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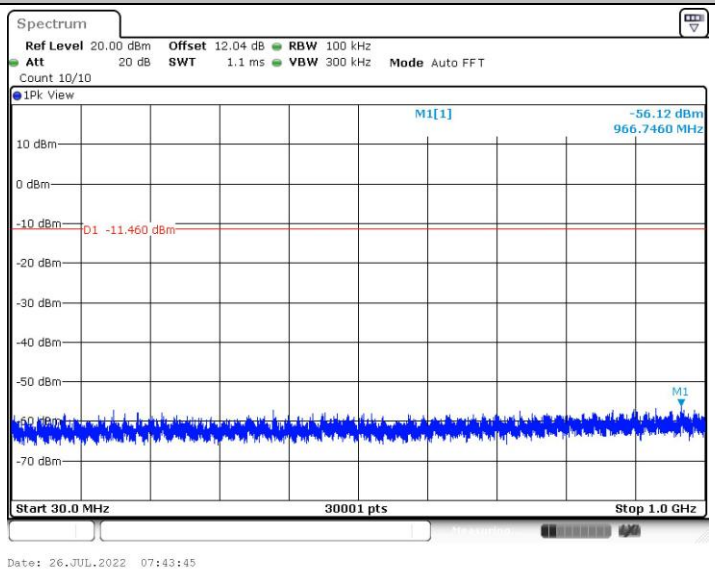
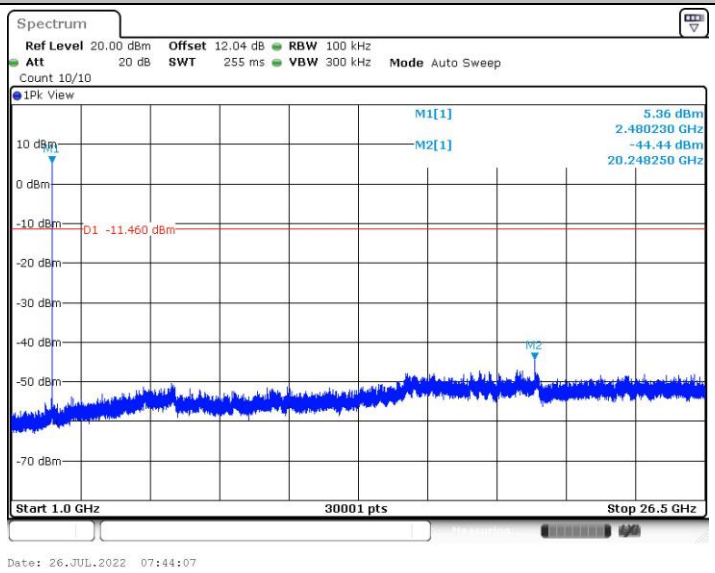
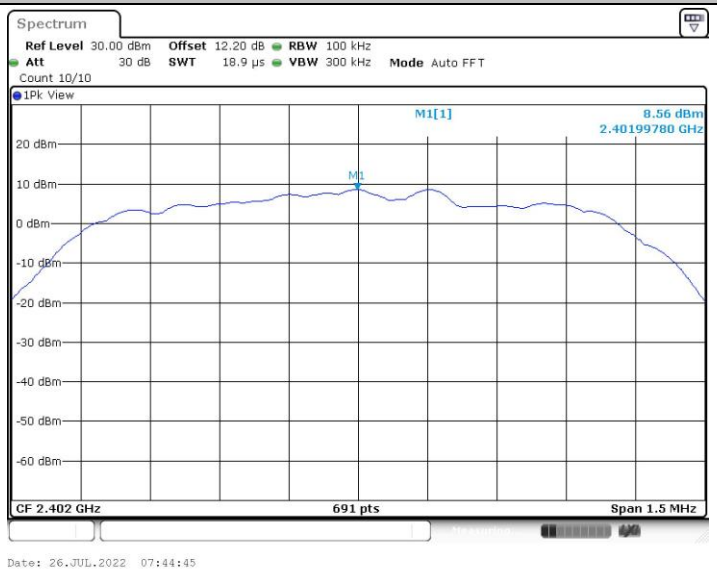
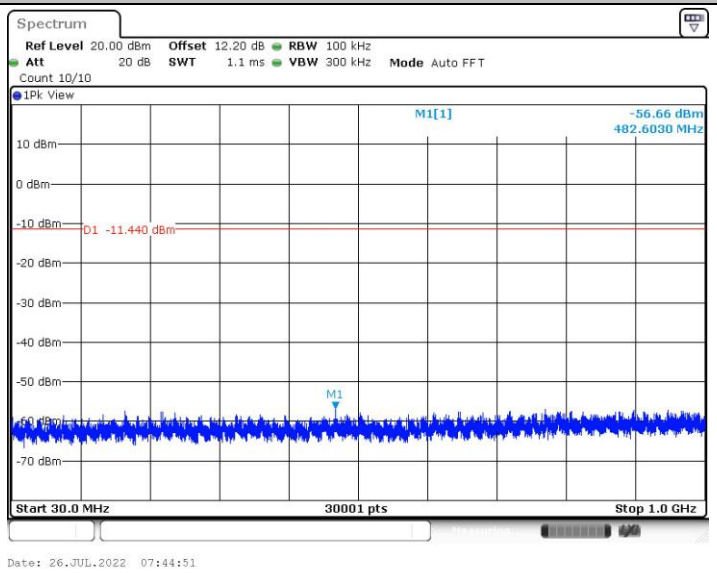
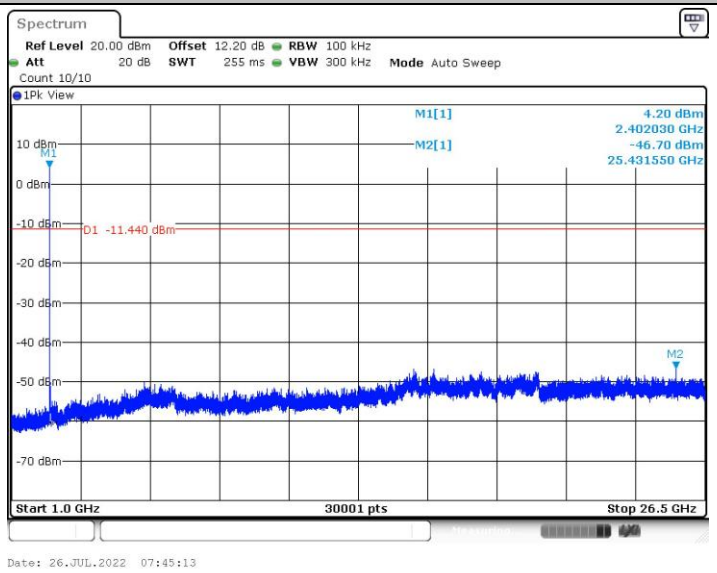


