

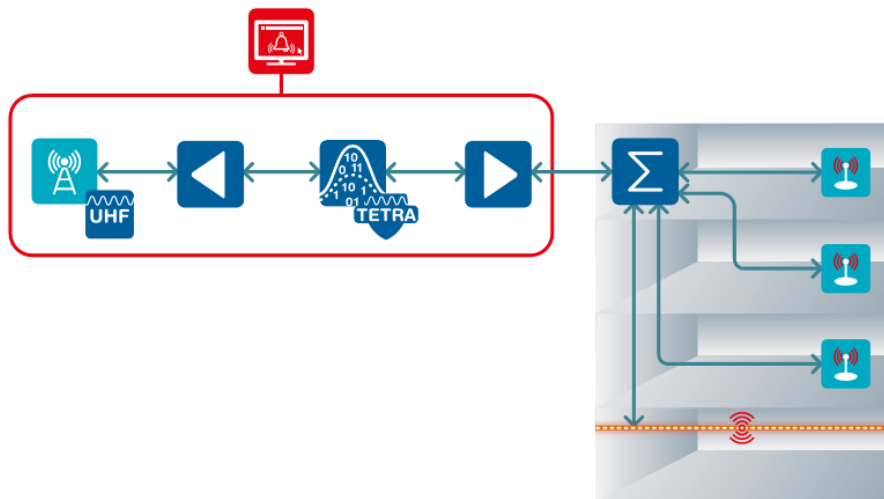
## Description

SEE Telecom's multi-channel digital off-air repeater (MC-DIRRAC) enhances RF coverage in confined areas. The MC-DIRRAC processes up to eight channels, independently, both in frequency and in power, through per channel and per timeslot AGC/ALC functionalities and customizable filtering.

The repeater has two RF connectors, one connected to the antenna pointing toward the base station and the second one is connected to the antenna or radiating cable in tunnel or building. Monitoring and control can be done via SNMP, SCADA, via Ethernet using a web browser installed on a PC which gives access to the GUI. This interface contains an easy configuration page.

The MC-DIRRAC has a sum alarm and two software programmable alarms that can be outputted on dry contacts which can be connected to an external alarm system (PLC, etc.). External alarm inputs are also available.

The repeater can be ordered with different frequencies and powers.



## Applications

- TETRA, TETRAPOL
- Coverage enhancement
- Confined areas; tunnels, buildings, metros, mines, wind turbines, warehouses
- Outdoor: public safety, border patrol, working areas

## Key features

- 19" rackable
- Bi-directional high power
- Up to 8 channels independently processed
- Customizable filtering
- AGC/ALC per timeslot
- High linearity
- Monitoring & control via IP

## Benefits

- Easy installation inside 19" rack
- No near-far effect
- Large coverage capability
- Carriers balancing
- Unwanted carriers notching
- High density spectrum adapted

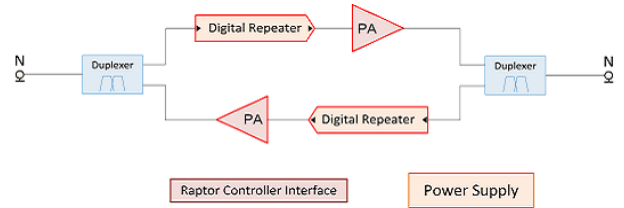
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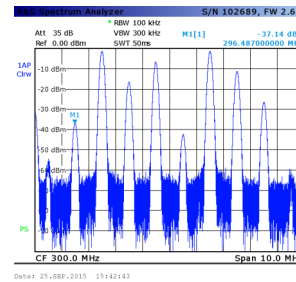
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### Technical features

