



Radiobaken OO8SNW 800 jaar Sint-Niklaas ASGARD VII

SNW: Kurt Smet (ON4CHE)

06 januari 2017

UBA Sectie SNW

Parochiaal Centrum "Huize De Meerleer" - lokaal de "Nieuwe Pluim"

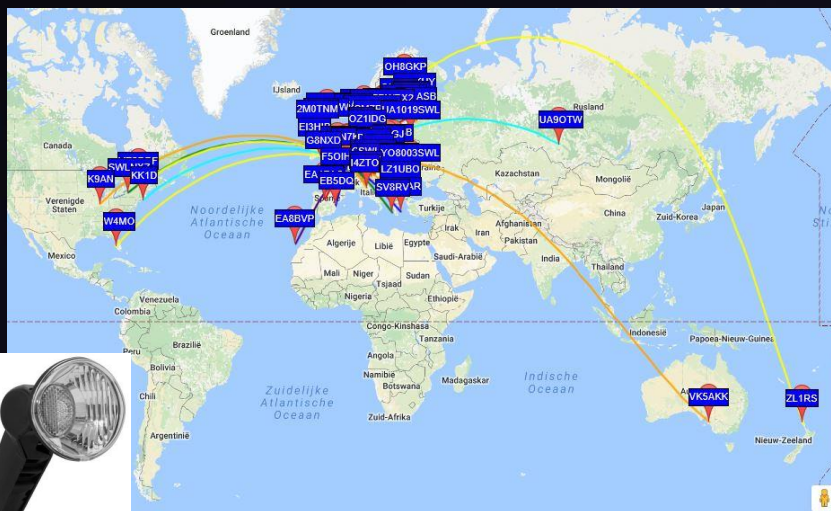
Hofstraat 7

9100 Sint-Niklaas



Agenda:

- 800jaar Sint-Niklaas activiteiten
- OO8snw baken vliegt mee met Asgard VII
- Prototype baken
- 3 band antenne
- Komende



Activiteiten rond 800 jaar Sint-Niklaas

800 JAAR SINT-NIKLAAS



Elektronica-experiment met weerballon

Ringlaan Brussel, te volgen op groot scherm bij VTS, Breedstraat 152, Sint-Niklaas.

Donderdag 20 april 2017

De Vrije Technische Scholen nemen deel aan het Asgard 7 project, waarbij een op school gemaakt elektronica-experiment wordt meegestuurd met een weerballon, gelanceerd van op het KMI. Dit experiment wordt vooraf toegelicht, onder meer op de locatie van de Sint-Niklase Radioamateurs (SNW), maar ook op de schoolterreinen zelf, met tijdens de Kerstmarkt de officiële inhuldiging van het radiobaken.

Info: kurt.smet2@skynet.be, 0476 43 25 45.

Organisatie: Vrije Technische Scholen, i.s.m. SNW (Sint-Niklase Radioamateurs).



Activiteit 1:

SINT-NIKLAAS RADIOBAKEN 1 JAAR ENERGIENEUTRAAL IN DE ETHER

The UBA logo is centered, featuring a globe with a diamond shape and the letters 'UBA'. The background is a dark field with binary code (0s and 1s). Surrounding the logo are several labels in different colors and orientations: 'Internet' (white, curved), 'Sciences' (orange, curved), 'Radio Communication' (white, curved), 'Experiment' (orange, curved), 'Space' (orange, curved), and 'Satellite' (white, curved).



WSPRnet

Weak Signal Propagation Reporter Network

Search

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Frequencies

USB dial (MHz): 0.136, 0.4742,
1.8366, 3.5926, 5.2872, 7.0386,
10.1387, 14.0956, 18.1046,
21.0946, 24.9246, 28.1246,
50.293, 70.091, 144.489,
432.300, 1296.500

Spot Count

317,490,962 total spots
182,406 in the last 24 hours
7,401 in the last hour

Navigation

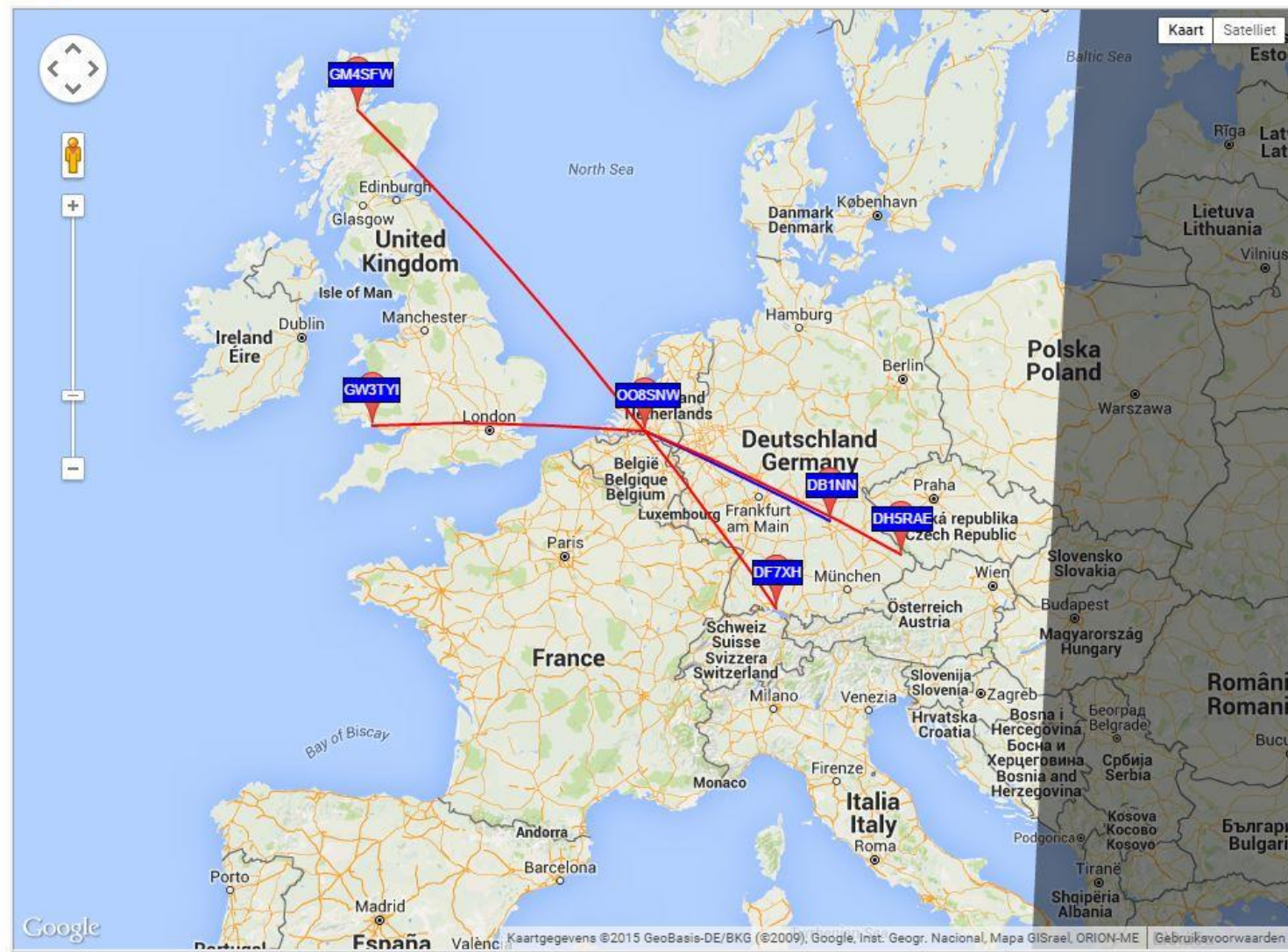
- ▶ Add content
- ▶ Forums

Who's online

There are currently 94 users online.

- ON4CHE
- g8huh
- df9jl
- KB3OZA
- ON3FV
- on7kb
- YU1UN
- WB2EEE
- pc1z
- K5CGM
- wd9dui
- K8LET
- PA0O
- N3XKB
- g4cao
- 2E0KFO
- VK2MKD
- K3EA

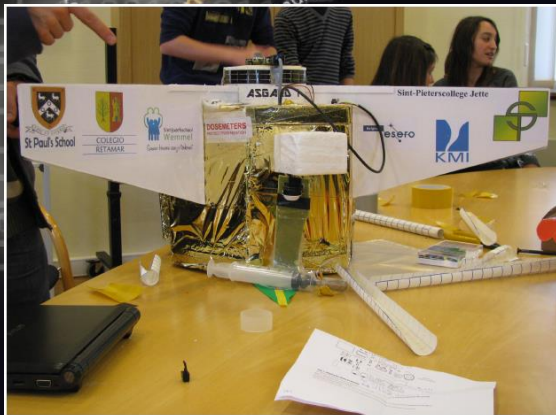
Map





Activiteit 2:

OO8SNW BAKEN VLIEGT MEE MET ASGARD VII PROJECT



Afbeelding 11: Logo's van scholen en partners op de gondola van Asgard-1



ASGARD April 2017, vlucht met KMI ballon.
Scholen uit gans de wereld mogen
wetenschappelijke projecten indienen.
10 mogen er mee (=wedstrijd).

ASGARD

Balloons for science



Organised by



St-pieterscollege
Jette



ESERO
Belgium



Royal
Meteorological
Institute



Planetarium
Brussels

With cooperation of



Solar Terrestrial
Center of
Excellence



Royal Observatory
Of Belgium



Euro Space
Society



Belgian Institute
for Space Aeronomy

ASGARD VI (2016)

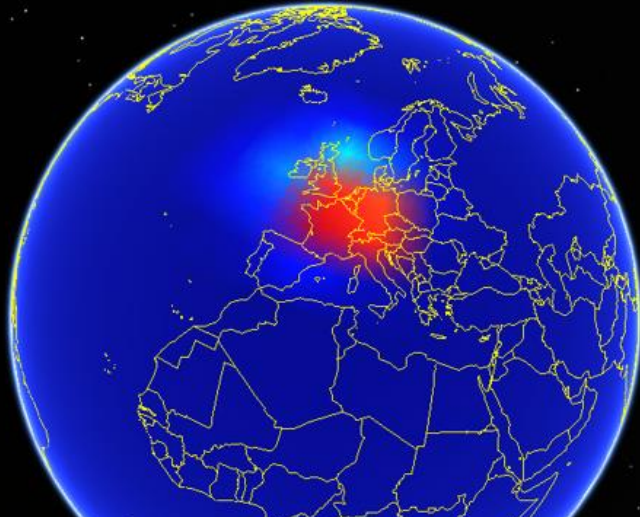




GIP 2015-2016

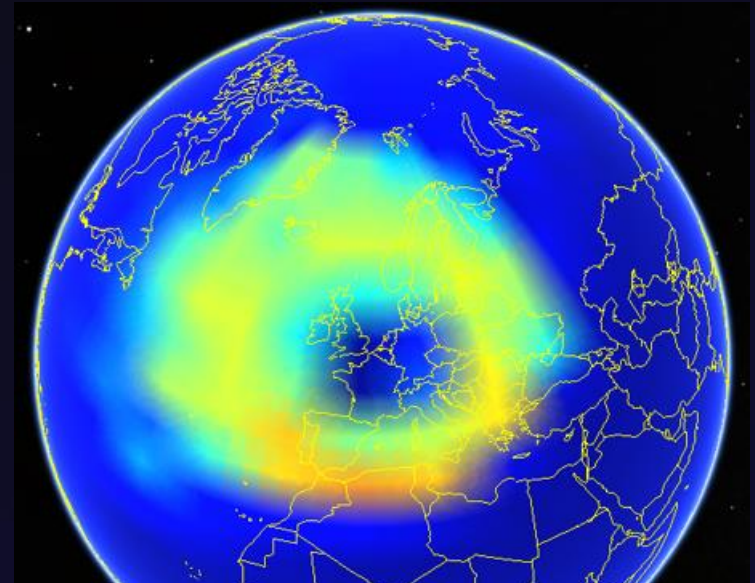


VTS ASGARD VII Experiment



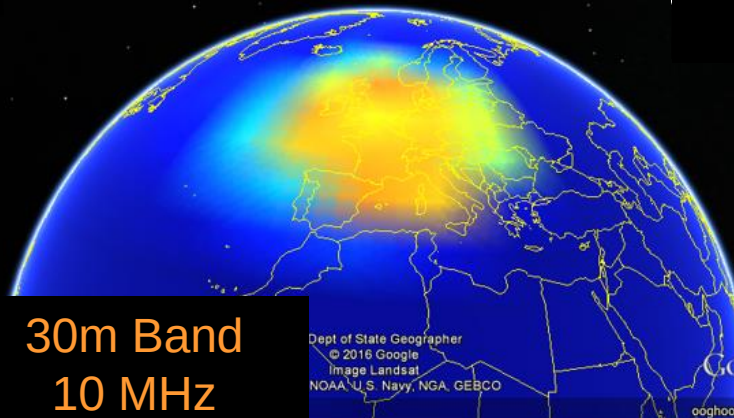
40m Band
7 MHz

Dept of State-Geographer
© 2016 Google
Image Landsat
NOAA, U.S. Navy, NGA, GEBCO
beeldmateriaal: 14-12-2015 36°08'52.23" N 5°36'15.05" O



