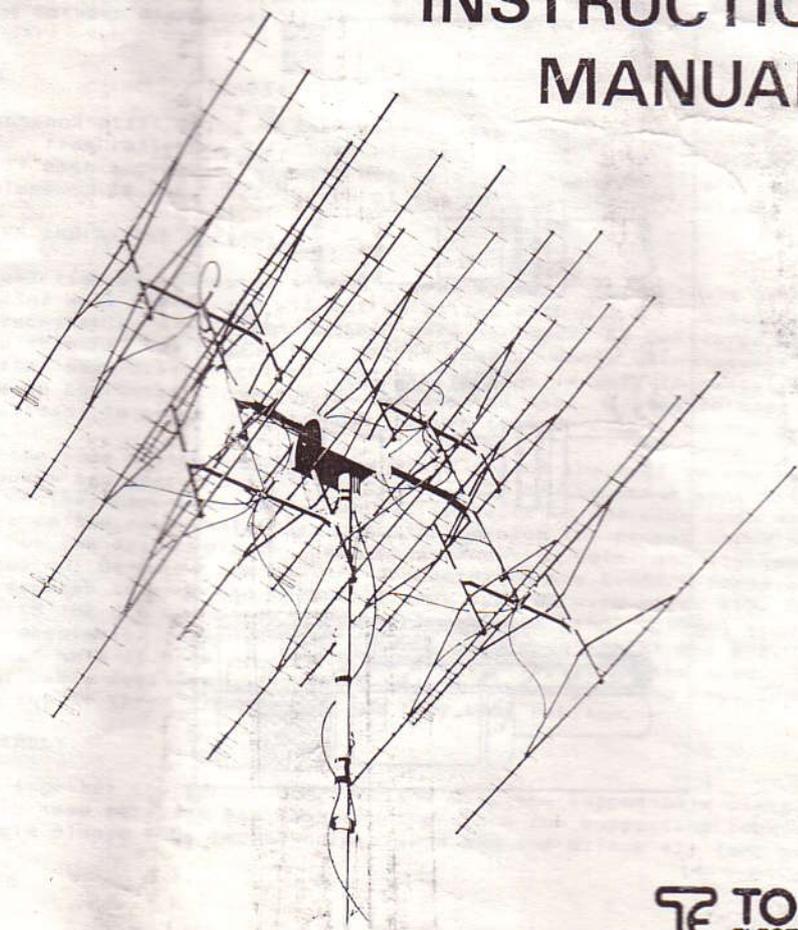


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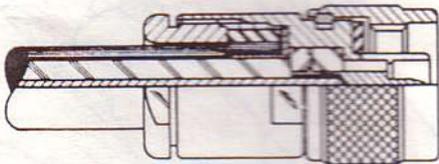
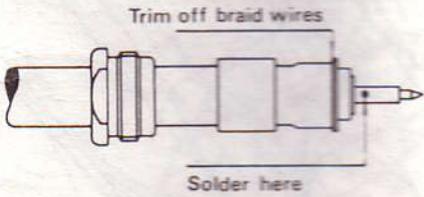
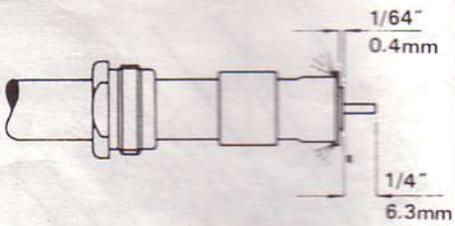
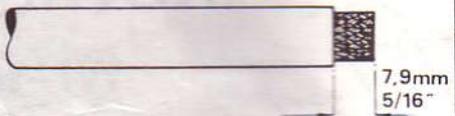
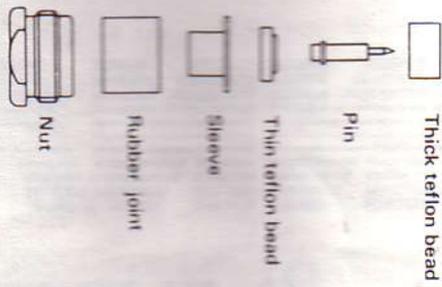
**432 MHz 21 ELEMENT
INSTRUCTION
MANUAL**



**TE TONNA
ELECTRONIQUE**

20921A

PRESSE ETIOUPE SYSTEME SERLOCK



ASSEMBLY INSTRUCTIONS

432 / 438 MHz 21 element 99FT ANTENNA

IMPORTANT

When opening the package, check and compare all parts and hardware with enclosed part list. Then, thoroughly and carefully read the instructions.

