

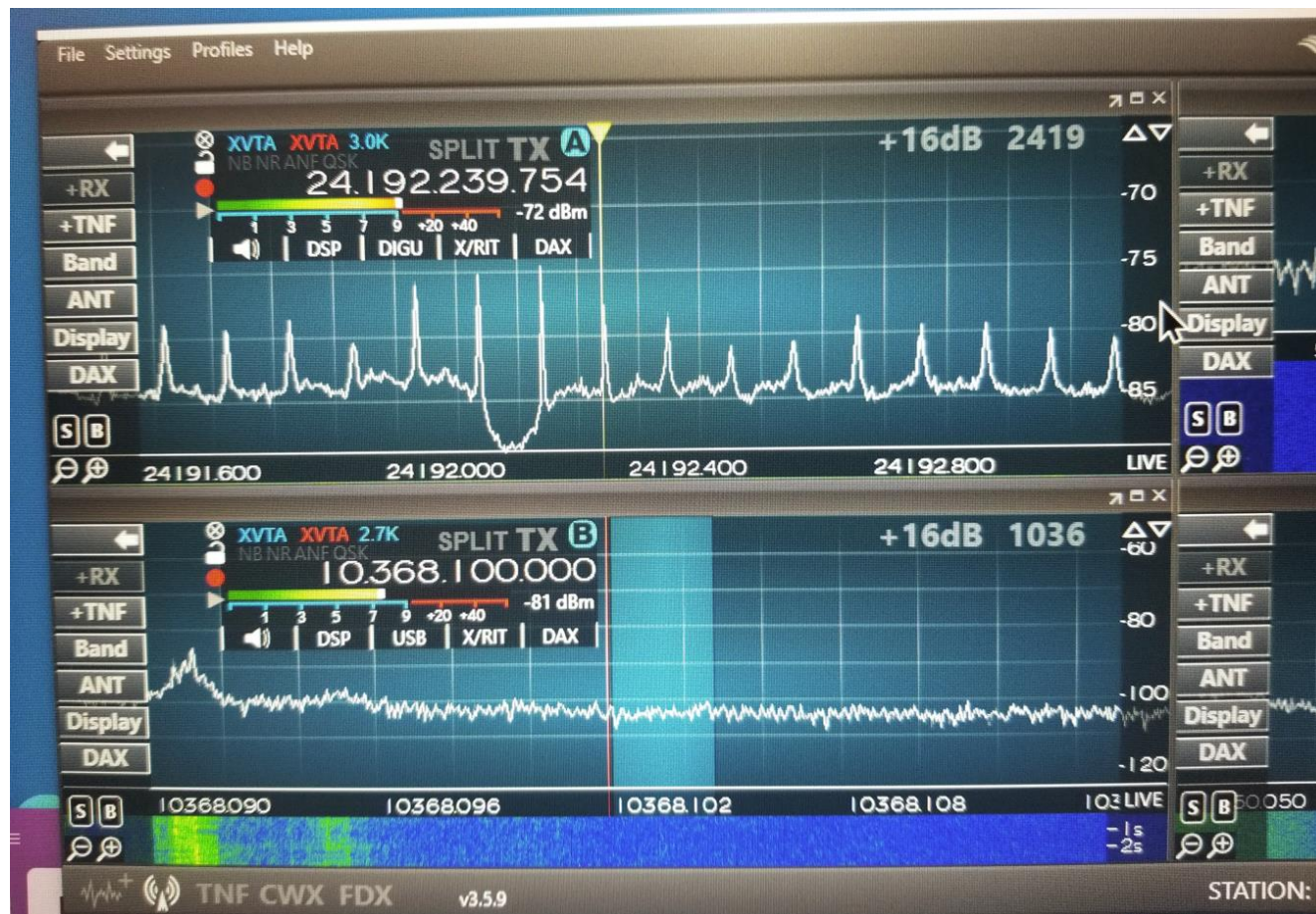
24 GHz QRM

Jim McMasters

KM5PO

May 18, 2024

QRM at W5LUA looking 38 degrees

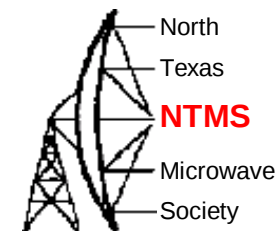


The 24 GHz DF team

Matthew Kube
W5ZCA and
Richard Burger
AG5XW

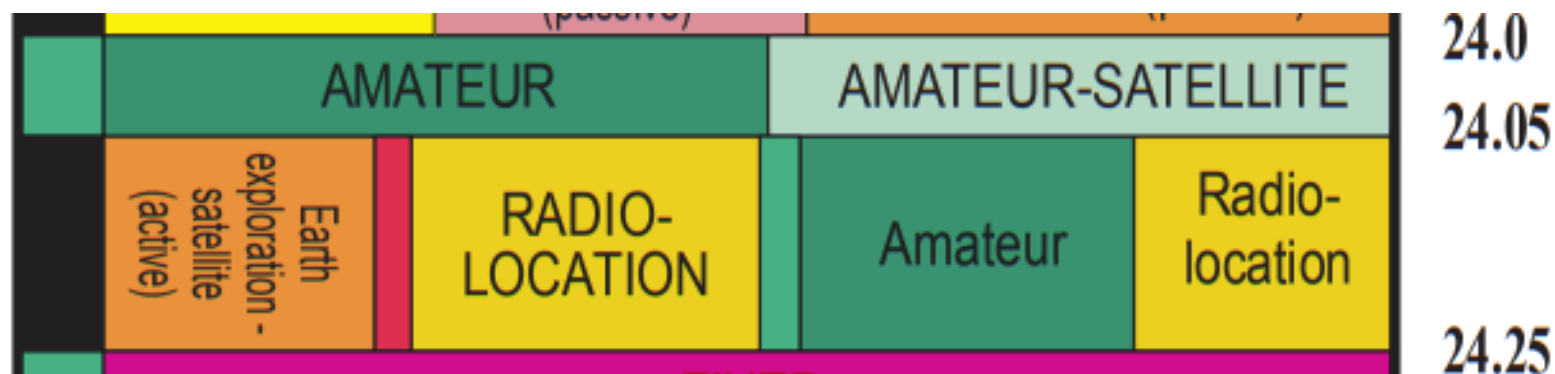
24 GHz
Wavelab sniffer
in foreground



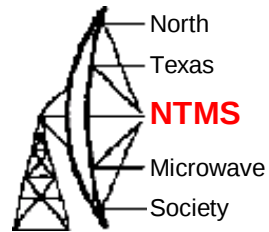


Shared 24 GHz spectrum

Table of Frequency Allocations		18.6-24.45 GHz (SHF)		Page 53
International Table		United States Table		FCC Rule Part(s)
24-24.05	AMATEUR AMATEUR-SATELLITE	24-24.05	24-24.05 AMATEUR AMATEUR-SATELLITE	ISM Equipment (18) Amateur Radio (97)
5.150		5.150 US211	5.150 US211	
24.05-24.25	RADIOLOCATION Amateur Earth exploration-satellite (active)	24.05-24.25	24.05-24.25 Amateur Earth exploration-satellite (active)	RF Devices (15) ISM Equipment (18) Private Land Mobile (90) Amateur Radio (97)
