

LoRa-FHSS-Spreading Factor 7

Test Engineer:	Smile Wang	Temperature:	20~26	°C
Test Date:	2024/3/31~2024/5/30	Relative Humidity:	40~51	%

TEST RESULTS DATA
20dB and 99% Occupied Bandwidth and Hopping Channel Separation

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	20db BW (MHz)	99% Bandwidth (MHz)	Hopping Channel Separation Measurement (MHz)	Hopping Channel Separation Measurement Limit (MHz)	Pass/Fail
SF7		1	1	902.2	0.147	0.128	0.222	0.147	Pass
SF7		1	65	915	0.147	0.128	0.214	0.147	Pass
SF7		1	128	927.6	0.146	0.129	0.163	0.146	Pass

TEST RESULTS DATA
Dwell Time

Mod.	CH.	DT On-time per hop (ms)	Total hops over 20sec	Dwell Time (sec)	Limits (sec)	Pass/Fail
SF7	hopping	50	3.00	0.15	0.4	Pass

TEST RESULTS DATA
Peak Power Table

mode	Freq. (MHz)	NTX	Peak Power (dBm)	Power Limit (dBm)	Test Result	Power Setting
SF7	902.2	1	20.72	30.00	Pass	20
	915	1	20.82	30.00	Pass	20
	927.6	1	20.54	30.00	Pass	20

TEST RESULTS DATA
Number of Hopping Frequency

Number of Hopping (Channel)	Limits (Channel)	Pass/Fail
128	> 50	Pass

LoRa-FHSS-Spreading Factor 8

Test Engineer:	Smile Wang	Temperature:	20~26	°C
Test Date:	2024/3/31~2024/5/30	Relative Humidity:	40~51	%

TEST RESULTS DATA
20dB and 99% Occupied Bandwidth and Hopping Channel Separation

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	20db BW (MHz)	99% Bandwidth (MHz)	Hopping Channel Separation Measurement (MHz)	Hopping Channel Separation Measurement Limit (MHz)	Pass/Fail
SF8		1	1	902.2	0.150	0.129	0.224	0.150	Pass
SF8		1	65	915	0.151	0.129	0.201	0.151	Pass
SF8		1	128	927.6	0.149	0.129	0.193	0.149	Pass

TEST RESULTS DATA
Dwell Time

Mod.	CH.	DT On-time per hop (ms)	Total hops over 20sec	Dwell Time (sec)	Limits (sec)	Pass/Fail
SF8	hopping	90.01	2.00	0.18	0.4	Pass

TEST RESULTS DATA
Peak Power Table

mode	Freq. (MHz)	NTX	Peak Power (dBm)	Power Limit (dBm)	Test Result	Power Setting
SF8	902.2	1	20.74	30.00	Pass	20
	915	1	20.79	30.00	Pass	20
	927.6	1	20.53	30.00	Pass	20

TEST RESULTS DATA
Number of Hopping Frequency

Number of Hopping (Channel)	Limits (Channel)	Pass/Fail
128	> 50	Pass

LoRa-FHSS-Spreading Factor 9

Test Engineer:	Smile Wang	Temperature:	20~26	°C
Test Date:	2024/3/31~2024/5/30	Relative Humidity:	40~51	%

TEST RESULTS DATA
20dB and 99% Occupied Bandwidth and Hopping Channel Separation

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	20db BW (MHz)	99% Bandwidth (MHz)	Hopping Channel Separation Measurement (MHz)	Hopping Channel Separation Measurement Limit (MHz)	Pass/Fail
SF9		1	1	902.2	0.149	0.131	0.205	0.149	Pass
SF9		1	65	915	0.147	0.130	0.212	0.147	Pass
SF9		1	128	927.6	0.149	0.130	0.193	0.149	Pass

TEST RESULTS DATA
Dwell Time

Mod.	CH.	DT On-time per hop (ms)	Total hops over 20sec	Dwell Time (sec)	Limits (sec)	Pass/Fail
SF9	hopping	152.02	1.00	0.15	0.4	Pass

