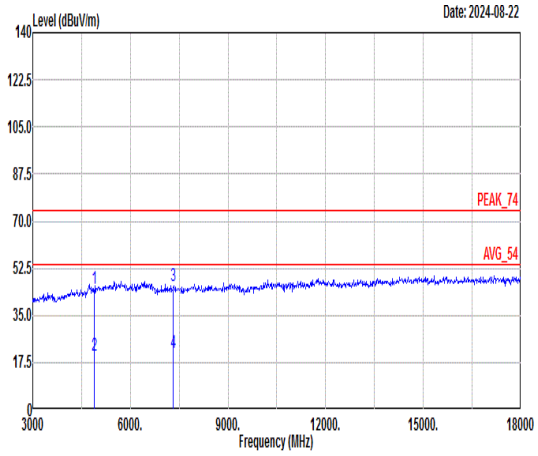
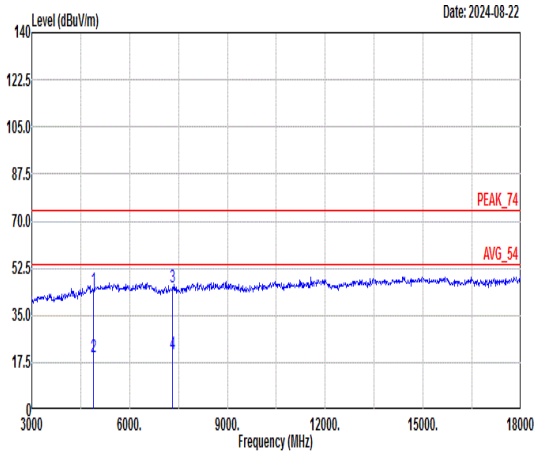
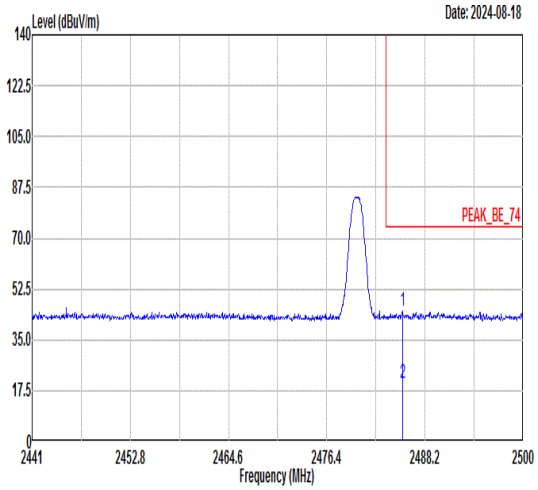
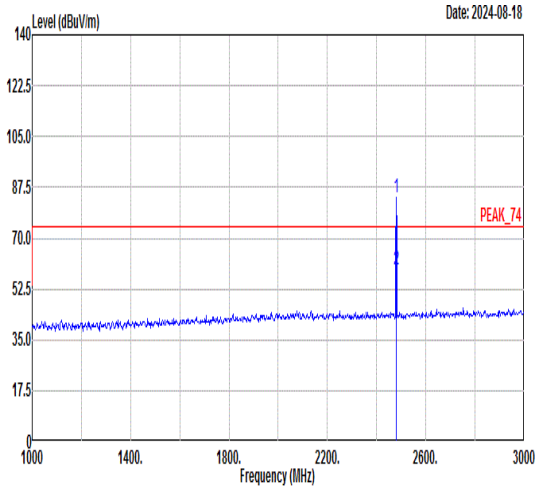
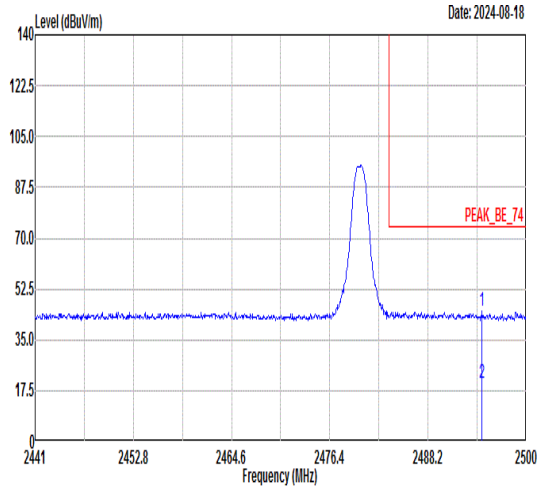
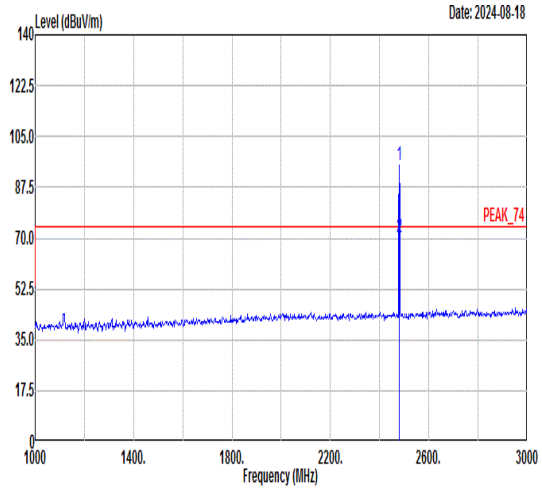
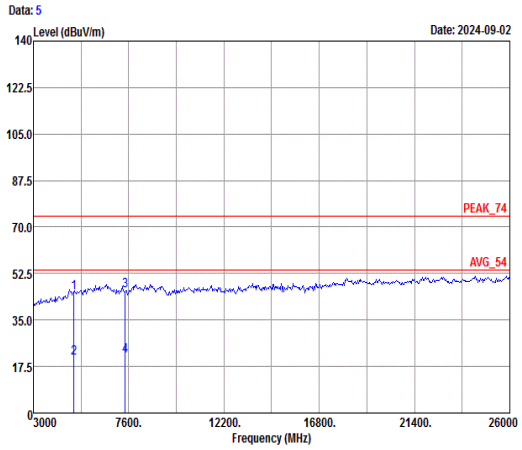
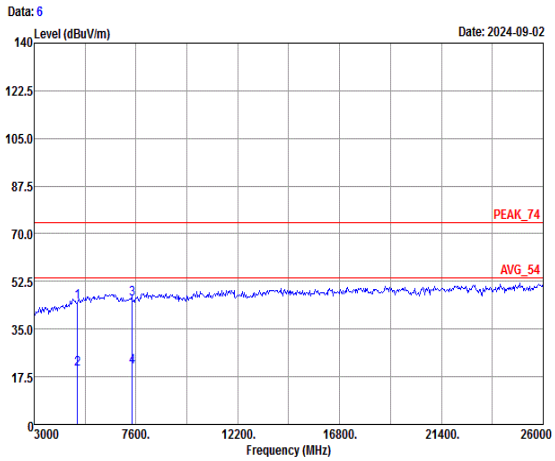
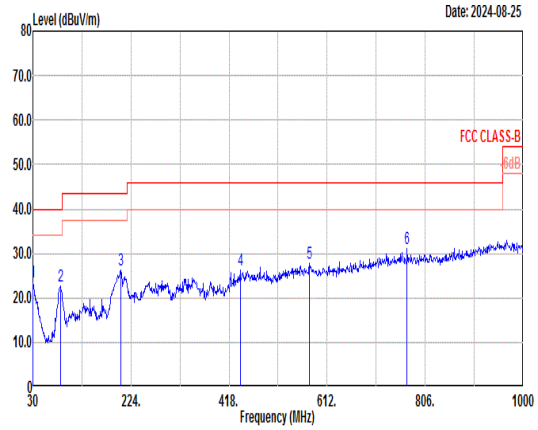
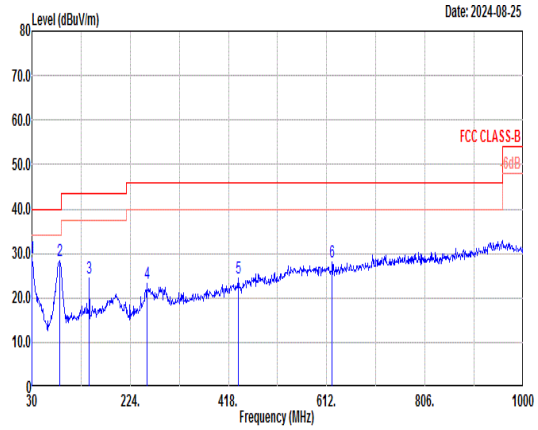
Mode	12	
	Harmonic	
	2400-2483.5_Bluetooth _CH39_2441MHz	
ANT	2	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4882.00 44.99 74.00 -29.01 51.92 35.92 8.70 51.55 --- --- Peak 2 4882.00 20.20 54.00 -33.80 27.13 35.92 8.70 51.55 --- --- Average 3 7323.00 45.92 74.00 -28.08 50.03 36.87 10.18 51.16 --- --- Peak 4 7323.00 21.13 54.00 -32.87 25.24 36.87 10.18 51.16 --- --- Average	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4882.00 44.38 74.00 -29.62 51.31 35.92 8.70 51.55 --- --- Peak 2 4882.00 19.59 54.00 -34.41 26.52 35.92 8.70 51.55 --- --- Average 3 7323.00 45.21 74.00 -28.79 49.32 36.87 10.18 51.16 --- --- Peak 4 7323.00 20.42 54.00 -33.58 24.53 36.87 10.18 51.16 --- --- Average

