

Navico Inc.

4500 S. 129th East Avenue, Ste. 200, Tulsa, Oklahoma, 74134 United States

TO: Federal Communication Commission
Equipment Authorization Branch
7435 Oakland Mills Road
Columbia, MID 21046

Regarding: Compliance Statement of Class "D" Digital Selective Calling Equipment.
FCC ID: RAYVHFNRS1
IC:4697A-VHFNRS1D
Model No.: NRS-1

Dear Examiner:

This is to confirm this Class D DSC equipment complying with the ITU-R M493-13 requirements.

This equipment has been tested to the following standard and clause:

Article 3.1a Safety:

EN 60945:2002 section 8
EN 62368-1:2014+A11:2017

3.1a Health:

EN 62311:2008

Article 3.1b:

EN 60945:2002 section 9, section 10
EN 301 843-1 V2.2.1
EN 301 489-1 V2.2.3
EN 301 489-5 V2.2.1
EN 301 489-17 V3.2.4
EN 301 489-19 V2.1.1

Article 3.2 Radio:

EN 300 328 V2.2.2
EN 303 413 V1.1.1
EN 301 025 V2.2.1(DSC)
EN 300 698 V2.3.1(Inland waterways radio)

Article 3.3g:

EN 301 025 V2.2.1(DSC)
EN 300 698 V2.3.1(Inland waterways radio)
EN 62287-1:2017 (Class B AIS (CSTDMA))
EN 61162-1:2016(Digital Interfaces)
EN 61162-2:1998(Digital Interfaces)
EN 61108-1:2003(GPS)
EN 61108-2:1998(GLONASS)

Furthermore, the Notified Body [**SGS Fimko Ltd.**], with Notified Body number [**0598**] performed *Modules B in Annex III of Directive* [**2014/53/EU**], and issued the EU TEC No. [**RED-2278**].

IEC 62238 compliance is reported in this application.

The standard IEC 62238 is an identical adoption of ETSI EN 301 025 V2.2.1(2017-03):

General and operational requirements		
Test Item	Requirement	Comments
General	IEC62238 Section 4.1	Please check the product technical data
Composition	IEC62238 Section 4.2	
Construction	IEC62238 Section 4.3	
Controls and indicators	IEC62238 Section 4.4	
Facilities for coding and decoding of DSC	IEC62238 Section 4.5	
DSC display	IEC62238 Section 4.6	
Handset and loudspeaker	IEC62238 Section 4.7	
Safety precautions	IEC62238 Section 4.8	
Labelling	IEC62238 Section 4.9	
Warm up	IEC62238 Section 4.10	

Technical requirements		
Test Item	Requirement	Reference Report No.
Switching time	IEC62238 Section 5.1	Please check the product technical data
Class of emission and modulation characteristics	IEC62238 Section 5.2	
Facilities for DSC transmission and reception	IEC62238 Section 5.3	
Ships identity – MMSI and Group MMSI	IEC62238 Section 5.4	
Entry of position information	IEC62238 Section 5.5	
Alarm circuits for incoming calls	IEC62238 Section 5.6	
Multiple watch facilities	IEC62238 Section 5.7	
Built-in test	IEC62238 Section 5.8	

General conditions of measurement		
Test Item	Requirement	Reference Report No.
Arrangements for test signals applied to the receiver input	IEC62238 Section 6.1	Meets measurement requirements
Squelch	IEC62238 Section 6.2	
Normal test modulation	IEC62238 Section 6.3	
Artificial antenna	IEC62238 Section 6.4	
Arrangements for test signals applied to the transmitter input	IEC62238 Section 6.5	
Test channels	IEC62238 Section 6.6	
Generation and examination of the digital selective call signal	IEC62238 Section 6.7	
Standard test signals for DSC	IEC62238 Section 6.8	
Determination of the symbol error ratio in the output of the receiving part	IEC62238 Section 6.9	
Measurement uncertainty and interpretation of the measured results	IEC62238 Section 6.10	

