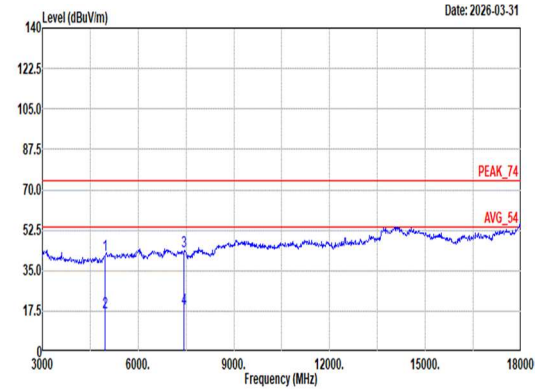
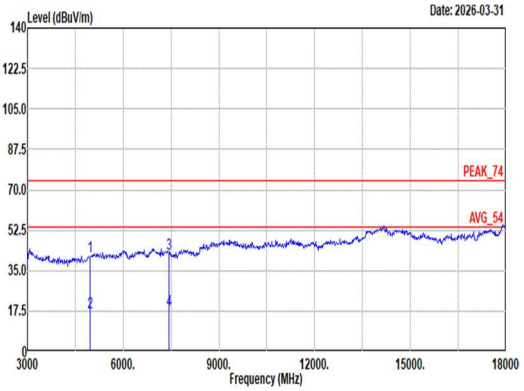
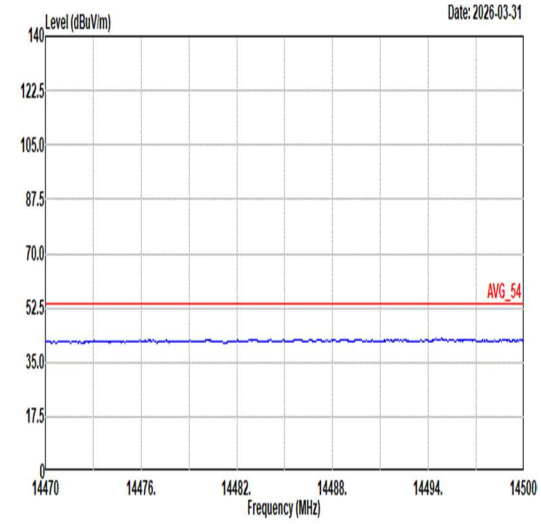
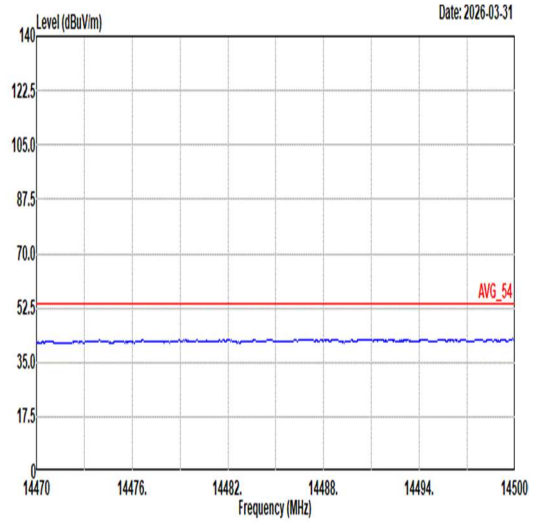
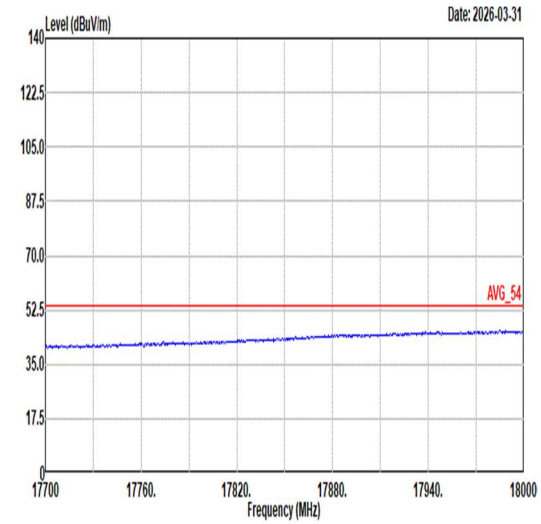
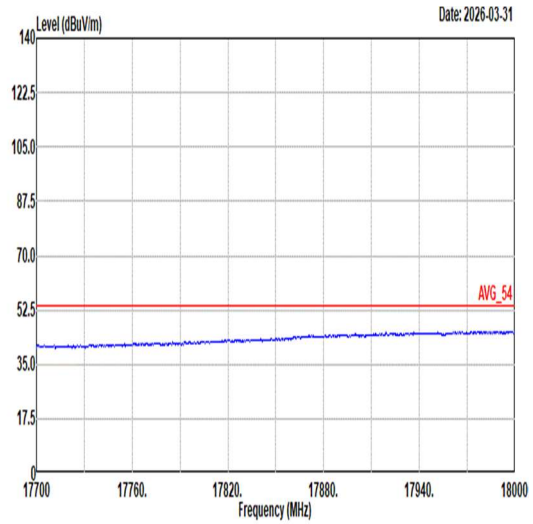
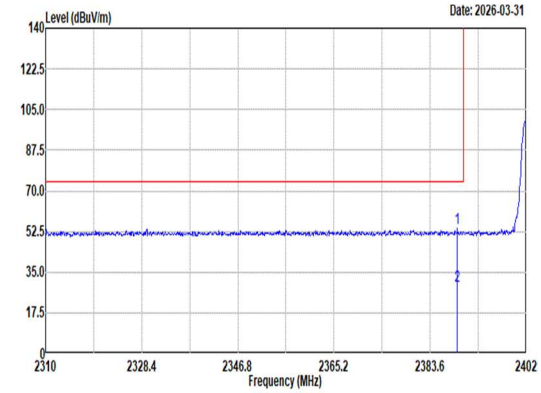
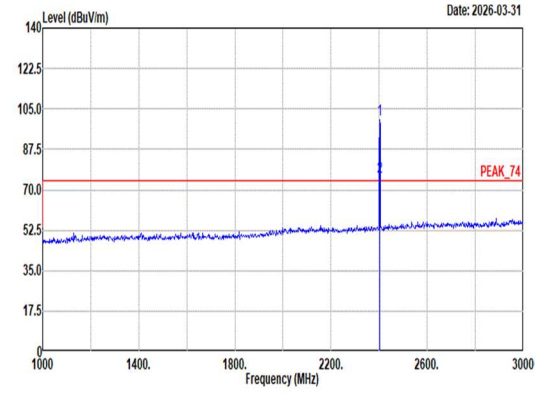
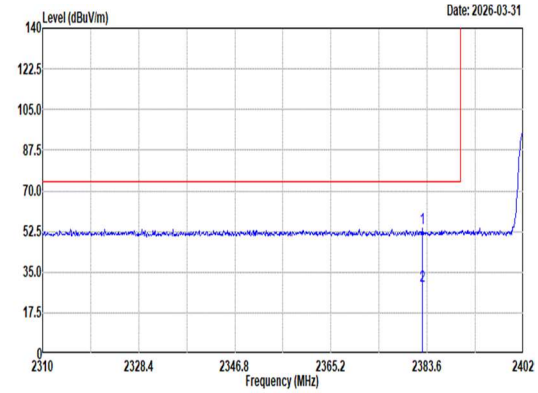
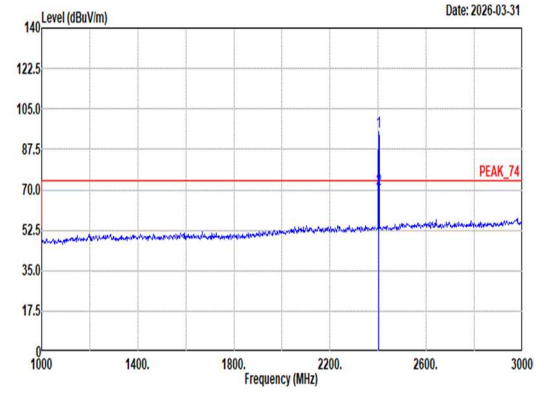
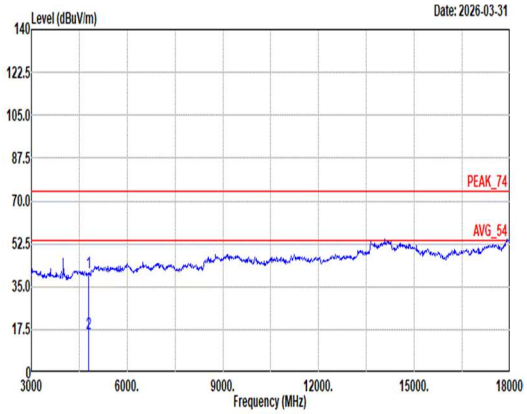
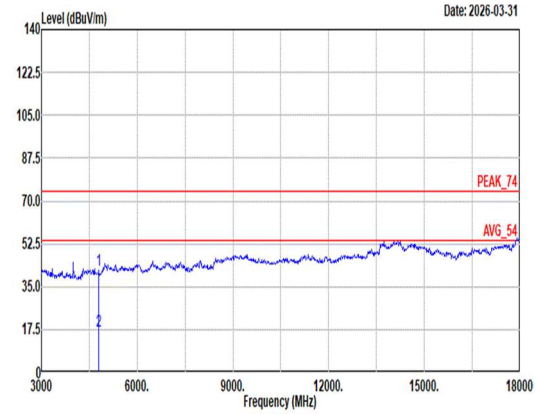
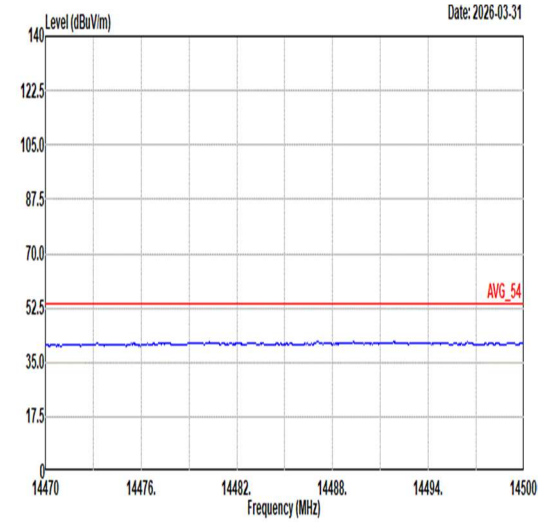
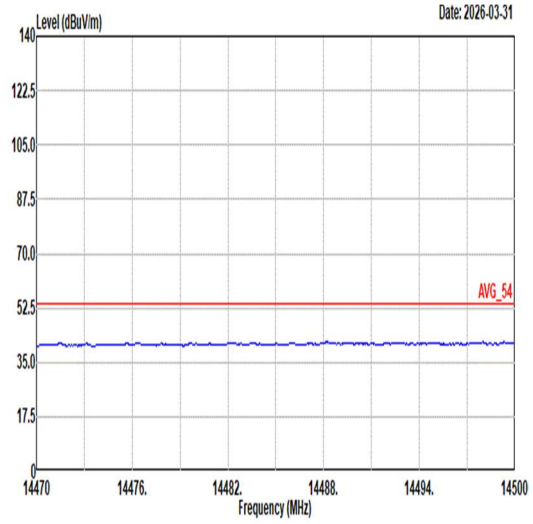
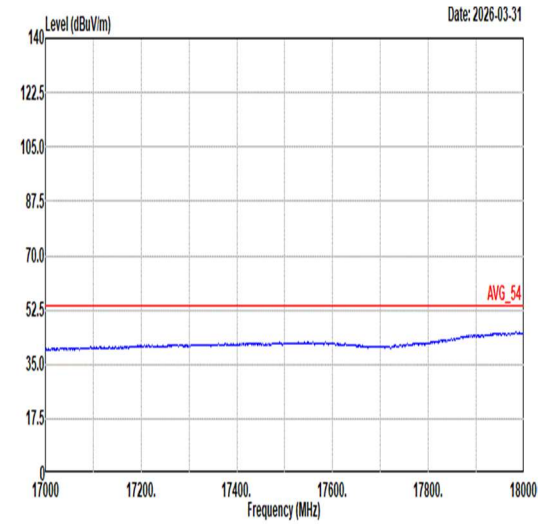
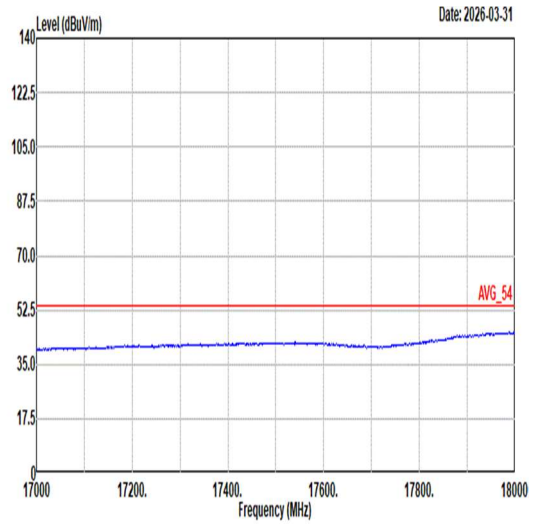
Mode	3	
	Harmonic	
	2400-2483.5_Bluetooth BR_GFSK_CH78_2480MHz	
ANT	6	
Pol.	Horizontal	Vertical
Peak Avg	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_250915 HORIZONTAL Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 4960.00 41.85 74.00 -32.15 63.94 32.94 11.06 67.05 0.96 -- -- Peak 2 4960.00 17.09 54.00 -36.91 -- -- -- -- -- -- -- Average 3 7440.00 43.37 74.00 -30.63 59.21 36.30 13.87 66.19 0.18 -- -- Peak 4 7440.00 18.61 54.00 -35.39 -- -- -- -- -- -- -- Average	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_250915 VERTICAL Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 4960.00 41.43 74.00 -32.57 63.52 32.94 11.06 67.05 0.96 -- -- Peak 2 4960.00 16.67 54.00 -37.33 -- -- -- -- -- -- -- Average 3 7440.00 42.47 74.00 -31.53 58.31 36.30 13.87 66.19 0.18 -- -- Peak 4 7440.00 17.72 54.00 -36.28 -- -- -- -- -- -- -- Average

