122 / 134GHz
Going Further?

Roger Ray G8CUB

Millimetre Bands

122 134GHz

67km Contact

Equipment Used

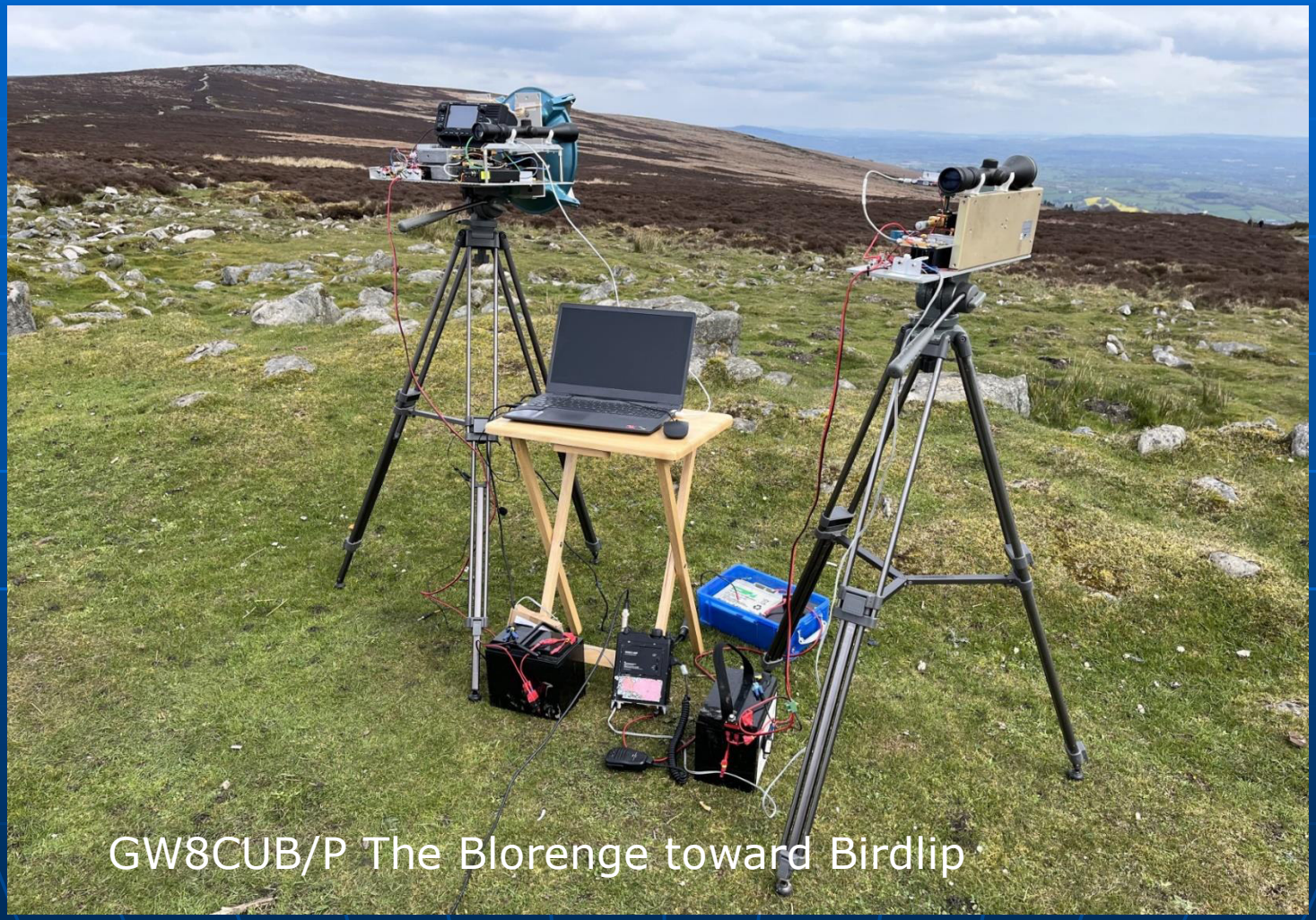
Comparison to VK System

Path profile

Tx Power

Antenna Gain

67km attempt



GW8CUB/P The Blorenge toward Birdlip

67km attempt

G8GTZ/P Birdlip towards the Blorenge

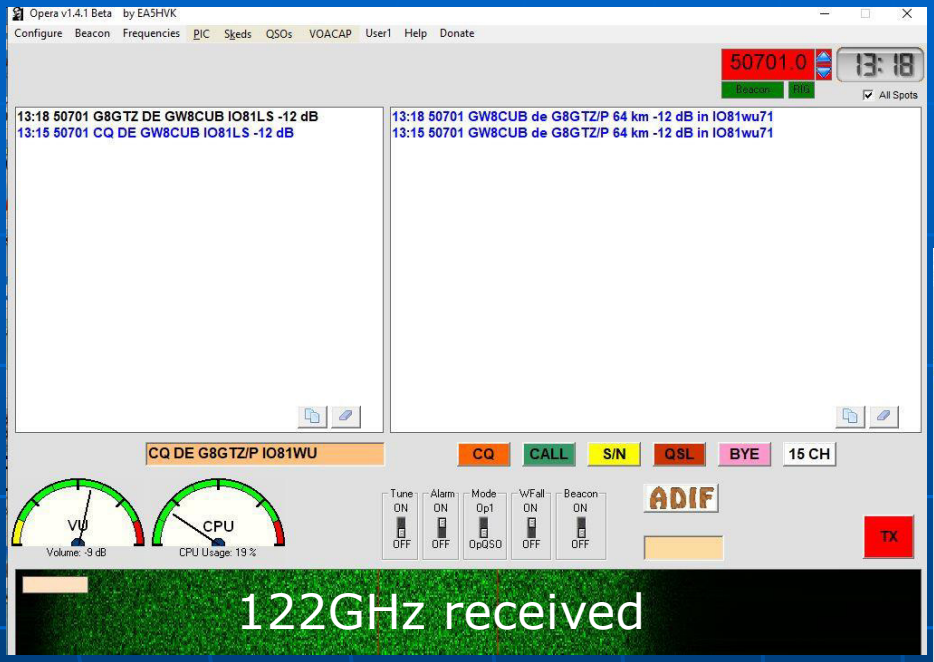
122GHz

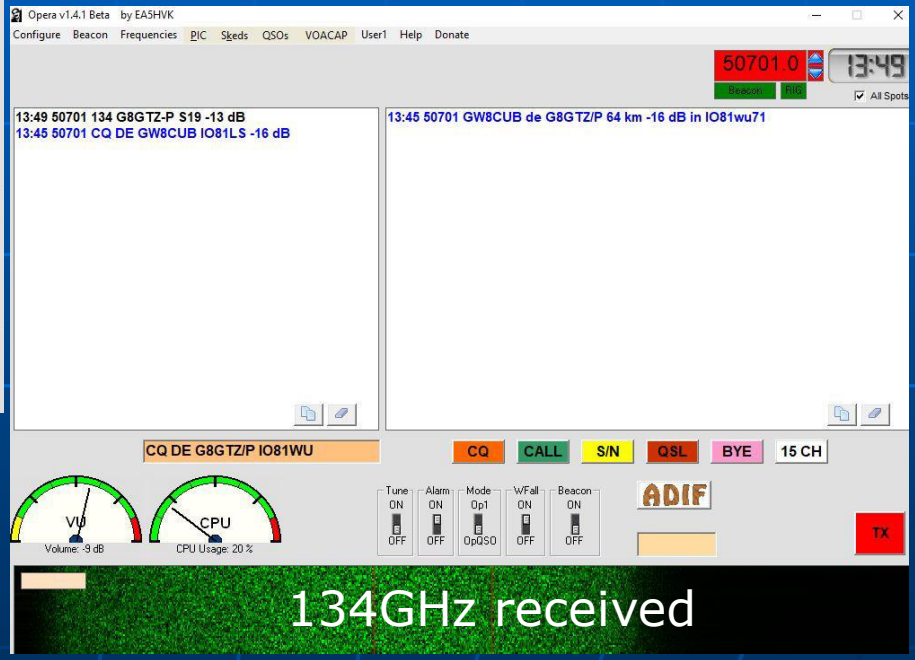
