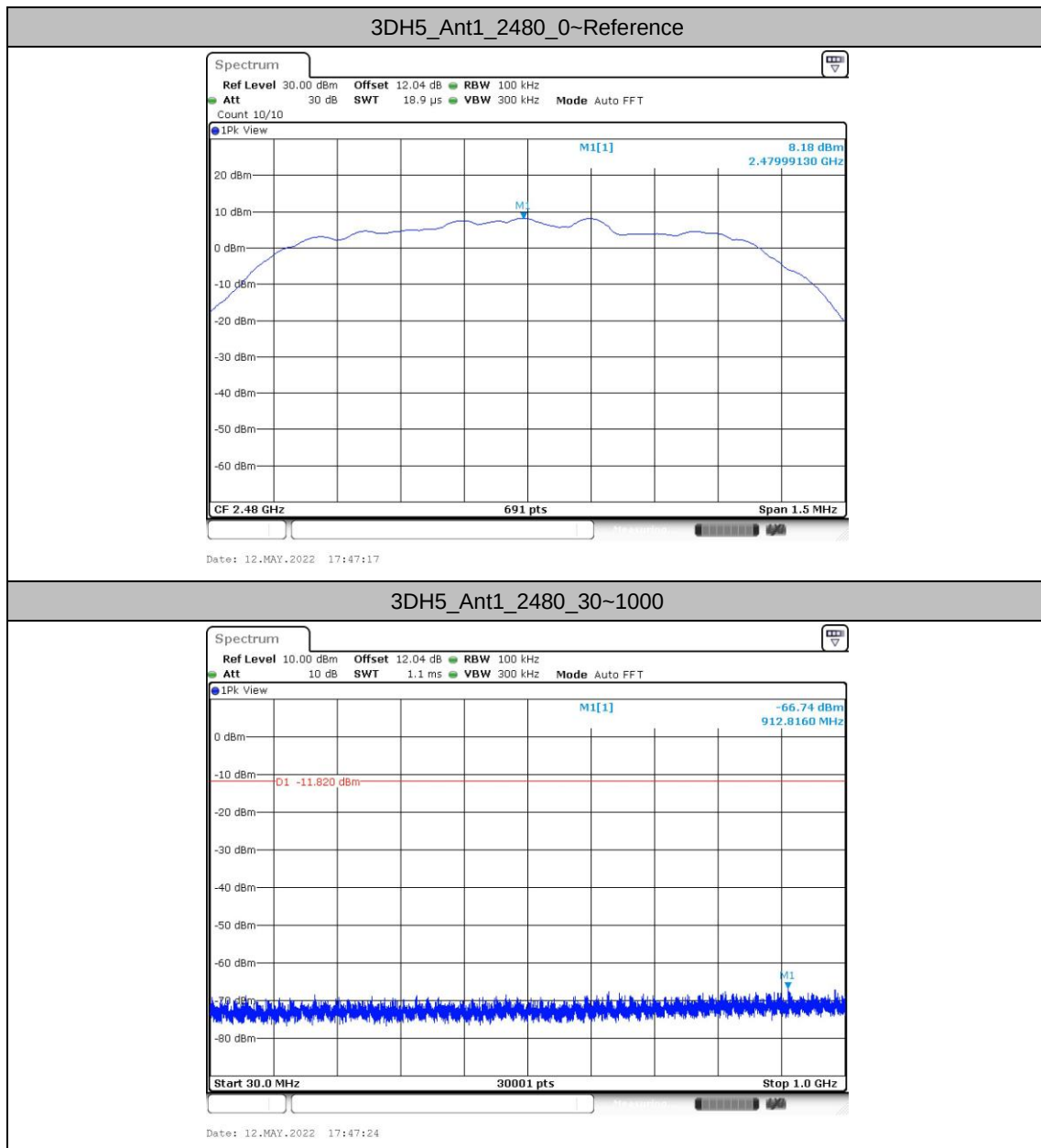