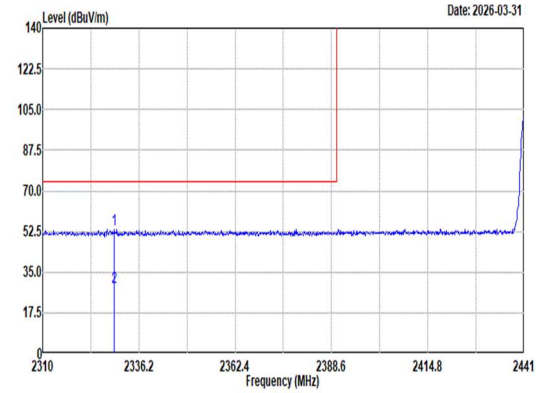
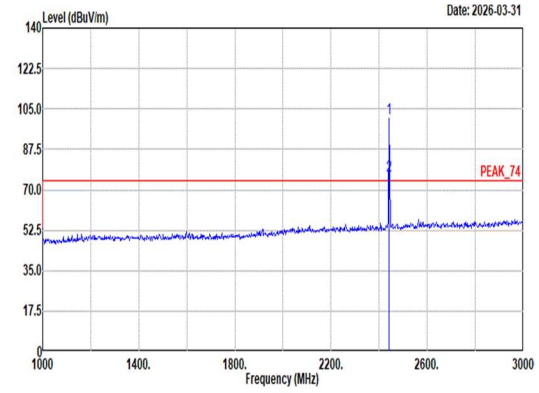
Mode	3	
	Harmonic	
	2400-2483.5_Bluetooth BR_GFSK_CH78_2480MHz	
ANT	6	
Pol.	Horizontal	Vertical
14.47G ~14.5G Avg	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_250915 HORIZONTAL	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_250915 VERTICAL
17.7G ~18G Avg	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_250915 HORIZONTAL	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_250915 VERTICAL

