1296 MHz EME Using a 1.5 Meter Solar cooker

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Show and Tell



Objective: Build a Hybrid (3D printed) Septum feed and mount for dish

Not Discussed Radio, AZ-EL Rotator, Amplifier

Eastern VHF/UHF/Microwave Conference
April 24, 2026

1296 MHz EME 1.5 Meter Solar cooker

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Light weight
Get your feet wet doing
1296 MHz EME

Dish can be used
on other bands
up to 10 GHz.



1800W Parabolic Solar Cooker High Efficiency Sun Oven 700-1000°C Outdoor Camping

$96

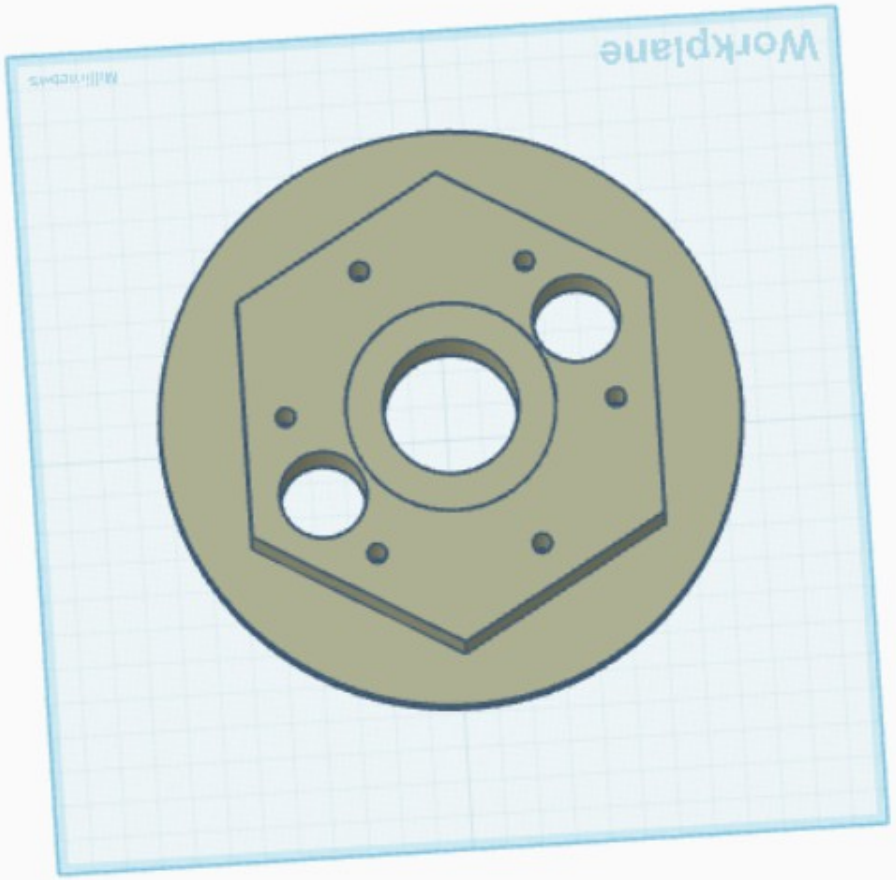
Price varies

Amazon

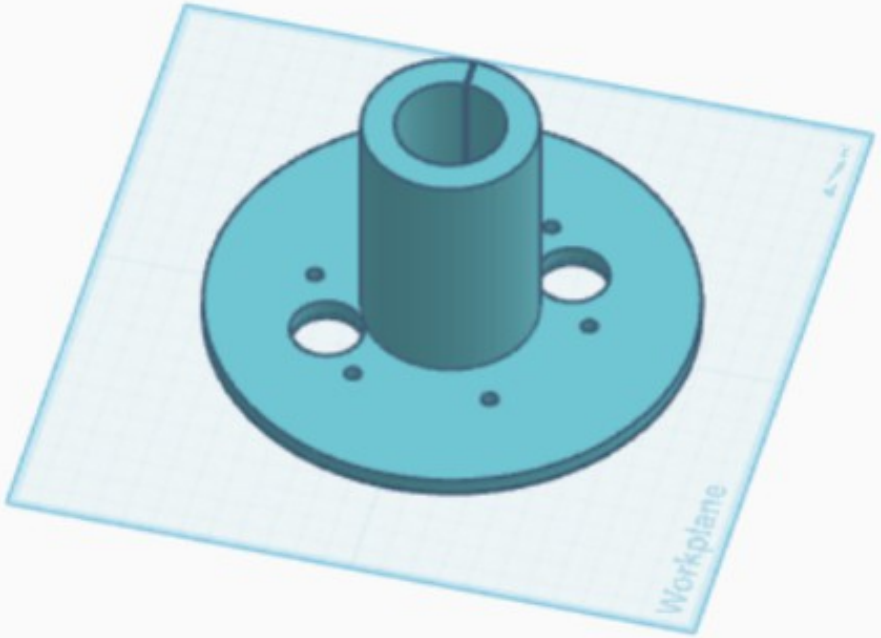
(4-19-2026)

Diameter 59 inches
Focal length roughly 23 inches
Material Steel

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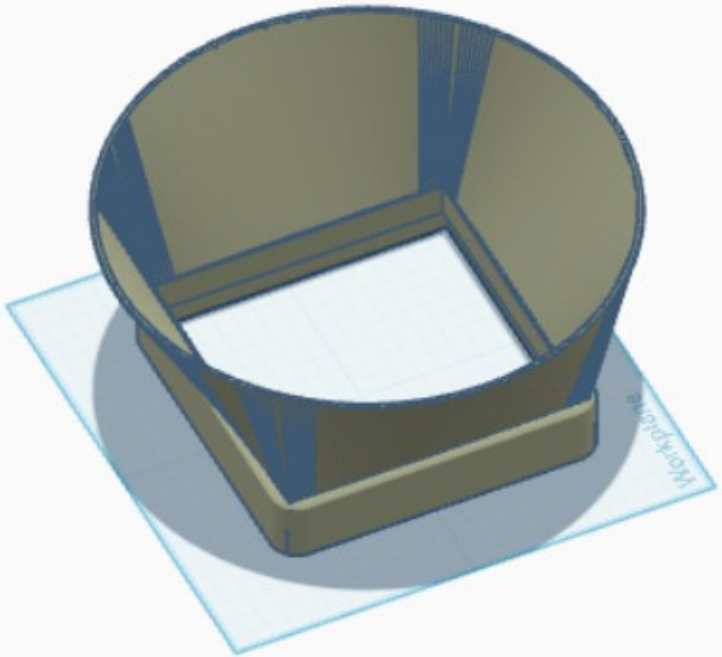
Center Support Feed Tube Front of dish



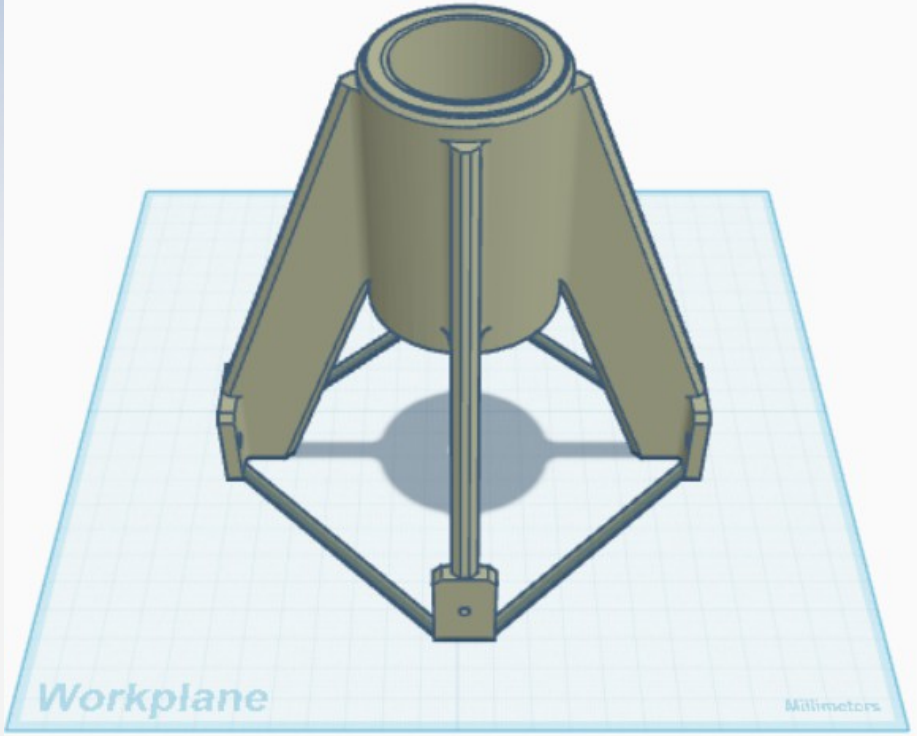
Center Support Feed Tube Back of dish

3D Printed PETG

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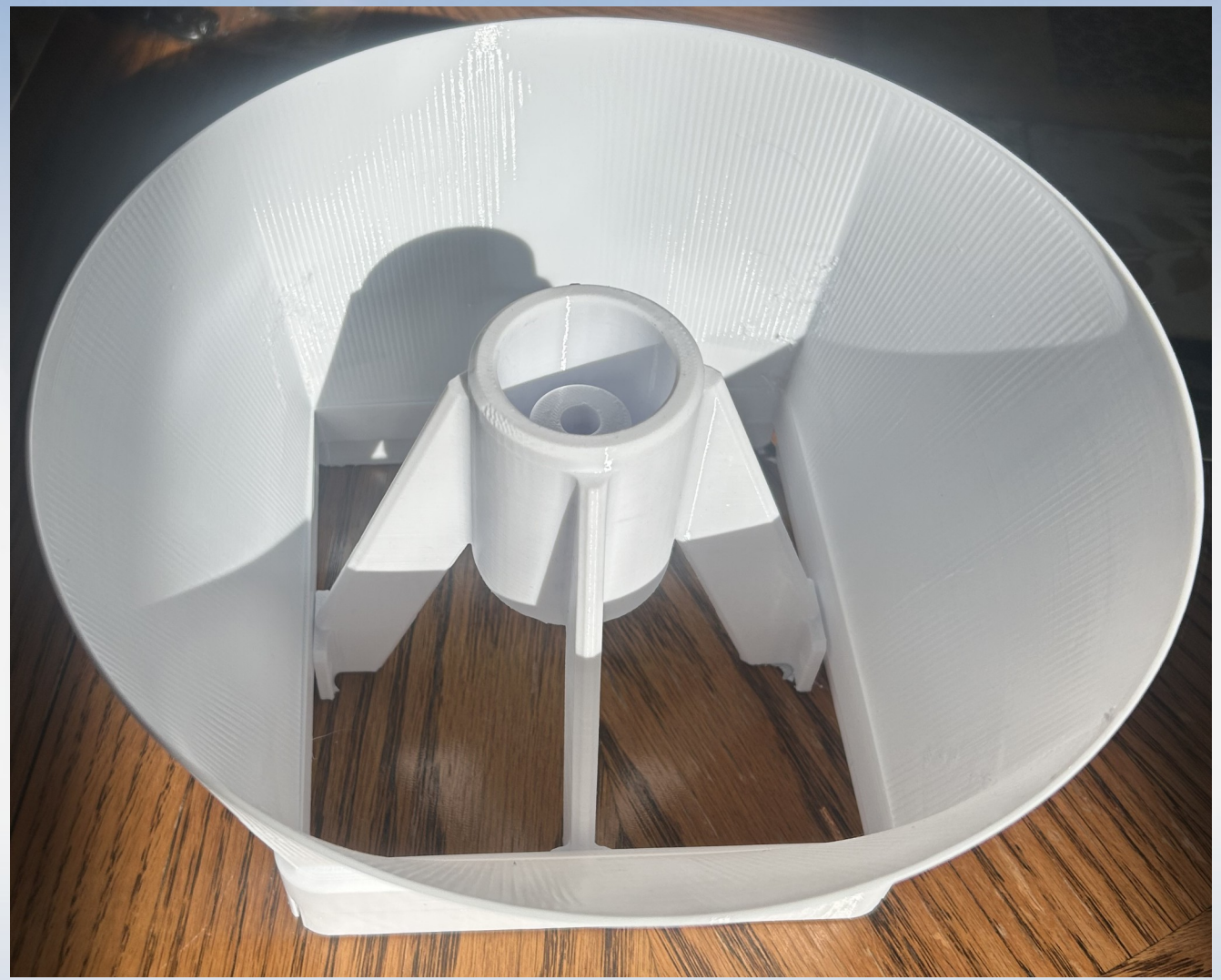
Square to round transition 100 mm high - 240 mm diameter



