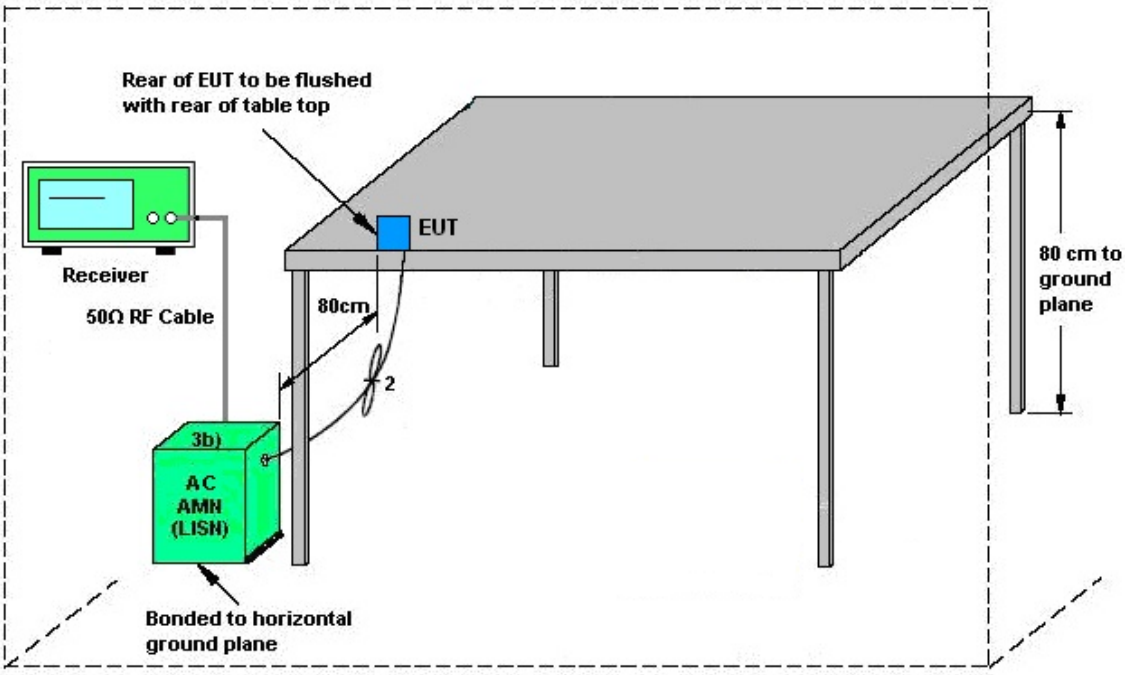
3.6.4 Test Setup



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

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 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. 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	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Jan. 07, 2019	Nov. 11, 2019~ Dec. 23, 2019	Jan. 06, 2020	Radiation (03CH15-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz ~ 40GHz	Dec. 06, 2018	Nov. 11, 2019~ Dec. 03, 2019	Dec. 05, 2019	Radiation (03CH15-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz ~ 40GHz	Dec. 13, 2019	Feb. 24, 2020~ Feb. 25, 2020	Dec. 12, 2020	Radiation (03CH15-HY)
Preamplifier	EMEC INSTRUMENTS&PE	EMC184045B &PE7005-6	980192	18GHz ~ 40GHz	Aug. 01, 2019	Dec. 04, 2019~ Dec. 23, 2019	Jul. 31, 2020	Radiation (03CH15-HY)
Bilog Antenna	TESEQ	CBL6111D&0 0800N1D01N-06	41912&05	30MHz to 1GHz	Feb. 12, 2019	Nov. 11, 2019~ Dec. 23, 2019	Feb. 11, 2020	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-2114	1-18GHz	Jul. 31, 2019	Nov. 11, 2019~ Feb. 25, 2020	Jul. 30, 2020	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Dec. 05, 2018	Nov. 11, 2019~ Dec. 03, 2019	Dec. 04, 2019	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170576	18GHz~40GHz	May 14, 2019	Dec. 04, 2019~ Dec. 23, 2019	May 13, 2020	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Dec. 10, 2019	Feb. 24, 2020~ Feb. 25, 2020	Dec. 09, 2020	Radiation (03CH15-HY)
Amplifier	SONOMA	310N	363440	9kHz~1GHz	Dec. 28, 2018	Nov. 11, 2019~ Dec. 23, 2019	Dec. 27, 2019	Radiation (03CH15-HY)
Preamplifier	Jet-Power	JPA0118-55-303	1710001800054001	1GHz~18GHz	May 19, 2019	Nov. 11, 2019~ Dec. 23, 2019	May 18, 2020	Radiation (03CH15-HY)
Preamplifier	Keysight	83017A	MY53270195	1GHz~26.5GHz	Aug. 23, 2019	Nov. 11, 2019~ Feb. 25, 2020	Aug. 22, 2020	Radiation (03CH15-HY)
Preamplifier	Jet-Power	JPA0118-55-303	1710001800055007	1GHz~18GHz	Apr. 01, 2019	Feb. 24, 2020~ Feb. 25, 2020	May 31, 2020	Radiation (03CH15-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	20MHz~8.4GHz	Nov. 01, 2019	Nov. 11, 2019~ Dec. 23, 2019	Oct. 31, 2020	Radiation (03CH15-HY
EMI Test Receiver	Rohde & Schwarz	ESU26	100390	20Hz~26.5GHz	Dec. 27, 2018	Nov. 11, 2019~ Dec. 23, 2019	Dec. 26, 2019	Radiation (03CH15-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY55420170	20MHz~8.4GHz	Mar. 08, 2019	Feb. 24, 2020~ Feb. 25, 2020	Mar. 07, 2020	Radiation (03CH15-HY
Controller	ChainTek	3000-1	N/A	Control Turn table & Ant Mast	N/A	Nov. 11, 2019~ Dec. 23, 2019	N/A	Radiation (03CH15-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Nov. 11, 2019~ Feb. 25, 2020	N/A	Radiation (03CH15-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Nov. 11, 2019~ Feb. 25, 2020	N/A	Radiation (03CH15-HY)
Software	Audix	E3 6.2009-8-24(k5)	RK-000451	N/A	N/A	Nov. 11, 2019~ Feb. 25, 2020	N/A	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY36980/4	30M-18G	Apr. 15, 2019	Nov. 11, 2019~ Feb. 25, 2020	Apr. 14, 2020	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9838/4PE	30M-18G	Apr. 15, 2019	Nov. 11, 2019~ Feb. 25, 2020	Apr. 14, 2020	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY802430/4	30M~18GHz	May 13, 2019	Nov. 11, 2019~ Feb. 25, 2020	May 12, 2020	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz-40GHz	Feb. 26, 2019	Nov. 11, 2019~ Dec. 23, 2019	Feb. 25, 2020	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30MHz-40GHz	Feb. 26, 2019	Nov. 11, 2019~ Dec. 23, 2019	Feb. 25, 2020	Radiation (03CH15-HY)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Filter	Wainwright	WLK4-1000-1530-8000-40SS	SN4	1.53G Low Pass	Jul. 04, 2019	Nov. 11, 2019~ Dec. 23, 2019	Jul. 03, 2020	Radiation (03CH15-HY)
Filter	Wainwright	WHKX12-2700-3000-18000-60ST	SN2	3GHz High Pass Filter	Jul. 17, 2019	Nov. 11, 2019~ Feb. 25, 2020	Jul. 14, 2020	Radiation (03CH15-HY)
Spectrum Analyzer	Agilent	E4446A	MY50180136	3Hz~44GHz	Apr. 29, 2019	Feb. 24, 2020~ Feb. 25, 2020	Apr. 28, 2020	Radiation (03CH15-HY)
Hygrometer	Testo	608-H2	41410069	N/A	Jun. 17, 2019	Nov. 13, 2019~ Feb. 27, 2020	Jun. 16, 2020	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	16I00054SNO10	10MHz~6GHz	Dec. 19, 2018	Nov. 13, 2019~ Dec. 17, 2019	Dec. 18, 2019	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	13I00030SNO32	9kHz~6GHz	Dec. 17, 2019	Dec.18, 2019~ Feb. 27, 2020	Dec. 16, 2020	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Jul. 15, 2019	Nov. 13, 2019~ Feb. 27, 2020	Jul. 14, 2020	Conducted (TH05-HY)
Switch Box & RF Cable	Burgeon	ETF-058	EC1208382	N/A	Mar. 27, 2019	Nov. 13, 2019~ Feb. 27, 2020	Mar. 26, 2020	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Jan. 07, 2020	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Nov. 15, 2019	Jan. 07, 2020	Nov. 14, 2020	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Mar. 19, 2019	Jan. 07, 2020	Mar. 18, 2020	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 15, 2019	Jan. 07, 2020	Nov. 14, 2020	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jan. 07, 2020	N/A	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 02, 2020	Jan. 07, 2020	Jan. 01, 2021	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 02, 2020	Jan. 07, 2020	Jan. 01, 2021	Conduction (CO05-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.00

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.00

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.40

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.00

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Derek Hsu / Luffy Lin	Temperature:	21~25	°C
Test Date:	2019/11/13~2020/02/27	Relative Humidity:	51~54	%

<Ant.1>

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	1.033	0.679	0.50	Pass
BLE	1Mbps	1	19	2440	1.033	0.683	0.50	Pass
BLE	1Mbps	1	39	2480	1.033	0.677	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	-2.00	30.00	2.80	0.80	36.00	Pass
BLE	1Mbps	1	19	2440	-1.90	30.00	2.80	0.90	36.00	Pass
BLE	1Mbps	1	39	2480	-1.80	30.00	2.80	1.00	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	-2.80	-17.14	2.80	8.00	Pass
BLE	1Mbps	1	19	2440	-2.49	-16.81	2.80	8.00	Pass
BLE	1Mbps	1	39	2480	-2.33	-16.70	2.80	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	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE5.0	2Mbps	1	0	2402	2.070	1.163	0.50	Pass
BLE5.0	2Mbps	1	19	2440	2.070	1.167	0.50	Pass
BLE5.0	2Mbps	1	39	2480	2.070	1.171	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
BLE5.0	2Mbps	1	0	2402	-1.80	30.00	2.80	1.00	36.00	Pass
BLE5.0	2Mbps	1	19	2440	-1.60	30.00	2.80	1.20	36.00	Pass
BLE5.0	2Mbps	1	39	2480	-1.50	30.00	2.80	1.30	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
BLE5.0	2Mbps	1	0	2402	-2.44	-19.24	2.80	8.00	Pass
BLE5.0	2Mbps	1	19	2440	-2.01	-18.86	2.80	8.00	Pass
BLE5.0	2Mbps	1	39	2480	-1.92	-18.75	2.80	8.00	Pass

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

<Ant.2>

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	1.033	0.689	0.50	Pass
BLE	1Mbps	1	19	2440	1.033	0.683	0.50	Pass
BLE	1Mbps	1	39	2480	1.033	0.683	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	-2.10	30.00	2.80	0.70	36.00	Pass
BLE	1Mbps	1	19	2440	-1.90	30.00	2.80	0.90	36.00	Pass
BLE	1Mbps	1	39	2480	-1.80	30.00	2.80	1.00	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	-2.84	-17.18	2.80	8.00	Pass
BLE	1Mbps	1	19	2440	-2.41	-16.79	2.80	8.00	Pass
BLE	1Mbps	1	39	2480	-2.29	-16.59	2.80	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	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE5.0	2Mbps	1	0	2402	2.070	1.167	0.50	Pass
BLE5.0	2Mbps	1	19	2440	2.070	1.167	0.50	Pass
BLE5.0	2Mbps	1	39	2480	2.070	1.171	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
BLE5.0	2Mbps	1	0	2402	-2.20	30.00	2.80	0.60	36.00	Pass
BLE5.0	2Mbps	1	19	2440	-1.90	30.00	2.80	0.90	36.00	Pass
BLE5.0	2Mbps	1	39	2480	-1.90	30.00	2.80	0.90	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
BLE5.0	2Mbps	1	0	2402	-2.75	-19.57	2.80	8.00	Pass
BLE5.0	2Mbps	1	19	2440	-2.33	-19.18	2.80	8.00	Pass
BLE5.0	2Mbps	1	39	2480	-2.22	-19.05	2.80	8.00	Pass

