



Jeff Welton
Sales Manager, Central USA
Nautel



Alex Hartman
Customer Service Technologist
Nautel



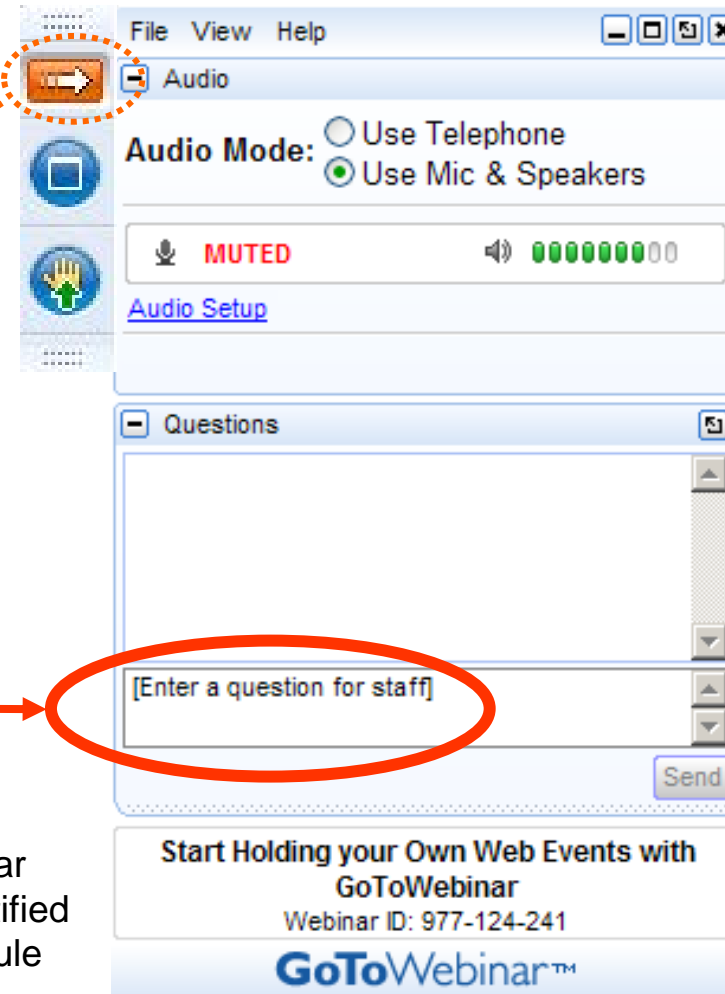
Episode #47

Software Defined Radio (SDR)

Your questions please?

(if you don't see the control panel, click on the orange arrow icon to expand it)

Please enter your questions in the text box of the webinar control panel (remember to press send)

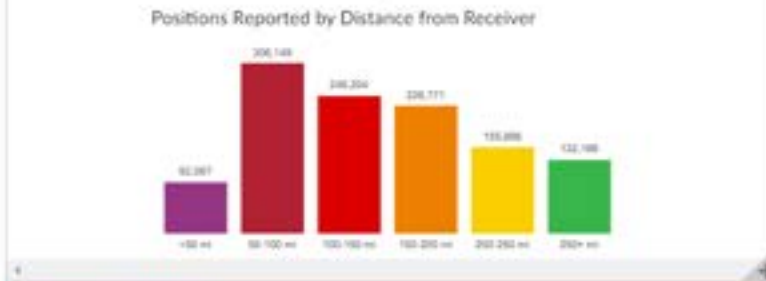


The screenshot shows a GoToWebinar control panel window. At the top, there is a menu bar with 'File', 'View', and 'Help'. Below the menu bar, there is a vertical sidebar with several icons: a blue square, a blue square with a white square inside, a green hand icon, and a blue square with a white square inside. The main area of the control panel is divided into two sections. The top section is titled 'Audio' and contains the following elements: 'Audio Mode:' with two radio buttons, 'Use Telephone' (unselected) and 'Use Mic & Speakers' (selected); a 'MUTED' status indicator with a microphone icon and a volume level indicator showing 00; and a link for 'Audio Setup'. The bottom section is titled 'Questions' and contains a large text input field with the placeholder text '[Enter a question for staff]' and a 'Send' button. An orange arrow points to the orange arrow icon in the sidebar, and another orange arrow points to the text input field. At the bottom of the control panel, there is a promotional banner for GoToWebinar with the text 'Start Holding your Own Web Events with GoToWebinar' and 'Webinar ID: 977-124-241'.