1.5 inch Fiberglass Feed support

3D Printed PETG

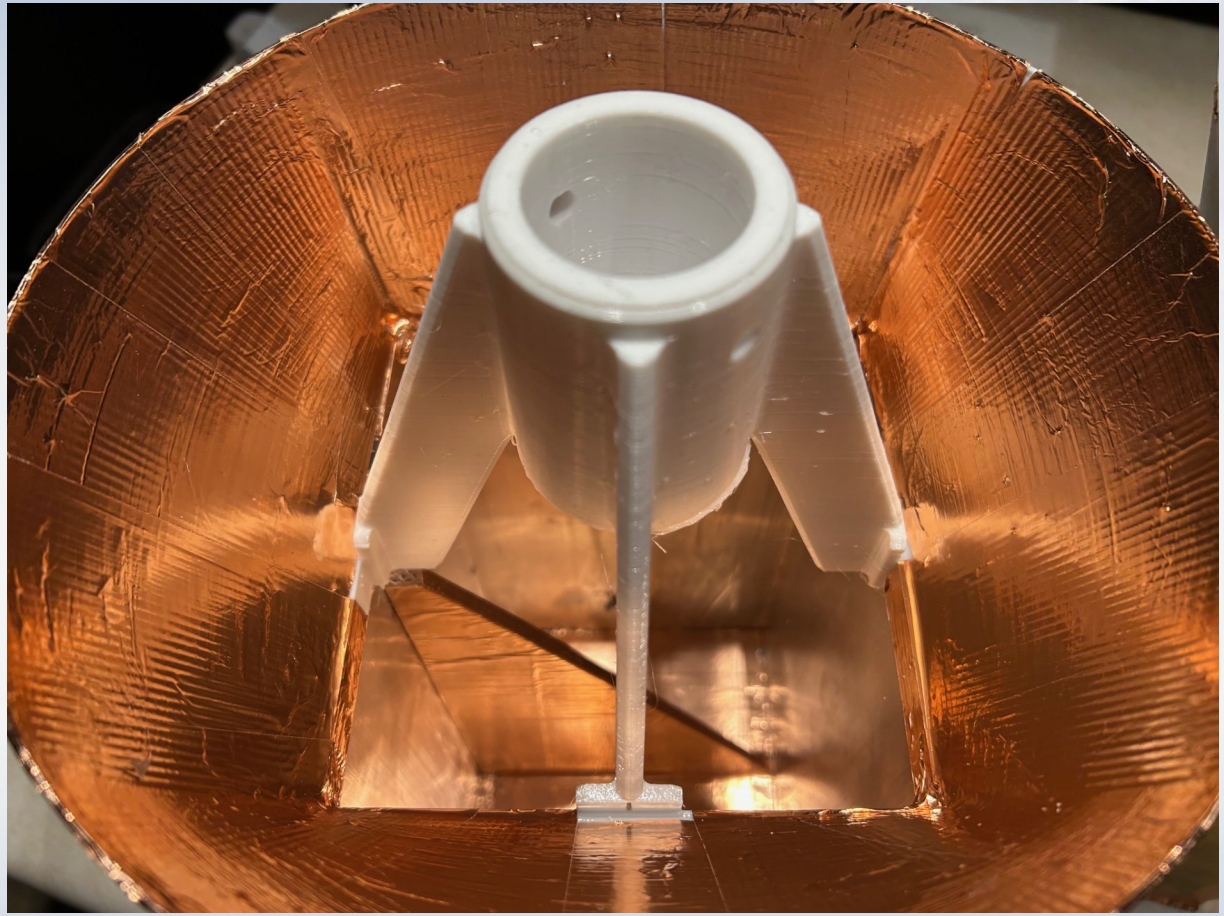
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3D printed (before Copper tape)