5.150		5.150	5.150	



Signal identification



"The" reference for signals is- but lacks the higher bands..

https://www.sigidwiki.com/wiki/Signal_Identification_Guide

From the reference signal page above, this modulation sounds close to what we heard in Al Ward's case: OTH-SW Chinese over the horizon radar

<https://www.sigidwiki.com/wiki/Special:RunQuery/Database>

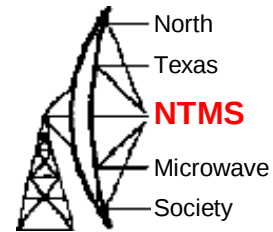
The Gov/FCC frequency allocation schedule

<https://transition.fcc.gov/oet/spectrum/table/fcctable.pdf>

Gov/FCC colored wall chart

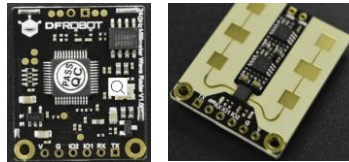
<https://www.ntia.gov/page/united-states-frequency-allocation-chart>

Two DUTs



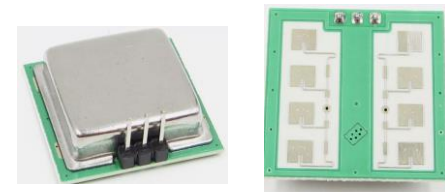
Two common 24 GHz “human presence” radar units were tested.

