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## MORSE radio channel versus GPRS

In the MORSE system RACOM uses radio channels of width 12.5 kHz, 25 kHz, 200 kHz, 250 kHz and 500 kHz and also the GPRS system for data transmission.

RACOM therefore has experience of both types of operation as a manufacturer and as an operator: RACOM has been manufacturing and developing radio modems since 1992 (e.g. MR400), the GPRS modem MG100 since 2004 and since 1998 has been running MODANET – public data transmission service, which makes use of both radio modems and GPRS.



### Comparison

Both transmission channels (radio and GPRS) are integrated into the MORSE system. Thanks to this RACOM and its partners have a great deal of practical experience which has enabled the following comparison to be made. However, it cannot be taken to apply in general and without reservation as the properties of the GPRS system can differ for individual GSM network operators and may change in time.

	MORSE radio channel	GPRS
<b>Developed and determined for</b>	Data transfer with minimum response time and maximum reliability	Access to the Internet or utilising free capacity of a GSM network
<b>Service priority</b>	100 % – only data is transferred in the network and is always designed for a given application	In last place: 1. voice 2. SMS 3. GPRS
<b>Reliability</b>	Exclusively for data transfer → the network is always designed for maximum reliability of data transfer	Secondary service → changeable reliability depending on the instantaneous status of the network and its utilisation for primary services
<b>Security</b>	Private network	Public network – risk of attack – possibility of having to pay for SPAM – may be switched off in the public's interest (terrorist attacks, etc.)

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	<b>MORSE radio channel</b>	<b>GPRS</b>
<b>Coverage</b>	100 % for the given application – network always designed and measured for a specific need	Not guaranteed – according to the instantaneous status of the network
<b>On-line connection</b>	100 % - if the radio modem is switched on it is connected in the network (initialisation of the connection to the centre doesn't take place)	After switching on the module reports to the centre – when the module is not active it will be disconnected after a certain amount of time. Before the next transmission it must login again, and this takes a number of seconds + the operator can change the disconnection timeout
<b>Capacity</b>	Network always designed for a specific purpose → sufficient	GPRS is a secondary service in the GSM network → not guaranteed
<b>Speed</b>	21.68 kbps (for 25 kHz channel) 96 kbps (for 250 kHz channel)	Not guaranteed – depends on the instantaneous utilisation of the network
<b>Response</b>	General and max. response time guaranteed	Not guaranteed
<b>Interface</b>	All common standards + tens of industrial protocols	For standard GPRS modems only some of the most common standards, e.g. AT Hayes, PPP (MG100 has the same interface as the MR400)
<b>Investment costs</b>	Higher – instalment options	Lower
<b>Operating costs</b>	Clear from the start – not dependent on the volume of transferred data	Unclear at the beginning – depends on the volume of transferred data + time tariff window which the operator may change
<b>Construction time</b>	Longer (because of the need to measure the quality of signal for guaranteeing future reliability)	Short
<b>Servicing</b>	Directly from the manufacturer → – individual approach – information about the cause of a defect, method and time of its removal – extensive user diagnostics – possibility to contact system authors	General hot-line → – mass approach – user not sufficiently informed – user not able to contact a technician



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