

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Tommy Lee	Temperature:	20-25	°C
Test Date:	2022/1/15~2022/3/28	Relative Humidity:	51-56	%

<LoRa 500KHz>

TEST RESULTS DATA**6dB and 99% Occupied Bandwidth**

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
LoRa 500KHz	SF5	1	1	902.5	0.527	0.601	0.50	Pass
LoRa 500KHz	SF5	1	16	914.5	0.525	0.613	0.50	Pass
LoRa 500KHz	SF5	1	31	926.5	0.519	0.601	0.50	Pass

TEST RESULTS DATA**Average Power Table**

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
LoRa 500KHz	SF5	1	1	902.5	0.37	13.05	30.00	-1.19	11.86	36.00	Pass
LoRa 500KHz	SF5	1	16	914.5	0.37	24.78	30.00	-1.19	23.59	36.00	Pass
LoRa 500KHz	SF5	1	31	926.5	0.37	25.20	30.00	-1.19	24.01	36.00	Pass

TEST RESULTS DATA**Average Power Density**

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm /100kHz)	Average PSD (dBm /3kHz)	DG (dBi)	Average PSD Limit (dBm /3kHz)	Pass/Fail
LoRa 500KHz	SF5	1	1	902.5	12.83	-5.00	-1.19	8.00	Pass
LoRa 500KHz	SF5	1	16	914.5	24.74	6.97	-1.19	8.00	Pass
LoRa 500KHz	SF5	1	31	926.5	25.41	7.76	-1.19	8.00	Pass

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

Mod.	Data Rate	Ntx	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
LoRa 500KHz	SF8	1	1	902.5	0.547	0.639	0.50	Pass
LoRa 500KHz	SF8	1	16	914.5	0.541	0.637	0.50	Pass
LoRa 500KHz	SF8	1	31	926.5	0.537	0.637	0.50	Pass

TEST RESULTS DATA
Average Power Table

Mod.	Data Rate	Ntx	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
LoRa 500KHz	SF8	1	1	902.5	0.06	25.59	30.00	-1.19	24.40	36.00	Pass
LoRa 500KHz	SF8	1	16	914.5	0.06	25.36	30.00	-1.19	24.17	36.00	Pass
LoRa 500KHz	SF8	1	31	926.5	0.06	25.16	30.00	-1.19	23.97	36.00	Pass

TEST RESULTS DATA
Average Power Density

Mod.	Data Rate	Ntx	CH.	Freq. (MHz)	Peak PSD (dBm /100kHz)	Average PSD (dBm /3kHz)	DG (dBi)	Average PSD Limit (dBm /3kHz)	Pass/Fail
LoRa 500KHz	SF8	1	1	902.5	26.05	6.71	-1.19	8.00	Pass
LoRa 500KHz	SF8	1	16	914.5	25.63	6.52	-1.19	8.00	Pass
LoRa 500KHz	SF8	1	31	926.5	25.31	6.15	-1.19	8.00	Pass

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

Mod.	Data Rate	Ntx	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
LoRa 500KHz	SF9	1	1	902.5	0.549	0.651	0.50	Pass
LoRa 500KHz	SF9	1	16	914.5	0.543	0.641	0.50	Pass
LoRa 500KHz	SF9	1	31	926.5	0.541	0.641	0.50	Pass

TEST RESULTS DATA
Average Power Table

Mod.	Data Rate	Ntx	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
LoRa 500KHz	SF9	1	1	902.5	0.04	25.55	30.00	-1.19	24.36	36.00	Pass
LoRa 500KHz	SF9	1	16	914.5	0.04	25.27	30.00	-1.19	24.08	36.00	Pass
LoRa 500KHz	SF9	1	31	926.5	0.04	25.02	30.00	-1.19	23.83	36.00	Pass

TEST RESULTS DATA
Average Power Density

Mod.	Data Rate	Ntx	CH.	Freq. (MHz)	Peak PSD (dBm /100kHz)	Average PSD (dBm /3kHz)	DG (dBi)	Average PSD Limit (dBm /3kHz)	Pass/Fail
LoRa 500KHz	SF9	1	1	902.5	25.75	6.65	-1.19	8.00	Pass
LoRa 500KHz	SF9	1	16	914.5	25.42	6.21	-1.19	8.00	Pass
LoRa 500KHz	SF9	1	31	926.5	25.13	5.89	-1.19	8.00	Pass

