



3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 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

3.5.2 Measuring Instruments

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

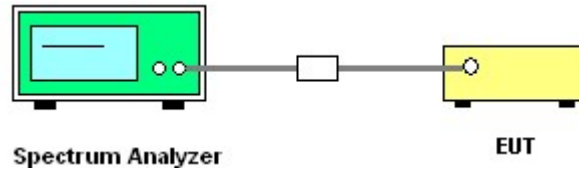
**3.5.3 Test Procedures**

1. The testing follows the ANSI C63.10 Section 11.12.2 Antenna-port conducted measurements.
2. Measure the conducted output power (in dBm) using the peak detector.
3. Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP.
4. Add the appropriate maximum ground reflection factor to the EIRP (6 dB for frequencies \leq 30 MHz; 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive; and 0 dB for frequencies $>$ 1000 MHz).
5. Convert the resultant EIRP to an equivalent electric field strength using the following relationship:
$$E = \text{EIRP} - 20 \log d + 104.8,$$
where
E is the electric field strength in dB μ V/m
EIRP is the equivalent isotropically radiated power in dBm
d is the specified measurement distance in 3m
6. Compare the resultant electric field strength level with the applicable regulatory limit.
7. Corrected Reading for conducted spurious emission: Antenna Factor + Cable Loss + Read Level = Level
8. Perform the cabinet radiated spurious emission test.
9. 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.
10. 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.
11. The EUT is set 3 meters away from the receiving antenna, which is mounted on the top of a variable height antenna tower.
12. Corrected Reading for cabinet radiated spurious emission: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
13. 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 "-".
14. 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 "-".

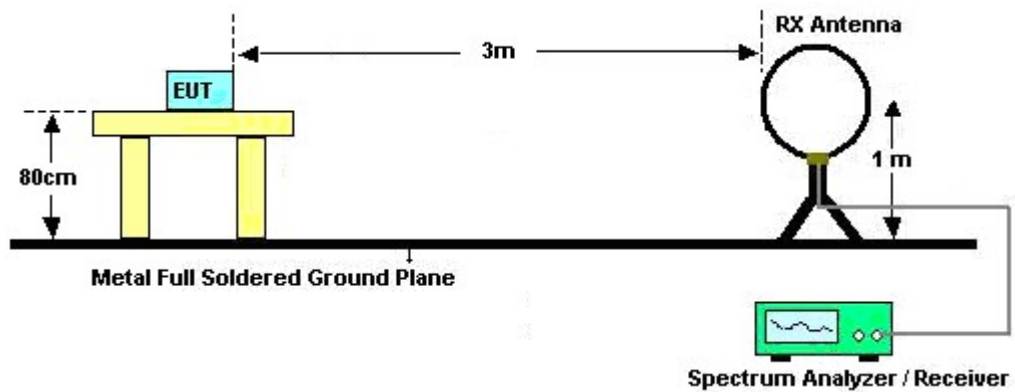
15. Use the following spectrum analyzer settings:
- (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW = 100 kHz for $f < 1$ GHz; VBW \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW = 3 MHz for $f \geq 1$ GHz for peak measurement.
- For average measurement:
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, 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.

3.5.4 Test Setup

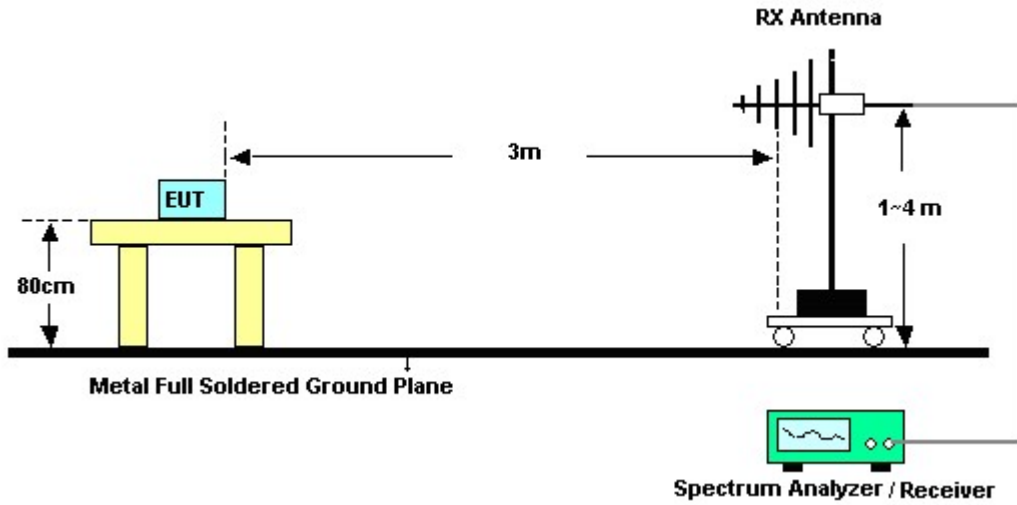
For Conducted Measurement Setup:



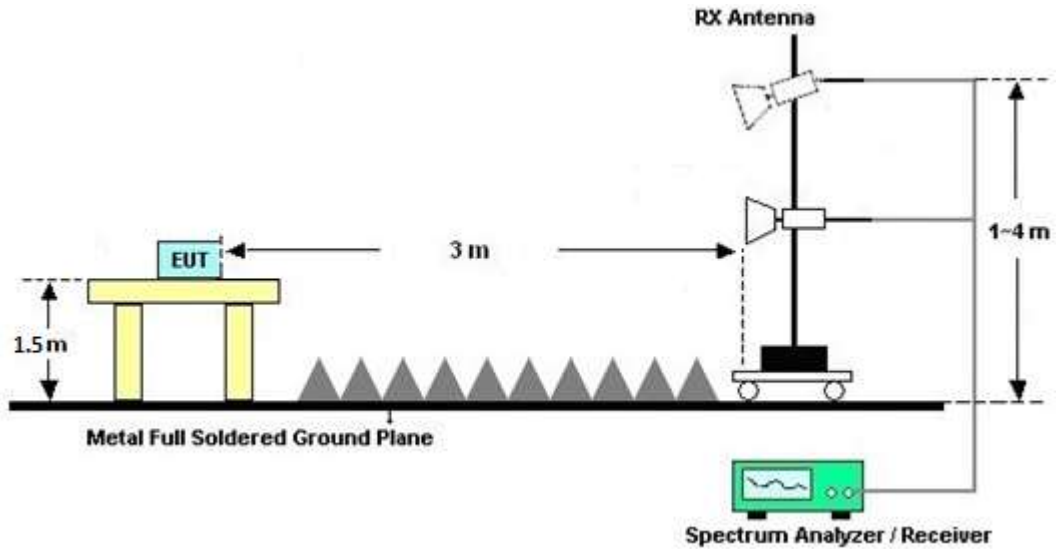
For radiated test below 30MHz



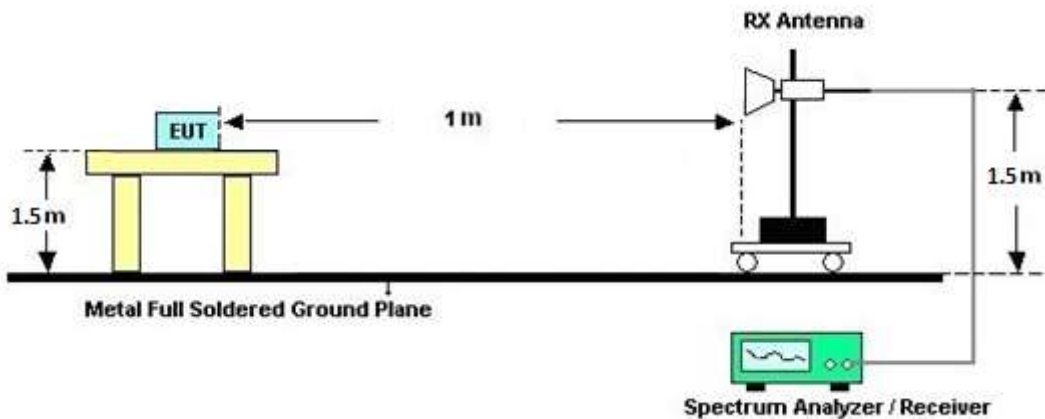
For radiated test from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz





3.5.5 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.

3.5.6 Test Result of Conduced Spurious at Band Edges in the Restricted Band

Please refer to Appendix C and D.

3.5.7 Test Result of Conduced Spurious Emission in the Restricted Band

Please refer to Appendix C and D.

3.5.8 Test Result of Cabinet Radiated Spurious at Band Edges

Please refer to Appendix E and F.

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

Please refer to Appendix E and F.

3.5.10 Duty Cycle

Please refer to Appendix G.



3.6 AC Conducted Emission Measurement

3.6.1 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 (dB μ V)	
	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.

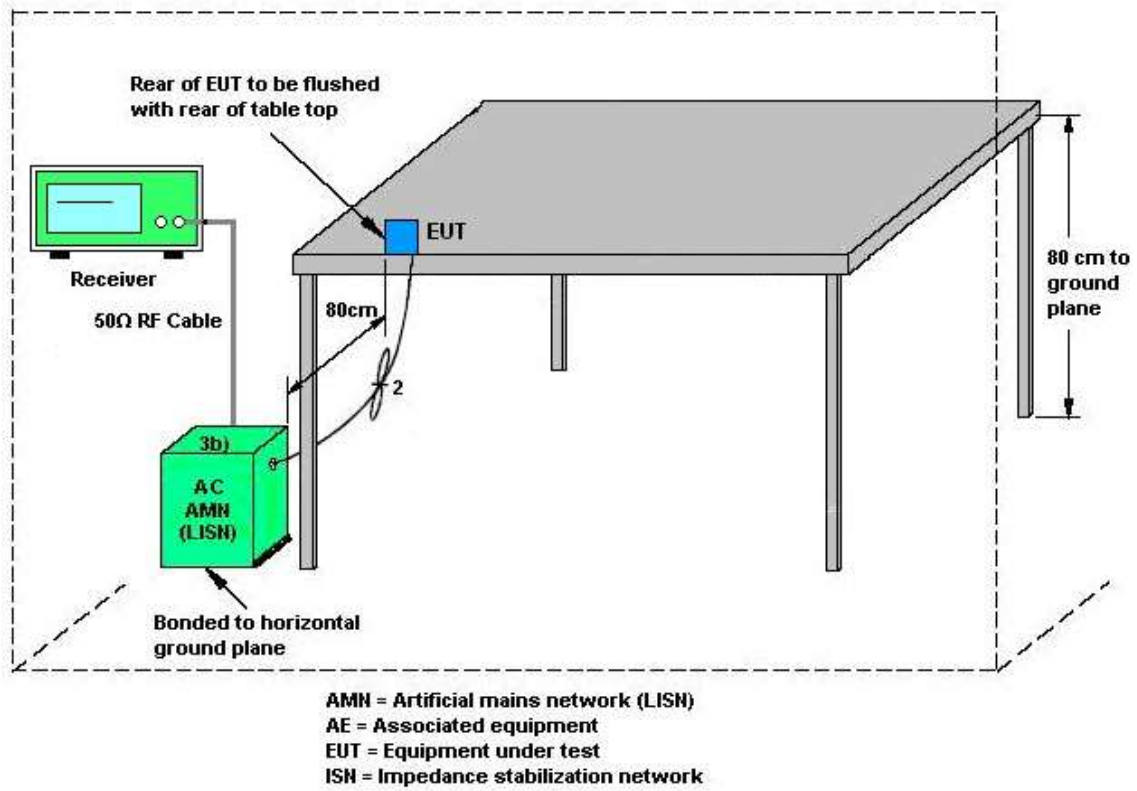
3.6.2 Measuring Instruments

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

3.6.3 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.

