North Texas NTMS Microwave Society

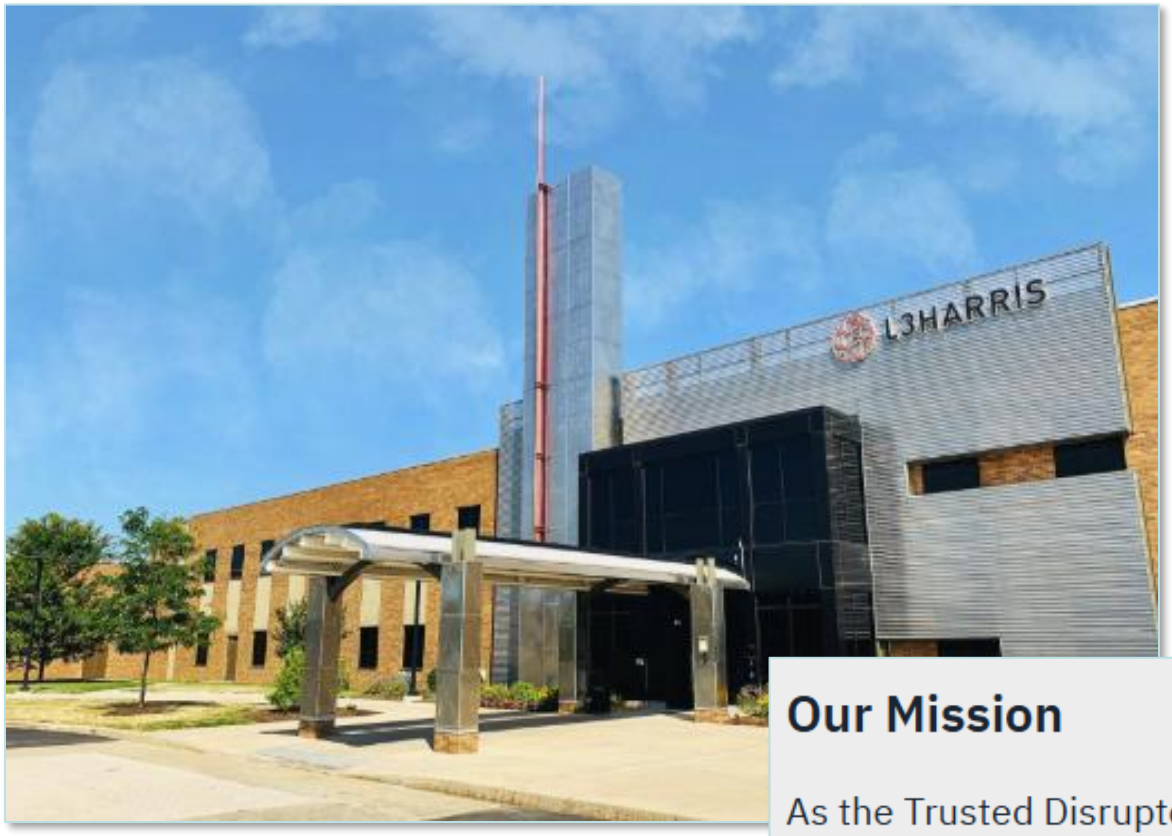
MUD Rochester 2026 Followup

KM5PO – Jim McMasters

November 21, 2026

L3 Harris Technology

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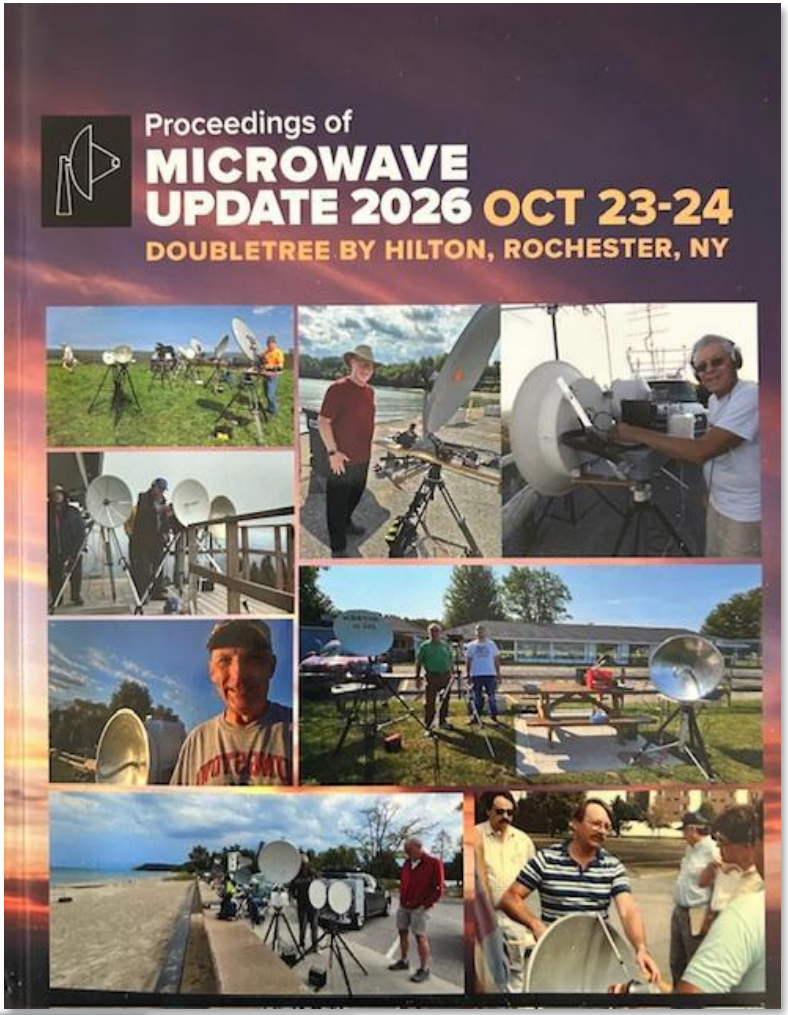