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

Mod.	Data Rate	Ntx	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
LoRa 500KHz	SF10	1	1	902.5	0.545	0.645	0.50	Pass
LoRa 500KHz	SF10	1	16	914.5	0.545	0.645	0.50	Pass
LoRa 500KHz	SF10	1	31	926.5	0.541	0.645	0.50	Pass

TEST RESULTS DATA
Average Power Table

Mod.	Data Rate	Ntx	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
LoRa 500KHz	SF10	1	1	902.5	0.00	25.59	30.00	-1.19	24.40	36.00	Pass
LoRa 500KHz	SF10	1	16	914.5	0.00	25.31	30.00	-1.19	24.12	36.00	Pass
LoRa 500KHz	SF10	1	31	926.5	0.00	25.23	30.00	-1.19	24.04	36.00	Pass

TEST RESULTS DATA
Average Power Density

Mod.	Data Rate	Ntx	CH.	Freq. (MHz)	Peak PSD (dBm /100kHz)	Average PSD (dBm /3kHz)	DG (dBi)	Average PSD Limit (dBm /3kHz)	Pass/Fail
LoRa 500KHz	SF10	1	1	902.5	25.87	6.84	-1.19	8.00	Pass
LoRa 500KHz	SF10	1	16	914.5	25.46	6.45	-1.19	8.00	Pass
LoRa 500KHz	SF10	1	31	926.5	25.40	6.37	-1.19	8.00	Pass

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

Mod.	Data Rate	Ntx	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
LoRa 500KHz	SF11	1	1	902.5	0.551	0.651	0.50	Pass
LoRa 500KHz	SF11	1	16	914.5	0.543	0.645	0.50	Pass
LoRa 500KHz	SF11	1	31	926.5	0.543	0.647	0.50	Pass

TEST RESULTS DATA
Average Power Table

Mod.	Data Rate	Ntx	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
LoRa 500KHz	SF11	1	1	902.5	0.00	25.60	30.00	-1.19	24.41	36.00	Pass
LoRa 500KHz	SF11	1	16	914.5	0.00	25.36	30.00	-1.19	24.17	36.00	Pass
LoRa 500KHz	SF11	1	31	926.5	0.00	25.20	30.00	-1.19	24.01	36.00	Pass

TEST RESULTS DATA
Average Power Density

Mod.	Data Rate	Ntx	CH.	Freq. (MHz)	Peak PSD (dBm /100kHz)	Average PSD (dBm /3kHz)	DG (dBi)	Average PSD Limit (dBm /3kHz)	Pass/Fail
LoRa 500KHz	SF11	1	1	902.5	25.71	6.98	-1.19	8.00	Pass
LoRa 500KHz	SF11	1	16	914.5	25.56	6.95	-1.19	8.00	Pass
LoRa 500KHz	SF11	1	31	926.5	24.77	6.43	-1.19	8.00	Pass

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.