Received signals

134 received by G8GTZ/P

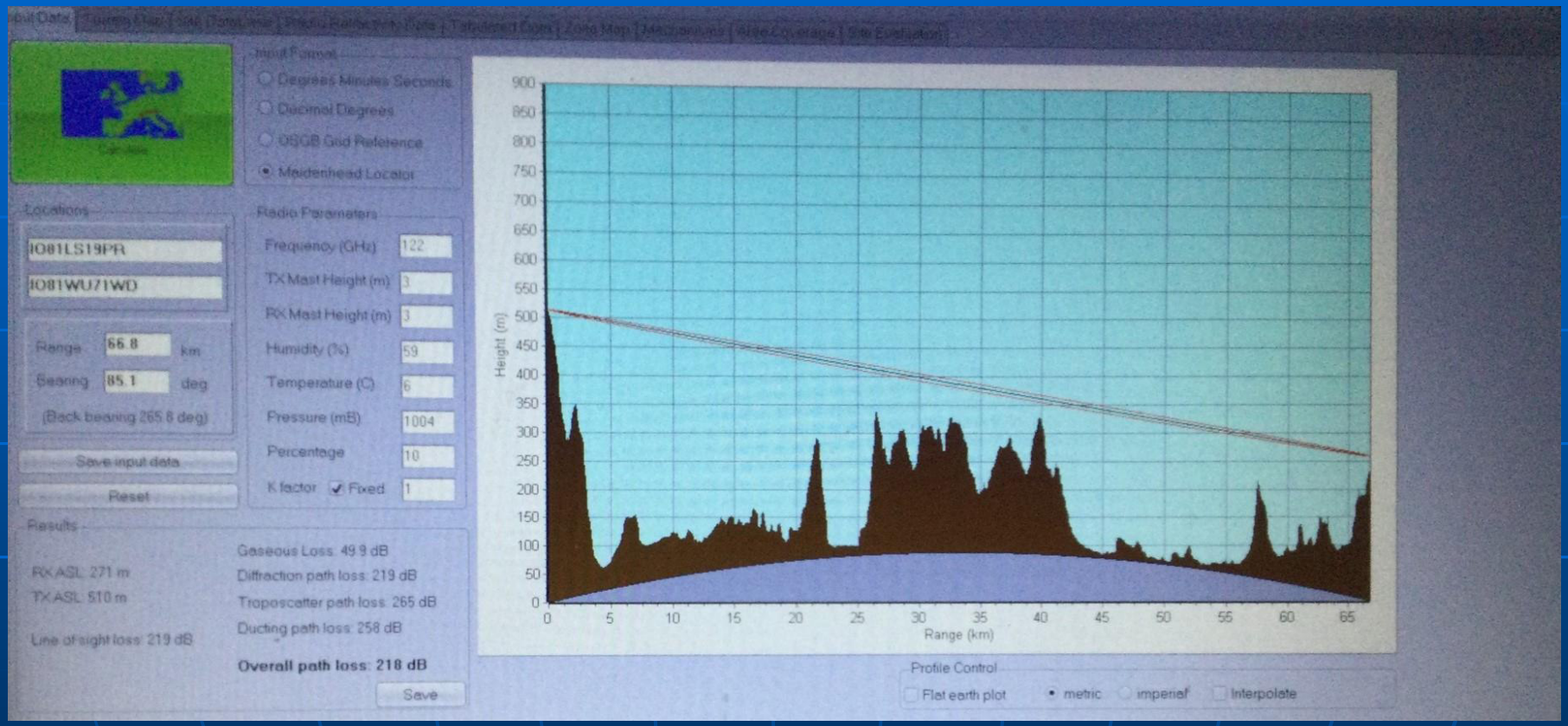
122 received by GW8CUB/P

Opera received





Path Profile



IO81LS19PR to IO81WU71WD

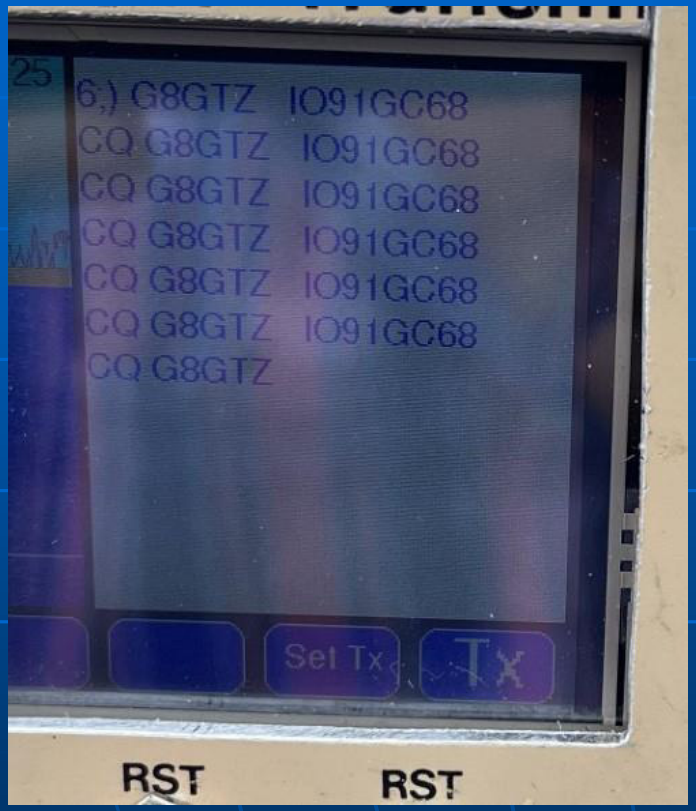
Path Losses

Calculated path loss:
122GHz free-space loss 171dB + 50dB atmospheric loss = 221dB
134GHz free-space loss 172dB + 36dB atmospheric loss = 208dB

