ANTENNE DINAMICHE E ADATTIVE

GIANNI

IK0WMJ - K0WMJ

QUANTI TIPI DI ANTENNE?

QUALI TIPI DI ANTENNE?
Ecco alcune classificazioni

- Omnidirezionali
- Direttive

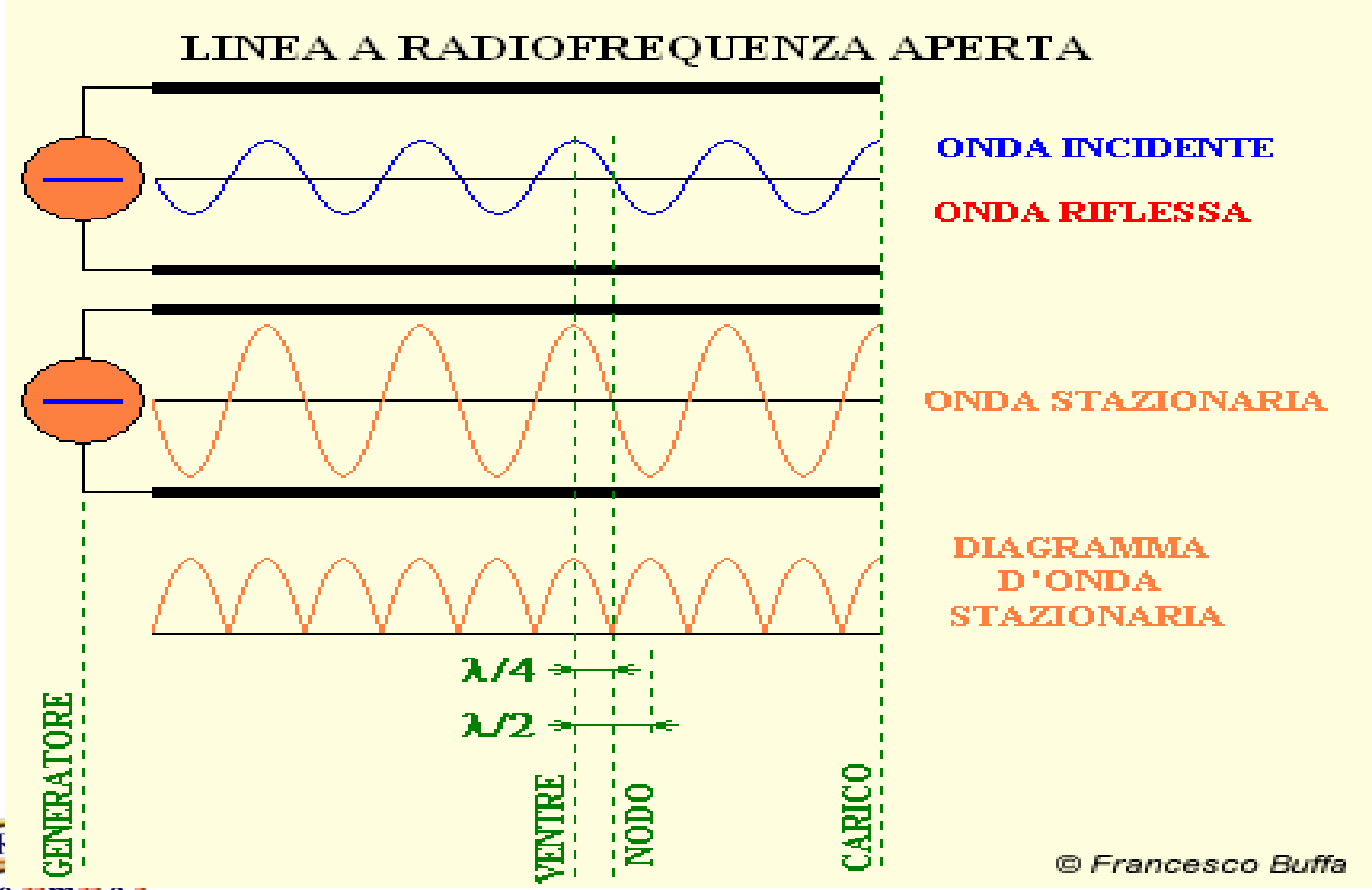
- Risonanti
- Aperiodiche

- Lineari
- Dipoli

- Monobanda
- Multibanda

- Magnetiche
- E - H

LE ONDE STAZIONARIE



IL R.O.S.: sempre 1 : 1

ROS	%Potenza riflessa
1.0 :1	0%
1.2 : 1	0,8%
1.4 :1	2.8%
1.8 :1	8.0%
2.0 :1	11.0%
3.0 :1	25.0%

ROS 1.0 : 1 non vuol dire sempre massima efficienza perché:

-Se un trasmettitore eroga 10W in fondamentale, 4W in terza armonica e 2W in quinta armonica, il wattmetro misurerà 16W di uscita……

-Attenzione ai carichi fittizi… (antenne camuffate!!!!)

PROGETTO DI UN DIPOLO

LUNGHEZZA DIPOLO è Lunghezza d'onda/2

Lunghezza d'onda = Velocità Luce / Frequenza

Es . Dipolo per i 40m (7MHz):

Quindi L= 300.000 (km/sec)/7.000 (KHz) = 42,8 m

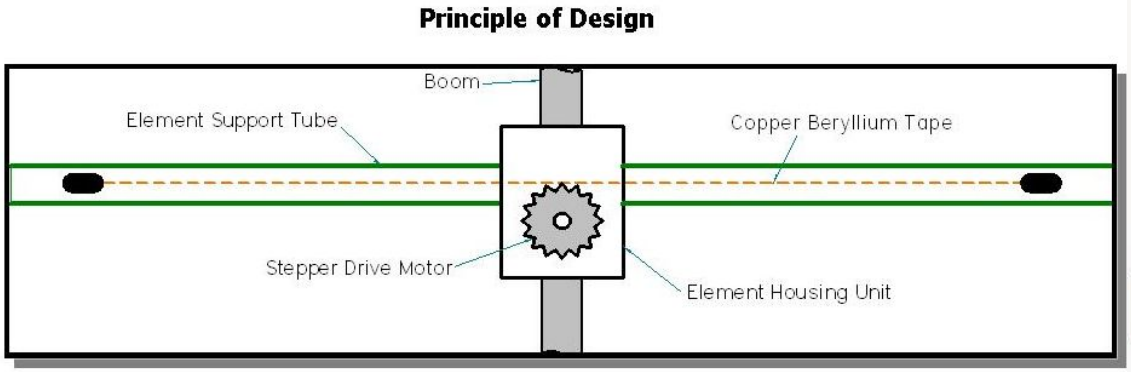
Fattore di velocità 0,95, quindi:

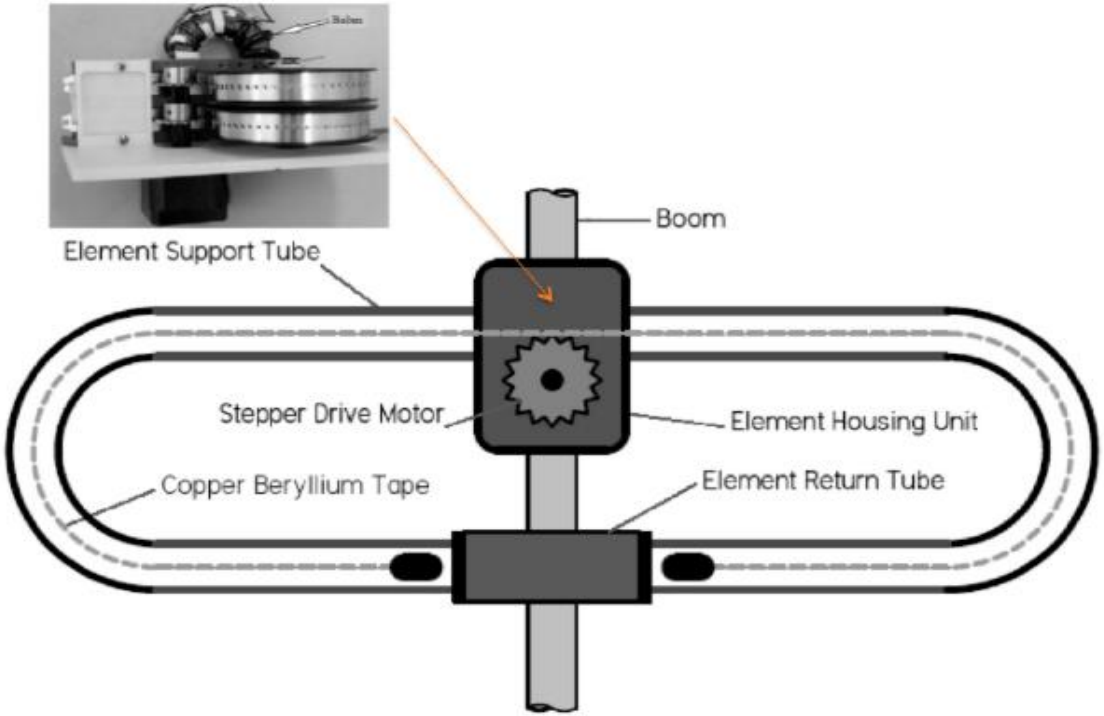
L= 0,95 * 42,8 = 40,7m (quindi lunghezza totale dipolo 20,3m)

