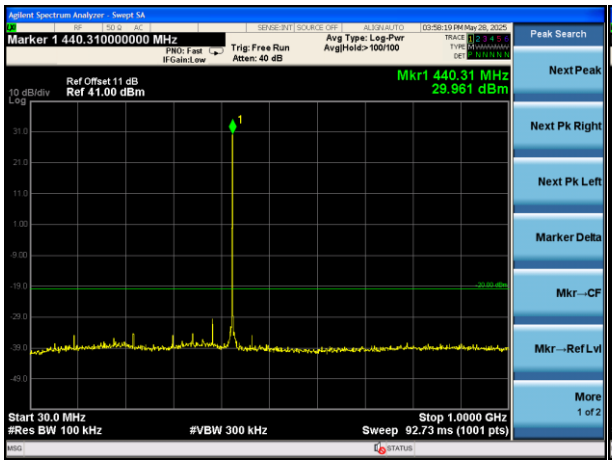
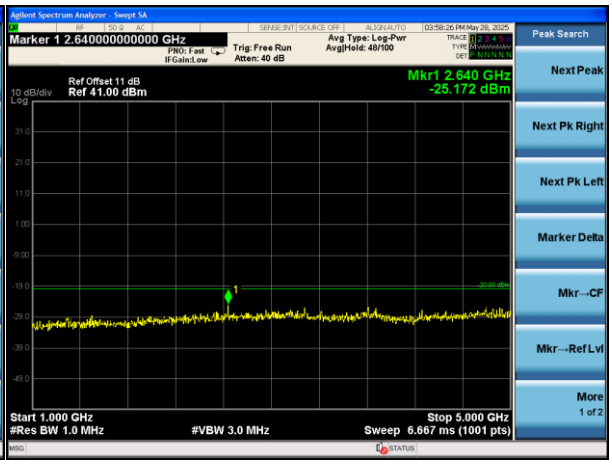
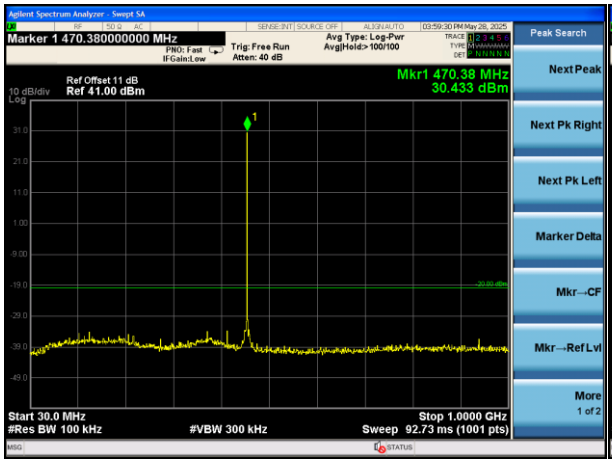
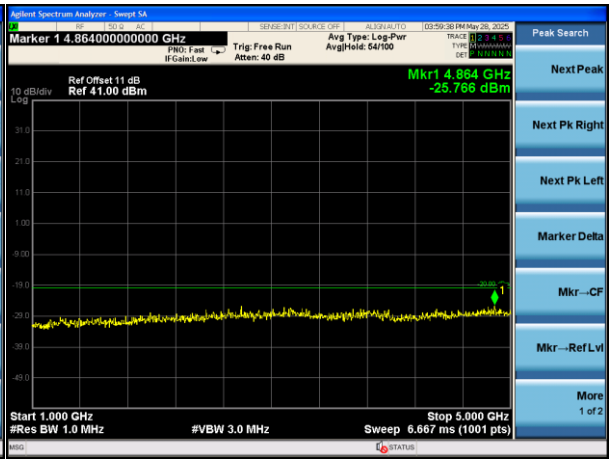
Mid: 440.000MHz





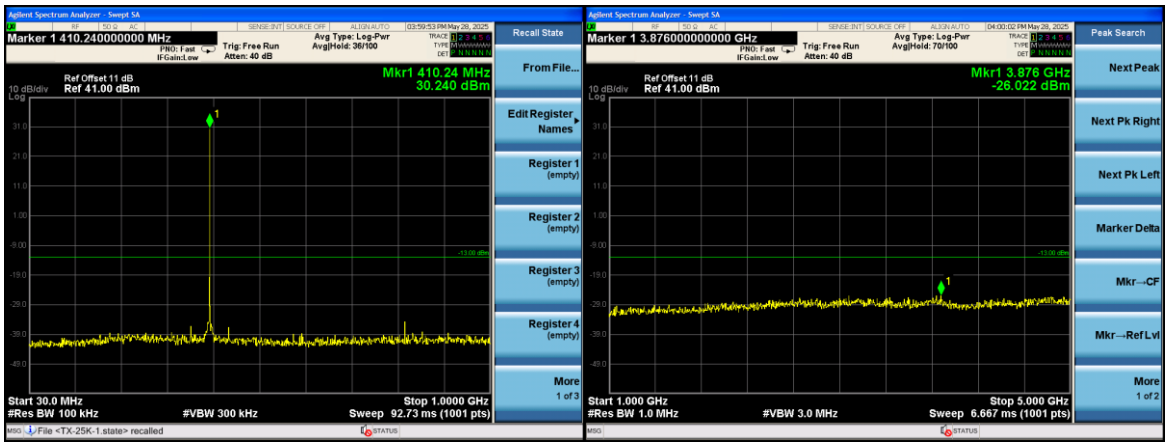
High: 469.950MHz



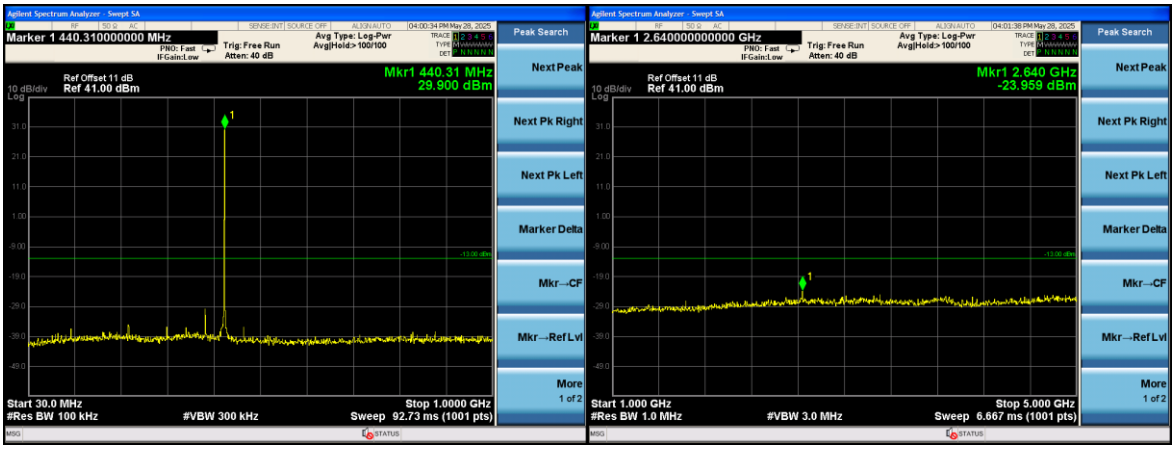


GMSK 25KHz Channel Spacing:

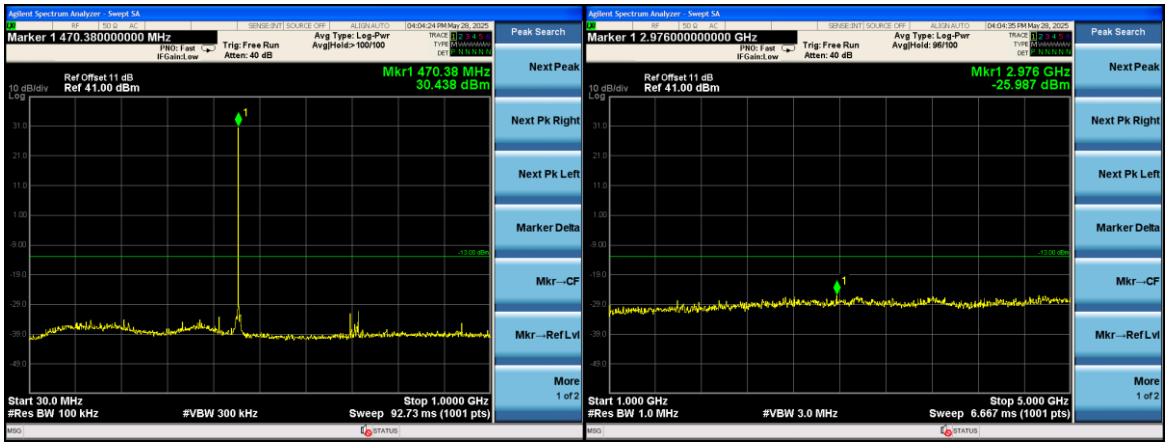
Low: 410.050MHz



Mid: 440.000MHz



High: 469.950MHz

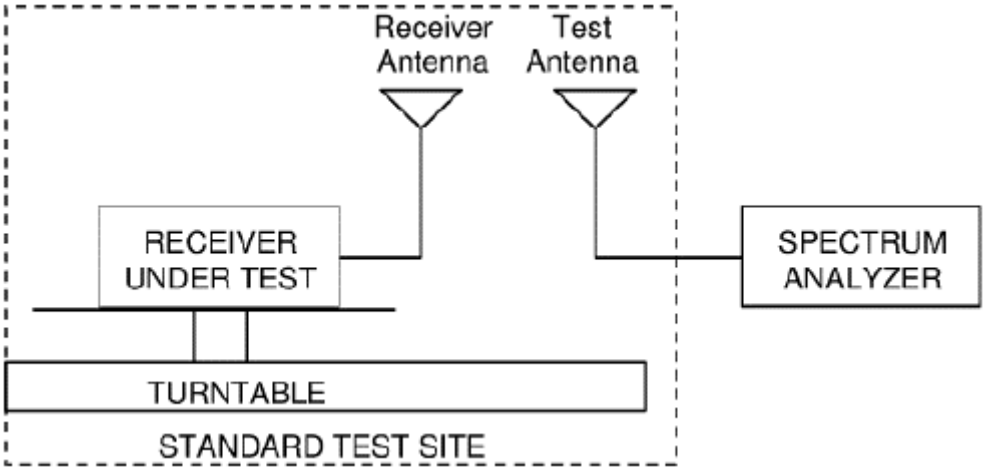


6. Radiated Spurious Emission

6.1. Test equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal Due To
Horn Antenna	SCHWARZBECK	BBHA 9120 D	Aa-EE076	2023/08/19	2025/08/18
Bilog Antenna	SCHWARZBECK	VULB 9168	Aa-EE001	2023/08/28	2025/08/27
Amplifier	SKET	LNPA_0118G-45	Aa-EE087	2024/08/08	2025/08/07
Horn Antenna	SCHWARZBECK	BBHA 9170	Aa-EE077	2023/08/19	2025/08/18
Test Receiver	ROHDE&SCHWARZ	ESR	Aa-EE048	2024/08/08	2025/08/07
Spectrum analyzer	ROHDE&SCHWARZ	FSU	Aa-EE075	2024/08/08	2025/08/07
Loop Antenna	SCHWARZBECK	FMZB 1519B	Aa-EE074	2023/08/19	2025/08/18

6.2. Block diagram of test setup



6.3. Limits

For equipment using 25 kHz channel spacing, on any frequency removed from the center of the authorized bandwidth by more than 250 percent of the authorized bandwidth: At least 43 + 10log (P) dB.
For equipment using 12.5 kHz channel spacing, on any frequency removed from the center of The authorized bandwidth by a displacement frequency (fd in kHz) of more than 12.5 kHz: At least 50 + 10 log(P) dB or 70 dB, whichever is the lesser attenuation.
For equipment using 6.25 kHz channel spacing, On any frequency removed from the center of the authorized bandwidth by more than 4.6 kHz: At least 55 + 10 log (P) or 65 dB, whichever is the lesser attenuation.

6.4. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	Description	other
/	/	/	/	/

6.5. Test procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.
The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT .The test was performed by placing the EUT on 3-orthogonal axis.
The frequency range up to teeth harmonic of the fundamental frequency was investigated.
Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.
Spurious emissions in dB =10, 1g (TXpwr in Watts/0.001)-the absolute level

6.6. Test result

Test Site: Chamber 1#(RSE)	Test Date: 2025/05/21--2025/05/21
Condition: 24.1°C,56%RH,101kPa	Test Engineer: Yannis Wen
Memo: /	

EUT Name: Geodetic GNSS Receiver	EUT Model: i76
Sample No.: A2503163-S0003	Test Mode: All modes
Power supply: DC 7.2V from battery	Memo: /

/

6.7. Test data

GMSK:
Test Mode: Low: 410.050MHz, Channel Spacing 12.5KHz

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
151.388	-91.218	V	0.24	31.35	-60.108	-20	-40.108
361.671	-89.395	V	0.26	31.34	-58.315	-20	-38.315
674.464	-98.666	V	0.42	31.24	-67.846	-20	-47.846
863.099	-97.989	V	0.58	30.71	-67.859	-20	-47.859
1263.509	-83.855	V	1.23	26.38	-58.705	-20	-38.705
3862.352	-81.550	V	1.68	25.47	-57.760	-20	-37.760
285.594	-92.371	H	0.43	31.24	-61.561	-20	-41.561
400.806	-91.081	H	0.45	30.68	-60.851	-20	-40.851
480.824	-98.270	H	0.64	30.85	-68.060	-20	-48.060
673.829	-100.344	H	0.79	31.12	-70.014	-20	-50.014
1370.436	-82.563	H	1.29	26.12	-57.733	-20	-37.733
3259.813	-79.511	H	1.62	25.41	-55.721	-20	-35.721

Test Mode: Mid: 440.000MHz, Channel Spacing 12.5KHz

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
153.961	-89.012	V	0.24	31.35	-57.902	-20	-37.902
362.588	-95.017	V	0.26	31.34	-63.937	-20	-43.937
668.918	-98.186	V	0.42	31.24	-67.366	-20	-47.366
863.270	-98.357	V	0.58	30.71	-68.227	-20	-48.227
1258.616	-89.229	V	1.23	26.38	-64.079	-20	-44.079
3859.698	-82.962	V	1.68	25.47	-59.172	-20	-39.172
289.073	-101.918	H	0.43	31.24	-71.108	-20	-51.108
397.839	-99.152	H	0.45	30.68	-68.922	-20	-48.922
477.652	-98.922	H	0.64	30.85	-68.712	-20	-48.712
684.328	-99.573	H	0.79	31.12	-69.243	-20	-49.243
1368.133	-84.155	H	1.29	26.12	-59.325	-20	-39.325
3262.627	-79.728	H	1.62	25.41	-55.938	-20	-35.938

