RFI
TECHNOLOGY SOLUTIONS

# Rebroadcast Capability

## Introduction to RFI Rebroadcast

KNOWLEDGE • EXPERTISE • RELIABILITY

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# About RFI

RFI Technology Solutions are committed to world-class quality standards. A recognised market leader, with unmatched industry experience, RFI offers the best products for your needs.

For over 40 years we have been manufacturing and delivering innovative technical products to our global customers.

# Innovation & Engineering on global scale

RFI have been offering customised Radio Rebroadcast solutions for VHF and UHF for emergency services applications that seamlessly link radio as it travels down and through tunnels then back above ground via our Australian designed and manufactured radio solutions.

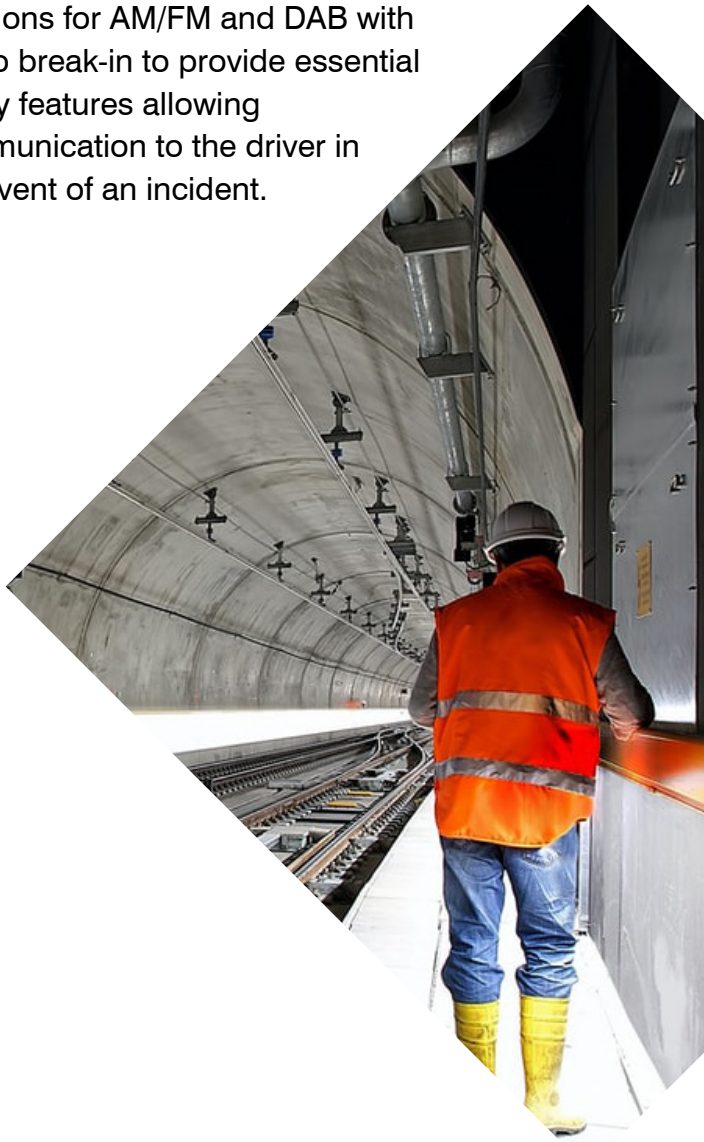
Australia's roadways have experienced a monumental transformation over the last 10 years. A significant infrastructure boom has seen our capital cities undergo major capital works projects incorporating roadways above and below ground with many unique interlinking road tunnels. We are proud to be an integral partner on the majority of these projects either as a manufacturer and designer of radio solutions or complete end to end integrator of radio rebroadcast offerings. Seamless Mission-critical radio communications is now available to our first responders above and below ground thanks to our Australian designed and manufactured solutions.

RFI can provide a total turnkey package not to only supply the required equipment but also to provide design, installation, testing, commissioning, and project management services.

Each tunnel partner has their own specific requirements as they set out with an initial design. We take their initial specification and then in collaboration design a customised solution that considers traffic, tunnel design and specific requirements related to their project. Designing an efficient rebroadcast system for large tunnel networks can often be quite complex and challenging, however RFI's RRB subject matter expert engineers have years of experience designing such complex systems.