TEST RESULTS DATA
Peak Power Table

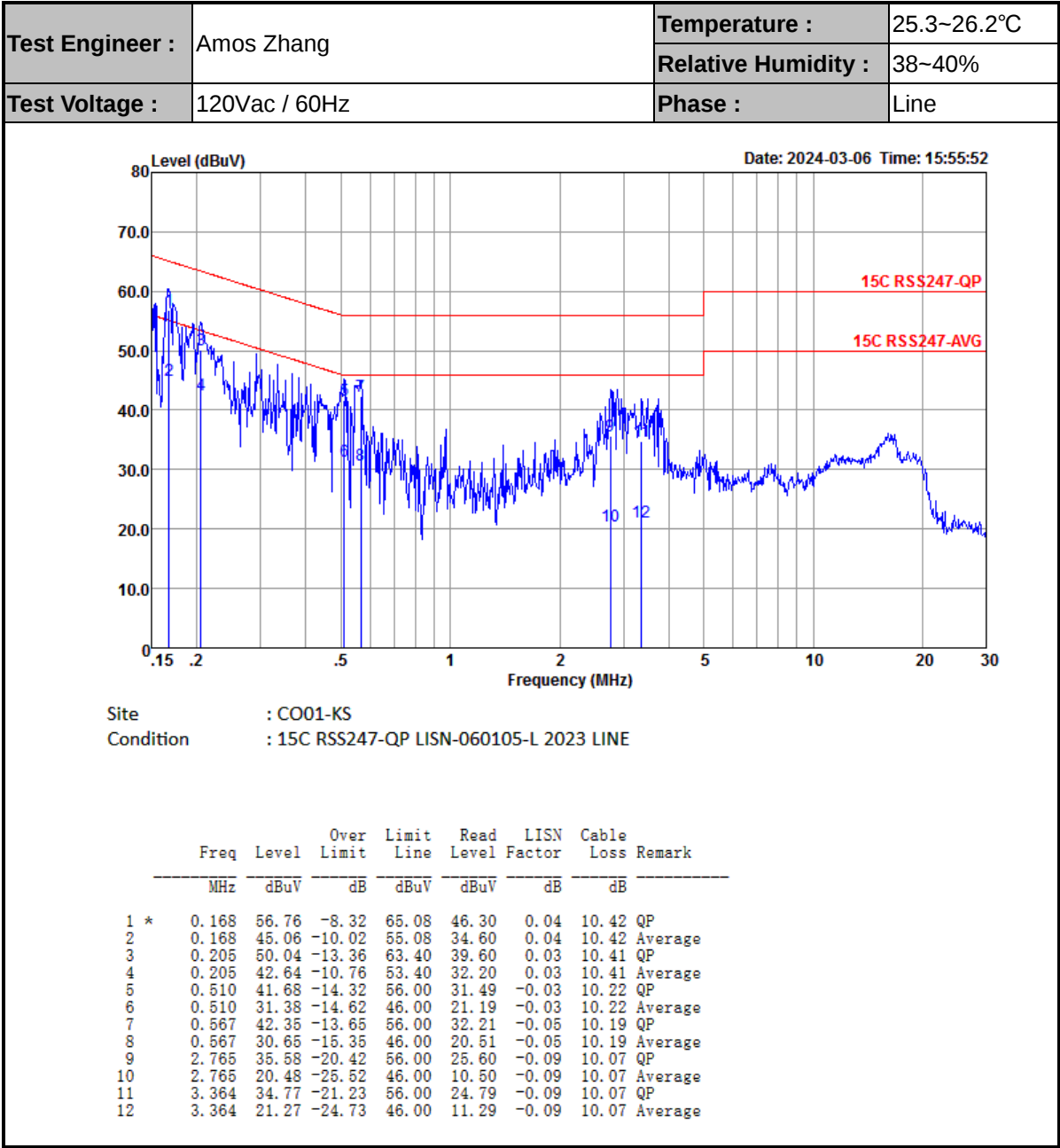
DH	Freq. (MHz)	NTX	Peak Power (dBm)	Power Limit (dBm)	Test Result	Power Setting
SF9	902.2	1	20.75	30.00	Pass	20
	915	1	20.78	30.00	Pass	20
	927.6	1	20.53	30.00	Pass	20

