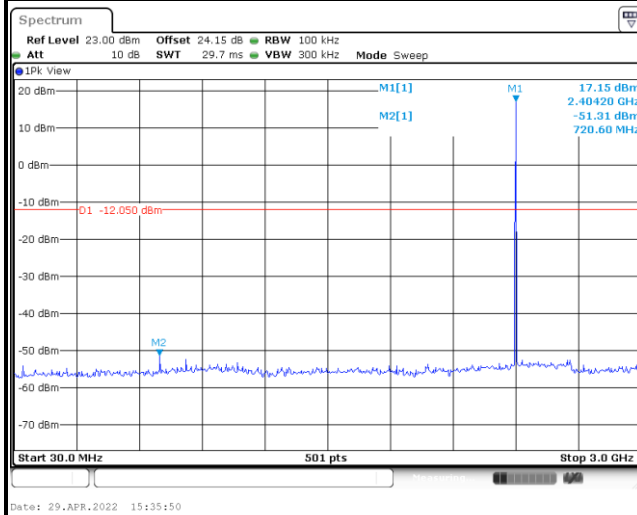
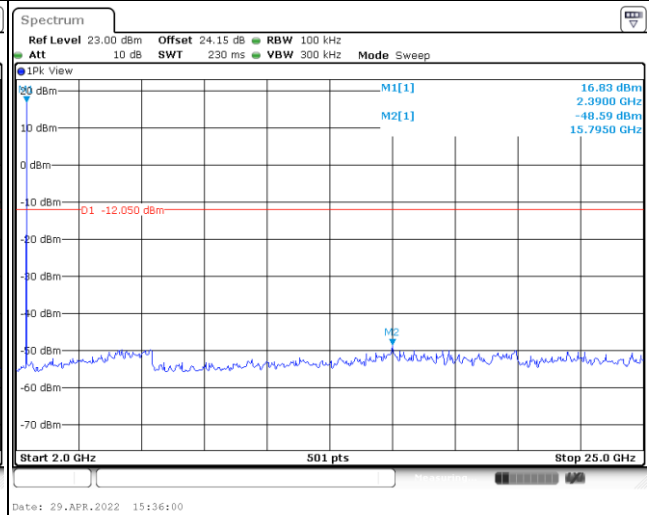
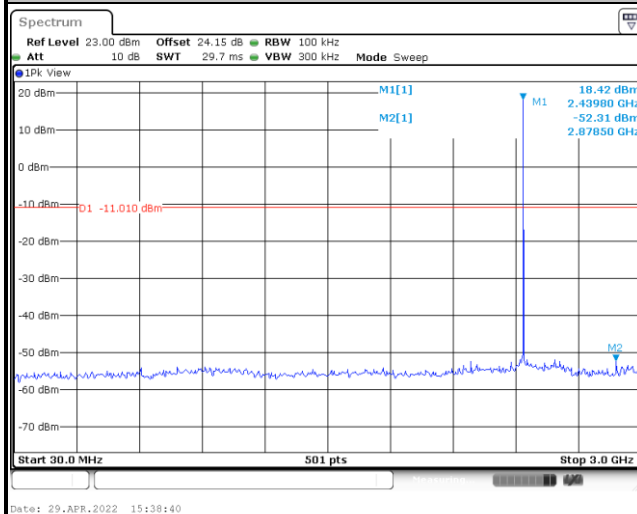
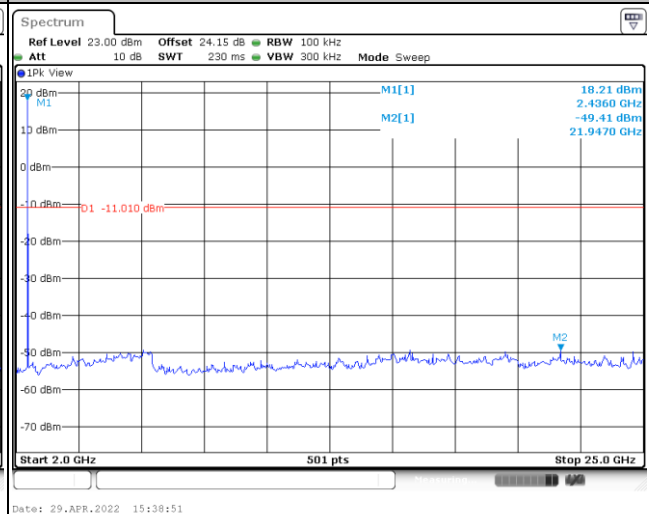
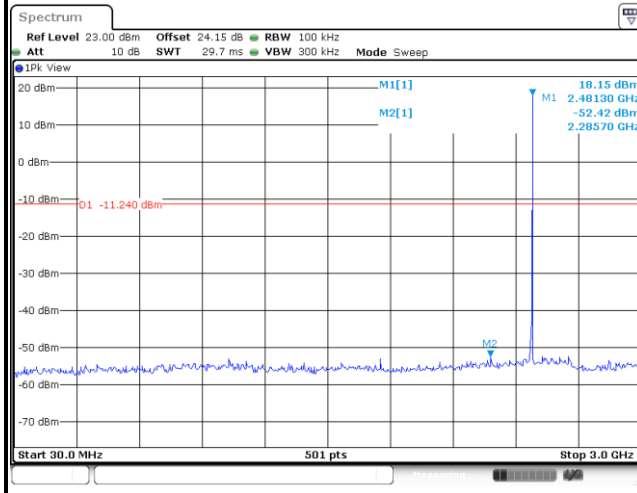
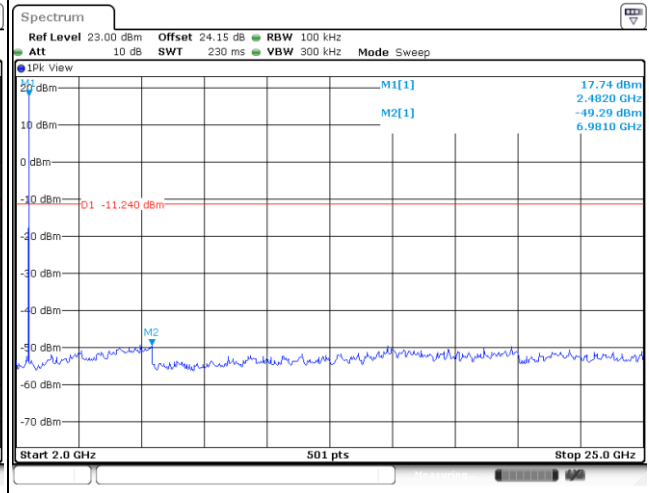




<Ant. 3>

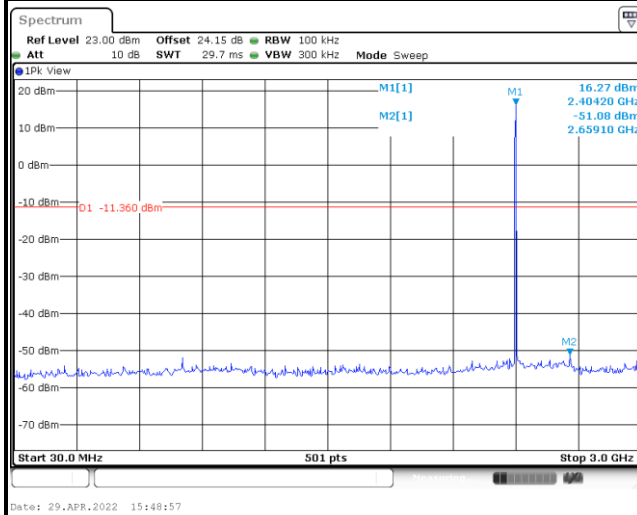
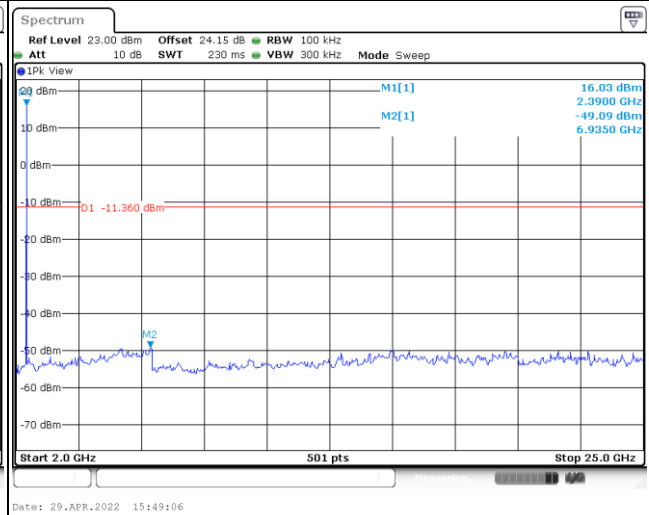
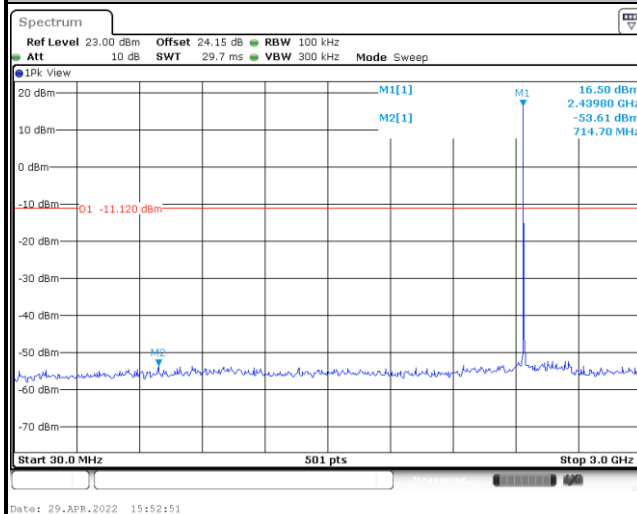
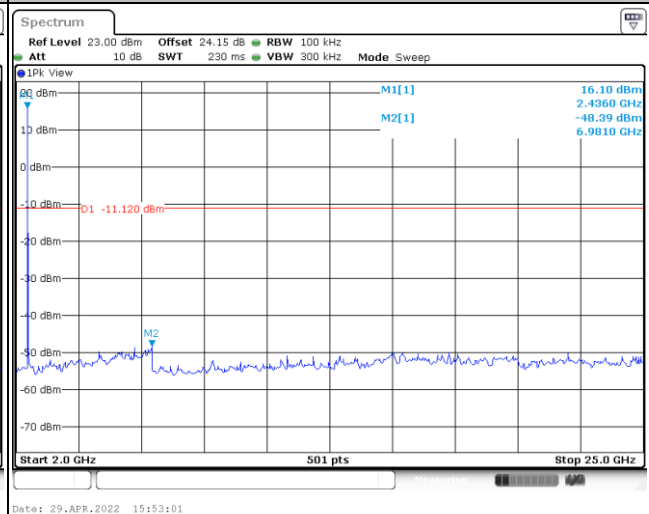
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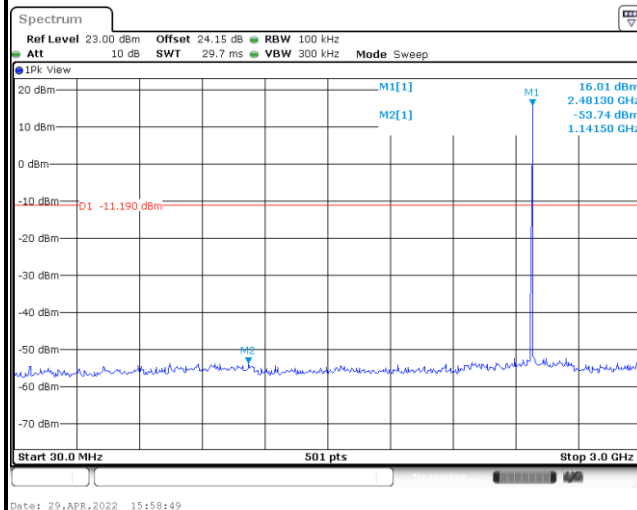
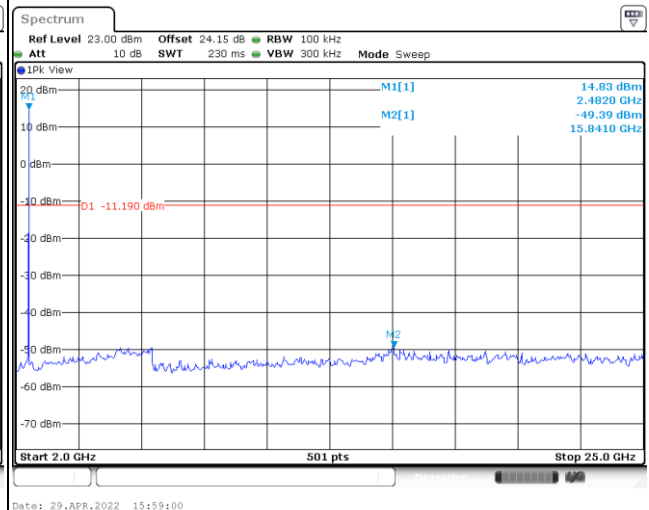
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Bluetooth LE 1Mbps GFSK Channel 00****Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 00****Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 19****Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 19**

**Conducted Spurious Emission Plot on
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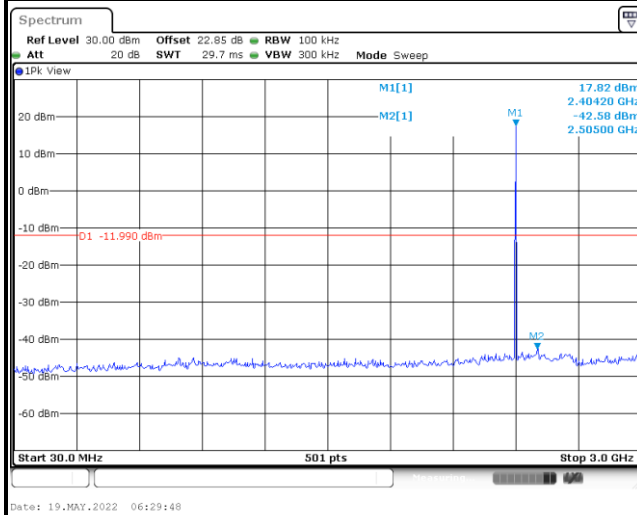
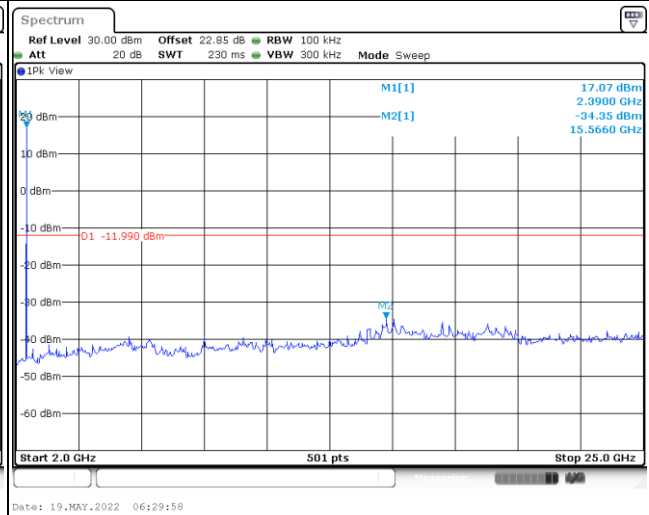
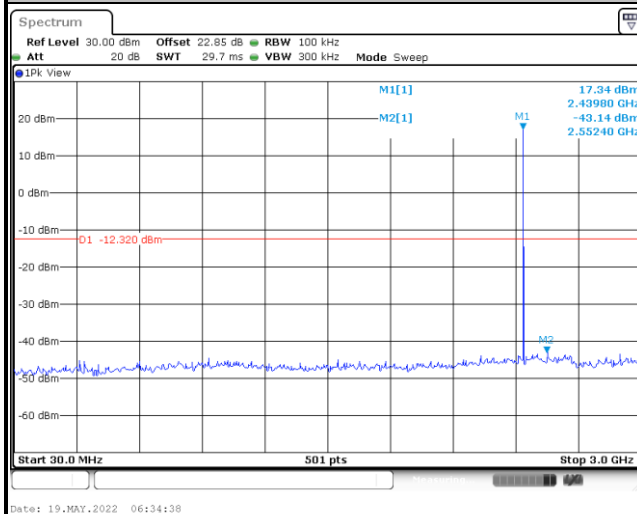
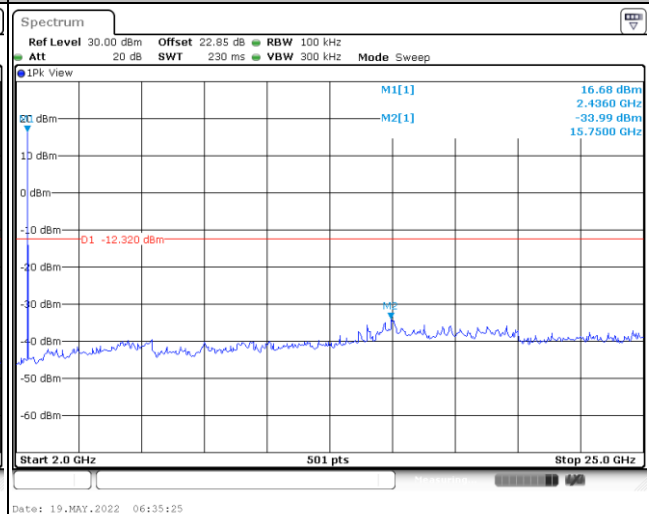
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Bluetooth LE 2Mbps GFSK Channel 00****Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 00****Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 19****Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 19**

**Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 39****Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 39**



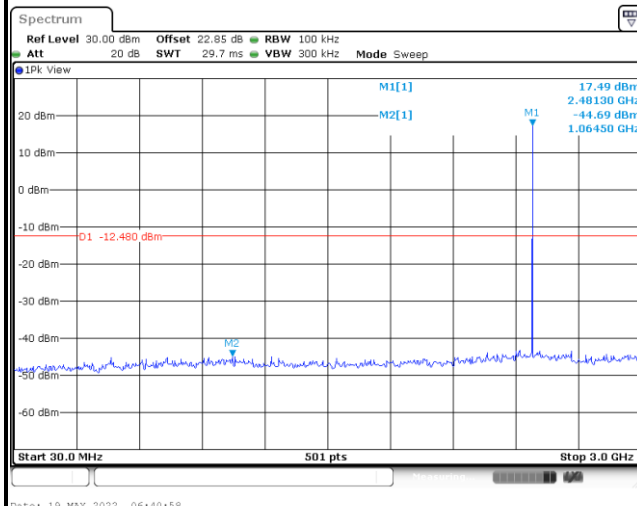
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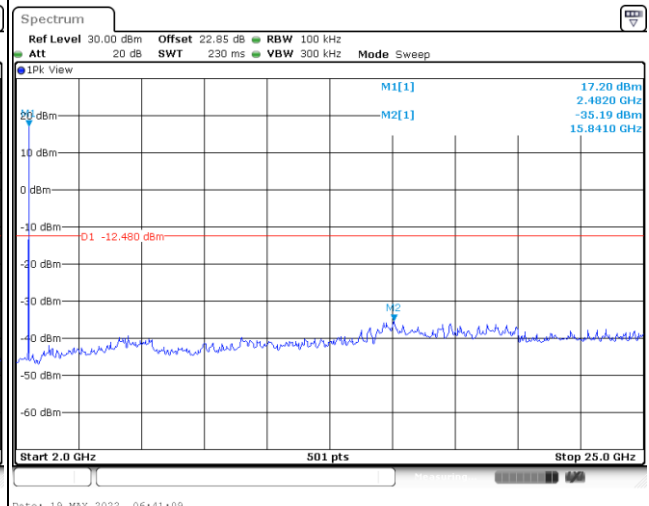
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Bluetooth LE 1Mbps GFSK Channel 00****Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 19****Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 19**



Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 39

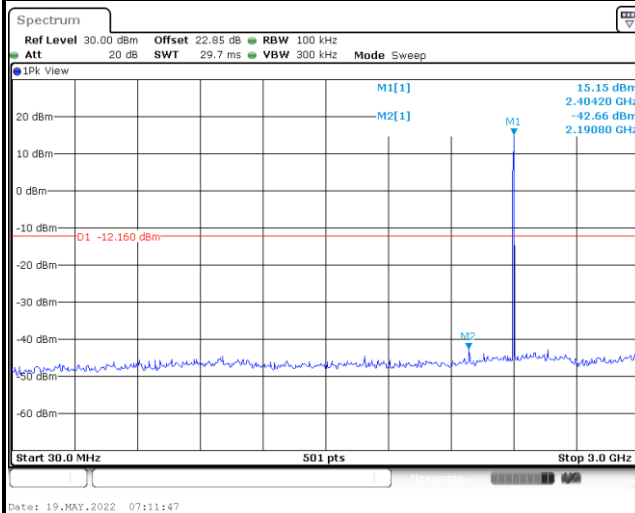
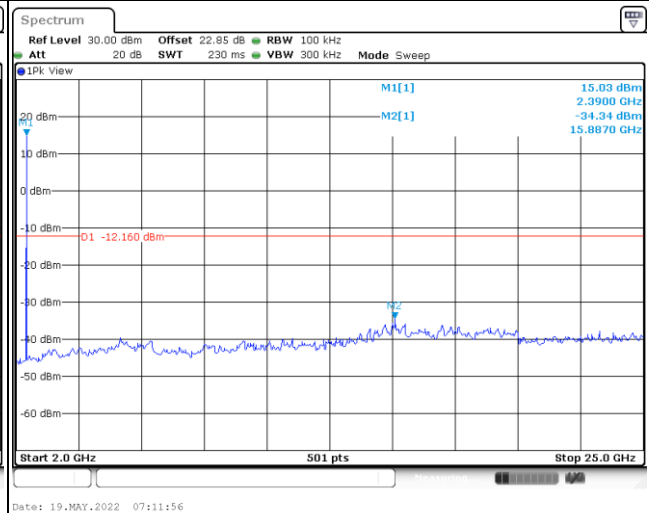
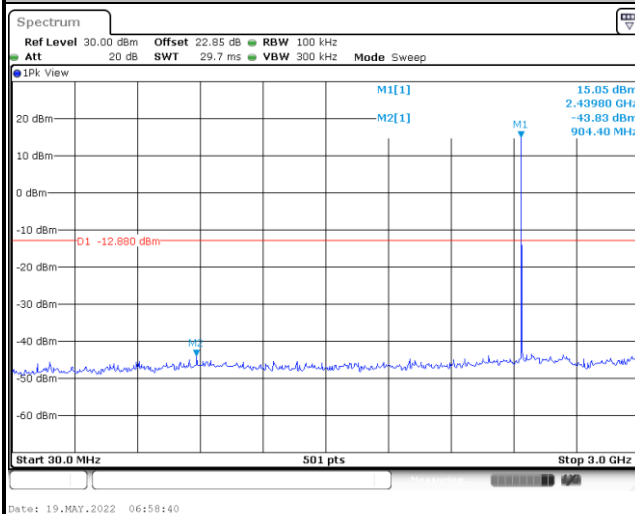
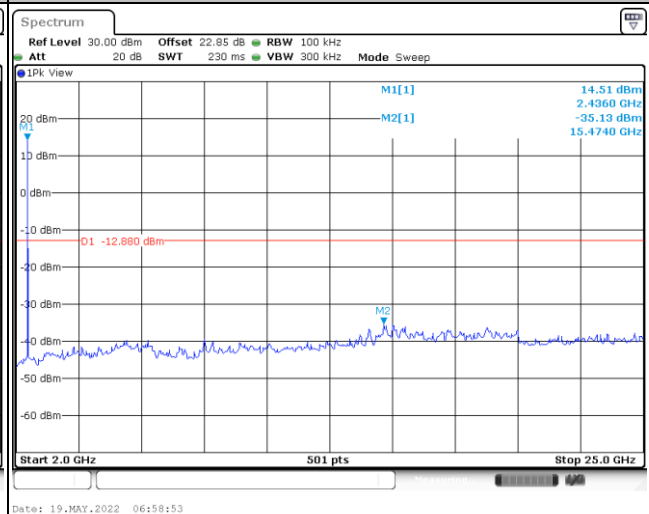


Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 39



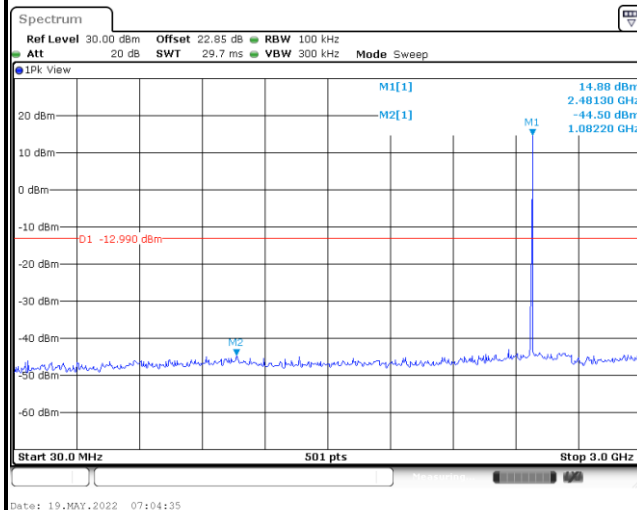


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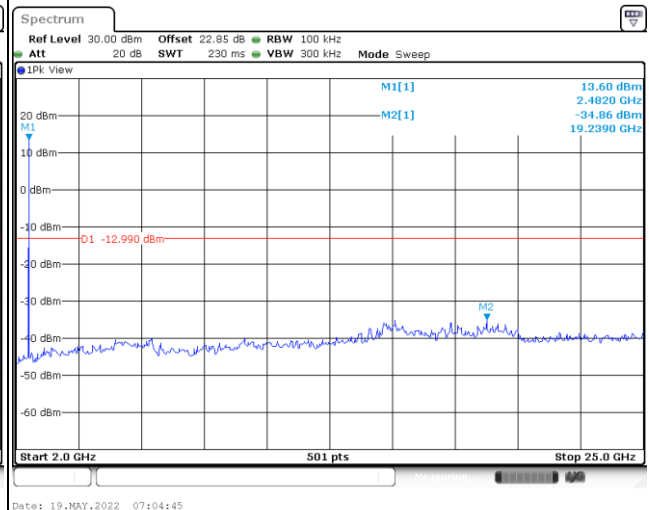
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Bluetooth LE 2Mbps GFSK Channel 00Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 19Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 19



Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 39



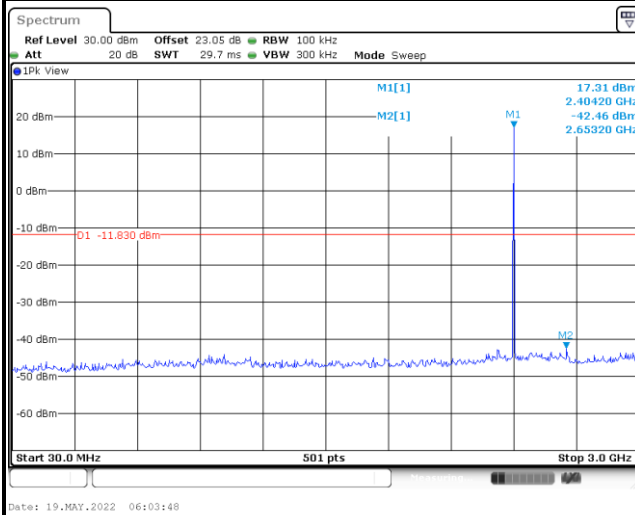
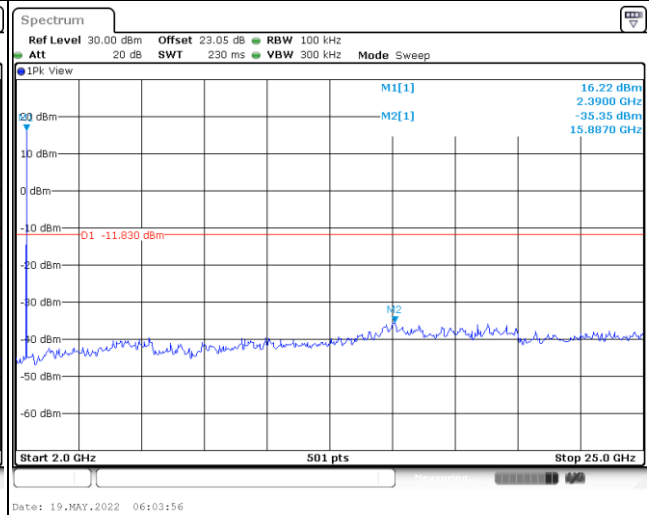
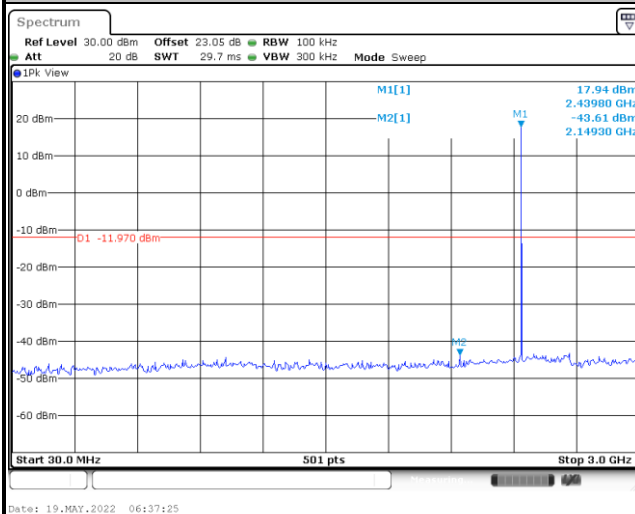
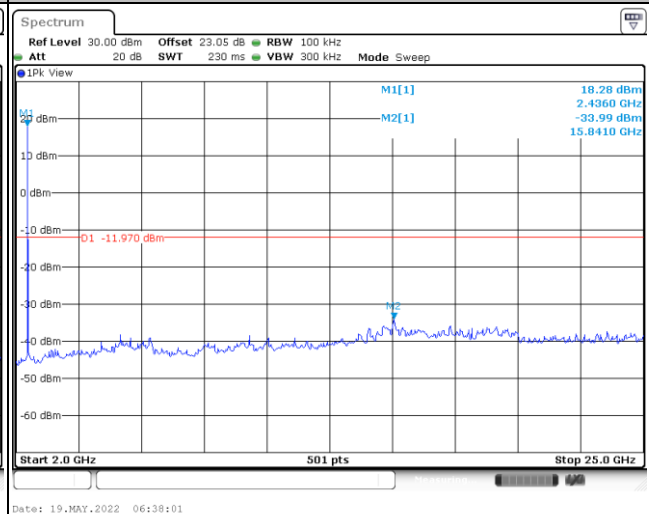
Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 39

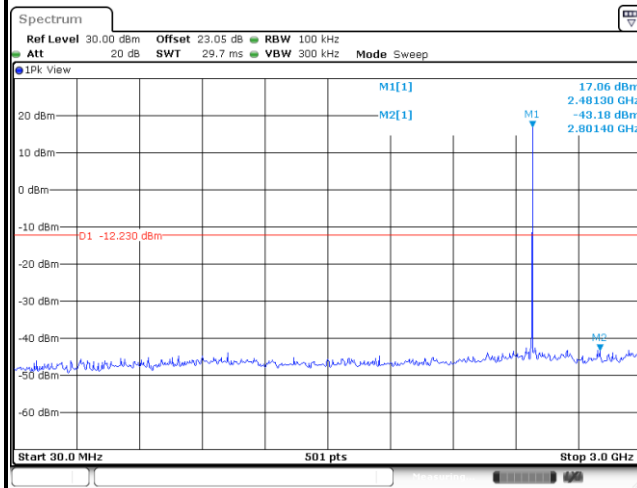
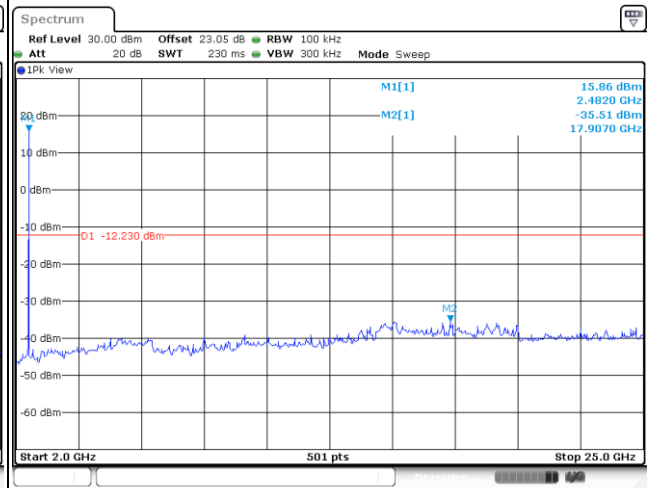