2DH5_Ant1_2480_1000~26500



3DH5_Ant1_2402_0~Reference

3DH5_Ant1_2402_30~1000


3DH5_Ant1_2402_1000~26500

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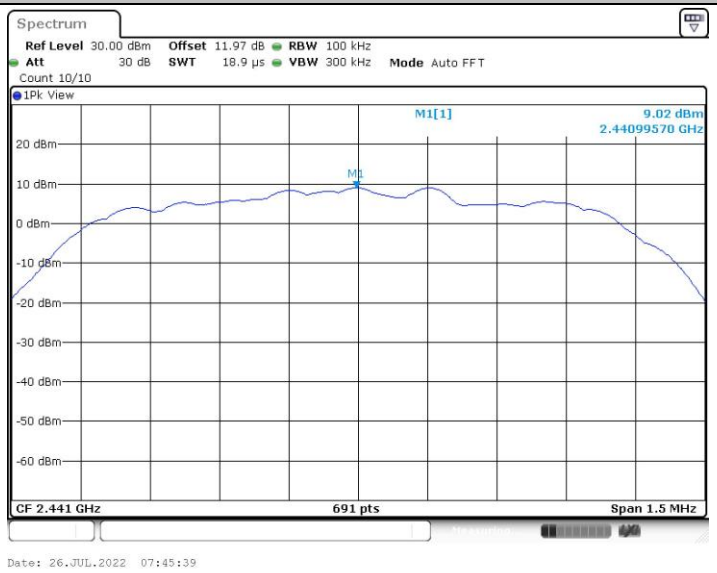
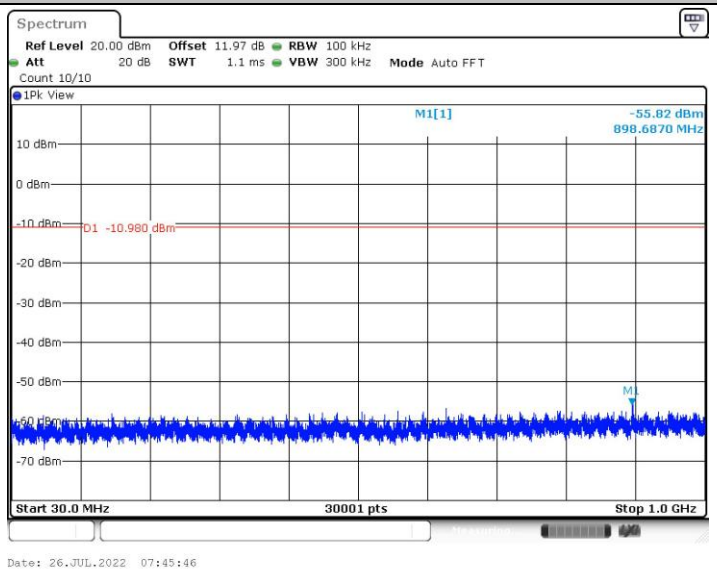
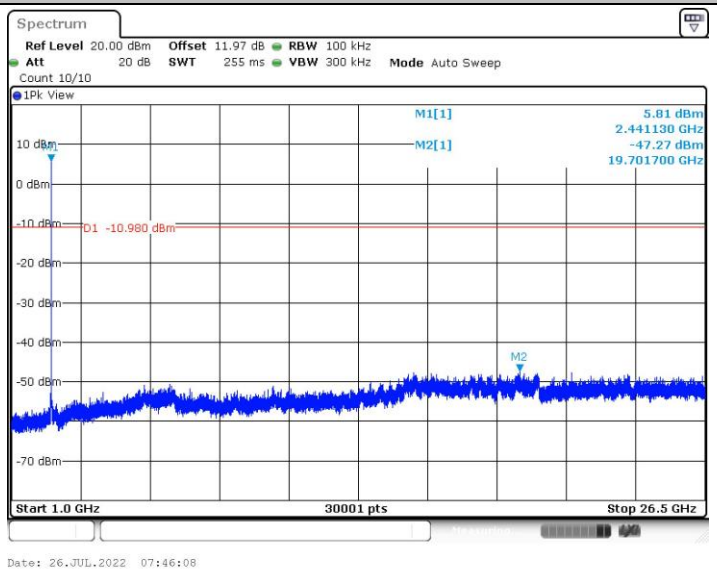


