



MMANA-GAL FOR DUMMIES

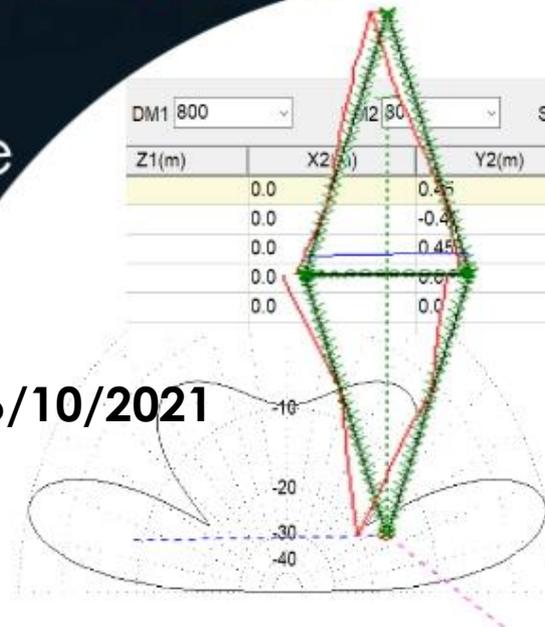
Parte 2:
simulazioni avanzate



Evento Live
I3NJI
Vitaliano

6/10/2021

Z1(m)	X2(m)	Y2(m)	
0.0	0.45	0.0	2.0
0.0	-0.45	0.0	2.0
0.0	0.45	0.0	2.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0





Di cosa parliamo?



- Premetto che il focus sarà su **antenne semplici per il nostro QRP/P MONTANO**

Parte1:

1. Uso del modello della mia TURNSTILE 144MHz per presentare i vari menù e cercare di coglierne il senso;
2. Creazione di una yagi 2 elementi @ 144,300 MHz partendo da zero.
3. Pillole sparse di teoria

Parte 2:

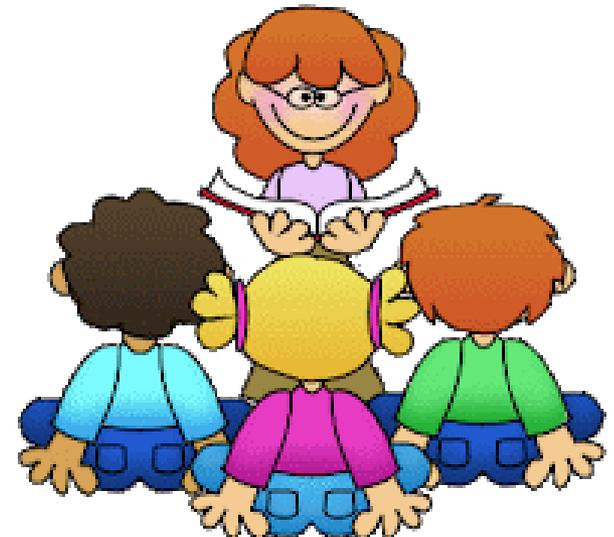
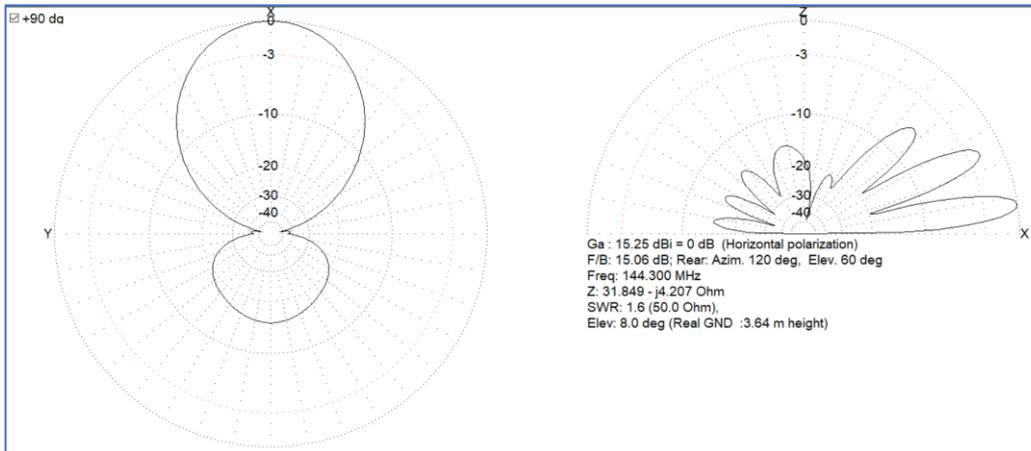
1. Approfondimenti sulle «ottimizzazioni»
2. Carrellata di simulazioni per antenne HF/P;
3. Uno sguardo alla DOPPIO RETTANGOLO VERTICALE per i 2 m





FATE LE VOSTRE PROPOSTE !

- Chi avesse desiderio di proporre argomenti e/o approfondimenti, lo può senz'altro fare scrivendo una email al club oppure chiedendolo nella chat
- Nel limite del possibile e delle conoscenze (!) continueremo la discussione nel nostro forum.





Funzione PLOTS

Geometry View Calculate Far field plots

Freq MHz

Ground

Free space

Perfect

Real

Add height m

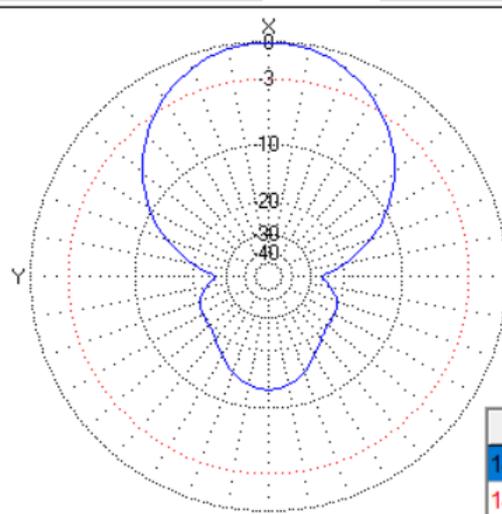
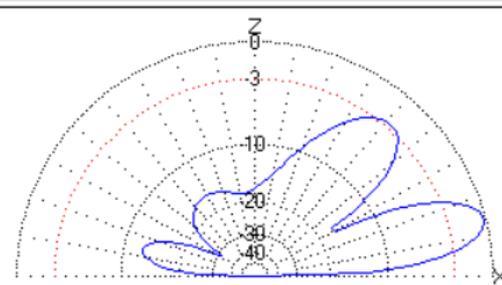
Material

No.	F (MHz)	R (Ohm)	jX (Ohm)
1	144.3	50.21	-0.2478

Plots

Speculation All points Detailed Resonance Print BW KHz

Z SWR Gain/FB Far fields Setup

11.6(dBi) = 0dB

Colours	Freq	R	jX	Ga	F/B	ON
	142.3					Off
	143.3					Off
	144.3	50.2	-0.2	11.6	12.5	On
	145.3					Off
	146.3					Off