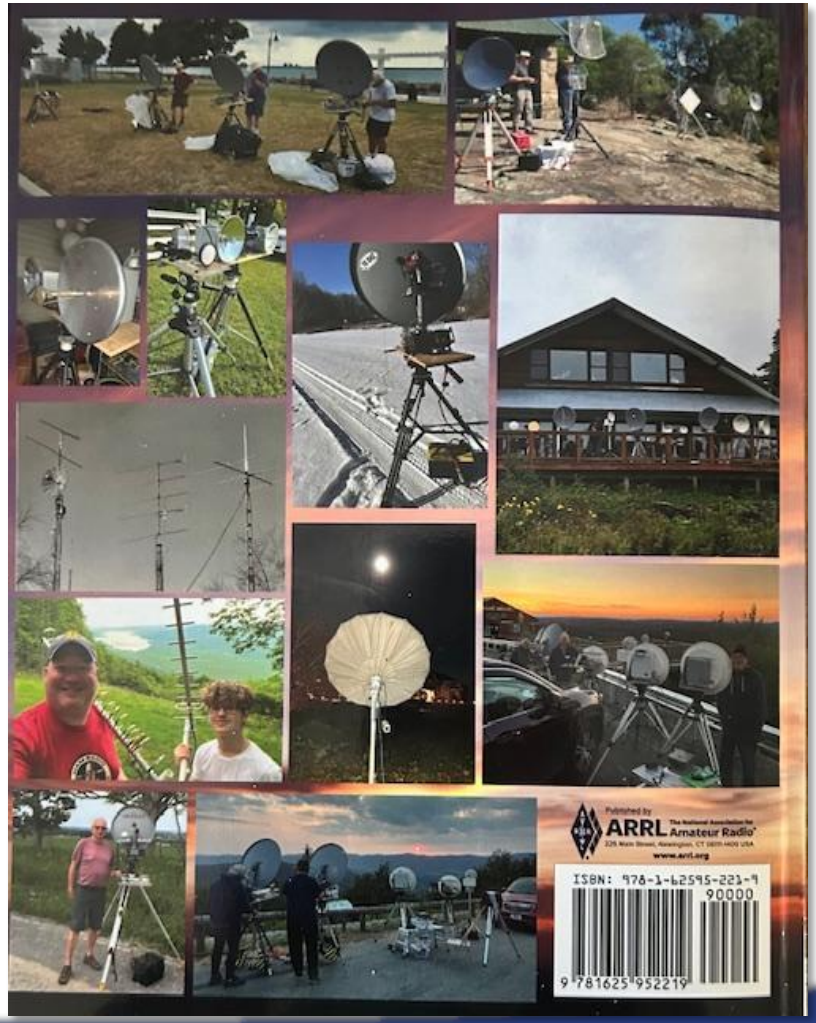
Our Mission

As the Trusted Disruptor, we innovate relentlessly and deliver capability with the speed, passion and determination that our customers demand in executing their most challenging missions.

Proceedings

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Presentations

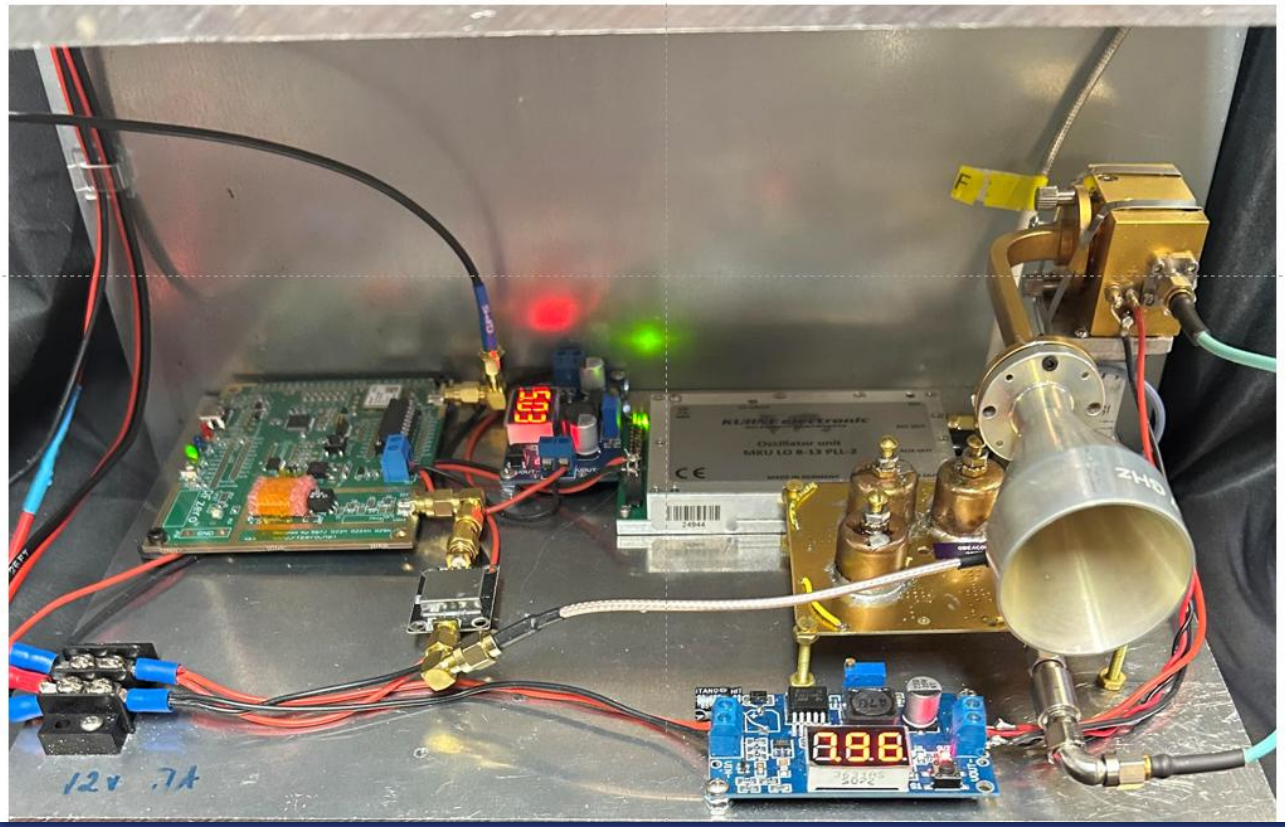
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Name	Call	Time/Presentation
Andy Flowers	KOSM	9:30 A Practical SDR-Based Antenna Range
Brian Justin	WA1ZMS	10:45 Tunnel Diodes as Comb Generators
Maggie Flowers	KE2AIZ	11:30 Doing the dishes
Paul Wade	W1GHZ	13:00 Measuring Microwave VSWR or Return Loss
James McMasters	KM5PO	14:00 Empirically Calibrated Propagation Forecasting For SHF/EHF Amateur Paths
Tom Williams	WA1MBA	15:30 Radome Materials for 47GHz and Other Bands
Rus Healy	K2UA	9:00 From Soldering Irons to Syntax_ Modernizing Your Amateur Radio Workbench
Tony Emanuele & Al Ward	K8ZR & W5LUA	10:00 24, 47 & 78 GHz VUCC attempt at Microwave Update 2025, Tucson AZ
Benjamin Lowe	K4QF	11:00 New Worlds in Microwave Roving
Paul Wade	W1GHZ	13:00 Qbeacon - Q65 beacon board for 10, 24, 47 GHz plus 5760
Andy Flowers	KOSM	14:00 Optical Communications Experiments
Hans Wagemans	ON4CDU	16:00 10 GHz EME for everyone?!