Mode	13	
	Band Edge	
	2400-2483.5_Bluetooth _CH78_2480MHz	
ANT	2	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin (dB) Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dBuV dB/m dB dB cm deg 1 2485.49 44.92 74.00 -29.08 42.35 30.70 5.46 33.59 100 147 PEAK 2 2485.49 20.13 54.00 -33.87 17.56 30.70 5.46 33.59 100 147 AVERAGE	 Freq Level Limit Line Margin (dB) Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dBuV dB/m dB dB cm deg 1 2480.00 84.21 ------ ------ 81.64 30.70 5.46 33.59 100 147 PEAK 2 2480.00 59.42 ------ ------ 56.85 30.70 5.46 33.59 100 147 AVERAGE

Mode	13	
	Band Edge	
	2400-2483.5_Bluetooth _CH78_2480MHz	
ANT	2	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin (dB) Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dBuV dB/m dB dB cm deg 1 2494.69 44.84 74.00 -29.16 42.27 30.70 5.47 33.60 100 180 PEAK 2 2494.69 20.05 54.00 -33.95 17.48 30.70 5.47 33.60 100 180 AVERAGE	 Freq Level Limit Line Margin (dB) Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dBuV dB/m dB dB cm deg 1 2480.00 95.10 ------ ------ 92.53 30.70 5.46 33.59 100 180 PEAK 2 2480.00 70.31 ------ ------ 67.74 30.70 5.46 33.59 100 180 AVERAGE