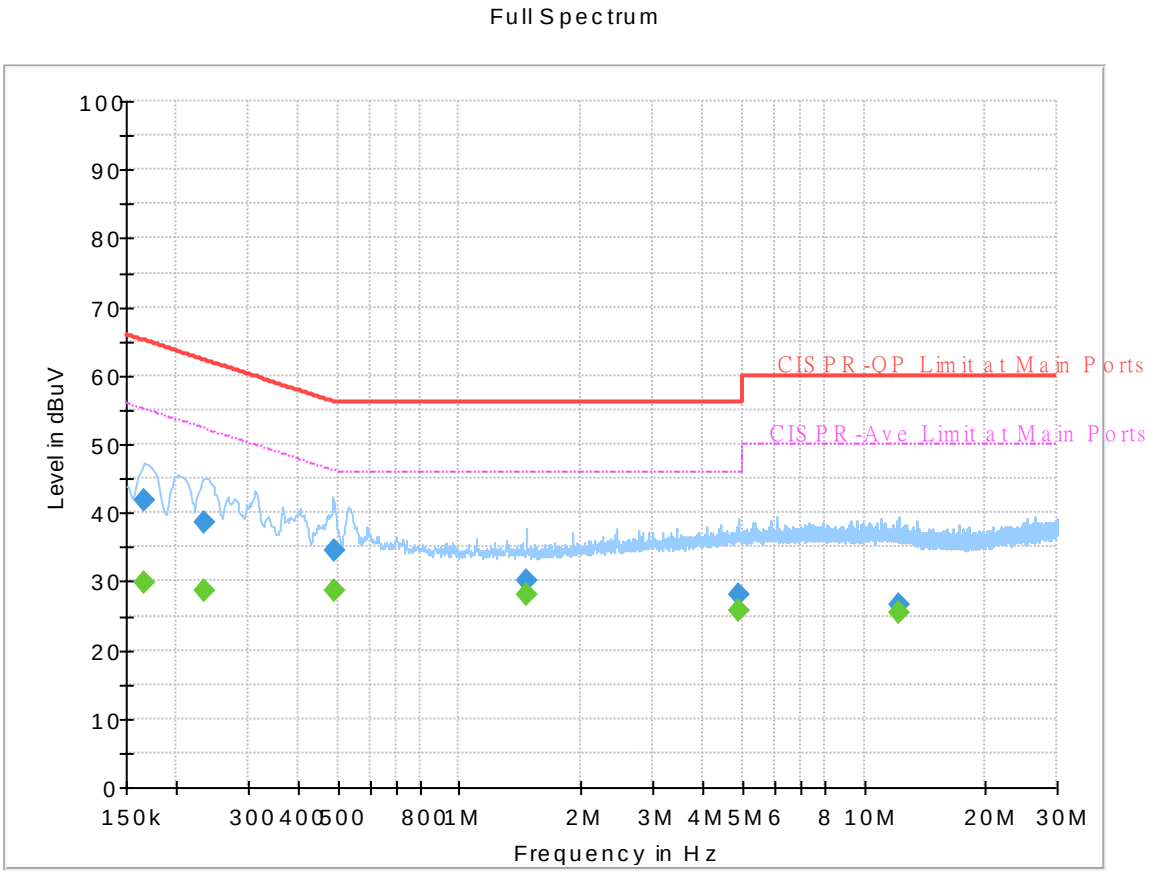
Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

Appendix B. AC Conducted Emission Test Results

Test Engineer :	Howard Huang	**Temperature :**	24~26℃
		Relative Humidity :	52~55%

EUT Information

Report NO :	982217-01
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Line

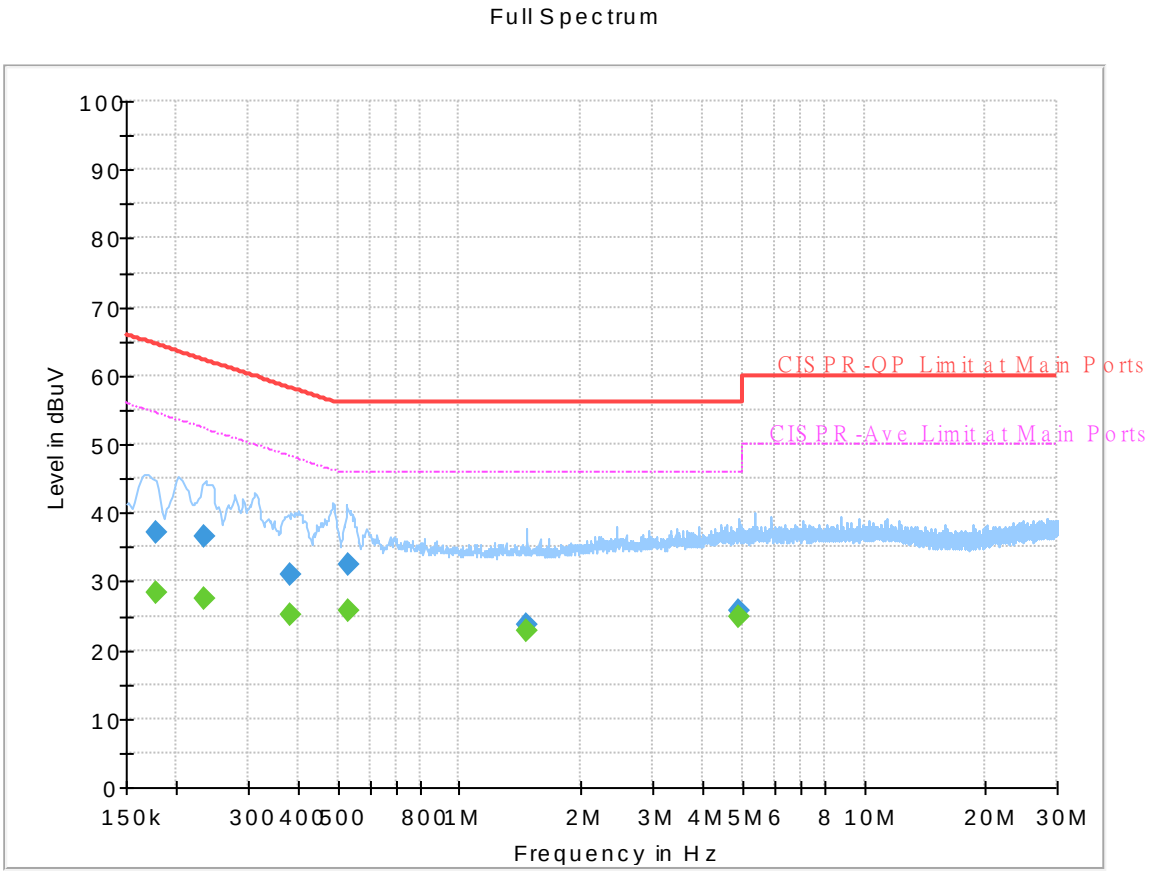


Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.165750	---	29.86	55.17	25.31	L1	OFF	19.5
0.165750	41.89	---	65.17	23.28	L1	OFF	19.5
0.233430	---	28.61	52.33	23.72	L1	OFF	19.5
0.233430	38.71	---	62.33	23.62	L1	OFF	19.5
0.490290	---	28.79	46.16	17.37	L1	OFF	19.5
0.490290	34.55	---	56.16	21.61	L1	OFF	19.5
1.470120	---	27.95	46.00	18.05	L1	OFF	19.6
1.470120	30.06	---	56.00	25.94	L1	OFF	19.6
4.897410	---	25.85	46.00	20.15	L1	OFF	19.7
4.897410	27.97	---	56.00	28.03	L1	OFF	19.7
12.234750	---	25.33	50.00	24.67	L1	OFF	20.1
12.234750	26.67	---	60.00	33.33	L1	OFF	20.1

EUT Information

Report NO :	982217-01
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Neutral



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.177000	---	28.36	54.63	26.27	N	OFF	19.6
0.177000	37.12	---	64.63	27.51	N	OFF	19.6
0.233250	---	27.63	52.33	24.70	N	OFF	19.6
0.233250	36.49	---	62.33	25.84	N	OFF	19.6
0.380670	---	25.26	48.27	23.01	N	OFF	19.6
0.380670	31.14	---	58.27	27.13	N	OFF	19.6
0.532500	---	25.66	46.00	20.34	N	OFF	19.6
0.532500	32.46	---	56.00	23.54	N	OFF	19.6
1.464000	---	22.74	46.00	23.26	N	OFF	19.6
1.464000	23.79	---	56.00	32.21	N	OFF	19.6
4.899750	---	24.77	46.00	21.23	N	OFF	19.8
4.899750	25.60	---	56.00	30.40	N	OFF	19.8

Appendix C. Radiated Spurious Emission

Test Engineer :	Leo Li, Mancy Chou and Bigshow Wang	Temperature :	24.2~25.1°C
		Relative Humidity :	53~63%

<Ant.1>

<1Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (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		2361.66	54.21	-19.79	74	41.37	27.88	16.12	31.16	100	112	P	H
		2332.155	45.59	-8.41	54	32.78	27.9	16.08	31.17	100	112	A	H
	*	2402	93.45	-	-	80.62	27.8	16.17	31.14	100	112	P	H
	*	2402	92.93	-	-	80.1	27.8	16.17	31.14	100	112	A	H
													H
													H
		2382.03	54.73	-19.27	74	41.89	27.84	16.15	31.15	336	78	P	V
		2388.75	45.38	-8.62	54	32.55	27.82	16.16	31.15	336	78	A	V
	*	2402	93.77	-	-	80.94	27.8	16.17	31.14	336	78	P	V
	*	2402	92.95	-	-	80.12	27.8	16.17	31.14	336	78	A	V
													V
													V

BLE CH 19 2440MHz		2383.78	55.25	-18.75	74	42.42	27.83	16.15	31.15	100	110	P	H
		2372.44	45.22	-8.78	54	32.38	27.86	16.13	31.15	100	110	A	H
	*	2440	94.23	-	-	81.34	27.8	16.21	31.12	100	110	P	H
	*	2440	93.71	-	-	80.82	27.8	16.21	31.12	100	110	A	H
		2490.55	53.98	-20.02	74	41.09	27.72	16.26	31.09	100	110	P	H
		2492.72	45.21	-8.79	54	32.33	27.71	16.26	31.09	100	110	A	H
		2344.16	54.74	-19.26	74	41.91	27.9	16.1	31.17	323	75	P	V
		2348.64	45.41	-8.59	54	32.58	27.9	16.1	31.17	323	75	A	V
	*	2440	94.23	-	-	81.34	27.8	16.21	31.12	323	75	P	V
	*	2440	93.77	-	-	80.88	27.8	16.21	31.12	323	75	A	V
		2497.69	54.07	-19.93	74	41.19	27.7	16.27	31.09	323	75	P	V
		2486	45.19	-8.81	54	32.3	27.73	16.26	31.1	323	75	A	V
BLE CH 39 2480MHz	*	2480	94.77	-	-	81.88	27.74	16.25	31.1	100	106	P	H
	*	2480	94.25	-	-	81.36	27.74	16.25	31.1	100	106	A	H
		2487.48	55.16	-18.84	74	42.27	27.73	16.26	31.1	100	106	P	H
		2483.92	45.18	-8.82	54	32.3	27.73	16.25	31.1	100	106	A	H
													H
													H
	*	2480	94.34	-	-	81.45	27.74	16.25	31.1	314	75	P	V
	*	2480	93.92	-	-	81.03	27.74	16.25	31.1	314	75	A	V
		2497.04	54.33	-19.67	74	41.44	27.71	16.27	31.09	314	75	P	V
		2486.24	45.37	-8.63	54	32.48	27.73	16.26	31.1	314	75	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)	Over Limit (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	37.2	-36.8	74	54.37	31.32	9.62	58.11	100	0	P	H
													H
													H
													H
		4804	38.4	-35.6	74	55.57	31.32	9.62	58.11	100	0	P	V
													V
													V
													V
BLE CH 19 2440MHz		4880	37.4	-36.6	74	54.46	31.44	9.63	58.13	100	0	P	H
		7320	44.32	-29.68	74	53.35	36.76	11.7	57.49	100	0	P	H
													H
													H
		4880	37.49	-36.51	74	54.55	31.44	9.63	58.13	100	0	P	V
		7320	44.25	-29.75	74	53.28	36.76	11.7	57.49	100	0	P	V
													V
													V
BLE CH 39 2480MHz		4960	38.49	-35.51	74	55.56	31.42	9.65	58.14	100	0	P	H
		7440	43.87	-30.13	74	52.76	36.68	11.76	57.33	100	0	P	H
													H
													H
		4960	38.23	-35.77	74	55.3	31.42	9.65	58.14	100	0	P	V
		7440	44.64	-29.36	74	53.53	36.68	11.76	57.33	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

2.4GHz BLE (LF)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz BLE LF		47.46	32.12	-7.88	40	48.14	15.67	0.9	32.59	400	330	Q	H
		167.74	34.12	-9.38	43.5	48.96	15.83	1.83	32.5	-	-	P	H
		240.49	31.71	-14.29	46	44.76	17.36	2.1	32.51	-	-	P	H
		269.59	28.51	-17.49	46	39.77	19.08	2.19	32.53	-	-	P	H
		449.04	28.37	-17.63	46	35.14	23.08	2.71	32.56	-	-	P	H
		896.21	36.78	-9.22	46	35.67	28.82	3.96	31.67	-	-	P	H
													H
													H
													H
													H
													H
													H
		47.46	33.72	-6.28	40	49.74	15.67	0.9	32.59	100	0	P	V
		167.74	27.99	-15.51	43.5	42.83	15.83	1.83	32.5	-	-	P	V
		288.99	22.88	-23.12	46	34.08	19.08	2.25	32.53	-	-	P	V
		375.32	24.7	-21.3	46	33.74	21.01	2.5	32.55	-	-	P	V
		729.37	33.13	-12.87	46	34.32	27.66	3.49	32.34	-	-	P	V
		896.21	38.17	-7.83	46	37.06	28.82	3.96	31.67	-	-	P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