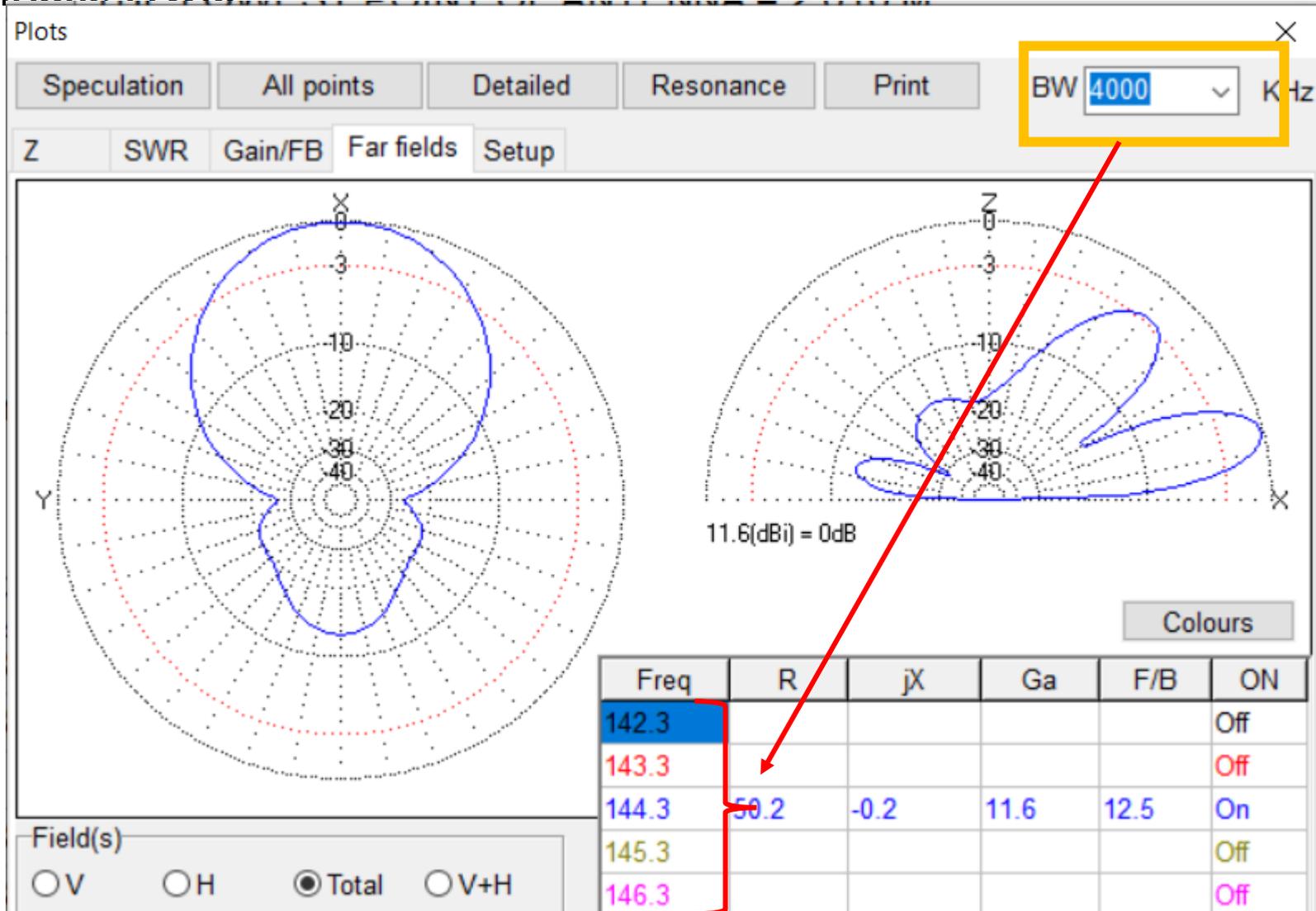
Field(s)

V H Total V+H

Polar. hori.