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



3.7 Antenna Requirements

3.7.1 Standard Applicable

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. 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.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Meter	Anritsu	ML2495A	932001	N/A	Sep. 30, 2021	May 02, 2022~ Jun. 13, 2022	Sep. 29, 2022	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	846202	300MHz~40GHz	Sep. 30, 2021	May 02, 2022~ Jun. 13, 2022	Sep. 29, 2022	Conducted (TH02-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Aug. 30, 2021	May 02, 2022~ Jun. 13, 2022	Aug. 29, 2022	Conducted (TH02-HY)
Switch Control Mainframe	E-IUSTRUMENT	ETF-1405-0	EC1900067 (BOX7)	N/A	Aug. 12, 2021	May 02, 2022~ Jun. 13, 2022	Aug. 11, 2022	Conducted (TH02-HY)
Spectrum Analyzer	ROHDE & SCHWARZ	FSV40	101565	10Hz~40GHz	Dec. 29, 2021	May 11, 2022~ Jun. 13, 2022	Dec. 28, 2022	CSE (TH02-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 10, 2022	May 11, 2022~ Jun. 13, 2022	Mar. 09, 2023	CSE (TH02-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0058/126E	30MHz~18GHz	Dec. 10, 2021	May 11, 2022~ Jun. 13, 2022	Dec. 09, 2022	CSE (TH02-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Feb. 21, 2022	May 11, 2022~ Jun. 13, 2022	Feb. 20, 2023	CSE (TH02-HY)
Filter	Wainwright	WLKS1200-12SS	SN2	1.2GHz Low Pass Filter	Mar. 15, 2022	May 11, 2022~ Jun. 13, 2022	Mar. 14, 2023	CSE (TH02-HY)
Filter	Wainwright	WHKX12-2700-3000-18000-60ST	SN2	3GHz High Pass Filter	Jul. 12, 2021	May 11, 2022~ Jun. 13, 2022	Jul. 11, 2022	CSE (TH02-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Jun. 07, 2022	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Dec. 01, 2021	Jun. 07, 2022	Nov. 30, 2022	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 03, 2021	Jun. 07, 2022	Dec. 02, 2022	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 16, 2021	Jun. 07, 2022	Nov. 15, 2022	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	Jun. 07, 2022	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-FN	00691	N/A	Jul. 28, 2021	Jun. 07, 2022	Jul. 27, 2022	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 30, 2021	Jun. 07, 2022	Dec. 29, 2022	Conduction (CO05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jan. 07, 2022	May 11, 2022~ May 12, 2022	Jan. 06, 2023	Radiation (03CH07-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	35419 & 03	30MHz~1GHz	Apr. 24, 2022	May 11, 2022~ May 12, 2022	Apr. 23, 2023	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Dec. 03, 2021	May 11, 2022~ May 12, 2022	Dec. 02, 2022	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	18GHz~40GHz	Nov. 30, 2021	May 11, 2022~ May 12, 2022	Nov. 29, 2022	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590075	1GHz~18GHz	Apr. 21, 2022	May 11, 2022~ May 12, 2022	Apr. 20, 2023	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz~1GHz	Oct. 04, 2021	May 11, 2022~ May 12, 2022	Oct. 03, 2022	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~26.5GHz	Oct. 04, 2021	May 11, 2022~ May 12, 2022	Oct. 03, 2022	Radiation (03CH07-HY)
Preamplifier	EMEC	EM18G40G	0600789	18-40GHz	Jul. 23, 2021	May 11, 2022~ May 12, 2022	Jul. 22, 2022	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	N9030A	MY52350276	3Hz~44GHz	Jul. 22, 2021	May 11, 2022~ May 12, 2022	Jul. 21, 2022	Radiation (03CH07-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY15682/4	30MHz to 18GHz	Feb. 23, 2022	May 11, 2022~ May 12, 2022	Feb. 22, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24971/4	9kHz to 18GHz	Feb. 23, 2022	May 11, 2022~ May 12, 2022	Feb. 22, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4	9kHz to 18GHz	Feb. 23, 2022	May 11, 2022~ May 12, 2022	Feb. 22, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126	532078/126E	30MHz~18GHz	Sep. 17, 2021	May 11, 2022~ May 12, 2022	Sep. 16, 2022	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2858/2	18GHz~40GHz	Feb. 23, 2022	May 11, 2022~ May 12, 2022	Feb. 22, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	801606/2	9KHz ~ 40GHz	Apr. 14, 2022	May 11, 2022~ May 12, 2022	Apr. 13, 2023	Radiation (03CH07-HY)
Antenna Mast	EMEC	AM-BS-4500E	N/A	Boresight mast 1M~4M	N/A	May 11, 2022~ May 12, 2022	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	May 11, 2022~ May 12, 2022	N/A	Radiation (03CH07-HY)
Software	Audix	E3	N/A	N/A	N/A	May 11, 2022~ May 12, 2022	N/A	Radiation (03CH07-HY)
USB Data Logger	TECPEL	TR-32	HE17XB1148	N/A	Oct. 25, 2021	May 11, 2022~ May 12, 2022	Oct. 24, 2022	Radiation (03CH07-HY)



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.1 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.1 dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.8 dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.0 dB
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Appendix A. Test Result of Conducted Test Items

Test Engineer:	Kai Liao	Temperature:	21~25	°C
Test Date:	2022/05/02 ~2022/06/13	Relative Humidity:	51~54	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE	1Mbps	1	0	2402	1.070	0.696	0.50	Pass
BLE	1Mbps	1	19	2440	1.093	0.720	0.50	Pass
BLE	1Mbps	1	39	2480	1.089	0.710	0.50	Pass

TEST RESULTS DATA
Peak Power Table

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
BLE	1Mbps	1	0	2402	4.98	30.00	3.30	8.28	36.00	Pass
BLE	1Mbps	1	19	2440	5.13	30.00	3.30	8.43	36.00	Pass
BLE	1Mbps	1	39	2480	4.97	30.00	3.30	8.27	36.00	Pass

TEST RESULTS DATA
Average Power Table
(Reporting Only)

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	4.68	30.00	3.30	7.98	36.00	Pass
BLE	1Mbps	1	19	2440	4.77	30.00	3.30	8.07	36.00	Pass
BLE	1Mbps	1	39	2480	4.66	30.00	3.30	7.96	36.00	Pass

TEST RESULTS DATA
Peak Power Density

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm /100kHz)	Peak PSD (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
BLE	1Mbps	1	0	2402	3.74	-8.24	3.30	8.00	Pass
BLE	1Mbps	1	19	2440	3.82	-8.61	3.30	8.00	Pass
BLE	1Mbps	1	39	2480	3.80	-8.19	3.30	8.00	Pass

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 20dBc limit.

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE	2Mbps	1	0	2402	2.062	1.292	0.50	Pass
BLE	2Mbps	1	19	2440	2.058	1.328	0.50	Pass
BLE	2Mbps	1	39	2480	2.074	1.400	0.50	Pass

TEST RESULTS DATA
Peak Power Table

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
BLE	2Mbps	1	0	2402	4.97	30.00	3.30	8.27	36.00	Pass
BLE	2Mbps	1	19	2440	5.10	30.00	3.30	8.40	36.00	Pass
BLE	2Mbps	1	39	2480	4.92	30.00	3.30	8.22	36.00	Pass

TEST RESULTS DATA
Average Power Table
(Reporting Only)

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	4.67	30.00	3.30	7.97	36.00	Pass
BLE	2Mbps	1	19	2440	4.76	30.00	3.30	8.06	36.00	Pass
BLE	2Mbps	1	39	2480	4.65	30.00	3.30	7.95	36.00	Pass

TEST RESULTS DATA
Peak Power Density

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm /100kHz)	Peak PSD (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
BLE	2Mbps	1	0	2402	3.12	-10.57	3.30	8.00	Pass
BLE	2Mbps	1	19	2440	3.20	-10.47	3.30	8.00	Pass
BLE	2Mbps	1	39	2480	3.25	-10.62	3.30	8.00	Pass

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 20dBc limit.