From Paul Wade's (W1GHZ) presentaion

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KM5PO V2 47 GHz Beacon
with QBEACON board



10 GHz Moonbounce for everyone

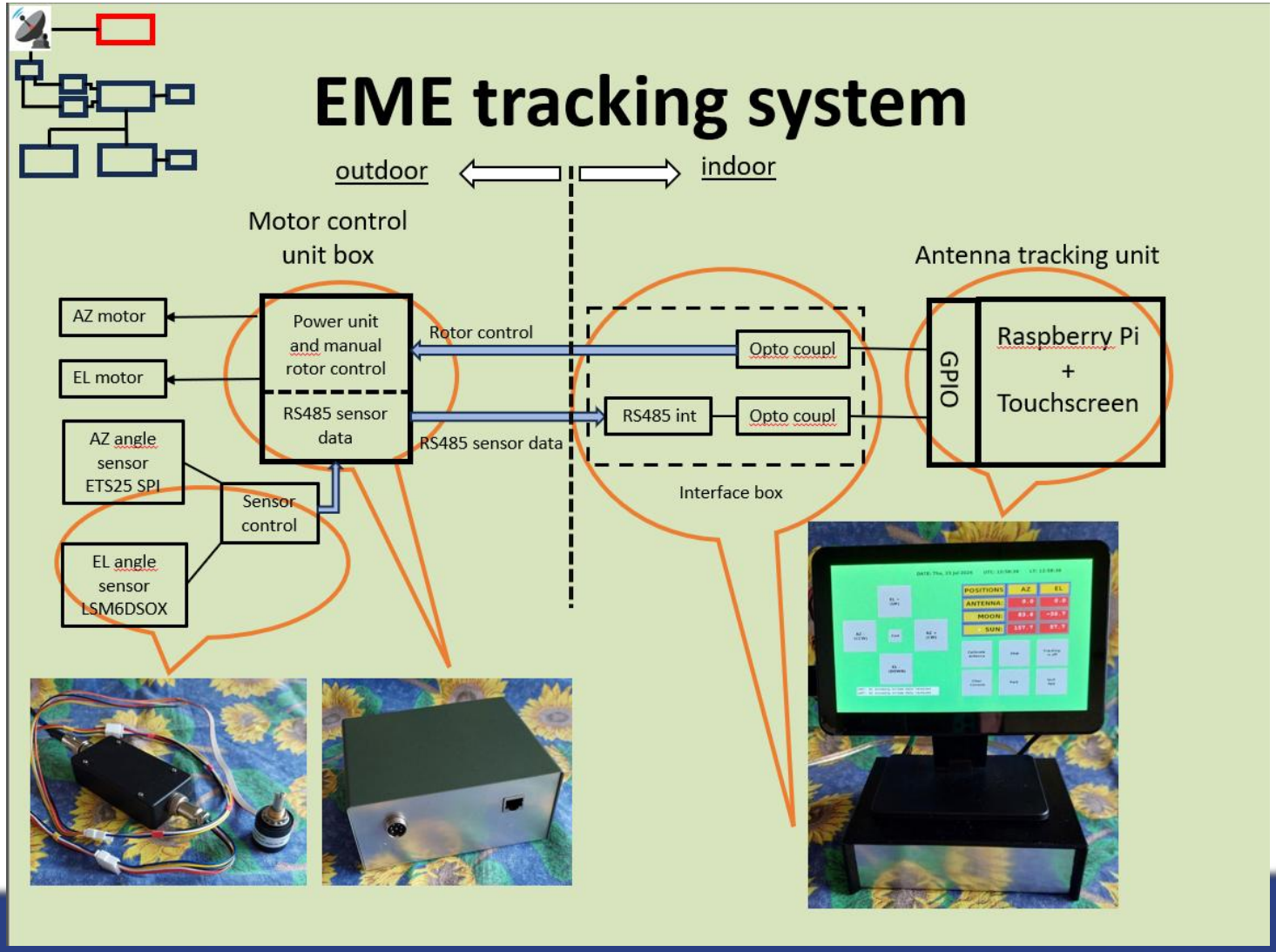
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- Hans, ON4CDU - on4cdu@uba.be



Tracking

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Summary

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Summary

- Setting up an EME station is a mechanical and technical challenge
- 10 GHz EME can be performed using relatively small antennas
  - Focus strongly on optimization
  - Measure solar and lunar noise
  - Minimum of 3 to 4 ft dish and 15 watt output power
- Receiving EME stations is also possible with a smaller setup
- Start with the reception of DL0SHF

Han's design will make my job easier!