TEST RESULTS DATA
Number of Hopping Frequency

Number of Hopping (Channel)	Limits (Channel)	Pass/Fail
128	> 50	Pass

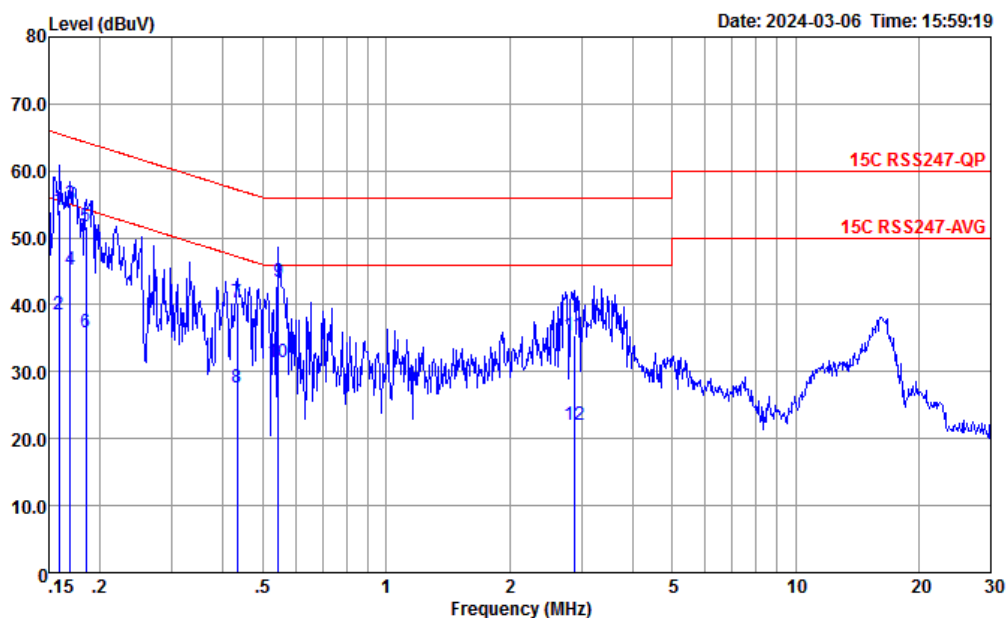


Appendix B. AC Conducted Emission Test Results





Test Engineer :	Amos Zhang	Temperature :	25.3~26.2°C
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



Site : CO01-KS
Condition : 15C RSS247-QP LISN-060105-N 2023 NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.159	54.06	-11.46	65.52	43.60	0.04	10.42	QP
2	0.159	38.66	-16.86	55.52	28.20	0.04	10.42	Average
3	0.169	55.06	-9.93	64.99	44.60	0.04	10.42	QP
4 *	0.169	45.16	-9.83	54.99	34.70	0.04	10.42	Average
5	0.184	51.66	-12.62	64.28	41.20	0.05	10.41	QP
6	0.184	35.96	-18.32	54.28	25.50	0.05	10.41	Average
7	0.433	40.40	-16.80	57.20	30.20	-0.06	10.26	QP
8	0.433	27.70	-19.50	47.20	17.50	-0.06	10.26	Average
9	0.546	43.43	-12.57	56.00	33.30	-0.07	10.20	QP
10	0.546	31.33	-14.67	46.00	21.20	-0.07	10.20	Average
11	2.884	35.44	-20.56	56.00	25.50	-0.13	10.07	QP
12	2.884	22.14	-23.86	46.00	12.20	-0.13	10.07	Average

Note:

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



Appendix C. Radiated Spurious Emission

Remark: For RSE different Spread Factor, only the test data of SF9 is shown in the report according to the maximum power.

902.2~927.6MHz

LORA FHSS SF=9 (Band Edge @ 3m)

	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dB μ V/m)	(dB)	(dB μ V/m)	(dB μ V)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
902.2MHz		393.75	37.15	-8.85	46	44.85	21.51	2.9	32.11	-	-	P	H
		902.03	106.9	-	-	104.63	29.18	4.37	31.28	-	-	P	H
		410.24	34.35	-11.65	46	40.96	22.54	2.96	32.11	-	-	P	V
		902.03	116.51	-	-	114.24	29.18	4.37	31.28	-	-	P	V
915MHz		399.57	37.71	-8.29	46	45.16	21.74	2.92	32.11	-	-	P	H
		914.64	108.2	-	-	105.44	29.55	4.4	31.19	-	-	P	H
		395.69	35.53	-10.47	46	43.15	21.58	2.91	32.11	-	-	P	V
		914.64	115.3	-	-	112.54	29.55	4.4	31.19	-	-	P	V
927.6MHz		391.81	34.6	-11.40	46	42.95	21.48	3.02	32.85	-	-	P	H
		927.60	110.72	-	-	110.63	27.16	4.66	31.73	-	-	P	H
		463.59	34.51	-11.49	46	41.42	22.82	3.29	33.02	-	-	P	V
		927.60	116.26	-	-	116.17	27.16	4.66	31.73	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



LORA FHSS SF=9 125KHZ (Harmonic @ 3m)