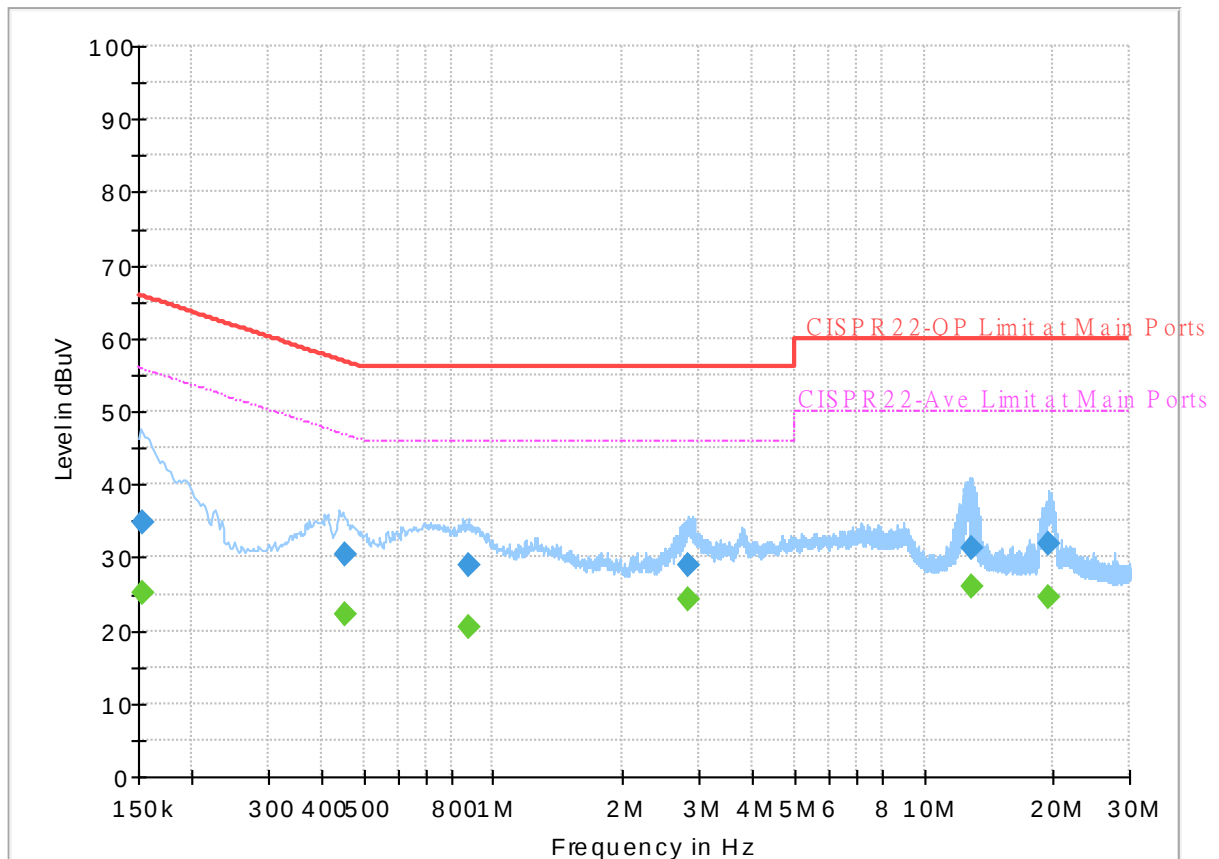
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Louis Chung	Temperature :	23~26°C
		Relative Humidity :	45~55%

