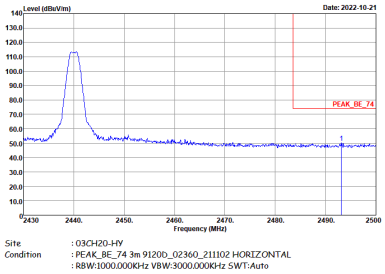
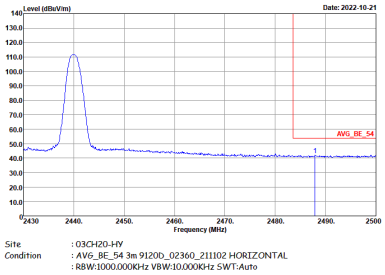
2.4GHz 2400~2483.5MHz

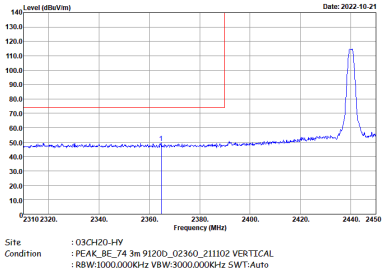
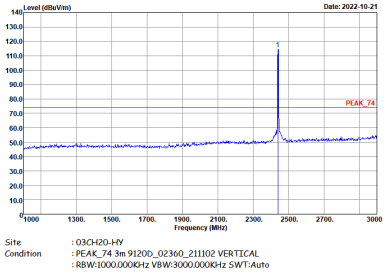
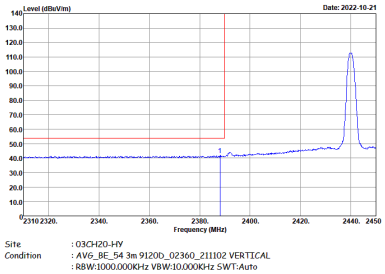
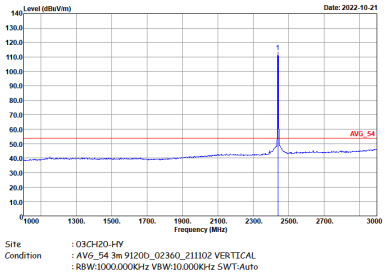
BLE (Band Edge @ 3m)

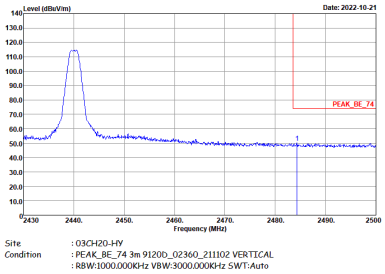
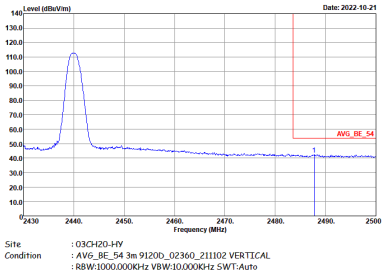
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Fundamental
Peak		
Avg.		

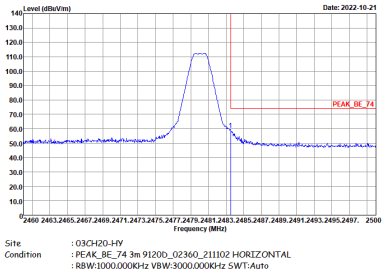
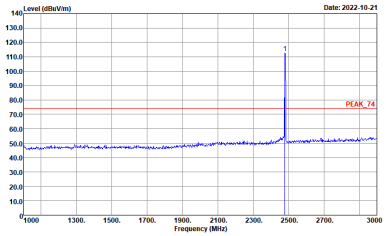
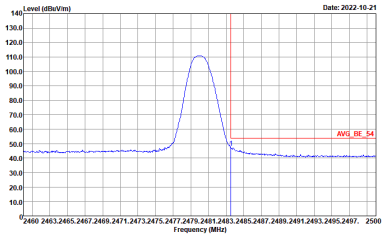
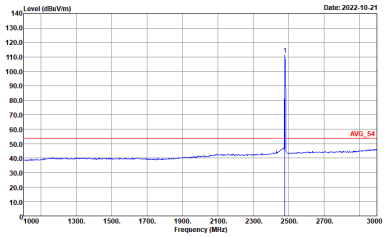
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto