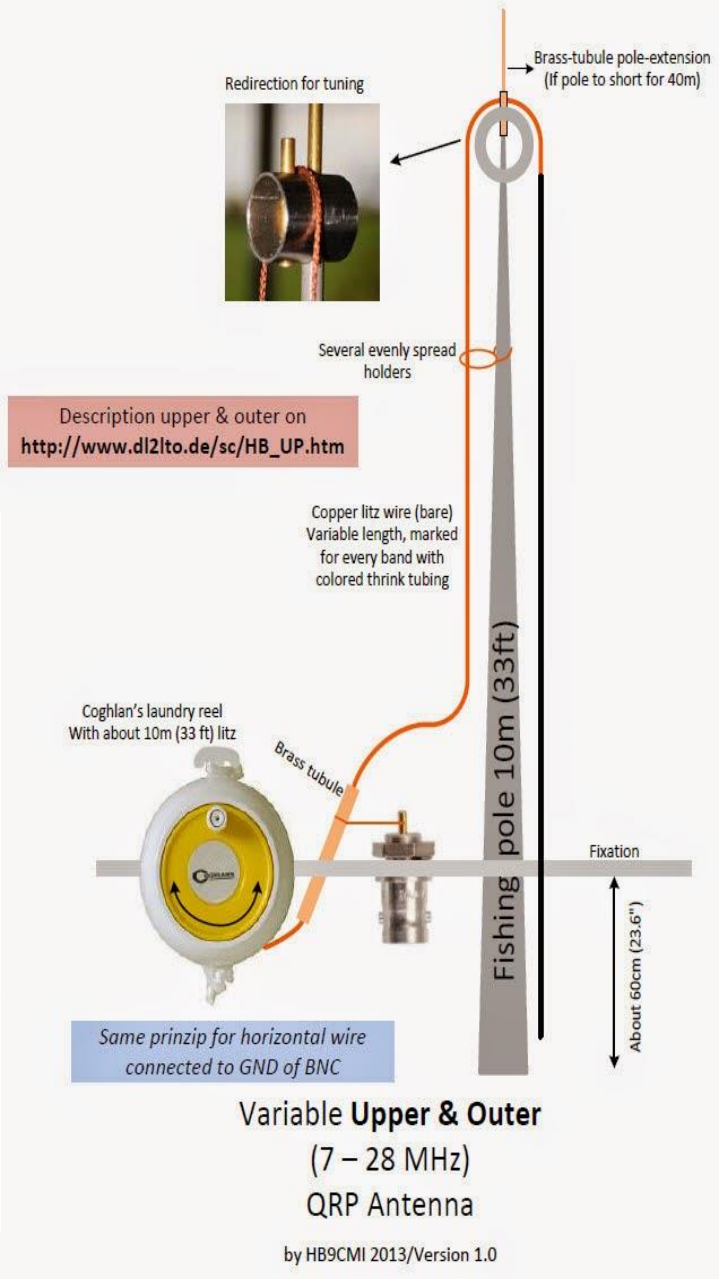
Inoltre a V invertita se a 120°/130° impedenza vicino ai 52 Ohm pertanto ogni braccio deve essere lungo 10,15m

QUINDI UN DIPOLO PER OGNI BANDA (a meno di lavorare con le armoniche!! c'è pure anche un piccolo guadagno in db)

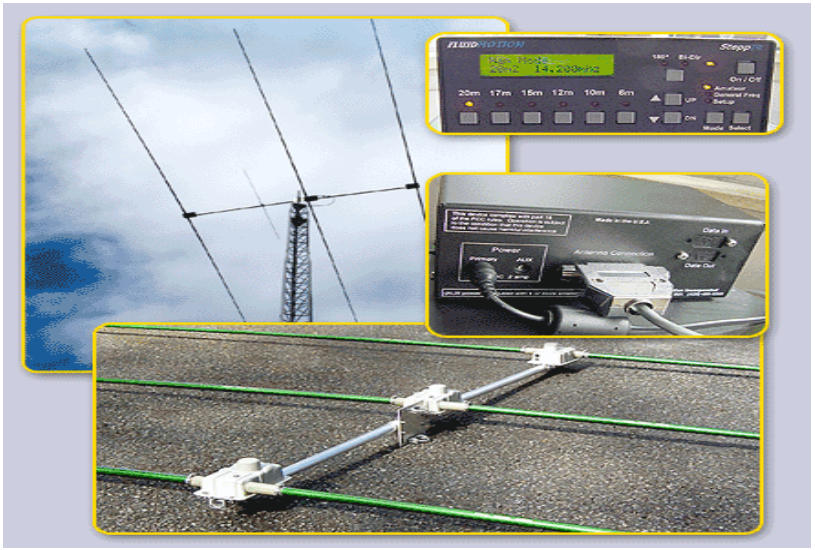
Il Principio delle antenne dinamiche



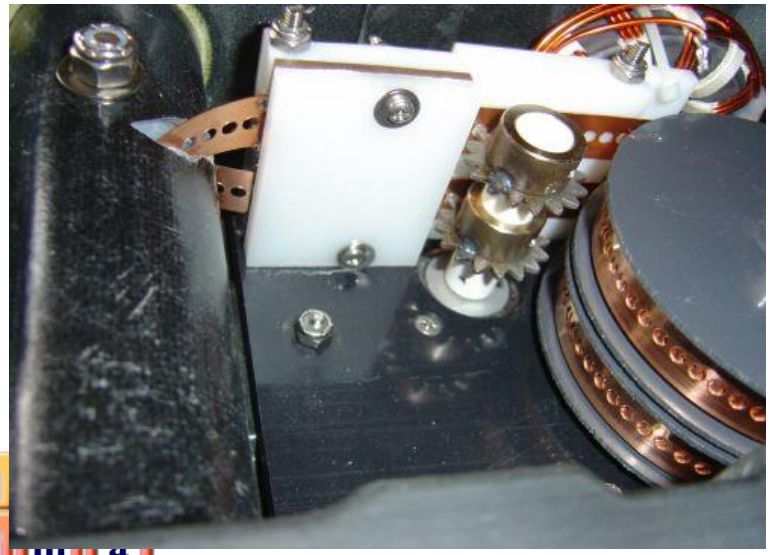




Alcuni particolari costruttivi



Altri particolari costruttivi



Alcuni Noti Produttori

AntennaDinamica.com

KOHJINSHA

MULTI BAND – YAGI ANTENNA

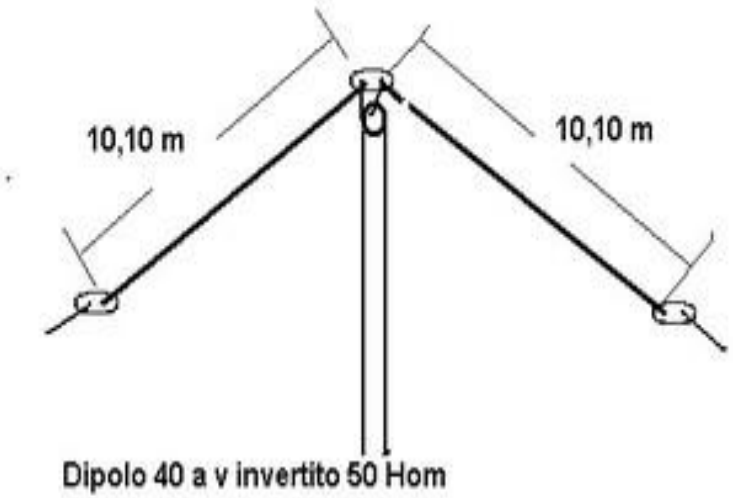
StepIR™

Ultra Beam

- *Dynamic Antenna Systems*

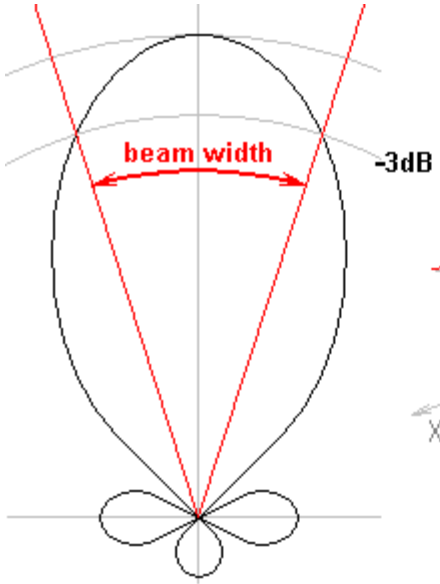
ARI Roma

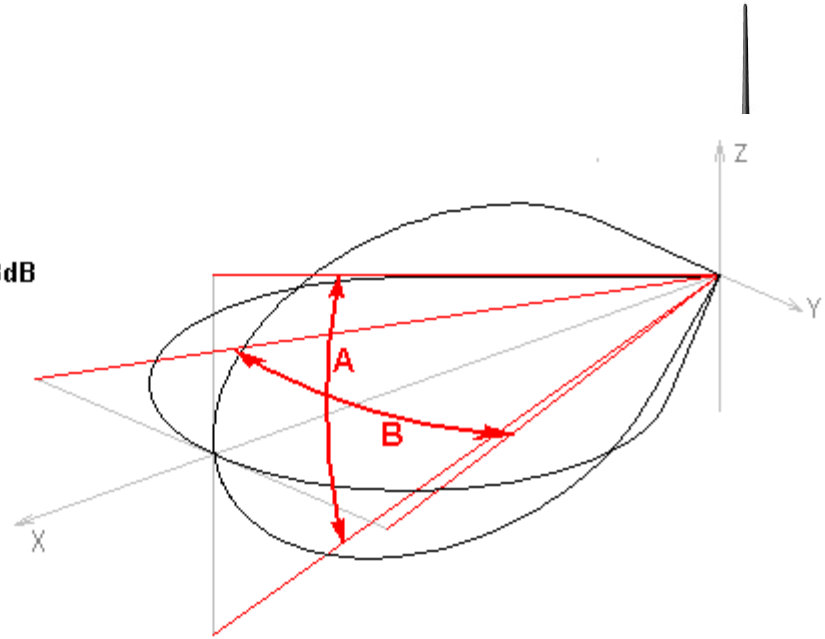
Loris IK5GFC: dipolo motorizzato



Curiosità: sono resistenti?