<2Mbps >

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (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		2357.04	54.85	-19.15	74	41.94	27.96	16.11	31.16	128	112	P	H
		2333.835	44.64	-9.36	54	31.7	28.03	16.08	31.17	128	112	A	H
	*	2402	93.21	-	-	80.48	27.7	16.17	31.14	128	112	P	H
	*	2402	91.66	-	-	78.93	27.7	16.17	31.14	128	112	A	H
													H
													H
		2383.29	55.07	-18.93	74	42.27	27.8	16.15	31.15	347	25	P	V
		2311.995	44.88	-9.12	54	31.92	28.08	16.06	31.18	347	25	A	V
	*	2402	91.41	-	-	78.68	27.7	16.17	31.14	347	25	P	V
	*	2402	88.96	-	-	76.23	27.7	16.17	31.14	347	25	A	V
													V
													V
BLE CH 19 2440MHz		2387.12	54.79	-19.21	74	42.01	27.78	16.15	31.15	133	93	P	H
		2344.4	44.83	-9.17	54	31.89	28.01	16.1	31.17	133	93	A	H
	*	2440	93.23	-	-	80.52	27.62	16.21	31.12	133	93	P	H
	*	2440	91.18	-	-	78.47	27.62	16.21	31.12	133	93	A	H
		2499.64	54.9	-19.1	74	42.22	27.5	16.27	31.09	133	93	P	H
		2493.88	44.27	-9.73	54	31.59	27.51	16.26	31.09	133	93	A	H
		2320.56	54.56	-19.44	74	41.61	28.06	16.07	31.18	250	81	P	V
		2378.64	44.52	-9.48	54	31.7	27.83	16.14	31.15	250	81	A	V
	*	2440	91.65	-	-	78.94	27.62	16.21	31.12	250	81	P	V
	*	2440	90.17	-	-	77.46	27.62	16.21	31.12	250	81	A	V
		2486.86	53.45	-20.55	74	40.76	27.53	16.26	31.1	250	81	P	V
		2492.8	44.28	-9.72	54	31.6	27.51	16.26	31.09	250	81	A	V

BLE CH 39 2480MHz	*	2480	93.6	-	-	80.91	27.54	16.25	31.1	100	93	P	H
	*	2480	92.18	-	-	79.49	27.54	16.25	31.1	100	93	A	H
		2491.44	54.73	-19.27	74	42.04	27.52	16.26	31.09	100	93	P	H
		2494.68	44.32	-9.68	54	31.64	27.51	16.26	31.09	100	93	A	H
													H
													H
	*	2480	92.63	-	-	79.94	27.54	16.25	31.1	280	74	P	V
	*	2480	90.16	-	-	77.47	27.54	16.25	31.1	280	74	A	V
		2484	54.15	-19.85	74	41.47	27.53	16.25	31.1	280	74	P	V
		2483.84	44.52	-9.48	54	31.84	27.53	16.25	31.1	280	74	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)	Over Limit (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	35.44	-38.56	74	53.77	31.21	9.62	59.16	100	0	P	H
													H
													H
													H
		4804	35.75	-38.25	74	54.08	31.21	9.62	59.16	100	0	P	V
													V
													V
													V
BLE CH 19 2440MHz		4880	36.02	-37.98	74	54.33	31.24	9.63	59.18	100	0	P	H
		7320	41.85	-32.15	74	52.78	36.54	11.7	59.17	100	0	P	H
													H
													H
		4880	35.15	-38.85	74	53.46	31.24	9.63	59.18	100	0	P	V
		7320	41.75	-32.25	74	52.68	36.54	11.7	59.17	100	0	P	V
													V
													V
BLE CH 39 2480MHz		4960	35.78	-38.22	74	53.78	31.54	9.65	59.19	100	0	P	H
		7440	42.5	-31.5	74	53.3	36.56	11.76	59.12	100	0	P	H
													H
													H
		4960	35.68	-38.32	74	53.68	31.54	9.65	59.19	100	0	P	V
		7440	41.14	-32.86	74	51.94	36.56	11.76	59.12	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

<Ant.2>

<1Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (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		2338.98	54.12	-19.88	74	41.3	27.9	16.09	31.17	100	303	P	H
		2375.73	45.51	-8.49	54	32.67	27.85	16.14	31.15	100	303	A	H
	*	2402	92.27	-	-	79.44	27.8	16.17	31.14	100	303	P	H
	*	2402	91.62	-	-	78.79	27.8	16.17	31.14	100	303	A	H
													H
													H
		2344.545	54.55	-19.45	74	41.72	27.9	16.1	31.17	387	232	P	V
		2386.965	45.25	-8.75	54	32.42	27.83	16.15	31.15	387	232	A	V
	*	2402	93.41	-	-	80.58	27.8	16.17	31.14	387	232	P	V
	*	2402	92.78	-	-	79.95	27.8	16.17	31.14	387	232	A	V
													V
													V
BLE CH 19 2440MHz		2312.38	54.3	-19.7	74	41.52	27.9	16.06	31.18	100	305	P	H
		2355.08	45.32	-8.68	54	32.48	27.89	16.11	31.16	100	305	A	H
	*	2440	92.89	-	-	80	27.8	16.21	31.12	100	305	P	H
	*	2440	92.4	-	-	79.51	27.8	16.21	31.12	100	305	A	H
		2492.23	54.47	-19.53	74	41.58	27.72	16.26	31.09	100	305	P	H
		2489.64	45.3	-8.7	54	32.42	27.72	16.26	31.1	100	305	A	H
		2342.62	54.5	-19.5	74	41.67	27.9	16.1	31.17	375	230	P	V
		2388.96	45.29	-8.71	54	32.46	27.82	16.16	31.15	375	230	A	V
	*	2440	93.5	-	-	80.61	27.8	16.21	31.12	375	230	P	V
	*	2440	93.03	-	-	80.14	27.8	16.21	31.12	375	230	A	V
		2496.92	54.5	-19.5	74	41.61	27.71	16.27	31.09	375	230	P	V
		2496.29	45.34	-8.66	54	32.45	27.71	16.27	31.09	375	230	A	V

BLE CH 39 2480MHz	*	2480	92.33	-	-	79.44	27.74	16.25	31.1	100	303	P	H
	*	2480	91.82	-	-	78.93	27.74	16.25	31.1	100	303	A	H
		2486.72	55.55	-18.45	74	42.66	27.73	16.26	31.1	100	303	P	H
		2488.48	45.17	-8.83	54	32.29	27.72	16.26	31.1	100	303	A	H
													H
													H
	*	2480	94.13	-	-	81.24	27.74	16.25	31.1	399	230	P	V
	*	2480	93.63	-	-	80.74	27.74	16.25	31.1	399	230	A	V
		2490.56	55.12	-18.88	74	42.23	27.72	16.26	31.09	399	230	P	V
		2494.16	45.37	-8.63	54	32.49	27.71	16.26	31.09	399	230	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)	Over Limit (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	37.31	-36.69	74	54.48	31.32	9.62	58.11	100	0	P	H
													H
													H
													H
		4804	37.36	-36.64	74	54.53	31.32	9.62	58.11	100	0	P	V
													V
													V
													V
BLE CH 19 2440MHz		4880	36.58	-37.42	74	53.64	31.44	9.63	58.13	100	0	P	H
		7320	44.36	-29.64	74	53.39	36.76	11.7	57.49	100	0	P	H
													H
													H
		4880	37.81	-36.19	74	54.87	31.44	9.63	58.13	100	0	P	V
		7320	44.48	-29.52	74	53.51	36.76	11.7	57.49	100	0	P	V
													V
													V
BLE CH 39 2480MHz		4960	37.53	-36.47	74	54.6	31.42	9.65	58.14	100	0	P	H
		7440	43.76	-30.24	74	52.65	36.68	11.76	57.33	100	0	P	H
													H
													H
		4960	37.38	-36.62	74	54.45	31.42	9.65	58.14	100	0	P	V
		7440	43.96	-30.04	74	52.85	36.68	11.76	57.33	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

2.4GHz BLE (LF)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz BLE LF		47.46	33.88	-6.12	40	49.9	15.67	0.9	32.59	100	0	P	H
		84.32	25.11	-14.89	40	42.36	14.03	1.26	32.54	-	-	P	H
		143.49	28.7	-14.8	43.5	42.07	17.5	1.63	32.5	-	-	P	H
		167.74	25.15	-18.35	43.5	39.99	15.83	1.83	32.5	-	-	P	H
		239.52	32.76	-13.24	46	45.93	17.24	2.1	32.51	-	-	P	H
		295.78	27.43	-18.57	46	38.49	19.22	2.26	32.54	-	-	P	H
													H
													H
													H
													H
													H
													H
		47.46	33.79	-6.21	40	49.81	15.67	0.9	32.59	100	0	P	V
		167.74	26.16	-17.34	43.5	41	15.83	1.83	32.5	-	-	P	V
		240.49	24.21	-21.79	46	37.26	17.36	2.1	32.51	-	-	P	V
		329.73	24.4	-21.6	46	34.79	19.79	2.36	32.54	-	-	P	V
		719.67	35.32	-10.68	46	37.03	27.18	3.47	32.36	-	-	P	V
		896.21	35.18	-10.82	46	34.07	28.82	3.96	31.67	-	-	P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

<2Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (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		2311.47	54.88	-19.12	74	41.93	28.08	16.05	31.18	100	311	P	H
		2313.045	44.64	-9.36	54	31.69	28.07	16.06	31.18	100	311	A	H
	*	2402	93.53	-	-	80.8	27.7	16.17	31.14	100	311	P	H
	*	2402	92.03	-	-	79.3	27.7	16.17	31.14	100	311	A	H
													H
													H
		2361.45	54.31	-19.69	74	41.42	27.93	16.12	31.16	388	233	P	V
		2332.995	44.62	-9.38	54	31.68	28.03	16.08	31.17	388	233	A	V
	*	2402	92.58	-	-	79.85	27.7	16.17	31.14	388	233	P	V
	*	2402	90.4	-	-	77.67	27.7	16.17	31.14	388	233	A	V
													V
													V
BLE CH 19 2440MHz		2365.36	54.36	-19.64	74	41.49	27.91	16.12	31.16	100	312	P	H
		2310	44.74	-9.26	54	31.79	28.08	16.05	31.18	100	312	A	H
	*	2440	93.26	-	-	80.55	27.62	16.21	31.12	100	312	P	H
	*	2440	91.78	-	-	79.07	27.62	16.21	31.12	100	312	A	H
		2492.71	54.38	-19.62	74	41.7	27.51	16.26	31.09	100	312	P	H
		2483.98	44.33	-9.67	54	31.65	27.53	16.25	31.1	100	312	A	H
		2326.64	54.99	-19.01	74	42.05	28.05	16.07	31.18	374	234	P	V
		2338.96	44.52	-9.48	54	31.58	28.02	16.09	31.17	374	234	A	V
	*	2440	92.31	-	-	79.6	27.62	16.21	31.12	374	234	P	V
	*	2440	90.71	-	-	78	27.62	16.21	31.12	374	234	A	V
		2485.6	53.32	-20.68	74	40.63	27.53	16.26	31.1	374	234	P	V
		2490.46	44.23	-9.77	54	31.54	27.52	16.26	31.09	374	234	A	V

BLE CH 39 2480MHz	*	2480	92.11	-	-	79.42	27.54	16.25	31.1	109	307	P	H
	*	2480	90.58	-	-	77.89	27.54	16.25	31.1	109	307	A	H
		2497.76	53.88	-20.12	74	41.2	27.5	16.27	31.09	109	307	P	H
		2495.96	44.4	-9.6	54	31.71	27.51	16.27	31.09	109	307	A	H
													H
													H
	*	2480	92.93	-	-	80.24	27.54	16.25	31.1	400	233	P	V
	*	2480	91.48	-	-	78.79	27.54	16.25	31.1	400	233	A	V
		2487.68	54.14	-19.86	74	41.46	27.52	16.26	31.1	400	233	P	V
		2486.52	44.41	-9.59	54	31.72	27.53	16.26	31.1	400	233	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)	Over Limit (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	36.19	-37.81	74	54.52	31.21	9.62	59.16	100	0	P	H
													H
													H
													H
		4804	35.48	-38.52	74	53.81	31.21	9.62	59.16	100	0	P	V
													V
													V
													V
BLE CH 19 2440MHz		4880	35.22	-38.78	74	53.53	31.24	9.63	59.18	100	0	P	H
		7320	41.98	-32.02	74	52.91	36.54	11.7	59.17	100	0	P	H
													H
													H
		4880	35.52	-38.48	74	53.83	31.24	9.63	59.18	100	0	P	V
		7320	42.09	-31.91	74	53.02	36.54	11.7	59.17	100	0	P	V
													V
													V
BLE CH 39 2480MHz		4960	35.51	-38.49	74	53.51	31.54	9.65	59.19	100	0	P	H
		7440	42.03	-31.97	74	52.83	36.56	11.76	59.12	100	0	P	H
													H
													H
		4960	35.41	-38.59	74	53.41	31.54	9.65	59.19	100	0	P	V
		7440	40.93	-33.07	74	51.73	36.56	11.76	59.12	100	0	P	V
													V
													V
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	**P**eak or **A**verage
H/V	**H**orizontal or **V**ertical