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Friday night dinner – Jeremiah's

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- With NTMS members
- Eric AG5XV and Lisa Haskell
- Pat Patterson W5VY



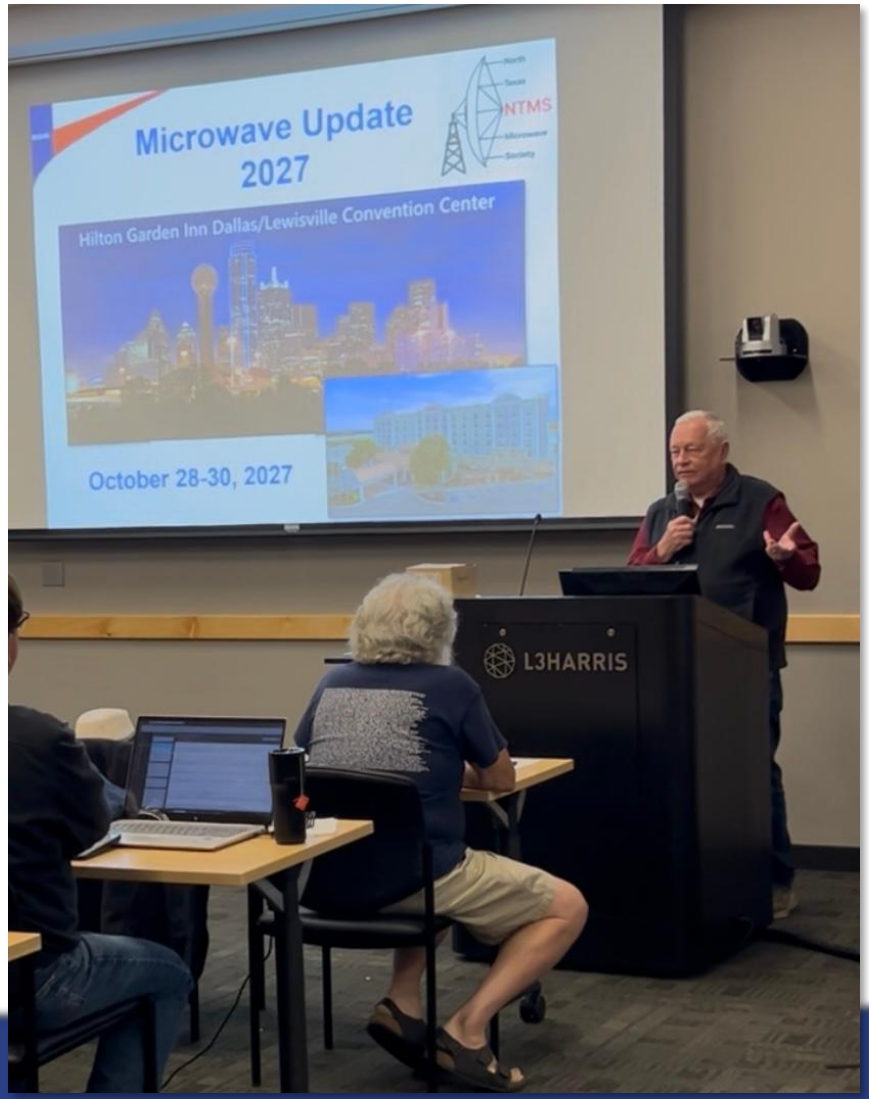
Visiting

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- New acquaintances
  - Kern Owens ZF1KO – Lawyer from Cayman
  - Victoria Christof KC2ZOE – Landscape Architect
  - Dave Petke K1RZ – propagation study on 24 GHz
- Old friends
  - Oliver KB6BA & Paul AA6PZ
  - Steve Kostro N2CEI & Tom Williams WA1MBA
  - Many others

W5LUA announcing NTMS hosting MUD in Dallas 2027

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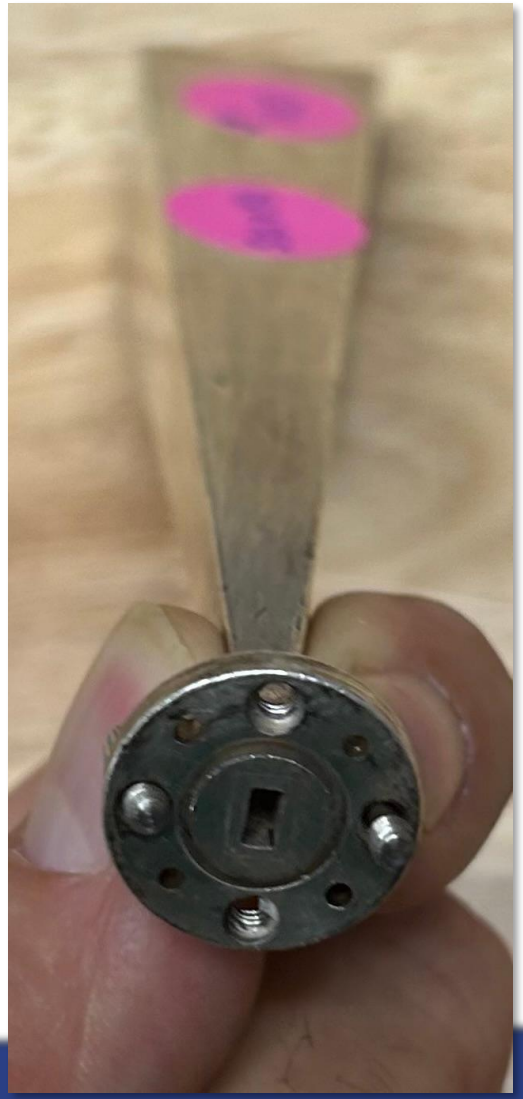


Flea Market!