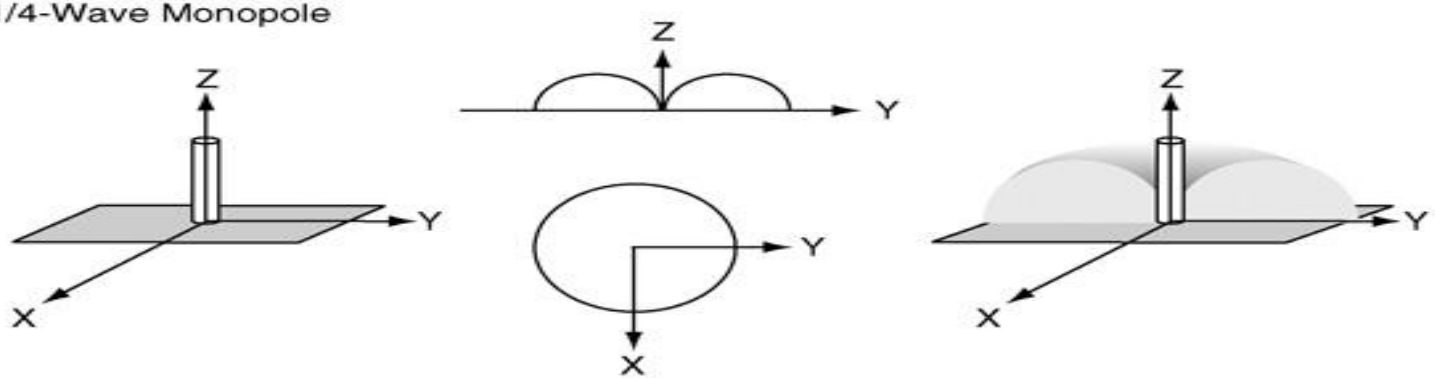
IL GUADAGNO (GAIN)



