

Review Period

We have covered about all the material Steve wanted to cover, so we will start reviewing. We can also cover additional topics on demand to see if we can fit it in.

SBE CBT Test

We will go over this sample test. Our next test will probably be on the same format.

Which signal is most often used to measure frequency response of an NTSC video signal? Multiburst, modulated ramp, color bars, sin x/x? Multiburst. We are concerned with the 0 to 4.2 MHz range allowed within NTSC. Multiburst chart has sets of closely spaced vertical lines, arranged left to right, where the sets on the left are spaced farther apart than are the sets on the right. The more closely spaced the lines are, the higher bandwidth is required to represent the luminance changes that occur from the closely spaced lines. Good place to look for problems are the connectors (camera, video switcher, waveform monitor) since connector problems can reduce frequency response. Could also be a problem with the source. Could get the signal from a generator (make sure the generator is generating the signal properly).

Which mode on an NTSC television waveform monitor would be used to view the luminance only portion of a video signal? IRE, Flat, High Pass, 2H? Eliminate flat, since that means flat response, which includes color (flat usually means +/- 3 dB). Eliminate high pass, since that leaves the color and filters out the luminance. High Pass can also be labeled as Chroma. 2H shows two horizontal lines, so that isn't it. Left with IRE.

It takes how many frames to complete a full four field NTSC color sequence? 1, 2, 3, or 4? 2, since there are 2 fields per frame.

What is the color code for the digit 6 in the resistor/capacitor color code? Blue, violet, green, or yellow? Blue. Bad beer rots our young guts but vodka goes well.

The FCC specifies that NTSC H sync width must be? It is 4.7 microseconds 4.45-5.08, 5.08-6.08, 3.45-4.45, 3.45-5.08? One is huge and one is smaller, so pick 4.45-5.08.

What is the precise frequency of the NTSC color subcarrier? 3.579545 MHz.

The NTSC color bars in wide spread use today are referred to as: full field color bars, split field color bars, SMPTE color bars, or all of the above? Split is what the Ikegami cameras generate. Full field is color bars going from top to bottom (no I, Q, white, or PLUGE). Answer is all of the above.

How many fields are in one frame of NTSC video? 2.

Two NTSC video monitors are being fed by a single video output. In what position should the 75 ohm / Hi-Z switches be placed? A single video output means there is a loop through available. Need to put termination at the end of the monitor chain. The monitor first in line to Hi-Z and the monitor last in line to 75 ohms.

A full field NTSC color sequence is comprised of: two consecutive frames. This is similar to an earlier question.

What television receiver control adjusts the video level? Brightness or contrast. Not fine tuning, color killer, or hue. Brightness is bias, it moves the entire representation. Contrast is what changes the level.

Contrast causes the white chip to bloom on the SMPTE color bars. Brightness adjusts the PLUGE.

The NTSC color burst has a frequency of: 3.579545 MHz.

What is the frequency tolerance of NTSC color burst? +/- 10 Hz, 0.005%, 100 Hz, or it is not specified. It is specified. 3.579545 MHz.

In order to mix NTSC video signals in a video switcher, the video signals must arrive at the switcher: synchronized in time, 90 degrees out of phase, 180 degrees out of phase, with precisely the same pedestal level? Synchronized in time. That's why we do subcarrier phasing and horizontal phasing at the CCU, compared with the output of the program bus.

On which line does burst re-appear after NTSC vertical sync? Line 19, line 21, burst is on every line, line 10? Line 10. Why is line 10 so important to us? The sync to subcarrier relationship occurs at line 10. Must be crossing the leading edge of line 10 going positive. Called SCH (subcarrier to horizontal) phase relationship. The subcarrier just starts to go positive at the same time that the horizontal sync pulse is at the 50% point on its leading edge (the trigger point).

What is the advantage of VITC compared with linear track time code? There is none, VITC is easier to decode, it's frame accurate, it can be read in still mode. It can be read in still mode. Linear track is longitudinal, along the length of the video tape. VITC is within one or two lines within the vertical interval. Both are frame accurate, else professionals would not accept them. VITC isn't any easier to decode, since it is compressed, and it is not at audio levels like time code we used in the lab; you have to decode it in video levels.

SMPTE color bars with PLUGE are used to adjust: monitors, sync generators, frequency response of VTRs, frequency response of camera systems. Monitors. The sole purpose of PLUGE.

In NTSC television transmission a field is: one half of a frame, and it is interlaced so that it contains either the odd or the even scanning lines of its frame.

The NTSC color burst is positioned: on the back porch of the composite synchronizing signal. But I thought color burst was between the breezeway and the back porch, not on the back porch. In black and white, there was no breezeway.

How many frames of a TV motion picture are projected per second? 30, since is a TV motion picture, even though they are talking about film? No. They are talking about 24 because of the 3:2 pulldown creates 30 frames out of the 24 per second.

NTSC blanking level refers to the voltage level of signal during blanking interval except for horizontal sync and color burst.

In a NTSC transmitted signal on which line is closed captioning found? 10, 19, 21, 17 and 18? Nothing put on line 10. Line 21 is first line of active video. Quiz says it is line 21! You can see the flickering at the top of the picture; it is usually in the overscan area. They don't do this in Europe.

