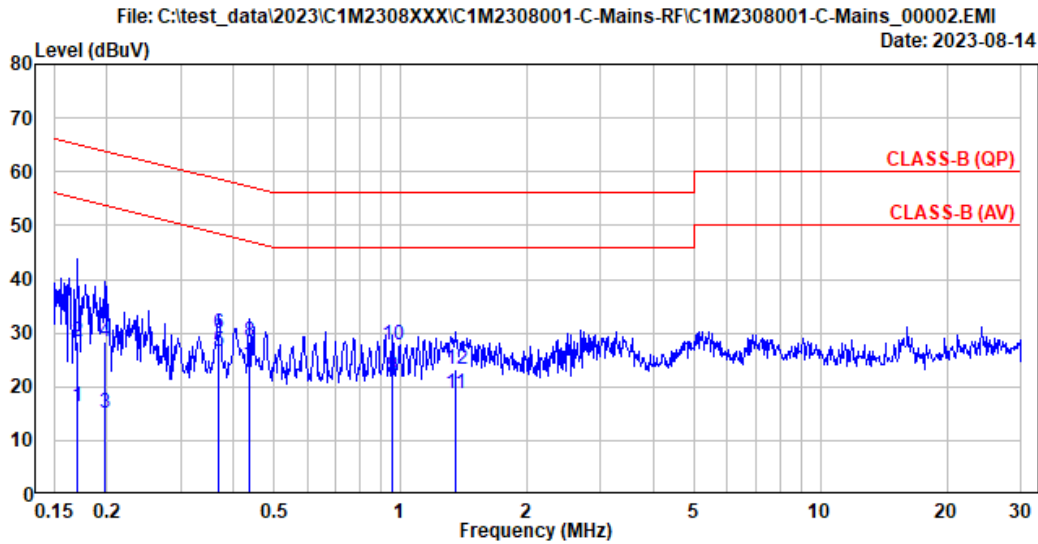


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## A.1 CONDUCTED EMISSION

Test Date	2023/08/14	Temp./Hum.	24°C/53%
Test Voltage	DC 3.3V	Tested By	Xar Zhou

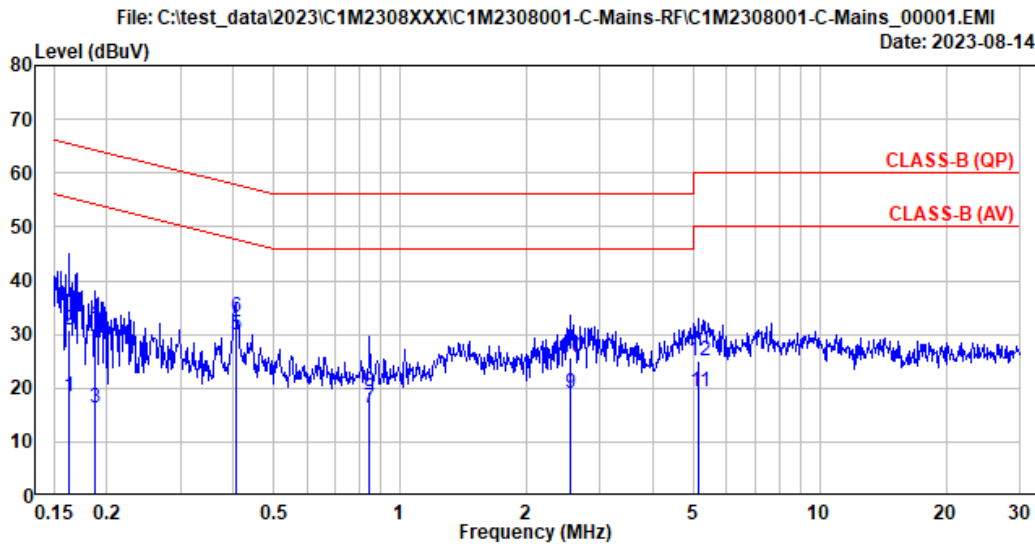


Site No.	: No.8 Shielded Room	Data No.	: 2
Instrument 1	: Receiver ESR(774)		
Instrument 2	: ENV432 (567)(A) CE-08 ESH3-Z2 (354)		
Limit	: CLASS-B (QP)	Phase	: Neutral
Environment	: 24°C/53%	Test Rating	: 110Vac/60Hz
EUT Model	: WL1SB23	Engineer	: Xar Zhuo
Test Mode	: Operating		

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.171	10.30	0.03	9.85	-3.92	16.26	54.92	38.66	Average
2	0.171	10.30	0.03	9.85	8.10	28.28	64.92	36.64	QP
3	0.198	10.29	0.03	9.85	-5.12	15.05	53.68	38.63	Average
4	0.198	10.29	0.03	9.85	8.12	28.29	63.68	35.39	QP
5	0.370	10.28	0.03	9.85	6.35	26.51	48.51	22.00	Average
6	0.370	10.28	0.03	9.85	9.83	29.99	58.51	28.52	QP
7	0.438	10.28	0.03	9.85	3.49	23.65	47.10	23.45	Average
8	0.438	10.28	0.03	9.85	8.12	28.28	57.10	28.82	QP
9	0.958	10.29	0.04	9.85	1.90	22.08	46.00	23.92	Average
10	0.958	10.29	0.04	9.85	7.66	27.84	56.00	28.16	QP
11	1.351	10.30	0.05	9.85	-1.45	18.75	46.00	27.25	Average
12	1.351	10.30	0.05	9.85	3.20	23.40	56.00	32.60	QP

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

Test Date	2023/08/14	Temp./Hum.	24°C/53%
Test Voltage	DC 3.3V	Tested By	Xar Zhou



Site No.	: No.8 Shielded Room	Data No.	: 1
Instrument 1	: Receiver ESR(774)		
Instrument 2	: ENV432 (567)(A) CE-08 ESH3-Z2 (354)		
Limit	: CLASS-B (QP)	Phase	: Line
Environment	: 24°C/53%	Test Rating	: 110Vac/60Hz
EUT Model	: WL1SB23	Engineer	: Xar Zhou
Test Mode	: Operating		

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.163	10.29	0.03	9.85	-1.86	18.31	55.30	36.99	Average
2	0.163	10.29	0.03	9.85	10.77	30.94	65.30	34.36	QP
3	0.188	10.28	0.03	9.85	-3.78	16.38	54.14	37.76	Average
4	0.188	10.28	0.03	9.85	12.17	32.33	64.14	31.81	QP
5	0.406	10.27	0.03	9.85	9.86	30.01	47.72	17.71	Average
6	0.406	10.27	0.03	9.85	13.08	33.23	57.72	24.49	QP
7	0.846	10.28	0.04	9.85	-3.76	16.41	46.00	29.59	Average
8	0.846	10.28	0.04	9.85	-0.82	19.35	56.00	36.65	QP
9	2.545	10.31	0.07	9.86	-1.09	19.15	46.00	26.85	Average
10	2.545	10.31	0.07	9.86	5.41	25.65	56.00	30.35	QP
11	5.164	10.37	0.09	9.87	-1.15	19.18	50.00	30.82	Average
12	5.164	10.37	0.09	9.87	4.59	24.92	60.00	35.08	QP

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

## **A.2 RADIATED EMISSION**

Test Date	2023/08/10 ~ 22	Temp./Hum.	25°C/48~62%
Test Voltage	DC 3.3V	Tested By	Kuper Hsu

### 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

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)	Preamp Gain (dB)	Read Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
35.389	21.93	1.54	26.48	30.10	27.09	40.00	12.91	Peak
101.672	16.82	2.63	26.28	32.97	26.14	43.50	17.36	Peak
324.233	19.61	5.02	25.83	34.43	33.23	46.00	12.77	Peak
603.917	24.35	7.12	27.40	32.34	36.41	46.00	9.59	Peak
814.083	25.20	8.28	27.23	33.25	39.50	46.00	6.50	Peak
983.294	26.84	9.21	26.71	32.03	41.35	54.00	12.65	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
35.389	21.93	1.54	26.48	31.60	28.59	40.00	11.41	Peak
114.067	17.56	2.78	26.20	31.69	25.84	43.50	17.66	Peak
324.233	19.61	5.02	25.83	32.40	31.20	46.00	14.80	Peak
653.494	24.53	7.39	27.42	32.66	37.16	46.00	8.84	Peak
852.344	25.66	8.50	27.12	33.99	41.04	46.00	4.96	Peak
992.456	26.90	9.25	26.68	32.79	42.26	54.00	11.74	Peak

Mode	GFSK	U-NII Band	3
Antenna	ANT 1	Frequency	TX 5735MHz

## 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
32.694	22.96	1.48	26.48	31.51	29.47	40.00	10.53	Peak
128.617	17.56	2.96	26.11	33.31	27.72	43.50	15.78	Peak
463.806	22.61	6.48	26.90	32.17	34.37	46.00	11.63	Peak
690.139	24.66	7.58	27.43	32.91	37.72	46.00	8.28	Peak
904.078	26.27	8.78	26.98	33.81	41.88	46.00	4.12	Peak
989.222	26.88	9.24	26.69	32.71	42.13	54.00	11.87	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
33.233	22.77	1.49	26.48	33.06	30.83	40.00	9.17	Peak
128.617	17.56	2.96	26.11	36.46	30.87	43.50	12.63	Peak
453.567	22.44	6.40	26.83	32.01	34.02	46.00	11.98	Peak
697.145	24.68	7.62	27.43	33.02	37.89	46.00	8.11	Peak
904.078	26.27	8.78	26.98	32.57	40.65	46.00	5.35	Peak
983.294	26.84	9.21	26.71	32.97	42.30	54.00	11.70	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)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
34.850	22.21	1.53	26.48	31.25	28.50	40.00	11.50	Peak
101.672	16.82	2.63	26.28	33.29	26.46	43.50	17.04	Peak
378.122	21.04	5.69	26.28	33.18	33.63	46.00	12.37	Peak
606.611	24.36	7.14	27.40	32.67	36.76	46.00	9.24	Peak
863.122	25.80	8.56	27.09	33.48	40.75	46.00	5.25	Peak
980.600	26.81	9.19	26.72	32.01	41.29	54.00	12.71	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
38.083	20.45	1.60	26.48	30.95	26.53	40.00	13.47	Peak
136.700	17.29	3.05	26.06	32.15	26.43	43.50	17.07	Peak
378.122	21.04	5.69	26.28	32.91	33.36	46.00	12.64	Peak
644.872	24.50	7.35	27.41	32.46	36.89	46.00	9.11	Peak
873.361	25.92	8.62	27.06	32.50	39.97	46.00	6.03	Peak
963.356	26.69	9.10	26.78	33.61	42.63	54.00	11.37	Peak

Mode	GFSK	U-NII Band	3
Antenna	ANT 2	Frequency	TX 5735MHz

**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
31.078	23.55	1.44	26.49	30.52	29.03	40.00	10.97	Peak
128.617	17.56	2.96	26.11	32.36	26.77	43.50	16.73	Peak
435.783	22.17	6.25	26.70	32.77	34.48	46.00	11.52	Peak
703.072	24.70	7.65	27.42	32.93	37.86	46.00	8.14	Peak
903.539	26.27	8.78	26.98	32.61	40.68	46.00	5.32	Peak
988.683	26.87	9.23	26.70	33.14	42.54	54.00	11.46	Peak

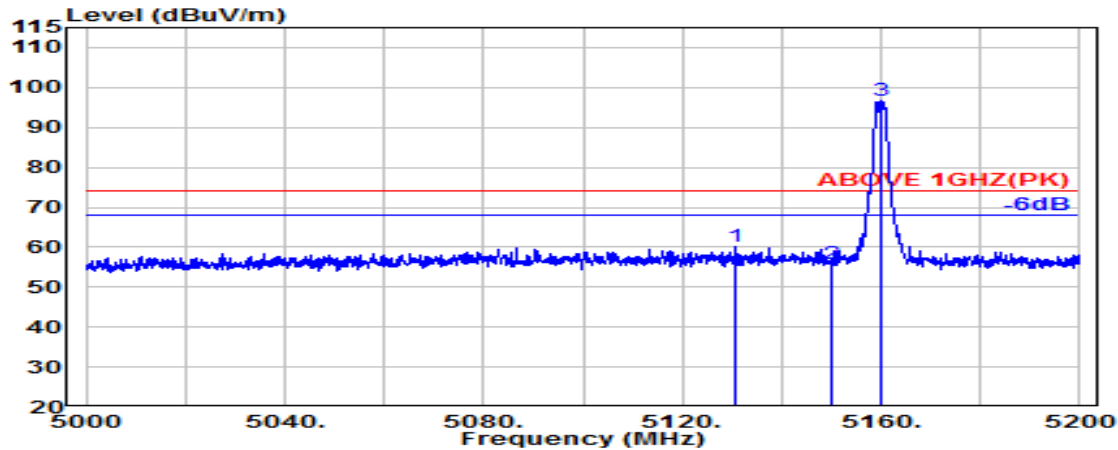
**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
34.850	22.21	1.53	26.48	32.45	29.70	40.00	10.30	Peak
128.617	17.56	2.96	26.11	35.69	30.10	43.50	13.40	Peak
464.345	22.62	6.48	26.90	32.38	34.58	46.00	11.42	Peak
677.744	24.62	7.52	27.42	32.71	37.42	46.00	8.58	Peak
903.539	26.27	8.78	26.98	31.89	39.96	46.00	6.04	Peak
988.145	26.87	9.23	26.70	33.74	43.15	54.00	10.85	Peak