Test Mode: High: 469.950MHz, Channel Spacing 12.5KHz

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
151.185	-93.670	V	0.24	31.35	-62.560	-20	-42.560
363.921	-94.676	V	0.26	31.34	-63.596	-20	-43.596
670.958	-96.536	V	0.42	31.24	-65.716	-20	-45.716
866.957	-97.531	V	0.58	30.71	-67.401	-20	-47.401
1259.555	-84.669	V	1.23	26.38	-59.519	-20	-39.519
3859.685	-82.246	V	1.68	25.47	-58.456	-20	-38.456
290.399	-97.640	H	0.43	31.24	-66.830	-20	-46.830
405.078	-92.964	H	0.45	30.68	-62.734	-20	-42.734
475.167	-97.406	H	0.64	30.85	-67.196	-20	-47.196
677.427	-99.347	H	0.79	31.12	-69.017	-20	-49.017
1373.413	-84.807	H	1.29	26.12	-59.977	-20	-39.977
3263.826	-80.891	H	1.62	25.41	-57.101	-20	-37.101

Test Mode: Low: 410.050MHz, Channel Spacing 25KHz

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
147.585	-96.136	V	0.24	31.35	-65.026	-13	-52.026
358.405	-92.651	V	0.26	31.34	-61.571	-13	-48.571
675.162	-91.118	V	0.42	31.24	-60.298	-13	-47.298
864.848	-91.451	V	0.58	30.71	-61.321	-13	-48.321
1261.577	-83.136	V	1.23	26.38	-57.986	-13	-44.986
3858.768	-81.806	V	1.68	25.47	-58.016	-13	-45.016
286.535	-91.105	H	0.43	31.24	-60.295	-13	-47.295
403.456	-99.012	H	0.45	30.68	-68.782	-13	-55.782
474.225	-96.635	H	0.64	30.85	-66.425	-13	-53.425
676.593	-96.155	H	0.79	31.12	-65.825	-13	-52.825
1373.076	-82.562	H	1.29	26.12	-57.732	-13	-44.732
3258.189	-78.266	H	1.62	25.41	-54.476	-13	-41.476

Test Mode; Mid: 440.000MHz, Channel Spacing 25KHz

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
160.001	-97.377	V	0.24	31.35	-66.267	-13	-53.267
360.153	-91.923	V	0.26	31.34	-60.843	-13	-47.843
673.482	-94.170	V	0.42	31.24	-63.350	-13	-50.350
858.632	-93.651	V	0.58	30.71	-63.521	-13	-50.521
1263.673	-85.675	V	1.23	26.38	-60.525	-13	-47.525
3863.268	-80.940	V	1.68	25.47	-57.150	-13	-44.150
284.280	-94.552	H	0.43	31.24	-63.742	-13	-50.742
405.445	-98.180	H	0.45	30.68	-67.950	-13	-54.950
475.615	-96.984	H	0.64	30.85	-66.774	-13	-53.774
685.013	-94.226	H	0.79	31.12	-63.896	-13	-50.896
1370.776	-85.688	H	1.29	26.12	-60.858	-13	-47.858
3261.978	-80.915	H	1.62	25.41	-57.125	-13	-42.260

Test Mode: High: 469.950MHz, Channel Spacing 25KHz

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
151.019	-96.591	V	0.24	31.35	-65.481	-13	-52.481
361.765	-95.057	V	0.26	31.34	-63.977	-13	-50.977
669.655	-96.101	V	0.42	31.24	-65.281	-13	-52.281
864.358	-92.151	V	0.58	30.71	-62.021	-13	-49.021
1256.222	-81.308	V	1.23	26.38	-56.158	-13	-43.158
3858.032	-80.464	V	1.68	25.47	-56.674	-13	-43.674
289.686	-93.071	H	0.43	31.24	-62.261	-13	-49.261
399.227	-94.170	H	0.45	30.68	-63.940	-13	-50.940
473.187	-92.945	H	0.64	30.85	-62.735	-13	-49.735
679.804	-102.354	H	0.79	31.12	-72.024	-13	-59.024
1372.089	-83.855	H	1.29	26.12	-59.025	-13	-46.025
3262.970	-80.384	H	1.62	25.41	-56.594	-13	-43.594

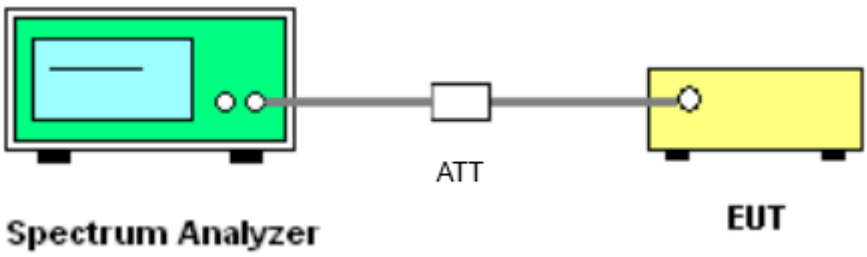
7. Transient Frequency Behavior

7.1. Test equipment

SHENZHEN STS TEST SERVICES CO., LTD

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
1	Temperature & Humidity	SW-108	SuWei	N/A	2025.02.24	2026.02.23
2	Universal Radio Communication Tester	R&S	CMU200	119907	2025.02.22	2026.02.21
3	MXG Vector Signal Generator	Keysight	N5182B	MY57301448	2024.09.23	2025.09.22
4	Signal Analyzer	Keysight	N9020A	MY52440124	2025.02.22	2026.02.21
5	Intercom comprehensive tester	HP	8920A	348A05658	2025.02.22	2026.02.21
6	Temperature& Humidity test chamber	Safety test	AG80L	171200018	2025.02.22	2026.02.21
7	Attenuator	HP	8494B	DC-18G	2025.02.25	2026.02.24
8	AC Power Source	APC	KDF-11010G	F214050035	N/A	N/A
9	DC Power Supply	Agilent	E3642A	MY40002025	N/A	N/A

7.2. Block diagram of test setup



7.3. Limits

Channel Bandwidth(kHz)	Time Inter'vals (Notes 1, 2)	Maximum Frequency Difference (kHz)	Transient Duration Limit (ms)
		138-174MHz	406.1-512MHz
25	+25	5	10
	+12.5	20	25
	+25	5	10
12.5	+12.5	5	10
	±6.25	20	25
	+12.5	5	10
6.25	+6.25	5	10

	+3.125	20	25
	+6.25	5	10

7.4. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	Description	other
/	/	/	/	/

7.5. Test procedure

The EUT was set in the climate chamber and connected to an external DC power supply and AC power supply. The RF output was directly connected to Oscilloscope. The coupling loss of the additional cables was recorded and taken in account for all the measurements. The result was recorded.