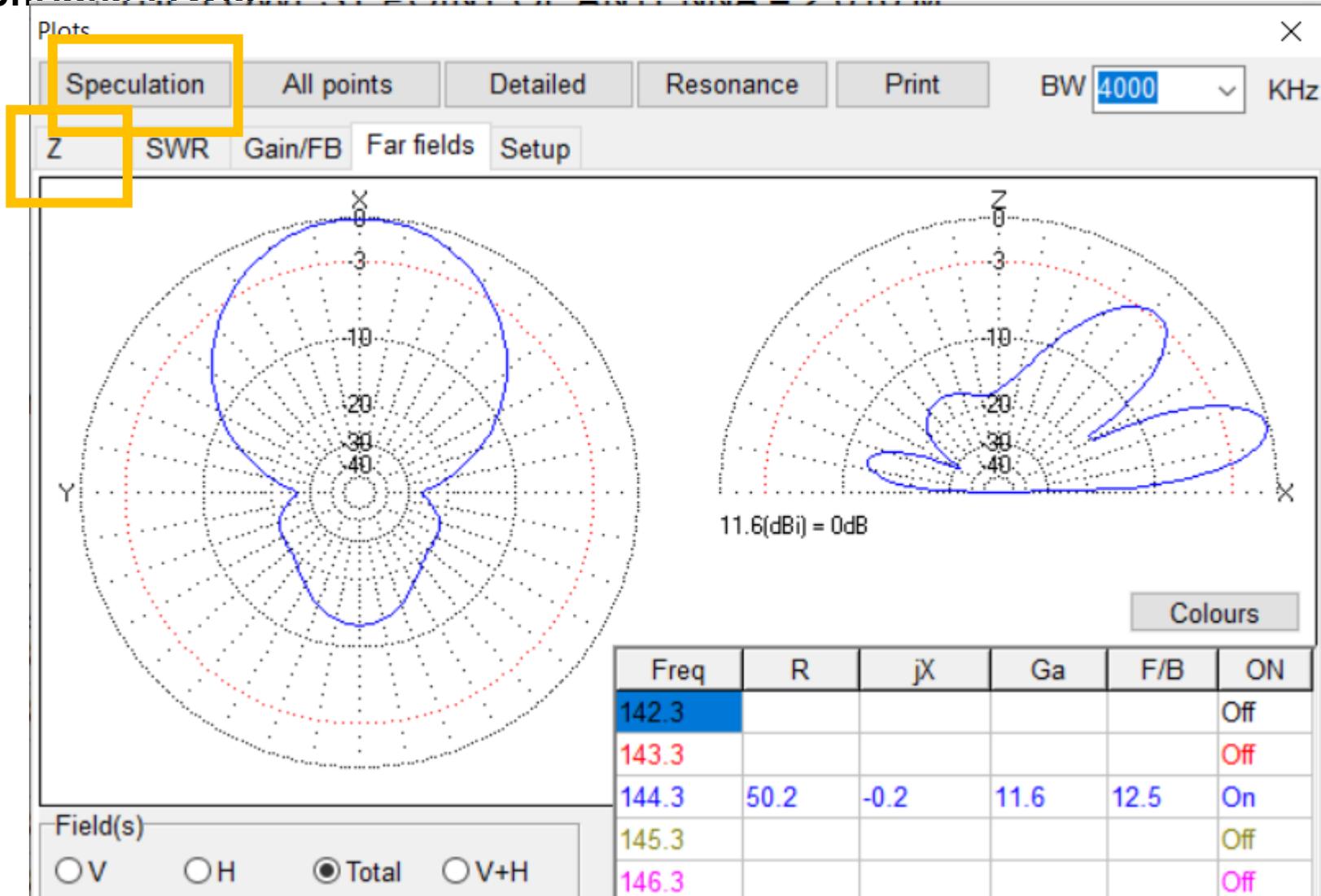


Funzione PLOTS



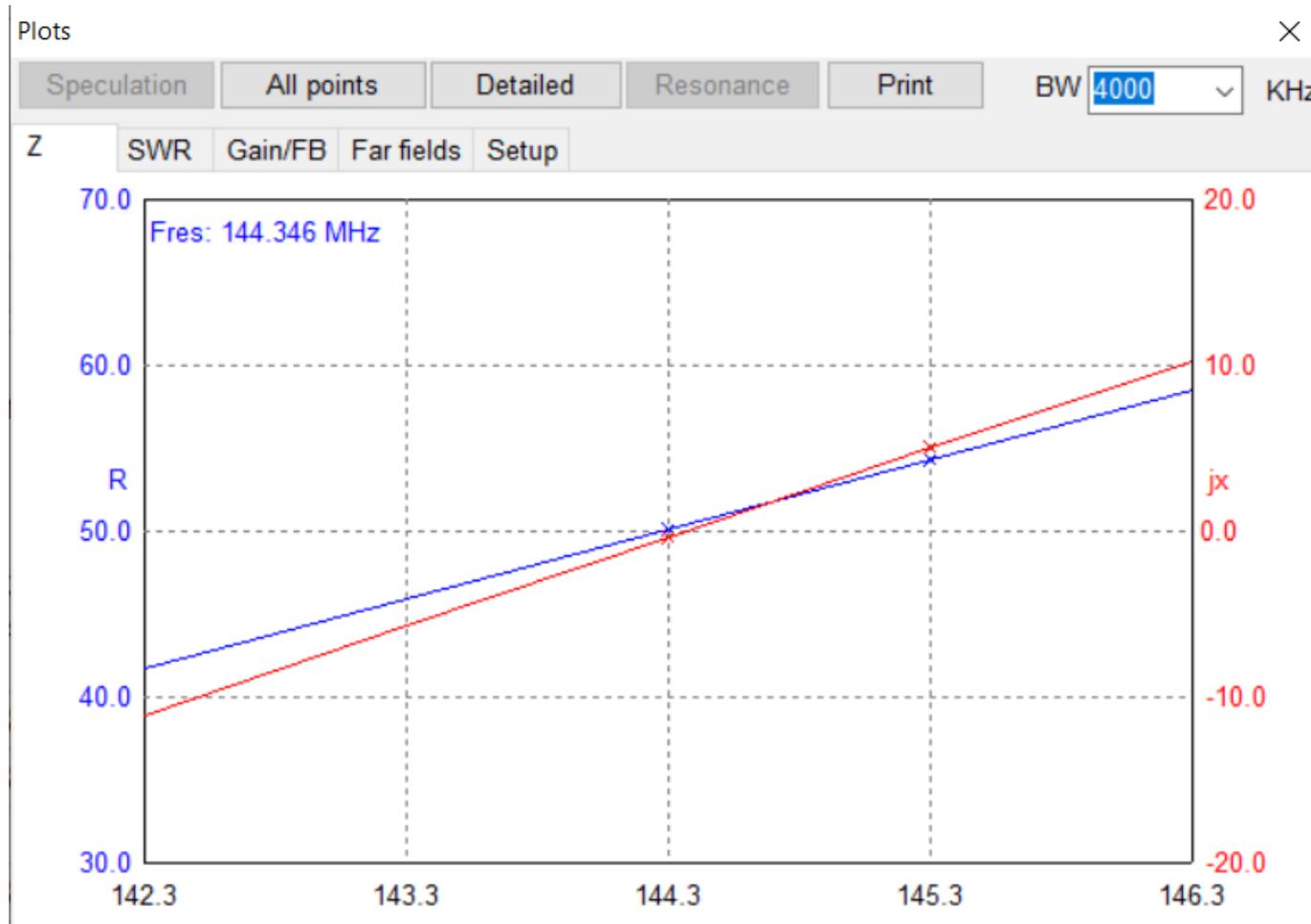


Funzione PLOTS



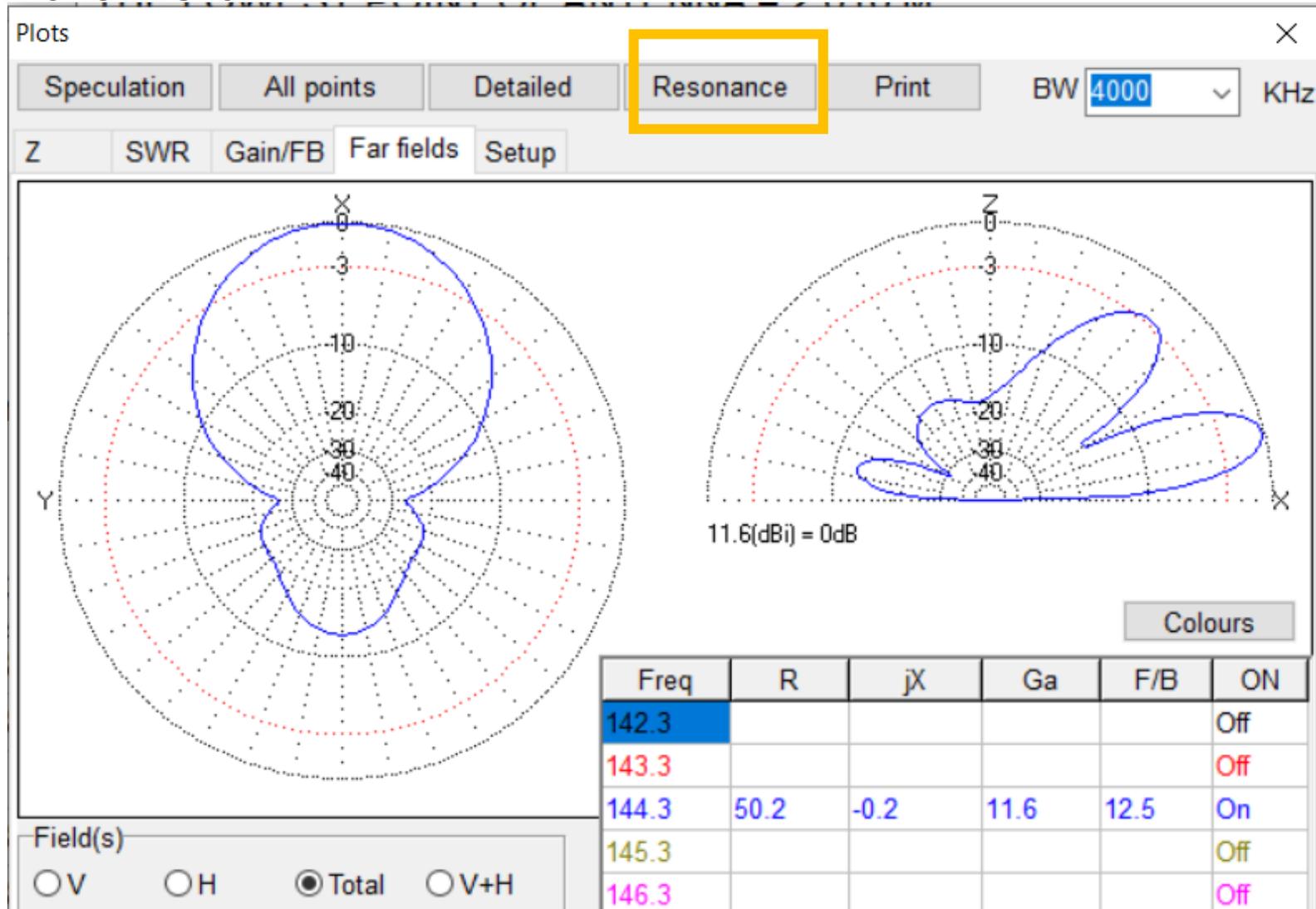


Funzione PLOTS



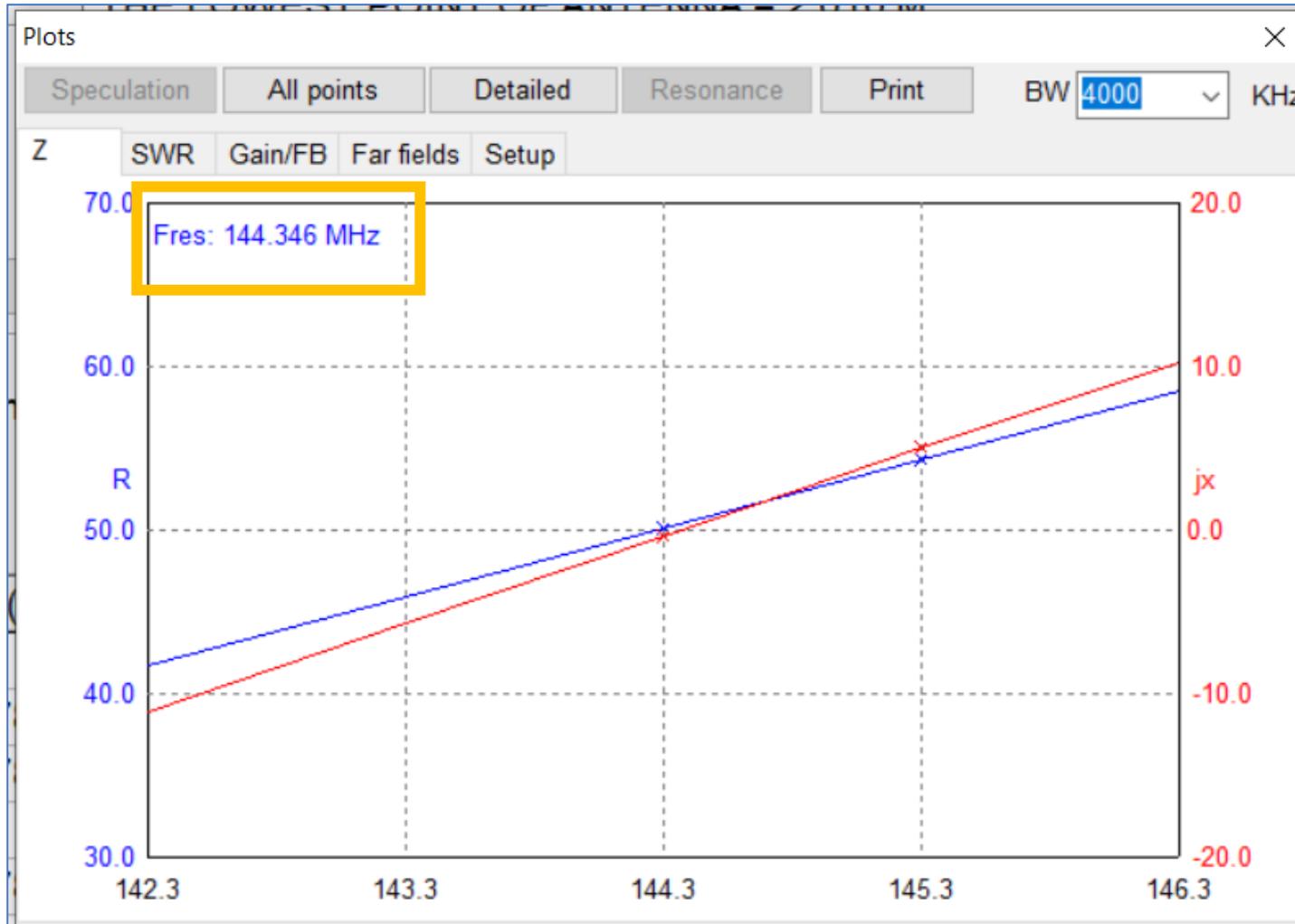


Funzione PLOTS





Funzione PLOTS





Spostare la Freq. di RISONANZA

- Con la nostra 2 elementi Yagi «MQC», l'analisi di RISONANZA ha dato 144,364 MHz come freq di risonanza anziché 144,300 di progetto.