Weather Data from Met office:
14.00 26th April 2024

	Birdlip	Blorenge
Visibility	E	VG
Temperature	7C	6C
Humidity	55%	59%
Pressure	1004	1005
Dew Point	-1.4C	-1.4C

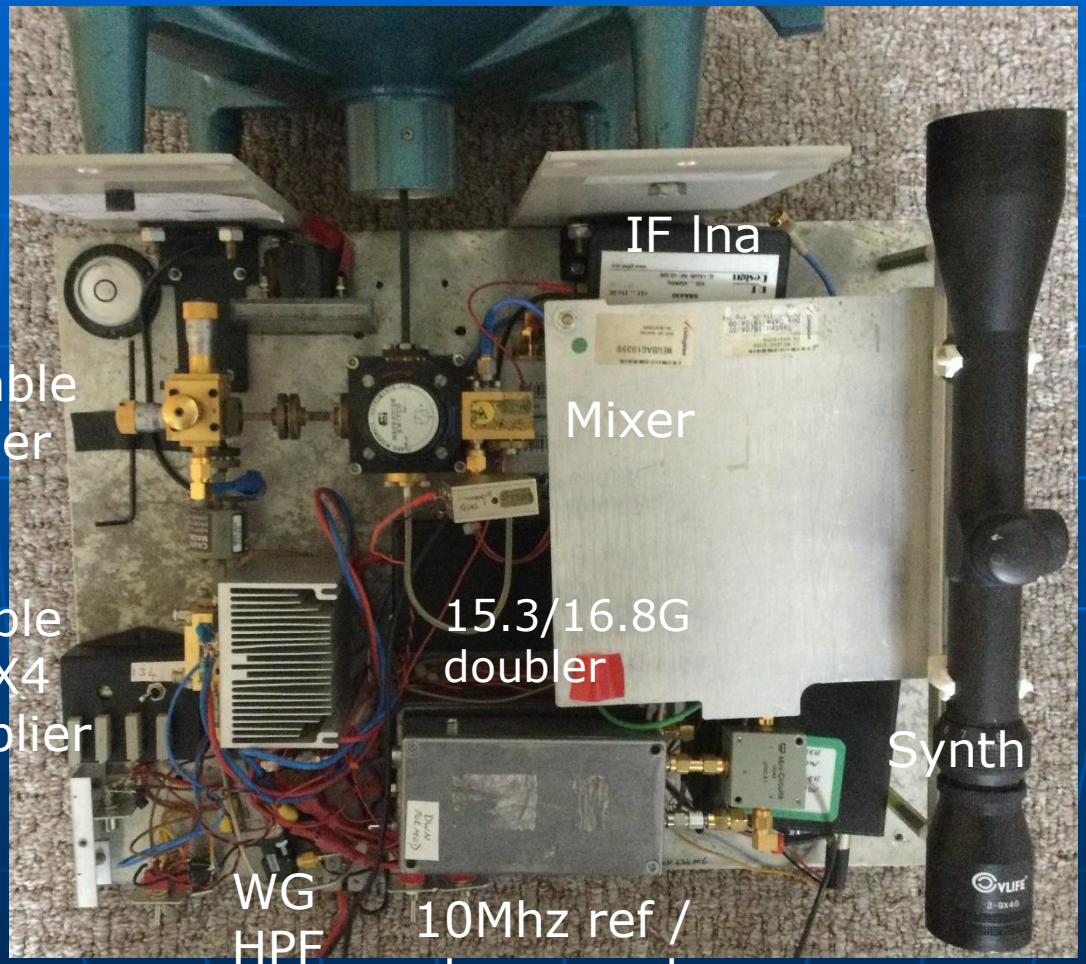
OOK48 test on 76GHz



Good signal from Noel at Combe Gibbet

Weak Signal from Neil repeat message allows message to be read

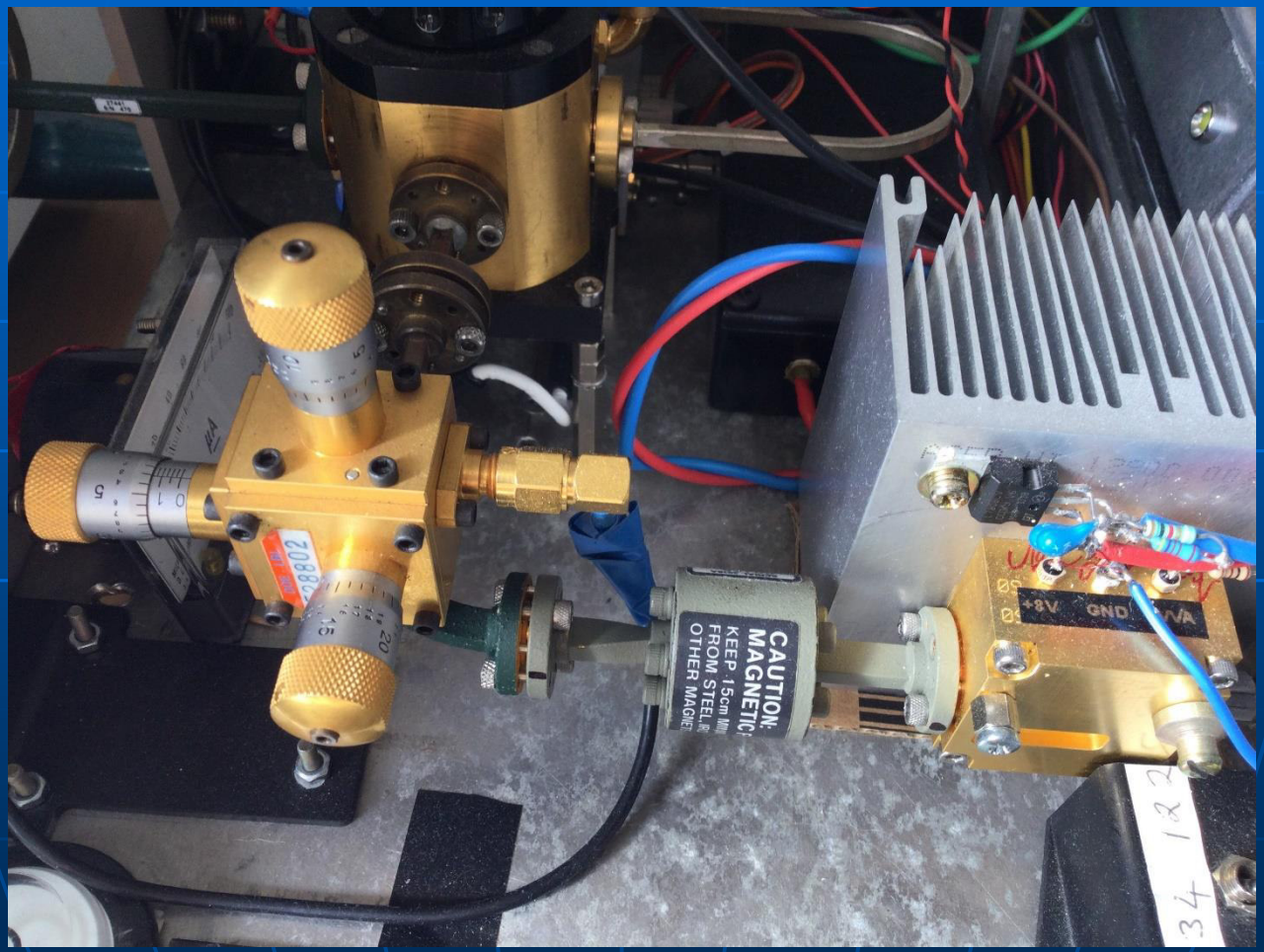
122/134GHz



tuneable
doubler

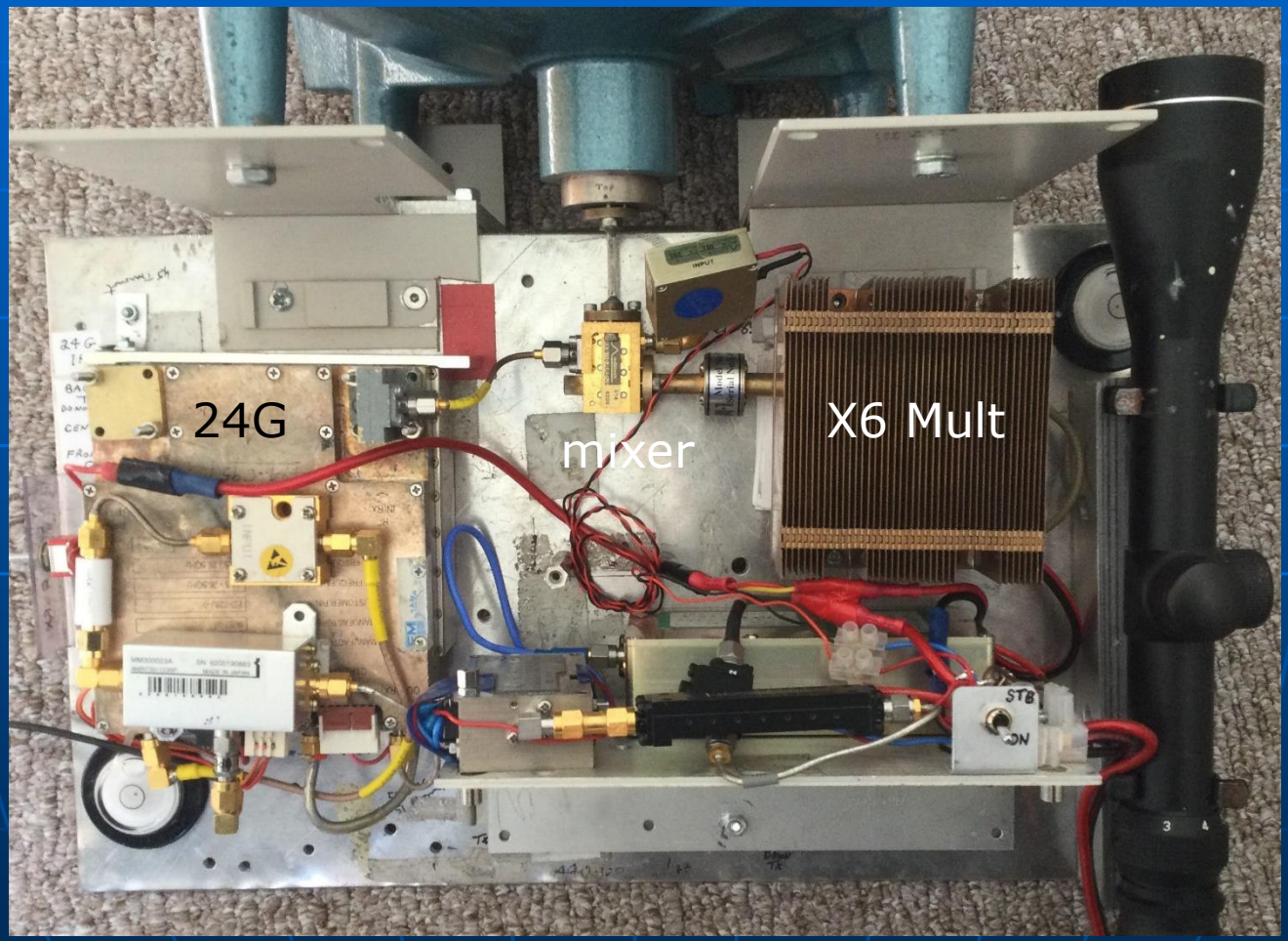
Variable
gain X4
Multiplier

122/134GHz



Tuneable Doubler

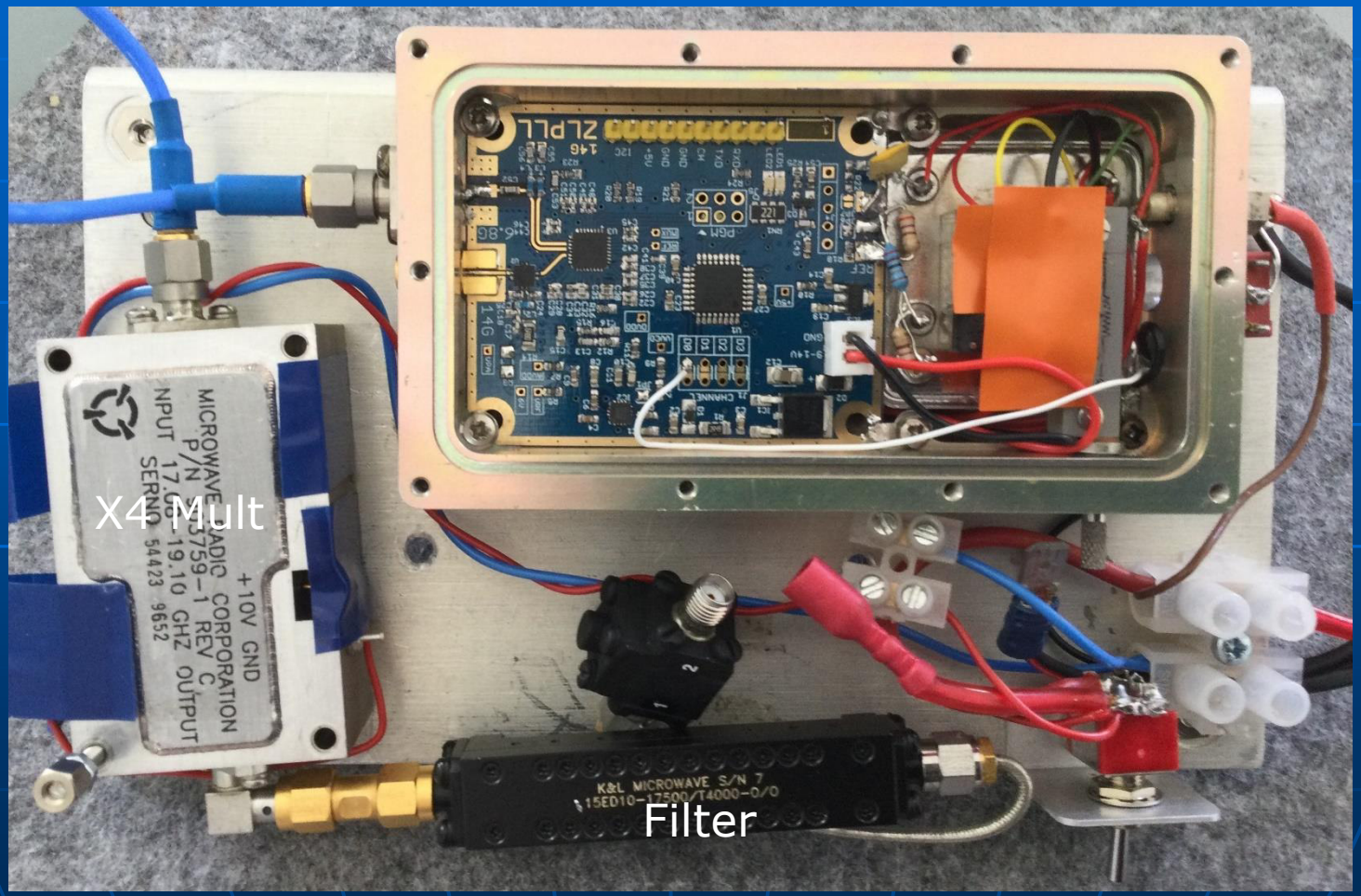
122/134GHz Receive



