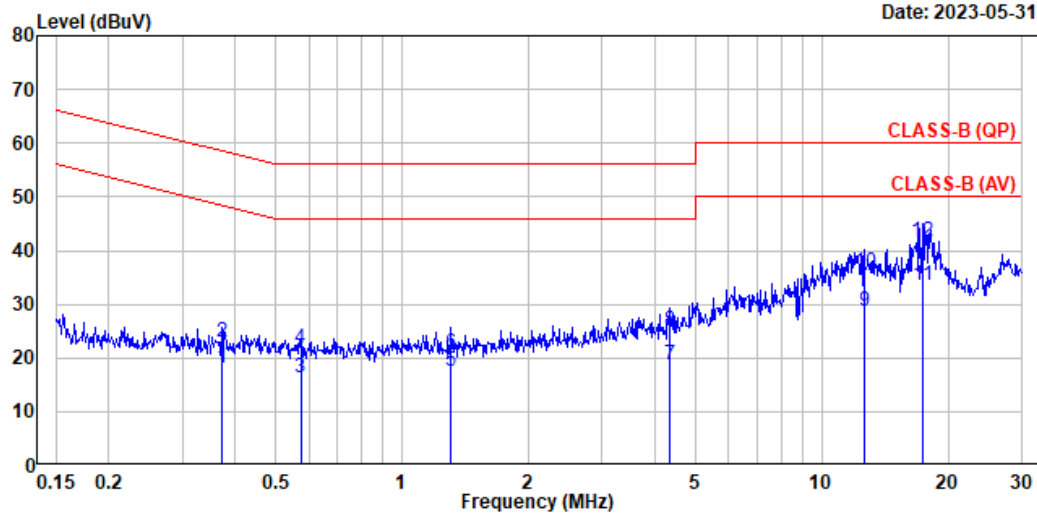


## TABLE OF CONTENTS

<b>A.1 CONDUCTED EMISSION</b> .....	<b>2</b>
<b>A.2 RADIATED EMISSION</b> .....	<b>4</b>
A.2.1 Emissions within Restricted Frequency Bands.....	4
A.2.2 Emissions outside the frequency band.....	17
A.2.3 Emissions in Non-restricted Frequency Bands.....	22
<b>A.3 EMISSION/OCCUPIED BANDWIDTH</b> .....	<b>23</b>
A.3.1 Emission/Occupied Bandwidth Result .....	23
A.3.2 Measurement Plots .....	24
<b>A.4 MAXIMUM OUTPUT POWER</b> .....	<b>25</b>
A.4.1 Average Output Power .....	25
<b>A.5 POWER SPECTRAL DENSITY</b> .....	<b>26</b>
A.5.1 Power Spectral Density Result .....	26
A.5.2 Measurement Plots .....	27
<b>A.6 FREQUENCY STABILITY</b> .....	<b>28</b>
A.6.1 Frequency stability Result .....	28

## A.1 CONDUCTED EMISSION

Test Date	2023/05/31	Temp./Hum.	26°C/64%
Test Voltage	DC 3.3V	Tested By	Joe Kuo



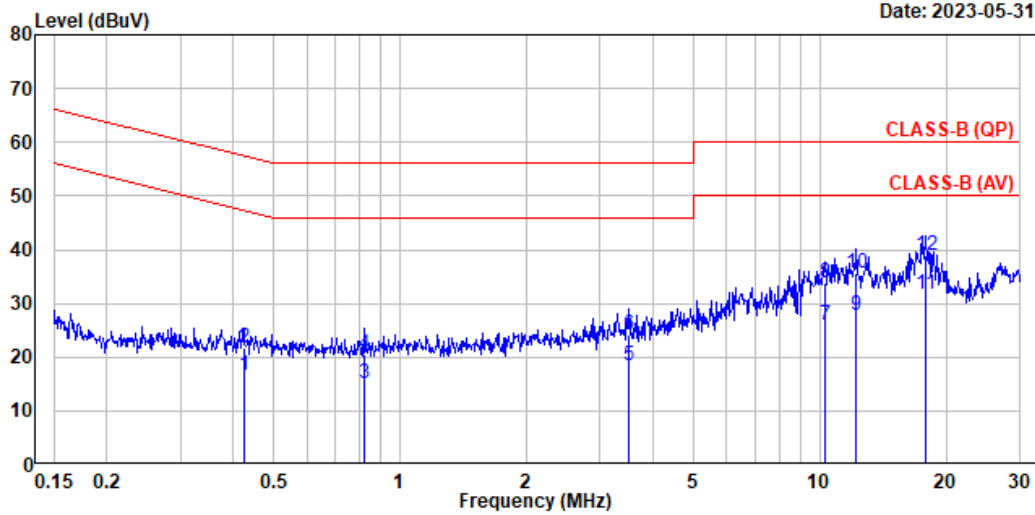
Site No. : No.8 Shielded Room  
 Instrument 1 : Receiver ESR(774)  
 Instrument 2 : ENV4200 (169)(A)|CE-08|ESH3-Z2 (354)  
 Limit : CLASS-B (QP)  
 Environment : 26°C/64%  
 EUT Model : WL1BKT23  
 Test Mode : Operating

Data No. : 2  
 Test Rating : DC 3.3V  
 Engineer : Joe\_Kuo

	Freq. (MHz)	ISN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.373	10.48	0.03	9.85	-2.24	18.12	48.42	30.30	Average
2	0.373	10.48	0.03	9.85	2.55	22.91	58.42	35.51	QP
3	0.573	10.46	0.03	9.85	-4.10	16.24	46.00	29.76	Average
4	0.573	10.46	0.03	9.85	1.37	21.71	56.00	34.29	QP
5	1.311	10.47	0.05	9.85	-2.92	17.45	46.00	28.55	Average
6	1.311	10.47	0.05	9.85	0.57	20.94	56.00	35.06	QP
7	4.337	10.71	0.08	9.86	-1.93	18.72	46.00	27.28	Average
8	4.337	10.71	0.08	9.86	4.26	24.91	56.00	31.09	QP
9	12.603	12.20	0.15	9.90	6.31	28.56	50.00	21.44	Average
10	12.603	12.20	0.15	9.90	13.74	35.99	60.00	24.01	QP
11	17.338	13.27	0.19	9.93	10.05	33.44	50.00	16.56	Average
12	17.338	13.27	0.19	9.93	18.35	41.74	60.00	18.26	QP

Remarks: 1. Emission Level(dBμV)= ISN Factor(dB) + Cable Loss(dB) + Pulse Att.(dB) + Reading(dBμV).

Test Date	2023/05/31	Temp./Hum.	26°C/64%
Test Voltage	DC 3.3V	Tested By	Joe Kuo



Site No. : No.8 Shielded Room  
 Instrument 1 : Receiver ESR(774)  
 Instrument 2 : ENV4200 (169)(A)|CE-08|ESH3-Z2 (354)  
 Limit : CLASS-B (QP)  
 Environment : 26°C/64%  
 EUT Model : WL1BKT23  
 Test Mode : Operating  
 Data No. : 1  
 Test Rating : DC 3.3V  
 Engineer : Joe\_Kuo

	Freq. (MHz)	ISN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.425	10.42	0.03	9.85	-3.55	16.75	47.35	30.60	Average
2	0.425	10.42	0.03	9.85	1.49	21.79	57.35	35.56	QP
3	0.825	10.40	0.04	9.85	-5.08	15.21	46.00	30.79	Average
4	0.825	10.40	0.04	9.85	0.35	20.64	56.00	35.36	QP
5	3.518	10.54	0.08	9.86	-2.01	18.47	46.00	27.53	Average
6	3.518	10.54	0.08	9.86	3.67	24.15	56.00	31.85	QP
7	10.325	11.31	0.14	9.89	4.63	25.97	50.00	24.03	Average
8	10.325	11.31	0.14	9.89	12.54	33.88	60.00	26.12	QP
9	12.232	11.81	0.15	9.90	5.85	27.71	50.00	22.29	Average
10	12.232	11.81	0.15	9.90	13.84	35.70	60.00	24.30	QP
11	17.865	12.94	0.19	9.93	8.74	31.80	50.00	18.20	Average
12	17.865	12.94	0.19	9.93	16.03	39.09	60.00	20.91	QP

Remarks: 1. Emission Level(dBμV)= ISN Factor(dB) + Cable Loss(dB) + Pulse Att.(dB) + Reading(dBμV).