DfRobot SEN0395



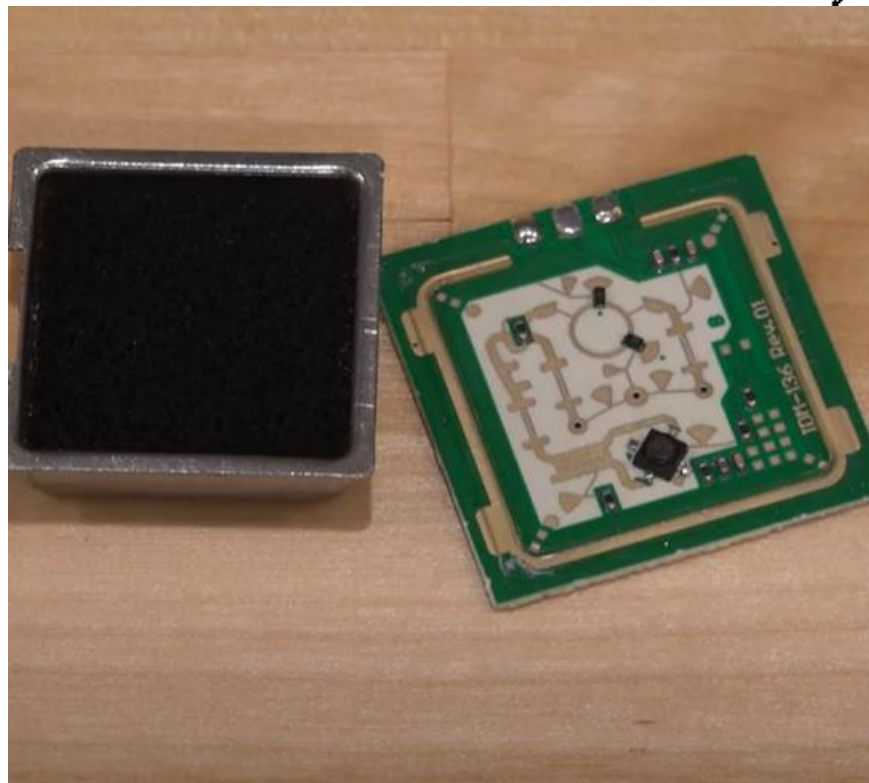
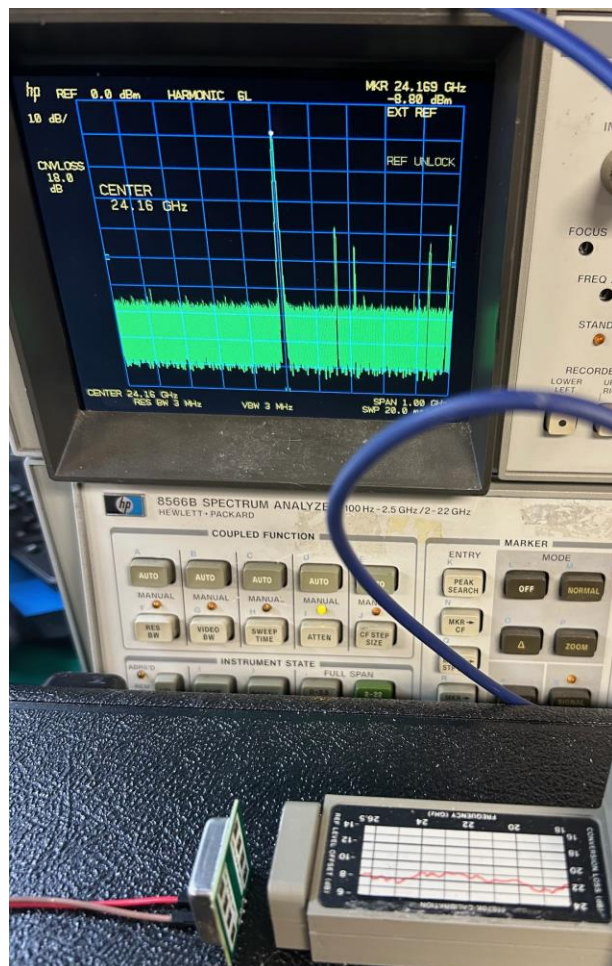
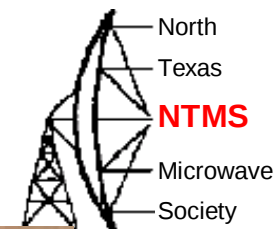
Parameter	Value
Freq	24.125-24.250
Oper V	3.6-5v
Oper Cur	90 mA
Modulation	FMCW,CW
Pwr output	13-15 dBm
IF	uProc serial