Mode	13	
	Harmonic	
	2400-2483.5_Bluetooth _CH78_2480MHz	
ANT	2	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Over Limit Limit Line ReadLevel Antenna Factor Cable Loss Preamp Factor A/Pos T/Pos Remark MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 4960.00 45.30 -28.70 74.00 51.77 36.64 8.41 51.52 --- --- Peak 2 4960.00 20.51 -33.49 54.00 26.98 36.64 8.41 51.52 --- --- Average 3 * 7440.00 46.17 -27.83 74.00 50.43 36.76 10.17 51.19 --- --- Peak 4 7440.00 21.38 -32.62 54.00 25.64 36.76 10.17 51.19 --- --- Average	 Freq Level Over Limit Limit Line ReadLevel Antenna Factor Cable Loss Preamp Factor A/Pos T/Pos Remark MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 4960.00 45.03 -28.97 74.00 51.50 36.64 8.41 51.52 --- --- Peak 2 4960.00 20.24 -33.76 54.00 26.71 36.64 8.41 51.52 --- --- Average 3 * 7440.00 45.83 -28.17 74.00 50.09 36.76 10.17 51.19 --- --- Peak 4 7440.00 21.04 -32.96 54.00 25.30 36.76 10.17 51.19 --- --- Average

Mode	14	
	LF	
	2400-2483.5_Bluetooth _CH78_2480MHz	
ANT	2	
Pol.	Horizontal	Vertical
QP/ Peak		

	Freq	Level	Limit Line	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	23.45	40.00	-16.55	29.32	25.20	0.53	31.60	---	---	Peak
2	84.32	22.57	40.00	-17.43	39.46	14.00	0.91	31.80	---	---	Peak
3	203.63	26.15	43.50	-17.35	41.24	15.06	1.45	31.60	---	---	Peak
4	440.31	26.38	46.00	-19.62	32.80	22.90	2.18	31.50	---	---	Peak
5	577.08	27.79	46.00	-18.21	30.37	26.06	2.51	31.15	---	---	Peak
6	770.11	31.05	46.00	-14.95	30.92	28.40	2.89	31.16	---	---	Peak

	Freq	Level	Limit Line	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	28.83	40.00	-11.17	34.70	25.20	0.53	31.60	---	---	Peak
2	84.32	28.42	40.00	-11.58	45.31	14.00	0.91	31.80	---	---	Peak
3	143.49	24.42	43.50	-19.08	37.52	17.40	1.23	31.73	---	---	Peak
4	256.98	23.34	46.00	-22.66	33.90	19.36	1.67	31.59	---	---	Peak
5	437.40	24.46	46.00	-21.54	30.89	22.90	2.17	31.50	---	---	Peak
6	622.67	28.00	46.00	-18.00	30.73	25.82	2.60	31.15	---	---	Peak

Appendix C2. Radiated Spurious Emission Test Data

<MIMO Mode>

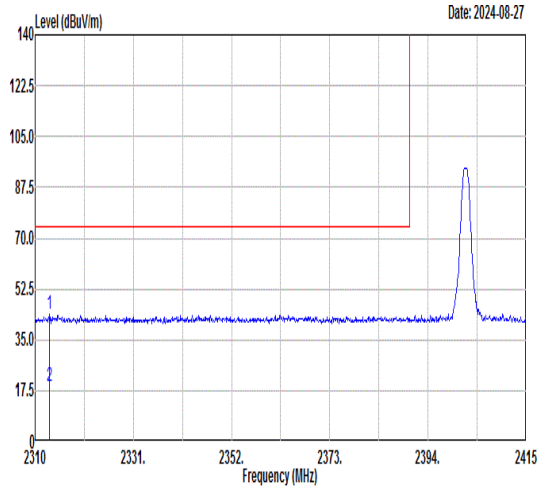
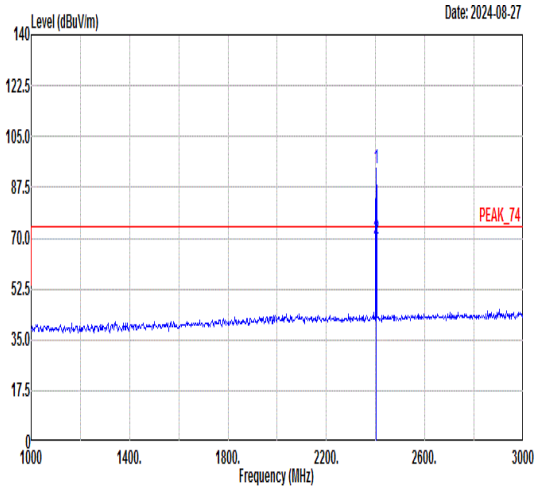
Test Engineer :	Wenbo Xiao	**Relative Humidity :**	50%
		Temperature :	20℃~22℃

