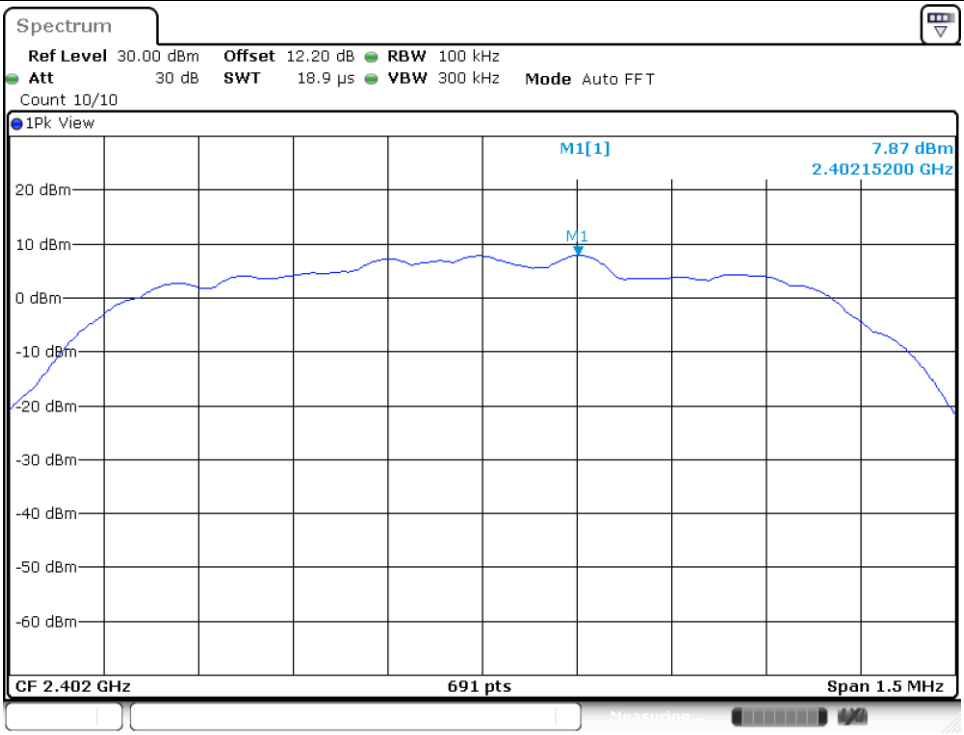
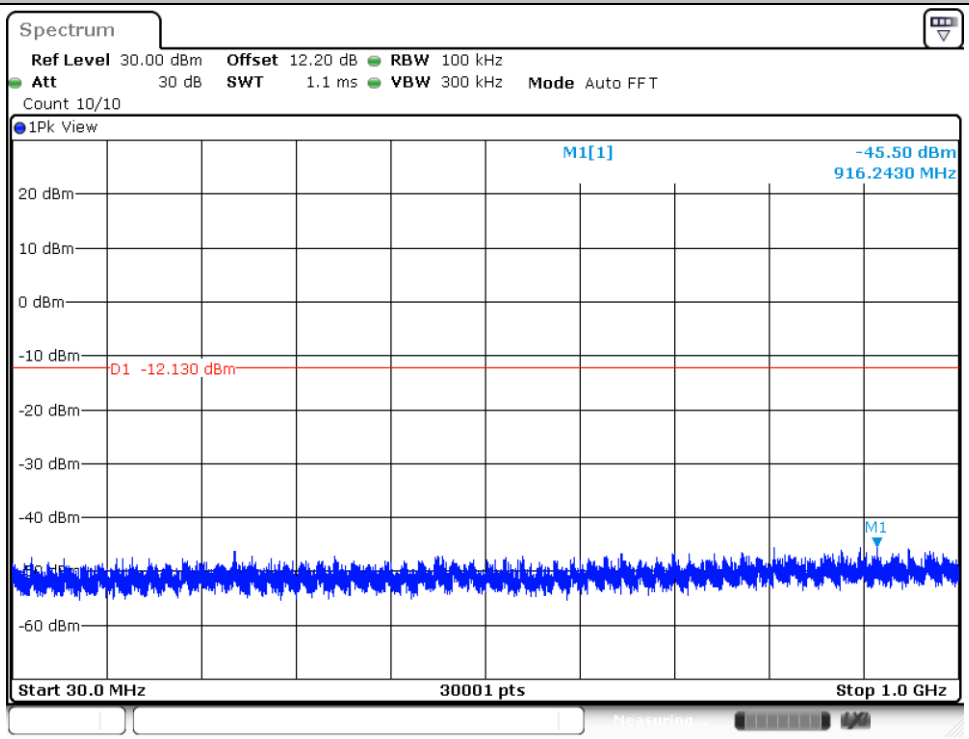
3DH5_Ant2_2402_0~Reference



Date: 20.FEB.2025 18:37:04

3DH5_Ant2_2402_30~1000



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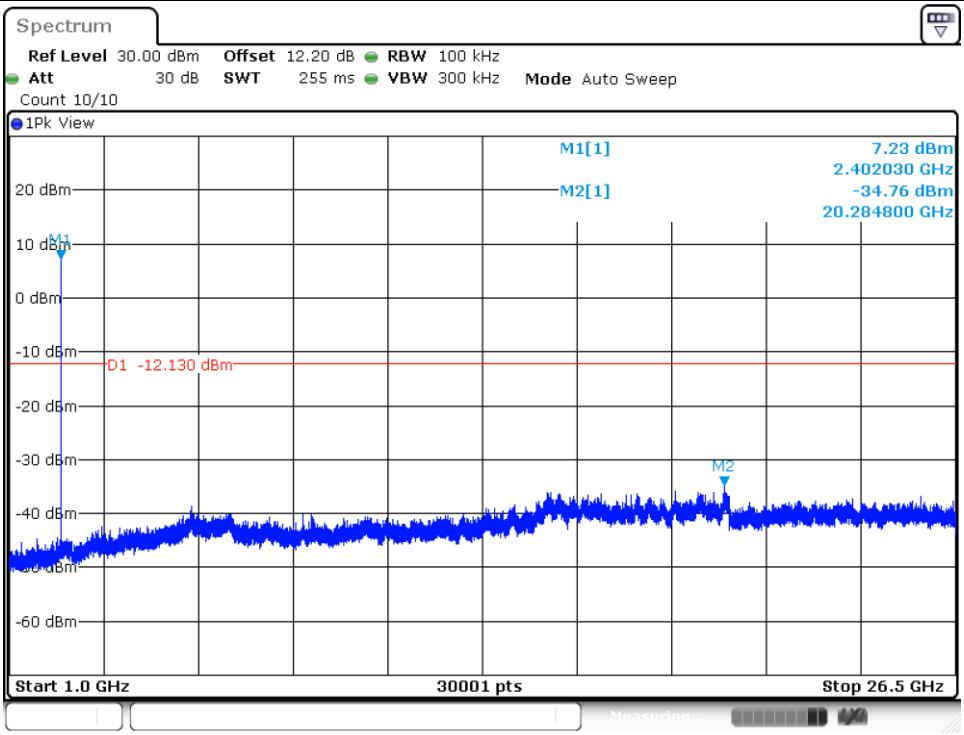
3DH5_Ant2_2402_1000~26500



