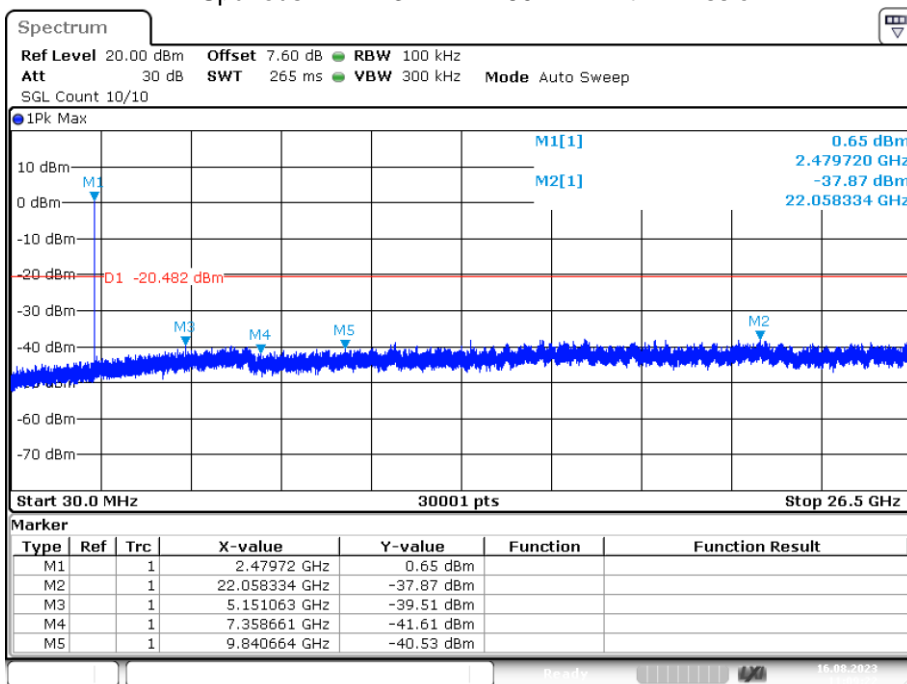


Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Emission



Date: 16.AUG.2023 11:09:22

4.8 Band edge emissions (Radiated)

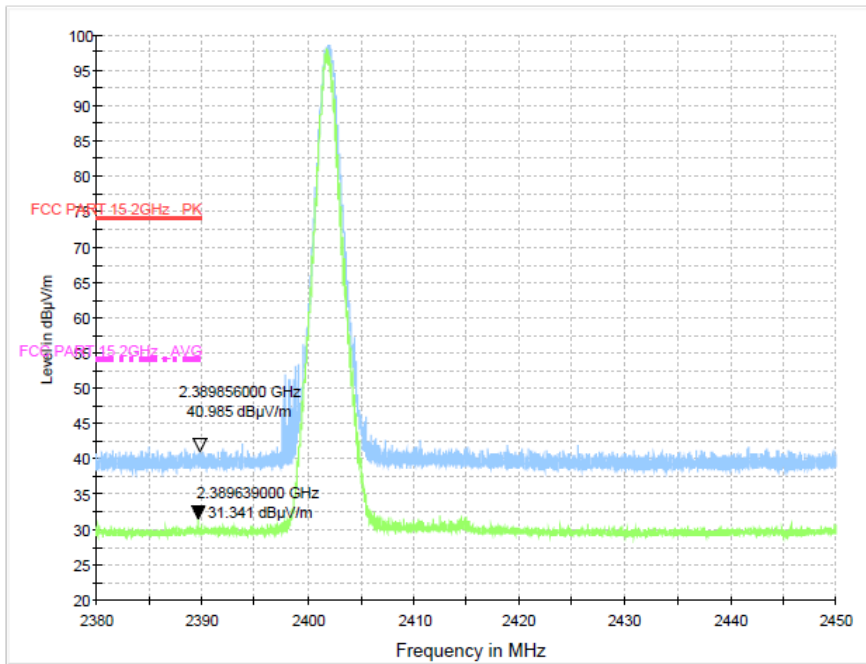
Test Requirement:	In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).`		
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.			
Test Method:	Radiated emissions tests		
Procedure:	ANSI C63.10-2013 section 6.6.4		

4.8.1 E.U.T. Operation:

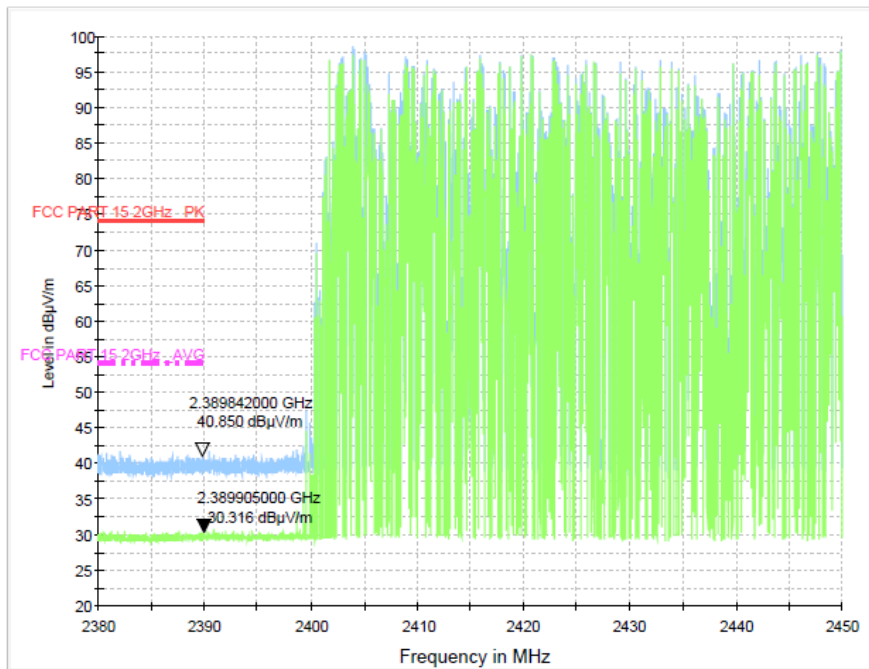
Operating Environment:					
Temperature:	23.8 °C	Humidity:	54.2 %	Atmospheric Pressure:	101.6 kPa
Pre test mode:	All modes				
Final test mode:	All modes				