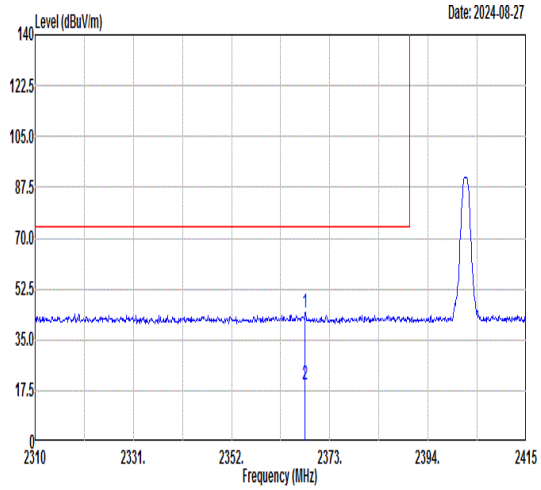
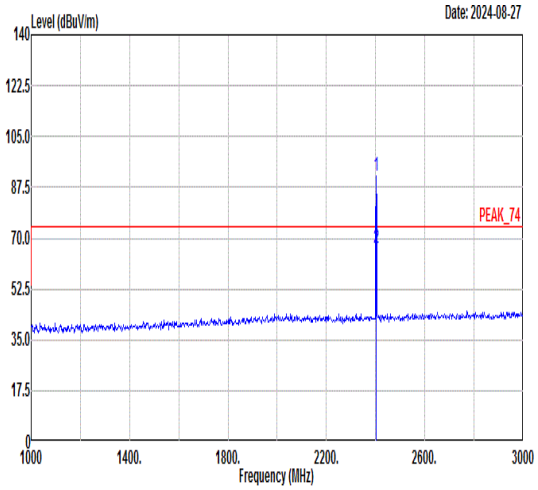
Radiated Spurious Emission Test Modes

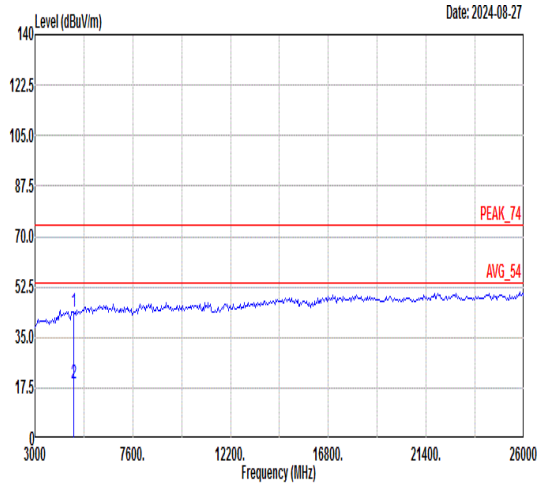
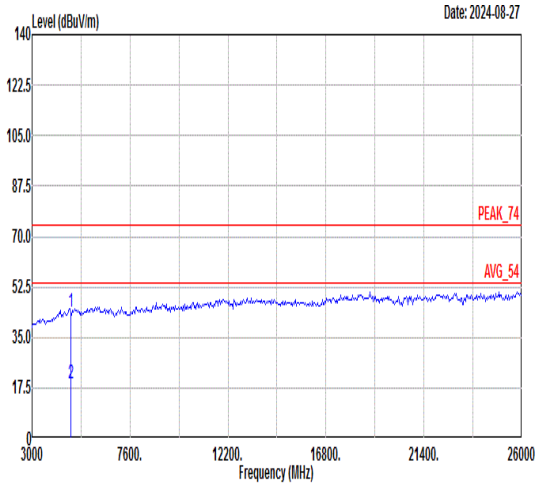
Mode	Band (MHz)	Antenna	Modulation	Channel	Frequency	Data Rate	RU	Remark
Mode 51	2400-2483.5	0+2	Bluetooth BR_GFSK	00	2402	1DH5	-	-
Mode 52	2400-2483.5	0+2	Bluetooth BR_GFSK	39	2441	1DH5	-	-
Mode 53	2400-2483.5	0+2	Bluetooth BR_GFSK	78	2480	1DH5	-	-
Mode 54	2400-2483.5	0+2	Bluetooth BR_GFSK-LF	00	2402	1DH5	-	LF

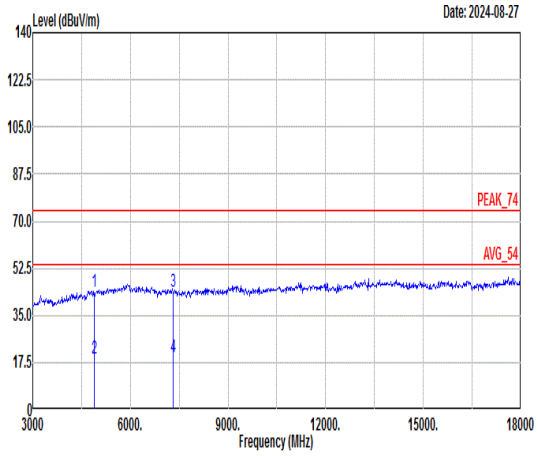
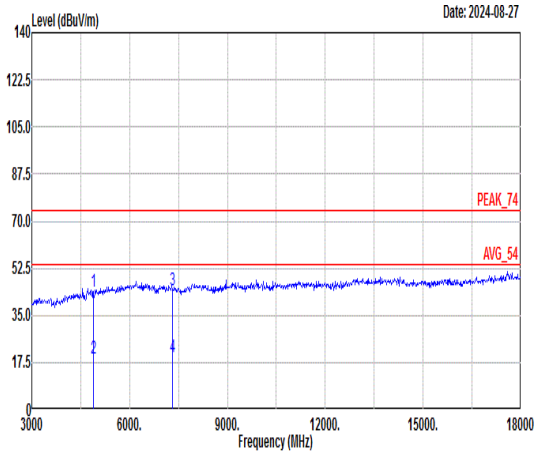
Summary of each worse mode