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

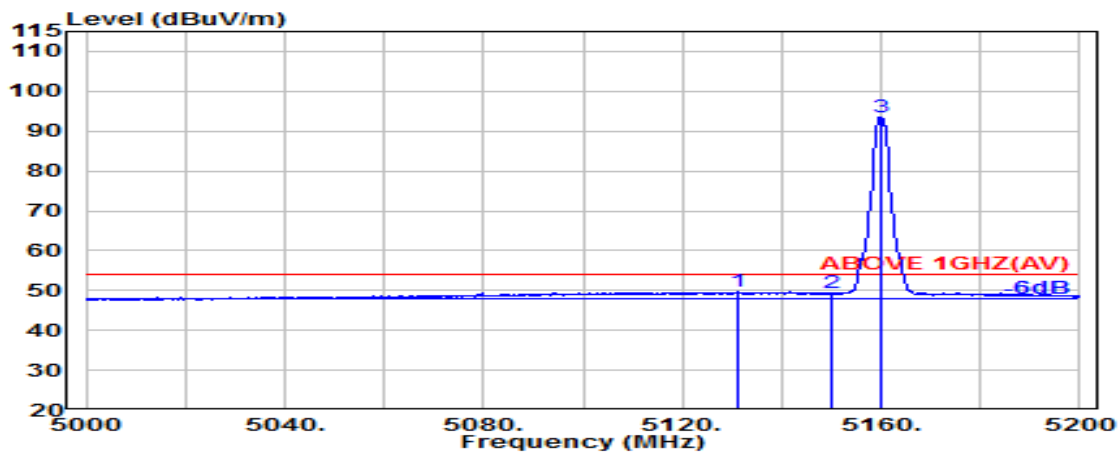
**Band Edge:**

Mode	GFSK	U-NII Band	1
Antenna	ANT 1	Frequency	TX 5160MHz



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5130.700	33.70	8.88	34.35	51.76	59.99	74.00	14.01	Peak
5150.000	33.70	8.89	34.34	47.43	55.68	74.00	18.32	Peak
@ 5159.800	33.70	8.89	34.33	88.32	96.58	---	---	Peak

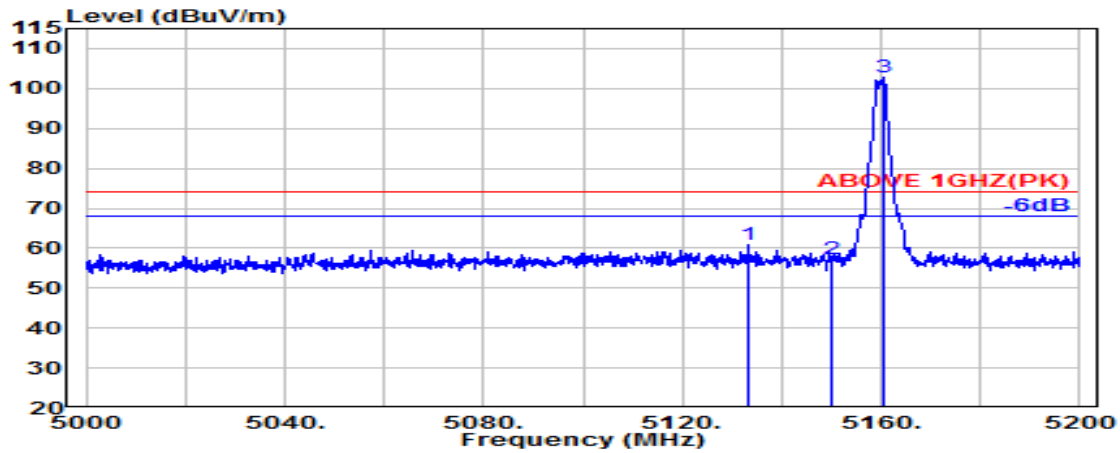


Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5131.200	33.70	8.88	34.35	41.40	49.63	54.00	4.37	Average
5150.000	33.70	8.89	34.34	40.99	49.24	54.00	4.76	Average
@ 5160.000	33.70	8.89	34.33	85.35	93.61	---	---	Average

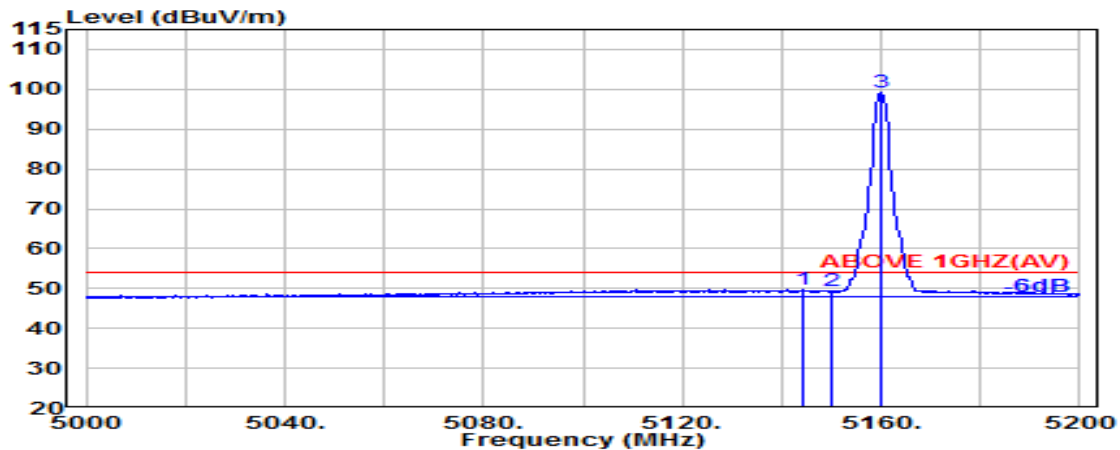
Remark: The “@” means fundamental frequency, it is ignored in this section.

Mode	GFSK	U-NII Band	1
Antenna	ANT 1	Frequency	TX 5160MHz



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
5133.300	33.70	8.88	34.34	52.50	60.73	74.00	13.27	Peak
5150.000	33.70	8.89	34.34	49.20	57.45	74.00	16.55	Peak
@ 5160.400	33.70	8.89	34.33	94.60	102.85	---	---	Peak



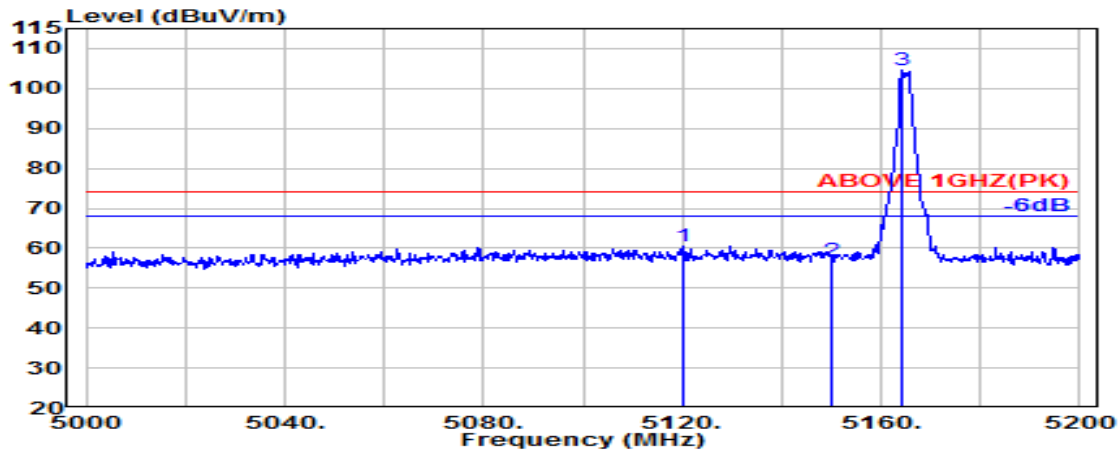
Antenna at Vertical Polarization

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
5144.200	33.70	8.88	34.34	41.42	49.67	54.00	4.33	Average
5150.000	33.70	8.89	34.34	41.07	49.32	54.00	4.68	Average
@ 5160.000	33.70	8.89	34.33	90.85	99.11	---	---	Average

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

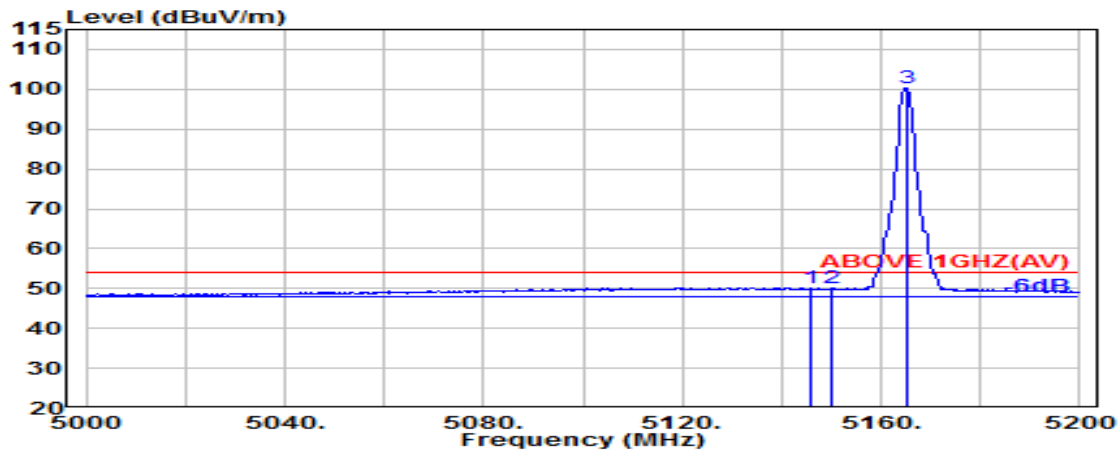


Mode	GFSK	U-NII Band	1
Antenna	ANT 1	Frequency	TX 5165MHz



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
5120.000	33.70	8.87	34.35	52.35	60.56	74.00	13.44	Peak
5150.000	33.70	8.89	34.34	48.63	56.88	74.00	17.12	Peak
@ 5164.200	33.70	8.89	34.33	96.41	104.68	---	---	Peak

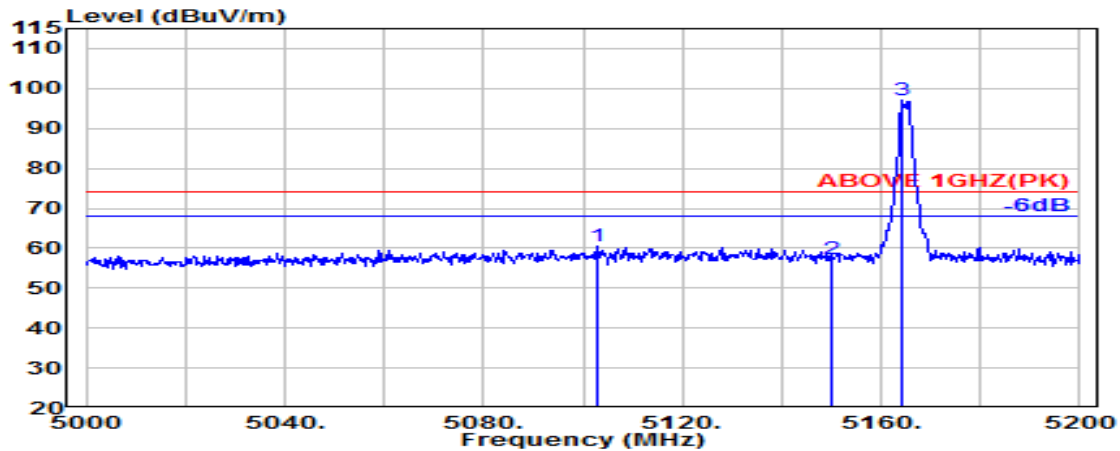


Antenna at Horizontal Polarization

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
5146.000	33.70	8.88	34.34	41.98	50.22	54.00	3.78	Average
5150.000	33.70	8.89	34.34	41.73	49.98	54.00	4.02	Average
@ 5165.000	33.70	8.89	34.33	92.10	100.36	---	---	Average

