

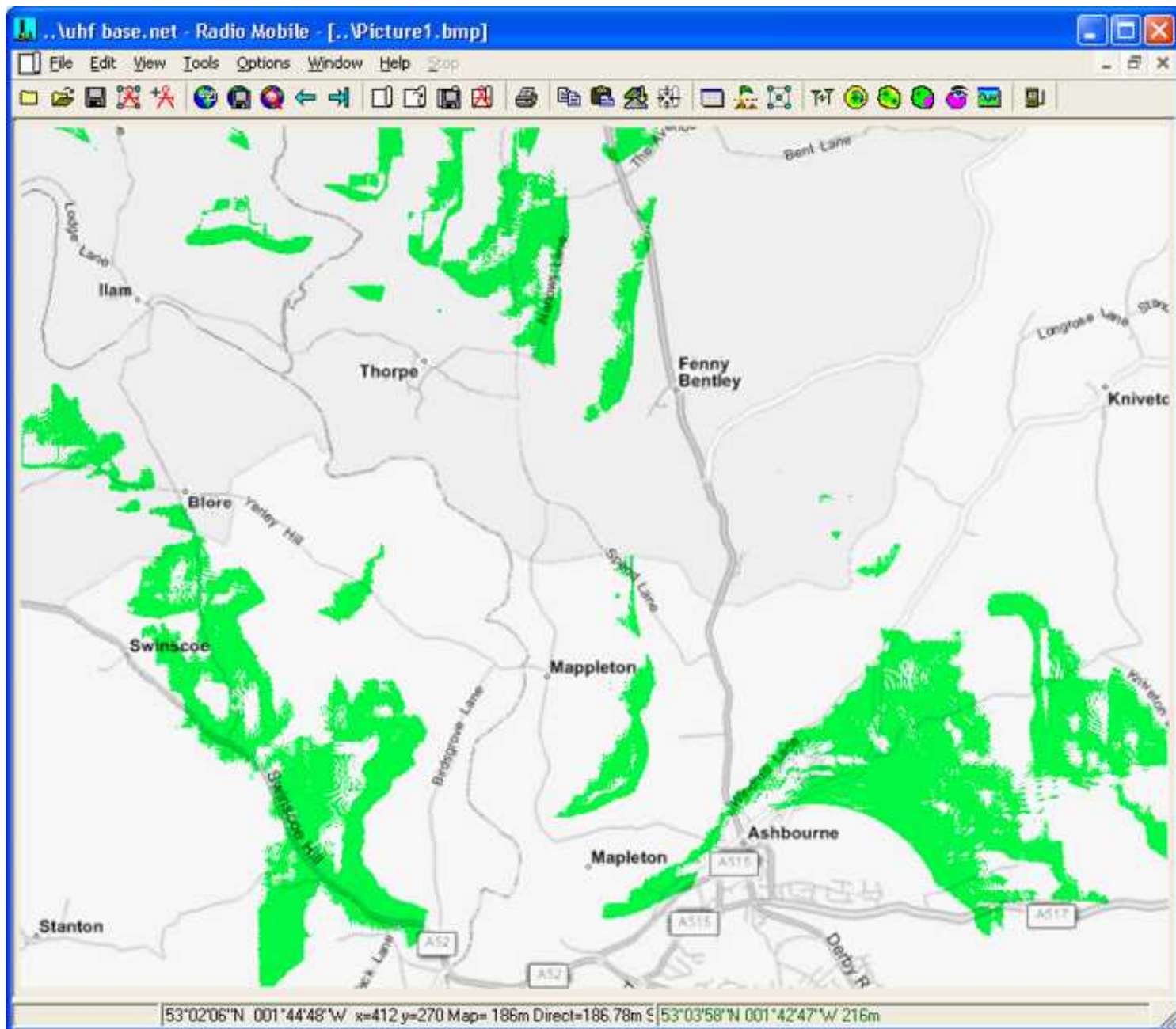
Fresnel Coverage



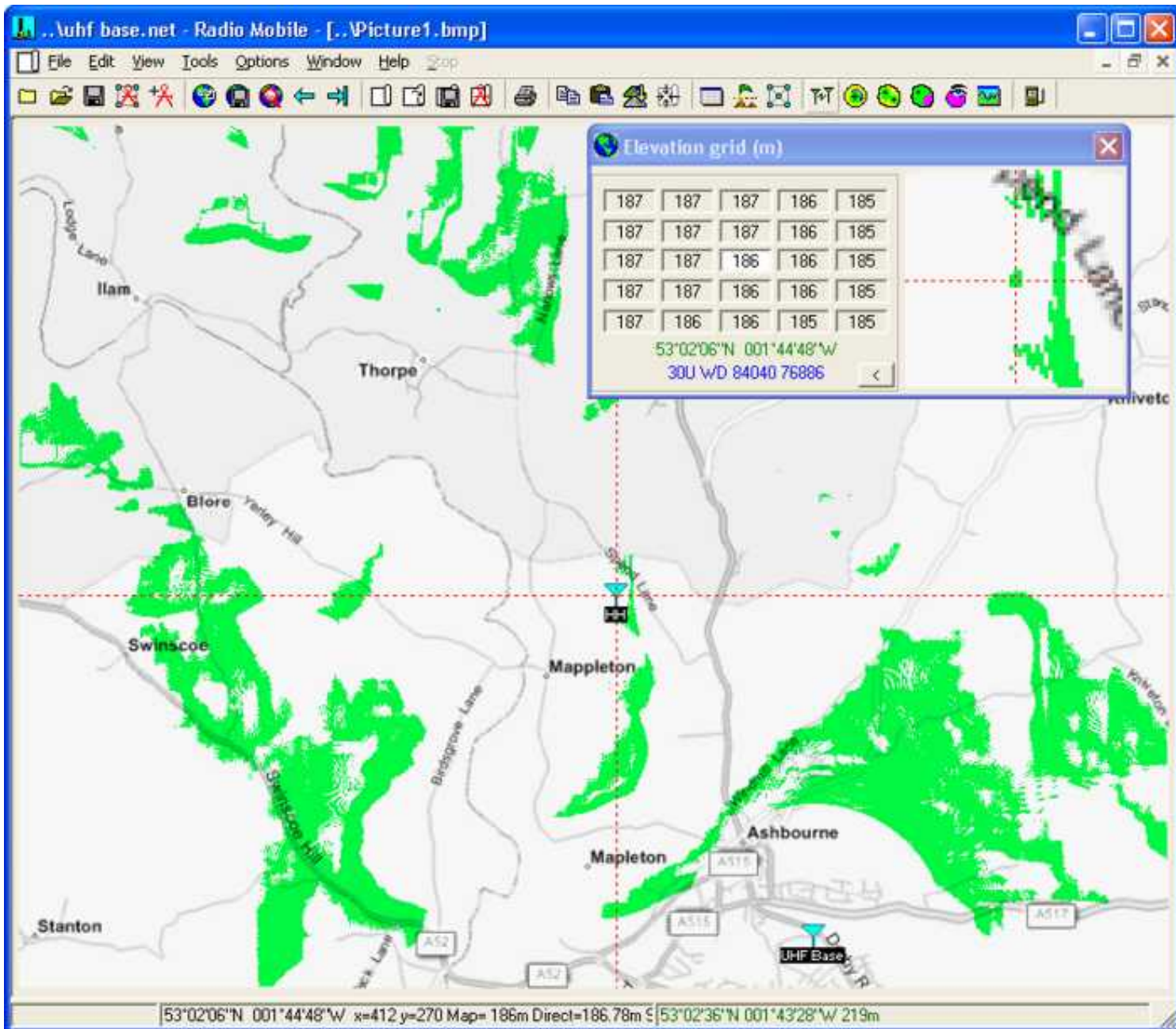
I can be contacted at E-mail address: - web@g3tvu.co.uk

The pane below is obtained from 'Tools/Radio Coverage/Fresnel', where the wanted Fresnel Zone clearance margins are set, units are selected, plot colour is selected and the radial and azimuth ranges defined for the plot. This plot was produced using a reduced area UHF version of my 'Base Network' to better display the effects:

Clicking on 'Draw' then produced the following plot over a greyscale road map:



Using the Elevation Grid viewer, the cursor was placed in the small 'acceptable limit' green area shown, and the HH Unit then moved to the cursor position:



Opening the Radio Link pane then showed the Worst Fresnel clearance of the path was $0.6F1$ - which is within the limits set.

