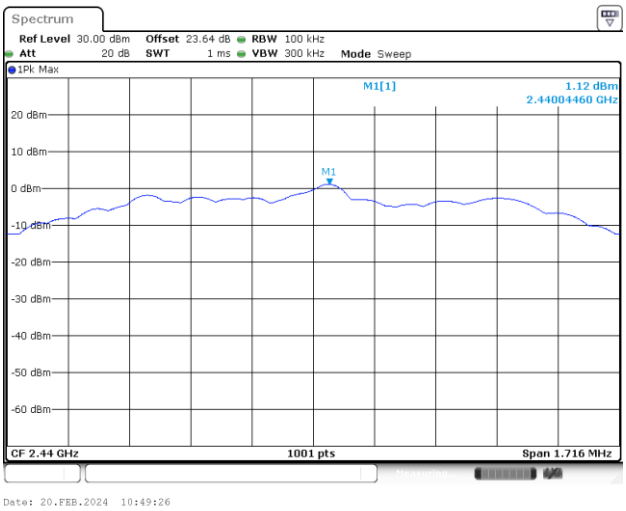
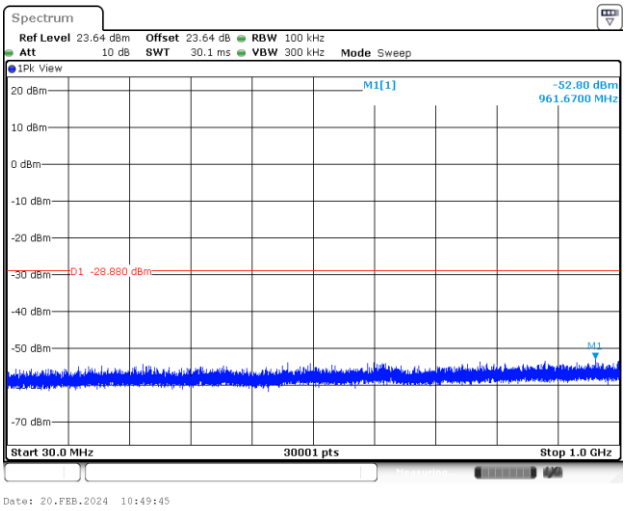
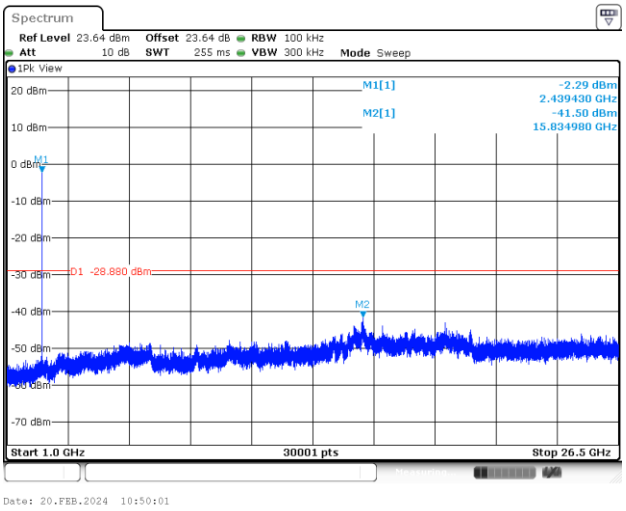
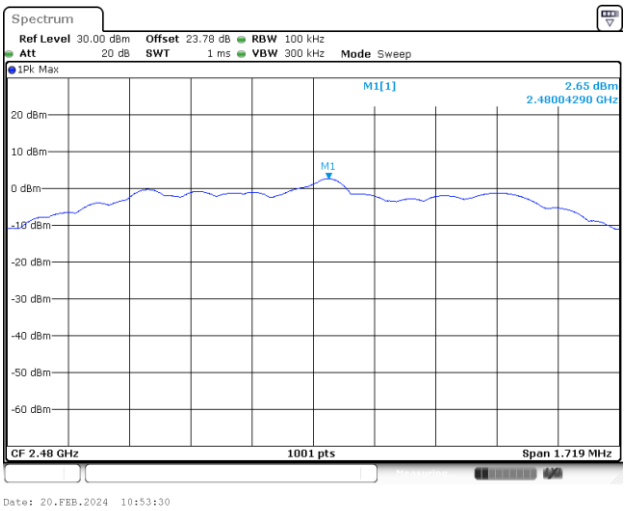
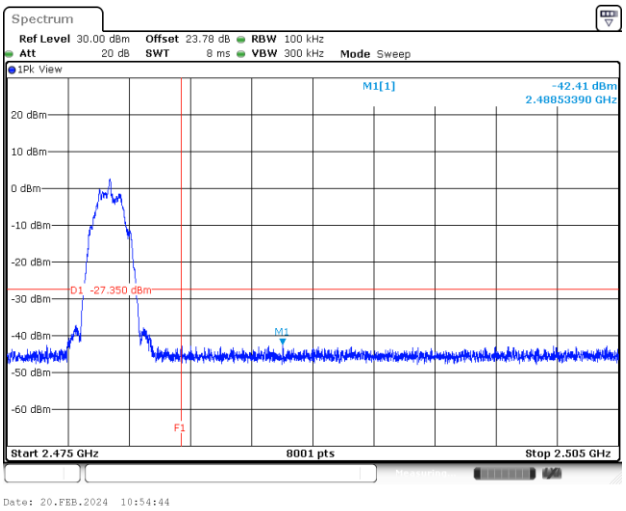
Channel 19	
100kHz PSD reference Level Plot	**Mid Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

Channel 39

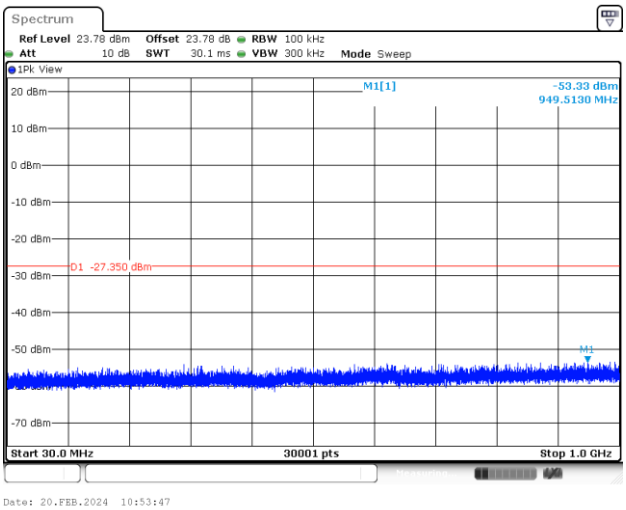
100kHz PSD reference Level Plot



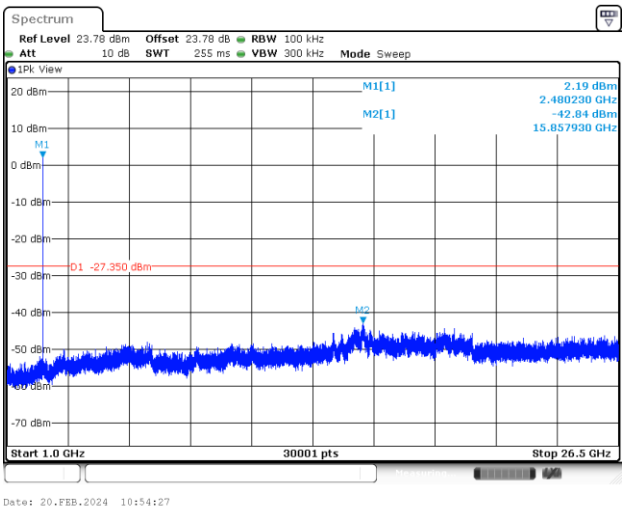
High Channel Plot



Spurious Emission 30MHz~1GHz Plot



Spurious Emission 1GHz~26.5GHz Plot



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6dB Bandwidth

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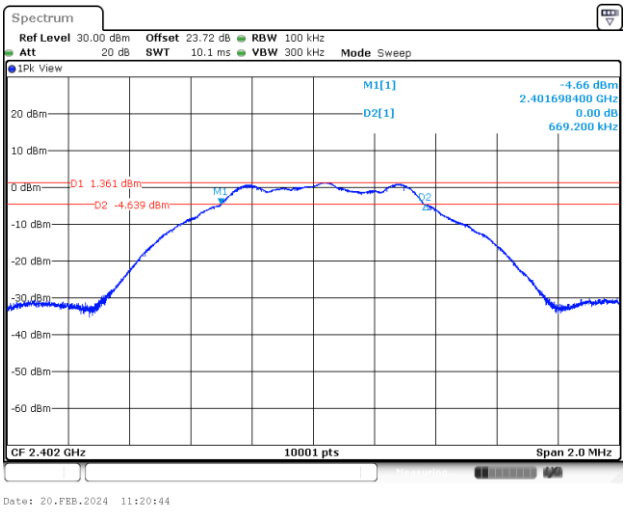
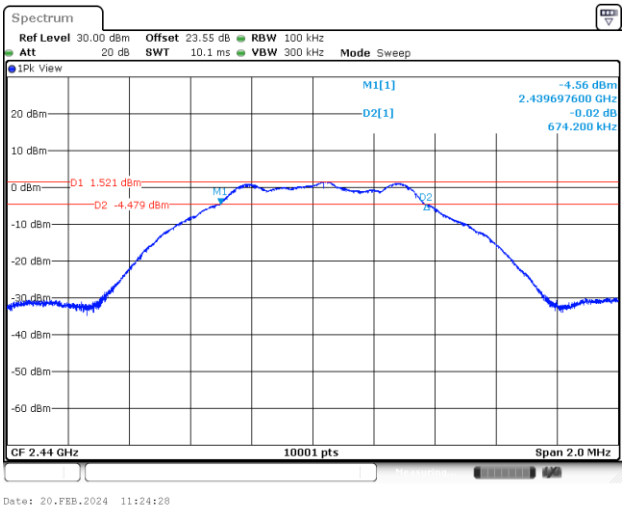
6 dB Bandwidth Plot on Channel 00	6 dB Bandwidth Plot on Channel 19
	
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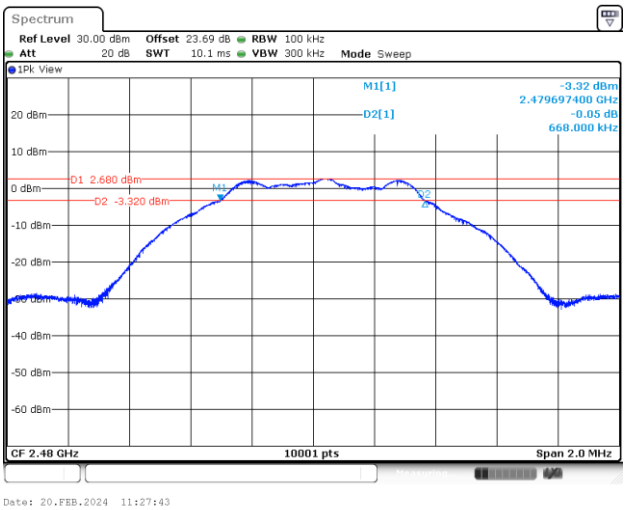	

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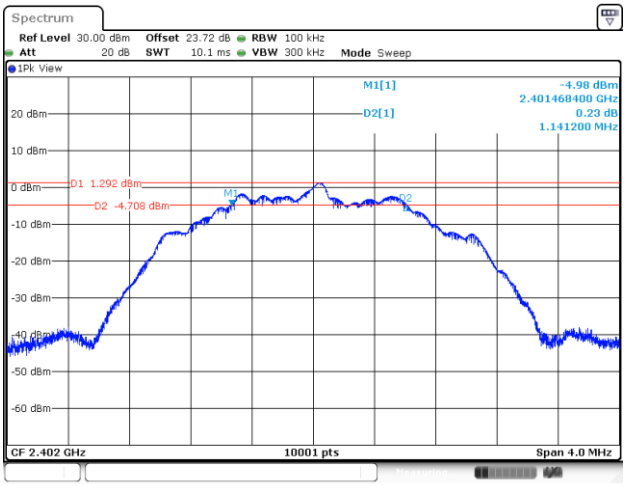	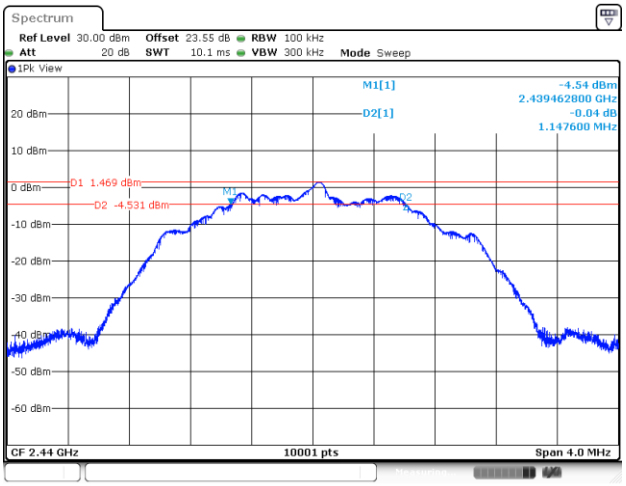
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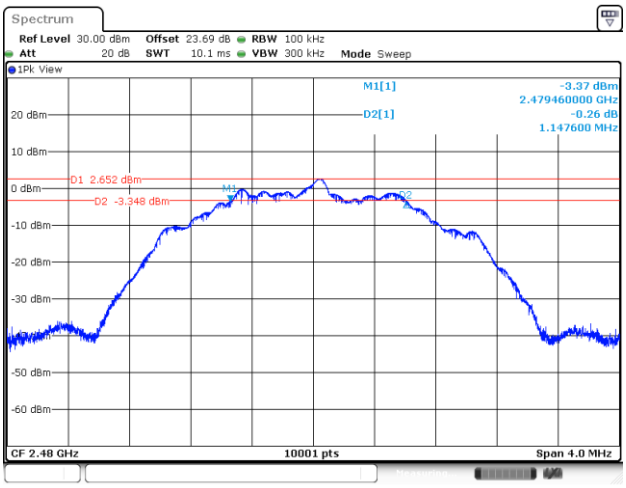	

99% Occupied Bandwidth

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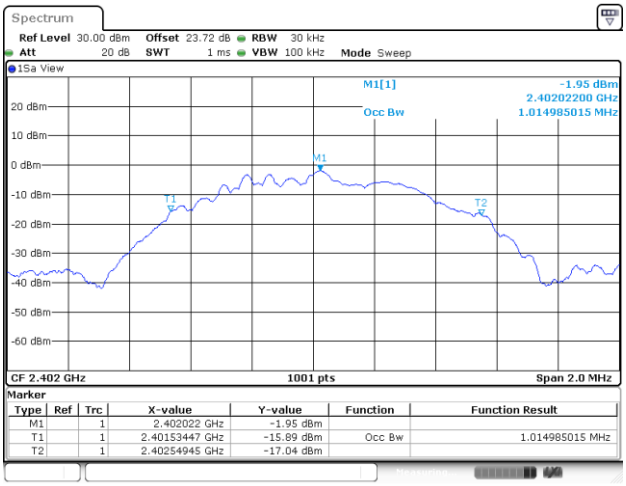
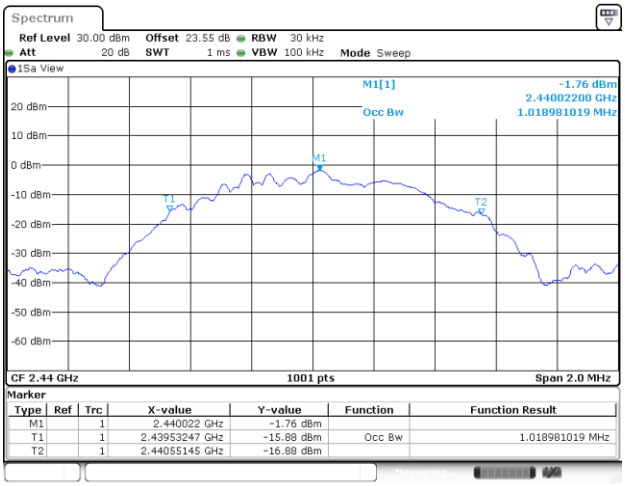
99% Occupied Bandwidth Plot on Channel 00	99% Occupied Bandwidth Plot on Channel 19
	
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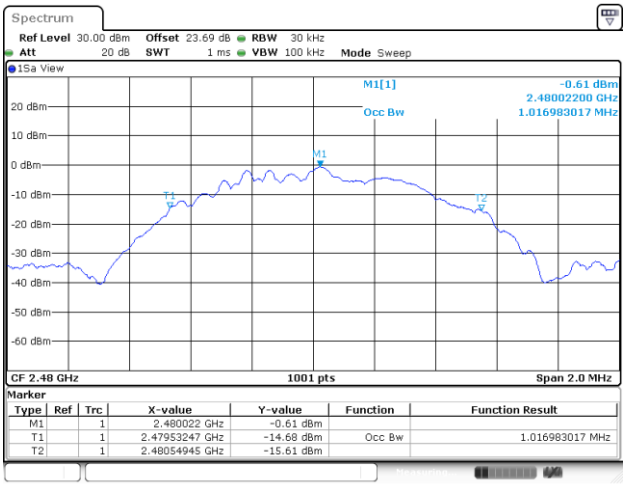	