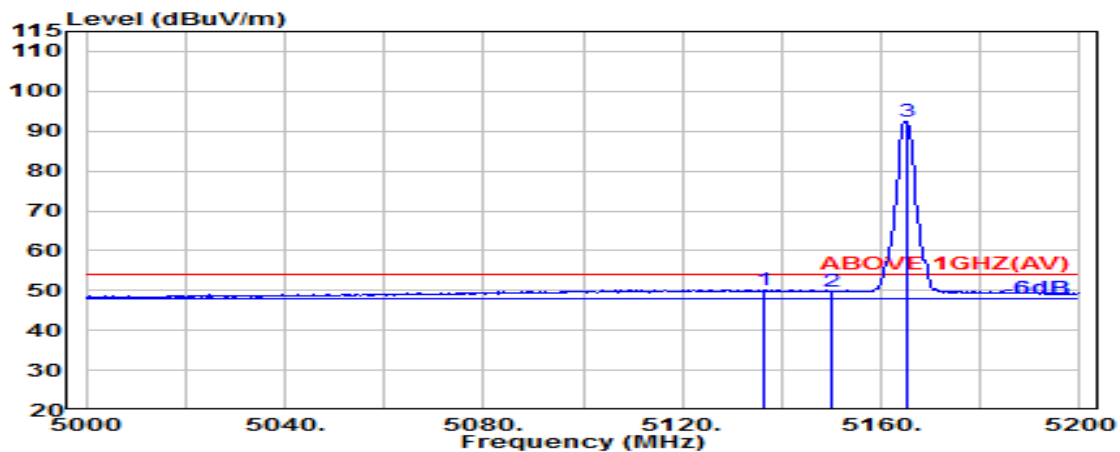
Remark: The “@” means fundamental frequency, it is ignored in this section.

Mode	GFSK	U-NII Band	1
Antenna	ANT 1	Frequency	TX 5165MHz



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
5102.800	33.70	8.86	34.36	52.19	60.39	74.00	13.61	Peak
5150.000	33.70	8.89	34.34	49.06	57.31	74.00	16.69	Peak
@ 5164.200	33.70	8.89	34.33	88.65	96.91	---	---	Peak



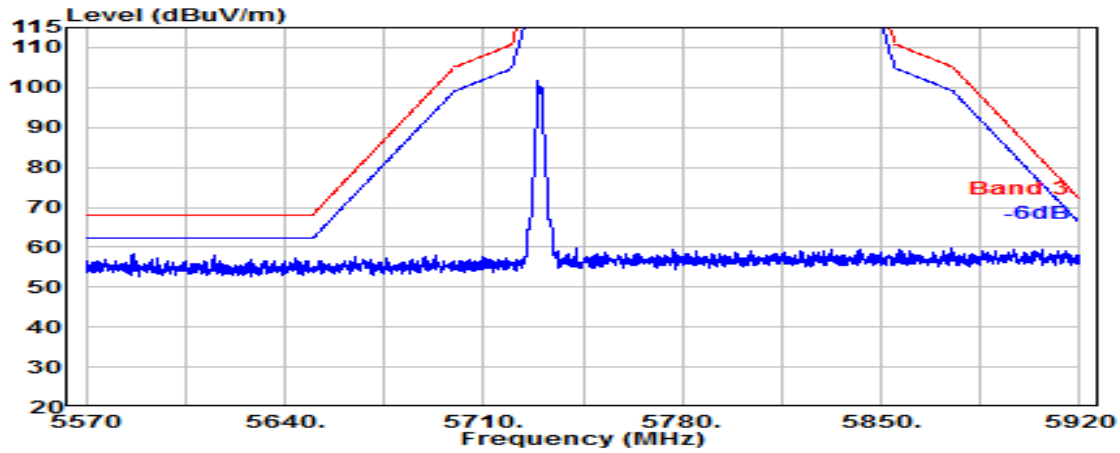
Antenna at Vertical Polarization

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
5136.600	33.70	8.88	34.34	41.91	50.14	54.00	3.86	Average
5150.000	33.70	8.89	34.34	41.65	49.90	54.00	4.10	Average
@ 5165.000	33.70	8.89	34.33	84.32	92.59	---	---	Average

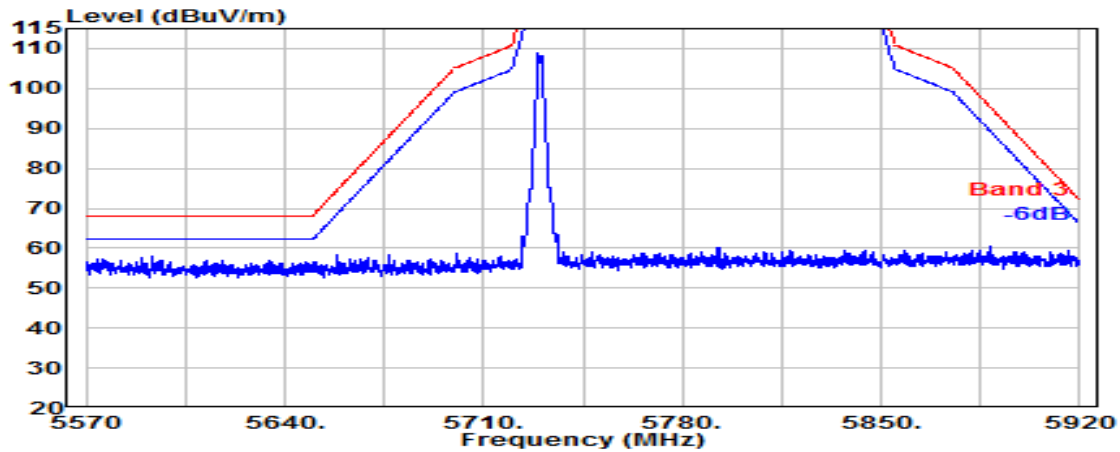
Remark: The “@” means fundamental frequency, it is ignored in this section.

