



FCC TEST REPORT

FCC ID: SY4-A02033

On Behalf of

Shanghai Huace Navigation Technology Ltd.

Geodetic GNSS Receiver

Model No.: i83

Prepared for : Shanghai Huace Navigation Technology Ltd.
Address : Building D, 599 Gaojing Road, Qingpu District, Shanghai, China


Prepared By : Shenzhen Alpha Product Testing Co., Ltd.
Address : Building i, No.2, Lixin Road, Fuyong Street, Bao'an District,
518103, Shenzhen, Guangdong, China

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TEST REPORT DECLARATION

Applicant : Shanghai Huace Navigation Technology Ltd.
Address : Building D, 599 Gaojing Road, Qingpu District, Shanghai, China
Manufacturer : Shanghai Huace Navigation Technology Ltd.
Address : Building D, 599 Gaojing Road, Qingpu District, Shanghai, China
EUT Description : Geodetic GNSS Receiver
(A) Model No. : i83
(B) Trademark : 

Measurement Standard Used:

FCC CFR Title 47 Part 90, FCC CFR Title 47 Part 2

ANSI C63.26: 2015

The device described above is tested by Shenzhen Alpha Product Testing Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 2, Part 90, RSS-119, RSS-Gen limits both conducted and radiated emissions. The test results are contained in this test report and Shenzhen Alpha Product Testing Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After the test, our opinion is that EUT compliance with the requirement of the above standards.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen Alpha Product Testing Co., Ltd.

Tested by (name + signature).....: Lucas Pang
Project Engineer



Approved by (name + signature).....: Simple Guan
Project Manager



Date of issue.....: March 9, 2022

Revision History

Revision	Issue Date	Revisions	Revised By
V0	March 9, 2022	Initial released Issue	Lucas Pang

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results


The EUT have been tested according to the applicable standards as referenced below:

Test Item	Test Requirement	Standards Paragraph	Result
Transmitter Power(Conducted)	FCC PART 90	§90.205	P
Occupied Bandwidth & Emission Mask	FCC PART 90	§90.209, §90.210	P
Spurious Emissions(conducted)	FCC PART 90	§90.210	P
Spurious Emissions(Radiated)	FCC PART 90	§90.210	P
Transient Frequency Behavior	FCC PART 90	§90.213	P
Frequency Stability	FCC PART 90	§90.214	P
Modulation Characteristics - Audio Frequency Response	FCC PART 2 FCC PART 90	§2.1047(a); §90.207	N/A
Modulation Characteristics - Modulation Limiting	FCC PART 2 FCC PART 90	§2.1047(b); §90.207	N/A
<p>Note:</p> <ol style="list-style-type: none"> 1. P is an abbreviation for Pass. 2. F is an abbreviation for Fail. 3. N/A is an abbreviation for Not Applicable. 			

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Description/PMN : Geodetic GNSS Receiver

Trademark : 

Model Number /HVIN(s) : i83

DIFF. : N/A

Test Voltage : DC 5V from adapter, DC 7.2V from battery

UHF

Operation frequency : 410MHz-470MHz

Conducted Power : 0.5W(26.99dBm), 1W(30.00dBm), 2W(33.01dBm)

Bandwidth : 25KHz

Modulation type : GMSK

Antenna Type : External Antenna, Maximum Gain is 4.0dBi

Software version : V1.0.0

Hardware version/FVIN : V1.0.1

Note: All Conducted Power have been tested, and recorded the worst case 2W(33.01dBm) results in this report.

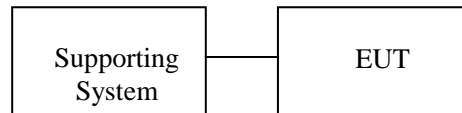
2.2. Accessories of Device (EUT)

Accessories1	:	AC Adapter
Manufacturer	:	EDAC POWER Electronics Co., Ltd
Model	:	EA1012AVRU-050
Ratings	:	Input: 100-240Vac~50/60Hz 1.0A Output: 5.0V=2.4A

2.3. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number	Certification or DOC
/	/	/	/	/	/

2.4. Block Diagram of connection between EUT and simulators



The sample was placed 0.8m & 1.5m for the measurement below & above 1GHz above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

2.5. Test Mode

All modes and data rates and positions were investigated.