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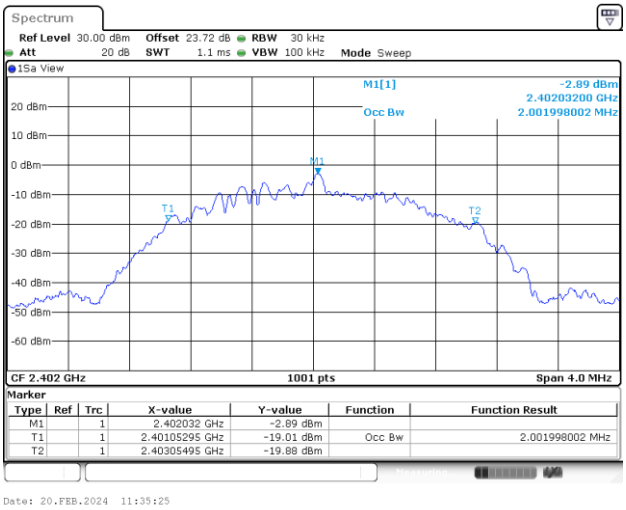
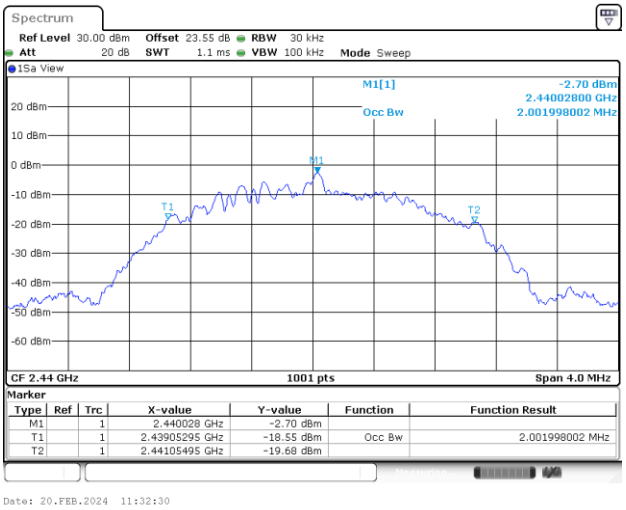
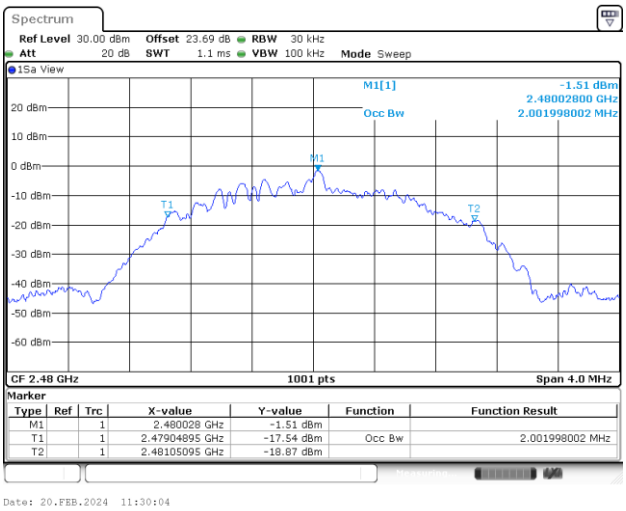
99% Occupied Bandwidth Plot on Channel 00	99% Occupied Bandwidth Plot on Channel 19
	
99% Occupied Bandwidth Plot on Channel 39	
	

Power Spectral Density (dBm/3kHz)

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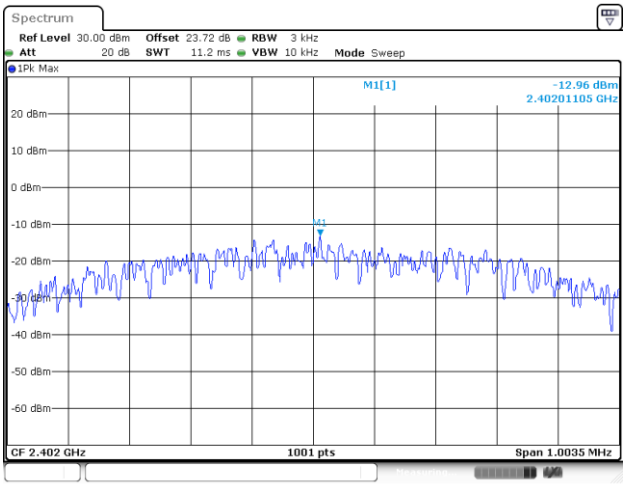
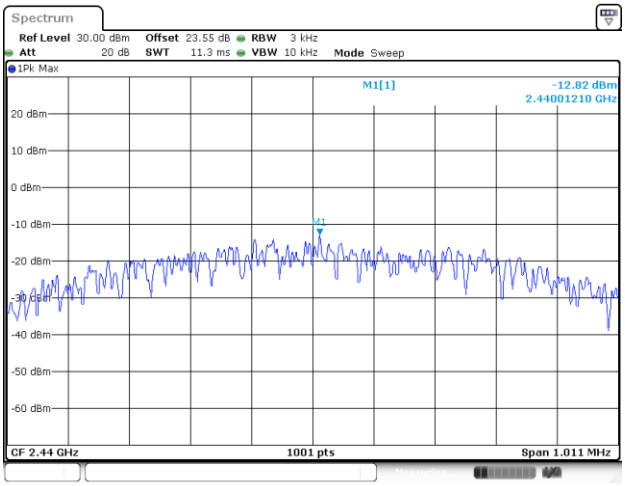
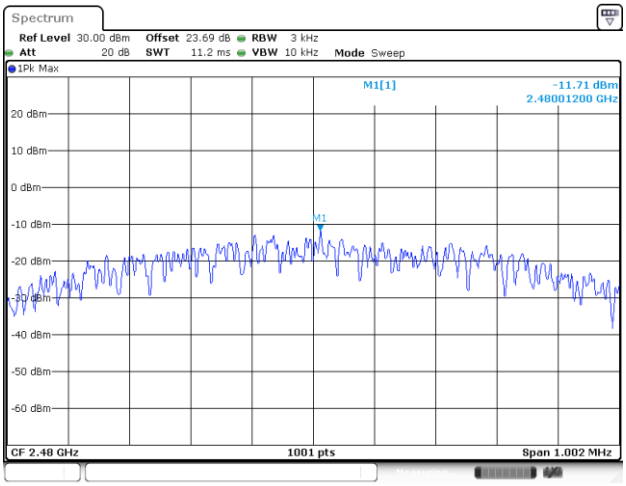
Power Density (dBm/3kHz) Plot Channel 00	Power Density (dBm/3kHz) Plot Channel 19
	
Power Density (dBm/3kHz) Plot Channel 39	
	

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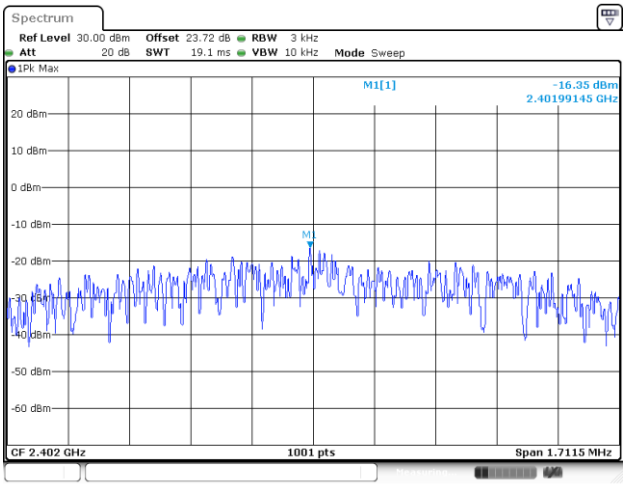
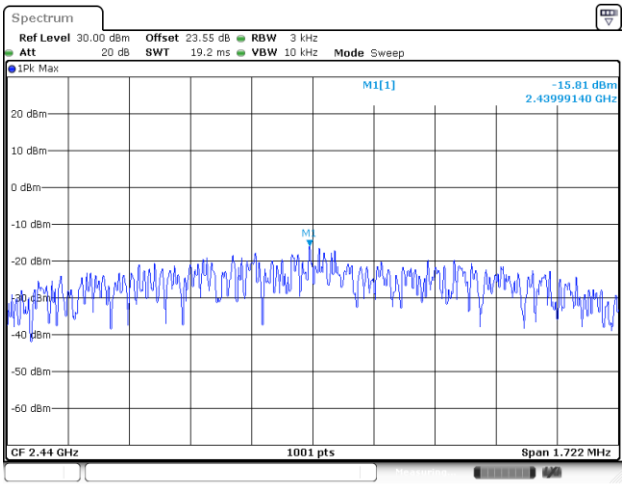
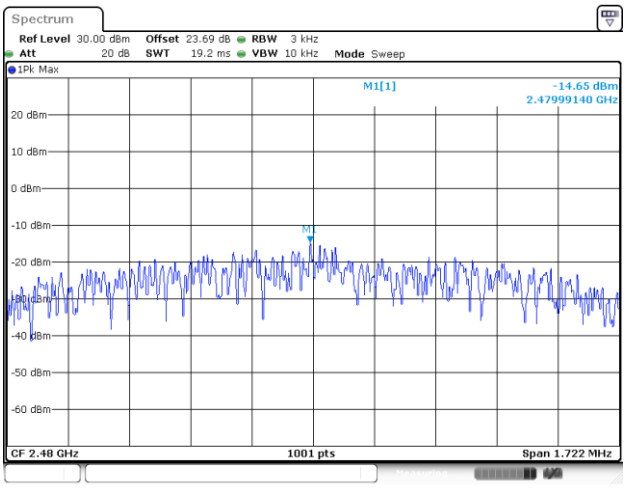
Power Density (dBm/3kHz) Plot Channel 00	Power Density (dBm/3kHz) Plot Channel 19
 Date: 20.FEB.2024 11:35:59	 Date: 20.FEB.2024 11:33:11
Power Density (dBm/3kHz) Plot Channel 39	
 Date: 20.FEB.2024 11:30:48	

Band Edge and Conducted Spurious Emission

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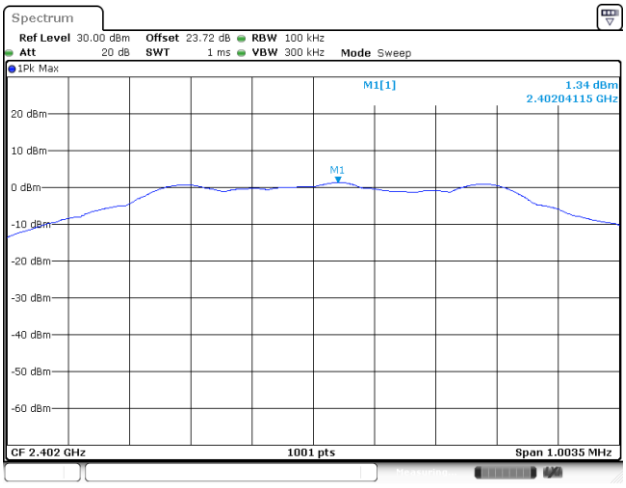
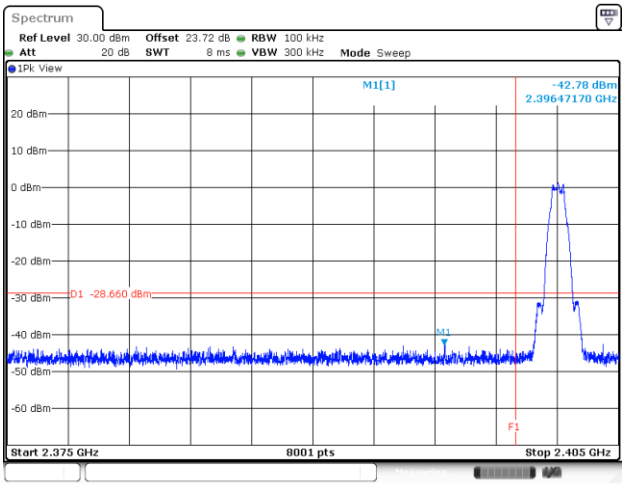
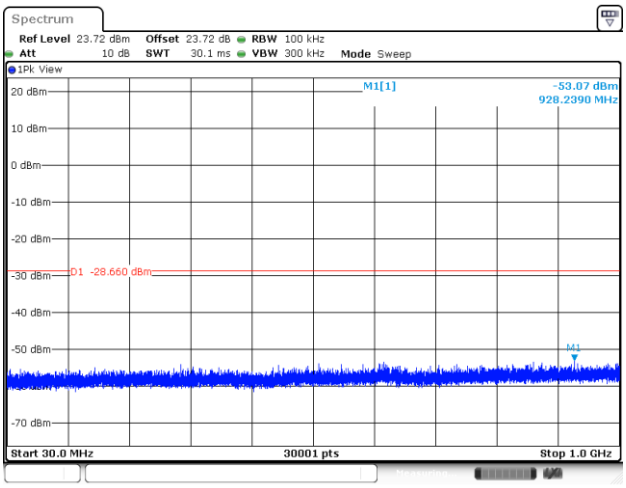
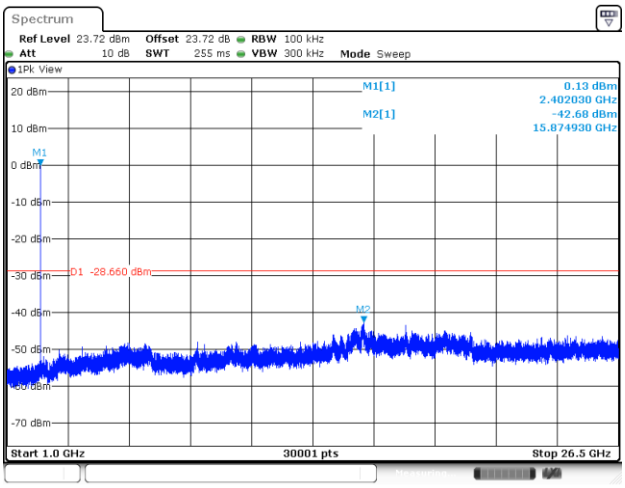
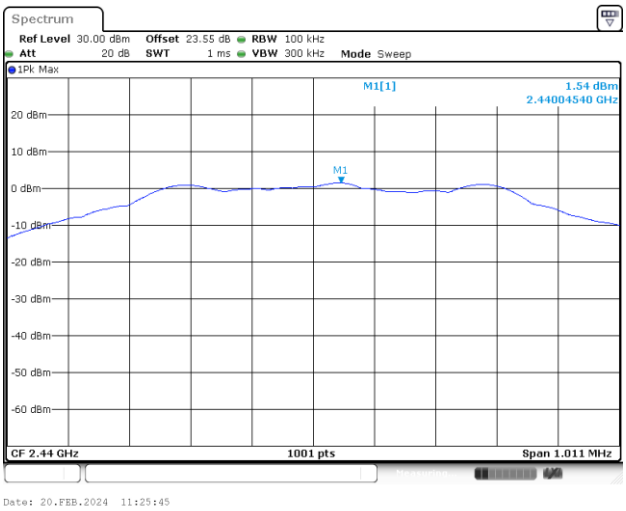
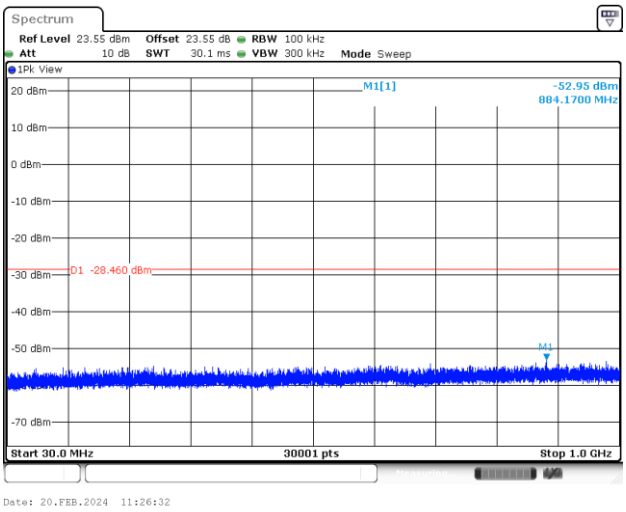
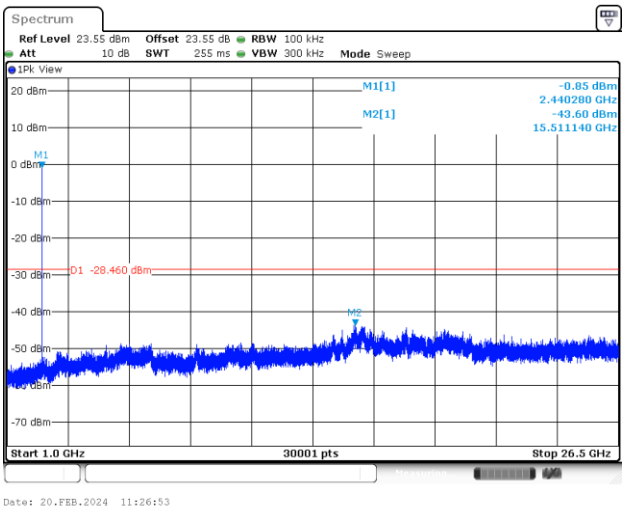
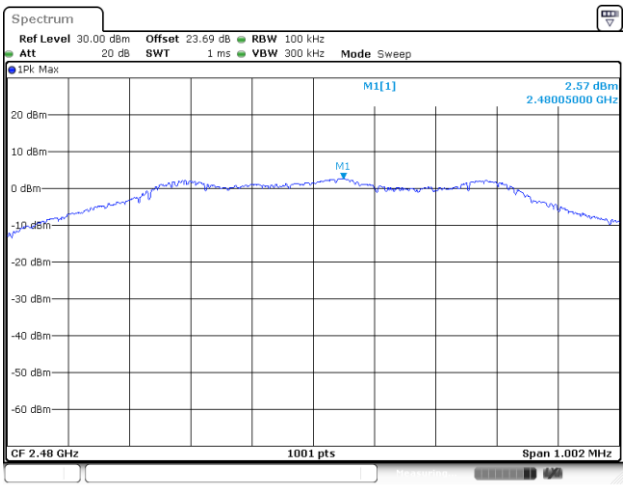
Channel 00	
100kHz PSD reference Level Plot	**Low Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