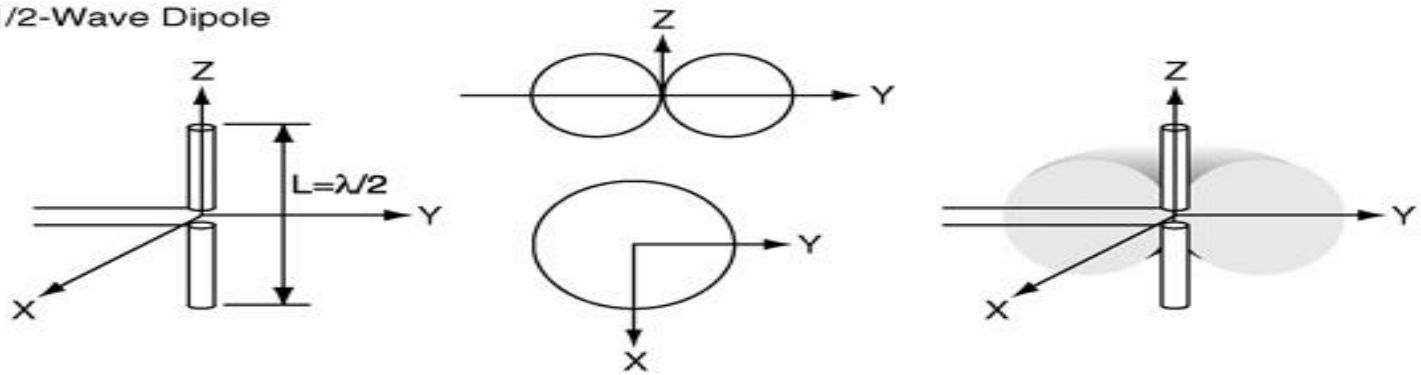


LE ANTENNE PIU COMUNI PER GLI OM

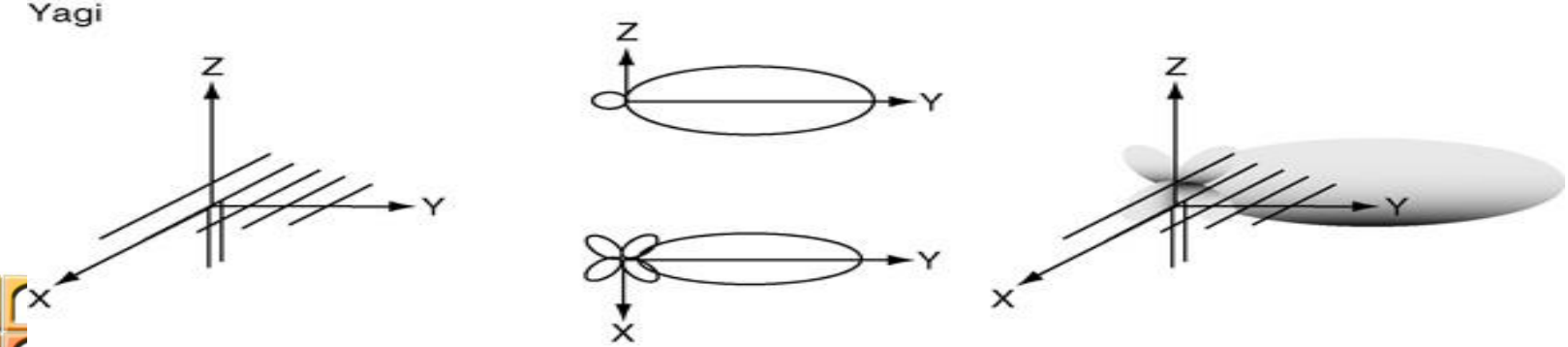
1/4-Wave Monopole



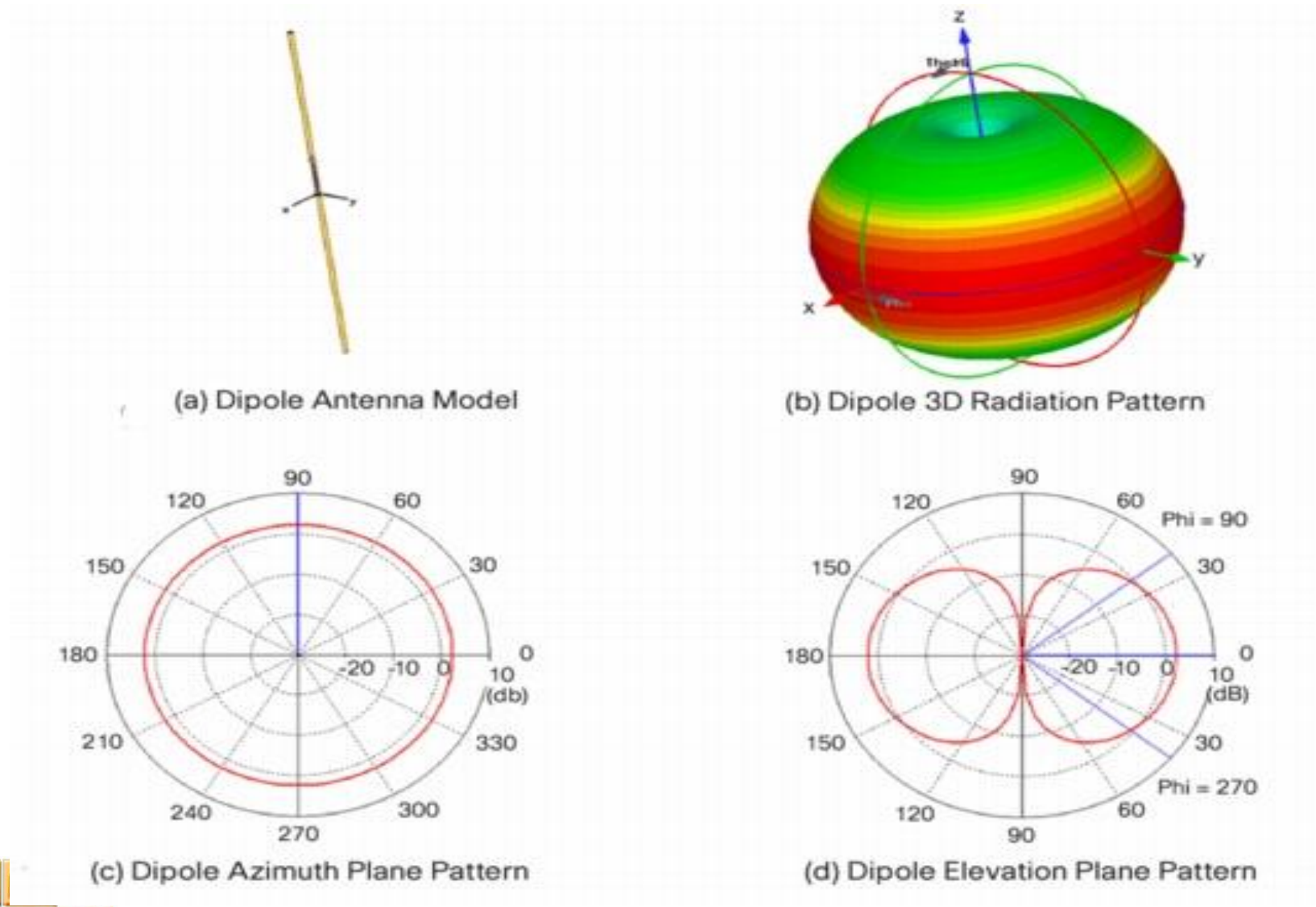
1/2-Wave Dipole



Yagi



UN PO' PIU' IN DETTAGLIO 1



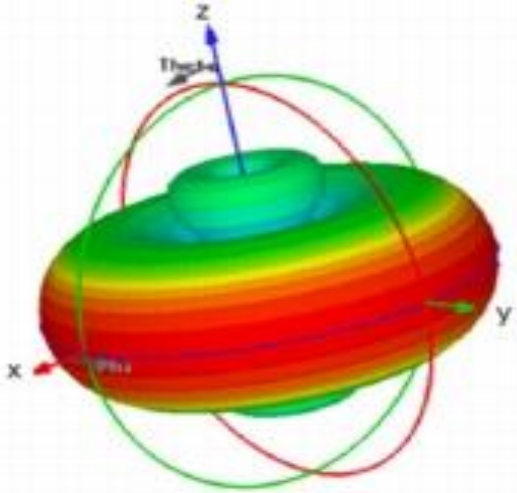
(a) Dipole Antenna Model

(b) Dipole 3D Radiation Pattern

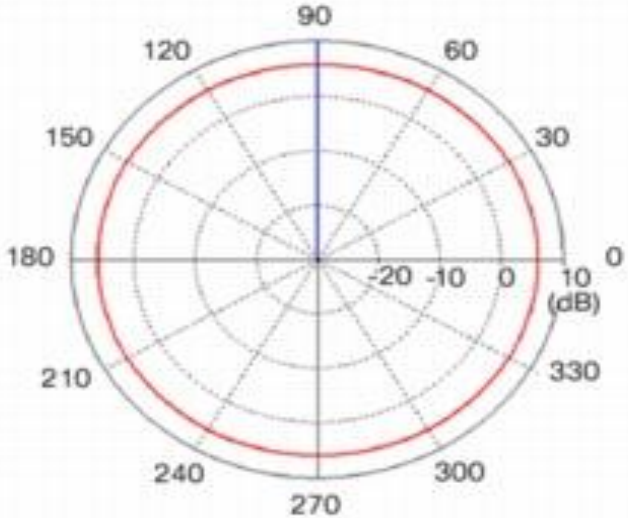
(c) Dipole Azimuth Plane Pattern

(d) Dipole Elevation Plane Pattern

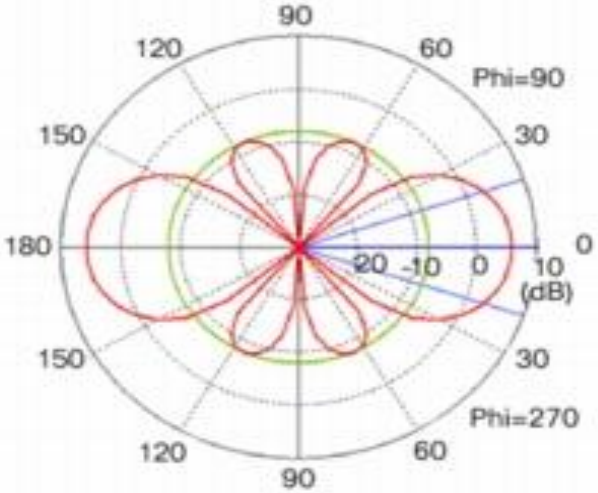
UN PO' PIU IN DETTAGLIO 2



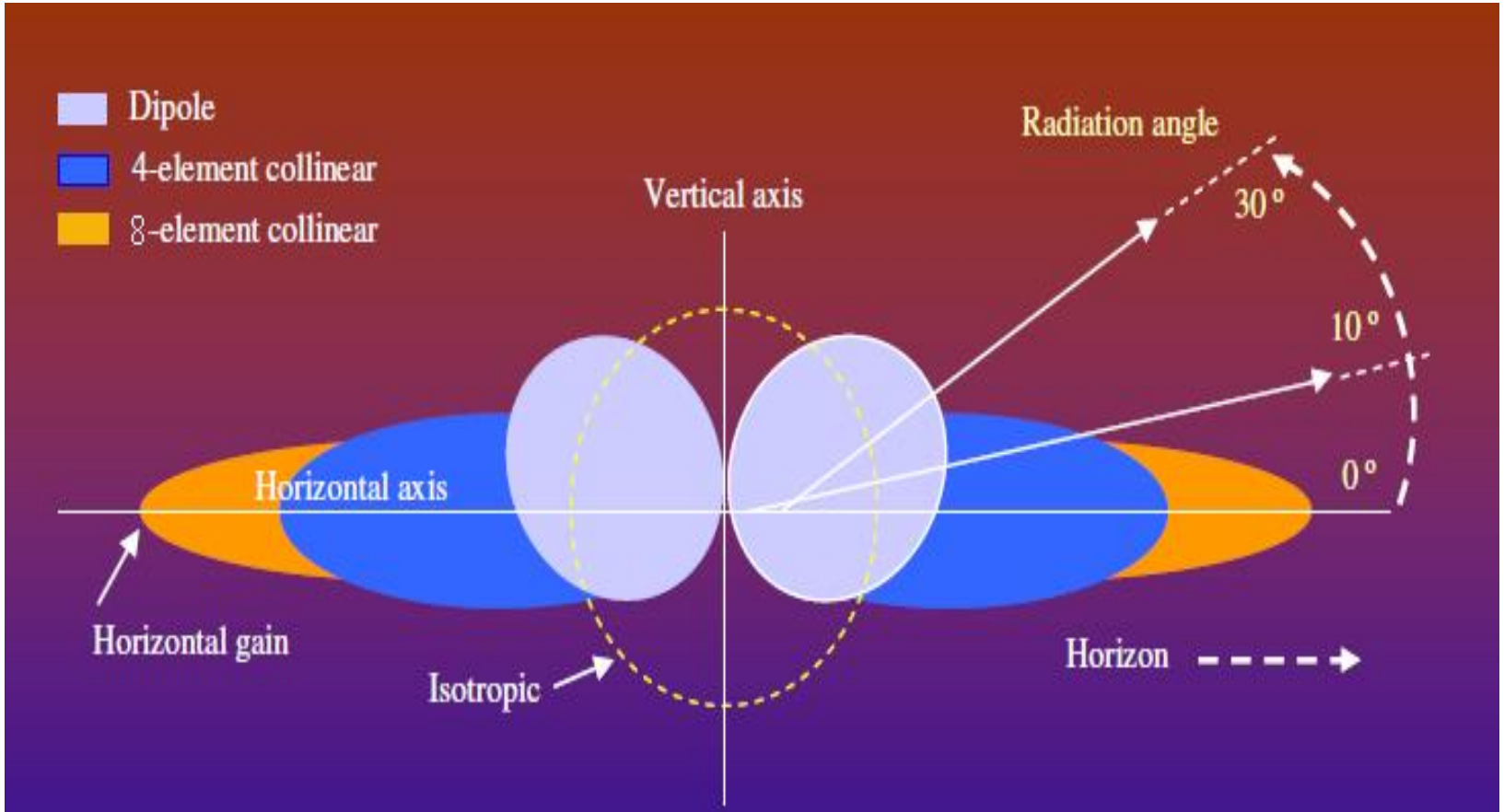
(a) 5.8 dBi Omni 3D Pattern



(b) 5.8 dBi Omni Azimuth Plane Pattern



(c) 5.8 dBi Omni Elevation Plane Pattern



The Horizontal directivity gain of various types of antennas and their respective radiation patterns and vertical angle of radiation