20m Band
14 MHz

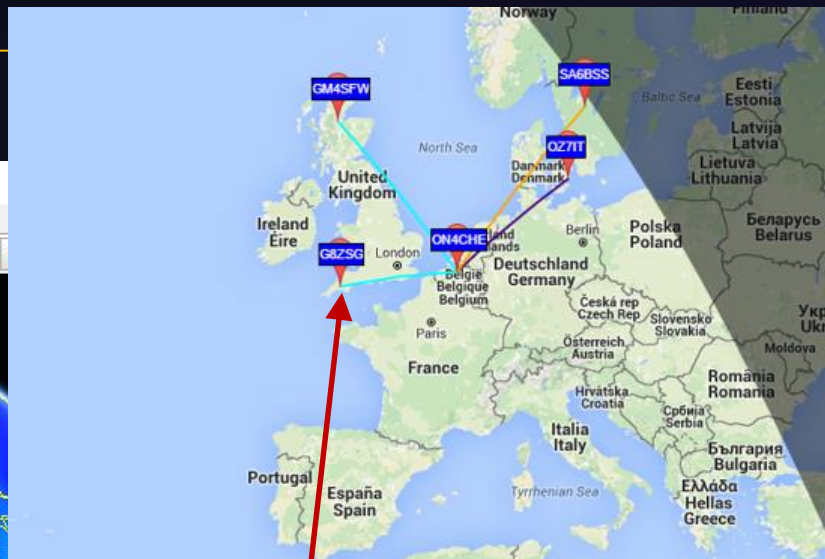
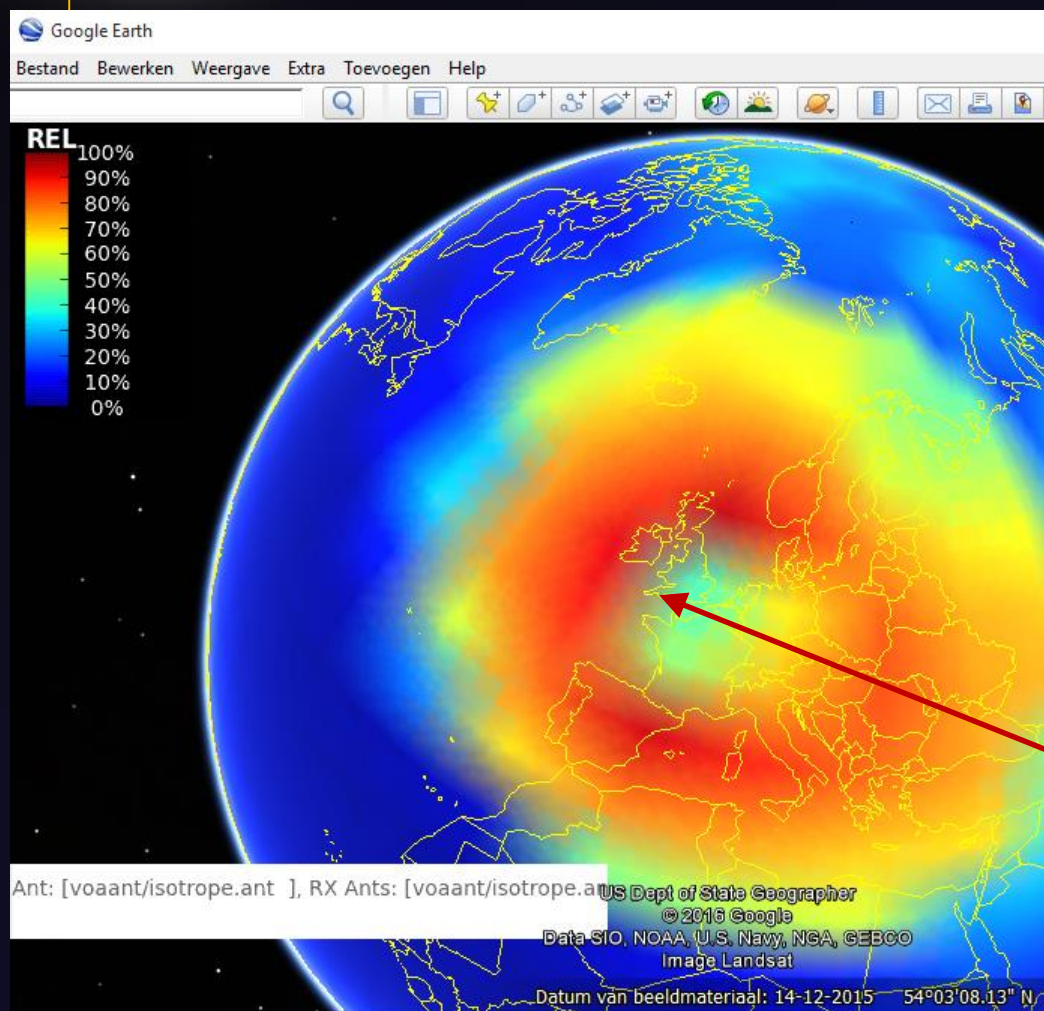
Dept of State-Geographer
© 2016 Google
Image Landsat
NOAA, U.S. Navy, NGA, GEBCO
beeldmateriaal: 14-12-2015 50°04'39.67" N 4°10'42.76" O



30m Band
10 MHz

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ooghooite 107

ASGARD VII VTS Experiment



We gaan zowel op de grond, als in een ballon (ASGARD) een WSPR station op 20m, 30m en 40m stoppen OO8SNW en deze met elkaar vergelijken.

Ant: [voaant/isotrope.ant], RX Ants: [voaant/isotrope.ant]

© 2016 Google
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat

Google earth

Datum van beeldmateriaal: 14-12-2015 54°03'08.13" N 2°34'31.02" O ooghoogte 10234.42 km

Experiment: 40m, 30m en 20m band.



Station YYYY DAY DDD HHMMSS P1 FFS S AXN PPS IGA PS
 Dourbes 2015 Apr28 118 103002 RSF 005 2 713 100 03+ 55

foF2 8.475
 foF1 5.12
 foF1p 4.77
 foE 3.46
 foEp 3.39
 fxI 9.15
 foEs N/A
 fmin 1.50

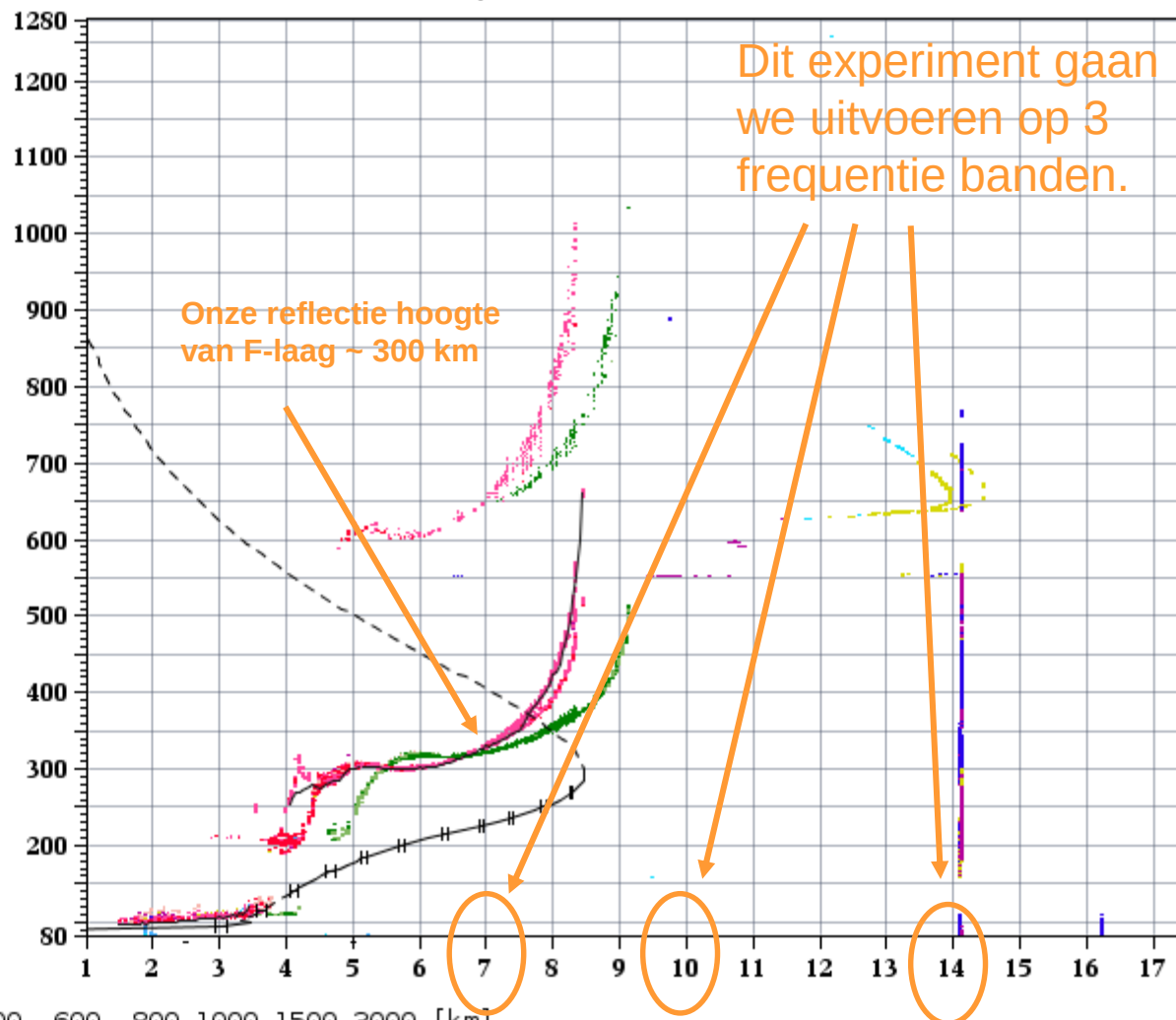
MUF(D) 25.03
 M(D) 2.96
 D N/A

h`F 253.5
 h`F2 299.0
 h`E 96.0
 h`Es N/A

hmF2 292.0
 hmF1 183.7
 hmE 99.5
 yF2 114.9
 yF1 50.5
 yE 9.2
 B0 125.0
 B1 2.10

C-level 22

Auto:
 Artist5
 500200



No Val
 NNE
 E
 W
 Vo-
 Vo+
 SSW
 X-
 X+
 SSE
 NNW

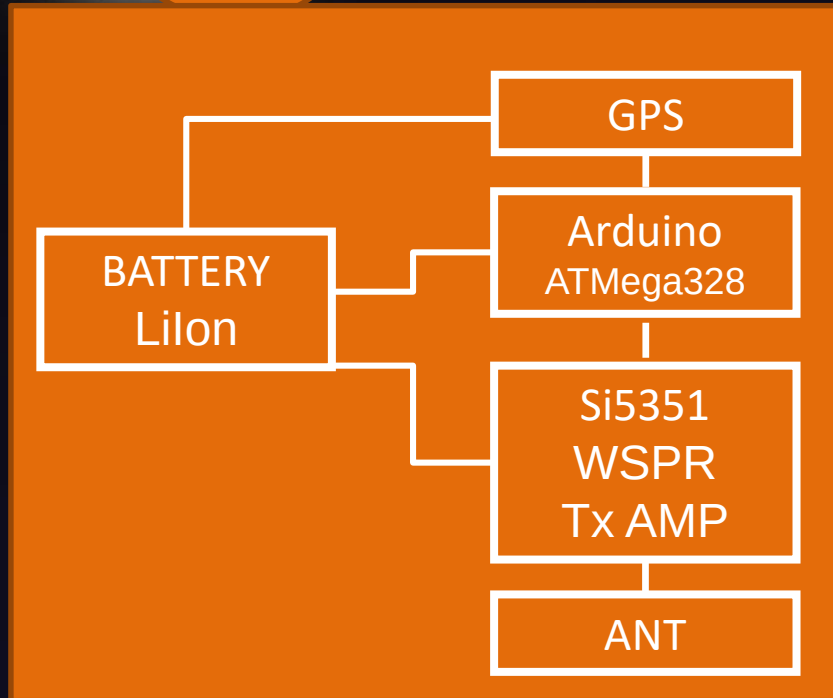
D 100 200 400 600 800 1000 1500 3000 [km]
 MUF 9.1 9.2 9.6 10.2 11.0 12.3 15.9 25.0 [MHz]
 46944969.tmp / 330fx512h 50 kHz 2.5 km / DPS-4D DB049 049 / 50.1 N 4.6 E

ShowIonogram v 1.0

ASGARD VII

Experiment: de opstelling.

VTS HW

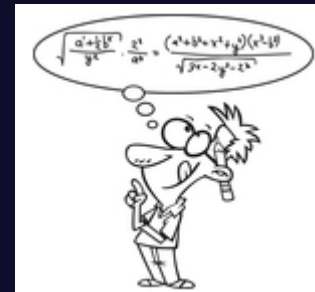


Tijd & Locatie

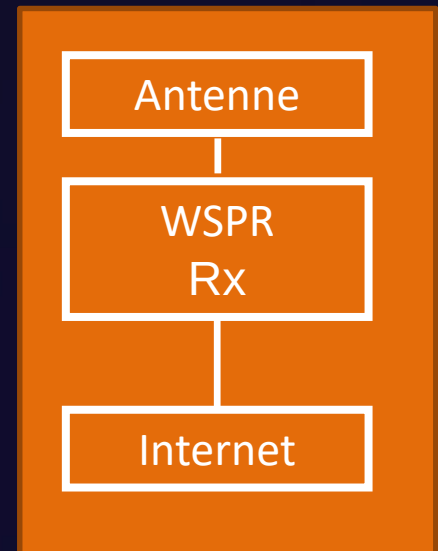
WSPR

OSC (Si5351)
Uitgangstrap

9m antenne
(end-fed)



WSPR ontvang
station:



WSPR ontvangststation.

Oproep aan de HAMs om op 27 april 2017 tussen 10h – 13h WSPR te ontvangen op 40m, 30m en 20m band.