Channel 19	
100kHz PSD reference Level Plot	**Mid Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

Channel 39

100kHz PSD reference Level Plot



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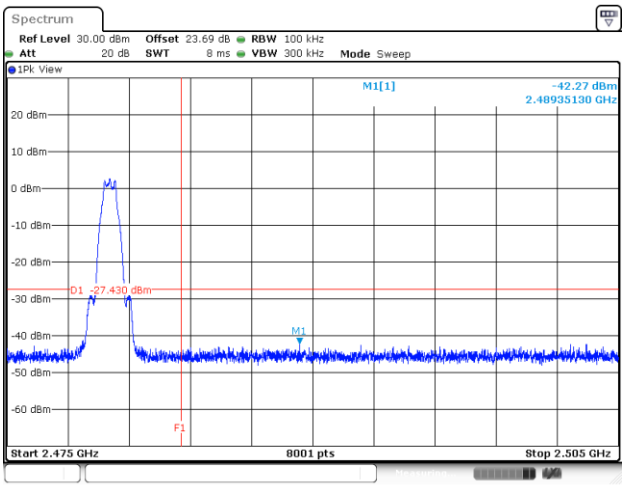
High Channel Plot



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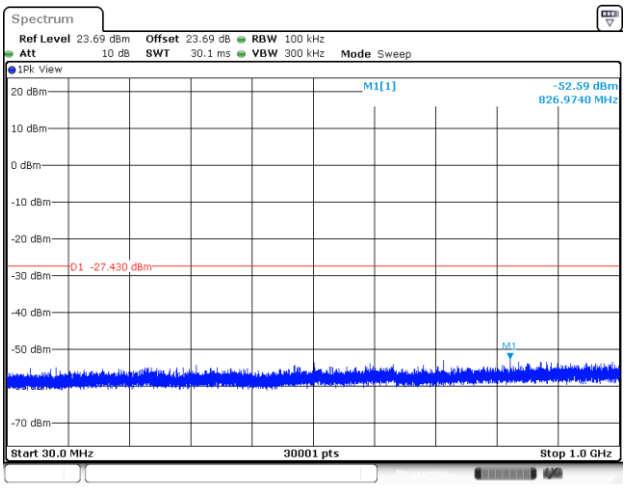
Spurious Emission 30MHz~1GHz Plot



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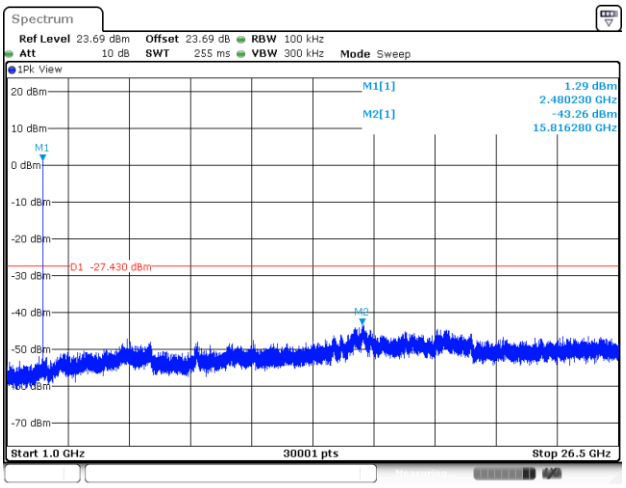
Spurious Emission 1GHz~26.5GHz Plot



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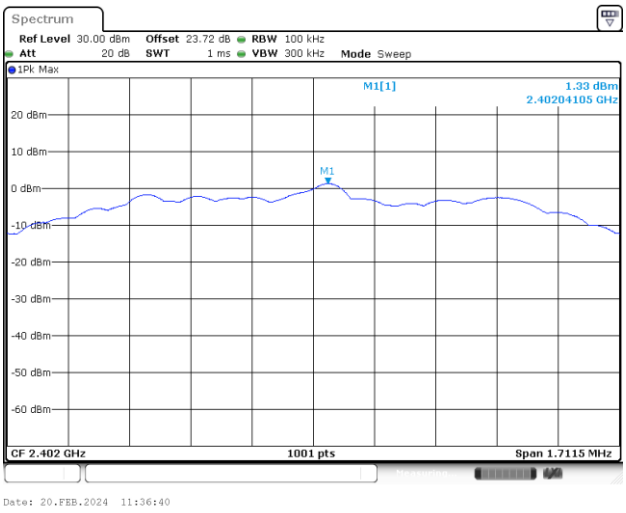
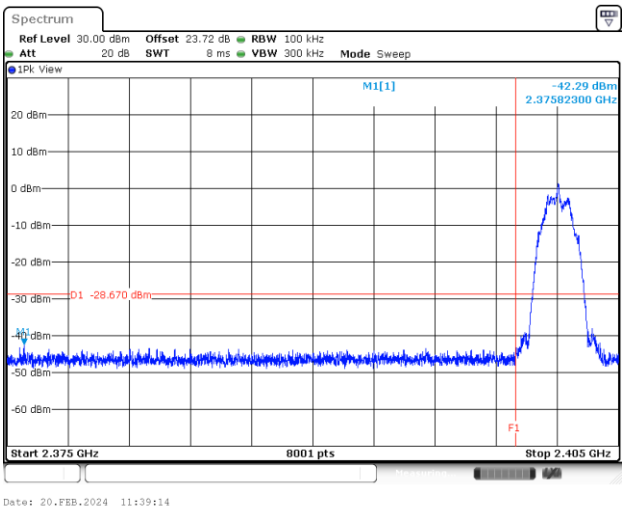
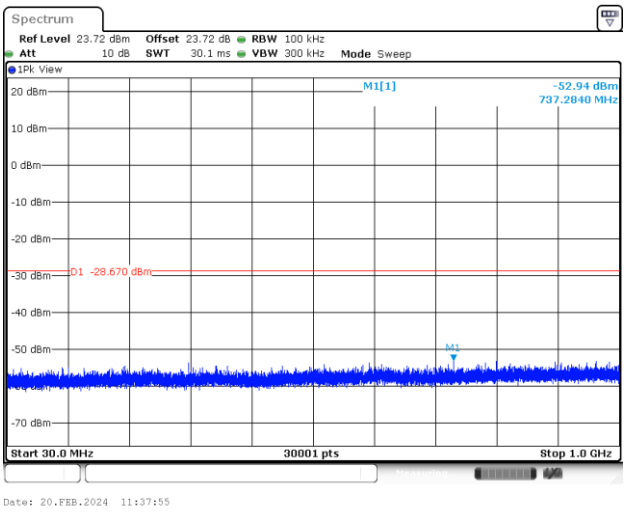
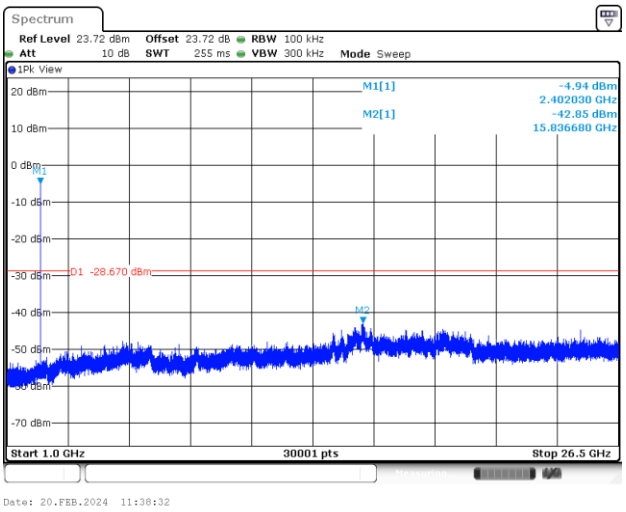
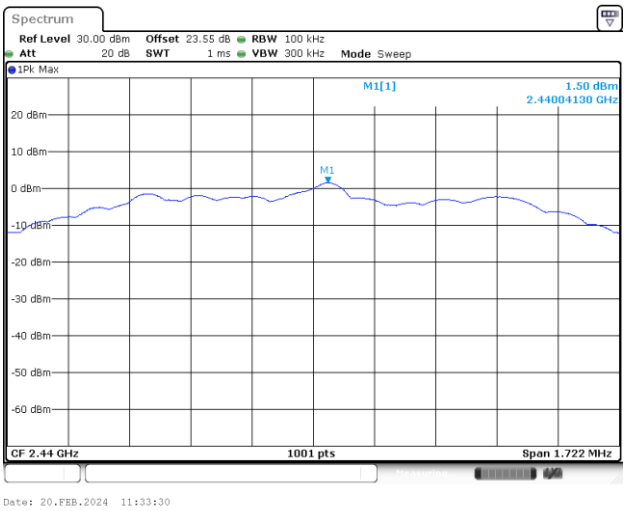
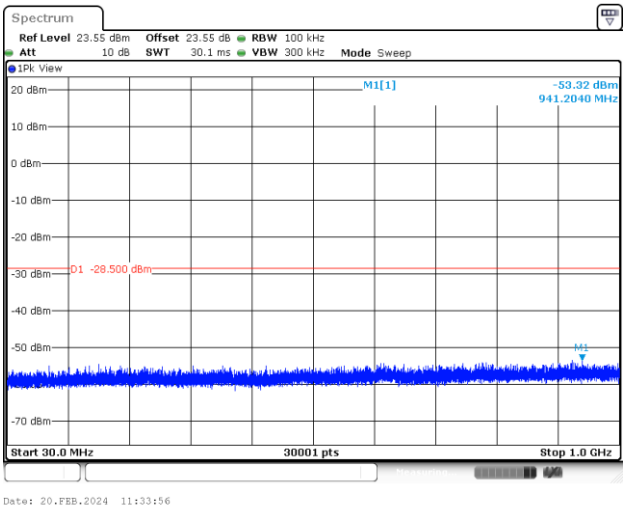
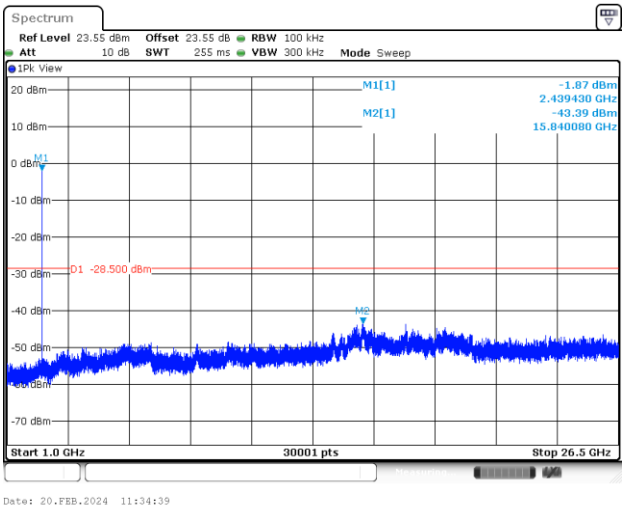
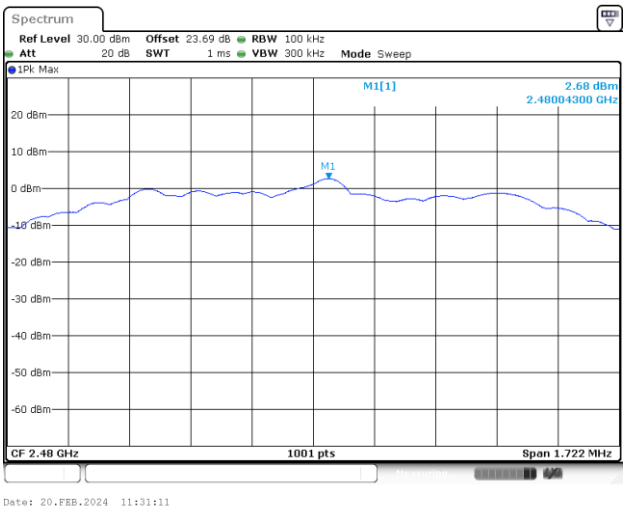
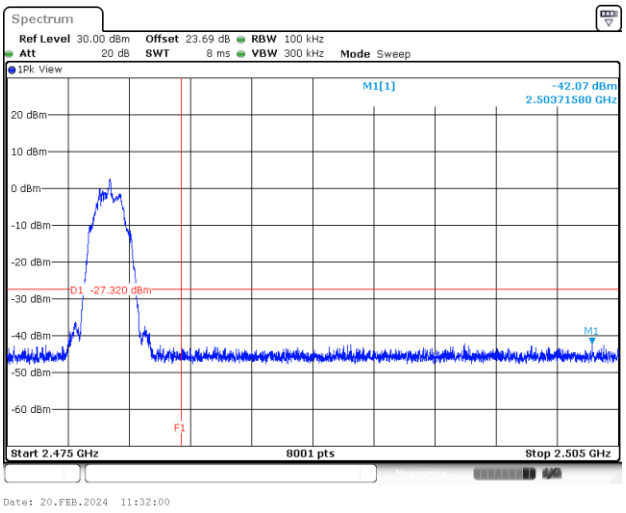
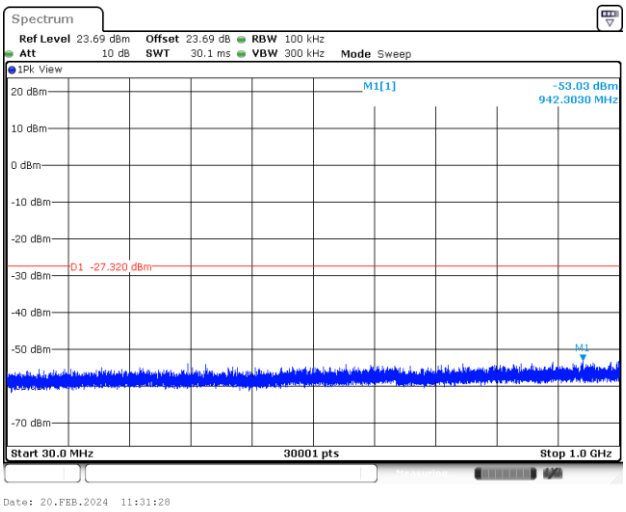
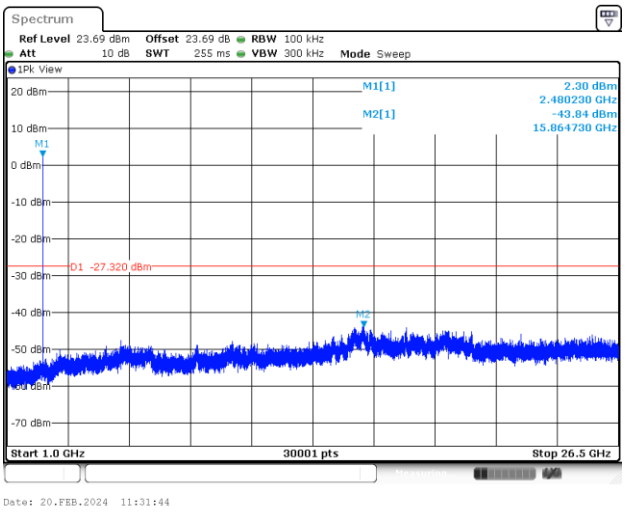
Channel 00	
100kHz PSD reference Level Plot	**Low Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

Channel 19	
100kHz PSD reference Level Plot	**Mid Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