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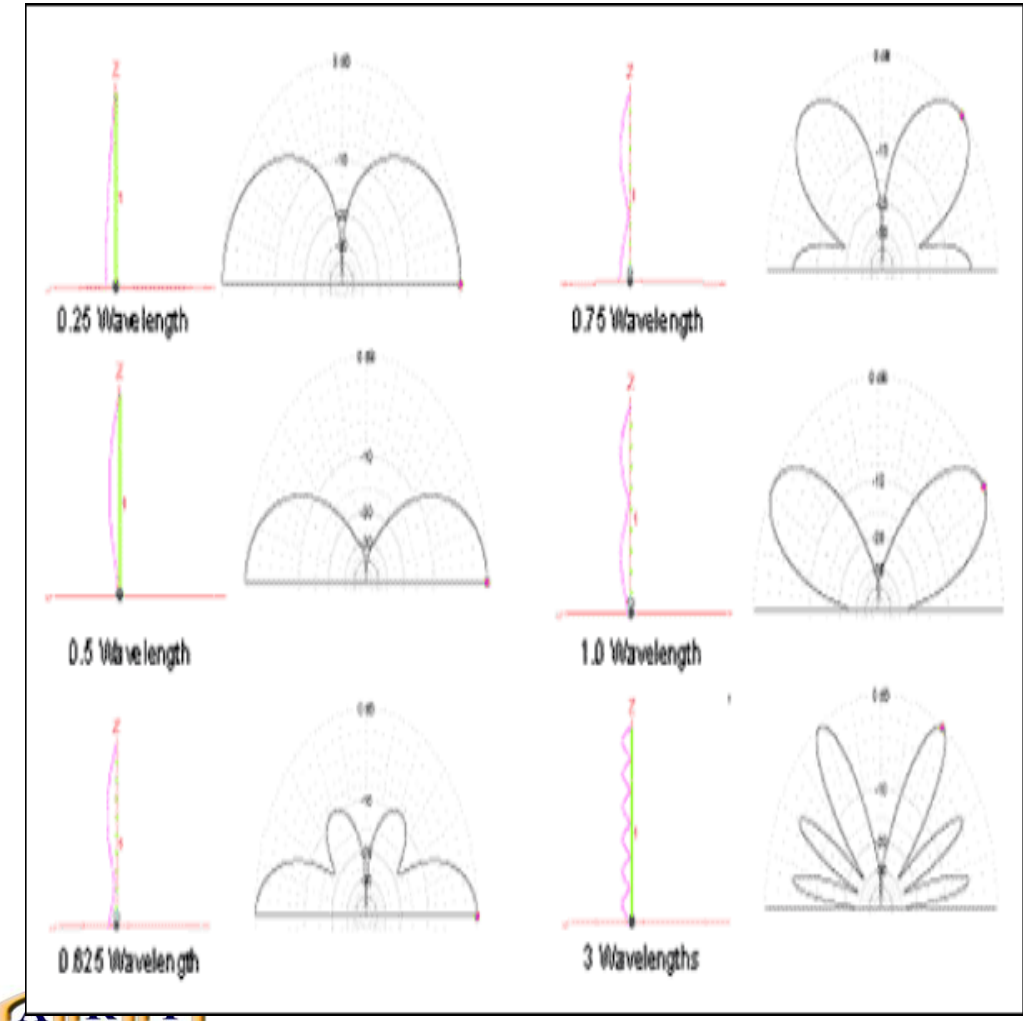
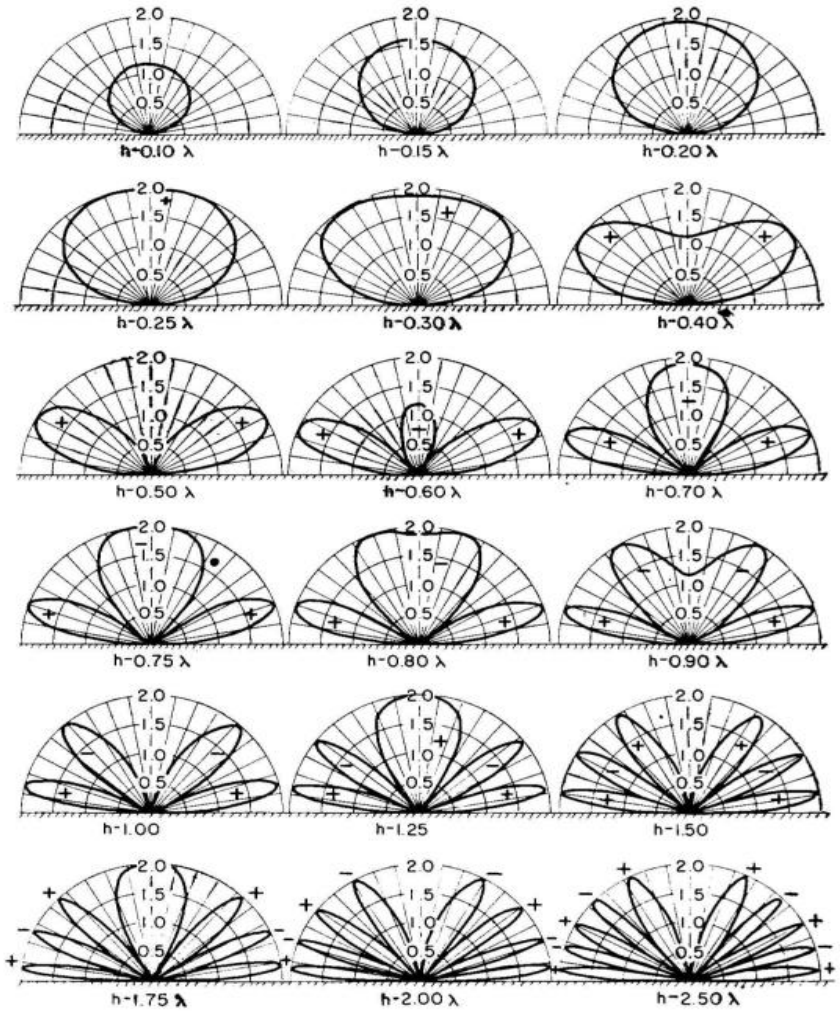
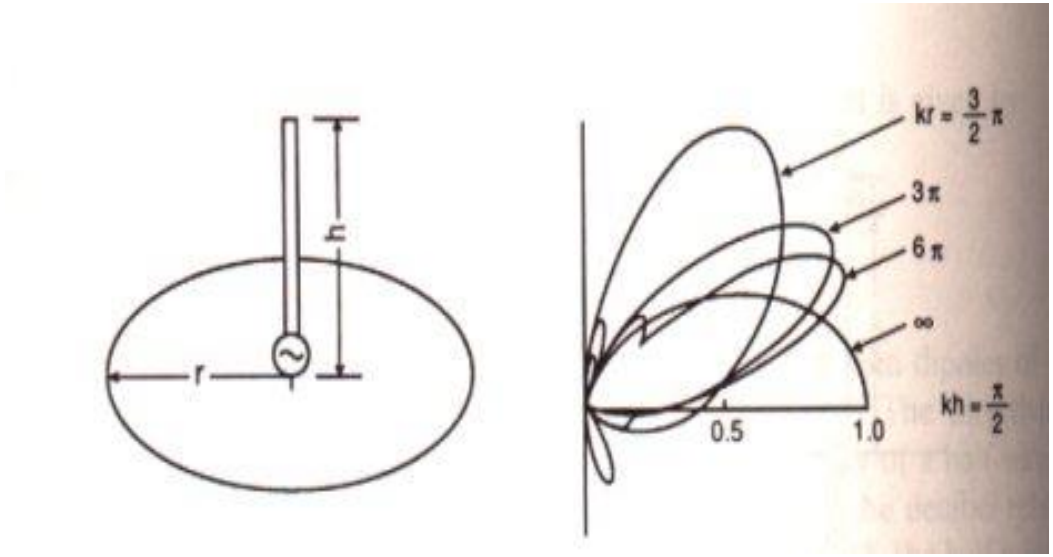
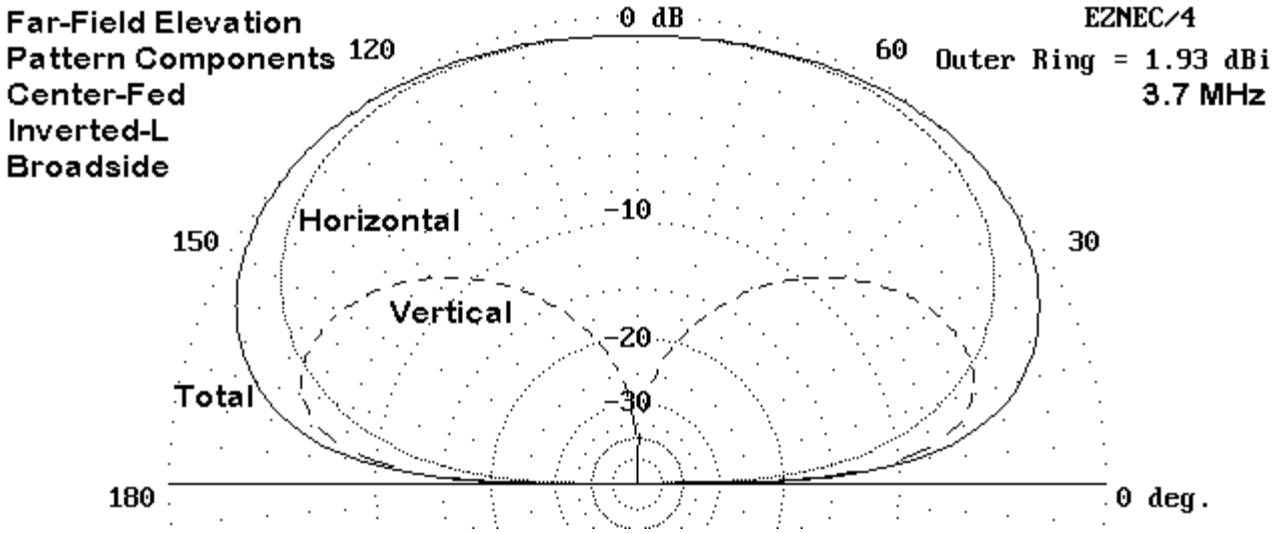
DIAGRAMMA DI RADIAZIONE O ANTENNA PATTERN





Come varia il diagramma di emissione





Antenne Adattive

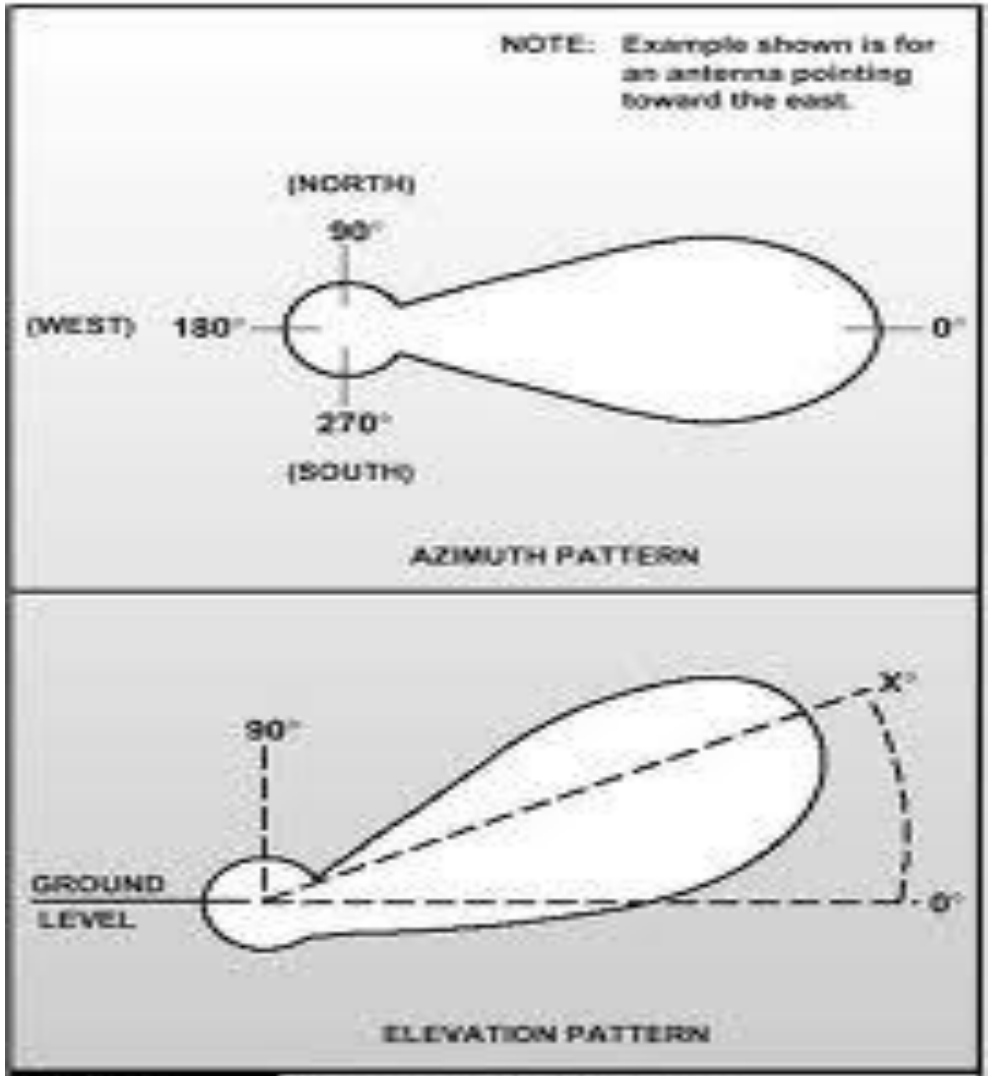
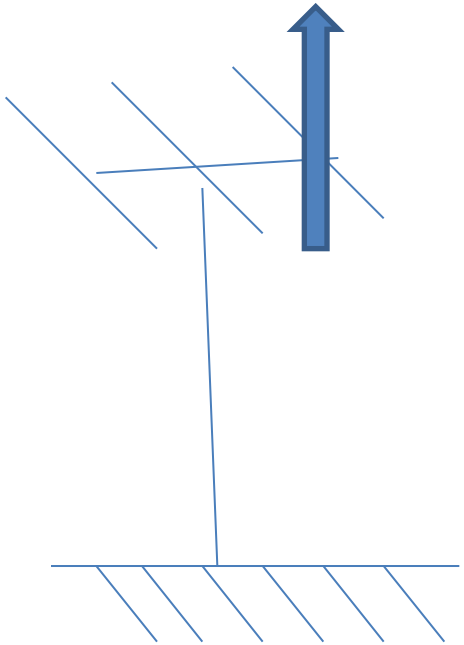
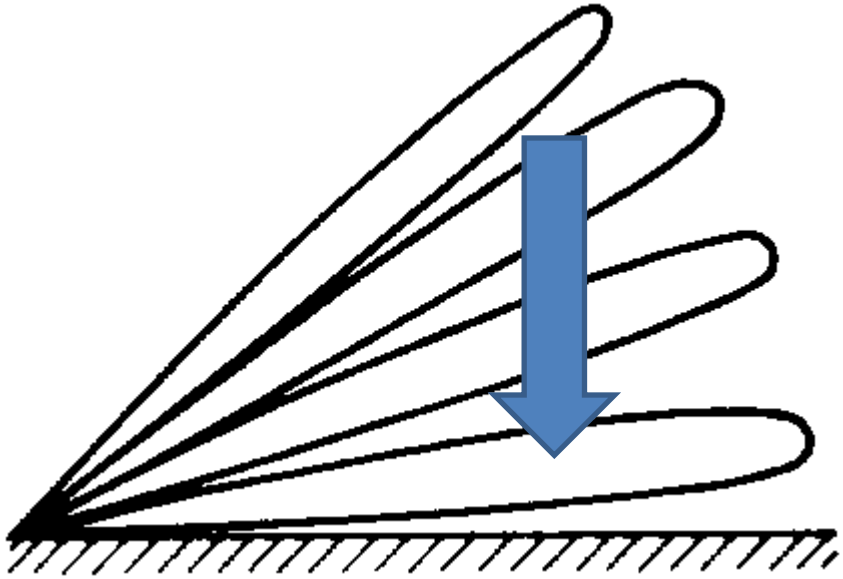