4.8.2 Test Result:

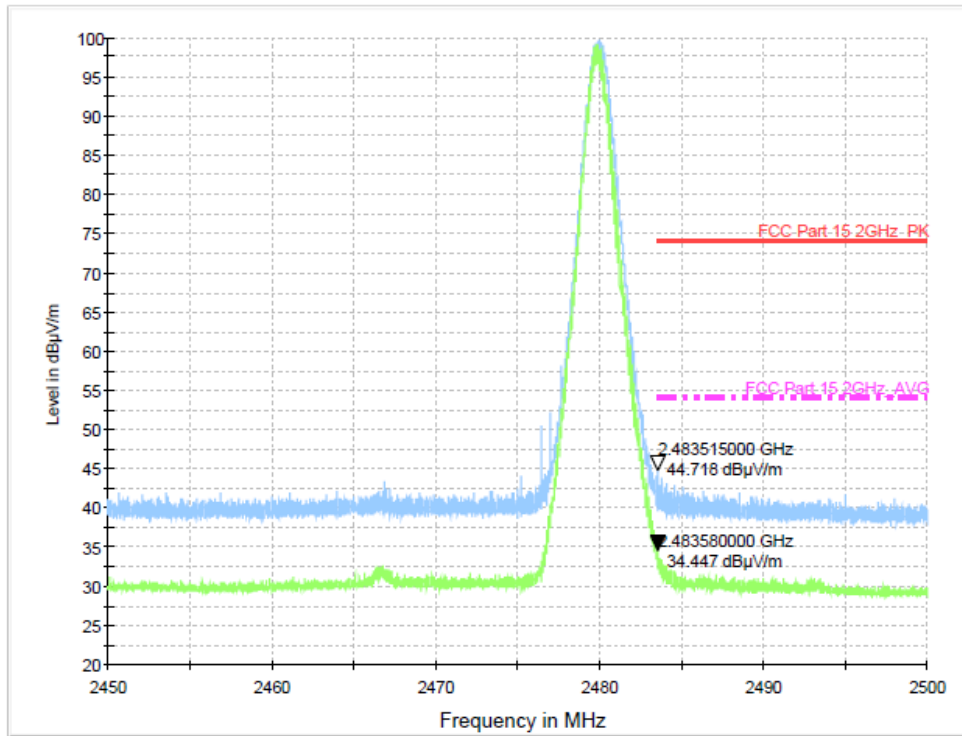
TX-GFSK(hopping off) / CH: L



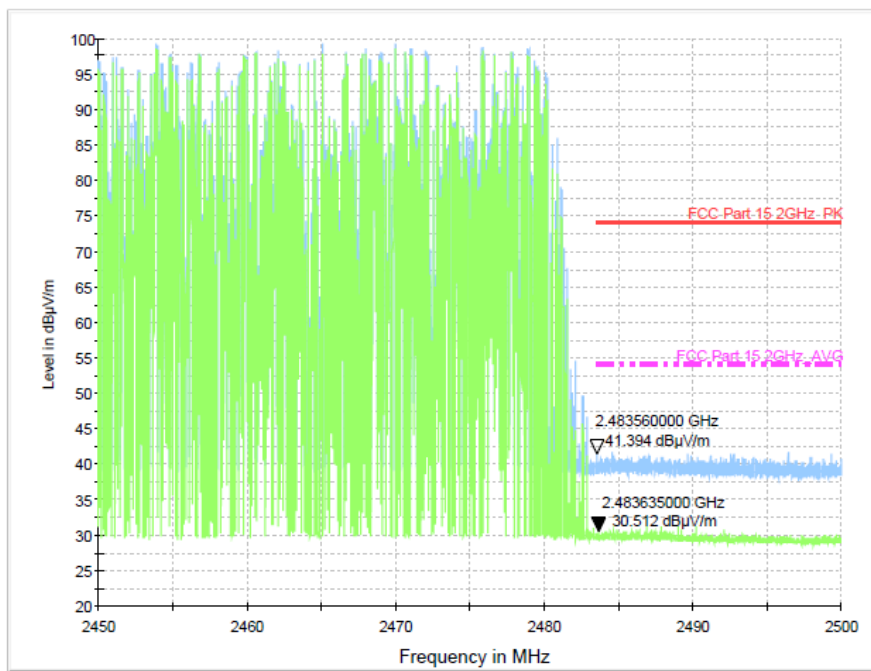
TX-GFSK(hopping on) / CH: L



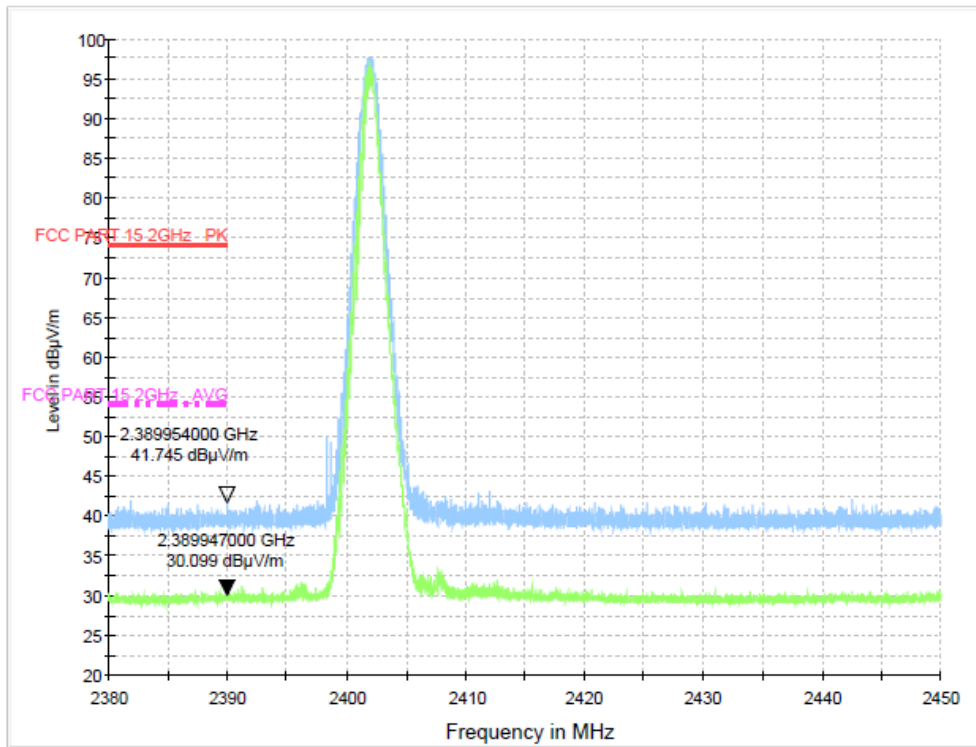
TX-GFSK(hopping off) / CH: H



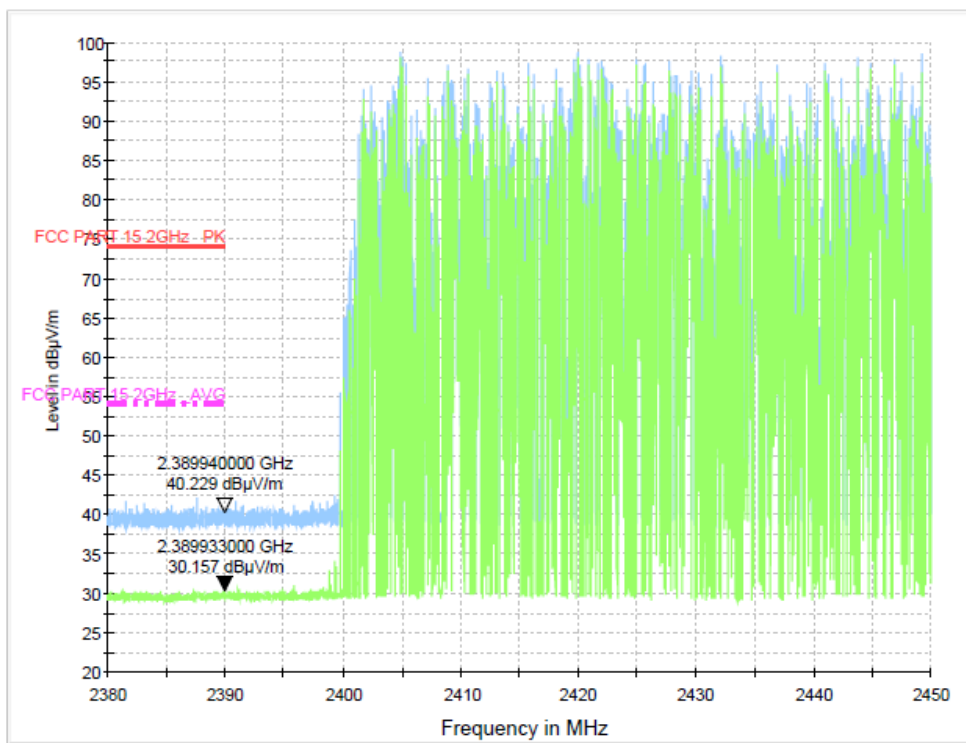
TX-GFSK(hopping on) / CH: H



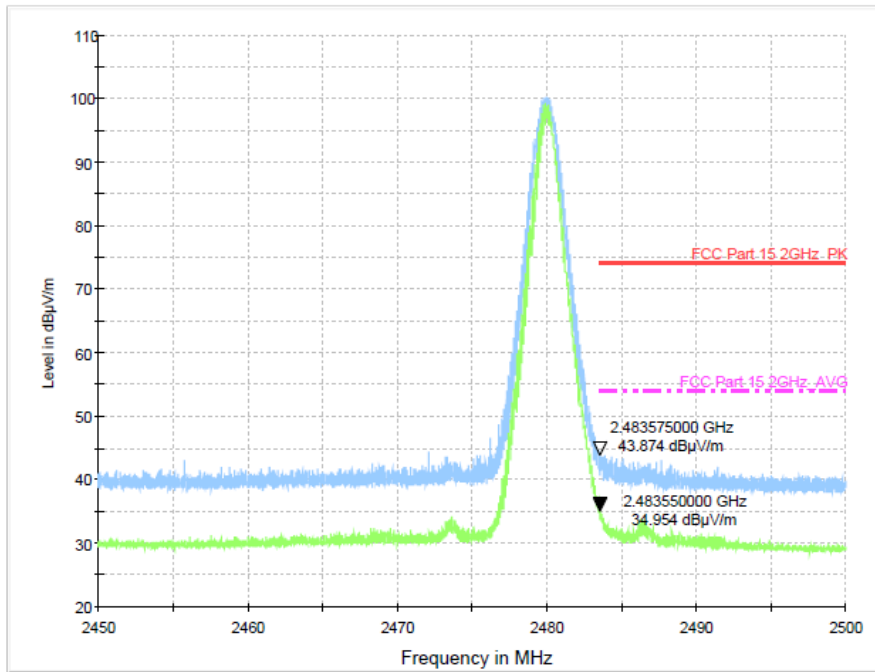
TX-Pi/4DQPSK (hopping off) / CH: L



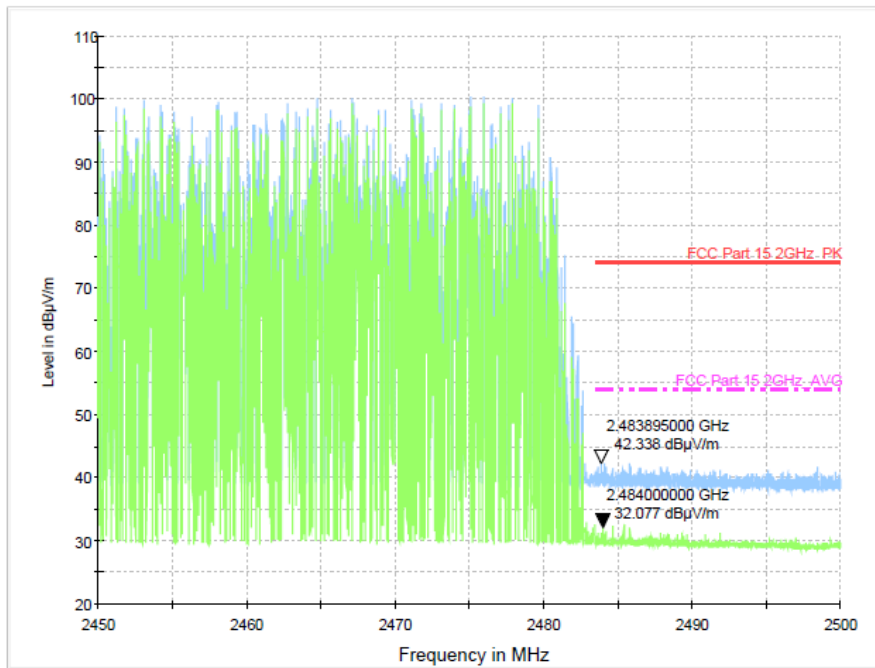
TX-Pi/4DQPSK (hopping on) / CH: L



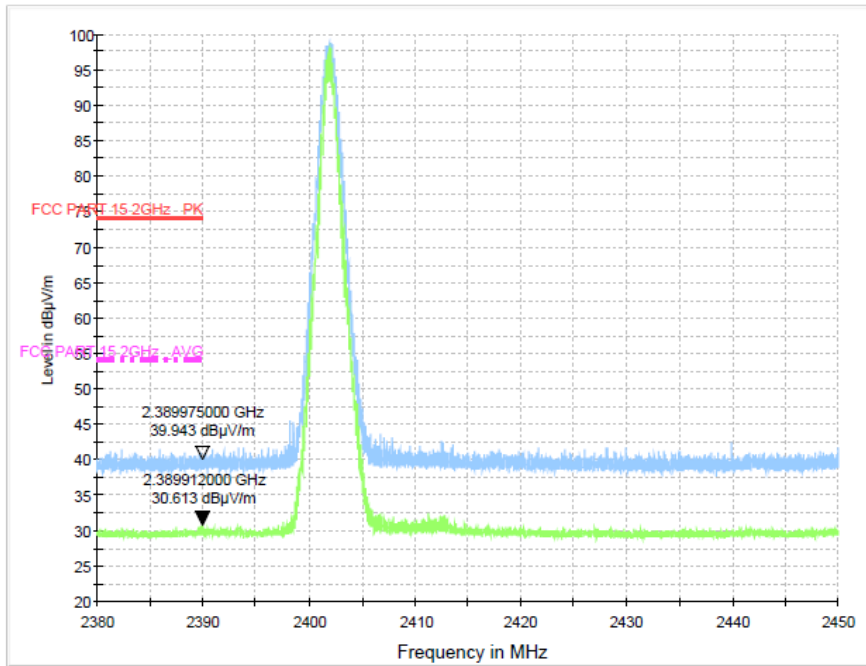
TX-Pi/4DQPSK (hopping off) / CH: H



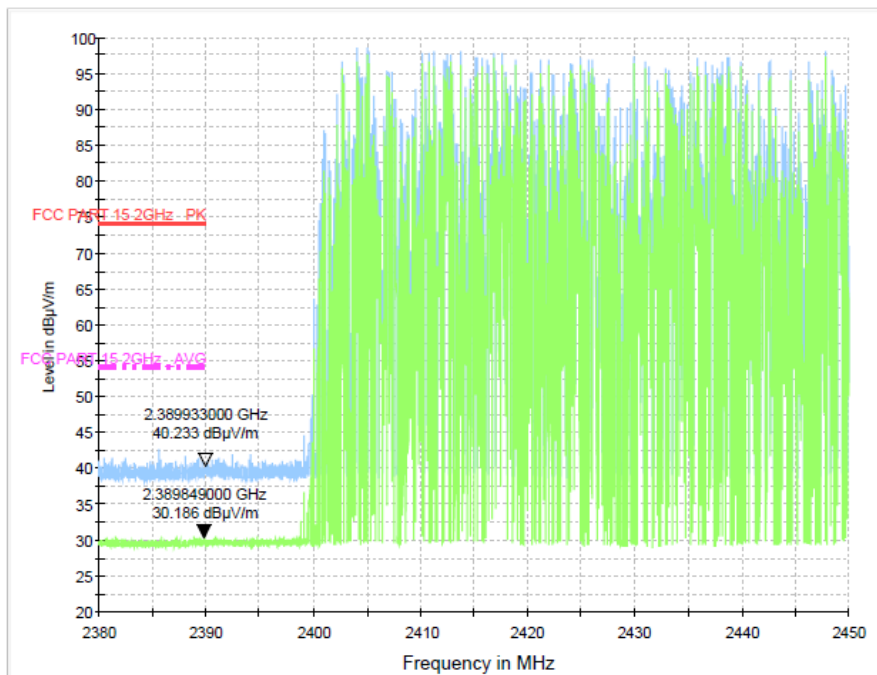
TX-Pi/4DQPSK (hopping on) / CH: H



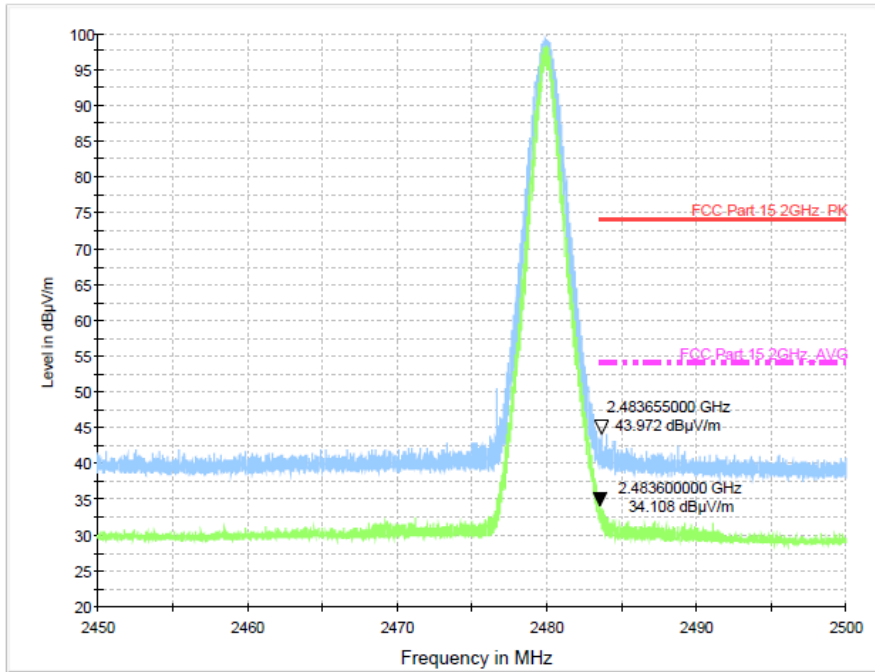
TX-8DPSK (hopping off) / CH: L



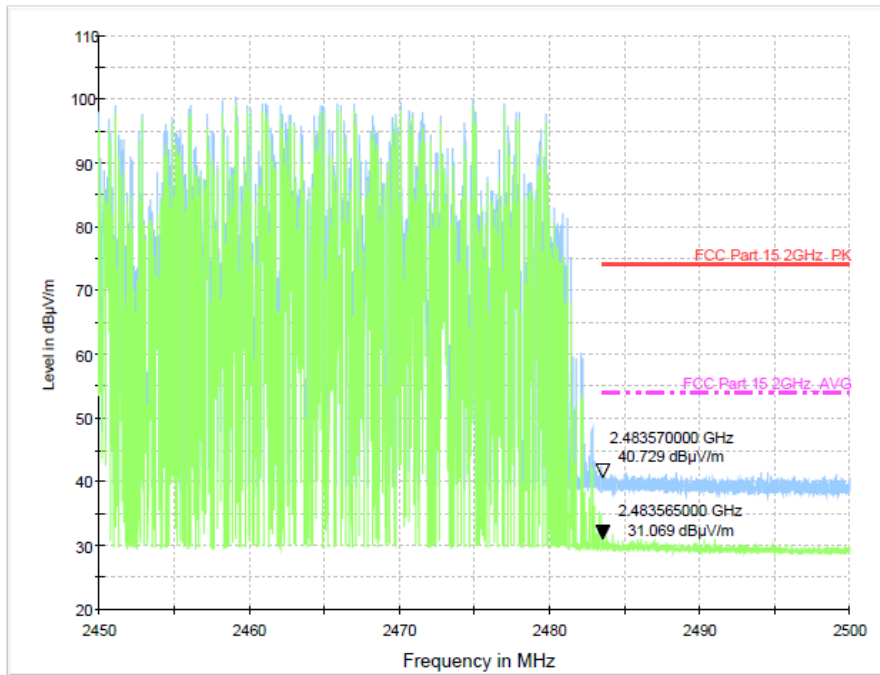
TX-8DPSK (hopping on) / CH: L



TX-8DPSK (hopping off) / CH: H



TX-8DPSK (hopping on) / CH: H



4.9 Emissions in restricted frequency bands (below 1GHz)

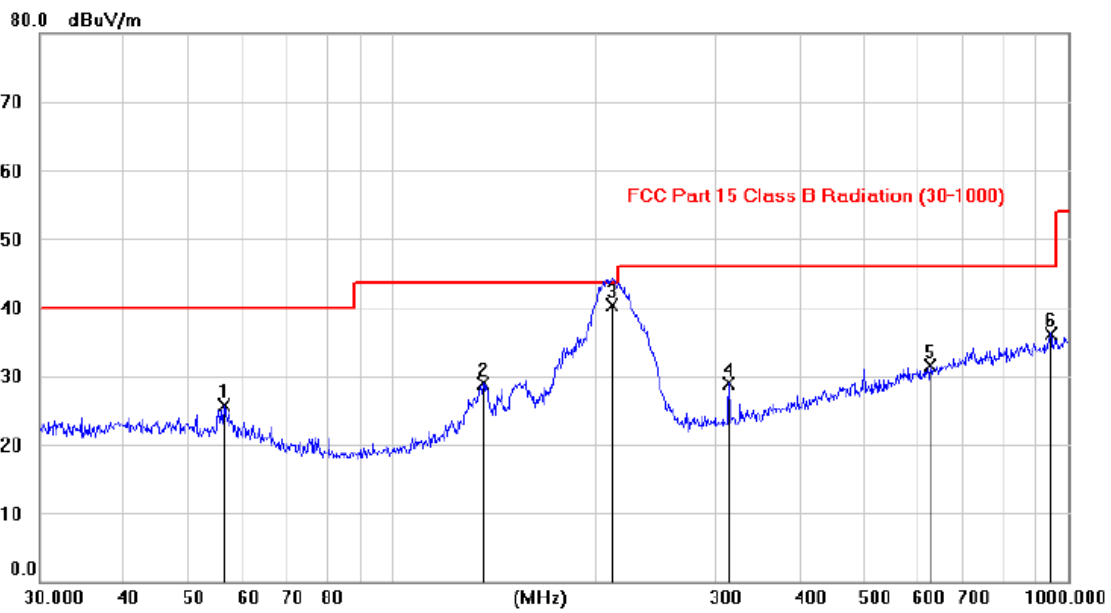