	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	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)
902.2MHz		1052.80	45.84	-28.16	74	77.80	28.50	4.70	65.16	-	-	P	H
		2706.40	54.18	-19.82	74	79.09	33.06	7.58	65.55	333	245	P	H
		2706.40	52.25	-1.75	54	77.16	33.06	7.58	65.55	333	245	A	H
		5413.60	52.03	-21.97	74	71.44	35.25	10.79	65.45	100	265	P	H
		5413.60	50.10	-3.90	54	69.51	35.25	10.79	65.45	100	265	A	H
		1031.20	49.30	-24.70	74	80.91	28.87	4.66	65.14	-	-	P	V
		2706.40	52.39	-21.61	74	77.30	33.06	7.58	65.55	100	306	P	V
		2706.40	50.46	-3.54	54	75.37	33.06	7.58	65.55	100	306	A	V
		5413.60	54.06	-19.94	74	73.47	35.25	10.79	65.45	300	327	P	V
		5413.60	52.13	-1.87	54	71.54	35.25	10.79	65.45	300	327	A	V
915MHz		1056.40	46.02	-27.98	74	78.03	28.44	4.71	65.16	-	-	P	H
		2744.80	53.70	-20.30	74	78.74	32.83	7.63	65.50	111	246	P	H
		2744.80	51.77	-2.23	54	76.81	32.83	7.63	65.50	111	246	A	H
		5489.80	52.13	-36.07	88.20	71.74	34.94	10.87	65.42	-	-	P	H
		1057.60	49.37	-24.63	74	81.40	28.42	4.71	65.16	-	-	P	V
		2744.80	52.24	-21.76	74	77.28	32.83	7.63	65.50	300	279	P	V
		2744.80	50.31	-3.69	54	75.35	32.83	7.63	65.50	300	279	A	V
		5489.80	55.72	-39.94	95.30	75.33	34.94	10.87	65.42	-	-	P	V
927.6MHz		1063.60	46.50	-27.50	74	79.74	27.20	4.72	65.16	-	-	P	H
		2782.60	51.72	-22.28	74	77.40	32.10	7.68	65.46	100	335	P	H
		2782.60	49.79	-4.21	54	75.47	32.10	7.68	65.46	100	335	A	H
		5565.40	54.33	-36.39	90.72	73.95	34.80	10.96	65.38	-	-	P	H
		1079.80	48.17	-25.83	74	81.75	26.84	4.76	65.18	-	-	P	V
		2782.60	53.02	-20.98	74	78.70	32.10	7.68	65.46	300	328	P	V
		2782.60	51.09	-2.91	54	76.77	32.10	7.68	65.46	300	328	A	V
		5565.40	55.77	-40.49	96.26	75.39	34.80	10.96	65.38	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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	Peak or Average
H/V	Horizontal or Vertical



A calculation example for radiated spurious emission is shown as below:

	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable 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)
902.2MHz		2707.00	51.94	-22.06	74	76.85	33.06	7.58	65.55	333	245	P	H
		2707.00	50.01	-3.99	54	74.92	33.06	7.58	65.55	333	245	A	H

1. $\text{Level(dB}\mu\text{V/m)} = \text{Antenna Factor(dB/m)} + \text{Cable Loss(dB)} + \text{Read Level(dB}\mu\text{V)} - \text{Preamp Factor(dB)}$
2. $\text{Over Limit(dB)} = \text{Level(dB}\mu\text{V/m)} - \text{Limit Line(dB}\mu\text{V/m)}$

For Peak Limit @ 2707MHz:

1. $\text{Level(dB}\mu\text{V/m)}$
 $= \text{Antenna Factor(dB/m)} + \text{Cable Loss(dB)} + \text{Read Level(dB}\mu\text{V)} - \text{Preamp Factor(dB)}$
 $= 33.06(\text{dB/m}) + 7.58(\text{dB}) + 76.85(\text{dB}\mu\text{V}) - 65.55(\text{dB})$
 $= 51.94(\text{dB}\mu\text{V/m})$
2. Over Limit(dB)
 $= \text{Level(dB}\mu\text{V/m)} - \text{Limit Line(dB}\mu\text{V/m)}$
 $= 51.94(\text{dB}\mu\text{V/m}) - 74(\text{dB}\mu\text{V/m})$
 $= -22.06(\text{dB})$

For Average Limit @ 2707MHz:

1. $\text{AV Level(dB}\mu\text{V/m)}$
 $= \text{Peak Level(dB}\mu\text{V/m)} + \text{Duty cycle correction factor (dB)}$
 $= 51.94(\text{dB}\mu\text{V/m}) + (-1.93)(\text{dB})$
 $= 50.01(\text{dB}\mu\text{V/m})$
2. Over Limit(dB)
 $= \text{Level(dB}\mu\text{V/m)} - \text{Limit Line(dB}\mu\text{V/m)}$
 $= 50.01(\text{dB}\mu\text{V/m}) - 54(\text{dB}\mu\text{V/m})$
 $= -3.99(\text{dB})$