MIMO <Ant. 3>

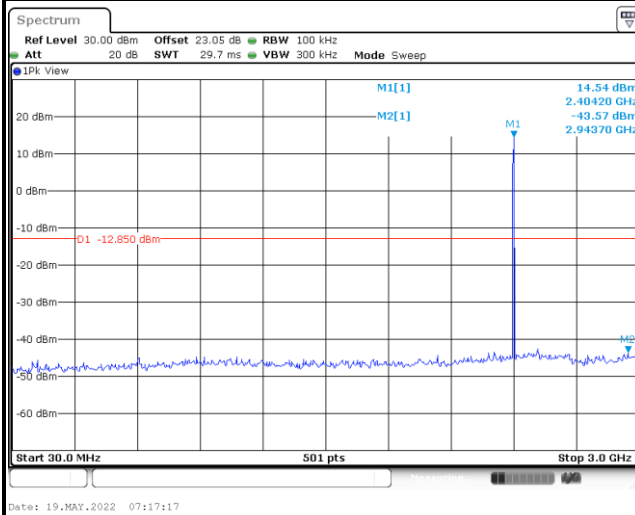
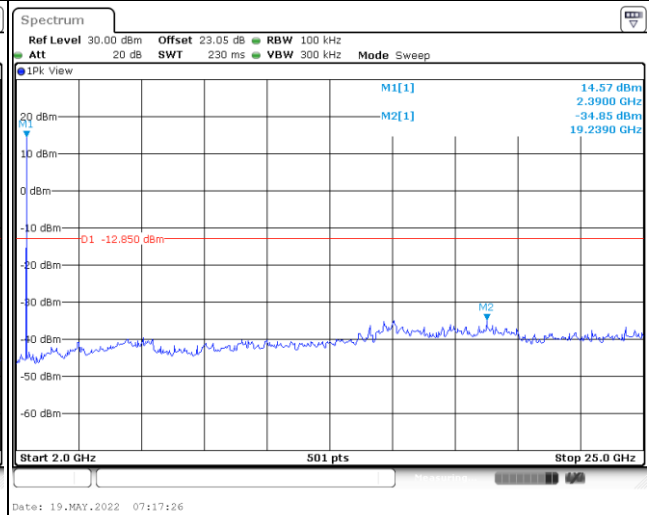
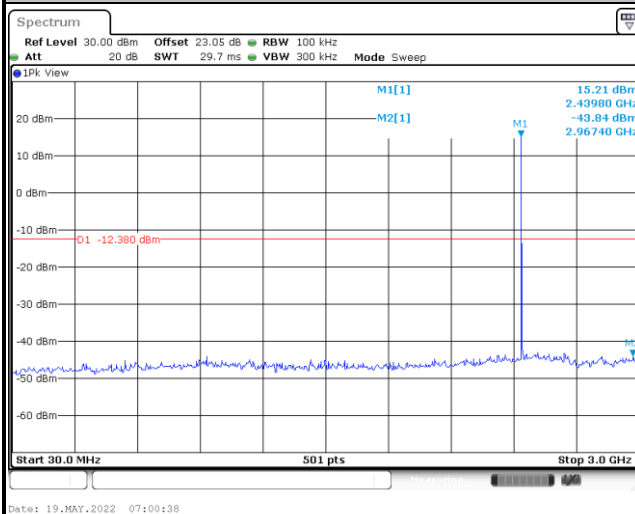
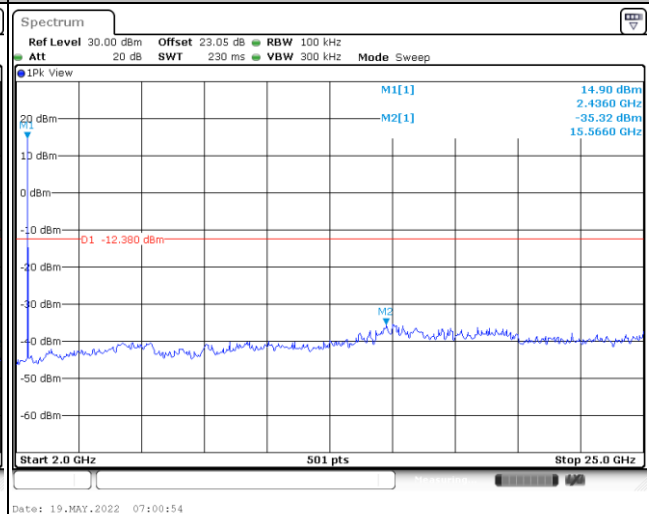
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Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 00Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 00Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 19Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 19

**Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 39****Conducted Spurious Emission Plot on
Bluetooth LE 1Mbps GFSK Channel 39**

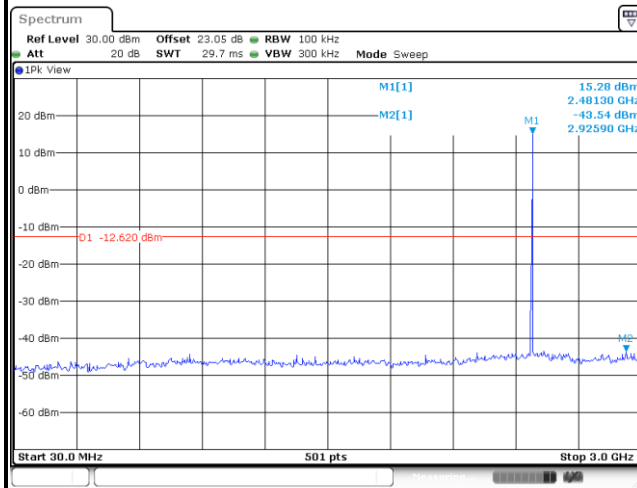


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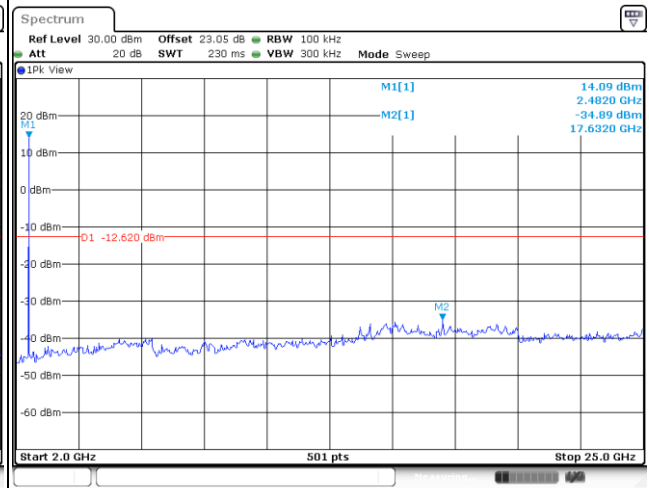
**Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 00****Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 00****Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 19****Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 19**



Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 39



Conducted Spurious Emission Plot on
Bluetooth LE 2Mbps GFSK Channel 39



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

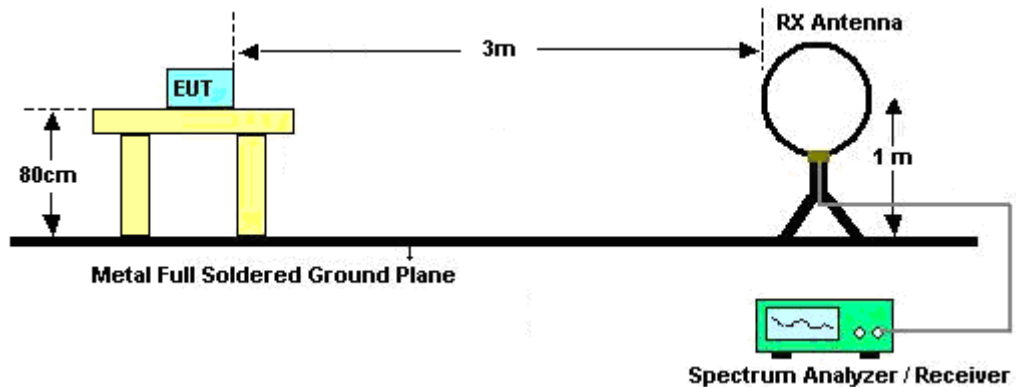
Please refer to the measuring equipment list in this test report.

3.5.3 Test Procedures

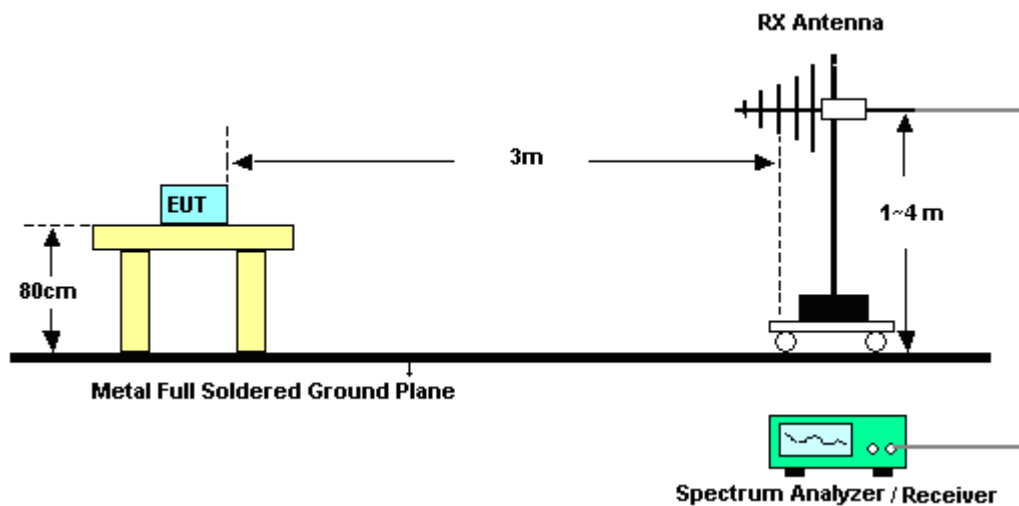
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT is arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the 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 $\geq$ 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

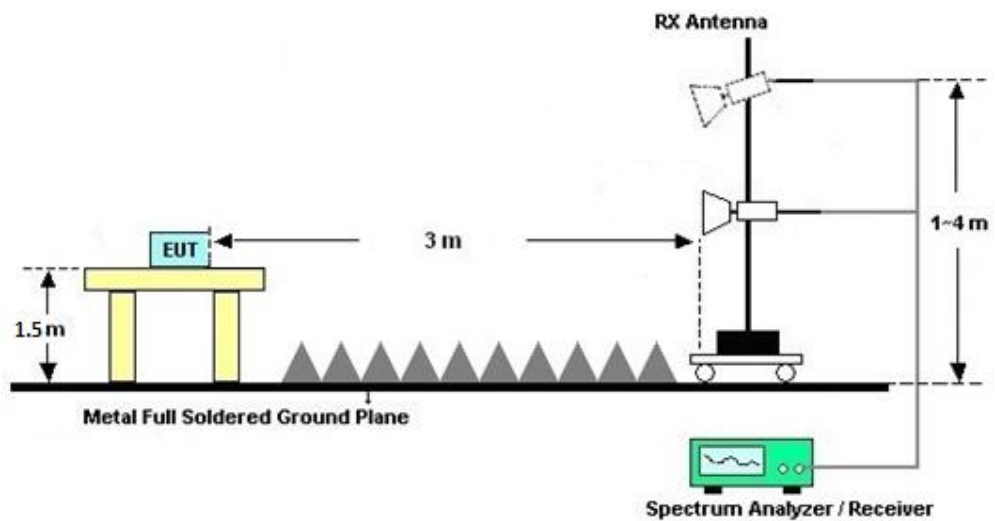
For radiated test below 30MHz



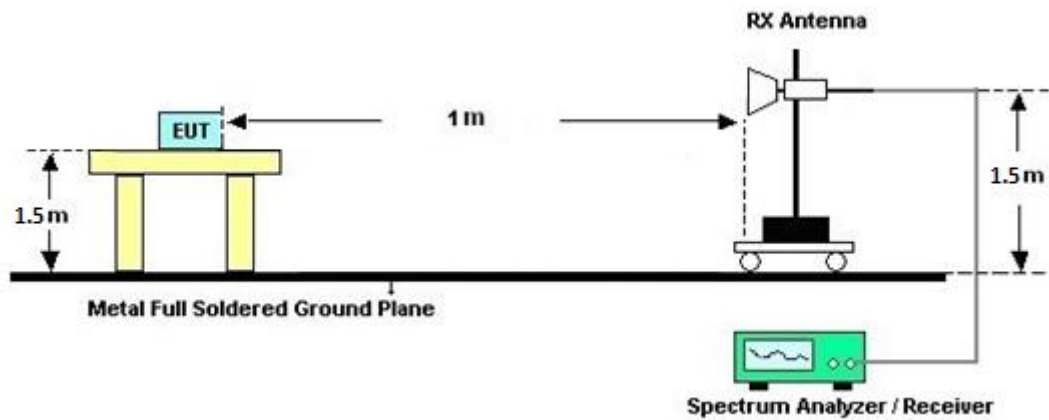
For radiated test from 30MHz to 1GHz



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 Radiated Spurious at Band Edges

Please refer to Appendix C and D.

3.5.7 Duty Cycle

Please refer to Appendix E.

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

Please refer to Appendix C and D.

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.

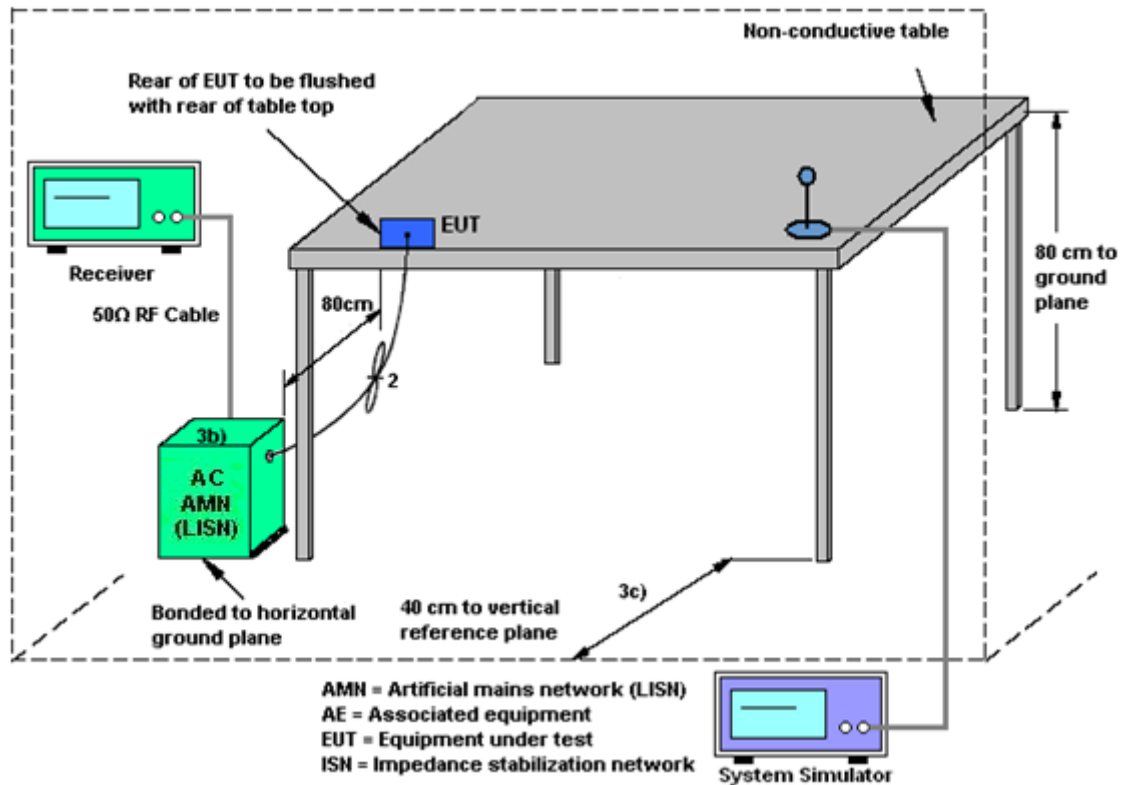
3.6.2 Measuring Instruments

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

<CDD Modes >

For power measurements on IEEE 802.11 devices,

Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows:

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$.