Test Requirement:	In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).`		
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.			
Test Method:	Radiated emissions tests		
Procedure:	ANSI C63.10-2013 section 6.6.4		

4.9.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.8 °C	Humidity:	54.2 %	Atmospheric Pressure:	101.6 kPa
Pre test mode:	TX-GFSK(hopping off), TX-Pi/4DQPSK (hopping off), TX-8DPSK (hopping off)				
Final test mode:	TX-GFSK(hopping off)				

4.9.2 Test Result:

TX-GFSK(hopping off)/ Polarization: Horizontal / CH: L

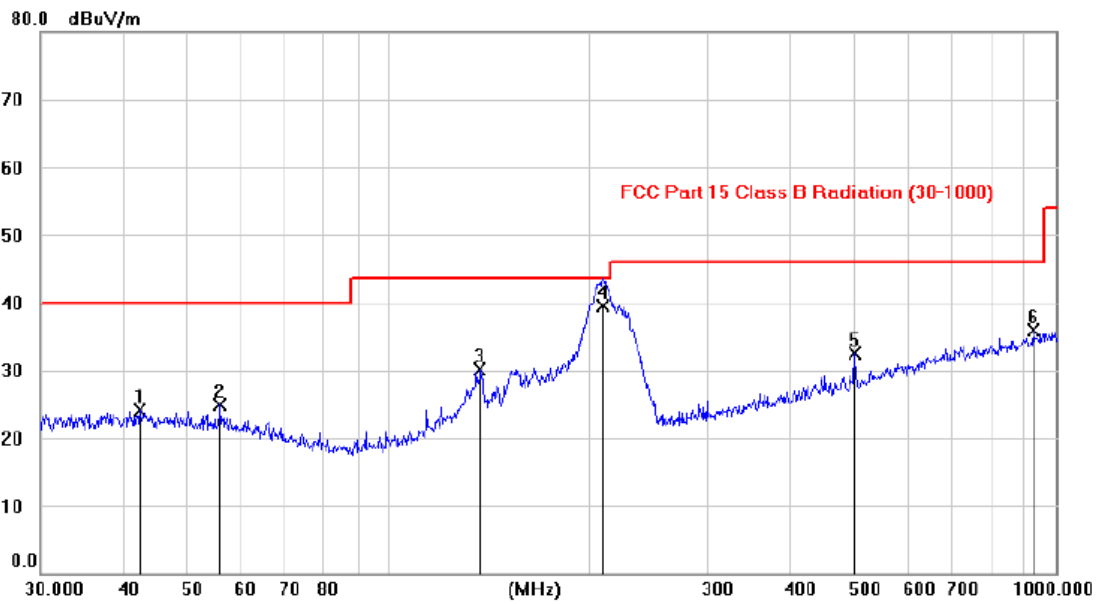


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		56.2237	12.20	13.53	25.73	40.00	-14.27			peak
2		136.0776	14.88	14.03	28.91	43.50	-14.59			peak
3	*	211.9967	29.16	11.20	40.36	43.50	-3.14			QP
4		314.8545	14.34	14.48	28.82	46.00	-17.18			peak
5		626.9806	10.79	20.77	31.56	46.00	-14.44			peak
6		945.3294	11.59	24.61	36.20	46.00	-9.80			peak

Note:1. *:Maximum data; x:Over limit; !:over margin.