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



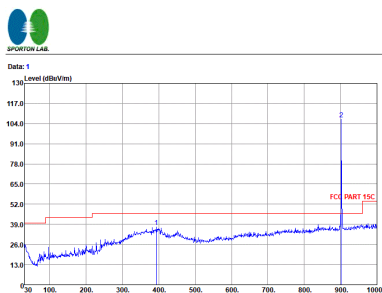
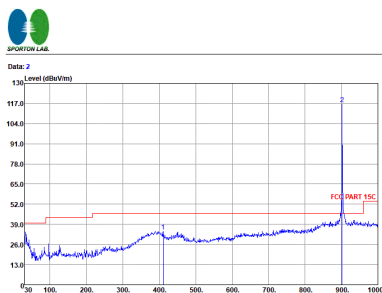
Appendix D. Radiated Spurious Emission Plots

Note symbol

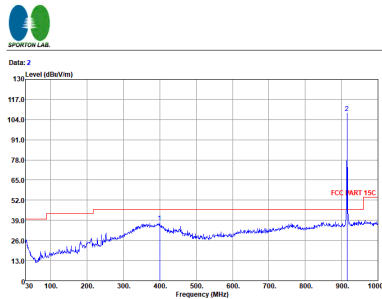
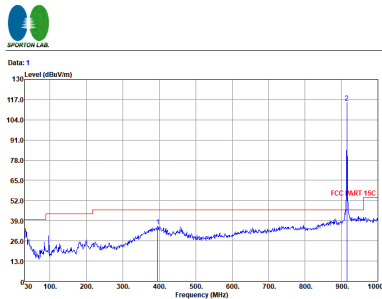
-L	Low channel location
-R	High channel location



LoRa 125KHz FHSS SF=9 (Band Edge @ 3m)

LoRa	902.2~927.6 Band Edge @ 3m																																																																																																													
ANT	LoRa 125KHz FHSS SF=9 CH01 902.2																																																																																																													
ANT	Horizontal	Vertical																																																																																																												
Peak	 <table><tr><th></th><th>Over</th><th>L</th><th>Read</th><th>Cable</th><th>Antenna</th><th>Preamp</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th><th>Pol/Phas</th></tr><tr><th></th><th>Freq</th><th>Level</th><th>Limit</th><th>Line</th><th>Loss</th><th>Factor</th><th>Factor</th><th></th><th></th><th></th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dB</th><th>dB/m</th><th>dB</th><th>cm</th><th>deg</th><th></th></tr><tr><td>1</td><td>393.75</td><td>37.15</td><td>-8.85</td><td>46.00</td><td>44.85</td><td>2.90</td><td>21.51</td><td>32.11</td><td>---</td><td>Peak HORIZONTAL</td></tr><tr><td>2 *</td><td>902.83</td><td>106.90</td><td>-----</td><td>104.63</td><td>4.17</td><td>29.18</td><td>31.28</td><td>---</td><td>Peak HORIZONTAL</td></tr></table>		Over	L	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phas		Freq	Level	Limit	Line	Loss	Factor	Factor					MHz	dBuV/m	dB	dBuV/m	dB	dB/m	dB	cm	deg		1	393.75	37.15	-8.85	46.00	44.85	2.90	21.51	32.11	---	Peak HORIZONTAL	2 *	902.83	106.90	-----	104.63	4.17	29.18	31.28	---	Peak HORIZONTAL	 <table><tr><th></th><th>Over</th><th>L</th><th>Read</th><th>Cable</th><th>Antenna</th><th>Preamp</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th><th>Pol/Phas</th></tr><tr><th></th><th>Freq</th><th>Level</th><th>Limit</th><th>Line</th><th>Loss</th><th>Factor</th><th>Factor</th><th></th><th></th><th></th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dB</th><th>dB/m</th><th>dB</th><th>cm</th><th>deg</th><th></th></tr><tr><td>1</td><td>439.24</td><td>34.35</td><td>-11.65</td><td>46.00</td><td>49.96</td><td>2.90</td><td>22.54</td><td>32.11</td><td>---</td><td>Peak VERTICAL</td></tr><tr><td>2 *</td><td>902.83</td><td>116.51</td><td>-----</td><td>114.24</td><td>4.17</td><td>29.18</td><td>31.28</td><td>---</td><td>Peak VERTICAL</td></tr></table>		Over	L	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phas		Freq	Level	Limit	Line	Loss	Factor	Factor					MHz	dBuV/m	dB	dBuV/m	dB	dB/m	dB	cm	deg		1	439.24	34.35	-11.65	46.00	49.96	2.90	22.54	32.11	---	Peak VERTICAL	2 *	902.83	116.51	-----	114.24	4.17	29.18	31.28	---	Peak VERTICAL