- In GEOMETRY inseriamo questa frequenza e poi ritorniamo a CALCULATE / RUN
- apriamo il tool WIRE SCALE ed inseriamo 144,300
- Torniamo a CALCULATE / RUN e quindi a PLOT / Z / RESONANCE che si è spostata verso i 144,300.

Geometry View Calculate Far field plots

Name

Freq MHz

Wire scale

Old frequency 144.346 MHz

New freq MHz

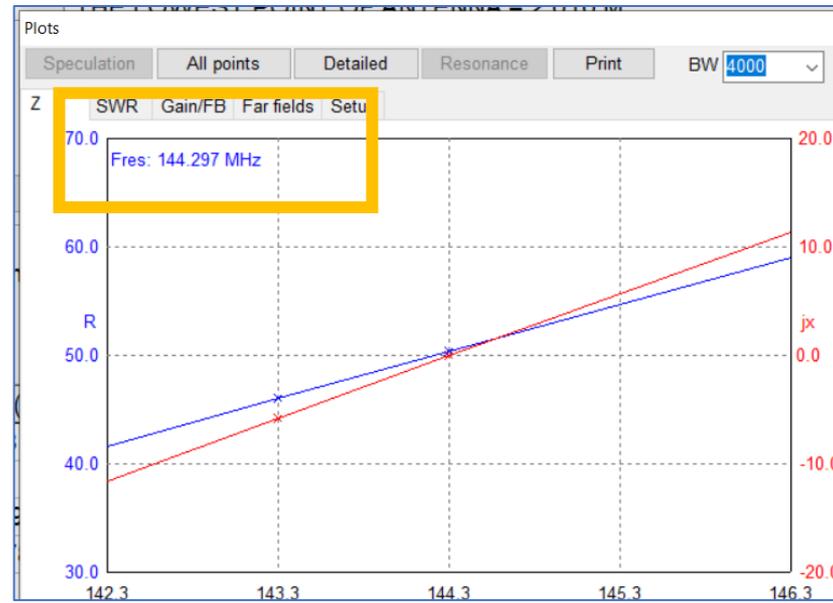
Mult.