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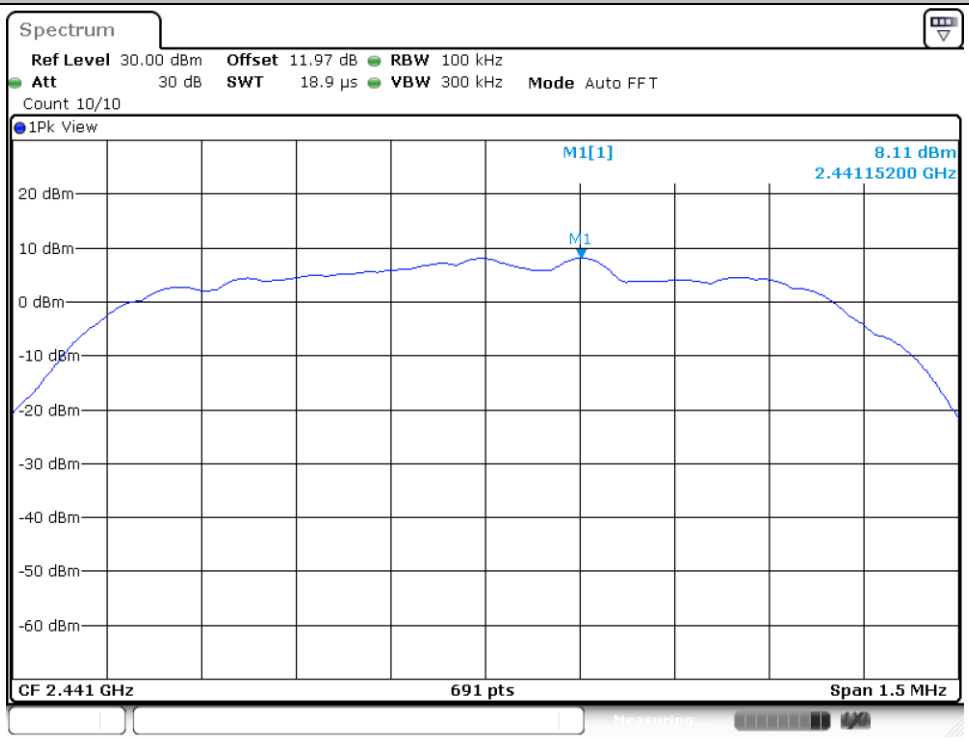
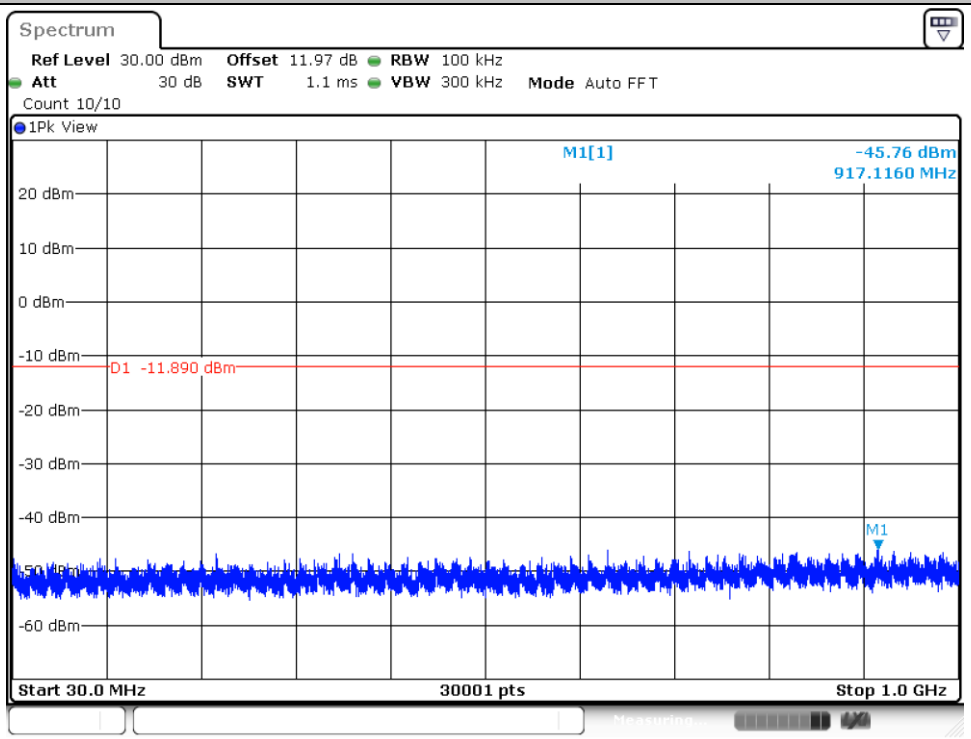
3DH5_Ant2_2441_0~Reference