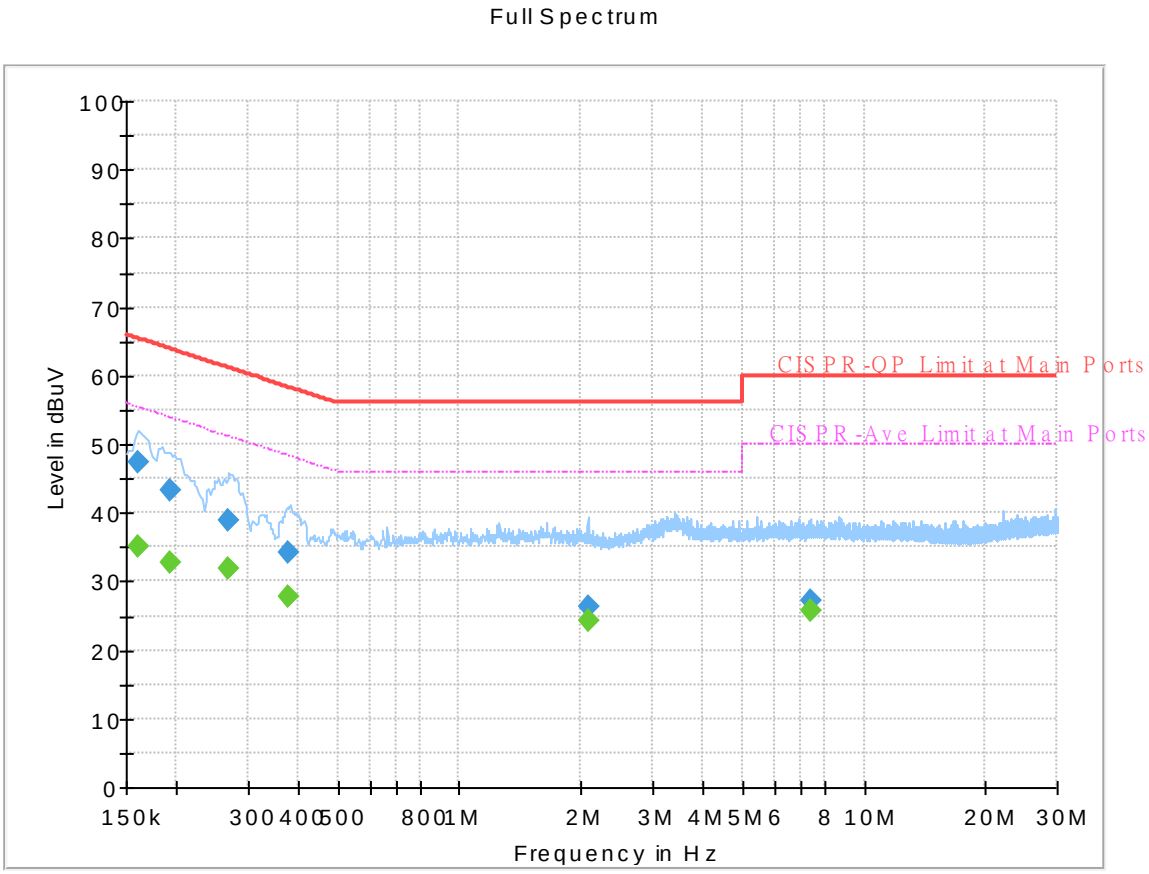
Channel 39	
100kHz PSD reference Level Plot	**High Channel Plot**
	
Spurious Emission 30MHz~1GHz Plot	**Spurious Emission 1GHz~26.5GHz Plot**
	

Appendix B. AC Conducted Emission Test Results

Test Engineer :	Calvin Wang	**Temperature :**	23~26℃
		Relative Humidity :	45~55%

EUT Information

Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Line

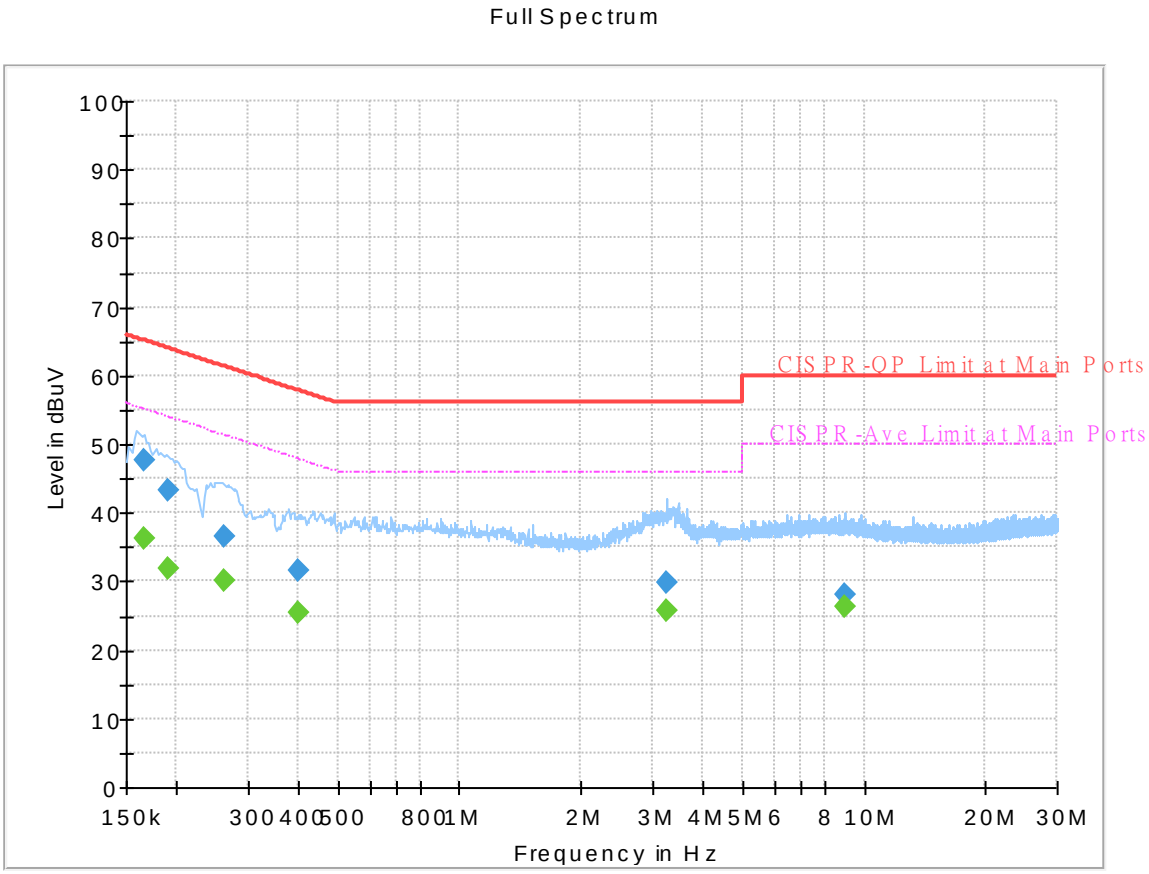


Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.161250	---	35.00	55.40	20.40	L1	OFF	19.8
0.161250	47.38	---	65.40	18.02	L1	OFF	19.8
0.192750	---	32.65	53.92	21.27	L1	OFF	19.8
0.192750	43.19	---	63.92	20.73	L1	OFF	19.8
0.269250	---	31.99	51.14	19.15	L1	OFF	19.8
0.269250	38.95	---	61.14	22.19	L1	OFF	19.8
0.377250	---	27.67	48.34	20.67	L1	OFF	19.8
0.377250	34.11	---	58.34	24.23	L1	OFF	19.8
2.073750	---	24.21	46.00	21.79	L1	OFF	19.9
2.073750	26.43	---	56.00	29.57	L1	OFF	19.9
7.345500	---	25.66	50.00	24.34	L1	OFF	20.0
7.345500	27.05	---	60.00	32.95	L1	OFF	20.0

EUT Information

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)
0.165750	---	36.31	55.17	18.86	N	OFF	19.8
0.165750	47.69	---	65.17	17.48	N	OFF	19.8
0.190500	---	31.97	54.02	22.05	N	OFF	19.8
0.190500	43.34	---	64.02	20.68	N	OFF	19.8
0.262500	---	30.23	51.35	21.12	N	OFF	19.8
0.262500	36.64	---	61.35	24.71	N	OFF	19.8
0.399750	---	25.52	47.86	22.34	N	OFF	19.8
0.399750	31.65	---	57.86	26.21	N	OFF	19.8
3.241500	---	25.66	46.00	20.34	N	OFF	19.9
3.241500	29.73	---	56.00	26.27	N	OFF	19.9
8.934000	---	26.24	50.00	23.76	N	OFF	20.1
8.934000	27.95	---	60.00	32.05	N	OFF	20.1

Appendix B. Radiated Spurious Emission

Test Engineer :	John Chuang, David Dai and Howard Huang	Temperature :	19.5~23.5°C
		Relative Humidity :	64.9~70.7%

<1Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE Ant	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
6		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 00 2402MHz		2364.075	50.13	-23.87	74	40.53	27.16	18.67	36.23	240	342	P	H
		2366.385	40.15	-13.85	54	30.53	27.17	18.68	36.23	240	342	A	H
	*	2402	104.1	-	-	94.3	27.31	18.74	36.25	240	342	P	H
	*	2402	103.54	-	-	93.74	27.31	18.74	36.25	240	342	A	H
													H
		2358.195	49.82	-24.18	74	40.26	27.13	18.66	36.23	204	248	P	V
		2374.995	40.13	-13.87	54	30.48	27.2	18.69	36.24	204	248	A	V
	*	2402	102.05	-	-	92.25	27.31	18.74	36.25	204	248	P	V
	*	2402	101.46	-	-	91.66	27.31	18.74	36.25	204	248	A	V
													V
BLE CH 19 2440MHz		2376.56	49.78	-24.22	74	40.11	27.21	18.7	36.24	200	345	P	H
		2385.2	40.08	-13.92	54	30.37	27.24	18.71	36.24	200	345	A	H
	*	2440	105.17	-	-	95.16	27.46	18.81	36.26	200	345	P	H
	*	2440	104.62	-	-	94.61	27.46	18.81	36.26	200	345	A	H
		2492.56	50.69	-23.31	74	40.39	27.67	18.91	36.28	200	345	P	H
		2487.44	40.64	-13.36	54	30.37	27.65	18.9	36.28	200	345	A	H
		2388.56	50.66	-23.34	74	40.93	27.25	18.72	36.24	200	239	P	V
		2363.76	40.27	-13.73	54	30.67	27.16	18.67	36.23	200	239	A	V
	*	2440	100.61	-	-	90.6	27.46	18.81	36.26	200	239	P	V
	*	2440	100.02	-	-	90.01	27.46	18.81	36.26	200	239	A	V
		2485.6	50.03	-23.97	74	39.77	27.64	18.9	36.28	200	239	P	V
		2488.88	41.1	-12.9	54	30.82	27.66	18.9	36.28	200	239	A	V

BLE Ant 6	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	103.49	-	-	93.25	27.62	18.89	36.27	100	342	P	H
	*	2480	102.91	-	-	92.67	27.62	18.89	36.27	100	342	A	H
		2498.88	50.41	-23.59	74	40.07	27.7	18.92	36.28	100	342	P	H
		2484.16	40.8	-13.2	54	30.53	27.64	18.9	36.27	100	342	A	H
													H
													H
	*	2480	99.57	-	-	89.33	27.62	18.89	36.27	400	252	P	V
	*	2480	99.04	-	-	88.8	27.62	18.89	36.27	400	252	A	V
		2485	50.32	-23.68	74	40.05	27.64	18.9	36.27	400	252	P	V
		2498.76	40.65	-13.35	54	30.31	27.7	18.92	36.28	400	252	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 6	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
BLE CH 00 2402MHz		4804	43.85	-30.15	74	36.03	32.4	12.92	37.5	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4804	42.46	-31.54	74	34.64	32.4	12.92	37.5	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

BLE Ant 6	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	43.08	-30.92	74	35.05	32.52	13.07	37.56	-	-	P	H
		7320	48.48	-25.52	74	34.23	36.9	15.96	38.61	100	45	P	H
		7320	39.23	-14.77	54	24.98	36.9	15.96	38.61	100	45	A	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4880	43.75	-30.25	74	35.72	32.52	13.07	37.56	-	-	P	V
		7320	49.1	-24.9	74	34.85	36.9	15.96	38.61	200	267	P	V
		7320	39.5	-14.5	54	25.25	36.9	15.96	38.61	200	267	A	V
													V
													V
													V
													V
													V
													V
													V
													V
													V

BLE Ant 6	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	44.1	-29.9	74	35.56	32.94	13.23	37.63	-	-	P	H
		7440	47.48	-26.52	74	33.55	36.52	16.12	38.71	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4960	43.64	-30.36	74	35.1	32.94	13.23	37.63	-	-	P	V
		7440	47.57	-26.43	74	33.64	36.52	16.12	38.71	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

Remark

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

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE Ant 7	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		2342.34	50.43	-23.57	74	40.93	27.1	18.63	36.23	126	343	P	H
		2382.555	40.08	-13.92	54	30.38	27.23	18.71	36.24	126	343	A	H
	*	2402	104.52	-	-	94.72	27.31	18.74	36.25	126	343	P	H
	*	2402	104.01	-	-	94.21	27.31	18.74	36.25	126	343	A	H
													H
													H
		2364.39	49.89	-24.11	74	40.29	27.16	18.67	36.23	103	298	P	V
		2363.13	40.03	-13.97	54	30.44	27.15	18.67	36.23	103	298	A	V
	*	2402	101.81	-	-	92.01	27.31	18.74	36.25	103	298	P	V
	*	2402	101.28	-	-	91.48	27.31	18.74	36.25	103	298	A	V
													V
													V
BLE CH 19 2440MHz		2386.64	49.45	-24.55	74	39.73	27.25	18.71	36.24	201	345	P	H
		2330.48	39.89	-14.11	54	30.4	27.1	18.61	36.22	201	345	A	H
	*	2440	104.91	-	-	94.9	27.46	18.81	36.26	201	345	P	H
	*	2440	104.41	-	-	94.4	27.46	18.81	36.26	201	345	A	H
		2493.2	49.69	-24.31	74	39.39	27.67	18.91	36.28	201	345	P	H
		2492.96	40.37	-13.63	54	30.07	27.67	18.91	36.28	201	345	A	H
		2319.76	50.37	-23.63	74	40.9	27.1	18.59	36.22	100	239	P	V
		2373.36	40.14	-13.86	54	30.5	27.19	18.69	36.24	100	239	A	V
	*	2440	100.87	-	-	90.86	27.46	18.81	36.26	100	239	P	V
	*	2440	100.3	-	-	90.29	27.46	18.81	36.26	100	239	A	V
		2497.92	50.32	-23.68	74	39.99	27.69	18.92	36.28	100	239	P	V
		2495.04	40.44	-13.56	54	30.12	27.68	18.92	36.28	100	239	A	V

BLE Ant 7	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	103.97	-	-	93.73	27.62	18.89	36.27	299	345	P	H
	*	2480	103.42	-	-	93.18	27.62	18.89	36.27	299	345	A	H
		2496.48	50.56	-23.44	74	40.23	27.69	18.92	36.28	299	345	P	H
		2483.84	40.72	-13.28	54	30.45	27.64	18.9	36.27	299	345	A	H
													H
													H
	*	2480	99.5	-	-	89.26	27.62	18.89	36.27	306	269	P	V
	*	2480	98.99	-	-	88.75	27.62	18.89	36.27	306	269	A	V
		2496.12	50.34	-23.66	74	40.02	27.68	18.92	36.28	306	269	P	V
		2485.24	40.61	-13.39	54	30.34	27.64	18.9	36.27	306	269	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 7	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	42.95	-31.05	74	35.13	32.4	12.92	37.5	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4804	43.43	-30.57	74	35.61	32.4	12.92	37.5	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

BLE Ant 7	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	43.69	-30.31	74	35.66	32.52	13.07	37.56	-	-	P	H
		7320	47.95	-26.05	74	33.7	36.9	15.96	38.61	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4880	43.44	-30.56	74	35.41	32.52	13.07	37.56	-	-	P	V
		7320	47.87	-26.13	74	33.62	36.9	15.96	38.61	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

BLE Ant 7	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	44.39	-29.61	74	35.85	32.94	13.23	37.63	-	-	P	H
		7440	46.85	-27.15	74	32.92	36.52	16.12	38.71	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4960	44.48	-29.52	74	35.94	32.94	13.23	37.63	-	-	P	V
		7440	47.29	-26.71	74	33.36	36.52	16.12	38.71	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												

<2Mbps>

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE Ant	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
6		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 00 2402MHz		2373	50.65	-23.35	74	41.01	27.19	18.69	36.24	100	340	P	H
		2350.845	40.95	-13.05	54	31.43	27.1	18.65	36.23	100	340	A	H
	*	2402	104.13	-	-	94.33	27.31	18.74	36.25	100	340	P	H
	*	2402	102.79	-	-	92.99	27.31	18.74	36.25	100	340	A	H
													H
													H
		2321.655	50.45	-23.55	74	40.98	27.1	18.59	36.22	200	250	P	V
		2357.565	40.82	-13.18	54	31.26	27.13	18.66	36.23	200	250	A	V
	*	2402	101.75	-	-	91.95	27.31	18.74	36.25	200	250	P	V
	*	2402	100.42	-	-	90.62	27.31	18.74	36.25	200	250	A	V
													V
													V
BLE CH 19 2440MHz		2387.44	49.88	-24.12	74	40.15	27.25	18.72	36.24	200	344	P	H
		2370.8	41.04	-12.96	54	31.42	27.18	18.68	36.24	200	344	A	H
	*	2440	105.19	-	-	95.18	27.46	18.81	36.26	200	344	P	H
	*	2440	103.79	-	-	93.78	27.46	18.81	36.26	200	344	A	H
		2493.6	50.17	-23.83	74	39.87	27.67	18.91	36.28	200	344	P	H
		2499.28	41.21	-12.79	54	30.87	27.7	18.92	36.28	200	344	A	H
		2355.44	50.14	-23.86	74	40.59	27.12	18.66	36.23	250	242	P	V
		2324.56	40.89	-13.11	54	31.41	27.1	18.6	36.22	250	242	A	V
	*	2440	101.39	-	-	91.38	27.46	18.81	36.26	250	242	P	V
	*	2440	99.98	-	-	89.97	27.46	18.81	36.26	250	242	A	V
		2486.8	49.92	-24.08	74	39.65	27.65	18.9	36.28	250	242	P	V
		2484.96	41.61	-12.39	54	31.34	27.64	18.9	36.27	250	242	A	V