7.6. Test result

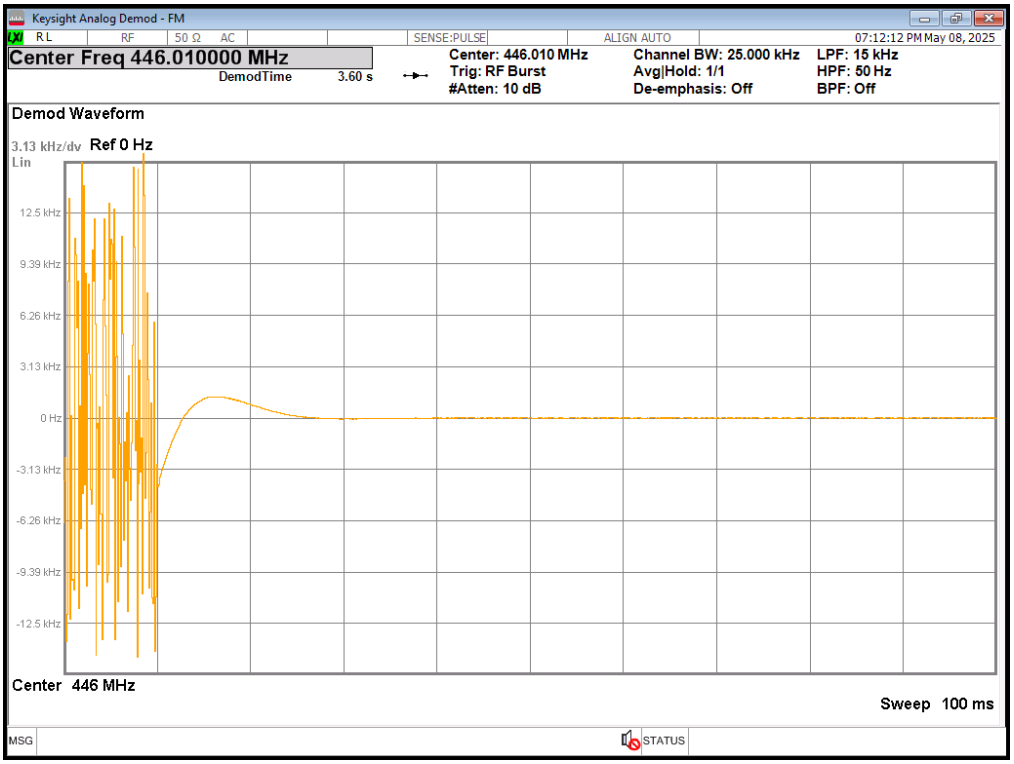
Test Site: STS RF Laboratory	Test Date: 2025/05/08--2025/05/08
Condition: 24.1°C,56%RH,101kPa	Test Engineer: Yannis Wen
Memo: Only show the test data of the worst Channel in this report.	

EUT Name: Geodetic GNSS Receiver	EUT Model: i76
Sample No.: A2503163-S0003	Test Mode: GMSK+CS25KHz+TX
Power supply: DC 7.2V from battery	Memo: /