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

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
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 :	Leo Li, Mancy Chou and Bigshow Wang	**Temperature :**	24.2~25.1°C
		Relative Humidity :	53~63%

Note symbol

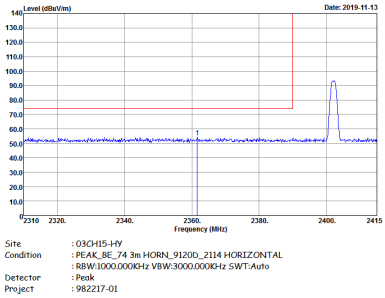
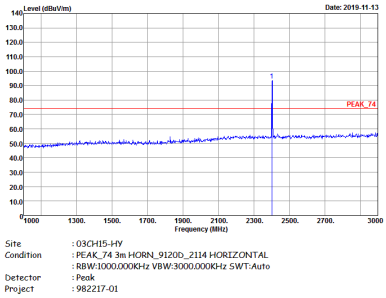
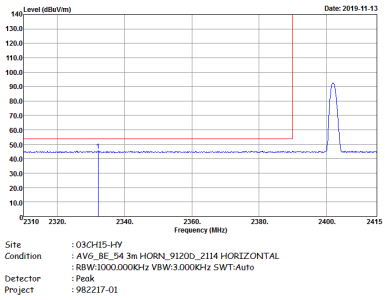
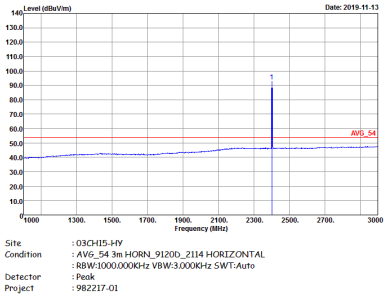
-L	**Low channel location**
-R	**High channel location**

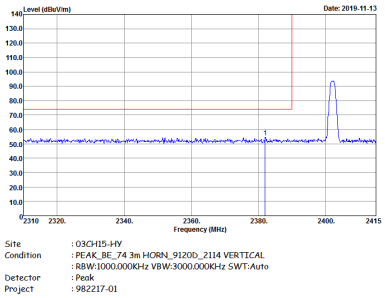
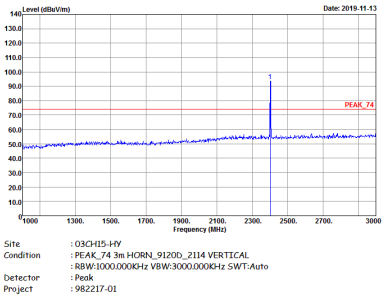
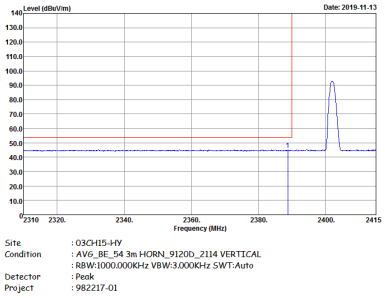
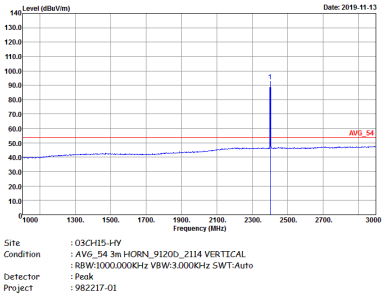
<Ant.1>

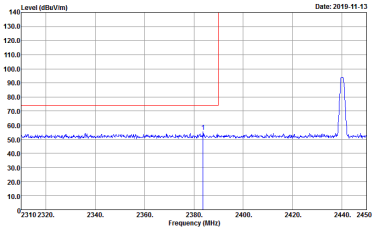
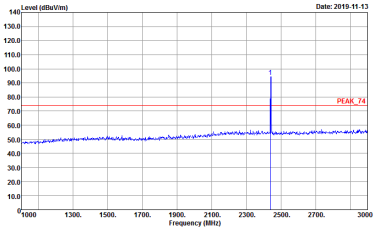
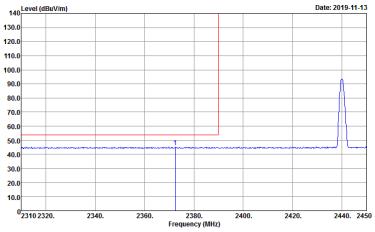
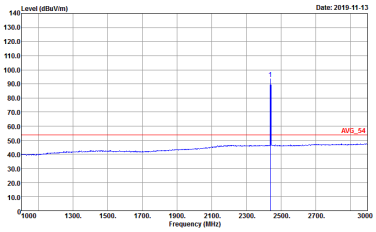
<1Mbps>

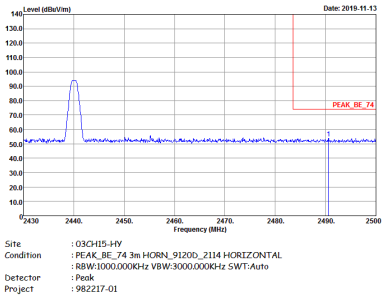
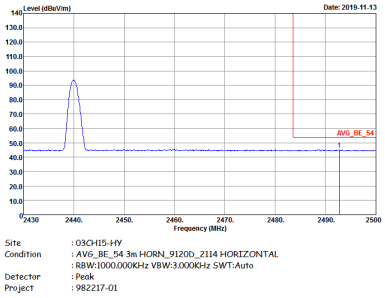
2.4GHz 2400~2483.5MHz

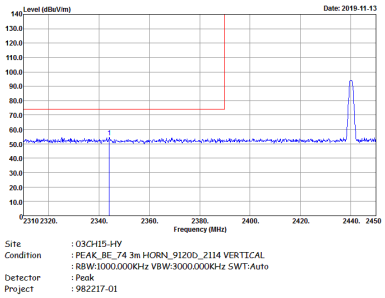
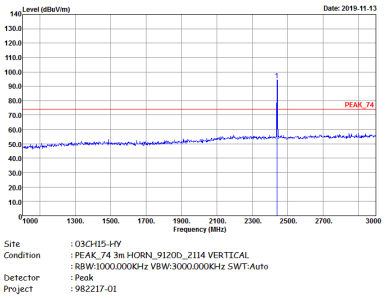
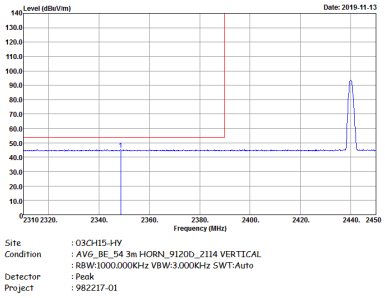
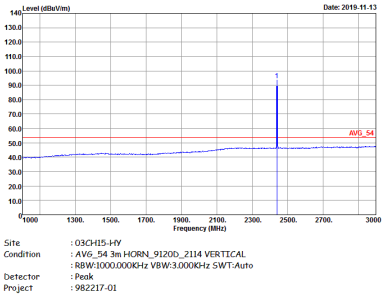
BLE (Band Edge @ 3m)

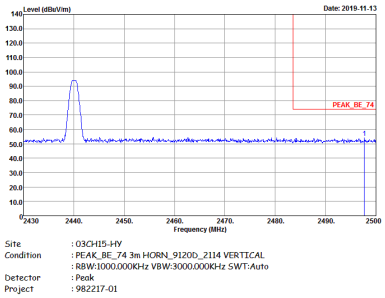
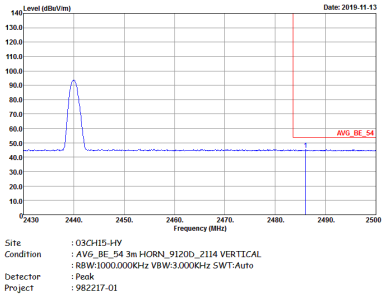
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

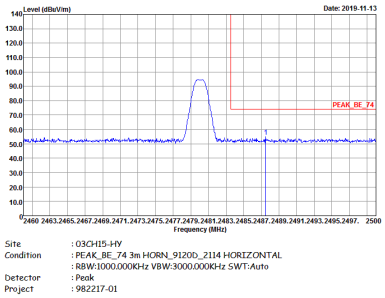
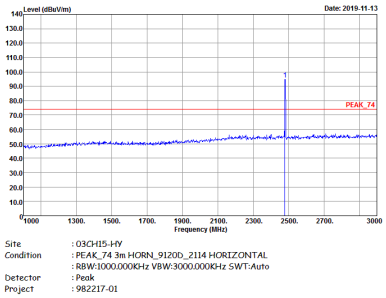
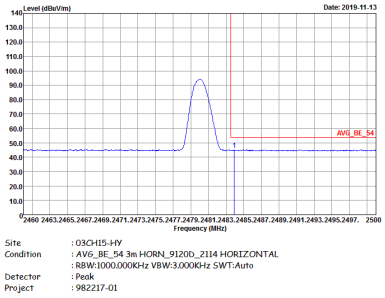
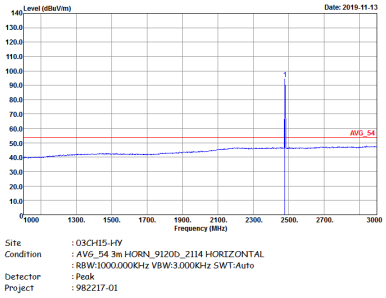
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
1	Vertical	Fundamental
Peak		
Avg		

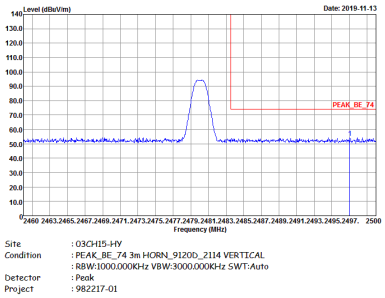
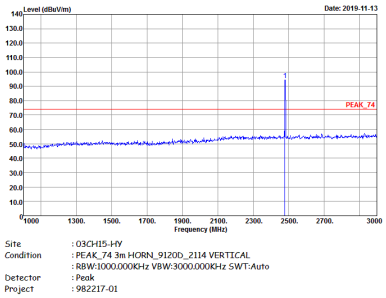
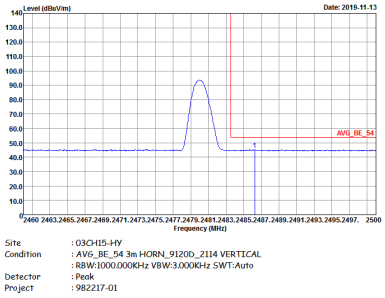
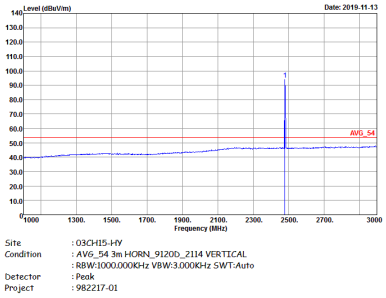
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
1	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m HORN_9120D_2114 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 982217-01	 Site : 03CH15-HY Condition : PEAK_74 3m HORN_9120D_2114 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 982217-01
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m HORN_9120D_2114 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 982217-01	 Site : 03CH15-HY Condition : AVG_54 3m HORN_9120D_2114 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 982217-01

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

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

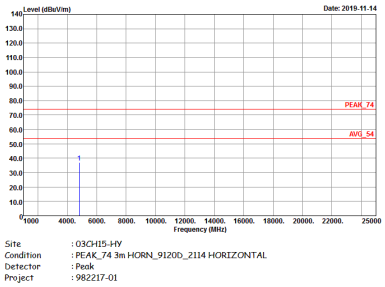
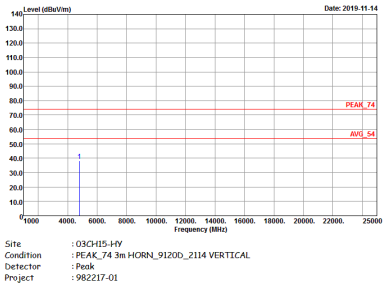
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

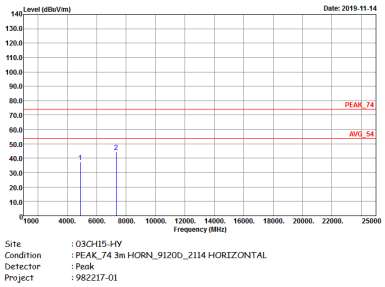
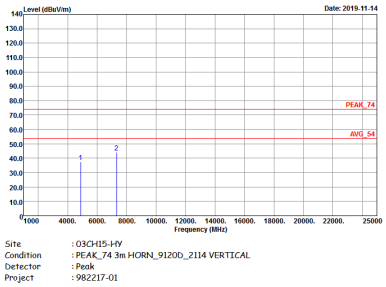
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

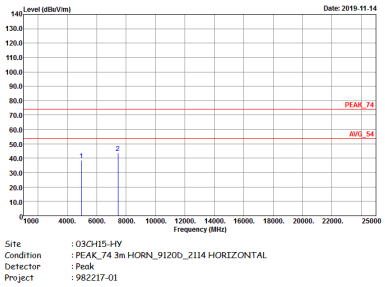
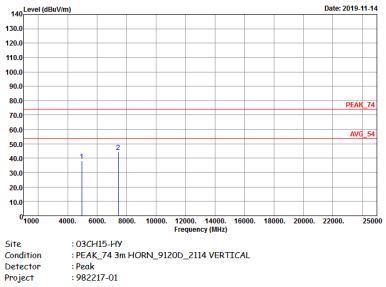
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
1	Vertical	Fundamental
Peak		
Avg.		