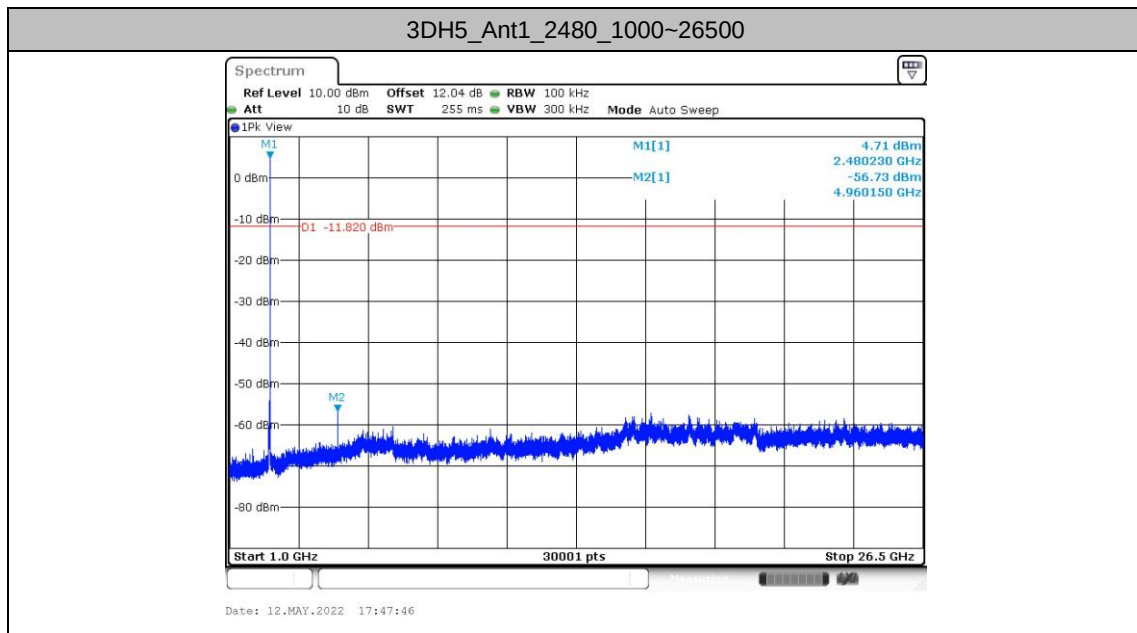