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

Antenna at Horizontal Polarization

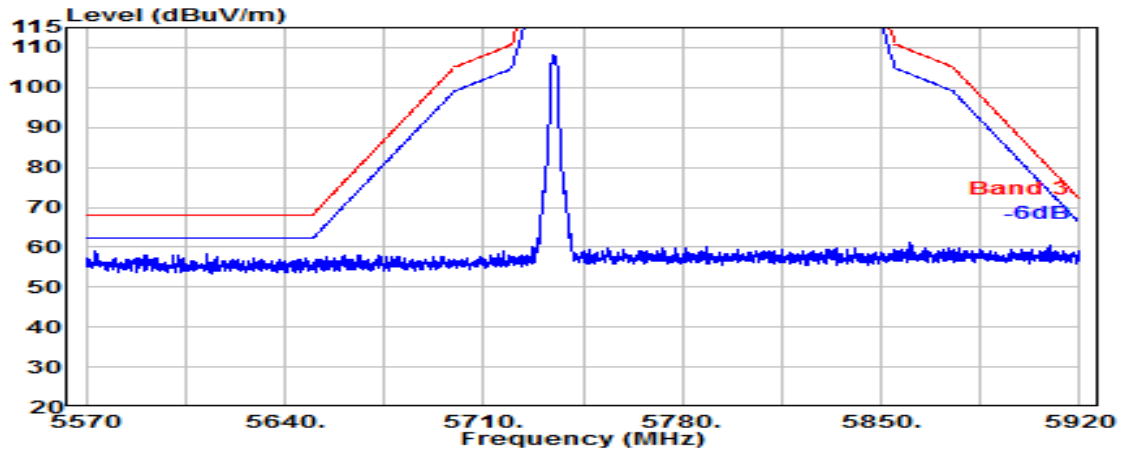


Antenna at Vertical Polarization

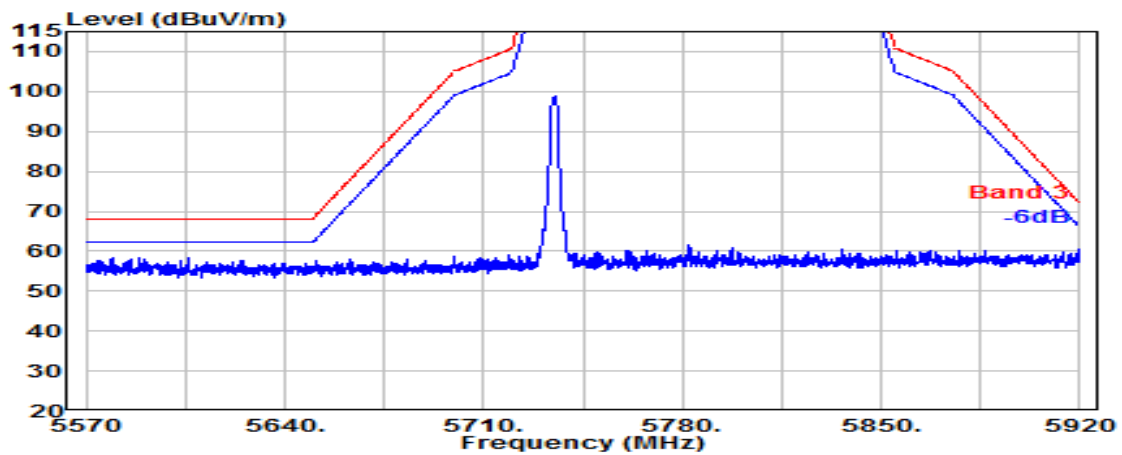


Mode	GFSK	U-NII Band	3
Antenna	ANT 1	Frequency	TX 5735MHz

Antenna at Horizontal Polarization

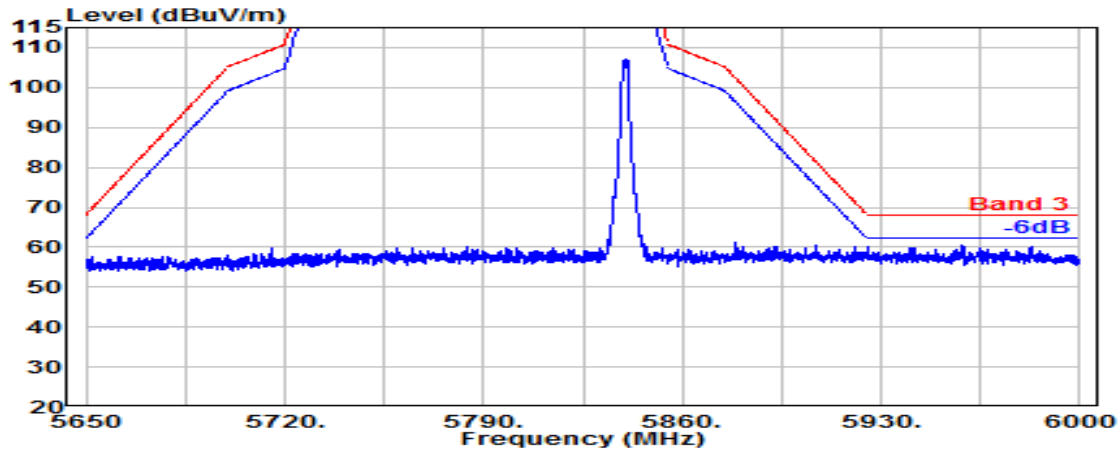


Antenna at Vertical Polarization

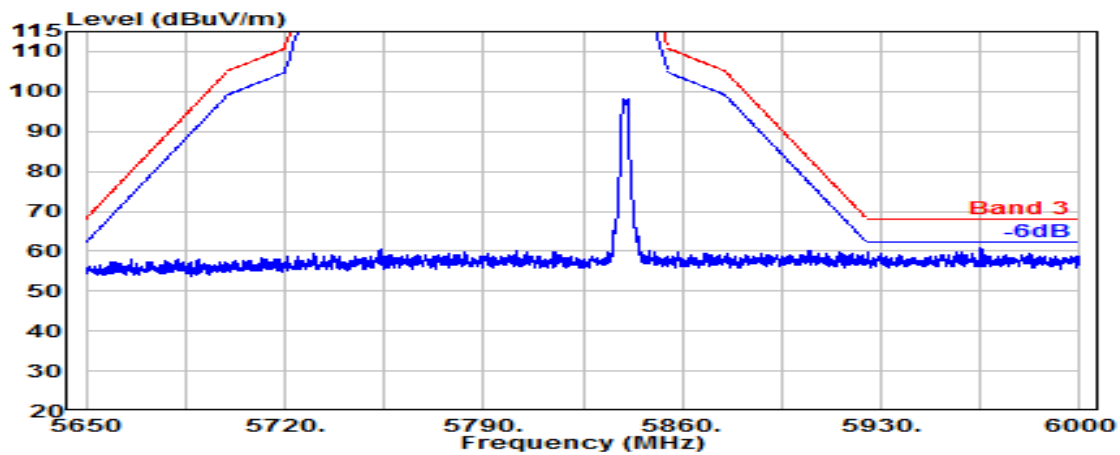


Mode	GFSK	U-NII Band	3
Antenna	ANT 1	Frequency	TX 5840MHz

Antenna at Horizontal Polarization

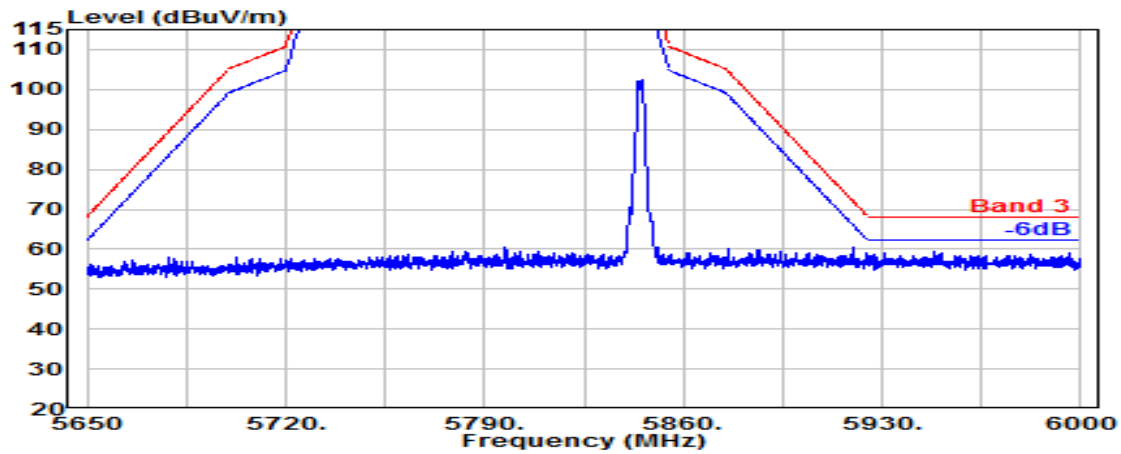


Antenna at Vertical Polarization

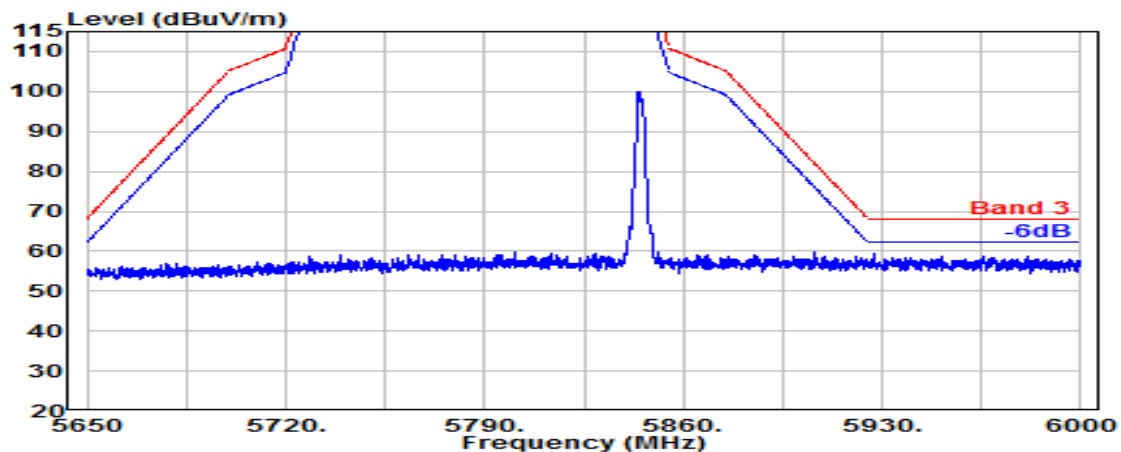


Mode	GFSK	U-NII Band	3
Antenna	ANT 1	Frequency	TX 5845MHz

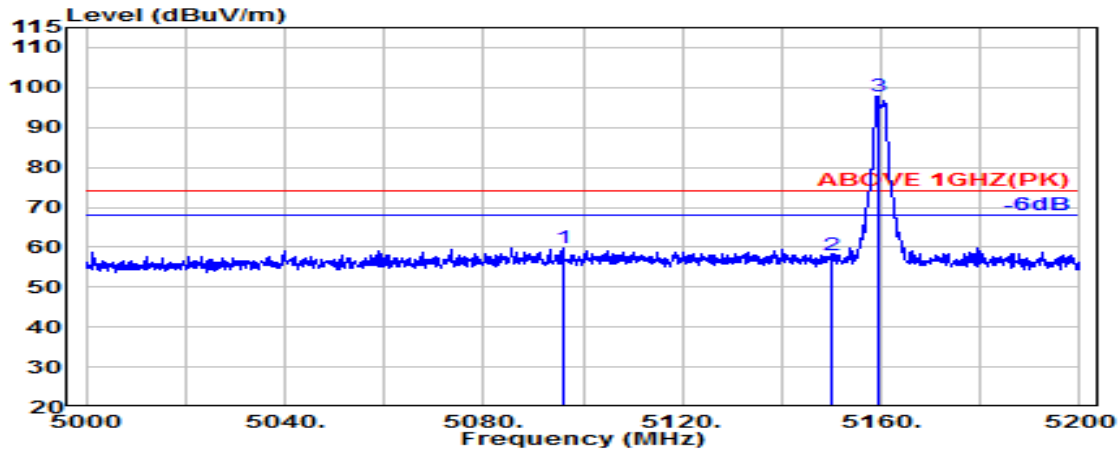
Antenna at Horizontal Polarization



Antenna at Vertical Polarization

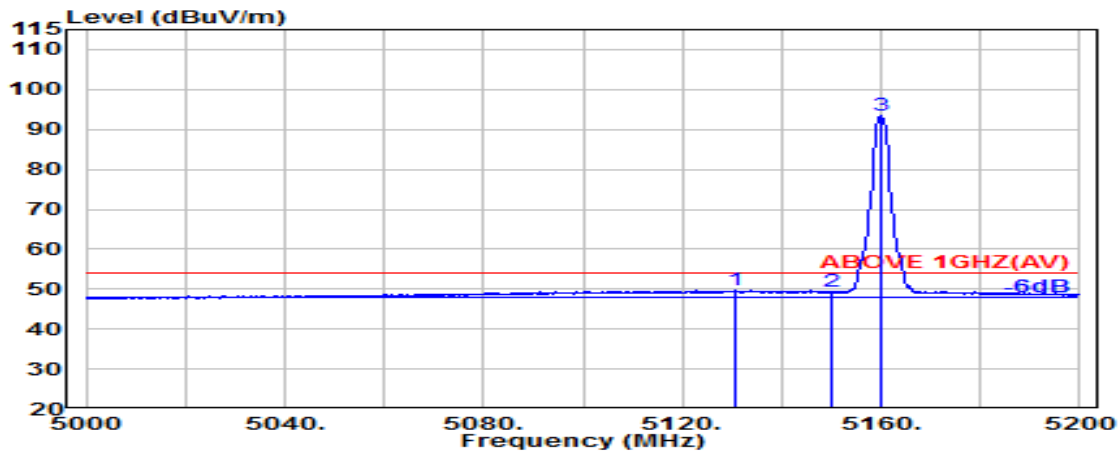


Mode	GFSK	U-NII Band	1
Antenna	ANT 2	Frequency	TX 5160MHz



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
5095.900	33.68	8.86	34.36	51.64	59.82	74.00	14.18	Peak
5150.000	33.70	8.89	34.34	49.59	57.83	74.00	16.17	Peak
@ 5159.300	33.70	8.89	34.33	89.40	97.66	---	---	Peak

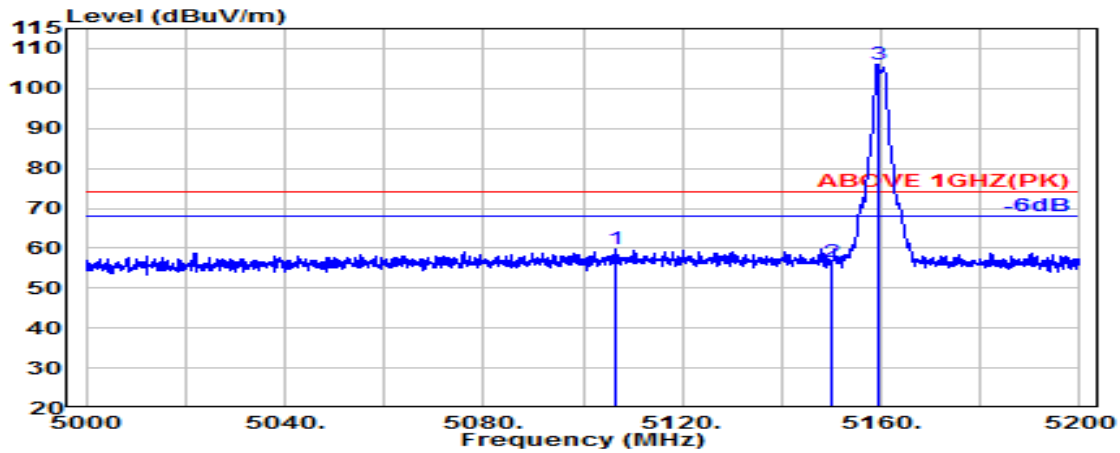


Antenna at Horizontal Polarization

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
5130.600	33.70	8.87	34.35	41.39	49.62	54.00	4.38	Average
5150.000	33.70	8.89	34.34	41.02	49.27	54.00	4.73	Average
@ 5159.900	33.70	8.89	34.33	85.20	93.45	---	---	Average

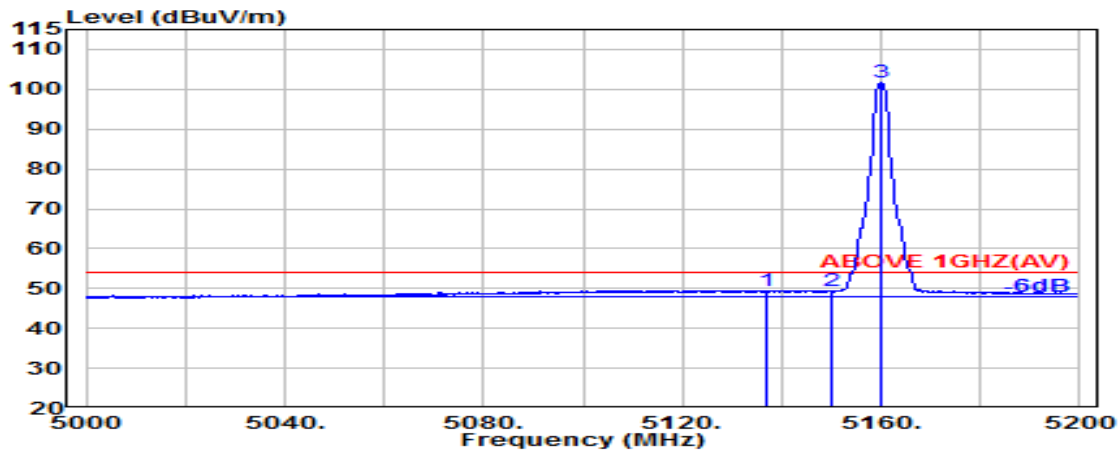
Remark: The “@” means fundamental frequency, it is ignored in this section.