Date: 20.FEB.2025 18:02:29

3DH5_Ant2_2441_30~1000



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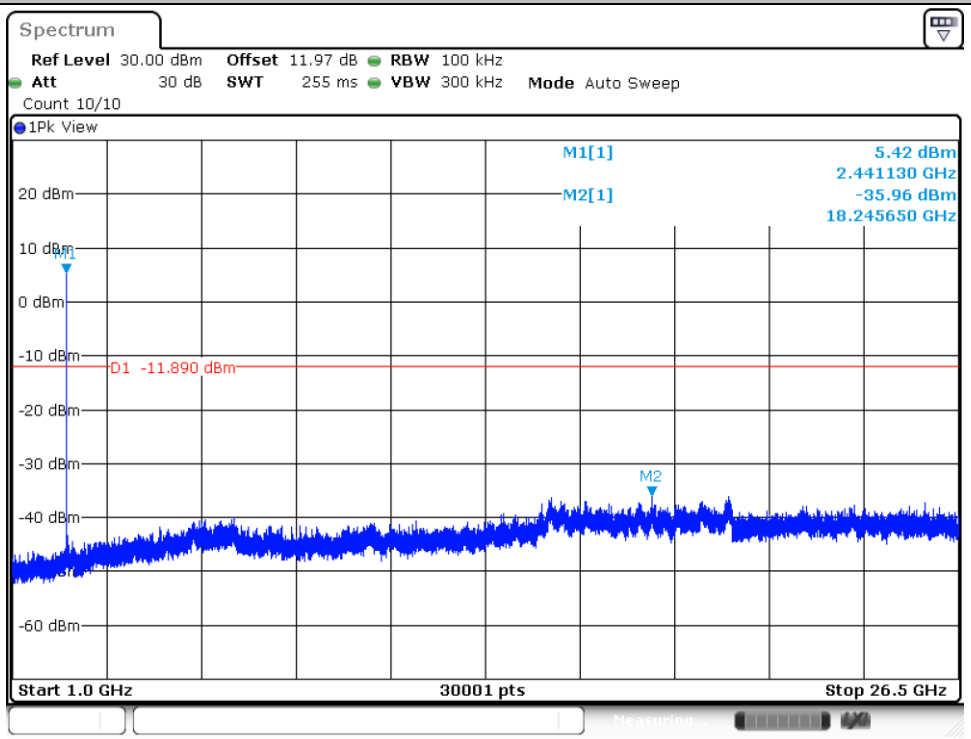
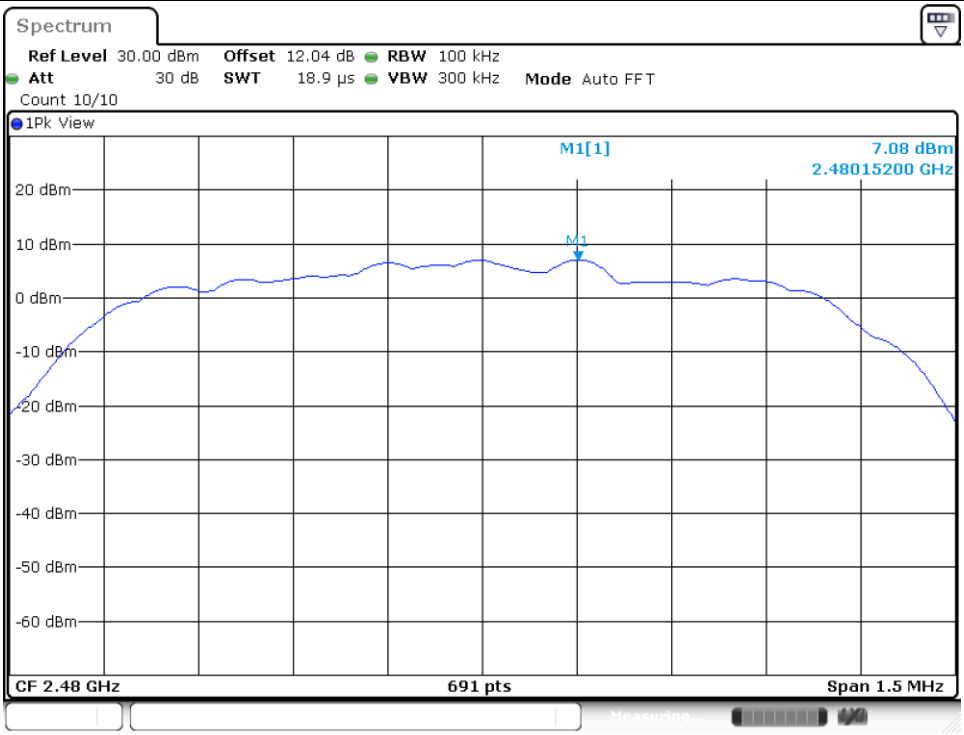
3DH5_Ant2_2441_1000~26500