EUT Information

Report NO : 240816
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Line

Full Spectrum



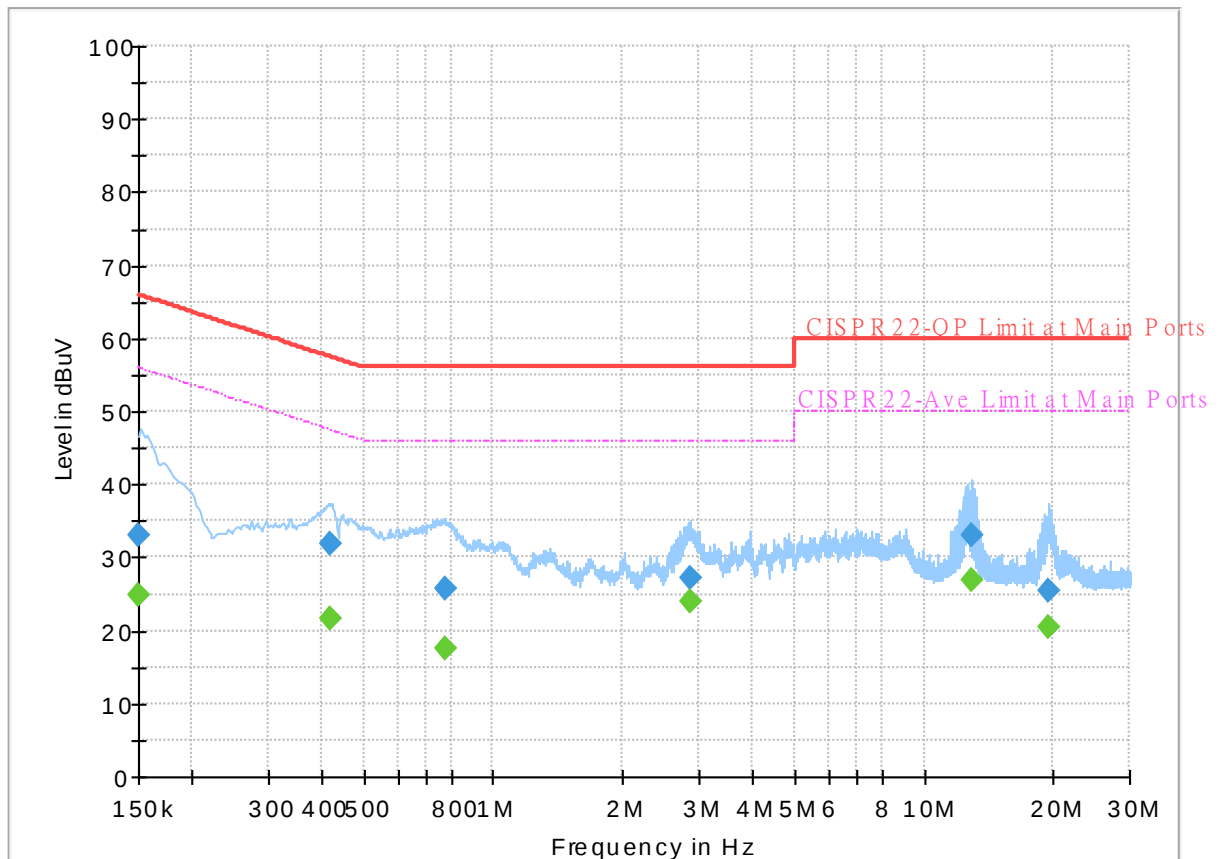
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152700	---	25.19	55.85	30.66	L1	OFF	19.7
0.152700	34.88	---	65.85	30.97	L1	OFF	19.7
0.451500	---	22.31	46.85	24.54	L1	OFF	19.7
0.451500	30.49	---	56.85	26.36	L1	OFF	19.7
0.876660	---	20.60	46.00	25.40	L1	OFF	19.7
0.876660	28.83	---	56.00	27.17	L1	OFF	19.7
2.825970	---	24.39	46.00	21.61	L1	OFF	19.7
2.825970	29.04	---	56.00	26.96	L1	OFF	19.7
12.850800	---	26.11	50.00	23.89	L1	OFF	19.9
12.850800	31.27	---	60.00	28.73	L1	OFF	19.9
19.495140	---	24.53	50.00	25.47	L1	OFF	20.0
19.495140	31.79	---	60.00	28.21	L1	OFF	20.0

EUT Information

Report NO : 240816
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150743	---	24.90	55.96	31.06	N	OFF	19.7
0.150743	32.96	---	65.96	33.00	N	OFF	19.7
0.417750	---	21.55	47.49	25.94	N	OFF	19.7
0.417750	31.99	---	57.49	25.50	N	OFF	19.7
0.771720	---	17.60	46.00	28.40	N	OFF	19.7
0.771720	25.79	---	56.00	30.21	N	OFF	19.7
2.868360	---	23.95	46.00	22.05	N	OFF	19.7
2.868360	27.14	---	56.00	28.86	N	OFF	19.7
12.862500	---	26.83	50.00	23.17	N	OFF	19.9
12.862500	33.07	---	60.00	26.93	N	OFF	19.9
19.498290	---	20.34	50.00	29.66	N	OFF	19.9
19.498290	25.45	---	60.00	34.55	N	OFF	19.9



Appendix C. Radiated Spurious Emission

Test Engineer :	Karl Hou and Andy Yang	Temperature :	20~25°C
		Relative Humidity :	50~60%

902~928MHz

LoRa (500KHz)_SF11 (Harmonic @ 3m)