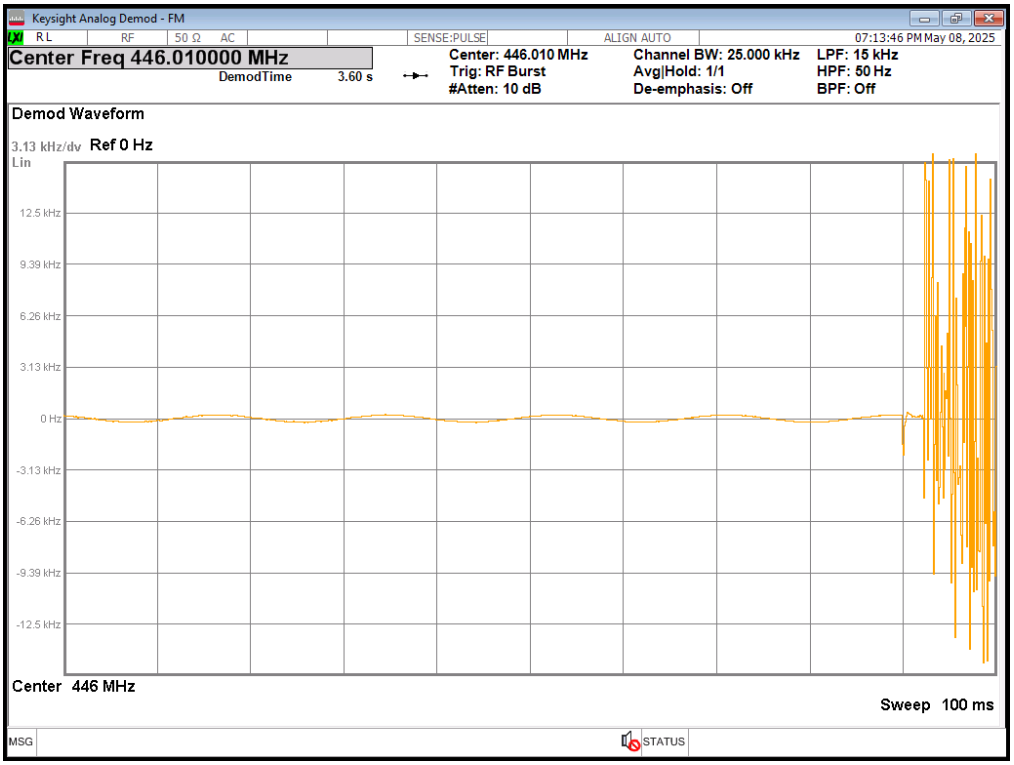
7.7. Test data

Test Plots for channel spacing 12.5KHz, EUT power setting: Maximum

Power On

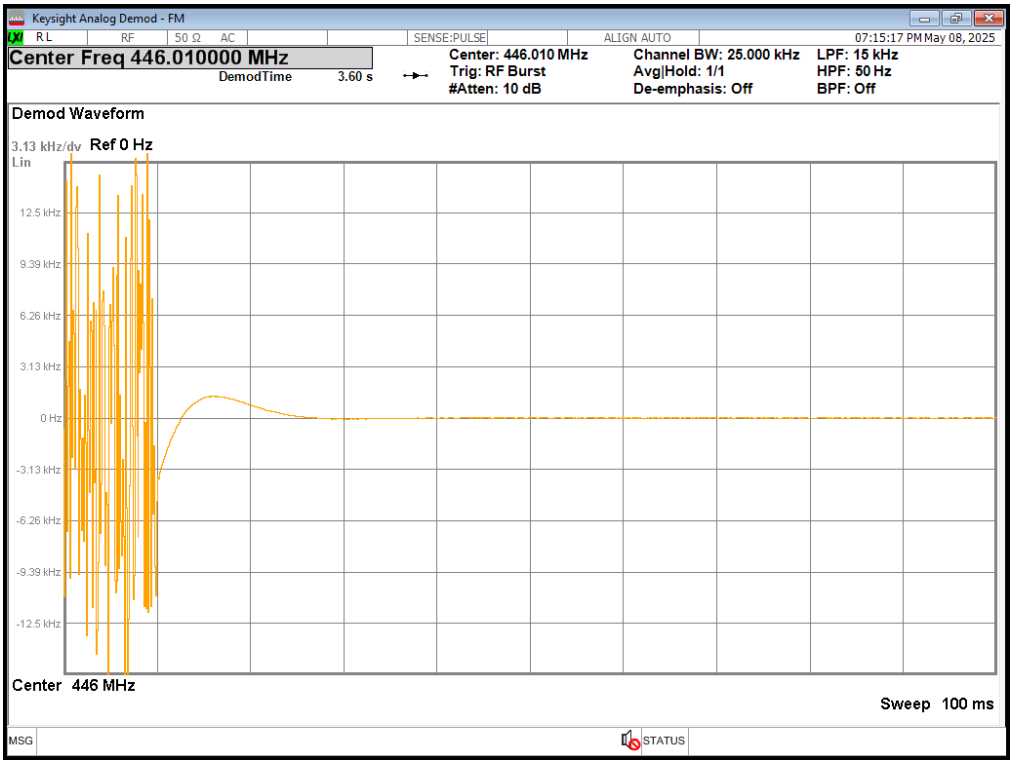


Power Off

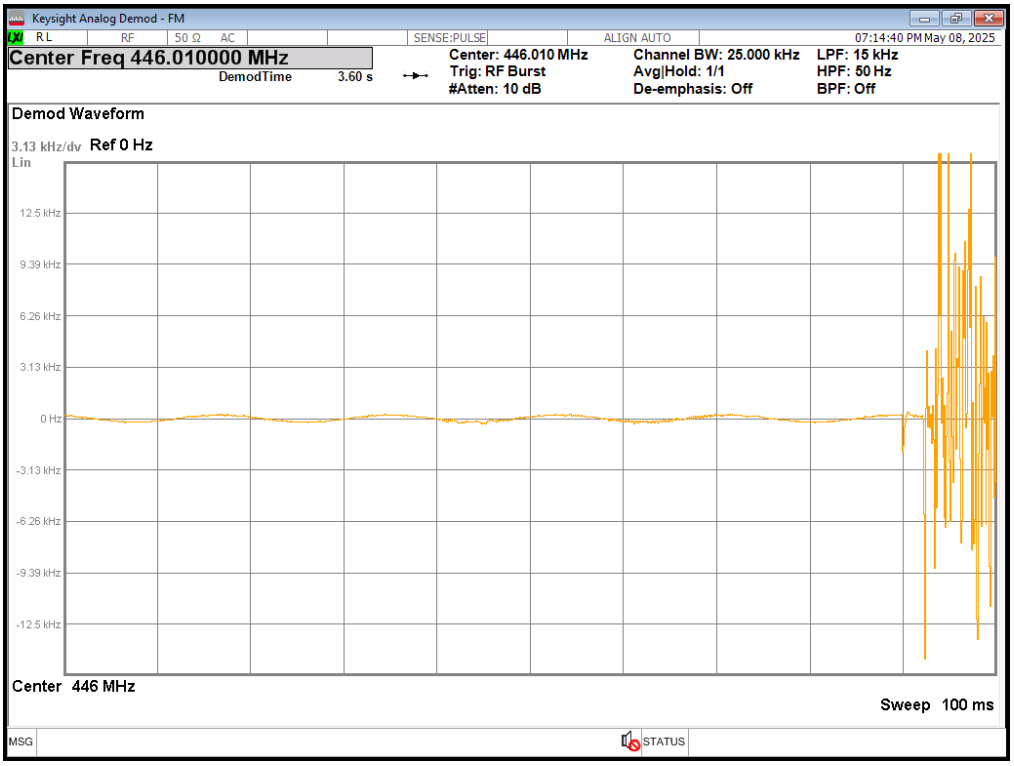


Test Plots for channel spacing 25KHz, EUT power setting: Maximum

Power On



Power Off

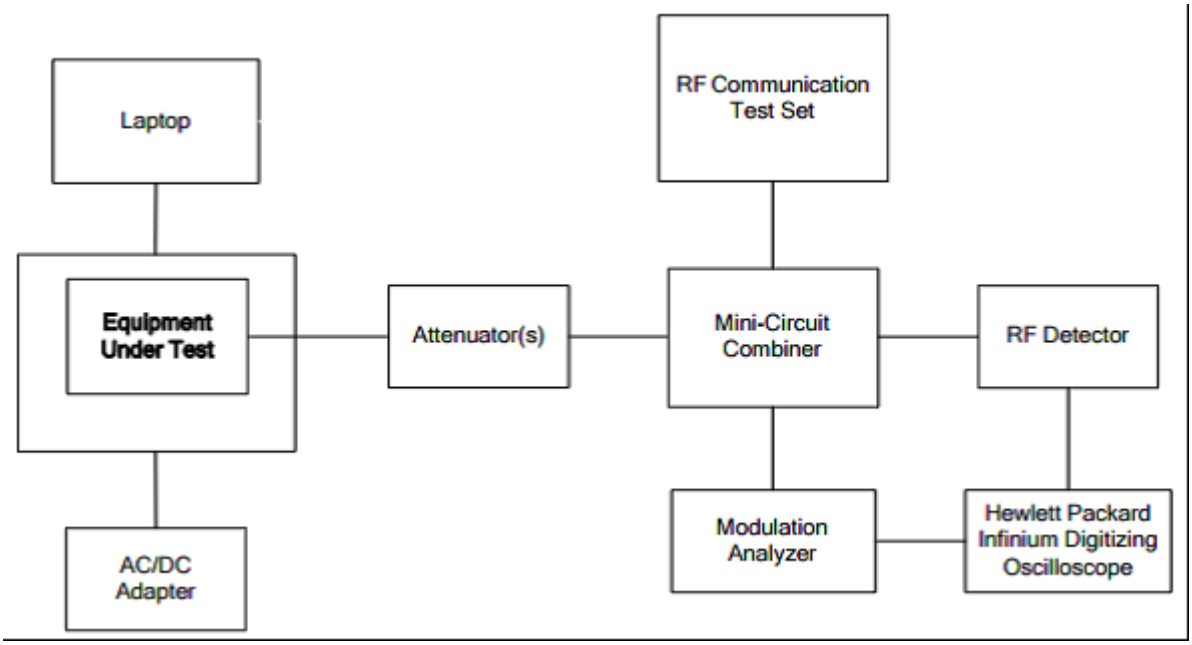

Keysight Analog Demod - FM
RL
RF
50 Ω AC
SENSE:PULSE
ALIGN AUTO
07:14:40 PM May 08, 2025
Center Freq 446.010000 MHz
DemodTime 3.60 s
Center: 446.010 MHz
Trig: RF Burst
#Atten: 10 dB
Channel BW: 25.000 kHz
Avg|Hold: 1/1
De-emphasis: Off
LPF: 15 kHz
HPF: 50 Hz
BPF: Off
Demod Waveform
3.13 kHz/dv Ref 0 Hz
Lin
12.5 kHz
9.39 kHz
6.26 kHz
3.13 kHz
0 Hz
-3.13 kHz
-6.26 kHz
-9.39 kHz
-12.5 kHz
Center 446 MHz
Sweep 100 ms
MSG
STATUS

8. Behavior Frequency Stability

8.1. Test equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal Due To
Power Sensor	DARE	RPR3006W	Aa-EE071	2024/08/08	2025/08/07
Spectrum analyzer	ROHDE&SCHWARZ	FSV40-N	Aa-EE081	2024/08/08	2025/08/07
Power Sensor	Agilent	E9300A	Aa-EE046	2024/08/08	2025/08/07
Power Sensor	DARE	RPR3006W	Aa-EE070	2024/08/08	2025/08/07
CMW500	ROHDE&SCHWARZ	CMW500	Aa-EE073	2024/08/08	2025/08/07
Signal Analyzer	Agilent	N9020A	Aa-EE039	2024/08/08	2025/08/07
Vector Signal Generator	Agilent	N5182A	Aa-EE040	2024/08/08	2025/08/07

8.2. Block diagram of test setup



8.3. Limits

Please refer section FCC Part 90.213

8.4. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	Description	other
/	/	/	/	/

8.5. Test procedure

Method of Measurement:
After temperature stabilization (approx. 20 min for each stage), the frequency for the lower, the middle and the highest frequency range was recorded. For Frequency stability Vs. Voltage the EUT

was connected to a DC power supply or AC power supply and the voltage was adjusted in the required ranges.

8.6. Test result

Test Site: RF Laboratory	Test Date: 2025/05/30--2025/05/30
Condition: 24.2°C,56%RH,101kPa	Test Engineer: Yannis Wen
Memo: /	

EUT Name: Geodetic GNSS Receiver	EUT Model: i76
Sample No.: A2503163-S0003	Test Mode: All modes
Power supply: DC 7.2V from battery	Memo: /

8.7. Test data

Conclusion: PASS			
Mode	Voltage (V)	Frequency error (Hz)	frequency error (ppm)
Middle Channel 12.5KHz Channel Spacing	6.12	16.04	0.036
	6.48	-2.74	-0.006
	6.84	-7.84	-0.018
	7.2	16.91	0.038
	7.56	20.48	0.047
	7.92	8.14	0.019
	8.82	8.77	0.020
Limit	2.5ppm		
Middle Channel 25KHz Channel Spacing	6.12	3.25	0.007
	6.48	17.38	0.039
	6.84	9.67	0.022
	7.2	28.31	0.064
	7.56	27.89	0.063
	7.92	-9.26	-0.021
	8.82	-5.96	-0.014
Limit	5ppm		

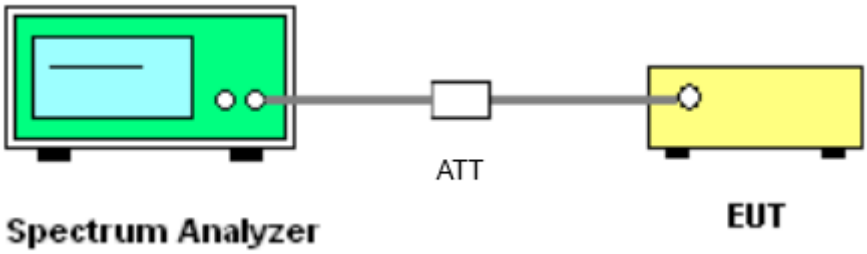
Mode	Temperature (℃)	Frequency error (Hz)	frequency error (ppm)
Middle Channel 12.5KHz Channel Spacing	-20	2.85	0.006
	-10	-3.01	-0.007
	0	8.98	0.020
	10	26.53	0.060
	20	13.59	0.031
	30	18.48	0.042
	40	5.73	0.013
	50	24.24	0.055
Limit	2.5ppm		
Middle Channel 25KHz Channel Spacing	-20	23.95	0.054
	-10	8.49	0.019
	0	-6.54	-0.015
	10	2.64	0.006
	20	6.13	0.014
	30	4.13	0.009
	40	-3.52	-0.008
	50	29.07	0.066
Limit	5ppm		

9. Adjacent Channel Power

9.1. Test equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal Due To
Power Sensor	DARE	RPR3006W	Aa-EE070	2024/08/08	2025/08/07
Power Sensor	DARE	RPR3006W	Aa-EE071	2024/08/08	2025/08/07
Signal Analyzer	Agilent	N9020A	Aa-EE039	2024/08/08	2025/08/07
Spectrum analyzer	ROHDE&SCHWARZ	FSV40-N	Aa-EE081	2024/08/08	2025/08/07
Power Sensor	Agilent	E9300A	Aa-EE046	2024/08/08	2025/08/07
Vector Signal Generator	Agilent	N5182A	Aa-EE040	2024/08/08	2025/08/07
CMW500	ROHDE&SCHWARZ	CMW500	Aa-EE073	2024/08/08	2025/08/07

9.2. Block diagram of test setup



9.3. Limits

Please refer section FCC Part 90.221

9.4. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	Description	other
/	/	/	/	/

9.5. Test procedure

The resolution bandwidth of the spectrum analyzer was set at 100 Hz and the spectrum was recorded in the Frequency band 0Kz from the wanted frequency

9.6. Test result

Test Site: RF Laboratory	Test Date: 2025/05/26--2025/05/28
Condition: 24.2°C,56%RH,101kPa	Test Engineer: Yannis Wen
Memo: /	

EUT Name: Geodetic GNSS Receiver	EUT Model: i76
Sample No.: A2503163-S0003	Test Mode: All modes
Power supply: DC 7.2V from battery	Memo: /

/

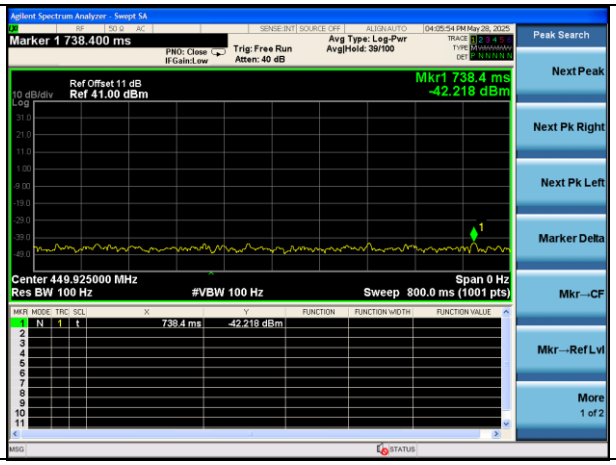
9.7. Test data

GMSK 25KHz spacing 450MHz-470MHz

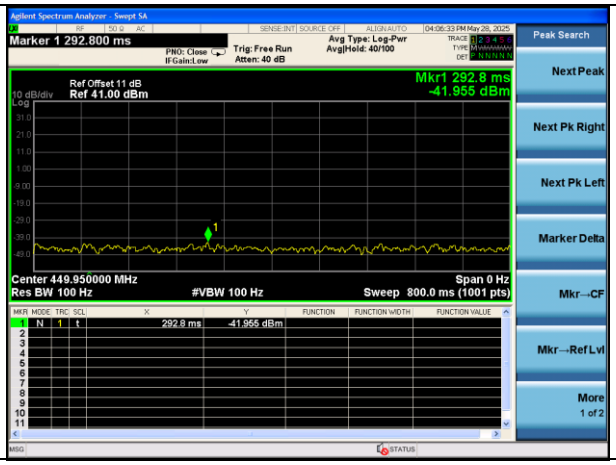
Carrier frequency (MHz)	Test Frequency (MHz)	Test Value (dBm)	Limit (dBm)	Result
450.000	449.925	-42.218	44-70=-26	PASS
	449.95	-41.955	44-70=-26	PASS
	449.975	-40.253	44-60=-16	PASS
	450.025	-41.478	44-60=-16	PASS
	450.05	-41.538	44-70=-26	PASS
	450.075	-39.787	44-70=-26	PASS
469.950	469.875	-41.804	44-70=-26	PASS
	469.900	-42.449	44-70=-26	PASS
	469.925	-40.767	44-60=-16	PASS
	469.975	-41.175	44-60=-16	PASS
	470.000	-40.405	44-70=-26	PASS
	470.025	-40.438	44-70=-26	PASS