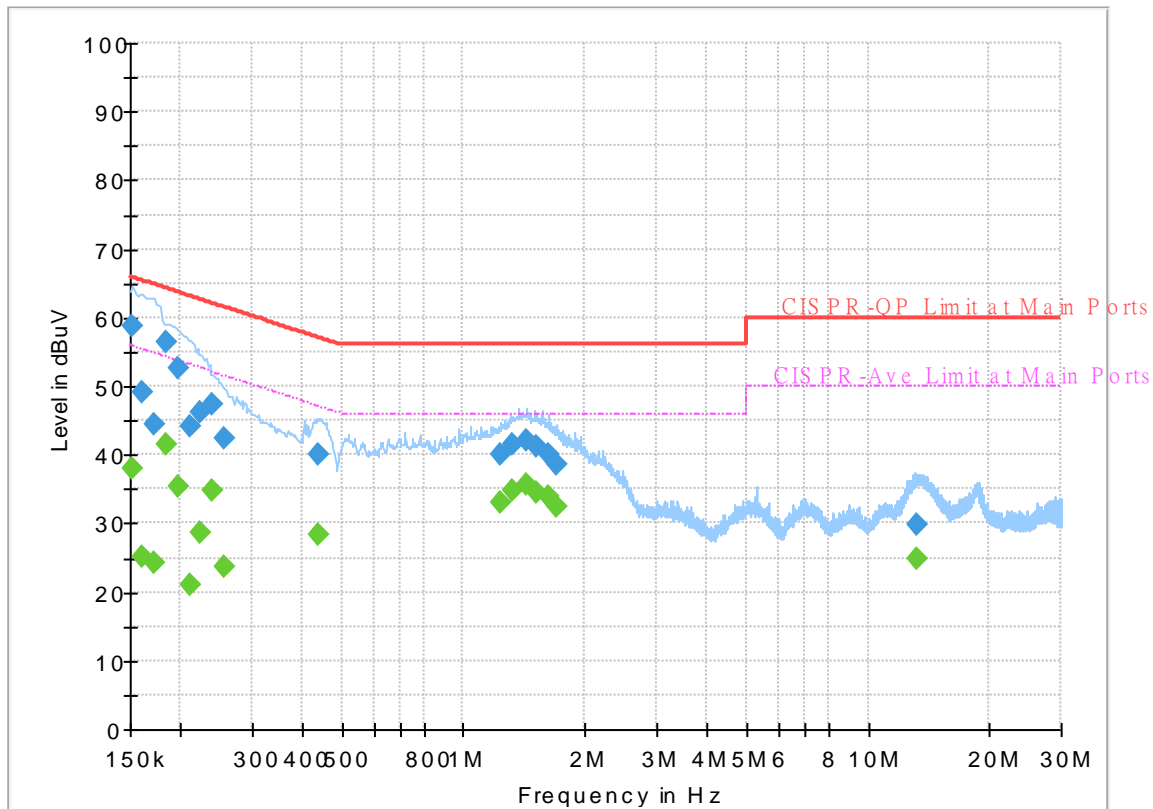
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Tom Lee	Temperature :	23~26°C
		Relative Humidity :	45~55%

EUT Information

Report NO : 242614
 Test Mode : Mode 1
 Test Voltage : Power From System
 Phase : Line

Full Spectrum



Final_Result

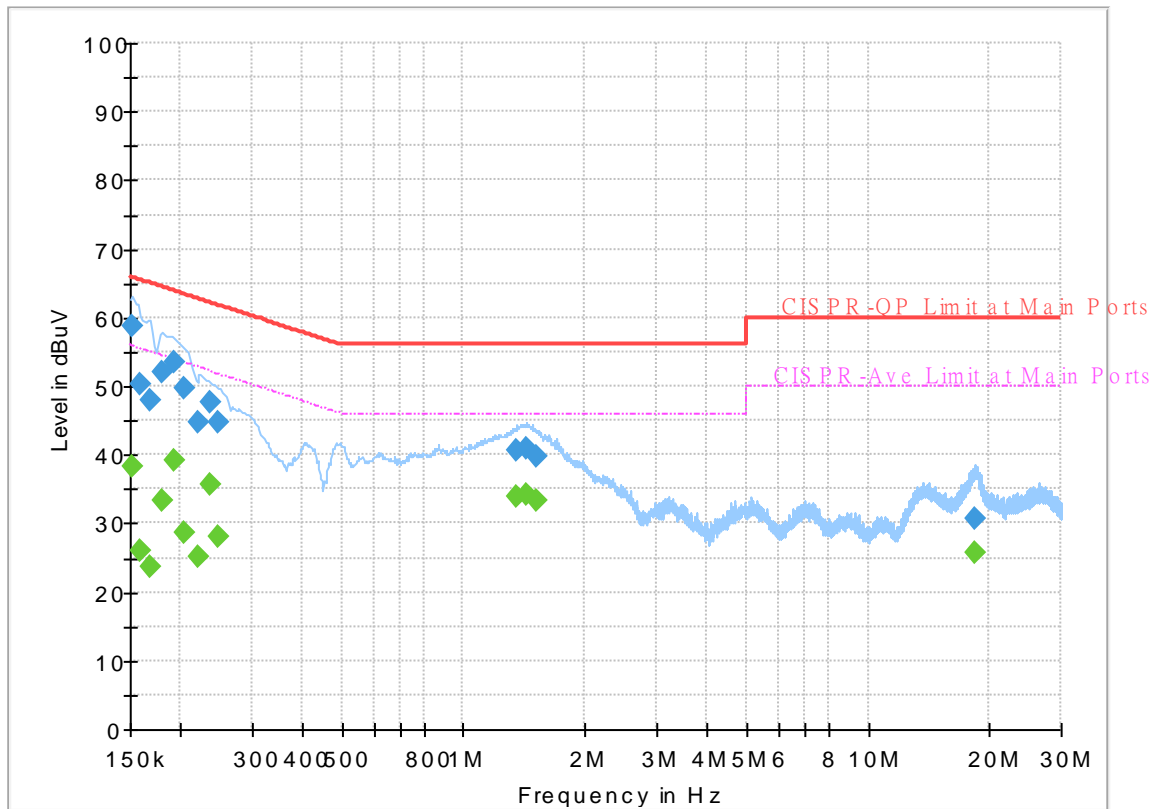
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	38.00	55.88	17.88	L1	OFF	19.6
0.152250	58.79	---	65.88	7.09	L1	OFF	19.6
0.161250	---	25.03	55.40	30.37	L1	OFF	19.6
0.161250	49.03	---	65.40	16.37	L1	OFF	19.6
0.172500	---	24.30	54.84	30.54	L1	OFF	19.6
0.172500	44.32	---	64.84	20.52	L1	OFF	19.6
0.183750	---	41.61	54.31	12.70	L1	OFF	19.6
0.183750	56.55	---	64.31	7.76	L1	OFF	19.6
0.197250	---	35.35	53.73	18.38	L1	OFF	19.6
0.197250	52.69	---	63.73	11.04	L1	OFF	19.6
0.210750	---	21.18	53.18	32.00	L1	OFF	19.6
0.210750	44.10	---	63.18	19.08	L1	OFF	19.6
0.224250	---	28.59	52.66	24.07	L1	OFF	19.6
0.224250	46.12	---	62.66	16.54	L1	OFF	19.6
0.240000	---	34.70	52.10	17.40	L1	OFF	19.6
0.240000	47.33	---	62.10	14.77	L1	OFF	19.6
0.255750	---	23.56	51.57	28.01	L1	OFF	19.6
0.255750	42.49	---	61.57	19.08	L1	OFF	19.6
0.438000	---	28.42	47.10	18.68	L1	OFF	19.6
0.438000	39.93	---	57.10	17.17	L1	OFF	19.6
1.236750	---	33.13	46.00	12.87	L1	OFF	19.6

1.236750	40.20	---	56.00	15.80	L1	OFF	19.6
1.329000	---	34.69	46.00	11.31	L1	OFF	19.6
1.329000	41.57	---	56.00	14.43	L1	OFF	19.6
1.430250	---	35.58	46.00	10.42	L1	OFF	19.6
1.430250	42.24	---	56.00	13.76	L1	OFF	19.6
1.518000	---	34.51	46.00	11.49	L1	OFF	19.6
1.518000	41.19	---	56.00	14.81	L1	OFF	19.6
1.626000	---	33.90	46.00	12.10	L1	OFF	19.6
1.626000	40.10	---	56.00	15.90	L1	OFF	19.6
1.707000	---	32.35	46.00	13.65	L1	OFF	19.6
1.707000	38.65	---	56.00	17.35	L1	OFF	19.6
13.276500	---	24.94	50.00	25.06	L1	OFF	19.8
13.276500	29.76	---	60.00	30.24	L1	OFF	19.8

EUT Information

Report NO : 242614
 Test Mode : Mode 1
 Test Voltage : Power From System
 Phase : Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	38.25	55.88	17.63	N	OFF	19.6
0.152250	58.67	---	65.88	7.21	N	OFF	19.6
0.159000	---	26.15	55.52	29.37	N	OFF	19.6
0.159000	50.21	---	65.52	15.31	N	OFF	19.6
0.168000	---	23.66	55.06	31.40	N	OFF	19.6
0.168000	48.05	---	65.06	17.01	N	OFF	19.6
0.179250	---	33.23	54.52	21.29	N	OFF	19.6
0.179250	52.09	---	64.52	12.43	N	OFF	19.6
0.192750	---	39.26	53.92	14.66	N	OFF	19.6
0.192750	53.58	---	63.92	10.34	N	OFF	19.6
0.204000	---	28.59	53.45	24.86	N	OFF	19.6
0.204000	49.57	---	63.45	13.88	N	OFF	19.6
0.222000	---	25.01	52.74	27.73	N	OFF	19.6
0.222000	44.64	---	62.74	18.10	N	OFF	19.6
0.237750	---	35.78	52.17	16.39	N	OFF	19.6
0.237750	47.56	---	62.17	14.61	N	OFF	19.6
0.249000	---	27.99	51.79	23.80	N	OFF	19.6
0.249000	44.83	---	61.79	16.96	N	OFF	19.6
1.358250	---	33.83	46.00	12.17	N	OFF	19.6
1.358250	40.52	---	56.00	15.48	N	OFF	19.6
1.425750	---	34.19	46.00	11.81	N	OFF	19.6

1.425750	40.97	---	56.00	15.03	N	OFF	19.6
1.520250	---	33.19	46.00	12.81	N	OFF	19.6
1.520250	39.87	---	56.00	16.13	N	OFF	19.6
18.478500	---	25.76	50.00	24.24	N	OFF	19.9
18.478500	30.78	---	60.00	29.22	N	OFF	19.9



Appendix C. Conducted Spurious Emission

Test Engineer :	Kal Liao	Temperature :	21.2 ~ 24.7°C
		Relative Humidity :	54.4 ~ 66.8%

<1Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	MIMO	Grounding	Peak
		(MHz)	(dBm)	Limit	Line	Level	Gain	Loss	Factor	Factor	Avg.
				(dB)	(dBm)	(dBm)	(dBi)	(dB)	(dB)	(dB)	(P/A)
BLE CH 00 2402MHz		2363.025	-41.76	-20.56	-21.2	-46.59	3.3	1.53	0	0	P
		2388.33	-55.12	-13.92	-41.2	-59.92	3.3	1.5	0	0	A
	*	2402	11.13	-	-	6.33	3.3	1.5	0	0	P
	*	2402	9.53	-	-	4.73	3.3	1.5	0	0	A
BLE CH 19 2440MHz		2316.86	-42.09	-20.89	-21.2	-46.9	3.3	1.51	0	0	P
		2389.8	-55.91	-14.71	-41.2	-60.71	3.3	1.5	0	0	A
	*	2440	11.1	-	-	6.22	3.3	1.58	0	0	P
	*	2440	9.52	-	-	4.64	3.3	1.58	0	0	A
		2489.92	-41.03	-19.83	-21.2	-45.95	3.3	1.62	0	0	P
		2487.96	-54.89	-13.69	-41.2	-59.66	3.3	1.47	0	0	A
BLE CH 39 2480MHz	*	2480	11.14	-	-	6.37	3.3	1.47	0	0	P
	*	2480	9.64	-	-	4.87	3.3	1.47	0	0	A
		2483.48	-38.11	-16.91	-21.2	-42.88	3.3	1.47	0	0	P
		2483.48	-48.53	-7.33	-41.2	-53.3	3.3	1.47	0	0	A
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.										