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- WR15 flange 6” horn

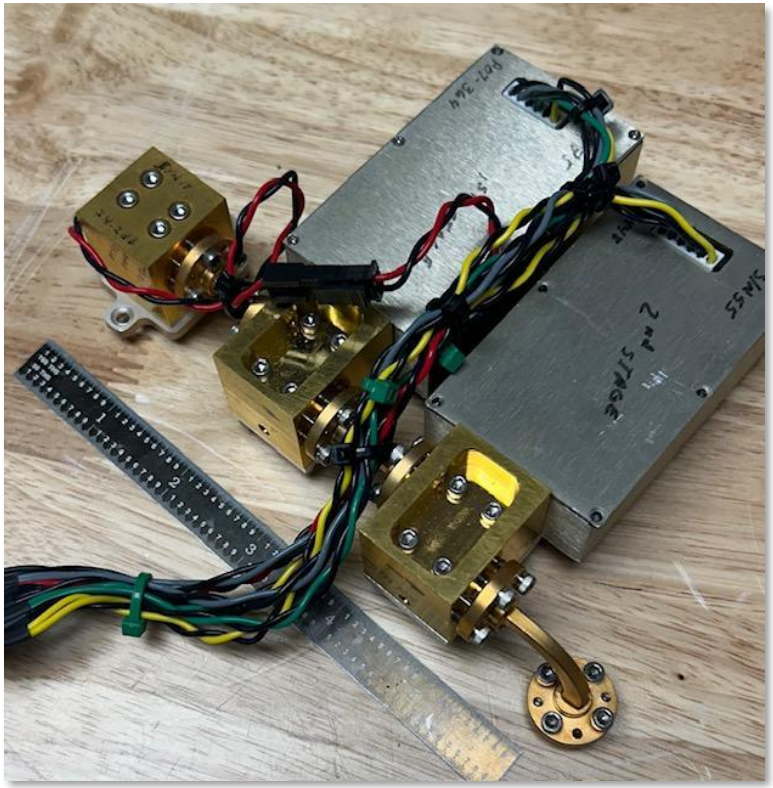


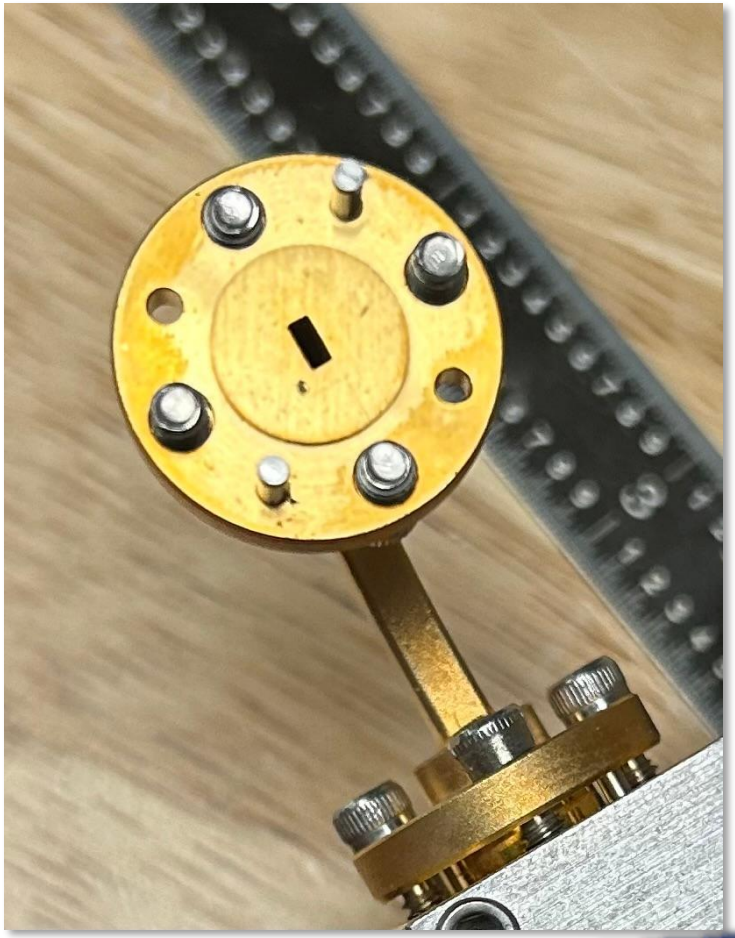


Flea Market!

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- Itty bitty waveguide/LNAs
- WR10?





Flea Market!

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- 24 GHz crystal detector and 24 GHz Gunn oscillators
  - For NTMS antenna range





Flea Market!

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- 144 to 28 MHz transverter for sun noise measurements



Work to be done

- VE3KH Kevin – repair his 24 GHz beacon and rename it VE3GHZ/B
- VE2ZAZ/VE2IZ Bert – hand off a Wavelab control board kit.
  - Solve for a different XP module
  - Berts VE2IZ/B beacon is on the NTMS propagation beacons page he submitted himself.
- AA5NI Ron Wicker – NTMS member.
  - Pick up Wavelab module from Barry VE4MA
  - Assemble a Wavelab board, mount to module, test system, assist with implementation in a 10/24 GHz rover
- K1RZ Dave Petke – 24 GHz analysis

VE3KH – VE3GHZ/B

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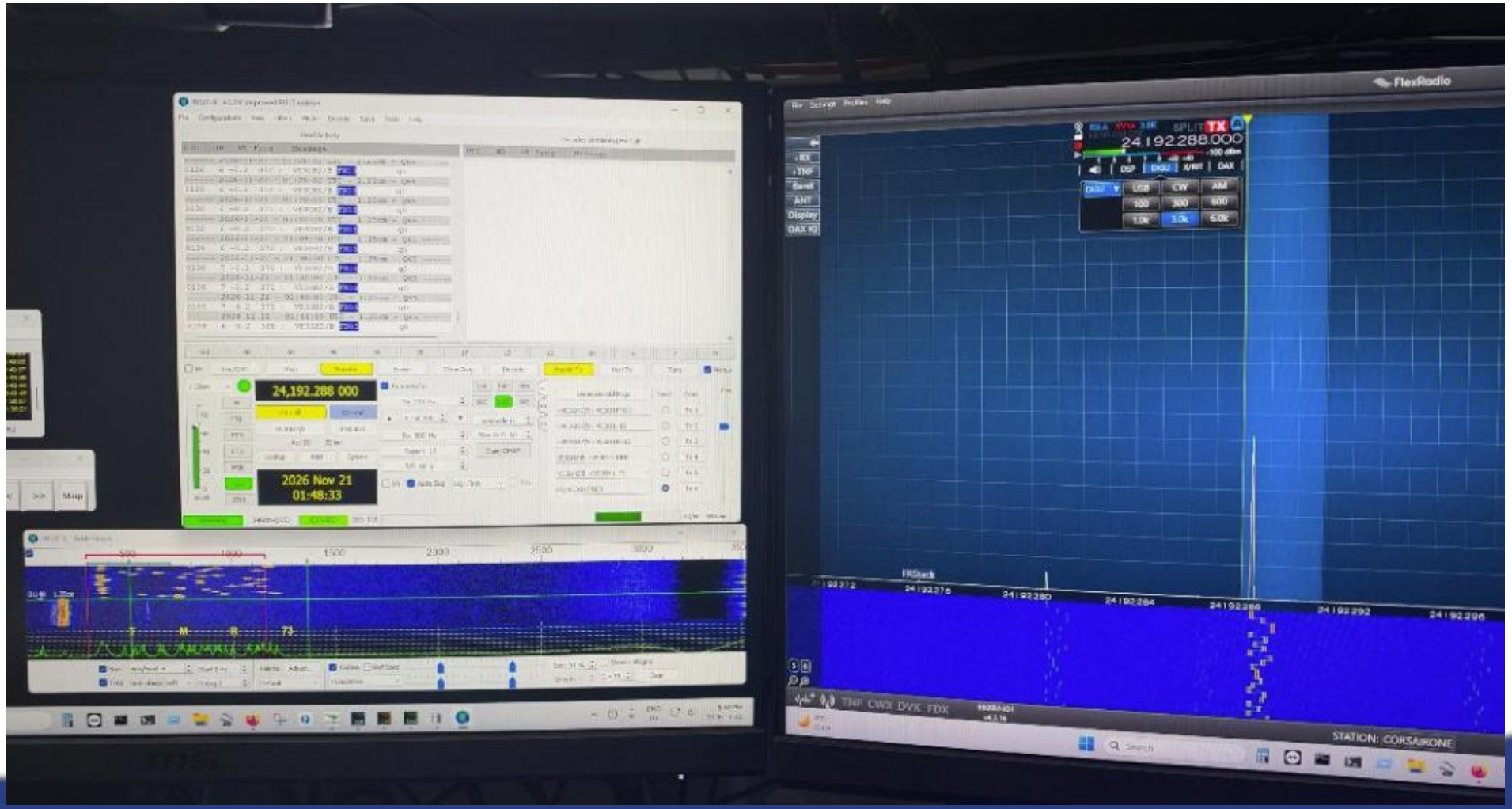