3DH5_Ant1_2441_30~1000

3DH5_Ant1_2441_1000~26500


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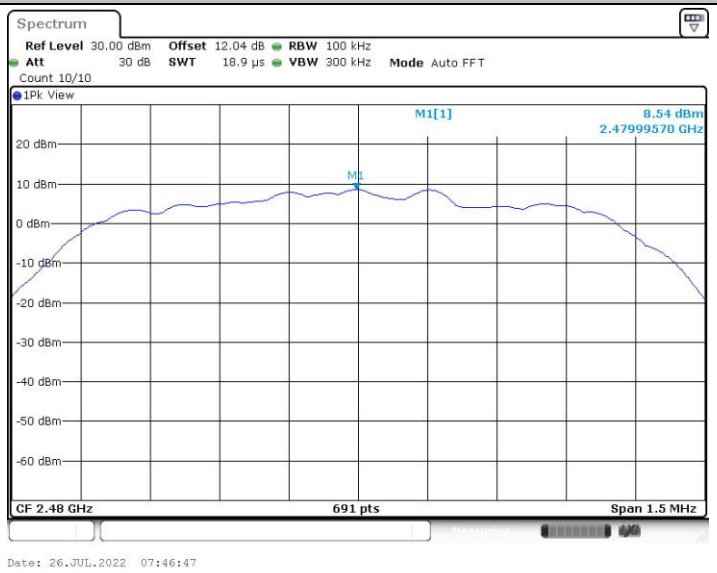
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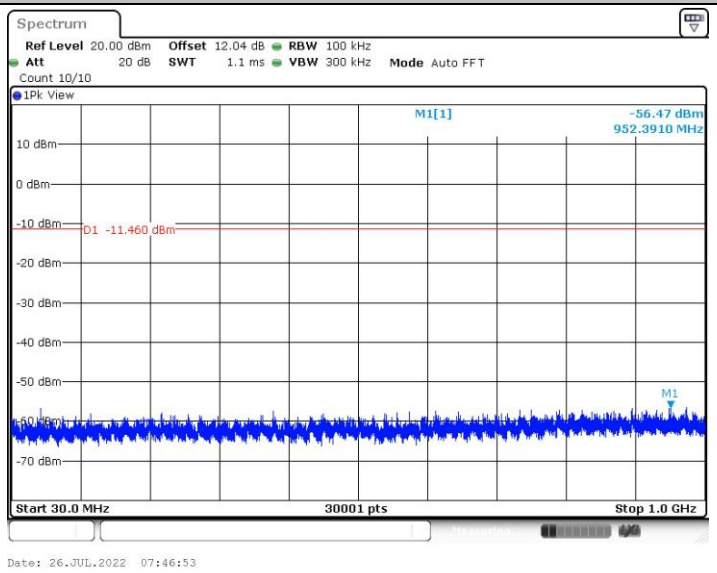
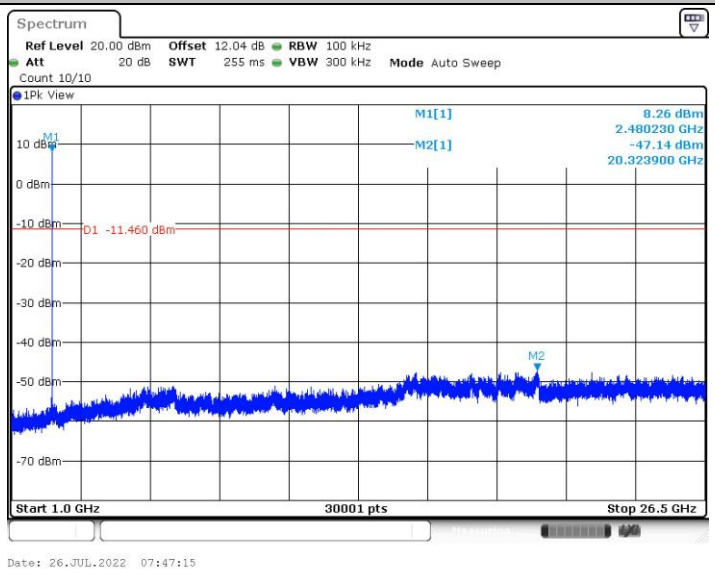


