



AUGUST 2015

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NEWS

Audio Cable Impedance

Use Digital Cable for Digital Applications. 7/31/15 By Bob Kova

In fact, digital cable is better for analog signals as well

As television engineers age, those brought up in the era of analog signals and the subsequent transition to digital are retiring and talking hard-earned knowledge with them. Younger engineers (when they are hired) often have stronger IT backgrounds than audio/video backgrounds.

That's probably good for some of the directions that television will go in the future, but many of these IT specialists have little understanding of cable impedance and its effect on signals. Many of these people will not realize the difference between cable designed for digital audio and analog audio, and this brings up the possibility that someone could plug an old analog cable into a digital line and suffer the consequences.

Furthermore, although North America, Europe and advanced countries in the Pacific region have transitioned to digital, much of the world has not. Many of the places yet to convert to digital have long traditions of wearing out their gear and physical plants before replacing them. When it comes to audio cables, digital and analog varieties with XLR connectors look more-or-less identical, but their performance is significantly different.

Everyone working in video knows that video cables have a characteristic impedance of 75 Ohms, and most probably realize that pinching a video cable (such as using an overly tight cable tie to hold it in place) can change the impedance at that point. And most know that impedance changes lead to signal reflections, loss of signal and distortion.

Just as it is with video cables, audio cables have a characteristic impedance and they are also subject to the same impedance changes when poorly installed and handled. In the case of AES/EBU digital audio, the standard calls for 110-Ohm cable, although it looks much like audio cable that's been used for decades to carry analog audio. The typical broadcast-quality analog audio cable has a characteristic impedance of 45 Ohms.

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ALMOST LIKE DC.



Audio cable with XLR connectors for analog use can look identical to a cable for digital use, but an analog cable can kill a digital feed.

In the analog world, audio is relatively low frequency and it behaves almost like DC. Obviously, the higher the frequency gets, the more like RF the signal acts. A quarter-wavelength at 1,000 Hz is approximately 75,000 meters (roughly 47 miles), so the effects of an impedance reflection in a 100-foot analog cable will be minimal.

It's a different story with digital audio, which can include waveforms that are as high as 25 MHz. "25 MHz has a quarter-wavelength of 3 meters (10 ft.)," said Steve Lampen, a multimedia technology manager at Belden, a St. Louis, Mo.-based manufacturer of cable. "If you cinch down wire ties at precisely 10 ft. you might be able to see [negative effects]. More likely, if you use a patch cable that is the wrong stuff (i.e., microphone cable) with the wrong impedance, and it is at least 10 feet long, you will definitely see that." So what are these effects? "Impedance problems show up as reflections ("return loss"), so the level will drop dramatically," Lampen said. "It will look like the cable had a lot of attenuation, which in fact, is reflection."

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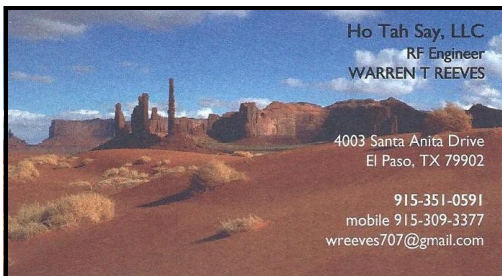
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EL PASO, TX SBE CHAPTER 38 MEETING MINUTE

DATE 7/14/2015 LOCATION: KRWG TV/FM

MEETING CALLED TO ORDER: 12:00 PM, BY ANTONIO CASTRO, THERE WERE 17 MEMBERS.

REPORT OF THE SECRETARY: MINUTES IN THE JULY NEWSLETTER. ACCEPTED BY GLENN LEFFLER, SECOND BY CARLOS SOSA.

REPORT OF THE TREASURER: \$ 7,862.02, AFTER PAYING SPONSORSHIP TO ENNES WS, ACCEPTED BY WARREN REEVES, SECOND BY MARIO JIMENEZ.

REPORT OF THE CERTIFICATION COMMITTEE: WAITING FOR ONE CRO, STUDENT FROM NMSU FOR EXAM.

REPORT OF THE MEMBERSHIP COMMITTEE: NO REPORT.

REPORT OF THE FREQUENCY COORDINATOR COMMITTEE: REQUESTED FQCY. BOEING, 959 KHZ, 20 WATTS, SIGNAL ONE MINUTE TEN TIMES A YEAR./ FROM CD.JUAREZ EN THE 450-455 KHZ. NO PROBLEM

REPORT OF THE SCHOLARSHIP COMMITTEE: CIERRA BUSTAMANTE IS THE RECIPIENT, WHICH WILL BE DELIVERED IN THE AUGUST MEETING

REPORT OF THE WEBSITE COMMITTEE: 1895 HITS LAST TIME, NOW 1818. (23). PAGE BEEN UPDATED.

