

❖ **General description :**

The **Optirep Multiband system** is flexible equipment that ensures the continuity of the Radiocommunications service in places or infrastructures insufficiently covered.

With the flexibility of the system, several combinations are possible according to the specificities of each site : RF or BTS captation compatible with remote repeaters MP and HP. Several optical racks can be combined in the need for distribution on more than 6 fibers.

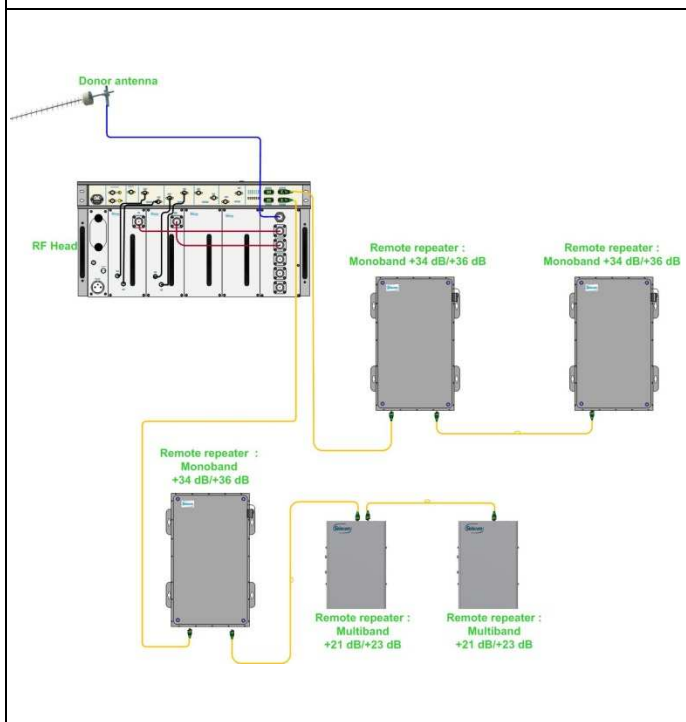
The equipment can be monitored remotely using its E2M monitoring module (integrated WEB / SNMP server). Remote access is possible with all media using IP (modem, satellite). All "centralized" units (FO / RF repeater) are supervised (via optical fiber) by the master receiving unit in which the supervision module (WEB / SNMP server) is located.

Typical application

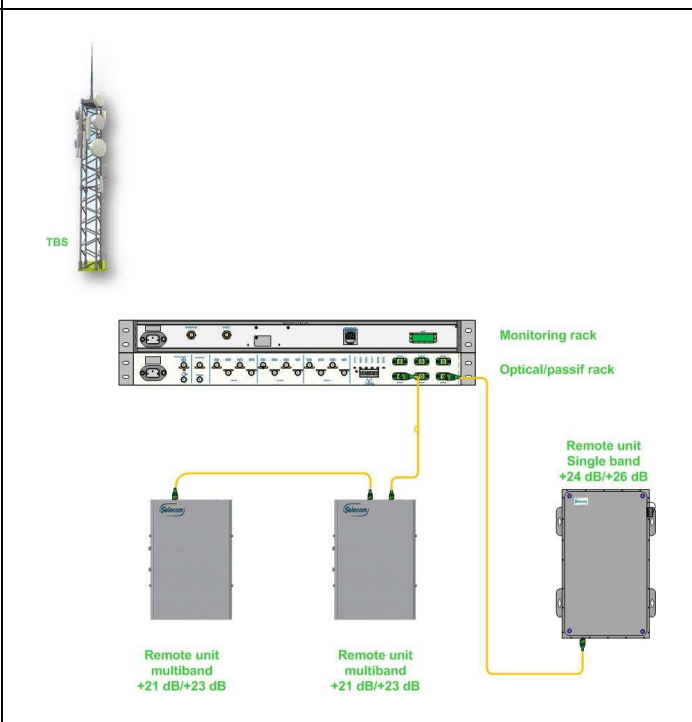
- ✓ **Underground parking,**
- ✓ **Shopping centers,**
- ✓ **Metro corridors,**
- ✓ **Theatres,**
- ✓ **Tunnel...**



Example of possible configuration with a RF captation



Example of possible configuration with a BTS captation





The System

The **Optirep Multiband system** includes:

- ✓ Two racks depending on the signal source:
 - A **passive / optical rack** (1U) and a **Digirep rack** (5U integrated ventilation) will be used for RF reception
 - A **monitoring rack** (1U) and 1 **passive / optical rack** (1U) will be used for BTS