HF Ontvanger (USB)



audio



Computer met geluidsingang



Internet



800 jaar Sint-Niklaas baken / ASGARD VII baken

PROTOTYPE OO8SNW BAKEN

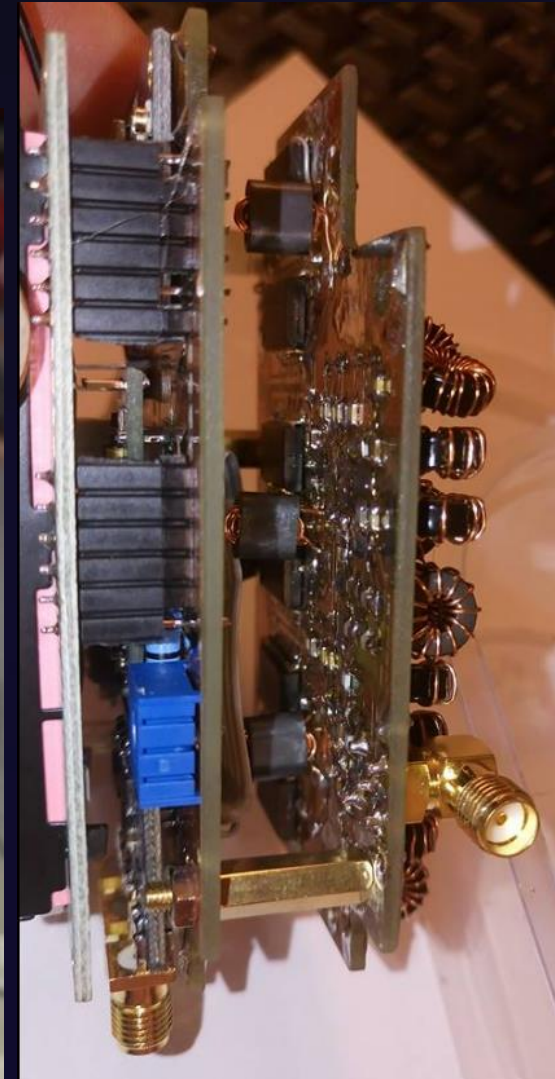
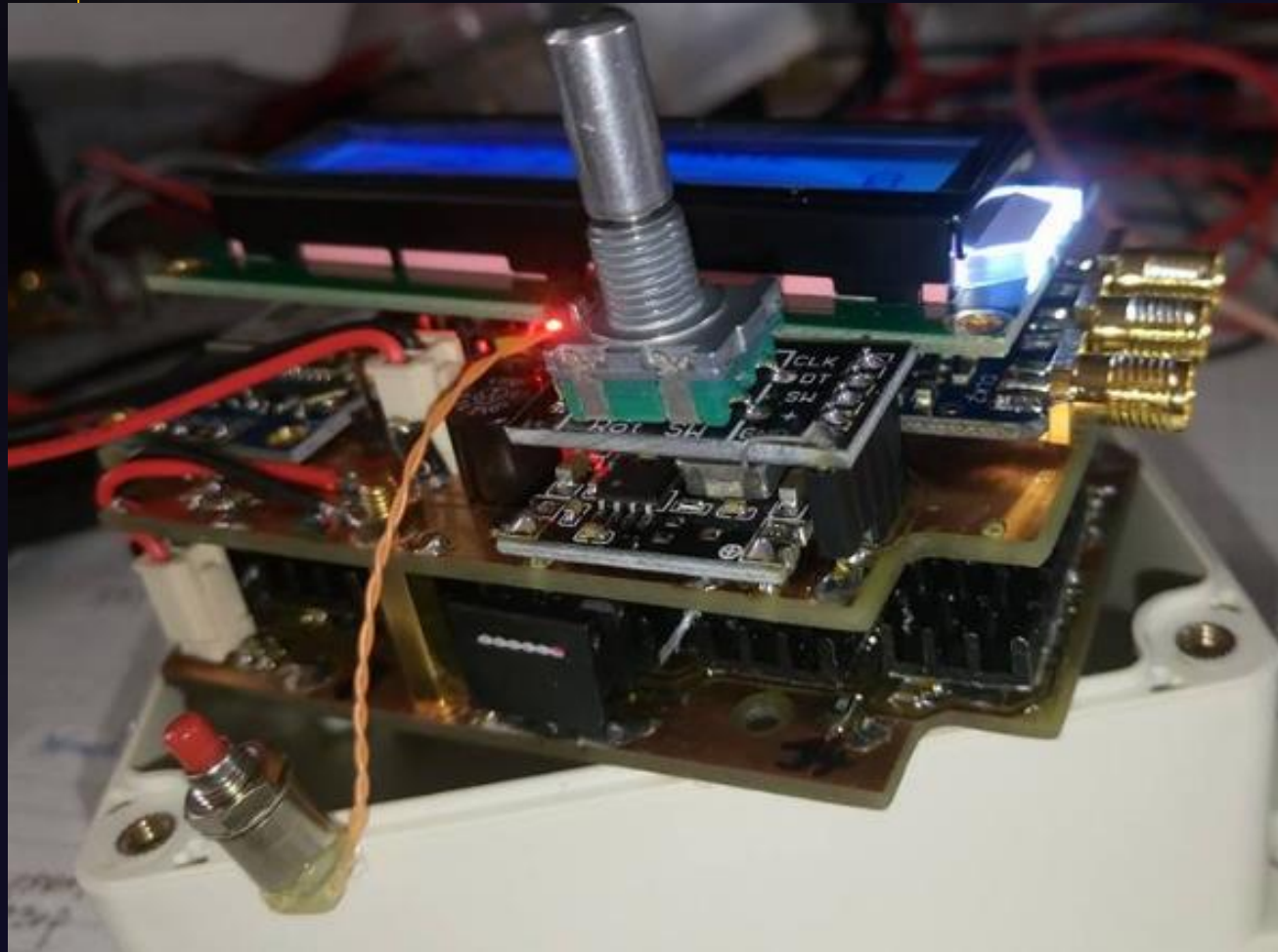


008SNW WSPR Baken Prototype





008SNW WSPR Baken Prototype



Behuizing



2015 hot selling Waterproof 100 x 68 x 50mm Plastic Electronic Project Box Enclosure Case

★★★★★ 5.0 (4 votes) ▾ 9 orders

Price: **€ 2,30** / piece

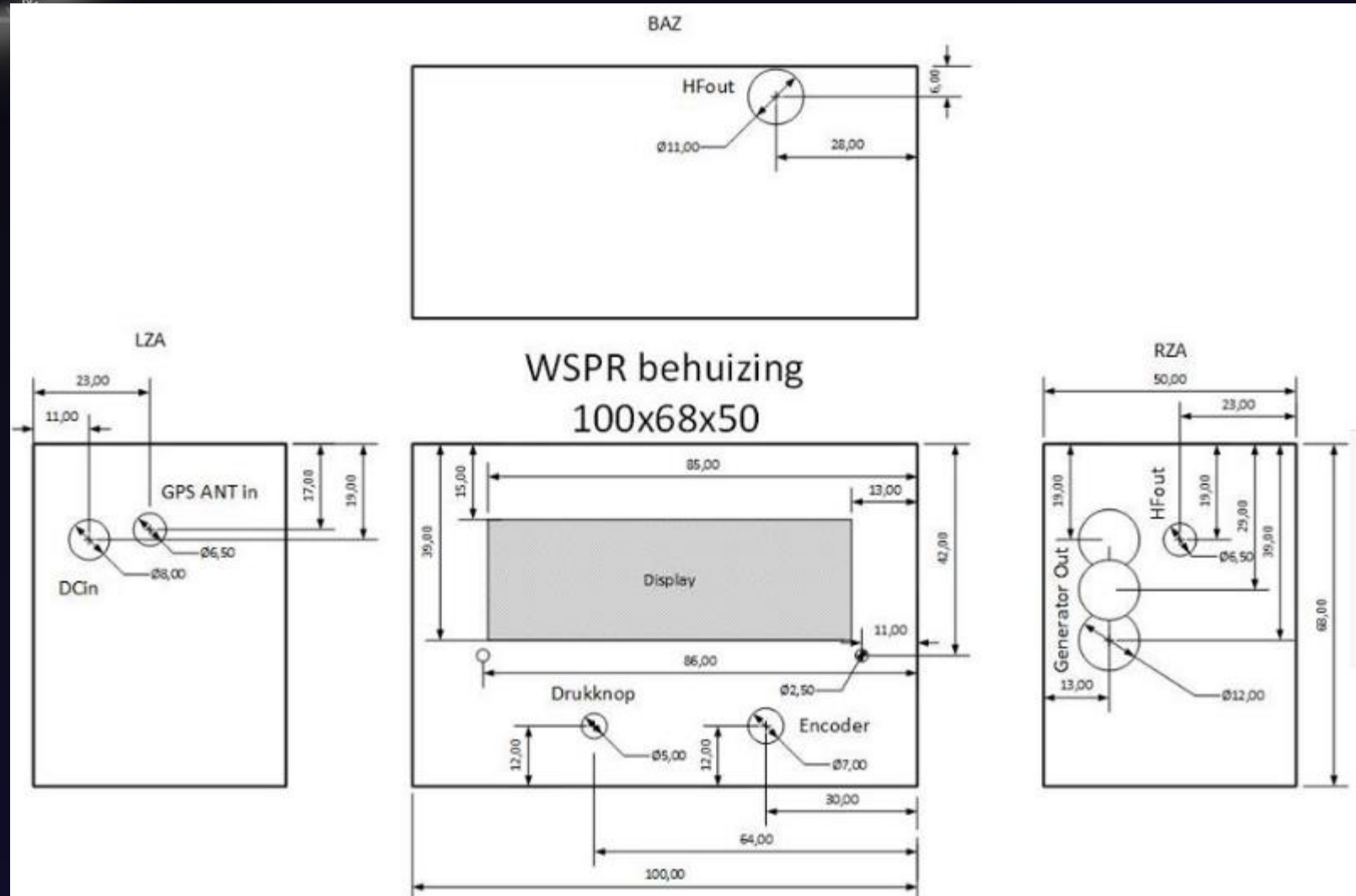
Shipping: **Free Shipping to Belgium via China Post Ordinary Small Packet Plus** ▾
Estimated Delivery Time: 21-40 days ?

Quantity: piece (10871 pieces available)