Remember: The completion of a Nautel webinar qualifies for $\frac{1}{2}$ SBE re-certification credit, identified under Category I of the Re-certification Schedule for SBE Certifications.



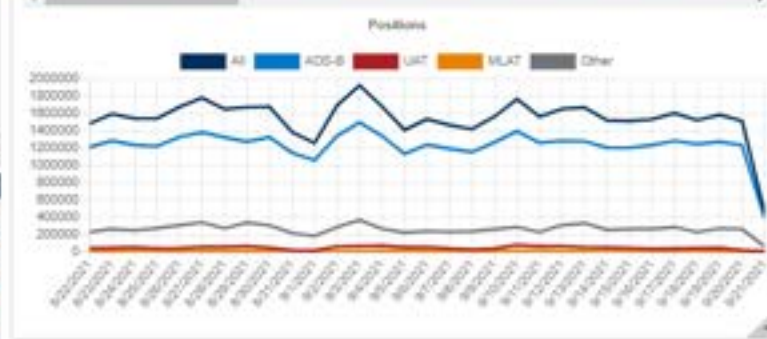


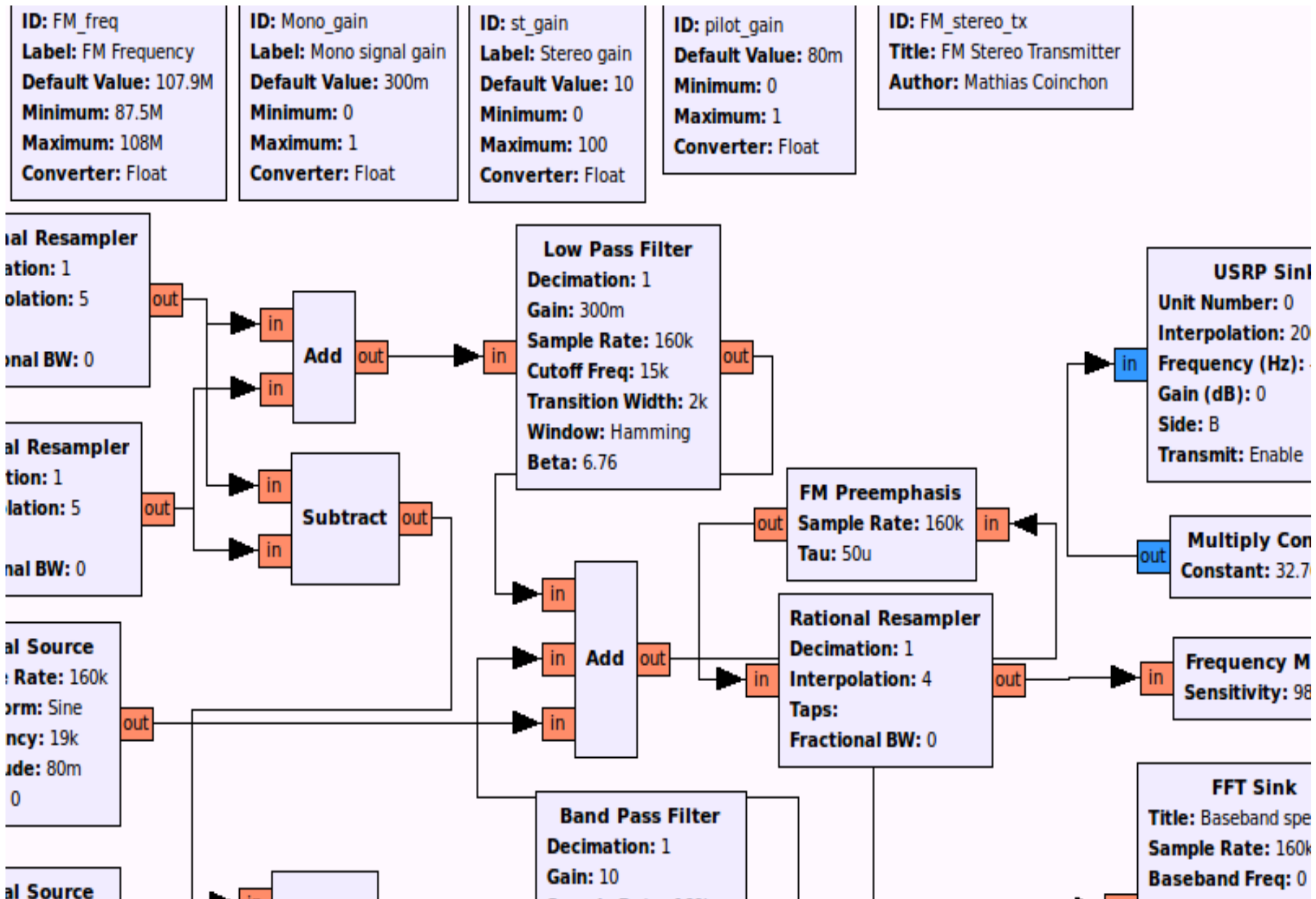
POSITIONS REPORTED

| | 8/21/2021 | 8/20/2021 | 8/19/2021 | 8/18/2021 | 8/17/2021 | 8/16/2021 | 8/15/2021 | 8/14/2021 |
|--------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| ADS-B Mode-S | 388,788 | 1,231,862 | 1,298,261 | 1,243,407 | 1,279,243 | 1,221,178 | 1,180,868 | 1,207,717 |
| ADS-B UAT | 406 | 17,300 | 41,500 | 35,915 | 33,318 | 29,319 | 38,388 | 48,010 |
| MLAT | 3,711 | 2,879 | 2,861 | 13,879 | 8,294 | 6,822 | 6,046 | 10,818 |
| Other | 61,800 | 258,594 | 267,776 | 225,500 | 261,319 | 261,058 | 280,646 | 240,410 |
| Total | 453,305 | 1,509,744 | 1,581,307 | 1,518,706 | 1,600,094 | 1,530,375 | 1,508,062 | 1,516,955 |

AIRCRAFT REPORTED

| | 8/21/2021 | 8/20/2021 | 8/19/2021 | 8/18/2021 | 8/17/2021 | 8/16/2021 | 8/15/2021 | 8/14/2021 |
|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| ADS-B Mode-S | 2,441 | 4,813 | 4,860 | 4,443 | 5,150 | 5,026 | 5,110 | 4,818 |
| ADS-B UAT | 1 | 54 | 134 | 131 | 106 | 71 | 106 | 118 |
| MLAT | 16 | 36 | 19 | 29 | 62 | 60 | 94 | 118 |
| Other | 33 | 67 | 63 | 47 | 73 | 68 | 77 | 118 |