2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

TX-GFSK(hopping off) / Polarization: Vertical / CH: L



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree
1		42.4061	9.79	14.29	24.08	40.00	-15.92	peak	
2		55.8504	11.36	13.57	24.93	40.00	-15.07	peak	
3		137.3720	15.89	14.12	30.01	43.50	-13.49	peak	
4	*	209.7538	28.46	11.07	39.53	43.50	-3.97	QP	
5		500.0088	14.20	18.21	32.41	46.00	-13.59	peak	
6		927.7061	11.53	24.39	35.92	46.00	-10.08	peak	

Note:1. *:Maximum data; x:Over limit; !:over margin.

2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

4.10 Emissions in restricted frequency bands (above 1GHz)

Test Requirement:	In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).`		
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.			
Test Method:	Radiated emissions tests		
Procedure:	ANSI C63.10-2013 section 6.6.4		

4.10.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.8 °C	Humidity:	54.2 %	Atmospheric Pressure:	101.6 kPa
Pre test mode:	TX-GFSK(hopping off), TX-Pi/4DQPSK (hopping off), TX-8DPSK (hopping off)				
Final test mode:	TX-GFSK(hopping off), TX-Pi/4DQPSK (hopping off), TX-8DPSK (hopping off)				

4.10.2 Test Result:

From 1G-25GHz

Test Mode: GFSK TX Low									
Freq (MHz)	Read Level (dBuV/m)	Polar (H/V)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4804	45.72	V	33.95	10.18	34.26	55.59	74	-18.41	PK
4804	34.94	V	33.95	10.18	34.26	44.81	54	-9.19	AV
7206	/	/	/	/	/	/	/	/	/
9608	/	/	/	/	/	/	/	/	/
4804	45.42	H	33.95	10.18	34.26	55.29	74	-18.71	PK
4804	34.63	H	33.95	10.18	34.26	44.50	54	-9.50	AV
7206	/	/	/	/	/	/	/	/	/
9608	/	/	/	/	/	/	/	/	/
Test Mode: GFSK TX Mid									
4882	43.86	V	33.93	10.2	34.29	53.70	74	-20.30	PK
4882	36.29	V	33.93	10.2	34.29	46.13	54	-7.87	AV
7323	/	/	/	/	/	/	/	/	/
9764	/	/	/	/	/	/	/	/	/
4882	45.57	H	33.93	10.2	34.29	55.41	74	-18.59	PK
4882	34.77	H	33.93	10.2	34.29	44.61	54	-9.39	AV
7323	/	/	/	/	/	/	/	/	/
9764	/	/	/	/	/	/	/	/	/
Test Mode: GFSK TX High									
4960	46.18	V	33.93	10.2	34.29	56.02	74	-17.98	PK
4960	35.02	V	33.93	10.2	34.29	44.86	54	-9.14	AV
7440	/	/	/	/	/	/	/	/	/
9920	/	/	/	/	/	/	/	/	/
4960	44.54	H	33.93	10.2	34.29	54.38	74	-19.62	PK
4960	34.29	H	33.93	10.2	34.29	44.13	54	-9.87	AV
7440	/	/	/	/	/	/	/	/	/
9920	/	/	/	/	/	/	/	/	/
Note:									
1, Result = Read level + Antenna factor + cable loss-Amp factor									
2, All the other emissions not reported were too low to read and deemed to comply with FCC limit.									

From 1G-25GHz

Test Mode: $\pi/4$ DQPSK TX Low									
Freq (MHz)	Read Level (dBuV/m)	Polar (H/V)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4804	46.88	V	33.95	10.18	34.26	56.75	74	-17.25	PK
4804	34.49	V	33.95	10.18	34.26	44.36	54	-9.64	AV
7206	/	/	/	/	/	/	/	/	/
9608	/	/	/	/	/	/	/	/	/
4804	47.99	H	33.95	10.18	34.26	57.86	74	-16.14	PK
4804	35.29	H	33.95	10.18	34.26	45.16	54	-8.84	AV
7206	/	/	/	/	/	/	/	/	/
9608	/	/	/	/	/	/	/	/	/
Test Mode: $\pi/4$ DQPSK TX Mid									
4882	42.81	V	33.93	10.2	34.29	52.65	74	-21.35	PK
4882	35.55	V	33.93	10.2	34.29	45.39	54	-8.61	AV
7323	/	/	/	/	/	/	/	/	/
9764	/	/	/	/	/	/	/	/	/
4882	42.72	H	33.93	10.2	34.29	52.56	74	-21.44	PK
4882	33.02	H	33.93	10.2	34.29	42.86	54	-11.14	AV
7323	/	/	/	/	/	/	/	/	/
9764	/	/	/	/	/	/	/	/	/
Test Mode: $\pi/4$ DQPSK TX High									
4960	43.37	V	33.93	10.2	34.29	53.21	74	-20.79	PK
4960	36.45	V	33.93	10.2	34.29	46.29	54	-7.71	AV
7440	/	/	/	/	/	/	/	/	/
9920	/	/	/	/	/	/	/	/	/
4960	45.27	H	33.93	10.2	34.29	55.11	74	-18.89	PK
4960	32.99	H	33.93	10.2	34.29	42.83	54	-11.17	AV
7440	/	/	/	/	/	/	/	/	/
9920	/	/	/	/	/	/	/	/	/
Note:									
1, Result = Read level + Antenna factor + cable loss-Amp factor									
2, All the other emissions not reported were too low to read and deemed to comply with FCC limit.									

From 1G-25GHz

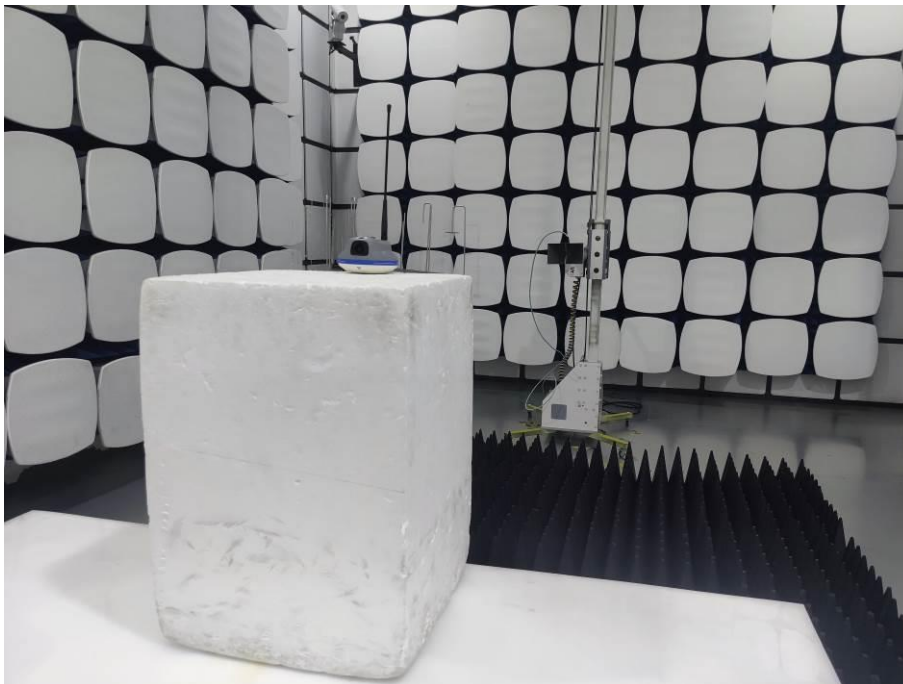
Test Mode: 8- DQPSK TX Low									
Freq (MHz)	Read Level (dBuV/m)	Polar (H/V)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4804	46.53	V	33.95	10.18	34.26	56.40	74	-17.60	PK
4804	36.06	V	33.95	10.18	34.26	45.93	54	-8.07	AV
7206	/	/	/	/	/	/	/	/	/
9608	/	/	/	/	/	/	/	/	/
4804	46.76	H	33.95	10.18	34.26	56.63	74	-17.37	PK
4804	36.56	H	33.95	10.18	34.26	46.43	54	-7.57	AV
7206	/	/	/	/	/	/	/	/	/
9608	/	/	/	/	/	/	/	/	/
Test Mode: 8- DQPSK TX Mid									
4882	42.69	V	33.93	10.2	34.29	52.53	74	-21.47	PK
4882	35.76	V	33.93	10.2	34.29	45.60	54	-8.40	AV
7323	/	/	/	/	/	/	/	/	/
9764	/	/	/	/	/	/	/	/	/
4882	42.70	H	33.93	10.2	34.29	52.54	74	-21.46	PK
4882	35.15	H	33.93	10.2	34.29	44.99	54	-9.01	AV
7323	/	/	/	/	/	/	/	/	/
9764	/	/	/	/	/	/	/	/	/
Test Mode: 8- DQPSK TX High									
4960	44.32	V	33.93	10.2	34.29	54.16	74	-19.84	PK
4960	33.66	V	33.93	10.2	34.29	43.50	54	-10.50	AV
7440	/	/	/	/	/	/	/	/	/
9920	/	/	/	/	/	/	/	/	/
4960	42.73	H	33.93	10.2	34.29	52.57	74	-21.43	PK
4960	32.05	H	33.93	10.2	34.29	41.89	54	-12.11	AV
7440	/	/	/	/	/	/	/	/	/
9920	/	/	/	/	/	/	/	/	/
Note:									
1, Result = Read level + Antenna factor + cable loss-Amp factor									
2, All the other emissions not reported were too low to read and deemed to comply with FCC limit.									