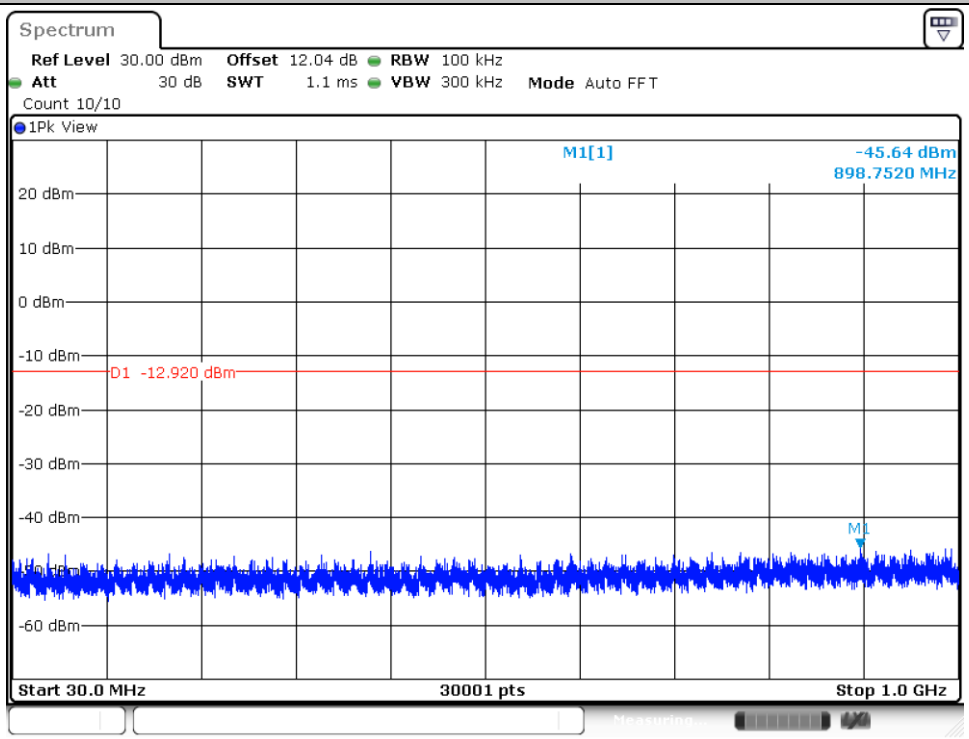
Date: 20.FEB.2025 18:02:59

3DH5_Ant2_2480_0~Reference



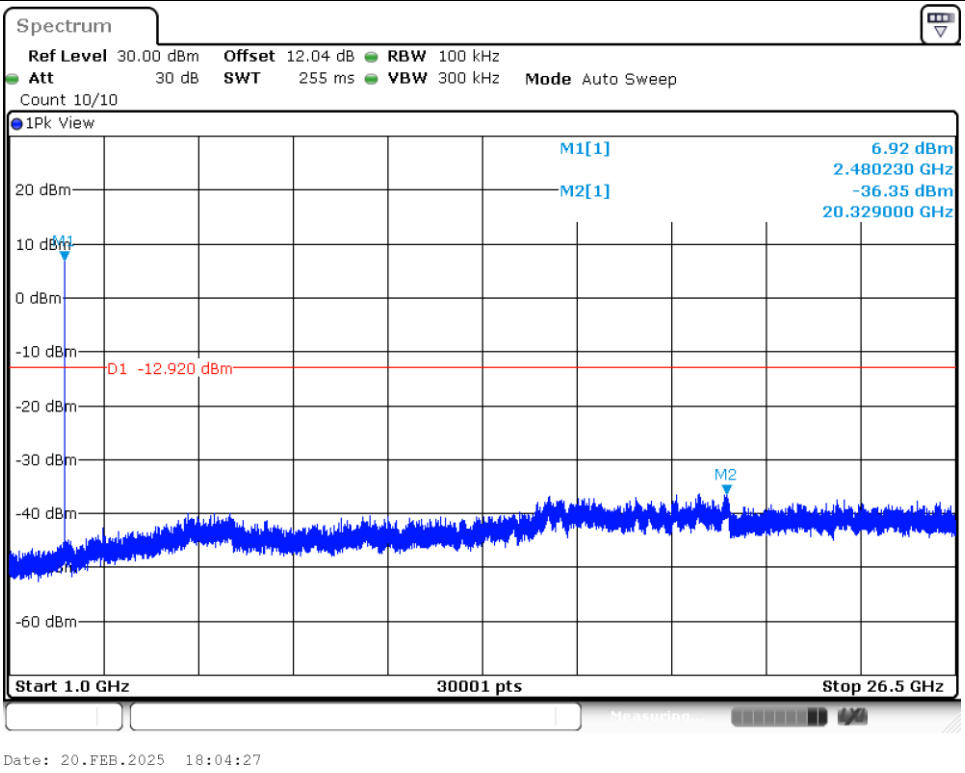
Date: 20.FEB.2025 18:03:56

3DH5_Ant2_2480_30~1000



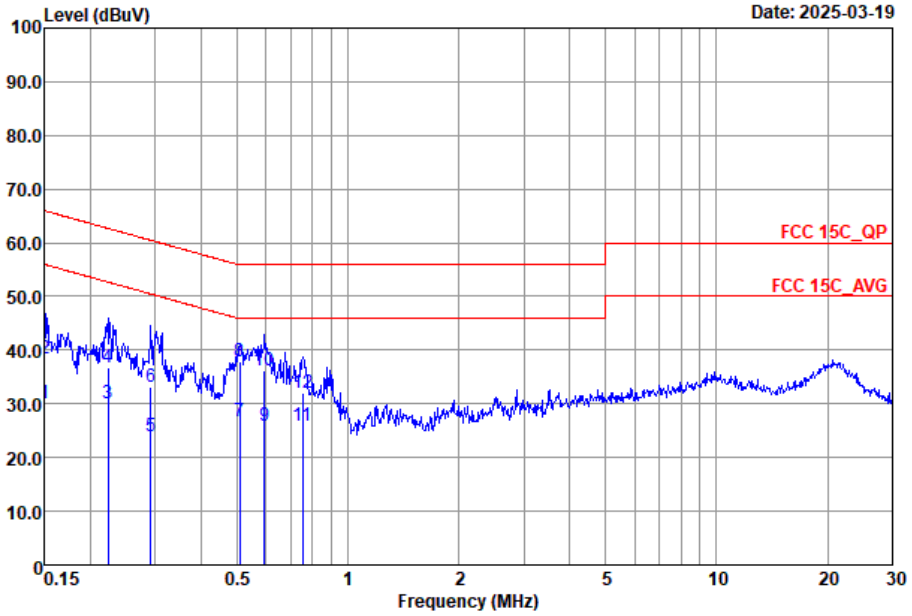
Date: 20.FEB.2025 18:04:05

3DH5_Ant2_2480_1000~26500



Appendix B. AC Conducted Emission Test Results

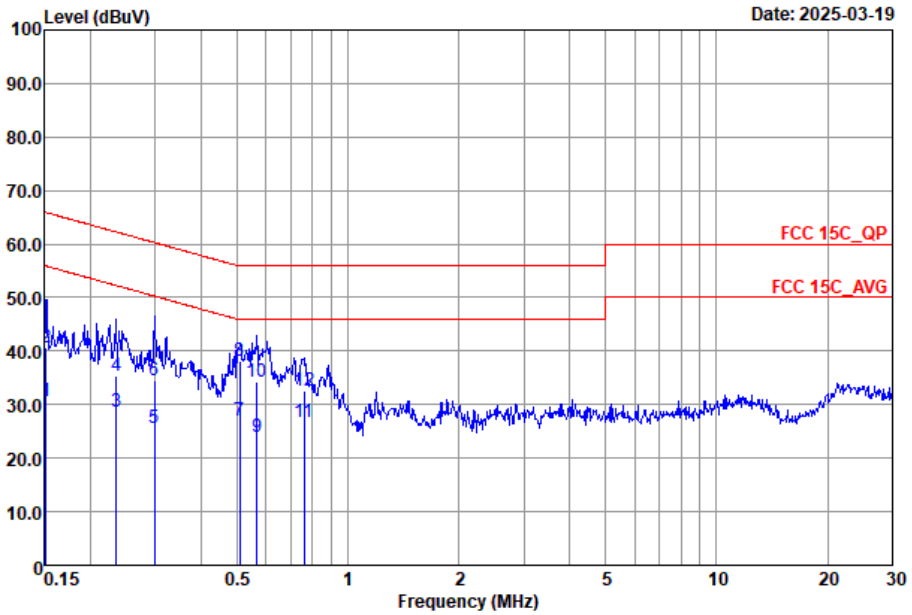
Test Engineer :	Yuki	**Temperature :**	22~24℃
		Relative Humidity :	44~50%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO02-SZ
Condition : FCC 15C_QP LISN_2025-L LINE

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.15	30.05	-25.95	56.00	10.20	9.66	10.19	Average
2	0.15	38.55	-27.45	66.00	18.70	9.66	10.19	QP
3	0.22	30.20	-22.50	52.70	10.29	9.72	10.19	Average
4	0.22	36.90	-25.80	62.70	16.99	9.72	10.19	QP
5	0.29	23.96	-26.50	50.46	4.01	9.75	10.20	Average
6	0.29	33.06	-27.40	60.46	13.11	9.75	10.20	QP
7	0.51	26.62	-19.38	46.00	6.70	9.68	10.24	Average
8 *	0.51	37.92	-18.08	56.00	18.00	9.68	10.24	QP
9	0.59	25.80	-20.20	46.00	5.90	9.66	10.24	Average
10	0.59	36.20	-19.80	56.00	16.30	9.66	10.24	QP
11	0.75	26.00	-20.00	46.00	6.10	9.67	10.23	Average
12	0.75	32.00	-24.00	56.00	12.10	9.67	10.23	QP