---

## A.2 RADIATED EMISSION

Test Date	2023/05/30	Temp./Hum.	21°C/68%
Test Voltage	DC 3.3V	Tested By	Hua Wu

### A.2.1 Emissions within Restricted Frequency Bands

#### A.2.1.1 Frequency 9kHz~30MHz

**The emissions (9kHz~30MHz) not reported for there is no emission be found.**

## A.2.1.2 Frequency Below 1GHz

## ● ANT 1

Mode	GFSK	U-NII Band	1
Antenna	ANT 1	Frequency	TX 5245MHz

## Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
36.079	21.62	1.56	26.48	39.24	35.94	40.00	4.06	Peak
59.941	12.41	2.00	26.42	47.70	35.69	40.00	4.31	Peak
83.867	13.96	2.41	26.33	46.21	36.25	40.00	3.75	Peak
144.007	17.27	3.13	26.03	44.44	38.82	43.50	4.68	Peak
167.869	16.00	3.39	25.92	46.49	39.96	43.50	3.54	Peak
191.861	15.42	3.63	25.82	44.56	37.79	43.50	5.71	Peak

## Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
35.949	21.70	1.55	26.48	39.44	36.22	40.00	3.78	Peak
59.876	12.42	2.00	26.42	47.37	35.38	40.00	4.62	Peak
71.969	12.34	2.21	26.37	45.25	33.42	40.00	6.58	Peak
83.932	13.97	2.41	26.33	46.72	36.77	40.00	3.23	Peak
143.943	17.27	3.13	26.03	44.96	39.34	43.50	4.16	Peak
167.934	16.00	3.39	25.92	45.40	38.87	43.50	4.63	Peak

Mode	GFSK	U-NII Band	3
Antenna	ANT 1	Frequency	TX 5845MHz

## Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
36.079	21.62	1.56	26.48	38.01	34.71	40.00	5.29	Peak
59.811	12.43	2.00	26.42	47.81	35.82	40.00	4.18	Peak
83.997	13.99	2.41	26.33	45.36	35.43	40.00	4.57	Peak
143.878	17.28	3.13	26.03	44.02	38.40	43.50	5.10	Peak
167.934	16.00	3.39	25.92	46.61	40.09	43.50	3.41	Peak
191.861	15.42	3.63	25.82	43.76	36.99	43.50	6.51	Peak

## Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
35.820	21.78	1.55	26.48	39.02	35.87	40.00	4.13	Peak
71.969	12.34	2.21	26.37	48.52	36.69	40.00	3.31	Peak
143.943	17.27	3.13	26.03	44.76	39.14	43.50	4.36	Peak
167.934	16.00	3.39	25.92	44.20	37.67	43.50	5.83	Peak
392.392	21.46	5.85	26.38	31.56	32.48	46.00	13.52	Peak
498.898	23.45	6.75	27.12	31.85	34.93	46.00	11.07	Peak

● ANT 2

Mode	GFSK	U-NII Band	1
Antenna	ANT 2	Frequency	TX 5245MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
35.820	21.78	1.55	26.48	38.72	35.58	40.00	4.42	Peak
60.005	12.40	2.00	26.42	47.63	35.62	40.00	4.38	Peak
83.932	13.97	2.41	26.33	44.83	34.88	40.00	5.12	Peak
144.007	17.27	3.13	26.03	43.66	38.04	43.50	5.46	Peak
167.999	16.00	3.39	25.92	45.91	39.38	43.50	4.12	Peak
191.861	15.42	3.63	25.82	44.06	37.29	43.50	6.21	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
36.014	21.66	1.55	26.48	38.89	35.63	40.00	4.37	Peak
60.005	12.40	2.00	26.42	47.00	34.99	40.00	5.01	Peak
72.033	12.34	2.21	26.37	47.87	36.05	40.00	3.95	Peak
83.932	13.97	2.41	26.33	45.60	35.65	40.00	4.35	Peak
143.878	17.28	3.13	26.03	44.98	39.36	43.50	4.14	Peak
167.999	16.00	3.39	25.92	46.73	40.20	43.50	3.30	Peak

Mode	GFSK	U-NII Band	3
Antenna	ANT 2	Frequency	TX 5845MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
36.079	21.62	1.56	26.48	38.43	35.13	40.00	4.87	Peak
60.135	12.40	2.00	26.41	47.39	35.37	40.00	4.63	Peak
83.932	13.97	2.41	26.33	44.53	34.58	40.00	5.42	Peak
143.813	17.28	3.13	26.03	45.78	40.17	43.50	3.33	Peak
167.934	16.00	3.39	25.92	46.52	39.99	43.50	3.51	Peak
191.861	15.42	3.63	25.82	45.36	38.59	43.50	4.91	Peak

Antenna at Vertical Polarization

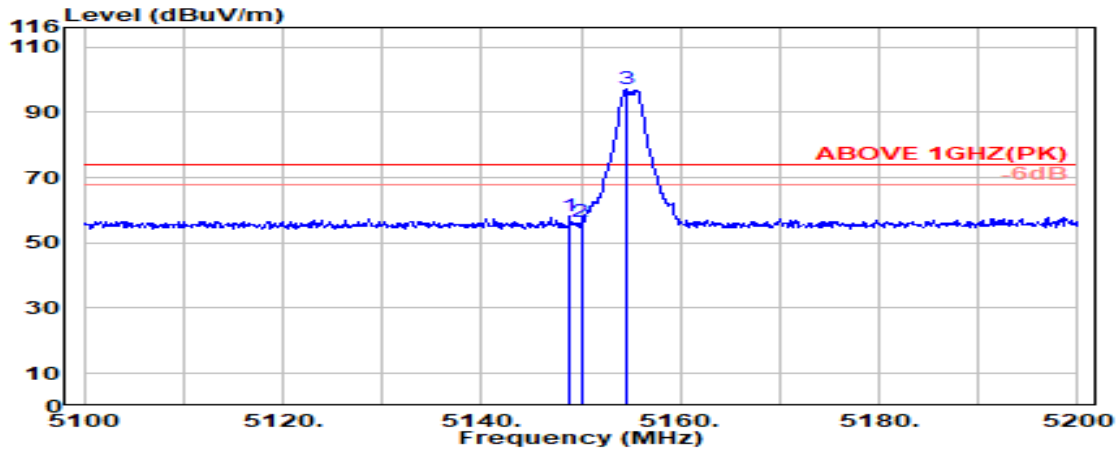
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
35.820	21.78	1.55	26.48	39.84	36.69	40.00	3.31	Peak
60.005	12.40	2.00	26.42	47.67	35.66	40.00	4.34	Peak
72.098	12.35	2.21	26.37	47.93	36.12	40.00	3.88	Peak
83.997	13.99	2.41	26.33	45.22	35.29	40.00	4.71	Peak
143.878	17.28	3.13	26.03	42.18	36.56	43.50	6.94	Peak
167.934	16.00	3.39	25.92	44.42	37.89	43.50	5.61	Peak

A.2.1.3 Frequency Above 1 GHz to 10<sup>th</sup> harmonics

**Band Edge:**

- ANT 1

Mode	GFSK	U-NII Band	1
Antenna	ANT 1	Frequency	TX 5155MHz

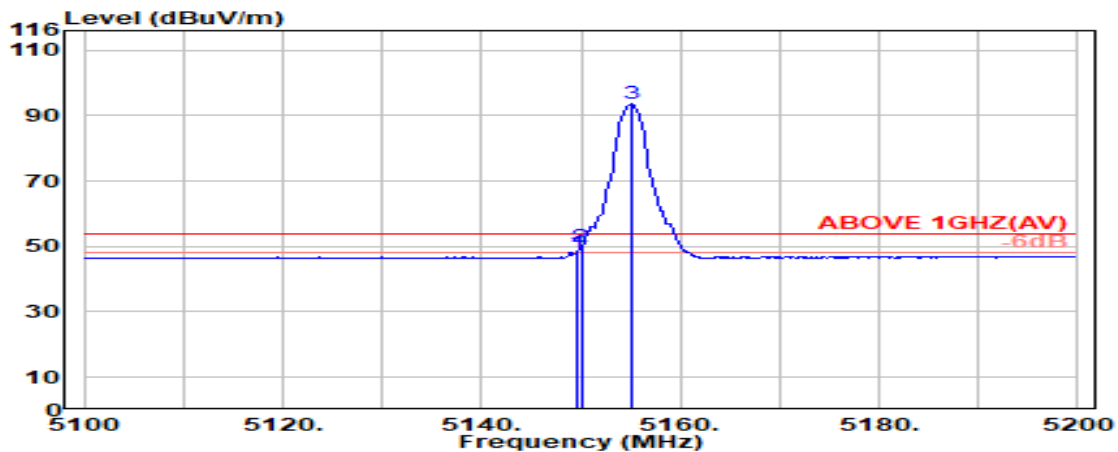


Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5148.900	33.70	8.54	34.24	50.01	58.01	74.00	15.99	Peak
5150.000	33.70	8.54	34.24	48.28	56.29	74.00	17.71	Peak
@ 5154.500	33.73	8.55	34.24	88.98	97.01	---	---	Peak

Remark: The “@” means fundamental frequency, it is ignored in this section.