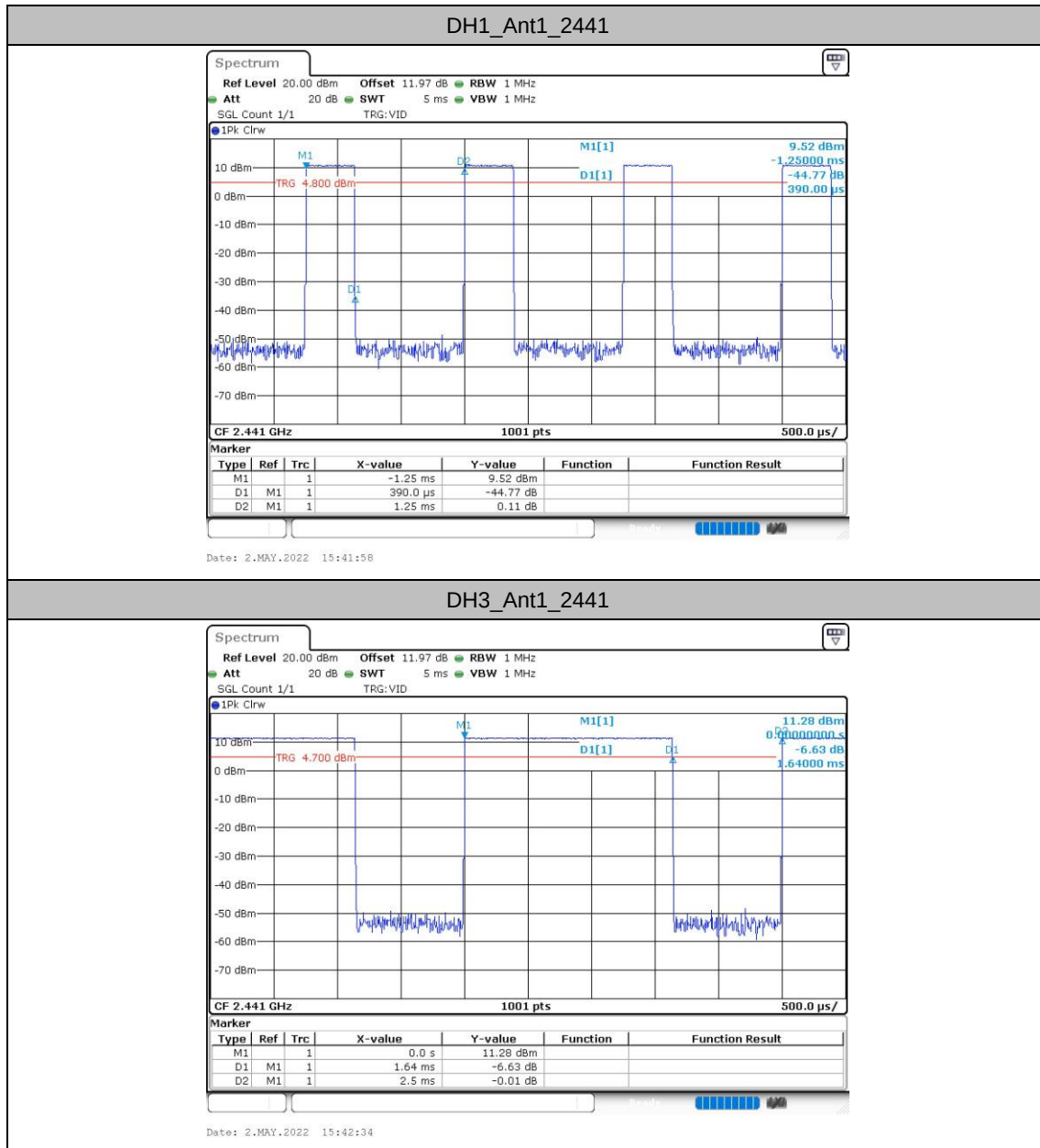
Duty Cycle

Test Result

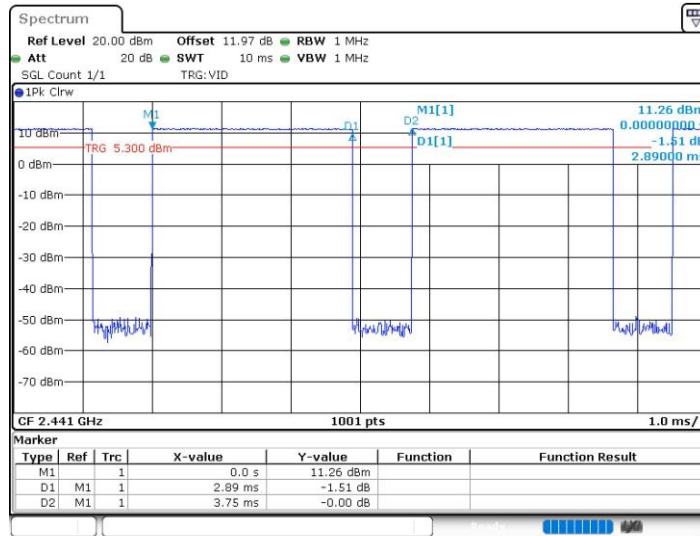
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	DC [%]	xFactor	Limit	Verdict
DH1	Ant1	2441	0.39	1.25	31.20	5.06	---	---
DH3	Ant1	2441	1.64	2.50	65.60	1.83	---	---
DH5	Ant1	2441	2.89	3.75	77.07	1.13	---	---
2DH1	Ant1	2441	0.39	1.25	31.20	5.06	---	---
2DH3	Ant1	2441	1.64	2.50	65.60	1.83	---	---
2DH5	Ant1	2441	2.89	3.76	76.86	1.14	---	---
3DH1	Ant1	2441	0.39	1.25	31.20	5.06	---	---
3DH3	Ant1	2441	1.64	2.50	65.60	1.83	---	---
3DH5	Ant1	2441	2.89	3.75	77.07	1.13	---	---