Test Engineer :	Yuki	**Temperature :**	22~24℃
		Relative Humidity :	44~50%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO02-SZ
Condition : FCC 15C_QP LISN_2025-N NEUTRAL

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.15	30.75	-25.16	55.91	11.00	9.56	10.19	Average
2		0.15	40.55	-25.36	65.91	20.80	9.56	10.19	QP
3		0.24	28.71	-23.55	52.26	8.90	9.62	10.19	Average
4		0.24	35.51	-26.75	62.26	15.70	9.62	10.19	QP
5		0.30	25.61	-24.67	50.28	5.50	9.90	10.21	Average
6		0.30	34.51	-25.77	60.28	14.40	9.90	10.21	QP
7		0.51	27.15	-18.85	46.00	7.30	9.61	10.24	Average
8	*	0.51	38.05	-17.95	56.00	18.20	9.61	10.24	QP
9		0.57	23.87	-22.13	46.00	4.00	9.63	10.24	Average
10		0.57	34.17	-21.83	56.00	14.30	9.63	10.24	QP
11		0.76	26.78	-19.22	46.00	6.80	9.75	10.23	Average
12		0.76	32.68	-23.32	56.00	12.70	9.75	10.23	QP

Note:

1. Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
2. Over Limit(dB) = Level(dBμV) – Limit Line(dBμV)

Appendix C. Radiated Spurious Emission

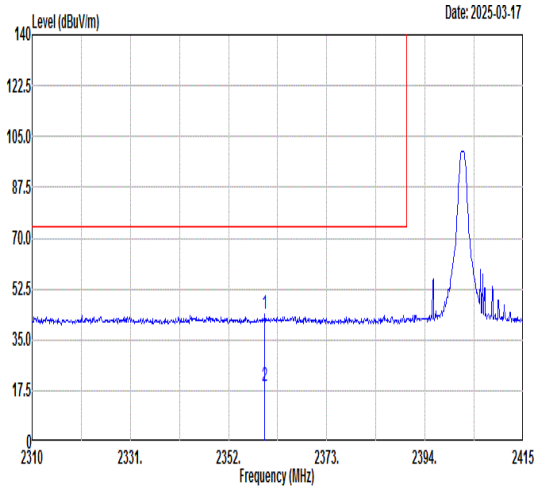
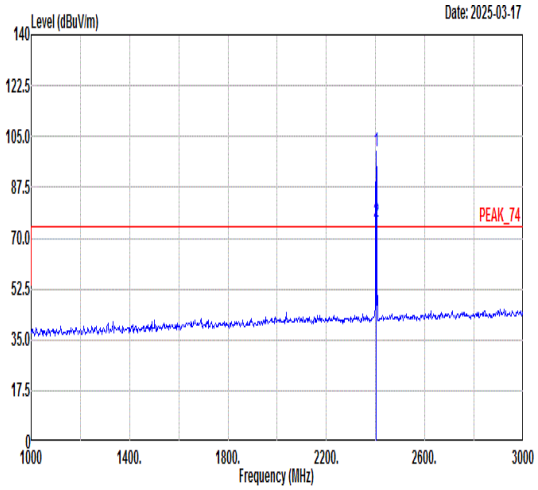
Test Engineer :	Winter Zhang	Relative Humidity :	50%
		Temperature :	20℃-22℃

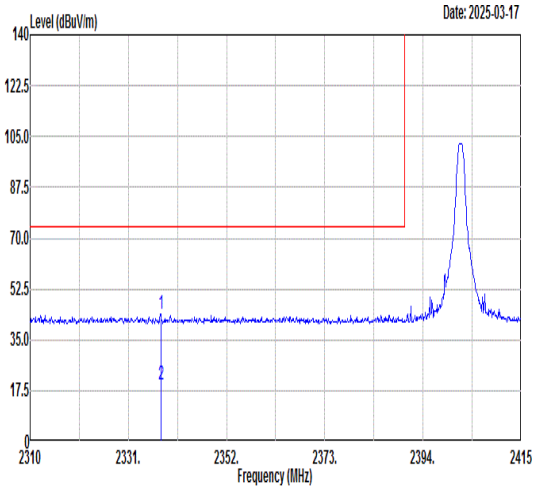
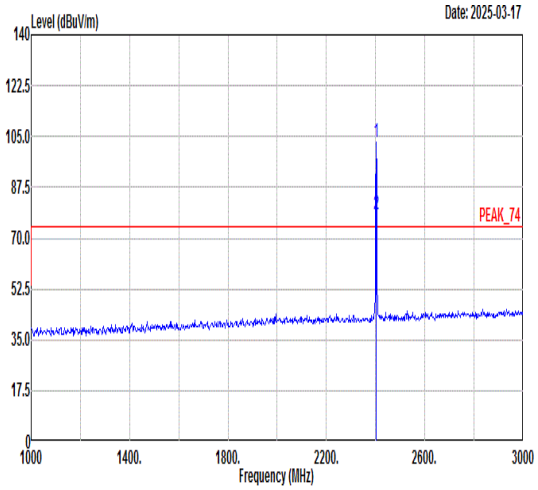
Radiated Spurious Emission Test Modes

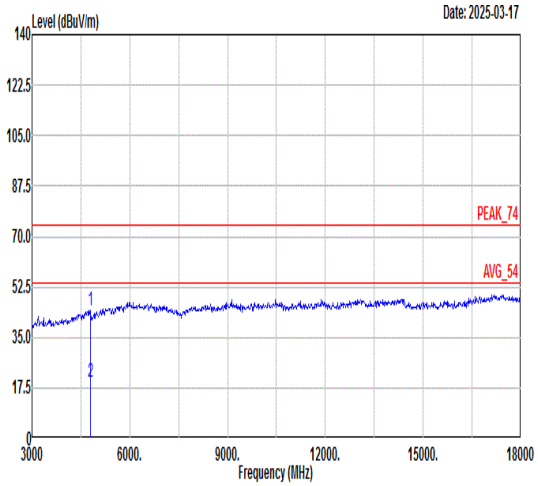
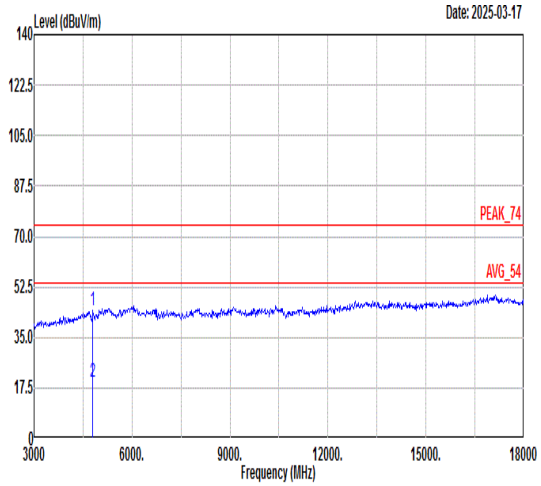
Mode	Band (MHz)	Antenna	Modulation	Channel	Frequency	Data Rate	RU	Remark
Mode 1	2400-2483.5	2	Bluetooth BR_GFSK	00	2402	（1DH5）	-	-
Mode 2	2400-2483.5	2	Bluetooth BR_GFSK	39	2440	（1DH5）	-	-
Mode 3	2400-2483.5	2	Bluetooth BR_GFSK	78	2480	（1DH5）	-	-
Mode 4	2400-2483.5	2	Bluetooth BR_GFSK	78	2480	（1DH5）	-	LF