Mode	GFSK	U-NII Band	1
Antenna	ANT 1	Frequency	TX 5155MHz

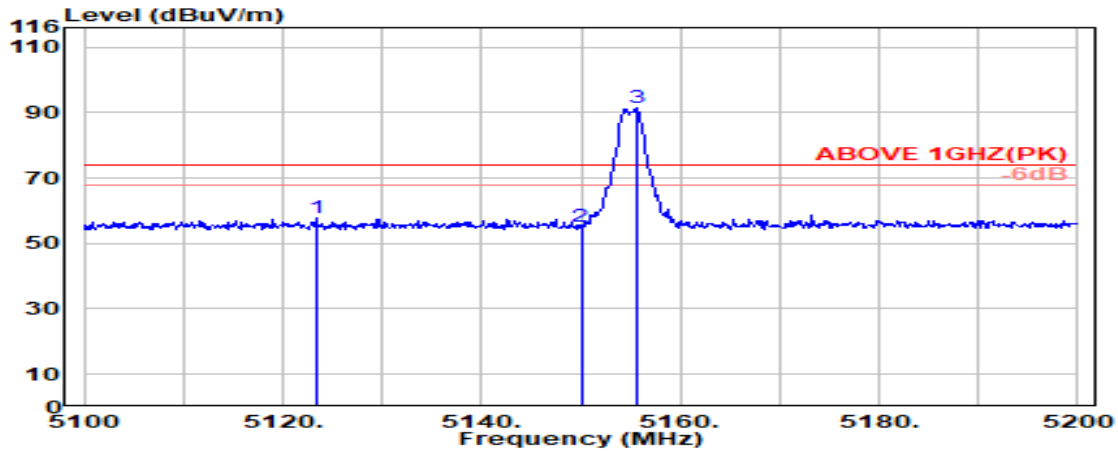


Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5149.600	33.70	8.54	34.24	40.25	48.26	54.00	5.74	Average
5150.000	33.70	8.54	34.24	41.85	49.85	54.00	4.15	Average
@ 5155.000	33.73	8.55	34.24	85.54	93.58	---	---	Average

Remark: The “@” means fundamental frequency, it is ignored in this section.

Mode	GFSK	U-NII Band	1
Antenna	ANT 1	Frequency	TX 5155MHz

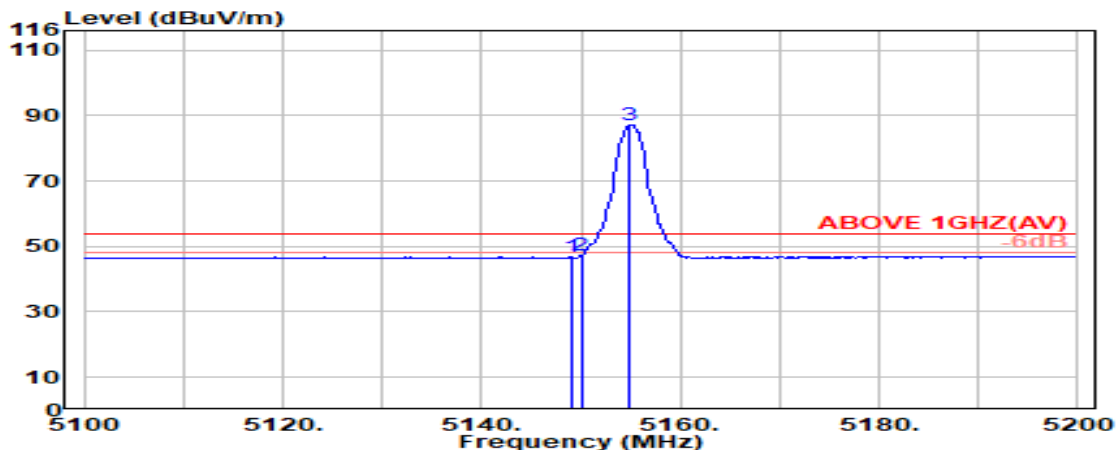


Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5123.300	33.65	8.53	34.25	49.69	57.61	74.00	16.39	Peak
5150.000	33.70	8.54	34.24	47.26	55.26	74.00	18.74	Peak
@ 5155.600	33.73	8.55	34.24	83.37	91.41	---	---	Peak

Remark: The “@” means fundamental frequency, it is ignored in this section.

Mode	GFSK	U-NII Band	1
Antenna	ANT 1	Frequency	TX 5155MHz



Antenna at Vertical Polarization

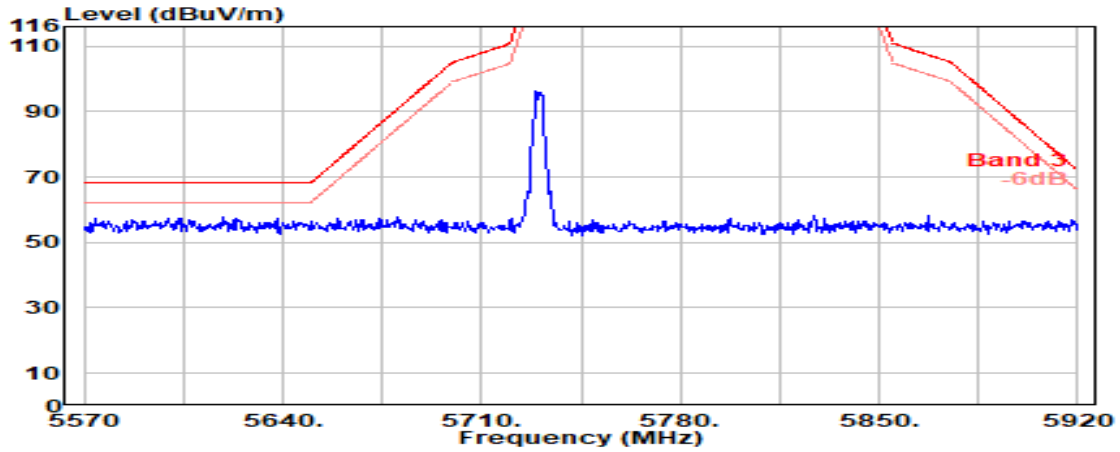
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5149.100	33.70	8.54	34.24	38.71	46.71	54.00	7.29	Average
5150.000	33.70	8.54	34.24	39.07	47.08	54.00	6.92	Average
@ 5154.900	33.73	8.55	34.24	79.19	87.23	---	---	Average

Remark: The “@” means fundamental frequency, it is ignored in this section.