- ✓ **Single or multiband remote unit.**

 System specifications							
RF characteristics		700 MHz	800 MHz	900 MHz	1800 MHz	2100 MHz	2600 MHz
Frequency range	TX	758~788	791~821	925-960	1805~1880	2110~2170	2620~2690
	RX	703~733	832~862	880~915	1710~1785	1920~1980	2500~2570
Gain max	MP	80 dB					
	HP	90 dB					
Ripple in bandwidth		≤ 2dB					
Intermodulation		≤ -30 dBm @ ≥ 1 GHz ; ≤ -36 dBm @ ≤ 1 GHz					
Noise factor	Uplink RX	≤ 4 dB @ Gain Max					
	Downlink RX	≤ 5 dB @ Gain Max					
Group delay		≤ 5 μs (Out of fiber)					
 Filters sub-band							
		700 MHz	800 MHz	900 MHz	1800 MHz	2100 MHz	2600 MHz
Number of filters max		12					
For each filter	Adjust bandwidth	From 100 kHz to 30 MHz		From 200 kHz to 35 MHz	From 200 kHz to 75 MHz	From 100 kHz to 60 MHz	From 100 kHz to 60 MHz
	Central frequency adjustment	From f_0 to $f_0 + 15$ MHz		From f_0 to $f_0 + 17.5$ MHz	From f_0 to $f_0 + 35$ MHz	From f_0 to $f_0 + 30$ MHz	From f_0 to $f_0 + 35$ MHz
	Adjustment attenuation	From 0 dB to -30 dB					

Master Unit – RF captation

RF CHARACTERISTICS		700 MHz	800 MHz	900 MHz	1800 MHz	2100 MHz	2600 MHz
Frequency range	TX	758~788	791~821	925-960	1805~1880	2110~2170	2620~2690
	RX	703~733	832~862	880~915	1710~1785	1920~1980	2500~2570
UL composite nominal output power		+12 dBm					
Gain		Adjustable from 60 to 90 dB					
Ripple in bandwidth	Frequency Adjustment	From 200 kHz to full band					
	Frequency response	$< \pm 1$ dB					
Selectivity		40 dB @ ± 400 KHz 50 dB @ ± 600 KHz 55 dB @ ± 1 MHz					
Absolute group delay		≤ 5 μ s					
Maximum entry input BS		20 dBm without degradation of specifications and conform to standards / + 0 dBm without damage					
Monitoring		IP RJ45 Access (x2) 2G_3G_4G Modem/SNMP COMPLIANT					
Conformity		Compliant 3GPP					
RF SLOT	Power supply	28 VDC					
	Consumption	≤ 80 W					
	Dimensions	177 mm (4U) x 77 mm (15TE) x 393 mm					
	Weight	7 kg					
	Connectors	QN female					
	Protection class	IP68 / IK9					
	Signs	A tricolor Led (Green / Yellow / Red) + 1 dry loops					
COMBINER	Insertion loss	0.8 dB					
	Isolation	≥ 20 dB					
	VSWR	1,5 : 0					
	Dimensions (L x H x P)	177 mm (4U) x 76 mm x 200 mm					
	Weight	3 kg					
	Connector	Antennas	1 Nf				
Rf slot		5 QN female					
SUPPLY	Supply voltage	230 Vac or 48V DC					
	Consumption	500 W					
	Efficiency	86%					
	Dimensions	177 mm (4 U) x 46 mm (9TE) x 370 mm					
	Weight	2.800 kg					

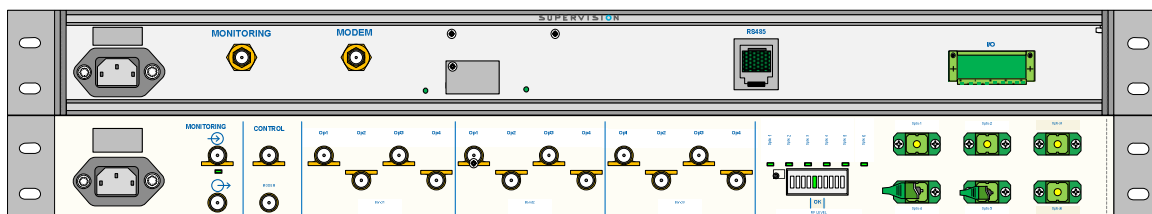
FANS	Supply voltage	28 V DC		
	Consumption	6 W		
	Connector (X1)	Binder F		
	Dimensions (L x H x P)	344 mm x 167 mm x 39 mm		
	Weight	0.75 Kg		
RACKS				
REPEATER RACK	Dimensions (L x H x P)	177 mm (4 U) x 482.6 mm x 446mm		
	Weight (multiplexer included)	10 kg		
	Total weight (Complete rack)	35 kg		
PASSIVE & OPTICAL RACK	Compatible up to 3 frequency bands			
	Optical access	1 to 6 access SC APC (Factory setting)		
	Connectors	RF	2 SMA female per band	
		Optics	6 SC APC	
	Control of remote units	Remote repeater monitoring by optical link over IP protocol		
	Signaling	Operating LEDs of optical links Green / Yellow		
	Voltage	230 Vac or 48 Vdc		
	Consumption	30 W		
	Dimensions (L x H x P)	44 mm (1U) x 482.6 mm (19') x 260 mm		
	Weight	4 Kg		
	Technology	Transmission / reception in WDM on a fiber		
	Wavelength emission	1310 nm		
	Optical output power	4 dBm ± 2 dB		
	CAG (Automatic Balance Compensation)	12 dBo		