Test Graphs

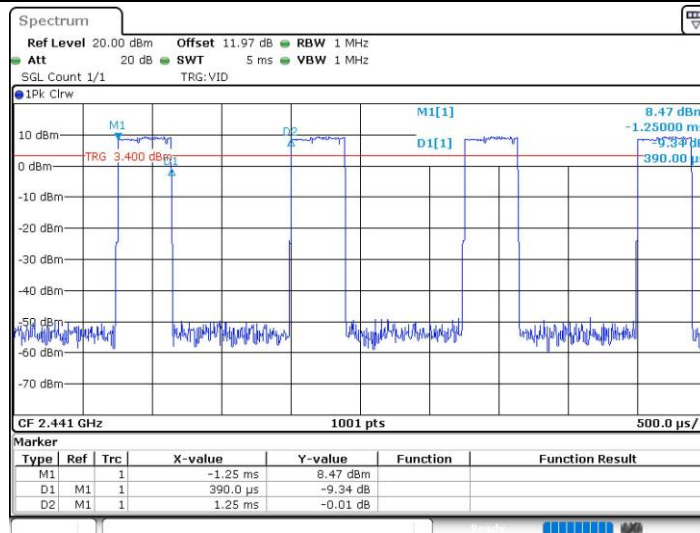


DH5_Ant1_2441

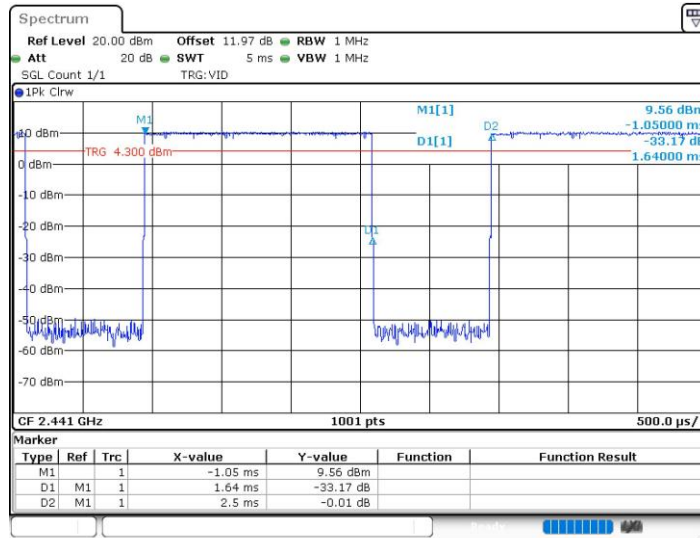


Date: 2.MAY.2022 15:43:12

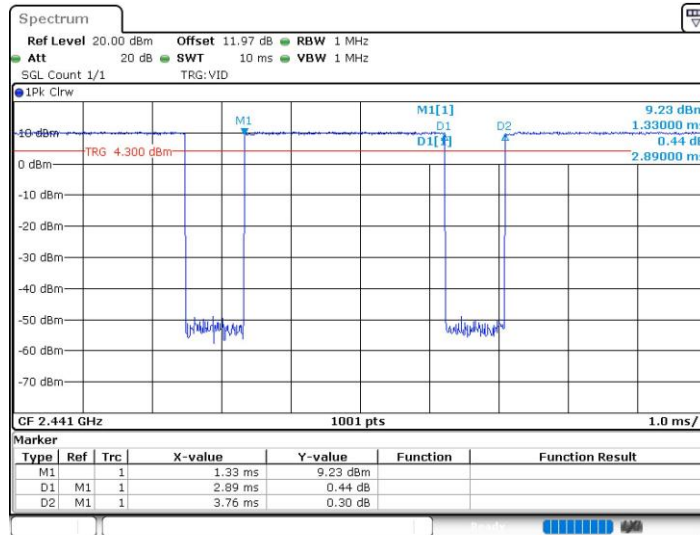
2DH1_Ant1_2441



Date: 2.MAY.2022 15:42:10

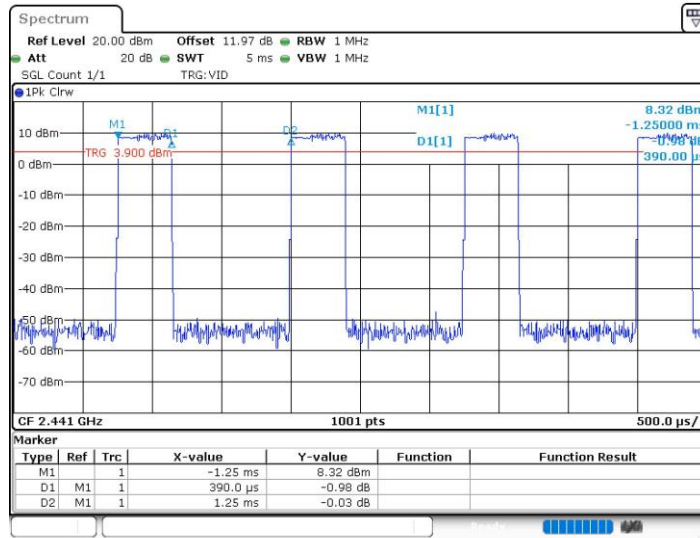
2DH3_Ant1_2441


Date: 2.MAY.2022 15:42:46

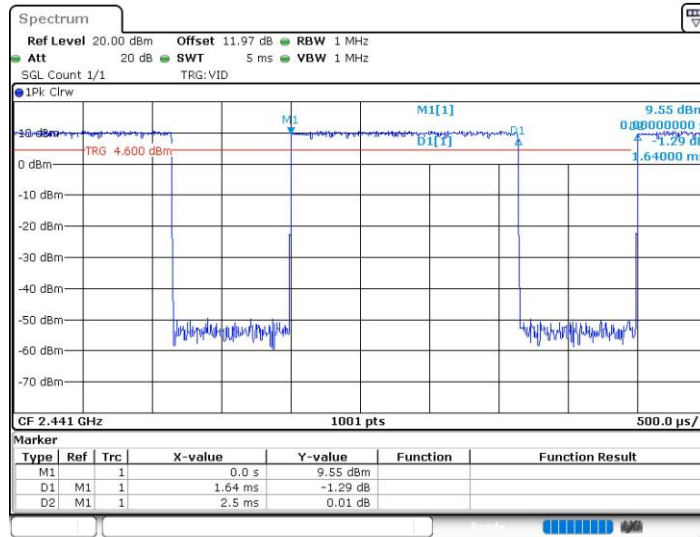