General conditions of measurement		
Test Item	Requirement	Reference Report No.
Test conditions, power sources, and ambient temperatures	IEC62238 Section 6.11	
Normal test conditions	IEC62238 Section 6.12	
Extreme test conditions	IEC62238 Section 6.13	
Procedure for tests at extreme temperatures	IEC62238 Section 6.14	

Environmental Tests		
Test Item	Requirement	Reference Report No.
Introduction	IEC62238 Section 7.1	SZES200700466701
Procedure	IEC62238 Section 7.2	
Performance check	IEC62238 Section 7.3	
Vibration/shock	IEC62238 Section 7.4	
Temperature tests	IEC62238 Section 7.5	

Transmitter		
Item	Requirement	Reference Report No.
Frequency error	IEC62238 Section 8.1	SZEM200700601807 SZEM200700601907
Carrier power	IEC62238 Section 8.2	
Frequency deviation	IEC62238 Section 8.3	
Sensitivity of the modulator, including microphone	IEC62238 Section 8.4	
Audio frequency response	IEC62238 Section 8.5	
Audio frequency harmonic distortion of the emission	IEC62238 Section 8.6	
Adjacent channel power	IEC62238 Section 8.7	
Conducted spurious emissions conveyed to the antenna	IEC62238 Section 8.8	
Transient frequency behaviour of the transmitter	IEC62238 Section 8.9	
Residual modulation of the transmitter	IEC62238 Section 8.10	
Frequency error (demodulated DSC signal)	IEC62238 Section 8.11	
Modulation index for DSC	IEC62238 Section 8.12	
Modulation rate for DSC	IEC62238 Section 8.13	
Testing of free channel transmission on DSC channel 70	IEC62238 Section 8.14	

Radiotelephone receiver		
Item	Requirement	Reference Report No.
Harmonic distortion and rated audio-frequency output power	IEC62238 Section 9.1	SZEM200700601807 SZEM200700601907
Audio frequency response	IEC62238 Section 9.2	
Maximum usable sensitivity	IEC62238 Section 9.3	
Co-channel rejection	IEC62238 Section 9.4	
Adjacent channel selectivity	IEC62238 Section 9.5	
Spurious response rejection	IEC62238 Section 9.6	
Intermodulation response	IEC62238 Section 9.7	
Blocking or desensitization	IEC62238 Section 9.8	

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Spurious emissions	IEC62238 Section 9.9	
Receiver residual noise level	IEC62238 Section 9.10	
Squelch operation	IEC62238 Section 9.11	
Squelch hysteresis	IEC62238 Section 9.12	
Multiple watch characteristic	IEC62238 Section 9.13	

Receiver for DSC decoder		
Item	Requirement	Result
Maximum usable sensitivity	IEC62238 Section 10.1	SZEM200700601807 SZEM200700601907
Co-channel rejection	IEC62238 Section 10.2	
Adjacent channel selectivity	IEC62238 Section 10.3	
Spurious response and blocking immunity	IEC62238 Section 10.4	
Intermodulation response	IEC62238 Section 10.5	
Dynamic range	IEC62238 Section 10.6	
Spurious emissions	IEC62238 Section 10.7	
Verification of correct decoding of various types of DSC calls	IEC62238 Section 10.8	
Reaction to VTS and AIS channel management DSC transmissions	IEC62238 Section 10.9	
Simultaneous reception	IEC62238 Section 10.10	

Electromagnetic compatibility		
Test Item	Requirement	Reference Report No.
Conducted spurious emission	IEC62238 Section 11.1.1	SZEM200700601701
Radiated spurious emission	IEC62238 Section 11.1.2	
Immunity to electromagnetic environment	IEC62238 Section 11.1.3	


Please proceed to accept this FCC Grant application.

Sincerely,

Print Name: John Lloyd

Title: VP, Global Quality, Quality assurance

Signature:



On behalf: Navico Inc.

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