RF reception: Repeater rack and passive /optical rack

Master Unit – Captation BTS

RF CHARACTERISTICS		700 MHz	800 MHz	900 MHz	1800 MHz	2100 MHz	2600 MHz	
PASSIVE & OPTICAL RACK	Optical access	1 to 6 access (Factory setting)						
	Operators input	Up to 4 operators						
	Monitoring	Local IP monitoring on SMA-F						
	Connectors	RF	SMA female					
		Optics	6 SC APC per rack					
	Bar graph	Indication of the distributed composite RF level on the fibers						
	Voltage	230 Vac ou 48 Vdc						
	Consumption	30 W						
	Dimensions (L x H x P)	44 mm (1U) x 482.6 mm (19") x 260 mm						
	Weight	4 Kg						
	Protection class	IP 20						
	Technology	Transmission / reception in WDM on a fiber						
	Wavelength emission	1310 nm						
	Optical output power	4 dBm ± 2 dB						
CAG (Automatic Balance Compensation)	12 dBo							
MONITORING RACK	Connectors	2 connectors RF SMA						
		Alarm connector 8 points						
	Dedicated interface	Developed according to the application and the specifications						
	Monitoring	RJ45						
		SIM card port						
		IP monitoring/local Remote monitoring via 2G / 3G / 4G modem						
	Protocol	HTTP, SNMP						
	Supply	230 Vac or 48 Vdc						
	Consumption	100 mA						
Dimensions (L x H x P)	44 mm (1U) x 482.6 mm (19") x 260 mm							
Weight	2 Kg							
Protection class	IP20							
Box version on request								



BTS coupling: Passive & Optical Rack

Remote unit

✓ **FO/RF single band remote unit**

Built in an IP65 compliant box, repeaters can be wall mounted indoors or outdoors and in the most challenging environments.

RF CHARACTERISTICS		700 MHz	800 MHz	900 MHz	1800 MHz	2100 MHz	2600 MHz
Frequency range	TX	758~788	791~821	925-960	1805~1880	2110~2170	2620~2690
	RX	703~733	832~862	880~915	1710~1785	1920~1980	2500~2570
DL composite nominal power		+36 dBm		+34 dBm		+36 dBm	
Optical links		2 outputs including 1 available as an option for daisy chain configuration					
OPTICAL INTERFACE	Technology	Transmission / reception in WDM on a fiber					
	Wavelength emission	1550 nm					
	Optical Output Power	4 dBm ± 2 dB					
	CAG (Automatic optical balance compensation)	12 dBo					
	Optical connector	SC / APC					
	Optical fiber	SMF G652D or G657A2					
SUPPLY & MECHANICAL	Supply voltage	230 Vac or 48 Vdc					
	Consumption	130 W max					
	Efficacy	86%					
	Connector	N-Female					
	Dimensions (L x H x P)	350 mm x 550 MM x 102 mm					
	Weight	13 Kg					
	Cooling	Natural convection					
	Operating temperature	Included between -20 ° C and 50 ° C					
Monitoring		Centralized at master level via TCP / IP link on fiber					

✓ **FO/RF remote unit multiband**

Our remote unit multiband are compatible up to 3 frequencies bands.

Our remote unit multiband are reserved for indoor use only.

RF CHARACTERISTICS		700 MHz	800 MHz	900 MHz	1800 MHz	2100 MHz	2600 MHz
Frequency range	TX	758~788	791~821	925-960	1805~1880	2110~2170	2620~2690
	RX	703~733	832~862	880~915	1710~1785	1920~1980	2500~2570
DL composite nominal power		+ 23 dBm		+ 21 dBm		+ 23 dBm	
Optical links		2 outputs including 1 available as an option for daisy chain configuration					
OPTICAL INTERFACE	Technology	Transmission / reception in WDM on a fiber					
	Wavelength emission	1550 nm					
	Optical Output Power	4 dBm ± 2 dB					
	CAG (Automatic optical balance compensation)	12 dBo					
	Optical connector	SC / APC					
	Optical fiber	SMF G652D or G657A2					
SUPPLY & MECHANICAL	Supply voltage	24 Vdc Power supply Plug in 230 Vac ou 48 Vdc					
	Consumption	60 W max					
	Connector	1 N Female					
	Dimensions (L x H x P)	260 mm x 210 MM x 70 mm					
	Weight	4 Kg					
	Cooling	Natural convection					
	Operating temperature	Included between -20 ° C and 40 ° C					
Monitoring		Centralized at master level via TCP / IP link on fiber					
Optional		2dBi omnidirectional coverage antenna					