G_{ANT} is set equal to the gain of the antenna having the highest gain.



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	Keysight	N9010B	MY60241055	10Hz~44GHz	Jul. 12, 2021	Apr. 12, 2022 ~ Apr. 16, 2022	Jul. 11, 2022	Radiation (03CH20-HY)
Preamplifier	COM-POWER	PAM-103	18020201	1MHz-1000MHz	Jan. 03, 2022	Apr. 12, 2022 ~ Apr. 16, 2022	Jan. 02, 2023	Radiation (03CH20-HY)
Amplifier	EMCI	EMC118A45SE	980792	N/A	Nov. 15, 2021	Apr. 12, 2022 ~ Apr. 16, 2022	Nov. 14, 2022	Radiation (03CH20-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 24, 2021	Apr. 12, 2022 ~ Apr. 16, 2022	Dec. 23, 2022	Radiation (03CH20-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jan. 07, 2022	Apr. 12, 2022 ~ Apr. 16, 2022	Jan. 06, 2023	Radiation (03CH20-HY)
Bilog Antenna	TESEQ	CBL 6111D&00802 N1D01N-06	55606 & 08	30MHz~1GHz	Oct. 17, 2021	Apr. 12, 2022 ~ Apr. 16, 2022	Oct. 16, 2022	Radiation (03CH20-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-02294	1GHz~18GHz	Jun. 23, 2021	Apr. 12, 2022 ~ Apr. 16, 2022	Jun. 22, 2022	Radiation (03CH20-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00993	18GHz~40GHz	Nov. 30, 2021	Apr. 12, 2022 ~ Apr. 16, 2022	Nov. 29, 2022	Radiation (03CH20-HY)
Hygrometer	TECEPIL	DTM-303B	TP200728	N/A	Mar. 22, 2022	Apr. 12, 2022 ~ Apr. 16, 2022	Mar. 21, 2023	Radiation (03CH20-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	519229/2,804 015/2,804027 /2	N/A	Jan. 19, 2022	Apr. 12, 2022 ~ Apr. 16, 2022	Jan. 18, 2023	Radiation (03CH20-HY)
Software	Audix	E3 6.2009-8-24	RK-002156	N/A	N/A	Apr. 12, 2022 ~ Apr. 16, 2022	N/A	Radiation (03CH20-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Apr. 12, 2022 ~ Apr. 16, 2022	N/A	Radiation (03CH20-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Apr. 12, 2022 ~ Apr. 16, 2022	N/A	Radiation (03CH20-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Apr. 12, 2022 ~ Apr. 16, 2022	N/A	Radiation (03CH20-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Apr. 19, 2022	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Dec. 01, 2021	Apr. 19, 2022	Nov. 30, 2022	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Nov. 17, 2021	Apr. 19, 2022	Nov. 16, 2022	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 03, 2021	Apr. 19, 2022	Dec. 02, 2022	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	Apr. 19, 2022	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-FN	00691	N/A	Jul. 28, 2021	Apr. 19, 2022	Jul. 27, 2022	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 30, 2021	Apr. 19, 2022	Dec. 29, 2022	Conduction (CO05-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 16, 2021	Apr. 11, 2022 May 19, 2022	Nov. 15, 2022	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	16I00054SNO 12 (NO:113)	10MHz~6GHz	Dec. 16, 2021	Apr. 11, 2022 May 19, 2022	Dec. 15, 2022	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Aug. 30, 2021	Apr. 11, 2022 May 19, 2022	Aug. 29, 2022	Conducted (TH05-HY)
Switch Control Mainframe	E-IUSTRUMENT	ETF-1405-0	EC1900067 (BOX7)	N/A	Aug. 12, 2021	Apr. 11, 2022 May 19, 2022	Aug. 11, 2022	Conducted (TH05-HY)



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.1 dB
--	--------

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.9 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:	Eason Huang	Temperature:	21~25	°C
Test Date:	2022/4/11~2022/4/29	Relative Humidity:	51~54	%

<Ant. 4>

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	1.036	0.702	0.50	Pass
BLE	1Mbps	1	19	2440	1.036	0.718	0.50	Pass
BLE	1Mbps	1	39	2480	1.036	0.718	0.50	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	1Mbps	1	0	2402	19.65	30.00	-1.60	18.05	36.00	Pass
BLE	1Mbps	1	19	2440	19.15	30.00	-1.60	17.55	36.00	Pass
BLE	1Mbps	1	39	2480	18.95	30.00	-1.60	17.35	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	18.34	3.66	-1.60	8.00	Pass
BLE	1Mbps	1	19	2440	18.26	3.63	-1.60	8.00	Pass
BLE	1Mbps	1	39	2480	17.75	3.10	-1.60	8.00	Pass

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE	2Mbps	1	0	2402	2.045	1.187	0.50	Pass
BLE	2Mbps	1	19	2440	2.053	1.243	0.50	Pass
BLE	2Mbps	1	39	2480	2.045	1.191	0.50	Pass

TEST RESULTS DATA
Average Power Table

Mod.	Data Rate	N _{TX}	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	19.75	30.00	-1.60	18.15	36.00	Pass
BLE	2Mbps	1	19	2440	19.35	30.00	-1.60	17.75	36.00	Pass
BLE	2Mbps	1	39	2480	19.15	30.00	-1.60	17.55	36.00	Pass

TEST RESULTS DATA
Peak Power Density

Mod.	Data Rate	N _{TX}	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	17.81	-0.43	-1.60	8.00	Pass
BLE	2Mbps	1	19	2440	17.87	-0.37	-1.60	8.00	Pass
BLE	2Mbps	1	39	2480	18.14	-0.13	-1.60	8.00	Pass

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

<Ant. 3>

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE	1Mbps	1	0	2402	1.037	0.712	0.50	Pass
BLE	1Mbps	1	19	2440	1.039	0.720	0.50	Pass
BLE	1Mbps	1	39	2480	1.037	0.718	0.50	Pass

TEST RESULTS DATA
Average Power Table

Mod.	Data Rate	N _{TX}	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	19.35	30.00	-0.40	18.95	36.00	Pass
BLE	1Mbps	1	19	2440	19.75	30.00	-0.40	19.35	36.00	Pass
BLE	1Mbps	1	39	2480	19.35	30.00	-0.40	18.95	36.00	Pass

TEST RESULTS DATA
Peak Power Density

Mod.	Data Rate	N _{TX}	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	17.95	3.26	-0.40	8.00	Pass
BLE	1Mbps	1	19	2440	18.99	4.34	-0.40	8.00	Pass
BLE	1Mbps	1	39	2480	18.76	4.16	-0.40	8.00	Pass

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE	2Mbps	1	0	2402	2.050	1.196	0.50	Pass
BLE	2Mbps	1	19	2440	2.050	1.244	0.50	Pass
BLE	2Mbps	1	39	2480	2.045	1.243	0.50	Pass

TEST RESULTS DATA
Average Power Table

Mod.	Data Rate	N _{TX}	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	19.55	30.00	-0.40	19.15	36.00	Pass
BLE	2Mbps	1	19	2440	19.95	30.00	-0.40	19.55	36.00	Pass
BLE	2Mbps	1	39	2480	19.55	30.00	-0.40	19.15	36.00	Pass

TEST RESULTS DATA
Peak Power Density

Mod.	Data Rate	N _{TX}	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	18.64	0.43	-0.40	8.00	Pass
BLE	2Mbps	1	19	2440	18.88	0.71	-0.40	8.00	Pass
BLE	2Mbps	1	39	2480	18.81	0.54	-0.40	8.00	Pass

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

MIMO <Ant. 4+3>

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE	1Mbps	2	0	2402	1.037	0.706	0.50	Pass
BLE	1Mbps	2	19	2440	1.037	0.716	0.50	Pass
BLE	1Mbps	2	39	2480	1.037	0.712	0.50	Pass

TEST RESULTS DATA
Average Power Table

Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Average Conducted Power Ant 4 (dBm)	Average Conducted Power Ant 3 (dBm)	Total Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
BLE	1Mbps	2	0	2402	19.35	19.45	22.41	30.00	-1.60	17.75	36.00	Pass
BLE	1Mbps	2	19	2440	19.15	19.55	22.36	30.00	-1.60	17.55	36.00	Pass
BLE	1Mbps	2	39	2480	18.65	19.15	21.92	30.00	-1.60	17.05	36.00	Pass

TEST RESULTS DATA
Peak Power Density

Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Peak PSD (dBm /100kHz)	Peak PSD (dBm /3kHz)	Peak PSD Worst +3.01 (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
BLE	1Mbps	2	0	2402	18.01	3.23	6.24	-1.60	8.00	Pass
BLE	1Mbps	2	19	2440	17.68	3.02	6.03	-1.60	8.00	Pass
BLE	1Mbps	2	39	2480	17.52	2.82	5.83	-1.60	8.00	Pass

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE	2Mbps	2	0	2402	2.046	1.188	0.50	Pass
BLE	2Mbps	2	19	2440	2.054	1.192	0.50	Pass
BLE	2Mbps	2	39	2480	2.046	1.244	0.50	Pass

TEST RESULTS DATA
Average Power Table

Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Average Conducted Power Ant 4 (dBm)	Average Conducted Power Ant 3 (dBm)	Total Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
BLE	2Mbps	2	0	2402	19.45	19.15	22.31	30.00	-1.60	17.85	36.00	Pass
BLE	2Mbps	2	19	2440	19.45	19.85	22.66	30.00	-1.60	17.85	36.00	Pass
BLE	2Mbps	2	39	2480	18.85	19.15	22.01	30.00	-1.60	17.25	36.00	Pass

TEST RESULTS DATA
Peak Power Density

Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Peak PSD (dBm /100kHz)	Peak PSD (dBm /3kHz)	Peak PSD Worst +3.01 (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
BLE	2Mbps	2	0	2402	17.84	-0.52	2.49	-1.60	8.00	Pass
BLE	2Mbps	2	19	2440	17.12	-1.07	1.94	-1.60	8.00	Pass
BLE	2Mbps	2	39	2480	17.01	-1.20	1.81	-1.60	8.00	Pass

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.



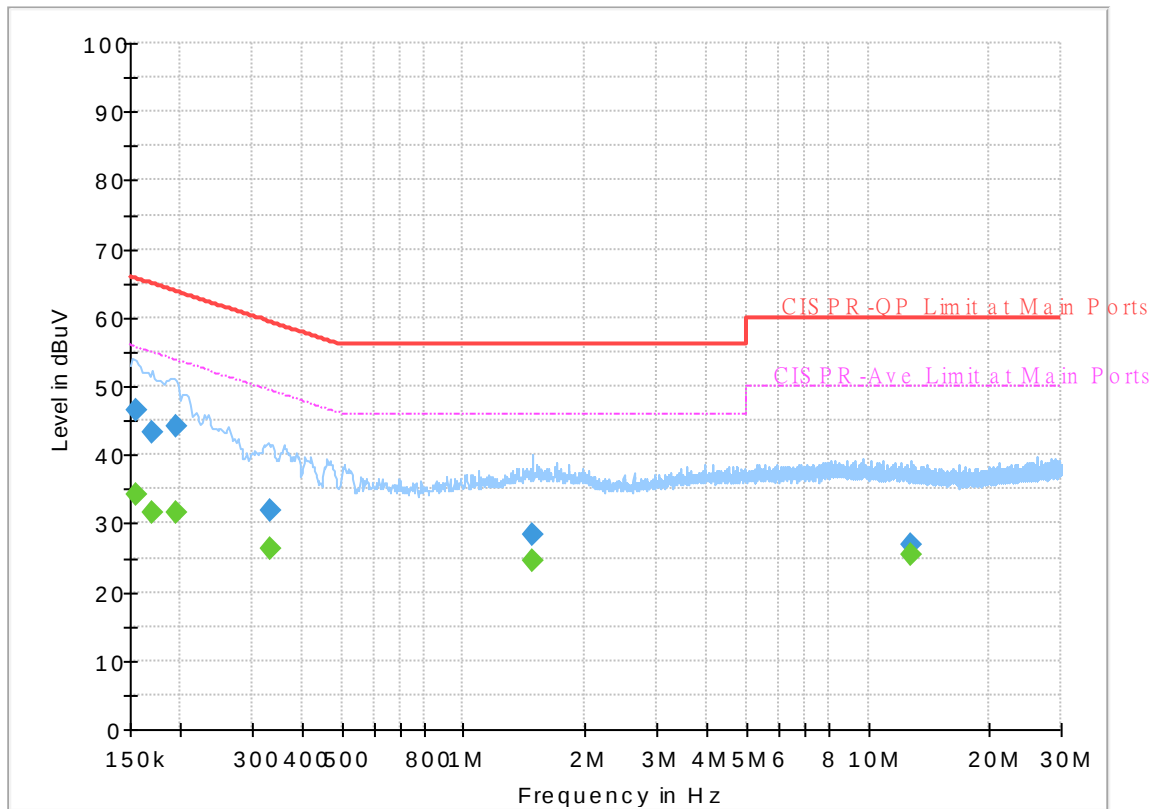
Appendix B. AC Conducted Emission Test Results