5 Test Setup Photos

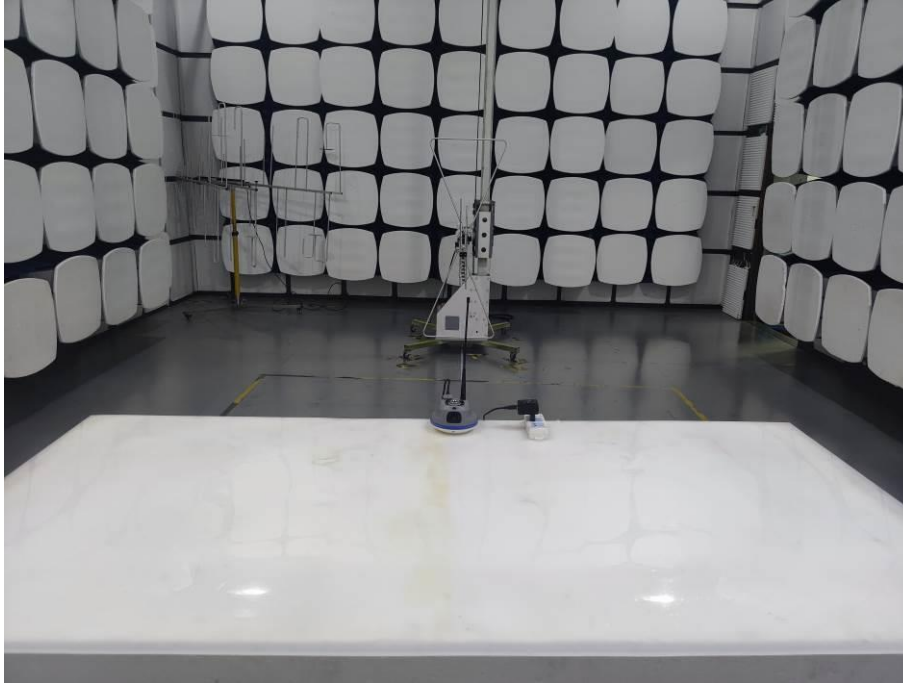
Conducted Emission at AC power line



**Band edge emissions (Radiated)
Emissions in restricted frequency bands (above 1GHz)**



Emissions in restricted frequency bands (below 1GHz)

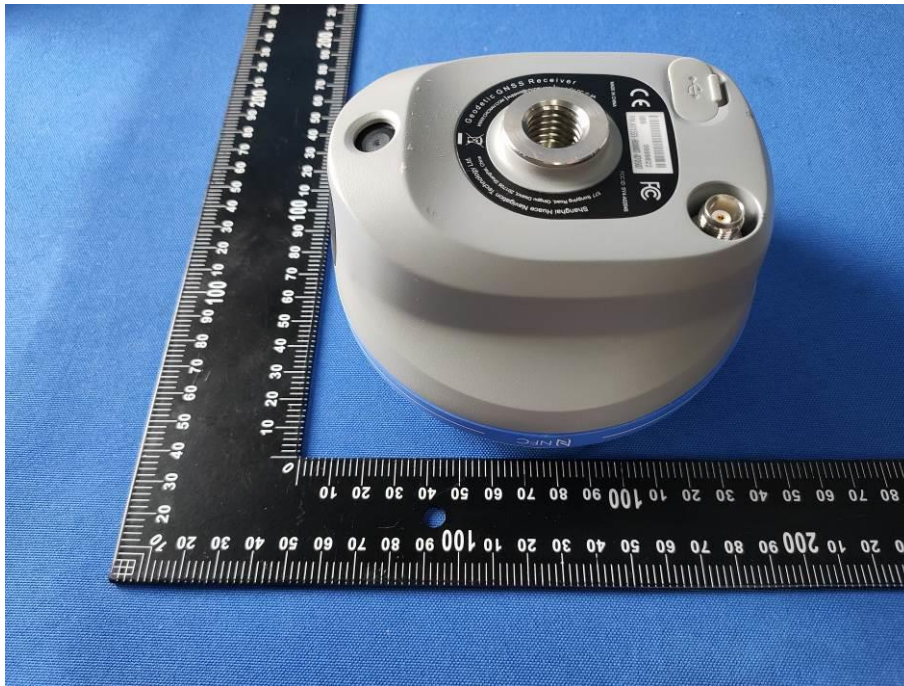


6 EUT Constructional Details (EUT Photos)

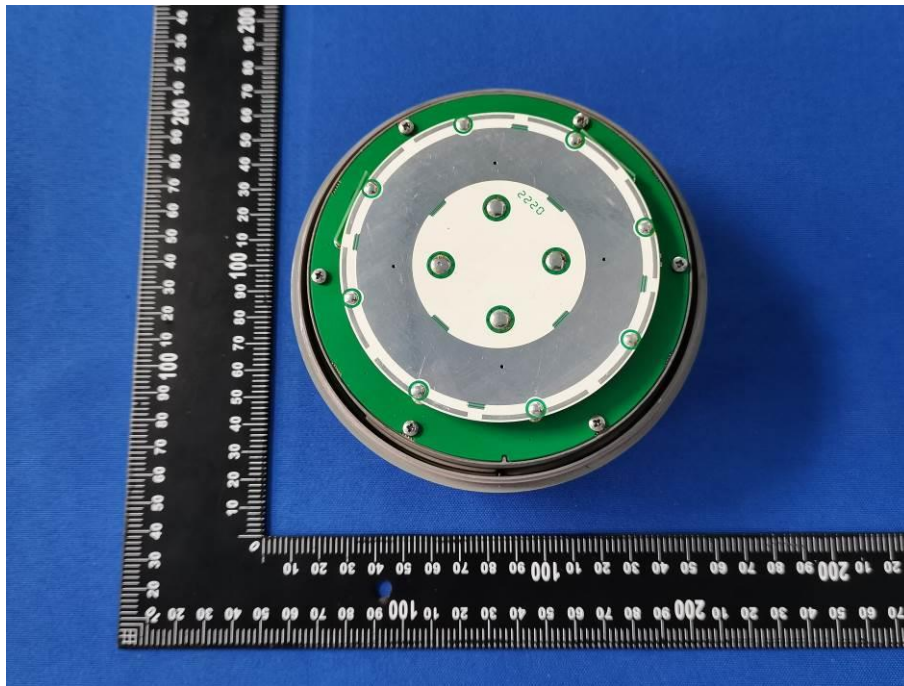
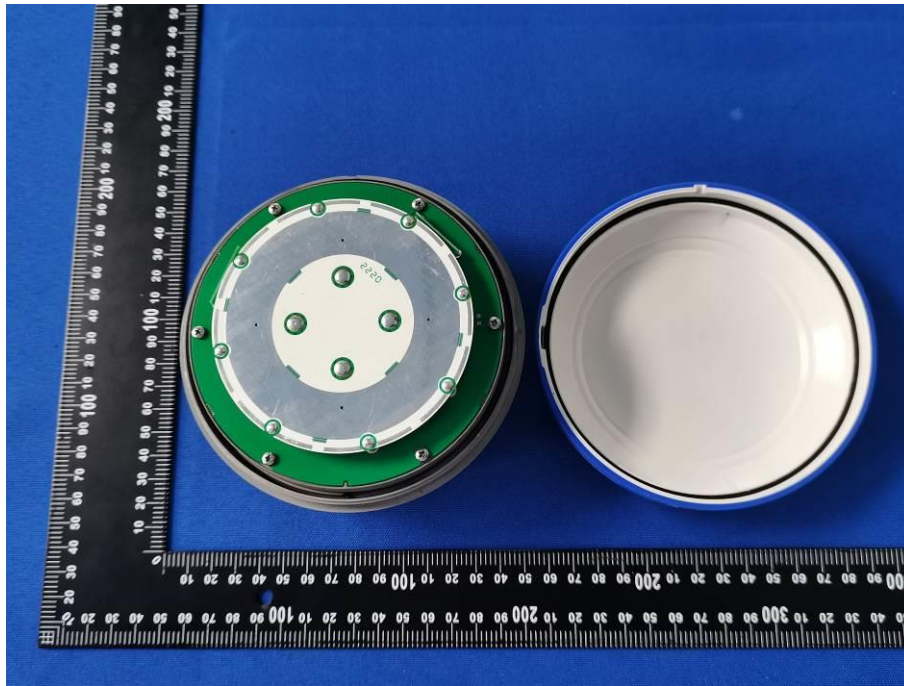


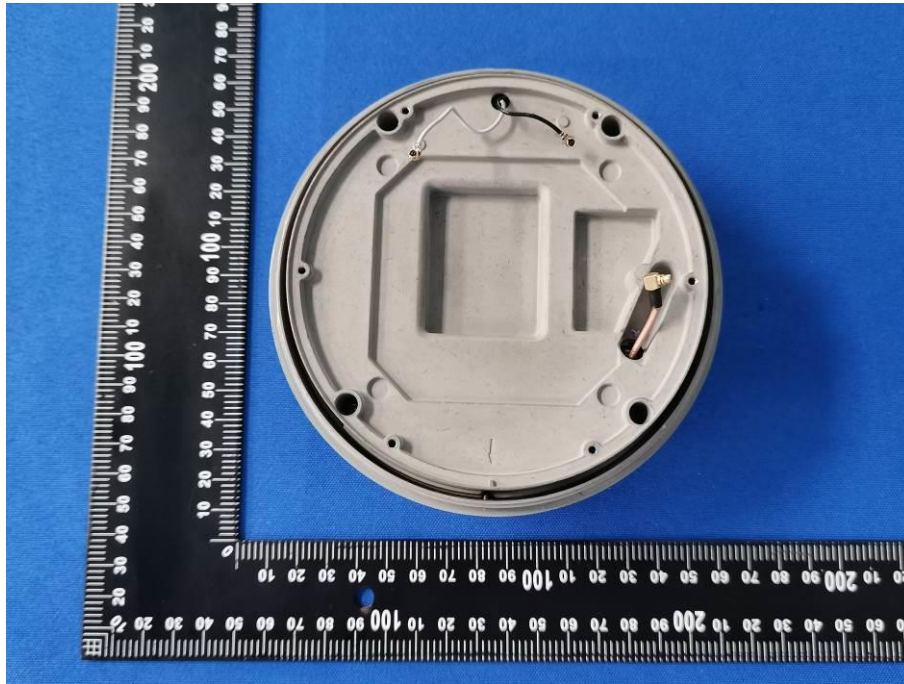
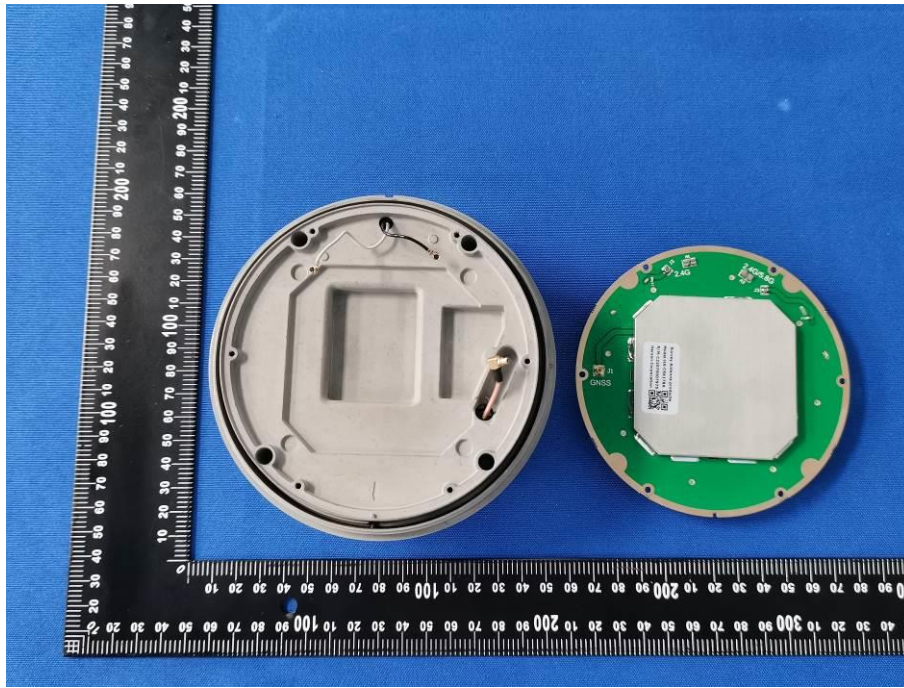