Object

X axis Taper wires

Y axis Wire radius(R)

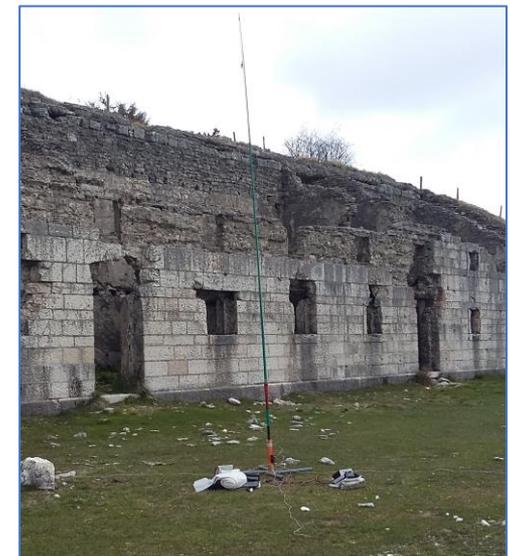
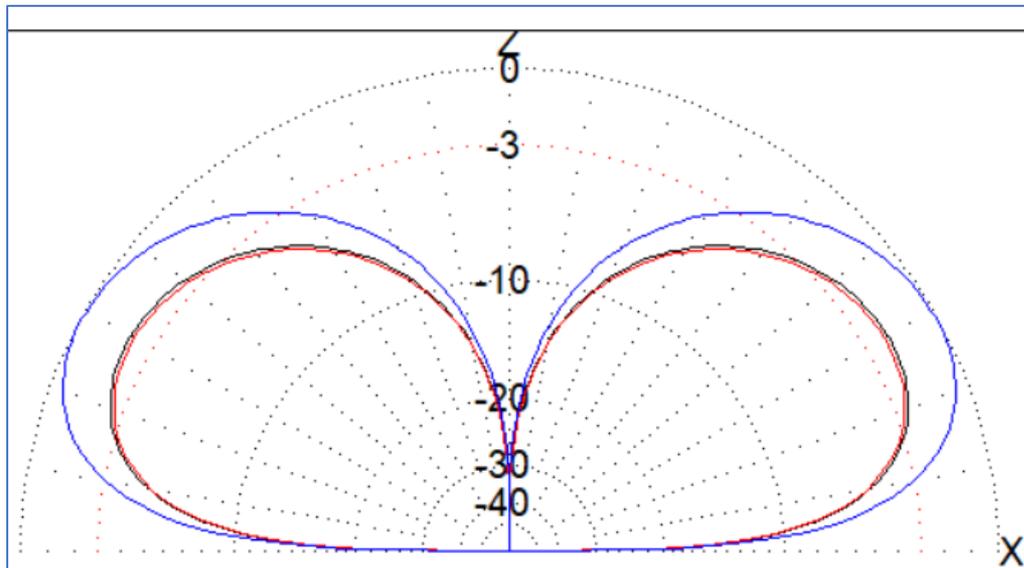
Z axis Add height





Antenna «Barsine» (by IW2WXE) in 40 e 20 m: simuliamo nuove posizioni della bobina

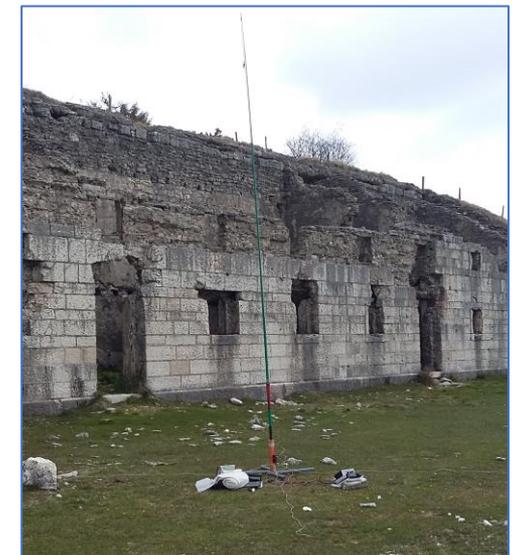
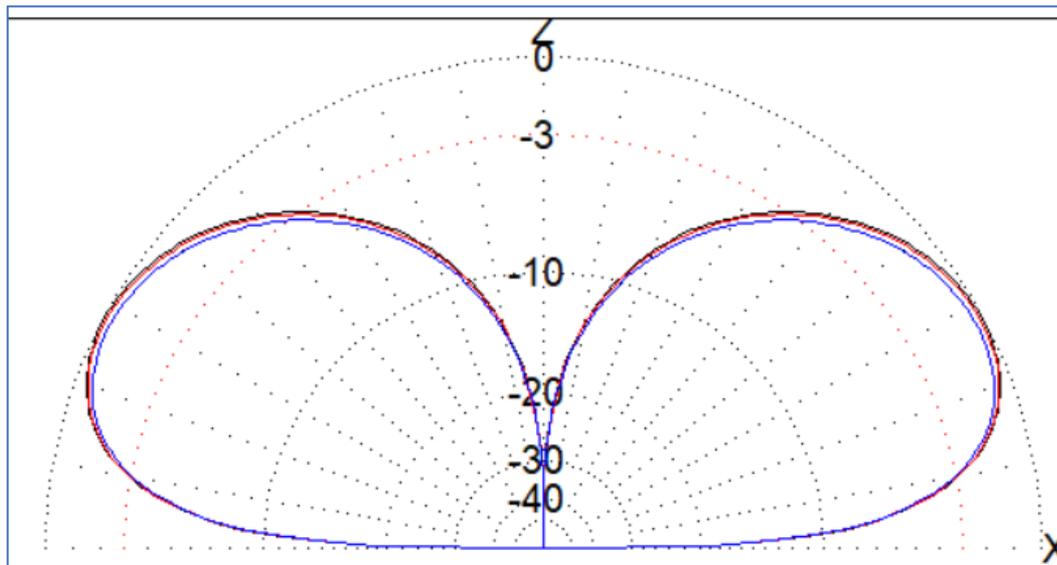
L tot =	4,6 m	
F =	7 MHz	
Originale:	bobina a 0,72 m	(nero)
Simul. 1:	bobina a 2,28 m	(rosso)
Simul. 2:	bobina a 3,85 m	(blu)





Antenna «Barsine» (by IW2WXE) in 40 e 20 m: simuliamo nuove posizioni della bobina