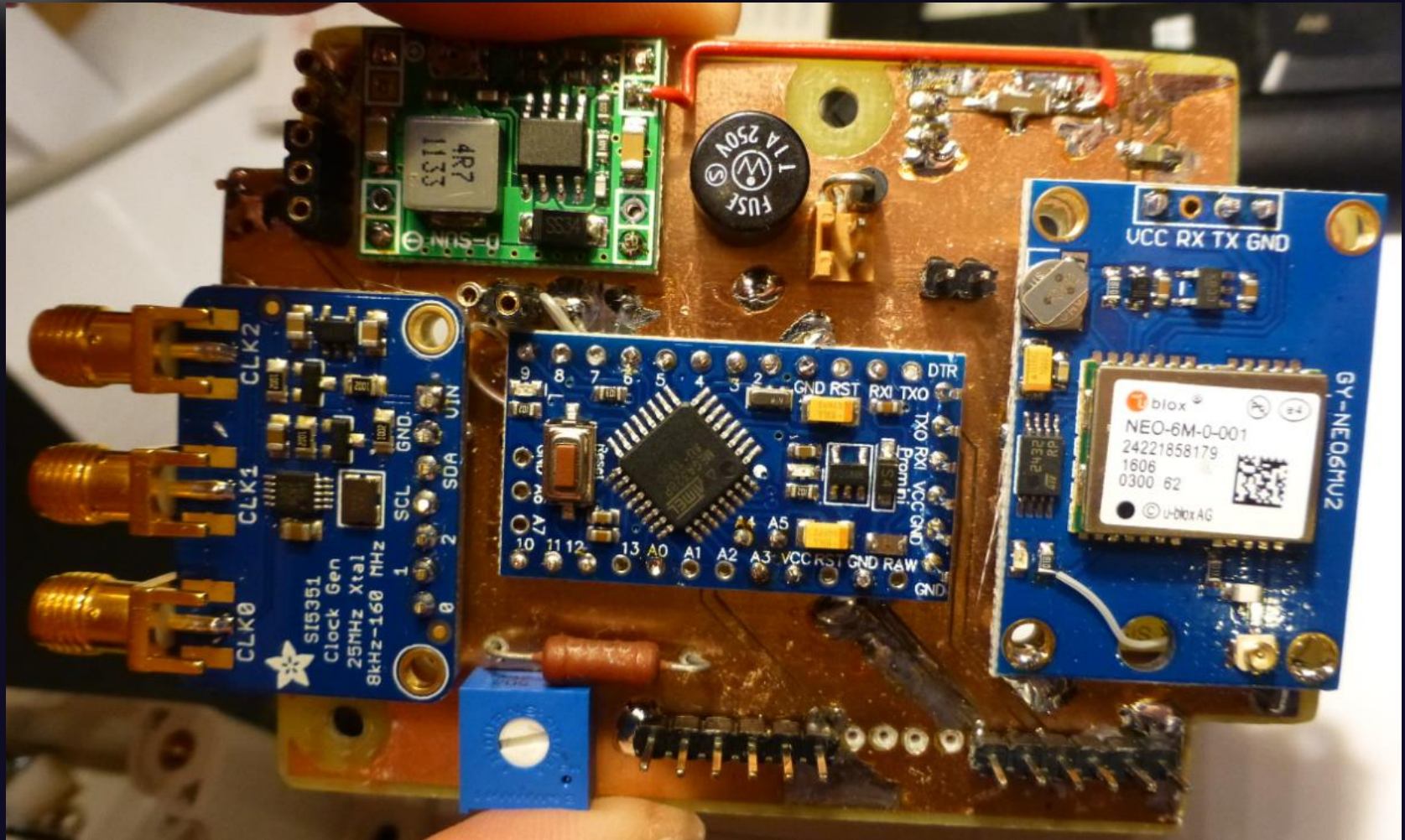
Total Price: **€ 2,30**

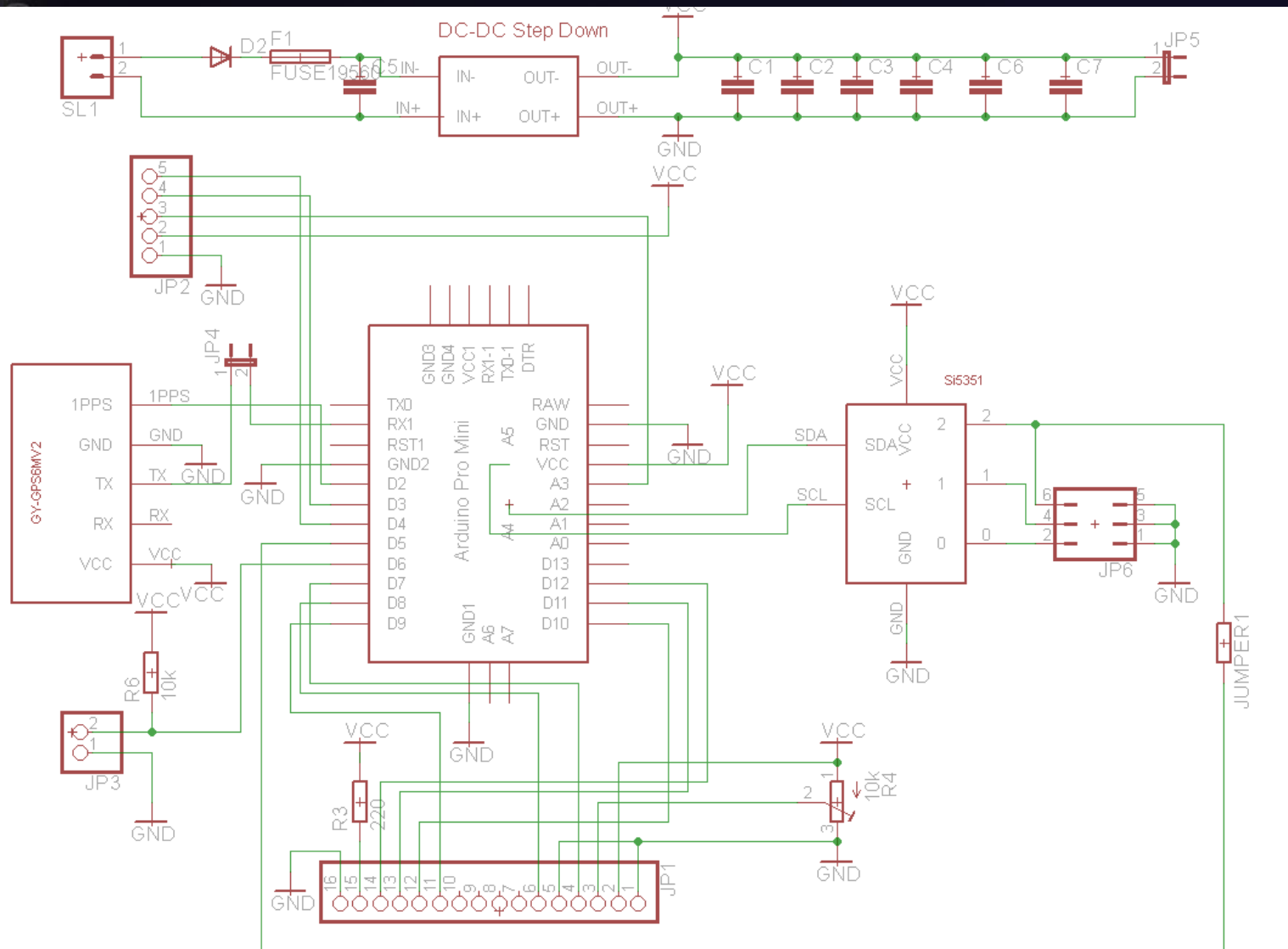


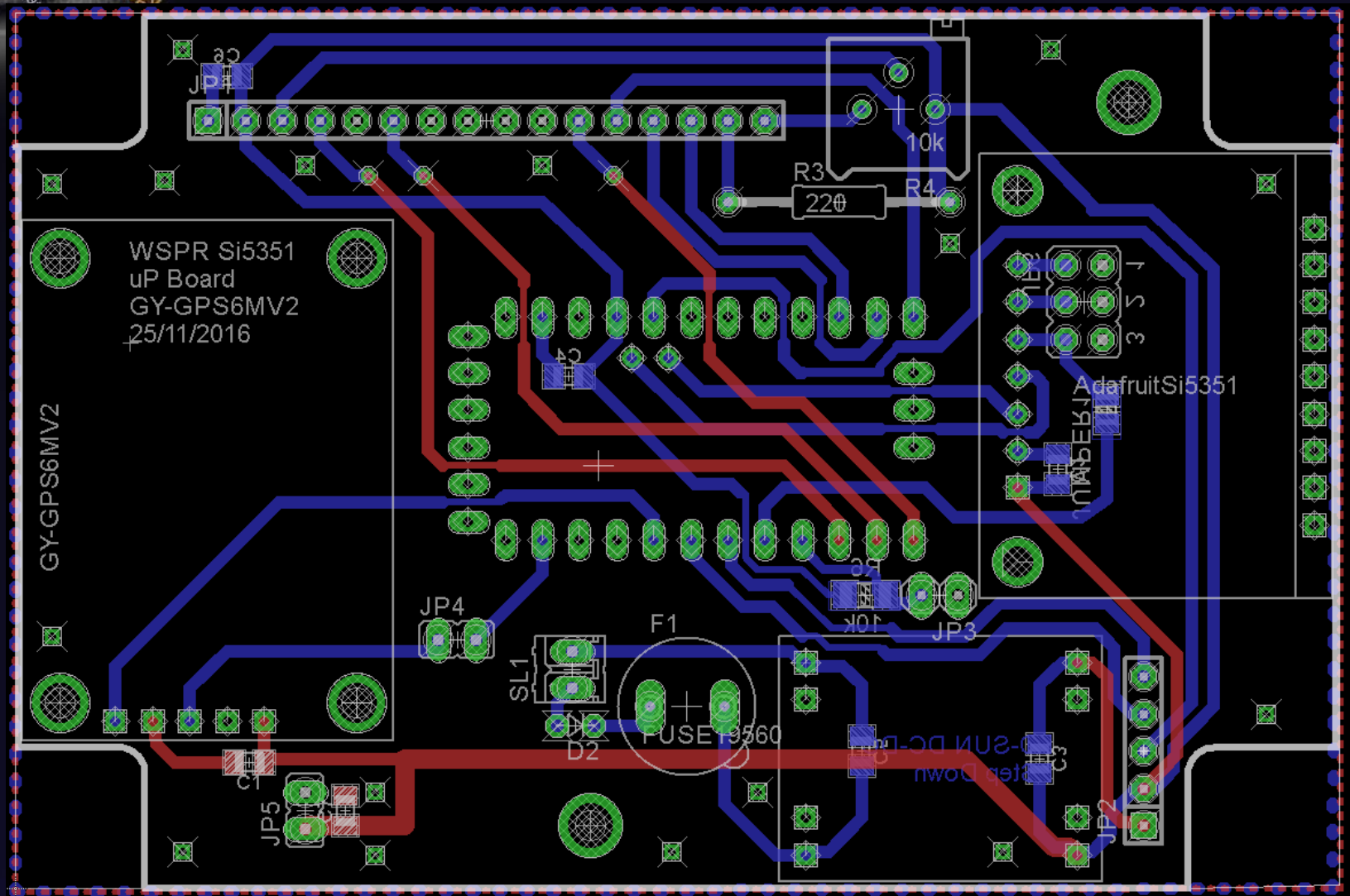
Behuizing

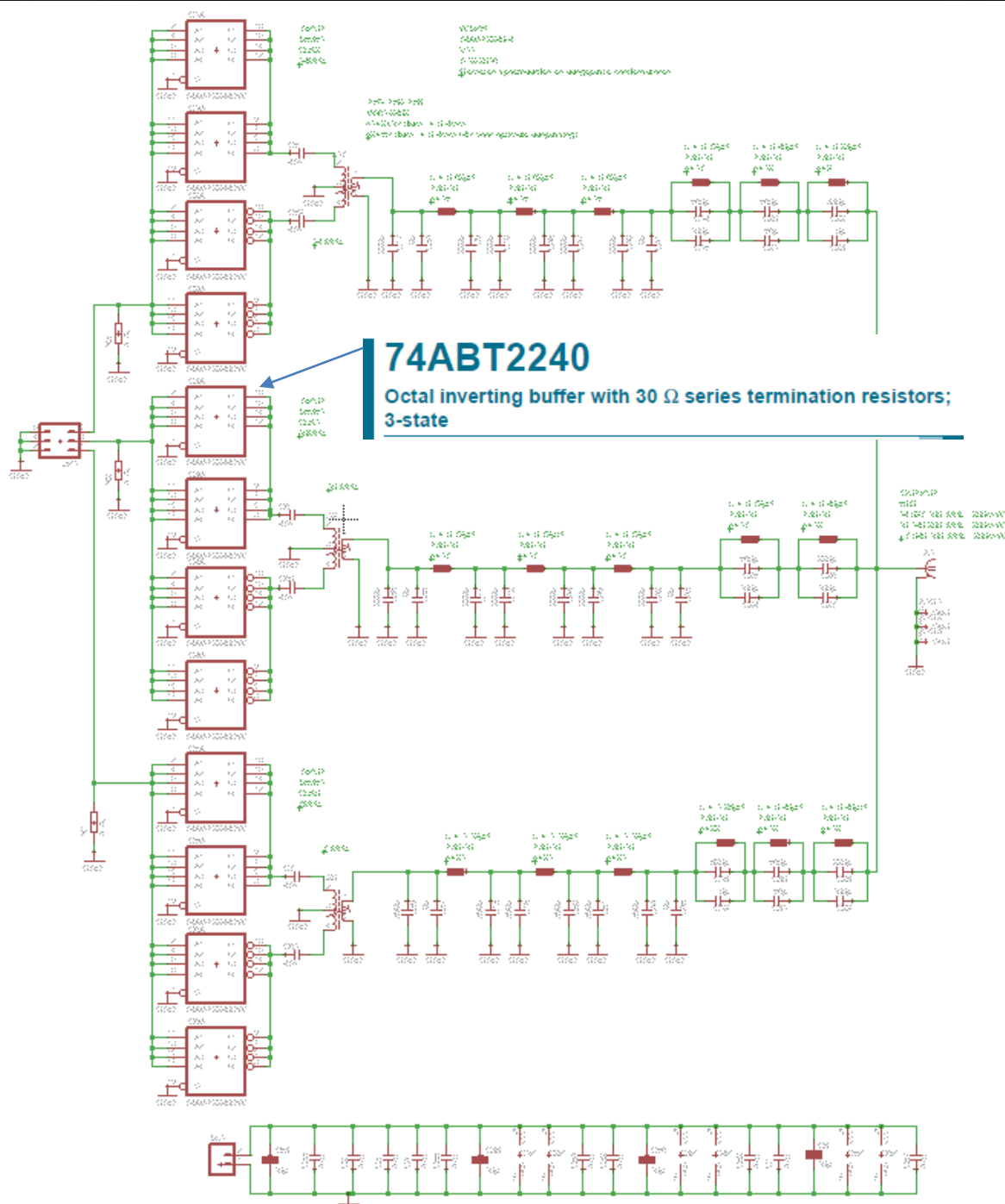


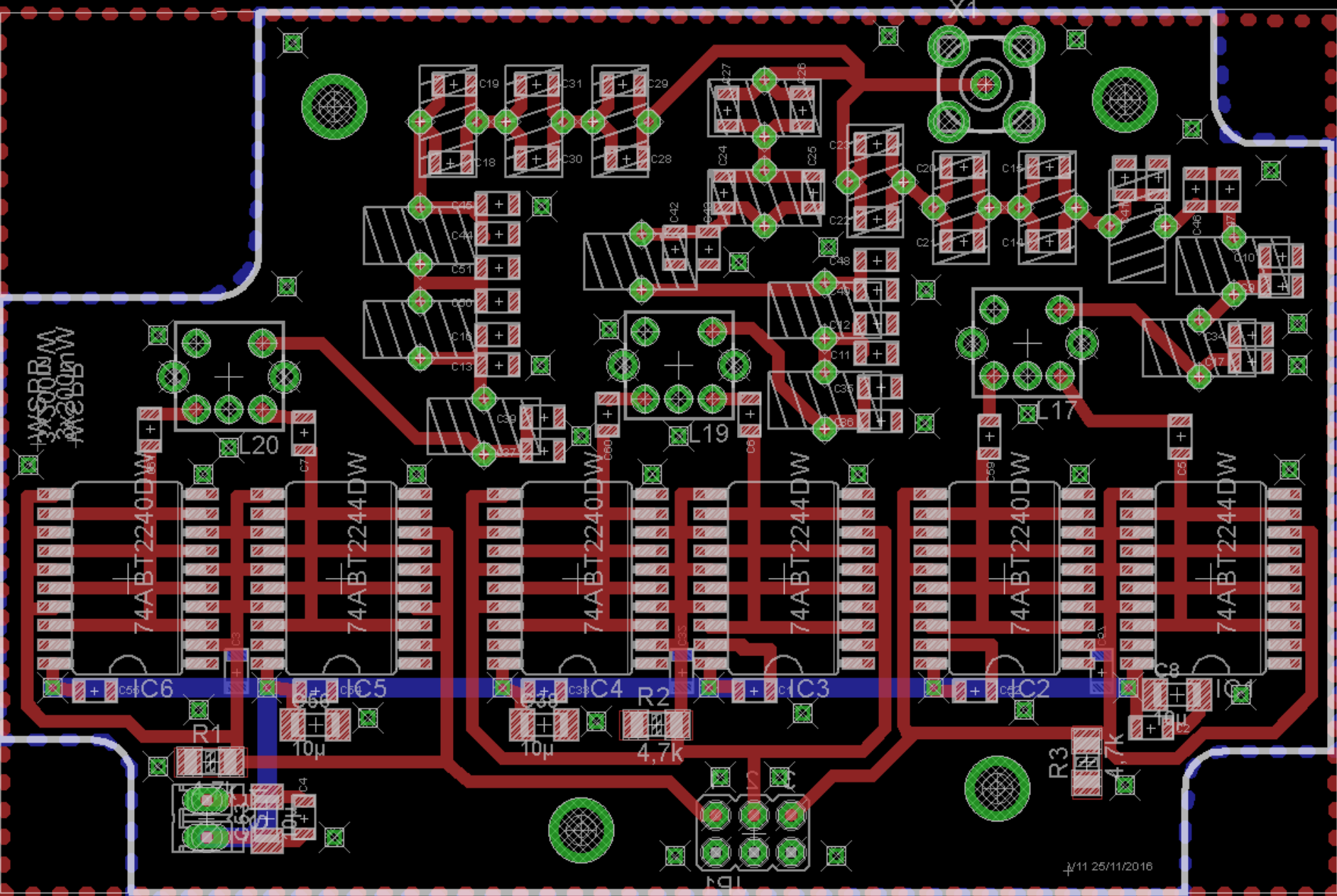
μ P Bord













Alternatieve toepassingen: 3f-generator.