3DH5_Ant1_2480_1000~26500


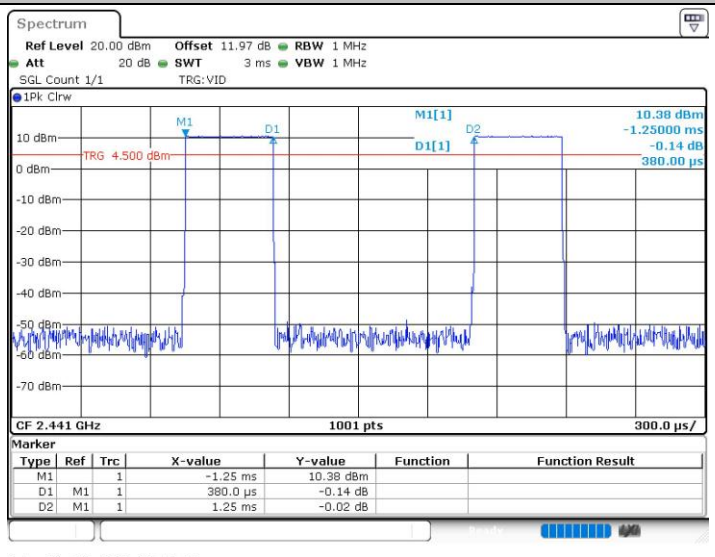
Duty Cycle

Test Result

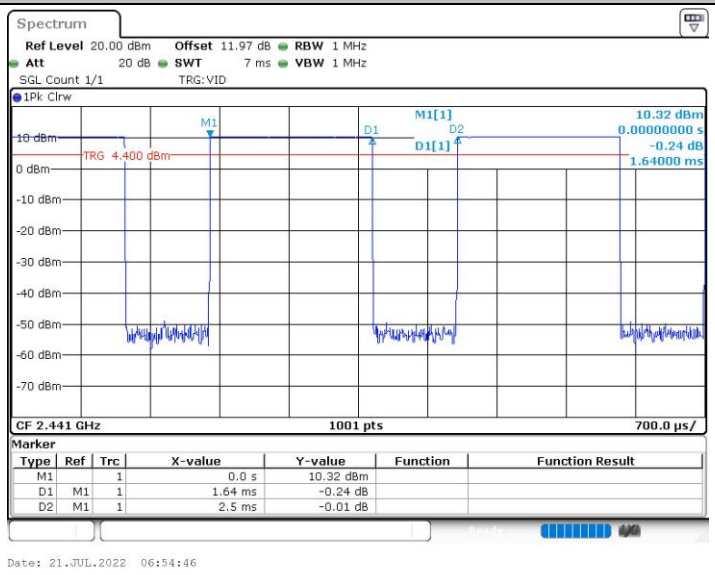
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	DC [%]	xFactor	Limit	Verdict
DH1	Ant1	2441	0.38	1.25	30.40	5.17	---	---
DH3	Ant1	2441	1.64	2.50	65.60	1.83	---	---
DH5	Ant1	2441	2.89	3.75	77.07	1.13	---	---
2DH1	Ant1	2441	0.39	1.25	31.20	5.06	---	---
2DH3	Ant1	2441	1.64	2.50	65.60	1.83	---	---
2DH5	Ant1	2441	2.89	3.75	77.07	1.13	---	---
3DH1	Ant1	2441	0.39	1.25	31.20	5.06	---	---
3DH3	Ant1	2441	1.63	2.50	65.20	1.86	---	---
3DH5	Ant1	2441	2.89	3.75	77.07	1.13	---	---