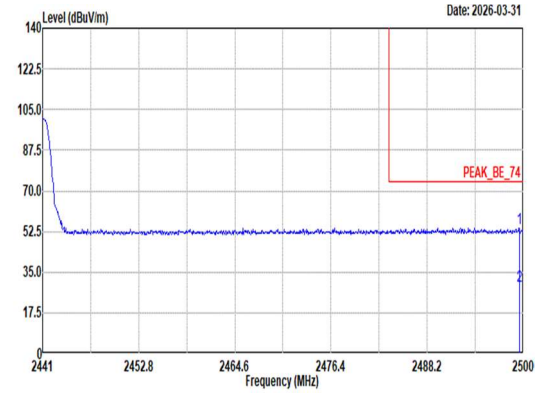
Mode	10	
	Band Edge	
	2400-2483.5_Bluetooth BR_GFSK_CH00_2402MHz	
ANT	7	
Pol.	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition: PEAK_BE_74 3m 9120D_01620_250915 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2388.84 53.64 74.00 -20.36 42.66 27.29 6.64 33.07 10.12 100 111 Peak 2 2388.84 28.85 54.00 -25.15 -- -- -- -- -- -- -- AVERAGE	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_250915 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2402.00 100.59 ------ ------ 89.55 27.32 6.66 33.06 10.12 100 111 Peak 2 2402.00 75.80 ------ ------ -- -- -- -- -- -- -- Average

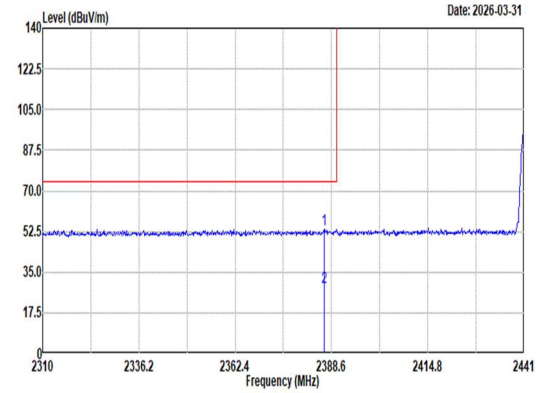
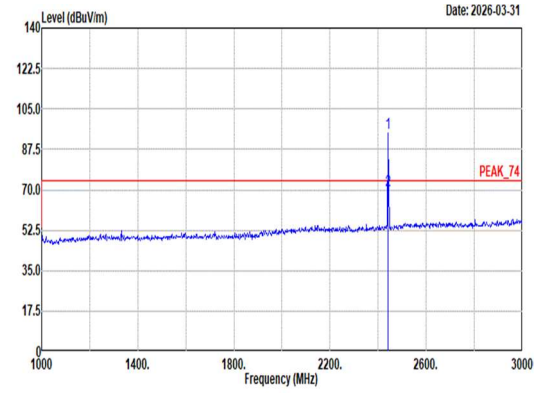
Mode	10	
	Band Edge	
	2400-2483.5_Bluetooth BR_GFSK_CH00_2402MHz	
ANT	7	
Pol.	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition: PEAK_BE_74 3m 9120D_01620_250915 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2382.68 53.68 74.00 -20.32 42.77 27.23 6.64 33.08 10.12 100 142 Peak 2 2382.68 28.89 54.00 -25.11 -- -- -- -- -- -- -- AVERAGE	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_250915 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2402.00 94.91 ------ ------ 83.87 27.32 6.66 33.06 10.12 100 142 Peak 2 2402.00 70.12 ------ ------ -- -- -- -- -- -- -- Average