BLE Ant 6	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	104.1	-	-	93.86	27.62	18.89	36.27	300	344	P	H
	*	2480	102.7	-	-	92.46	27.62	18.89	36.27	300	344	A	H
		2483.52	52.14	-21.86	74	41.89	27.63	18.89	36.27	300	344	P	H
		2483.64	42.05	-11.95	54	31.8	27.63	18.89	36.27	300	344	A	H
													H
													H
	*	2480	99.81	-	-	89.57	27.62	18.89	36.27	350	277	P	V
	*	2480	98.46	-	-	88.22	27.62	18.89	36.27	350	277	A	V
		2499.2	50.3	-23.7	74	39.96	27.7	18.92	36.28	350	277	P	V
		2492.88	41.5	-12.5	54	31.2	27.67	18.91	36.28	350	277	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 6	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	42.85	-31.15	74	35.03	32.4	12.92	37.5	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4804	43.5	-30.5	74	35.68	32.4	12.92	37.5	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

BLE Ant 6	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	43.93	-30.07	74	35.9	32.52	13.07	37.56	-	-	P	H
		7320	48.66	-25.34	74	34.41	36.9	15.96	38.61	350	108	P	H
		7320	38.89	-15.11	54	24.64	36.9	15.96	38.61	350	108	A	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4880	42.81	-31.19	74	34.78	32.52	13.07	37.56	-	-	P	V
		7320	48.51	-25.49	74	34.26	36.9	15.96	38.61	300	305	P	V
		7320	39.15	-14.85	54	24.9	36.9	15.96	38.61	300	305	A	V
													V
													V
													V
													V
													V
													V
													V
													V
													V

BLE Ant 6	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	43.48	-30.52	74	34.94	32.94	13.23	37.63	-	-	P	H
		7440	47.84	-26.16	74	33.91	36.52	16.12	38.71	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4960	44.41	-29.59	74	35.87	32.94	13.23	37.63	-	-	P	V
		7440	47.16	-26.84	74	33.23	36.52	16.12	38.71	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												

Emission above 18GHz

2.4GHz BLE (SHF)

BT	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
6		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz BLE SHF		24573	41.54	-32.46	74	36.31	39.38	19.32	53.47	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		24839	41.98	-32.02	74	36.17	39.71	19.46	53.36	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												

Emission below 1GHz

2.4GHz BLE (LF)

BLE Ant 6	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)
2.4GHz BLE LF		31.02	24.3	-15.7	40	34.14	24.45	1.3	35.59	-	-	P	H
		94.26	27.88	-15.62	43.5	46.28	15.21	1.9	35.51	-	-	P	H
		149.51	27.75	-15.75	43.5	43.34	17.45	2.39	35.43	-	-	P	H
		353.6	23.69	-22.31	46	34.46	20.6	3.56	34.93	-	-	P	H
		744	33.27	-12.73	46	33.65	28.23	5.09	33.7	-	-	P	H
		978.4	36.55	-17.45	54	32.82	30.69	5.88	32.84	-	-	P	H
													H
													H
													H
													H
													H
													H
		52.61	32.7	-7.3	40	53.23	13.58	1.46	35.57	-	-	P	V
		92.73	28.41	-15.09	43.5	47.01	15.03	1.89	35.52	-	-	P	V
		184.02	23.8	-19.7	43.5	41.55	15.01	2.6	35.36	-	-	P	V
		263.2	21.72	-24.28	46	33.58	20.28	3.06	35.2	-	-	P	V
		662.4	30.37	-15.63	46	33.23	26.43	4.8	34.09	-	-	P	V
		945.6	35.77	-10.23	46	32.42	30.59	5.76	33	-	-	P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line. 3. The emission position marked as “-” means no suspected emission found and emission level has at least 6dB margin against limit or emission is noise floor only.												

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE Ant 7	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		2386.965	49.95	-24.05	74	40.22	27.25	18.72	36.24	129	342	P	H
		2372.055	40.87	-13.13	54	31.23	27.19	18.69	36.24	129	342	A	H
	*	2402	104.95	-	-	95.15	27.31	18.74	36.25	129	342	P	H
	*	2402	103.59	-	-	93.79	27.31	18.74	36.25	129	342	A	H
													H
													H
		2368.275	50.52	-23.48	74	40.91	27.17	18.68	36.24	101	298	P	V
		2385.495	40.73	-13.27	54	31.02	27.24	18.71	36.24	101	298	A	V
	*	2402	101.58	-	-	91.78	27.31	18.74	36.25	101	298	P	V
	*	2402	100.22	-	-	90.42	27.31	18.74	36.25	101	298	A	V
													V
													V
BLE CH 19 2440MHz		2314.64	49.76	-24.24	74	40.3	27.1	18.58	36.22	201	345	P	H
		2374.16	40.89	-13.11	54	31.24	27.2	18.69	36.24	201	345	A	H
	*	2440	105.35	-	-	95.34	27.46	18.81	36.26	201	345	P	H
	*	2440	103.91	-	-	93.9	27.46	18.81	36.26	201	345	A	H
		2487.28	50.18	-23.82	74	39.91	27.65	18.9	36.28	201	345	P	H
		2486.64	41.3	-12.7	54	31.03	27.65	18.9	36.28	201	345	A	H
		2341.04	49.6	-24.4	74	40.1	27.1	18.63	36.23	100	239	P	V
		2362.48	41.12	-12.88	54	31.53	27.15	18.67	36.23	100	239	A	V
	*	2440	100.66	-	-	90.65	27.46	18.81	36.26	100	239	P	V
	*	2440	99.26	-	-	89.25	27.46	18.81	36.26	100	239	A	V
		2491.36	49.48	-24.52	74	39.18	27.67	18.91	36.28	100	239	P	V
		2491.84	41.36	-12.64	54	31.06	27.67	18.91	36.28	100	239	A	V

BLE Ant 7	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	104.55	-	-	94.31	27.62	18.89	36.27	298	346	P	H
	*	2480	103.19	-	-	92.95	27.62	18.89	36.27	298	346	A	H
		2483.6	52.68	-21.32	74	42.43	27.63	18.89	36.27	298	346	P	H
		2483.52	41.92	-12.08	54	31.67	27.63	18.89	36.27	298	346	A	H
													H
													H
	*	2480	99.72	-	-	89.48	27.62	18.89	36.27	400	256	P	V
	*	2480	98.38	-	-	88.14	27.62	18.89	36.27	400	256	A	V
		2484.52	50.78	-23.22	74	40.51	27.64	18.9	36.27	400	256	P	V
		2484.92	41.94	-12.06	54	31.67	27.64	18.9	36.27	400	256	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 7	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	42.79	-31.21	74	34.97	32.4	12.92	37.5	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4804	42.63	-31.37	74	34.81	32.4	12.92	37.5	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V

BLE Ant 7	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		4880	43.51	-30.49	74	35.48	32.52	13.07	37.56	-	-	P	H
		7320	47.63	-26.37	74	33.38	36.9	15.96	38.61	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
BLE CH 19 2440MHz		4880	42.88	-31.12	74	34.85	32.52	13.07	37.56	-	-	P	V
		7320	49.09	-24.91	74	34.84	36.9	15.96	38.61	400	47	P	V
		7320	39.75	-14.25	54	25.5	36.9	15.96	38.61	400	47	A	V
													V
													V
													V
													V
													V
													V
													V
													V
													V

BLE Ant 7	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	44.12	-29.88	74	35.58	32.94	13.23	37.63	-	-	P	H
		7440	46.94	-27.06	74	33.01	36.52	16.12	38.71	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
		4960	44.24	-29.76	74	35.7	32.94	13.23	37.63	-	-	P	V
		7440	47.34	-26.66	74	33.41	36.52	16.12	38.71	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												

Note symbol

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

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

BLE	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 00 2402MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) =

Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

3. Margin (dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Margin (dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Margin (dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

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

Appendix D. Radiated Spurious Emission Plots

Test Engineer :	John Chuang, David Dai and Howard Huang	**Temperature :**	19.5~23.5°C
		Relative Humidity :	64.9~70.7%

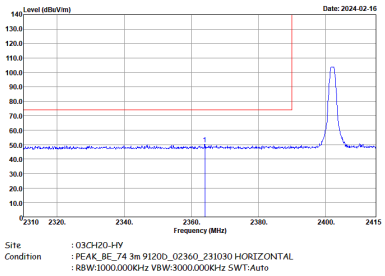
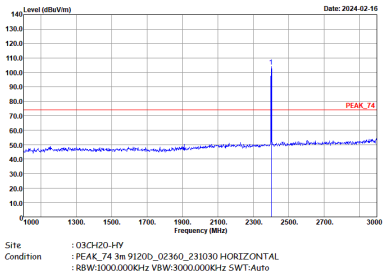
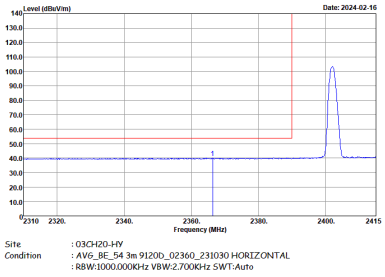
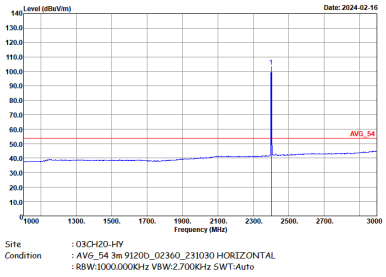
Note symbol

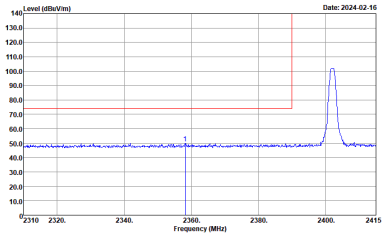
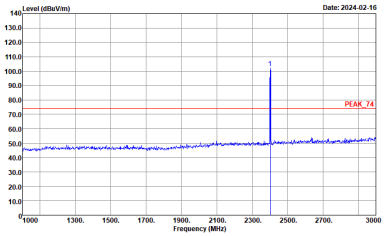
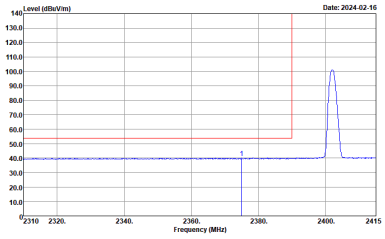
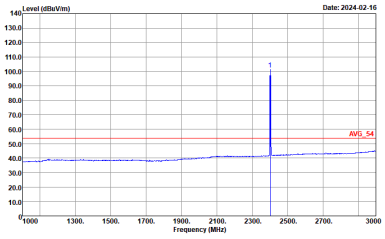
-L	**Low channel location**
-R	**High channel location**

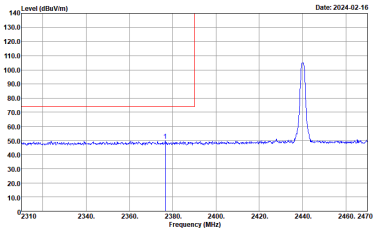
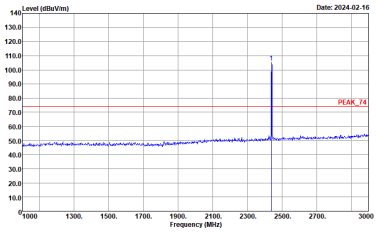
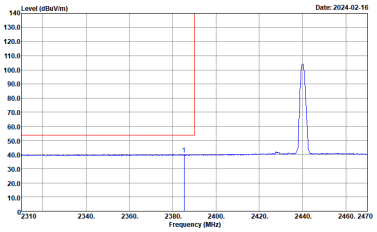
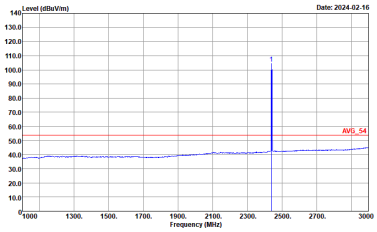
<1Mbps>

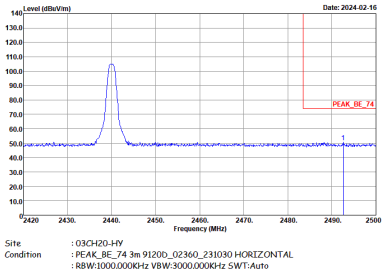
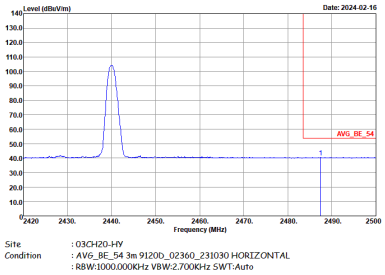
2.4GHz 2400~2483.5MHz

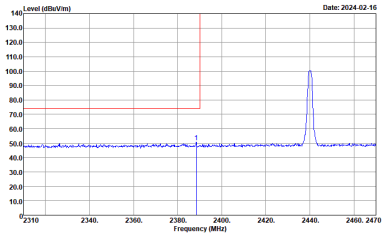
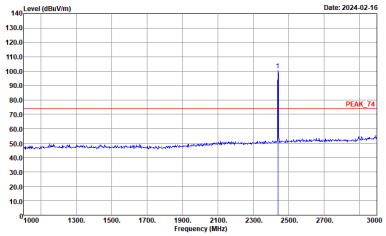
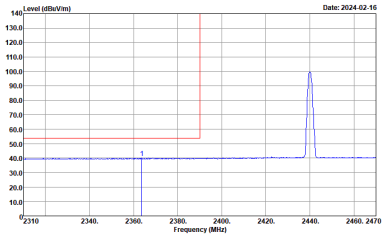
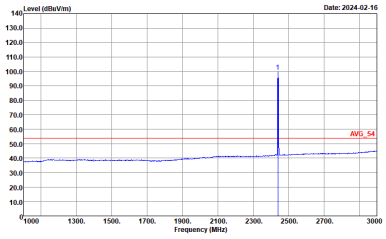
BLE (Band Edge @ 3m)

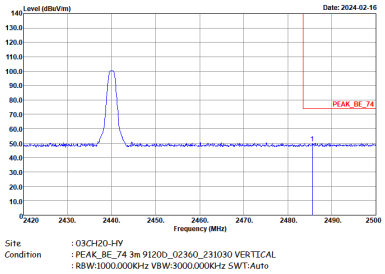
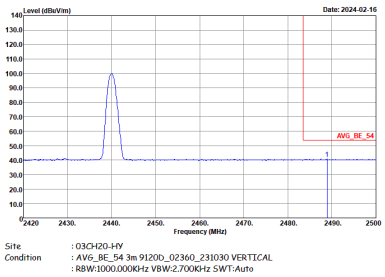
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
6	Horizontal	Fundamental
Peak		
Avg.		

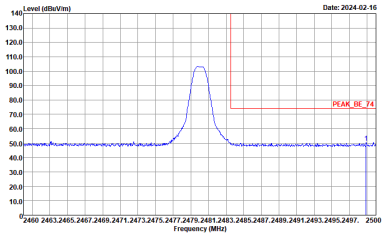
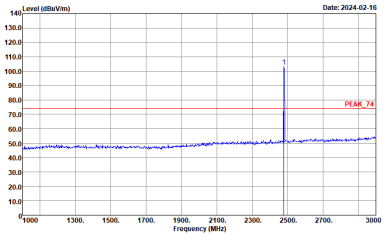
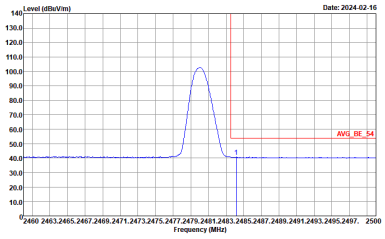
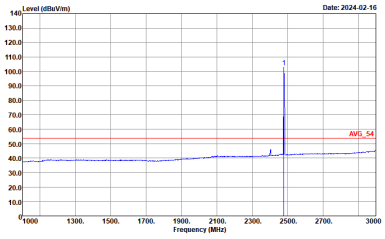
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
6	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:2.700KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:2.700KHz SWT:Auto

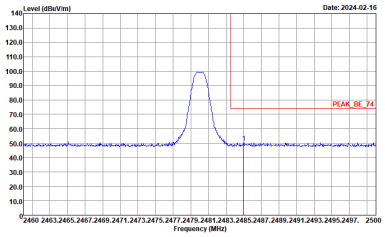
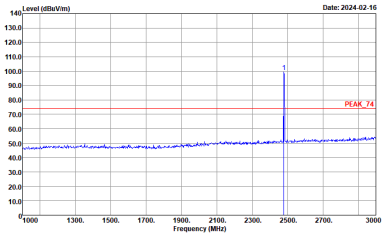
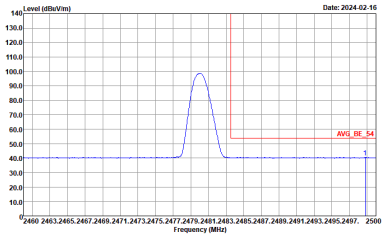
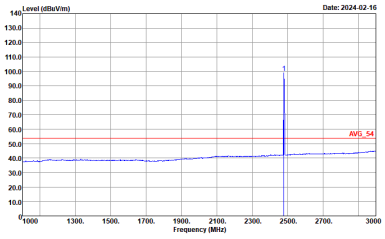
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
6	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:2.700KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:2.700KHz SWT:Auto