ELEMENT ASSEMBLY

Each element is mounted on the boom with a special holder (#8 on diagram), made of glass fiber loaded polycarbonate. This holder is provided with a conical hole, into which a thread is tailored with a special self tapping screw (#9 on diagram). DO NOT OVERTIGHTEN THIS SCREW !!. Note: a hexagonal screw of the same type is used for directors D1 and D2 (#10).

On each element is provided a centering bump which must fit inside the centering cavity of the holder (See arrow on medalion A). First snap the holder on the element, taking care for proper centering, and mount the holder on the boom, with screw #9. The holder should be mounted as shown on the diagram (the hole is located BEHIND the element, when antenna is seen from rear). If not, spacings between directors, driven elements and reflectors may not be correct any longer.

CAUTION

The antenna still being on the ground, make sure that all element lengths decrease, from reflector R (longer element) through director D19 (shorter element); each successive element set is either the same or shorter than the prior element. If not, performance of the antenna may be drastically reduced.

FEED-LINE AND DRIVEN ELEMENT

The feed-line is connected to the driven element (DIP) with a watertight type N connector set. The driven element is fitted with a built-in standard UG58A/U female receptacle. A standard UG21B/U male connector is delivered as accessory with the antenna. Use RG213/U, or better coaxial cable whenever available.

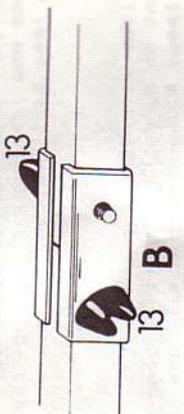
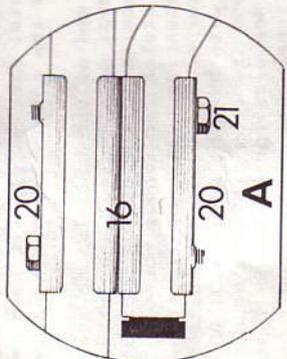
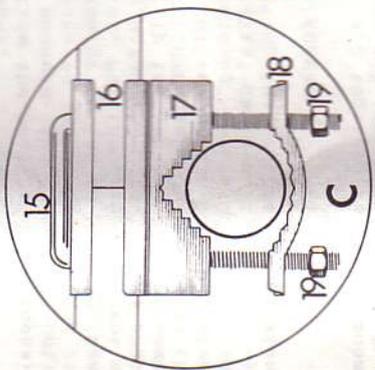
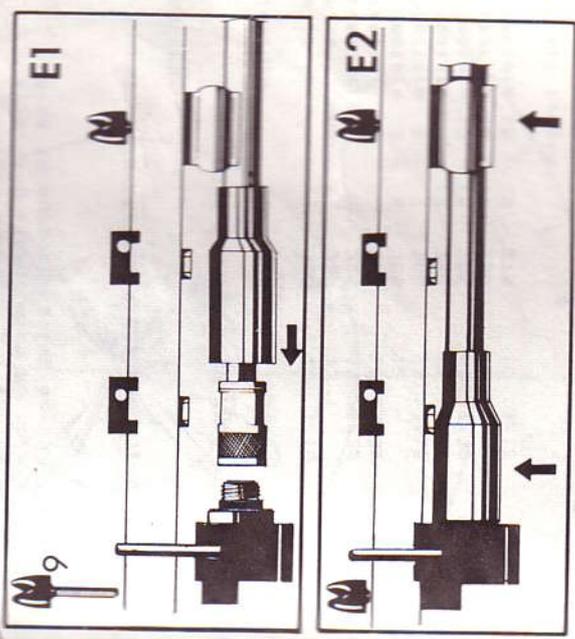
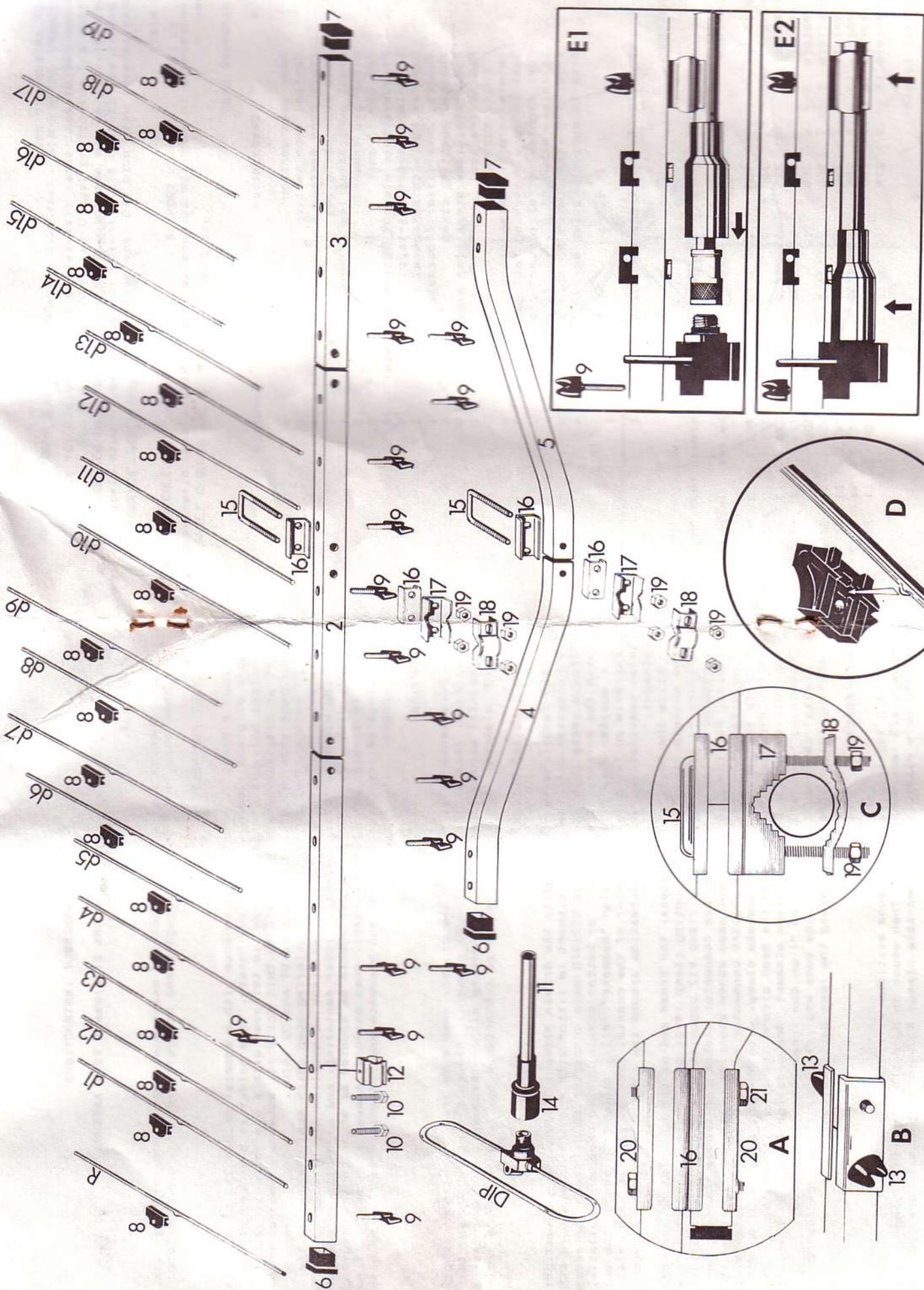
A quarter wave filter, called "bazooka" (#11), is used to cancel the outer currents on the outer conductor of the coaxial line. A plastic hood (#14) is also provided, to avoid condensation around the connector, on the driven element.

