

PLEASE FORWARD TO THE ENGINEERING DEPARTMENT



Radio TechCheck



The weekly newsfax for RADIO broadcast engineers

JUNE 5, 1995

NRSC DAB SUBCOMMITTEE ADOPTS FIELD TEST PLAN

The Digital Audio Broadcasting (DAB) Subcommittee of the National Radio Systems Committee adopted a plan for field testing proposed DAB systems last week at its meeting in Cleveland, Ohio. These field tests are intended to determine if the proposed systems provide users with a signal quality and durability that is significantly better than that provided by the AM and FM analog systems that exist today. They are also intended to provide broadcasters and receiver manufacturers with the information they need to make an informed decision on the future of DAB in the United States.

The field tests will be conducted in San Francisco, and will consist generally of four components: "long path" tests, "short path" tests, "point" tests and "inside building" tests. The long path test routes have been mapped out by the Field Test Task Group — the NRSC committee that has designed the field tests. They cover territory in downtown San Francisco, and areas extending roughly 30 kilometers to the north, east and south of San Francisco Bay. A wide variety of transmission path characteristics is covered by these long paths, including: line-of-sight conditions, terrain shielding conditions, significant shielding by buildings, vertical shielding (tunnels/wires), major over-water paths, significant foliage, rural areas, highway travel and fringe reception areas.

In addition to providing valuable data over a wide range of reception conditions, the long path tests will also be used to identify specific areas that will be focused on during the short path tests. The short path tests — which will consist of test runs over relatively short distances of a few hundred meters — will generally focus on specific locations where one or more of the proposed systems experiences some sort of difficulty.

The point tests will really consist of measurements over a very short path, most likely a small circle 10 to 50 meters in circumference measured at a very slow velocity of about one or two meters per second. These tests will serve as a basis for estimating ambient field intensity.

They will also serve to estimate propagation characteristics in a particular area, particularly the signal margin above system failure and the presence of multipath propagation.

The inside building tests will be conducted at several locations inside representative building structures including residential, commercial and industrial buildings. Because moving all of the DAB receivers (which are generally rack mounted pieces of equipment) into the buildings will not be practical, a remote antenna will be used with 100 meters or more of coaxial cable. A moderate preamplifier gain and an attenuator at the receiver input will be used to overcome line loss and negate any noise picked up in the line.

Four in-band, on-channel systems will be tested. They are: USA Digital Radio's AM-band system, AT&T/Amati's FM-band system, and USA Digital Radio's FM-1 and FM-2 FM-band systems.

All three IBOC FM-band digital signals will be added (one at a time) into the analog signal of Shamrock Broadcasting's KBGG FM. The AM-band digital signal will be added to Shamrock's KABL AM. According to system descriptions submitted by the proponents to the NRSC early on in the DAB work, the AM-band digital signal will be at least 10 dB below its analog host, and all three FM-band digital signals will be at least 25 dB below their analog hosts.

KBGG FM transmits a 100 kW ERP signal from Mt. Beacon in San Francisco. KABL AM transmits a 5 kW ERP signal from an antenna site near San Francisco's Bay Bridge (daytime) and a directional 5 kW ERP signal from the same transmitter site at night. The AM DAB signal will be tested with KABL operating in both its daytime, non-directional mode and its nighttime, directional mode.

For a copy of the NRSC DAB Field Test Plan, call NAB Science and Technology at 202-429-5346 and ask for Packet R-195.