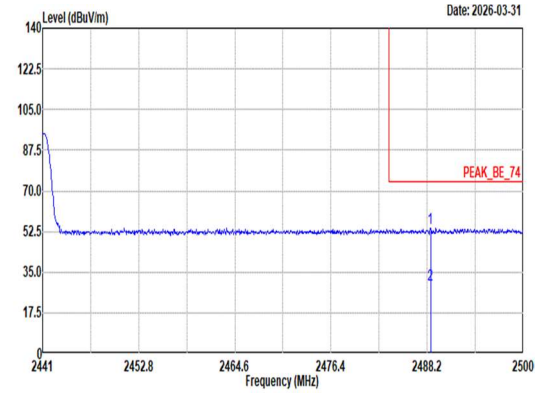
Mode	10	
	Harmonic	
	2400-2483.5_Bluetooth BR_GFSK_CH00_2402MHz	
ANT	7	
Pol.	Horizontal	Vertical
Peak Avg	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_250915 HORIZONTAL Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 4804.00 40.86 74.00 -33.14 64.47 32.32 10.29 67.17 0.95 -- -- Peak 2 4804.00 16.07 54.00 -37.93 -- -- -- -- -- -- -- Average	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_250915 VERTICAL Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 4804.00 41.63 74.00 -32.37 65.24 32.32 10.29 67.17 0.95 -- -- Peak 2 4804.00 16.84 54.00 -37.16 -- -- -- -- -- -- -- Average

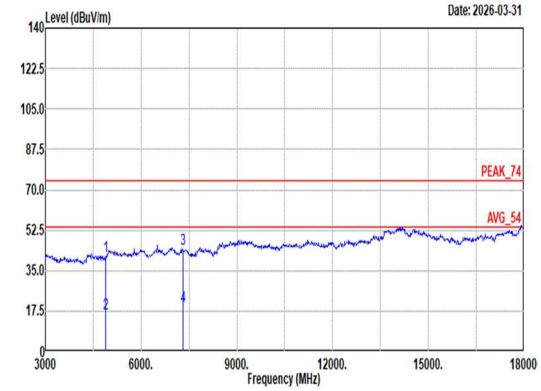
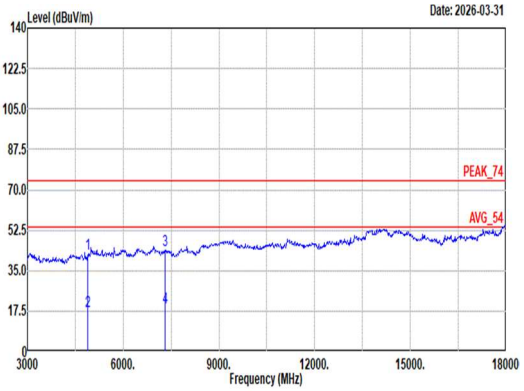
Mode	10	
	Harmonic	
	2400-2483.5_Bluetooth BR_GFSK_CH00_2402MHz	
ANT	7	
Pol.	Horizontal	Vertical
14.47G ~14.5G Avg	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_250915 HORIZONTAL	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_250915 VERTICAL
17G ~18G Avg	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_250915 HORIZONTAL	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_250915 VERTICAL

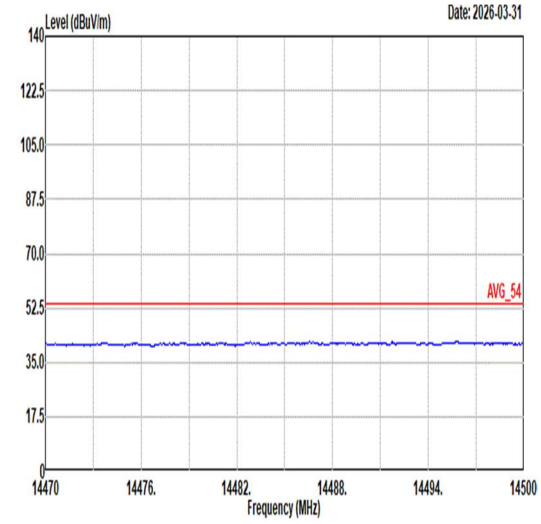
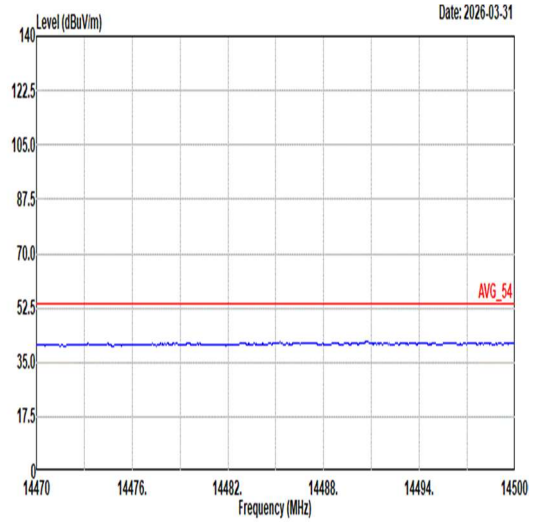
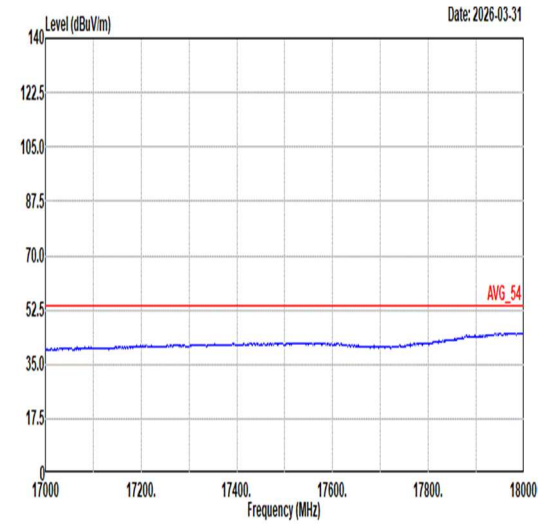
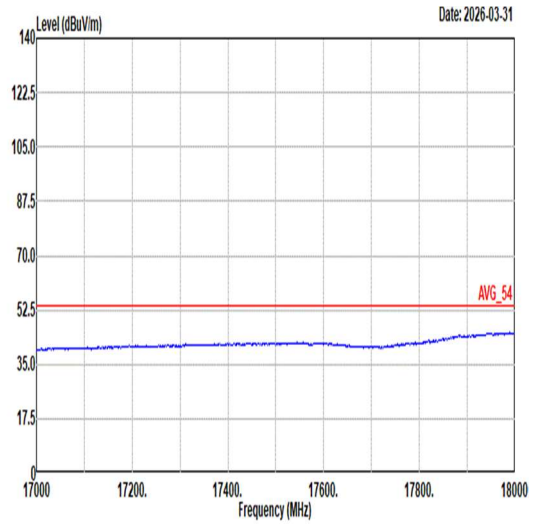
Mode	11	
	Band Edge - L	
	2400-2483.5_Bluetooth BR_GFSK_CH39_2441MHz	
ANT	7	
Pol.	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition: PEAK_BE_74 3m 9120D_01620_250915 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2329.52 53.24 74.00 -20.76 42.48 27.20 6.56 33.12 10.12 200 112 Peak 2 2329.52 28.45 54.00 -25.55 -- -- -- -- -- -- -- AVERAGE	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_250915 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2441.00 100.90 ------ ------ 89.59 27.50 6.72 33.03 10.12 200 112 Peak 2 2441.00 76.11 ------ ------ -- -- -- -- -- -- -- Average