An Arduino Controlled GPS Corrected VFO

(Gene Marcus, W3PM/GM4YRE)

- A VFO that provides 1 to 112.5 MHz signals on two independent outputs. Use it as a stand alone unit or with a GPS receiver to improve frequency accuracy. UTC and six digit grid square locations are also displayed in the GPS Mode



Figure 2 — Here is a completed VFO project, housed in a plastic project box. The Resolution, Band Select, and Reset pushbutton controls are located just below the rotary encoder.

QEX July/August 2015 **3**

<http://www.knology.net/~gmarcus/>



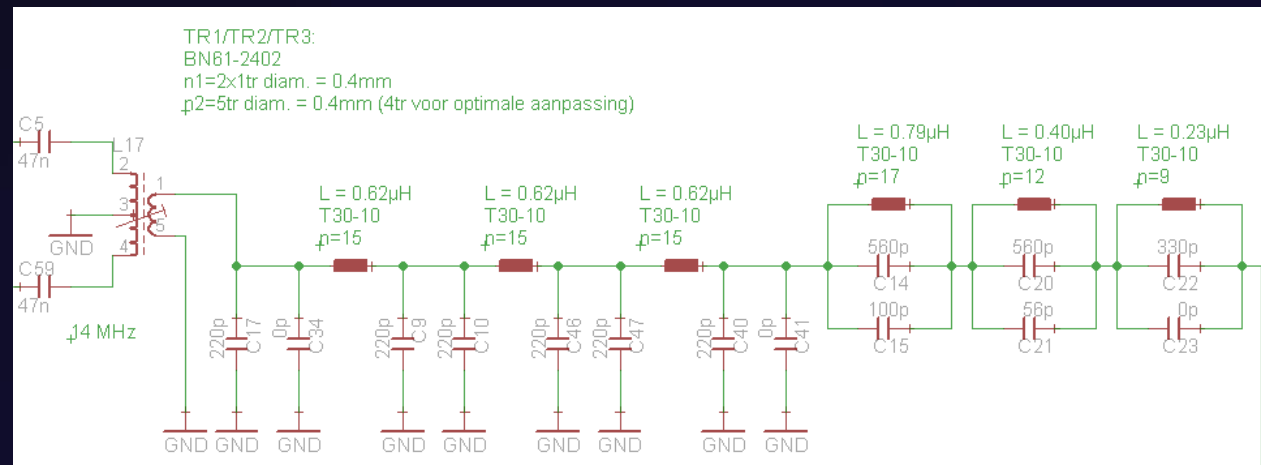
Banden prototype: 40m, 30m en 20m.

AANPASSEN VAN DE WSPR BANDEN



Ontwerp stappen

- Keuze van de kernen
- Ontwerpen van de filters
- Wikkelen van de spoelen
- Meten van de spoelen
- Aanpassen van de condensator waarden
- Solderen
- SW laden



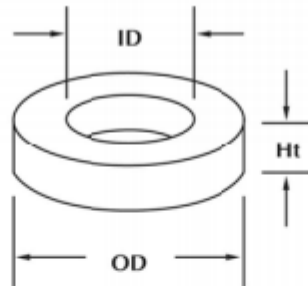


Keuze van de kernen

1. General material properties

Material Mix no.	Magnetic Permeability (μ i)	Temperature Stability (ppm /°C)	Resonant Circuits Frequency Band (MHz)	Color Code
-0	1 (non magnetic)	0	50 - 350	Tan
-2	10	95	0.25 - 20	Red/Clear
-3	35	370	0.02 - 1	Gray/Clear
-6	8	35	3 - 40	Yellow/Clear
-7	9	30	1 - 25	White/Clear
-10	6	150	15 - 100	Black/Clear

2. Dimensions



Part number	OD (mm / inch)	ID (mm / inch)	Ht (mm / inch)
T12-*	3.18 / 0.125	1.57 / 0.062	1.27 / 0.050
T20-*	5.08 / 0.200	2.24 / 0.088	1.78 / 0.070
T25-*	6.48 / 0.255	3.05 / 0.120	2.44 / 0.096
T30-*	7.80 / 0.307	3.84 / 0.151	3.25 / 0.128
T37-*	9.53 / 0.375	5.21 / 0.205	3.25 / 0.128
T44-*	11.2 / 0.440	5.82 / 0.229	4.04 / 0.159
T50-*	12.7 / 0.500	7.70 / 0.303	4.83 / 0.190
T68-*	17.5 / 0.690	9.40 / 0.370	4.83 / 0.190

Order code T25-6

Amidon T25-6

Yellow/clear Amidon toroid



- Color code: yellow/clear
- Material: 6
- Permeability (μ_r): 8
- A_L 100 turns: 27 μH
- Frequency range: 3 - 40 MHz
- Outer diameter (metric): 6.48 mm
- Inner diameter (metric): 3.05 mm

Keuze van de kernen

Order code T25-10

Amidon T25-10

Black/clear Amidon toroid



- Color code: black/clear
- Material: 10
- Permeability (μ_r): 6
- A_L 100 turns: 19 μH
- Frequency range: 15 - 100 MHz
- Outer diameter (metric): 6.48 mm
- Inner diameter (metric): 3.05 mm
- Height (metric): 2.44 mm
- Outer diameter (imperial): 0.255 in
- Inner diameter (imperial): 0.12 in
- Height (imperial): 0.096 in

*Image is for illustrative purposes,
see product details*

[More details](#)

RoHS: Yes
Conditions: New
Unit weight: 1.00 g

 [datasheet \(178 KB\)](#)

Minimum: 1 pc
Multiple: 1 pc

1+ pc: 0,45 €
10+ pc: 0,35 €
30+ pc: 0,30 €
100+ pc: 0,26 €

In stock: 635 pc

1

[buy](#)

[+ Add to comparison list](#)

Order code T30-10

Amidon T30-10

Black/clear Amidon toroid



- Color code: black/clear
- Material: 10
- Permeability (μ_r): 6
- A_L 100 turns: 25 μH
- Frequency range: 15 - 100 MHz
- Outer diameter (metric): 7.8 mm
- Inner diameter (metric): 3.84 mm
- Height (metric): 3.25 mm
- Outer diameter (imperial): 0.307 in
- Inner diameter (imperial): 0.151 in
- Height (imperial): 0.128 in

*Image is for illustrative purposes,
see product details*

[More details](#)

RoHS: Yes
Conditions: New
Unit weight: 1.00 g

 [datasheet \(178 KB\)](#)

Minimum: 1 pc
Multiple: 1 pc

1+ pc: 0,50 €
10+ pc: 0,40 €
30+ pc: 0,30 €
100+ pc: 0,25 €

In stock: 898 pc

1

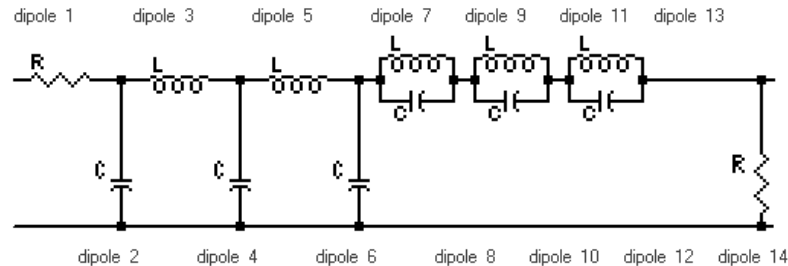
[buy](#)

[+ Add to comparison list](#)

Ontwerp filters

AADE Filter Design V4.42

FILE UTILITIES ANALYZE DESIGN OPTIONS WINDOW HELP



DIPOLE 1
R 1=50,

DIPOLE 2
C 2=220,pF

DIPOLE 3
L 3=549uHy
Qu~100,

DIPOLE 4
C 4=440,pF

DIPOLE 5
L 5=549uHy
Qu~100,

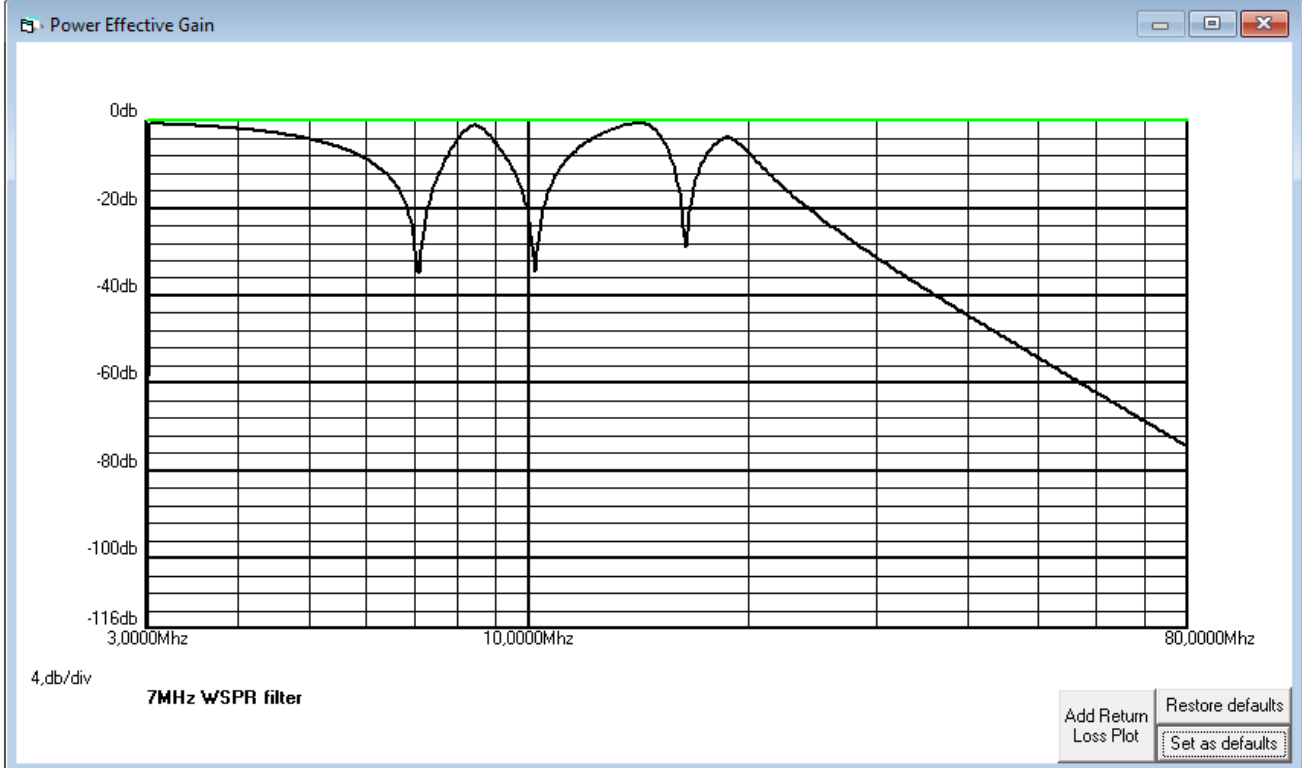
DIPOLE 6
C 6=220,pF

DIPOLE 7
C 7=470,pF
L 7=1,08uHy
Qu~100,

DIPOLE 9
C 9=352,pF
L 9=6912uHy
Qu~100,

DIPOLE 11
C 11=348,pF
L 11=27uHy
Qu~100,

DIPOLE 14
R 14=50,





Ontwerp spoelen

mini Ring Core Calculator 1.2

Info Tools Language (Sprache) Units Help

☐ $R_L \mu_i$
☐ $\frac{m}{in ft}$
☐ Cu

Ferroxcube	Unknown Cores	Air Cores
Iron Powder T .. - ..	Ferrite FT .. - ..	SIFFERIT