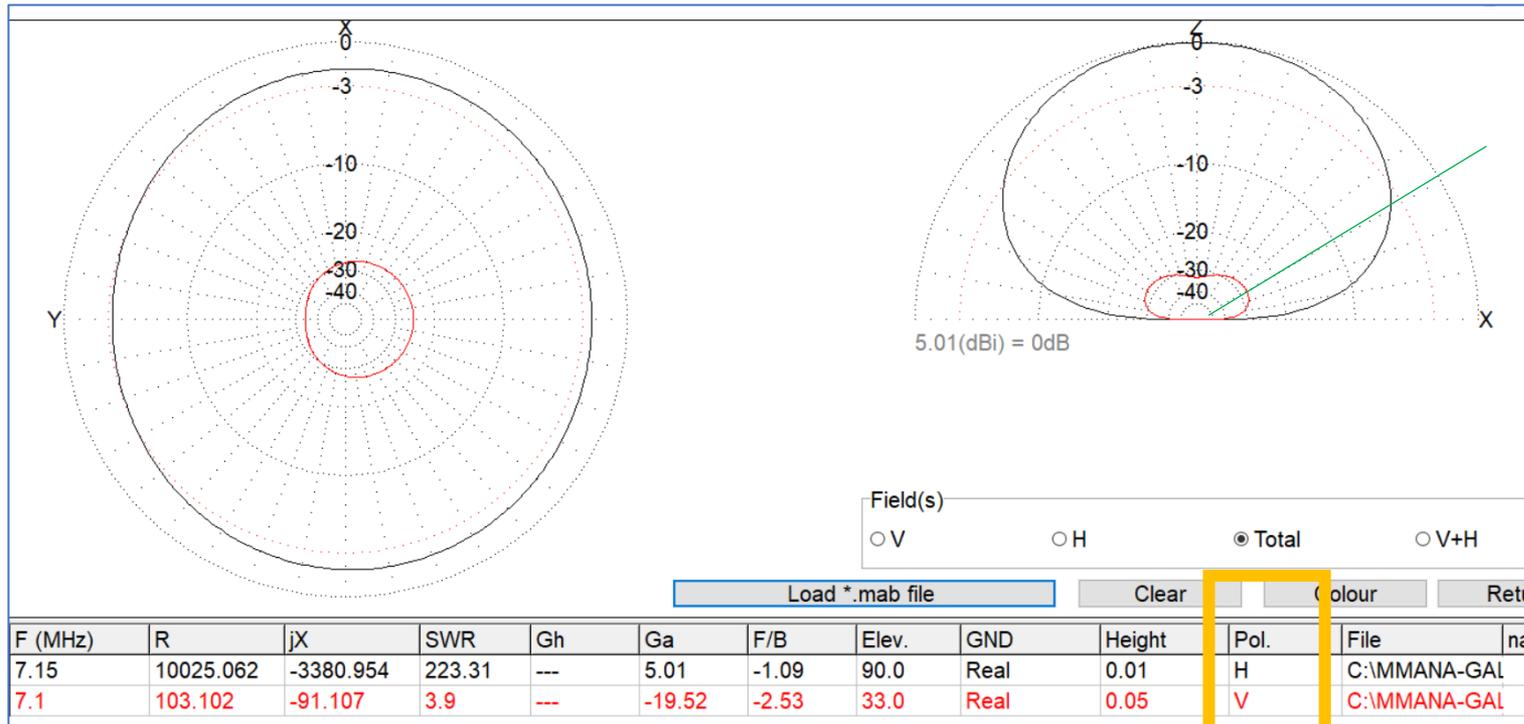
L tot =	4,6 m	
F =	14 MHz	
Originale:	bobina a 0,72 m	(nero)
Simul. 1:	bobina a 2,28 m	(rosso)
Simul. 2:	bobina a 3,85 m	(blu)





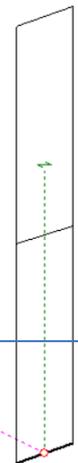
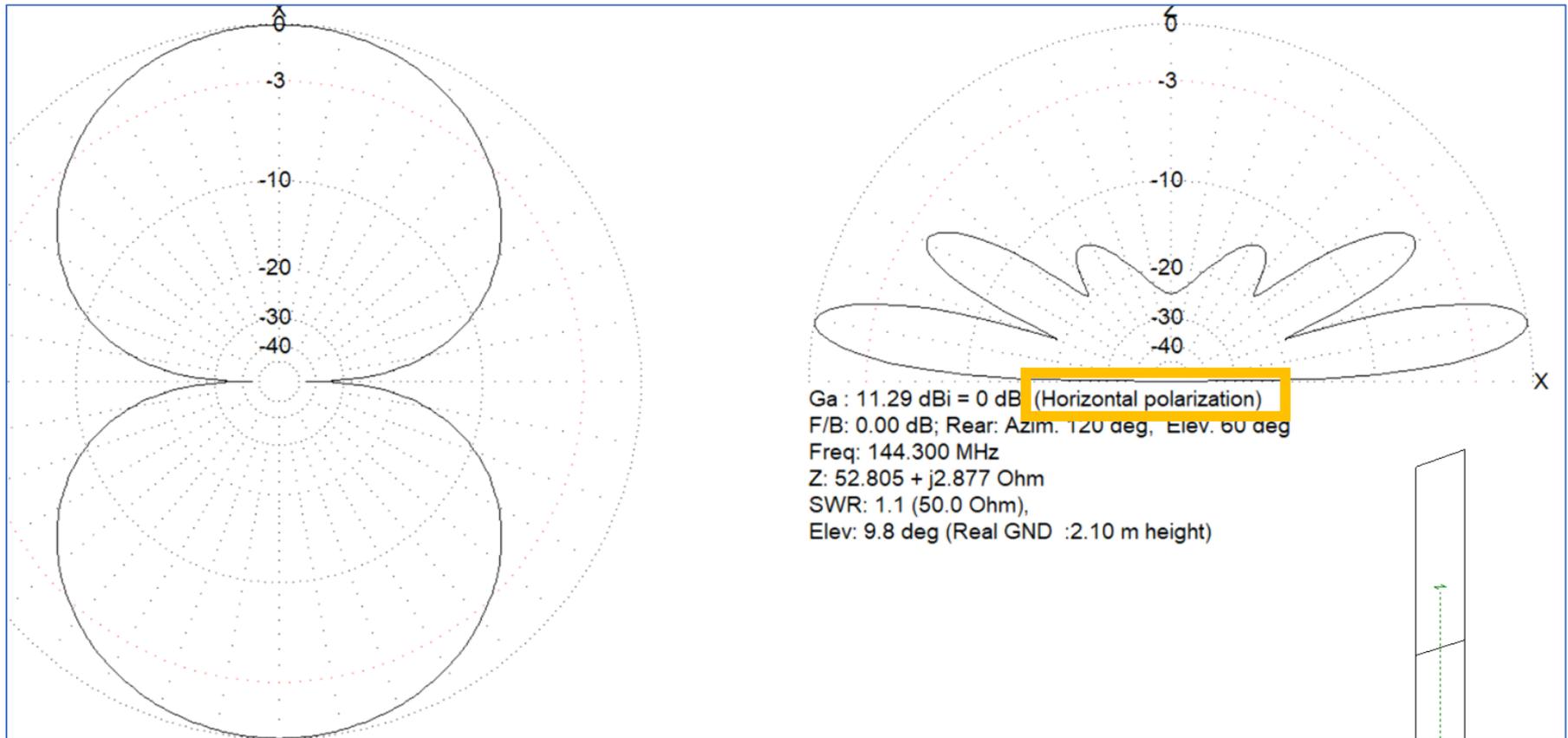
EFHW V-Invertita vs Miracle Whip

F = 7 MHz
 EFHW @ V-Invertita (NVIS): L = 20,1 m (nero)
 Whip: L = 1,5 m + 1 radiale (rosso)