We have our manufacturing facilities in Melbourne and Adelaide where we manufacture, assemble, and test our RRB products and solutions using RFI's industry-leading innovative technology. Depending on the requested design, we make the necessary modifications and customisations in the RBB products and solutions to suit the specific application. The equipment will then go to our staging areas in Melbourne or Sydney where they will be assembled into the final racks, loaded with the required configuration / firmware, and tested before they are sent to site for installation.

The result is a detailed engineering solution many years in the making that provides first responders a most up to date rebroadcast solution along with additional rebroadcast solutions for AM/FM and DAB with Audio break-in to provide essential safety features allowing communication to the driver in the event of an incident.



# RFI's Suite of RRB Solutions

## DSPbR

Digital Signal Processor based Repeater(DSPbR) is the family of RFI's channel selective Bi-directional Amplifiers (BDAs), which are used to boost and extend the radio coverage for public safety and commercial two way radio networks (PMR) into the desired coverage locations. The true channelised nature of these repeaters helps to ensure the spectrum pollution is avoided, the strict spectrum regulatory requirements are met, and available amplifier power budget is spent only on the desired signals. DSPbR is compatible with most common PMR technologies including Analogue, APCO P25 Phase 1 and Phase 2, DMR and MotoTrbo.

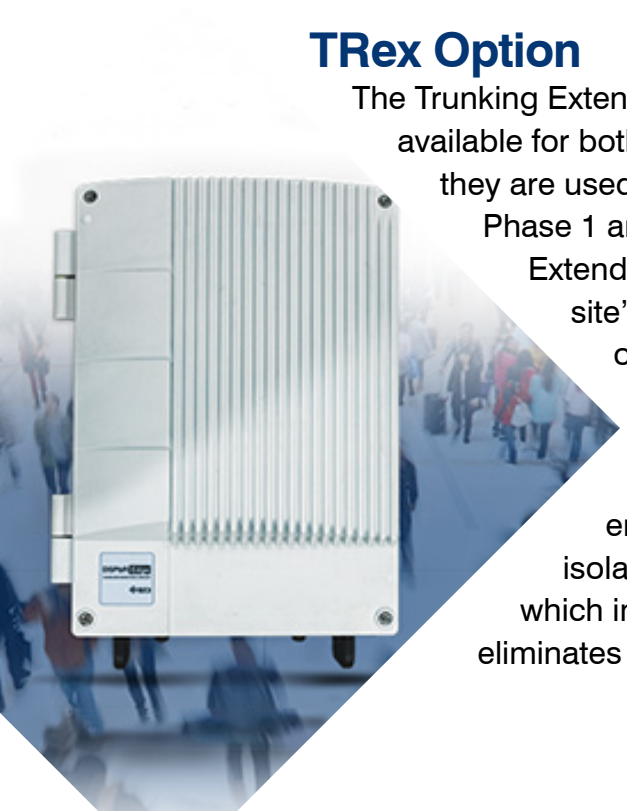
DSPbR family of products provide a cost effective and simplified solution to boost and extend the radio signals, from an area where the coverage is available via an off-air antenna or through optical fibre, into areas where coverage is weak or not available. Examples include providing critical radio coverage inside the buildings, inside the underground road and rail tunnels, or at remote sites and locations as well as blackspots.

The classic DSPbR is a compact, modular, 19" rack mountable, high power repeater that is configurable to deliver large outdoor coverage footprints, or to act as a headend for large to medium size in-building or in-tunnel Distributed Antenna Systems (DAS). DSPbR is available in most common VHF, UHF and 7/800MHz frequency sub bands.