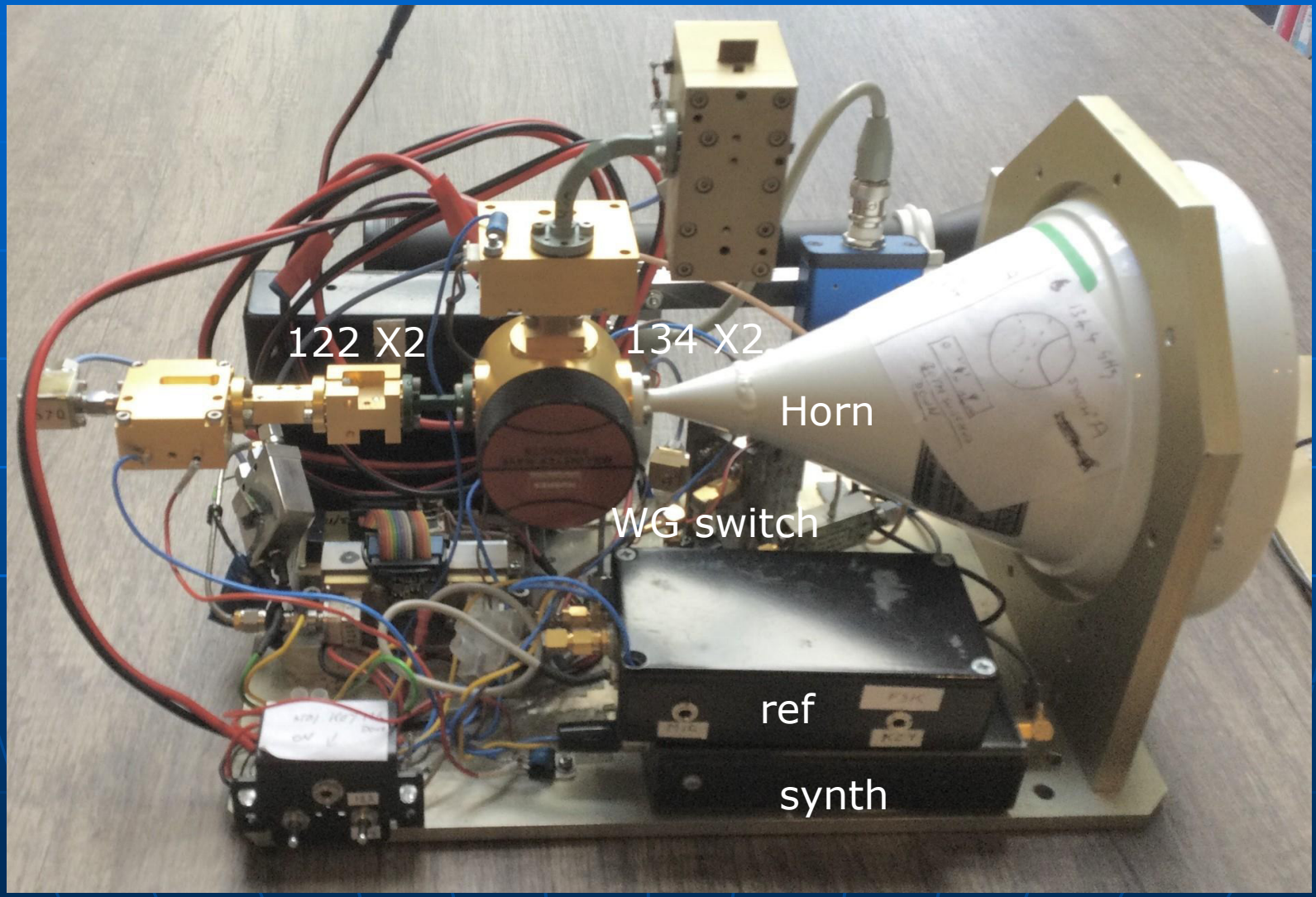
24GHz IF, 98/110GHz LO

122/134GHz

ZL14G ADF5355 - 100MHz Ref

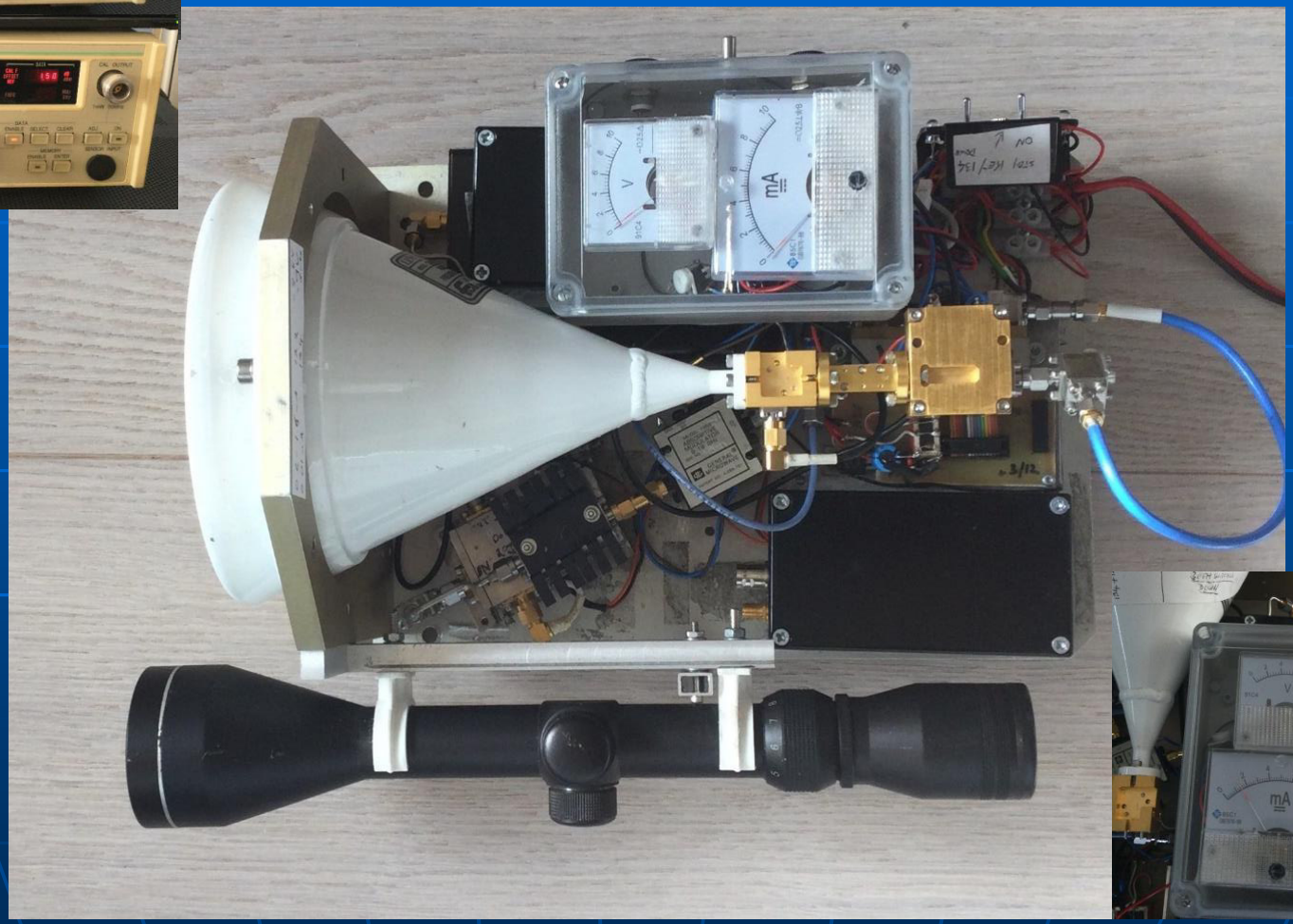


Dual band Tx



Dual band Tx

BIAS ADJ



X3

122 / 134GHz Doubler 20mW+

Teratech Components Ltd

PM 125/2/13-02 (SN: 2300)

Datasheet

Frequency Doubler (120-130 GHz)

Serial Number: 2300

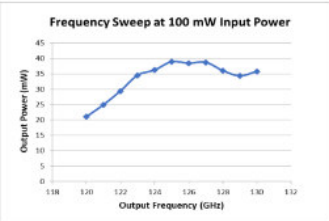
Description

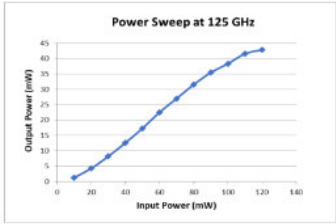
The PM 125/2/13 series is a passive frequency doubler based on Teratech's Schottky diode technology. This device is operated at fixed or variable bias.

Specification	Unit	Min	Typ	Max
Input frequency	GHz	60	62.5	65
Output frequency	GHz	120	125	130
Input power	mW			200
Output power	mW		30*	
Doubler bias	V	-10 to -1		
Doubler current	mA	0.01 to 5		
Input port	WR-15 (UG-385/U)			
Output port	WR-8 (UG-387/U-M)			
Dimension	mm	24 x 19 x 19 (length x width x height)		

* Performance changes with input power and bias voltage

Typical Performance





Note: Teratech reserves the right to change the data for this device without notice. For different frequency and power requirements contact the sales team at the email given below.

Attention:

Teratech Components Ltd. assumes users will be familiar with microwave and millimetre wave products.
This product is sensitive to Electrostatic Discharge (ESD). Teratech Components Ltd assumes the user will only be handling and working with these products in an ESD safe environment, where the component will be grounded at all times. Any attempt to open, pull apart, or damage the component will immediately void the warranty. Any damage caused to the component by improper handling is highly likely to void the warranty.

