

# 70 MINUTES

May 2021 Vol. XXIX Number 5

Tuesday, May 11, 2021 • Gather Online beginning at 6:30pm  
Meeting 7:00pm with presentation to follow  
Presentation: Virtual Mixing in the Browser with a Software Audio Console  
by Kirk Harnack, Telos Alliance

## Meeting Information

Our next meeting will be Tuesday, May 11 online at 6:30pm, the SBE Chapter 70 meeting will be at 7pm with a presentation to follow.

We invited our usual May hosts, the Telos Alliance! Kirk Harnack will be making a presentation for us on virtual mixing in the browser with a software audio console.

Our May meeting will again be virtual, via Zoom. Click on the link in the email with this newsletter. We will send out a reminder email this coming Tuesday morning.

Hope to see you on May 11,

-John Hovanec, CSRE/CBNT DRB AMD  
SBE Chapter 70 Program Chair



## The Chairman's Chat

Hello all members and friends of SBE Chapter 70. First up I want to thank our own Jim Baird, and the NFL, for the program on Intermodulation in RF signals. The main take-away is to remember with RF: proximity and harmonics are the main creators of interference. It makes you appreciate how the Superbowl or those huge Broadway type tours with dozens of mics active can make it work. Check out the pix on page 3 for examples.

A reminder from the SBE about the failed IPAWS test on April 26th. When FEMA issues an IPAWS test or alert it includes a "signature certificate." This operates similar to a password for accessing different sites or files on a computer. In the case of a message from FEMA, a message without a correct signature the EAS device should ignore the message.

On April 26, 2021, the Required Weekly Test (RWT) from IPAWS was transmitted with an incorrect signature. The test messages had a mismatch between the digest inside the message, and the digest computed by receivers. This is a part of the validation for an alert, and checking it is required by FCC Rule 11.56(c): "EAS Participants shall configure their systems to reject all CAP-formatted EAS messages that include an invalid digital signature." Stations should insert



(Continued on page 2)

**Chairman's Chat** ((Continued from page 1)

a note in the Station Log indicating the failed test and the reason for failure.

More info at - [http://sbe.org/april2021ipaws\\_rwt/](http://sbe.org/april2021ipaws_rwt/)

The 2021 IP Networking series continues with **Module 5: Cybersecurity – Principles and Concepts** on Thursday, May 20, 2021. Part 5 of the series will focus on understanding the principles and concepts of cybersecurity. Topics to be covered include: Understanding the NIST framework; practical NIST framework implementation; cybersecurity risks, threats and vulnerabilities. Cybersecurity principles will be discussed including minimum attack surface, least privilege, defense-in-depth and deny-by-default. Other topics covered include the security audit, security policies and understanding cybersecurity threats: DoS, DDoS and Malware. Mitigating cybersecurity threats is also covered.

Thanks,

Blake E. Thompson CBNT  
BET Broadcast Engineering  
SBE Chapter 70 Chairman  
OAB ABIP Inspector



# 2021

## Exam Schedule

Exam Dates	Location	Appication Dates
February 5-15, 2021	Local Chapters	Closed
June 4-14, 2021	Local Chapters	Closed
August 6-16, 2021	Local Chapters	June 11, 2021
November 5-15, 2021	Local Chapters	September 10, 2021

**Gary Liebisch**  
Regional Sales Manager, Eastern US

Tel: 1 740 513 2087  
Mobile: 1 513 289 6322  
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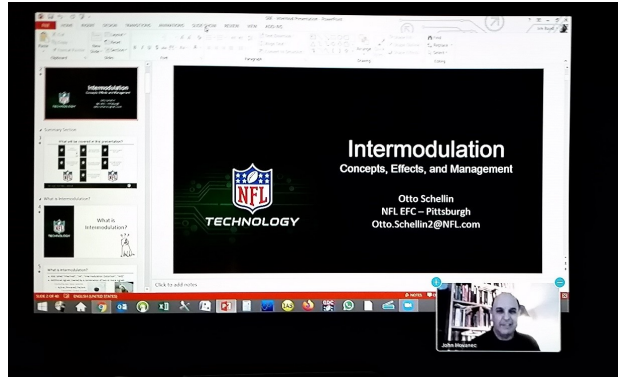


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# April Meeting in Pictures



zoom SBE Chapter 70 Meeting - Recording 4 - Shared screen with speaker view

## What is Intermodulation?

- Intermod products are described by their "order"
- The order is simply the sum of the frequency multipliers
- For example a "second order" IM product example is  $(1) \times F1 + (1) \times F2$
- A third order example is  $2 \times F1 - (1) \times F2$

↑                    ↑

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## What is Intermodulation?

### Fifth-Order Intermod

- Created by the addition and subtraction of the 2<sup>nd</sup> harmonic of one signal with the 3<sup>rd</sup> harmonic of the other
- $IM3 = (3 \times F1) - (2 \times F2)$   
 $= 1500.0 - 1002.0 = 498.0 \text{ MHz}$
- $IM4 = (3 \times F2) - (2 \times F1)$   
 $= 1503.0 - 1000.0 = 503.0 \text{ MHz}$

5<sup>th</sup> Order

IM3

498.0

F1

500.0

F2

501.0

5<sup>th</sup> Order

IM4

503.0

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## How may we recognize Intermod?

- Mic 1 on 633.15 MHz
- Mic 2 on 633.55 MHz
- 3<sup>rd</sup> Order = 632.75 MHz and 633.95 MHz
- 5<sup>th</sup> Order = 632.35 MHz and 634.35 MHz
- 7<sup>th</sup> Order = 631.95 MHz and 634.75 MHz

A screenshot of a spectrum analyzer. The main display shows a frequency spectrum with several peaks. The highest peak is labeled "Ref Lvl - 11.0 dBm". The x-axis is labeled "Center 633.350 MHz" and "Span 1.000 MHz". The y-axis is labeled "dBm". The spectrum shows a central peak at 633.350 MHz and several side peaks, including the intermodulation products mentioned in the text.

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## 2020-2021 Chapter 70 Officers

<p><b><u>Chairman</u></b> Blake Thompson, CBNT WQKT-FM / WKVX-AM (330) 671-6208 blake@uakron.edu</p>	<p><b><u>Vice-Chairman</u></b> Jim Georgiades wktxam@yahoo.com</p>	<p><b><u>Program Chair</u></b> John Horvanec, CSRE/CBNT, DRB, AMD WNCX, WKRK, Audacy-Cleveland (216) 861-1361 john.hovanec@audacy.com</p>
<p><b><u>Secretary</u></b></p>	<p><b><u>Treasurer</u></b> Mark Krieger krieger trek@gmail.com</p>	<p><b><u>Certification</u></b> Bill Kozel, CSRE/CBTE/CSRTAVE (440) 779-8984 (h) (440) 221-8477 (c) zok51@hotmail.com</p>
<p><b><u>Frequency Coordinator &gt; 1GHz</u></b> Jim Baird (440) 823-6803 ajrb53@ameritech.net</p>	<p><b><u>Frequency Coordinator &lt; 1GHz</u></b> Jim Baird (440) 823-6803 ajrb53@ameritech.net</p>	<p><b><u>Webmaster</u></b> Brett Patram WUBE, WKRQ, Hubbard Radio (216) 525-1824 bpatram@hbi.com</p>
<p><b><u>Newsletter Editor</u></b> Bob Long 88.9/WSTB-FM 330-352-3071 (c) boblong@rock889.com</p>		

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