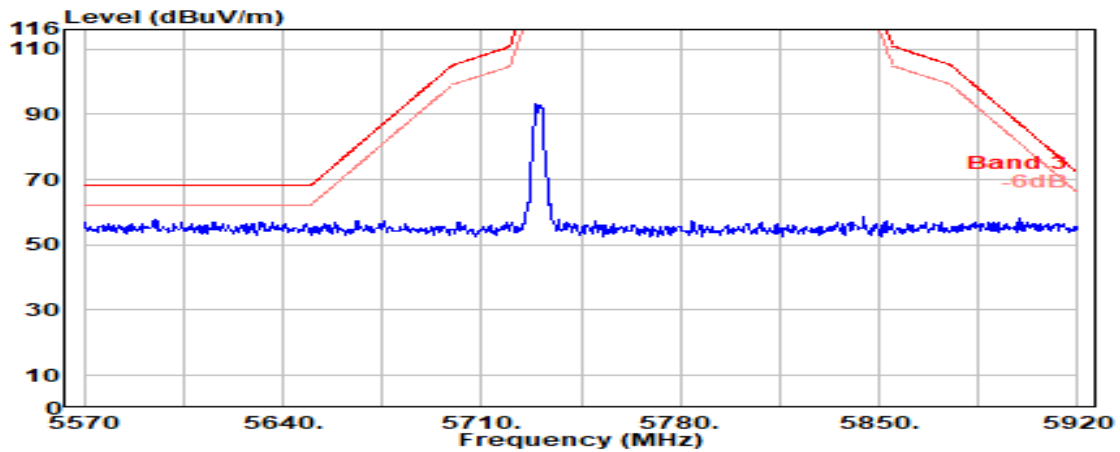


Mode	GFSK	U-NII Band	3
Antenna	ANT 1	Frequency	TX 5730MHz

## Antenna at Horizontal Polarization

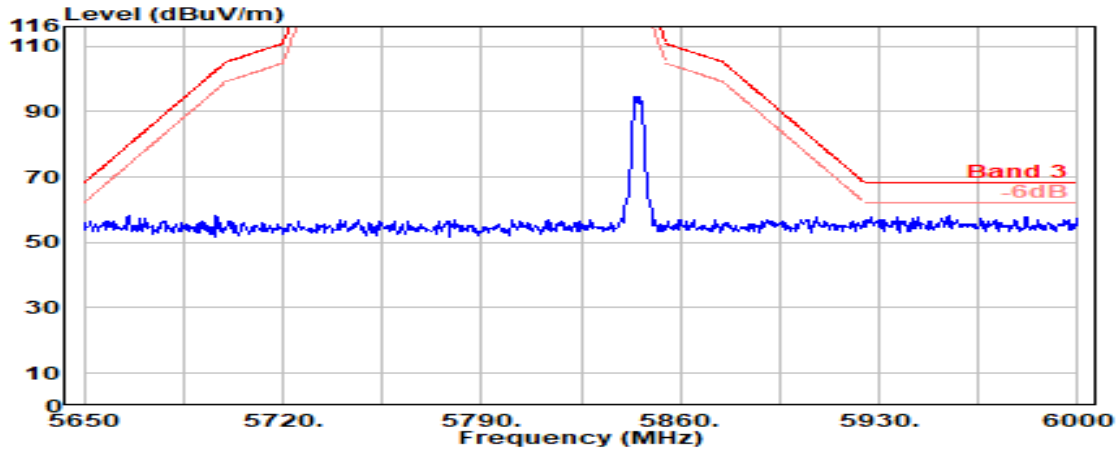


## Antenna at Vertical Polarization

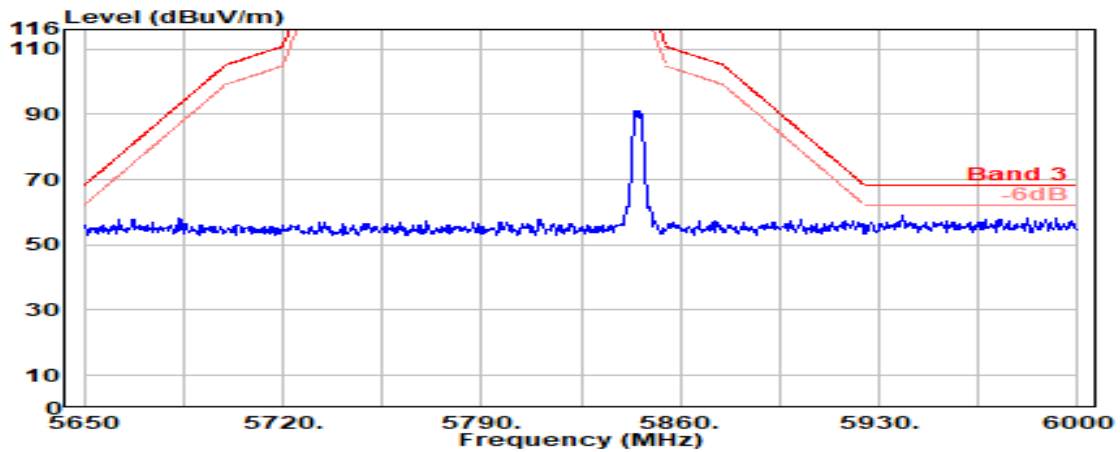


Mode	GFSK	U-NII Band	3
Antenna	ANT 1	Frequency	TX 5845MHz

## Antenna at Horizontal Polarization

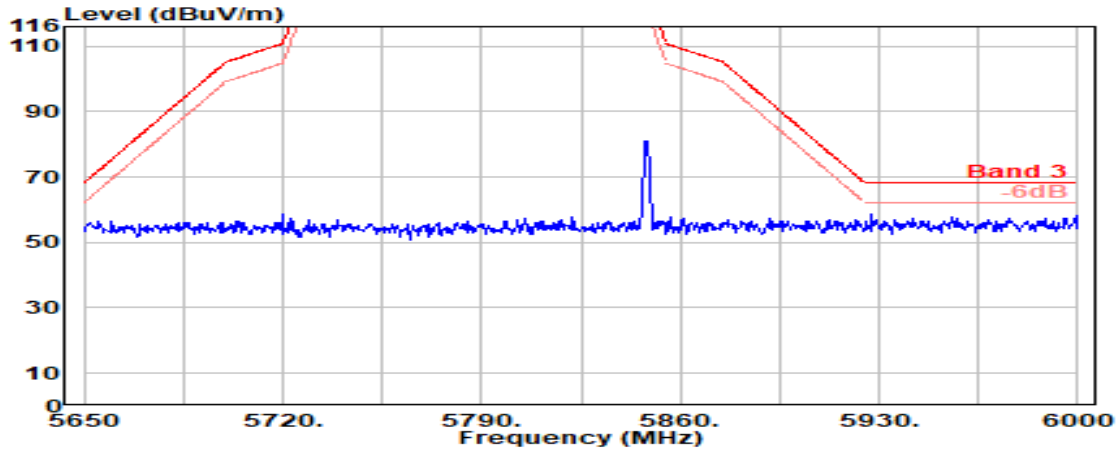


## Antenna at Vertical Polarization

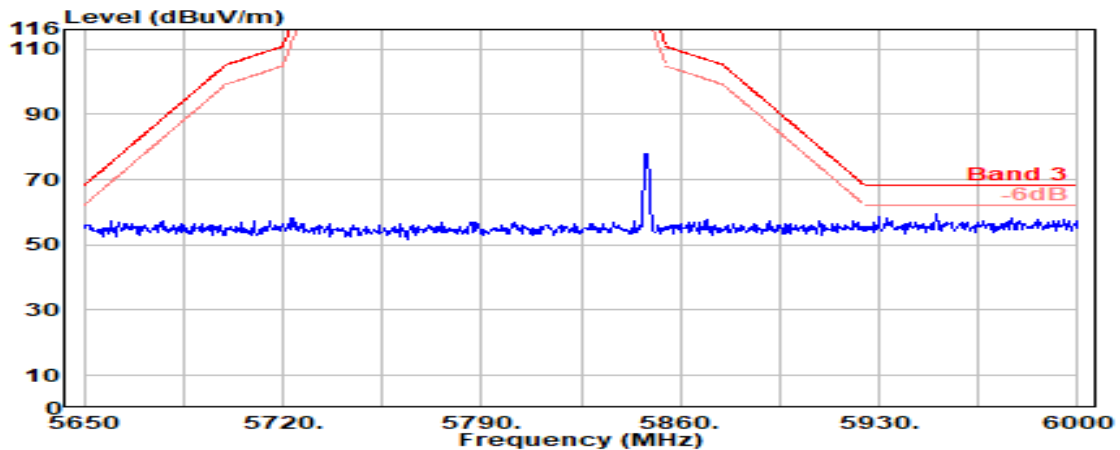


Mode	GFSK	U-NII Band	3
Antenna	ANT 1	Frequency	TX 5848MHz

## Antenna at Horizontal Polarization

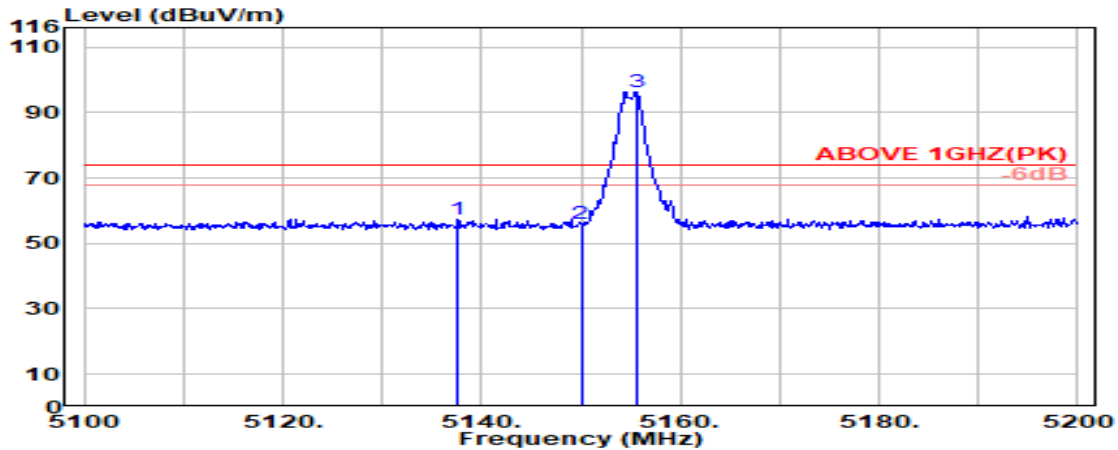


## Antenna at Vertical Polarization



● ANT 2

Mode	GFSK	U-NII Band	1
Antenna	ANT 2	Frequency	TX 5155MHz

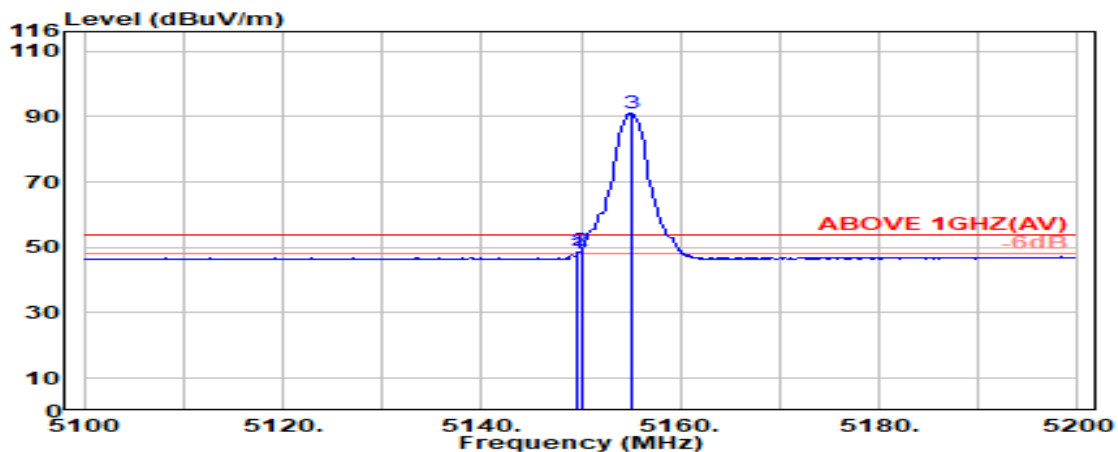


Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5137.600	33.68	8.54	34.25	49.47	57.44	74.00	16.56	Peak
5150.000	33.70	8.54	34.24	47.88	55.88	74.00	18.12	Peak
@ 5155.600	33.73	8.55	34.24	88.21	96.25	---	---	Peak

Remark: The “@” means fundamental frequency, it is ignored in this section.

Mode	GFSK	U-NII Band	1
Antenna	ANT 2	Frequency	TX 5155MHz