LoRa	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)
LoRa (500KHz)_ SF11 Ch01 902.5MHz		1805	51.64	-22.36	74	49.37	25.14	7.5	30.37	-	-	P	H
		2707.5	50.5	-23.5	74	42.99	28.3	9.23	30.02	110	158	P	H
		2707.5	39.64	-14.36	54	32.13	28.3	9.23	30.02	110	158	A	H
		3610	38.54	-35.46	74	53.36	29.54	10.86	55.22	-	-	P	H
		4512.5	43.57	-30.43	74	55.13	31.42	11.9	54.88	-	-	P	H
		5415	52.48	-21.52	74	61.47	32.9	13.17	55.06	100	321	P	H
		5415	47.02	-6.98	54	56.01	32.9	13.17	55.06	100	321	A	H
		8122.5	46.49	-27.51	74	49.05	36.9	16.41	55.87	-	-	P	H
		1805	48.71	-25.29	74	46.44	25.14	7.5	30.37	-	-	P	V
		2707.5	51.37	-22.63	74	43.86	28.3	9.23	30.02	100	142	P	V
		2707.5	39.68	-14.32	54	32.17	28.3	9.23	30.02	100	142	A	V
		3610	43.96	-30.04	74	58.78	29.54	10.86	55.22	-	-	P	V
		4512.5	47.71	-26.29	74	59.27	31.42	11.9	54.88	-	-	P	V
		5415	52.94	-21.06	74	61.93	32.9	13.17	55.06	107	284	P	V
		5415	47.55	-6.45	54	56.54	32.9	13.17	55.06	107	284	A	V
		8122.5	48.1	-25.9	74	50.66	36.9	16.41	55.87	-	-	P	V



LoRa	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)
LoRa (500KHz)_ SF11 Ch16 914.5MHz		1829	54.09	-19.91	74	51.55	25.33	7.56	30.35	-	-	P	H
		2744	50.56	-23.44	74	42.96	28.3	9.31	30.01	300	286	P	H
		2744	37.74	-16.26	54	30.14	28.3	9.31	30.01	300	286	A	H
		3658	40.73	-33.27	74	55.21	29.7	10.97	55.15	-	-	P	H
		4572.5	47.34	-26.66	74	58.65	31.5	12.14	54.95	-	-	P	H
		7316	51.64	-22.36	74	54.66	36.77	15.86	55.65	100	221	P	H
		7316	46.71	-7.29	54	49.73	36.77	15.86	55.65	100	221	P	H
		8230.5	48.15	-25.85	74	50.87	36.92	16.27	55.91	-	-	A	H
		1829	51.41	-22.59	74	48.87	25.33	7.56	30.35	-	-	P	V
		2743.5	51.5	-22.5	74	43.9	28.3	9.31	30.01	100	312	P	V
		2743.5	38.57	-15.43	54	30.97	28.3	9.31	30.01	100	312	A	V
		3658	42.77	-31.23	74	57.25	29.7	10.97	55.15	-	-	P	V
		4572.5	44.46	-29.54	74	55.77	31.5	12.14	54.95	-	-	P	V
		7316	48.93	-25.07	74	51.95	36.77	15.86	55.65	100	180	P	V
		7316	38.92	-15.08	54	41.94	36.77	15.86	55.65	100	221	A	V
		8230.5	46.56	-27.44	74	49.28	36.92	16.27	55.91	-	-	P	V