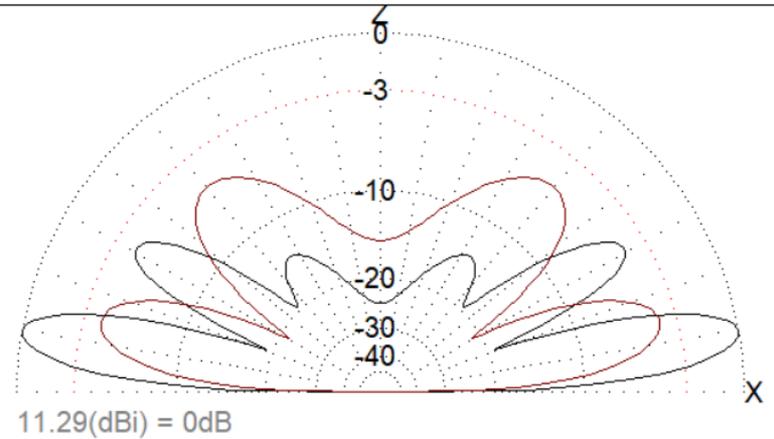
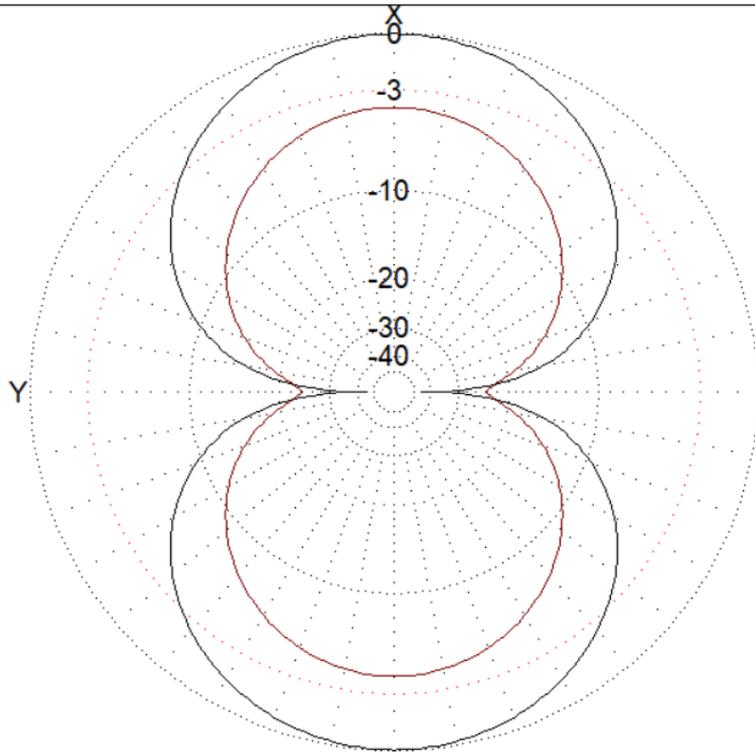


DRV Doppio Rettangolo Verticale @ 144 MHz





DRV vs dipolo @ 144 MHz



Field(s)

V

H

Total

V+H

Load *.mab file

Clear

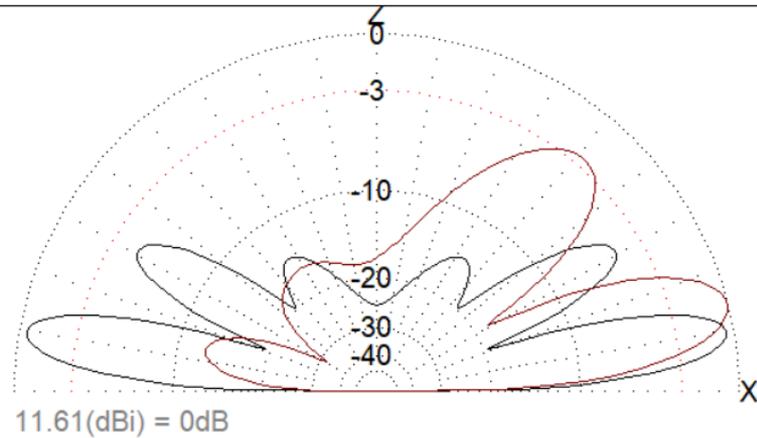
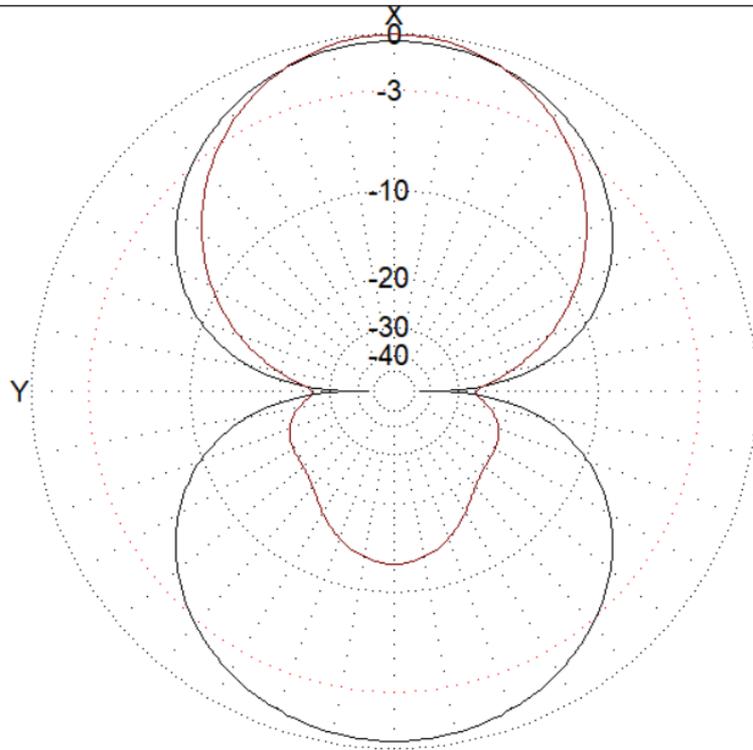
Colour

Ret

(MHz)	R	jX	SWR	Gh	Ga	F/B	Elev.	GND	Height	Pol.	File	n
44.3	52.805	2.877	1.08	---	11.29	0.0	9.8	Real	2.1	H	C:\MMANA-GAL	
44.3	69.911	-28.725	1.79	---	7.3	0.0	14.5	Real	2.01	H	C:\MMANA-GAL	



DRV vs 2 elementi «MQC» @ 144 MHz



Field(s)

V

H

Total

V+H

Load *.mab file

Clear

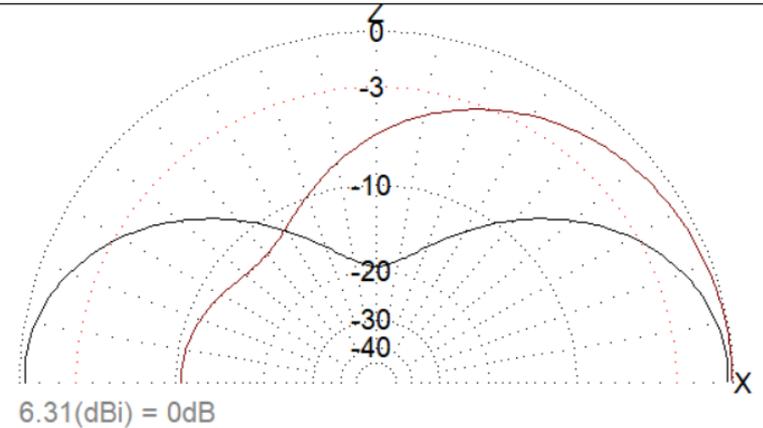
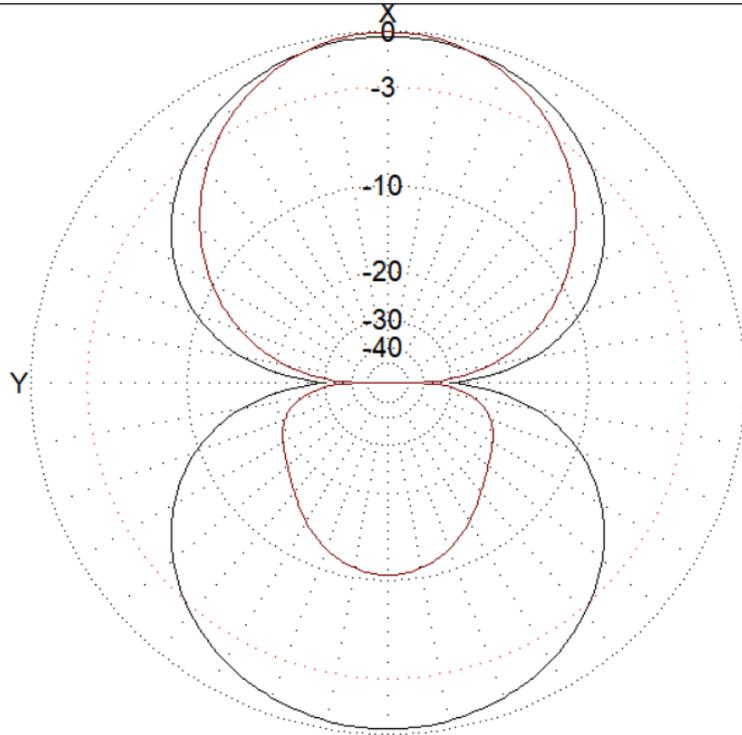
Colour