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

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

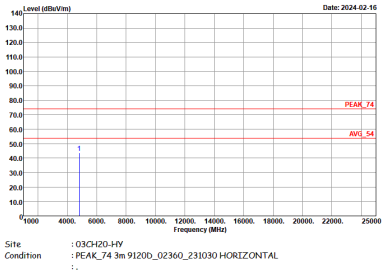
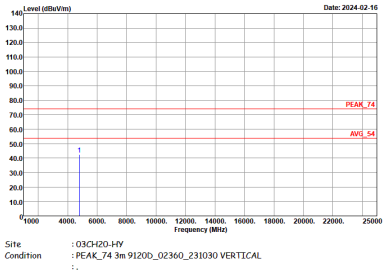
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
6	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

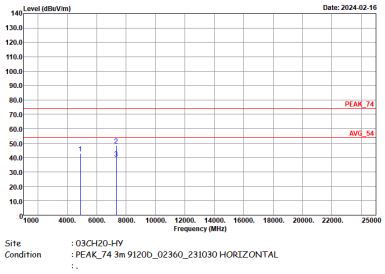
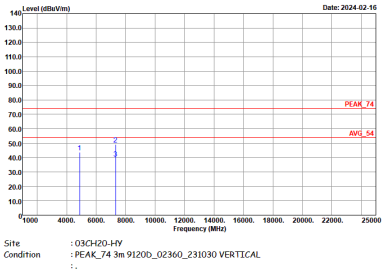
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
6	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:2.700KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:2.700KHz SWT:Auto

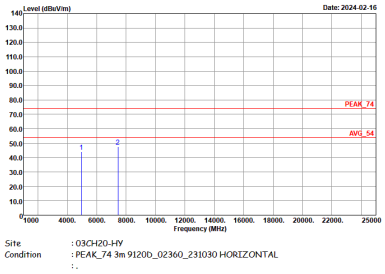
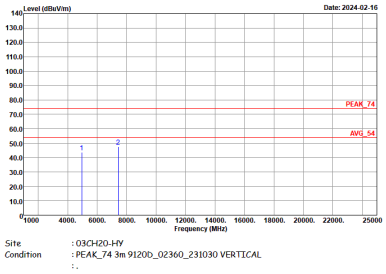
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
6	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:2.700KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:2.700KHz SWT:Auto

2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

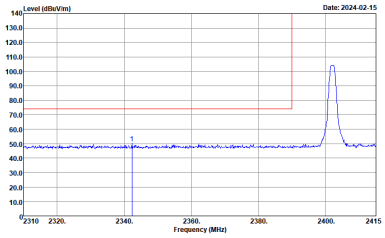
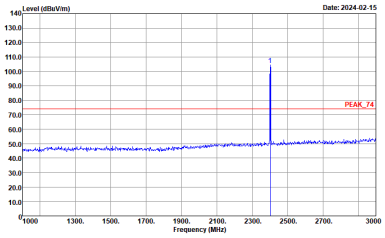
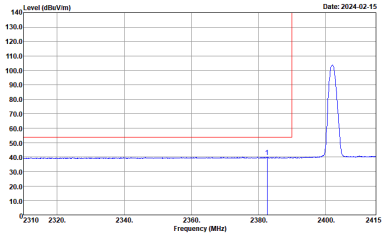
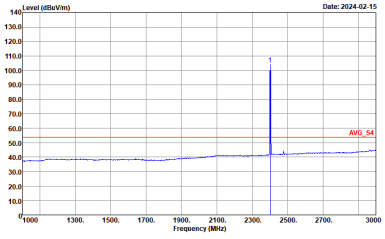
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH00 2402MHz	
6	Horizontal	Vertical
Peak Avg.		

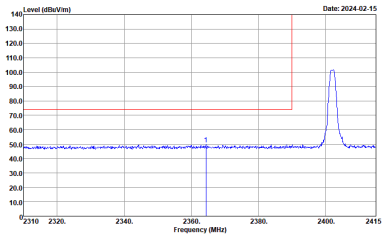
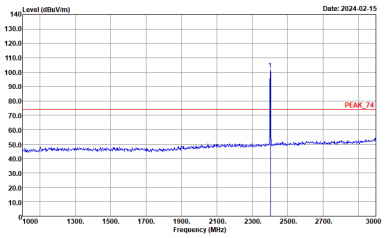
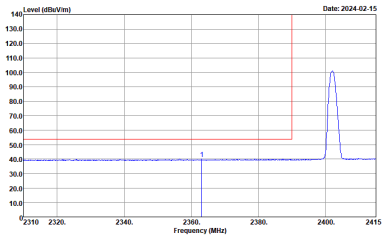
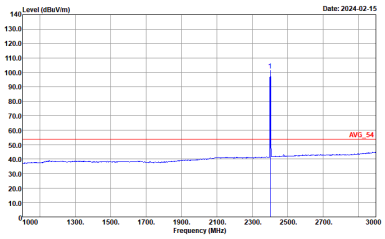
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH19 2440MHz	
6	Horizontal	Vertical
Peak Avg.	 	

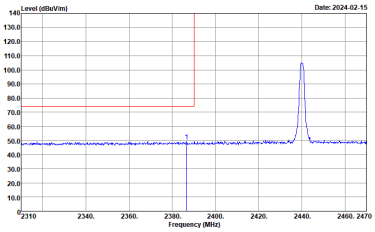
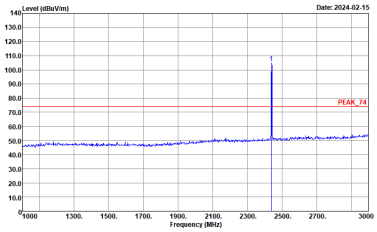
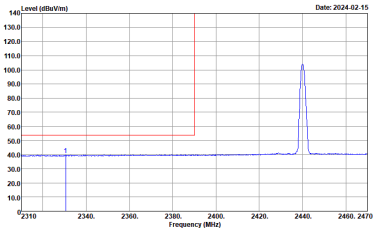
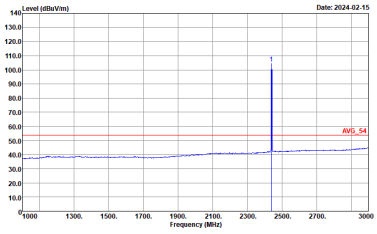
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH39 2480MHz	
6	Horizontal	Vertical
Peak		

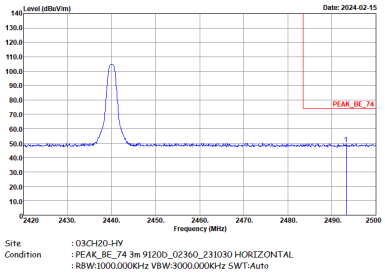
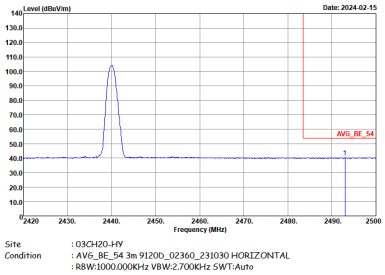
2.4GHz 2400~2483.5MHz

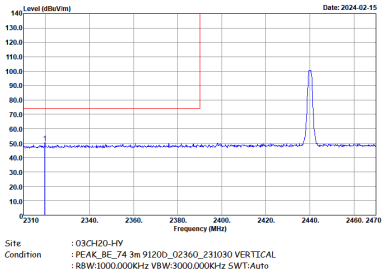
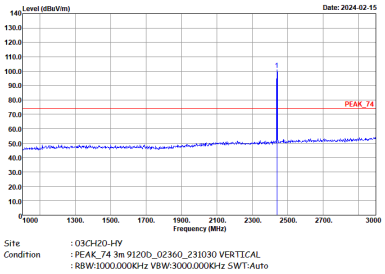
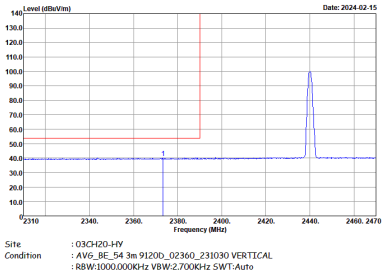
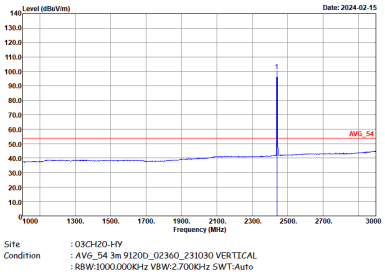
BLE (Band Edge @ 3m)

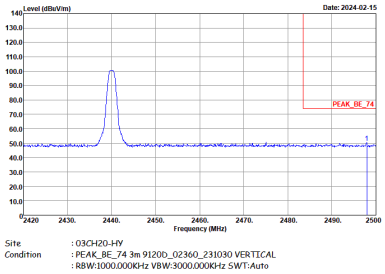
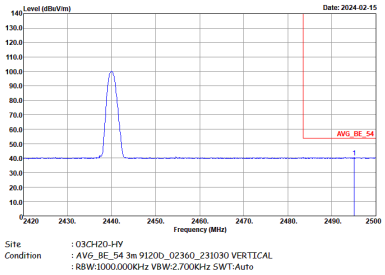
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
7	Horizontal	Fundamental
Peak		
Avg.		

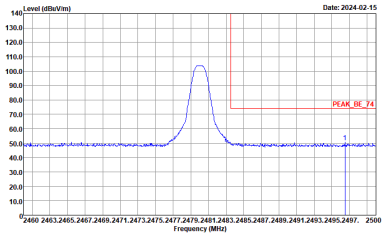
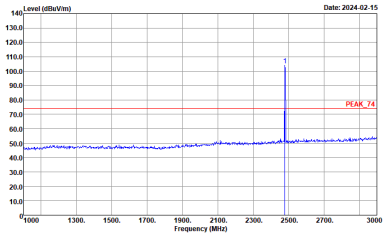
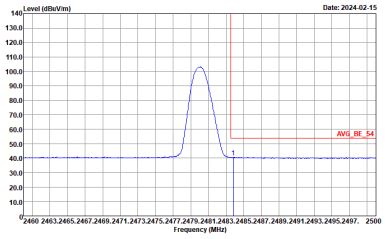
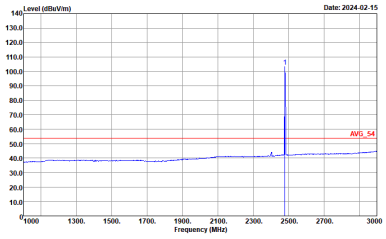
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
7	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:2.700KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:2.700KHz SWT:Auto

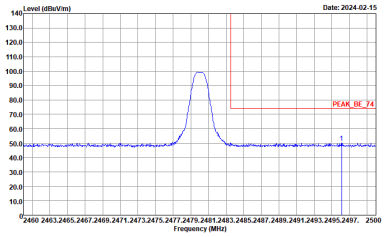
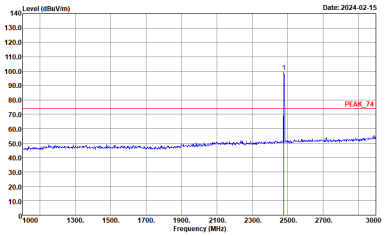
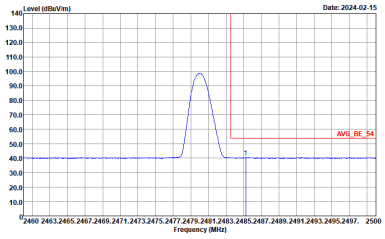
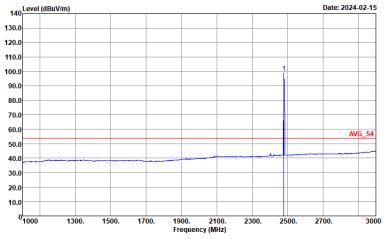
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
7	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:2.700KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:2.700KHz SWT:Auto

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

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

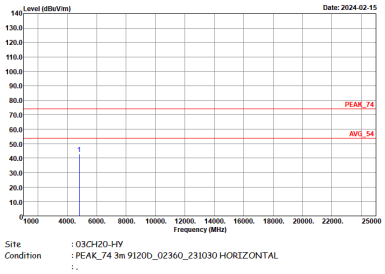
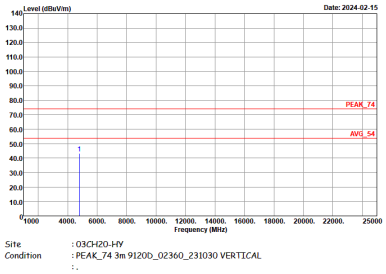
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
7	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

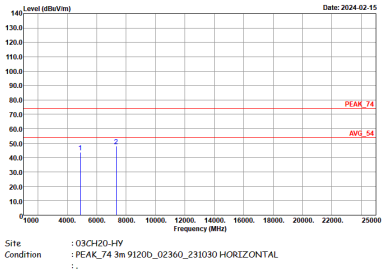
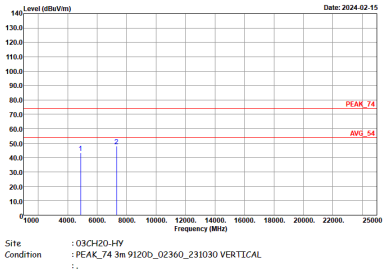
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
7	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:2.700KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:2.700KHz SWT:Auto

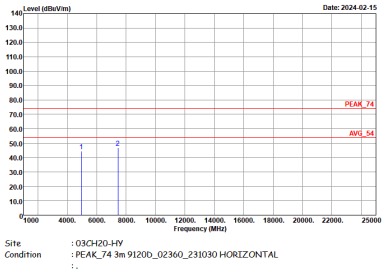
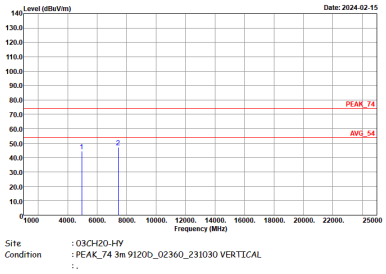
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
7	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:2.700KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:2.700KHz SWT:Auto

2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

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

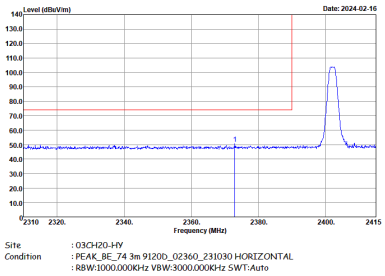
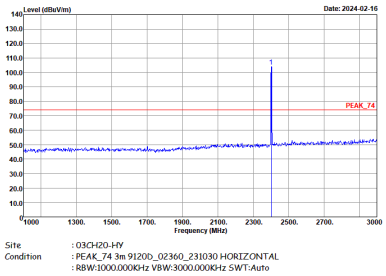
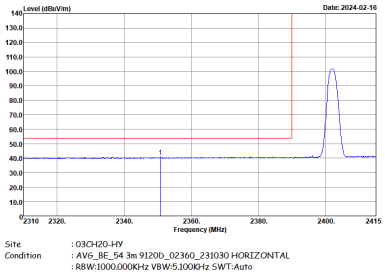
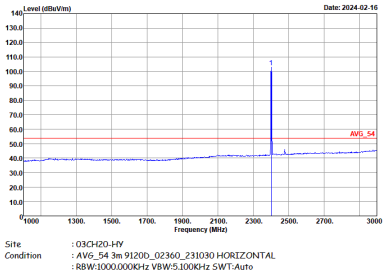
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH19 2440MHz	
7	Horizontal	Vertical
Peak Avg.		