2.4GHz 2400~2483.5MHz

BLE (Harmonic)

BLE	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Gain (dBi)	Path Loss (dB)	MIMO Factor (dB)	Groun ding Factor (dB)	Peak Avg. (P/A)	
BLE CH 00 2402MHz		4804	-54.4	-33.2	-21.2	-60.67	3.3	2.97	0	0	P	
		7206	-54.76	-33.56	-21.2	-61.55	3.3	3.49	0	0	P	
		9608	-57.99	-36.79	-21.2	-65.22	3.3	3.93	0	0	P	
		12010	-54.46	-33.26	-21.2	-62.04	3.3	4.28	0	0	P	
		14412	-52.64	-31.44	-21.2	-62.26	3.3	6.32	0	0	P	
BLE CH 19 2440MHz		4880	-46.67	-25.47	-21.2	-52.69	3.3	2.72	0	0	P	
		7320	-59.5	-38.3	-21.2	-66.27	3.3	3.47	0	0	P	
		9760	-58.98	-37.78	-21.2	-66.26	3.3	3.98	0	0	P	
		12200	-51.53	-30.33	-21.2	-59.52	3.3	4.69	0	0	P	
		14640	-48.78	-27.58	-21.2	-57.65	3.3	5.57	0	0	P	
BLE CH 39 2480MHz		4960	-51.84	-30.64	-21.2	-57.79	3.3	2.65	0	0	P	
		7440	-53.37	-32.17	-21.2	-60.16	3.3	3.49	0	0	P	
		9920	-56.45	-35.25	-21.2	-63.82	3.3	4.07	0	0	P	
		12400	-54.87	-33.67	-21.2	-62.86	3.3	4.69	0	0	P	
		14880	-50.31	-29.11	-21.2	-59.93	3.3	6.32	0	0	P	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.											



Emission below 1GHz

BLE (LF)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	MIMO	Grounding	Peak
		(MHz)	(dBm)	(dB)	Limit	Level	Factor	Loss	Factor	Factor	Avg.
					(dBm)	(dBm)	(dBi)	(dB)	(dB)	(dB)	(P/A)
2.4GHz BLE LF		77.79	-80.16	-24.96	-55.2	-88.51	3.3	0.35	0	4.7	P
		156.63	-78.34	-26.64	-51.7	-86.86	3.3	0.52	0	4.7	P
		231.15	-78.35	-29.15	-49.2	-86.98	3.3	0.63	0	4.7	P
		729.1	-72.05	-22.85	-49.2	-81.24	3.3	1.19	0	4.7	P
		743.8	-64.52	-15.32	-49.2	-73.64	3.3	1.12	0	4.7	P
		840.4	-64.7	-15.5	-49.2	-74.04	3.3	1.34	0	4.7	P
Remark	1. No other spurious found. 2. All results are PASS against limit line.										



<2Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	MIMO	Grounding	Peak
		(MHz)	(dBm)	Limit (dB)	Line (dBm)	Level (dBm)	Gain (dBi)	Loss (dB)	Factor (dB)	Factor (dB)	Avg. (P/A)
BLE CH 00 2402MHz		2385.6	-41.95	-20.75	-21.2	-46.75	3.3	1.5	0	0	P
		2388.435	-55.28	-14.08	-41.2	-60.08	3.3	1.5	0	0	A
	*	2402	10.93	-	-	6.13	3.3	1.5	0	0	P
	*	2402	7.79	-	-	2.99	3.3	1.5	0	0	A
BLE CH 19 2440MHz		2382.8	-42.04	-20.84	-21.2	-46.83	3.3	1.49	0	0	P
		2389.1	-56.02	-14.82	-41.2	-60.82	3.3	1.5	0	0	A
	*	2440	10.9	-	-	6.02	3.3	1.58	0	0	P
	*	2440	7.85	-	-	2.97	3.3	1.58	0	0	A
		2488.1	-41.21	-20.01	-21.2	-45.98	3.3	1.47	0	0	P
		2487.82	-55.05	-13.85	-41.2	-59.82	3.3	1.47	0	0	A
BLE CH 39 2480MHz	*	2480	10.92	-	-	6.15	3.3	1.47	0	0	P
	*	2480	7.94	-	-	3.17	3.3	1.47	0	0	A
		2483.55	-34.67	-13.47	-21.2	-39.44	3.3	1.47	0	0	P
		2483.48	-45.81	-4.61	-41.2	-50.58	3.3	1.47	0	0	A
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.										



2.4GHz 2400~2483.5MHz

BLE (Harmonic)

BLE	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Gain (dBi)	Path Loss (dB)	MIMO Factor (dB)	Groun ding Factor (dB)	Peak Avg. (P/A)
BLE CH 00 2402MHz		4804	-55.09	-33.89	-21.2	-61.36	3.3	2.97	0	0	P
		7206	-55.28	-34.08	-21.2	-62.07	3.3	3.49	0	0	P
		9608	-57.93	-36.73	-21.2	-65.16	3.3	3.93	0	0	P
		12010	-55.38	-34.18	-21.2	-62.96	3.3	4.28	0	0	P
		14412	-52.96	-31.76	-21.2	-62.58	3.3	6.32	0	0	P
BLE CH 19 2440MHz		4880	-46.62	-25.42	-21.2	-52.64	3.3	2.72	0	0	P
		7320	-59.69	-38.49	-21.2	-66.46	3.3	3.47	0	0	P
		9760	-58.86	-37.66	-21.2	-66.14	3.3	3.98	0	0	P
		12200	-51.66	-30.46	-21.2	-59.65	3.3	4.69	0	0	P
		14640	-49.12	-27.92	-21.2	-57.99	3.3	5.57	0	0	P
BLE CH 39 2480MHz		4960	-52.13	-30.93	-21.2	-58.08	3.3	2.65	0	0	P
		7440	-53.91	-32.71	-21.2	-60.7	3.3	3.49	0	0	P
		9920	-56.78	-35.58	-21.2	-64.15	3.3	4.07	0	0	P
		12400	-54.93	-33.73	-21.2	-62.92	3.3	4.69	0	0	P
		14880	-51.02	-29.82	-21.2	-60.64	3.3	6.32	0	0	P
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.										



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	Peak or Average
H/V	Horizontal or Vertical



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

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	MIMO	Grounding	Peak
				Limit	Line	Level	Factor	Loss	Factor	Factor	Avg.
		(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dBi)	(dB)	(dB)	(dB)	(P/A)
BLE CH 00		2390	-45.8	-24.6	-21.2	-48.44	2	0.64	0	0	P
2402MHz		2390	-59.91	-18.71	-41.2	-62.58	2	0.67	0	0	A

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBm) =
Antenna Factor(dBi) + Path Loss(dB) + Read Level(dBm)
3. Over Limit(dB) = Level(dBm) – Limit Line(dBm)

For Peak Limit @ 2390MHz:

1. Level(dBm)
= Antenna Factor(dBi) + Path Loss(dB) + Read Level(dBm)
= 2(dBi) + 0.64(dB) - 48.44(dBm)
= -45.8 (dBm)
2. Over Limit(dB)
= Level(dBm) – Limit Line(dBm)
= -45.8(dBm) +21.2(dBm)
= -24.6(dB)

For Average Limit @ 2390MHz:

1. Level(dBm)
= Antenna Factor(dBi) + Path Loss(dB) + Read Level(dBm)
= 2(dBi) + 0.67(dB) - 62.58(dBm)
= -59.91 (dBm)
2. Over Limit(dB)
= Level(dBm) – Limit Line(dBm)
= -59.91(dBm) + 41.2(dBm)
= -18.71(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.



Appendix D. Conducted Spurious Emission Plots

Test Engineer :	Kal Liao	Temperature :	21.2 ~ 24.7°C
		Relative Humidity :	54.4 ~ 66.8%

Note symbol

-L	Low channel location
-R	High channel location



<1Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge)

BLE	2.4GHz 2400~2483.5MHz Band Edge	
	BLE CH00 2402MHz	
	CSE	Fundamental
Peak	<p>Site : TH05-HY Condition : FCC CLASS-B_CON ANT_GAIN+3.3 HORIZONTAL : RBW 1000.000kHz VIEW 3000.000kHz</p>	<p>Site : TH05-HY Condition : FCC CLASS-B_CON ANT_GAIN+3.3 HORIZONTAL : RBW 1000.000kHz VIEW 3000.000kHz</p>
Avg.	<p>Site : TH05-HY Condition : FCC CLASS-B(AVG)_CON ANT_GAIN+3.3 HORIZONTAL : RBW 1000.000kHz VIEW 0.010kHz</p>	<p>Site : TH05-HY Condition : FCC CLASS-B(AVG)_CON ANT_GAIN+3.3 HORIZONTAL : RBW 1000.000kHz VIEW 0.010kHz</p>



BLE	2.4GHz 2400~2483.5MHz Band Edge	
	BLE CH19 2440MHz - L	
	CSE	Fundamental
Peak	<p>Site Condition: TH05-HY FCC CLASS-B_CON ANT_GAIN+3 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz</p>	<p>Site Condition: TH05-HY FCC CLASS-B_CON ANT_GAIN+3 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz</p>
Avg.	<p>Site Condition: TH05-HY FCC CLASS-B(AVG)_CON ANT_GAIN+3.3 HORIZONTAL RBW:1000.000KHz VBW:0.010KHz</p>	<p>Site Condition: TH05-HY FCC CLASS-B(AVG)_CON ANT_GAIN+3.3 HORIZONTAL RBW:1000.000KHz VBW:0.010KHz</p>



BLE	2.4GHz 2400~2483.5MHz Band Edge	
BLE CH19 2440MHz - R		
	CSE	Fundamental
<p>Peak</p>		<p>Left blank</p>
<p>Avg.</p>		<p>Left blank</p>