Test modes are chosen to be reported as the worst case configuration below:

Test Mode		
Item	Description of operation mode	Note
1	GMSK+BW25KHz+TX	at maximum rated power for transmitter
2	GMSK+BW25KHz+TX	at minimum rated power for transmitter

Note: The worst case modes for all test are the item 1

Description Operation Frequency

QMSK		
Test Channel	BW(KHz)	Frequency(MHz)
Low	25	410.250
Mid	25	456.250
High	25	469.850

2.6.Test Conditions

Items	Required	Actual
Temperature range:	15-35°C	24°C
Humidity range:	25-75%	56%
Pressure range:	86-106kPa	980kPa

2.7.Test Facility

Shenzhen Alpha Product Testing Co., Ltd

Building i, No.2, Lixin Road, Fuyong Street, Bao'an District,
518103, Shenzhen, Guangdong, China

June 21, 2018 File on Federal Communication Commission

Registration Number: 293631

Designation Number: CN1236

July 15, 2019 Certificated by IC

Registration Number: CN0085

2.8.Measurement Uncertainty

(95% confidence levels, k=2)

Item	Uncertainty
Uncertainty for Power point Conducted Emissions Test	2.74dB
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	2.13 dB(Polarize: V)
	2.57dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.77dB(Polarize: V)
	3.80dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	4.16dB(Polarize: H)
	4.13dB(Polarize: V)
Uncertainty for radio frequency	5.4×10^{-8}
Uncertainty for conducted RF Power	0.37dB
Uncertainty for temperature	0.2°C
Uncertainty for humidity	1%
Uncertainty for DC and low frequency voltages	0.06%

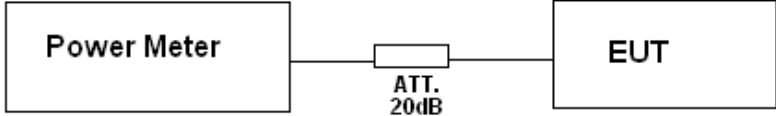
2.9. Test Equipment List

Equipment	Manufacture	Model No.	Serial No.	Last cal.	Cal Interval
9*6*6 anechoic chamber	CHENYU	9*6*6	N/A	2020.09.02	3Year
Spectrum analyzer	ROHDE&SCHWARZ	FSV40-N	102137	2021.08.25	1 Year
Spectrum analyzer	Agilent	N9020A	MY499100060	2021.08.25	1 Year
Receiver	ROHDE&SCHWARZ	ESR	1316.3003K03-102082-Wa	2021.08.25	1 Year
Receiver	R&S	ESCI	101165	2021.08.25	1 Year
Bilog Antenna	Schwarzbeck	VULB 9168	VULB9168-438	2020.04.12	2Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D(1201)	2020.04.12	2Year
Active Loop Antenna	SCHWARZBECK	FMZB 1519B	00059	2021.08.30	2Year
RF Cable	Resenberger	Cable 1	RE1	2021.08.25	1 Year
RF Cable	Resenberger	Cable 2	RE2	2021.08.25	1 Year
RF Cable	Resenberger	Cable 3	CE1	2021.08.25	1 Year
Pre-amplifier	HP	HP8347A	2834A00455	2021.08.25	1 Year
Pre-amplifier	Agilent	8449B	3008A02664	2021.08.25	1 Year
L.I.S.N.#1	Schwarzbeck	NSLK8126	8126-466	2021.08.25	1 Year
L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	101043	2021.08.25	1 Year
Horn Antenna	SCHWARZBECK	BBHA9170	00946	2021.08.30	2 Year
Preamplifier	SKET	LNPA_1840-50	SK2018101801	2021.08.25	1 Year
Power Meter	Agilent	E9300A	MY41496628	2021.08.25	1 Year
Power Sensor	DARE	RPR3006W	15100041SNO91	2021.08.25	1 Year
Temp. & Humid. Chamber	Wei Huang	WHTH-1000-40-880	100631	2021.04.21	1 Year
Switching Mode Power Supply	JUNKE	JK12010S	20140927-6	2021.08.25	1 Year
Adjustable attenuator	MWRFtest	N/A	N/A	N/A	N/A
10dB Attenuator	Mini-Circuits	DC-6G	N/A	N/A	N/A

3. Test Results and Measurement Data

3.1. Transmitter Power (Conducted)

3.1.1. Test Specification

Test Requirement:	Part 90.205
Test Method:	FCC part 2.1046
Limits:	Please refer section FCC Part 90.205 and
Test Setup:	 <pre> graph LR PM[Power Meter] --- ATT[ATT. 20dB] --- EUT[EUT] </pre>
Test Procedure:	a) Connect the equipment as illustrated. b) Turn on the power meter c) Record value
Test Result:	PASS

3.1.2. Test Results

GMSK mode (2W):					
Frequency (MHz)	Maximum Conducted Output Power(Peak) (dBm)	Maximum ERP(dBm)	Stated ERP Power (dBm)	Limit (dBm)	Result
410.125	30.57	32.42	33	33	PASS
410.250	30.62	32.47	33	33	PASS
456.125	30.68	32.53	33	33	PASS
456.250	30.58	32.43	33	33	PASS
469.975	30.54	32.39	33	33	PASS
469.850	30.57	32.42	33	33	PASS