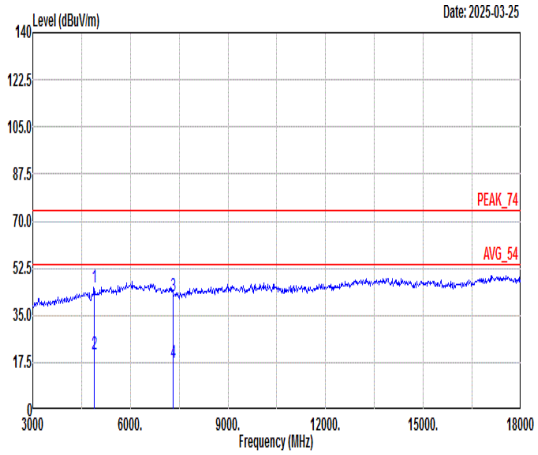
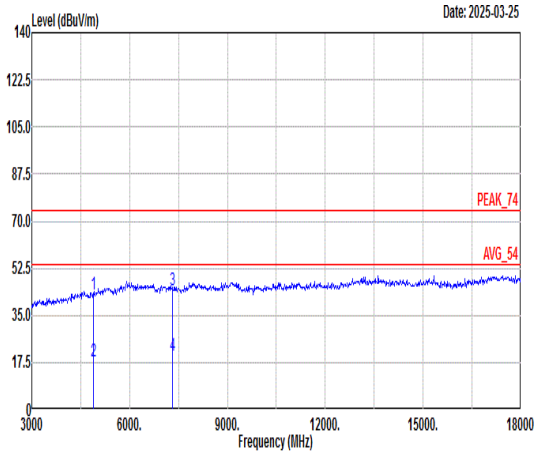
Summary of each worse mode

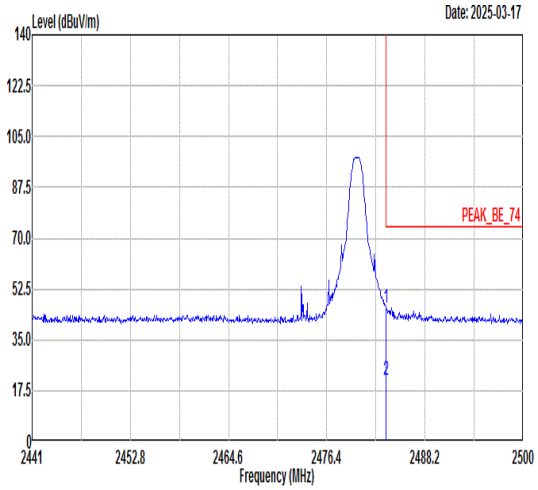
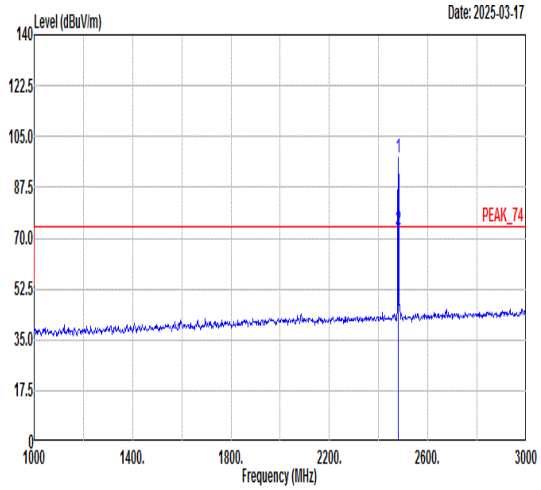
Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	Remark
1	Bluetooth BR_GFSK	00	2337.93	44.08	74.00	-29.92	V	PEAK	Pass	Band Edge
1	Bluetooth BR_GFSK	00	4804.00	44.35	74.00	-29.65	V	Peak	Pass	Harmonic
2	Bluetooth BR_GFSK	39	-	-	-	-	-	-	-	Band Edge
2	Bluetooth BR_GFSK	39	4882.00	45.58	74.00	-28.42	H	Peak	Pass	Harmonic
3	Bluetooth BR_GFSK	78	2483.66	48.37	74.00	-25.63	V	PEAK	Pass	Band Edge
3	Bluetooth BR_GFSK	78	7440.00	45.24	74.00	-28.76	H	Peak	Pass	Harmonic
4	Bluetooth BR_GFSK	78	49.40	31.79	40.00	-8.21	V	PEAK	Pass	LF

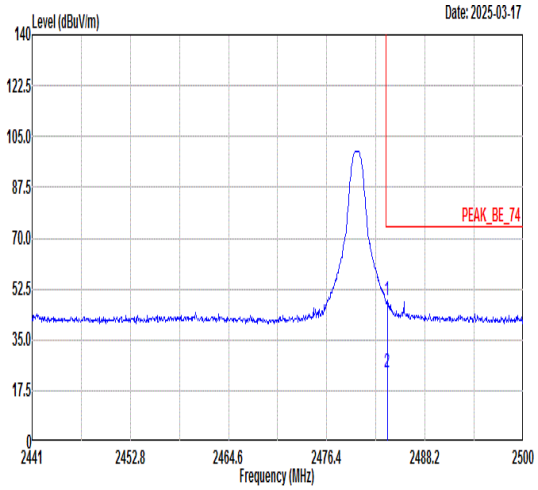
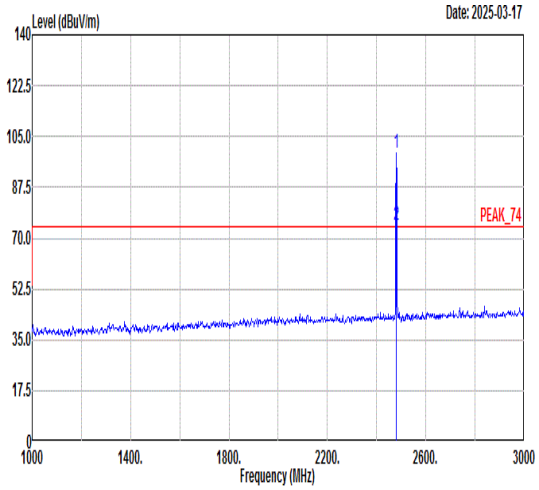
Mode	1	
	Band Edge	
	2400-2483.5_Bluetooth BR_GFSK_CH00_2402MHz	
ANT	2	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin (dB) Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dBuV dB/m dB dB cm deg 1 2359.77 43.70 74.00 -30.30 41.76 30.77 5.33 34.16 100 209 PEAK 2 2359.77 18.91 54.00 -35.09 16.97 30.77 5.33 34.16 100 209 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 2402.00 100.10 ------ ------ 98.09 30.78 5.37 34.14 100 209 PEAK 2 2402.00 75.31 ------ ------ 73.30 30.78 5.37 34.14 100 209 AVERAGE