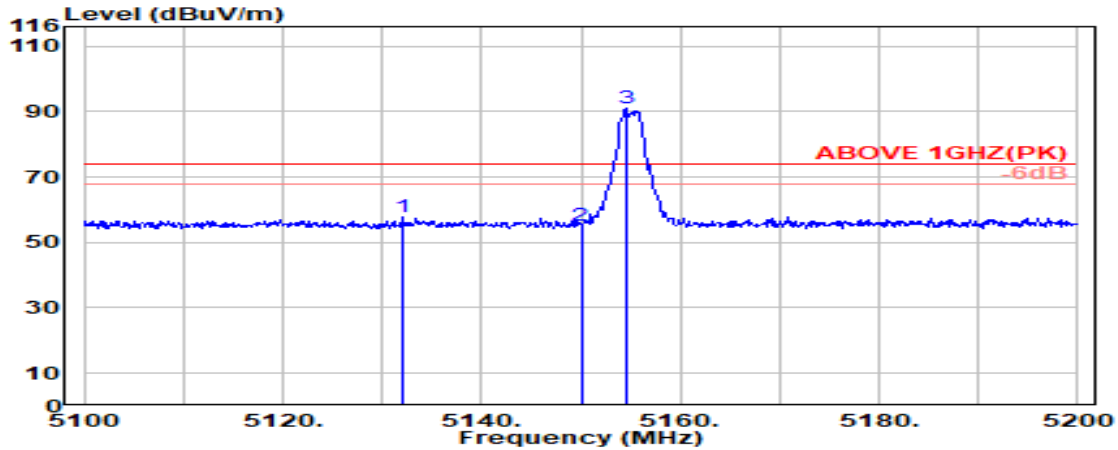


Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5149.600	33.70	8.54	34.24	40.25	48.25	54.00	5.75	Average
5150.000	33.70	8.54	34.24	40.89	48.90	54.00	5.10	Average
@ 5155.000	33.73	8.55	34.24	83.01	91.05	---	---	Average

Remark: The “@” means fundamental frequency, it is ignored in this section.

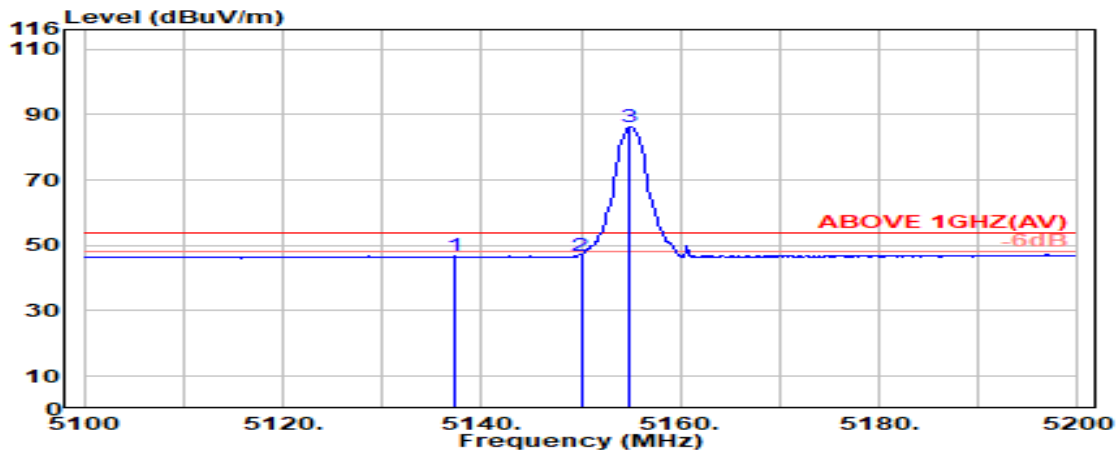
Mode	GFSK	U-NII Band	1
Antenna	ANT 2	Frequency	TX 5155MHz



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5132.000	33.66	8.53	34.25	49.81	57.76	74.00	16.24	Peak
5150.000	33.70	8.54	34.24	47.33	55.33	74.00	18.67	Peak
@ 5154.500	33.73	8.55	34.24	83.03	91.06	---	---	Peak

Mode	GFSK	U-NII Band	1
Antenna	ANT 2	Frequency	TX 5155MHz



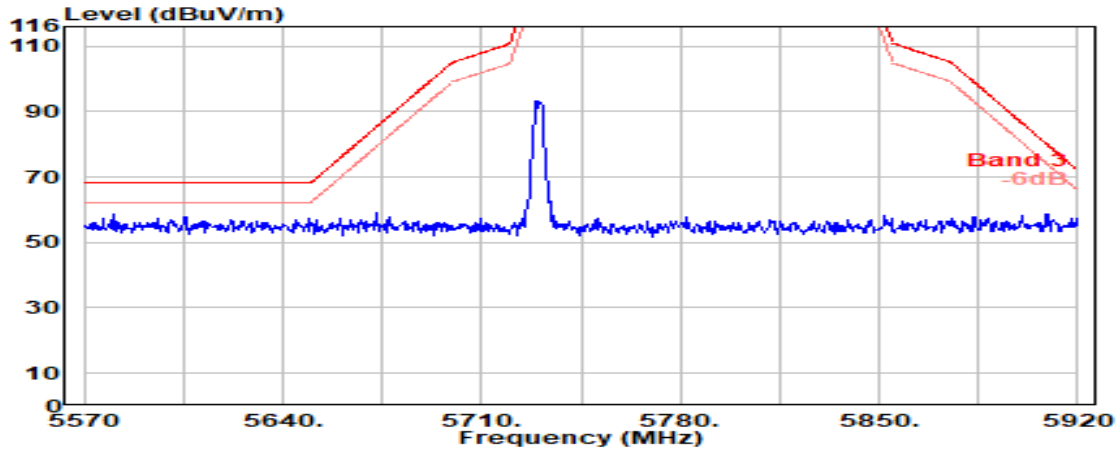
Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5137.200	33.67	8.54	34.25	38.80	46.76	54.00	7.24	Average
5150.000	33.70	8.54	34.24	38.98	46.99	54.00	7.01	Average
@ 5154.900	33.73	8.55	34.24	78.25	86.29	---	---	Average

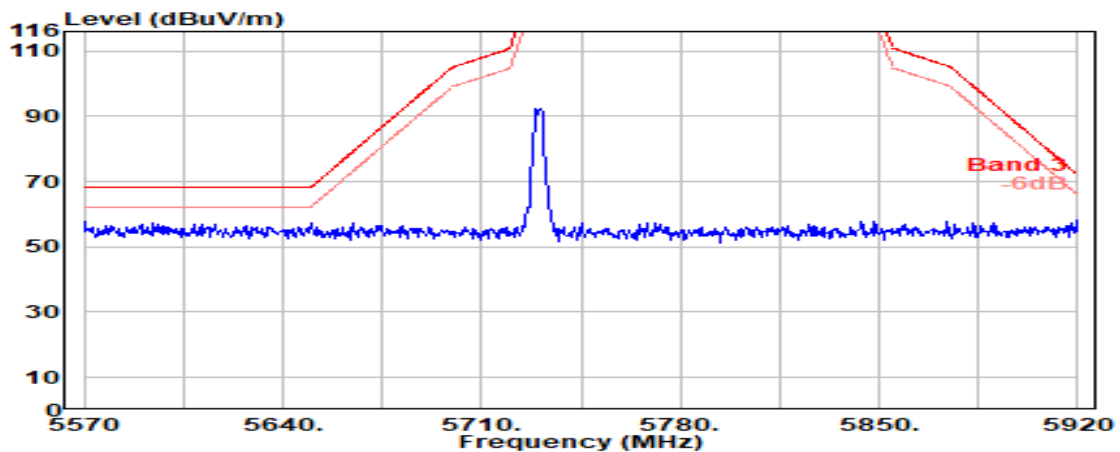
Remark: The “@” means fundamental frequency, it is ignored in this section.