Slide the hood on the bazooka, the broad end of the hood facing one end of the bazooka, and snap the mounting clamp (#12) on the other end; slide the bazooka on the coax, with the clamp #12 opposite to the coax end; mount the connector on the coax cable (See connector sketch for proper mounting on cable). Put the driven element case above mounting hole, and tighten with the wing screw #9. Screw in the UG21B/U connector on the UG58A/U receptacle, and finally tighten to boom the bazooka clamp, with M5 wing screw #13. DO NOT OVERTIGHTEN THE SCREWS! Slide the hood around the ring provided around the coaxial receptacle, on the driven element (See medalion B1 and B2), and drill a "breathing" hole (1.5 mm or 1/16 ") on the lower part of the hood.

Coaxial cable must run under the boom and rear supporting leg, taping occurring two or three times along the rear boom section.

BOOM ASSEMBLY

Attach together the three boom sections with the tapped-hole clamps #20 and screws #13 (see medalion B). Then mount on boom the supporting legs with the smooth-hole clamps #16, tapped-hole clamps #20 and screws #21 (see medalion A).



MOUNTING OF ANTENNA TO MAST

The maximum useful mast outer diameter is 54 millimeters (2" 1/8). Mount on boom and supporting legs U-bolt #15, clamps #16 and #17, and first set of M6 nuts #19; tighten the assembly. Then slide on U-bolts clamps #18, and screw in second set of nuts #19. Finally run mast through both clamp set, and tighten boom to mast with nuts #19 (see section C).