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

EUT Information

Report NO : 1O2919-05
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Line

Full Spectrum



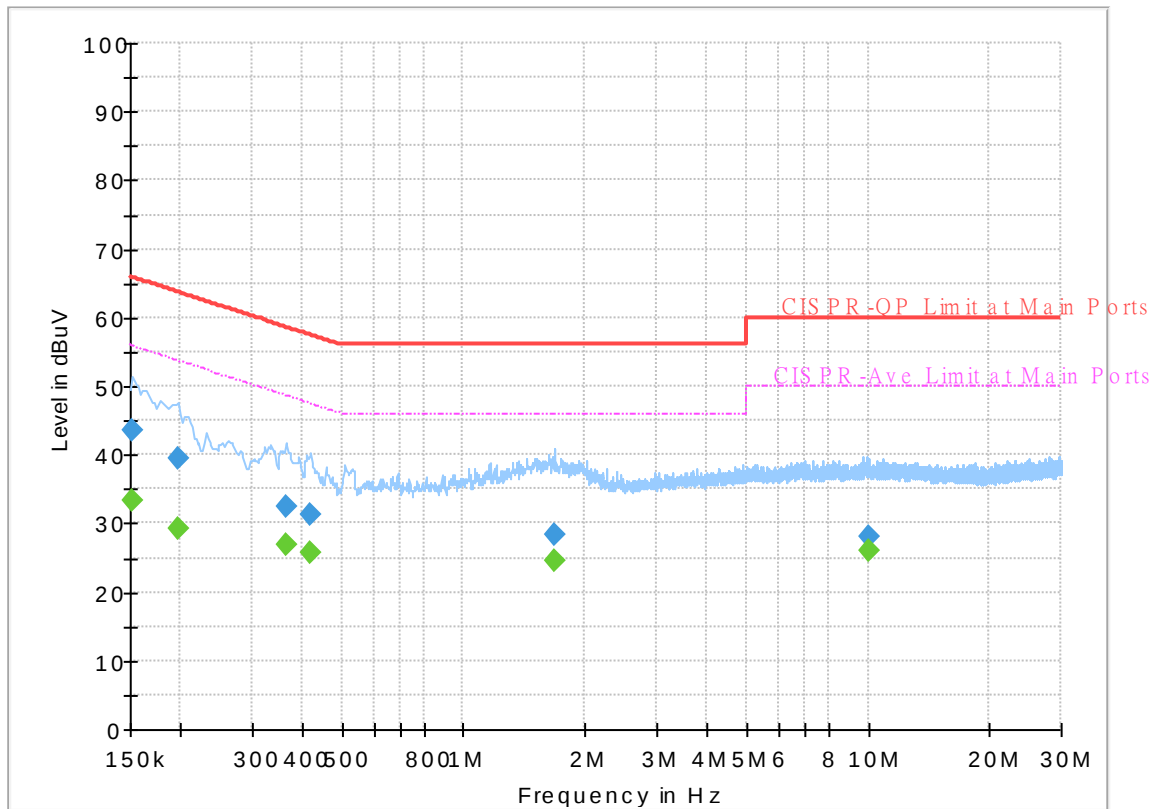
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.154500	---	34.24	55.75	21.51	L1	OFF	19.6
0.154500	46.57	---	65.75	19.18	L1	OFF	19.6
0.170250	---	31.51	54.95	23.44	L1	OFF	19.6
0.170250	43.39	---	64.95	21.56	L1	OFF	19.6
0.195000	---	31.64	53.82	22.18	L1	OFF	19.6
0.195000	44.09	---	63.82	19.73	L1	OFF	19.6
0.334500	---	26.17	49.34	23.17	L1	OFF	19.6
0.334500	31.95	---	59.34	27.39	L1	OFF	19.6
1.479750	---	24.43	46.00	21.57	L1	OFF	19.7
1.479750	28.28	---	56.00	27.72	L1	OFF	19.7
12.804000	---	25.41	50.00	24.59	L1	OFF	20.2
12.804000	27.04	---	60.00	32.96	L1	OFF	20.2

EUT Information

Report NO : 1O2919-05
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	33.34	55.88	22.54	N	OFF	19.6
0.152250	43.65	---	65.88	22.23	N	OFF	19.6
0.197250	---	29.30	53.73	24.43	N	OFF	19.6
0.197250	39.49	---	63.73	24.24	N	OFF	19.6
0.363750	---	27.04	48.64	21.60	N	OFF	19.6
0.363750	32.33	---	58.64	26.31	N	OFF	19.6
0.417750	---	25.66	47.49	21.83	N	OFF	19.6
0.417750	31.29	---	57.49	26.20	N	OFF	19.6
1.684500	---	24.60	46.00	21.40	N	OFF	19.7
1.684500	28.49	---	56.00	27.51	N	OFF	19.7
10.088250	---	26.04	50.00	23.96	N	OFF	20.1
10.088250	27.98	---	60.00	32.02	N	OFF	20.1



Appendix C. Radiated Spurious Emission

Test Engineer :	Bill Chang, JC Liang, Big show Wang	Temperature :	18~20°C
		Relative Humidity :	66~70%

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE Ant	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preampl Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
4		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 00 2402MHz		2378.985	49.83	-24.17	74	40.22	27.22	18.66	36.27	319	105	P	H
		2367.54	39.91	-14.09	54	30.36	27.17	18.64	36.26	319	105	A	H
	*	2402	113.39	-	-	103.66	27.31	18.7	36.28	319	105	P	H
	*	2402	112.81	-	-	103.08	27.31	18.7	36.28	319	105	A	H
													H
													H
		2338.455	50.65	-23.35	74	41.21	27.1	18.59	36.25	355	91	P	V
		2382.345	39.82	-14.18	54	30.19	27.23	18.67	36.27	355	91	A	V
	*	2402	108.44	-	-	98.71	27.31	18.7	36.28	355	91	P	V
	*	2402	107.85	-	-	98.12	27.31	18.7	36.28	355	91	A	V
													V
													V
BLE CH 19 2440MHz		2338.96	49.96	-24.04	74	40.52	27.1	18.59	36.25	318	105	P	H
		2375.12	40.1	-13.9	54	30.51	27.2	18.66	36.27	318	105	A	H
	*	2440	115.05	-	-	105.1	27.46	18.78	36.29	318	105	P	H
	*	2440	114.45	-	-	104.5	27.46	18.78	36.29	318	105	A	H
		2496.8	50.72	-23.28	74	40.47	27.69	18.88	36.32	318	105	P	H
		2491.68	40.63	-13.37	54	30.41	27.67	18.87	36.32	318	105	A	H
		2351.28	49.42	-24.58	74	39.95	27.11	18.61	36.25	352	83	P	V
		2386.32	40	-14	54	30.34	27.25	18.68	36.27	352	83	A	V
	*	2440	111.49	-	-	101.54	27.46	18.78	36.29	352	83	P	V
	*	2440	110.82	-	-	100.87	27.46	18.78	36.29	352	83	A	V
		2487.84	50.24	-23.76	74	40.03	27.65	18.87	36.31	352	83	P	V
		2494.96	40.5	-13.5	54	30.26	27.68	18.88	36.32	352	83	A	V



BLE Ant 4	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	*	2480	115.27	-	-	105.11	27.62	18.85	36.31	306	107	P	H
	*	2480	114.72	-	-	104.56	27.62	18.85	36.31	306	107	A	H
		2483.6	53.18	-20.82	74	43	27.63	18.86	36.31	306	107	P	H
		2483.64	44.18	-9.82	54	34	27.63	18.86	36.31	306	107	A	H
													H
													H
	*	2480	111.46	-	-	101.3	27.62	18.85	36.31	336	83	P	V
	*	2480	110.9	-	-	100.74	27.62	18.85	36.31	336	83	A	V
		2483.8	50.89	-23.11	74	40.7	27.64	18.86	36.31	336	83	P	V
		2483.6	42.09	-11.91	54	31.91	27.63	18.86	36.31	336	83	A	V
													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 Ant 4	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	42.21	-31.79	74	34.5	32.22	13.03	37.54	-	-	P	H
		12660	51.84	-22.16	74	34.49	39.42	21.17	43.24	-	-	P	H
		12660	42.69	-11.31	54	25.34	39.42	21.17	43.24	-	-	A	H
		13305	52.45	-21.55	74	33.98	39.81	21.81	43.15	-	-	P	H
		13305	44.25	-9.75	54	25.78	39.81	21.81	43.15	-	-	A	H
		17970	55.76	-18.24	74	34.75	41.59	24.87	45.45	-	-	P	H
		17970	47.49	-6.51	54	26.48	41.59	24.87	45.45	-	-	A	H
													H
													H
													H
													H
													H
		4804	42.31	-31.69	74	34.6	32.22	13.03	37.54	-	-	P	V
		11130	51.47	-22.53	74	34.96	38.73	19.7	41.92	-	-	P	V
		11130	42.36	-11.64	54	25.85	38.73	19.7	41.92	-	-	A	V
		13395	52.44	-21.56	74	33.72	39.99	21.9	43.17	-	-	P	V
		13395	44.66	-9.34	54	25.94	39.99	21.9	43.17	-	-	A	V
		18000	55.96	-18.04	74	34.74	41.8	24.89	45.47	-	-	P	V
		18000	48.1	-5.9	54	26.88	41.8	24.89	45.47	-	-	A	V
													V
													V
													V
													V
													V



BLE Ant 4	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	43.12	-30.88	74	35.14	32.58	13	37.6	-	-	P	H
		7320	47.85	-26.15	74	33.69	36.76	15.93	38.53	-	-	P	H
		12645	52.23	-21.77	74	34.92	39.39	21.16	43.24	-	-	P	H
		12645	43.07	-10.93	54	25.76	39.39	21.16	43.24	-	-	A	H
		13245	52.89	-21.11	74	34.53	39.74	21.76	43.14	-	-	P	H
		13245	43.72	-10.28	54	25.36	39.74	21.76	43.14	-	-	A	H
		17970	56.09	-17.91	74	35.08	41.59	24.87	45.45	-	-	P	H
		17970	47.45	-6.55	54	26.44	41.59	24.87	45.45	-	-	A	H
													H
													H
													H
													H
		4880	43.83	-30.17	74	35.85	32.58	13	37.6	-	-	P	V
		7320	48.35	-25.65	74	34.19	36.76	15.93	38.53	-	-	P	V
		7320	39.18	-14.82	54	25.02	36.76	15.93	38.53	-	-	A	V
		12240	51.88	-22.12	74	35.15	39.16	20.73	43.16	-	-	P	V
		12240	42.47	-11.53	54	25.74	39.16	20.73	43.16	-	-	A	V
		13260	51.93	-22.07	74	33.54	39.76	21.78	43.15	-	-	P	V
		13260	42.73	-11.27	54	24.34	39.76	21.78	43.15	-	-	A	V
		17970	56.38	-17.62	74	35.37	41.59	24.87	45.45	-	-	P	V
		17970	47.67	-6.33	54	26.66	41.59	24.87	45.45	-	-	A	V
													V
													V
													V



BLE Ant 4	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	43.39	-30.61	74	35.07	33.02	12.96	37.66	-	-	P	H
		7440	47.28	-26.72	74	33.71	36.22	15.98	38.63	-	-	P	H
		12360	52.11	-21.89	74	35.43	39.04	20.86	43.22	-	-	P	H
		12360	42.1	-11.9	54	25.42	39.04	20.86	43.22	-	-	A	H
		13365	52.91	-21.09	74	34.28	39.93	21.87	43.17	-	-	P	H
		13365	44.26	-9.74	54	25.63	39.93	21.87	43.17	-	-	A	H
		17895	56.23	-17.77	74	35.74	41.06	24.82	45.39	-	-	P	H
		17895	47.63	-6.37	54	27.14	41.06	24.82	45.39	-	-	A	H
													H
													H
													H
													H
		4960	43.27	-30.73	74	34.95	33.02	12.96	37.66	-	-	P	V
		7440	47.7	-26.3	74	34.13	36.22	15.98	38.63	-	-	P	V
		10695	52.47	-21.53	74	36	38.9	19.28	41.71	-	-	P	V
		10695	42.23	-11.77	54	25.76	38.9	19.28	41.71	-	-	A	V
		13290	52.89	-21.11	74	34.45	39.79	21.8	43.15	-	-	P	V
		13290	44.33	-9.67	54	25.89	39.79	21.8	43.15	-	-	A	V
		17910	55.8	-18.2	74	35.21	41.17	24.83	45.41	-	-	P	V
		17910	47.15	-6.85	54	26.56	41.17	24.83	45.41	-	-	A	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.												
	4. The emission level close to 18GHz is checked that the average emission level is noise floor only.												



2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
3		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 00 2402MHz		2382.975	49.24	-24.76	74	39.61	27.23	18.67	36.27	151	334	P	H
		2387.385	40	-14	54	30.34	27.25	18.68	36.27	151	334	A	H
	*	2402	112.81	-	-	103.08	27.31	18.7	36.28	151	334	P	H
	*	2402	112.08	-	-	102.35	27.31	18.7	36.28	151	334	A	H
													H
													H
		2335.83	49.06	-24.94	74	39.63	27.1	18.58	36.25	400	118	P	V
		2358.3	39.61	-14.39	54	30.12	27.13	18.62	36.26	400	118	A	V
	*	2402	112.64	-	-	102.91	27.31	18.7	36.28	400	118	P	V
	*	2402	112.09	-	-	102.36	27.31	18.7	36.28	400	118	A	V
													V
													V
BLE CH 19 2440MHz		2344.88	49.51	-24.49	74	40.06	27.1	18.6	36.25	350	27	P	H
		2360.24	39.71	-14.29	54	30.2	27.14	18.63	36.26	350	27	A	H
	*	2440	114.36	-	-	104.41	27.46	18.78	36.29	350	27	P	H
	*	2440	113.75	-	-	103.8	27.46	18.78	36.29	350	27	A	H
		2488.8	49.29	-24.71	74	39.08	27.66	18.87	36.32	350	27	P	H
		2495.76	40.18	-13.82	54	29.94	27.68	18.88	36.32	350	27	A	H
		2362.16	48.97	-25.03	74	39.45	27.15	18.63	36.26	400	115	P	V
		2389.68	40.07	-13.93	54	30.4	27.26	18.68	36.27	400	115	A	V
	*	2440	115.01	-	-	105.06	27.46	18.78	36.29	400	115	P	V
	*	2440	114.49	-	-	104.54	27.46	18.78	36.29	400	115	A	V
		2499.36	49.27	-24.73	74	39	27.7	18.89	36.32	400	115	P	V
		2498.64	40.39	-13.61	54	30.13	27.69	18.89	36.32	400	115	A	V



BLE Ant 3	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	*	2480	114.63	-	-	104.47	27.62	18.85	36.31	302	97	P	H
	*	2480	114.03	-	-	103.87	27.62	18.85	36.31	302	97	A	H
		2483.52	51.48	-22.52	74	41.3	27.63	18.86	36.31	302	97	P	H
		2483.52	43.04	-10.96	54	32.86	27.63	18.86	36.31	302	97	A	H
													H
													H
	*	2480	113.98	-	-	103.82	27.62	18.85	36.31	380	117	P	V
	*	2480	113.32	-	-	103.16	27.62	18.85	36.31	380	117	A	V
		2484.2	51.85	-22.15	74	41.66	27.64	18.86	36.31	380	117	P	V
		2483.72	43.02	-10.98	54	32.84	27.63	18.86	36.31	380	117	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 Ant 3	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	41.72	-32.28	74	34.01	32.22	13.03	37.54	-	-	P	H
		12540	52.26	-21.74	74	35.26	39.24	21.04	43.28	-	-	P	H
		12540	42.45	-11.55	54	25.45	39.24	21.04	43.28	-	-	A	H
		13380	52.56	-21.44	74	33.88	39.96	21.89	43.17	-	-	P	H
		13380	44.55	-9.45	54	25.87	39.96	21.89	43.17	-	-	A	H
		17970	55.7	-18.3	74	34.69	41.59	24.87	45.45	-	-	P	H
		17970	47.78	-6.22	54	26.77	41.59	24.87	45.45	-	-	A	H
													H
													H
													H
													H
													H
		4804	42.29	-31.71	74	34.58	32.22	13.03	37.54	-	-	P	V
		12255	51.64	-22.36	74	34.92	39.15	20.74	43.17	-	-	P	V
		12255	42.28	-11.72	54	25.56	39.15	20.74	43.17	-	-	A	V
		13380	52.73	-21.27	74	34.05	39.96	21.89	43.17	-	-	P	V
		13380	44.51	-9.49	54	25.83	39.96	21.89	43.17	-	-	A	V
		17970	56.94	-17.06	74	35.93	41.59	24.87	45.45	-	-	P	V
		17970	47.35	-6.65	54	26.34	41.59	24.87	45.45	-	-	A	V
													V
													V
													V
													V
													V



BLE Ant 3	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	43.58	-30.42	74	35.6	32.58	13	37.6	-	-	P	H
		7320	47.37	-26.63	74	33.21	36.76	15.93	38.53	-	-	P	H
		10875	52.34	-21.66	74	35.68	38.88	19.46	41.68	-	-	P	H
		10875	42.1	-11.9	54	25.44	38.88	19.46	41.68	-	-	A	H
		13350	52.86	-21.14	74	34.26	39.9	21.86	43.16	-	-	P	H
		13350	43.95	-10.05	54	25.35	39.9	21.86	43.16	-	-	A	H
		17880	55.76	-18.24	74	35.41	40.92	24.81	45.38	-	-	P	H
		17880	46.75	-7.25	54	26.4	40.92	24.81	45.38	-	-	A	H
													H
													H
													H
													H
		4880	43.4	-30.6	74	35.42	32.58	13	37.6	-	-	P	V
		7320	48.02	-25.98	74	33.86	36.76	15.93	38.53	-	-	P	V
		7320	39.17	-14.83	54	25.01	36.76	15.93	38.53	-	-	A	V
		12705	52.44	-21.56	74	34.92	39.51	21.23	43.22	-	-	P	V
		12705	42.61	-11.39	54	25.09	39.51	21.23	43.22	-	-	A	V
		13290	52.34	-21.66	74	33.9	39.79	21.8	43.15	-	-	P	V
		13290	43.7	-10.3	54	25.26	39.79	21.8	43.15	-	-	A	V
		17985	55.55	-18.45	74	34.44	41.69	24.88	45.46	-	-	P	V
		17985	47.76	-6.24	54	26.65	41.69	24.88	45.46	-	-	A	V
													V
													V
													V



BLE Ant 3	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	44.32	-29.68	74	36	33.02	12.96	37.66	-	-	P	H
		7440	47.54	-26.46	74	33.97	36.22	15.98	38.63	-	-	P	H
		11430	52.29	-21.71	74	35.81	39.04	19.96	42.52	-	-	P	H
		11430	41.95	-12.05	54	25.47	39.04	19.96	42.52	-	-	A	H
		13290	52.41	-21.59	74	33.97	39.79	21.8	43.15	-	-	P	H
		13290	43.04	-10.96	54	24.6	39.79	21.8	43.15	-	-	A	H
		17955	55.38	-18.62	74	34.47	41.49	24.86	45.44	-	-	P	H
		17955	46.88	-7.12	54	25.97	41.49	24.86	45.44	-	-	A	H
													H
													H
													H
													H
		4960	43.21	-30.79	74	34.89	33.02	12.96	37.66	-	-	P	V
		7440	46.27	-27.73	74	32.7	36.22	15.98	38.63	-	-	P	V
		12270	52.25	-21.75	74	35.54	39.13	20.76	43.18	-	-	P	V
		12270	42.6	-11.4	54	25.89	39.13	20.76	43.18	-	-	A	V
		13290	52.61	-21.39	74	34.17	39.79	21.8	43.15	-	-	P	V
		13290	43.77	-10.23	54	25.33	39.79	21.8	43.15	-	-	A	V
		17970	55.01	-18.99	74	34	41.59	24.87	45.45	-	-	P	V
		17970	46.78	-7.22	54	25.77	41.59	24.87	45.45	-	-	A	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.												
	4. The emission level close to 18GHz is checked that the average emission level is noise floor only.												