Mode	GFSK	U-NII Band	1
Antenna	ANT 2	Frequency	TX 5160MHz



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
5106.700	33.70	8.86	34.36	51.53	59.73	74.00	14.27	Peak
5150.000	33.70	8.89	34.34	48.43	56.68	74.00	17.32	Peak
@ 5159.300	33.70	8.89	34.33	97.95	106.21	---	---	Peak



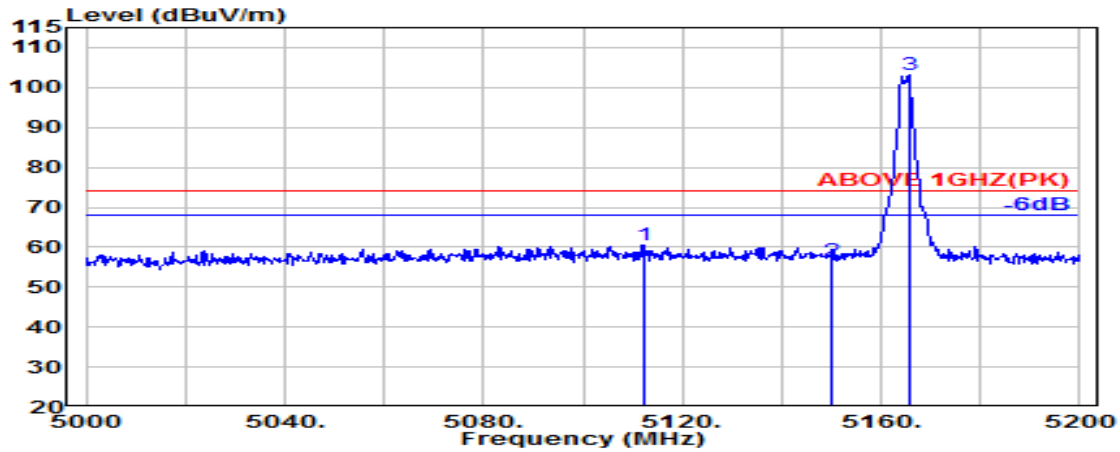
Antenna at Vertical Polarization

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
5136.700	33.70	8.88	34.34	41.31	49.55	54.00	4.45	Average
5150.000	33.70	8.89	34.34	41.08	49.33	54.00	4.67	Average
@ 5159.900	33.70	8.89	34.33	93.65	101.90	---	---	Average

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

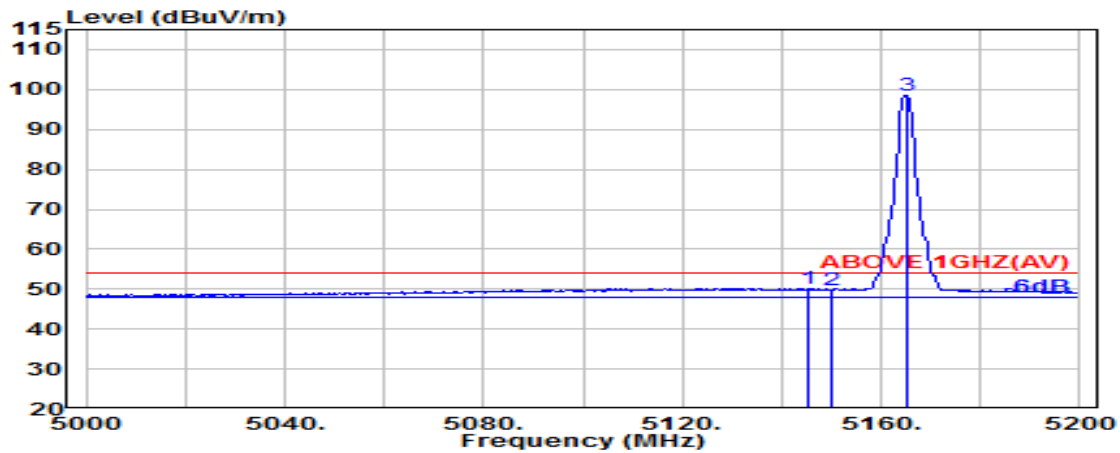


Mode	GFSK	U-NII Band	1
Antenna	ANT 2	Frequency	TX 5165MHz



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
5112.400	33.70	8.86	34.35	52.17	60.38	74.00	13.62	Peak
5150.000	33.70	8.89	34.34	48.16	56.40	74.00	17.60	Peak
@ 5165.600	33.70	8.89	34.33	94.90	103.16	---	---	Peak

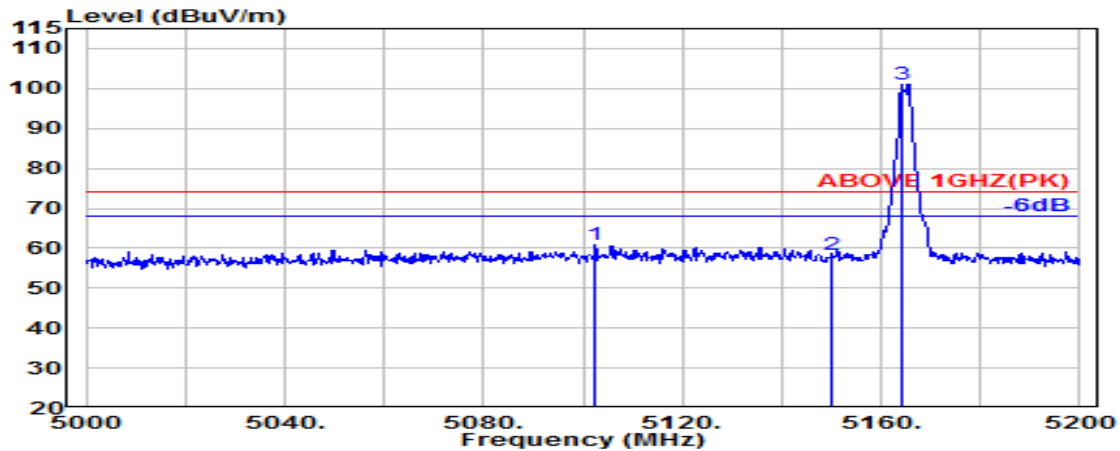


Antenna at Horizontal Polarization

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
5145.400	33.70	8.88	34.34	41.94	50.18	54.00	3.82	Average
5150.000	33.70	8.89	34.34	41.54	49.78	54.00	4.22	Average
@ 5165.000	33.70	8.89	34.33	90.31	98.57	---	---	Average

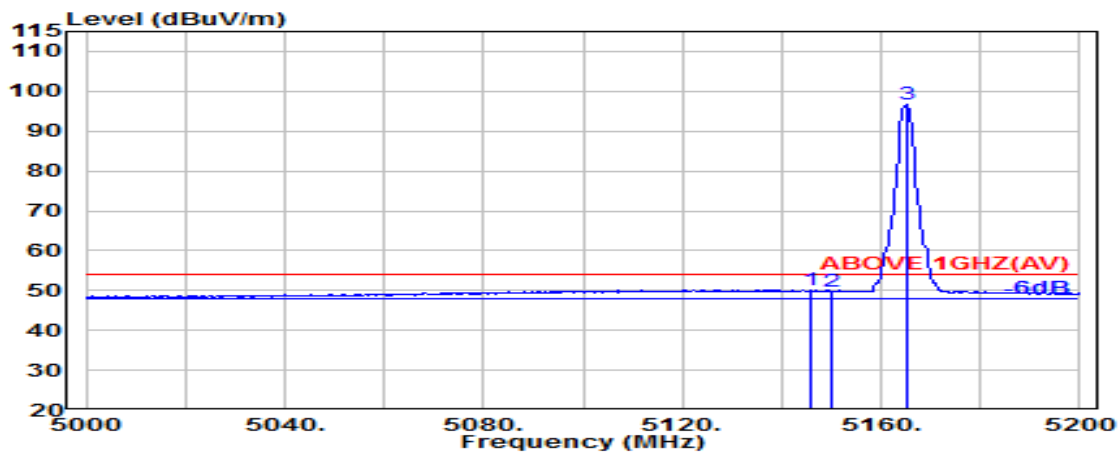
Remark: The “@” means fundamental frequency, it is ignored in this section.

Mode	GFSK	U-NII Band	1
Antenna	ANT 2	Frequency	TX 5165MHz



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
5102.600	33.70	8.86	34.36	52.72	60.92	74.00	13.08	Peak
5150.000	33.70	8.89	34.34	50.19	58.44	74.00	15.56	Peak
@ 5164.200	33.70	8.89	34.33	92.84	101.10	---	---	Peak



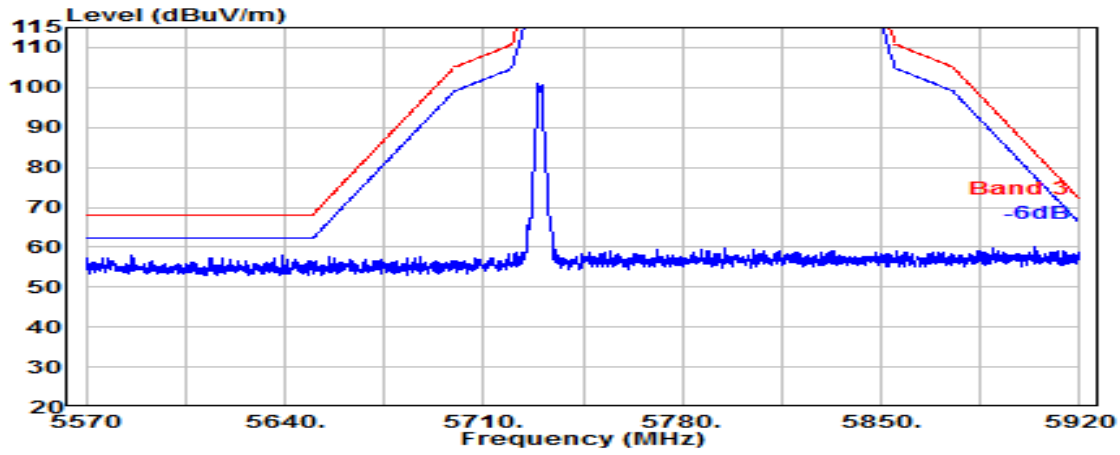
Antenna at Vertical Polarization

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
5146.000	33.70	8.88	34.34	41.85	50.10	54.00	3.90	Average
5150.000	33.70	8.89	34.34	41.66	49.91	54.00	4.09	Average
@ 5165.000	33.70	8.89	34.33	88.33	96.59	---	---	Average

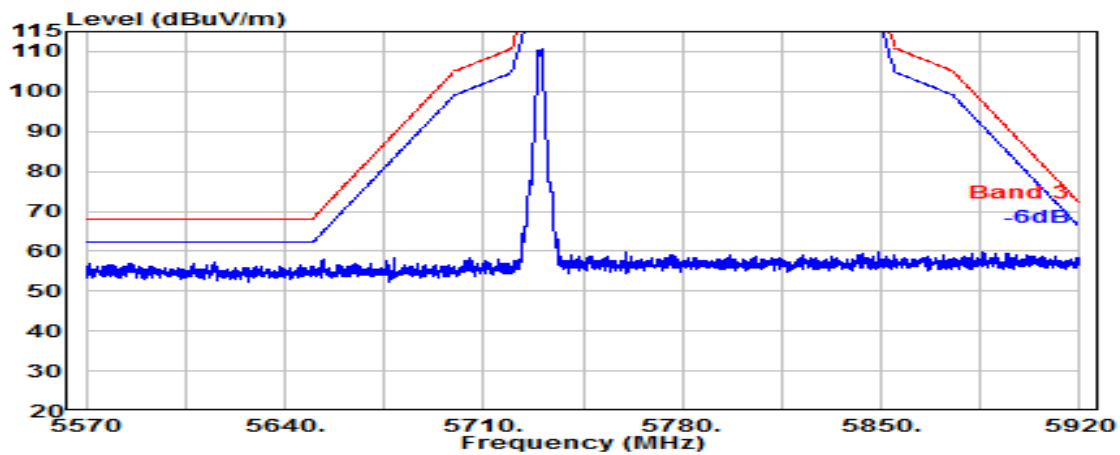
Remark: The “@” means fundamental frequency, it is ignored in this section.