GNURadio showing an FM Transmitter



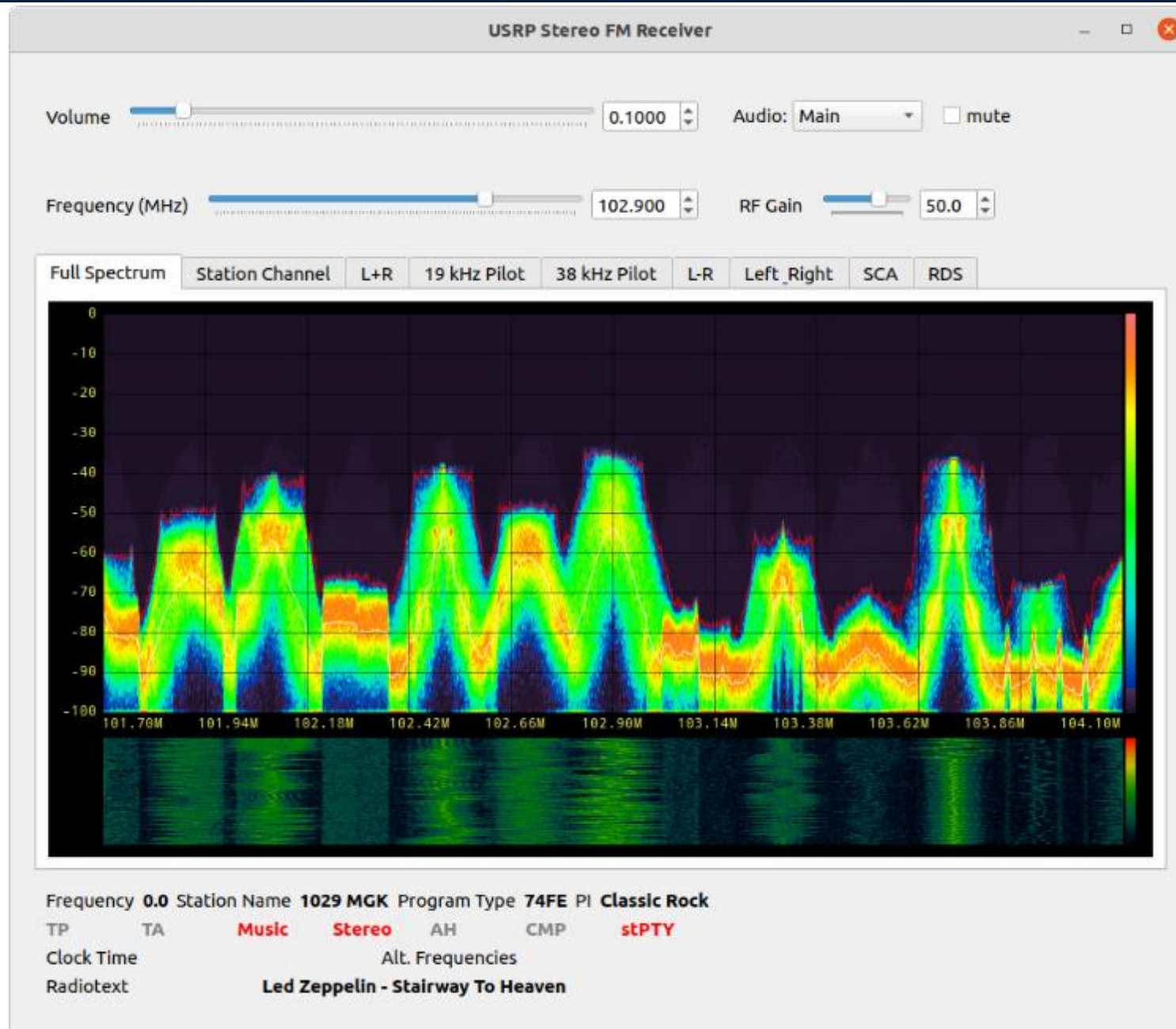
<https://shop.elad-usa.com/sdr-radio/fdm-s1/>



The screenshot displays a radio control software interface with several panels:

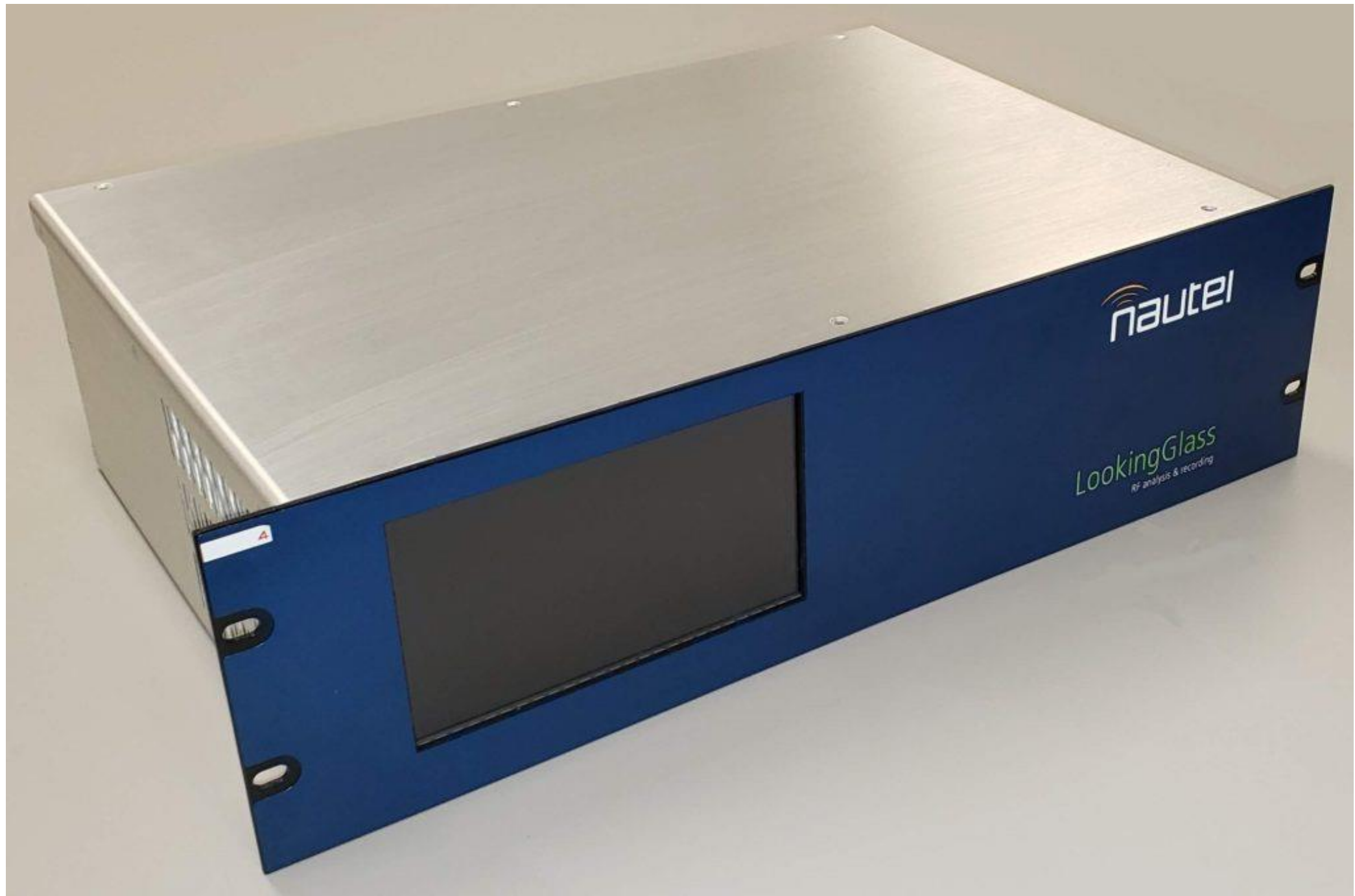
- Waterfall Plot:** A large spectrogram at the top showing frequency over time. A red vertical line indicates the current frequency.
- Audio Spectrum:** A line graph below the waterfall plot showing the amplitude of the audio signal.
- FDM-SW2:** A control panel on the right with various knobs and sliders for signal processing.
- FDM-DUO Stand Alone Control:** A control panel on the right with buttons for 'TUNE' and 'PTT'.
- FDM-DUO Advanced TX:** A control panel on the right with various settings for transmission.
- Log Window:** A window at the bottom center displaying a list of log entries with columns for 'Time', 'Mode', and 'Power'.