BLE	2.4GHz 2400~2483.5MHz Band Edge	
BLE CH39 2480MHz		
	CSE	Fundamental
Peak	<p>Site : TH05-HY Condition : FCC CLASS-B, CON ANT_GAIN+3.3 HORIZONTAL REW: 1000.000kHz VIEW: 3000.000kHz</p>	<p>Site : TH05-HY Condition : FCC CLASS-B, CON ANT_GAIN+3.3 HORIZONTAL REW: 1000.000kHz VIEW: 3000.000kHz</p>
Avg.	<p>Site : TH05-HY Condition : FCC CLASS-B(AVG), CON ANT_GAIN+3.3 HORIZONTAL REW: 1000.000kHz VIEW: 0.010kHz</p>	<p>Site : TH05-HY Condition : FCC CLASS-B(AVG), CON ANT_GAIN+3.3 HORIZONTAL REW: 1000.000kHz VIEW: 0.010kHz</p>

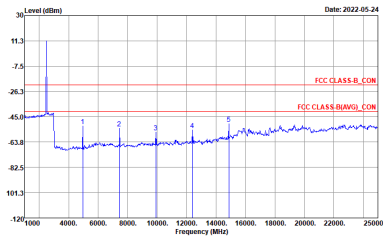


2.4GHz 2400~2483.5MHz

BLE (Harmonic)

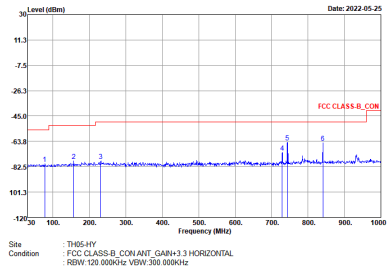
BLE	2.4GHz 2400~2483.5MHz Harmonic	
BLE		
CH00 2402MHz		CH19 2440MHz
<p>Peak Avg.</p>	<p>Site : TH05-HY Condition : FCC CLASS-B_CON ANT_GAIN+3.3 HORIZONTAL RESW: 1000.000kHz VIEW: 3000.000kHz</p>	<p>Site : TH05-HY Condition : FCC CLASS-B_CON ANT_GAIN+3.3 HORIZONTAL RESW: 1000.000kHz VIEW: 3000.000kHz</p>



BLE	2.4GHz 2400~2483.5MHz Harmonic	
	BLE	
	CH39 2480MHz	
<p>Peak Avg.</p>	 <p>Date: 2022-05-24</p> <p>Site : TH05-HY Condition : FCC CLASS-B_CON ANT_GAIN=3.3 HORIZONTAL : RBW: 1000.000KHz VIEW: 2000.000KHz</p>	



Emission below 1GHz
2.4GHz BLE (LF)

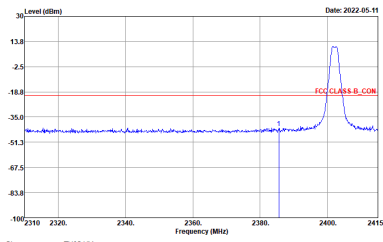
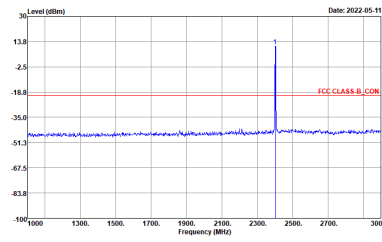
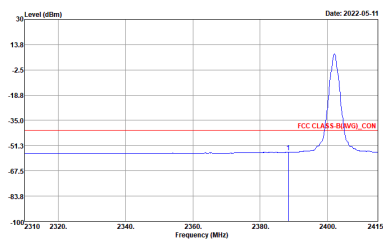
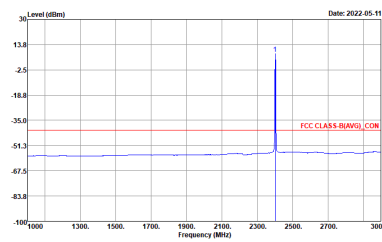
BLE	2.4GHz 2400~2483.5MHz	
	BLE LF	
<p>Peak</p>		<p>Left blank</p>



<2Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge)

BLE	2.4GHz 2400~2483.5MHz Band Edge	
	BLE CH00 2402MHz	
	CSE	Fundamental
Peak	 <p>Site Condition : TH05-HY : FCC CLASS-B_CON ANT_GAIN+3.3 HORIZONTAL : RBW: 1000.000kHz VIEW: 3000.000kHz</p>	 <p>Site Condition : TH05-HY : FCC CLASS-B_CON ANT_GAIN+3.3 HORIZONTAL : RBW: 1000.000kHz VIEW: 3000.000kHz</p>
Avg.	 <p>Site Condition : TH05-HY : FCC CLASS-B(AVG)_CON ANT_GAIN+3.3 HORIZONTAL : RBW: 1000.000kHz VIEW: 0.010kHz</p>	 <p>Site Condition : TH05-HY : FCC CLASS-B(AVG)_CON ANT_GAIN+3.3 HORIZONTAL : RBW: 1000.000kHz VIEW: 0.010kHz</p>



BLE	2.4GHz 2400~2483.5MHz Band Edge	
	BLE CH19 2440MHz - L	
	CSE	Fundamental
Peak	<p>Site Condition: TH05-HY FCC CLASS_B_CON ANT_GAIN+3.3 HORIZONTAL RBW:1000.000kHz; VSW:3000.000kHz</p>	<p>Site Condition: TH05-HY FCC CLASS_B_CON ANT_GAIN+3.3 HORIZONTAL RBW:1000.000kHz; VSW:3000.000kHz</p>
Avg.	<p>Site Condition: TH05-HY FCC CLASS_B(AVG)_CON ANT_GAIN+3.3 HORIZONTAL RBW:1000.000kHz; VSW:0.010kHz</p>	<p>Site Condition: TH05-HY FCC CLASS_B(AVG)_CON ANT_GAIN+3.3 HORIZONTAL RBW:1000.000kHz; VSW:0.010kHz</p>



BLE	2.4GHz 2400~2483.5MHz Band Edge	
BLE CH19 2440MHz - R		
	CSE	Fundamental
<p>Peak</p>	<p>Site : TH05-HY Condition : FCC CLASS-B_CON ANT_GAIN+3.3 HORIZONTAL : RBW:1000.000kHz VIEW:3000.000kHz</p>	<p>Left blank</p>
<p>Avg.</p>	<p>Site : TH05-HY Condition : FCC CLASS-B(AVG)_CON ANT_GAIN+3.3 HORIZONTAL : RBW:1000.000kHz VIEW:0.0100kHz</p>	<p>Left blank</p>



BLE	2.4GHz 2400~2483.5MHz Band Edge	
BLE CH39 2480MHz		
	CSE	Fundamental
Peak	<p>Date: 2022-05-12</p> <p>Site Condition : TH05-HY : FCC CLASS-B_CON ANT_GAIN+3.3 HORIZONTAL : RBW: 1000.000kHz VIEW: 3000.000kHz</p>	<p>Date: 2022-05-11</p> <p>Site Condition : TH05-HY : FCC CLASS-B_CON ANT_GAIN+3.3 HORIZONTAL : RBW: 1000.000kHz VIEW: 3000.000kHz</p>
Avg.	<p>Date: 2022-05-12</p> <p>Site Condition : TH05-HY : FCC CLASS-B(AVG)_CON ANT_GAIN+3.3 HORIZONTAL : RBW: 1000.000kHz VIEW: 0.0100kHz</p>	<p>Date: 2022-05-12</p> <p>Site Condition : TH05-HY : FCC CLASS-B(AVG)_CON ANT_GAIN+3.3 HORIZONTAL : RBW: 1000.000kHz VIEW: 0.0100kHz</p>

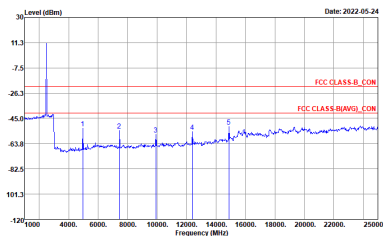


2.4GHz 2400~2483.5MHz

BLE (Harmonic)

BLE	2.4GHz 2400~2483.5MHz Harmonic	
BLE		
CH00 2402MHz		CH19 2440MHz
<p>Peak Avg.</p>	<p>Site Condition : TH05-HY : FCC CLASS-B_CON ANT_GAIN+3.3 HORIZONTAL : RESW:1000.000Hz VIEW:3000.000Hz</p>	<p>Site Condition : TH05-HY : FCC CLASS-B_CON ANT_GAIN+3.3 HORIZONTAL : RESW:1000.000Hz VIEW:3000.000Hz</p>



BLE	2.4GHz 2400~2483.5MHz Harmonic	
	BLE	
	CH39 2480MHz	
<p>Peak Avg.</p>	 <p>Site : TH05-HY Condition : FCC CLASS B_CON/ANT_GAIN+3.3 HORIZONTAL : RESV: 1000.0000Hz VIEW: 3000.0000Hz</p>	



Appendix E. Cabinet Radiated Spurious Emission

Test Engineer :	Jesse Wang, Stan Hsieh and Ken Wu	Temperature :	23~26.2°C
		Relative Humidity :	55.3~61%



<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		2365.335	55.18	-18.82	74	40.81	31.4	18.38	35.41	391	0	P	H	
		2384.97	42.94	-11.06	54	28.52	31.4	18.43	35.41	391	0	A	H	
	*	2402	86.5	-	-	72.02	31.42	18.48	35.42	391	0	P	H	
	*	2402	85.85	-	-	71.37	31.42	18.48	35.42	391	0	A	H	
													H	
													H	
			2313.57	53.68	-20.32	74	39.3	31.55	18.22	35.39	393	246	P	V
			2382.345	42.93	-11.07	54	28.51	31.4	18.43	35.41	393	246	A	V
	*		2402	84.91	-	-	70.43	31.42	18.48	35.42	393	246	P	V
	*		2402	84.26	-	-	69.78	31.42	18.48	35.42	393	246	A	V
														V
														V
BLE CH 19 2440MHz		2376.08	53.74	-20.26	74	39.35	31.4	18.4	35.41	380	5	P	H	
		2389.52	42.97	-11.03	54	28.53	31.4	18.45	35.41	380	5	A	H	
	*	2440	85.25	-	-	70.42	31.72	18.54	35.43	380	5	P	H	
	*	2440	84.66	-	-	69.83	31.72	18.54	35.43	380	5	A	H	
			2489.01	54.85	-19.15	74	39.58	32.11	18.61	35.45	380	5	P	H
			2499.86	43.93	-10.07	54	28.56	32.2	18.63	35.46	380	5	A	H
			2341.36	53.37	-20.63	74	39.04	31.43	18.3	35.4	386	137	P	V
			2382.52	42.92	-11.08	54	28.5	31.4	18.43	35.41	386	137	A	V
	*		2440	83.17	-	-	68.34	31.72	18.54	35.43	386	137	P	V
	*		2440	82.51	-	-	67.68	31.72	18.54	35.43	386	137	A	V
			2489.92	53.78	-20.22	74	38.5	32.12	18.61	35.45	386	137	P	V
			2499.86	43.86	-10.14	54	28.49	32.2	18.63	35.46	386	137	A	V