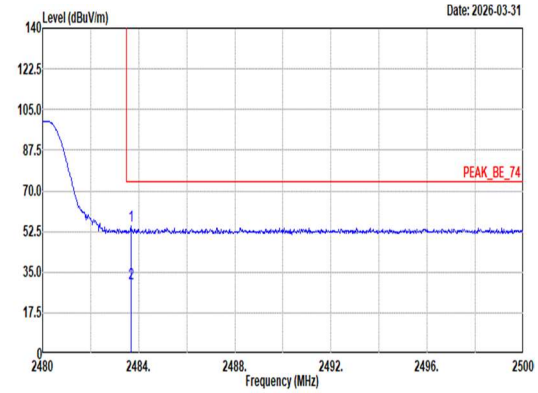
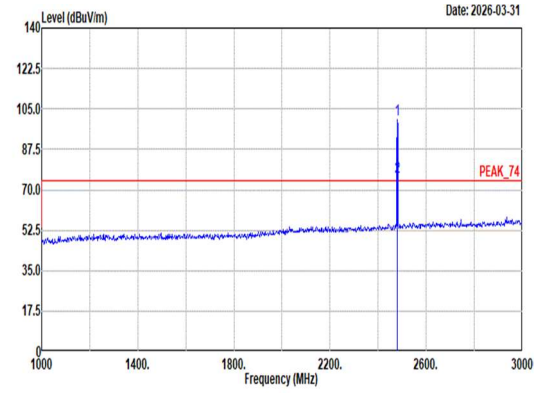
Mode	11	
	Band Edge - R	
	2400-2483.5_Bluetooth BR_GFSK_CH39_2441MHz	
ANT	7	
Pol.	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition: PEAK_BE_74 3m 9120D_01620_250915 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2499.53 53.95 74.00 -20.05 42.22 27.80 6.80 32.99 10.12 200 112 Peak 2 2499.53 29.16 54.00 -24.84 -- -- -- -- -- -- -- AVERAGE	Blank

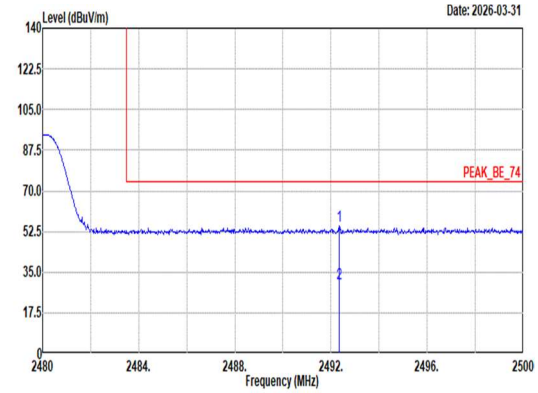
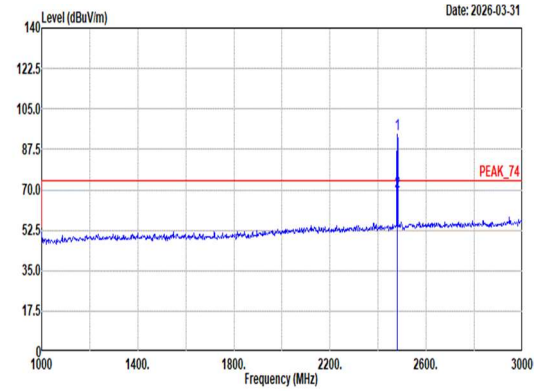
Mode	11	
	Band Edge - L	
	2400-2483.5_Bluetooth BR_GFSK_CH39_2441MHz	
ANT	7	
Pol.	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition: PEAK_BE_74 3m 9120D_01620_250915 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2386.64 53.37 74.00 -20.63 42.42 27.27 6.64 33.08 10.12 100 161 Peak 2 2386.64 28.58 54.00 -25.42 -- -- -- -- -- -- -- AVERAGE	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_250915 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2441.00 94.72 ------ ------ 83.41 27.50 6.72 33.03 10.12 100 161 Peak 2 2441.00 69.93 ------ ------ -- -- -- -- -- -- -- Average

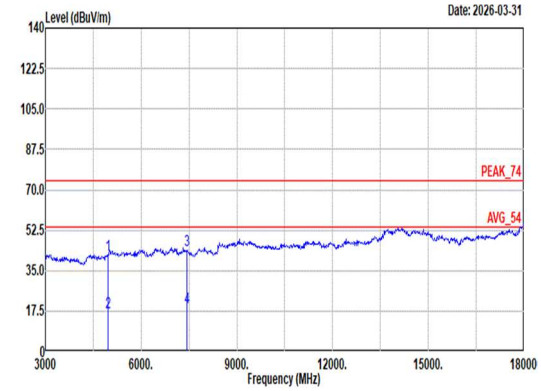
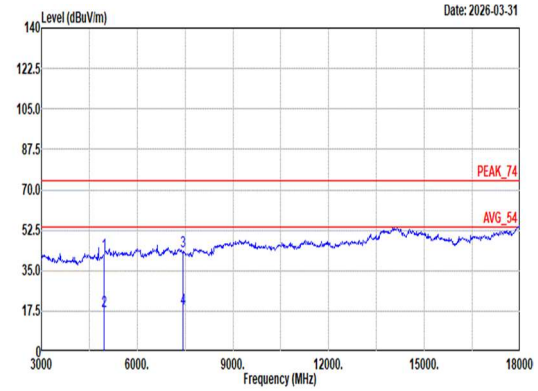
Mode	11	
	Band Edge - R	
	2400-2483.5_Bluetooth BR_GFSK_CH39_2441MHz	
ANT	7	
Pol.	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition: PEAK_BE_74 3m 9120D_01620_250915 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2488.61 54.14 74.00 -19.86 42.46 27.77 6.79 33.00 10.12 100 161 Peak 2 2488.61 29.35 54.00 -24.65 -- -- -- -- -- -- -- AVERAGE	Blank

