



Homeland Security & Critical Infrastructures

RACE FAMILY RAILWAY COMMUNICATION EQUIPMENT

Railway operators need to extend the use of GSM-R in voice and data ground-to-train radio communications obtaining the highest level of performance. The many different GSM-R applications are met by these highly cost effective solutions. Selex ES have developed a number of different solutions to meet the requirements for onboard communication equipment. All of these solutions provide EIRENE/MORANE standard features for vehicular radio modules and comply with all environmental safety requirements.

Selex ES is a leader in the development of wireless solutions for railway operators. The Company's long experience in digital mobile communications and railway technology has been the basis for advanced development of GSM-R terminals and mobile radio equipment for all customers' needs.

A member of international standards organizations as ETSI and the GSM-R Industry Group, Selex ES provides optimised, convenient and reliable solutions for secure communications along tracks.

Starting from a full equipped Railway Communication Equipment, Selex ES provides different solutions to meet the requirements for onboard communication equipment. It is possible to select the most appropriate configuration that fits exactly the customer requirements, without extra cost. The rack includes up to two GSMR Class 2 (ETSI EN 300 910) Radio modules, one for CS voice/data application, the other one (optional radio) for PS or GPRS data transmission. These solutions provide voice capability, a dedicated key for special functions and a comprehensive user friendly menu. Selex ES' GSM-R CAB Radio Systems provides the features of an advanced GSM-R telephone, with all the special railway functions: Advanced Speech Call Items (ASCI) phase 2+, Emergency Call, eMLPP priority features and Functional Numbering.

The Selex ES' Railway Communication Equipment also offers data transmission and shunting operations; it is possible to use a Local Maintenance Tool (LMT) to configure Software Download and diagnostics operations. The highly flexible Railway Communication Equipment design allows for a wide range of customized applications, to meet many different railway operators' needs.

Software updating through a data port enables easy evolution and integration of future EIRENE/MORANE requirements. Selex ES CAB is the smartest answer to the railway needs of reliable and cost effective ground-to-train communication.

For evaluation of GSM-R performance Selex ES provides the Trace Mobile 100, a test tool making real-time analysis of network status available at your fingertips. Selex ES has the skill and experience to provide the right mobile application to measure and optimize system performance in the GSM-R band: Trace Mobile 100 is a software application, which is able to monitor, collect and report all of the significant network parameters, based on real-time measurements.

Trace Mobile 100 can be loaded into all Selex ES GSM-R terminals: handhelds, CAB radio modules and modems. It is able to report network data, according to the terminal working state, through a dedicated serial maintenance data link provided in the Trace Mobile 100 kit.

A unique interface is defined for communication with a personal computer to perform terminal setup; it is possible to carry out post-processing of measurements with a special tool provided on request.

Trace Mobile 100 runs during normal terminal working time (voice and data calls, AT commands, SMS, ..) without causing any loss of performance in standard GSM-R mobile functionality.

RACE2500 - RAILWAY COMMUNICATION EQUIPMENT

The RaCE2500 Railway Communication Equipment is the in house designed Selex ES GSM-R Product Line. RaCE2500 is an innovative solution to support all GSM-R communications features that provides voice and data transmission for on board applications at the right price. The RaCE2500 comprises a 3U 19" standard rack (Radio and Control Parts) and a graphical MMI. For some equipment, up to 2 MMIs can be allocated per CAB unit.

The rack includes up to two GSMR Class 2 (ETSI EN 300 910) radio modules, one for CS voice/data applications, the other (optional radio) for PS or GPRS data transmission, a power supply module (extended range 24V to 110V), a control card module, an optional MVB Gateway and UIC interface. It would be possible to use radio slots for technologies other than GSM-R, by the use of radio commands via the CAB Radio backplane serial link (i.e. AT commands). In this case different control card module SW would be necessary. RaCE2500 provides the features of an advanced GSM-R telephone, with all the special railway functions: Advanced Speech Call Items (ASCI) phase 2+, Emergency Call, eMLPP priority features and Functional Numbering.

The RaCE2500 provides for communications on the train bus (MVB) and it is ready to interface with the driver safety device, the train board recorder system.

The RaCE2500 also offers data transmission and shunting operations; it is possible to use a Local Maintenance Tool (LMT) to configure Software Download and diagnostics operations. The highly flexible RaCE2500 design allows for a wide range of customized applications, to meet many different railway operators' needs.



RACE2300 COMPACT CAB RADIO

For on-board applications where there is not enough space to house a graphical MMI, Selex ES provides the RaCE2300 Railway Communication Equipment, a compact version of GSM-R CAB Radio.