To order this component please contact sales@teratechcomponents.com
www.teratechcompomponents.com

122GHz

Possible systems

- VK 122 transverter
- VK 122 / 134 modification
- Home brew transverter.
- Sub-harmonic mixer
- Tripler TX
- Multiplier / Doubler TX

122GHz

- VK Revolutionised Operation!
- Best receive option
- Combine with High Power TX?
- Allows much experimentation with antennas
- Chip change for 122 / 134

134GHz

- Dubus designs
- Boards (source was Kuhne)
- Housing / diodes DL2AM
- X4 Broadern modules
- ‘sub-harmonic’ mixer
- Fundamental mixer
- TX CW / FM / OOK48 / (Opera)

134GHz

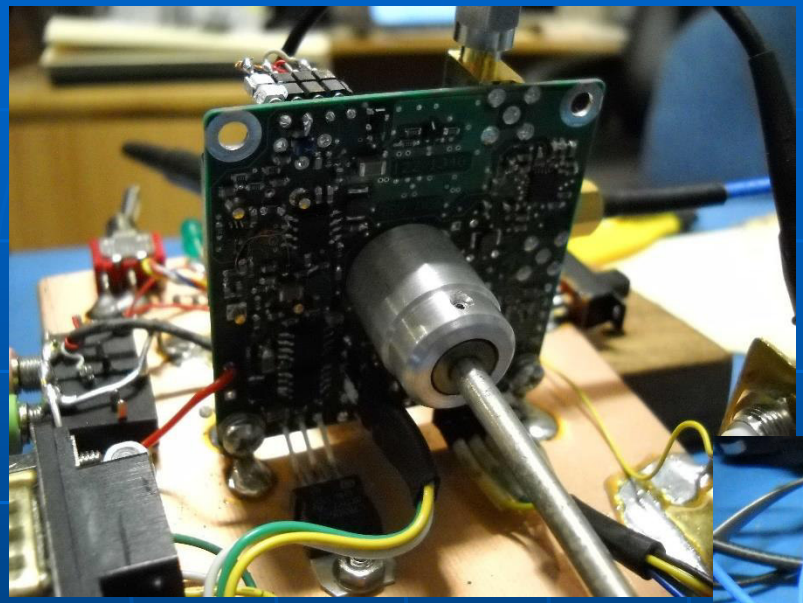
- VK System – modified 122 boards
- Longer paths than 122
- Alignment for 122
- Separate TX 10mW+

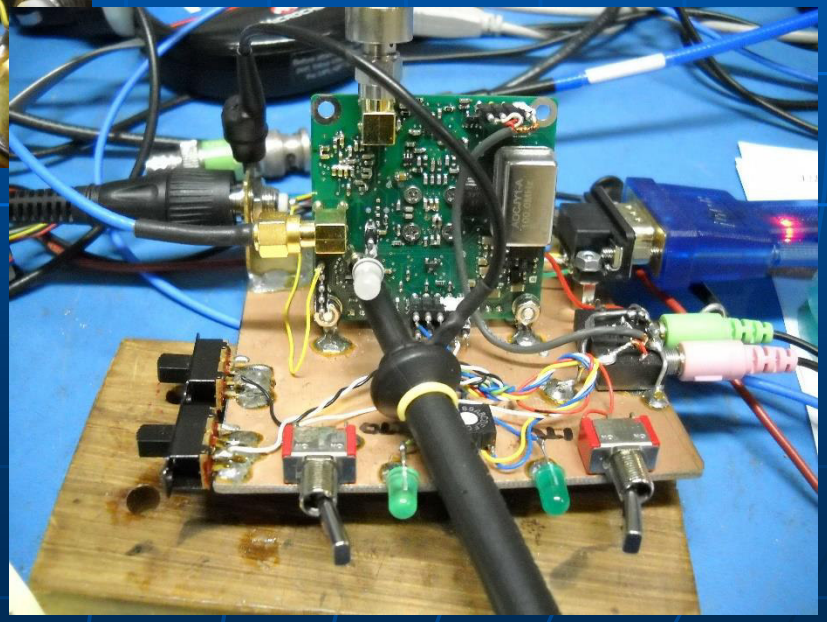
VK 122/134GHz

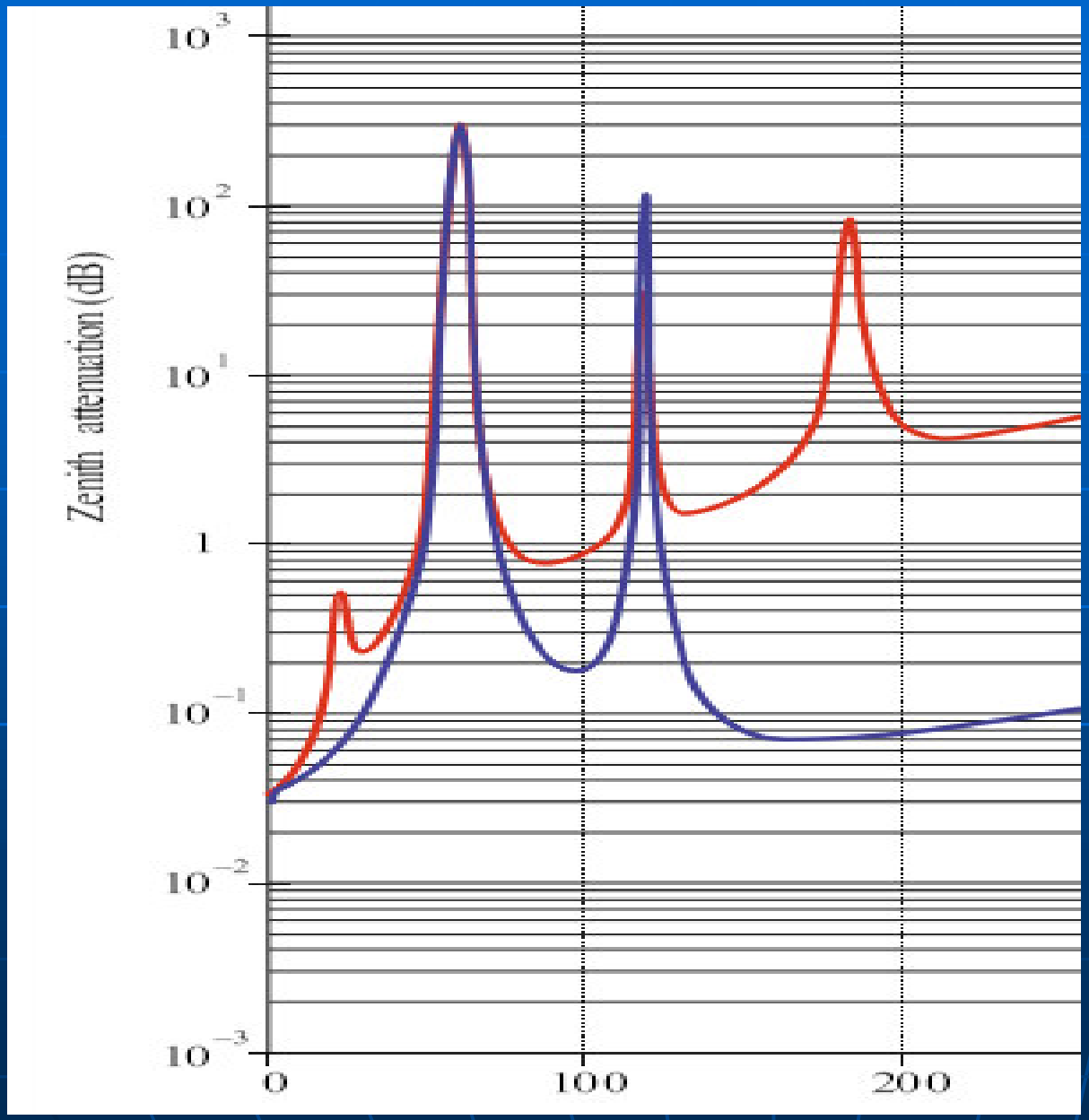
What we were getting!