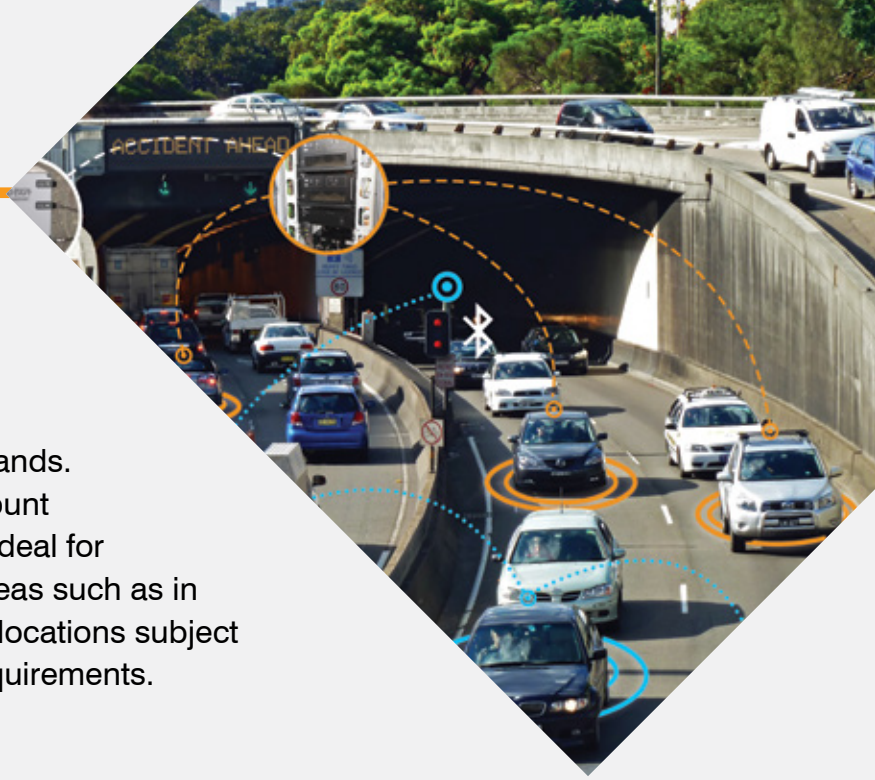
The new DSPbR Edge product is a compact channelised repeater in an IP rated wall/pole mountable enclosure. It's a simple and cost-effective solution for applications where critical radio coverage is desired for small to medium size buildings such as shopping centres, hospitals, public service buildings and carparks. DSPbR Edge is currently available in 400-470MHz band with more frequency sub-bands to be released in future.

## TRex Option

The Trunking Extender (TRex) is an innovative feature available for both DSPbR and DSPbR Edge when they are used to rebroadcast signal from APCO P25 Phase 1 and Phase 2 trunking networks. The Trunking Extender option transcodes the P25 network donor site's Control Channel, rebroadcasting it on different set of frequencies so subscriber terminals see the DSPbR rebroadcast site as 'another' site in the network.



Using this feature, rebroadcast frequency translation is enabled for P25 trunking networks. This helps to relax the isolation requirements between the donor and service antenna which in turn makes more usable gain of the BDA available. It also eliminates the so-called mush zones in the coverage border zones.




## Band Selective BDA

RFI also offers a range of standard and customised band selective BDAs. Both off-air and fibre fed BDAs are available in common VHF, UHF and 7/8/900MHz sub-bands. These come in various rack mount, wall mount or pole mount enclosures. These BDA are ideal for rebroadcasting RF coverage in confined areas such as in tunnels and mining sites as well as remote locations subject to compliance with spectrum regulatory requirements.

## AM/FM/DAB

RFI offers expandable AM, FM and DAB/DAB+ rebroadcast products suited for applications requiring single or multi-channel coverage enhancement. These products are suitable for providing coverage enhancement in poor signal areas such as rail and road tunnels, campus and office buildings, mines and carparks.

The offering includes multi-channel headend units and RF amplifies. Depending on the specific design requirements, the signals can be transported between these units over coaxial cables or optical fibre (RFoF).

Rebroadcast signals can be combined and interfaced into catenary wire, radiating feeder cable or antenna RF distribution systems.

RFI AM/FM/DAB rebroadcast systems can be provided with “audio break-in” feature to enable live or pre-recorded announcements. This is a critical functionality for incident control and public safety purposes.

RFI can also supply a Rebroadcast Audio Server (RAS) to provide pre-recorded announcement message storage, retrieval, and playback, remote OMCS/PMCS control and alarm system interfacing (via TCP/IP, VOIP, PLC or discrete digital I/O), rebroadcast system monitoring and alarm status reporting.

Public Address (P.A.) system, EWIS interfacing and control, announcement message logging with time and date stamping for incident management, reporting and review are also available.

RFI’s product portfolio also includes a wide range of antennas as well as multicoupling and filtering solutions and products many of which are also commonly used in radio rebroadcast designs.

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