2DH5_Ant1_2441


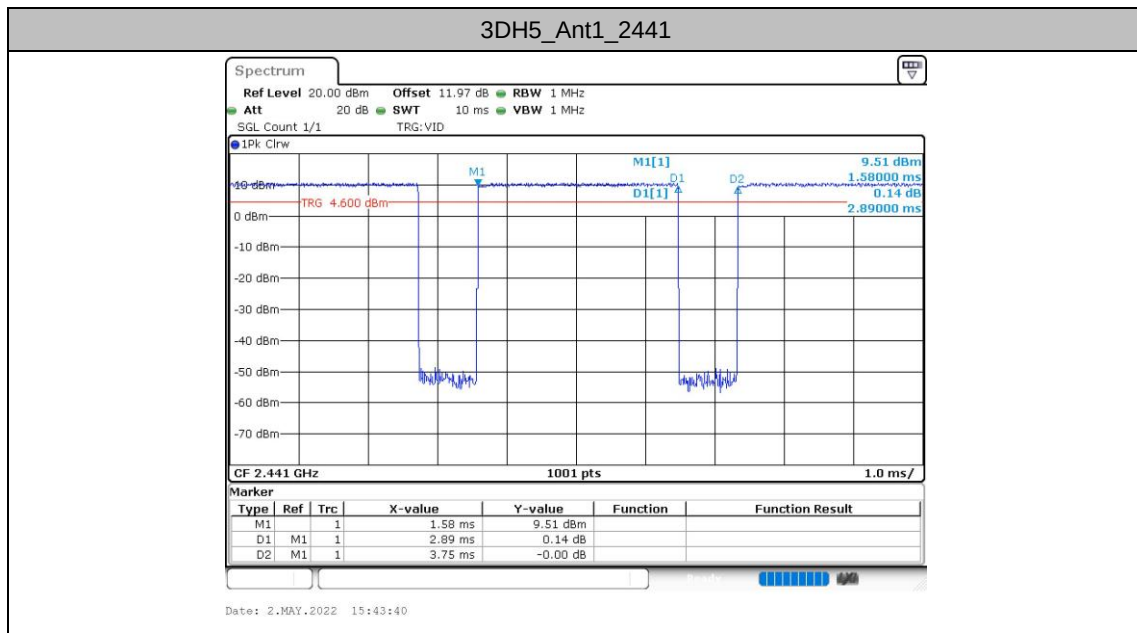
Date: 2.MAY.2022 15:43:26

3DH1_Ant1_2441



3DH3_Ant1_2441

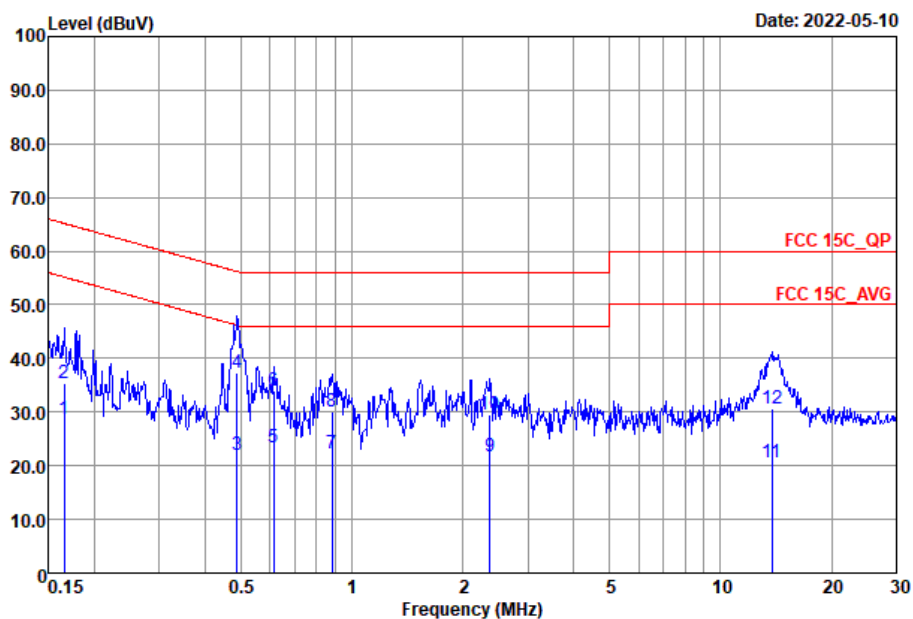






Appendix B. AC Conducted Emission Test Results

Test Engineer :	ZhangXu	Temperature :	22~25°C
		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.		