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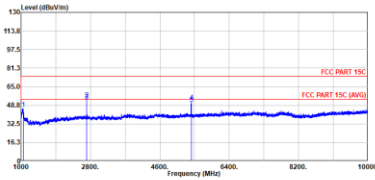
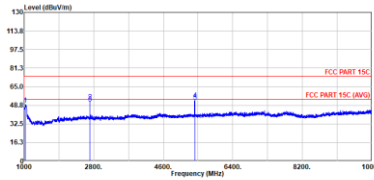
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Peak	 <table><tr><th>Peak</th><th>Freq</th><th>Level</th><th>Over</th><th>Limit</th><th>Read</th><th>CableAntenna</th><th>Preamp</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th><th>Pol/Phas</th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dBuV</th><th>dB</th><th>dB/m</th><th>dB</th><th>cm</th><th>deg</th><th></th></tr><tr><td>1</td><td>399.57</td><td>37.73</td><td>-6.29</td><td>46.00</td><td>45.16</td><td>2.92</td><td>21.74</td><td>32.11</td><td>---</td><td>---</td><td>Peak HORIZONTAL</td></tr><tr><td>2 *</td><td>914.64</td><td>188.20</td><td>---</td><td>---</td><td>185.44</td><td>4.40</td><td>29.55</td><td>31.19</td><td>---</td><td>---</td><td>Peak HORIZONTAL</td></tr></table>	Peak	Freq	Level	Over	Limit	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phas		MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB/m	dB	cm	deg		1	399.57	37.73	-6.29	46.00	45.16	2.92	21.74	32.11	---	---	Peak HORIZONTAL	2 *	914.64	188.20	---	---	185.44	4.40	29.55	31.19	---	---	Peak HORIZONTAL	 <table><tr><th>Peak</th><th>Freq</th><th>Level</th><th>Over</th><th>Limit</th><th>Read</th><th>CableAntenna</th><th>Preamp</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th><th>Pol/Phas</th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dBuV</th><th>dB</th><th>dB/m</th><th>dB</th><th>cm</th><th>deg</th><th></th></tr><tr><td>1</td><td>399.60</td><td>35.53</td><td>-10.47</td><td>46.00</td><td>43.15</td><td>2.91</td><td>23.58</td><td>32.11</td><td>---</td><td>---</td><td>Peak VERTICAL</td></tr><tr><td>2 *</td><td>914.64</td><td>115.30</td><td>---</td><td>---</td><td>112.54</td><td>4.40</td><td>29.55</td><td>31.19</td><td>---</td><td>---</td><td>Peak VERTICAL</td></tr></table>	Peak	Freq	Level	Over	Limit	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phas		MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB/m	dB	cm	deg		1	399.60	35.53	-10.47	46.00	43.15	2.91	23.58	32.11	---	---	Peak VERTICAL	2 *	914.64	115.30	---	---	112.54	4.40	29.55	31.19	---	---	Peak VERTICAL
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LoRa	902.2–927.6 Band Edge @ 3m																																																																																																													
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LoRa 125KHz FHSS SF=9 (Harmonic @ 3m)