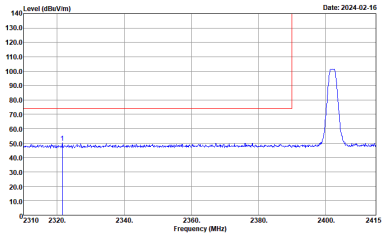
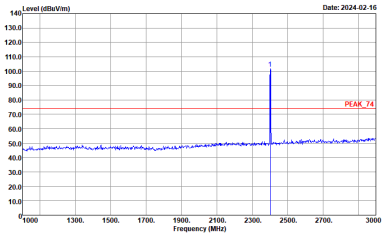
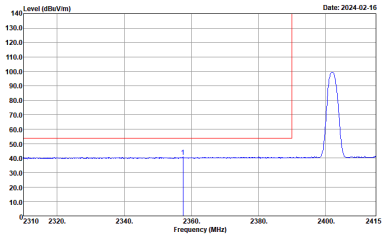
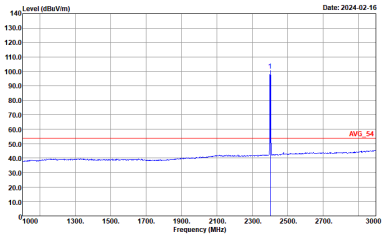
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH39 2480MHz	
7	Horizontal	Vertical
Peak		

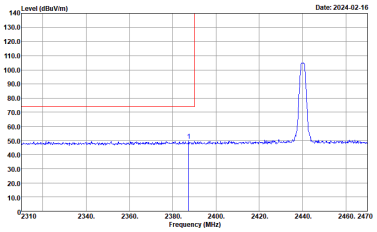
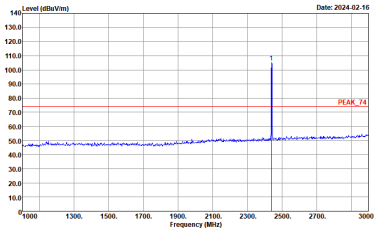
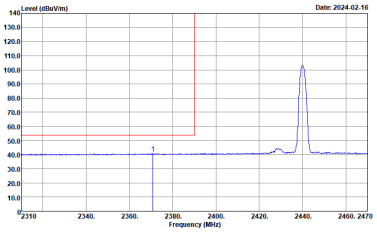
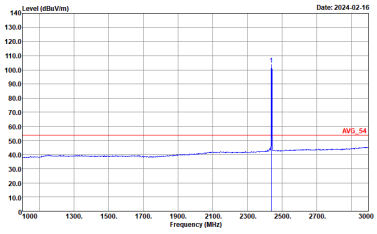
<2Mbps>

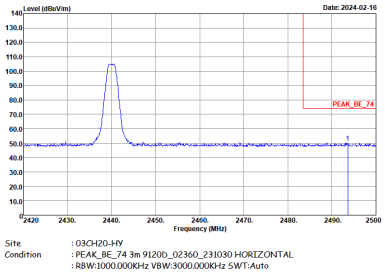
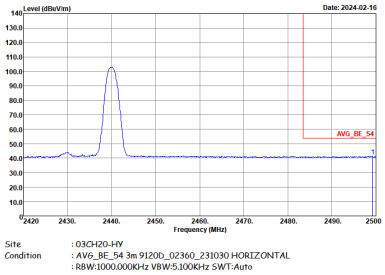
2.4GHz 2400~2483.5MHz

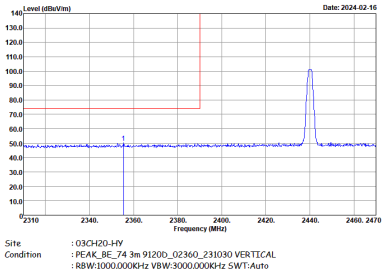
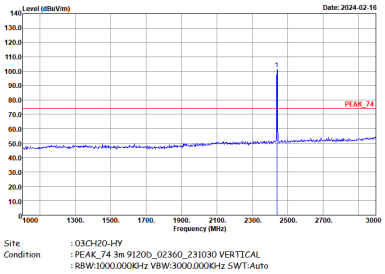
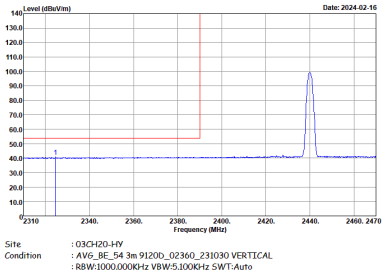
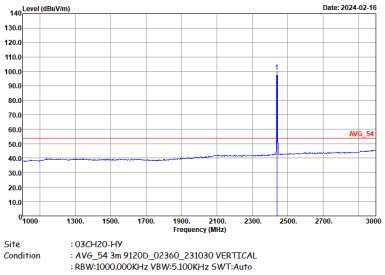
BLE (Band Edge @ 3m)

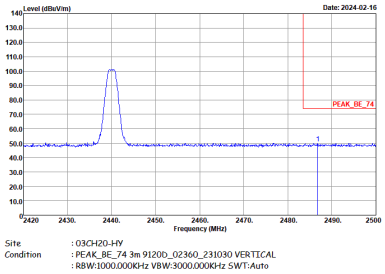
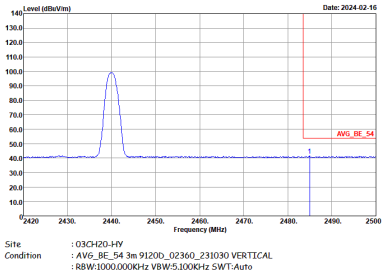
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
6	Horizontal	Fundamental
Peak		
Avg.		

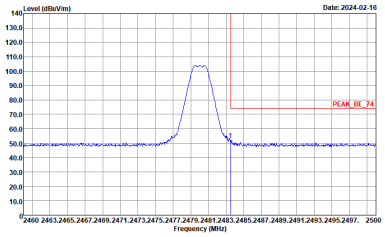
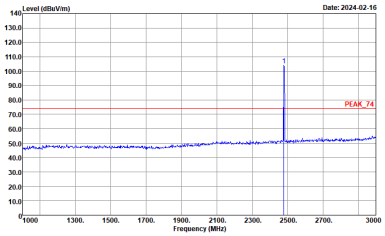
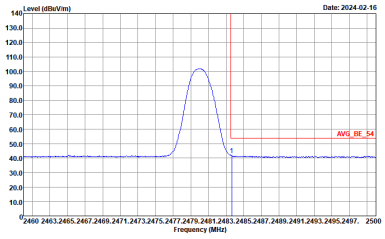
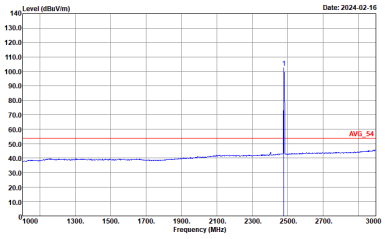
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
6	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:5.100KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:5.100KHz SWT:Auto

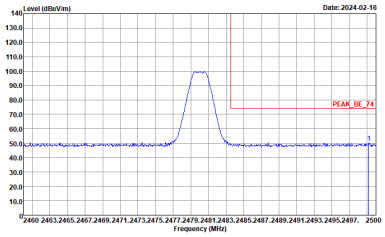
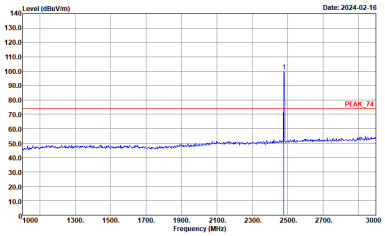
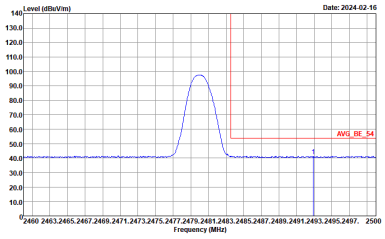
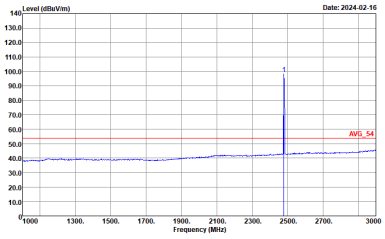
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
6	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:5.100KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:5.100KHz SWT:Auto

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

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

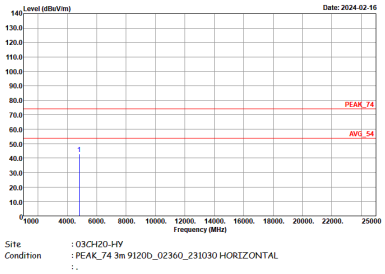
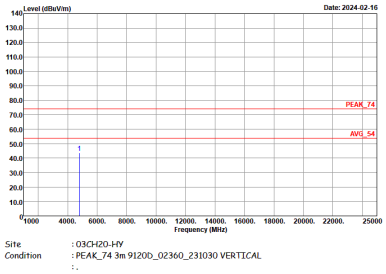
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
6	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

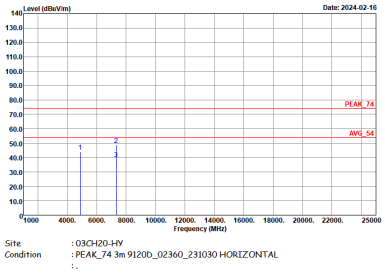
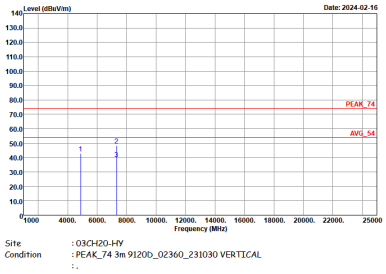
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
6	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:5.100KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:5.100KHz SWT:Auto

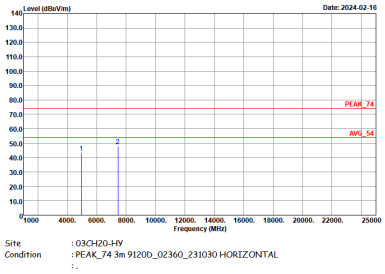
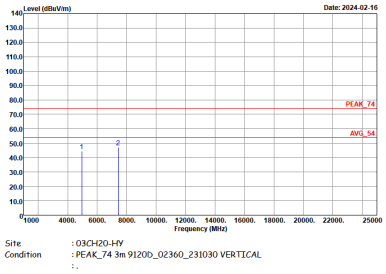
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
6	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:5.100KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:5.100KHz SWT:Auto

2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

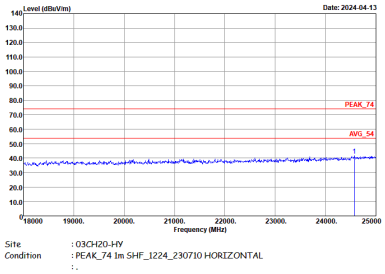
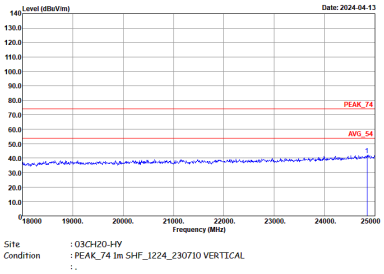
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH00 2402MHz	
6	Horizontal	Vertical
Peak Avg.		

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

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

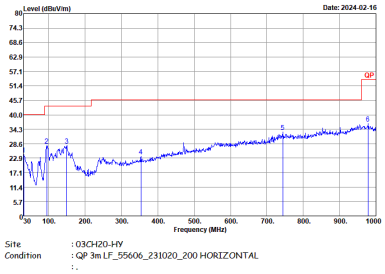
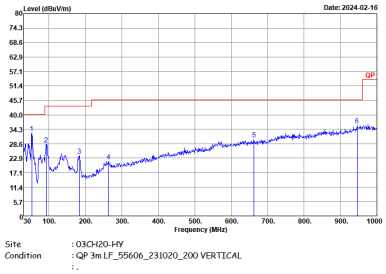
Emission above 18GHz

2.4GHz BLE (SHF @ 1m)

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

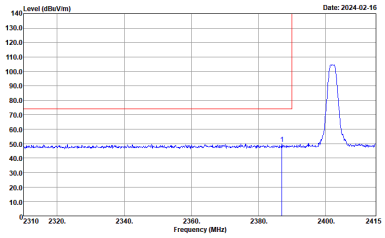
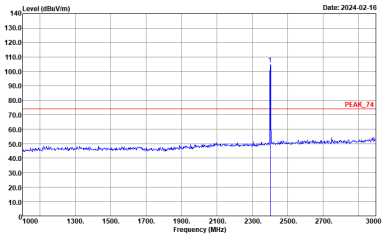
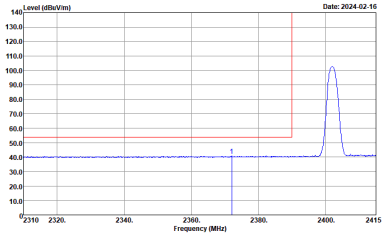
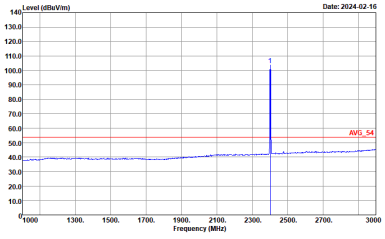
Emission below 1GHz

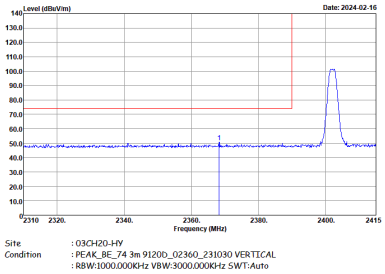
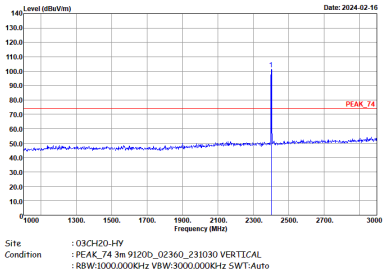
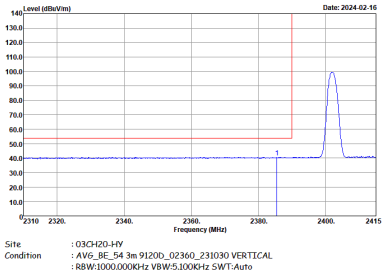
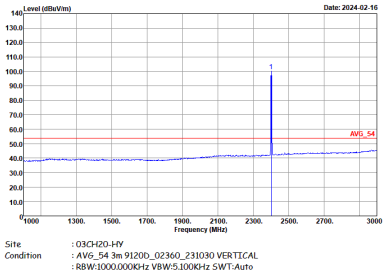
2.4GHz BLE (LF)

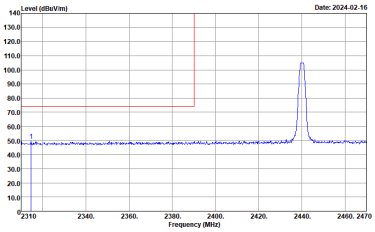
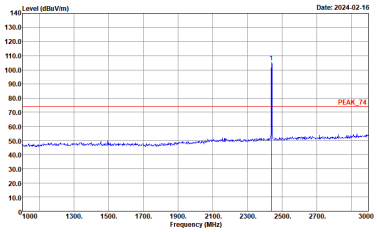
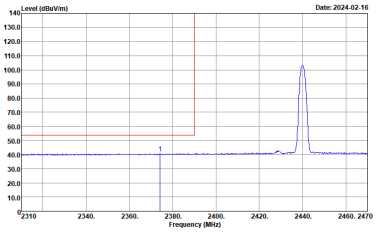
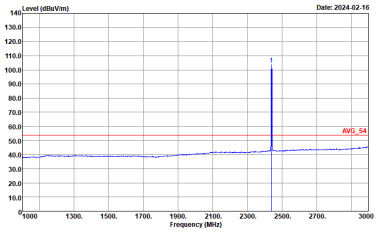
BLE	2.4GHz 2400~2483.5MHz	
ANT	BLE LF	
6	Horizontal	Vertical
QP / Peak		

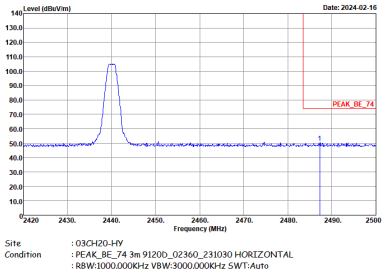
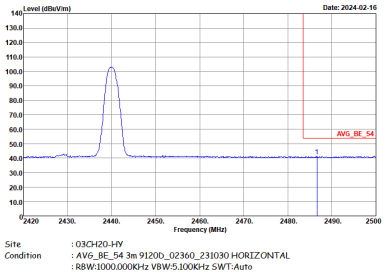
2.4GHz 2400~2483.5MHz

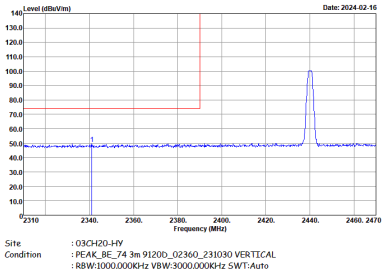
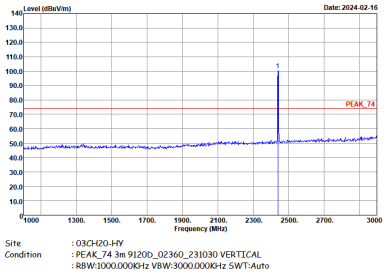
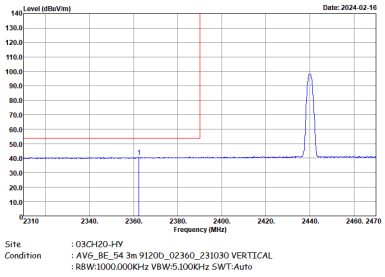
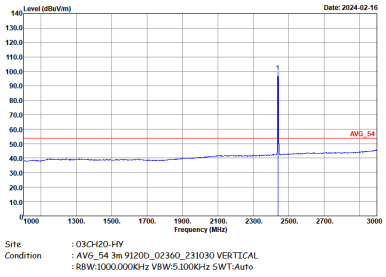
BLE (Band Edge @ 3m)

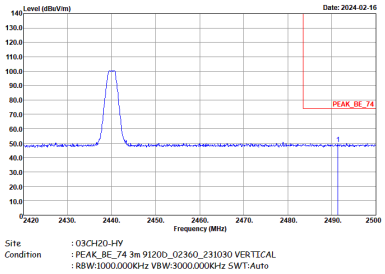
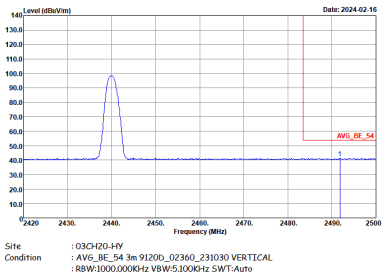
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
7	Horizontal	Fundamental
Peak		
Avg.		