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VE3GHZ/B back home and on the air

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W5HN

VE3GHZ/B back home and on the air

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VE3GHZ/B FN03EO Mississauga ON, SW of Toronto 98% RH 11-21-26

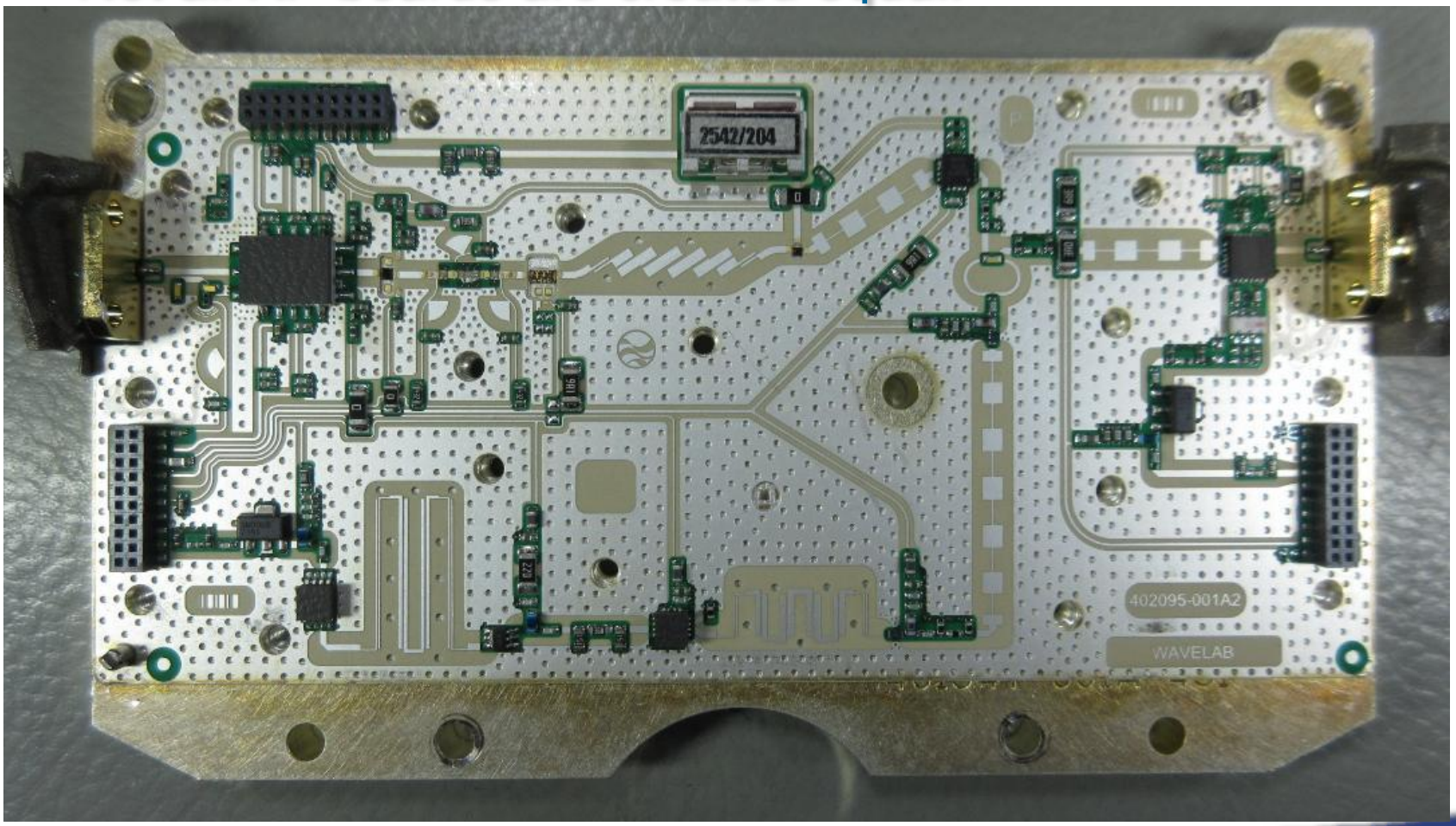
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VE2ZAZ – “XP” board

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Not all XP boards are created equal.



