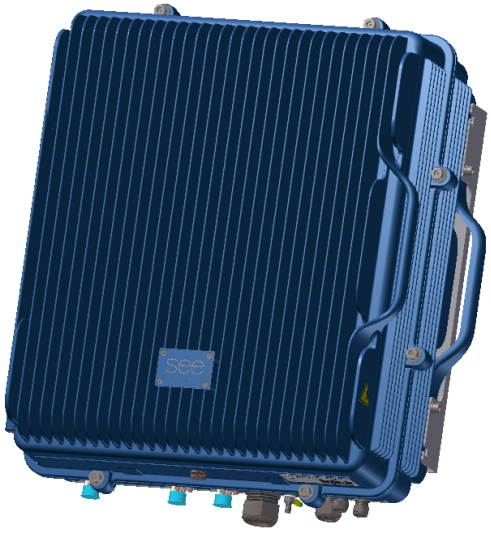
MC-DIRRAC Off-air Multi-Channel Digital Selective UHF Repeater

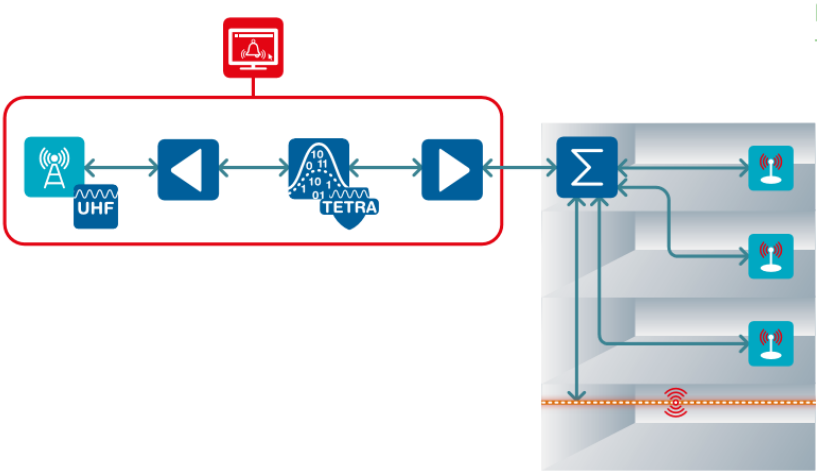


Description

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. Built-in waterproof wall-mounted rack, the MC-DIRRAC can be installed in the harshest environment, indoors or outdoors.

The repeater has three 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, or remotely via an optional LTE modem which allows to access the repeaters GUI from everywhere, using the 4G network and the third connector. This interface contains an easy configuration page. The MC-DIRRAC also has a sum alarm output which can be connected to an external alarm system.

The repeater can be ordered with different frequencies, powers, different power supply voltages, with or without battery backup, and with a remote monitoring LTE modem.



Applications

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

Key features

- Bi-directional high power
- Up to 8 channels independently processed
- Customizable filtering
- AGC/ALC per timeslot
- Compact size
- High linearity
- Monitoring & control via IP
- Optional Remote Monitoring

Benefits

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

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> RADIO COMMUNICATION IN CONFINED AREAS
> BROADBAND COMMUNICATION SYSTEMS
> RADIOFREQUENCY CONNECTORS

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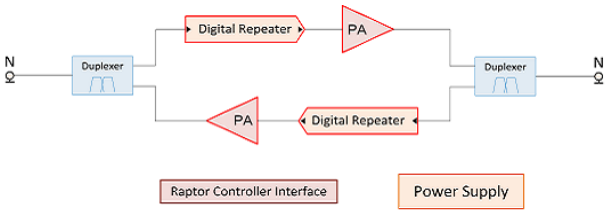
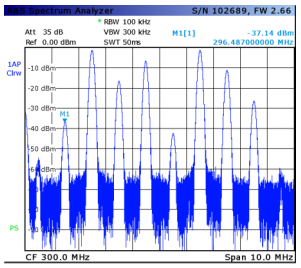
Technical features

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
Max gain	90 dB (exact value depends on application) 82 dB for TETRA
Gain adjustment	30 dB in 0.5 dB steps
Squelch adjustement	-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	100-230 VAC, 47-63 Hz or -48 VDC
Power consumption	55 W (medium power) 150 W (high power)
Dimensions	440 x 515 x 230 mm
Weight	33 kg
Protection class	IP66
Operating temperature	-10 to +55°C
MTBF	> 70 000 h
RF-connectors	N-female
Monitoring	RJ45 (HTTP, SNMP), LTE modem
Sum alarm	NO and NC (plinth)

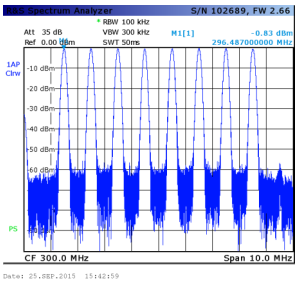


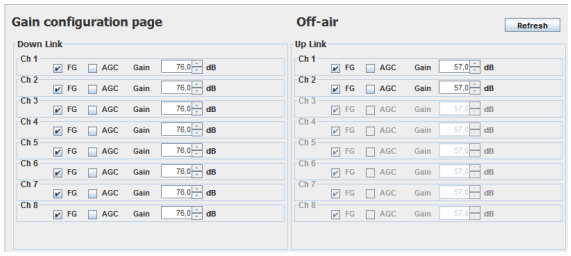
Schematic diagram of the MC-DIRRAC.

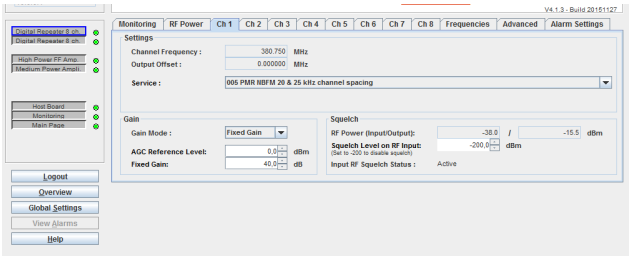


Digital signal processing per Channel :

- *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	-	l		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								

** Optional Battery Backup unit must be ordered through additional 170710-0 ordering code*

About SEE TELECOM

Since 1972, SEE TELECOM is developing and delivering innovative and reliable equipment in three product ranges: RF connectors, hybrid fiber-coaxial transmission systems and RF communication systems. Our excellent knowledge of RF and fiber communication has resulted in high performance products of excellent, long lasting quality. This had been widely recognized and we are proud of our long relationships with a large number of customers, designing, manufacturing and supporting installation of systems and solutions across the world.

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