REPORT OF THE EAS CHAIRMAN: NO REPORT..

REPORT OF THE PROGRAM COMMITTEE: WE HAD AN EXCELLENT PRESENTATION (CLASS) FROM TRIVENI DIGITAL, PRESENTED BY RUBEN ARAZA, TEAM LEAD - SALES ENGINEERING.

UNFINISHED BUSINESS: RECOGNITION FOR 2015 CHAPTER ENGINEER OF THE YEAR WAS PRESENTED TO BRUNO CRUZ.

NEW BUSINESS OR ANY ITEMS FOR THE CHAPTER INTERES: GATE IN COMANCHE PEAK IS UNLOCK. WARREN IS GOING TO TAKE CARE.

NEXT MEETING DATE AND LOCATION: TUESDAY, AUGUST 18TH 2015, FORMER CLEARCHANNEL BUILDING, NOW Iheartmedia. 4045 N.MESA, AT 6 PM

MEETING ADJOURNED: AT 12:22:00 PM.

FROM THE SCHOLARSHIP COMITEE:
OUR RECIPIENT THIS YEAR IS CIERRA BUSTAMANTE, AND THE CHECK WILL BE AWARDED ON OUR NEXT CHAPTER MEETING, AUGUST 18th, @ 6 PM, AT THE 4045 NORTH MESA, CLEARCHANNEL(former) BUILDING. DON'T MISS IT !!

AUGUST PROGRAM

For JULY, we had a presentation from TRIVENI DIGITAL who hosted a lunch at the installations of KRWG TV. This was in Las Cruces, NM. and it was the perfect education opportunity for the engineers of the area. Many thanks to Mario Jimenez and his crew.

For August, we don't have a presentation, only our regular chapter meeting with one variation: we are going to present a scholarship check to the recipient CIERRA BUSTAMANTE, so don't miss this event and be participant

WHEN? Tuesday August 18, 2015

TIME? 6:00 PM

WHERE? iHeartRadio, former Clearchannel radio studio at 4045 N.Mesa.

Engineer PIZZA and drinks will be provided.



The result could be that a digital audio run of a couple hundred feet that's kinked or overly cinched could have enough signal loss to prevent the signal from reaching the end. This is exacerbated when an analog audio cable is patched into a digital line.

GET RID OF 'EM

As wasteful as it sounds, if you have a digital plant and still have lots of analog patch cords or older cables with XLR connectors that seemingly fit, it's best to either clearly mark the analog cables in an unmistakable way or to simply get rid of them. If you are having problems with digital audio passing down cable lengths that should be acceptable, look carefully for analog interlopers, such as patch cables and gender-changers that use analog-rated connectors.

If you still need to connect analog devices to your system (such as a microphone or an older device with analog audio), a modern digital cable with XLR connectors will work fine. For more information about installing and working with digital audio cables, Belden's Lampen has a book from Mc Graw-Hill titled "The Audio/Video Cable Installer's Pocket Guide," which has separate chapters on analog and digital audio. By the way, the restriction about using analog cable in a digital feed doesn't work in the opposite direction. It's perfectly acceptable to use a digital audio cable for an analog feed — in fact, audio cable made for digital service is better with analog signals than analog-only rated cable. Digital cable will have less attenuation at high analog frequencies than does cable built specifically for analog operation.

FROM DAVID HALPERIN, CHIEF ENGINEER AND BRAD DUBOW, GENERAL MANAGER KLAQ.

EARS Summit Meeting: September 9th, 2015

Emergency Alert System

El Paso- Las Cruces- Juarez

It's time to gather for another meeting to review and update EAS procedures within our region. In light of the recent train derailment in Tennessee and that area's evacuation, the local EAS community: broadcasters, public information officers, public and government agencies, military, weather officials, and others are invited to attend this 2015 Borderland EAS summit.

The El Paso Association of Radio Station (EARS) will set up this meeting and handle room costs, snacks, and beverages. We have secured the AV Theatre room inside the Wyndham 2027 Airway (next to the airport). Specific topics for discussion will include the feasibility of designating a Spanish LP-1 (to permit the broadcast of alerts in Spanish & English), as well as to address any open issues & revisions in our local EAS plan.

The room will be opened at 8:30 am and the meeting will begin at 9:00 am. The meeting should last no more than ninety minutes and your presence or a key person from your team is invited. Please RSVP your attendance at this very important meeting by contacting Stephanie Guerra at (915-544-9550) or Alexandra Caldera at (915-521-6307).

Please RSVP by September 4th for this important September 9th Meeting.

Thanks.