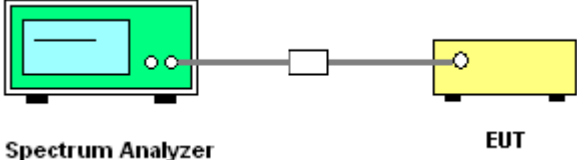
GMSK mode (1W):					
Frequency (MHz)	Maximum Conducted Output Power(Peak) (dBm)	Maximum ERP(dBm)	Stated ERP Power (dBm)	Limit (dBm)	Result
410.125	27.51	29.36	30	33	PASS
410.250	27.52	29.37	30	33	PASS
456.125	27.50	29.35	30	33	PASS
456.250	27.47	29.32	30	33	PASS
469.975	27.55	29.40	30	33	PASS
469.850	27.56	29.41	30	33	PASS

GMSK mode (0.5W):					
Frequency (MHz)	Maximum Conducted Output Power(Peak) (dBm)	Maximum ERP(dBm)	Stated ERP Power (dBm)	Limit (dBm)	Result
410.125	24.49	26.34	27	33	PASS
410.250	24.43	26.28	27	33	PASS
456.125	24.35	26.20	27	33	PASS
456.250	24.47	26.32	27	33	PASS
469.975	24.46	26.31	27	33	PASS
469.850	24.48	26.33	27	33	PASS

Note: 1. $ERP = \text{Maximum Conducted Output Power(Peak)} + \text{Antenna Gain} - 2.15\text{dB}$

3.2. Occupied Bandwidth and Emission Mask

3.2.1. Test Specification

Test Requirement:	FCC Part 90.209, FCC Part 90.21
Test Setup:	 <p>The diagram illustrates the test setup. On the left is a green rectangular box representing the Spectrum Analyzer, with a blue screen and two small circles representing ports. A grey cable connects this box to a small white square, which in turn connects to a yellow rectangular box on the right representing the EUT (Equipment Under Test). Below the green box is the label 'Spectrum Analyzer' and below the yellow box is the label 'EUT'.</p>
Test Procedure:	The resolution bandwidth of the spectrum analyzer was set at 300 Hz and the spectrum was recorded in the Frequency band $\pm 50\text{KHz}$ from the carrier frequency for Occupied Bandwidth, the resolution bandwidth of the spectrum analyzer was set at 100 Hz and the spectrum was recorded in the Frequency band $\pm 100\text{KHz}$ from the carrier frequency for Emission Mask.
Test Result:	PASS

3.2.2. Test data

Occupied Bandwidth:

GMSK 25KHz Channel Spacing:

Channel	Frequency (MHz)	26dB Bandwidth (KHz)	99% Occupied Bandwidth (KHz)	99% Occupied Bandwidth Limit (KHz)	Result
Low	410.250	22.89	19.617	20	PASS
Mid	456.250	22.72	19.887	20	PASS
High	469.850	23.44	19.771	20	PASS

Emission Mask:

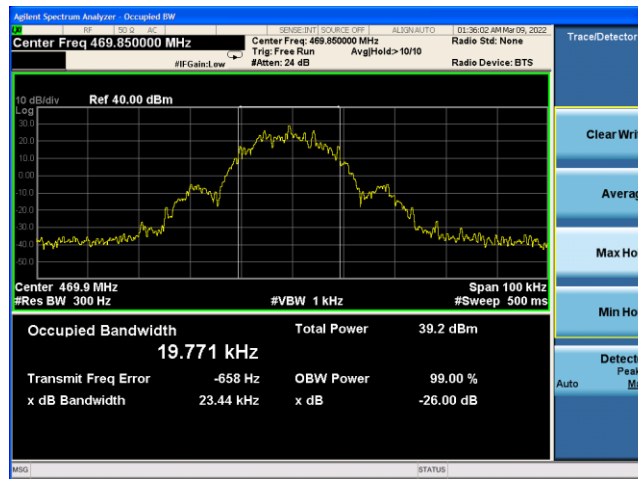
GMSK 25KHz Channel Spacing:

Channel	Frequency (MHz)	Applicable Mask	RBW	Result
Low	410.250	B	300	PASS
Mid	456.250	B	300	PASS
High	469.850	B	300	PASS

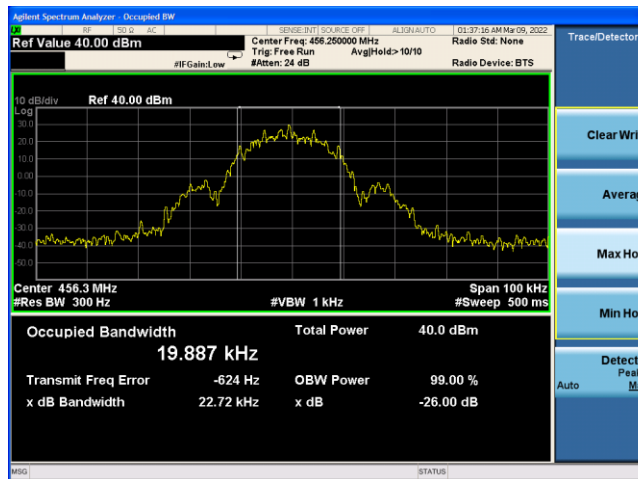
Test plots as follows:

GMSK 25KHz Channel Spacing: Occupied Bandwidth

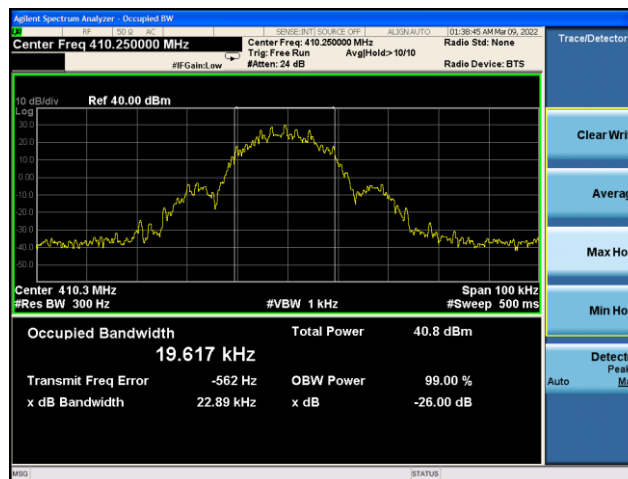
Low: 410.250MHz



Mid: 456.250MHz

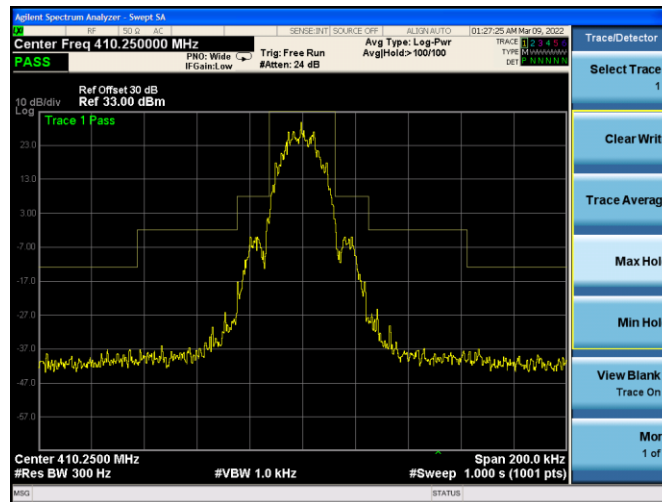


High: 469.850MHz

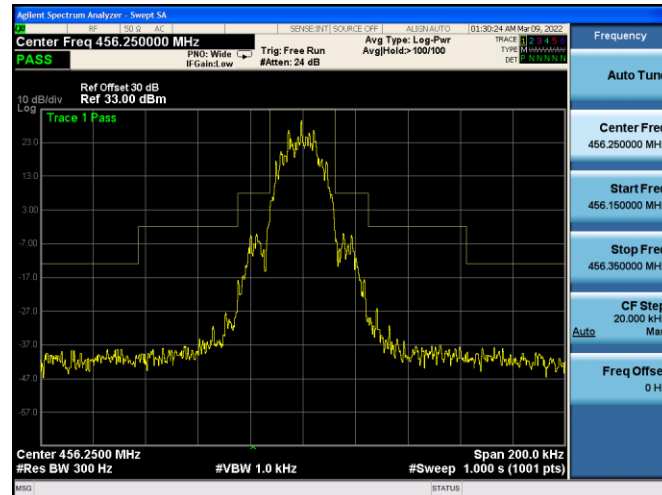


GMSK 25KHz Channel Spacing: Emission Mask

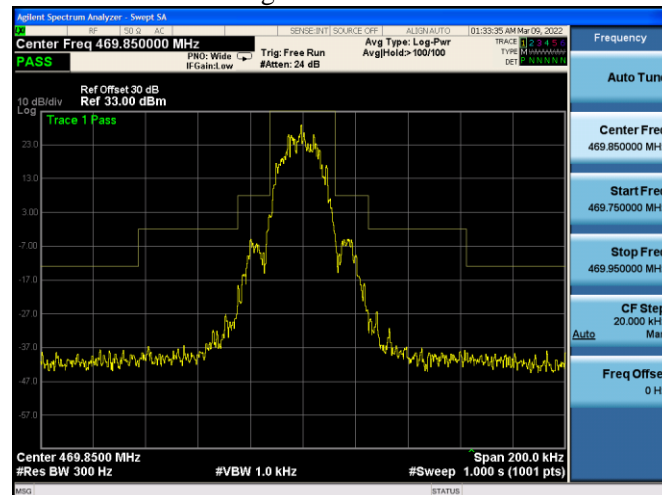
Low: 410.250MHz



Mid: 456.250MHz




High: 469.850MHz



3.3. Spurious Emissions(conducted)

3.3.1.Test Specification

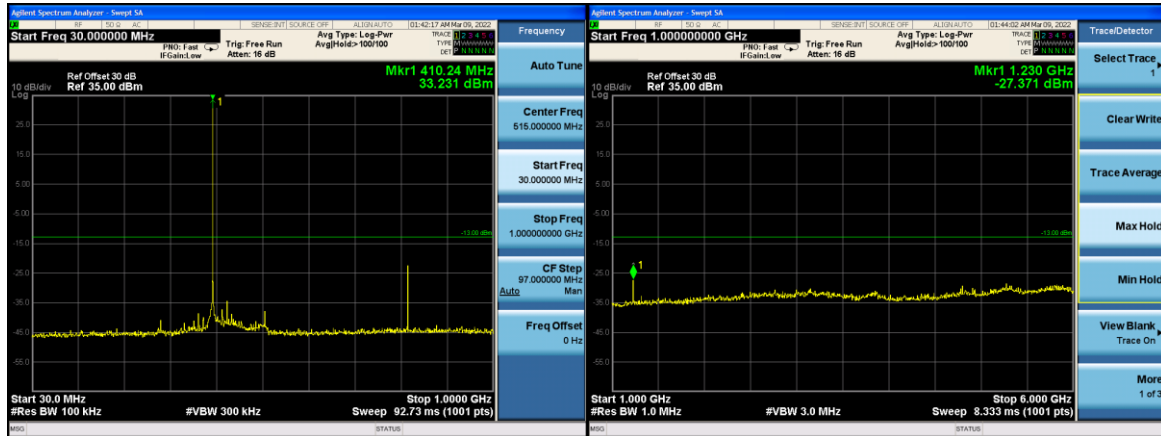
Test Requirement:	FCC Part 90.210
Test Setup:	 <p style="text-align: center;">Spectrum Analyzer EUT</p>
Test Limit:	<p>Modulation Type: GMSK FCC Part 22.359, 74.462, 80.211 and 90.210 and RSS Gen, RSS 119 Issue 12: For 12.5 bandwidth: On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz at least: High: $50 + 10 \log (P_{\text{watts}}) = 50 + 10 \log (3.0) = 54.77 \text{ dB}$ Low: $50 + 10 \log (P_{\text{watts}}) = 50 + 10 \log (1.0) = 50.00 \text{ dB}$ Note: In general, the worst case attenuation requirement shown above was applied. Calculation: Limit (dBm) = EL-50-10log10 (TP) Notes: EL is the emission level of the Output Power expressed in dBm, In this application, the EL is 34.77 dBm for High