Inside Septum Feed



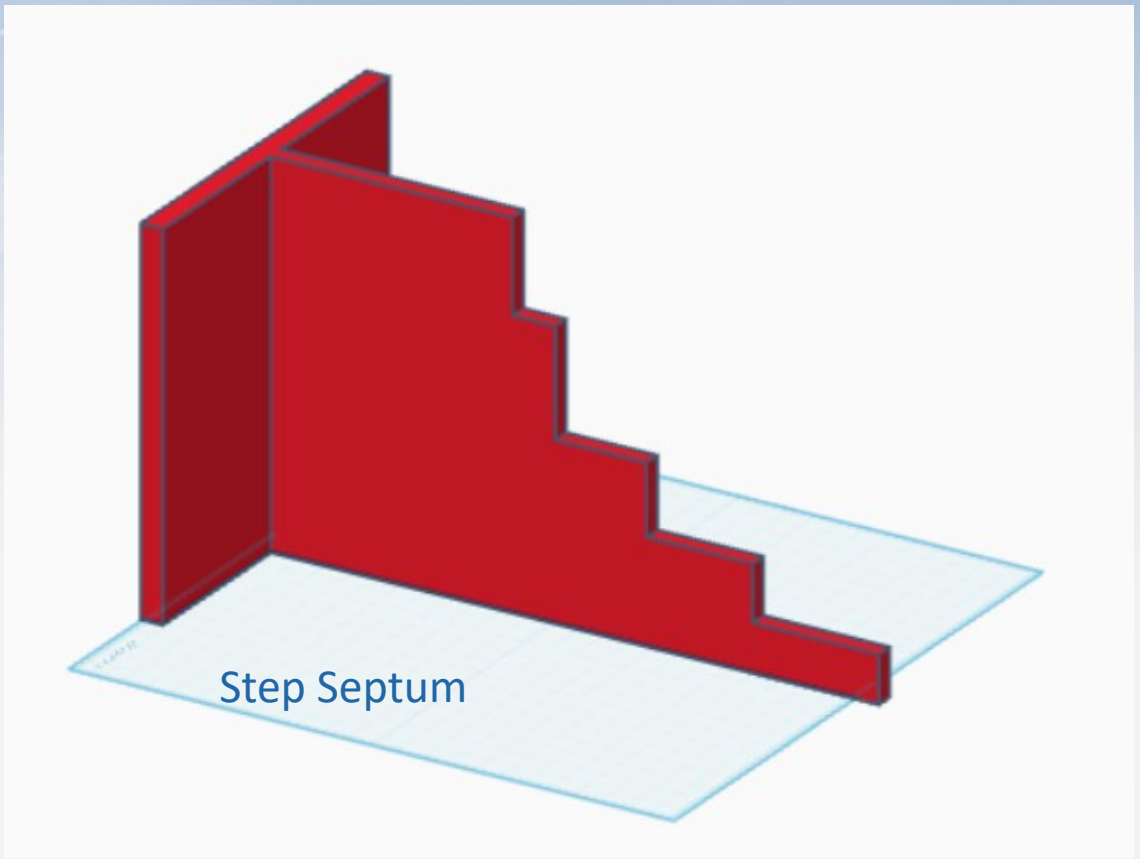


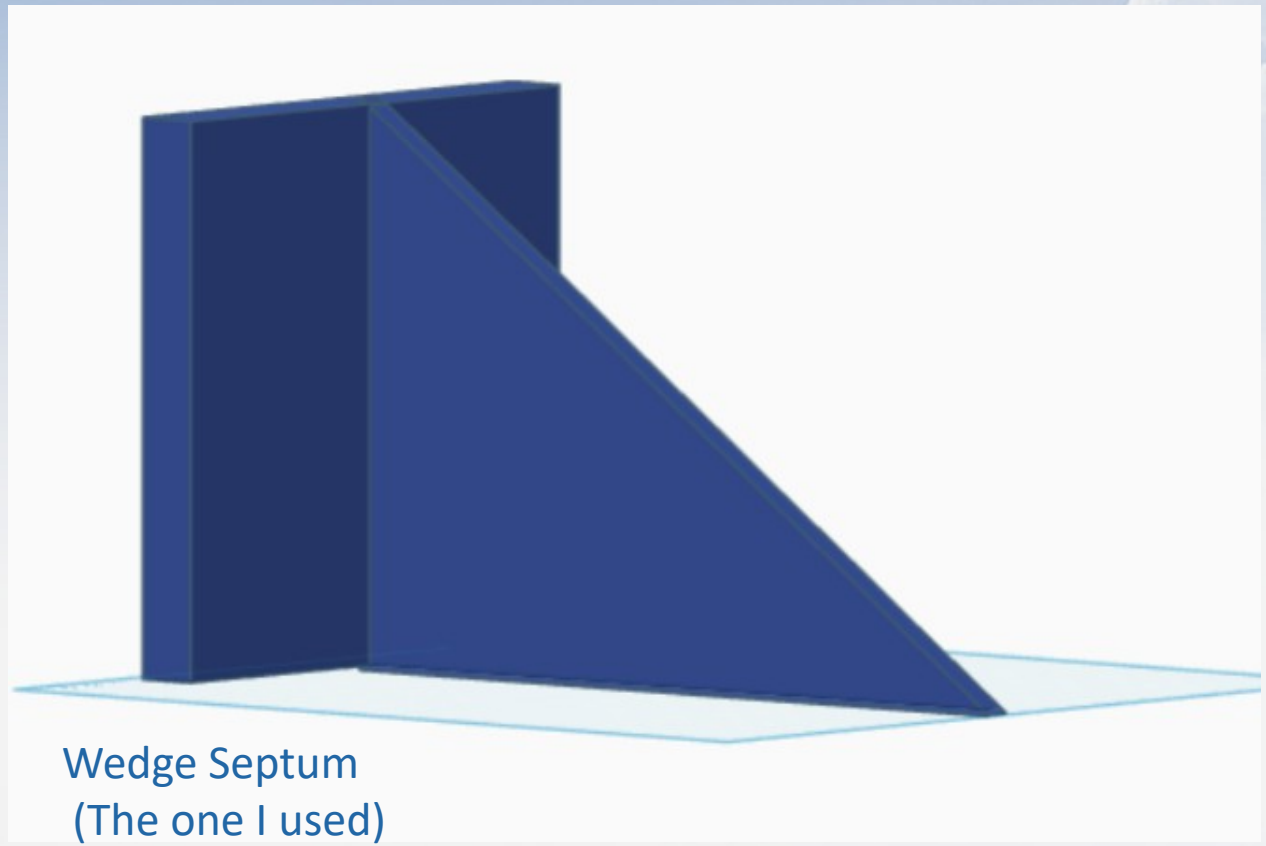
Spray UV coat all 3D printed pieces (Suggested)