2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
4+3		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 00 2402MHz		2315.355	48.84	-25.16	74	39.43	27.1	18.55	36.24	323	95	P	H
		2359.77	39.82	-14.18	54	30.31	27.14	18.63	36.26	323	95	A	H
	*	2402	114.89	-	-	105.16	27.31	18.7	36.28	323	95	P	H
	*	2402	114.31	-	-	104.58	27.31	18.7	36.28	323	95	A	H
													H
													H
		2379.93	49.15	-24.85	74	39.54	27.22	18.66	36.27	400	81	P	V
		2381.925	39.9	-14.1	54	30.27	27.23	18.67	36.27	400	81	A	V
	*	2402	109.61	-	-	99.88	27.31	18.7	36.28	400	81	P	V
	*	2402	109.02	-	-	99.29	27.31	18.7	36.28	400	81	A	V
													V
													V
BLE CH 19 2440MHz		2385.04	49.37	-24.63	74	39.73	27.24	18.67	36.27	313	91	P	H
		2384.72	39.58	-14.42	54	29.94	27.24	18.67	36.27	313	91	A	H
	*	2440	115.99	-	-	106.04	27.46	18.78	36.29	313	91	P	H
	*	2440	115.32	-	-	105.37	27.46	18.78	36.29	313	91	A	H
		2487.36	48.9	-25.1	74	38.69	27.65	18.87	36.31	313	91	P	H
		2492.24	40.21	-13.79	54	29.98	27.67	18.88	36.32	313	91	A	H
		2368.72	49.01	-24.99	74	39.46	27.17	18.64	36.26	393	118	P	V
		2385.36	39.83	-14.17	54	30.19	27.24	18.67	36.27	393	118	A	V
	*	2440	112.27	-	-	102.32	27.46	18.78	36.29	393	118	P	V
	*	2440	111.7	-	-	101.75	27.46	18.78	36.29	393	118	A	V
		2493.2	49.31	-24.69	74	39.08	27.67	18.88	36.32	393	118	P	V
		2494.64	40.16	-13.84	54	29.92	27.68	18.88	36.32	393	118	A	V



BLE Ant. 4+3	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	*	2480	119.08	-	-	108.92	27.62	18.85	36.31	302	95	P	H
	*	2480	118.49	-	-	108.33	27.62	18.85	36.31	302	95	A	H
		2483.52	54.86	-19.14	74	44.68	27.63	18.86	36.31	302	95	P	H
		2483.72	45.55	-8.45	54	35.37	27.63	18.86	36.31	302	95	A	H
													H
													H
	*	2480	111.54	-	-	101.38	27.62	18.85	36.31	400	57	P	V
	*	2480	110.93	-	-	100.77	27.62	18.85	36.31	400	57	A	V
		2483.56	50.31	-23.69	74	40.13	27.63	18.86	36.31	400	57	P	V
		2483.56	41.35	-12.65	54	31.17	27.63	18.86	36.31	400	57	A	V
													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 Ant. 4+3	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	42.12	-31.88	74	34.41	32.22	13.03	37.54	-	-	P	H
		10770	52.19	-21.81	74	35.5	39.04	19.35	41.7	-	-	P	H
		10770	42.48	-11.52	54	25.79	39.04	19.35	41.7	-	-	A	H
		13350	53.27	-20.73	74	34.67	39.9	21.86	43.16	-	-	P	H
		13350	43.6	-10.4	54	25	39.9	21.86	43.16	-	-	A	H
		17970	55.06	-18.94	74	34.05	41.59	24.87	45.45	-	-	P	H
		17970	47.78	-6.22	54	26.77	41.59	24.87	45.45	-	-	A	H
													H
													H
													H
													H
													H
		4804	42.99	-31.01	74	35.28	32.22	13.03	37.54	-	-	P	V
		12570	52.39	-21.61	74	35.31	39.27	21.08	43.27	-	-	P	V
		12570	42.74	-31.26	74	25.66	39.27	21.08	43.27	-	-	P	V
		13350	53.45	-20.55	74	34.85	39.9	21.86	43.16	-	-	P	V
		13350	44.7	-9.3	54	26.1	39.9	21.86	43.16	-	-	A	V
		18000	55.48	-18.52	74	34.26	41.8	24.89	45.47	-	-	P	V
		18000	47.25	-6.75	54	26.03	41.8	24.89	45.47	-	-	A	V
													V
													V
													V
													V
													V



BLE Ant. 4+3	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	44.26	-29.74	74	36.28	32.58	13	37.6	-	-	P	H
		7320	47.6	-26.4	74	33.44	36.76	15.93	38.53	-	-	P	H
		11010	52.75	-21.25	74	36.13	38.7	19.6	41.68	-	-	P	H
		11010	42.38	-11.62	54	25.76	38.7	19.6	41.68	-	-	A	H
		13320	52.86	-21.14	74	34.34	39.84	21.84	43.16	-	-	P	H
		13320	43.82	-10.18	54	25.3	39.84	21.84	43.16	-	-	A	H
		17970	54.79	-19.21	74	33.78	41.59	24.87	45.45	-	-	P	H
		17970	47.26	-6.74	54	26.25	41.59	24.87	45.45	-	-	A	H
													H
													H
													H
													H
		4880	43.17	-30.83	74	35.19	32.58	13	37.6	-	-	P	V
		7320	47.95	-26.05	74	33.79	36.76	15.93	38.53	-	-	P	V
		12615	52.08	-21.92	74	34.87	39.33	21.13	43.25	-	-	P	V
		12615	42.51	-11.49	54	25.3	39.33	21.13	43.25	-	-	A	V
		13380	53.76	-20.24	74	35.08	39.96	21.89	43.17	-	-	P	V
		13380	44.45	-9.55	54	25.77	39.96	21.89	43.17	-	-	A	V
		17985	54.67	-19.33	74	33.56	41.69	24.88	45.46	-	-	P	V
		17985	47.11	-6.89	54	26	41.69	24.88	45.46	-	-	A	V
													V
													V
													V
													V

BLE Ant. 4+3	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	44.51	-29.49	74	36.19	33.02	12.96	37.66	-	-	P	H	
		7440	46.77	-27.23	74	33.2	36.22	15.98	38.63	-	-	P	H	
		12555	52.85	-21.15	74	35.81	39.26	21.06	43.28	-	-	P	H	
		12555	42.75	-11.25	54	25.71	39.26	21.06	43.28	-	-	A	H	
		13380	52.9	-21.1	74	34.22	39.96	21.89	43.17	-	-	P	H	
		13380	43.75	-10.25	54	25.07	39.96	21.89	43.17	-	-	A	H	
		17970	54.25	-19.75	74	33.24	41.59	24.87	45.45	-	-	P	H	
		17970	47.08	-6.92	54	26.07	41.59	24.87	45.45	-	-	A	H	
														H
														H
														H
														H
		4960	45.16	-28.84	74	36.84	33.02	12.96	37.66	-	-	P	V	
		7440	48.49	-25.51	74	34.92	36.22	15.98	38.63	-	-	P	V	
		7440	38.45	-15.55	54	24.88	36.22	15.98	38.63	-	-	A	V	
		12630	52.62	-21.38	74	35.37	39.36	21.14	43.25	-	-	P	V	
		12630	43.1	-10.9	54	25.85	39.36	21.14	43.25	-	-	A	V	
		13395	53.05	-20.95	74	34.33	39.99	21.9	43.17	-	-	P	V	
		13395	44.6	-9.4	54	25.88	39.99	21.9	43.17	-	-	A	V	
		17970	54.61	-19.39	74	33.6	41.59	24.87	45.45	-	-	P	V	
		17970	47.35	-6.65	54	26.34	41.59	24.87	45.45	-	-	A	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.														
4. The emission level close to 18GHz is checked that the average emission level is noise floor only.														

Emission above 18GHz

2.4GHz BLE (SHF)

[illegible]

Emission below 1GHz

2.4GHz BLE (LF)

[illegible]



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is 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	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. 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 D. Radiated Spurious Emission Plots

Test Engineer :	Bill Chang, JC Liang, Big show Wang	Temperature :	18~20°C
		Relative Humidity :	66~70%

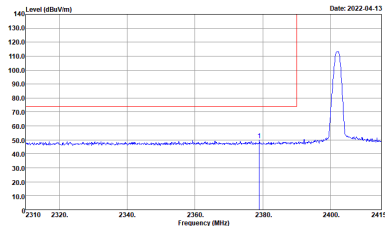
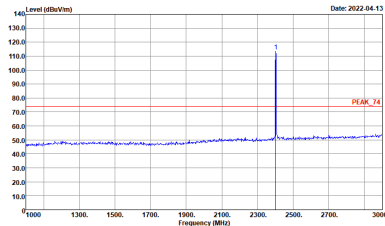
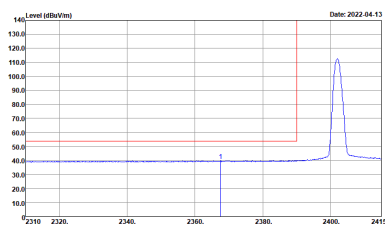
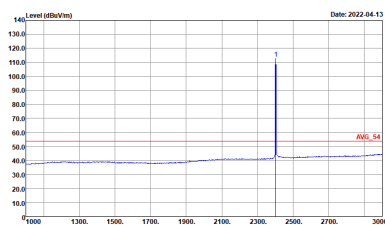
Note symbol

-L	Low channel location
-R	High channel location

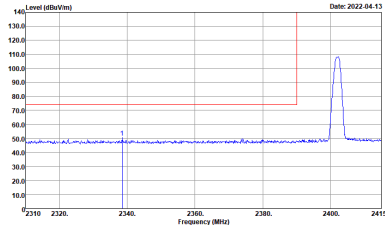
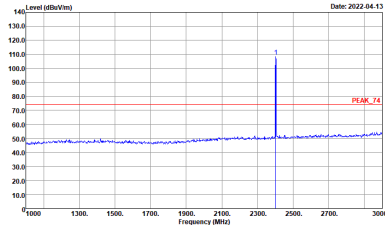
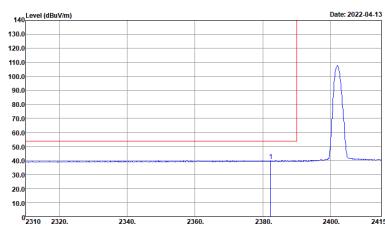
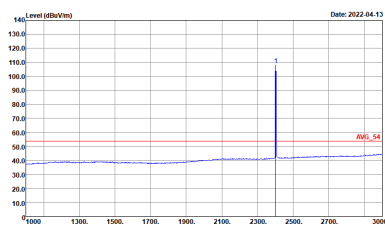


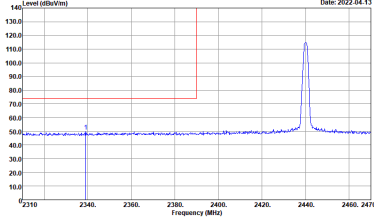
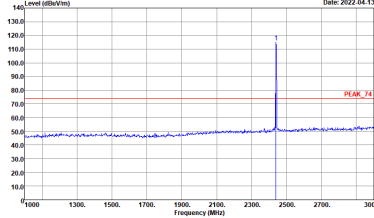
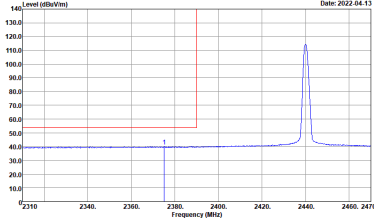
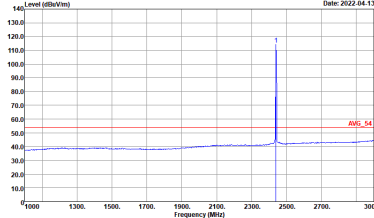
2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

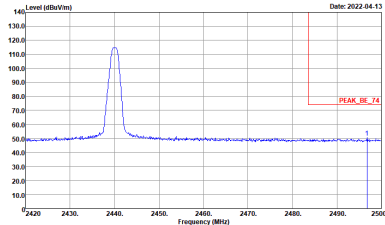
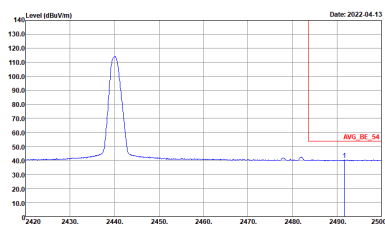
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ANT	BLE CH00 2402MHz	
4	Horizontal	Fundamental
Peak	 Site : 03CH20-1HY Condition : PEAK_BE_74 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site : 03CH20-1HY Condition : PEAK_74 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Avg.	 Site : 03CH20-1HY Condition : AVG_BE_54 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000kHz VBW:3.000kHz SWT:Auto	 Site : 03CH20-1HY Condition : AVG_54 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000kHz VBW:3.000kHz SWT:Auto

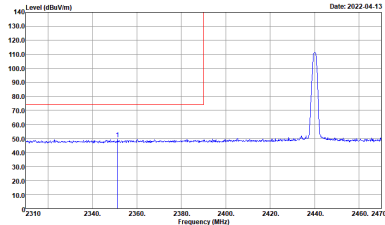
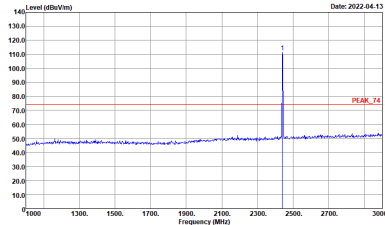
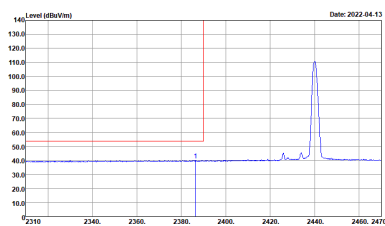
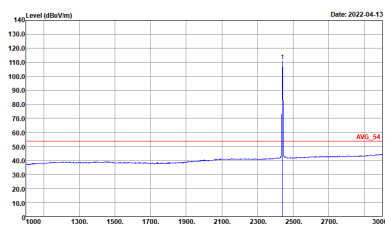