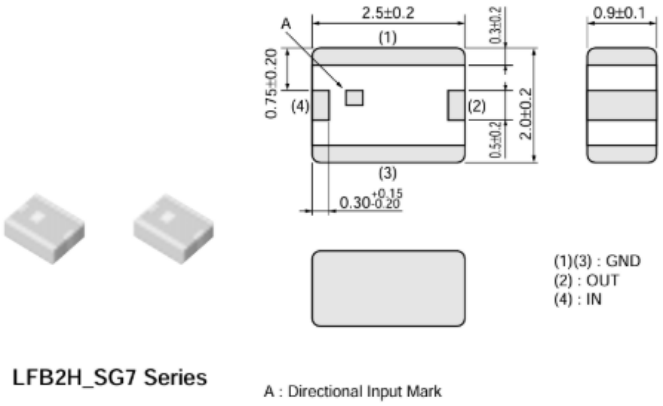
23X1008XP vs 23X1232XP

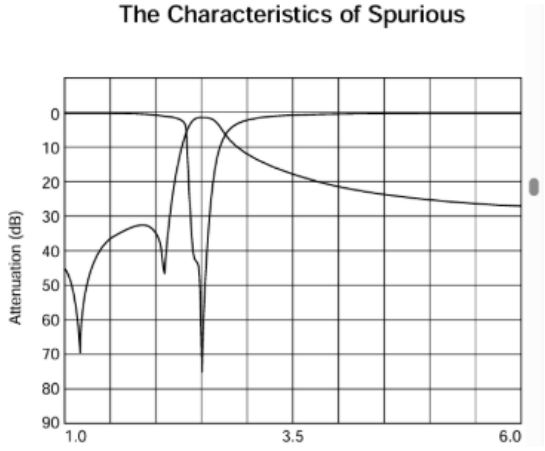
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To hit 2542 means a programmed frequency of 1804.1667 (1/12 MHz fraction) which is not good so we will go with 2544. The ceramic bandpass filter should be at least 100 MHz wide so no problem there. The new schema then would be:
LO1 = 1804.000
LO2 = 2112.000
Then we get 1804 × 12 = 21648 + (2112 LO2 + 432 IF) = 24192 RF on TX
And we get incoming 24192 RF - 21648 (12xLO1) = 2544 which is mixed on the control board mixer with 2112 LO2 to yield 432 IF.

I've checked the filter spec for U3 which is in the transmit and receive path above the control board mixer and it's centered on 2.5 GHz with enough bandwidth to not impact the new mixed IF frequency of 2544 (filter graph below).

I'll pull out the programming tools and try to burn the chip per the new LO1 and LO2 frequency and let you know. I don't expect a problem. Then I can mail that chip in a regular envelope and have no customs paperwork! :-)





VE2ZAZ – “XP” board

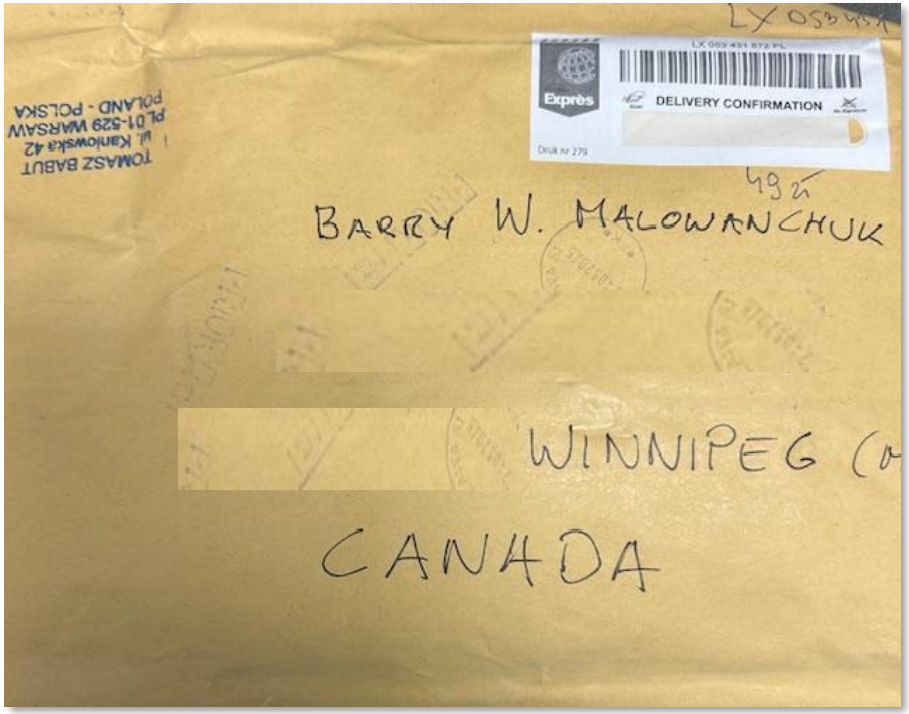
GM Jim,

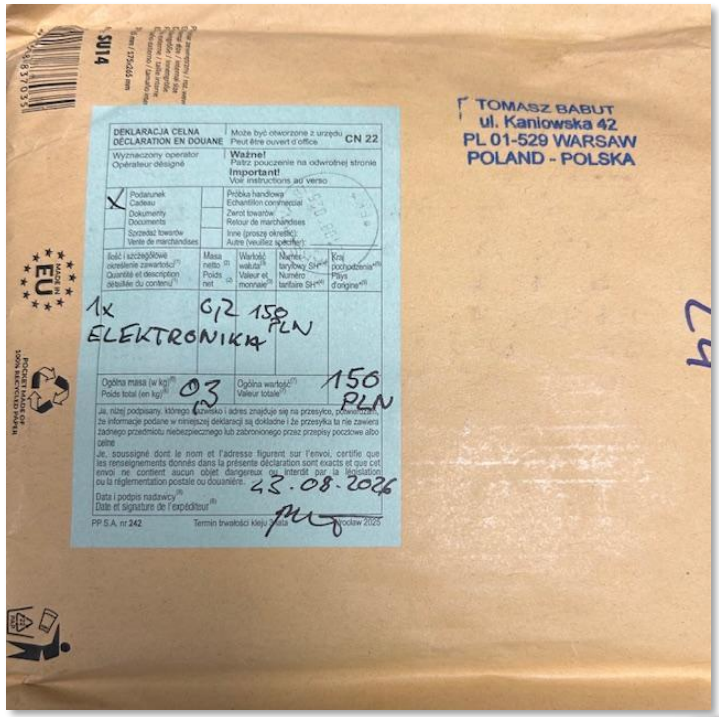
I made the mod, and now I am getting around 1 Watt out. That will be good enough! I actually had to dial down the TX IF attenuator pot, as even at its lowest power setting, the IC-705 was driving the TX power into saturation. I have listened to the SSB audio through the IF out port of my spectrum analyzer (zero span, RBW at 10 KHz, IF out sent into a receiver tuned to 321.4 MHz), and it sounds good enough for ham radio 😂.

AA5NI new 24 GHz rig

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Module shipped from Poland to Canada, then transported to Rochester N.Y.