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

Antenna at Horizontal Polarization

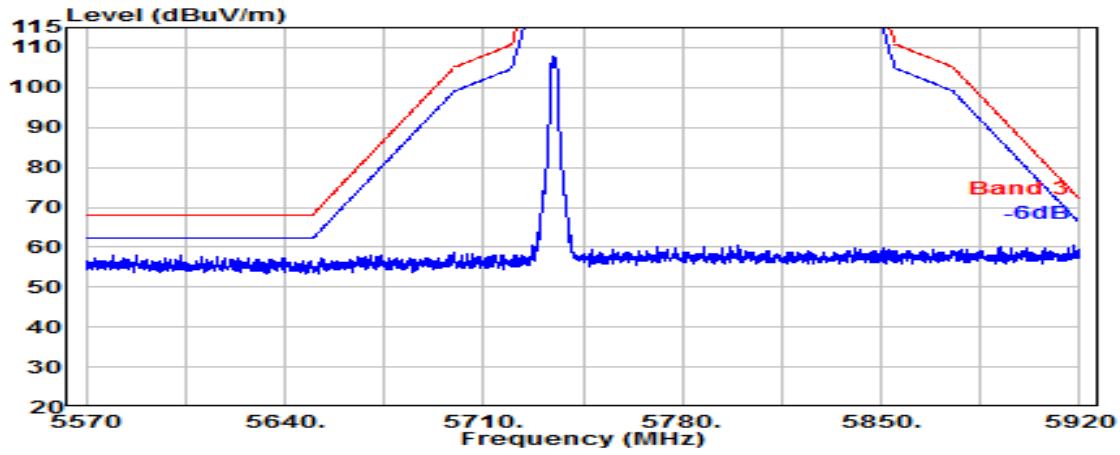


Antenna at Vertical Polarization

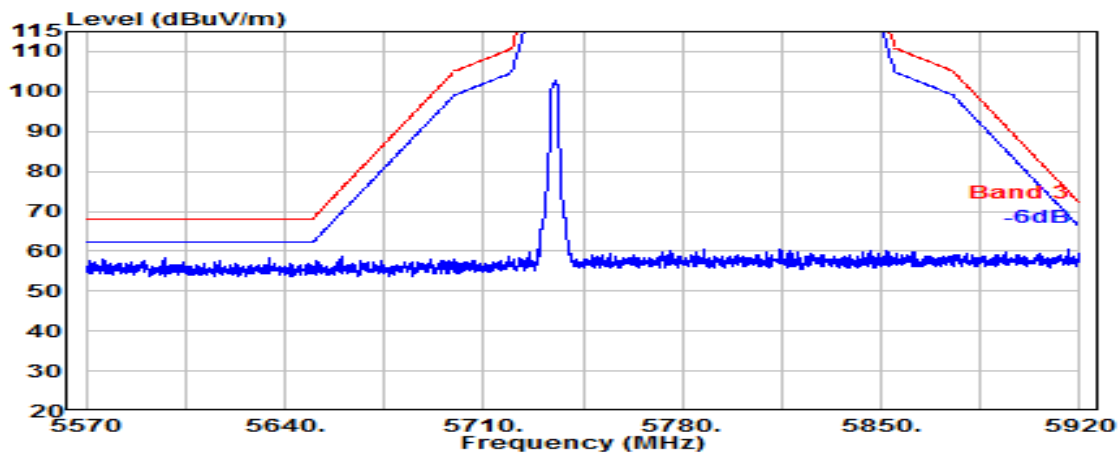


Mode	GFSK	U-NII Band	3
Antenna	ANT 2	Frequency	TX 5735MHz

Antenna at Horizontal Polarization

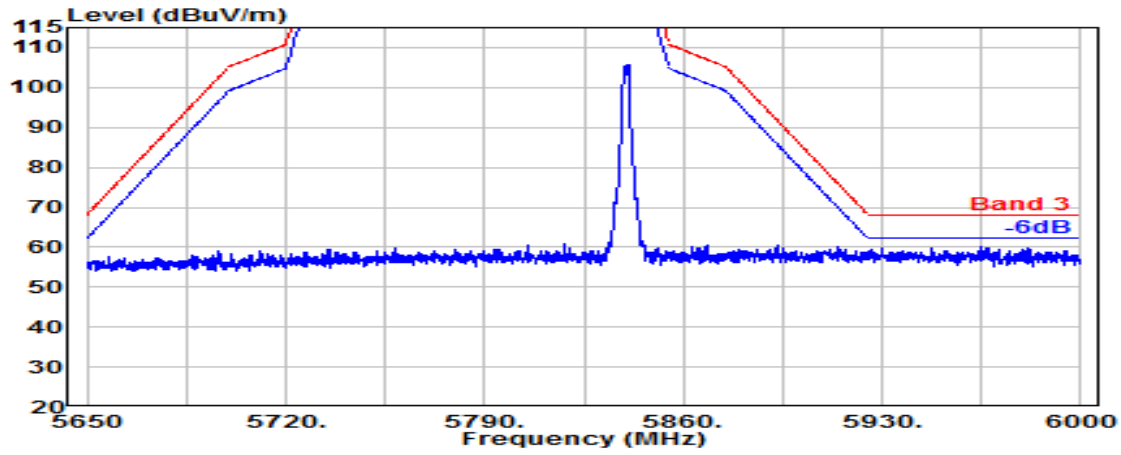


Antenna at Vertical Polarization

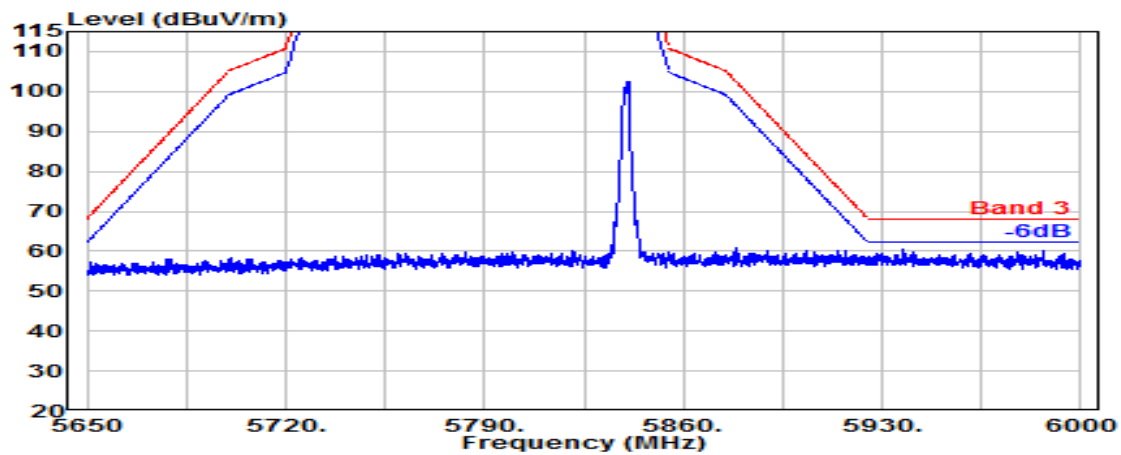


Mode	GFSK	U-NII Band	3
Antenna	ANT 2	Frequency	TX 5840MHz

Antenna at Horizontal Polarization

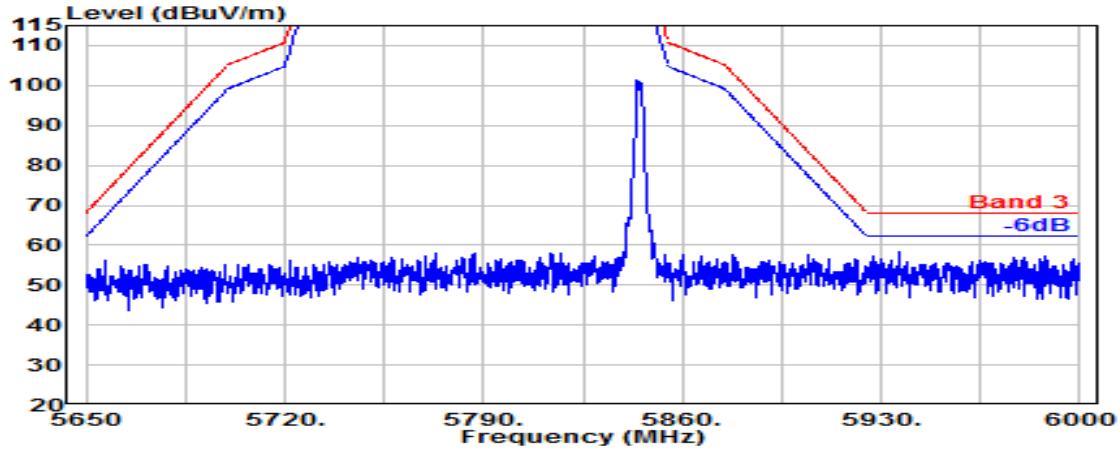


Antenna at Vertical Polarization

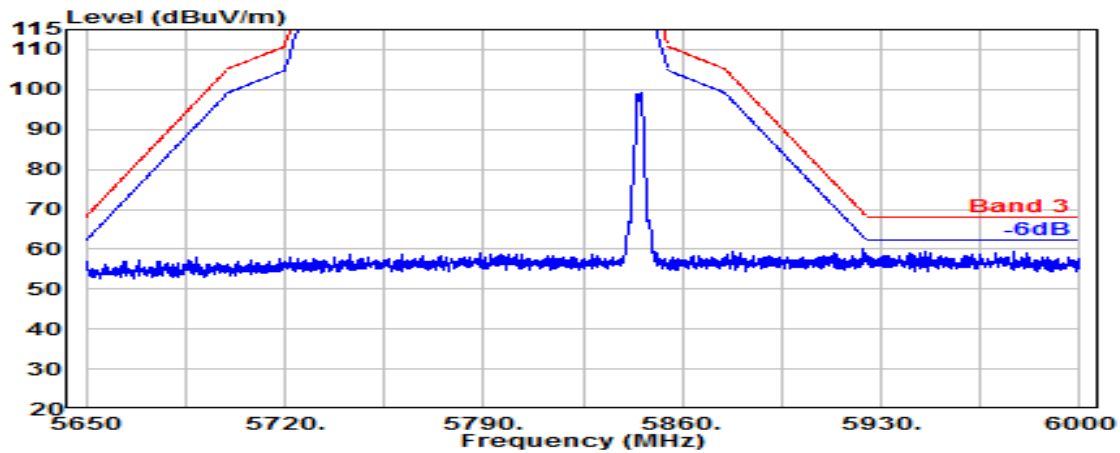


Mode	GFSK	U-NII Band	3
Antenna	ANT 2	Frequency	TX 5845MHz

Antenna at Horizontal Polarization



Antenna at Vertical Polarization



### A.2.2 Emissions outside the frequency band

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

Mode	GFSK	U-NII Band	1
Antenna	ANT 1	Frequency	TX 5160MHz

#### 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
10320.000	38.10	12.59	34.80	28.68	44.56	54.00	9.44	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
10320.000	38.10	12.59	34.80	30.60	46.48	54.00	7.52	Peak

Mode	GFSK	U-NII Band	1
Antenna	ANT 1	Frequency	TX 5205MHz

#### 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
10410.000	38.12	12.66	34.72	30.81	46.87	54.00	7.13	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
10410.000	38.12	12.66	34.72	29.67	45.73	54.00	8.27	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 (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
10490.000	38.28	12.72	34.65	30.85	47.20	54.00	6.80	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
10490.000	38.28	12.72	34.65	29.67	46.02	54.00	7.98	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	39.02	13.58	34.52	29.57	47.66	54.00	6.34	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	39.02	13.58	34.52	28.40	46.49	54.00	7.51	Peak

Mode	GFSK	U-NII Band	3
Antenna	ANT 1	Frequency	TX 5785MHz

**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
11570.000	39.17	13.70	34.54	29.83	48.16	54.00	5.84	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
11570.000	39.17	13.70	34.54	28.68	47.01	54.00	6.99	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	39.38	13.82	34.57	28.96	47.60	54.00	6.40	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	39.38	13.82	34.57	28.53	47.17	54.00	6.83	Peak



Mode	GFSK	U-NII Band	1
Antenna	ANT 2	Frequency	TX 5160MHz

**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
10320.000	38.10	12.59	34.80	29.10	44.98	54.00	9.02	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
10320.000	38.10	12.59	34.80	28.88	44.77	54.00	9.23	Peak

Mode	GFSK	U-NII Band	1
Antenna	ANT 2	Frequency	TX 5205MHz

**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
10410.000	38.12	12.66	34.72	28.30	44.35	54.00	9.65	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
10410.000	38.12	12.66	34.72	30.34	46.39	54.00	7.61	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	38.28	12.72	34.65	31.44	47.78	54.00	6.22	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
	38.28	12.72	34.65	29.76	46.10	54.00	7.90	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 (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
11460.000	39.02	13.58	34.52	29.00	47.09	54.00	6.91	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
11460.000	39.02	13.58	34.52	29.43	47.51	54.00	6.49	Peak