rated power and 30.00 for lower rated power. High: Limit (dBm) = $34.77 - 50 - 10 \log (3.0) = -20 \text{ dBm}$ Low: Limit (dBm) = $30.00 - 50 - 10 \log (1.0) = -20 \text{ dBm}$ For 25 kHz bandwidth: On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 62.5 kHz at least: High: $43 + 10 \log (P_{\text{watts}}) = 43 + 10 \log (3.0) = 47.77 \text{ dB}$ Low: $43 + 10 \log (P_{\text{watts}}) = 43 + 10 \log (1.0) = 43.00 \text{ dB}$ Note: In general, the worst case attenuation requirement shown above was applied. Calculation: Limit (dBm) = EL-43-10log10 (TP) In this application, the EL is 34.77 dBm for High rated power and 30.00 for lower rated power. High: Limit (dBm) = $34.77 - 43 - 10 \log (3.0) = -13 \text{ dBm}$ Low: Limit (dBm) = $30.00 - 43 - 10 \log (1.0) = -13 \text{ dBm}$ Note: 1. In general, the worst case attenuation requirement shown above was applied. 2. The measurement frequency range from 9 KHz to 5 GHz. 3. *** means that the emission level is too low to be measured or at least 20 dB down than the limit. 4. ERP for below 1GHz and EIRP above 1GHz.</p>
Test Result:	PASS

3.3.2.Test data

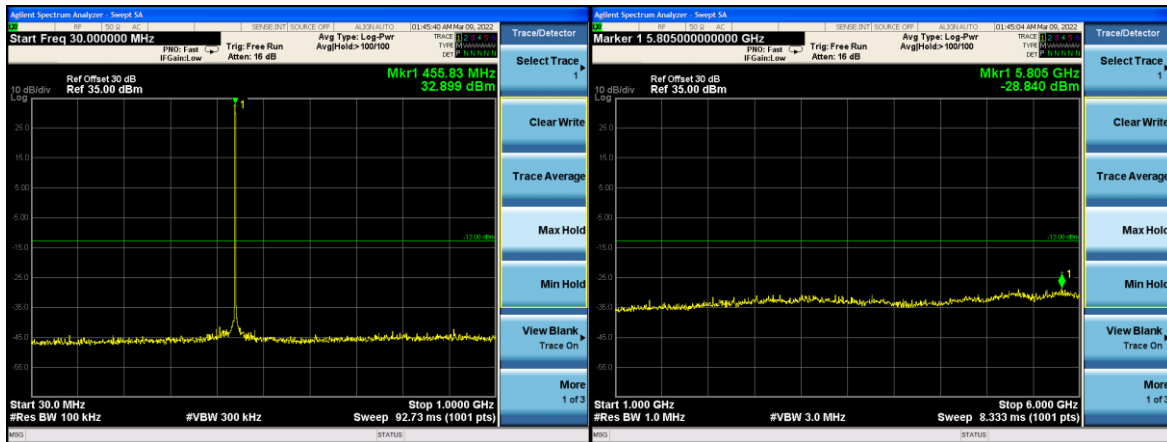
Test plots as follows:

GMSK 25KHz Channel Spacing:

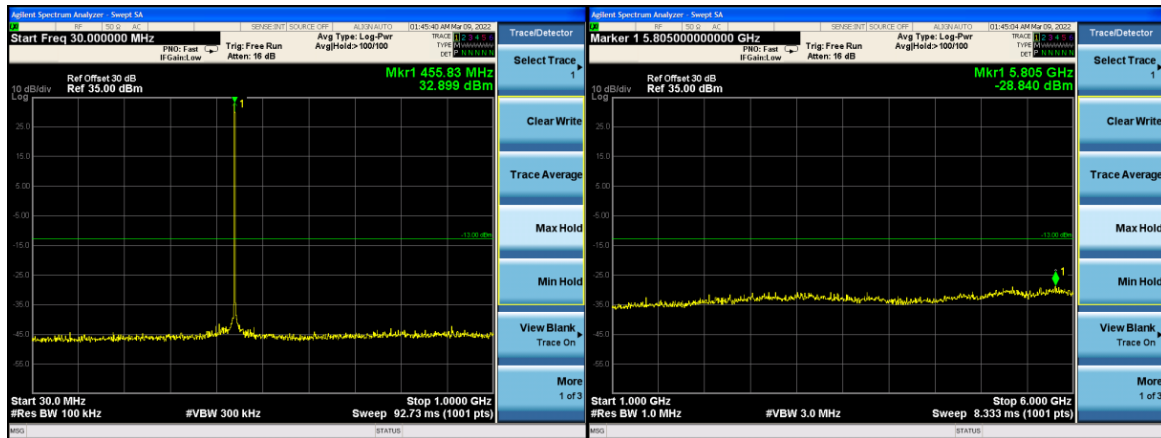
Low: 410.250MHz



Mid: 456.250MHz

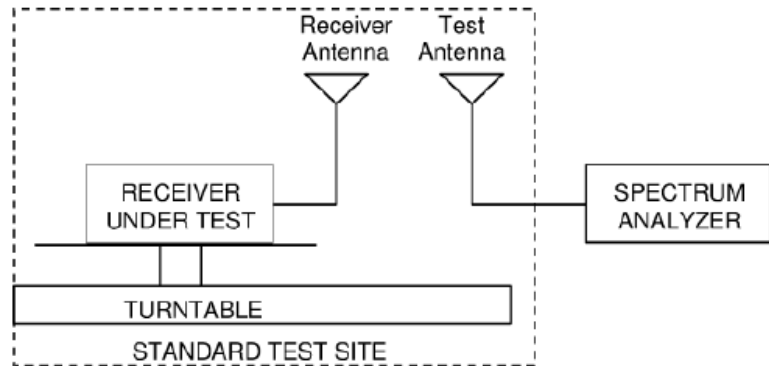


High: 469.850MHz



3.4. Radiated Spurious Emission

3.4.1. Test Specification

Test Requirement:	FCC Part 90.210															
Test Method:	ANSI C63.26															
Measurement Distance:	3 m															
Antenna Polarization:	Horizontal & Vertical															
Operation mode:	Refer to item 4.1															
Receiver Setup:	<table><tr><td>Frequency</td><td>RBW</td><td>VBW</td></tr><tr><td>9kHz- 150kHz</td><td>200Hz</td><td>1kHz</td></tr><tr><td>150kHz- 30MHz</td><td>9kHz</td><td>30kHz</td></tr><tr><td>30MHz-1GHz</td><td>100KHz</td><td>300KHz</td></tr><tr><td>Above 1GHz</td><td>1MHz</td><td>3MHz</td></tr></table>	Frequency	RBW	VBW	9kHz- 150kHz	200Hz	1kHz	150kHz- 30MHz	9kHz	30kHz	30MHz-1GHz	100KHz	300KHz	Above 1GHz	1MHz	3MHz
Frequency	RBW	VBW														
9kHz- 150kHz	200Hz	1kHz														
150kHz- 30MHz	9kHz	30kHz														
30MHz-1GHz	100KHz	300KHz														
Above 1GHz	1MHz	3MHz														
Limit:	<p>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 $43 + 10\log (P)$ dB.</p> <p>For equipment using 12.5 kHz channel spacing, on any frequency removed from the center of</p> <p>The authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz: At least $50 + 10 \log(P)$ dB or 70 dB, whichever is the lesser attenuation.</p>															
Test setup:																
Test Procedure:	<p>The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.</p> <p>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.</p> <p>The frequency range up to teeth harmonic of the fundamental frequency was investigated.</p> <p>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</p>															

	the substitution. Spurious emissions in dB =10, 1g (TXpwr in Watts/0.001)-the absolute level Spurious attenuation limit in dB =50+10 Log ₁₀ (power out in Watts) for EUT with a 12.5 kHz and 25KHz channel bandwidth.
Test results:	PASS