LoRa	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)
LoRa (500KHz)_ SF11 Ch31 926.5MHz		1853	58.14	-15.86	74	55.33	25.52	7.62	30.33	-	-	P	H
		2779.5	51.06	-22.94	74	43.26	28.42	9.39	30.01	100	148	P	H
		2779.5	39.32	-14.68	54	31.52	28.42	9.39	30.01	100	148	A	H
		3706	43.71	-30.29	74	57.98	29.72	11.1	55.09	-	-	P	H
		4632.5	45.05	-28.95	74	56.23	31.57	12.28	55.03	-	-	P	H
		6485.5	47.87	-26.13	74	53.82	34.98	14.41	55.34	-	-	P	H
		7412	51.69	-22.31	74	54.8	36.28	16.28	55.67	400	125	P	H
		7412	42.7	-11.3	54	45.81	36.28	16.28	55.67	400	125	A	H
		8338.5	46.31	-27.69	74	48.91	37.05	16.3	55.95	-	-	P	H
		1853	58.01	-15.99	74	55.2	25.52	7.62	30.33	-	-	P	V
		2779.5	51.03	-22.97	74	43.23	28.42	9.39	30.01	100	128	P	V
		2779.5	38.93	-15.07	54	31.13	28.42	9.39	30.01	100	128	A	V
		3706	41.86	-32.14	74	56.13	29.72	11.1	55.09	-	-	P	V
		4632.5	43.96	-30.04	74	55.14	31.57	12.28	55.03	-	-	P	V
		6485.5	47.64	-26.36	74	53.59	34.98	14.41	55.34	-	-	P	V
		7412	52.12	-21.88	74	55.23	36.28	16.28	55.67	298	198	P	V
		7412	43.45	-10.55	54	46.56	36.28	16.28	55.67	298	198	A	V
		8338.5	47.57	-26.43	74	50.17	37.05	16.3	55.95	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												



Emission below 1GHz

LoRa (500KHz)_SF11

LoRa	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)
LoRa(500KHz)_SF11 Ch01 902.5MHz		30	31.85	-8.15	40	28.92	24.63	10.62	32.32	-	-	P	H
		93.05	30.23	-13.27	43.5	36.05	14.94	11.55	32.31	-	-	P	H
		183.26	29.88	-13.62	43.5	34.95	14.9	12.26	32.23	-	-	P	H
		455.83	35.7	-10.3	46	31.19	23.35	13.58	32.42	-	-	P	H
		612	36.65	-9.35	46	29.27	25.7	14.25	32.57	-	-	P	H
		902.5	123.77	-	-	111.09	29.05	15.15	31.52	149	269	P	H
		965.08	45.41	-8.59	54	30.16	30.96	15.36	31.07	-	-	P	H
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		38.73	31.07	-8.93	40	32.39	20.15	10.83	32.3	100	26	Q	V
		158.04	30.8	-12.7	43.5	34.06	16.76	12.23	32.25	-	-	P	V
		180.35	31.31	-12.19	43.5	36.24	15.05	12.24	32.22	-	-	P	V
		455.83	34.53	-11.47	46	30.02	23.35	13.58	32.42	-	-	P	V
		613.94	37.38	-8.62	46	29.95	25.74	14.25	32.56	-	-	P	V
		902.5	118.15	-	-	105.47	29.05	15.15	31.52	144	56	P	V
		999.03	45.32	-8.68	54	30.21	30.48	15.4	30.77	-	-	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line. 3. Non restricted band limit is radio frequency level down 30db and the result which was 20dB lower than the limit line was not reported. 4. The emission position marked as “-” means no suspected emission found and emission level has at least 6dB margin against limit or emission is noise floor only.												

LoRa	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)
LoRa(500KHz)_SF11 Ch16 914.5MHz		30	30.94	-9.06	40	28.01	24.63	10.62	32.32	-	-	P	H
		93.05	30.74	-12.76	43.5	36.56	14.94	11.55	32.31	-	-	P	H
		191.02	30.89	-12.61	43.5	35.95	14.84	12.34	32.24	-	-	P	H
		424.79	34.15	-11.85	46	30.14	22.98	13.44	32.41	-	-	P	H
		608.12	37.44	-8.56	46	30.16	25.62	14.23	32.57	-	-	P	H
		914.5	124.86	-	-	111.77	29.33	15.2	31.44	114	273	P	H
		971.87	45.67	-8.33	54	30.4	30.91	15.37	31.01	-	-	P	H
													H
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													H
													H
													H
													V
		40.67	31.42	-8.58	40	33.75	19.07	10.89	32.29	100	28	Q	V
		158.04	30.5	-13	43.5	33.76	16.76	12.23	32.25	-	-	P	V
		419.94	33.92	-12.08	46	30.03	22.88	13.42	32.41	-	-	P	V
		508.21	35.51	-10.49	46	30	24.05	13.82	32.36	-	-	P	V
		612.97	36.94	-9.06	46	29.53	25.72	14.25	32.56	-	-	P	V
		914.5	117.76	-	-	104.67	29.33	15.2	31.44	100	246	P	V
		967.02	44.64	-9.36	54	29.37	30.96	15.36	31.05	-	-	P	V
													V
													V
													V
												V	
Remark	1. No other spurious found.												
	2. All results are PASS against limit line.												
	3. Non restricted band limit is radio frequency level down 30db and the result which was 20dB lower than the limit line was not reported.												
	4. The emission position marked as “-” means no suspected emission found and emission level has at least 6dB margin against limit or emission is noise floor only.												