Test Graphs

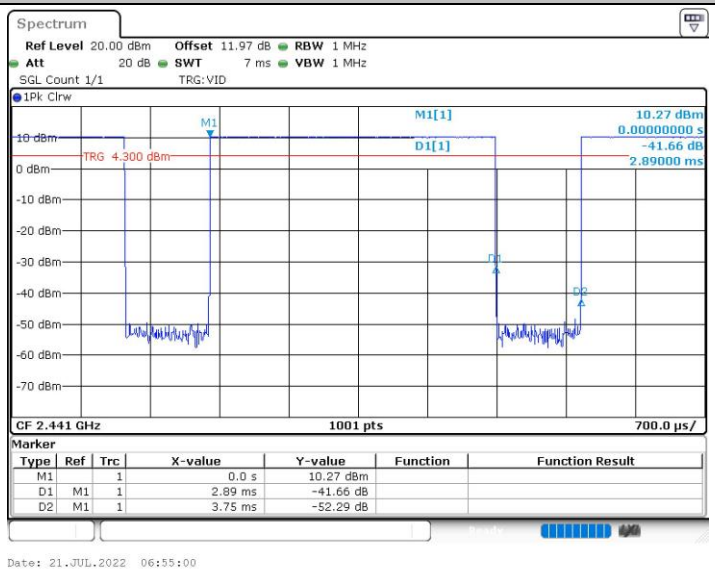
DH1_Ant1_2441



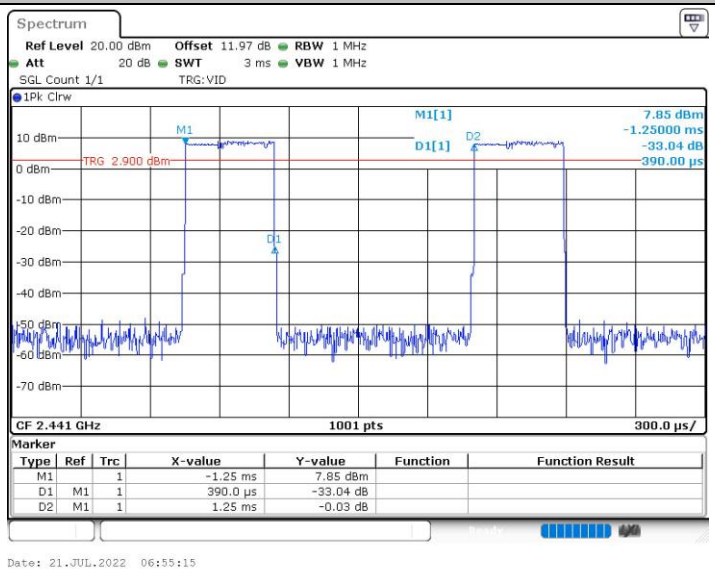
DH3_Ant1_2441



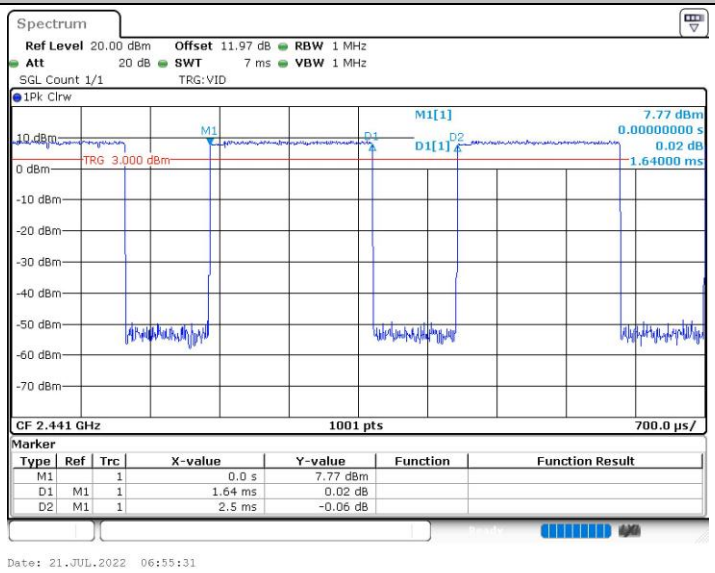
DH5_Ant1_2441



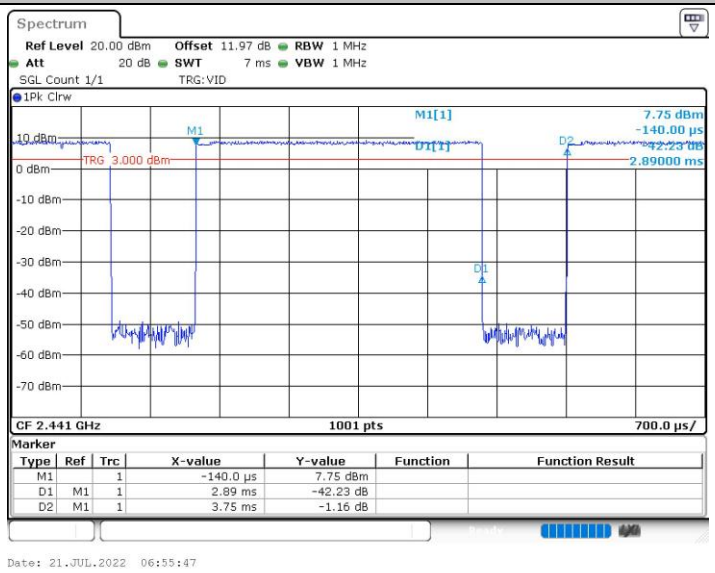
2DH1_Ant1_2441

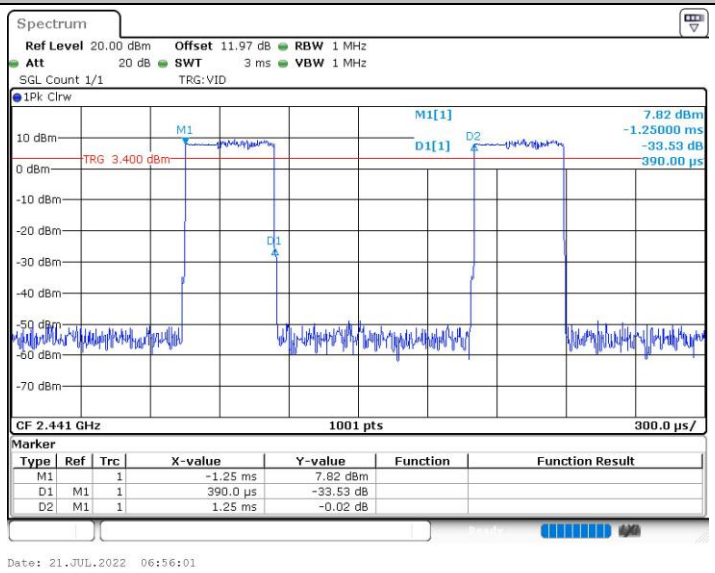


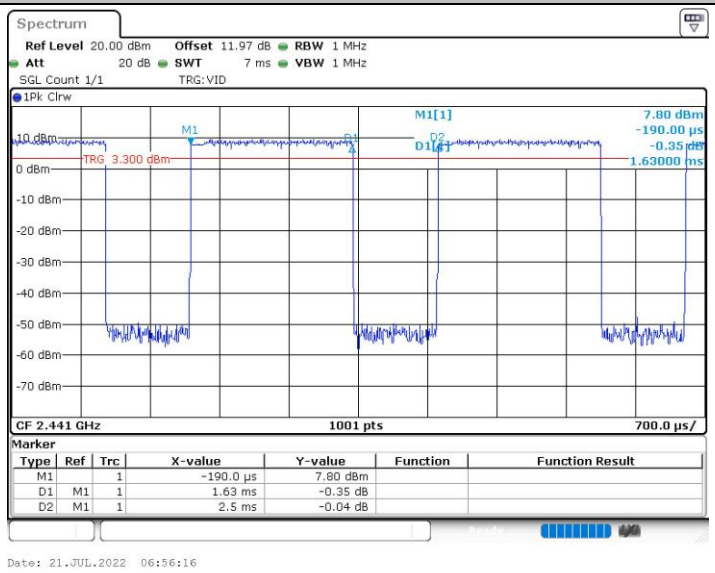
2DH3_Ant1_2441

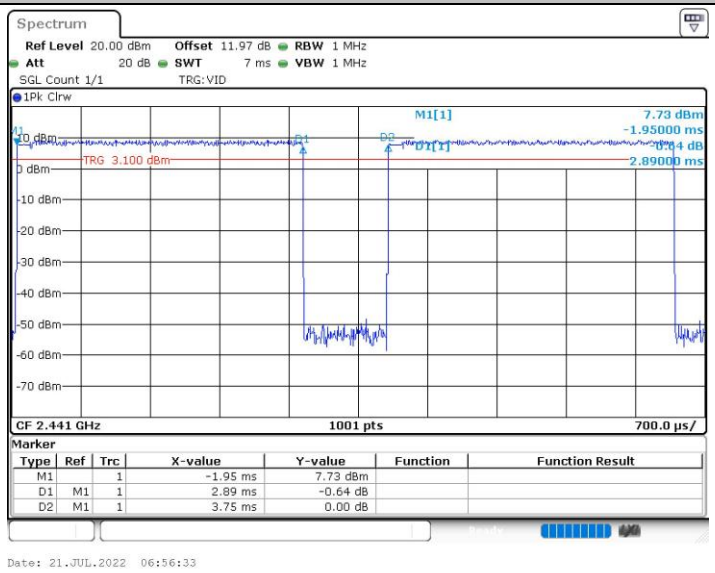


2DH5_Ant1_2441



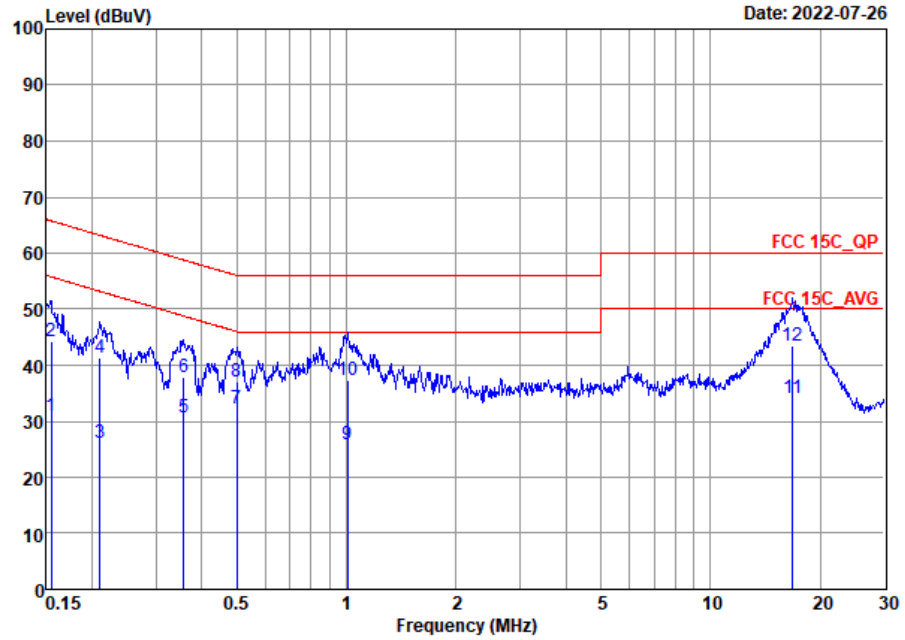
3DH1_Ant1_2441


3DH3_Ant1_2441


3DH5_Ant1_2441


Appendix B. AC Conducted Emission Test Results

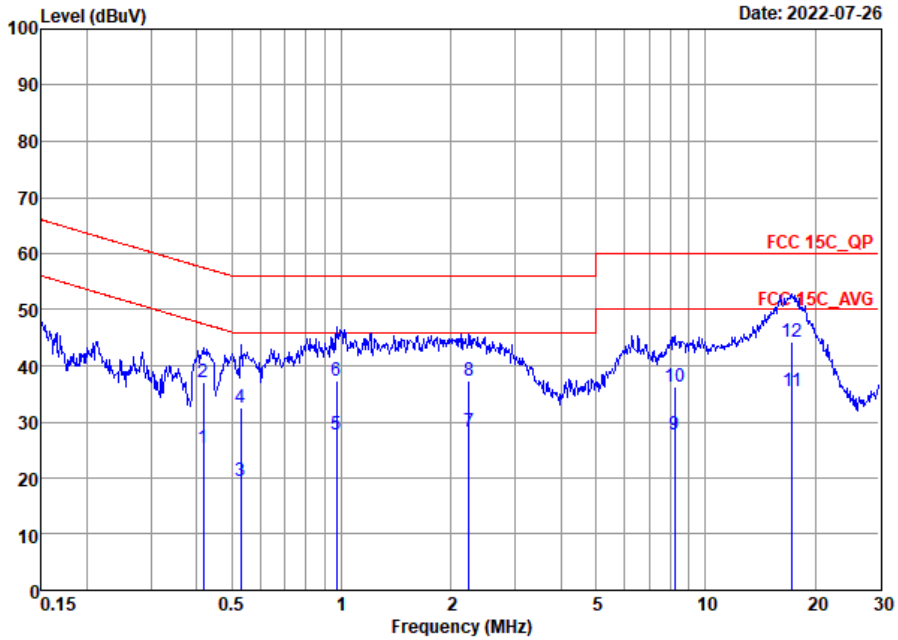
Test Engineer :	Lily	**Temperature :**	22~25℃
		Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-SZ
Condition: FCC 15C_QP LISN_20210901_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	30.97	-24.77	55.74	10.00	10.20	10.77	Average
2		0.15	44.37	-21.37	65.74	23.40	10.20	10.77	QP
3		0.21	26.15	-27.03	53.18	5.70	10.19	10.26	Average
4		0.21	41.35	-21.83	63.18	20.90	10.19	10.26	QP
5		0.36	30.62	-18.16	48.78	9.30	10.08	11.24	Average
6		0.36	37.92	-20.86	58.78	16.60	10.08	11.24	QP
7	*	0.50	32.28	-13.73	46.01	10.30	10.12	11.86	Average