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
4	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_F4 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto
	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3.0000Hz SWT:Auto	 Site : 03CH20-HY Condition : AVG_F4 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3.0000Hz SWT:Auto

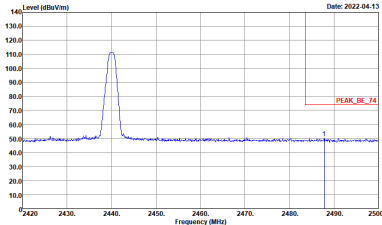
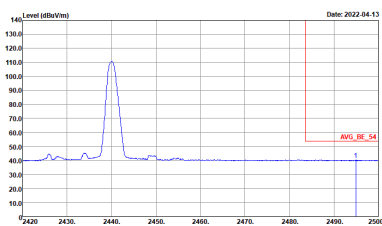
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
4	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02294_1110622 HORIZONTAL : RBW:3000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

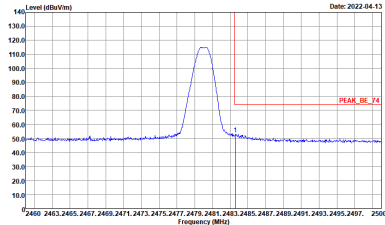
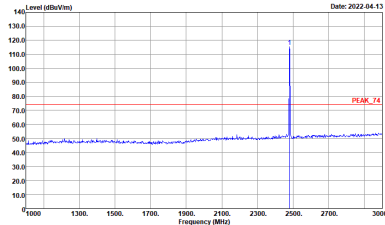
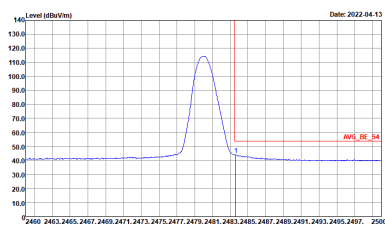
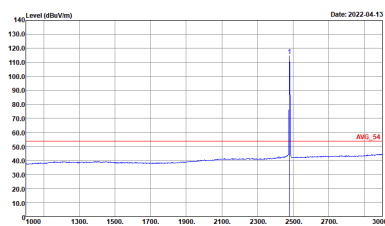


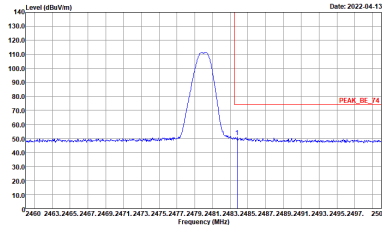
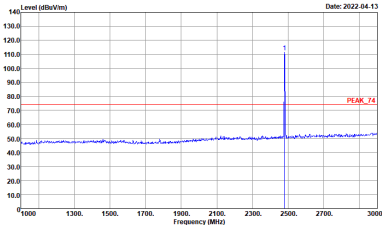
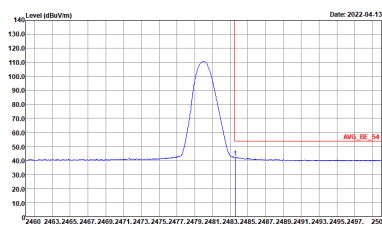
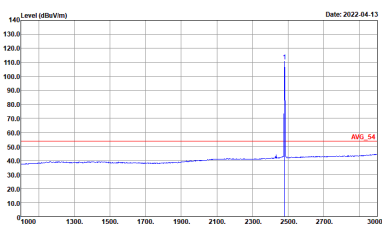
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
4	Horizontal	Fundamental
Peak	 Site : 03CH-D0-1FV Condition : PEAK_BE_74 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.0000kHz VBW:3000.0000kHz SWT:Auto	Left blank
Avg.	 Site : 03CH-D0-1FV Condition : AVG_BE_54 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.0000kHz VBW:3000.0000kHz SWT:Auto	Left blank

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
4	Vertical	Fundamental
Peak	 Site Condition : 03CH20-HV : PEAK_BE_74 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto	 Site Condition : 03CH20-HV : PEAK_F4 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto
Avg.	 Site Condition : 03CH20-HV : AVG_BE_54 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3.0000Hz SWT:Auto	 Site Condition : 03CH20-HV : AVG_F4 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3.0000Hz SWT:Auto



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
4	Vertical	Fundamental
Peak	 Site : 03CH20-1FV Condition : PEAK_BE_74 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto	Left blank
Avg.	 Site : 03CH20-1FV Condition : AVG_BE_54 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto	Left blank

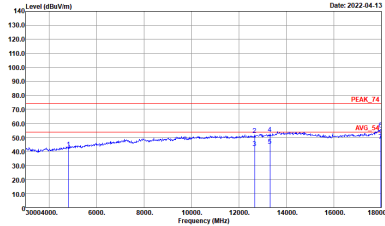
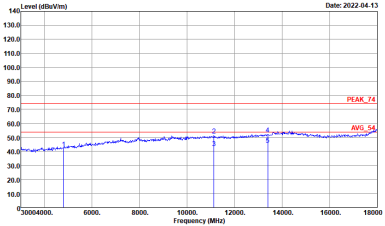
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
4	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.0000kHz VBW:3000.0000kHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.0000kHz VBW:3000.0000kHz SWT:Auto
	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.0000kHz VBW:3.0000kHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.0000kHz VBW:3.0000kHz SWT:Auto
Avg.		

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
4	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto
	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3.0000Hz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3.0000Hz SWT:Auto
Avg.		



2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH00 2402MHz	
4	Horizontal	Vertical
Peak Avg.	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 HORIZONTAL	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 VERTICAL



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH19 2440MHz	
4	Horizontal	Vertical
Peak Avg.	Level (dBm/Hz) Date: 2022-04-13 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 HORIZONTAL	Level (dBm/Hz) Date: 2022-04-13 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 VERTICAL

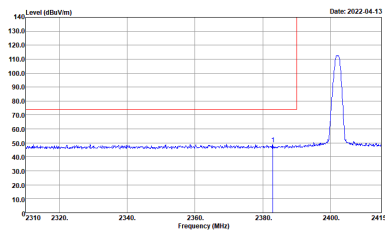
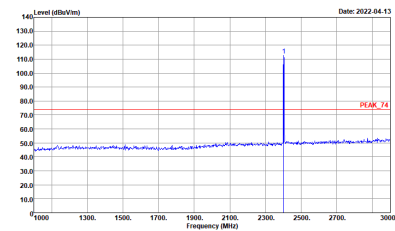
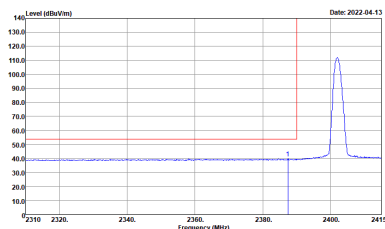
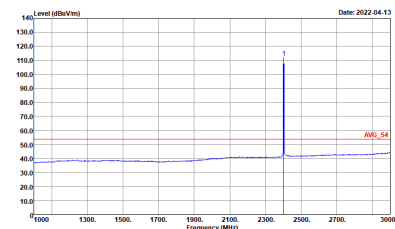


BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH39 2480MHZ	
4	Horizontal	Vertical
Peak Avg.	Level (dBm/Hz) Date: 2022-04-13 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 HORIZONTAL	Level (dBm/Hz) Date: 2022-04-13 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 VERTICAL

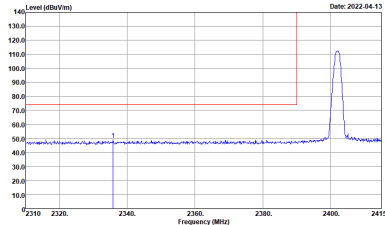
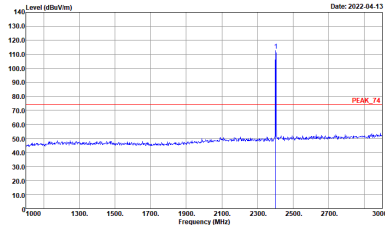
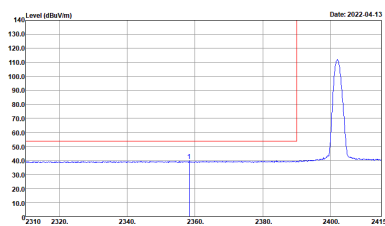
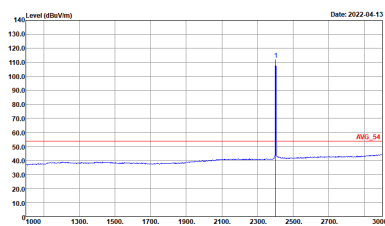


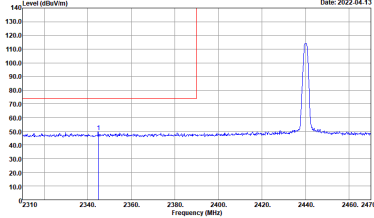
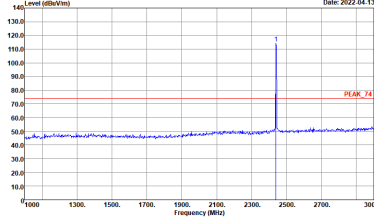
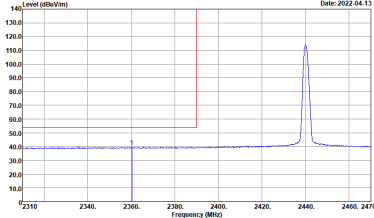
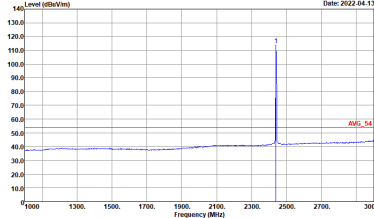
2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

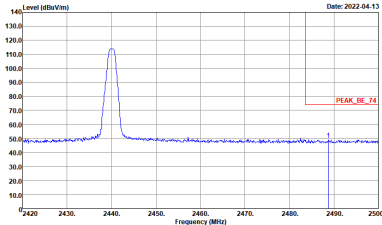
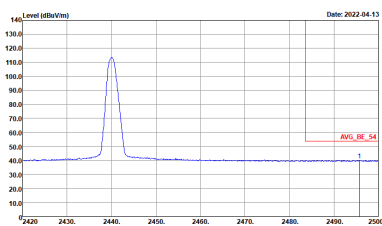
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
3	Horizontal	Fundamental
Peak	 Site : 03CH20-1HY Condition : PEAK_BE_74 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site : 03CH20-1HY Condition : PEAK_74 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Avg.	 Site : 03CH20-1HY Condition : AVG_BE_54 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000kHz VBW:3.000kHz SWT:Auto	 Site : 03CH20-1HY Condition : AVG_54 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000kHz VBW:3.000kHz SWT:Auto



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
3	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000kHz VBW:3000.0000kHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_F4 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000kHz VBW:3000.0000kHz SWT:Auto
Avg	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000kHz VBW:3.0000kHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_F4 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000kHz VBW:3.0000kHz SWT:Auto

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
3	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

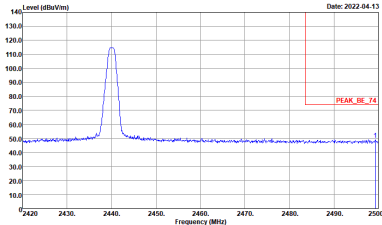
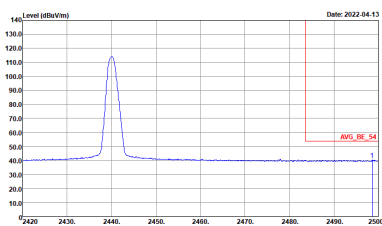


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
3	Horizontal	Fundamental
Peak	 Site : 03CH-D0-1FV Condition : PEAK_BE_74 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.0000kHz VBW:3000.0000kHz SWT:Auto	Left blank
Avg.	 Site : 03CH-D0-1FV Condition : AVG_BE_54 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.0000kHz VBW:3000.0000kHz SWT:Auto	Left blank



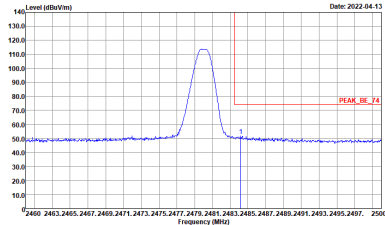
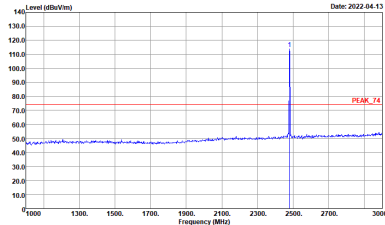
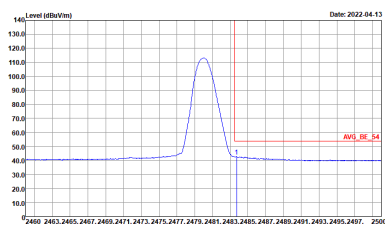
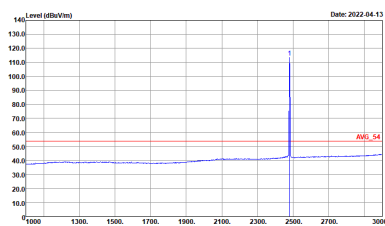
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
3	Vertical	Fundamental
Peak	Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02294_1110622 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Site : 03CH20-HY Condition : PEAK_F4 3m 91200_02294_1110622 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Avg.	Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02294_1110622 VERTICAL : RBW:1000.000kHz VBW:3.000kHz SWT:Auto	Site : 03CH20-HY Condition : AVG_F4 3m 91200_02294_1110622 VERTICAL : RBW:1000.000kHz VBW:3.000kHz SWT:Auto



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
3	Vertical	Fundamental
Peak	 Site : 03CH-D0-1FV Condition : PEAK_BE_74 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto	Left blank
Avg.	 Site : 03CH-D0-1FV Condition : AVG_BE_54 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto	Left blank



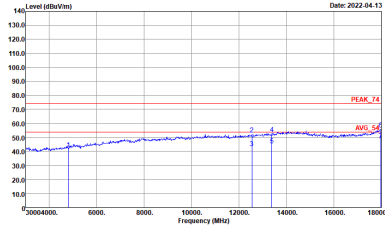
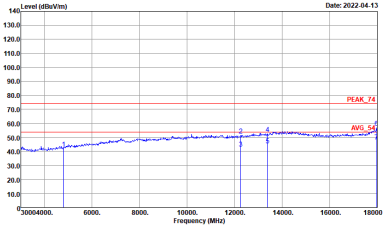
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
3	Horizontal	Fundamental
Peak	Site : 03CH20-HV Condition : PEAK_BE_74 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH20-HV Condition : PEAK_74 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	Site : 03CH20-HV Condition : AVG_BE_54 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto	Site : 03CH20-HV Condition : AVG_54 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
3	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000kHz VBW:3000.0000kHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000kHz VBW:3000.0000kHz SWT:Auto
	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000kHz VBW:3.0000kHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000kHz VBW:3.0000kHz SWT:Auto
Avg.		



