

Broadcast Australia - Dulong Lookout site Compact Combiners in the Australian Outback

Background

Broadcast Australia (BA) is Australia's leading independent broadcast transmission provider. It provides transmission services from approximately 600 transmission sites across Australia and reaches over 99% of the country's population. BA is the sole provider of digital and analogue broadcasting services to ABC and is the majority provider to SBS, and a number of other regional commercial broadcasters.

Challenge

The conversion of Australia's television network to digital has set many challenges for BA's network. The digital television rollout required a complete review of the analogue network on a site by site basis. In particular, it was important to ensure that the quality of the existing analogue signal was not effected by the installation of the new equipment.

An example of the difficulties involved in this process was BA's Dulong Lookout site in Queensland. Dulong Lookout was originally designed as a five channel analogue station, with the transmitters feeding into a stretch line combiner. BA needed a new combiner solution which would allow the addition of five digital channels, with a minimum of disruption to existing channels during and after the installation.

Space and adjacent channels were also issues at the site. 'There was very limited floor space to sit the new combiners' says Chris Lumsden, the BSA engineer who undertook the installation. BA wanted a compact solution which avoided the need to build extensions to the existing buildings.

Solution

BA needed to look no further than Exir Broadcasting & Telecom for a solution. Teracom with its Australian distributor, BSA designed a system comprising of five

digital and five analogue services, six of which are adjacent. All combiners were of the constant impedance type. In order to avoid any interference problems, eight of the combiners used had six cavity filters with notches (Model COM4-6BPF-AA01 and COM4-6BPF-AI00) which are very selective. The remaining non adjacent analogue channels used combiners with a 3-cavity filter (Model COM4-3CWG-A001). The analogue services were also installed nearest to the antenna to minimise insertion loss.

The power level of the analogue services was 500W P/s and 250 W rms for the digital services, which is higher than most of the low power stations in Australia. It was necessary therefore to use a more powerful combiner at the end of the combiner chain to handle both the inp power and the output power and voltage.

Both BA and BSA were very satisfied with the results after extensive testing. The existing analogue signals were not adversely affected after the combiner install. 'The analogue channel insertion loss measurements were actually improved after the new installation' says Chris Lumsden, 'The measurements were typically about 0.5 dB better than the original combiner.'

At present there are five analogue services and two digital channels being broadcast from the site. The system has capacity for three further digital channels and even two datacasting channels can be added to the wideband input port, giving a total of 12 channels. 'Luckily, Teracom did a terrific job of putting together the combiners and made them as compact as possible' says Chris Lumsden. It has not been necessary therefore for BA to make any extensions to the site.

The existing analogue services have been improved and the Dulong site is now successfully broadcasting. ■