LoRa	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)
LoRa(500KHz)_SF11 Ch31 926.5MHz		30.97	31.15	-8.85	40	28.78	24.05	10.64	32.32	-	-	P	H
		94.02	30.1	-13.4	43.5	35.83	15.03	11.55	32.31	-	-	P	H
		176.47	30.96	-12.54	43.5	35.66	15.29	12.24	32.23	-	-	P	H
		336.52	33.72	-12.28	46	32.81	20.08	13.08	32.25	-	-	P	H
		613.94	37.74	-8.26	46	30.31	25.74	14.25	32.56	-	-	P	H
		926.5	121.9	-	-	108.4	29.62	15.24	31.36	129	20	P	H
		963.14	45.7	-8.3	54	30.49	30.94	15.35	31.08	-	-	P	H
													H
													H
													H
													H
													H
													V
		30	33.91	-6.09	40	30.98	24.63	10.62	32.32	-	-	P	V
		156.1	30.71	-12.79	43.5	33.92	16.83	12.21	32.25	-	-	P	V
		353.01	31.92	-14.08	46	30.38	20.63	13.15	32.24	-	-	P	V
		512.09	36.29	-9.71	46	30.77	24.04	13.84	32.36	-	-	P	V
		608.12	36.9	-9.1	46	29.62	25.62	14.23	32.57	-	-	P	V
		926.5	116.85	-	-	103.34	29.63	15.24	31.36	132	96	P	V
		965.08	45.49	-8.51	54	30.24	30.96	15.36	31.07	-	-	P	V
													V
													V
													V
												V	
Remark	1. No other spurious found.												
	2. All results are PASS against limit line.												
	3. Non restricted band limit is radio frequency level down 30db and the result which was 20dB lower than the limit line was not reported.												
	4. The emission position marked as “-” means no suspected emission found and emission level has at least 6dB margin against limit or emission is noise floor only.												



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 over limit 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:

LoRa	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	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)
LoRa CH 01 902.2MHz		910	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		910	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. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 910MHz:

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. Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= -18.55(dB)

For Average Limit @ 910MHz:

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. Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 43.54(dBμV/m) – 54(dBμV/m)
= -10.46(dB)

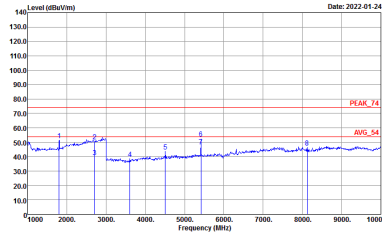
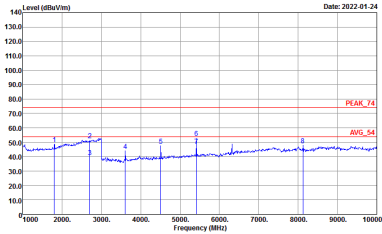
Both peak and average measured complies with the limit line, so test result is “PASS”.



Appendix D. Radiated Spurious Emission Plots

Test Engineer :	Karl Hou and Andy Yang	Temperature :	20~25°C
		Relative Humidity :	50~60%

902~928MHz**LoRa (500KHz)_SF11 (Harmonic @ 3m)**

LoRa	902~928MHz Harmonic @ 3m	
	LoRa(500KHz)_SF11 Ch01 902.5MHz	
	Horizontal	Vertical
Peak Avg.	 Site : 03CH16-HY Condition : PEAK_74 3m 9120D_02114_210804 HORIZONTAL	 Site : 03CH16-HY Condition : PEAK_74 3m 9120D_02114_210804 VERTICAL