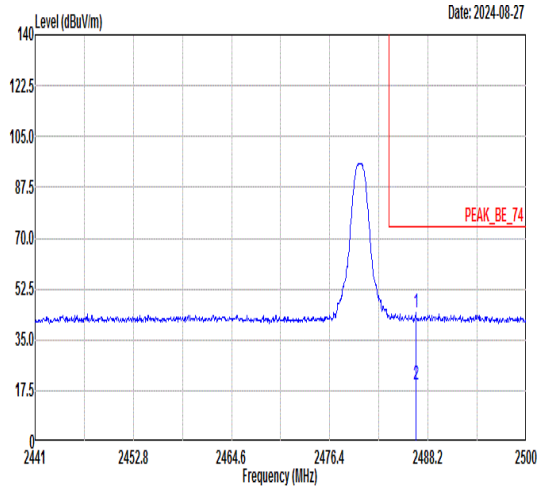
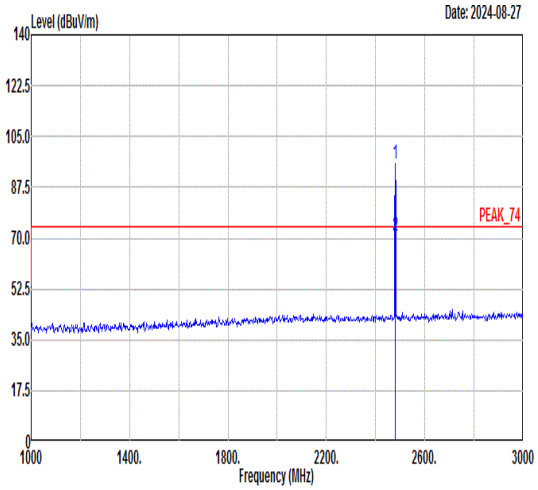
Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	Remark
51	Bluetooth BR_GFSK	00	2367.75	44.53	74.00	-29.47	V	PEAK	Pass	Band Edge
	Bluetooth BR_GFSK	00	4804.00	43.79	74.00	-30.21	V	Peak	Pass	Harmonic
52	Bluetooth BR_GFSK	39	-	-	-	-	-	-	-	Band Edge
	Bluetooth BR_GFSK	39	7323.00	44.34	74.00	-29.66	V	Peak	Pass	Harmonic
53	Bluetooth BR_GFSK	78	2486.73	44.45	74.00	-29.55	H	PEAK	Pass	Band Edge
	Bluetooth BR_GFSK	78	4960.00	44.18	74.00	-29.82	V	Peak	Pass	Harmonic
54	Bluetooth BR_GFSK-LF	00	84.32	28.10	40.00	-11.90	V	Peak	Pass	LF

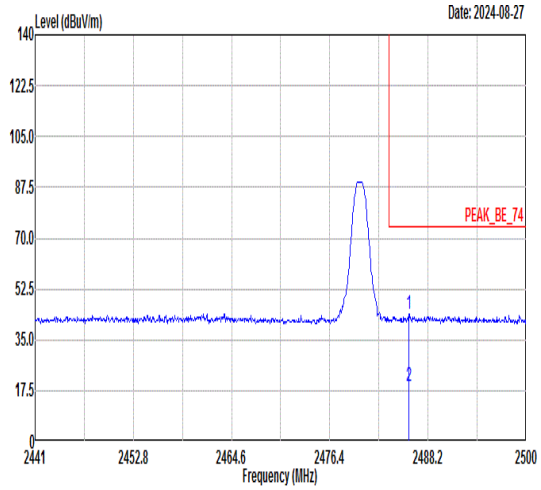
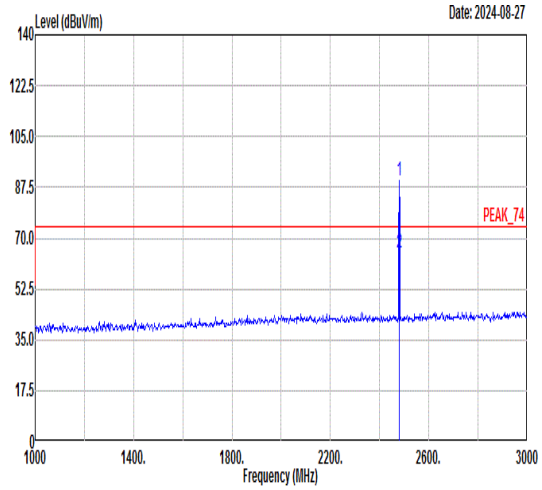
Mode	51	
	Band Edge	
	2400-2483.5_Bluetooth BR_GFSK_CH00_2402MHz	
ANT	0+2	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin (dB) Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dBuV dB/m dB dB cm deg 1 2313.05 43.73 74.00 -30.27 41.18 30.74 5.30 33.49 255 298 PEAK 2 2313.05 18.94 54.00 -35.06 16.39 30.74 5.30 33.49 255 298 AVERAGE	 Freq Level Limit Line Margin (dB) Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dBuV dB/m dB dB cm deg 1 2402.00 94.28 ------ ------ 91.73 30.72 5.37 33.54 255 298 PEAK 2 2402.00 69.49 ------ ------ 66.94 30.72 5.37 33.54 255 298 AVERAGE

Mode	51	
	Band Edge	
	2400-2483.5_Bluetooth BR_GFSK_CH00_2402MHz	
ANT	0+2	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin (dB) Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dBuV dB/m dB dB cm deg 1 2367.75 44.53 74.00 -29.47 41.98 30.73 5.34 33.52 140 318 PEAK 2 2367.75 19.74 54.00 -34.26 17.19 30.73 5.34 33.52 140 318 AVERAGE	 Freq Level Limit Line Margin (dB) Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dBuV dB/m dB dB cm deg 1 2402.00 91.42 ------ ------ 88.87 30.72 5.37 33.54 140 318 PEAK 2 2402.00 66.63 ------ ------ 64.08 30.72 5.37 33.54 140 318 AVERAGE