Figure 3-3. *Antenna Radiation Patterns*

Più abbasso la yagi più alzo il lobo





IN NVIS NO POLARIZZAZIONE VERTICALE

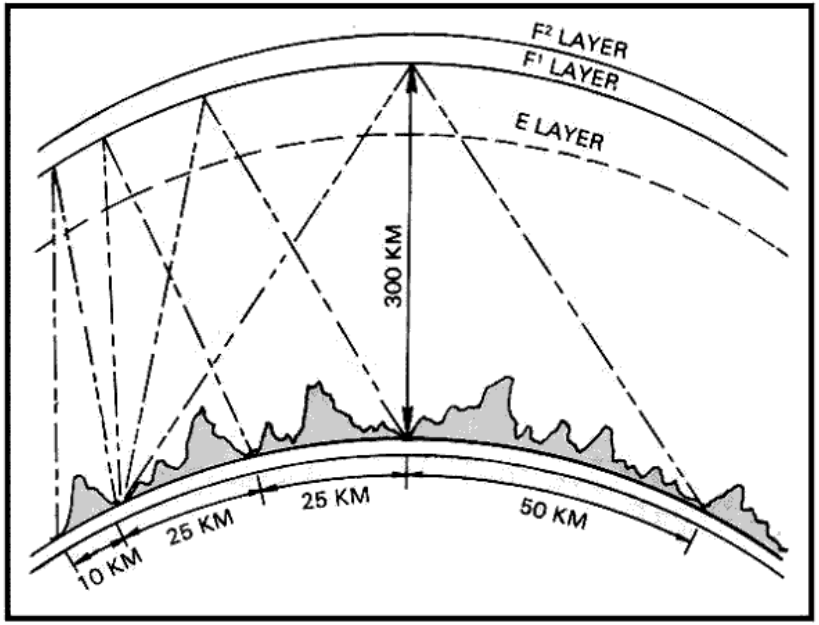
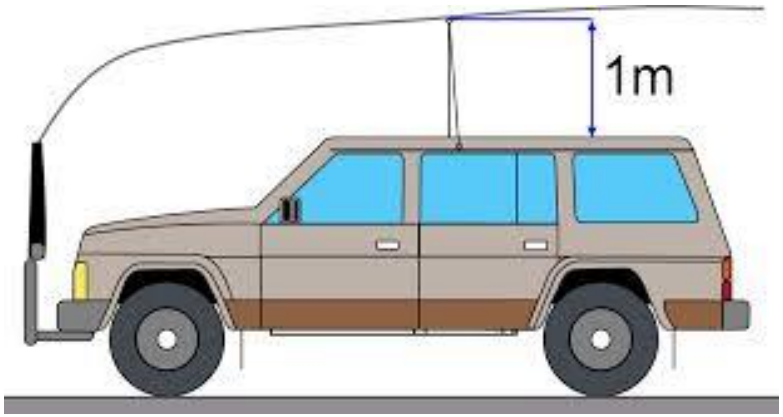


Figure M-1. Near-vertical incidence sky-wave propagation concept.

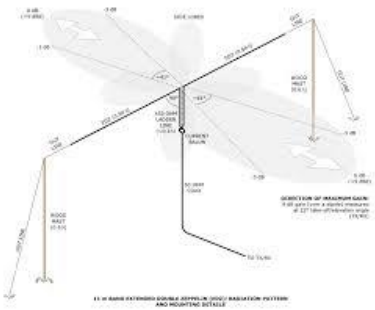


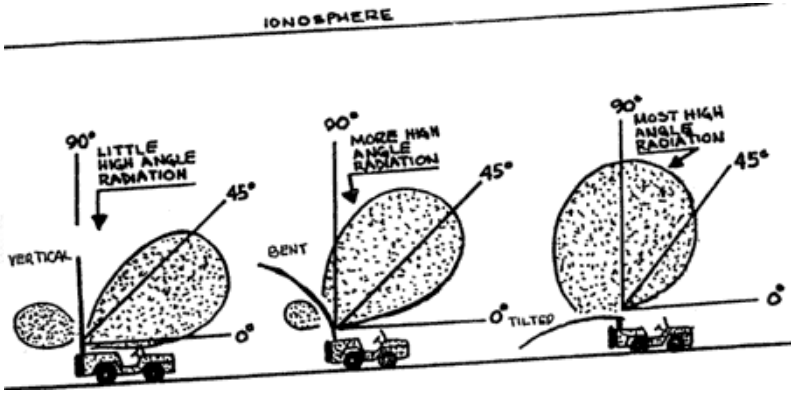
Sezione ALTO LAZIO

NVIS TEAM

COMUNICAZIONI HF DI EMERGENZA

ARI Roma





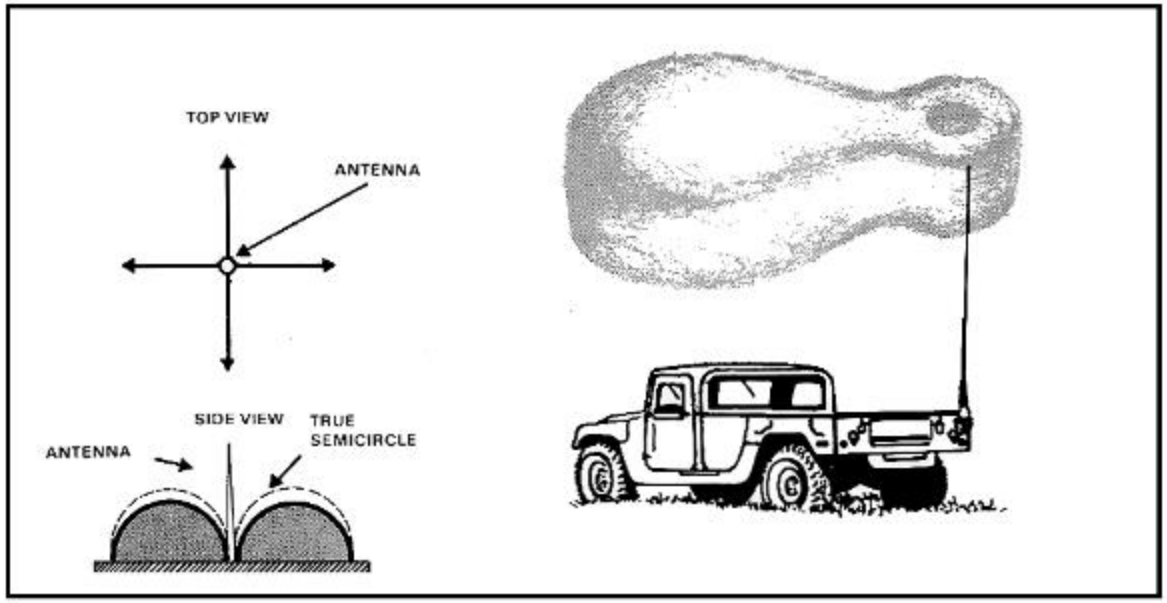


Figure 3-15. Radiation pattern of a whip antenna.