Copper Foil Tape
(2 inch X 66 FT)
with Conductive Adhesive
for Guitar and EMI Shielding, Crafts, Electrical Repairs, Grounding
Size:50mmx20m-1p

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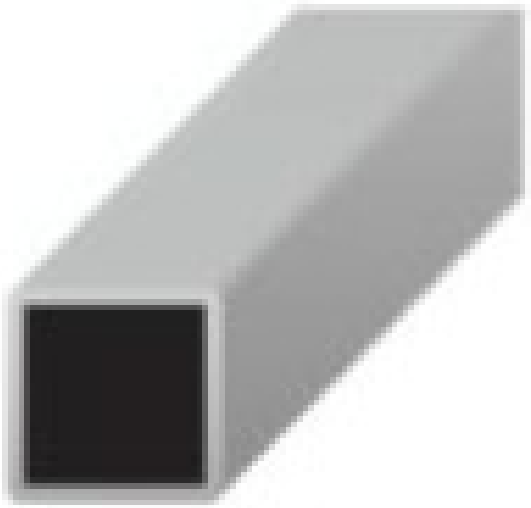




Wedge Septum
(The one I used)

3D Printed PETG With Copper tape
Or
.25 inch aluminum plate
(expensive 6x21 inches $96 plus shipping)

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Septum Feed Square Tube
.125 wall X 6X6 inches

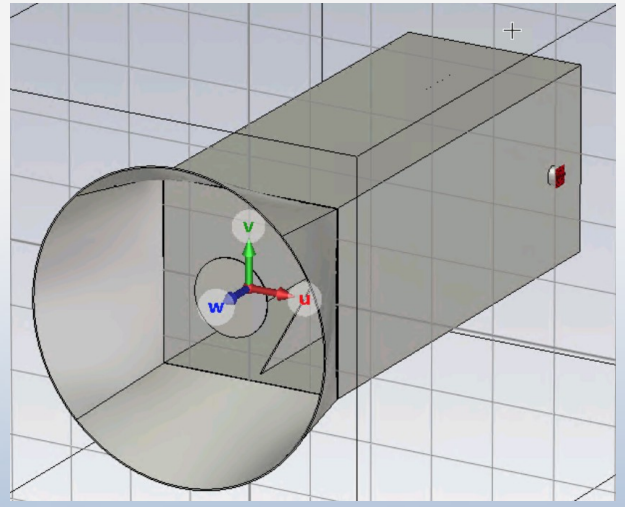
Metal Supermarkets

T6 Sharp Corner 6.000 X 6.000 X 0.125
ALUMINUM 6061 SQUARE TUBE

250 mm (13 inches) $73 Plus shipping
350 mm (15 inches) $84 Plus shipping

(Buy 2 and the price drops per piece)

from KB2SA Bills
original design
350 mm



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Septum Support Tube

MAX Gain Systems

1-1/2” OD, 1-1/4” ID Fiberglass Round Tube

Pultruded Fiberglass Tube
Made in USA

Nominal Dimensions
Outer Diameter: 1.50”
Inner Diameter: 1.25”
Wall Thickness: 0.125”
46.5 inches
Color: Gray

$20.45 Plus Shipping
1-1/2" OD, 1-1/4" ID Fiberglass Round Tube
SKU: RT-112-4G

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Solar Cooker with
Mylar tape removed

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250 mm long feed
Test for Sun Noise



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Preliminary feed test

(Hybrid 3D printed)

SWR better than 1.3 to 1

Port to port Insolation better than 20 dB

Short Feed:

250 mm long with 100 mm long 240 mm diam. Square to round transition (3D printed)

Wedge septum (3D printed)

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Edge of Dish is a bit fragile
If rested on ground, seam is strongest spot



