DNV·GL

Certificate No:
TAA00002MX

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Network and Communication Components

with type designation(s)
Mesh Node SRT MN-01, Personnel Tag SRT PT-01

Issued to
Scandinavian Reach Technologies AS
Straume, Norway

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Location classes:

Type	Temperature	Humidity	Vibration	EMC	Enclosure
Mesh Node SRT MN-01	D	B	A	B	C / IP66 / IP67
Personnel Tag SRT PT-01	D	B	A	B	C / IP66 / IP67

Issued at **Høvik** on **2020-04-02**
This Certificate is valid until **2025-04-01**.
DNV GL local station: **Bergen**

Approval Engineer: **Ståle Sneen**

for **DNV GL**

Marta Alonso Pontes
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Product description

Mesh Node model SRT MN-01 and Personnel Tag model SRT PT-01.

The Scandinavian Reach Technologies AS SRT MN-01 Mesh Node is a wireless network device intended to transport data in a Mesh network structure within steel confined areas. Several nodes are connected via built-in radio transmitters. The data is collected from SRT PT-01 or other adequate sensors via Bluetooth protocol. The end node is connected to a Gateway computer, collecting data sent through the network.

The Scandinavian Reach Technologies AS SRT PT-01 Personnel tag is a wearable device intended to report its location within predefined areas. The tag communicates with Scandinavian Reach Technologies AS Mesh nodes via built-in 2.4 GHz Bluetooth radio.

Technical information SRT MN-01

Wireless transceiver:	865-868 MHz
Modulation:	DSSS
TX power:	14 dBm (25 mW)
PCB antenna gain:	2.33 dBi
External antenna gain:	0.9 dBi
Wireless transceiver:	902-928 MHz
Modulation:	GFSK
TX power:	14 dBm (25 mW)
PCB antenna gain:	2.33 dBi
External antenna gain:	0.9 dBi
Wireless transceiver:	2.4 GHz Prop mode #1 (2.4-2.4835 GHz)
Modulation:	O-QPSK DSSS
TX power:	20 dBm (100 mW)
PCB antenna gain:	1.5 dBi
Wireless transceiver:	2.4 GHz Bluetooth LE (2.4 - 2.4835 GHz)
Modulation:	GFSK
TX power:	4 dBm (2.5 mW)
PCB antenna gain:	3.3 dBi
Power supply / USB:	5 V Micro-USB connection. For USB power and data connection to gateway. The unit can also be powered by the 3.7 V internal backup battery.
Power adapters:	Mean Well GS05E-USB 220 V / 110 V to 5 V USB-adapter Artesyn DA10-050EU 220 V / 110 V to 5 V USB-adapter
Compass safe distance:	Standard compass 30 cm, steering compass 20 cm

Technical information SRT PT-01

Wireless transceiver:	2.4 GHz Bluetooth LE (2.4-2.4835 GHz)
Modulation:	GFSK
TX power:	4 dBm (2.5 mW)
PCB antenna gain:	1.5 dBi
Power supply:	3 V battery
Compass safe distance:	Standard compass 20 cm, steering compass 10 cm

Place of manufacture

Topro Elektronikk AS
Gjøvik, Norway

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Application/Limitation

EMC immunity in the range 2 GHz to 6 GHz according to DNVGL-CG-0339, December 2019 has not been documented. EMC immunity up to 6 GHz must additionally be documented for installation on ships contracted for construction on or after 2022-01-01.

Use of radio frequency bands

- The applied frequency band 865-868 MHz is defined by ITU-R Radio Regulations (2016) as a frequency band that may be subject to special authorization.
- The applied frequency band 902-928 MHz is defined by ITU-R Radio Regulations (2016) as an ISM-band for Region 2.
- The applied frequency band 2400.0-2483.5 MHz is defined by ITU-R Radio Regulations (2016) as an ISM-band.

The type approval does not cover the different administrations requirements for use of the radio frequency bands. Any use of the radio frequency band has to be in line with the requirements of the administration concerned.

Type Approval documentation

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.
Applicable tests according to the Radio Equipment Directive, including:
- EN 300 220-1 V3.1.1 (2017-02) – for CE Radio 25 MHz to 1000 MHz requirements
- EN 300 220-2 V3.2.1 (2018-06) – for CE Radio 25 MHz to 1000 MHz requirements
- EN 300 328 V2.2.2 (2019-07) – for CE Radio 2.4 GHz requirements

Marking of product

The products to be marked with:
- manufacturer name
- model name
- serial number
- power supply ratings

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:
- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE