

# High Dynamic Range 4K UHD gets full test run at the Alpine Ski World Cup in Italy

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Monday, December 31, 2018

Sports Video Group Europe — [svgeurope.org](http://svgeurope.org)

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At the mid-December FIS Alpine Ski World Cup events in Val Gardena and Alta Badia, the International Ski Federation along with producer Infront Sport & Media Italy and OB provider Global Production tested 4K UHD using HLG BT.2020 HDR color space.

The signal produced in Italy was not distributed in 4K UHD HDR, but its conversion to HD SDR went to all the world's largest broadcasters and the event was designed as a real-world test to get ready for a forthcoming 4K UHD TV airing.

Global Production, as the technical provider, worked with Infront Sport & Media Italy, rights holder of the Ski World Cup. The mobile vehicle, OB8, used as many as 25 Grass Valley HDR-enabled LDX 86N 4K cameras, of which three were in 6X configuration.

Davide Furlan, CEO and partner at Global Production, said: "Never has the 'white' been so exciting and the result so incredible! We can say that we

have opened a new era for the TV production of the world ski races. It is a new world reproduced, where the spectators at home will feel like they are there on the slopes, thanks to the new definition in 4K UHD and the new color perception closer to reality provided by HDR: new colors, new sounds and new emotions."

It took three days to wire the track and connect the 25 cameras, positioned by Infront director Sandro de Manincor, with the support of the FIS for security issues. The technical staff hired to produce the event consisted of almost 60 people. The organizing committee made a portion of pre-wired optical fibers, plus some dark fiber sections, available.

Global Production laid the remaining backbones in dark fiber and SMPTE, using about 15 km of cable. They then created intermediate remote routing stations using hybrid fiber-based Grass Valley systems to reach each TV camera.



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Stefano Bianco, a director and partner at Global Production said: “To follow the various competitions on the different ski fields, we sent two mobile reference vehicles, OB6 and OB8. The OB8 unit is the last 14-meter flagship with over 70 square meters of walking space, completely in 4K UHD, capable of handling 30 cameras in 4K UHD.

“The other, the OB6, is also a 14-meter vehicle with great technological and performance content, 64 square meters, capable of managing 30 Grass Valley cameras and 10 servers, already fully wired in 3G.

“In Val Gardena OB8 was engaged for the production of the 4K UHD signal with 25 LDX 86N cameras that covered a shooting surface of around 4,800 meters of very steep slopes. Two Vislink radio cameras, one at the start and one on the parterre, a Polecam at the start and two Jimmi Jib Extreme arms completed the event’s camera plan,” said Bianco.

Global Production decided to also commit two LDX 86N cameras to shooting at 6X speed in order to create exciting images in super-slow motion. Grass Valley followed these sporting events, technically supporting Global Production, by providing spare equipment and giving support in the management of native live HDR.

The production included a Grass Valley 2 M/E Karrera and Kayenne K-Frame with 192 in and 96 out in 3G, configured in 2.5 M/E 4K UHD with HDR.

Thanks to the interaction between the Digico systems and the Lawo VSM audio control interfaces, shots were made in total “intelligent audio-fol-

low-video,” as the Grass Valley K-Frame commanded the pre-set Digico audio channels with a management programming of audio matching with video with fade-in and fade-out timing and left-right pan-pot movement depending on the type of cut and framing made by the director.

An omnidirectional Soundfield microphone was placed on the parterre to capture the spatiality of the fans’ cheers recreated in Dolby 5.1 surround. All the sources, the dirty feed and clean feed converted into HD SDR were distributed to the TV compound for international broadcasters: in addition to RAI, the ORF, ZDF, RTBF and RTV were taking feeds.

Stefano Bianco said, “truly a major event and commitment, that we have prepared for several weeks within our company and then one week on-site, using only three days for the wiring along the track. This was an historic opportunity in which we had to pour so much expertise and a lot of technology in order to make it as beautiful and usable as Infront, FIS and the committee rightly expected.”

Davide Furlan added: “When months ago I proposed to Infront executives to produce the Val Gardena event in 4K UHD there was immediately a great interest, but also an understandable concern for the complexity in producing this event. Skiing has, by its nature, a very high production difficulty for the environment that hosts it. Temperatures are not comfortable for electronics, weather conditions are very changeable and very long travel times are needed due to the topography of the terrain that obliges the use of skis, lifts, helicopters, skidoos and snowmobiles.



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“Communication systems must also be very reliable, ensuring coverage of many square kilometers. Due to all of this, we understood the concern of Infront’s managers in inserting a technological element of innovation and radical change, such as 4K UHD HDR, that had already seen productions in football with a quality considered below expectations and received some controversy from viewers at home.

“This project, however, was carried out and the result was truly incredible. Those who have seen the competitions at home in HD SDR did not notice anything thanks to the high quality of the downscaling equipment on board.”

This is the first time that such a huge deployment of technologies, personnel and means were employed for Alpine Ski World Cup. Everything worked in extreme conditions, far from the comfort typical of other production situations in other sports.

The 3TRE FIS World Cup Night Slalom on 22 December was broadcast on Eurosport 4K Russia in 4K Ultra HD.