Mode	GFSK	U-NII Band	3
Antenna	ANT 2	Frequency	TX 5785MHz

**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
11570.000	39.17	13.70	34.54	28.84	47.17	54.00	6.83	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
11570.000	39.17	13.70	34.54	30.54	48.87	54.00	5.13	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
11690.000	39.38	13.82	34.57	30.82	49.45	54.00	4.55	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	39.38	13.82	34.57	27.43	46.06	54.00	7.94	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 MAXIMUM OUTPUT POWER AND EMISSION/OCCUPIED BANDWIDTH

Test Date	2023/07/27 ~ 08/22	Temp./Hum.	24-25°C/50-55%
Cable Loss	0.50dB	Tested By	Kuper Hsu
Test Voltage	DC 3.3V		

### A.3.1 Average Output Power and Emission/Occupied Bandwidth

Mode GFSK	Centre Frequency (MHz)	Bandwidth(MHz)				Average Output Power (dBm)		Duty Cycle Factor (dB) 10log(1/X)	Max Average Output Power (dBm) Note 2	Limit (dBm)	Limit(11dBm +10 log B) <sup>Note 4</sup>
		Emission (26dB) Bandwidth		Occupied (99%) Bandwidth							
		ANT 1	ANT 2	ANT 1	ANT 2	ANT 1	ANT 2				
U-NII Band 1	5160	4.513	4.516	2.5451	2.5506	9.66	9.68	N/A	9.68	24	N/A
	5165	4.517	4.524	2.6920	2.7014	9.43	9.59		9.59		
	5205	4.517	4.523	2.6928	2.6929	9.82	10.07		10.07		
	5245	4.518	4.518	2.5603	2.5519	10.34	10.60		10.60		
U-NII Band 3	5730	1.882	1.880	2.4613	2.4626	14.15	14.52	N/A	14.52	30	N/A
	5735	1.887	1.901	2.4784	2.4927	14.24	14.30		14.30		
	5785	1.947	1.948	2.9557	2.9433	13.37	13.37		13.37		
	5840	1.958	1.960	2.8382	2.8413	12.55	12.57		12.57		
	5845	1.989	1.983	3.1340	3.1280	12.30	12.59		12.59		

Note: 1. The results have been included cable loss.

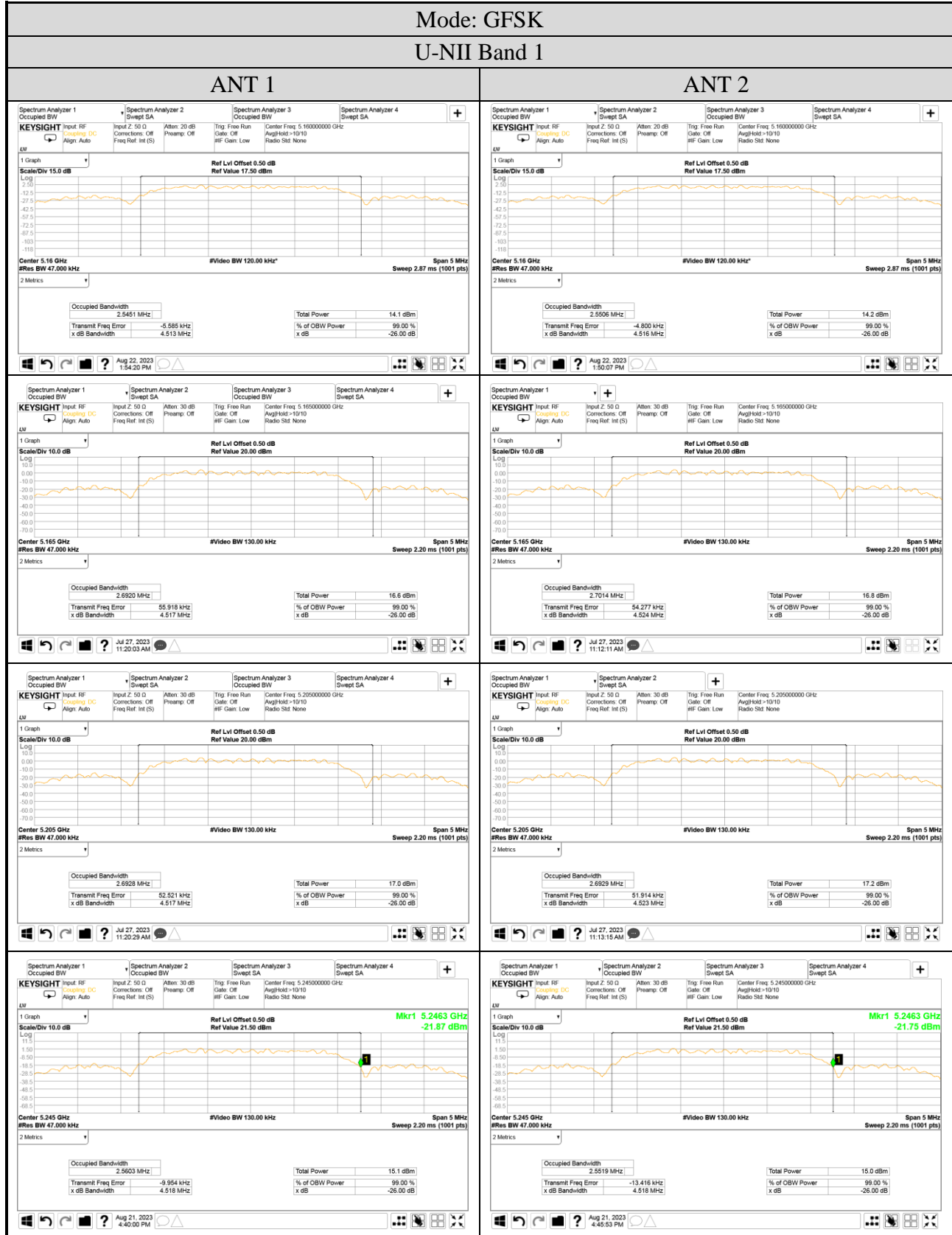
2. Max Average Output Power (dBm) = Max of each average output power (dBm)+ Duty Cycle Factor (dB) when duty cycle is less than 98%.

3. N/A represent the duty cycle is 100%, TX<sub>on</sub> and TX<sub>on+off</sub> cannot be measured.

4. B is the 26 dB emission bandwidth.

### A.3.2 Measurement Plots

- Emission (26dB) Bandwidth

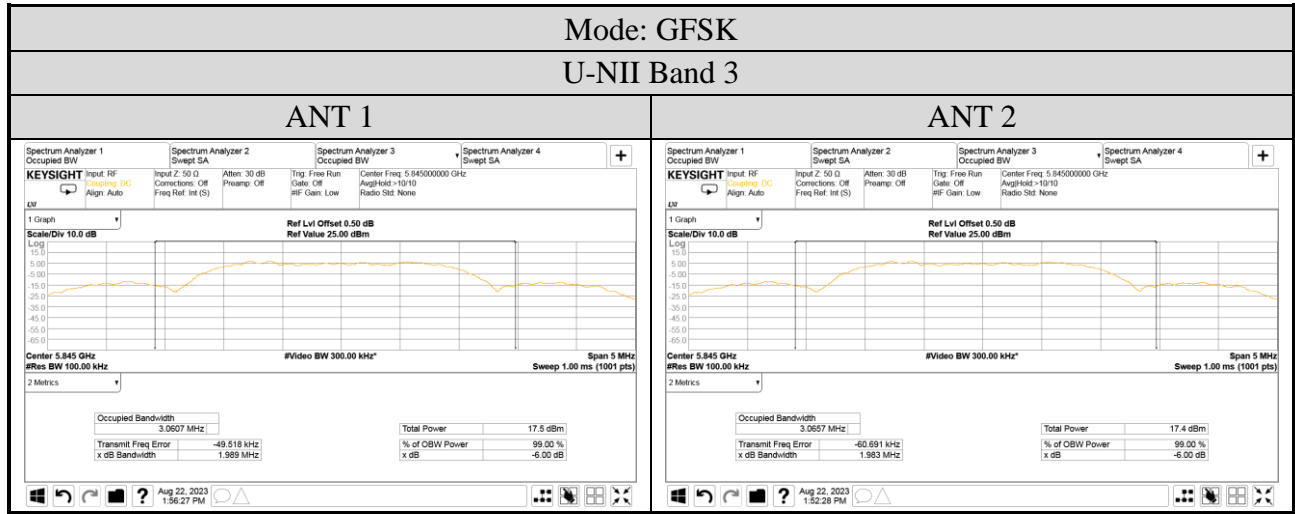


● Emission (6dB) Bandwidth



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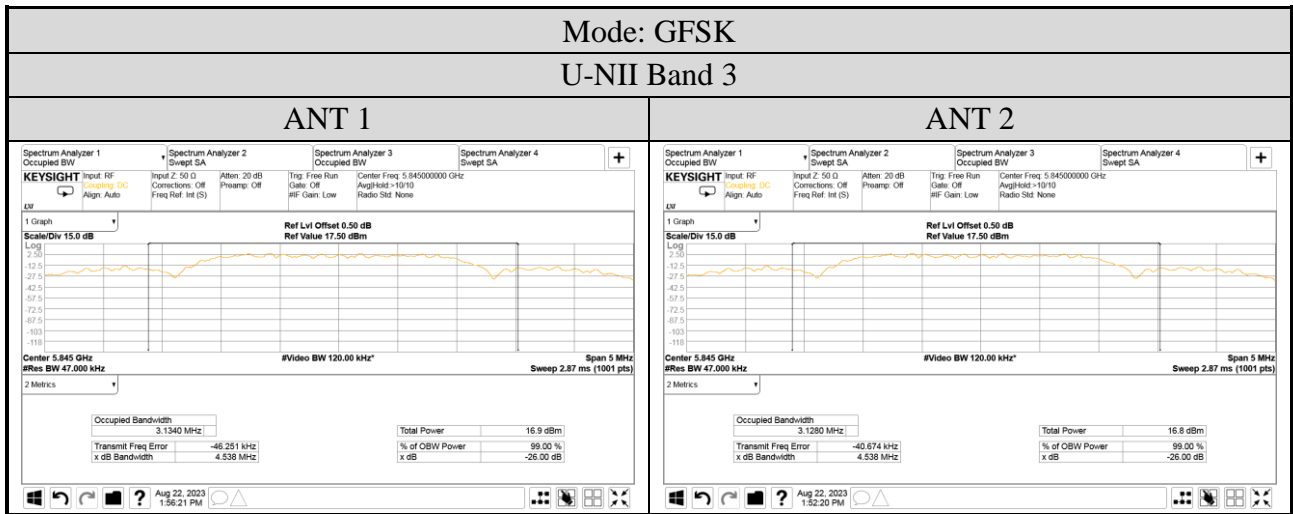


● Occupied (99%) Bandwidth



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 New Taipei City244, Taiwan

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**Fax: +886 2 26099303**





## A.4 POWER SPECTRAL DENSITY

Test Date	2023/07/27 ~ 08/22	Temp./Hum.	24-25°C/53-55%
Cable Loss	0.50dB	Tested By	Kuper Hsu
Test Voltage	DC 3.3V		

### A.4.1 Power Spectral Density Result

Mode (GFSK)	Centre Frequency (MHz)	Power Spectral Density (dBm/1MHz)		Duty Cycle Factor (dB) $10\log(1/X)$	Max. Power Spectral Density (dBm/1MHz) Note 3	Limit
		ANT1	ANT2			
U-NII Band 1	5160	5.540	5.631	N/A	5.631	11dBm/1MHz
	5165	5.656	5.864	N/A	5.864	
	5205	6.051	6.371	N/A	6.371	
	5245	6.577	6.829	N/A	6.829	
Mode (GFSK)	Centre Frequency (MHz)	Power Spectral Density (dBm/500kHz)		Duty Cycle Factor (dB) $10\log(1/X)$	Max. Power Spectral Density (dBm/500kHz) Note 4	Limit
		ANT1	ANT2			
U-NII Band 3	5730	8.553	8.363	N/A	8.553	30dBm/500 kHz
	5735	8.155	8.542	N/A	8.542	
	5785	7.627	7.823	N/A	7.823	
	5840	6.400	6.527	N/A	6.527	
	5845	6.392	6.323	N/A	6.392	

Note :1. All results have been included cable loss.