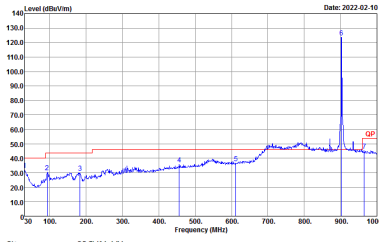
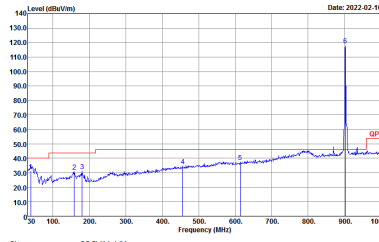


LoRa	902~928MHz Harmonic @ 3m	
	LoRa(500KHz)_SF11 Ch16 914.5MHz	
	Horizontal	Vertical
Peak Avg.	Level (dBuV/m) Date: 2022-01-24 Site : 03CH16-HY Condition : PEAK_74 3m 91200_02114_210804 HORIZONTAL	Level (dBuV/m) Date: 2022-01-24 Site : 03CH16-HY Condition : PEAK_74 3m 91200_02114_210804 VERTICAL

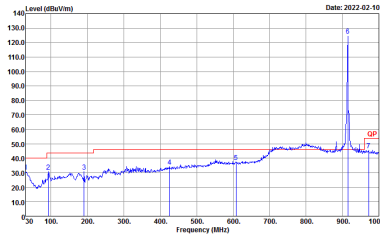
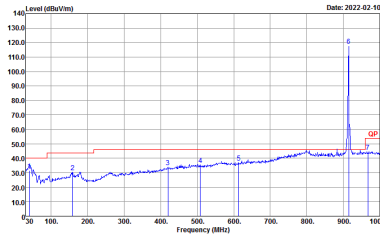


LoRa	902~928MHz Harmonic @ 3m	
	LoRa(500KHz)_SF11 Ch31 926.5MHz	
	Horizontal	Vertical
Peak	Level (dBuV/m) Date: 2022-02-09 Site : 03CH16-HY Condition : PEAK_74 3m 91200_02114_210804 HORIZONTAL	Level (dBuV/m) Date: 2022-02-09 Site : 03CH16-HY Condition : PEAK_74 3m 91200_02114_210804 VERTICAL

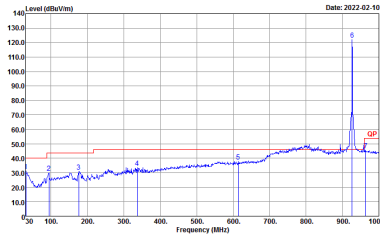
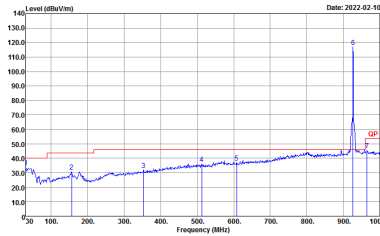
Emission below 1GHz
LoRa (500KHz)_SF11

LoRa	902~928MHz	
	LoRa(500KHz)_SF11 Ch01 902.5MHz LF	
	Horizontal	Vertical
QP / Peak	 Site : 03CHI6-HY Condition : QP 3m BIL06_47020_211009 HORIZONTAL	 Site : 03CHI6-HY Condition : QP 3m BIL06_47020_211009 VERTICAL



LoRa	902~928MHz	
	LoRa(500KHz)_SF11 Ch16 914.5MHz LF	
	Horizontal	Vertical
QP / Peak	 Site : 03CH16-HY Condition : QP 3m 81LOG_47020_211009 HORIZONTAL	 Site : 03CH16-HY Condition : QP 3m 81LOG_47020_211009 VERTICAL



LoRa	902~928MHz	
	LoRa(500KHz)_SF11 Ch31 926.5MHz LF	
	Horizontal	Vertical
QP / Peak	 Site : 03CH16-HY Condition : QP 3m 81LOG_47020_211009 HORIZONTAL	 Site : 03CH16-HY Condition : QP 3m 81LOG_47020_211009 VERTICAL



Appendix E. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
LoRa (500KHz)_SF11	100.00	-	-	10Hz