2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

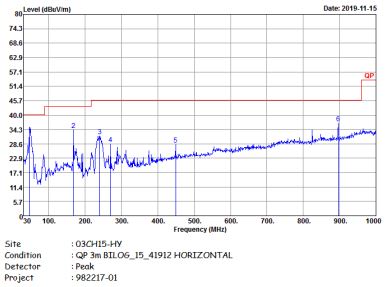
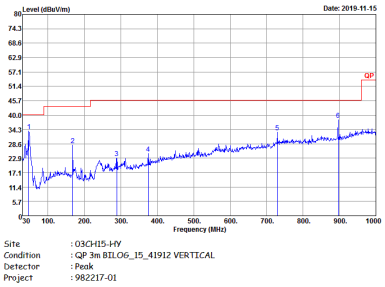
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH00 2402MHz	
1	Horizontal	Vertical
Peak Avg.		

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

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

Emission below 1GHz

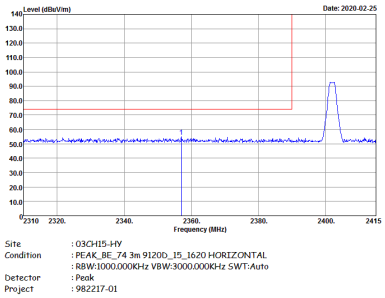
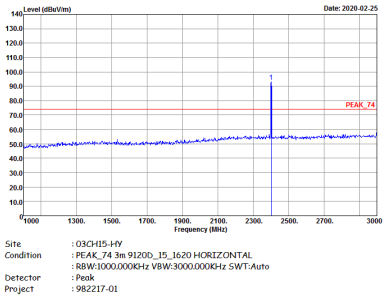
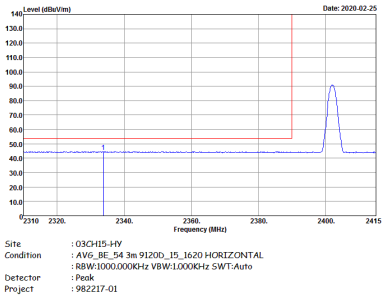
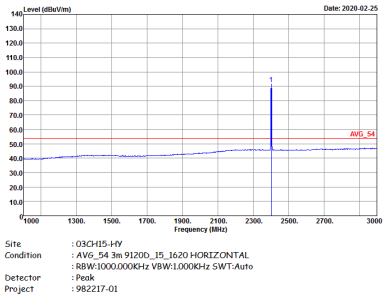
2.4GHz BLE (LF)

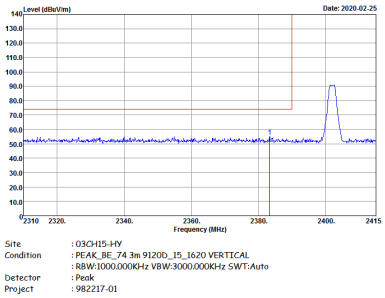
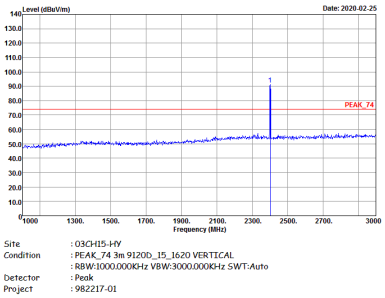
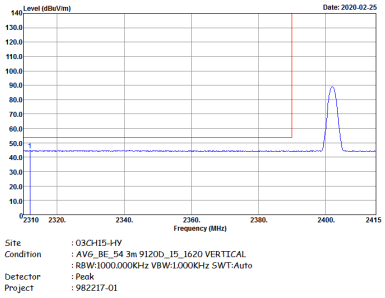
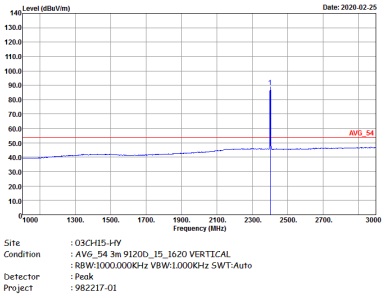
BLE	2.4GHz 2400~2483.5MHz	
ANT	BLE LF	
1	Horizontal	Vertical
QP / Peak		

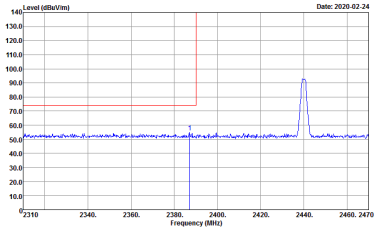
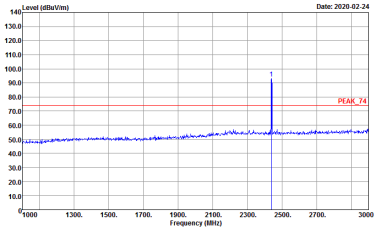
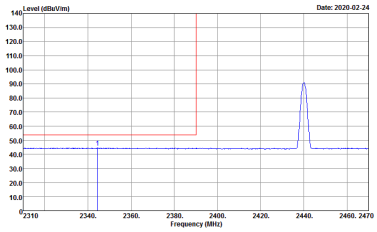
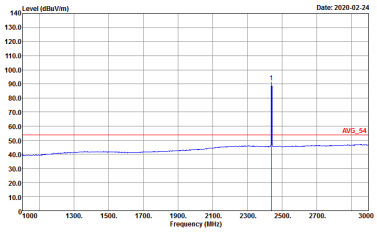
<2Mbps>

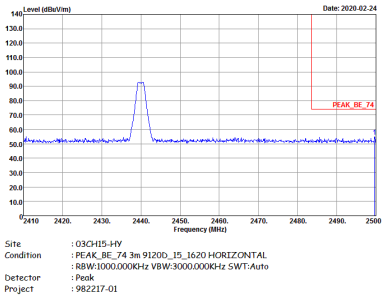
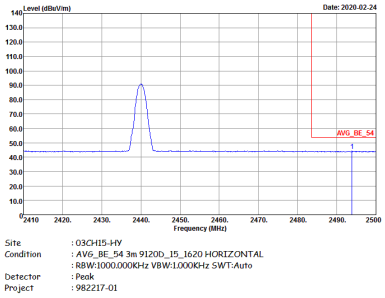
2.4GHz 2400~2483.5MHz

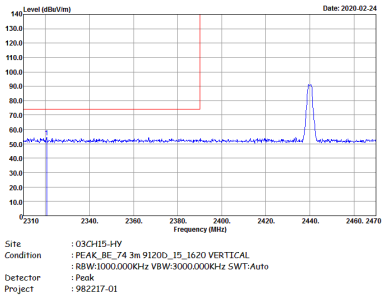
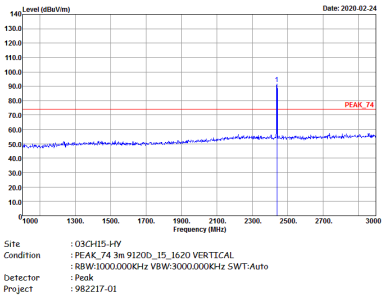
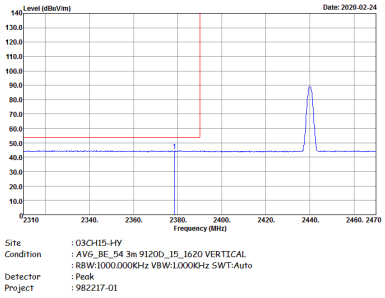
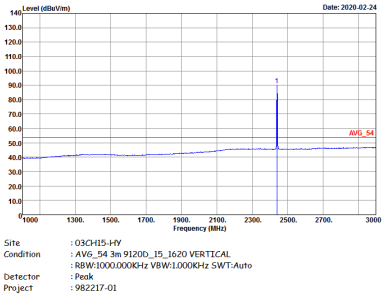
BLE (Band Edge @ 3m)

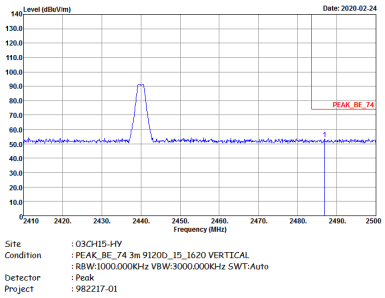
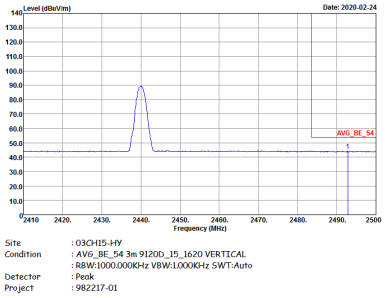
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

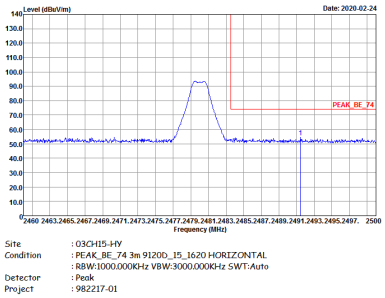
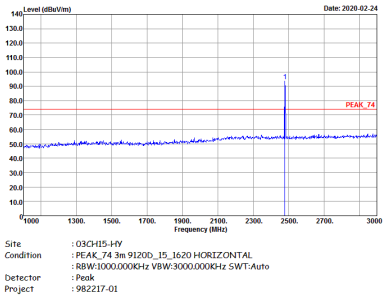
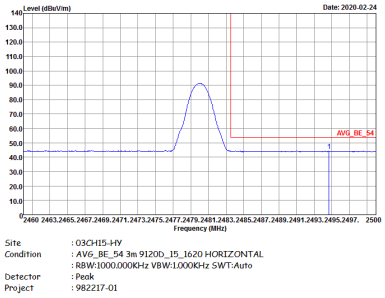
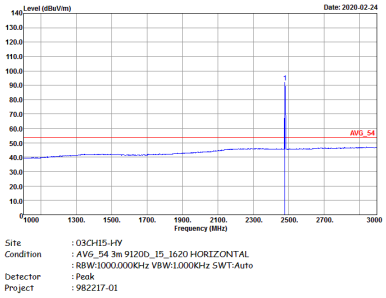
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
1	Vertical	Fundamental
Peak		
Avg		

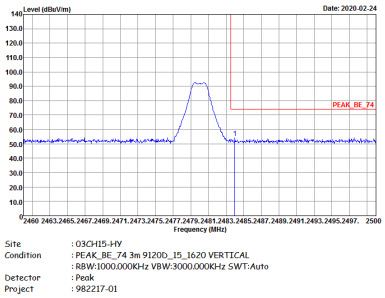
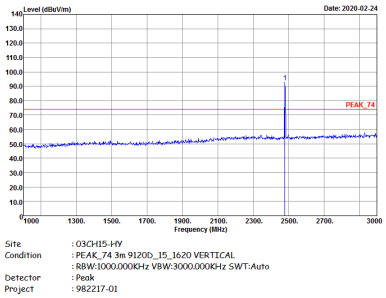
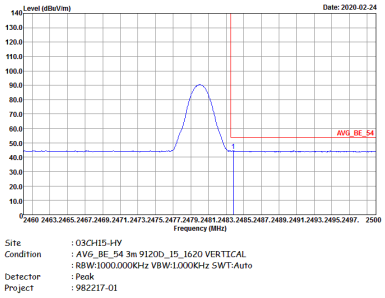
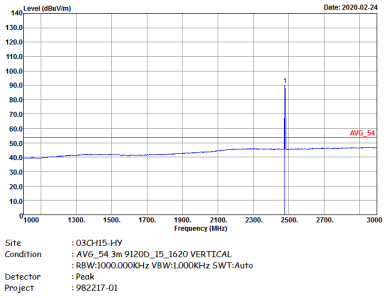
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
1	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 9120D_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 982217-01	 Site : 03CH15-HY Condition : PEAK_74 3m 9120D_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 982217-01
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 9120D_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 982217-01	 Site : 03CH15-HY Condition : AVG_54 3m 9120D_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 982217-01