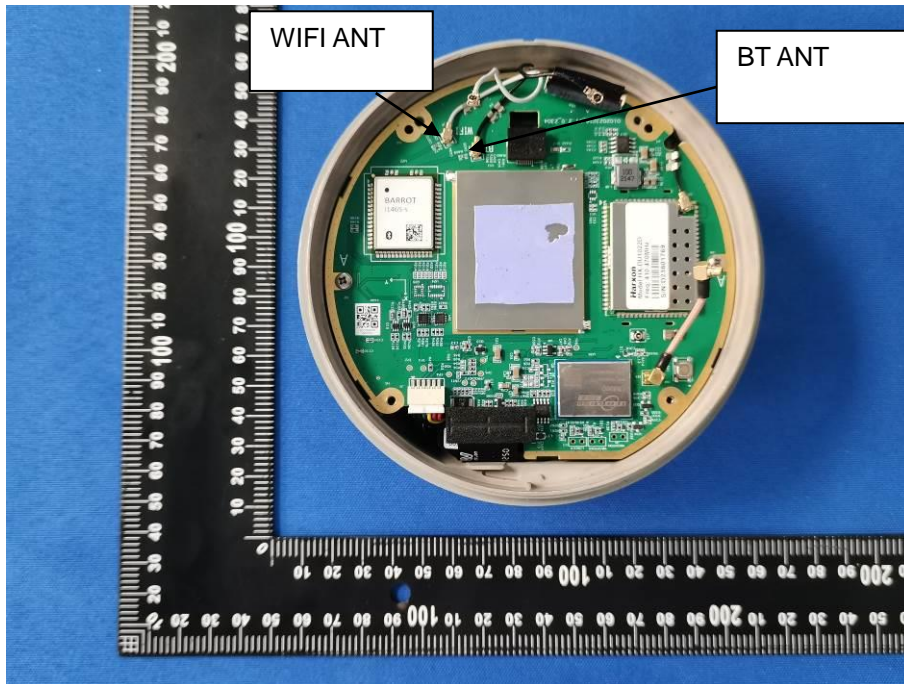
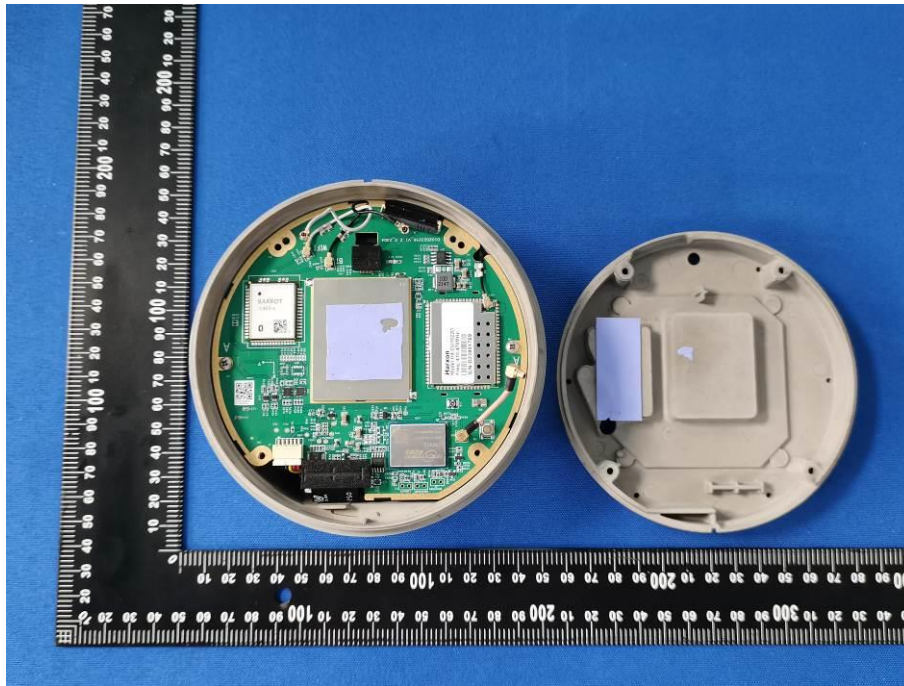


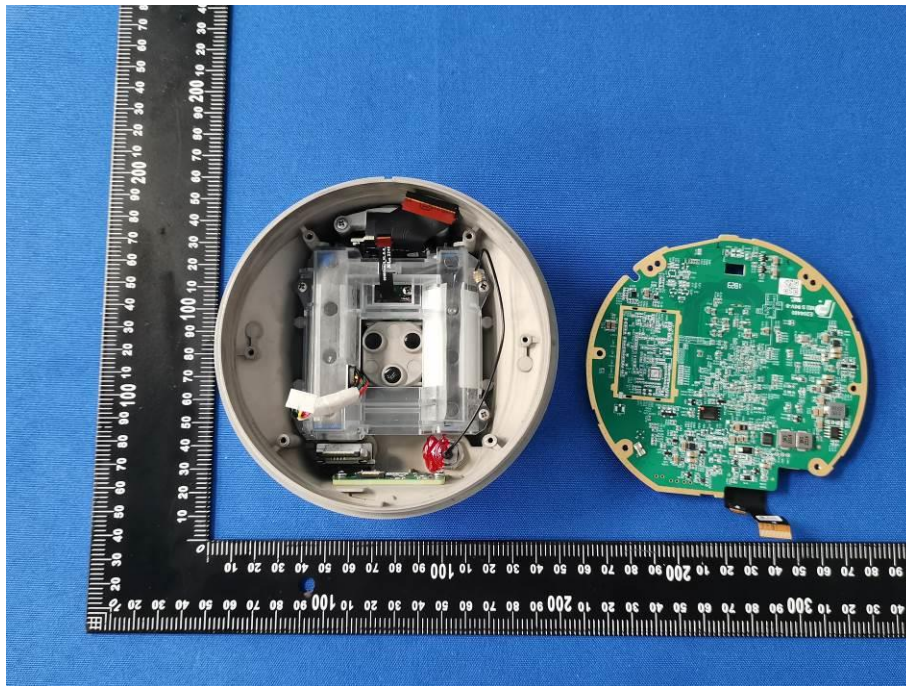
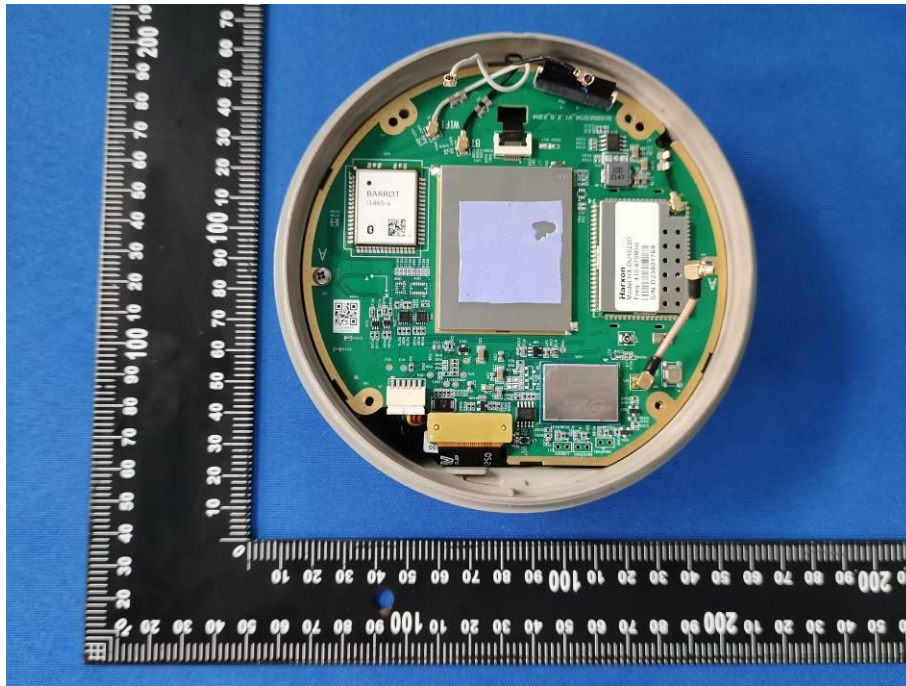