2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH00 2402MHz	
3	Horizontal	Vertical
Peak Avg.	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 HORIZONTAL	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 VERTICAL



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH19 2440MHz	
3	Horizontal	Vertical
Peak Avg.	Level (dBm/Hz) Date: 2022-04-13 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 HORIZONTAL	Level (dBm/Hz) Date: 2022-04-13 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 VERTICAL

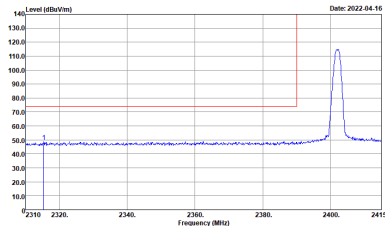
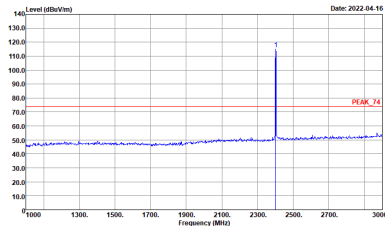
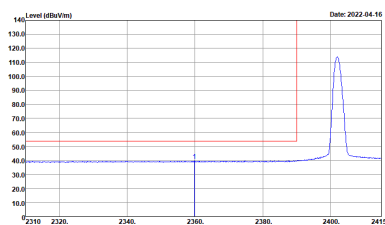
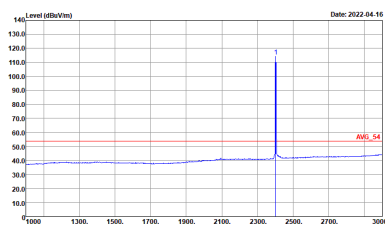


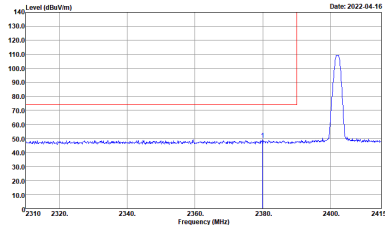
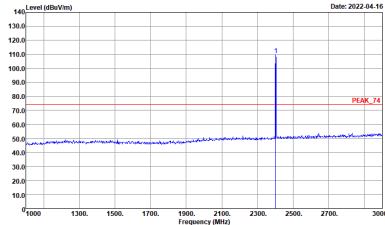
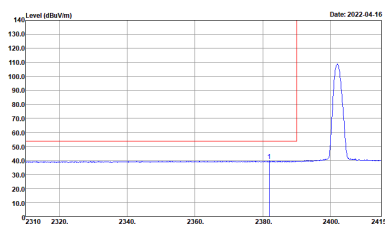
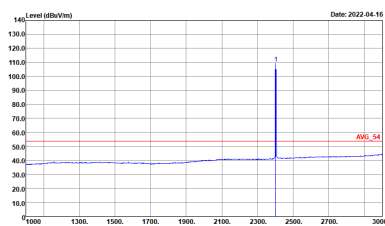
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH39 2480MHz	
3	Horizontal	Vertical
Peak Avg.	Level (dBm/Hz) Date: 2022-04-13 Site : 03CH20-HV Condition : PEAK_74 3m 91200_02294_1110622 HORIZONTAL	Level (dBm/Hz) Date: 2022-04-13 Site : 03CH20-HV Condition : PEAK_74 3m 91200_02294_1110622 VERTICAL

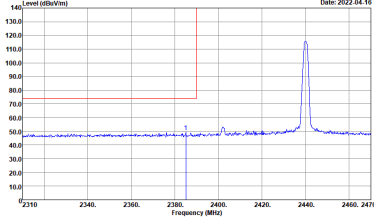
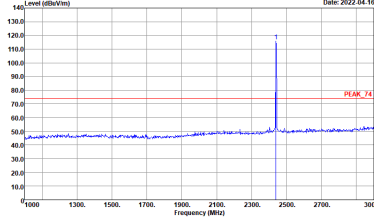
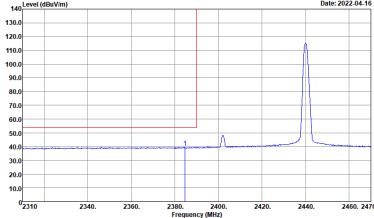
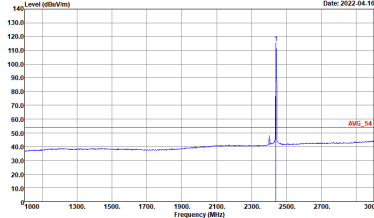


2.4GHz 2400~2483.5MHz

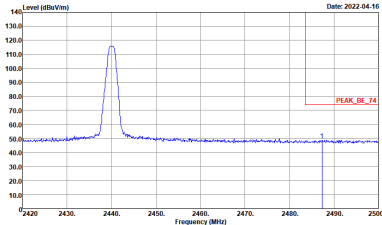
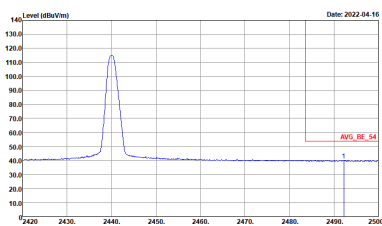
BLE (Band Edge @ 3m)

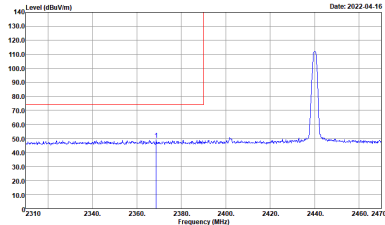
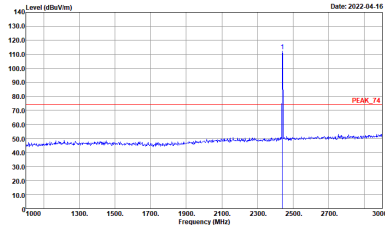
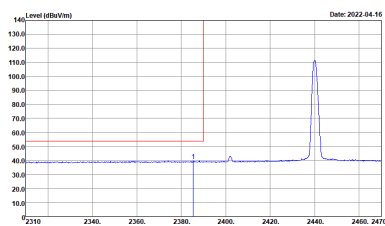
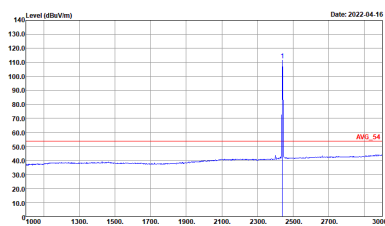
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
4+3	Horizontal	Fundamental
Peak	 Site : 03CH20-1HY Condition : PEAK_BE_74 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site : 03CH20-1HY Condition : PEAK_74 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Avg.	 Site : 03CH20-1HY Condition : AVG_BE_54 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000kHz VBW:3.000kHz SWT:Auto	 Site : 03CH20-1HY Condition : AVG_54 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000kHz VBW:3.000kHz SWT:Auto

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
4+3	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_F4 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto
	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3.0000Hz SWT:Auto	 Site : 03CH20-HY Condition : AVG_F4 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3.0000Hz SWT:Auto
Avg		

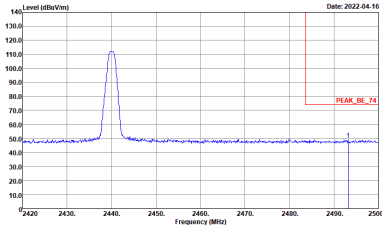
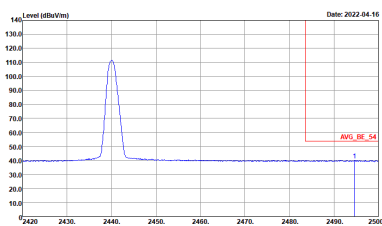
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
4+3	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02294_1110622 HORIZONTAL : RBW:3000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 HORIZONTAL : RBW:3000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02294_1110622 HORIZONTAL : RBW:3000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 91200_02294_1110622 HORIZONTAL : RBW:3000.000KHz VBW:3000.000KHz SWT:Auto



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
4+3	Horizontal	Fundamental
Peak	 Site : 03CH-D0-1FV Condition : PEAK_BE_74 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.0000kHz VBW:3000.0000kHz SWT:Auto	Left blank
Avg.	 Site : 03CH-D0-1FV Condition : AVG_BE_54 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.0000kHz VBW:3000.0000kHz SWT:Auto	Left blank

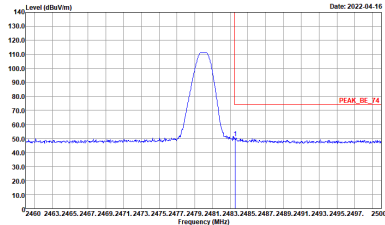
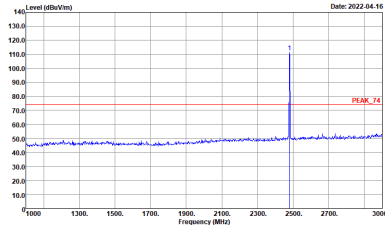
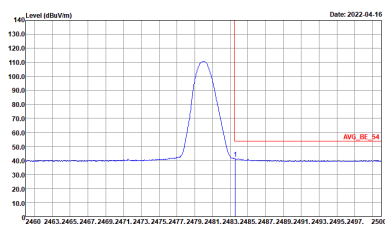
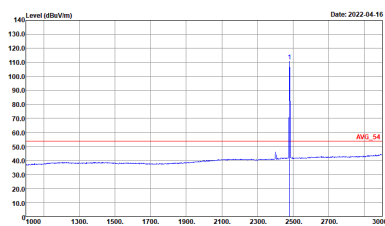
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
4+3	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02294_1110622 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_F4 3m 91200_02294_1110622 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02294_1110622 VERTICAL : RBW:1000.000kHz VBW:3.000kHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_F4 3m 91200_02294_1110622 VERTICAL : RBW:1000.000kHz VBW:3.000kHz SWT:Auto



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
4+3	Vertical	Fundamental
Peak	 Site : 03CH20-1FV Condition : PEAK_BE_74 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto	Left blank
Avg.	 Site : 03CH20-1FV Condition : AVG_BE_54 3m 91200_02294_1110622 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto	Left blank



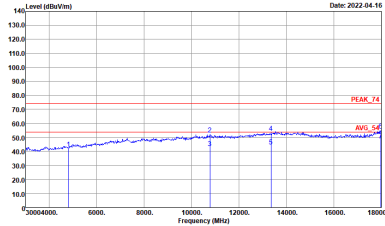
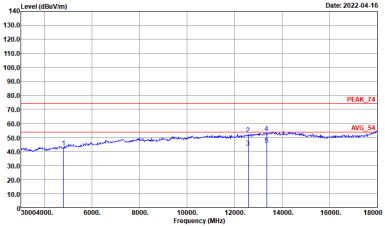
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
4+3	Horizontal	Fundamental
Peak	Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Avg.	Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000kHz VBW:3.000kHz SWT:Auto	Site : 03CH20-HY Condition : AVG_54 3m 91200_02294_1110622 HORIZONTAL : RBW:1000.000kHz VBW:3.000kHz SWT:Auto

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
4+3	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 91200_02294_1110622 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
	 Site : 03CH20-HY Condition : AVG_BE_54 3m 91200_02294_1110622 VERTICAL : RBW:1000.000kHz VBW:3.000kHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 91200_02294_1110622 VERTICAL : RBW:1000.000kHz VBW:3.000kHz SWT:Auto
Avg.		

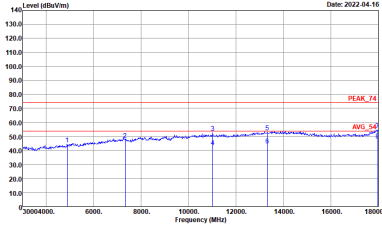
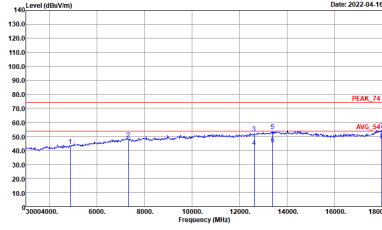


2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH00 2402MHz	
4+3	Horizontal	Vertical
Peak Avg.	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 HORIZONTAL	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 VERTICAL



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH19 2440MHz	
4+3	Horizontal	Vertical
Peak Avg.	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 HORIZONTAL	 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 VERTICAL



BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH39 2480MHz	
4+3	Horizontal	Vertical
Peak Avg.	Level (dBm/100) Date: 2022-04-16 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 HORIZONTAL	Level (dBm/100) Date: 2022-04-16 Site : 03CH20-HY Condition : PEAK_74 3m 91200_02294_1110622 VERTICAL



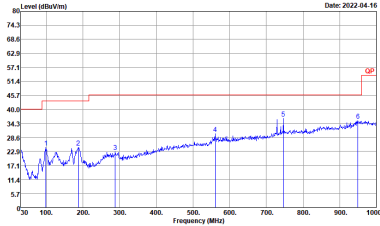
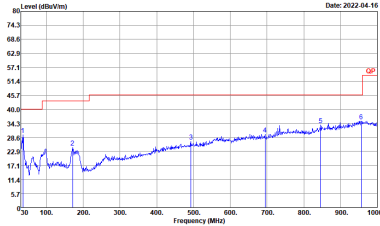
Emission above 18GHz
2.4GHz BLE (SHF @ 1m)

BLE	2.4GHz 2400~2483.5MHz	
ANT	BLE SHF	
4+3	Horizontal	Vertical
Peak Avg.	140 Level (dBuV/m) Date: 2022-04-16 Site : 03CH20-HY Condition : PEAK_T4 1m SHF_00993_211130 HORIZONTAL	140 Level (dBuV/m) Date: 2022-04-16 Site : 03CH20-HY Condition : PEAK_T4 1m SHF_00993_211130 VERTICAL



Emission below 1GHz

2.4GHz BLE (LF)

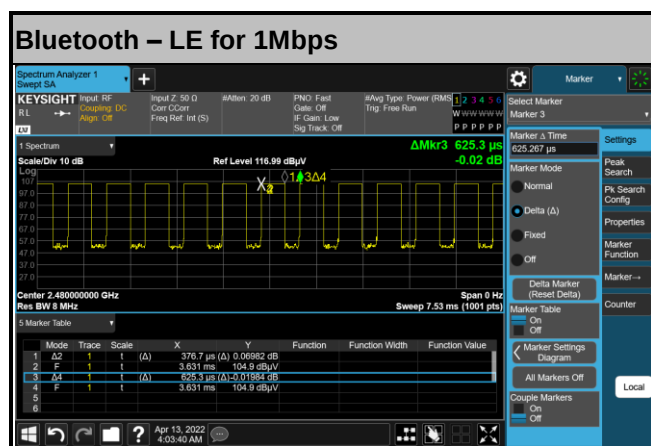
BLE	2.4GHz 2400~2483.5MHz	
ANT	BLE LF	
4+3	Horizontal	Vertical
QP / Peak	 Site : 03CH20-HY Condition : QP 3m LF_35606408_1101017 HORIZONTAL	 Site : 03CH20-HY Condition : QP 3m LF_35606408_1101017 VERTICAL



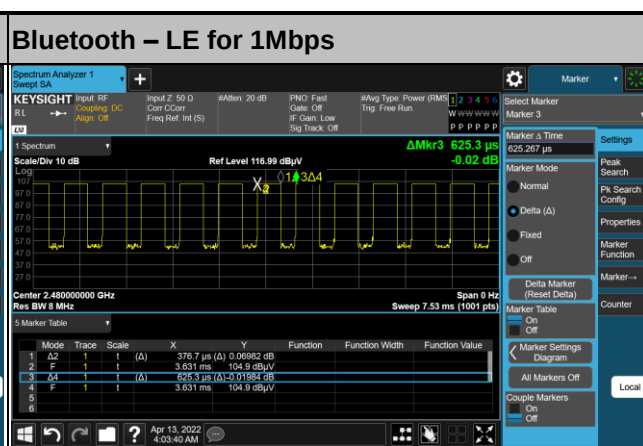
Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
4	Bluetooth - LE for 1Mbps	60.24	377	2.65	3kHz
3	Bluetooth - LE for 1Mbps	60.24	377	2.65	3kHz
4+3	Bluetooth - LE for 1Mbps	61.44	384.2	2.60	3kHz

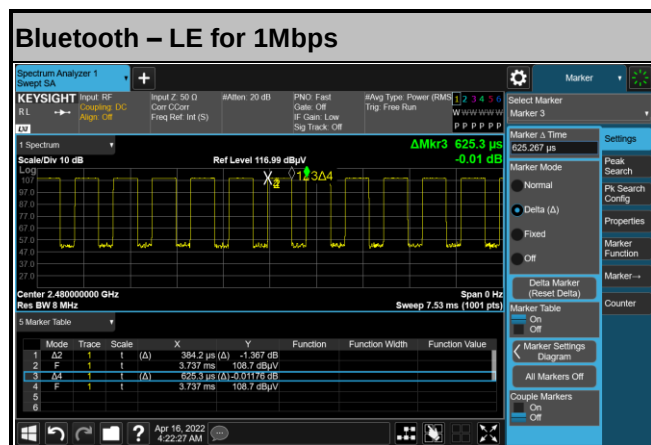
<Ant. 4>



<Ant. 3>



MIMO <Ant. 4+3>



—THE END—