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

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

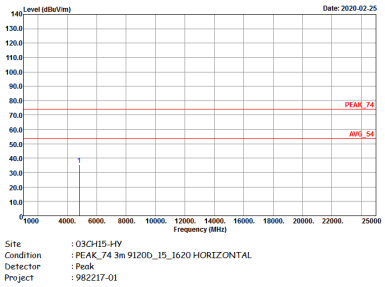
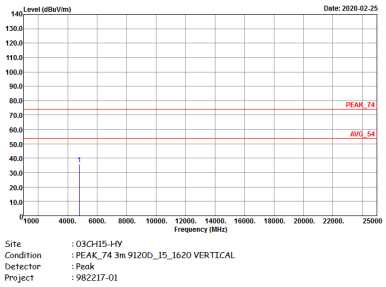
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

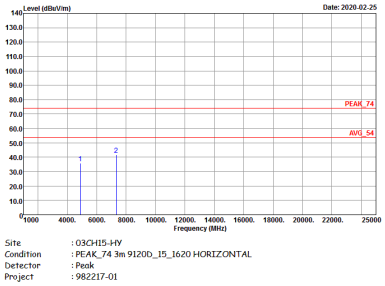
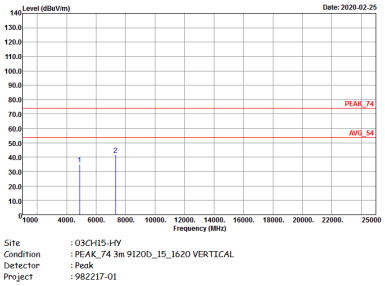
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

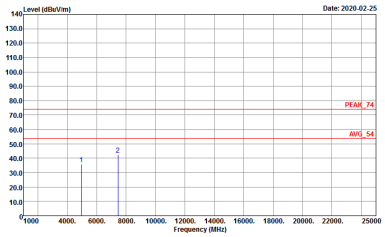
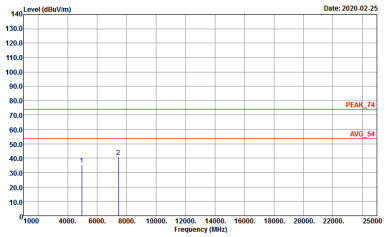
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
1	Vertical	Fundamental
Peak		
Avg.		

2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

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

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

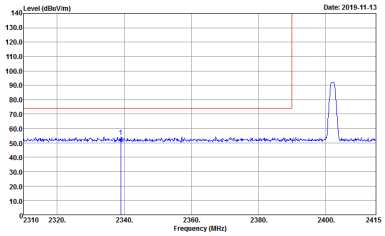
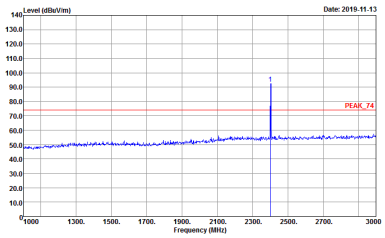
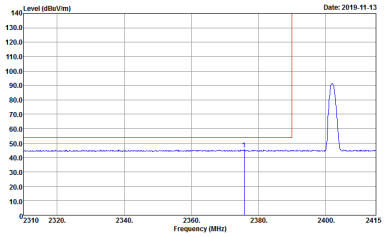
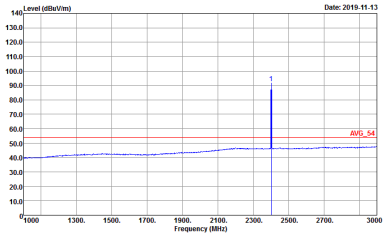
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH39 2480MHz	
1	Horizontal	Vertical
Peak		

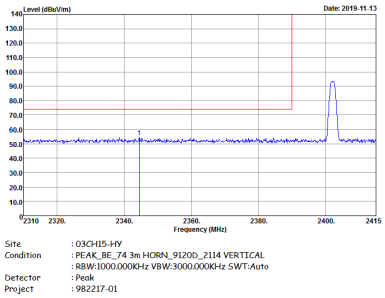
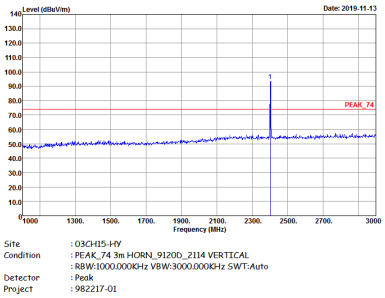
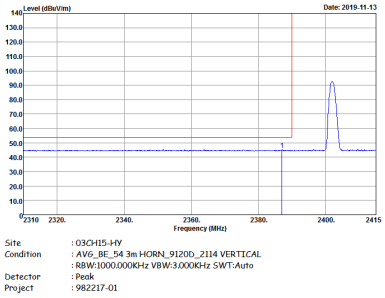
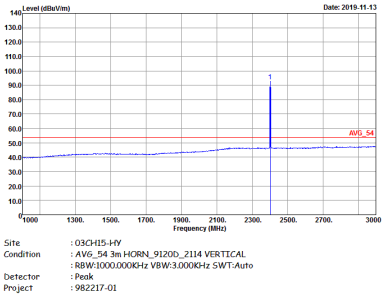
<Ant.2>

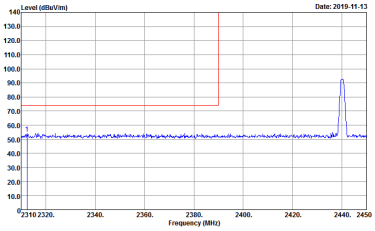
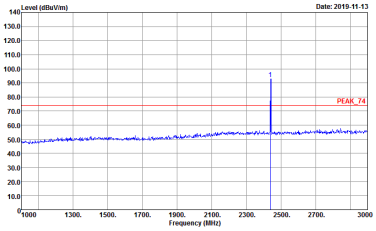
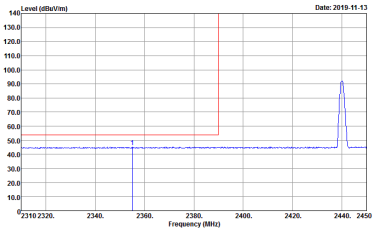
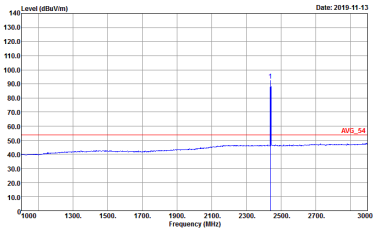
<1Mbps>

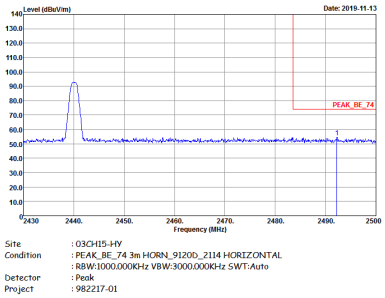
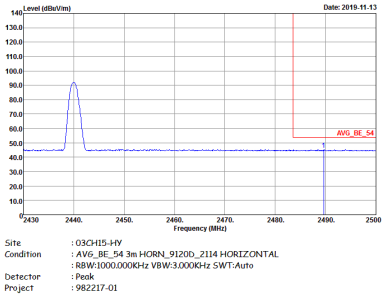
2.4GHz 2400~2483.5MHz

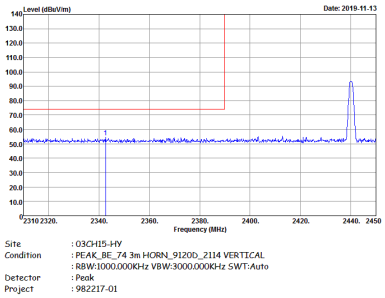
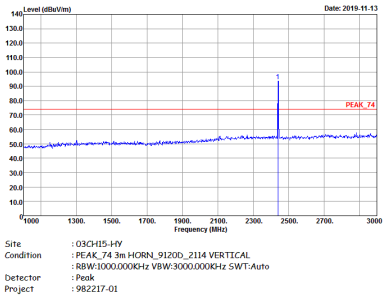
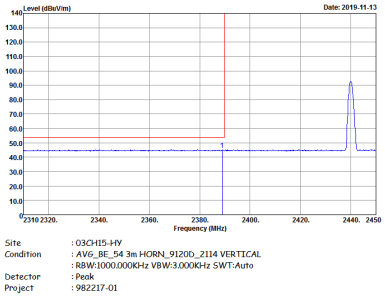
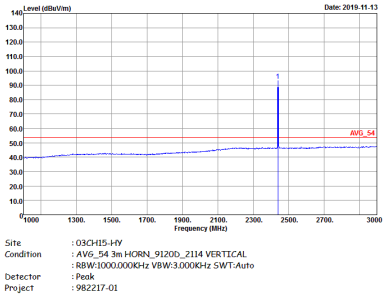
BLE (Band Edge @ 3m)

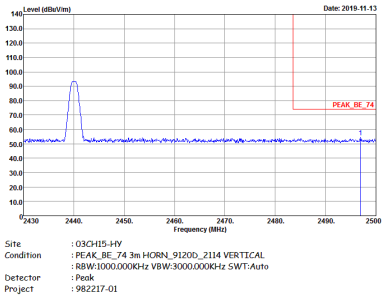
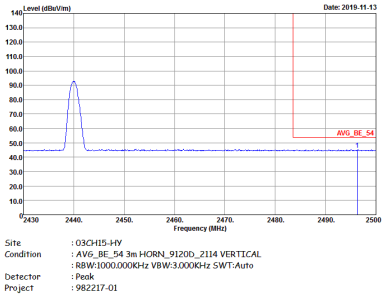
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m HORN_9120D_2114 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 982217-01	 Site : 03CH15-HY Condition : PEAK_74 3m HORN_9120D_2114 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 982217-01
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m HORN_9120D_2114 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 982217-01	 Site : 03CH15-HY Condition : AVG_54 3m HORN_9120D_2114 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 982217-01

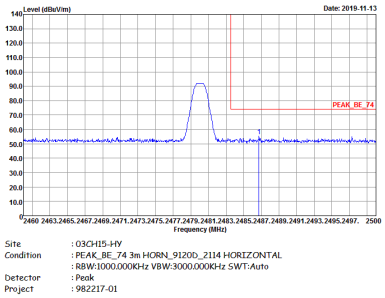
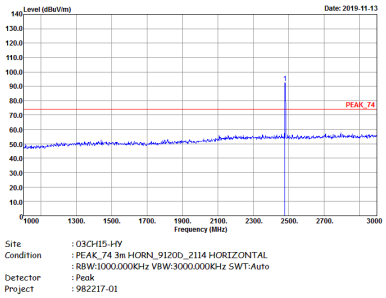
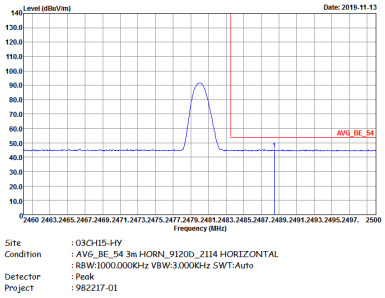
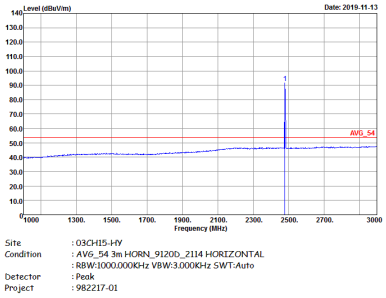
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
2	Vertical	Fundamental
Peak		
Avg		