T25 - 10 $\mu_i = 6$

Color

Frequency Range 10 - 100 MHz

AL = 1.9 nH/N²

OD 6.48 mm ID 3.05 mm h 2.44 mm

Inductance 0.777 μH

Turns 20

Length (wire) 17 cm

max. D (wire) 0.41 mm

Application

Frequency 14 MHz => XL = 68.348 Ω

max. Flux 4.2 mT

Voltage 3 V

Flux 0.6 mT

Core Loss 19 mW/cm³ 0 W

Temperature Rise 1 °C

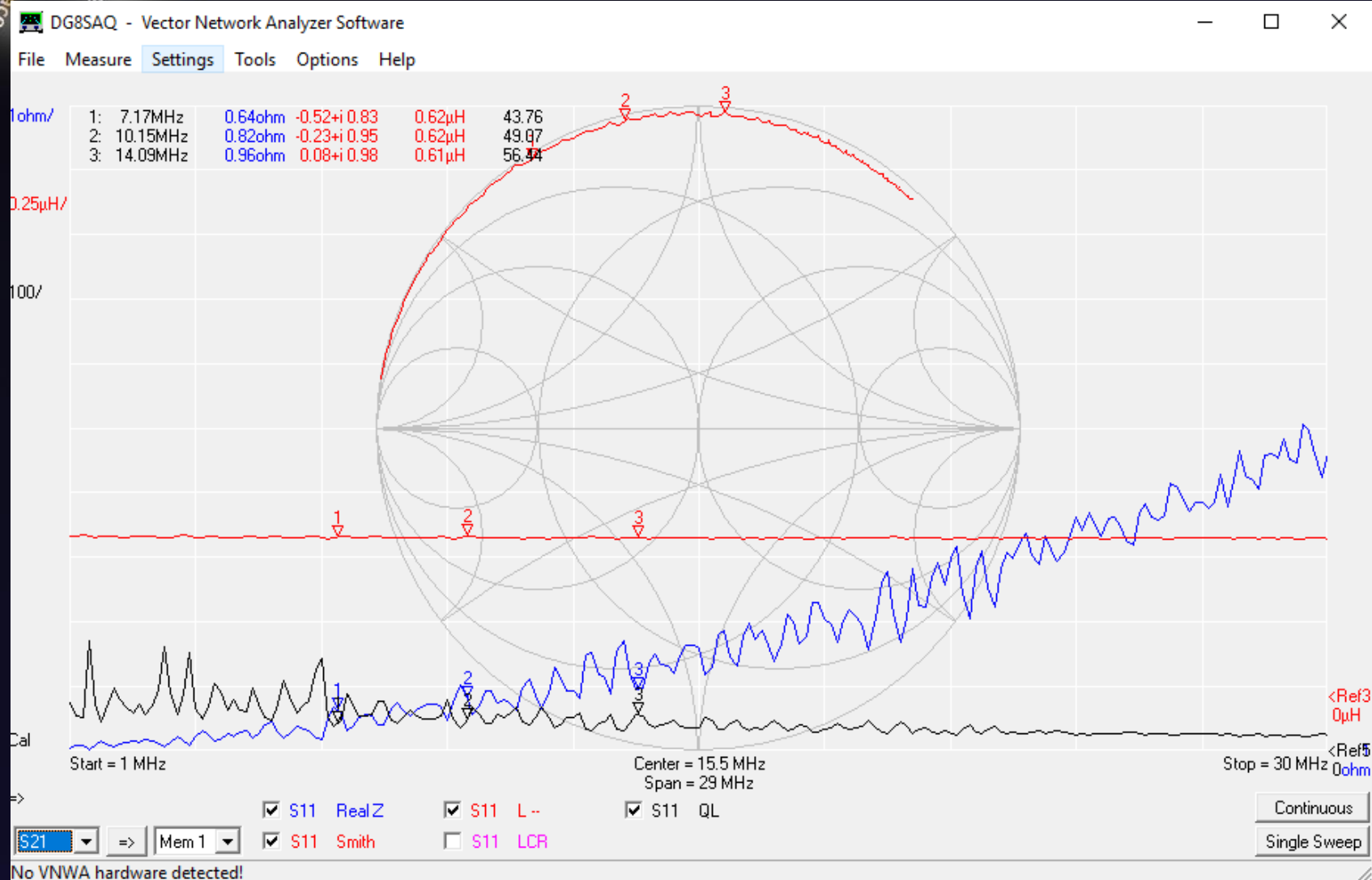
Calculating inductance by number of turns

20 N 760.000 nH XL = 66.853 Ω

Supplier: AMIDON



Meten spoelen





Aanpassen condensator waarden



1	C0805,1pF±0.25pF 50V C0G	GRM2165C1H1R0CD01D	muRata
2	C0805,1.5pF±0.25pF 50V C0G	GRM2165C1H1R5CZ01D	muRata
3	C0805,2.2pF±0.25pF 50V C0G	GRM2165C1H2R2CA01D	muRata
4	C0805,3pF±0.25pF 50V C0G	GRM2165C1H3R0CD01D	muRata
5	C0805,3.9pF±0.25pF 50V C0G	GRM2165C1H3R9CD01D	muRata
6	C0805,4.7pF±0.25pF 50V C0G	GRM2165C1H4R7CA01D	muRata
7	C0805,5.6pF±0.5pF 50V C0G	GRM2165C1H5R6DD01D	muRata
8	C0805,6.8pF±0.5pF 50V C0G	GRM2165C1H6R8DD01D	muRata
9	C0805,8.2pF±0.5pF 50V C0G	GRM2165C1H8R2DZ01D	muRata
10	C0805,10pF±5% 50V C0G	GRM2165C1H100JZ01D	muRata
11	C0805,12pF±5% 50V C0G	GRM2165C1H120JZ01D	muRata
12	C0805,15pF±5% 50V C0G	GRM2165C1H150JZ01D	muRata
13	C0805,18pF±5% 50V C0G	GRM2165C1H180JZ01D	muRata
14	C0805,22pF±5% 50V C0G	GRM2165C1H220JZ01D	muRata
15	C0805,27pF±5% 50V C0G	GRM2165C1H270JZ01D	muRata
16	C0805,30pF±5% 50V C0G	GRM2165C1H300JZ01D	muRata
17	C0805,33pF±5% 50V C0G	GRM2165C1H330JZ01D	muRata
18	C0805,39pF±5% 50V C0G	GRM2165C1H390JZ01D	muRata
19	C0805,47pF±5% 50V C0G	GRM2165C1H470JZ01D	muRata
20	C0805,56pF±5% 50V C0G	GRM2165C1H560JZ01D	muRata
21	C0805,68pF±5% 50V C0G	GRM2165C1H680JZ01D	muRata
22	C0805,82pF±5% 50V C0G	GRM2165C1H820JZ01D	muRata
23	C0805,100pF±5% 50V C0G	GRM2165C1H101JA01D	muRata
24	C0805,120pF±5% 50V C0G	GRM2165C1H121JA01D	muRata
25	C0805,150pF±5% 50V C0G	GRM2165C1H151JA01D	muRata
26	C0805,180pF±5% 50V C0G	GRM2165C1H181JA01D	muRata
27	C0805,220pF±10% 50V X7R	GRM216R71H221KA01D	muRata
28	C0805,330pF±10% 50V X7R	GRM216R71H331KA01D	muRata
29	C0805,390pF±10% 50V X7R	GRM216R71H391KA01D	muRata
30	C0805,470pF±10% 50V X7R	GRM216R71H471KA01D	muRata
31	C0805,560pF±10% 50V X7R	GRM216R71H561KA01D	muRata
32	C0805,680pF±10% 50V X7R	GRM216R71H681KA01D	muRata
33	C0805,820pF±10% 50V X7R	GRM216R71H821KA01D	muRata



Aanpassen Si5351 parameters/SW

	fosc =	25 000 000	Hz														
				PLLA			PLLB			CLK0				CLK1			
		CLK0	CLK1	CLK2	PLLA_a	PLLA_b	PLLA_c	PLLB_a	PLLB_b	PLLB_c	MS_0PLL	MS_0a	MS_0b	MS_0c	MS_1PLL	MS_1a	MS_1b
FSK0		7 040 250,0	10 140 400,0	14 097 400,0	36	0	1048575	36	0	1048575	PLLA	127	876996	1048575	PLLA	88	790515
FSK1		7 040 251,5	10 140 401,5	14 097 401,5	36	0	1048575	36	0	1048575	PLLA	127	876968	1048575	PLLA	88	790502
FSK2		7 040 252,9	10 140 402,9	14 097 402,9	36	0	1048575	36	0	1048575	PLLA	127	876940	1048575	PLLA	88	790488
FSK3		7 040 254,4	10 140 404,4	14 097 404,4	36	0	1048575	36	0	1048575	PLLA	127	876912	1048575	PLLA	88	790475
Delta		-58	-74,04	-99,483871													
Corr.		150	200	300													

Aanpassing Arduino SW:

```
const unsigned long MS_0a = 127;
const unsigned long MS_0b0 = 876996;
const unsigned long MS_0b1 = 876968;
const unsigned long MS_0b2 = 876940;
const unsigned long MS_0b3 = 876912;
const unsigned long MS_1a = 88;
const unsigned long MS_1b0 = 790515;
const unsigned long MS_1b1 = 790502;
const unsigned long MS_1b2 = 790488;
const unsigned long MS_1b3 = 790475;
const unsigned long MS_2a = 63;
const unsigned long MS_2b0 = 882438;
const unsigned long MS_2b1 = 882431;
const unsigned long MS_2b2 = 882424;
const unsigned long MS_2b3 = 882417;
```




Meest belangrijke onderdelen van de stuklijst

BENODIGDHEDEN WSPR TX



GPS SMA 3M Length Ant

★★★★★ 5.0 (13 votes) ▾

Price: **€ 3,17** / piece
Bulk Price ▾

Shipping: **Free Shipping**
Estimated Delivery Time

Quantity:

Total Price: **€ 3,17**

Buy Now

♥ Add to Wish List (14 Adds)

Store Promotion: **US \$1.00** off

Return Policy: Returns accepted



10cm iPEX to SMA female adapter cable U.F.L to sma 1.13 coaxial jumper cable for WIFI / GSM / 3G / GPS dedicated cable

★★★★★ 5.0 (6 votes) ▾ | 6 orders

Price: **€ 12,28** / lot 10 pieces / lot, € 1,23 / piece

Shipping: **Free Shipping to Belgium via China Post Registered Air Mail** ▾
Estimated Delivery Time: 17-29 days ?

Quantity: lot (942 lots available)

Total Price: **€ 12,28**

Buy Now

Add to Cart

♥ Add to Wish List (1 Adds) ▾

Return Policy: Returns accepted if product not as described, buyer pays return shipping fee; or keep

GREAT WALL



GY-NEO6MV2 new GPS module with Flight Control Flight Control EEPROM MWC APM2.5 large antenna NEO6MV2

★★★★★ 4.9 (337 votes) ▾ 329 orders

Price: € 7,80 / piece

Shipping: Free Shipping to Belgium via China Post Registered Air Mail ▾

Estimated Delivery Time: 17-29 days ?

Quantity: piece (8751 pieces available)

Total Price: € 7,80

Buy Now

Add to Cart

♥ Add to Wish List (546 Adds) ▾

1Pcs New Mini Pro atmega328 5V 16M Replace ATmega128 Compatible Nano for Arduino

Item condition: New

Quantity:

More than 10 available / 76 sold

Price: US \$2.68

Buy It Now

Add to cart

6 watching

👁 Add to watch list

★ Add to collection

76 sold

More than 73% sold

Free shipping

Shipping: FREE Economy Int'l Shipping | [See details](#)

See details about international shipping here. ?

Item location: China, China

Ships to: Worldwide [See exclusions](#)

Delivery: 📦 Estimated between Tue, Oct. 25 and Tue, Nov. 15

Seller ships within 1 day after receiving cleared payment . ?

Please note the delivery estimate is greater than 9 business days.

Payments:

PayPal

VISA

MasterCard

Discover

Discover



Seller information

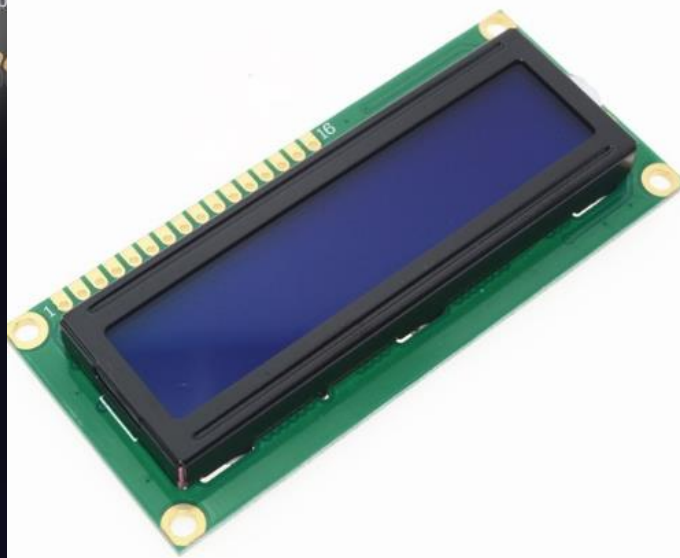
kingfull-electronic-company (5

99.2% Positive feedback

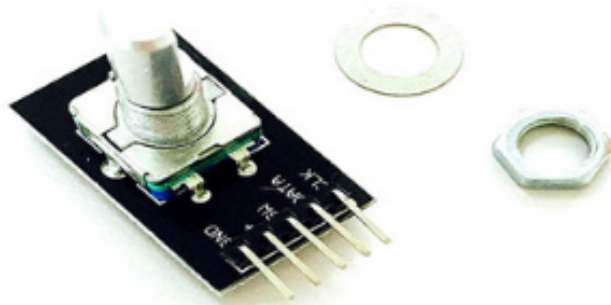
+ Follow this seller

Visit store: 📍 Kingfull-Electron

[See other items](#)



Return Policy:  Returns accepted if product not as described, buyer pays return shipping fee; or keep the product & agree refund with seller. View details ▶



Total Price: € 0,46



Mini 3A DC-DC Converter Adjustable Step down Power



10PCS Mini 3A DC-DC Converter Step Down M
Down Power Supply for Replace LM2596s

★★★★★ 4.9 (64 votes) ▾ 74 orders

Price: € 4,84 / lot (10 pieces / lot, € 0,47 / piece)

Discount Price: **€ 4,60** / lot **5% off** 03h:31m:30s

Find more deals on the app ▾ Bulk P

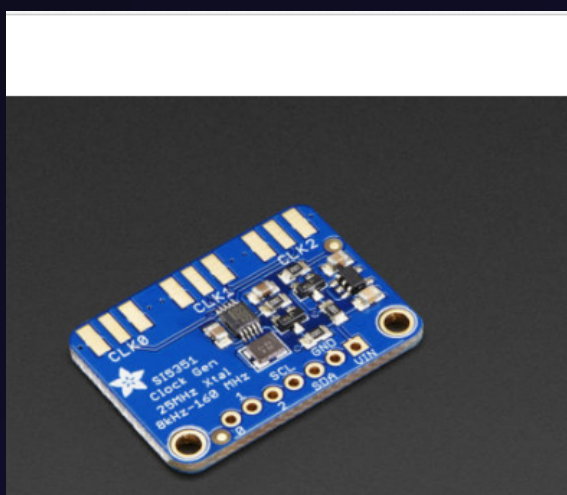
Shipping: **Free Shipping to Belgium via China Post**
Estimated Delivery Time: 21-40 days ?