Reinforced dish edge with
3/4 Cable TV Hardline
Pop Rivet to edge

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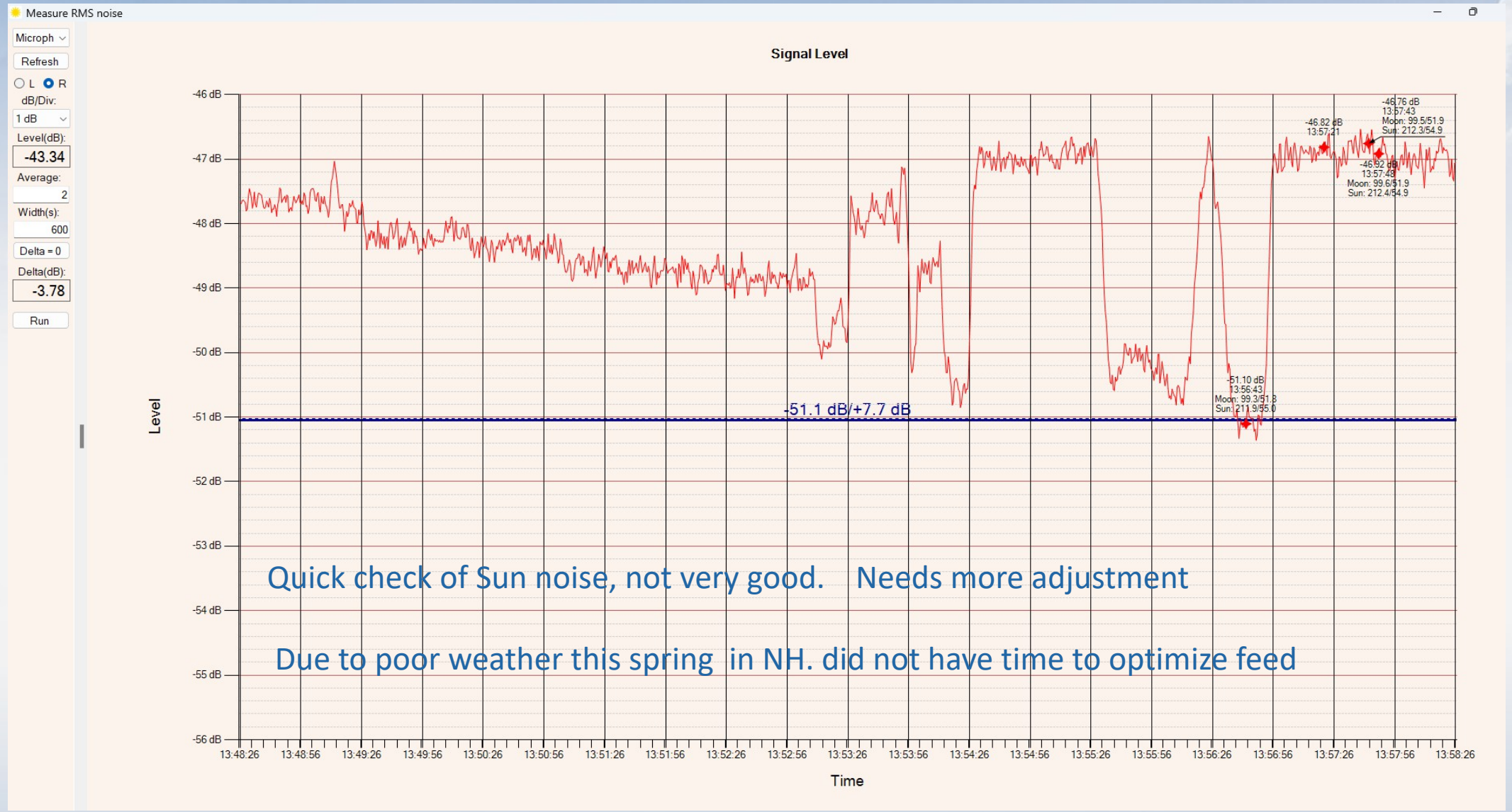