OPERATING HINTS

It is recommended to keep the antenna in local dominant wind direction, when not in use.

PART AND HARDWARE LIST

Diagram #	Description	Quantity
1	Rear boom section	1
2	Central boom section	1
3	Front boom section	1
4	Rear supporting leg	1
5	Front supporting leg	1
6	Black cap (rear)	2
7	Red cap (front)	2
8	Polycarbonate element attaching jumper	20
9	Stainless steel self-tapping screw	19
10	Same as #9, with hexagonal head	2
11	Quarter wave filter ("bazooka")	1
12	Bazooka mounting clamp	1
13	M5x25 stainless steel wing screw	5
14	Protective hood	1
15	U-bolt, M6x80	1
16	Smooth-hole attaching clamp	8
17	Mast to boom attaching "alligator" clamp	2
18	Mast tightening "alligator" clamp	2
19	Stainless steel M6 tightening nut	8
20	Attaching clamp, with M5 hole	8
21	Boom to supporting leg screw (M5x40)	4

ACCESSORY

TYPE "N" MALE CONNECTOR UG21B/U	1
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ELEMENT LENGTHS

Elements	"DX" Version (432 MHz)		"ATV" Version (438 MHz)	
	Millimeters	Inches	Millimeters	Inches
Reflector	360	14 3/16	350	13 25/32
Driven element *	330 *	13	325 *	12 25/32
Director 1	325	12 25/32	1	330
Director 2	315	12 13/32	2	320
Directors 3 - 4	305	12	3	305
Directors 5 - 7	300	11 13/16	4 - 5	300
Directors 8 - 12	290	11 13/32	6 - 7	295
Directors 13 - 15	285	11 7/32	8 - 15	285
Directors 16 - 17	280	11 1/32	16 - 19	280
Directors 18 - 19	275	10 13/16		

* Overall length.

NOTE: The company ANTENNES TONNA S.A. reserves for itself the right for modifying its products, without notice.

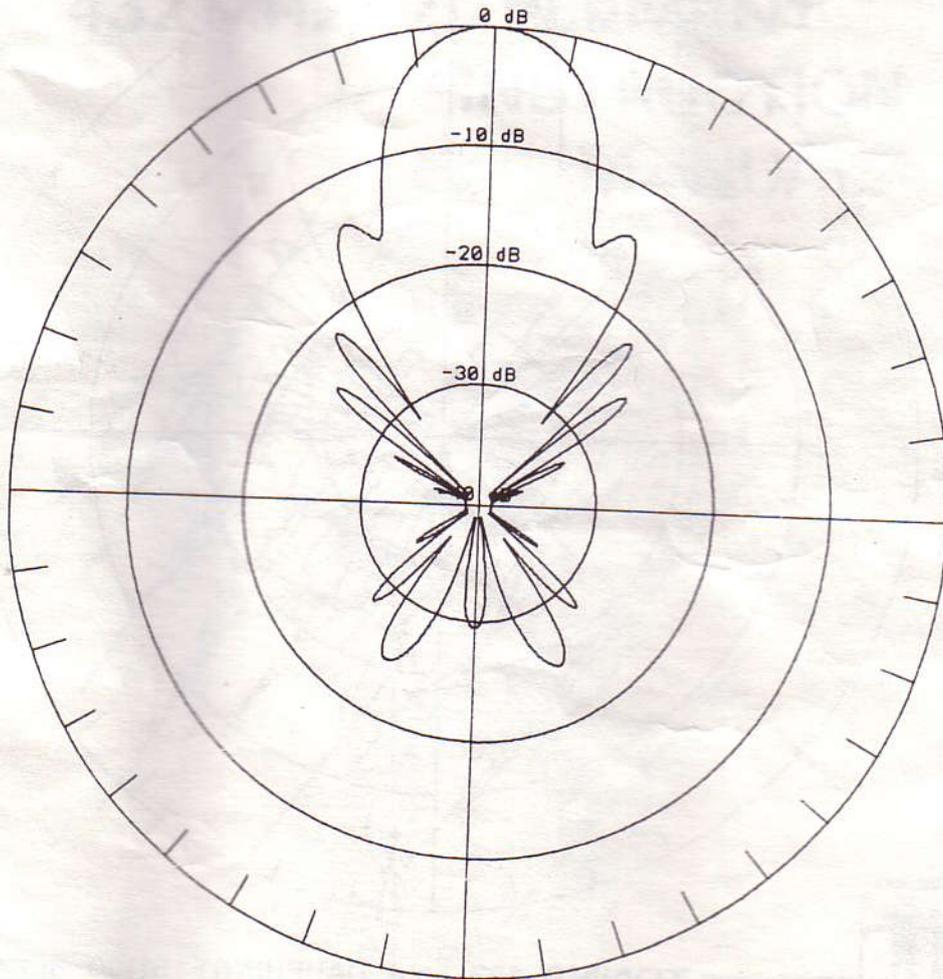
ANTENNES TONNA S.A. 132 Boulevard Dauphinois 51100 REIMS FRANCE