Mode	GFSK	U-NII Band	3
Antenna	ANT 2	Frequency	TX 5730MHz

## Antenna at Horizontal Polarization

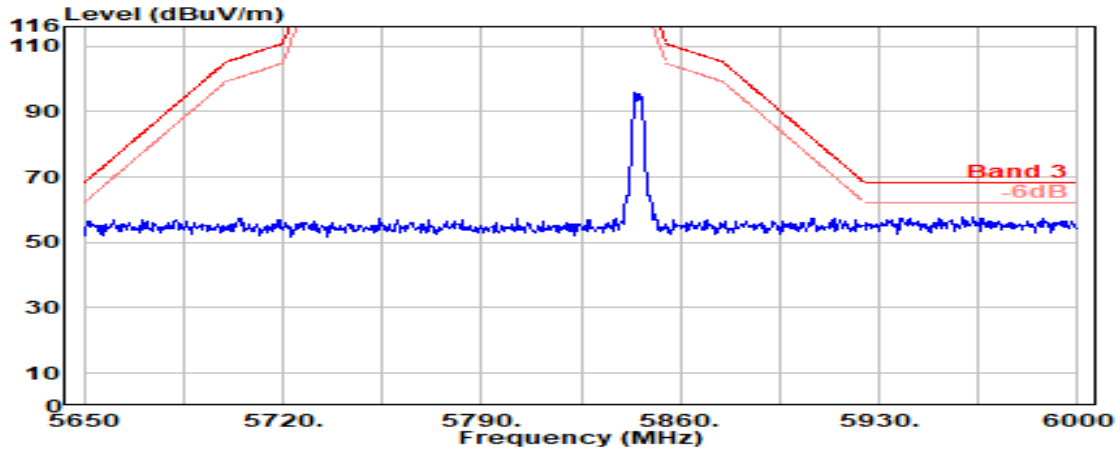


## Antenna at Vertical Polarization

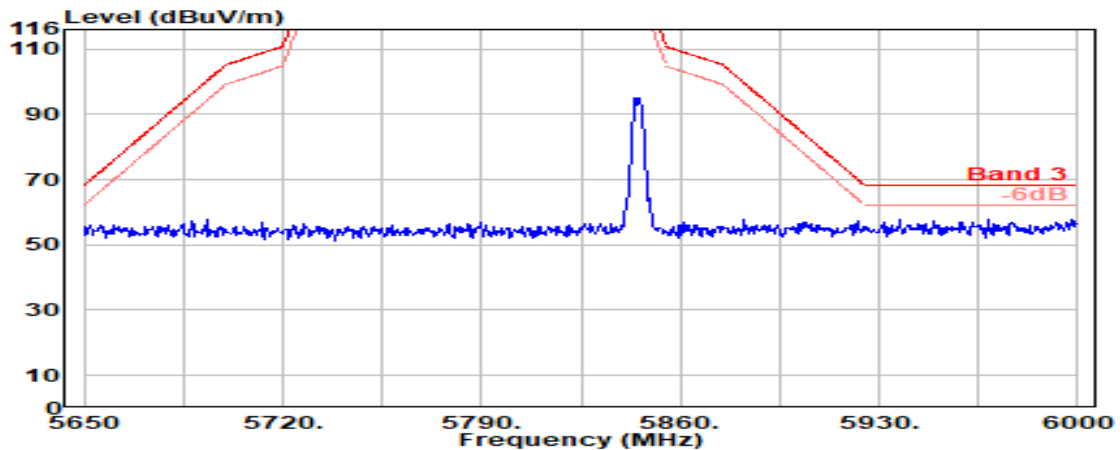


Mode	GFSK	U-NII Band	3
Antenna	ANT 2	Frequency	TX 5845MHz

## Antenna at Horizontal Polarization

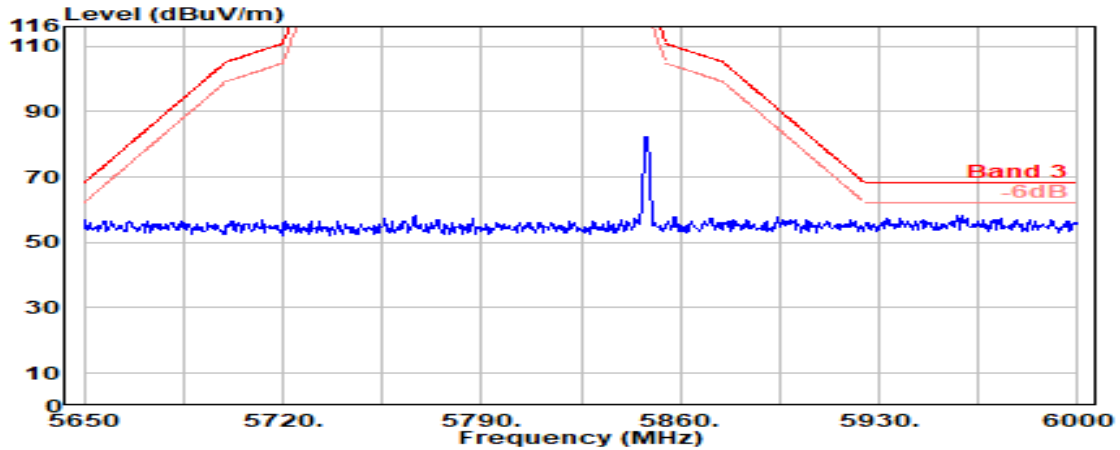


## Antenna at Vertical Polarization

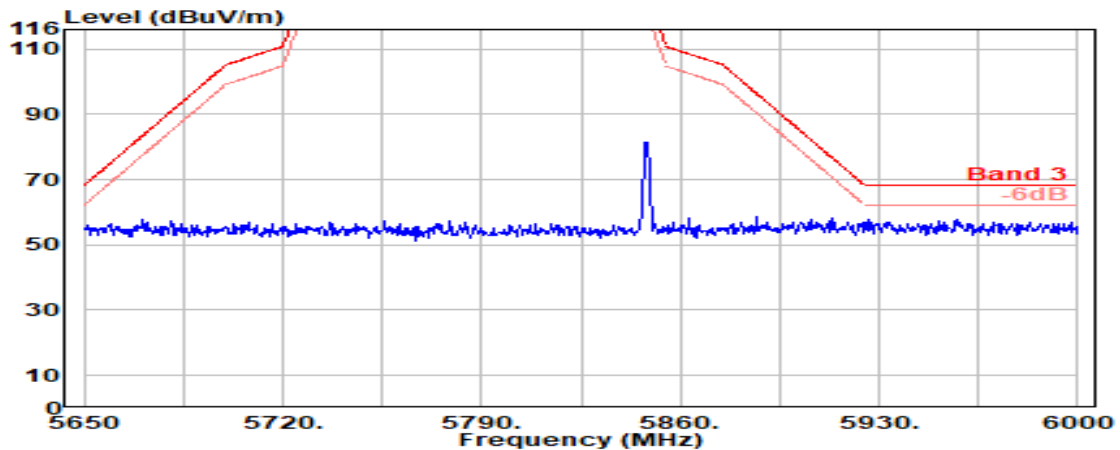


Mode	GFSK	U-NII Band	3
Antenna	ANT 2	Frequency	TX 5848MHz

#### Antenna at Horizontal Polarization



#### Antenna at Vertical Polarization





## A.2.2 Emissions outside the frequency band

The emissions (up to 40GHz) not reported for there is no emission be found.

