

SOTR FOR TECHNICAL AND OPERATING REQUIREMENTS FOR SOUND POWERED TELEPHONE SYSTEM

1. Sound Powered Telephone (SPT) System would be a marinised system using COTS components and conforming to specifications covered in the succeeding paragraphs. The system is required to have following functional characteristics: -

- (a) SPT system should provide loud and clear voice between key locations on a ship for both emergency and routine communication.
- (b) SPT system should operate independently without ships/ external power supply and provide seamless voice communication during emergency conditions.
- (c) SPT system should have internal systems/ circuitry to amplify the voice signals and able to transmit/ receive voice signals between the other SPTs installed onboard.
- (d) SPT will have a provision for connecting the ships emergency DC supply(24V) and should be able to operate as conventional external powered telephone system.
- (e) The handset of the SPT should have noise compensated microphone to achieve louder speech and listening levels. The handset shall be connected to the control box firmly with suitable flexible cable.
- (f) The SPTs instrument is to be equipped with visual(LED) and audible call indication. The audible call and Led indication should be prominent till a distance of at least 10m from the unit during ship's operating phases. Suitable indications to provide identity of caller and select a particular user for calling is required to be provided in the SPT set.
- (g) SPT system should have noise compensated headsets with noise compensated microphones that can be connected to a plug/ socket box fitted in the SPT system network.
- (h) The SPT system should have plug/ socket box for connecting the portable SPTs and portable headsets.
- (i) The SPT system should have audio and visual combined flash alarm units. These units will be connected to the individual SPTs. These alarm units will be interfaced with the individual SPT directly or through a relay box.
- (j) The SPT system has number of variants with different configurations viz Single way, Multi-way (1 to 24 extensions) . The SPT system should provide the means to select one of the various positions with which the user may need to communicate.
- (k) The SPT system should have group isolations (Armament group, Damage Control group, Machinery Group, etc.) and one group should be able to communicate with the SPTs of other groups. Call conferencing facilities maximum up to 08 SPT should be available.

- (l) The SPT system for new constructions ships should have screened cable network for interconnection between SPTs.
- (m) The SPT and associated accessories should meet the Ingress Protection Based on locations where it is going to be fitted. For SPTs fitted in the weather decks should have IP 66 rating, for underwater compartments it should have IP 67 rating and for other locations it should have IP 55 rating. The enclosure should be of aluminum or steel or alloy or composite materials having suitable arrangements for deck head/ bulkhead mounting type installation onboard ships.
- (n) If one SPT is sited inside a hazardous area, the SPTs shall meet the degree of intrinsic safety required for hazardous area, thus preventing dangerous voltages being introduced into the hazardous area by telephones/ circuits of the SPT system network sited outside the area.

2. **Eligibility Criteria**

The eligible vendor should have test certificates of SPT system conforming to type tests requirement indicated in this TSP. The firm should be in the field of manufacturing SPT systems and shall submit documentary evidence to this effect along with their offer.

3. **Type Test**

SPT system is to be subjected to type testing as per the specification given below:-

- (a) Seaway condition Test
- (b) Damp heat, Dry Heat
- (c) Cold
- (d) Humidity and Heat
- (e) Ingress Protection
- (f) Salt Mist
- (g) Shock
- (h) Vibration
- (i) EMI/EMC
- (j) Environmental Stress Screening and Burn-in Test on 100 % PCBs.

4. **Routine Test**

SPT system will undergo routine test as per approved QAP/ATP. The routine tests comprises following tests:-

- (a) Performance Test: The SPT system should be tested for its functioning as per the functional requirements mentioned in this TSP. The voice level shall not be less than 80% at 80 dB ambient noise condition.
- (b) Insulation Test(with 500V DC megger)

- (c) Physical Inspection, Dimensions and Weight
- (d) ESS and Burn-in Test
- (e) IP/Dust test
- (f) Modularity test: This test is to be conducted on randomly selected samples. Interchange the headset modules from the SPTs and the SPTs should function without any modifications. Similarly, on interchange of auto generator and microphone/ transducer, the SPT should function without any modifications.

5. **Environmental Conditions**

The SPT shall be capable of operating under marine conditions and shall be designed to meet the environment conditions as specified below:

<u>SNo.</u>	<u>Test</u>	<u>Specifications</u>
(a)	EMI/EMC	IEC 60945/ equivalent
(b)	Enclosure Protection	IEC 60529/ equivalent
(c)	Intrinsically safe certifications	IEC 60079-20,1:2010/ equivalent
(d)	Environmental testing	IEC 60068-2-2/ equivalent
	Cold, dry heat, FC(vibration sinusoidal), Damp heat cyclic, Salt mist cyclic	(Severities applicable for Merchant Ships)
(e)	Humidity and Heat tests	IEC 61347-1 Clause 11/ equivalent (Severities applicable for Merchant Ships)
(f)	Shock	IEC 60068-2-27/ equivalent (Severities applicable for Merchant Ships)
(g)	Environmental Stress Screening(COTS Grade)	66301/Policy-07/DQA(N)/QA-07 and 66301/Policy-10/DQA(N)/QA-10 both dated Jun 13