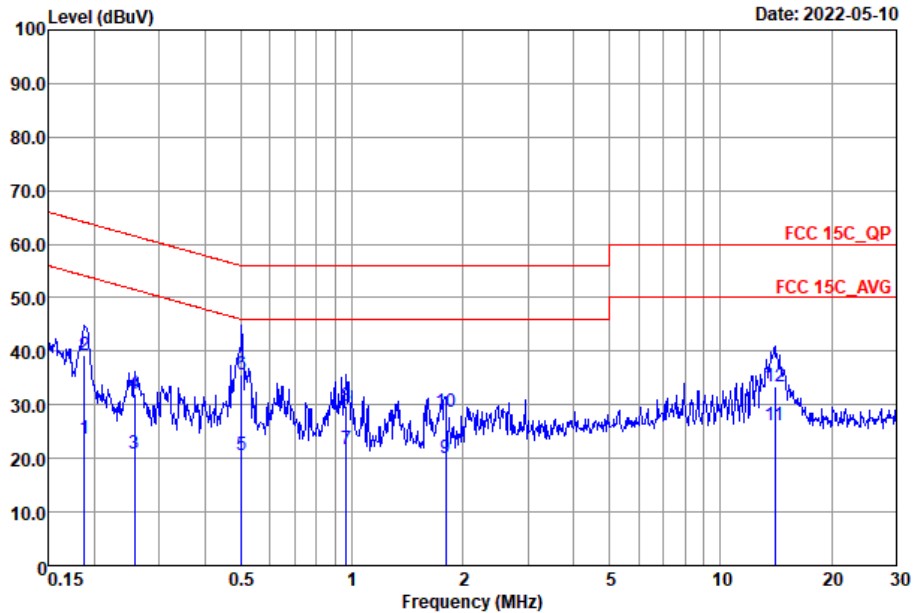


Site : CO02-SZ
Condition : FCC 15C_QP LISN_2022_L

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.17	28.74	-26.42	55.16	9.09	9.62	10.03	Average
2	0.17	35.44	-29.72	65.16	15.79	9.62	10.03	QP
3	0.49	21.89	-24.30	46.19	2.20	9.65	10.04	Average
4 *	0.49	37.39	-18.80	56.19	17.70	9.65	10.04	QP
5	0.61	23.30	-22.70	46.00	3.60	9.66	10.04	Average
6	0.61	34.00	-22.00	56.00	14.30	9.66	10.04	QP
7	0.88	22.28	-23.72	46.00	2.49	9.73	10.06	Average
8	0.88	29.98	-26.02	56.00	10.19	9.73	10.06	QP
9	2.37	21.64	-24.36	46.00	1.80	9.78	10.06	Average
10	2.37	29.44	-26.56	56.00	9.60	9.78	10.06	QP
11	13.77	20.70	-29.30	50.00	0.50	9.96	10.24	Average
12	13.77	30.70	-29.30	60.00	10.50	9.96	10.24	QP



Test Engineer :	ZhangXu	Temperature :	22~25°C
		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 : CO02-SZ
Condition : FCC 15C_QP LISN_2022_N
Project : 232517
Mode : Mode 1
IMEI : 869835050002343/869835050003143

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.19	23.75	-30.36	54.11	4.11	9.62	10.02	Average
2	0.19	39.15	-24.96	64.11	19.51	9.62	10.02	QP
3	0.26	20.86	-30.65	51.51	1.20	9.64	10.02	Average
4	0.26	32.06	-29.45	61.51	12.40	9.64	10.02	QP
5	0.50	20.65	-25.35	46.00	1.00	9.61	10.04	Average
6 *	0.50	35.55	-20.45	56.00	15.90	9.61	10.04	QP
7	0.96	21.78	-24.22	46.00	2.10	9.62	10.06	Average
8	0.96	29.78	-26.22	56.00	10.10	9.62	10.06	QP
9	1.80	20.17	-25.83	46.00	0.50	9.62	10.05	Average
10	1.80	28.57	-27.43	56.00	8.90	9.62	10.05	QP
11	14.06	26.09	-23.91	50.00	6.00	9.85	10.24	Average
12	14.06	33.49	-26.51	60.00	13.40	9.85	10.24	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	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BT CH00 2402MHz		2371.215	46.46	-27.54	74	43.36	31.9	4.88	33.68	370	135	P	H
		2371.215	21.67	-32.33	54	-	-	-	-	370	135	A	H
		2402	106.32	-	-	103.16	31.91	4.91	33.66	370	135	P	H
	*	2402	81.53	-	-	-	-	-	-	370	135	A	H
		2385.495	46.99	-27.01	74	43.87	31.9	4.88	33.66	375	277	P	V
		2385.495	22.2	-31.8	54	-	-	-	-	375	277	A	V
		2402	106.25	-	-	103.09	31.91	4.91	33.66	375	277	P	V
	*	2402	81.46	-	-	-	-	-	-	375	277	A	V
BT CH 39 2441MHz		2348.22	46.48	-27.52	74	43.47	31.89	4.81	33.69	353	135	P	H
		2348.22	21.69	-32.31	54	-	-	-	-	353	135	A	H
		2441	107.38	-	-	103.9	32.15	4.96	33.63	353	135	P	H
	*	2441	82.59	-	-	-	-	-	-	353	135	A	H
		2499.44	47.01	-26.99	74	43.5	32.1	5.01	33.6	353	135	P	H
		2499.44	22.22	-31.78	54	-	-	-	-	353	135	A	H
		2346.4	46.92	-27.08	74	43.91	31.89	4.81	33.69	359	276	P	V
		2346.4	22.13	-31.87	54	-	-	-	-	359	276	A	V
		2441	107.55	-	-	104.07	32.15	4.96	33.63	359	276	P	V
	*	2441	82.76	-	-	-	-	-	-	359	276	A	V
		2489.57	47.43	-26.57	74	43.9	32.12	5.01	33.6	359	276	P	V
		2489.57	22.64	-31.36	54	-	-	-	-	359	276	A	V



BT CH 78 2480MHz		2480	107.12	-	-	103.61	32.14	4.99	33.62	395	131	P	H
	*	2480	82.33	-	-	-	-	-	-	395	131	A	H
		2483.56	64.06	-9.94	74	60.56	32.13	4.99	33.62	395	131	P	H
		2483.56	39.27	-14.73	54	-	-	-	-	395	131	A	H
		2480	106.39	-	-	102.88	32.14	4.99	33.62	307	263	P	V
	*	2480	81.6	-	-	-	-	-	-	307	263	A	V
		2483.52	63.91	-10.09	74	60.41	32.13	4.99	33.62	307	263	P	V
		2483.52	39.12	-14.88	54	-	-	-	-	307	263	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	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 CH 00 2402MHz		4804	45.19	-28.81	74	57.14	33.89	7.09	52.93	-	-	P	H
		4804	20.4	-33.6	54	-	-	-	-	-	-	A	H
		4804	45.62	-28.38	74	57.57	33.89	7.09	52.93	-	-	P	V
		4804	20.83	-33.17	54	-	-	-	-	-	-	A	V
BT CH 39 2441MHz		4882	45.85	-28.15	74	57.7	33.8	7.19	52.84	-	-	P	H
		4882	21.06	-32.94	54	-	-	-	-	-	-	A	H
		7323	43.4	-30.6	74	53.08	35.63	8.8	54.11	-	-	P	H
		7323	18.61	-35.39	54	-	-	-	-	-	-	A	H
		4882	45.09	-28.91	74	56.94	33.8	7.19	52.84	-	-	P	V
		4882	20.3	-33.7	54	-	-	-	-	-	-	A	V
		7323	42.46	-31.54	74	52.14	35.63	8.8	54.11	-	-	P	V
		7323	17.67	-36.33	54	-	-	-	-	-	-	A	V
BT CH 78 2480MHz		4960	45.09	-28.91	74	56.79	33.82	7.22	52.74	-	-	P	H
		4960	20.3	-33.7	54	-	-	-	-	-	-	A	H
		7440	43.65	-30.35	74	53.06	35.68	8.95	54.04	-	-	P	H
		7440	18.86	-35.14	54	-	-	-	-	-	-	A	H
		4960	43.98	-30.02	74	55.68	33.82	7.22	52.74	-	-	P	V
		4960	19.19	-34.81	54	-	-	-	-	-	-	A	V
		7440	43.63	-30.37	74	53.04	35.68	8.95	54.04	-	-	P	V
		7440	18.84	-35.16	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 (LF @ 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 78 2480MHz		56.19	21.12	-18.88	40	39.88	13.1	0.64	32.5	-	-	P	H
		137.67	18.04	-25.46	43.5	31.64	17.55	1.02	32.17	-	-	P	H
		249.22	30.93	-15.07	46	43.55	18.35	1.13	32.1	-	-	P	H
		480.08	20.88	-25.12	46	27.36	23.04	1.92	31.44	-	-	P	H
		725.49	25.64	-20.36	46	29.8	25.23	2.31	31.7	-	-	P	H
		864.2	28.4	-17.6	46	31.33	26.46	2.47	31.86	-	-	P	H
		40.67	32.25	-7.75	40	47.66	18.94	0.66	35.01	-	-	P	V
		132.82	23.5	-20	43.5	39.76	17.67	1.2	35.13	-	-	P	V
		229.82	24.2	-21.8	46	41.31	16.35	1.58	35.04	-	-	P	V
		249.22	26.99	-19.01	46	41.98	18.35	1.66	35	-	-	P	V
		495.6	23.91	-22.09	46	32.92	23.31	2.38	34.7	-	-	P	V
		691.54	27.43	-18.57	46	34.21	24.88	2.84	34.5	-	-	P	V

Co-location

BT_TX_CH78 + LTE B7 Link

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 78 2480MHz		4960	44.4	-29.6	74	56.1	33.82	7.22	52.74	-	-	P	H
		5052	48.74	-25.26	74	60.21	33.9	7.32	52.69	-	-	P	H
		7440	44.14	-29.86	74	53.55	35.68	8.95	54.04	-	-	P	H
		7578	47.81	-26.19	74	57	35.7	9.06	53.95	-	-	P	H
		10104	47.74	-26.26	74	52.95	36.98	10.66	52.85	-	-	P	H
		4960	43.63	-30.37	74	55.33	33.82	7.22	52.74	-	-	P	V
		5052	55.82	-18.18	74	67.29	33.9	7.32	52.69	-	-	P	V
		7440	45.52	-28.48	74	54.93	35.68	8.95	54.04	-	-	P	V
		7578	50.83	-23.17	74	60.02	35.7	9.06	53.95	-	-	P	V
		10104	47.2	-26.8	74	52.41	36.98	10.66	52.85	-	-	P	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	Peak or Average
H/V	Horizontal or Vertical



