

## MIR-T Intrain RF Enhancer



Low Cost Solution  
for Unlimited Mobile  
Communication in Trains.

# MIR-T - Andrew's Intrain Solution

- Now designers of intrain applications are able to provide coverage to passengers even if base stations are far away. Andrew's MIR-T series repeater are designed for 19" rack mounting. Each frequency band (GSM-R, (E) GSM900, GSM1800, UMTS) fits into one 19" chassis of 1 HU which can be combined externally. Tunable band selective conversion modules also provide a high degree of flexibility.
- Additionally, the downlink controlled uplink ALC reduces the uplink desensitisation to base stations if the train is very close to the base station. In combination with the MIR-T's high gain and output power, these two features enable a

dynamic range in uplink and downlink of up to 50 dB.

- Hardware and software of this repeater family is ideally suited for multi-band/multi-operator use. Excellent isolation between the bands ensures proper and safe operation of each band without interfering the other by limiting inter-modulations and noise. The MIR-T family has an alarm interface with LEDs and dry-contact outputs which enables local and remote supervision. An optional remote monitor function provides equipment alarming via GSM-SMS. Alarm SMSs (including heartbeat) can be sent to the common Andrew OMC or any standard SMS receiver (even a mobile phone).



## Main Features

- Compact size and weight
- 19" rack mounting (1 HU)
- Easy and fast to install
- DL controlled UL ALC for reduced BTS desensitization
- Up to 50 dB dynamic range in UL and DL
- Powerdown functionality and bandwidth configuration management
- Optional GSM-SMS remote alarm monitoring

# MIR-T - The Cost-effective Multi Solution for Train Coverage

Mobile phones are a part of everyday life. In fact, users expect that good coverage exists wherever they are - also in trains. However, due to trains metallized windows the penetration loss reaches 30 dB in the most cases which dramatically reduces good zones of coverage and therefore high data rates along railway tracks.

A possible solution might be to install macro sites along the tracks but this is a very expensive solution compared to intrain repeaters which will be installed inside trains to overcome train penetration loss. Due to low acquisition costs the use of MIR-T repeaters can produce overall savings exceeding 20% to 30% of total project costs as considerably fewer BTS sites are needed.

Additionally the MIR-T family is designed specially for a long lifetime and requires no regular servicing.

This translates into considerable additional savings as there

is no regular maintenance required.

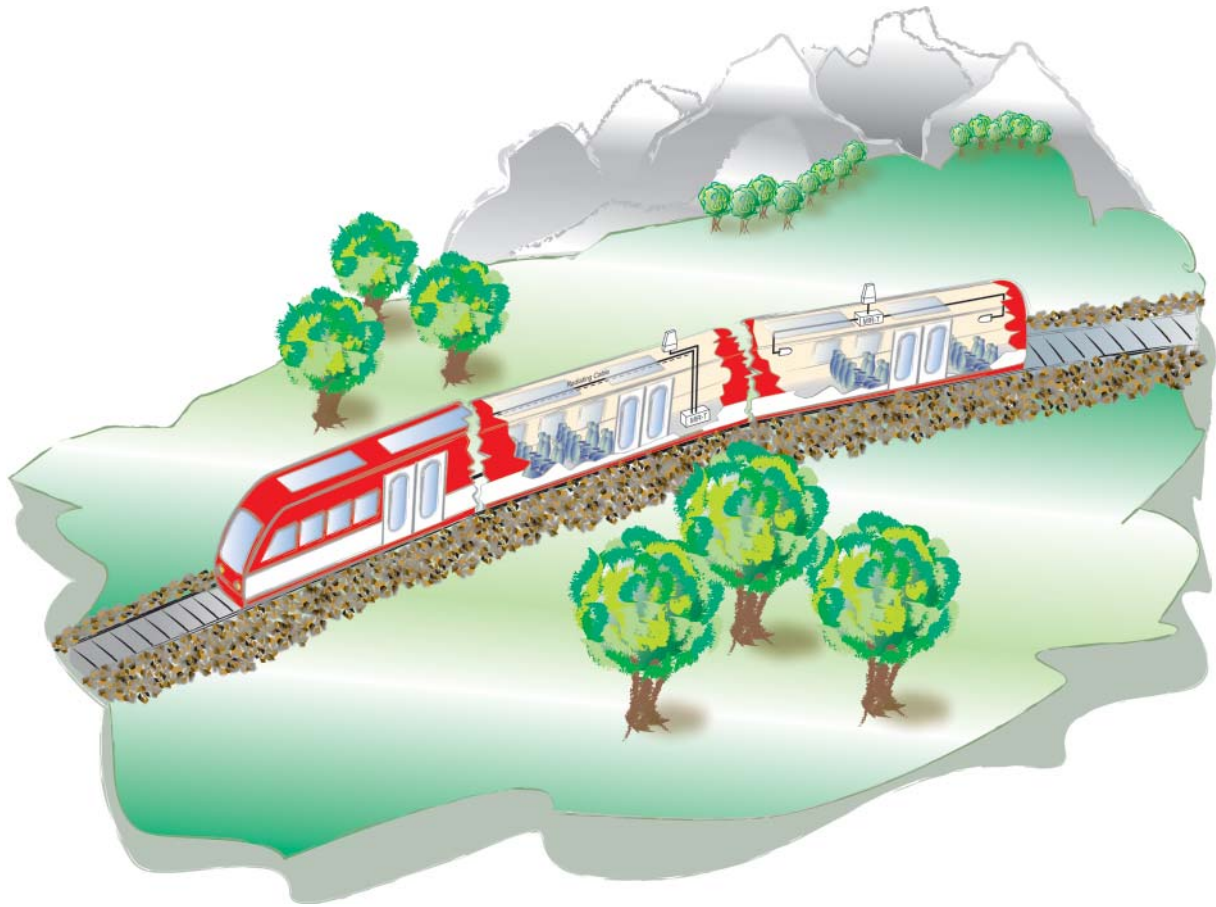
The Andrew intrain repeater is a versatile, cost-effective, multi-band, multi-technology solution designed for GSM, GSM Rail and UMTS.

It combines the advantages of the GSM and UMTS architectures with additional simulcasting and other features:

- Reduced mobile transmit power
- Improved signal quality
- Increased frequency use and capacity
- Reduced system engineering design time
- Optimized homogeneous coverage
- Increased flexibility for future applications

Frequency range	Gain, dB	Bandwidth	Gain adjust range, dB	DL noise figure, dB	UL Pout 2 carriers, dBm/c	UL Pout 4 carriers, dBm/c	UL Pout 8 carriers, dBm/c	DL Pout 2 carriers, dBm/c	DL Pout 4 carriers, dBm/c	DL Pout 8 carriers, dBm/c	Repeater
GSM-R900	70	1 var. Band up to 4 MHz	40 to 70	5.0	27.0	24.0	21.0	19.0	16.0	13.0	MIR-T9R
GSM-900	70	2 var. Bands up to 30 MHz	40 to 70	5.0	27.0	24.0	21.0	19.0	16.0	13.0	MIR-T9
GSM1800	70	2 var. Bands up to 38 MHz	40 to 70	5.0	27.0	24.0	21.0	19.0	16.0	13.0	MIR-T18
UMTS2100	70	2 var. Bands up to 30 MHz	40 to 70	5.0	24.0	21.0	18.0	10.0	7.0	4.0	MIR-T21

# Application Example



*MIR-T Application*



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