GMSK 25KHz spacing 450MHz-470MHz

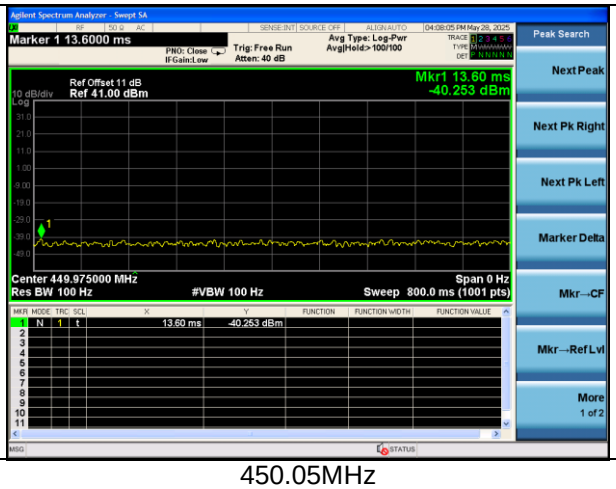
449.925MHz



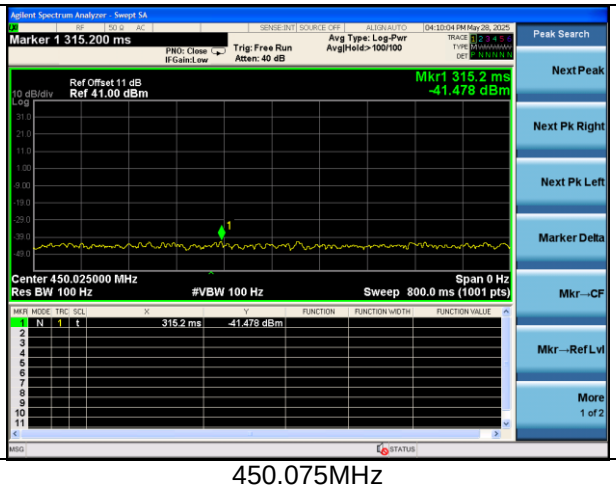
449.95MHz



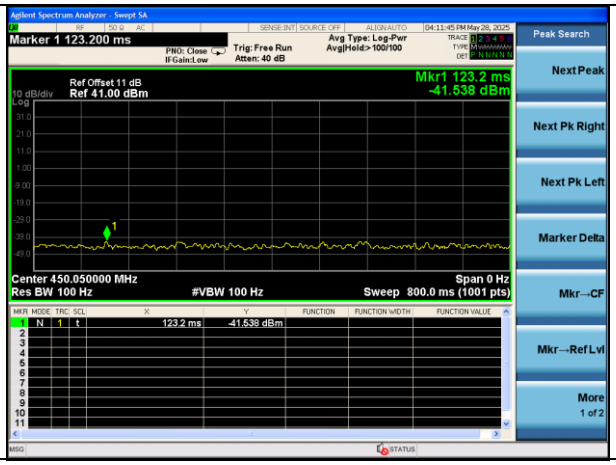
449.975MHz



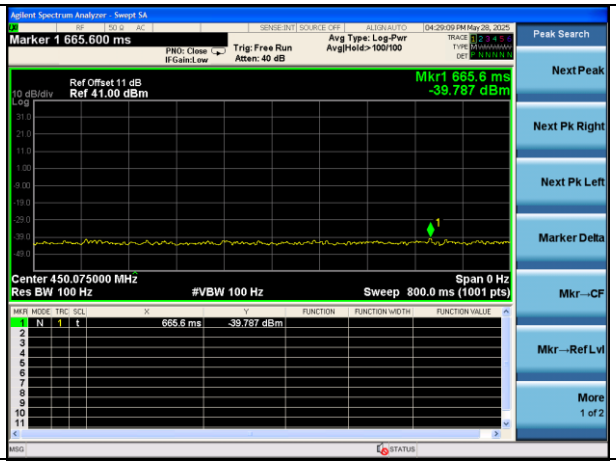
450.025MHz



450.05MHz

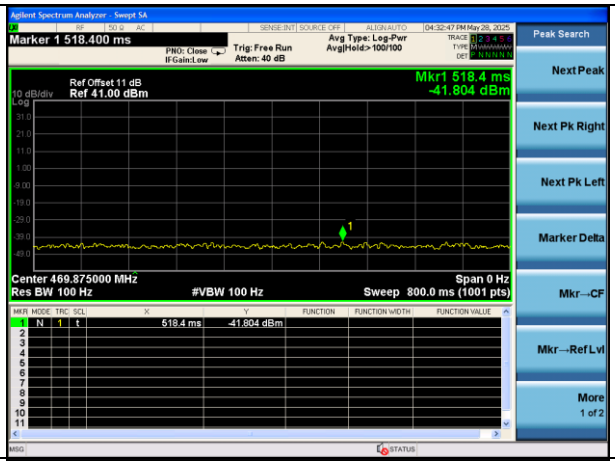


450.075MHz

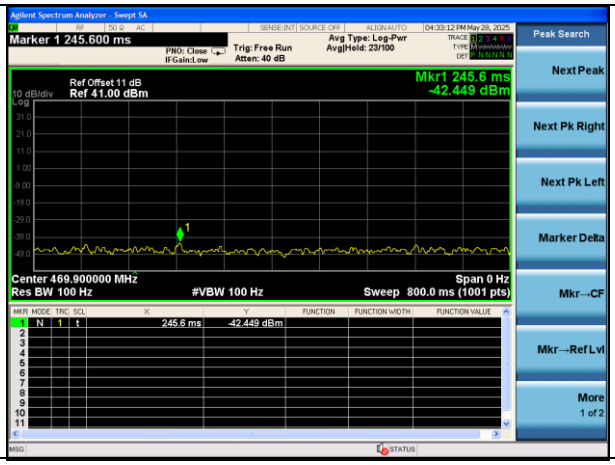


450MHz

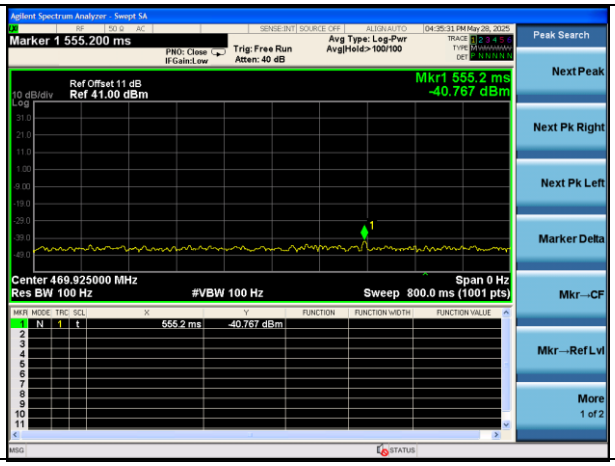
469.875MHz



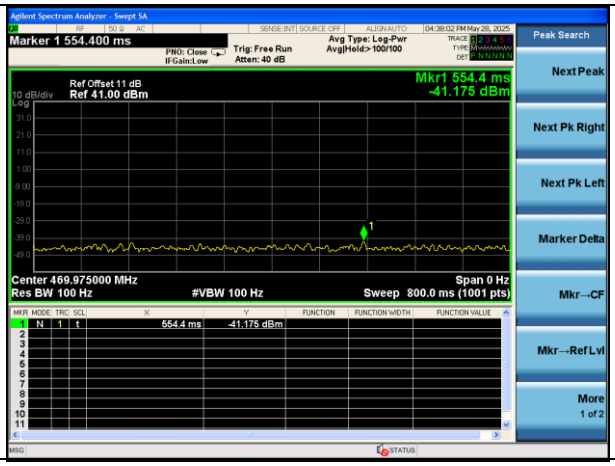
469.9MHz



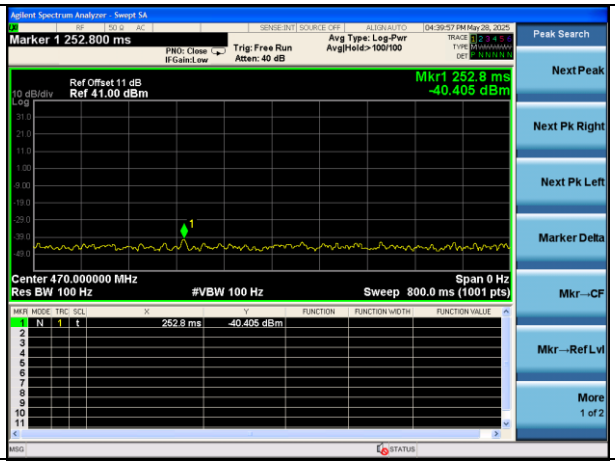
469.925MHz



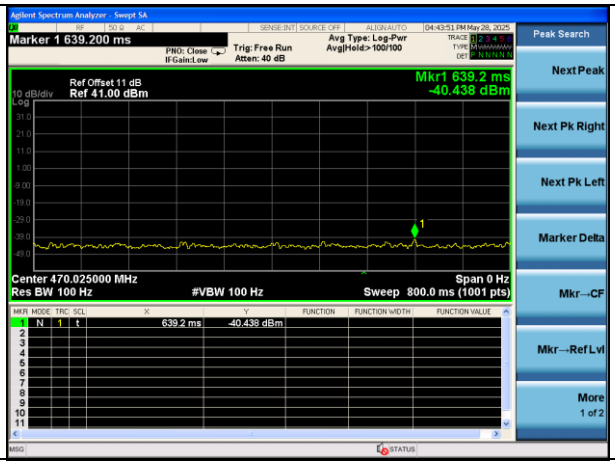
469.975MHz



470.0MHz



470.025MHz