Mode	51	
	Harmonic	
	2400-2483.5_Bluetooth BR_GFSK_CH00_2402MHz	
ANT	0+2	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4804.00 43.71 74.00 -30.29 50.62 35.73 8.94 51.58 --- --- Peak 2 4804.00 18.92 54.00 -35.08 25.83 35.73 8.94 51.58 --- --- Average	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4804.00 43.79 74.00 -30.21 50.70 35.73 8.94 51.58 --- --- Peak 2 4804.00 19.00 54.00 -35.00 25.91 35.73 8.94 51.58 --- --- Average

Mode	52	
	Harmonic	
	2400-2483.5_Bluetooth BR_GFSK_CH39_2441MHz	
ANT	0+2	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4882.00 43.74 74.00 -30.26 63.99 35.92 8.70 64.87 --- --- Peak 2 4882.00 18.95 54.00 -35.05 39.20 35.92 8.70 64.87 --- --- Average 3 7323.00 44.11 74.00 -29.89 61.92 36.87 10.18 64.86 --- --- Peak 4 7323.00 19.32 54.00 -34.68 37.13 36.87 10.18 64.86 --- --- Average	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4882.00 44.00 74.00 -30.00 64.25 35.92 8.70 64.87 --- --- Peak 2 4882.00 19.21 54.00 -34.79 39.46 35.92 8.70 64.87 --- --- Average 3 7323.00 44.34 74.00 -29.66 62.15 36.87 10.18 64.86 --- --- Peak 4 7323.00 19.55 54.00 -34.45 37.36 36.87 10.18 64.86 --- --- Average

Mode	53	
	Band Edge	
	2400-2483.5_Bluetooth BR_GFSK_CH78_2480MHz	
ANT	0+2	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2486.73 44.45 74.00 -29.55 41.88 30.70 5.46 33.59 292 204 PEAK 2 2486.73 19.66 54.00 -34.34 17.09 30.70 5.46 33.59 292 204 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2480.00 95.76 ------ ------ 93.19 30.70 5.46 33.59 292 204 PEAK 2 2480.00 70.97 54.00 16.97 68.40 30.70 5.46 33.59 292 204 AVERAGE

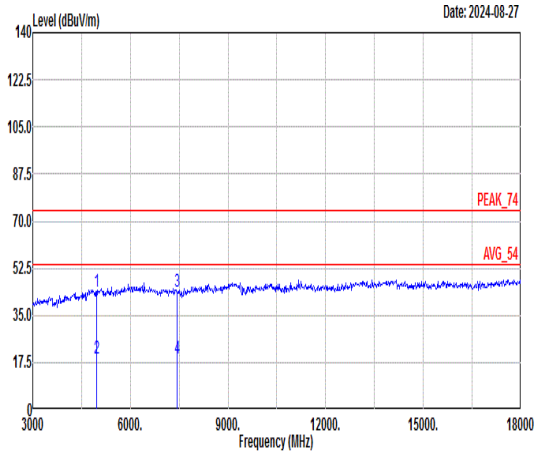
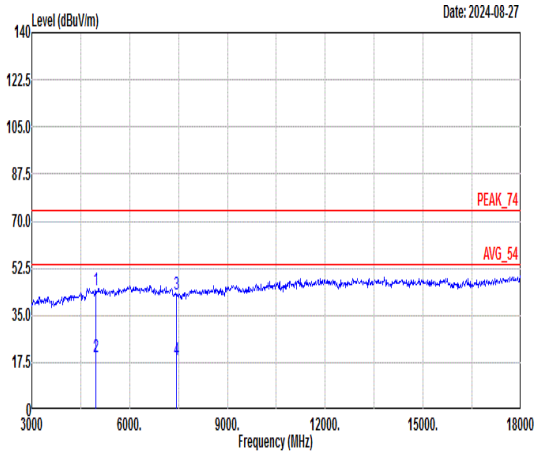
Mode	53	
	Band Edge	
	2400-2483.5_Bluetooth BR_GFSK_CH78_2480MHz	
ANT	0+2	
Pol.	Vertical	Fundamental
Peak		

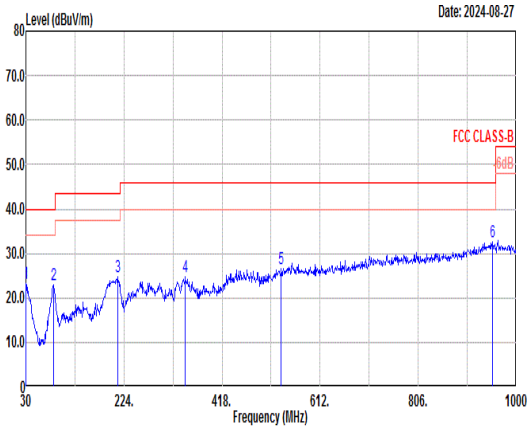
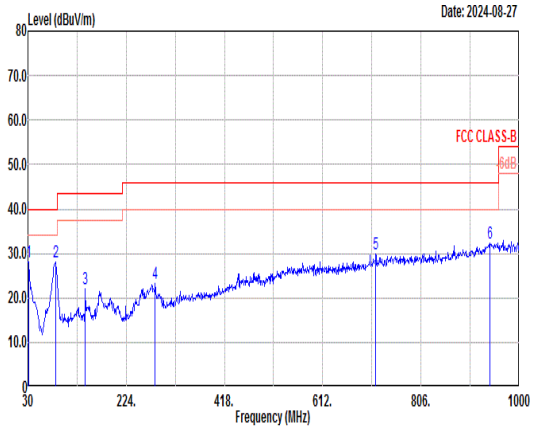
Vertical:

	Freq	Level	Limit Line	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg	
1	2485.90	43.62	74.00	-30.38	41.05	30.70	5.46	33.59	132	278	PEAK
2	2485.90	18.83	74.00	-55.17	16.26	30.70	5.46	33.59	132	278	AVERAGE

Fundamental:

	Freq	Level	Limit Line	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg	
1	2480.00	89.74	------	------	87.17	30.70	5.46	33.59	132	278	PEAK
2	2480.00	64.95	74.00	-9.05	62.38	30.70	5.46	33.59	132	278	AVERAGE

Mode	53	
	Harmonic	
	2400-2483.5_Bluetooth BR_GFSK_CH78_2480MHz	
ANT	0+2	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4960.00 44.03 74.00 -29.97 64.37 36.10 8.46 64.90 --- --- Peak 2 4960.00 19.24 54.00 -34.76 39.58 36.10 8.46 64.90 --- --- Average 3 7440.00 43.88 74.00 -30.12 61.75 36.82 10.17 64.86 --- --- Peak 4 7440.00 19.09 54.00 -34.91 36.96 36.82 10.17 64.86 --- --- Average	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4960.00 44.18 74.00 -29.82 64.52 36.10 8.46 64.90 --- --- Peak 2 4960.00 19.39 54.00 -34.61 39.73 36.10 8.46 64.90 --- --- Average 3 7440.00 43.05 74.00 -30.95 60.92 36.82 10.17 64.86 --- --- Peak 4 7440.00 18.26 54.00 -35.74 36.13 36.82 10.17 64.86 --- --- Average

Mode	54	
	LF	
	2400-2483.5_Bluetooth BR_GFSK-LF_CH00_2402MHz	
ANT	0+2	
Pol.	Horizontal	Vertical
QP/ Peak		

Horizontal:

	Freq	Level	Limit Line	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	23.13	40.00	-16.87	29.00	25.20	0.53	31.60	---	---	Peak
2	84.32	22.98	40.00	-17.02	39.87	14.00	0.91	31.80	---	---	Peak
3	212.36	24.84	43.50	-18.66	40.05	14.90	1.49	31.60	---	---	Peak
4	345.25	24.70	46.00	-21.30	33.85	20.30	1.96	31.41	---	---	Peak
5	535.37	26.65	46.00	-19.35	31.29	24.20	2.42	31.26	---	---	Peak
6	953.44	32.65	46.00	-13.35	29.22	31.00	3.24	30.81	---	---	Peak

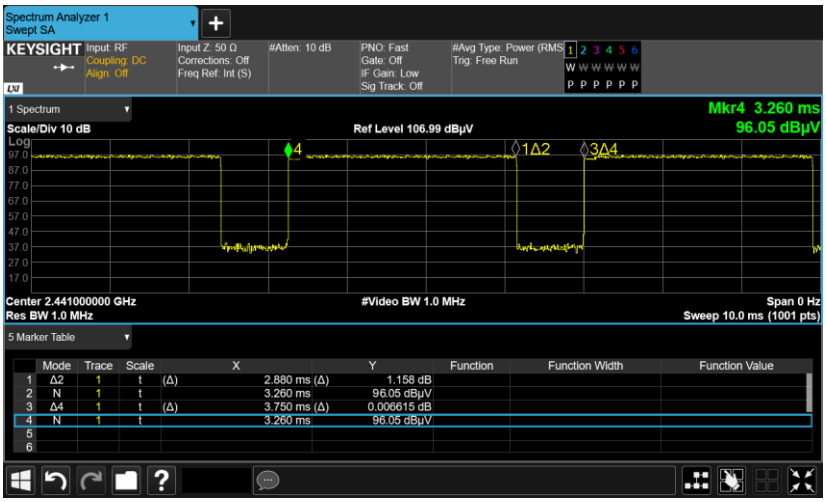
Vertical:

	Freq	Level	Limit Line	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg	
1	30.97	28.05	40.00	-11.95	34.43	24.70	0.54	31.62	---	---	Peak
2	84.32	28.10	40.00	-11.90	44.99	14.00	0.91	31.80	---	---	Peak
3	143.49	21.90	43.50	-21.60	35.00	17.40	1.23	31.73	---	---	Peak
4	281.23	23.15	46.00	-22.85	34.21	18.74	1.74	31.54	---	---	Peak
5	716.76	29.98	46.00	-16.02	31.41	26.98	2.79	31.20	---	---	Peak
6	942.77	32.35	46.00	-13.65	29.46	30.48	3.22	30.81	---	---	Peak