CDM 324



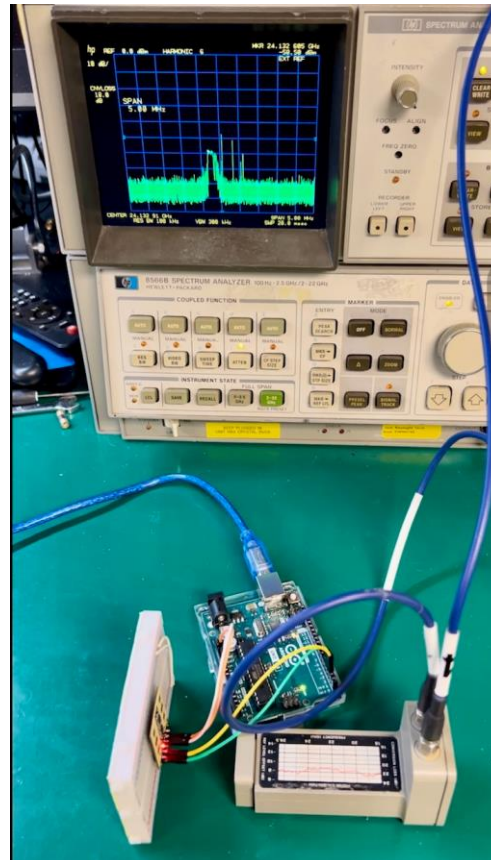
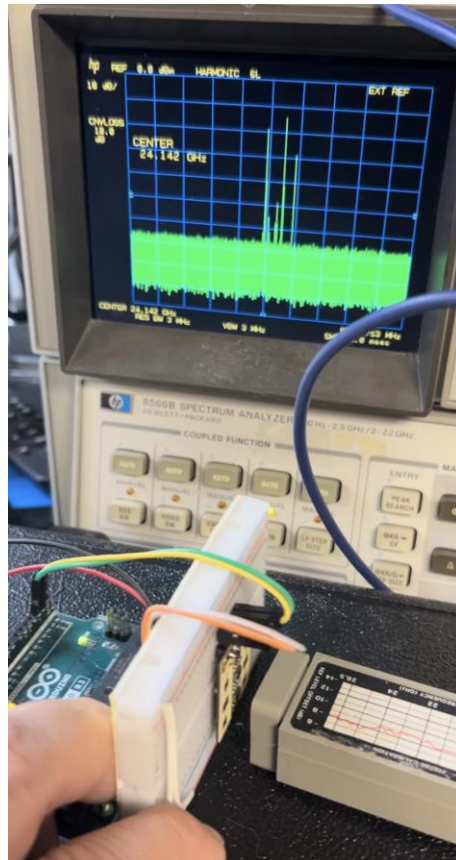
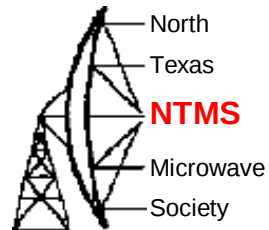
Parameter	Value
Freq	24.125-24.250
Oper V	5.5v
Oper Cur	30 mA
Modulation	CW pulse
Pwr output	16 dBm
IF	-300 to +300 mV

CDM 324



<https://www.youtube.com/watch?v=5vqSX40seqA&t=173s>

DfRobot SEN0395



Signal identification

Two common 24 GHz “human presence” radar units were tested.

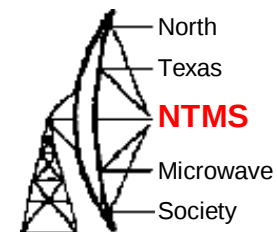
DfRobot SEN0395

Parameter	Value
Freq	24.125-24.250
Oper V	3.6-5v
Oper Cur	90 mA
Modulation	FMCW,CW
Radar app.	Range,Velocity
Pwr output	13-15 dBm
IF	uProc serial

CDM 324

Parameter	Value
Freq	24.125-24.250
Oper V	5.5v
Oper Cur	30 mA
Modulation	CW pulse
Radar app	Doppler
Pwr output	16 dBm
IF	-300 to +300 mV

Wavelab 24 GHz sniffer



Questions?