469.95MHz

10. Modulation Characteristic

10.1. Limits

Please refer section FCC Part 90.207

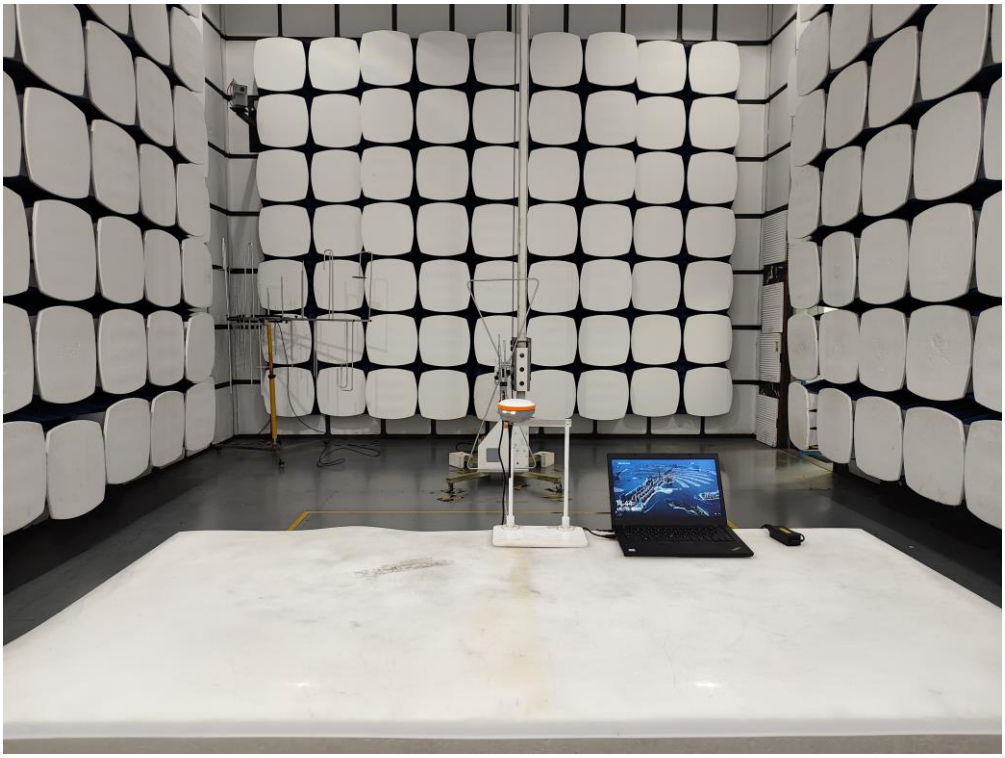
10.2. Assessment procedure

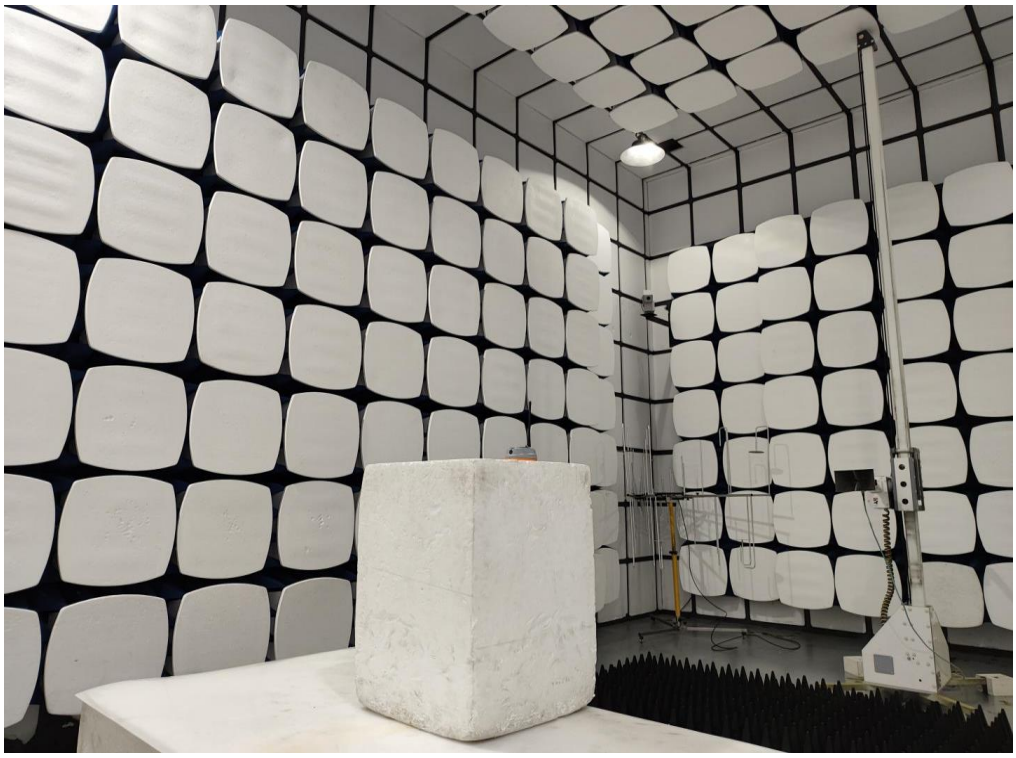
According to 90.207
Unless specified elsewhere in this part, stations will be authorized emissions as provided for in paragraphs (b) through (n) of this section.

10.3. Assess result

According to FCC § 2.1047(d), Part 22, 74, 90 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

11. Test Setup Photograph





12. Photos of the EUT

Please refer to the report A2503163-C03-R01.

----------End Report----------