RaCE2300 is an innovative solution to support all GSM-R communications features at the right price; it provides voice and data transmission for on board applications in a single module with reduced weight and size. The RaCE2300 comprises two interfaces to the conductor staff. These are switched by the bench key on the tail bench in the locomotive. The (3U, 19") fitting provides for locomotive installation.

As with all Selex ES's CAB radios for voice and data, RaCE2300 provides communications on the train bus (MVB) and it is ready to interface with the driver safety device, the train board recorder system. RaCE2300 also offers data transmission and shunting operations.

The highly flexible RaCE2300 design allows for a wide range of customized applications, to meet many different railway operators needs.

RaCE2300 provides EIRENE/MORANE standard features for vehicular radio modules and complies with all environmental safety requirements. It provides 8W transmission power, voice capability (ASCI), a dedicated key for direct emergency calls, and a comprehensive user friendly menu on the handset MMI. RaCE2300 is also easy to install.

RaCE2300 is managed by two active handsets, which provide the features of an advanced GSM-R telephone, with all special railway functions: Advanced Speech Call Items (ASCI) phase 2+, Emergency Call, eMLPP priority features and Functional Numbering.

The RaCE2300 comprises a rack made up of an 8W Radio Mobile Module RMM2300, a power supply module, capacitor unit, remote switch unit, Optional RMM2300 (supporting GPRS without ASCI features), Gateway MVB and ICU Module for the isolation of the serial interfaces present on the radio modules (RS422).

The two Active Control Handsets include a keyboard and display for the management of the Radio Mobile Module and Red key for Emergency Calls, a dedicated PTT (Push-To-Talk) button for voice group calls and Loudspeaker. RaCE2300 offers a user friendly MMI to manage the GSM-R functions.

This product is especially suitable for applications, where high RF power output is required.

GSC2300: ETCS DATA ONLY RADIO

For use as the radio subsystem of ETCS, Selex ES also provides the GSC2300. It is designed for vital data signalling transmission applications and provides redundancy by the use of two identical sections. Each section uses an RMM2300 module, power supply, capacitor and alarm unit and duplexer and they use independent power supplies. The equipment is managed by means of standard and proprietary AT commands exchanged through an RS422 serial interface. No GUI (Graphical User Interface) is available. The GSC2300 provides all EIRENE/MORANE standard features for vehicular radio modules and complies with all environmental safety requirements and with the interoperability directive.

Software updating through a data port enables easy evolution and integration of future EIRENE/MORANE requirements. Available access to diagnostic information for the analysis of Quality of Service.



Main Element of RaCE 2500 Solution



RaCE 2300 Compact Cab Radio



GSC 2300 ETCS Cab Radio

TECHNICAL DATA

	RaCE2300	RaCE2500	GSC2300
Supported services	GSM Phase 2/2+ CS Bearer Services for data transmission		
	GSM Phase 2/2+ Teleservices		
	GSM Phase 2/2+ ASCI		
	Specifics EIRENE/MORANE		
	GSM Phase 2/2+ Supplementary Services		
Call related functions	Call authorised users (including controllers)		
	Railway Emergency Calls		
	Receive incoming calls		
	Group and broadcast calls		
	Terminate calls		
Additional functions	Select Mobile Radio Network		
	Register and de-register functional number		
	Radio Functions (Switch radio on/off)		/
	Adjust Loudspeaker Volume		/
	Remote Unit MMI		/
	Red key for dir. Railway Emergency Call		/
	Tone to warn of incoming Calls/Messages		/
GPRS	GPRS Class 8 (1UL + 4DL)		/
Mechanical aspects	Standard Euroradio V.28 serial interface for data connection		/
	Index of protection: IP20		/
	Full graphic 132 x 65 black white display	Advanced graphic 7" wide 800 x 400 Colour display	/
Power class	Class 2 (8 W) GSM-R		
Environmental Conditions: - Working Temperature -Extreme T (with de-rating) - Storage -Altitude - Humidity	-20°C to +55°C -25°C to +70°C -40°C to +85°C -100 to 1800m (RSL) EN50155 and 100% for short periods		
Power supply	(Extended Range) 24V to 110V		
Power consumption	Max 60W		
Sensitivity	-104 dBm		
Frequency band	Uplink (MHz UIC 876-880 / E-GSM 880-915 Downlink (MHz UIC 921-925 / E-GSM 925-960)		
Weight	6kg		13kg
Dimensions (HxWxD)	132.5x482.6x194mm		

For more information please email infomarketing@selex-es.com

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