BLE CH 39 2480MHz	*	2480	83.1	-	-	67.91	32.04	18.6	35.45	361	2	P	H
	*	2480	82.47	-	-	67.28	32.04	18.6	35.45	361	2	A	H
		2488.28	54.83	-19.17	74	39.57	32.11	18.6	35.45	361	2	P	H
		2497.96	43.85	-10.15	54	28.5	32.18	18.63	35.46	361	2	A	H
													H
													H
	*	2480	79.23	-	-	64.04	32.04	18.6	35.45	369	114	P	V
	*	2480	78.4	-	-	63.21	32.04	18.6	35.45	369	114	A	V
		2489.16	55.18	-18.82	74	39.91	32.11	18.61	35.45	369	114	P	V
		2500	43.84	-10.16	54	28.48	32.2	18.62	35.46	369	114	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	40.78	-33.22	74	53.07	34.01	12.7	59	-	-	P	H	
		14499	46.99	-27.01	74	43.25	39.6	21.66	57.52	-	-	P	H	
		15870	48.52	-25.48	74	41.36	40.84	22.52	56.2	-	-	P	H	
		15870	38.92	-15.08	54	31.76	40.84	22.52	56.2	-	-	A	H	
		17850	50.57	-23.43	74	40.57	41.5	23.62	55.12	-	-	P	H	
		17850	41.06	-12.94	54	31.06	41.5	23.62	55.12	-	-	A	H	
														H
														H
														H
														H
														H
														H
														H
			4804	43.35	-30.65	74	55.64	34.01	12.7	59	-	-	P	V
			14499	47.41	-26.59	74	43.67	39.6	21.66	57.52	-	-	P	V
			15975	49.02	-24.98	74	41.49	40.97	22.59	56.03	-	-	P	V
			15975	39.4	-14.6	54	31.87	40.97	22.59	56.03	-	-	A	V
			17925	50.78	-23.22	74	40.76	41.43	23.67	55.08	-	-	P	V
		17925	40.9	-13.1	54	30.88	41.43	23.67	55.08	-	-	A	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 19 2440MHz		4880	41.69	-32.31	74	53.76	34.04	12.75	58.86	-	-	P	H	
		7320	44.53	-29.47	74	51.32	35.68	15.03	57.5	-	-	P	H	
		14499	47.18	-26.82	74	43.44	39.6	21.66	57.52	-	-	P	H	
		16125	48.64	-25.36	74	40.84	41.2	22.67	56.07	-	-	P	H	
		16125	38.64	-15.36	54	30.84	41.2	22.67	56.07	-	-	A	H	
		17850	51.47	-22.53	74	41.47	41.5	23.62	55.12	-	-	P	H	
		17850	40.78	-13.22	54	30.78	41.5	23.62	55.12	-	-	A	H	
														H
														H
														H
														H
														H
														H
			4880	43.99	-30.01	74	56.06	34.04	12.75	58.86	-	-	P	V
			7320	45.83	-28.17	74	52.62	35.68	15.03	57.5	-	-	P	V
			14499	47.25	-26.75	74	43.51	39.6	21.66	57.52	-	-	P	V
			15705	48.61	-25.39	74	42.25	40.42	22.41	56.47	-	-	P	V
			15705	38.21	-15.79	54	31.85	40.42	22.41	56.47	-	-	A	V
			17925	51.05	-22.95	74	41.03	41.43	23.67	55.08	-	-	P	V
			17925	40.87	-13.13	54	30.85	41.43	23.67	55.08	-	-	A	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	41.11	-32.89	74	52.9	34.1	12.82	58.71	-	-	P	H	
		7440	43.22	-30.78	74	49.96	35.82	15.03	57.59	-	-	P	H	
		14499	46.81	-27.19	74	43.07	39.6	21.66	57.52	-	-	P	H	
		16005	48.19	-25.81	74	40.57	41.01	22.6	55.99	-	-	P	H	
		16005	39.18	-14.82	54	31.56	41.01	22.6	55.99	-	-	A	H	
		17700	51.88	-22.12	74	42.02	41.5	23.55	55.19	-	-	P	H	
		17700	40.69	-13.31	54	30.83	41.5	23.55	55.19	-	-	A	H	
														H
														H
														H
														H
														H
			4960	43.92	-30.08	74	55.71	34.1	12.82	58.71	-	-	P	V
			7440	44.92	-29.08	74	51.66	35.82	15.03	57.59	-	-	P	V
			14499	47.38	-26.62	74	43.64	39.6	21.66	57.52	-	-	P	V
			15690	49.5	-24.5	74	43.21	40.38	22.41	56.5	-	-	P	V
			15690	38.28	-15.72	54	31.99	40.38	22.41	56.5	-	-	A	V
			17730	50.89	-23.11	74	40.97	41.53	23.56	55.17	-	-	P	V
			17730	40.75	-13.25	54	30.83	41.53	23.56	55.17	-	-	A	V
														V
													V	
													V	
													V	
													V	
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only. The emission level close to 18GHz is checked that the average emission level is noise floor only. 													



Emission above 18GHz

2.4GHz BLE (SHF)

BT	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz BLE SHF		23635	38.49	-35.51	74	49.43	38.81	8.64	58.39	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
			23754	38.86	-35.14	74	49.59	38.88	8.69	58.3	-	-	P
													V
													V
													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.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
2.4GHz BLE LF		87.78	26.86	-13.14	40	40.81	14.41	1.68	30.04	-	-	P	H	
		94.8	30.24	-13.26	43.5	43.23	15.26	1.73	29.98	-	-	P	H	
		234.39	36.05	-9.95	46	46.68	16.52	2.62	29.77	-	-	P	H	
		419.7	29.22	-16.78	46	32.76	22.6	3.61	29.75	-	-	P	H	
		848.8	33.85	-12.15	46	29.15	28.63	5.13	29.06	-	-	P	H	
		945.4	34.05	-11.95	46	27.25	29.92	5.54	28.66	-	-	P	H	
														H
														H
														H
														H
														H
														H
			30	32.18	-7.82	40	36.71	24.57	1.01	30.11	-	-	P	V
			65.37	31.54	-8.46	40	48.41	11.79	1.37	30.03	-	-	P	V
			82.38	31.97	-8.03	40	46.64	13.73	1.64	30.04	-	-	P	V
			755	30.13	-15.87	46	27.03	27.7	4.81	29.41	-	-	P	V
			891.5	33.05	-12.95	46	27.83	28.67	5.4	28.85	-	-	P	V
			959.4	34.97	-11.03	46	27.21	30.8	5.58	28.62	-	-	P	V
														V
														V
													V	
													V	
													V	

Remark

- No other spurious found.
- All results are PASS against limit line.
- 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.



<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		2364.39	53.68	-20.32	74	39.31	31.4	18.38	35.41	394	0	P	H	
		2384.34	42.93	-11.07	54	28.51	31.4	18.43	35.41	394	0	A	H	
	*	2402	86.54	-	-	72.06	31.42	18.48	35.42	394	0	P	H	
	*	2402	85.05	-	-	70.57	31.42	18.48	35.42	394	0	A	H	
													H	
													H	
			2377.2	53.71	-20.29	74	39.31	31.4	18.41	35.41	393	236	P	V
			2384.865	42.93	-11.07	54	28.51	31.4	18.43	35.41	393	236	A	V
	*		2402	84.83	-	-	70.35	31.42	18.48	35.42	393	236	P	V
	*		2402	83.21	-	-	68.73	31.42	18.48	35.42	393	236	A	V
													V	
													V	
BLE CH 19 2440MHz		2321.06	54.65	-19.35	74	40.29	31.52	18.23	35.39	379	3	P	H	
		2385.74	42.93	-11.07	54	28.5	31.4	18.44	35.41	379	3	A	H	
	*	2440	85.24	-	-	70.41	31.72	18.54	35.43	379	3	P	H	
	*	2440	83.78	-	-	68.95	31.72	18.54	35.43	379	3	A	H	
			2491.32	54.32	-19.68	74	39.03	32.13	18.61	35.45	379	3	P	H
			2498.88	43.85	-10.15	54	28.49	32.19	18.63	35.46	379	3	A	H
			2361.8	54.45	-19.55	74	40.09	31.4	18.36	35.4	331	259	P	V
			2385.74	42.94	-11.06	54	28.51	31.4	18.44	35.41	331	259	A	V
	*		2440	81.22	-	-	66.39	31.72	18.54	35.43	331	259	P	V
	*		2440	79.62	-	-	64.79	31.72	18.54	35.43	331	259	A	V
			2491.39	53.98	-20.02	74	38.69	32.13	18.61	35.45	331	259	P	V
			2499.09	43.88	-10.12	54	28.52	32.19	18.63	35.46	331	259	A	V