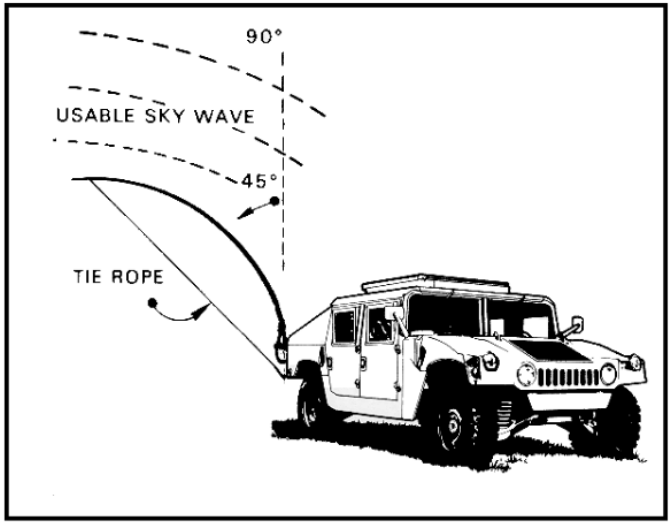
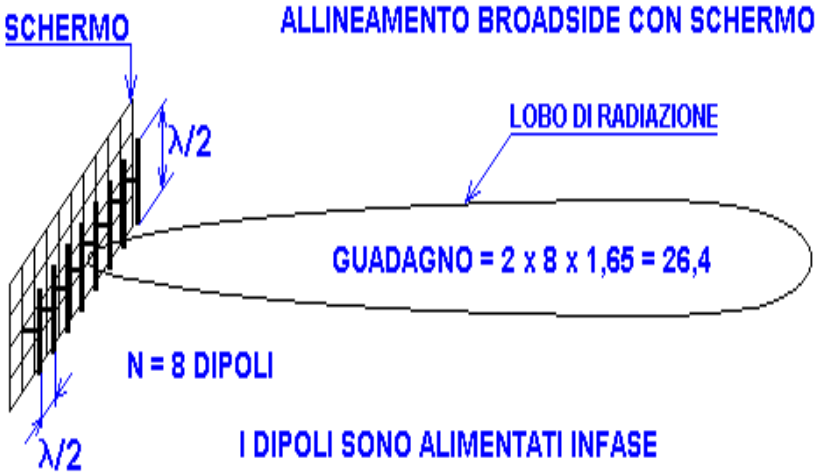
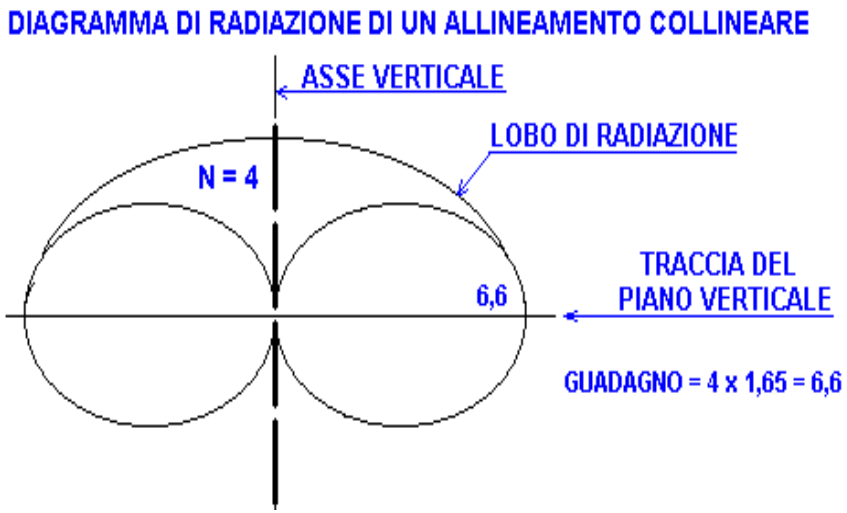
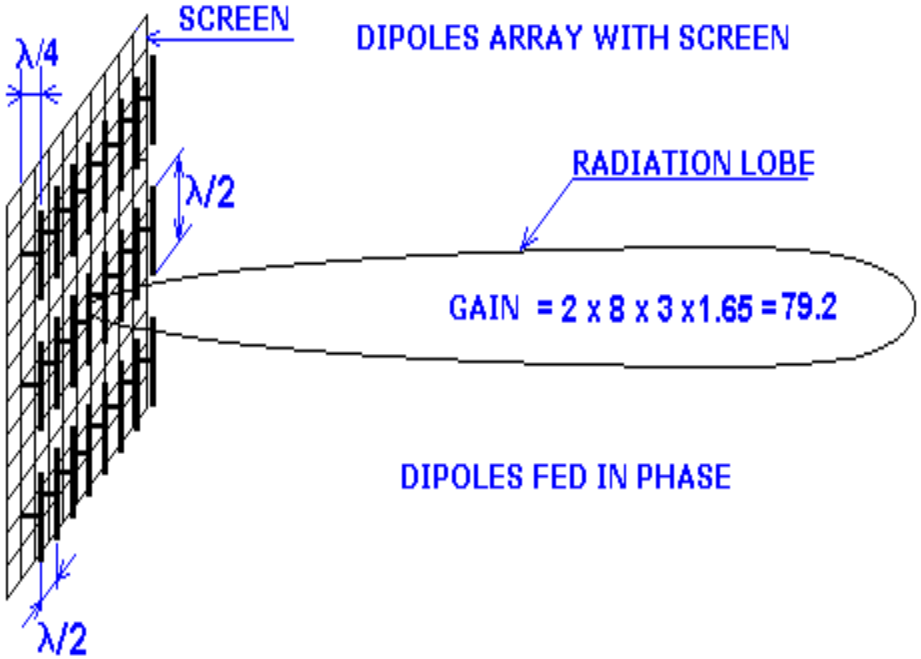


Figure M-9. Tying the whip antenna down.