Ret

F (MHz)	R	jX	SWR	Gh	Ga	F/B	Elev.	GND	Height	Pol.	File	n
144.3	52.805	2.877	1.08	---	11.29	0.0	9.8	Real	2.1	H	C:\MMANA-GAL	
144.3	50.212	-0.248	1.01	---	11.61	12.49	14.4	Real	2.01	H	C:\MMANA-GAL	



DRV vs 2 elementi «MQC» @ 144 MHz nello spazio libero



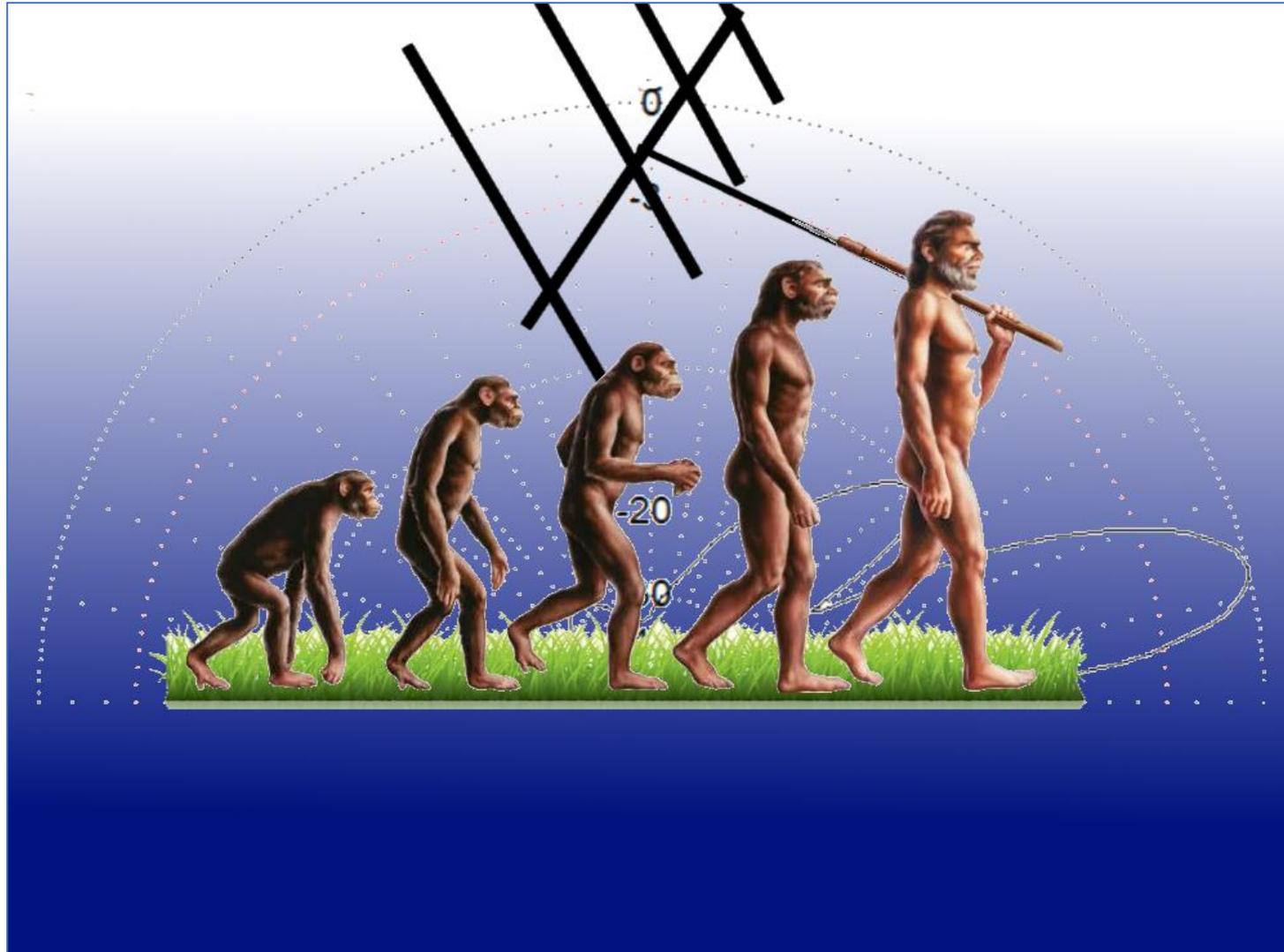
Field(s)

V
 H
 Total
 V+H

(MHz)	R	jX	SWR	Gh	Ga	F/B	Elev.	GND	Height	Pol.	File	na
44.3	52.797	2.855	1.08	3.96	6.11	-0.01	1.8	Free		H	C:\MMANA-GAL	
44.3	45.74	-0.973	1.1	4.16	6.31	10.38	0.0	Free		H	C:\MMANA-GAL	



Ecco fatto i nostri secondi passi in MMANA-GAL





Alcuni suggerimenti di testi sulle antenne

- | | |
|---|---------------|
| 1. Antenne riceventi e trasmettenti, Nuova Elettronica | (HAM_LEV) |
| 2. Wire antennas for ham radio – 70 ideas; Iulian Rosu YO3DAC | (HAM_LEV) |
| 3. The giant book of amateur radio antennas; Editors of 73 Magazine | (HAM_LEV) |
| 4. Antenna Engineering Handbook – R.C. Johnson | (UNIV_LEV) |
| 5. Antenna Theory and Design - Stutzman & Thiele | (UNIV_LEV) |
| 6. Antenna Toolkit, Joseph J. Carr, K4IPV | (HAM_TOP LEV) |
| 7. Radio Antenna Engineering, Edmund Laport, | (UNIV_LEV) |
| 8. Il manuale delle antenne, Angelo Barone | (HAM_LEV) |
| 9. Antenne riceventi e trasmettenti, Jackson Ed. | (HAM_TOP LEV) |
| 10. The ARRL Antenna Book | (HAM_TOP LEV) |
| 11. Practical Antenna Handbook | (HAM_TOP_LEV) |