LoRa	902.2~927.6 Harmonic @ 3m																																																																																																																																																																																							
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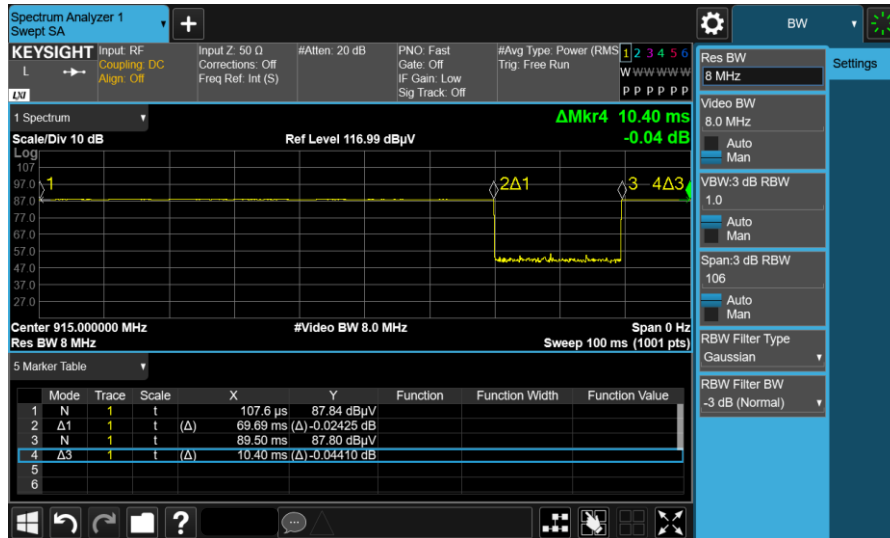
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Peak	<table><tr><th>Freq</th><th>Level</th><th>Limit</th><th>Read</th><th>Ant</th><th>Cable</th><th>Preamp</th><th>Aux</th><th>APos</th><th>TPos</th><th>Remark</th><th>Pol/Phase</th></tr><tr><th>MHz</th><th>dBuV/m</th><th>dBuV/m</th><th>dBuV/m</th><th>dBuV/m</th><th>dBuV/m</th><th>dBuV/m</th><th>dBuV/m</th><th>dBuV/m</th><th>dBuV/m</th><th></th><th></th></tr><tr><td>1895.40</td><td>-46.82</td><td>-27.50</td><td>76.00</td><td>70.05</td><td>20.44</td><td>4.71</td><td>65.16</td><td>0.00</td><td>--</td><td>Peak</td><td>HORIZONTAL</td></tr><tr><td>2744.80</td><td>53.78</td><td>-28.30</td><td>74.00</td><td>70.74</td><td>32.83</td><td>7.63</td><td>65.50</td><td>0.00</td><td>111</td><td>246 Peak</td><td>HORIZONTAL</td></tr><tr><td>2744.80</td><td>51.77</td><td>-2.23</td><td>54.00</td><td>76.52</td><td>32.83</td><td>7.63</td><td>65.50</td><td>0.00</td><td>111</td><td>246 Average</td><td>HORIZONTAL</td></tr><tr><td>5489.00</td><td>52.13</td><td>-36.87</td><td>68.20</td><td>71.74</td><td>34.94</td><td>10.87</td><td>65.42</td><td>0.00</td><td>--</td><td>Peak</td><td>HORIZONTAL</td></tr></table>	Freq	Level	Limit	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark	Pol/Phase	MHz	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dBuV/m			1895.40	-46.82	-27.50	76.00	70.05	20.44	4.71	65.16	0.00	--	Peak	HORIZONTAL	2744.80	53.78	-28.30	74.00	70.74	32.83	7.63	65.50	0.00	111	246 Peak	HORIZONTAL	2744.80	51.77	-2.23	54.00	76.52	32.83	7.63	65.50	0.00	111	246 Average	HORIZONTAL	5489.00	52.13	-36.87	68.20	71.74	34.94	10.87	65.42	0.00	--	Peak	HORIZONTAL	<table><tr><th>Freq</th><th>Level</th><th>Limit</th><th>Read</th><th>Ant</th><th>Cable</th><th>Preamp</th><th>Aux</th><th>APos</th><th>TPos</th><th>Remark</th><th>Pol/Phase</th></tr><tr><th>MHz</th><th>dBuV/m</th><th>dBuV/m</th><th>dBuV/m</th><th>dBuV/m</th><th>dBuV/m</th><th>dBuV/m</th><th>dBuV/m</th><th>dBuV/m</th><th>dBuV/m</th><th></th><th></th></tr><tr><td>1895.40</td><td>-46.82</td><td>-27.50</td><td>76.00</td><td>70.05</td><td>20.44</td><td>4.71</td><td>65.16</td><td>0.00</td><td>--</td><td>Peak</td><td>VERTICAL</td></tr><tr><td>2744.80</td><td>52.24</td><td>-21.76</td><td>74.00</td><td>77.28</td><td>32.83</td><td>7.63</td><td>65.50</td><td>0.00</td><td>300</td><td>279 Peak</td><td>VERTICAL</td></tr><tr><td>2744.80</td><td>50.51</td><td>-3.09</td><td>54.00</td><td>75.55</td><td>32.83</td><td>7.63</td><td>65.50</td><td>0.00</td><td>300</td><td>279 Average</td><td>VERTICAL</td></tr><tr><td>5489.00</td><td>55.72</td><td>-39.58</td><td>95.30</td><td>75.33</td><td>34.94</td><td>10.87</td><td>65.42</td><td>0.00</td><td>--</td><td>Peak</td><td>VERTICAL</td></tr></table>	Freq	Level	Limit	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark	Pol/Phase	MHz	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dBuV/m			1895.40	-46.82	-27.50	76.00	70.05	20.44	4.71	65.16	0.00	--	Peak	VERTICAL	2744.80	52.24	-21.76	74.00	77.28	32.83	7.63	65.50	0.00	300	279 Peak	VERTICAL	2744.80	50.51	-3.09	54.00	75.55	32.83	7.63	65.50	0.00	300	279 Average	VERTICAL	5489.00	55.72	-39.58	95.30	75.33	34.94	10.87	65.42	0.00	--	Peak	VERTICAL
