



GSM-R test modem 2W



TTS-TRM-5T USB

**Compact 2 Watt GSM-R test device for
Network measurement and monitoring
With best in class receiver performance**

Extended GSM-R supported

GSM-R technology for railways

TTS-TRM-5T USB

The TTS-TRM-5T USB is the right network probe for GSM-R in-depth testing and monitoring. The test system provides first hand interferer detection.



Technical data

Dimensions	45 x 40 x 20 mm [LxWxH]
Weight	70 g
Supply voltage	via USB
Current consumption	
Idle mode	50 mA
Speech mode	160 mA [Average]
GPRS Class 10	400 mA [Average]
In-rush current	910 mA
Temperature range	-25°C to +70°C

Interfaces

USB mini B	[Support of Windows® 8/10 with USB CDC-ACM driver; Digital audio and power supply via USB]
Antenna connector	SMA 50Ω
Display	3 status LED
Card reader	Mini-SIM [1.8 V / 3.0 V]

ASCII / EIRENE features

VGCS, VBS, UUS1, eMLPP, FN, PFN, REC

ETCS L2

QoS / Subset of values defined in the ERTMS/GSM-R QoS test specification [QoS working group, V1.1.i, 06-07-2006]

Transfer delay of user data frames

Round trip delay evaluation with optional required loopback terminal

Data transmission interference and data throughput

Output							
Timestamp	Channel	Dir	BCCH	Layer 3	Message Type	Layer 2	Header
38064	SDCCH	Down				SAPI: 0 C: UI-Frame,	
38073	SACCH	Down				SAPI: 0 C: UI-Frame,	
38073	SACCH	Down		RR	SYSTEM_INFORMATION_TYPE_6		
37985	SACCH	Up				SAPI: 0 C: UI-Frame,	
38089	SACCH	Up		RR	MEASUREMENT_REPORT		
38177	SACCH	Down				SAPI: 0 C: UI-Frame,	
38089	SACCH	Up				SAPI: 0 C: UI-Frame,	
38193	SACCH	Up		RR	MEASUREMENT_REPORT		
38276	SDCCH	Down				SAPI: 0 C: UI-Frame,	
38281	SACCH	Down				SAPI: 0 C: UI-Frame,	
38281	SACCH	Down		RR	SYSTEM_INFORMATION_TYPE_5		
38193	SACCH	Up				SAPI: 0 C: UI-Frame,	
38297	SACCH	Up		RR	MEASUREMENT_REPORT		

TrioTrace2 PC application

TrioTrace2 SW to visualize all measured data

Detection of interferer from public mobile networks

Trace log recording; Replay for post analyzing

Export of stored files in different formats

System / Standards

Frequency bands	GSM-R/EGSM-R/EGSM900/GSM1800
RF output power	
Class 4 [2 W]	{GSM-R/EGSM-R/EGSM900}
Class 1 [1 W]	{GSM1800}
Professional Mobile Standard	ETSI TS 102 933 V 2.1.1
ER-GSM Frequencies	ETSI TS 102 932 V 1.1.1
GSM Phase 2 and 2+; Mobile station class B	
Audio	Voice triple-rate codec for HR, FR and EFR AMR for non ASCII applications supported
Control by AT commands via serial interface	

Data services

GPRS class 10 with up to 85.6 kbps [DL] and 42.8 kbps [UL]
Coding scheme CS 1-4; PBCCH supported
CSD with up to 14.4 kbps [Transparent/Non transparent mode]
Fax group 3, class 2
PPP stack for GPRS data transfer
TCP/IP stack access via AT commands
Authentication: PAP, CHAP
Protocols: TCP, UDP, HTTP, FTP, SMTP, POP3
SMS via GSM/GSM-R/GPRS [MO, MT, CB, text/ PDU mode]

Test system

Layer 1	Serving/Neighbor cell BCCH, ARFCN, Cell ID, RX Level, Timing Advance, Power Level
Radio Res.	ARFCN, channel type, speech codec, time slot, network and base station color code
Messaging GPRS	GSM Layer 2/3, GPRS RLC/MAC, GMM/SM, RLC/MAC, LLC, GMM, SM/SNDCP, TBF, RLC mode, CS, NCO
Mobility Mgt. QoS	Cell ID, LA, MCC/MNC, TMSI, Ciphering FER, Handover, Call setup, data rates of LLC and RLC/MAC
Forcing	BCCH, Handover, Channel, Band, Power class, GPRS, Time slot, TCH, ASCII
Scanning	Single ARFCN, Set of frequencies, Band, System information

Part no.

TTS-TRM-5T USB	4151
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