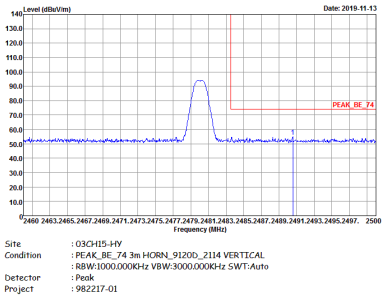
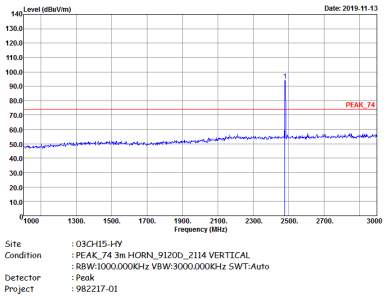
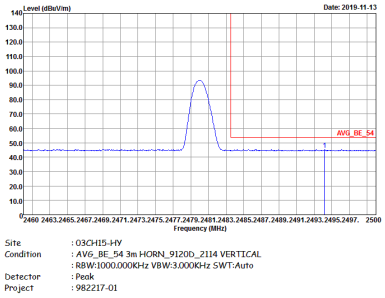
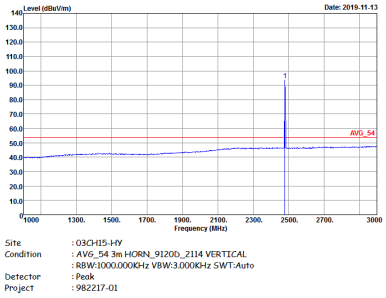
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m HORN_9120D_2114 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 982217-01	 Site : 03CH15-HY Condition : PEAK_74 3m HORN_9120D_2114 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 982217-01
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m HORN_9120D_2114 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 982217-01	 Site : 03CH15-HY Condition : AVG_54 3m HORN_9120D_2114 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 982217-01

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

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

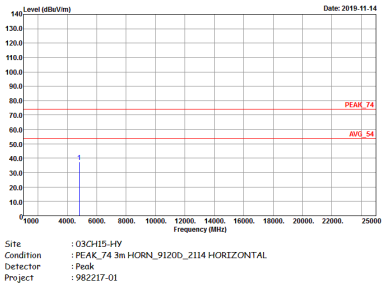
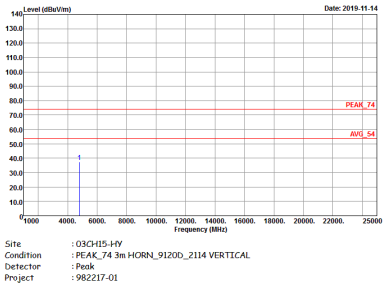
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
2	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

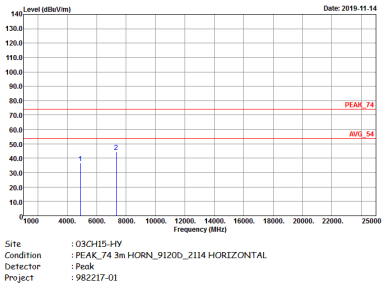
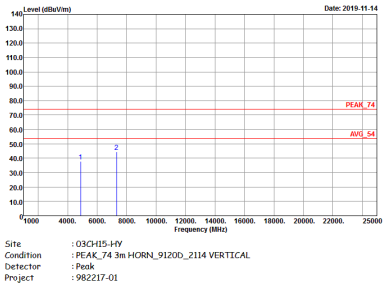
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
2	Horizontal	Fundamental
Peak		
Avg.		

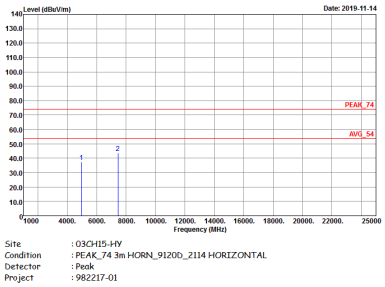
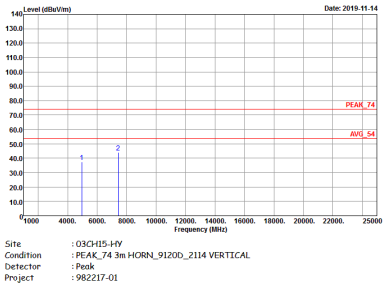
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
2	Vertical	Fundamental
Peak		
Avg.		

2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

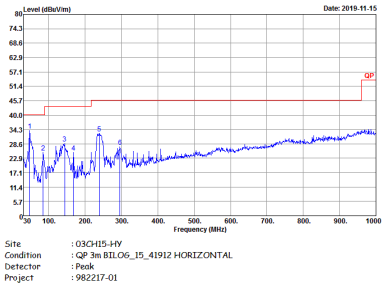
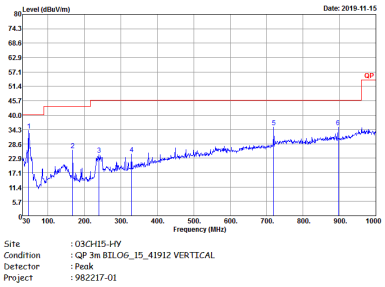
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH00 2402MHz	
2	Horizontal	Vertical
Peak Avg.		

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

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

Emission below 1GHz

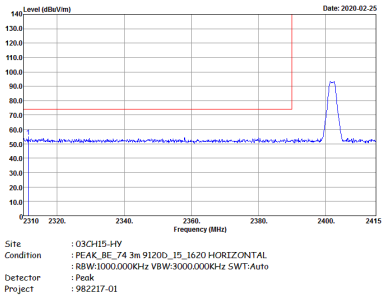
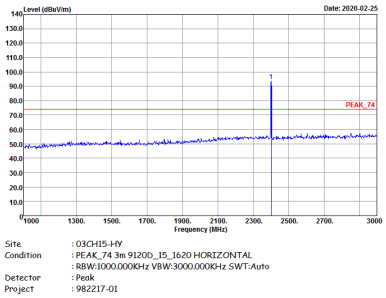
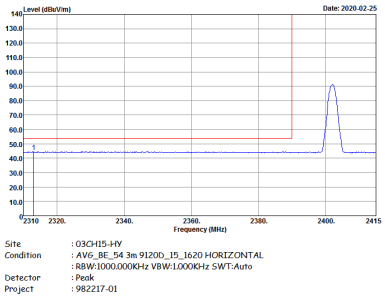
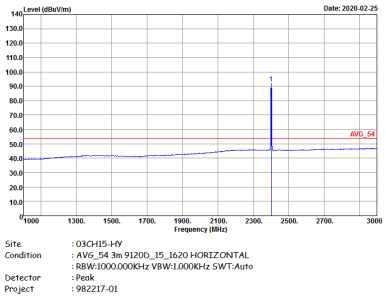
2.4GHz BLE (LF)

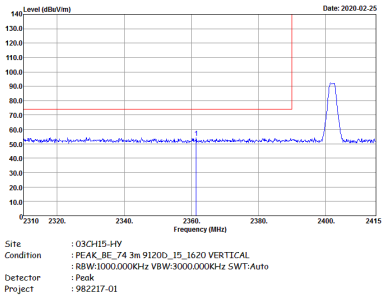
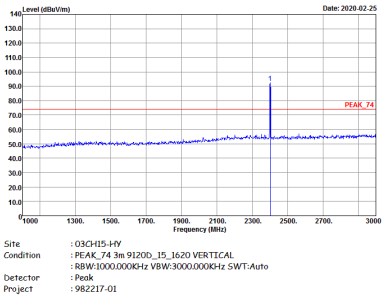
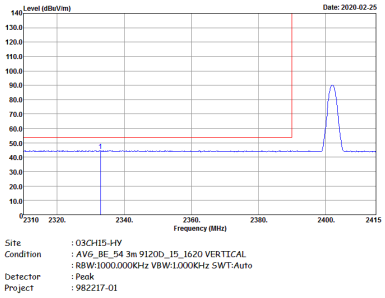
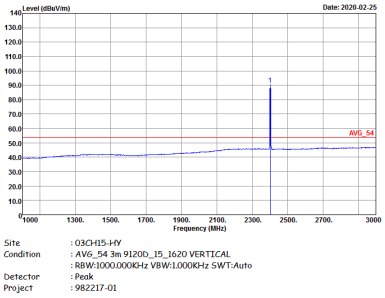
BLE	2.4GHz 2400~2483.5MHz	
ANT	BLE LF	
2	Horizontal	Vertical
QP / Peak		

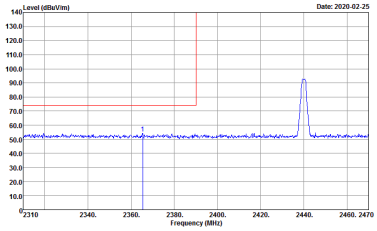
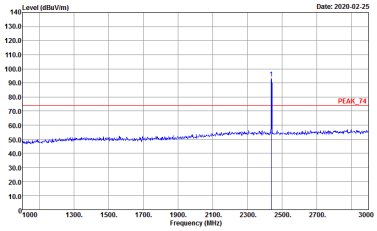
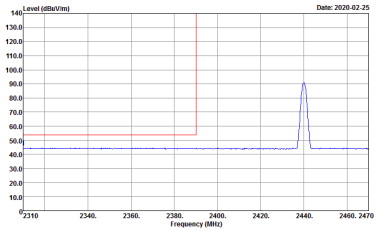
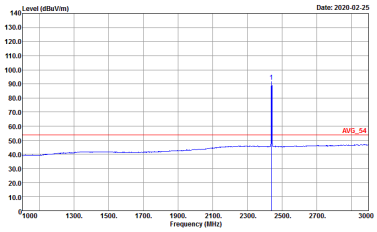
<2Mbps>

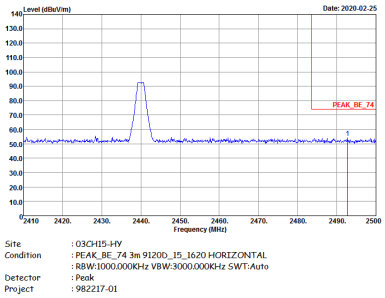
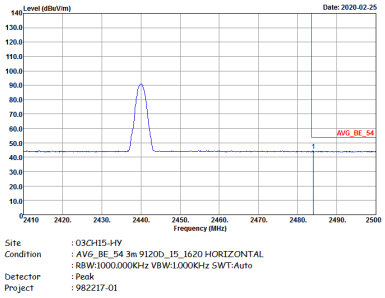
2.4GHz 2400~2483.5MHz

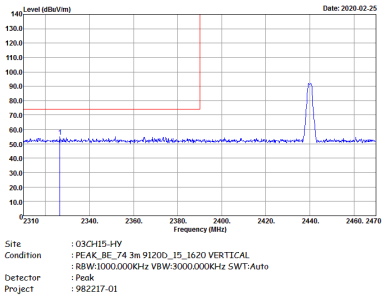
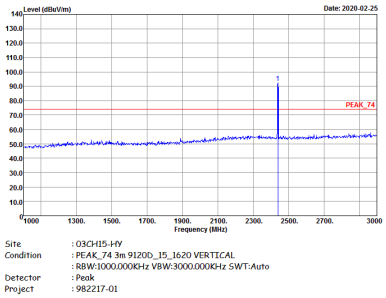
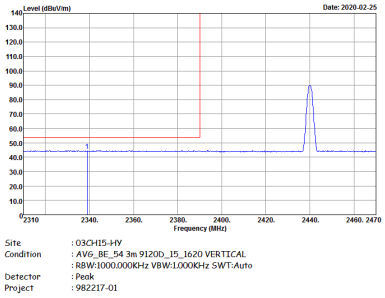
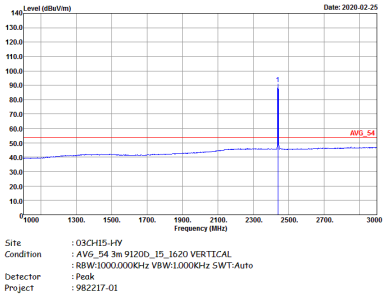
BLE (Band Edge @ 3m)

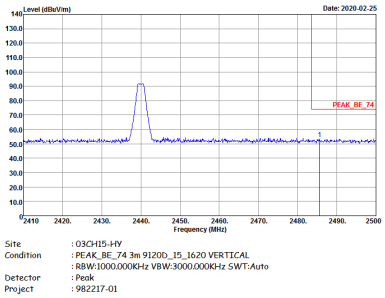
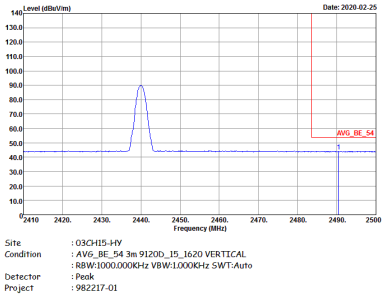
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
2	Horizontal	Fundamental
Peak		
Avg.		