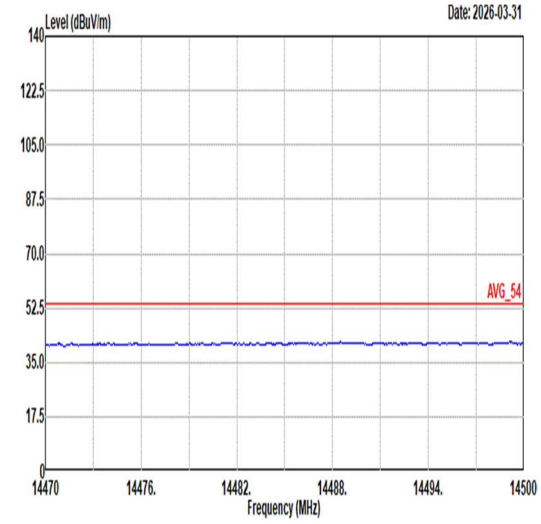
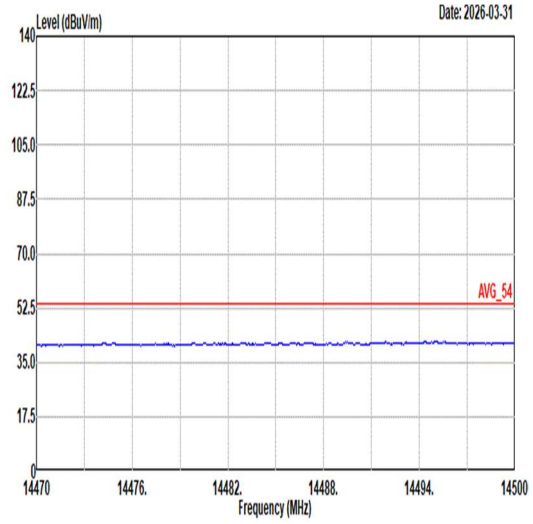
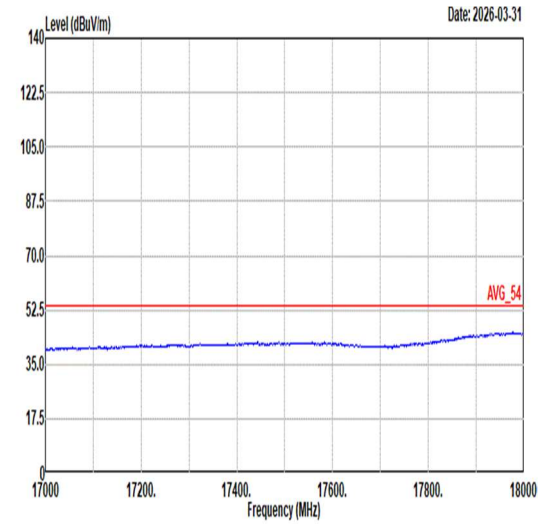
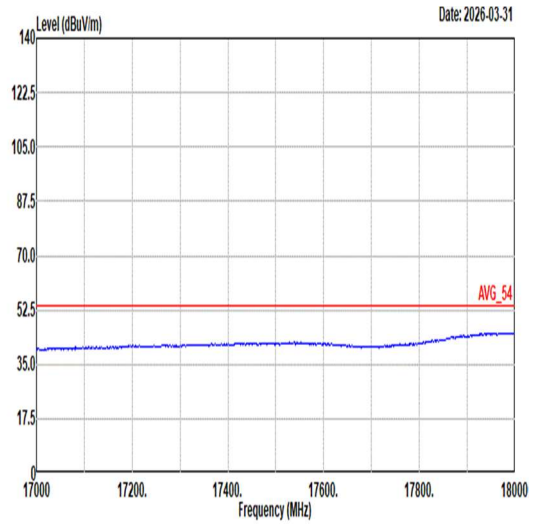
Mode	11	
	Harmonic	
	2400-2483.5_Bluetooth BR_GFSK_CH39_2441MHz	
ANT	7	
Pol.	Horizontal	Vertical
Peak Avg	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_250915 HORIZONTAL 1 4882.00 41.13 74.00 -32.87 63.98 32.63 10.68 67.11 0.95 -- -- Peak 2 4882.00 16.34 54.00 -37.66 -- -- -- -- -- -- -- Average 3 7323.00 44.40 74.00 -29.60 59.72 36.81 13.78 66.10 0.19 -- -- Peak 4 7323.00 19.61 54.00 -34.39 -- -- -- -- -- -- -- Average	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_250915 VERTICAL 1 4882.00 42.13 74.00 -31.87 64.98 32.63 10.68 67.11 0.95 -- -- Peak 2 4882.00 17.34 54.00 -36.66 -- -- -- -- -- -- -- Average 3 7323.00 44.01 74.00 -29.99 59.33 36.81 13.78 66.10 0.19 -- -- Peak 4 7323.00 19.22 54.00 -34.78 -- -- -- -- -- -- -- Average

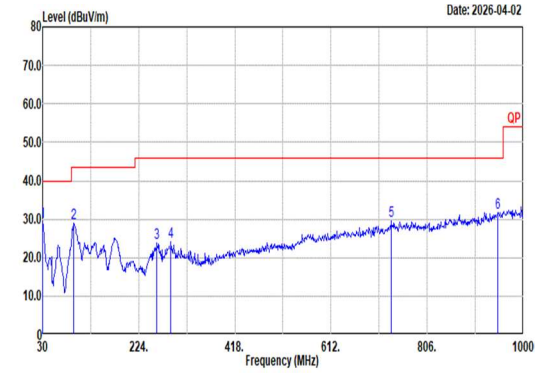
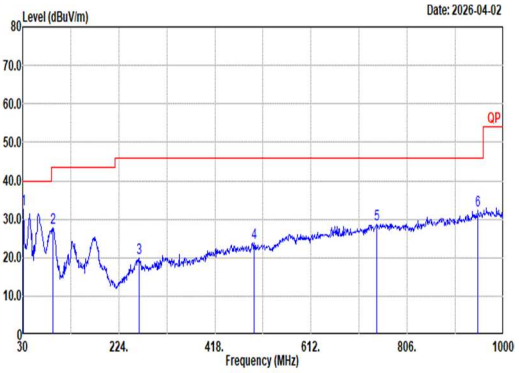
Mode	11	
	Harmonic	
	2400-2483.5_Bluetooth BR_GFSK_CH39_2441MHz	
ANT	7	
Pol.	Horizontal	Vertical
14.47G ~14.5G Avg	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_250915 HORIZONTAL	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_250915 VERTICAL
17G ~18G Avg	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_250915 HORIZONTAL	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_250915 VERTICAL