DIAGRAMME DE RAYONNEMENT CALCULE: 21 ELEMENTS LONG YAGI

FREQUENCE: 432.0 MHz PLAN: E

GAIN CALCULE : 18.15 dB Iso RAPPORT AV./ARR.: 29.49 dB

ANGLE D'OUVERTURE A -3dB : 2×10.82 deg.



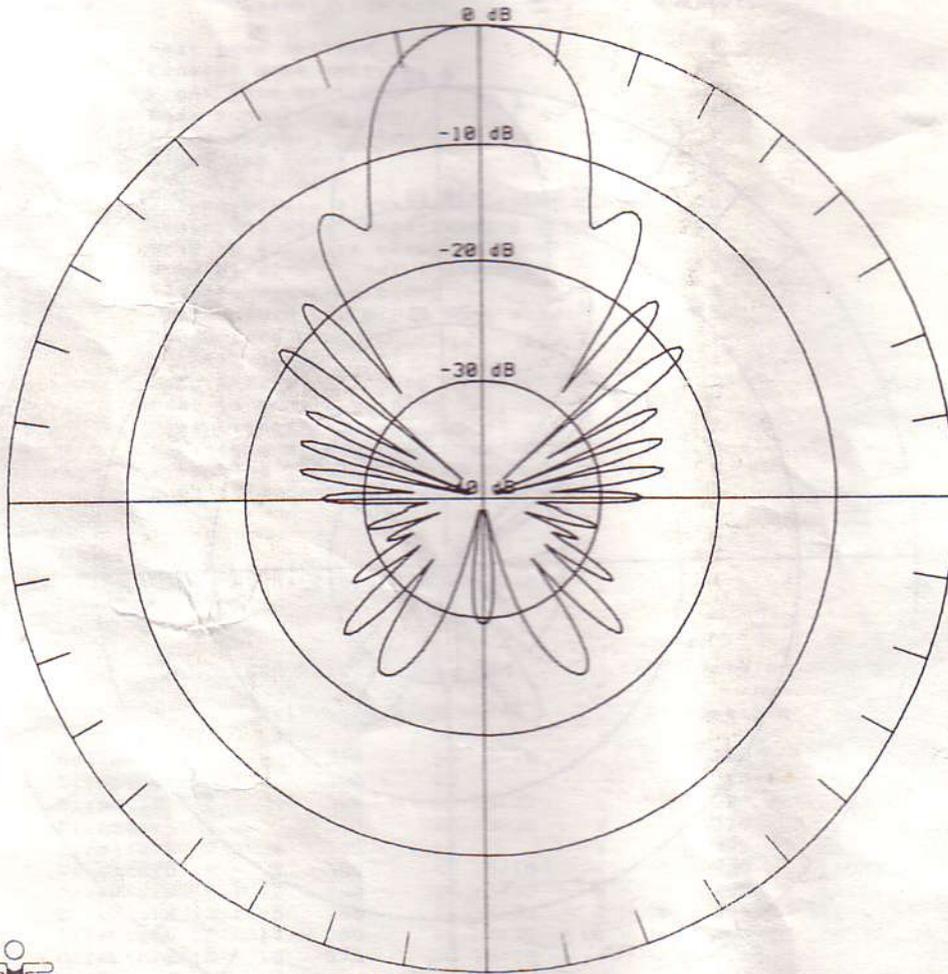
ANTENNES TONNA S.A. 132 Boulevard Dauphinot 51100 REIMS FRANCE

DIAGRAMME DE RAYONNEMENT CALCULE: 21 ELEMENTS LONG YAGI

FREQUENCE: 432,0 MHz PLAN: H

GAIN CALCULE : 18.15 dB iso RAPPORT AU./ARR.: 29.49 dB

ANGLE D'OUVERTURE A -3dB : 2 x 11.21 deg.



ANTENNES **TONNA** 132 blvd DAUPHINOT 51100 REIMS
FRANCE

20921 R