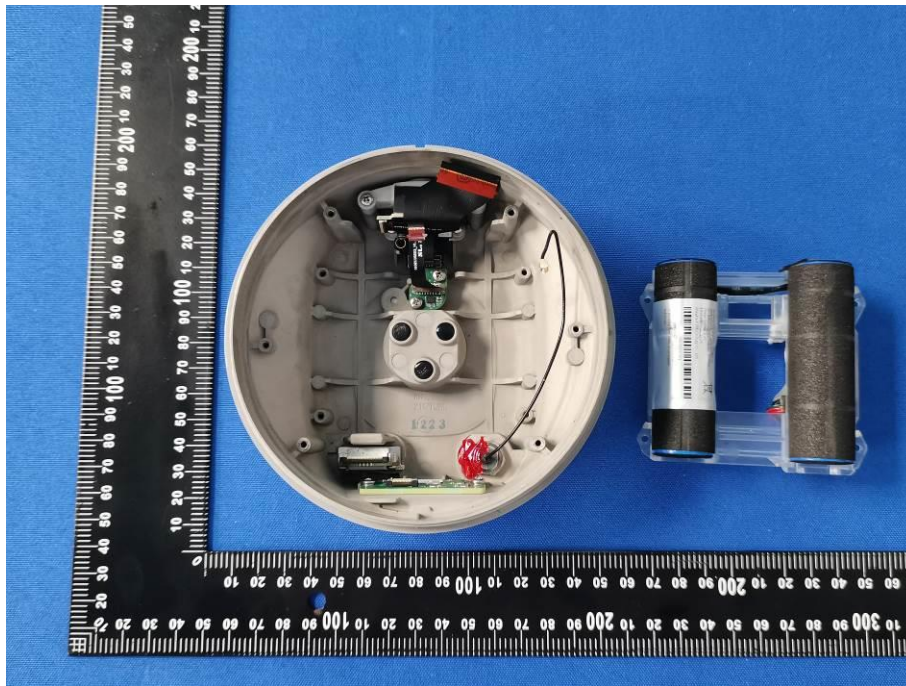
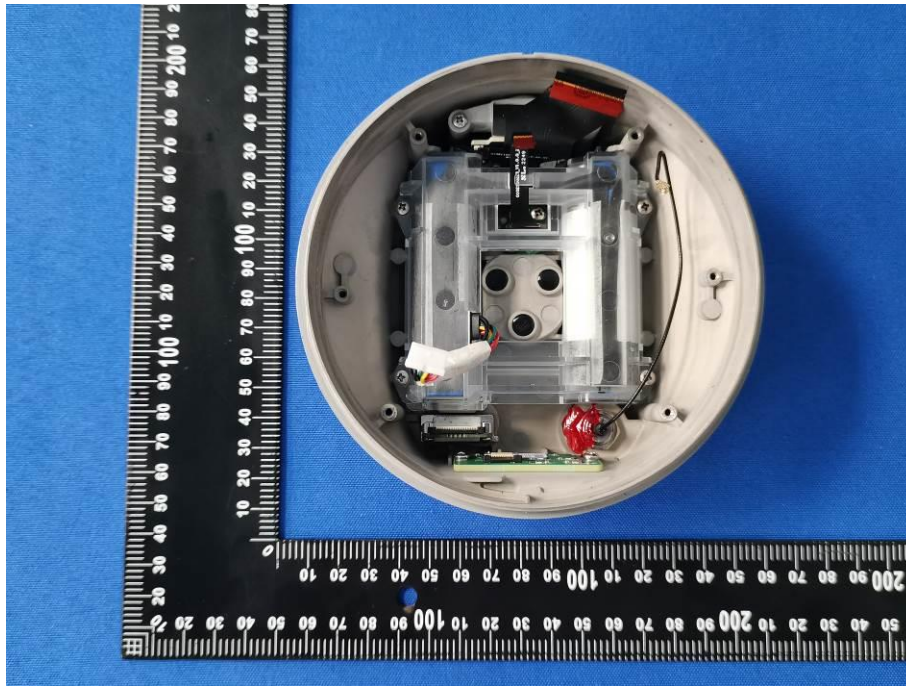


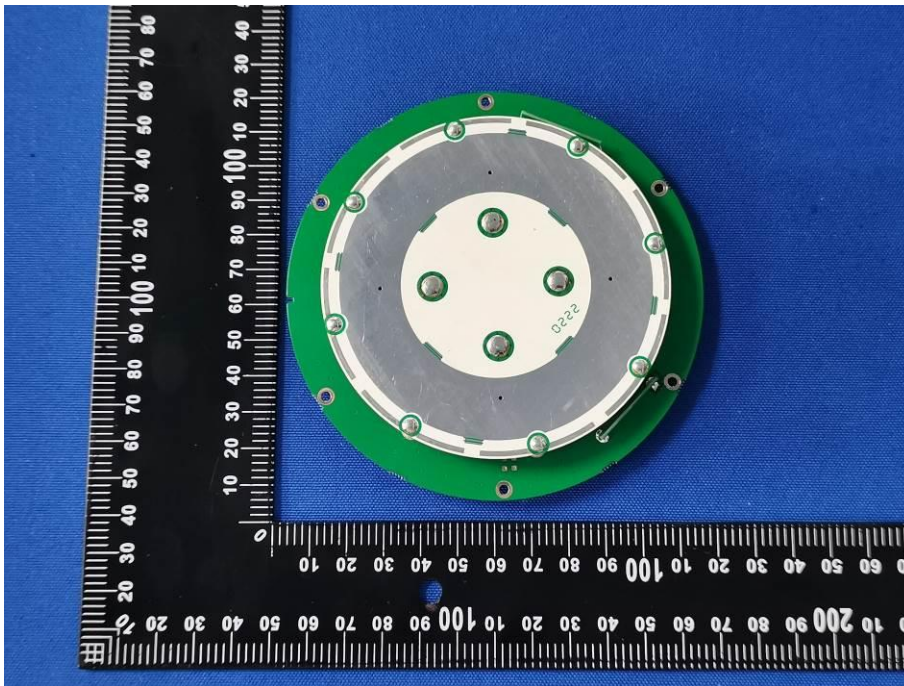
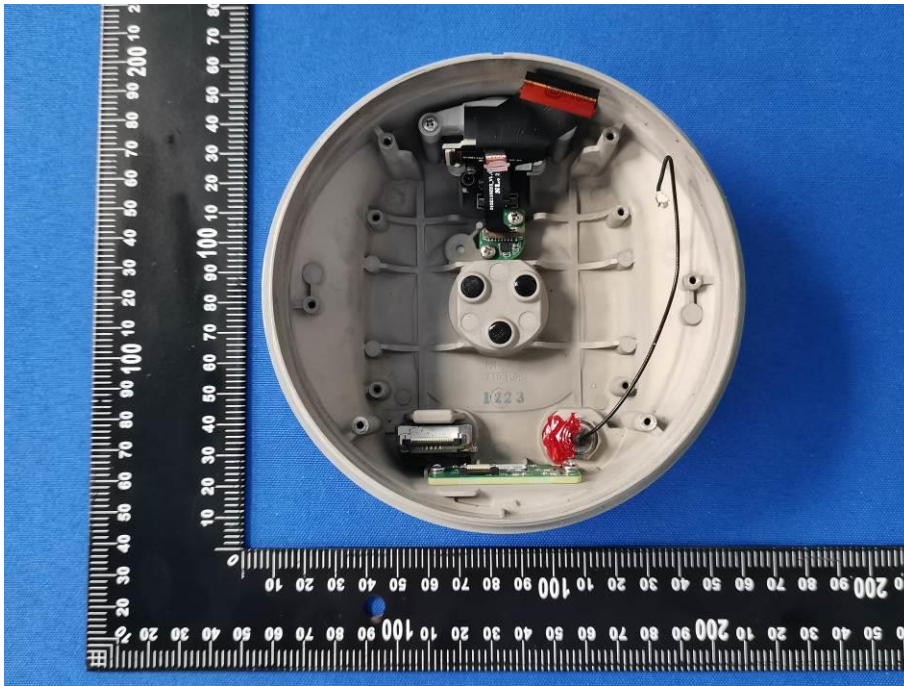


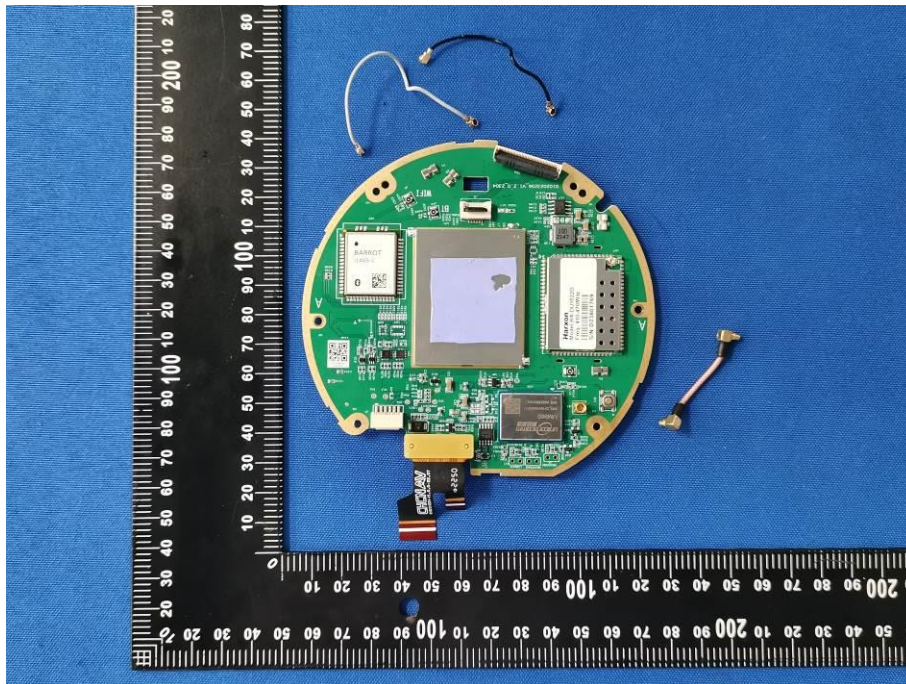
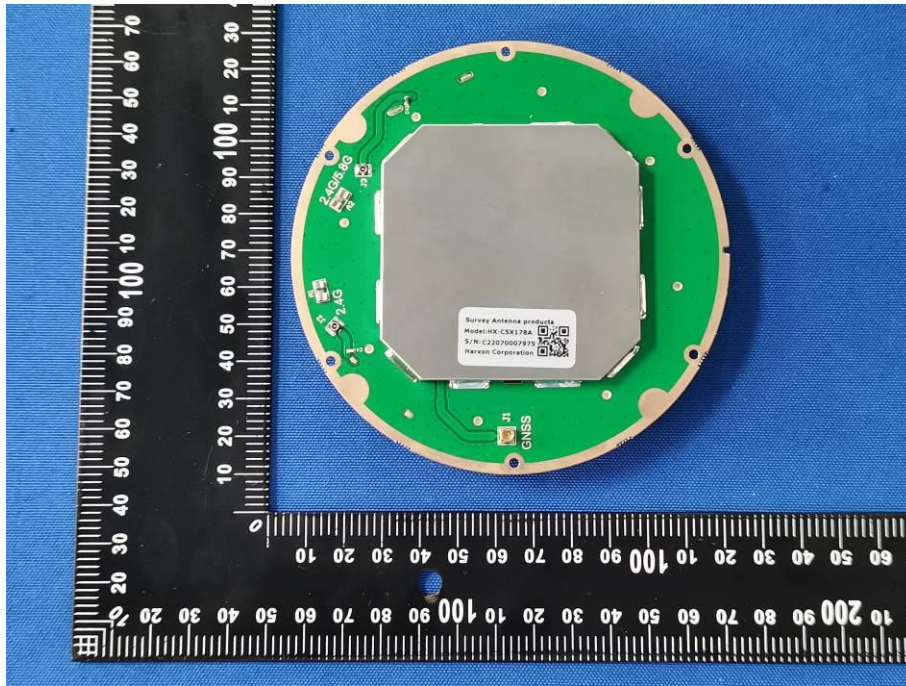