Radio Link
✕

Edit View Swap

Azimuth=330.0°	Elev. angle=0.153°	Clearance at 2.84km	Worst Fresnel=0.6F1	Distance=2.96km
PathLoss=101.8dB	E field=72.7dBμV/m	Rx level=-45.3dBm	Rx level=1216.9490μV	Rx Relative=67.7dB

Transmitter
S9+40

UHF Base

Role	Command	
Tx system name	Relay	
Tx power	5 W	36.99 dBm
Line loss	0.5 dB	
Antenna gain	8 dBi	5.85 dBd +
Radiated power	EIRP=28.12 W	ERP=17.14 W
Antenna height (m)	<input style="width: 50px;" type="text" value="8"/>	Apply

Receiver
S9+50

HH

Role	Subordinate	
Rx system name	HH+	
Required E Field	4.96 dBμV/m	
Antenna gain	12 dBi	9.85 dBd +
Line loss	0 dB	
Rx sensitivity	0.5 μV	-113.02 dBm
Antenna height (m)	<input style="width: 50px;" type="text" value="1.8"/>	Apply

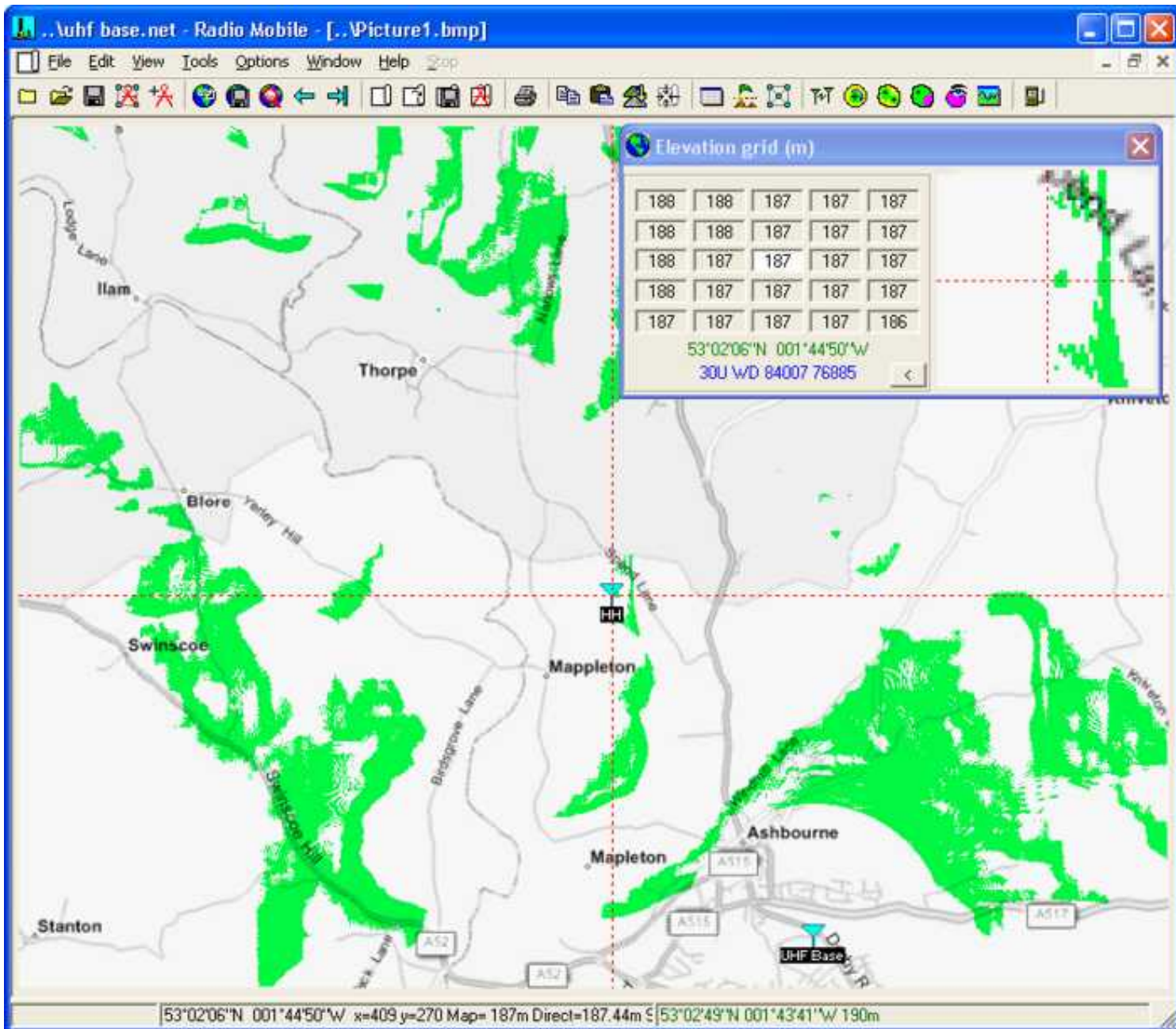
Net

UHF Base

Frequency (MHz)

Minimum	Maximum	
<input style="width: 50px;" type="text" value="430"/>	<input style="width: 50px;" type="text" value="440"/>	Apply

Moving the cursor outside the acceptable area as shown in the Elevation Grid viewer, and placing the HH unit at the new location as below:



Then opening the Radio Link pane once more showed this location had a worst Fresnel clearance of 0.5F1 - which is outside the limits set:

Radio Link
✕

Edit View Swap

Azimuth=329.5°	Elev. angle=0.165°	Clearance at 2.82km	Worst Fresnel=0.5F1	Distance=2.97km
PathLoss=103.8dB	E field=70.7dBμV/m	Rx level=-47.3dBm	Rx level=967.7718μV	Rx Relative=65.7dB

Transmitter

S9+40

UHF Base

Role	Command	
Tx system name	Relay	
Tx power	5 W	36.99 dBm
Line loss	0.5 dB	
Antenna gain	8 dBi	5.85 dBd +
Radiated power	EIRP=28.12 W	ERP=17.14 W
Antenna height (m)	<input style="width: 40px;" type="text" value="8"/>	Apply

Receiver

S9+50

HH

Role	Subordinate	
Rx system name	HH+	
Required E Field	4.96 dBμV/m	
Antenna gain	12 dBi	9.85 dBd +
Line loss	0 dB	
Rx sensitivity	0.5 μV	-113.02 dBm
Antenna height (m)	<input style="width: 40px;" type="text" value="1.8"/>	Apply

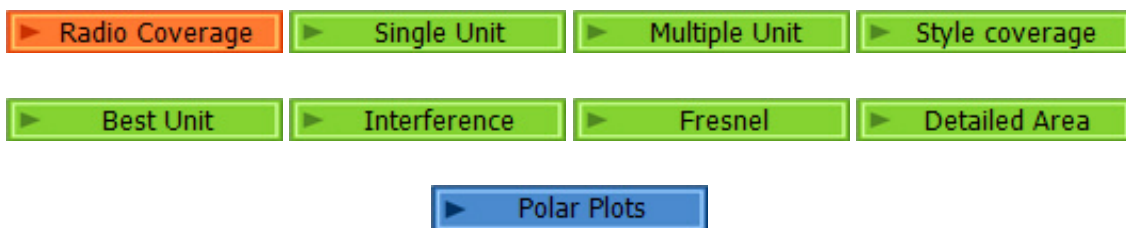
Net

UHF Base

Frequency (MHz)
 Minimum

Maximum

Apply



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