DSPbR
Digital Signal Processor based Repeater
In-building, In-tunnel or Outdoor Coverage Enhancement Repeater
Multi-channel and Multi-band expandability
DSPbR Series

The DSPbR is a compact 19" rack mountable, RF-transparent, digital channel selective repeater. It is fully programmable, on a per channel basis, and can provide up to 8 high power, or up to 12 low power, RF off-air bi-directional channels - with up to 3 frequency bands in one chassis. Additional channels or frequency bands can be added by expanding to multiple chassis'. Off-air RF linking to the donor network can be utilised, or a chassis can be installed at the donor location with fibre then being used to link to one or more remote chassis. Point-to-point, point-to-multipoint, drop-and-insert, RFOF Summing and Simulcast configurations are all available for implementation.

Remote or local configuration and status and alarm monitoring and reporting are provided via TCPIP connection or the integral cellular modem using a user-friendly webserver GUI - or via USB or RS232 using a Command Line Interface (CLI). SNMP Traps, UDP Manager Messages, SMS, Email (SMTP) and dry relay contacts are all available for alarm reporting. Alarm inputs are also provided for the monitoring of equipment cabinet doors and other site alarms.

The DSPbR is ideal for in-building, in-tunnel and outdoor coverage rebroadcast and enhancement, with its per-channel user-configurable channel frequency and bandwidth, frequency band, signal gain, RF output power and other parameters suiting a wide range of deployment applications. The DSPbR's RF-transparent operation is secure and compatible with most analogue and digital technologies, with network features like encryption and over-the-air-rekeying being passed unchanged. The hot-swappable, modular architecture of the DSPbR provides user-friendly, convenient and efficient in-field upgrading and maintenance.

Features:

- Analogue and Digital compatible – supports most network technologies
- Secure RF-transparent operation – supports encryption, over-the-air-rekeying, etc
- Up to 8 high-power or up to 12 low-power RF off-air bi-directional channels
- Up to 16 high-power or up to 24 low-power fibre-fed bi-directional channels
- On-frequency or frequency-translating operation, in-band or cross-band
- Programmable parameters per-channel, and independently in uplink and downlink
- Onboard GPS receiver and mutli-band Cellular modem
- Configurable for RFOF Summing, RF Simulcast, and Fibre connectivity
- Compact 19in rack mounting chassis with DC or AC power supply options
- Hot-swappable modular plug'n'play architecture for easy upgrading and maintenance

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Specifications

Model Number	DSPbR® Series - configuration dependent
Available Frequency Bands (MHz)	132-152, 150-174, 403-420, 410-430, 430-450, 450-470, 470-490, 480-500, 500-520, 746-766, 786-806, 805-825, 850-870
Maximum Channel / Band capacity per chassis	RF Off-Air: Up to 8 high pwr chs for 1 or 2 bands, Up to 7 high pwr chs for 3 bands RF Off-Air: Up to 12 low pwr chs for 1, 2 or 3 bands Fibre fed: Up to 16 high pwr chs for 1 or 2 bands, Up to 14 high pwr chs for 3 bands Fibre fed: Up to 24 low pwr chs for 1, 2 or 3 bands
Modes of operation	Full Duplex, on Frequency and or Frequency/Band Translating
Output Power - per RFBE (max)	Analogue, APCOP25 Phase 1, DMR, MotoTrbo™, EDACs, etc VHF/UHF +45dBm, 7/800MHz +43dBm APCOP25 Phase 2, TETRA VHF/UHF +36dBm, 7/800MHz +34dBm
Output Power adjustment range (1dB steps)	+10dBm to max
Output Power - MCPA mode per-carrier (max)	+15dBm (ACMA-compliant), +17dBm (FCC-compliant)
Output Power adjustment per-carrier in MCPA mode	0dBm to +15dBm (ACMA-compliant), 0dBm to +17dBm (FCC-compliant) Adjustable in 1dB steps
Gain Range (1dB steps) UL & DL, translating mode	70-135dB
Gain Range (1dB steps) UL & DL, non-translating mode	70-130dB
RF Channel Bandwidth (KHz)	12.5, 25 Please contact RFI for details of other Channel Bandwidths
Noise Figure (max) - No ALC	6dB
Receiver sensitivity (typical)	-116dBm
Tx spurious emissions	-30dBm (ACMA-compliant), -13dBm (FCC-compliant)
Frequency Translating Error	< 100Hz
External frequency reference/disciplining options	10MHz and GPS
Internal 8-Ch combiner option (MHz)	Available for UHF, 7/800MHz models only. Use external combining for VHF models
Maximum input power - RFFE without damage	+10dBm
User Access - Ethernet	2 levels of user name and password control
User Interface - Ethernet	GUI (Web browser enabled Graphical User Interface)
Configuration and Alarm diagnostics connectivity	Ethernet port / cellular modem
Alarm Interface termination connector	via rear mounted DB15 connector
System Impedance	50Ω
RF UL & DL Input and output termination connectors	N (F)
RF disciplining & cell modem antenna termination connectors	SMA (F)
Power Supply options	24VDC / 48VDC or Mains 85-265VAC (50/60Hz)
Cooling	Active - Fan assisted.
Installation environment	Indoor
Chassis Earthing	M6 Earth stud on chassis rear
Dimensions (single 4RU chassis)	W 483 x D 460 x H 178mm / W 19 x D 18.1 x H 7"
Weight (fully populated)	38kgs / 83.6lbs
Operational temperature range	-30° C to +60° C / -22° F to 140° F
Regulatory Approvals	ACMA AS/NZS4295 AS/NZS4768, FCC Part 22, FCC Part 90 EN60950-1:2006, AS/NZS60950.1:2011, FCC Part 15 Please contact RFI for details of other approvals

Australian Patent No. 2010236015   USA Patent No. 8,787,827

Ordering Information

The hardware and software configuration option requirements are likely to be different for most applications. Please contact your nearest RFI office for your specific requirements.