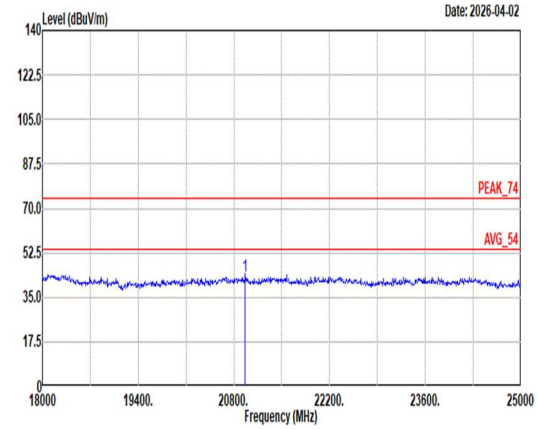
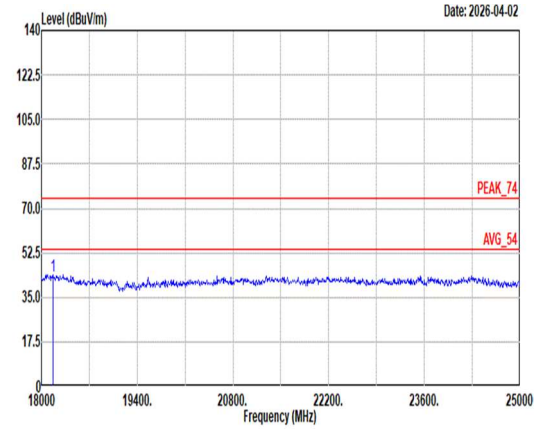
Mode	12	
	Band Edge	
	2400-2483.5_Bluetooth BR_GFSK_CH78_2480MHz	
ANT	7	
Pol.	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition: PEAK_BE_74 3m 9120D_01620_250915 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2483.68 54.90 74.00 -19.10 43.33 27.67 6.78 33.00 10.12 100 108 Peak 2 2483.68 30.11 54.00 -23.89 -- -- -- -- -- -- -- AVERAGE	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_250915 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2480.00 100.24 ------ ------ 88.75 27.60 6.78 33.01 10.12 100 108 Peak 2 2480.00 75.45 ------ ------ -- -- -- -- -- -- -- Average

Mode	12	
	Band Edge	
	2400-2483.5_Bluetooth BR_GFSK_CH78_2480MHz	
ANT	7	
Pol.	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition: PEAK_BE_74 3m 9120D_01620_250915 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2492.34 54.84 74.00 -19.16 43.13 27.80 6.79 33.00 10.12 393 160 Peak 2 2492.34 30.05 54.00 -23.95 -- -- -- -- -- -- -- AVERAGE	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_250915 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2480.00 94.11 ------ ------ 82.62 27.60 6.78 33.01 10.12 393 160 Peak 2 2480.00 69.32 ------ ------ -- -- -- -- -- -- -- Average

Mode	12	
	Harmonic	
	2400-2483.5_Bluetooth BR_GFSK_CH78_2480MHz	
ANT	7	
Pol.	Horizontal	Vertical
Peak Avg	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_250915 HORIZONTAL Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 4960.00 41.91 74.00 -32.09 64.00 32.94 11.06 67.05 0.96 -- -- Peak 2 4960.00 17.12 54.00 -36.88 -- -- -- -- -- -- -- Average 3 7440.00 43.78 74.00 -30.22 59.62 36.30 13.87 66.19 0.18 -- -- Peak 4 7440.00 18.99 54.00 -35.01 -- -- -- -- -- -- -- Average	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_250915 VERTICAL Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 4960.00 42.32 74.00 -31.68 64.41 32.94 11.06 67.05 0.96 -- -- Peak 2 4960.00 17.53 54.00 -36.47 -- -- -- -- -- -- -- Average 3 7440.00 43.44 74.00 -30.56 59.28 36.30 13.87 66.19 0.18 -- -- Peak 4 7440.00 18.65 54.00 -35.35 -- -- -- -- -- -- -- Average

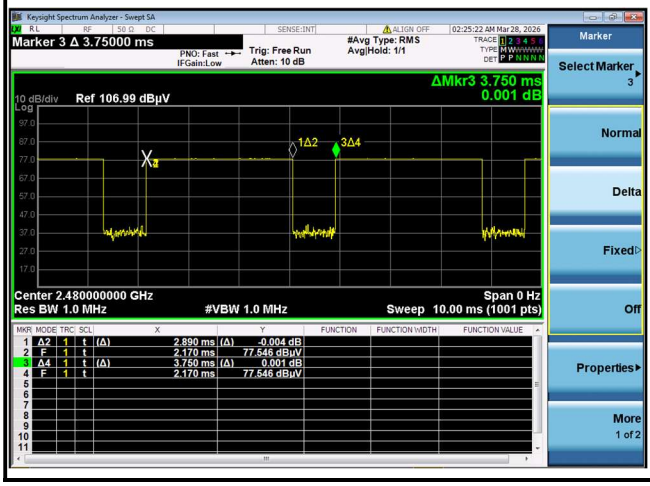
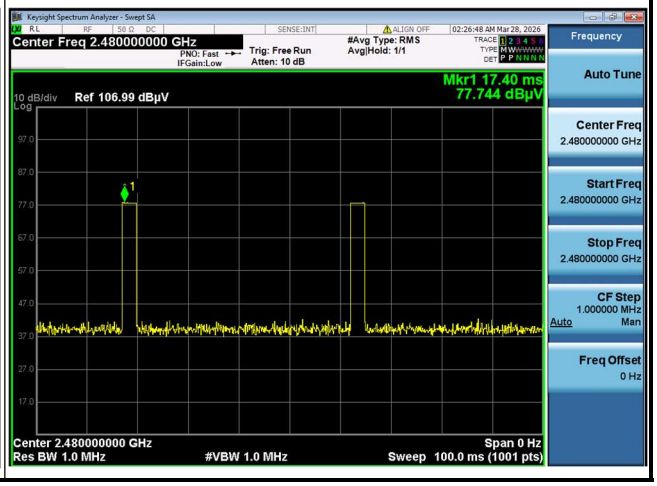
Mode	12	
	Harmonic	
	2400-2483.5_Bluetooth BR_GFSK_CH78_2480MHz	
ANT	7	
Pol.	Horizontal	Vertical
14.47G ~14.5G Avg	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_250915 HORIZONTAL	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_250915 VERTICAL
17G ~18G Avg	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_250915 HORIZONTAL	 Site : 03CH11-HY Condition: AVG_54 3m 9120D_01620_250915 VERTICAL