| Time | Mode | Power |
|---------------|------|--------|
| 14:00:00.0000 | FM | 0.0000 |
| 14:00:01.0000 | FM | 0.0000 |
| 14:00:02.0000 | FM | 0.0000 |
| 14:00:03.0000 | FM | 0.0000 |
| 14:00:04.0000 | FM | 0.0000 |
| 14:00:05.0000 | FM | 0.0000 |
| 14:00:06.0000 | FM | 0.0000 |
| 14:00:07.0000 | FM | 0.0000 |
| 14:00:08.0000 | FM | 0.0000 |
| 14:00:09.0000 | FM | 0.0000 |
| 14:00:10.0000 | FM | 0.0000 |



GNURadio showing an FM Receiver





WHMH Location: St. Cloud MN CPU Load: 51 % Client Volume: -31.0 dB WHMH - WHMH MPX Line 1 Volume: -90.0 dB Common - LW Stereo Input Line 2 Volume: -90.0 dB KNSI - KNSI MPX Client CPU Usage: 17% Menu 1 2 3 4 5 6

WHMH Tuner

101.7 Johnny R WHMH 6863

The Johnny Rock Show

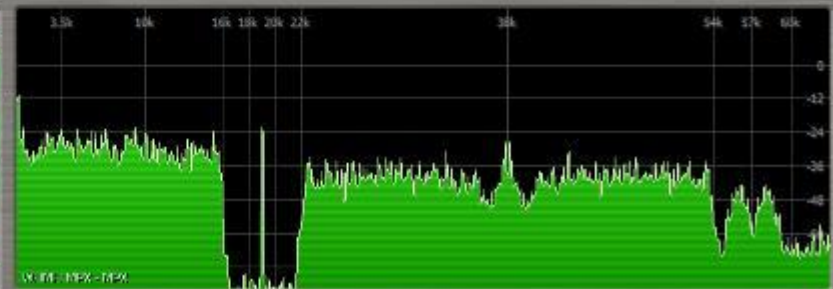
Rock TP TA MS

CT ST AH CMP 3.7%

WHMH Modulation Meter

Power +7.7 + Mod - 98 97 Pilot 8.7 De-mod 142 116

-7.3



| | | | | | | | | | | |
|--------|---------|----------|--------|--------|--------|--------|--------|------------|--------|--------------|
| Home | KVSC | MPX 2 | MPX 3 | MPX 4 | MPX 5 | MPX 6 | MPX 7 | Country 99 | ZROOK | WHMH |
| MPX 11 | MPX 12 | The Loon | MPX 14 | MPX 15 | MPX 16 | MPX 17 | MPX 18 | MPX 19 | KQOM | MPX 21 |
| KCLD | Lite FM | MPX 24 | MPX 25 | MPX 26 | MPX 27 | KHMK | KNSI | Kool 108 | Common | Client Audio |

RF Input Output Misc

De-modulator TCP Link Status Display Settings

Enable De-modulator

Frequency 10: 101.7 MHz

Custom Name: WHMH

Shortened: WHMH

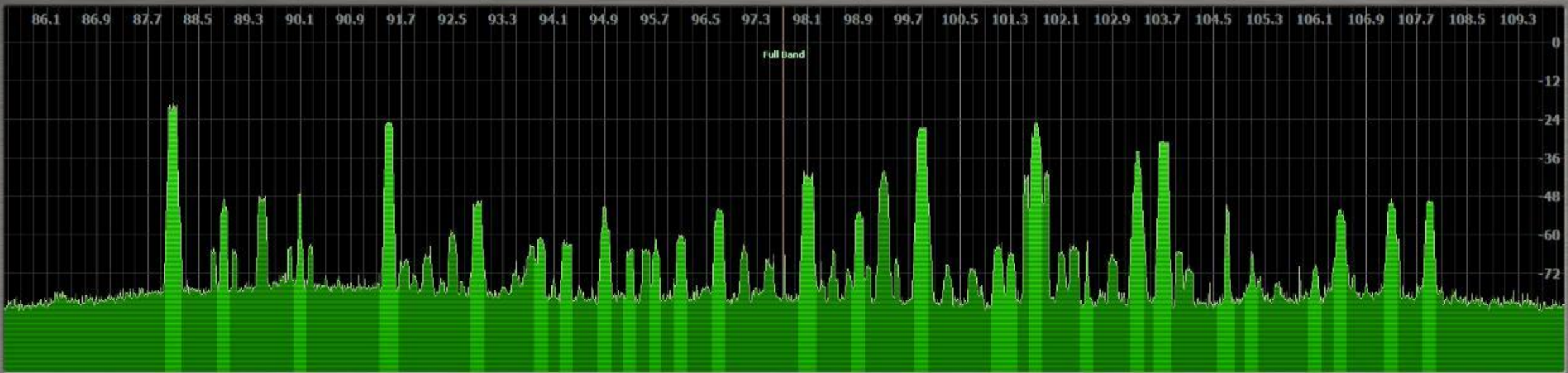
Current DC offset (PPM): 0

Fine tune: 0.0 kHz

MPX BW: 80 kHz

IF BW: 230 kHz

Overview Location: St. Cloud MN CPU Load: 48 % Client Volume: -31.0 dB Common - MPX 1 Line 1 Volume: -90.0 dB Common - LW Stereo Input Line 2 Volume: -90.0 dB KNSI - KNSI MPX Client CPU Usage: 19% Menu 1 2 3 4 5 6



| | | | | | | | | | | |
|--------|---------|----------|--------|--------|--------|--------|--------|------------|--------|--------------|
| Home | KVSC | MPX 2 | MPX 3 | MPX 4 | MPX 5 | MPX 6 | MPX 7 | Country 99 | ZROOK | WHMH |
| MPX 11 | MPX 12 | The Loon | MPX 14 | MPX 15 | MPX 16 | MPX 17 | MPX 18 | MPX 19 | KJGM | MPX 21 |
| KCLD | Lite FM | MPX 24 | MPX 25 | MPX 26 | MPX 27 | KHMK | KNSI | Kool 108 | Common | Client Audio |