## ● ANT 1

Mode	GFSK	U-NII Band	1
Antenna	ANT 1	Frequency	TX 5155MHz

## Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
10310.000	38.29	11.84	34.71	34.42	49.84	54.00	4.16	Peak

## Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
10310.000	38.29	11.84	34.71	32.73	48.15	54.00	5.85	Peak

Mode	GFSK	U-NII Band	1
Antenna	ANT 1	Frequency	TX 5195MHz

## Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
10390.000	38.21	11.95	34.64	33.48	49.00	54.00	5.00	Peak

## Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
10390.000	38.21	11.95	34.64	34.36	49.88	54.00	4.12	Peak

Mode	GFSK	U-NII Band	1
Antenna	ANT 1	Frequency	TX 5245MHz

## Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
10490.000	38.38	12.08	34.55	33.55	49.47	54.00	4.53	Peak

## Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
10490.000	38.38	12.08	34.55	34.64	50.55	54.00	3.45	Peak

Mode	GFSK	U-NII Band	3
Antenna	ANT 1	Frequency	TX 5730MHz

**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
11460.000	39.26	13.28	34.42	30.87	48.99	54.00	5.01	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
11460.000	39.26	13.28	34.42	30.87	48.99	54.00	5.01	Peak

Mode	GFSK	U-NII Band	3
Antenna	ANT 1	Frequency	TX 5790MHz

**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
11580.000	39.54	13.41	34.44	31.21	49.73	54.00	4.27	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
11580.000	39.54	13.41	34.44	30.77	49.28	54.00	4.72	Peak

Mode	GFSK	U-NII Band	3
Antenna	ANT 1	Frequency	TX 5845MHz

**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
11690.000	39.78	13.53	34.46	30.27	49.12	54.00	4.88	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
11690.000	39.78	13.53	34.46	31.22	50.07	54.00	3.93	Peak

Mode	GFSK	U-NII Band	3
Antenna	ANT 1	Frequency	TX 5848MHz

**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
11696.000	39.79	13.54	34.46	32.20	51.07	54.00	2.93	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
11696.000	39.79	13.54	34.46	30.02	48.89	54.00	5.11	Peak

● ANT 2

Mode	GFSK	U-NII Band	1
Antenna	ANT 2	Frequency	TX 5155MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
10310.000	38.29	11.84	34.71	33.40	48.82	54.00	5.18	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
10310.000	38.29	11.84	34.71	32.43	47.85	54.00	6.15	Peak

Mode	GFSK	U-NII Band	1
Antenna	ANT 2	Frequency	TX 5195MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
10390.000	38.21	11.95	34.64	33.75	49.27	54.00	4.73	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
10390.000	38.21	11.95	34.64	34.28	49.80	54.00	4.20	Peak

Mode	GFSK	U-NII Band	1
Antenna	ANT 2	Frequency	TX 5245MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
10490.000	38.38	12.08	34.55	33.92	49.83	54.00	4.17	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
10490.000	38.38	12.08	34.55	34.41	50.32	54.00	3.68	Peak

Mode	GFSK	U-NII Band	3
Antenna	ANT 2	Frequency	TX 5730MHz

**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
11460.000	39.26	13.28	34.42	32.68	50.80	54.00	3.20	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
11460.000	39.26	13.28	34.42	31.90	50.02	54.00	3.98	Peak

Mode	GFSK	U-NII Band	3
Antenna	ANT 2	Frequency	TX 5790MHz

**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
11580.000	39.54	13.41	34.44	30.70	49.22	54.00	4.78	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
11580.000	39.54	13.41	34.44	31.78	50.29	54.00	3.71	Peak

Mode	GFSK	U-NII Band	3
Antenna	ANT 2	Frequency	TX 5845MHz

**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
11690.000	39.78	13.53	34.46	31.03	49.88	54.00	4.12	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
11690.000	39.78	13.53	34.46	31.07	49.92	54.00	4.08	Peak

Mode	GFSK	U-NII Band	3
Antenna	ANT 2	Frequency	TX 5848MHz

#### Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
11696.000	39.79	13.54	34.46	31.39	50.26	54.00	3.74	Peak

#### Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
11690.000	39.78	13.53	34.46	31.07	49.92	54.00	4.08	Peak

#### A.2.3 Emissions in Non-restricted Frequency Bands

Pursuant to KDB 789033 D02 General UNII Test Procedures New Rules v02r01 that emission levels below the 15.209 Section 8.9 table 4 general radiated emissions limits is not required.

**A.3 EMISSION/OCCUPIED BANDWIDTH**

Test Date	2023/05/24~06/09	Temp./Hum.	23~24°C/49~64%
Cable Loss	0.40dB	Tested By	Hua Wu
Test Voltage	DC 3.3V		

## A.3.1 Emission/Occupied Bandwidth Result

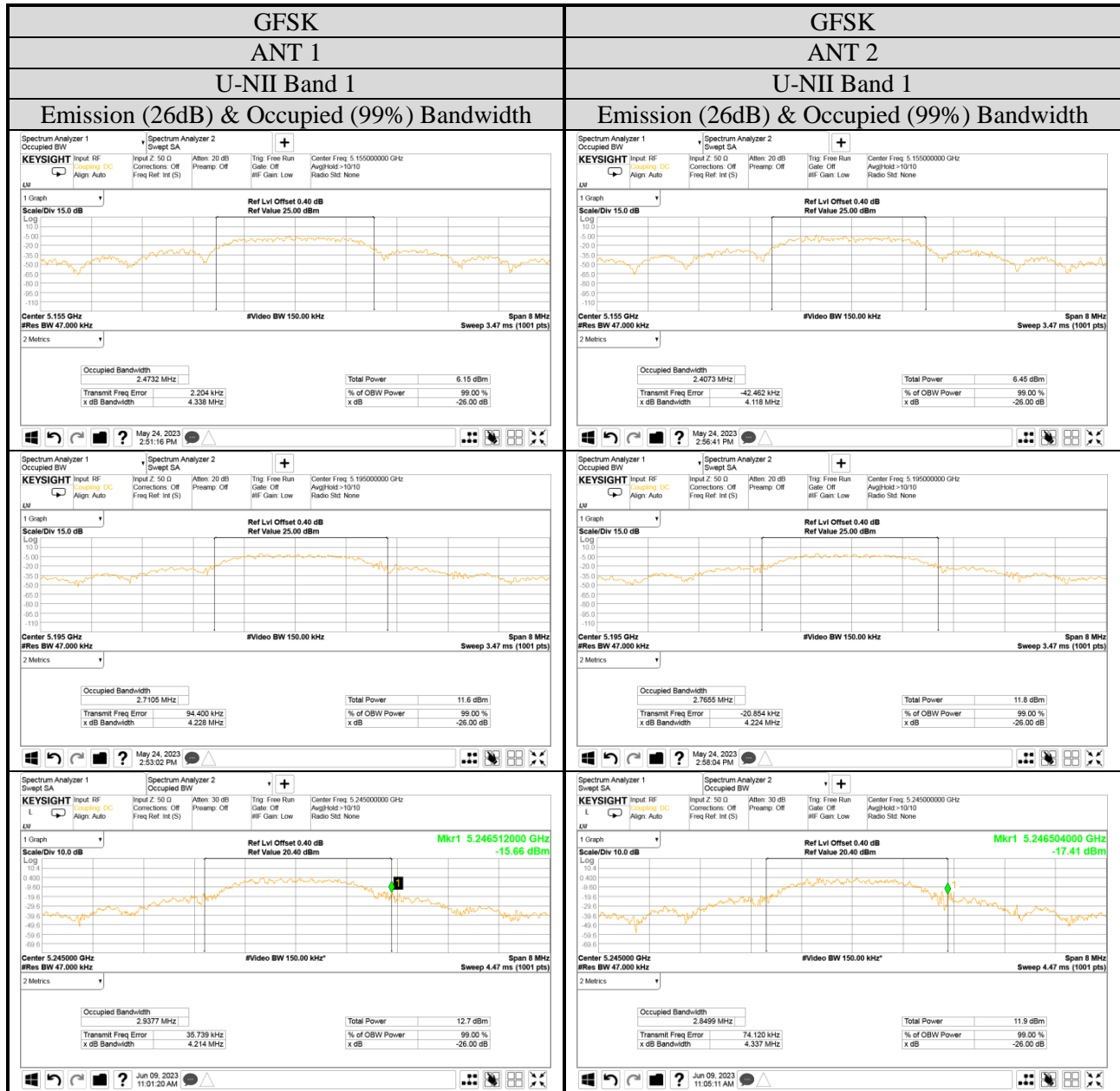
## ● ANT 1

Mode	U-NII Band	Centre Frequency (MHz)	Bandwidth (MHz)		Limit
			Emission (26dB)	Occupied (99%)	
GFSK	1	5155	4.338	2.4732	Reference only
		5195	4.228	2.7105	
		5245	4.214	2.9377	

## ● ANT 2

Mode	U-NII Band	Centre Frequency (MHz)	Bandwidth (MHz)		Limit
			Emission (26dB)	Occupied (99%)	
GFSK	1	5155	4.118	2.4073	Reference only
		5195	4.224	2.7655	
		5245	4.337	2.8499	

A.3.2 Measurement Plots





## A.4 MAXIMUM OUTPUT POWER

Test Date	2023/05/25	Temp./Hum.	25°C/55%
Cable Loss	0.40dB	Tested By	Hua Wu
Test Voltage	DC 3.3V		

### A.4.1 Average Output Power

● ANT 1

Mode	U-NII Band	Centre Frequency (MHz)	Average Output Power (dBm)	Duty Cycle Factor $10\log(1/X)$	Average Output Power		Limit
					(dBm)	(W)	
GFSK	1	5155	-4.50	6.498	2.00	0.00158	< 250 mW (24 dBm)
		5195	-1.96	6.498	4.54	0.00284	
		5245	-1.40	6.498	<b>5.10</b>	<b>0.00324</b>	
	3	5730	4.05	N/A	4.05	0.00254	< 1 W (30 dBm)
		5790	3.87	N/A	3.87	0.00244	
		5845	7.12	N/A	<b>7.12</b>	<b>0.00515</b>	
		5846	-6.48	N/A	-6.48	0.00022	
		5847	-6.49	N/A	-6.49	0.00022	
		5848	-6.49	N/A	-6.49	0.00022	

Note: The results have been included cable loss.