The FCC requires the frequency of the NTSC chrominance (color) subcarrier to be maintained within +/- 10 Mhz of 3.579545 MHz.

A video clamper is a device that: prevents distortion, increases video saturation levels, fixes level of picture at predetermined reference point at the start of each scanning line, none of the above? Fixes level.

Which NTSC test signal is best to measure differential gain? Modulated ramp. 100% APL bounce is

talking about video going to white, then black, then white, then black.

In reference to a NTSC tube television camera, which term describes that the three color pictures are exactly superimposed? Registration (analogous to convergence in monitors).

Vertical blanking of an NTSC video signal ends at line: 18, 21, 10, 262.5? 21 (it's when active video starts).

The color burst portion of an NTSC color TV signal consists of: 9 Hz of a 3.579545 MHz signal. Cycles and hertz are equivalent. Original question said transmission instead of signal, but burst isn't in the transmission (subcarrier is in the transmission, but burst is added to horizontal interval in the receiver).

Which NTSC test signal is best to measure differential phase? Modulated ramp.

NTSC chrominance subcarrier refers to the carrier which is modulated by the chrominance information. Chrominance subcarrier is not the color burst is from -20 to +20 IRE, which gives 40 IRE units and is just the reference to the subcarrier.

A complete frame of NTSC video is comprised of 525 lines.

NTSC relationships: line rate = $2 / 455 * \text{chrominance frequency}$. Field rate = $2/525 * \text{line rate}$. Chrominance frequency = $63/88 * 5 \text{ MHz}$. All of these.

Why would you want closed captioning in active video? Some time base correctors or line amplifiers replace vertical and horizontal sync.

Audio

A typical miking distance from a large musical ensemble is: over the conductor, in the audience, 12 feet, 30 feet. Where the microphone should be placed. Increased distance results in more noise and less signal. 12 feet.

What do the terms: coincident, near-coincident, and spaced pair refer to: stereo miking techniques.

What standard supports two channels of digital audio? AES/EBU.

A type of microphone polar pattern is: omni, uni, bidirectional.

Which of following numbers would be a broadcast audio and instrumentation cable? 8451 is a Belden cable that is for audio and instrumentation. RG-59/U is 75 ohm coax. RG-58/U is 50 ohm coax.

A stereo microphone is: two angled mic units within a single housing.

The process of electronically changing the response of a telephone line to create an even response for audio purposes is called: compensation, high frequency suppression, equalization, low frequency expansion? Equalization.

In the mid-side system, left and right channels are derived by: the two microphone outputs, the sum of the mic-capsule signals, the difference of the mic-capsule signals, the sum and difference of the mic-capsule signals? Vote for sum and difference, like FM transmission of stereo. L+R and L-R.

The audio frequency response range of an unequalized telephone line is: 0 to 3000, 300 to 2500, 100 to 5000, 50 to 8000? 300 to 2500.

110 ohm twisted pair cable is used to carry what type of signal? Ethernet, AES-3ID, CAT5, AES-3? It is

digital audio, so one of the AES answers. AES-3 (AES-3ID update for coax).

Preferred practice for stereo TV is: mono dialog, stereo sound effects, stereo music. If showing a movie, don't want voices all over the place on a TV. Sound effects in stereo for directionality, stereo in music for directionality.

Ability to simultaneously transmit and receive audio information over a single circuit telephone line requires: a 1:1 audio transformer, a hybrid duplexer system, a back to back audio transformer arrangement, a step up transformer? Don't need the 1:1 transformer since don't need isolation. Don't need a step up transformer. Need the 2-wire to 4-wire conversion. Use the hybrid duplexer system. Hybrid transformer also known as 2-line/4-line transformer. ENM (ear and microphone) circuit.

A stereo microphone adapter: adapts high-Z to low-Z, converts a mono microphone to stereo, mounts two microphones on one stand for stereo pickup, mounts two stereo microphones on one stand? Mounts two microphones on one stand for stereo pickup.

In coincident-pair miking, the microphones are: spaced several feet apart, angled 90 degrees apart, one above the other and angled apart, next to each other horizontally and angled together?

The VU (Volumn Unit) meter was adopted in 1937 as a standard method to measure audio levels. The VU meter is considered a: average level meter, peak program level indicator, useless indicator, none of the above? Average level meter.

A special type of audio amplifier designed to minimize overmodulation of the transmitter is called: distribution amplifier, volume limiting amplifier, monitor amplifier, power amplifier? Volume limiting amplifier.

What problem may occur in an audio frequency amplifier as a result of an open de-coupling or filter capacitor? Improved frequency response, motorboating, reverberation, echo cancellation? Motorboating. The open capacitors allow ripple into the circuits, and the varying level causes motorboating.

75 ohm coaxial cable is best used for which application: 110 volt supply voltage, phantom power, digital audio, microphone cable? Don't use coax for supply voltages normally (triax we do). Phantom power uses twisted pair with XLR connectors (balanced line, and coax is unbalanced) to power microphones. Digital audio looks likely. Microphone cable is balanced.

With true stereo miking, the musical ensemble's balance is: created during the mixdown, created by adjusting the level of several microphones, picked up by two or three distance microphones, picked up by multiple close microphones? Picked up by two or three distance microphones.