Overview

RF Front-end De mod Tuning

Delay TCP Link Status Display Settings

Main

RF Rec

RX: 24.576 MSPS D: 0

RF Gain: 36.0 dB

Frequency Compensation: 0 PPM

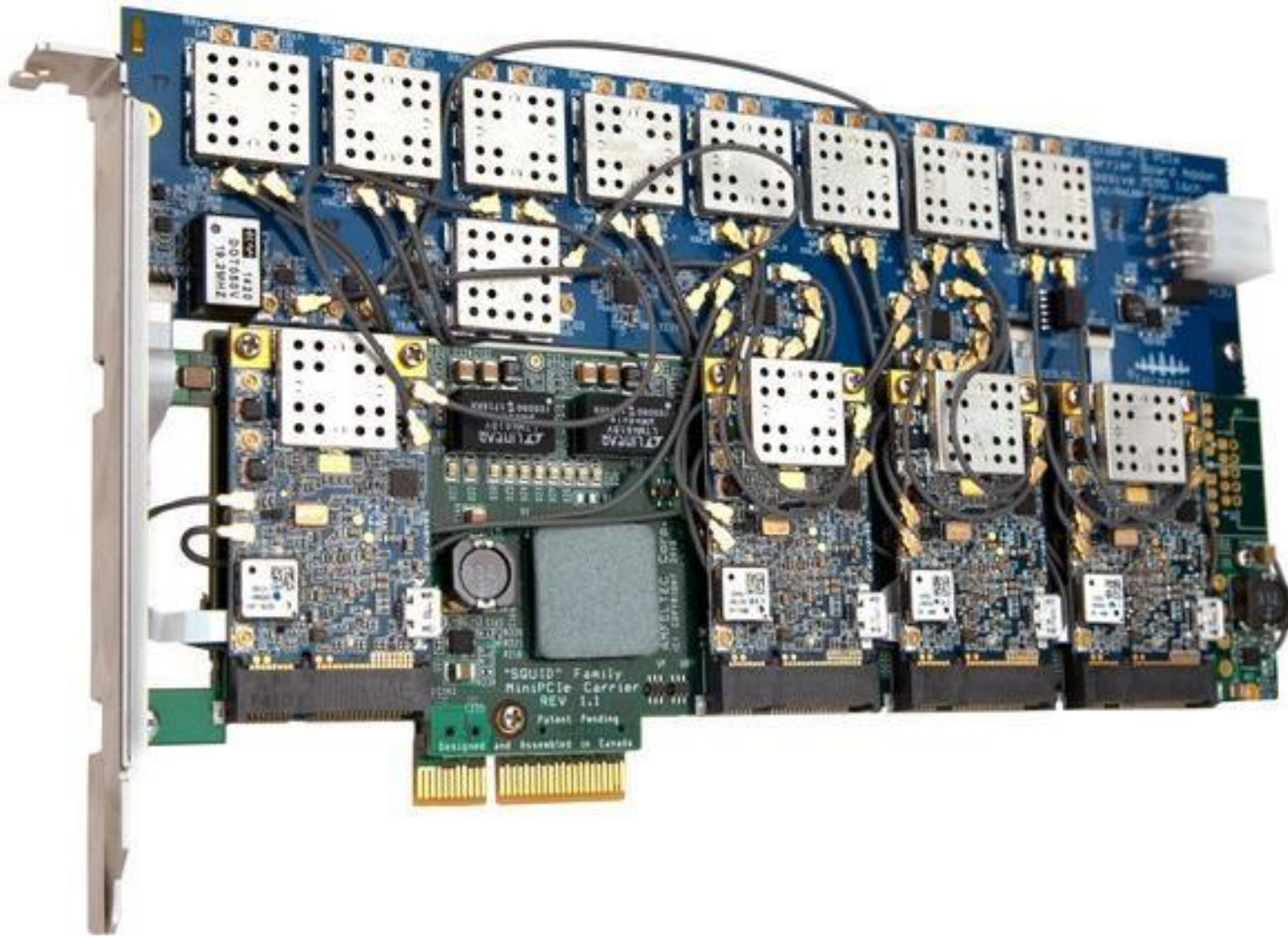
I/Q DC offset: 0

DC Spur Shift: -225 KHz



<https://www.ettus.com/all-products/x310-kit/>





<https://www.crowdsupply.com/fairwaves/xync>

<https://www.electronicdesign.com/industrial-automation/article/21156486/per-vices-corp-the-future-of-5g-with-sdr>





Online Information



Webinars

<https://www.nautel.com/resources/webinars/>



Nautel Waves Newsletter

<https://www.nautel.com/newsletters/>



YouTube

<http://www.youtube.com/user/NautelLtd>



Online Info, such as the Broadcasters' Desktop Resource

<https://www.thebdr.net/>



THANK YOU!