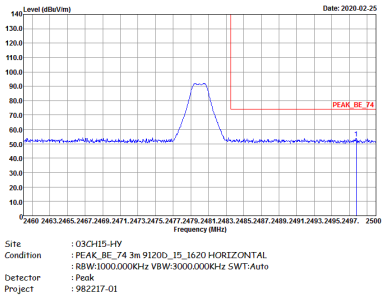
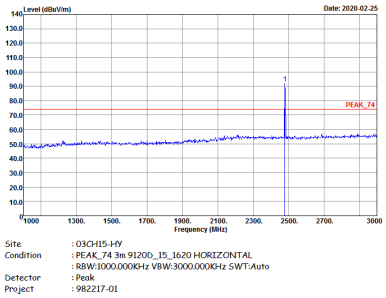
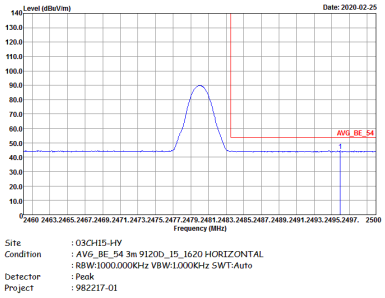
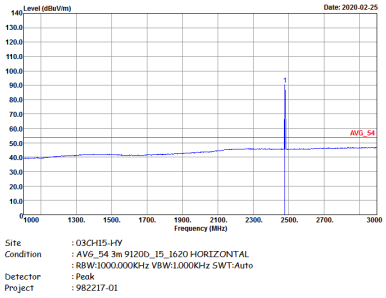
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
2	Vertical	Fundamental
Peak		
Avg		

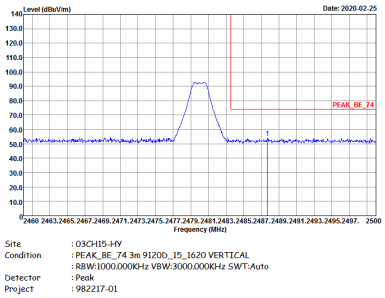
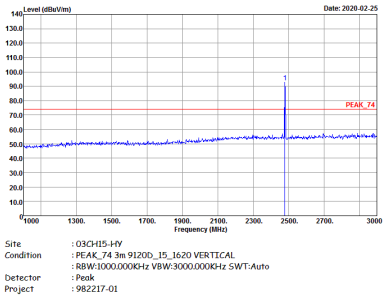
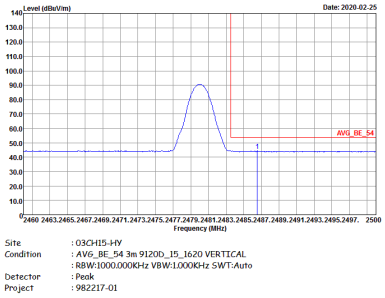
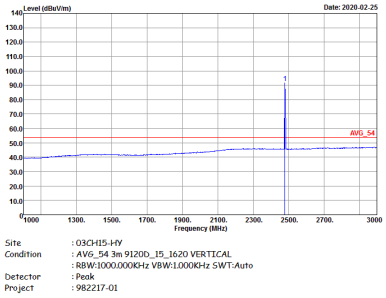
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 9120D_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 982217-01	 Site : 03CH15-HY Condition : PEAK_74 3m 9120D_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 982217-01
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 9120D_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 982217-01	 Site : 03CH15-HY Condition : AVG_54 3m 9120D_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 982217-01

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

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

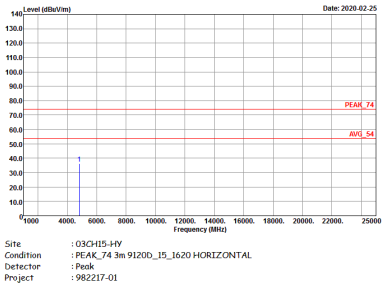
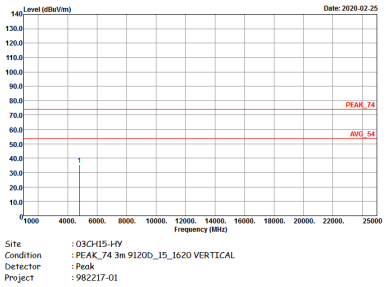
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
2	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

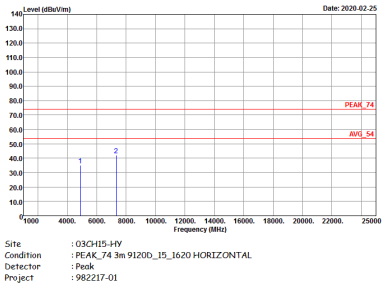
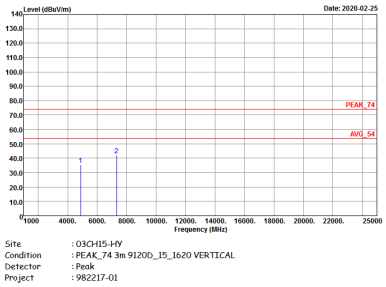
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
2	Horizontal	Fundamental
Peak		
Avg.		

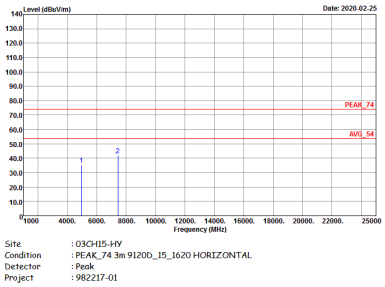
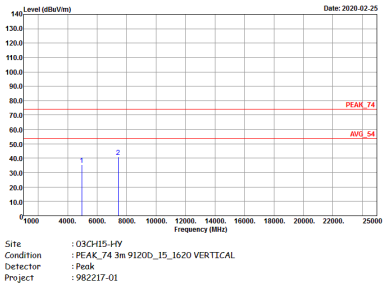
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
2	Vertical	Fundamental
Peak		
Avg.		

2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

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

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH19 2440MHz	
2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK_74 3m 9120D_15_1620 HORIZONTAL Detector : Peak Project : 982217-01	 Site : 03CH15-HY Condition : PEAK_74 3m 9120D_15_1620 VERTICAL Detector : Peak Project : 982217-01

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

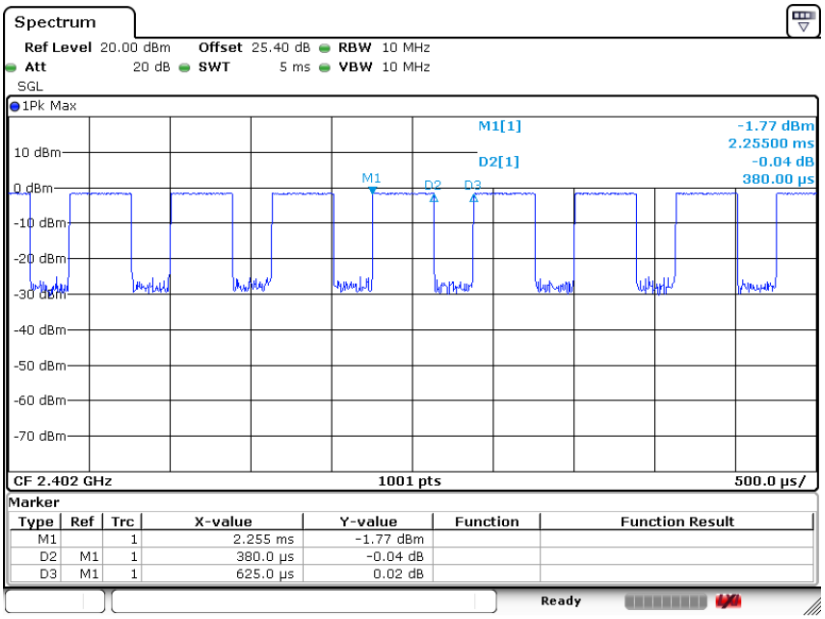
Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
1	Bluetooth –LE for 1Mbps	60.80	380	2.63	3kHz	2.16
1	Bluetooth –LE for 2Mbps	56.91	1070	0.93	1kHz	2.45
2	Bluetooth –LE for 1Mbps	60.80	380	2.63	3kHz	2.16
2	Bluetooth –LE for 2Mbps	56.91	1070	0.93	1kHz	2.45

<Ant. 1>

Bluetooth - LE

<1Mbps>



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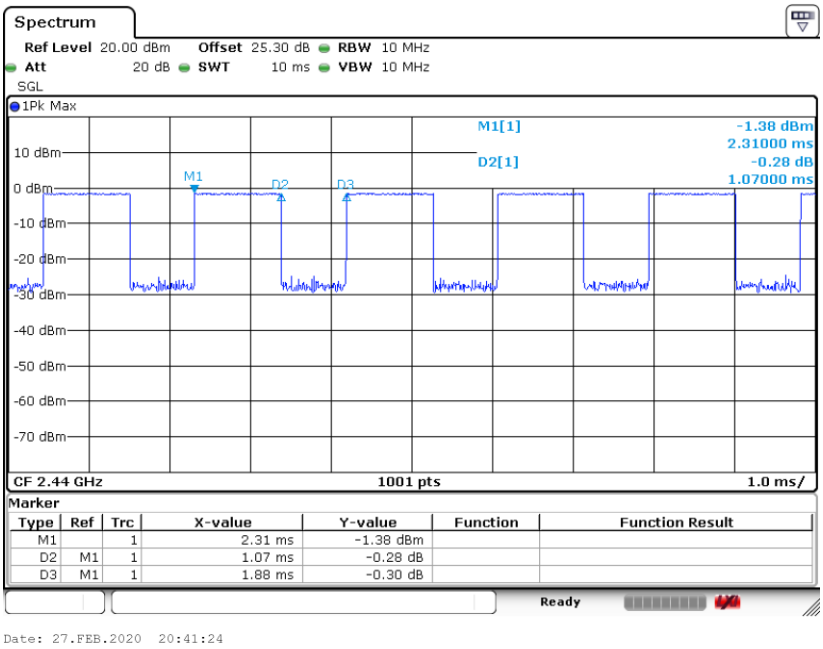

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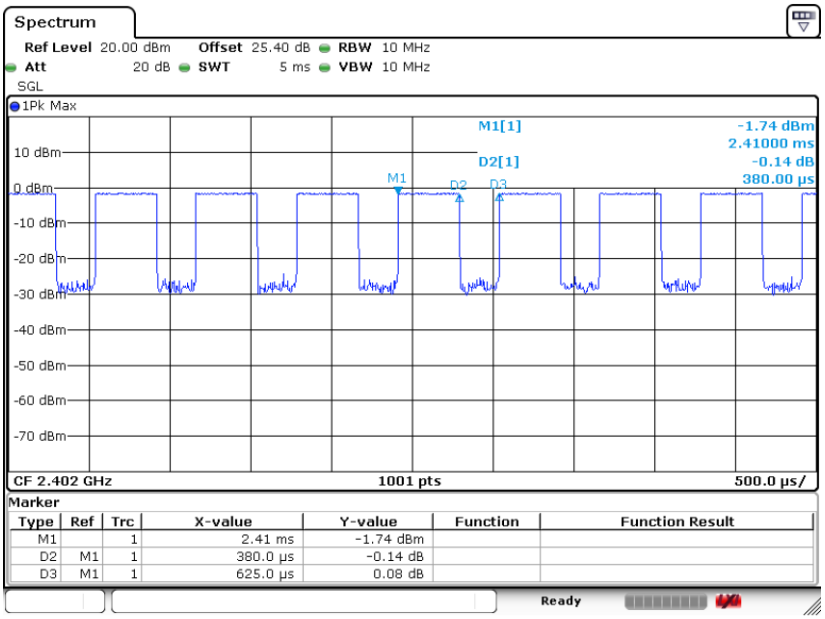

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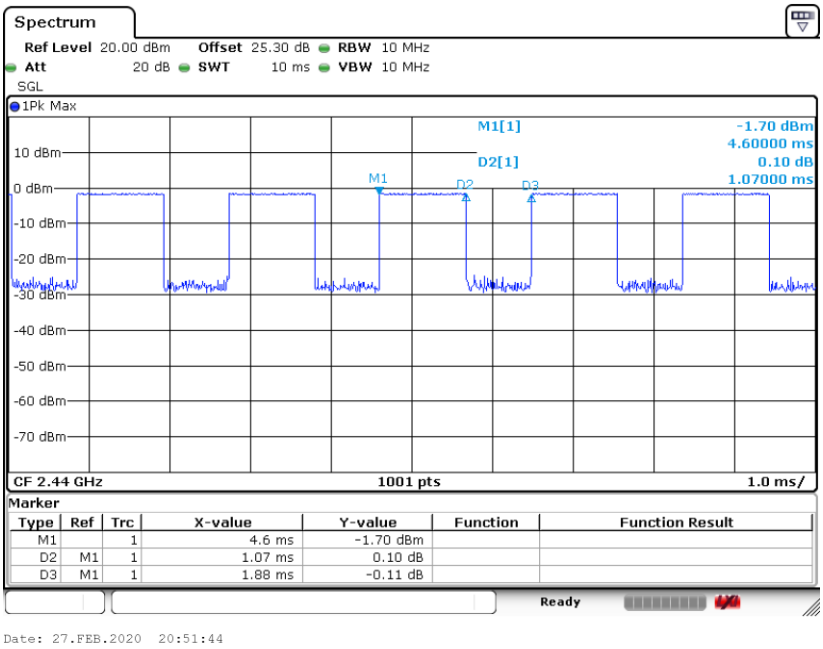

————THE END————