8		0.50	37.18	-18.83	56.01	15.20	10.12	11.86	QP
9		1.00	25.85	-20.15	46.00	5.50	10.12	10.23	Average
10		1.00	37.35	-18.65	56.00	17.00	10.12	10.23	QP
11		16.84	34.22	-15.78	50.00	14.00	9.87	10.35	Average
12		16.84	43.52	-16.48	60.00	23.30	9.87	10.35	QP

Test Engineer :	Lily	**Temperature :**	22~25℃
		Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-SZ
Condition: FCC 15C QP LISN 20210901 N NEUTRAL

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.42	25.22	-22.29	47.51	3.50	10.19	11.53	Average
2		0.42	37.12	-20.39	57.51	15.40	10.19	11.53	QP
3		0.53	19.53	-26.47	46.00	-2.41	10.21	11.73	Average
4		0.53	32.53	-23.47	56.00	10.59	10.21	11.73	QP
5		0.97	27.73	-18.27	46.00	7.19	10.23	10.31	Average
6		0.97	37.43	-18.57	56.00	16.89	10.23	10.31	QP
7		2.24	28.31	-17.69	46.00	7.90	10.17	10.24	Average
8		2.24	37.21	-18.79	56.00	16.80	10.17	10.24	QP
9		8.24	27.79	-22.21	50.00	7.50	10.01	10.28	Average
10		8.24	36.39	-23.61	60.00	16.10	10.01	10.28	QP
11	*	17.29	35.36	-14.64	50.00	15.20	9.81	10.35	Average
12		17.29	44.26	-15.74	60.00	24.10	9.81	10.35	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