3.4.2.Test Data

Test Mode: Low: 410.250MHz, Channel Spacing 25KHz

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
149.365	-94.07	V	0.24	31.35	-62.96	-13	-49.96
360.122	-90.47	V	0.26	31.34	-59.39	-13	-46.39
672.254	-92.83	V	0.42	31.24	-62.01	-13	-49.01
867.320	-93.46	V	0.58	30.71	-63.33	-13	-50.33
1259.385	-78.93	V	1.23	26.38	-53.78	-13	-40.78
3856.570	-78.03	V	1.68	25.47	-54.24	-13	-41.24
287.978	-94.79	H	0.43	31.24	-63.98	-13	-50.98
402.660	-96.18	H	0.45	30.68	-65.95	-13	-52.95
475.190	-94.51	H	0.64	30.85	-64.30	-13	-51.30
678.902	-97.84	H	0.79	31.12	-67.51	-13	-54.51
1370.493	-82.31	H	1.29	26.12	-57.48	-13	-44.48
3258.430	-77.88	H	1.62	25.41	-54.09	-13	-41.09

Test Mode; Mid: 456.250MHz, Channel Spacing 25KHz


Frequency (MHz)	Reading level (dBm)	Antenna Polarization	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
157.727	-93.78	V	0.24	31.35	-62.67	-13	-49.67
361.299	-90.15	V	0.26	31.34	-59.07	-13	-46.07
670.384	-93.17	V	0.42	31.24	-62.35	-13	-49.35
859.190	-93.91	V	0.58	30.71	-63.78	-13	-50.78
1262.116	-78.82	V	1.23	26.38	-53.67	-13	-40.67
3860.246	-78.54	V	1.68	25.47	-54.75	-13	-41.75
285.515	-94.97	H	0.43	31.24	-64.16	-13	-51.16
404.347	-95.51	H	0.45	30.68	-65.28	-13	-52.28
472.970	-94.67	H	0.64	30.85	-64.46	-13	-51.46
682.270	-97.42	H	0.79	31.12	-67.09	-13	-54.09
1370.178	-82.19	H	1.29	26.12	-57.36	-13	-44.36
3261.045	-77.88	H	1.62	25.41	-54.09	-13	-41.09

Test Mode: High: 469.850MHz, Channel Spacing 25KHz

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
154.820	-94.10	V	0.24	31.35	-62.99	-13	-49.99
363.368	-90.12	V	0.26	31.34	-59.04	-13	-46.04
670.811	-92.75	V	0.42	31.24	-61.93	-13	-48.93
865.805	-93.38	V	0.58	30.71	-63.25	-13	-50.25
1258.551	-78.92	V	1.23	26.38	-53.77	-13	-40.77
3858.923	-78.32	V	1.68	25.47	-54.53	-13	-41.53
291.012	-94.67	H	0.43	31.24	-63.86	-13	-50.86
400.454	-95.90	H	0.45	30.68	-65.67	-13	-52.67
475.645	-94.04	H	0.64	30.85	-63.83	-13	-50.83
680.453	-97.29	H	0.79	31.12	-66.96	-13	-53.96
1373.809	-81.97	H	1.29	26.12	-57.14	-13	-44.14
3264.509	-77.73	H	1.62	25.41	-53.94	-13	-40.94