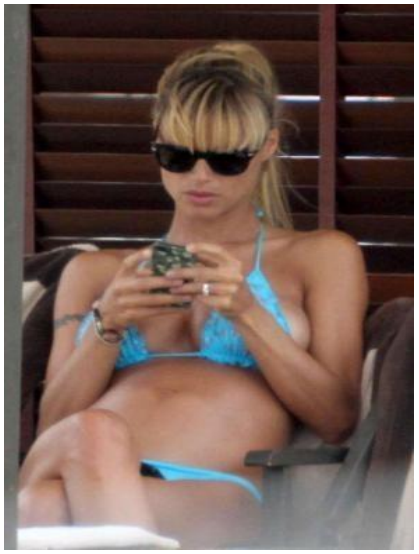
DIPOLI ACCOPPIATI

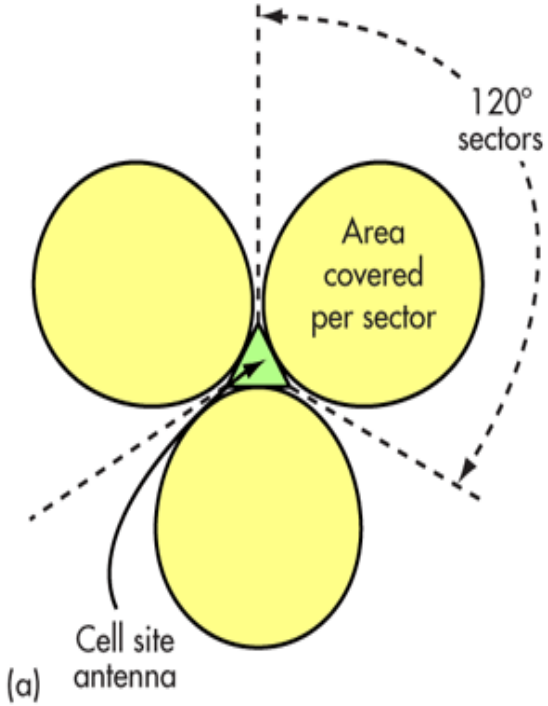


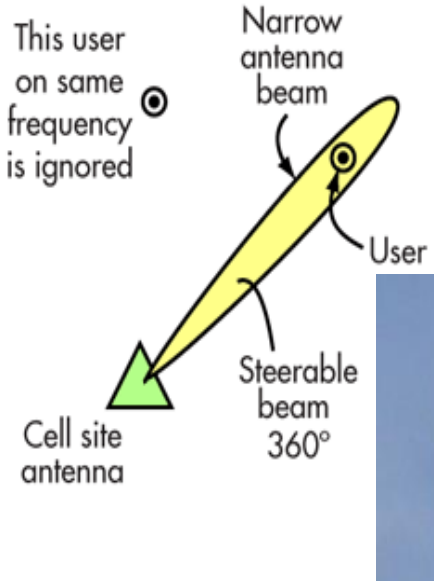




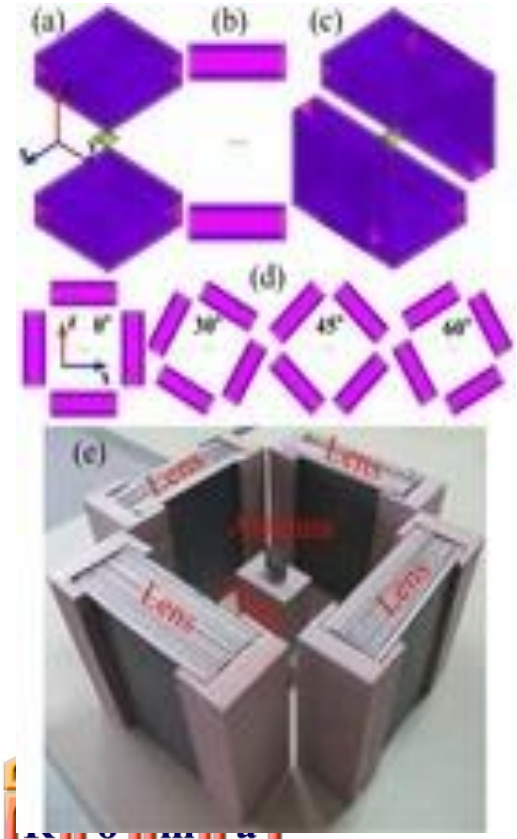
CELLE TELEFONICHE

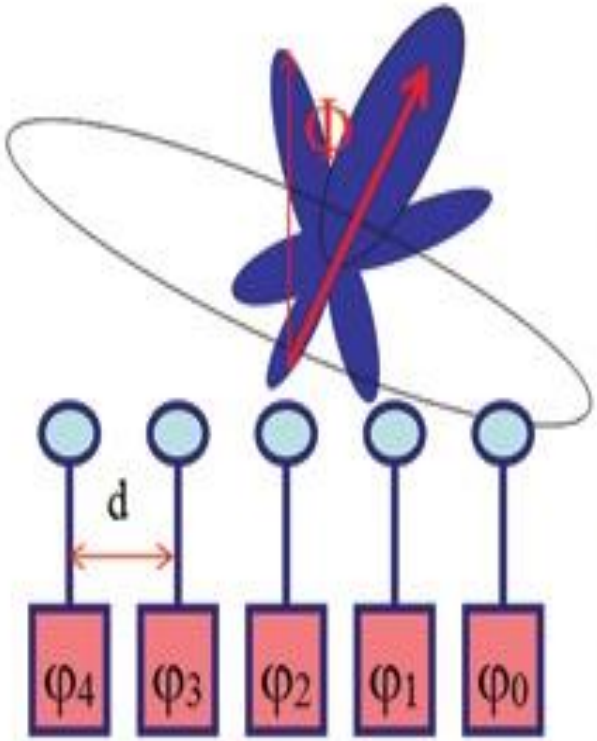






Orientamento del diagramma di emissione

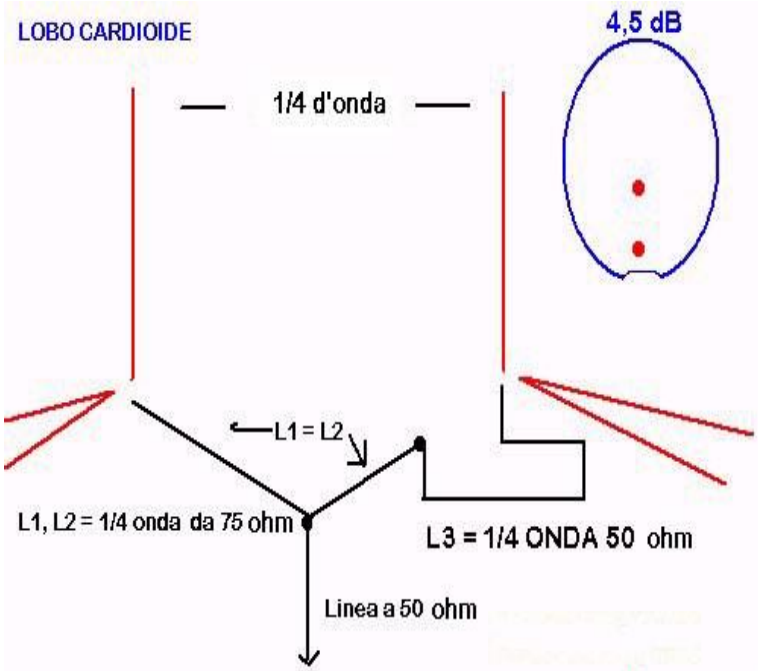


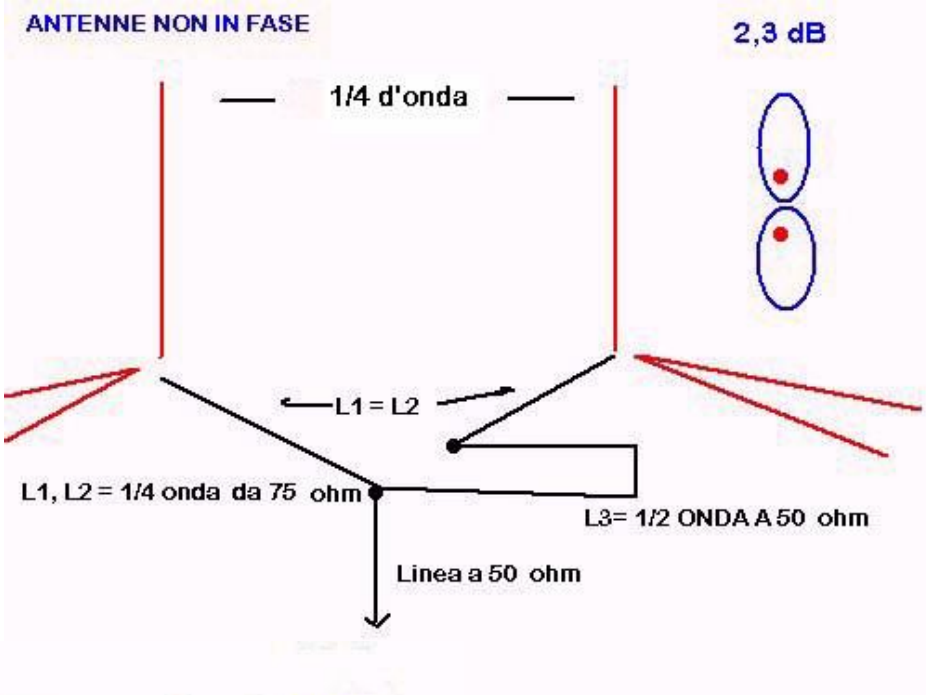


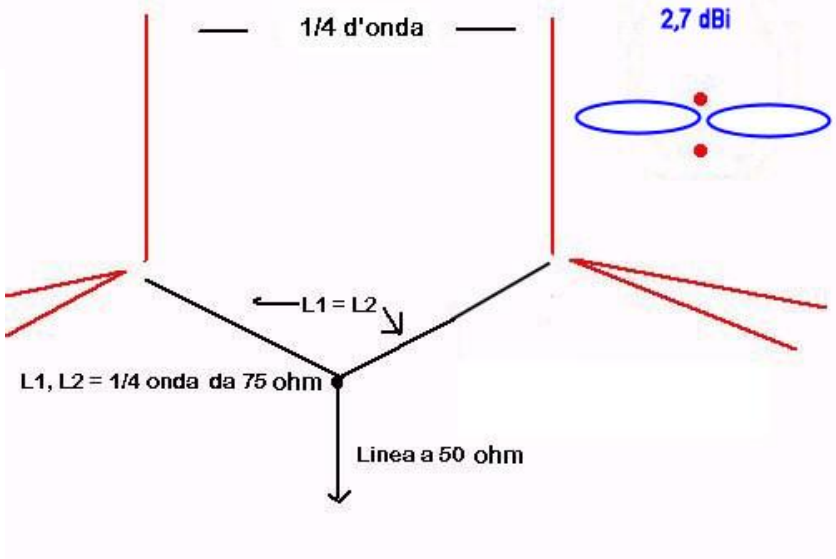
$$\varphi_i = \varphi_0 + 2.i.\pi.d / \lambda . \sin(\Phi)$$

Source: U.S. Air Force/SSGT Lono Kollars

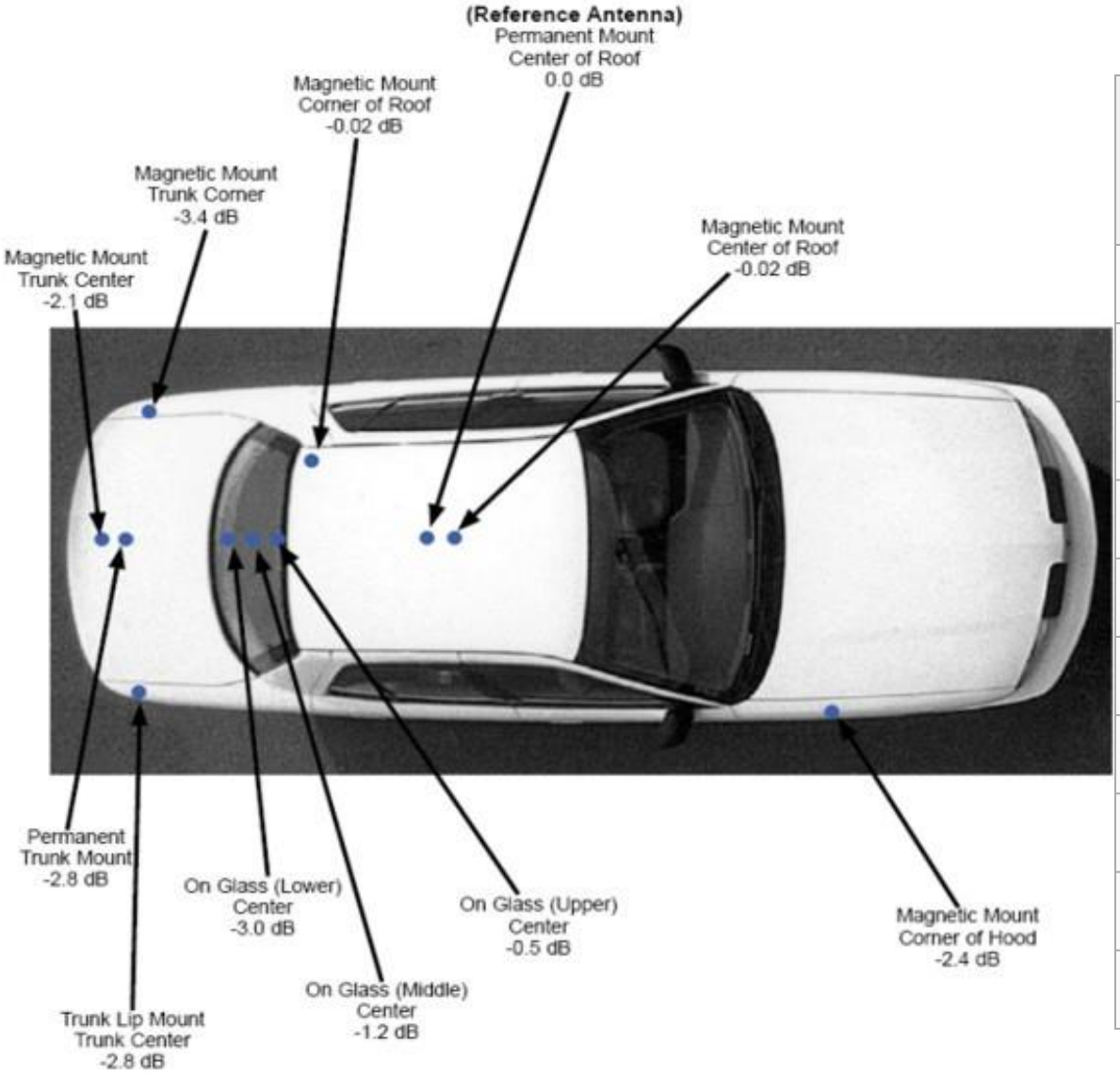
ESEMPI DI ANTENNE ACCOPPIATE





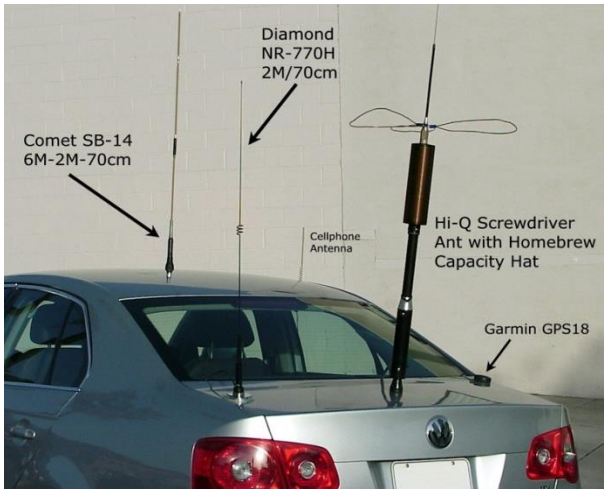


Un antenna adattiva anche sul tetto dell'auto?



dB	Fattore approssimato
1	1,25
2	1,6
3	2
4	2,5
5	3
6	4
7	5
8	6,3
9	8
10	10

Curiosità


Diamond
NR-770H
2M/70cm
Comet SB-14
6M-2M-70cm
Cellphone
Antenna
Hi-Q Screwdriver
Ant with Homebrew
Capacity Hat
Garmin GPS18

08/13/2008

GRAZIE DELL’ATTENZIONE

Gianni

IK0WMJ – K0WMJ