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BT CH00 2402MHz		2364.39	47.94	-26.06	74	43.67	27.36	9.61	32.7	134	303	P	H
		2364.39	23.15	-30.85	54	-	-	-	-	-	-	A	H
	*	2402	106.06	-	-	101.71	27.4	9.65	32.7	134	303	P	H
	*	2402	81.27	-	-	-	-	-	-	-	-	A	H
		2377.935	47.93	-26.07	74	43.63	27.38	9.62	32.7	361	58	P	V
		2377.935	23.14	-30.86	54	-	-	-	-			A	V
	*	2402	107.05	-	-	102.7	27.4	9.65	32.7	361	58	P	V
	*	2402	82.26	-	-	-	-	-	-	-	-	A	V
BT CH 39 2441MHz		2382.94	44.01	-29.99	74	39.7	27.38	9.63	32.7	100	299	P	H
		2382.94	19.22	-34.78	54	-	-	-	-	-	-	A	H
	*	2441	104.31	-	-	99.87	27.44	9.7	32.7	100	299	P	H
	*	2441	79.52	-	-	-	-	-	-	-	-	A	H
		2484.81	43.76	-30.24	74	39.23	27.48	9.75	32.7	100	299	P	H
		2484.81	18.97	-35.03	54	-	-	-	-	-	-	A	H
		2381.26	43.93	-30.07	74	39.62	27.38	9.63	32.7	400	29	P	V
		2381.26	19.14	-34.86	54	-	-	-	-	-	-	A	V
	*	2441	105.09	-	-	100.65	27.44	9.7	32.7	400	29	P	V
	*	2441	80.3	-	-	-	-	-	-	-	-	A	V
		2484.6	43.29	-30.71	74	38.76	27.48	9.75	32.7	400	29	P	V
		2484.6	18.5	-35.5	54	-	-	-	-	-	-	A	V
BT CH 78 2480MHz	*	2480	106.86	-	-	102.33	27.48	9.75	32.7	100	304	P	H
	*	2480	82.07	-	-	-	-	-	-	-	-	A	H
		2483.52	64.35	-9.65	74	59.82	27.48	9.75	32.7	100	304	P	H
		2483.52	39.56	-14.44	54	-	-	-	-	-	-	A	H
	*	2480	106.59	-	-	102.06	27.48	9.75	32.7	387	60	P	V
	*	2480	81.8	-	-	-	-	-	-	-	-	A	V
		2483.56	64.04	-9.96	74	59.51	27.48	9.75	32.7	387	60	P	V

		2483.56	39.25	-14.75	54	-	-	-	-	-	-	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

BT	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)
BT CH 00 2402MHz		4804	42.71	-31.29	74	51.79	31.07	12	52.15	-	-	P	H
		4804	17.92	-36.08	54	-	-	-	-	-	-	A	H
		4804	42.49	-31.51	74	51.57	31.07	12	52.15	-	-	P	V
		4804	17.7	-36.3	54	-	-	-	-	-	-	A	V
BT CH 39 2441MHz		4882	42.07	-31.93	74	50.8	31.32	12.05	52.1	-	-	P	H
		4882	17.28	-36.72	54	-	-	-	-	-	-	A	H
		7323	48.64	-25.36	74	50.08	36.16	14.17	51.77	-	-	P	H
		7323	23.85	-30.15	54	-	-	-	-	-	-	A	H
		4882	42.44	-31.56	74	51.17	31.32	12.05	52.1	-	-	P	V
		4882	17.65	-36.35	54	-	-	-	-	-	-	A	V
		7323	48.53	-25.47	74	49.97	36.16	14.17	51.77	-	-	P	V
		7323	23.74	-30.26	54	-	-	-	-	-	-	A	V
BT CH 78 2480MHz		4960	43.57	-30.43	74	51.94	31.57	12.09	52.03	-	-	P	H
		4960	18.78	-35.22	54	-	-	-	-	-	-	A	H
		7440	48.42	-25.58	74	49.58	36.25	14.24	51.65	-	-	P	H
		7440	23.63	-30.37	54	-	-	-	-	-	-	A	H
		4960	43.44	-30.56	74	51.81	31.57	12.09	52.03	-	-	P	V
		4960	18.65	-35.35	54	-	-	-	-	-	-	A	V
		7440	47.42	-26.58	74	48.58	36.25	14.24	51.65	-	-	P	V
		7440	22.63	-31.37	54	-	-	-	-	-	-	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

2.4GHz BT (LF)

BT	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)
2.4GHz BT LF		30	25.01	-14.99	40	31.02	25.86	0.53	32.4	-	-	P	H
		57.16	22.76	-17.24	40	41.67	12.73	0.76	32.4	-	-	P	H
		187.14	24.57	-18.93	43.5	39.7	15.6	1.39	32.12	-	-	P	H
		287.05	25.76	-20.24	46	36.11	19.61	1.76	31.72	-	-	P	H
		556.71	27.21	-18.79	46	29.6	26.02	2.47	30.88	-	-	P	H
		943.74	33.34	-12.66	46	30.69	30.93	3.22	31.5	-	-	P	H
		30	26.63	-13.37	40	32.64	25.86	0.53	32.4	-	-	P	V
		56.19	30.06	-9.94	40	48.74	12.97	0.75	32.4	-	-	P	V
		155.13	23.4	-20.1	43.5	37.46	16.86	1.27	32.19	-	-	P	V
		570.29	28.34	-17.66	46	30.53	26.13	2.5	30.82	-	-	P	V
		762.35	30.79	-15.21	46	30.46	28.62	2.87	31.16	-	-	P	V
		960.23	33.35	-20.65	54	30.57	30.94	3.25	31.41	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