BLE CH 39 2480MHz	*	2480	83.22	-	-	68.03	32.04	18.6	35.45	361	0	P	H
	*	2480	81.63	-	-	66.44	32.04	18.6	35.45	361	0	A	H
		2492.2	54.74	-19.26	74	39.45	32.14	18.61	35.46	361	0	P	H
		2499.36	43.88	-10.12	54	28.52	32.19	18.63	35.46	361	0	A	H
													H
													H
	*	2480	79.48	-	-	64.29	32.04	18.6	35.45	362	259	P	V
	*	2480	77.75	-	-	62.56	32.04	18.6	35.45	362	259	A	V
		2487.24	54.75	-19.25	74	39.5	32.1	18.6	35.45	362	259	P	V
		2500	43.86	-10.14	54	28.5	32.2	18.62	35.46	362	259	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	40.99	-33.01	74	53.28	34.01	12.7	59	-	-	P	H	
		14499	47.28	-26.72	74	43.54	39.6	21.66	57.52	-	-	P	H	
		16020	48.78	-25.22	74	41.12	41.04	22.62	56	-	-	P	H	
		16020	39.13	-14.87	54	31.47	41.04	22.62	56	-	-	A	H	
		17880	50.17	-23.83	74	40.19	41.44	23.65	55.11	-	-	P	H	
		17880	40.69	-13.31	54	30.71	41.44	23.65	55.11	-	-	A	H	
														H
														H
														H
														H
														H
														H
			4804	42.91	-31.09	74	55.2	34.01	12.7	59	-	-	P	V
			14499	47.47	-26.53	74	43.73	39.6	21.66	57.52	-	-	P	V
			15840	48.46	-25.54	74	41.43	40.78	22.5	56.25	-	-	P	V
			15840	38.61	-15.39	54	31.58	40.78	22.5	56.25	-	-	A	V
			17730	51.13	-22.87	74	41.21	41.53	23.56	55.17	-	-	P	V
			17730	40.55	-13.45	54	30.63	41.53	23.56	55.17	-	-	A	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 19 2440MHz		4880	41.39	-32.61	74	53.46	34.04	12.75	58.86	-	-	P	H	
		7320	44.49	-29.51	74	51.28	35.68	15.03	57.5	-	-	P	H	
		14499	47.74	-26.26	74	44	39.6	21.66	57.52	-	-	P	H	
		15870	48.63	-25.37	74	41.47	40.84	22.52	56.2	-	-	P	H	
		15870	38.41	-15.59	54	31.25	40.84	22.52	56.2	-	-	A	H	
		17760	50.69	-23.31	74	40.72	41.56	23.57	55.16	-	-	P	H	
		17760	40.64	-13.36	54	30.67	41.56	23.57	55.16	-	-	A	H	
														H
														H
														H
														H
														H
														H
			4880	44.26	-29.74	74	56.33	34.04	12.75	58.86	-	-	P	V
			7320	46.37	-27.63	74	53.16	35.68	15.03	57.5	-	-	P	V
			14499	46.64	-27.36	74	42.9	39.6	21.66	57.52	-	-	P	V
			16125	48.38	-25.62	74	40.58	41.2	22.67	56.07	-	-	P	V
			16125	31.34	-22.66	54	23.54	41.2	22.67	56.07	-	-	A	V
			17760	50.69	-23.31	74	40.72	41.56	23.57	55.16	-	-	P	V
			17760	40.55	-13.45	54	30.58	41.56	23.57	55.16	-	-	A	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	40.8	-33.2	74	52.59	34.1	12.82	58.71	-	-	P	H	
		7440	42.37	-31.63	74	49.11	35.82	15.03	57.59	-	-	P	H	
		14499	47.28	-26.72	74	43.54	39.6	21.66	57.52	-	-	P	H	
		16170	48.66	-25.34	74	40.87	41.2	22.69	56.1	-	-	P	H	
		16170	38.42	-15.58	54	30.63	41.2	22.69	56.1	-	-	A	H	
		17760	50.98	-23.02	74	41.01	41.56	23.57	55.16	-	-	P	H	
		17760	40.39	-13.61	54	30.42	41.56	23.57	55.16	-	-	A	H	
														H
														H
														H
														H
														H
														H
			4960	44.31	-29.69	74	56.1	34.1	12.82	58.71	-	-	P	V
			7440	45.7	-28.3	74	52.44	35.82	15.03	57.59	-	-	P	V
			14499	46.86	-27.14	74	43.12	39.6	21.66	57.52	-	-	P	V
			15825	48.75	-25.25	74	41.79	40.75	22.49	56.28	-	-	P	V
			15825	37.78	-16.22	54	30.82	40.75	22.49	56.28	-	-	A	V
			17715	50.75	-23.25	74	40.87	41.51	23.55	55.18	-	-	P	V
			17715	40.34	-13.66	54	30.46	41.51	23.55	55.18	-	-	A	V
													V	
													V	
													V	
													V	
													V	
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only. The emission level close to 18GHz is checked that the average emission level 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	Peak or Average
H/V	Horizontal or Vertical



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

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		(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. Over Limit(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. Over Limit(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. Over Limit(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 F. Cabinet Radiated Spurious Emission Plots

Test Engineer :	Jesse Wang, Stan Hsieh and Ken Wu	Temperature :	23~26.2°C
		Relative Humidity :	55.3~61%

Note symbol

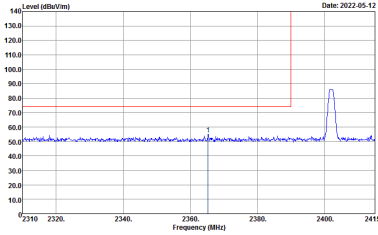
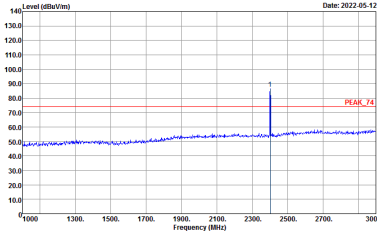
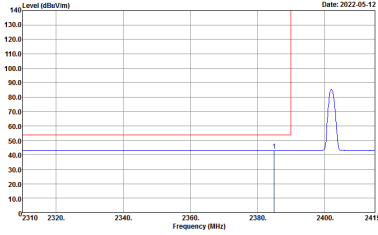
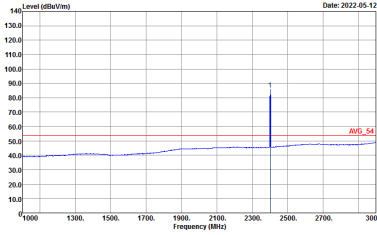
-L	Low channel location
-R	High channel location



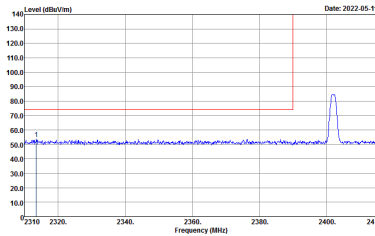
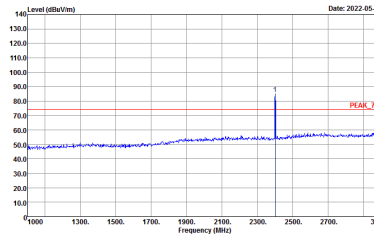
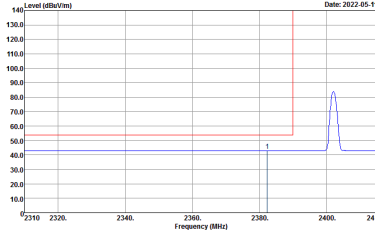
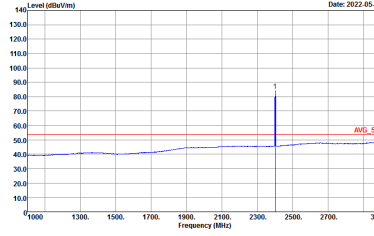
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2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH00 2402MHz		
Horizontal		Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:3000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL : RBW:3000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	 <p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH00 2402MHz		
	Vertical	Fundamental
Peak	 <p>Date: 2022-05-11</p> <p>Site Condition : 03CH07-HY : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Date: 2022-05-11</p> <p>Site Condition : 03CH07-HY : PEAK_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg	 <p>Date: 2022-05-11</p> <p>Site Condition : 03CH07-HY : AVG_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	 <p>Date: 2022-05-11</p> <p>Site Condition : 03CH07-HY : AVG_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH19 2440MHz - L		
	Horizontal	Fundamental
Peak	<p>Date: 2022-05-12</p> <p>Site : 03CH07-HY Condition : PEAK_BE_24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Date: 2022-05-12</p> <p>Site : 03CH07-HY Condition : PEAK_24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Date: 2022-05-12</p> <p>Site : 03CH07-HY Condition : AVG_BE_24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Date: 2022-05-12</p> <p>Site : 03CH07-HY Condition : AVG_24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Horizontal	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	Left blank
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	Left blank



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH19 2440MHz - L		
	Vertical	Fundamental
Peak	<p>Date: 2022-05-12</p> <p>Site : 03CH07-HY Condition : PEAK_BE_24 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	<p>Date: 2022-05-12</p> <p>Site : 03CH07-HY Condition : PEAK_24 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	<p>Date: 2022-05-12</p> <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	<p>Date: 2022-05-12</p> <p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00073962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	Left blank
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00073962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	Left blank



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH39 2480MHz		
Horizontal		Fundamental
Peak	<p>Date: 2022-05-12</p> <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Date: 2022-05-12</p> <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Date: 2022-05-12</p> <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	<p>Date: 2022-05-12</p> <p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>

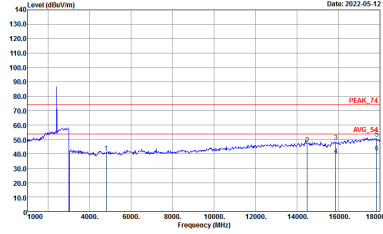
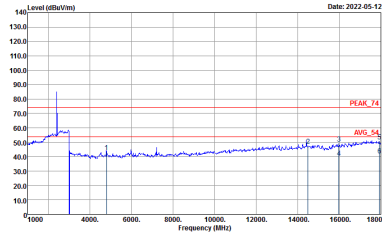


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH39 2480MHz		
	Vertical	Fundamental
Peak	<p>Date: 2022-05-12</p> <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWTA:Auto</p>	<p>Date: 2022-05-12</p> <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWTA:Auto</p>
Avg.	<p>Date: 2022-05-12</p> <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWTA:Auto</p>	<p>Date: 2022-05-12</p> <p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWTA:Auto</p>

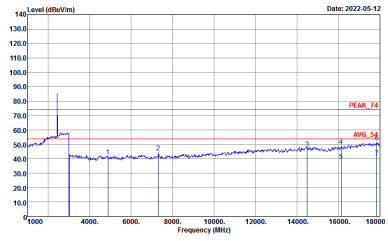
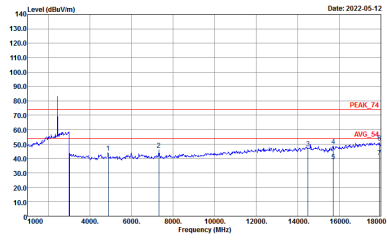


2.4GHz 2400~2483.5MHz

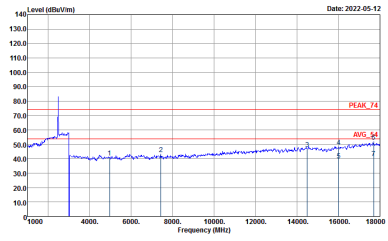
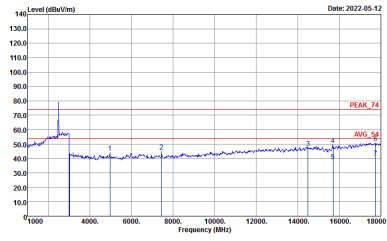
BLE (Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
BLE CH00 2402MHz		
	Horizontal	Vertical
Peak Avg.	 <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL</p>	 <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL</p>