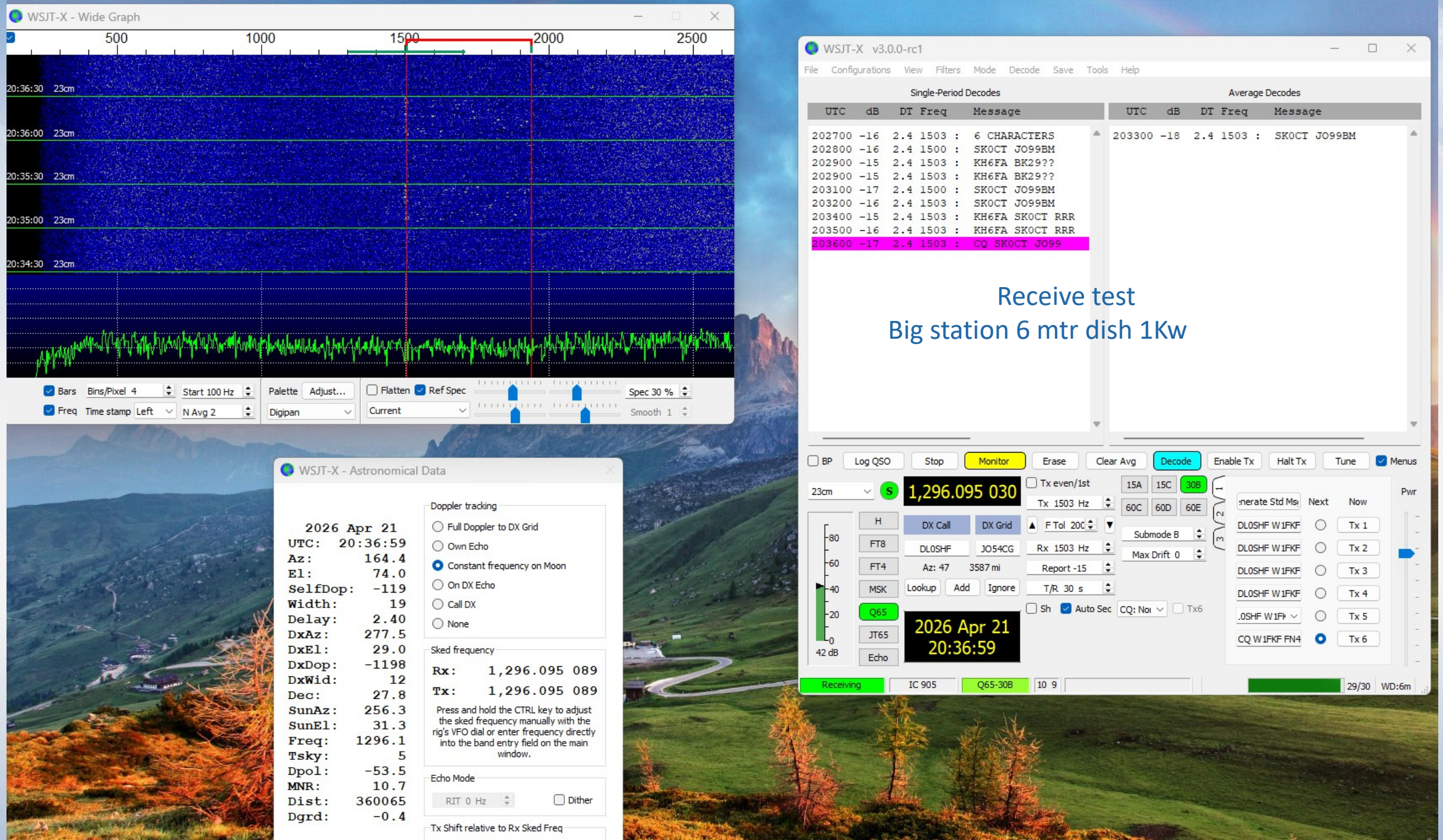
Receive Test set-up

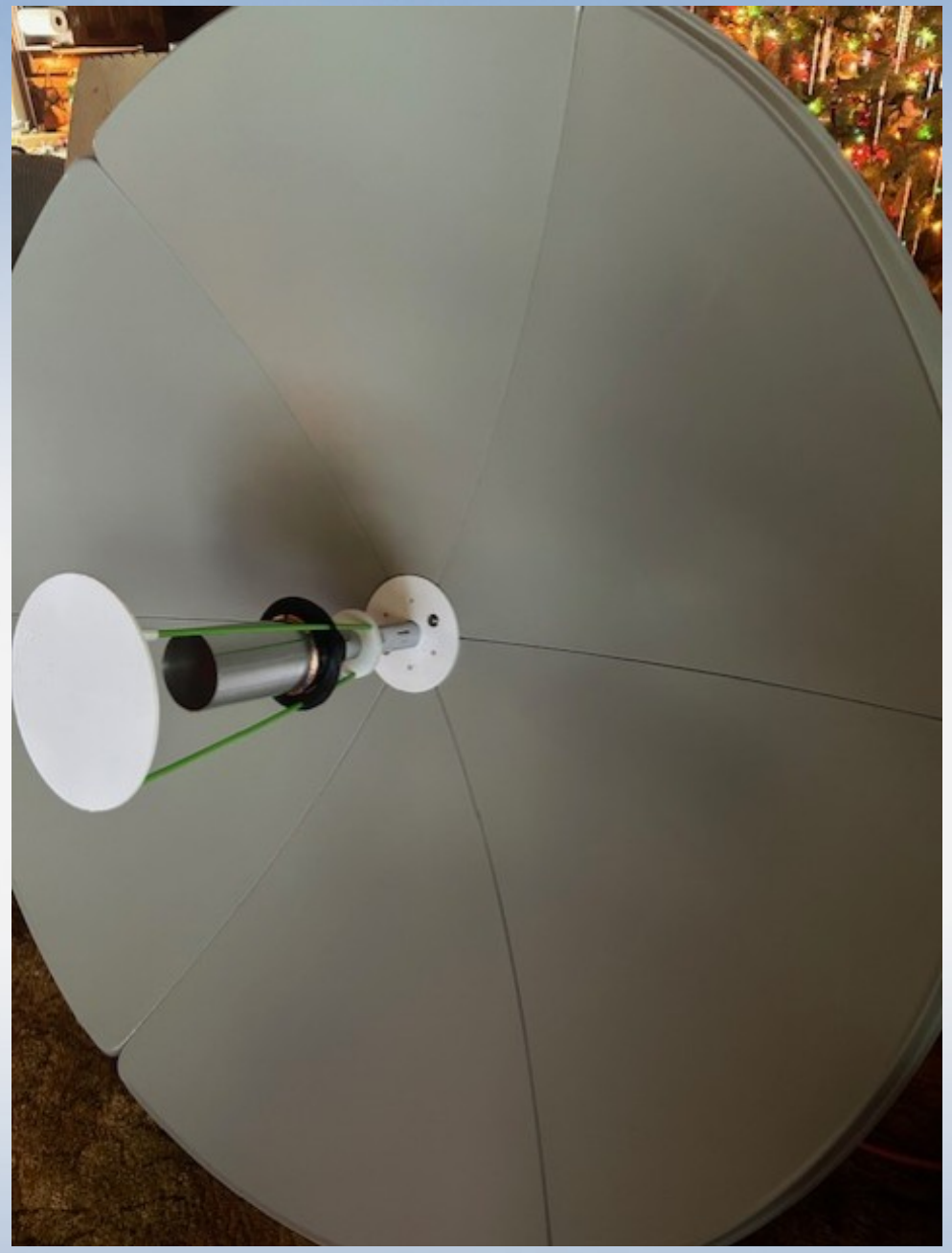
Looking
at Sun

Looking
at moon




Measure RMS noise
Microph
Refresh
L
R
dB/Div:
1 dB
Level(dB):
-43.34
Average:
2
Width(s):
600
Delta = 0
Delta(dB):
-3.78
Run
Signal Level
Level
Time
-46 dB
-47 dB
-48 dB
-49 dB
-50 dB
-51 dB
-52 dB
-53 dB
-54 dB
-55 dB
-56 dB
13:48:26
13:48:56
13:49:26
13:49:56
13:50:26
13:50:56
13:51:26
13:51:56
13:52:26
13:52:56
13:53:26
13:53:56
13:54:26
13:54:56
13:55:26
13:55:56
13:56:26
13:56:56
13:57:26
13:57:56
13:58:26
-51.1 dB/+7.7 dB
-46.82 dB
13:57:21
-46.76 dB
13:57:43
Moon: 99.5/51.9
Sun: 212.3/54.9
-46.92 dB
13:57:43
Moon: 99.6/51.9
Sun: 212.4/54.9
-51.10 dB
13:56:43
Moon: 99.3/51.8
Sun: 211.9/55.0
Quick check of $un noise, not very good. Needs more adjustment
Due to poor weather this spring in NH. did not have time to optimize feed


