

Sunshine Highlights IBOC Option

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factures and supports HD Radio digital solutions, also helped make the HD Radio Days possible.

Radio Sunshine, primarily owned by Ruoss, purchased a BE HD Radio system for field trials and operation in the Luzern area. The system was installed in April 2006.

Last digital medium

The oft-quoted expression "radio is the last medium to go digital" was repeated throughout the demonstration and discussions among broadcasters.

Because the demonstration followed months of field trials in the challenging terrain of eastern Switzerland, broadcasters present at the demonstration were satisfied that, as an alternative to DAB and its derivatives, HD Radio is workable here.

The IBOC system is attractive because most of the privately owned radio stations in Switzerland serve relatively small service areas that could not be efficiently or economically covered by a traditional Eureka-147 DAB pod.

The highlight of the HD Radio Days demonstration was an hour-long motor-coach trip through the mountains near Luzern.

The high-tech outfitting allowed observers to hear the transmission quality of the three digital signals as well as watch digital displays of spectrum analysis.

"He [Ruoss] had an interferer on the bus, he would give you a visual depiction by moving that interferer in closer to his signal, so that you could see and hear the effects of an interfering signal," said Tim Bealor, vice president of RF Systems at BE.

The interferer was a tunable FM signal source modulated with a 1 kHz tone.

"He would vary the frequency of that source until he started stepping on the upper sideband or the lower sideband and

he would keep tuning it until he started interfering with the main analog carrier of his station," Bealor said.

One major technical consideration facing HD Radio in Switzerland is the 100 kHz signal spacing on FM, which is much tighter than most countries. Another consideration, immediately apparent from the motorcoach tour, is the mountains.

The first part of the tour demonstrated good digital reception in areas where the FM signal was unusable. Inside the coverage area, the system operated "perfectly," said Ruoss, even with a simulated interfering signal.

There also was a demonstration of the multicasting feature on the Radio Sunshine frequency rather than on a test channel. Ruoss called multicasting the "killer application" for HD Radio.

Interesting opportunity

"Most of the members of our association [the Verband Schweizer Privatradios (VSP) association of Swiss private stations] are of the opinion that HD Radio is a very interesting opportunity for Switzerland, given its many and sometimes little stations," said Energy Zürich Managing Director Jürg Bachmann.

"The possibility of making three, four or five programs on the same frequency and in digital quality without enormous investments is very attractive," Bachmann said, echoing Ruoss's enthusiasm for multicasting.

The HD Radio demonstration featured digital broadcasts of Radio Sunshine, Energy Zürich and a speech-based service channel.

According to Bachmann, while multicasting is of interest, many smaller Swiss broadcasters would be attracted to HD Radio primarily because of their need to go digital.

The relative costs of implementing HD Radio compared to Eureka-147 DAB are

also attractive to small stations, he said.

At the same time, the lack of HD Radio receivers on the market could limit the appeal of the technology to listeners.

John Macdonald, Europe, Middle East and Africa sales manager at BE, said Ruoss was looking to acquire HD Radio receivers to distribute to Radio Sunshine listeners.

VSP members held a private meeting



(From Left) Tim Bealor and John MacDonald from Broadcast Electronics, Markus Ruoss from Ruoss AG and Perry Priestley from iBiquity

following the Luzern demonstration to discuss the various digital possibilities now available.

Bachmann said private broadcasters continue to work with public-service broadcaster SSR-SRG Idée Suisse as part of the Swiss DAB Consortium.

"It is important for us that there is not only one digital solution for radio," he said.

SSR-SRG Idée Suisse Radio Coordinator Marc Savary said the HD Radio demonstration was "interesting" and "useful," but said that the public

broadcaster remains totally committed to Eureka-147 DAB.

"SSR-SRG's digital radio strategy is DAB development. Phase one will cover the entire country by the end of 2008, phase two with the private broadcasters in German-speaking Switzerland and the third phase in 2009 for SSR-SRG multimedia programs," Savary said.

Normalizing Swiss digital development plans with recent International Telecommunications Union (ITU) Regional Radiocommunication Conference (RRC-06) conventions is nec-

essary, said Savary, because a phase-out of the use of the current FM radio broadcast band is under international negotiation. However, current frequencies are not expected to fall into disuse for more than a decade, if at all, he said.

In the short term, Savary said, HD Radio might provide an "end of the shortage" of FM frequencies.

Heavy investment

SSR-SRG Idée Suisse has invested heavily in DAB planning and infrastructure, leading Savary to mute his interest in the HD Radio system.

"HD Radio does not seem to be an attractive solution because, really, it is only digitizing current frequencies," said Savary. "Offers such as presented in Luzern probably involve a reduction in quality and even transmission power."

Savary said SRG-SSR follows the test with interest because HD Radio could offer "interesting and advantageous solutions" in outlying areas or mountains.

Every person involved in the demonstration and field tests praised the Swiss media regulator, Bundesamt für Kommunikation (BAKOM).

In remarks opening the discussions, BAKOM Director for New Media Marcel Regnatto, told the audience that, from the regulator's perspective, facilitating new technical platforms should be the obligation of all regulators.

Technical papers on the HD Radio field trials will be submitted to BAKOM later this year, prior to full authorization.

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HD Radio Proponents Look Ahead

By Leslie Stimson

In Markus Ruoss's plans, the HD Radio Days event was just the start for HD Radio in Switzerland and Europe. Ruoss plans to continue operating the Sunshine Radio HD Radio field trials until autumn 2007.

During that time, Ruoss aims to conduct further, more comprehensive tests of coverage and interference with an eye toward convincing the Swiss government to approve IBOC, according to Perry Priestley, director of International Business Development for iBiquity Digital Corp.

Ruoss hopes to demonstrate the technical feasibility of HD Radio over time under the demanding frequency and topographic conditions of Switzerland.

Benchmark test

"It allows us to do a benchmark test in Europe that will have credibility with other countries in the region," said Tim Bealor, vice president of RF Systems at Broadcast Electronics (BE), which is also sponsoring HD Radio trials in Poland and France.

Priestley said once the data from the Swiss trials is compiled, an alliance of European IBOC proponents will lobby other governments to approve the use of HD Radio.

"The more countries that implement HD Radio, the more that will be interested," Priestley said. Greater worldwide acceptance could someday lead to combined DAB/HD-Radio/DRM receivers, he said.

For the HD Radio Days demonstration, BE provided an FXi HD-R exciter and an XPi HD Radio data exporter and encoder.

An iDi 20 data importer acted as the interface with the Radio Sunshine hard disk-based storage system, allowing the station and its 12 translators and boosters to multicast the three digital signals alongside the Radio Sunshine analog FM signal.

Standard bitrates

The standard HD Radio digital channel has a total throughput of 96 kbps. Multicasting allows multiple channels to be carried in the same spectrum space at lower bitrates.

The Radio Sunshine HD Radio channel aired pop music at 48 kbps. Energy Zürich was carried as an HD2 channel at 32 kbps, while a third speech-based HD3 channel was carried at 16 kbps.

Text displays on the receivers were generated using BE The Radio Experience equipment.

Roughly 130 to 150 people attended the event, including regulators from other European countries, automobile manufacturers and receiver manufacturers.

Interference issues are a common question about IBOC from regulators in Europe.

"They are concerned about bordering countries managing their spectrum," said Bealor. "In HD Radio you are changing the spectral occupancy; the occupied bandwidth of an FM signal changes if you go from analog to HD because of the digital sidebands."

Bealor said he has fielded several queries about how spectrum management with HD Radio would work in Europe and how stations will be able to protect their first- and second-adjacent channels.

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