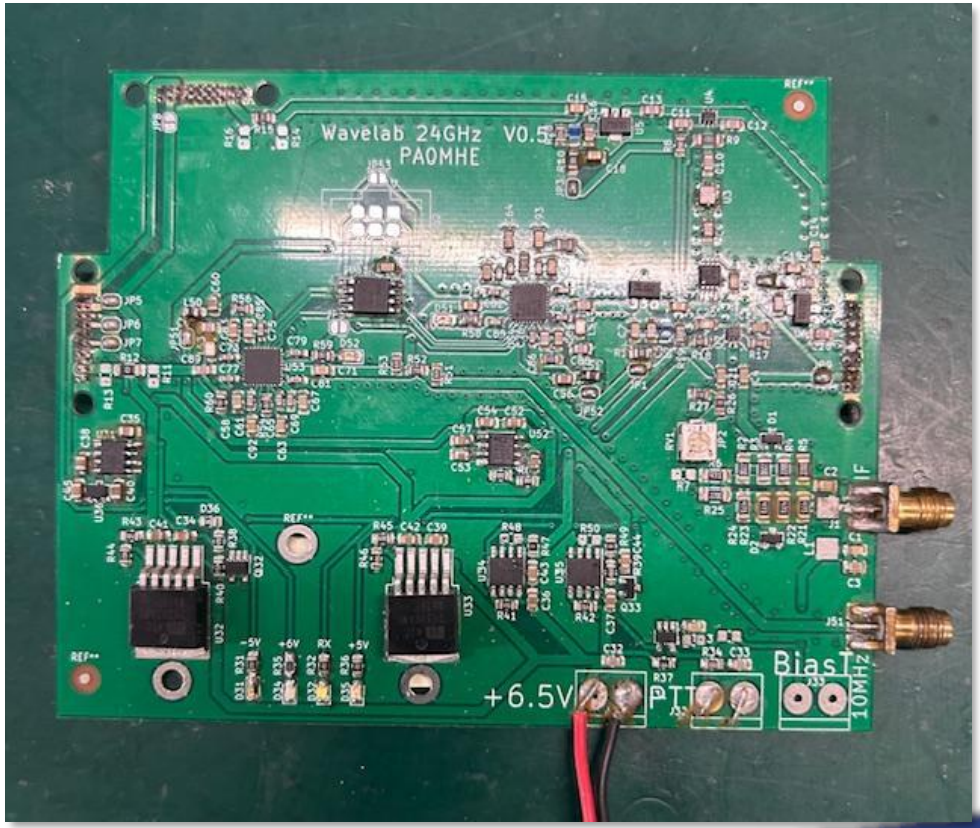


AA5NI new 24 GHz rig

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Start with board and parts and end up with completed board

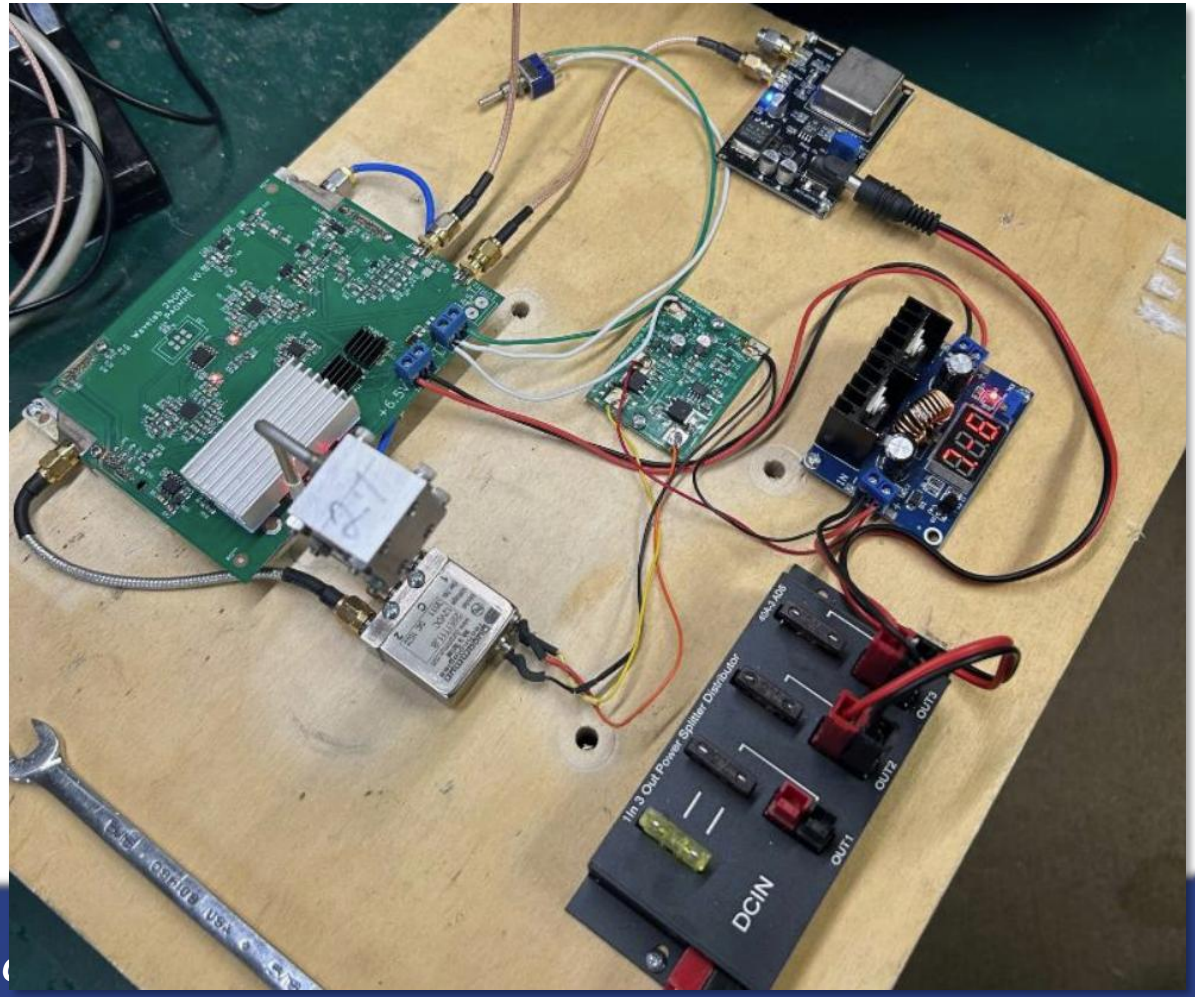




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AA5NI new 24 GHz rig

Ready to go on the air!



Questions?

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