Quantity: lot (706 lots available)

Total Price: **€ 4,60**

Buy Now

Add to Cart



Adafruit Si5351A Clock Generator Breakout Board 8KHz to 160MHz Arduino 3.3v 5v

Item condition: **New**

Quantity:

6 available / 157 sold

Price: **US \$7.89**

Buy It Now

Add to cart

52 watching

Add to watch list

Add to collection

157 sold

Experienced seller

30-day returns

Shipping: May not ship to Belgium - Read item description or [contact seller](#) for shipping options. | [See details](#)

Item location: Carrollton, Texas, United States

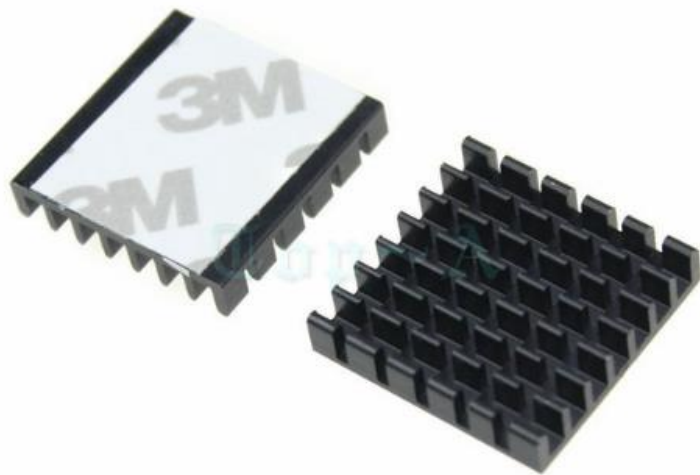
Seller information

atomsindustries (12875)
99.9% Positive feedback

Follow this seller

Visit store: AtomsInd
[See other items](#)

25x25x5mm



50pcs 25x25x5mm Aluminum Heatsink Radiator Chip CPU GPU VGA RAM LED IC HeatSink for Electronics Computer Transistor

★★★★★ 5.0 (1 votes) | 1 order

Price: €16,86 / lot (50 pieces / lot, € 0,32 / piece)

Discount Price: **€ 15,17** / lot **10% off** **5 days left**

Find more deals on the app ▾

Shipping: **Free Shipping to Belgium via China Post Registered Air Mail** ▾

Estimated Delivery Time: 17-29 days ?

Quantity: lot (5 lots at most per customer)

Total Price: **€ 15,17**

Buy Now

Add to Cart



<http://www.aliexpress.com/store/521293>

Sn74abt2244adwr



<http://www.aliexpress.com/store/521293>

Sn74abt2240an

Free shipping Sn74abt2244adwr / dvr, Tri-st ganda 20 SOIC 2244 SN74ABT2244 30PCS/LOT

★★★★★ 5.0 (1 votes) | 1 order

Price: **€ 14,07** / lot 30 pieces / lot, € 0,48 / piece

Shipping: **Free Shipping to Belgium via China Post Registered Air Mail** ▾

Estimated Delivery Time: 17-29 days ?

Quantity: lot (4321 lots available)

Total Price: **€ 14,07**

Buy Now

Add to Cart



T30-10 Carbonyl iron powder core high frequency magnetic core

★★★★★ 5.0 (1 votes) | 1 order

Price: **€ 9,75** / lot 100 pieces / lot , € 0,10 / piece
Bulk Price ▾

Shipping: **€ 3,95 to Belgium via China Post Registered Air Mail** ▾
Estimated Delivery Time: 17-29 days ?

Quantity: lot (994 lots available)

Total Price: **€ 13,70**

Buy Now

Add to Cart

♥ Add to Wish List (1 Adds) ▾



200pcs PCB M3 Hex Male Female Threaded Brass Spacer Standoffs Screw Nut Assortment Set

★★★★★ 4.9 (60 votes) | 48 orders

Price: ~~€ 9,71 / Set~~
Discount Price: **€ 9,23** / Set **5% off** 10 days left
Bulk Price ▾

Shipping: **Free Shipping to Belgium via China Post Registered Air Mail** ▾
Estimated Delivery Time: 17-29 days ?

Quantity: Set (904 Sets available)

Total Price: **€ 9,23**

Buy Now

Add to Cart

♥ Add to Wish List (129 Adds) ▾



3 Band dipool antenne voor 40m, 30m en 20m.

3 BAND DIPOOL ANTENNE



SotaBeams Antenne 3band dipool antenne

www.sotabeams.co.uk/band-hopper-iii-three-band-linked-dipole/

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AMATEUR RADIO FOR THE GREAT OUTDOORS

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AMATEUR RADIO FOR THE GREAT OUTDOORS

Antennas including linked dipoles, telescopic poles also ham radio kits - everything you need.
If you are thinking of leaving your ham shack with your radio, take a look. We can help.

Translate website
Selecteer een taal

Home > Antennas > Three-band portable dipole antenna system

Three-band portable dipole antenna system

41 people like this. Be the first of your friends.

Price: €68.41 (inc Tax)
€57.01 (exc Tax)

NOTE Customers outside Eu pay the lower (exc Tax) price!

Rating: ★★★★★ (34 product reviews)

Categories
Christmas Selection
WSPRlite Antenna Tester

Currency Converter
All orders are billed in UK Pounds. Choose a currency below to display products in your currency. Note: your bank/Paypal may not offer the same exchange rate.
UK Pounds
Australian Dollars
Canadian Dollar
Euros
Norwegian Krone

<http://www.sotabeams.co.uk/content/TRAPSV2.pdf>

<http://www.sotabeams.co.uk/band-hopper-iii-three-band-linked-dipole/>



800 jaar Sint-Niklaas

ASGARD VII Ballon

- Komende
 - Inhuldiging OO8SNW baken VTS
 - 20 april 2017 KMI ballon lancering
 - Bouw WSPR vakantie baken.



Vragen?



APPENDIX



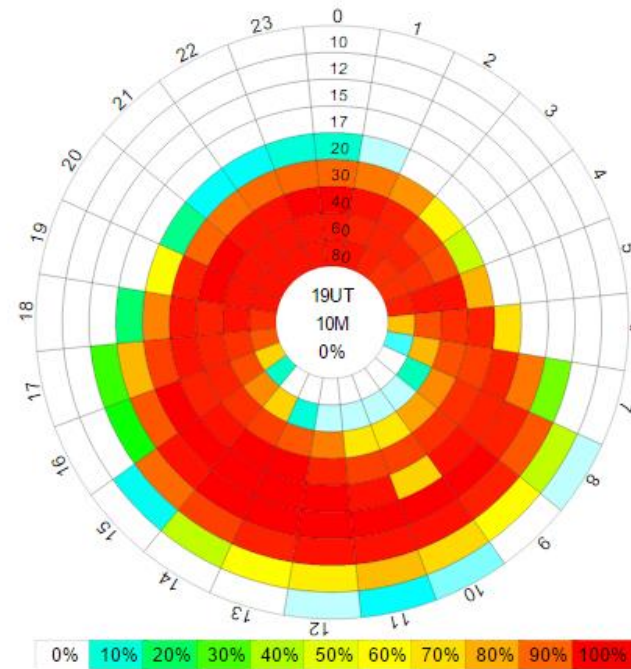
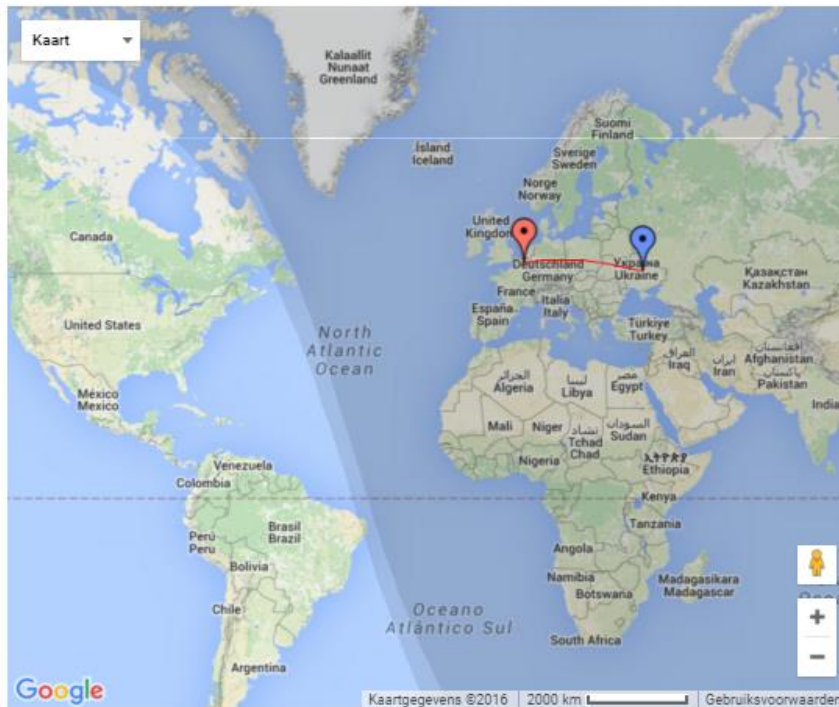
<http://www.voacap.com/>

VOACAP

PROPAGATION PREDICTION

Point to point simulation.

VOACAP Online



To RX: 2110 km, 1311 mi, 83 ° Grayline: 2016-02-01 20 : 49 Set Reset

Propagation Params

Es: No Model: Auto
SSN: Min.TOA: 0.1 °

Today's Sunrise/Sunset Times (UTC)

	Transmitter		Receiver	
	Rise	Set	Rise	Set
GND	07:21	16:33	05:18	14:39
D	06:41	17:13	04:39	15:17
F	05:51	18:03	03:51	16:05

Transmitter Site

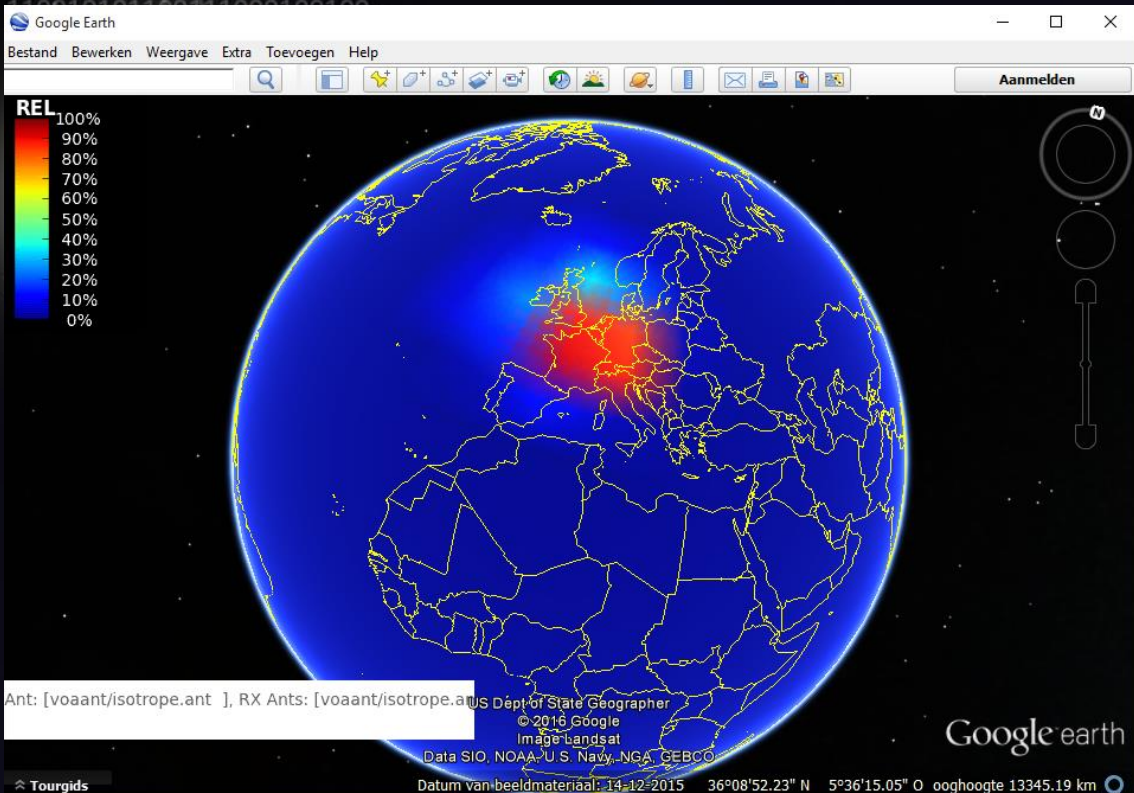
QTH: ON Belgium
Name: Belgium Loc calc
Latitude: 50.8300 [-90..90]
Longitude: 4.3300 [-180..180]
TX antenna: Dipole @ 10M (33ft)
TX power: 100 W
TX mode: CW
Specials: Swap TX-RX
Current point: Set Home Short-path Unset Home

Receiver Site

QTH: << Select a location >>
Name: KN69xj Loc calc
Latitude: 49.3824 [-90..90]
Longitude: 33.9922 [-180..180]
RX antenna: Dipole @ 10M (33ft)

The circular chart above shows predictions for all HF amateur radio bands. Hover the mouse over the chart for details. For predictions with more frequency coverage, click the "Run prediction!" button.