WSJT-X - Wide Graph
500
1000
1500
2000
2500
20:36:30 23cm
20:36:00 23cm
20:35:30 23cm
20:35:00 23cm
20:34:30 23cm
Bars
Bins/Pixel 4
Start 100 Hz
Palette
Adjust...
Flatten
Ref Spec
Spec 30 %
Freq
Time stamp
Left
N Avg 2
Digipan
Current
Smooth 1
WSJT-X v3.0.0-rc1
File Configurations View Filters Mode Decode Save Tools Help
Single-Period Decodes
UTC dB DT Freq Message
202700 -16 2.4 1503 : 6 CHARACTERS
202800 -16 2.4 1500 : SK0CT JO99BM
202900 -15 2.4 1503 : KH6FA BK29??
202900 -15 2.4 1503 : KH6FA BK29??
203100 -17 2.4 1500 : SK0CT JO99BM
203200 -16 2.4 1503 : SK0CT JO99BM
203400 -15 2.4 1503 : KH6FA SK0CT RRR
203500 -16 2.4 1503 : KH6FA SK0CT RRR
203600 -17 2.4 1503 : CQ SK0CT JO99
Average Decodes
UTC dB DT Freq Message
203300 -18 2.4 1503 : SK0CT JO99BM
Receive test
Big station 6 mtr dish 1Kw
BP
Log QSO
Stop
Monitor
Erase
Clear Avg
Decode
Enable Tx
Halt Tx
Tune
Menus
23cm
1,296.095 030
Tx even/1st
Tx 1503 Hz
15A
15C
30B
60C
60D
60E
Submode B
Max Drift 0
Pwr
H
FT8
FT4
MSK
Q65
JT65
Echo
DX Call
DX Grid
DL0SHF
JO54CG
Az: 47 3587 mi
Lookup
Add
Ignore
F Tol 200
Rx 1503 Hz
Report -15
T/R 30 s
Sh
Auto Sec
Tx6
2026 Apr 21
20:36:59
42 dB
Next
Now
DL0SHF W1FKF
Tx 1
Tx 2
Tx 3
Tx 4
Tx 5
CQ W1FKF FN4
Tx 6
Receiving
IC 905
Q65-30B
29/30
WD:6m
WSJT-X - Astronomical Data
2026 Apr 21
UTC: 20:36:59
Az: 164.4
El: 74.0
SelfDop: -119
Width: 19
Delay: 2.40
DxAz: 277.5
DxEl: 29.0
DxDop: -1198
DxWid: 12
Dec: 27.8
SunAz: 256.3
SunEl: 31.3
Freq: 1296.1
Tsky: 5
Dpol: -53.5
MNR: 10.7
Dist: 360065
Dgrd: -0.4
Doppler tracking
Full Doppler to DX Grid
Own Echo
Constant frequency on Moon
On DX Echo
Call DX
None
Sked frequency
Rx: 1,296.095 089
Tx: 1,296.095 089
Press and hold the CTRL key to adjust the sked frequency manually with the rig's VFO dial or enter frequency directly into the band entry field on the main window.
Echo Mode
RIT 0 Hz
Dither
Tx Shift relative to Rx Sked Freq



5760 MHz
IMU feed W1GHZ Design
10 inch Sub Reflector

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Design of Septum feeds and dishes has been done by many Amateurs
This includes Optimization, Mounting, Positioners, Preamplifiers, Amplifiers

Some information Refer to:

Groups io- Moon Bounce https://groups.io/g/Moon-Net/files
KA1GT: https://bobatkins.com/radio/150cm_EME_dish.html
KB2SA*: Feed Design
W2LPL: https://groups.io/g/Moon-Net/topic/1_5m_solar_cooker_23cm_4th/116720207
KB7Q: https://kb7qgrid.blogspot.com/2025/
Sub Lunar: lunar.com/products
EME News letter: https://eme.radio/432-and-above-newsletter
SimpleCalc: (OZ9AAR) https://www.moonbounce.dk/hamradio/simplecalc.html
W6PQL: https://www.w6pql.com/parts_i_can_provide.htm

Moon Net:
KB2SA

https://groups.io/g/Moon-Net/files/Antennas,%20Dishes%20&%20Feeds/KB2SA_3m_p5_Article_011226.pdf
https://groups.io/g/Moon-Net/files/Antennas,%20Dishes%20&%20Feeds/KB2SA_Optimal_Feeds_23cm_030526.pdf
https://groups.io/g/Moon-Net/files/Antennas,%20Dishes%20&%20Feeds/KB2SA_Pipe_Article_032526.pdf

Axial Ratio is the same for a stepped or sloped septum for our narrowband application. This was shown in simulations and measured by a few folks here.

Don W1FKF

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See you on the Moon!

1296 MHz
2 meter Mesh dish

W6PQL amp
400 Watts at feed

QUESTIONS



1.5 meter OFFSet Dish

Soon for
5760 Mhz (50 Watts)
10 GHz (60 Watts)

QUESTIONS

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Another 3D printed Project
Hybrid 10 GHz IMU feed for OFFSET dishes