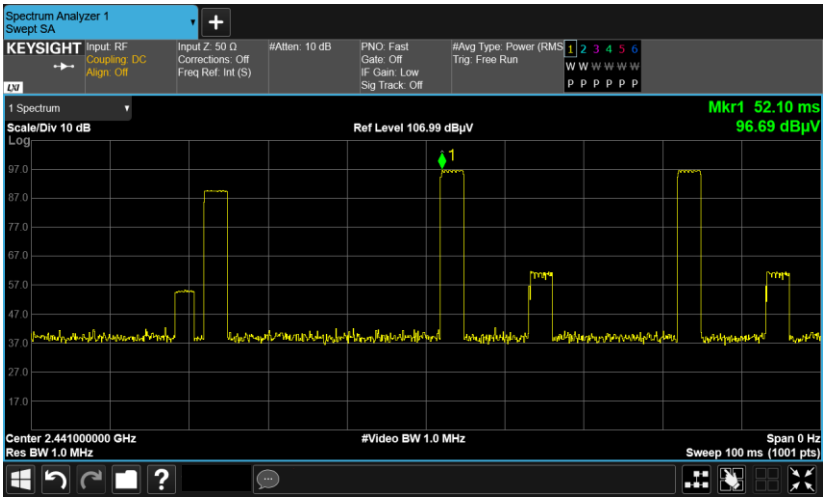
Appendix D. Duty Cycle Plots

<SISO_ANT0>

3DH5 on time (One Pulse) Plot



3DH5 on time (Count Pulses) Plot

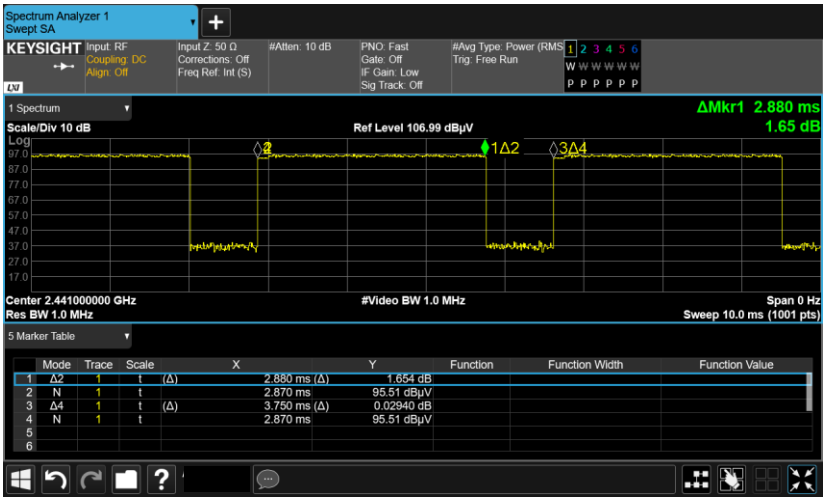


Note:

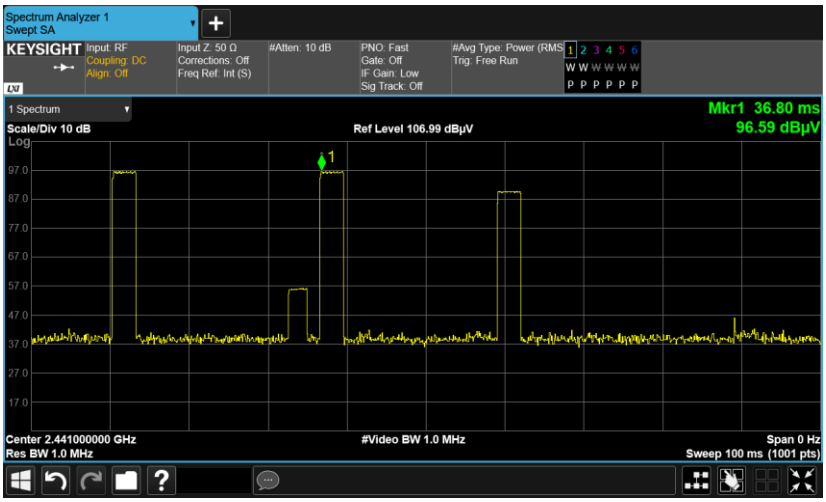
1. Worst case Duty cycle = on time/100 milliseconds = 2 * 2.88 / 100 = 5.76 %
2. Worst case Duty cycle correction factor = 20*log(Duty cycle) = -24.79 dB
3. 3DH5 has the highest duty cycle worst case and is reported.

<SISO_ANT2>

3DH5 on time (One Pulse) Plot



3DH5 on time (Count Pulses) Plot

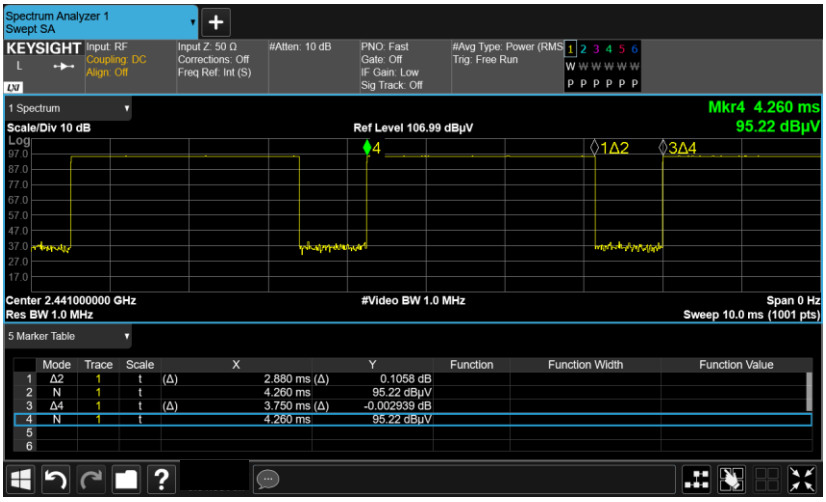


Note:

1. Worst case Duty cycle = on time/100 milliseconds = 2 * 2.88 / 100 = 5.76 %
2. Worst case Duty cycle correction factor = 20*log(Duty cycle) = -24.79 dB
3. 3DH5 has the highest duty cycle worst case and is reported.

<MIMO ANT0+2>

DH5 on time (One Pulse) Plot



DH5 on time (Count Pulses) Plot

Note:

1. Worst case Duty cycle = on time/100 milliseconds = 2 * 2.88 / 100 = 5.76 %
2. Worst case Duty cycle correction factor = 20*log(Duty cycle) = -24.79 dB
3. DH5 has the highest duty cycle worst case and is reported.