<Simultaneous transmission>

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT Ant. 23	Note	Frequency (MHz)	Level (dBµV/m)	Margin Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
BT CH 78 2480MHz +LTEB13 Co-colation		2480	104.93	-	-	100.4	27.48	9.75	32.7	100	298	P	H
		2480	80.14	-	-	-	-	-	-	-	-	A	H
		2483.52	60.4	-13.6	74	55.87	27.48	9.75	32.7	100	298	P	H
		2483.52	35.61	-18.39	54	-	-	-	-	-	-	A	H
		2480	103.76	-	-	99.23	27.48	9.75	32.7	400	45	P	V
		2480	78.97	-	-	-	-	-	-	-	-	A	V
		2483.6	58.71	-15.29	74	54.18	27.48	9.75	32.7	400	45	P	V
		2483.6	33.92	-20.08	54	-	-	-	-	-	-	A	V

2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

BT Ant. 23	Note	Frequency (MHz)	Level (dBµV/m)	Margin Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
BT CH 78 2480MHz +LTEB13 Co-colation		1559.5	42.19	-31.81	74	41.77	24.98	8.56	33.12	-	-	P	H
		2339.25	44.43	-29.57	74	40.21	27.34	9.58	32.7	-	-	P	H
		3119	42.08	-31.92	74	54.82	28.78	10.75	52.27	-	-	P	H
		4960	43.87	-30.13	74	52.24	31.57	12.09	52.03	-	-	P	H
		4960	19.08	-34.92	54	-	-	-	-	-	-	A	H
		7440	48.79	-25.21	74	49.95	36.25	14.24	51.65	-	-	P	H
		7440	24	-30	54	-	-	-	-	-	-	A	H
		1559.5	41.24	-32.76	74	40.82	24.98	8.56	33.12	-	-	P	V
		2339.25	43.89	-30.11	74	39.67	27.34	9.58	32.7	-	-	P	V
		3119	41.84	-32.16	74	54.58	28.78	10.75	52.27	-	-	P	V
		4960	43.84	-30.16	74	52.21	31.57	12.09	52.03	-	-	P	V
		4960	19.05	-34.95	54	-	-	-	-	-	-	A	V
		7440	47.96	-26.04	74	49.12	36.25	14.24	51.65	-	-	P	V
		7440	23.17	-30.83	54	-	-	-	-	-	-	A	V

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:

BT	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)
BT 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)

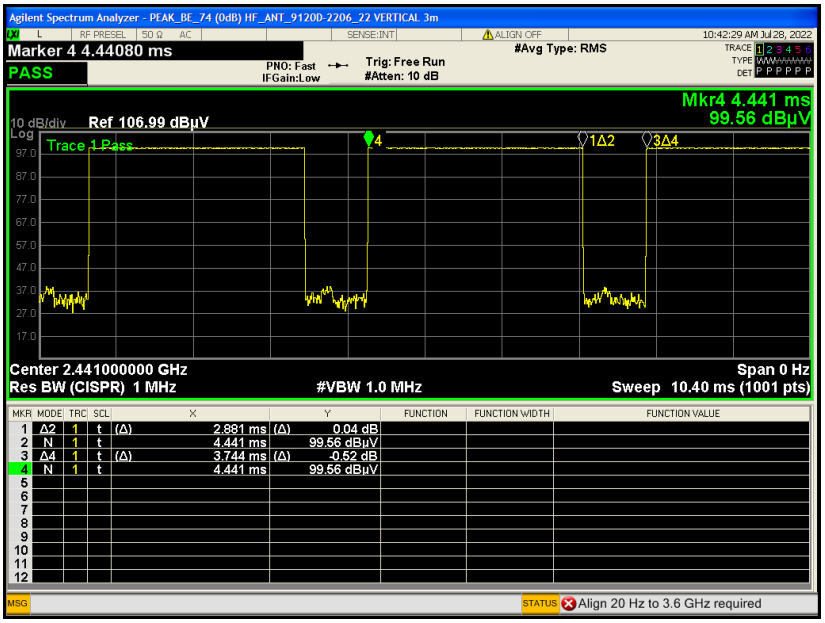
= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

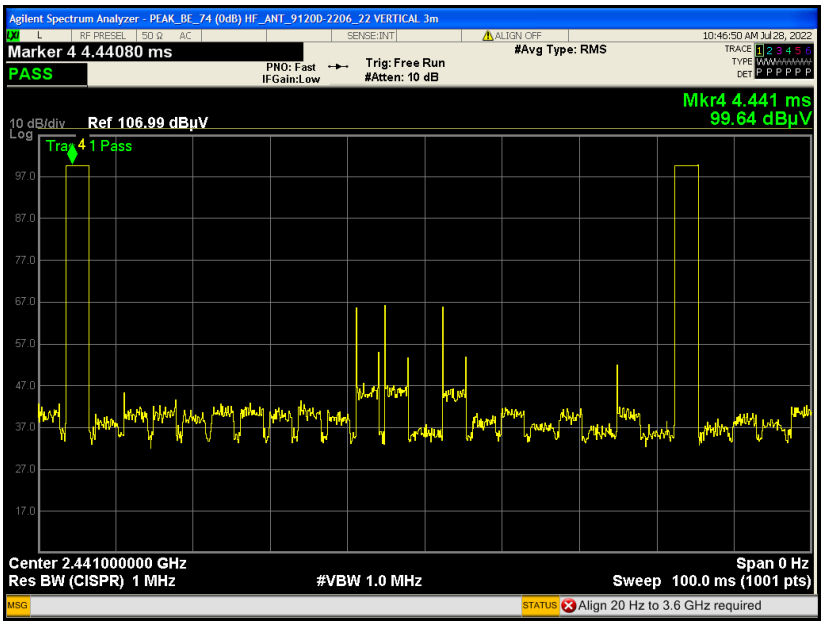
Both peak and average measured complies with the limit line, so test result is "PASS".

Appendix D. 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.