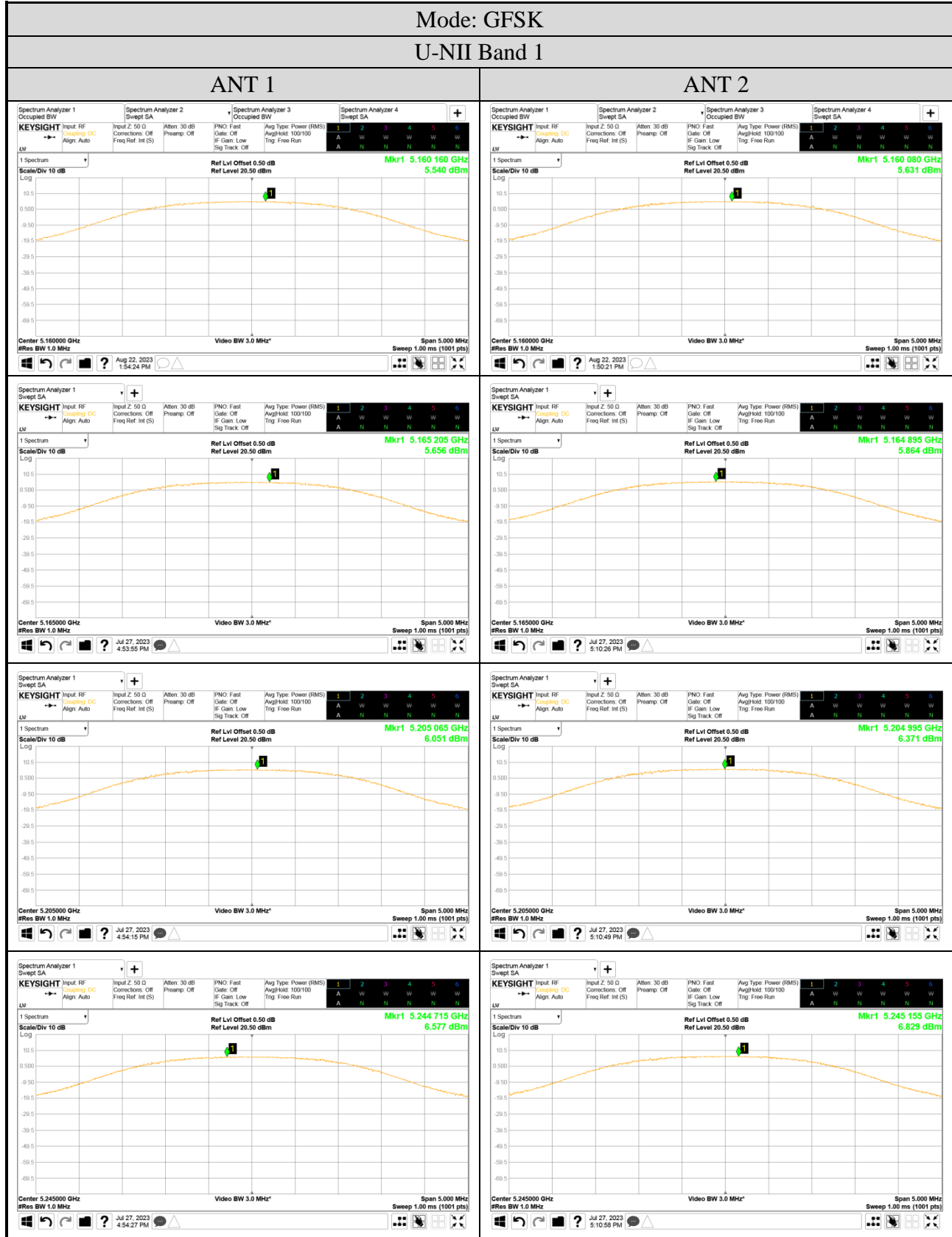
2. BWCF 7dB (100kHz converted to 500kHz) has been included in the test result.

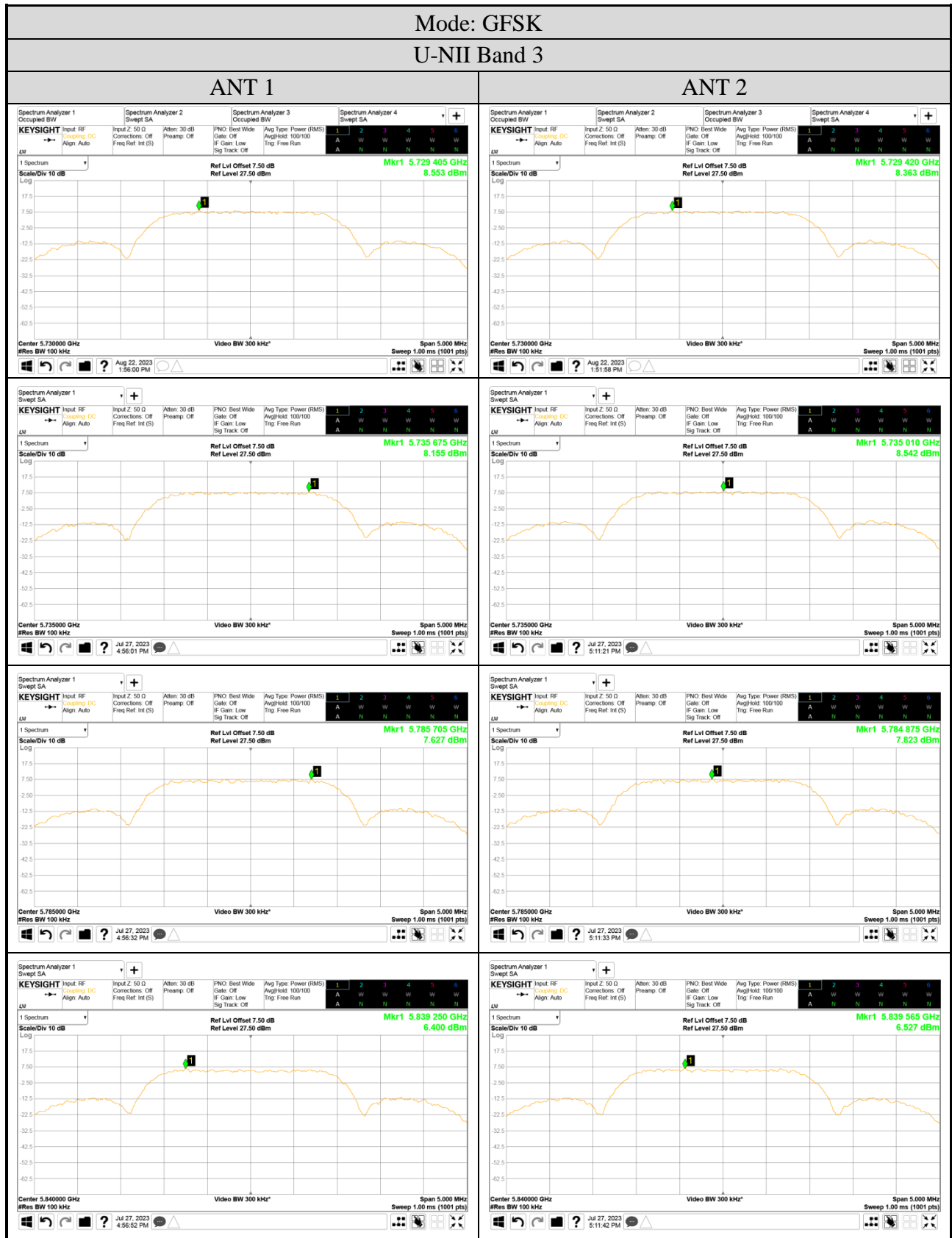
For UNII Band 3, Ref Offset of measured plot: Cable Loss (dB) + BWCF (dB)= 0.5dB+7.5dB=8dB

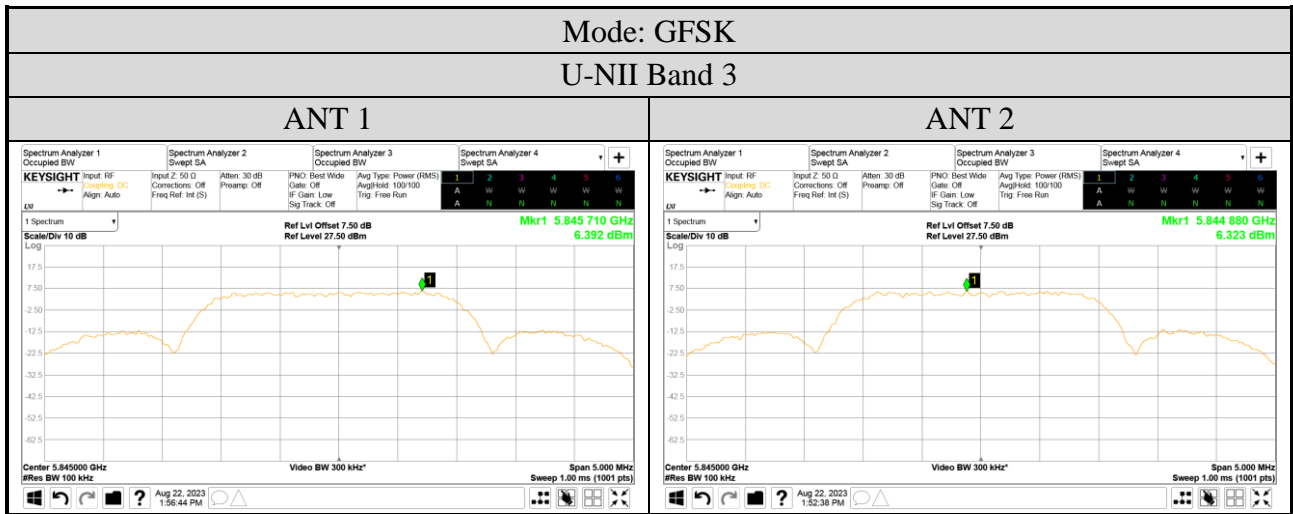
3. Max. Power Spectral Density (dBm/1MHz) = Max of each PSD (dBm/1MHz) + Duty Cycle Factor(dB) when duty cycle is less than 98%.

4. Max. Power Spectral Density (dBm/500kHz) = Max of each PSD (dBm/500kHz) + Duty Cycle Factor(dB) when duty cycle is less than 98%.

A.4.2 Measurement Plots







## A.5 FREQUENCY STABILITY

Test Date	2023/08/22	Temp./Hum.	25°C/53%
Test Voltage	DC 3.3V	Tested By	Kuper Hsu

### A.5.1 Frequency stability Result

#### ANT 1

Temperature (°C)	Voltage (Vdc)	Centre Frequency (MHz)	Measurement Value (MHz)	Frequency Stability (ppm)
25	3.30	5160	5159.978	-4.302
-30	3.15		5160.008	1.570
	3.45		5159.976	-4.612
-20	3.15		5160.001	0.116
	3.45		5160.004	0.717
-10	3.15		5160.016	3.178
	3.45		5159.992	-1.628
0	3.15		5160.014	2.674
	3.45		5159.971	-5.562
10	3.15		5159.997	-0.678
	3.45		5160.006	1.240
20	3.15		5159.993	-1.357
	3.45		5159.998	-0.426
30	3.15		5159.988	-2.403
	3.45		5160.000	-0.019
40	3.15		5159.992	-1.531
	3.45		5159.997	-0.562
50	3.15		5159.987	-2.461
	3.45		5159.999	-0.155

#### ANT 2

Temperature (°C)	Voltage (Vdc)	Centre Frequency (MHz)	Measurement Value (MHz)	Frequency Stability (ppm)
25	3.30	5160	5159.983	-3.391
-30	3.15		5160.0249	4.826
	3.45		5159.9934	-1.279
-20	3.15		5160.0034	0.659
	3.45		5159.9993	-0.136
-10	3.15		5159.9778	-4.302
	3.45		5159.9969	-0.601
0	3.15		5159.9989	-0.213
	3.45		5159.984	-3.101
10	3.15		5160.0183	3.547
	3.45		5159.9927	-1.415
20	3.15		5159.9898	-1.977
	3.45		5160.0027	0.523
30	3.15		5160.0205	3.973
	3.45		5160.0105	2.035
40	3.15		5159.996	-0.717
	3.45		5160.0188	3.643
50	3.15		5160.0218	4.225
	3.45		5160.0039	0.756

Note: The extreme Voltage is declared by manufacturer.