Run prediction!



Date

Year: 2016 ▾ SSN: 80

Month: April ▾

Time 10 ▾ ☒ Remember these values

UTC:

Transmitter Site

QTH: ON Belgium ▾

Name: Belgium Loc calc

Latitude: 50.8300 [-90..90]

Longitude: 4.3300 [-180..180]

TX antenna: Isotrope ▾

TX power: 1 W ▾

TX mode: CW ▾ No Es ▾

Band: 40M (7.1 MHz) ▾

Great-circle path: Short-path ▾

Current point: Set as default Reset

Receiver Sites

RX antenna: Isotrope ▾

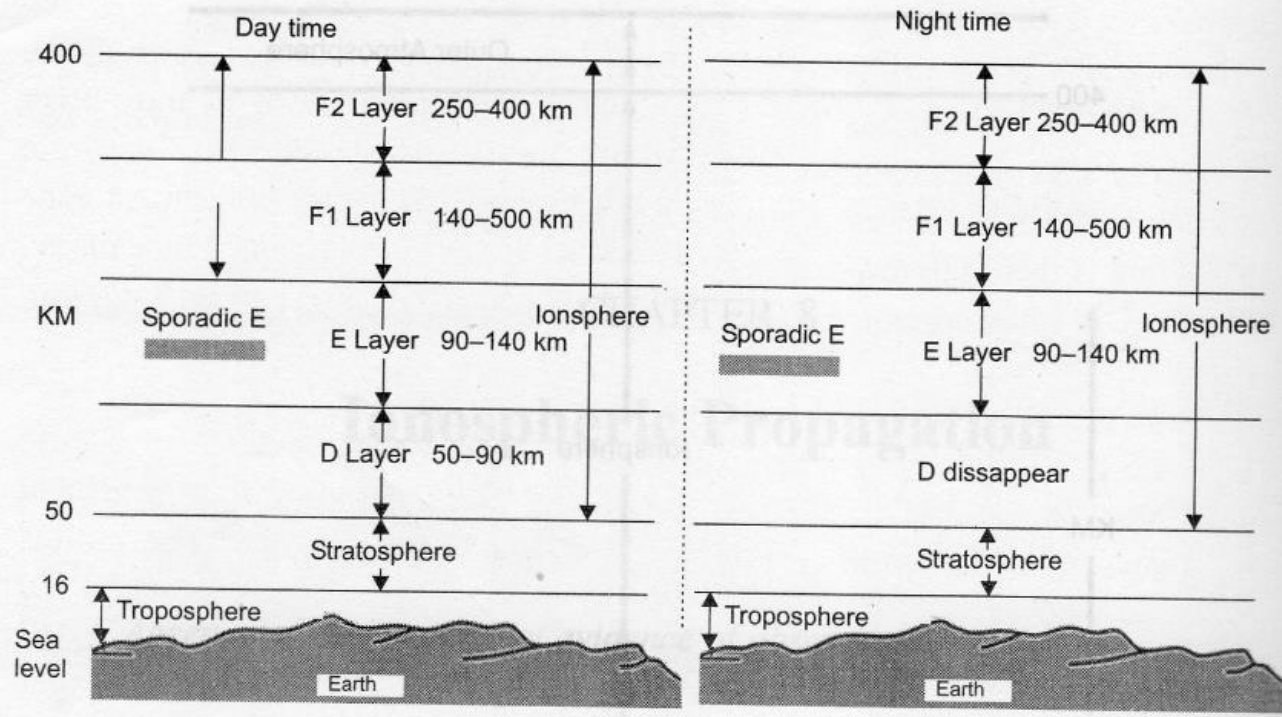
Run the prediction!



Op welke hoogte reflecteert het signaal?

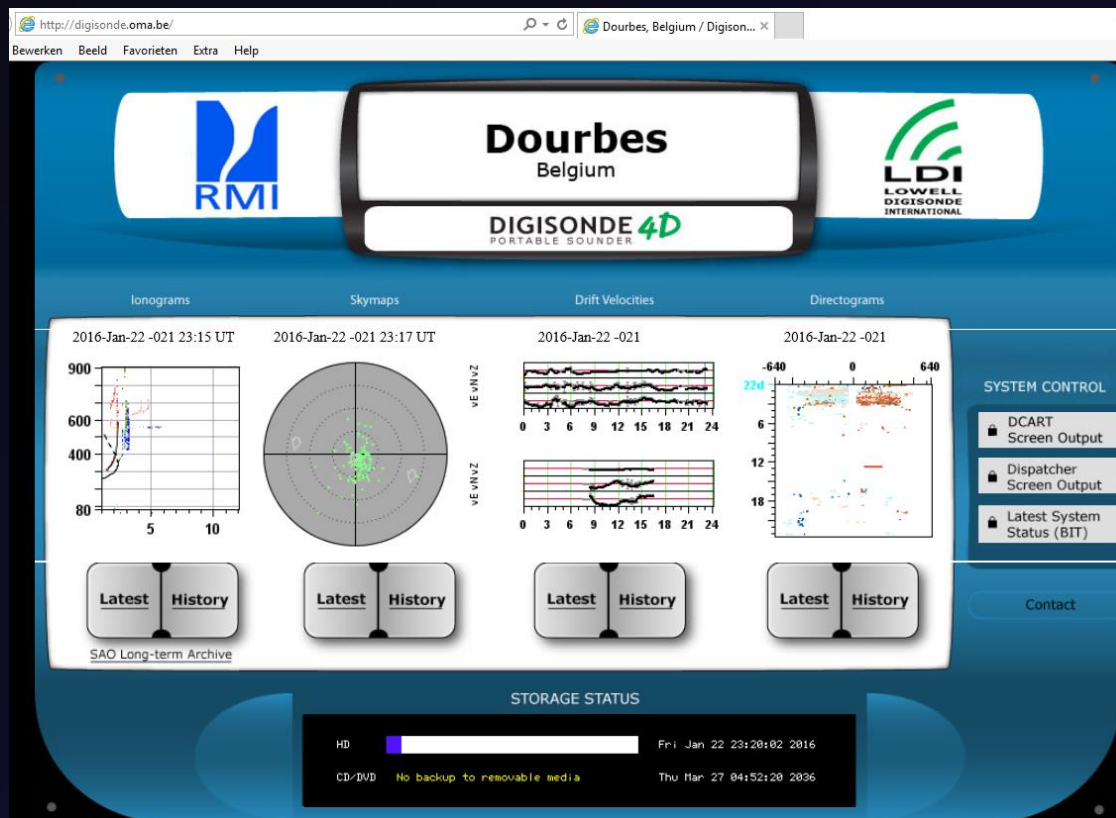
- De hoogte hangt af van het tijdstip, datum en frequentie. Overdag is er meer ionisatie en zullen de radiogolven door lager gelegen signalen gereflecteerd worden:

242 *Antenna and Wave Propagation*



Op welke hoogte reflecteert het signaal?

- Dit kunnen we aflezen op de ionogrammen (zie ppt van 30/10/2015).
- In België bevindt de KMI afdeling die dit doet in Dourbes (zie kaart). En zijn op volgende site terug te vinden: <http://digisonde.oma.be/>



Op welke hoogte reflecteert het signaal?

- Maar voor de oefening nemen we het diagram van 28/4/2015. Dit kunnen we terugvinden op: <http://giro.uml.edu/didbase/scaled.php>

giro.uml.edu/didbase/scaled.php

Digital Ionogram Data Base (DIDBase)

Ionogram-Derived Characteristics 13.5 million ionograms and counting

1. Select Time Interval:

All times in UTC

Start: 2015-04-28 10:00

Stop: 2015-04-28 12:00

+1 Hour +1 Day

Visit DIDBase Portal for [data availability](#) (live scan of DIDBase, wait for reply)

2. Pick one GIRO Location:

(DB049) DOURBES

Search

3. Select Data to Download:

- foF2 -- F2 layer critical frequency
- foF1 -- F1 layer critical frequency
- foE -- E layer critical frequency
- foEs -- Es layer critical frequency
- fbEs -- Blanketing frequency of Es-layer
- foEa -- Critical frequency of auroral E-layer
- foP -- Critical frequency of F region patch trace
- fxl -- Maximum frequency of F trace
- MUF -- Maximum usable frequency, 3000 km
- MD -- MUF(3000)foF2
- hF2 -- Minimum virtual height of F2 trace
- hF -- Minimum virtual height of F trace
- hE -- Minimum virtual height of E trace
- hEs -- Minimum virtual height of Es trace
- hEa -- Minimum virtual height of auroral E trace

Control-click to select multiple characteristics

Compute MUF for 3000 km

GIRO

Louisvale, LV12P 2011.12.10 02:15

Link Station

- [PLEASE READ RULES OF THE ROAD](#) : Rules of the road for using this data service
- [DIDBase Web Portal](#) : Web Portal for browsing images of ionograms and ionogram-derived data in DIDBase
- [DIDBase Availability Chart](#) : Table of stations with start/stop coverage dates (live)
- [SAO Explorer](#) : Java application for Digisonde ionogram display and editing with ARTIST-5. Download SAO Explorer [here](#).
- [Digisonde Station Map](#) at UMLCAR
- [Lowell Digisonde International \(LDI\)](#) Digisonde homepage



Op welke hoogte reflecteert het signaal?

- Voor de grafische weergave gebruiken we: <http://ulcar.uml.edu/DIDBase/>

Digital Ionogram DataBase

DIDBASE
GIRO WEB PORTAL

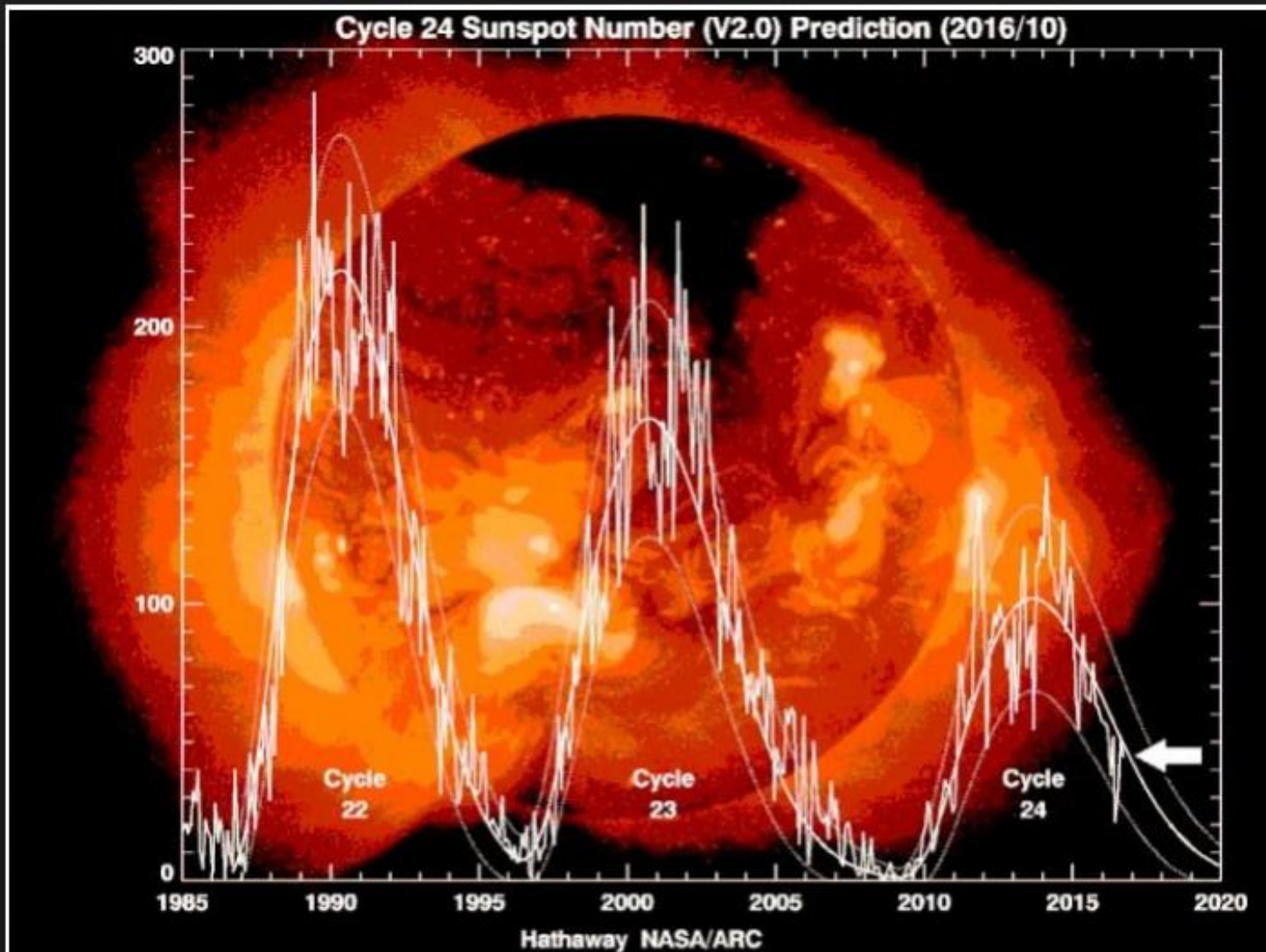
STATION LIST **CALENDAR LIST**

Please read: [Rules of the Road](#)

Select Station or Calendar list above to access ionogram images

For access to numerical data in DIDBase, install [SAOExplorer](#)

Full list of GIRO locations: [Station List](#)



Sunspot numbers for solar cycles 22, 23 and 24 which shows a clear weakening trend; current sunspot number indicated by arrow; plot courtesy Dr. David Hathaway, NASA/MSFC