Freq	Level	Limit	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark	Pol/Phase																																																																																																																																							
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Peak	<table><tr><th>Line</th><th>Freq</th><th>Level</th><th>Limit</th><th>Margin</th><th>Unit</th><th>Ant</th><th>Cable</th><th>Preamp</th><th>Aux</th><th>APos</th><th>TPos</th><th>Remark</th><th>Pol/Phase</th></tr><tr><td>1</td><td>1802.00</td><td>-45.50</td><td>-27.50</td><td>18.00</td><td>79.74</td><td>27.20</td><td>4.72</td><td>65.16</td><td>0.00</td><td>--</td><td>cm</td><td>deg</td><td>HORIZONTAL</td></tr><tr><td>2</td><td>2702.00</td><td>51.72</td><td>-22.28</td><td>74.00</td><td>77.40</td><td>32.18</td><td>7.68</td><td>65.46</td><td>0.00</td><td>180</td><td>335</td><td>Peak</td><td>HORIZONTAL</td></tr><tr><td>3</td><td>2702.00</td><td>49.79</td><td>-4.21</td><td>54.00</td><td>75.47</td><td>32.18</td><td>7.68</td><td>65.46</td><td>0.00</td><td>180</td><td>328</td><td>Average</td><td>HORIZONTAL</td></tr><tr><td>4</td><td>5505.40</td><td>54.33</td><td>-36.39</td><td>90.72</td><td>75.95</td><td>34.80</td><td>10.96</td><td>65.38</td><td>0.00</td><td>--</td><td>--</td><td>Peak</td><td>HORIZONTAL</td></tr></table>	Line	Freq	Level	Limit	Margin	Unit	Ant	Cable	Preamp	Aux	APos	TPos	Remark	Pol/Phase	1	1802.00	-45.50	-27.50	18.00	79.74	27.20	4.72	65.16	0.00	--	cm	deg	HORIZONTAL	2	2702.00	51.72	-22.28	74.00	77.40	32.18	7.68	65.46	0.00	180	335	Peak	HORIZONTAL	3	2702.00	49.79	-4.21	54.00	75.47	32.18	7.68	65.46	0.00	180	328	Average	HORIZONTAL	4	5505.40	54.33	-36.39	90.72	75.95	34.80	10.96	65.38	0.00	--	--	Peak	HORIZONTAL	<table><tr><th>Line</th><th>Freq</th><th>Level</th><th>Limit</th><th>Margin</th><th>Unit</th><th>Ant</th><th>Cable</th><th>Preamp</th><th>Aux</th><th>APos</th><th>TPos</th><th>Remark</th><th>Pol/Phase</th></tr><tr><td>1</td><td>1870.00</td><td>-48.17</td><td>-25.83</td><td>22.34</td><td>81.75</td><td>25.84</td><td>4.78</td><td>65.18</td><td>0.00</td><td>--</td><td>cm</td><td>deg</td><td>VERTICAL</td></tr><tr><td>2</td><td>2702.00</td><td>53.82</td><td>-28.98</td><td>74.80</td><td>78.78</td><td>32.18</td><td>7.68</td><td>65.46</td><td>0.00</td><td>180</td><td>328</td><td>Peak</td><td>VERTICAL</td></tr><tr><td>3</td><td>2702.00</td><td>51.89</td><td>-2.81</td><td>54.00</td><td>76.77</td><td>32.18</td><td>7.68</td><td>65.46</td><td>0.00</td><td>180</td><td>328</td><td>Average</td><td>VERTICAL</td></tr><tr><td>4</td><td>5505.40</td><td>55.77</td><td>-40.49</td><td>96.26</td><td>75.39</td><td>34.80</td><td>10.96</td><td>65.38</td><td>0.00</td><td>--</td><td>--</td><td>Peak</td><td>VERTICAL</td></tr></table>	Line	Freq	Level	Limit	Margin	Unit	Ant	Cable	Preamp	Aux	APos	TPos	Remark	Pol/Phase	1	1870.00	-48.17	-25.83	22.34	81.75	25.84	4.78	65.18	0.00	--	cm	deg	VERTICAL	2	2702.00	53.82	-28.98	74.80	78.78	32.18	7.68	65.46	0.00	180	328	Peak	VERTICAL	3	2702.00	51.89	-2.81	54.00	76.77	32.18	7.68	65.46	0.00	180	328	Average	VERTICAL	4	5505.40	55.77	-40.49	96.26	75.39	34.80	10.96	65.38	0.00	--	--	Peak	VERTICAL
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Appendix E. Duty Cycle Plots

LORA FHSS SF=9 125KHZ on time Plot



Note:

1. Worst case Duty cycle = on time/100 milliseconds = 80.09 / 100 = 80.09 %
2. Worst case Duty cycle correction factor = $20 \cdot \log(\text{Duty cycle}) = -1.93 \text{ dB}$