3.5. Transient Frequency Behavior

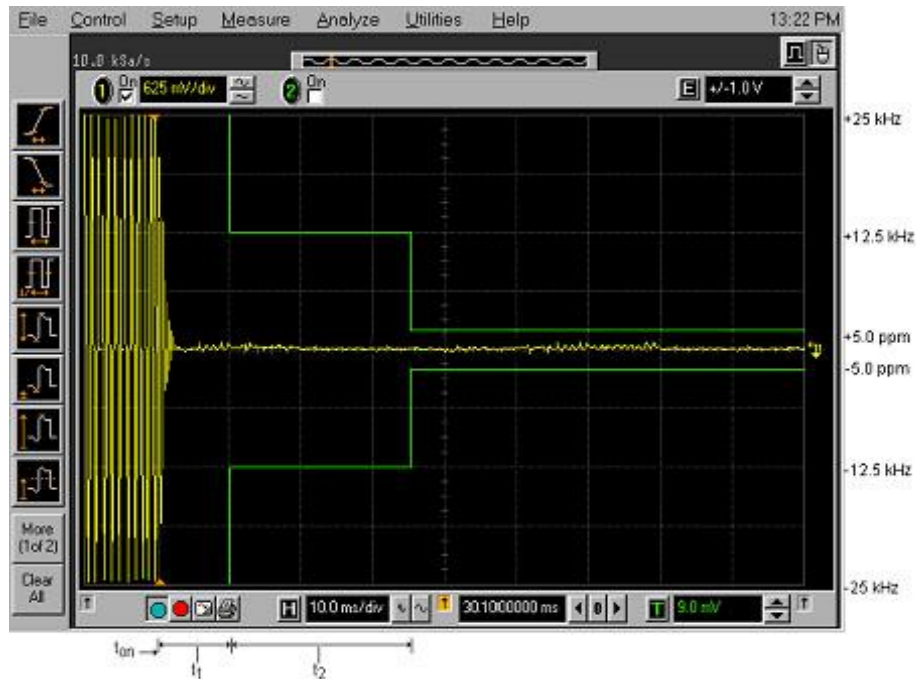
3.5.1. Test Specification

Test Requirement:	FCC Part 90.214																																																		
Test Setup:	<div></div> <div>OscilloscopeEUT</div>																																																		
Test Limit	<table><tr><th rowspan="2">Channel Bandwidth (kHz)</th><th rowspan="2">Time Intervals (Notes 1, 2)</th><th rowspan="2">Maximum Frequency Difference (kHz)</th><th colspan="2">Transient Duration Limit (ms)</th></tr><tr><th>138-174 MHz</th><th>406.1-512 MHz</th></tr><tr><td rowspan="3">25</td><td>t₁</td><td>±25</td><td>5</td><td>10</td></tr><tr><td>t₂</td><td>±12.5</td><td>20</td><td>25</td></tr><tr><td>t₃</td><td>±25</td><td>5</td><td>10</td></tr><tr><td rowspan="3">12.5</td><td>t₁</td><td>±12.5</td><td>5</td><td>10</td></tr><tr><td>t₂</td><td>±6.25</td><td>20</td><td>25</td></tr><tr><td>t₃</td><td>±12.5</td><td>5</td><td>10</td></tr><tr><td rowspan="3">6.25</td><td>t₁</td><td>±6.25</td><td>5</td><td>10</td></tr><tr><td>t₂</td><td>±3.125</td><td>20</td><td>25</td></tr><tr><td>t₃</td><td>±6.25</td><td>5</td><td>10</td></tr></table>	Channel Bandwidth (kHz)	Time Intervals (Notes 1, 2)	Maximum Frequency Difference (kHz)	Transient Duration Limit (ms)		138-174 MHz	406.1-512 MHz	25	t ₁	±25	5	10	t ₂	±12.5	20	25	t ₃	±25	5	10	12.5	t ₁	±12.5	5	10	t ₂	±6.25	20	25	t ₃	±12.5	5	10	6.25	t ₁	±6.25	5	10	t ₂	±3.125	20	25	t ₃	±6.25	5	10				
Channel Bandwidth (kHz)	Time Intervals (Notes 1, 2)				Maximum Frequency Difference (kHz)	Transient Duration Limit (ms)																																													
		138-174 MHz	406.1-512 MHz																																																
25	t ₁	±25	5	10																																															
	t ₂	±12.5	20	25																																															
	t ₃	±25	5	10																																															
12.5	t ₁	±12.5	5	10																																															
	t ₂	±6.25	20	25																																															
	t ₃	±12.5	5	10																																															
6.25	t ₁	±6.25	5	10																																															
	t ₂	±3.125	20	25																																															
	t ₃	±6.25	5	10																																															
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.																																																		
Test Result:	PASS																																																		

3.5.2. Test data

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

Power On



Power Off



3.6. Behavior Frequency Stability

3.6.1. Test Specification

Test Requirement:	FCC Part 90.213
Test Method:	ANSI C63.26, RSS-Gen
Test Setup:	<pre> graph LR Laptop[Laptop] --- EUT[Equipment Under Test] EUT --- ACDC[AC/DC Adapter] EUT --- Att[Attenuator(s)] Att --- MC[Mini-Circuit Combiner] MC --- RFCT[RF Communication Test Set] MC --- MA[Modulation Analyzer] MA --- RF[RF Detector] RF --- HPO[Hewlett Packard Infinium Digitizing Oscilloscope] </pre>
Test Procedure:	<p>Method of Measurement:</p> <p>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.</p>
Test Result:	PASS

3.6.2. Test data

Conclusion: PASS			
Mode	Voltage (V)	Frequency error (Hz)	frequency error (ppm)
Middle Channel 25KHz Channel Spacing	8.28	-33	-0.0013
	7.80	-28	-0.0011
	7.20	-54	-0.0021
	6.70	-30	-0.0012
	6.12	-33	-0.0013
Limit	5ppm		

Mode	Temperature (°C)	Frequency error (Hz)	frequency error (ppm)
Middle Channel 25KHz Channel Spacing	-20	-29	-0.0012
	-10	-36	-0.0014
	0	-31	-0.0012
	10	-26	-0.0010
	20	-32	-0.0013
	30	-37	-0.0015
	40	-26	-0.0010
	50	-22	-0.0009
Limit	5ppm		

3.7. Modulation Characteristic

Test Requirement:	FCC Part 90.207
Test 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.

----- **END OF REPORT**-----