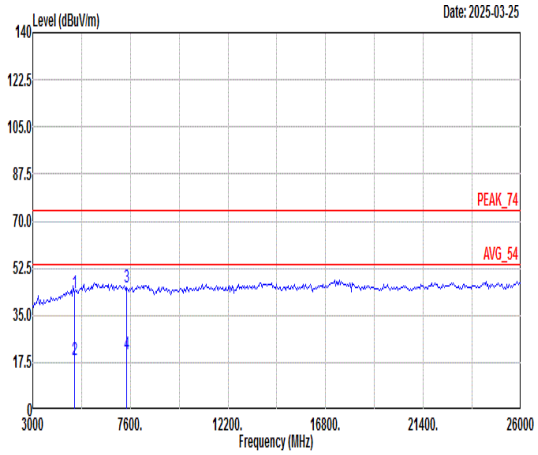
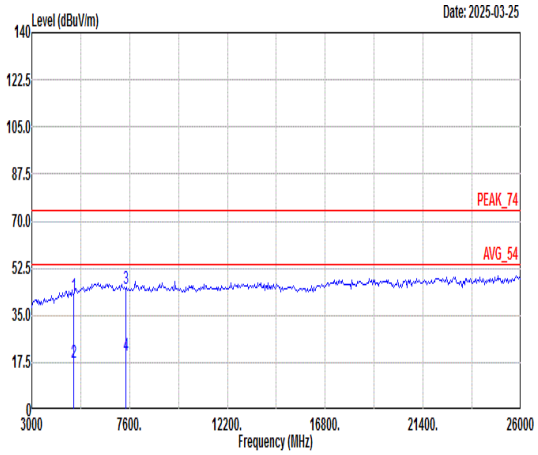
Mode	1	
	Band Edge	
	2400-2483.5_Bluetooth BR_GFSK_CH00_2402MHz	
ANT	2	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin (dB) Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dBuV dB/m dB dB cm deg 1 2337.93 44.08 74.00 -29.92 42.15 30.77 5.32 34.16 100 275 PEAK 2 2337.93 19.29 54.00 -34.71 17.36 30.77 5.32 34.16 100 275 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 2402.00 102.85 ------ ------ 100.84 30.78 5.37 34.14 100 275 PEAK 2 2402.00 78.06 ------ ------ 76.05 30.78 5.37 34.14 100 275 AVERAGE

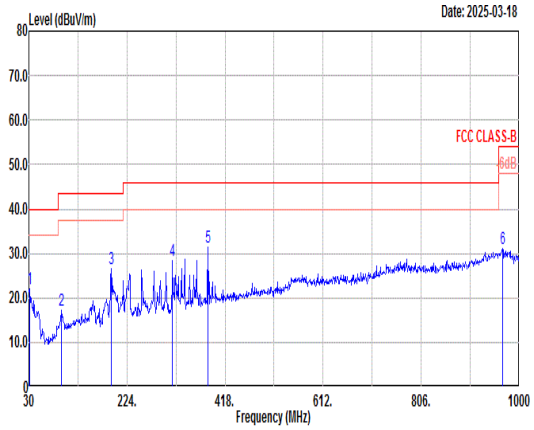
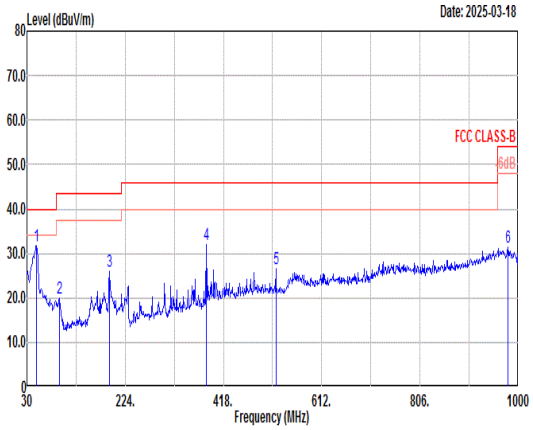
Mode	1	
	Harmonic	
	2400-2483.5_Bluetooth BR_GFSK_CH00_2402MHz	
ANT	2	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4804.00 44.23 74.00 -29.77 63.74 36.39 8.94 64.84 --- --- Peak 2 4804.00 19.44 54.00 -34.56 38.95 36.39 8.94 64.84 --- --- 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 44.35 74.00 -29.65 63.86 36.39 8.94 64.84 --- --- Peak 2 4804.00 19.56 54.00 -34.44 39.07 36.39 8.94 64.84 --- --- Average

Mode	2	
	Harmonic	
	2400-2483.5_Bluetooth BR_GFSK_CH39_2440MHz	
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 45.58 74.00 -28.42 65.19 36.51 8.70 64.82 --- --- Peak 2 4882.00 20.79 54.00 -33.21 40.40 36.51 8.70 64.82 --- --- Average 3 7323.00 42.46 74.00 -31.54 60.40 36.88 10.18 65.00 --- --- Peak 4 7323.00 17.67 54.00 -36.33 35.61 36.88 10.18 65.00 --- --- 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 42.97 74.00 -31.03 62.58 36.51 8.70 64.82 --- --- Peak 2 4882.00 18.18 54.00 -35.82 37.79 36.51 8.70 64.82 --- --- Average 3 7323.00 44.61 74.00 -29.39 62.55 36.88 10.18 65.00 --- --- Peak 4 7323.00 19.82 54.00 -34.18 37.76 36.88 10.18 65.00 --- --- Average

Mode	3	
	Band Edge	
	2400-2483.5_Bluetooth BR_GFSK_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 2483.54 45.94 74.00 -28.06 43.79 30.80 5.46 34.11 100 210 PEAK 2 2483.54 21.15 54.00 -32.85 19.00 30.80 5.46 34.11 100 210 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 97.80 ------ ------ 95.65 30.80 5.46 34.11 100 210 PEAK 2 2480.00 73.01 ------ ------ 70.86 30.80 5.46 34.11 100 210 AVERAGE