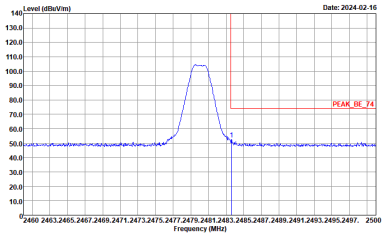
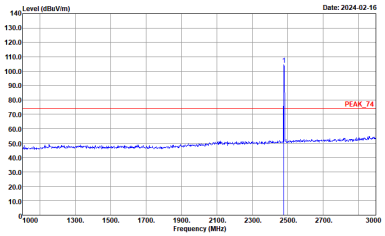
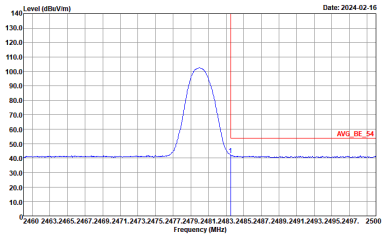
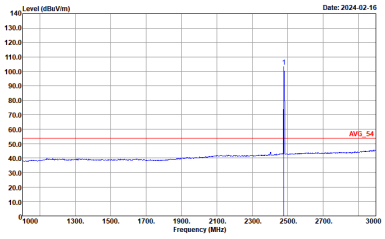
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
7	Vertical	Fundamental
Peak		
Avg		

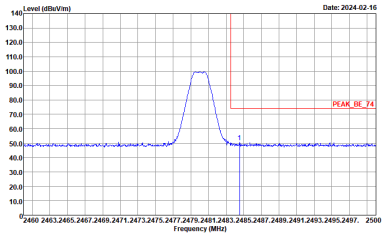
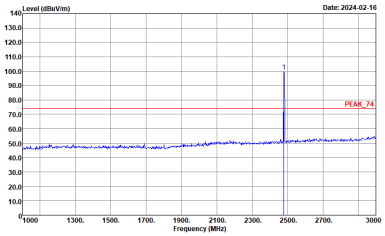
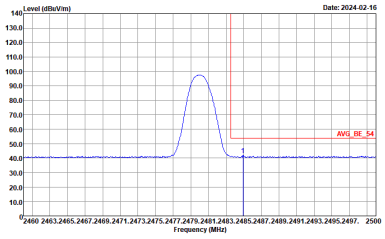
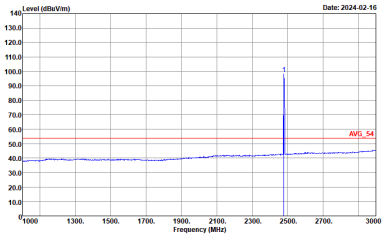
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
7	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:5.100KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:5.100KHz SWT:Auto

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

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

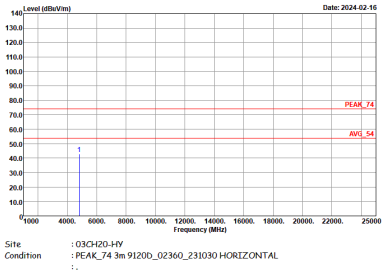
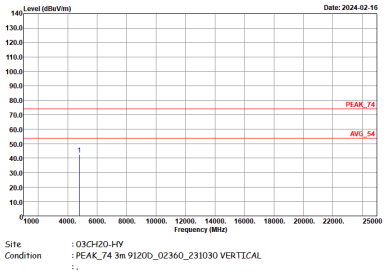
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
7	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

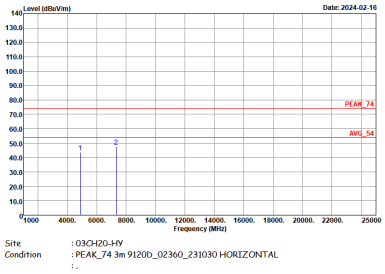
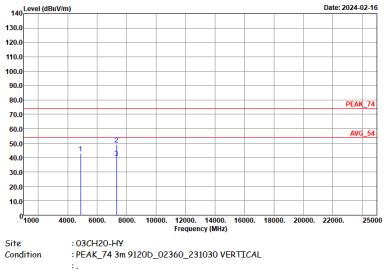
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
7	Horizontal	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:5.100KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_231030 HORIZONTAL : RBW:1000.000KHz VBW:5.100KHz SWT:Auto

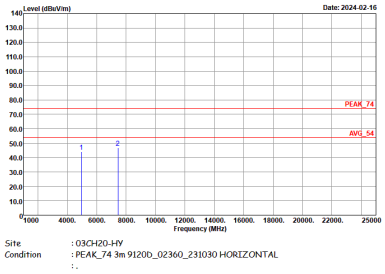
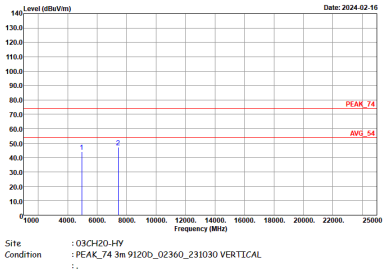
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
7	Vertical	Fundamental
Peak	 Site : 03CH20-HY Condition : PEAK_BE_74 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH20-HY Condition : PEAK_74 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH20-HY Condition : AVG_BE_54 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:5.100KHz SWT:Auto	 Site : 03CH20-HY Condition : AVG_54 3m 9120D_02360_231030 VERTICAL : RBW:1000.000KHz VBW:5.100KHz SWT:Auto

2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

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

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

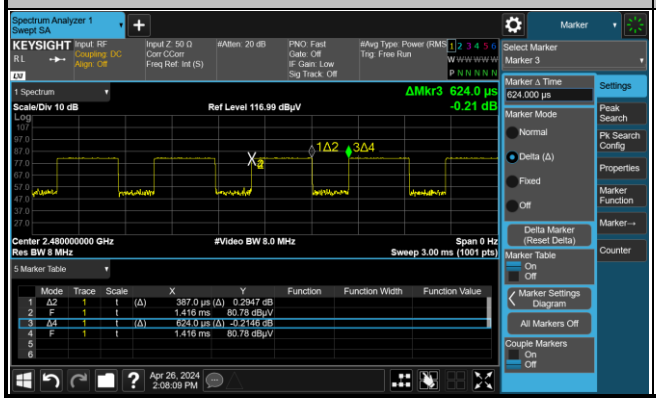
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH39 2480MHz	
7	Horizontal	Vertical
Peak		

Appendix E. Duty Cycle Plots

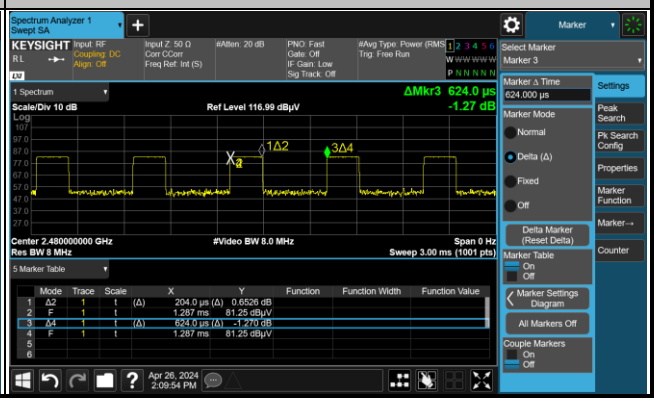
Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
6	Bluetooth - LE for 1Mbps	61.72	387	2.58	2.7kHz
6	Bluetooth - LE for 2Mbps	32.69	204	4.90	5.1kHz
7	Bluetooth - LE for 1Mbps	62.02	387	2.58	2.7kHz
7	Bluetooth - LE for 2Mbps	32.69	204	4.90	5.1kHz

<Ant. 6>

Bluetooth - LE for 1Mbps

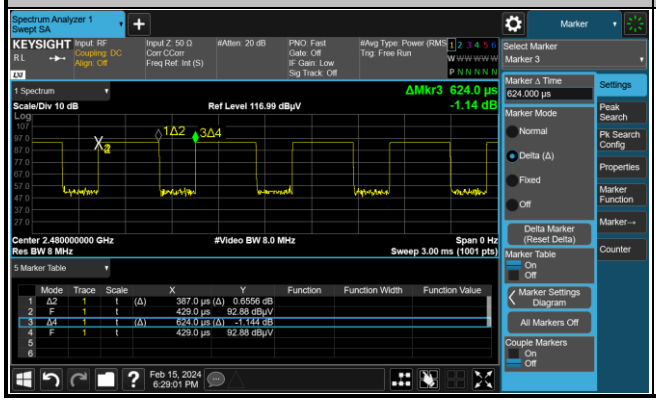


Bluetooth - LE for 2Mbps

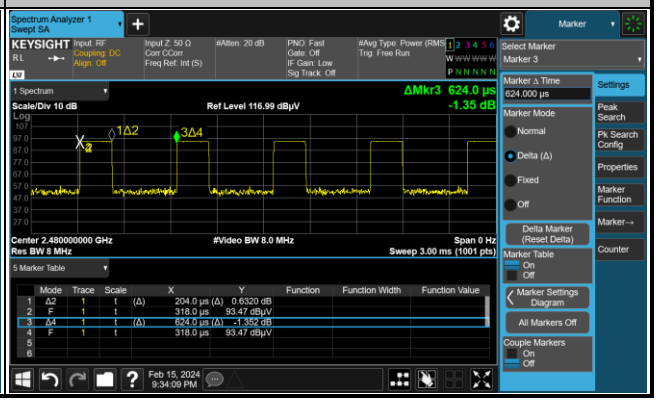


<Ant. 7>

Bluetooth - LE for 1Mbps



Bluetooth - LE for 2Mbps



Appendix G. Spot Check Evaluation on TC58BE

Conducted power test and radiated spurious emission test configurations were selected from the worst cases identified in the reference model and tested to demonstrate the test data from reference model remains representative for the variant model.

The deviation between the spot check and the referenced values is within 3dB, therefore data referencing is justified according to the guidance in the ECR inquiry

Mode	Test Item	UZ7TC58AE Reference Worst mode Test Result	UZ7TC58BE Variant Check Test Result	Deviation	Limit (dB)
BT	Number of Channels	79	79	0	Within the authorized block
	Hopping Channel Separation	1.007	1.303	0.296	Within the authorized block
	Dwell Time of Each Channel	0.31	0.31	0	Within the authorized block
	20dB Bandwidth	0.872	0.87	0.002	Within the authorized frequency block
	99% Bandwidth	0.803	0.798	0.005	Within the authorized frequency block
	Conducted Band Edges	-43.53	-45.87	2.34	Deviation (ddB) < 3 dB
	Conducted Spurious Emission	-36.86	-38.91	2.05	Deviation (ddB) < 3 dB
	Peak Output Power	7.18	6.7	0.48	Deviation (ddB) < 3 dB
	Radiated Band Edges and Radiated Spurious Emission	48.41	47.65	0.76	Deviation (ddB) < 3 dB
	AC Conducted Emission	17.48	19.72	2.24	Deviation (ddB) < 3 dB
BLE	6dB Bandwidth	1.142	1.155	0.013	Within the authorized frequency block
	99% Bandwidth	1.998	1.996	0.002	Within the authorized frequency block
	Power Spectral Density	5.44	6.07	0.63	Deviation (ddB) < 3 dB
	Conducted Band Edges	-43.68	-46.24	2.56	Deviation (ddB) < 3 dB
	Conducted Spurious Emission	-41.5	-38.88	2.62	Deviation (ddB) < 3 dB
	Peak Output Power	6.3	5.9	0.4	Deviation (ddB) < 3 dB
	Radiated Band Edges and Spurious Emission	50.56	50.49	0.07	Deviation (ddB) < 3 dB
	AC Conducted Emission	17.48	19.72	2.24	Deviation (ddB) < 3 dB
WIFI 2.4G	6dB Bandwidth	9.03	8.54	0.47	Within the authorized frequency block
	99% Bandwidth	13.59	13.52	0.07	Within the authorized frequency block
	Power Spectral Density	1.78	1.06	0.72	Deviation (ddB) < 3 dB
	Conducted Band Edges	-30.53	-30.89	0.36	Deviation (ddB) < 3 dB
	Conducted Spurious Emission	-46.39	-48.89	2.50	Deviation (ddB) < 3 dB
	Peak Output Power	23.41	23.31	0.1	Deviation (ddB) < 3 dB
	Radiated Band Edges and Spurious Emission	59.99	59.85	0.14	Deviation (ddB) < 3 dB
	AC Conducted Emission	17.48	19.72	2.24	Deviation (ddB) < 3 dB

Mode	Test Item	UZ7TC58AE Reference Worst mode Test Result	UZ7TC58BE Variant Check Test Result	Deviation	Limit (dB)
WIFI 5G	26dB Bandwidth	167.75	165.22	2.53	Within the authorized frequency block
	99% Bandwidth	154.89	155.47	0.58	Within the authorized frequency block
	Power Spectral Density	-2.9	-1.17	1.73	Deviation (ddB) < 3 dB
	Conducted Output Power	17.81	17.71	0.1	Deviation (ddB) < 3 dB
	Unwanted Emissions	63.2	64.81	1.61	Deviation (ddB) < 3 dB
	AC Conducted Emission	18.52	19.96	1.44	Deviation (ddB) < 3 dB
WIFI 6G UNII-8 (802.11ax HE20 CH189 6895MHz)	26dB Emission Bandwidth	20.75	21.14	0.39	Within the authorized frequency block
	99% Occupied Bandwidth	18.88	18.92	0.04	Within the authorized frequency block
	Conducted Output Power	7.66	7.56	0.1	Deviation (ddB) < 3 dB
	Fundamental Maximum EIRP	9.8	9.7	0.1	Deviation (ddB) < 3 dB
	Fundamental Power Spectral Density	-1.04	-1.41	0.37	Deviation (ddB) < 3 dB
	In-Band Emissions	-10.04	-12.35	2.31	Deviation (ddB) < 3 dB
WIFI 6G UNII-8 (802.11ax HE80 CH215 7025MHz)	Unwanted Emissions	72.37	72.28	0.09	Deviation (ddB) < 3 dB
WIFI 6G	AC Conducted Emission	18.52	19.96	1.44	Deviation (ddB) < 3 dB

List of Measuring Equipment

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	Feb. 08, 2024	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Dec. 06, 2023	Feb. 08, 2024	Dec. 05, 2024	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Oct. 26, 2023	Feb. 08, 2024	Oct. 25, 2024	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 22, 2023	Feb. 08, 2024	Nov. 21, 2024	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	Feb. 08, 2024	N/A	Conduction (CO05-HY)
ISN Cable	MVE	RG-400	200260	N/A	Dec. 28, 2023	Feb. 08, 2024	Dec. 27, 2024	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	00691	9kHz-200MHz	Jul. 28, 2023	Feb. 08, 2024	Jul. 27, 2024	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 28, 2023	Feb. 08, 2024	Dec. 27, 2024	Conduction (CO05-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	N/A	Oct. 06, 2023	Apr. 26, 2024 ~ Apr. 27, 2024	Oct. 05, 2024	Radiation (03CH20-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Sep. 12, 2023	Apr. 26, 2024 ~ Apr. 27, 2024	Sep. 11, 2024	Radiation (03CH20-HY)
Preamplifier	EMEC	EM18G40G	060801	18GHz~40GHz	Jun. 27, 2023	Apr. 26, 2024 ~ Apr. 27, 2024	Jun. 26, 2024	Radiation (03CH20-HY)
Controller	ChainTek	3000-1	N/A	Control Turn table & Ant Mast	N/A	Apr. 26, 2024 ~ Apr. 27, 2024	N/A	Radiation (03CH20-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Apr. 26, 2024 ~ Apr. 27, 2024	N/A	Radiation (03CH20-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Apr. 26, 2024 ~ Apr. 27, 2024	N/A	Radiation (03CH20-HY)
Signal Analyzer	Keysight	N9010B	MY60240520	N/A	Dec. 12, 2023	Apr. 26, 2024 ~ Apr. 27, 2024	Dec. 11, 2024	Radiation (03CH20-HY)
Bilog Antenna	TESEQ	CBL 6111D&00802 N1D01N-06	55606 & 08	30MHz~1GHz	Oct. 20, 2023	Apr. 26, 2024 ~ Apr. 27, 2024	Oct. 19, 2024	Radiation (03CH20-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	02360	1GHz-18GHz	Oct. 30, 2023	Apr. 26, 2024 ~ Apr. 27, 2024	Oct. 29, 2024	Radiation (03CH20-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	1224	18GHz-40GHz	Jul. 10, 2023	Apr. 26, 2024 ~ Apr. 27, 2024	Jul. 09, 2024	Radiation (03CH20-HY)
Preamplifier	COM-POWER	PAM-103	18020201	1MHz-1000MHz	Jan. 01, 2024	Apr. 26, 2024 ~ Apr. 27, 2024	Dec. 31, 2024	Radiation (03CH20-HY)
Amplifier	EMCI	EMC118A45S E	980792	N/A	Nov. 13, 2023	Apr. 26, 2024 ~ Apr. 27, 2024	Nov. 12, 2024	Radiation (03CH20-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	519229/2,804 015/2,804027 /2	N/A	Jan. 17, 2024	Apr. 26, 2024 ~ Apr. 27, 2024	Jan. 16, 2025	Radiation (03CH20-HY)
Hygrometer	TECPEL	DTM-303A	TP211382	N/A	Mar. 27, 2024	Apr. 26, 2024 ~ Apr. 27, 2024	Mar. 26, 2025	Radiation (03CH20-HY)
Software	Audix	N/A	RK-002156	N/A	N/A	Apr. 26, 2024 ~ Apr. 27, 2024	N/A	Radiation (03CH20-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 07, 2023	Apr. 22, 2024 ~ Apr. 23, 2024	Nov. 06, 2024	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	17I00015SNO 35 (NO:109)	10MHz~6GHz	Jan. 15, 2024	Apr. 22, 2024 ~ Apr. 23, 2024	Jan. 14, 2025	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV3044	101466	10HZ~44GHZ	Jan. 24, 2024	Apr. 22, 2024 ~ Apr. 23, 2024	Jan. 23, 2025	Conducted (TH05-HY)

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