- Operation on both 122G and 134G bands
- Cleaner L.O. (Better Phase noise)
- Smaller L.O. Tuning steps due to use of upgraded PLL chip ADF
- Frequency disciplining using either 1pps or 10MHz input
- User serial re-programming of all channel frequencies
- Built in auto switching I/Q quadrature combiner for improved RX performance
- Same PCB mechanical footprint as older 122G only boards
- High quality 100MHz oven reference oscillator on board

122/134G VK







ITU-R data

Peak 118.75G

At 67km 6dB advantage going from 122.4 to 122.99

Standard

Dry

Operating Frequencies

- 122GHz 122,400 (122,256)
- 122GHz 122,999.6

- 134GHz 134,400 (134,256)

Antenna Gain

0.3m Cassegrain antenna

Size	Gain	Beamwidth
0.6m	56dB	0.22 deg
0.3m	50dB	0.45 deg
0.15m	44dB	0.90 deg

122/134GHz Even More Power?

Teratech Components Ltd

PM 125/2/14-02 (SN: 2331)

Datasheet

Frequency Doubler (114-134 GHz)

Serial Number: 2331

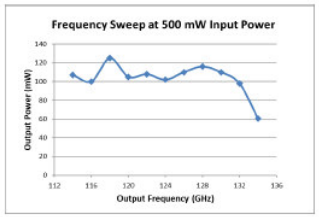
Description

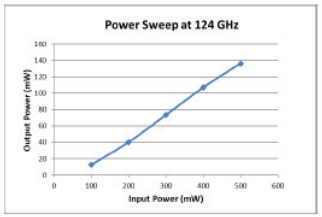
The PM 125/2/14 series is a high-power passive frequency doubler based on Teratech's Schottky diode technology. This device is operated at fixed or variable bias.

Specification	Unit	Min	Typ	Max
Input frequency	GHz	57	62	67
Output frequency	GHz	114	124	134
Input power	mW			500
Output power	mW		100*	
Doubler bias	V	-10 to -1		
Doubler current	mA	0.01 to 8		
Input port	WR-15 (UG-385/U)			
Output port	WR-8 (UG-387/U-M)			
Dimension	mm	28 x 19 x 25 (length x width x height)		

* Performance changes with input power and bias voltage

Typical Performance





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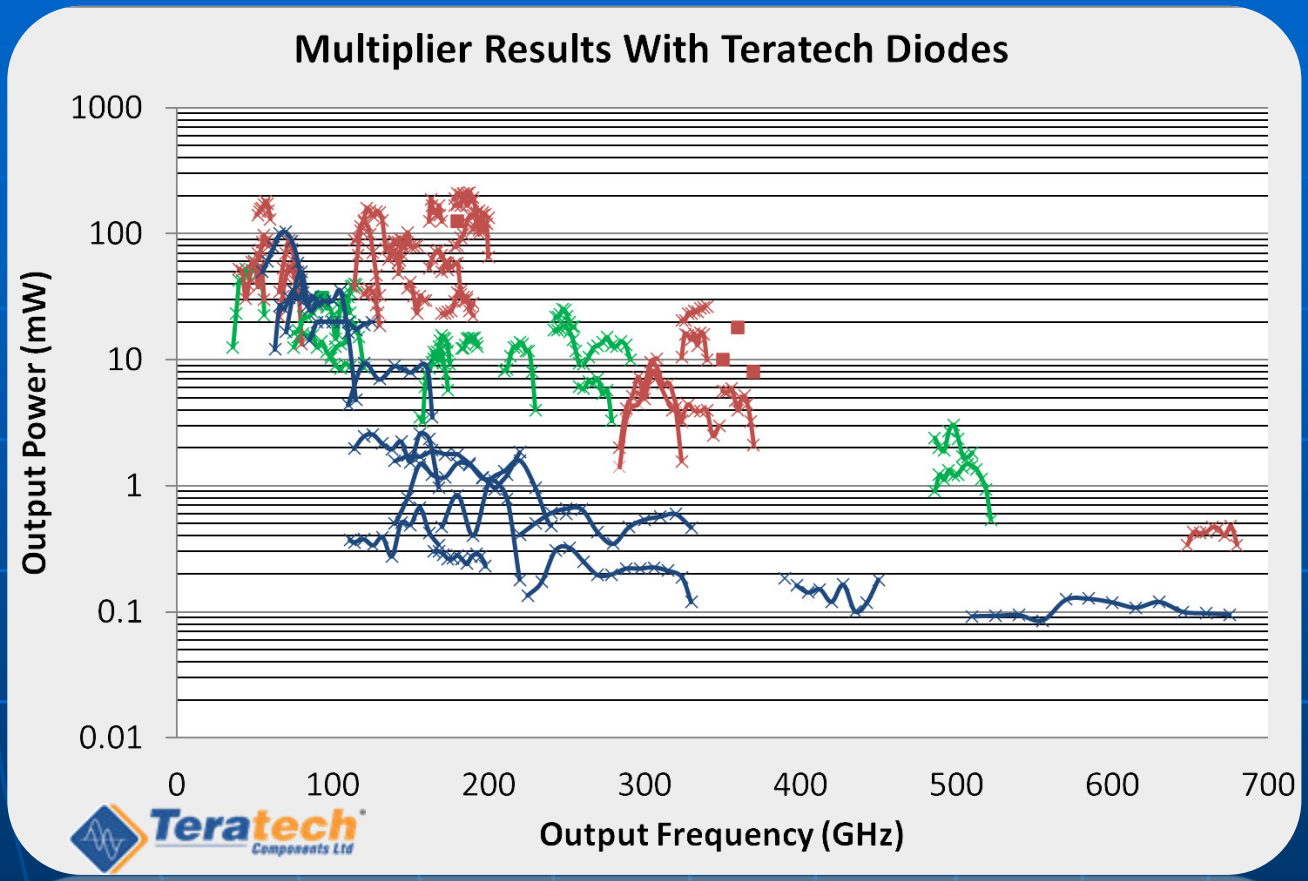
To order this component please contact sales@teratechcomponents.com
www.teratechcompomponents.com

Ridgeway RT 2026

State of the art Multipliers



RED Doubler

GREEN Tripler

BLUE Wideband