Mode	3	
	Band Edge	
	2400-2483.5_Bluetooth BR_GFSK_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 2483.66 48.37 74.00 -25.63 46.22 30.80 5.46 34.11 100 275 PEAK 2 2483.66 23.58 54.00 -30.42 21.43 30.80 5.46 34.11 100 275 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 99.51 ------ ------ 97.36 30.80 5.46 34.11 100 275 PEAK 2 2480.00 74.72 ------ ------ 72.57 30.80 5.46 34.11 100 275 AVERAGE

Mode	3	
	Harmonic	
	2400-2483.5_Bluetooth BR_GFSK_CH78_2480MHz	
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 4960.00 43.36 74.00 -30.64 63.07 36.64 8.46 64.81 --- --- Peak 2 4960.00 18.57 54.00 -35.43 38.28 36.64 8.46 64.81 --- --- Average 3 7440.00 45.24 74.00 -28.76 63.28 36.76 10.17 64.97 --- --- Peak 4 7440.00 20.45 54.00 -33.55 38.49 36.76 10.17 64.97 --- --- 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 42.47 74.00 -31.53 62.18 36.64 8.46 64.81 --- --- Peak 2 4960.00 17.68 54.00 -36.32 37.39 36.64 8.46 64.81 --- --- Average 3 7440.00 45.12 74.00 -28.88 63.16 36.76 10.17 64.97 --- --- Peak 4 7440.00 20.33 54.00 -33.67 38.37 36.76 10.17 64.97 --- --- Average

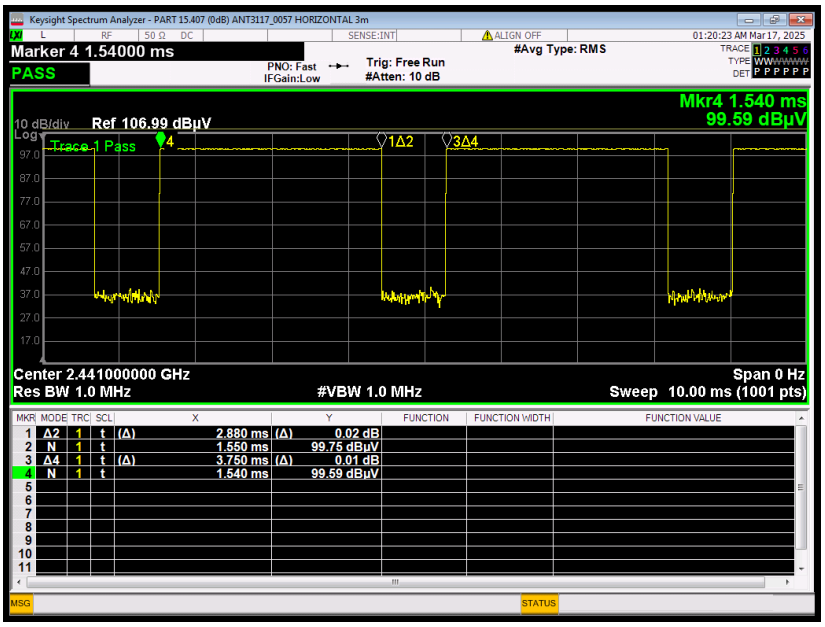
Mode	4	
	30M~1GHz	
	2400-2483.5_Bluetooth BR_GFSK_CH78_2480MHz	
ANT	2	
Pol.	Horizontal	Vertical
QP/ Peak		

	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	30.97	22.13	40.00	-17.87	28.41	24.72	0.54	31.54	---	---	Peak
2	94.99	17.17	43.50	-26.33	32.44	15.45	0.98	31.70	---	---	Peak
3	192.96	26.50	43.50	-17.00	41.71	14.89	1.41	31.51	---	---	Peak
4	314.21	28.42	46.00	-17.58	38.50	19.64	1.85	31.57	---	---	Peak
5	384.05	31.51	46.00	-14.49	39.42	21.39	2.06	31.36	---	---	Peak
6	967.02	30.97	54.00	-23.03	26.79	31.72	3.26	30.80	---	---	Peak

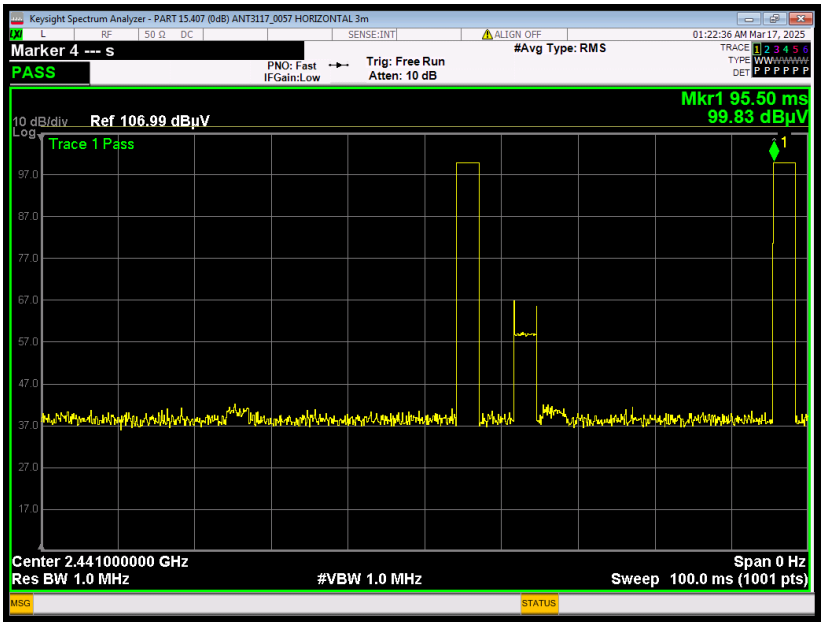
	Freq	Level	Limit Line	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg	
1	49.40	31.79	40.00	-8.21	47.99	14.81	0.70	31.71	---	---	Peak
2	94.02	19.79	43.50	-23.71	35.19	15.33	0.97	31.70	---	---	Peak
3	192.96	26.05	43.50	-17.45	41.26	14.89	1.41	31.51	---	---	Peak
4	384.05	32.02	46.00	-13.98	39.93	21.39	2.06	31.36	---	---	Peak
5	521.79	26.54	46.00	-19.46	31.10	24.35	2.39	31.30	---	---	Peak
6	979.63	31.31	54.00	-22.69	27.53	31.26	3.28	30.76	---	---	Peak

Appendix D. Duty Cycle Plots

DH5 on time (One Pulse) Plot on Channel 39



DH5 on time (Count Pulses) Plot on Channel 39



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.