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
BLE CH19 2440MHz		
	Horizontal	Vertical
Peak Avg.	 <p>Site : 03CH02-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL</p>	 <p>Site : 03CH02-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL</p>



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
BLE CH39 2480MHz		
	Horizontal	Vertical
Peak Avg.	 <p>Site : 03CH02-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL</p>	 <p>Site : 03CH02-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL</p>



Emission above 18GHz
2.4GHz BLE (SHF @ 1m)

BLE	2.4GHz 2400~2483.5MHz	
	BLE SHF	
	Horizontal	Vertical
Peak Avg.	<p>Site : 03C107-RY Condition : PEAK_74 1m SHF-EHF_5170251 HORIZONTAL</p>	<p>Site : 03C107-RY Condition : PEAK_74 1m SHF-EHF_5170251 VERTICAL</p>



Emission below 1GHz
2.4GHz BLE (LF)

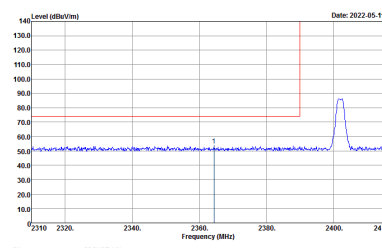
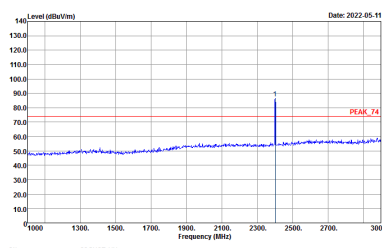
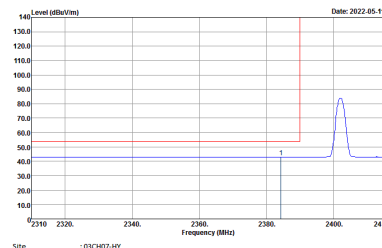
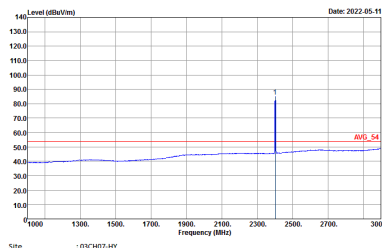
BLE	2.4GHz 2400~2483.5MHz	
	BLE LF	
	Horizontal	Vertical
QP / Peak	<p>Site : 03C1607-HY Condition : QP 3m LF-ANT-35413(6) HORIZONTAL</p>	<p>Site : 03C1607-HY Condition : QP 3m LF-ANT-35413(6) VERTICAL</p>



<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	 <p>Site Condition : 03CH07-HY : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site Condition : 03CH07-HY : PEAK_74 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site Condition : 03CH07-HY : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:5.000kHz SWT:Auto</p>	 <p>Site Condition : 03CH07-HY : AVG_54 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:5.000kHz SWT:Auto</p>

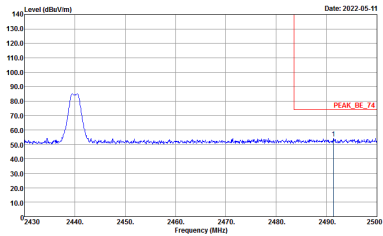
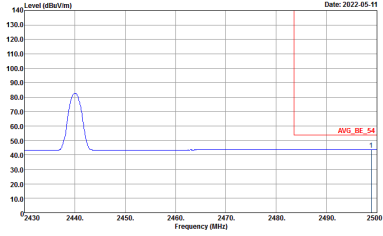


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH00 2402MHz		
	Vertical	Fundamental
Peak	<p>Date: 2022-05-11</p> <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	<p>Date: 2022-05-11</p> <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg	<p>Date: 2022-05-11</p> <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	<p>Date: 2022-05-11</p> <p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>

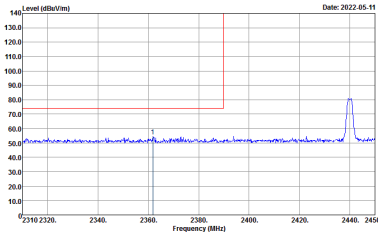
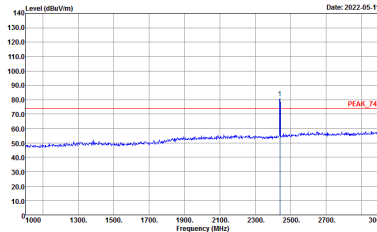
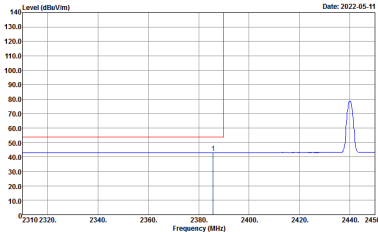
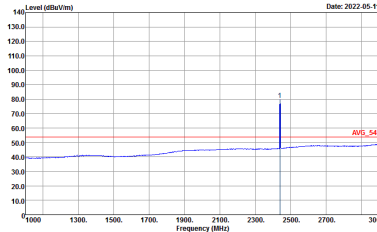


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Horizontal	Fundamental
Peak	<p>Date: 2022-05-11</p> <p>Site : 03CH07-HY Condition : PEAK_BE_24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	<p>Date: 2022-05-11</p> <p>Site : 03CH07-HY Condition : PEAK_24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	<p>Date: 2022-05-11</p> <p>Site : 03CH07-HY Condition : AVG_BE_24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	<p>Date: 2022-05-11</p> <p>Site : 03CH07-HY Condition : AVG_24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>

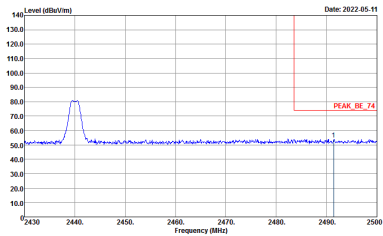
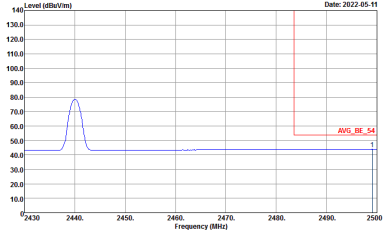


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH19 2440MHz - R		
	Horizontal	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00073962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00073962 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	Left blank

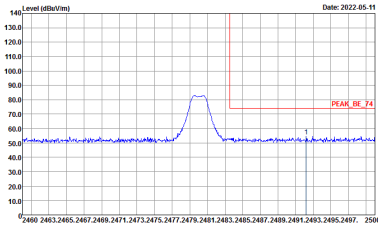
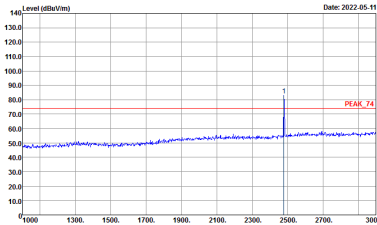
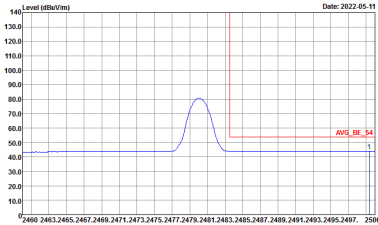
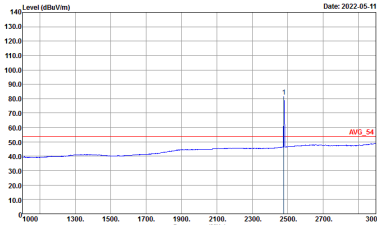


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH19 2440MHz - L		
	Vertical	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_24 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	 <p>Site : 03CH07-HY Condition : PEAK_24 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_24 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	 <p>Site : 03CH07-HY Condition : AVG_24 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH19 2440MHz - R		
	Vertical	Fundamental
<p>Peak</p>	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	<p>Left blank</p>
<p>Avg.</p>	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>	<p>Left blank</p>



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH39 2480MHz		
Horizontal		Fundamental
Peak	 <p>Date: 2022-05-11</p> <p>Level (dBm/1m) vs Frequency (MHz)</p> <p>Peak: PEAK_BE_74</p> <p>Site Condition: 03CH07-HY, PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL, RBW:1000.000KHz VBW:3000.000KHz SWTA:Auto</p>	 <p>Date: 2022-05-11</p> <p>Level (dBm/1m) vs Frequency (MHz)</p> <p>Peak: PEAK_74</p> <p>Site Condition: 03CH07-HY, PEAK_74 3m HF_ANT_00075962 HORIZONTAL, RBW:1000.000KHz VBW:3000.000KHz SWTA:Auto</p>
Avg.	 <p>Date: 2022-05-11</p> <p>Level (dBm/1m) vs Frequency (MHz)</p> <p>Avg: AVG_BE_54</p> <p>Site Condition: 03CH07-HY, AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL, RBW:1000.000KHz VBW:0.010KHz SWTA:Auto</p>	 <p>Date: 2022-05-11</p> <p>Level (dBm/1m) vs Frequency (MHz)</p> <p>Avg: AVG_54</p> <p>Site Condition: 03CH07-HY, AVG_54 3m HF_ANT_00075962 HORIZONTAL, RBW:1000.000KHz VBW:0.010KHz SWTA:Auto</p>

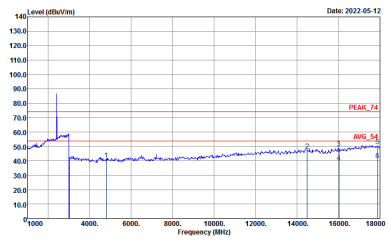
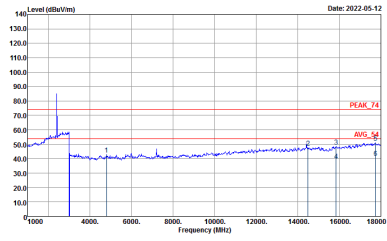


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH39 2480MHz		
Vertical		Fundamental
Peak	<p>Date: 2022-05-11</p> <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWTA:Auto</p>	<p>Date: 2022-05-11</p> <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWTA:Auto</p>
Avg.	<p>Date: 2022-05-11</p> <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWTA:Auto</p>	<p>Date: 2022-05-11</p> <p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWTA:Auto</p>



2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
BLE CH00 2402MHz		
	Horizontal	Vertical
Peak Avg.	 <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL</p>	 <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL</p>



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH02-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL</p>	<p>Site : 03CH02-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL</p>



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL</p>	<p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL</p>



Appendix G. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
Bluetooth –LE for 1Mbps	100.00	-	-	10kHz
Bluetooth –LE for 2Mbps	100.00	-	-	10kHz