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)

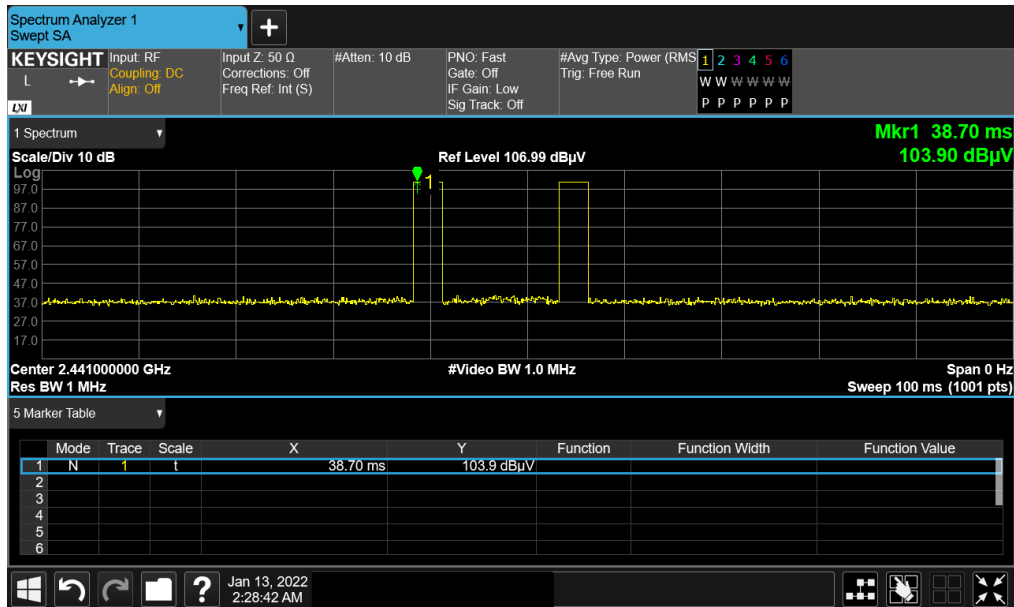
= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

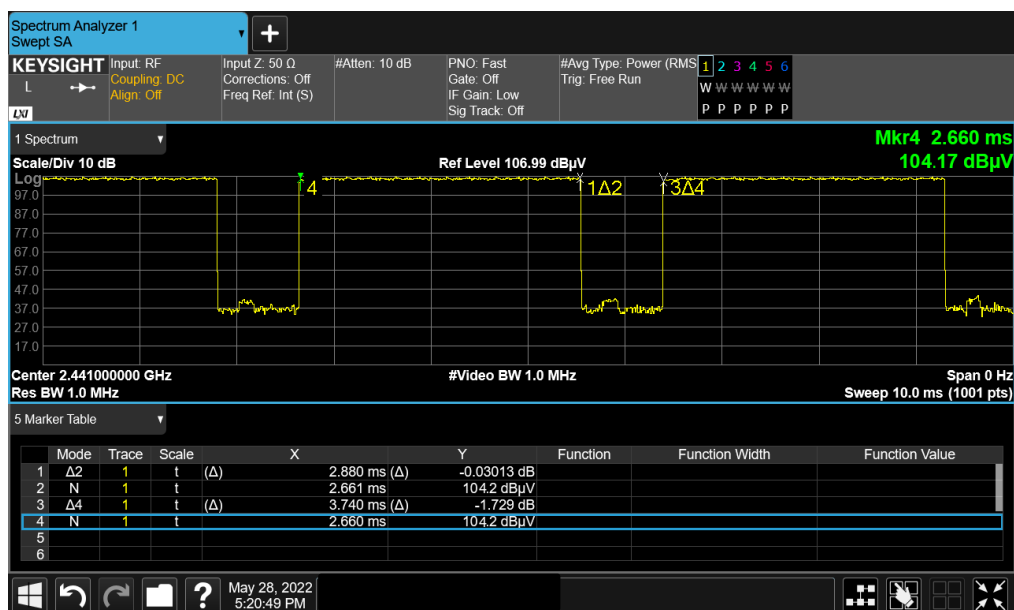
Both peak and average measured complies with the limit line, so test result is “PASS”.

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 = $20 * \log(\text{Duty cycle}) = -24.79 \text{ dB}$
3. DH5 has the highest duty cycle worst case and is reported.