● ANT 2

Mode	U-NII Band	Centre Frequency (MHz)	Average Output Power (dBm)	Duty Cycle Factor $10\log(1/X)$	Average Output Power		Limit
					(dBm)	(W)	
GFSK	1	5155	-4.45	6.498	2.05	0.00160	< 250 mW (24 dBm)
		5195	-1.83	6.498	4.67	0.00293	
		5245	-1.54	6.498	<b>4.96</b>	<b>0.00313</b>	
	3	5730	4.92	N/A	4.92	0.00310	< 1 W (30 dBm)
		5790	4.36	N/A	4.36	0.00273	
		5845	7.16	N/A	<b>7.16</b>	<b>0.00520</b>	
		5846	-6.54	N/A	-6.54	0.00022	
		5847	-6.55	N/A	-6.55	0.00022	
		5848	-6.58	N/A	-6.58	0.00022	

Note: The results have been included cable loss.

## A.5 POWER SPECTRAL DENSITY

Test Date	2023/05/24	Temp./Hum.	24°C/64%
Cable Loss	0.40dB	Tested By	Hua Wu
Test Voltage	DC 3.3V		

### A.5.1 Power Spectral Density Result

#### ● ANT 1

Mode	U-NII Band	Centre Frequency (MHz)	Power Spectral Density (dBm)	Duty Cycle Factor $10\log(1/X)$	Power Spectral Density (dBm)	Limit
GFSK	1	5155	-7.304	6.498	-0.806	11 dBm/MHz
		5195	-4.067	6.498	2.431	
		5245	-3.913	6.498	2.585	

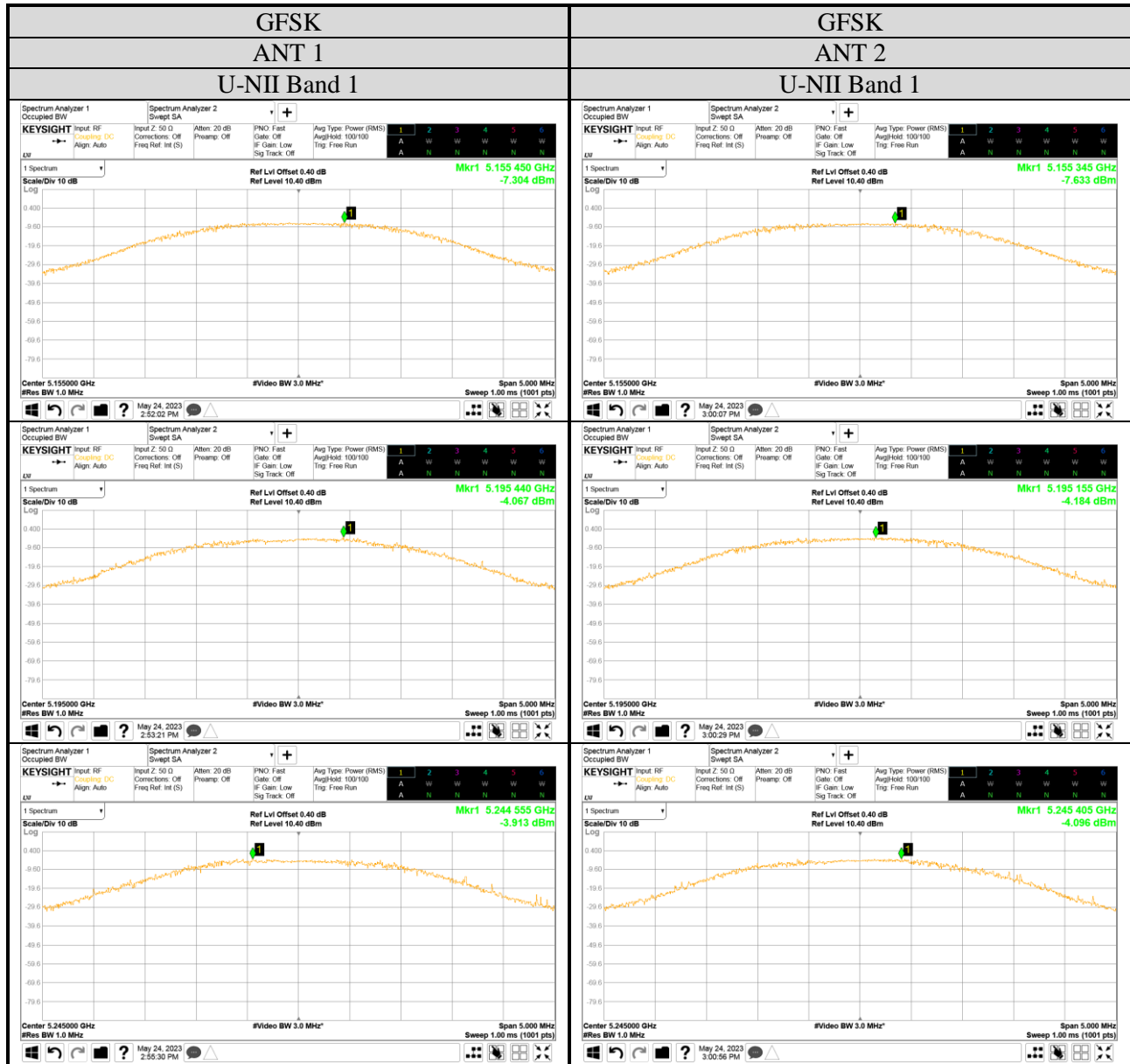
Note: All results have been included cable loss and duty cycle factor.

#### ● ANT 2

Mode	U-NII Band	Centre Frequency (MHz)	Power Spectral Density (dBm)	Duty Cycle Factor $10\log(1/X)$	Power Spectral Density (dBm)	Limit
GFSK	1	5155	-7.633	6.498	-1.135	11 dBm/MHz
		5195	-4.184	6.498	2.314	
		5245	-4.096	6.498	2.402	

Note: All results have been included cable loss and duty cycle factor.

A.5.2 Measurement Plots



## A.6 FREQUENCY STABILITY

Test Date	2023/05/23	Temp./Hum.	23°C/63%
Test Voltage	DC 3.3V	Tested By	Hua Wu

### A.6.1 Frequency stability Result

● ANT 1

Temperature (°C)	Voltage (Vdc)	Centre Frequency (MHz)	Measurement Value (MHz)	Frequency Stability (ppm)
25	3.30	5155	5154.979	-4.074
-30	3.15		5154.997	-0.582
	3.45		5154.981	-3.686
-20	3.15		5155.02	3.880
	3.45		5155.024	4.656
-10	3.15		5154.974	-5.044
	3.45		5155.003	0.582
0	3.15		5154.971	-5.626
	3.45		5155.023	4.462
10	3.15		5155.004	0.776
	3.45		5155.027	5.238
20	3.15		5155.004	0.776
	3.45		5154.995	-0.970
30	3.15		5154.980	-3.880
	3.45		5154.995	-0.970
40	3.15		5154.990	-1.940
	3.45		5154.996	-0.776
50	3.15		5155.020	3.880
	3.45		5154.984	-3.104

● ANT 2

Temperature (°C)	Voltage (Vdc)	Centre Frequency (MHz)	Measurement Value (MHz)	Frequency Stability (ppm)
25	3.30	5155	5154.992	-1.552
-30	3.15		5154.995	-0.970
	3.45		5155.010	1.940
-20	3.15		5155.020	3.880
	3.45		5154.98	-3.880
-10	3.15		5155.027	5.238
	3.45		5155.008	1.552
0	3.15		5154.981	-3.686
	3.45		5154.996	-0.776
10	3.15		5155.000	0.000
	3.45		5154.978	-4.268
20	3.15		5154.999	-0.194
	3.45		5155.011	2.134
30	3.15		5155.028	5.432
	3.45		5155.008	1.552
40	3.15		5154.972	-5.432
	3.45		5155.004	0.776
50	3.15		5154.995	-0.970
	3.45		5155.008	1.552