Frequency band	380 - 520 MHz
Duplex spacing	10 MHz
Channel bandwidth	Max 5 or 6.5 MHz (bandwidth per channel depends on selected filter, max 5 or 6.5 MHz for all channels)
Frequency shifting	± 5 or 6.5 MHz in 1 kHz step on UL& DL
Delay	For TETRA : < 12 µs (< 14 µs at high selectivity)
Downlink power per carrier (complying with ETSI TS 101 789-1)	Med. power: 1 carrier: +21 dBm, 2 carriers: +18dBm High power: 1 carrier: +36 dBm, 2 carriers: +33dBm
Uplink power per carrier (complying with ETSI TS 101 789-1)	Med. power: 1 carrier: +21 dBm, 2 carriers: +18dBm High power: 1 carrier: +36 dBm, 2 carriers: +33dBm
Downlink IP3	> 68 dBm (high power)
Spurious and harmonics	< -36 dBm (ETSI EN 300 392-2 v3.4.1 compliant)
Max gain	90 dB (exact value depends on application) 82 dB for TETRA
Gain adjustment	30 dB in 0.5 dB steps
Squelch adjustment	-90 to -20 dBm
AGC/ALC	Per channel & per timeslot
Input/output return loss	>12 dB
Noise factor	< 4.5 dB typ. @ max gain
Power supply voltage	28 VDC
Power consumption	55 W (medium power) 150 W (high power)
Dimensions (W x H x D) max	19" x 4U x 450mm
Weight	25 kg
Operating temperature	-10 to +55°C
MTBF	> 70 000 h
RF-connectors	N-female
Monitoring	RJ45 (HTTP, SNMP), GSM Modem
Sum alarm	NO and NC (plinth)

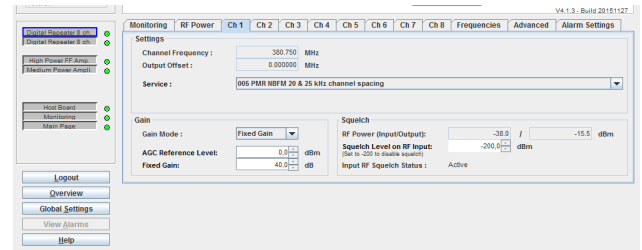
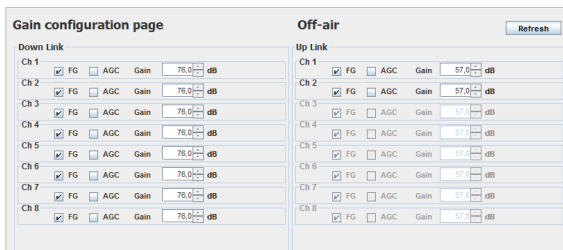
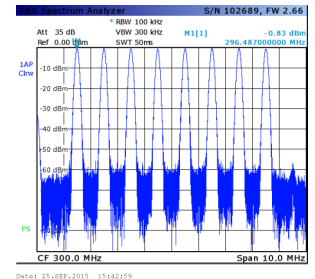


Schematic diagram of the MC-DIRRAC.



Digital signal processing per Channel :

- High-selectivity filtering
- AGC & ALC per timeslot
- Frequency shifting



Views of the GUI of the MC-DIRRAC. On the left, the easy configuration page is shown, allowing a user to configure the repeater with a few basic values.

MC-DIRRAC	Repeater type	Frequency bands	RF output power	Power supply	Monitoring	Frequency inversion
170720	I	m	n	o	p	q
C	Multi Channel selective UHF	A: UL: 380-385 MHz DL: 390-385 MHz	H: 2x High output Power (UL & DL)	0: None (external 28 Vdc)	N: RJ45 Ethernet connection	N: No frequency inversion (standard)
A	Band Selective UHF	B: UL: 410-415 MHz DL: 420-425 MHz	M: 2x Medium output Power (UL & DL)	1: 110-230 Vac (50-60 Hz)	G: Remote monitoring LTE Modem	I: Yes (High and Low duplexer ports inverted)
		C: UL: 415-420 MHz DL: 425-430 MHz	P: 1x High output power DL & 1x Medium output power UL	2: -48 Vdc		
		D: UL: 450-455 MHz DL: 460-465 MHz	Q: 1x High output power UL & 1x Medium output power DL	3: 110-230 Vac (50-60 Hz) + Battery Backup interface		
		E: UL: 455-460 MHz DL: 465-470 MHz		4: -48 Vdc + Battery Backup interface		
		K: UL: 380-386.5 MHz DL: 390-396.5 MHz				

### About See Telecom

SEE Telecom is a world leader in the provision of scalable, flexible, user-friendly, and cost-effective systems for multi-services radio coverage inside confined areas to enhance safety and facility management. Since 1999, SEE Telecom has equipped more than 1000 km of road tunnels, railway tunnels, and metros all over the world. SEE Telecom solutions are available worldwide through an exclusive network of partners.