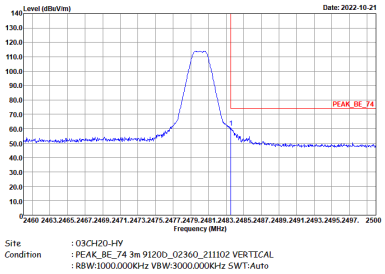
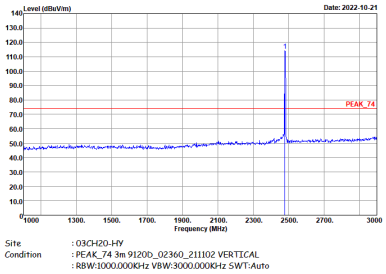
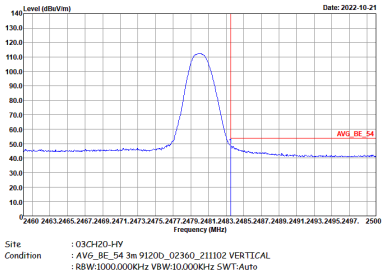
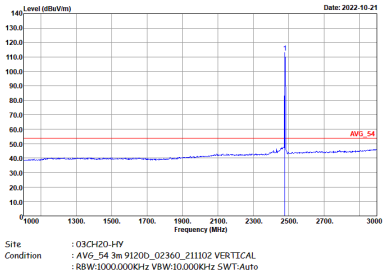
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto

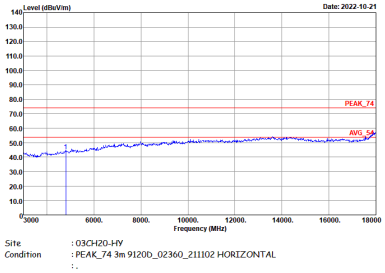
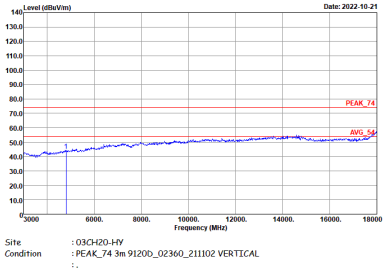
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

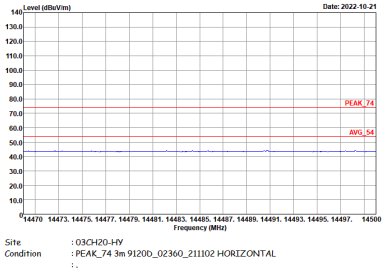
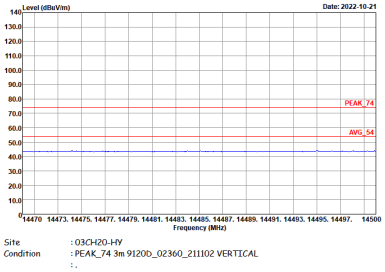
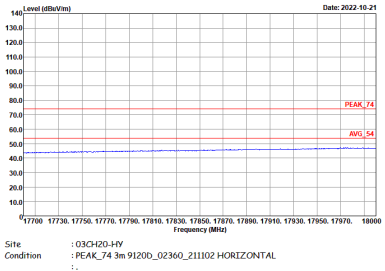
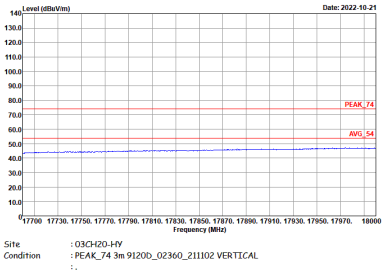
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_211102 HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto

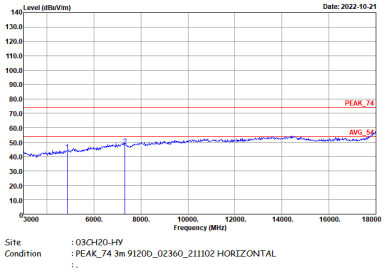
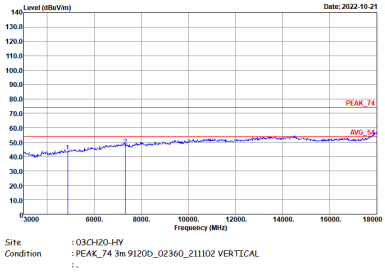
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_211102 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto

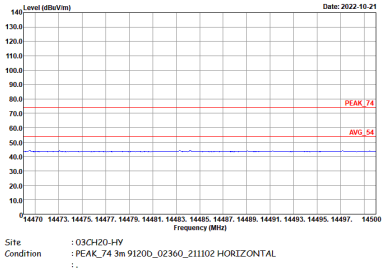
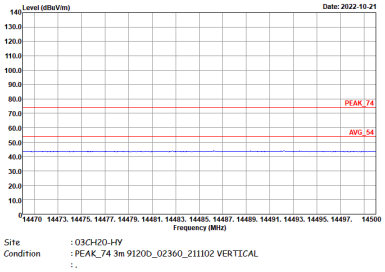
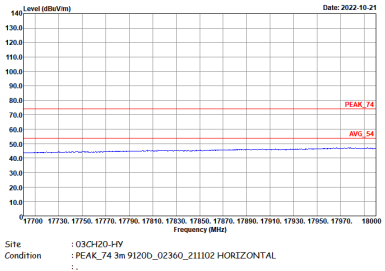
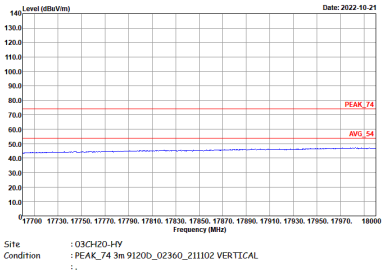
2.4GHz 2400~2483.5MHz

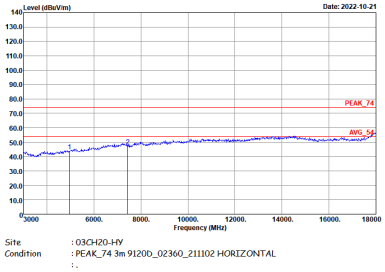
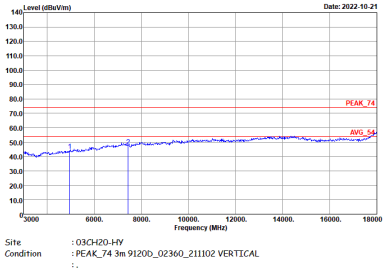
BLE (Harmonic @ 3m)

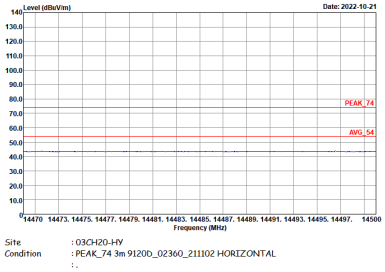
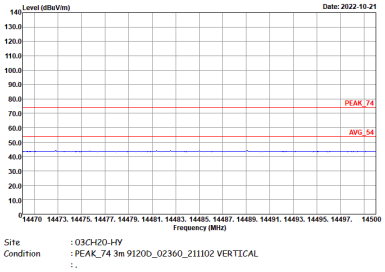
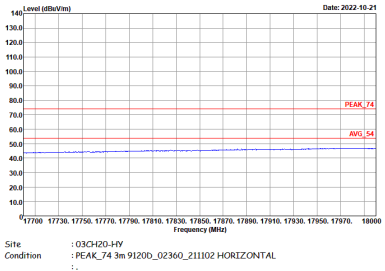
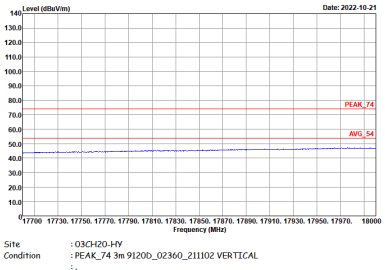
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Vertical
Peak Avg.		

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.		
17.7G ~18G Avg		

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak Avg.		

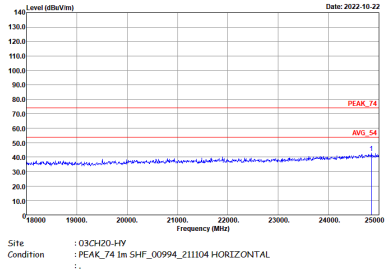
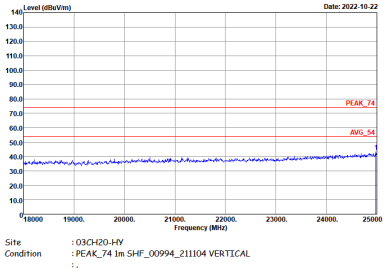
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.		
17.7G ~18G Avg		

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak		

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
14.47G ~14.5G Avg.		
17.7G ~18G Avg		

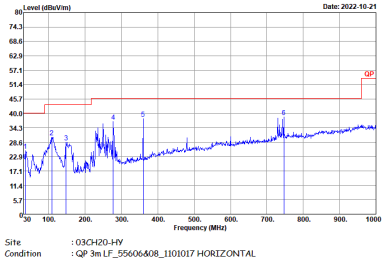
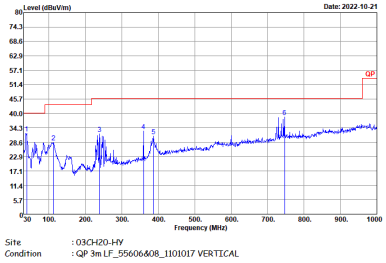
Emission above 18GHz

2.4GHz BLE (SHF @ 1m)

BLE	2.4GHz 2400~2483.5MHz	
	BLE SHF	
	Horizontal	Vertical
Peak Avg.		

Emission below 1GHz

2.4GHz BLE (LF)

BLE	2.4GHz 2400~2483.5MHz	
	BLE LF	
	Horizontal	Vertical
QP / Peak		

Appendix E. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
Bluetooth –LE for 1Mbps	61.98	388	2.58	3kHz
Bluetooth –LE for 2Mbps	32.64	204	4.90	10kHz

Bluetooth – LE for 1Mbps	Bluetooth – LE for 2Mbps