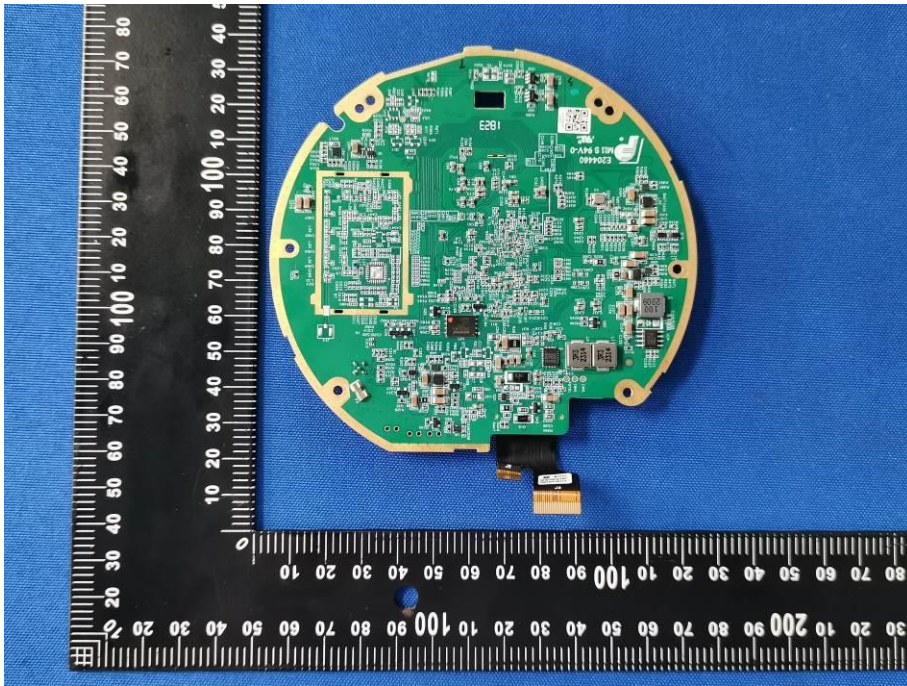
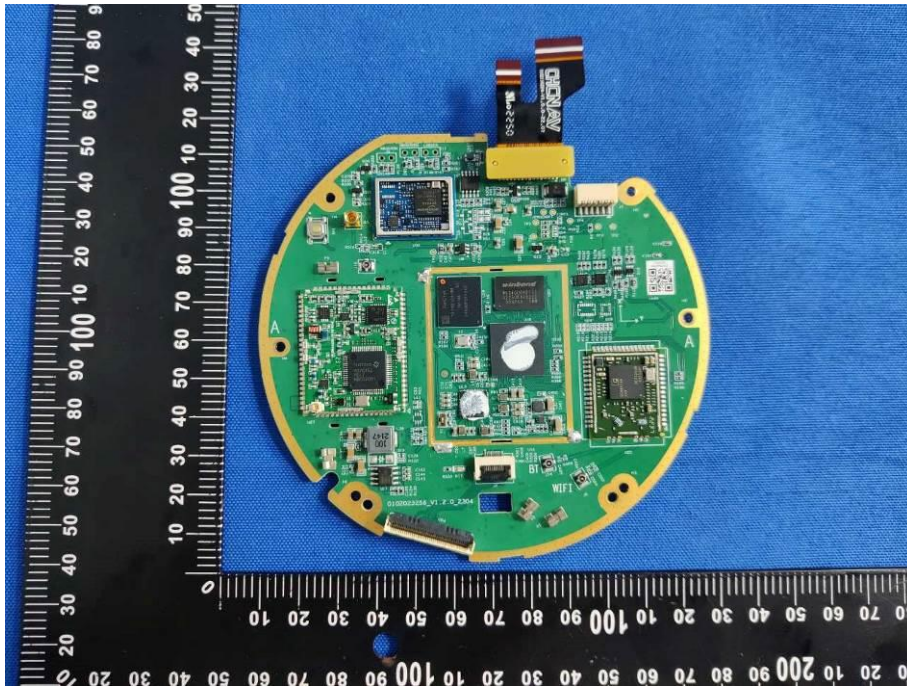




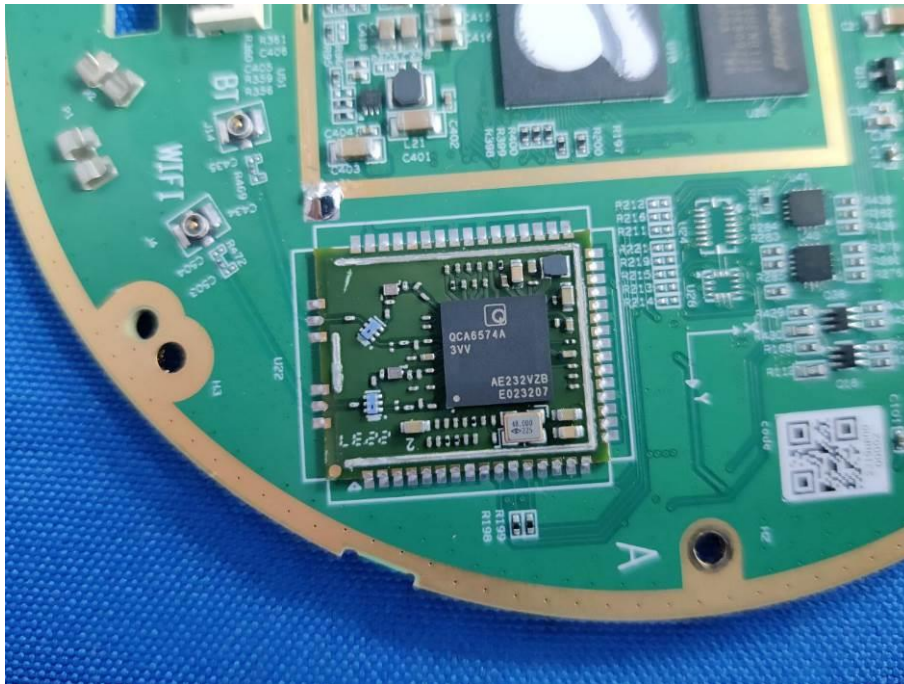


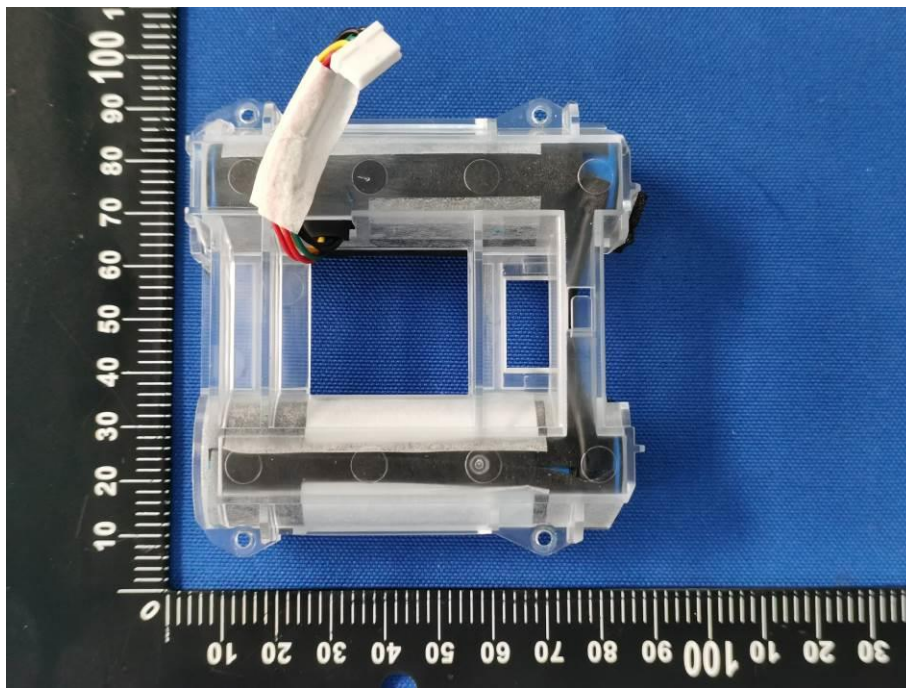


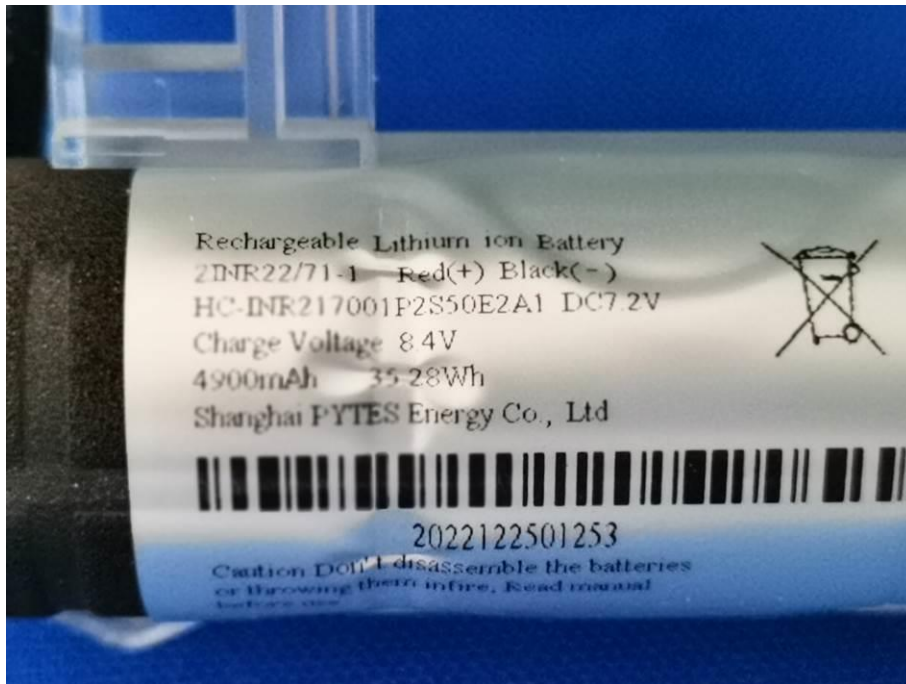












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