Mode	56	
	LF	
	2400-2483.5_Bluetooth BR_GFSK_CH78_2480MHz	
ANT	7	
Pol.	Horizontal	Vertical
QP/ Peak	 Site : 03CH11-HY Condition: QP 3m Bilog_37059 & 01_251126 HORIZONTAL Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 30.00 29.37 40.00 -10.63 36.38 24.04 0.72 31.86 0.09 -- -- Peak 2 92.08 28.96 43.50 -14.54 44.55 15.21 1.25 32.08 0.03 -- -- Peak 3 260.86 23.95 46.00 -22.05 33.46 20.20 2.15 31.93 0.07 -- -- Peak 4 288.99 24.16 46.00 -21.84 34.63 19.12 2.27 31.94 0.08 -- -- Peak 5 733.25 29.49 46.00 -16.51 29.12 27.98 3.69 31.90 0.60 -- -- Peak 6 948.59 31.81 46.00 -14.19 27.07 30.92 4.14 30.72 0.40 -- -- Peak	 Site : 03CH11-HY Condition: QP 3m Bilog_37059 & 01_251126 VERTICAL Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 30.97 32.65 40.00 -7.35 40.14 23.58 0.73 31.88 0.08 -- -- Peak 2 91.11 27.85 43.50 -15.65 43.53 15.13 1.24 32.08 0.03 -- -- Peak 3 264.74 20.06 46.00 -25.94 29.62 20.13 2.17 31.93 0.07 -- -- Peak 4 497.54 23.93 46.00 -22.07 28.90 23.97 3.01 32.02 0.07 -- -- Peak 5 744.89 28.80 46.00 -17.20 28.18 28.23 3.72 31.89 0.56 -- -- Peak 6 948.59 32.35 46.00 -13.65 27.61 30.92 4.14 30.72 0.40 -- -- Peak

Mode	57	
	SHF	
	2400-2483.5_Bluetooth BR_GFSK_CH78_2480MHz	
ANT	7	
Pol.	Horizontal	Vertical
Peak	 Site : 03CH11-HY Condition: PEAK_74 1m SHF_1225_250702 HORIZONTAL Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 20964.66 43.15 74.00 -30.85 54.41 38.10 23.52 63.34 -9.54 -- -- PEAK	 Site : 03CH11-HY Condition: PEAK_74 1m SHF_1225_250702 VERTICAL Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 18172.81 43.42 74.00 -30.58 56.81 38.09 22.47 64.41 -9.54 -- -- PEAK

Appendix D. Duty Cycle Plots

<Ant.6>

DH5 on time (One Pulse) Plot on Channel 39	on time (Count Pulses) Plot on Channel 39
	

Note:

1. Worst case Duty cycle = on time/100 milliseconds = 2 * 2.89 / 100 = 5.78 %
2. Worst case Duty cycle correction factor = 20*log(Duty cycle) = -24.76 dB
3. **DH5** has the highest duty cycle worst case and is reported.

Duty Cycle Correction Factor Consideration for AFH mode:

Bluetooth normal hopping rate is 1600Hz and reduced to 800Hz in AFH mode; due to the reduced number of hopping frequencies, with the same packet configuration the dwell time in each channel frequency within 100msec period is longer in AFH mode than normal mode.

In AFH mode, the minimum hopping frequencies are 20, to get the longest dwell time DH5 packet is observed; the on time period to have DH5 packet completing one hopping sequence is

2.89 ms x 20 channels = 57.8 ms

There cannot be 2 complete hopping sequences within 100ms period, considering the random hopping behavior, maximum 2 hops can be possibly observed within the period. [100 ms / 57.8 ms] = 2 hops

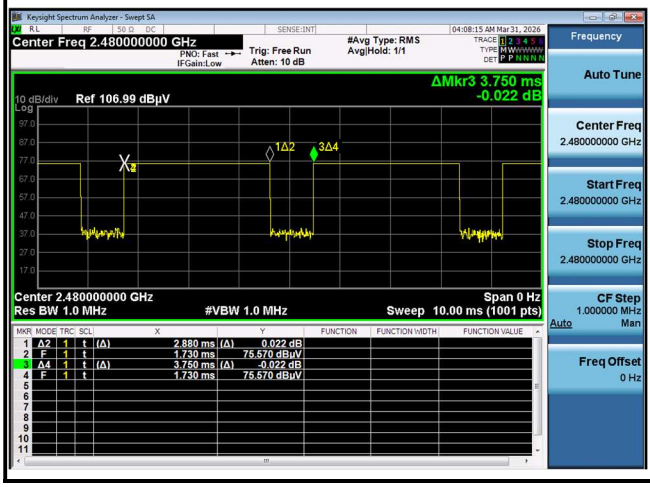
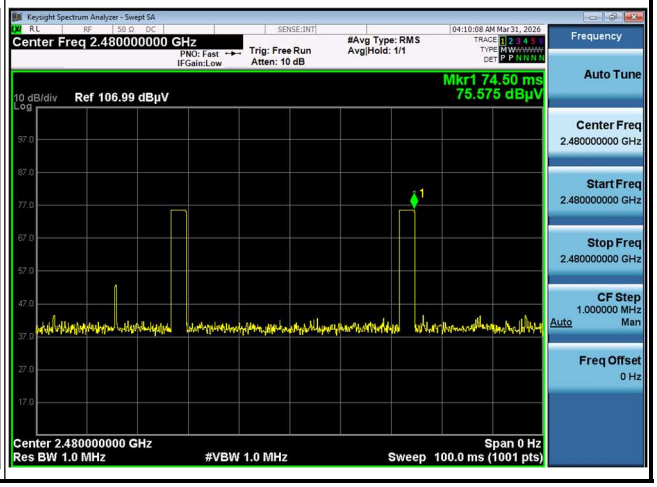
Thus, the maximum possible ON time:

2.89 ms x 2 = 5.78 ms

Worst case Duty Cycle Correction factor, which is derived from the maximum possible ON time,

20 x log(5.78 ms/100 ms) = -24.76 dB

<Ant.7>

DH5 on time (One Pulse) Plot on Channel 39	on time (Count Pulses) Plot on Channel 39
	

Note:

4. Worst case Duty cycle = on time/100 milliseconds = 2 * 2.88 / 100 = 5.78 %
5. Worst case Duty cycle correction factor = 20*log(Duty cycle) = -24.79 dB
6. **DH5** has the highest duty cycle worst case and is reported.

Duty Cycle Correction Factor Consideration for AFH mode:

Bluetooth normal hopping rate is 1600Hz and reduced to 800Hz in AFH mode; due to the reduced number of hopping frequencies, with the same packet configuration the dwell time in each channel frequency within 100msec period is longer in AFH mode than normal mode.

In AFH mode, the minimum hopping frequencies are 20, to get the longest dwell time DH5 packet is observed; the on time period to have DH5 packet completing one hopping sequence is

2.89 ms x 20 channels = 57.8 ms

There cannot be 2 complete hopping sequences within 100ms period, considering the random hopping behavior, maximum 2 hops can be possibly observed within the period. [100 ms / 57.8 ms] = 2 hops

Thus, the maximum possible ON time:

2.89 ms x 2 = 5.78 ms

Worst case Duty Cycle Correction factor, which is derived from the maximum possible ON time,

20 x log(5.78 ms/100 ms) = -24.76 dB