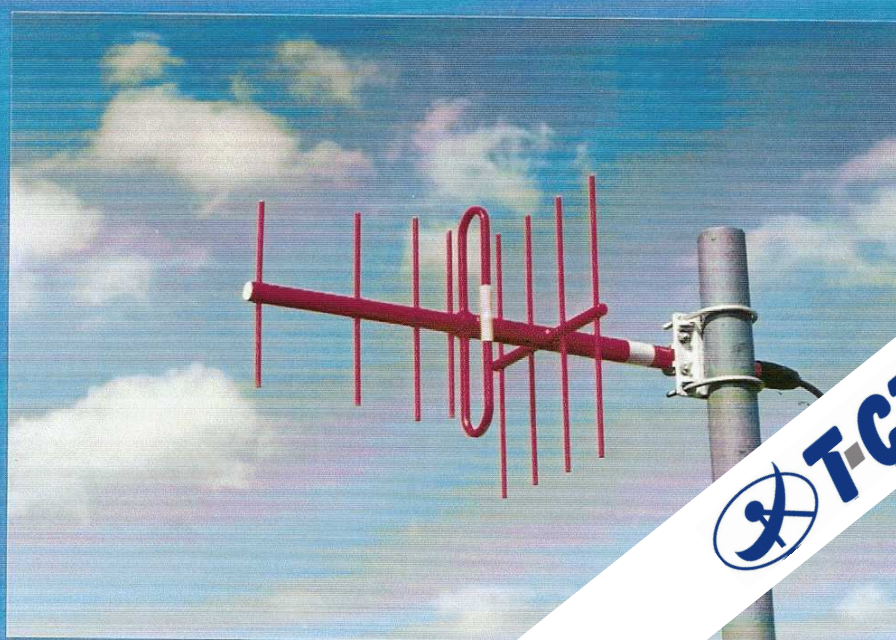
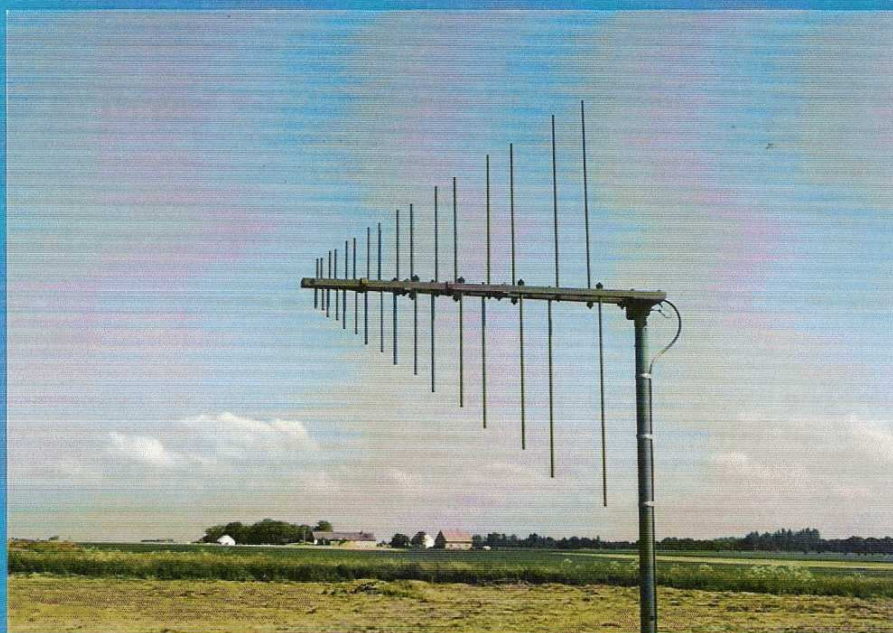


# ANTENNAS

RADIOCOMMUNICATION



 **TCZ**

# **1. TECHNICAL DESCRIPTION**

## **1.1 Introduction to problems of antennas and antenna systems correct choice, assembly and application**

Radio communication quality can be significantly affected by the correct antennas selection and installation. If radio stations are to be efficiently used in given radiocommunication network, it is necessary to be acquainted with essential properties of antenna devices and principles of the electromagnetic propagation.

Assortment given in this offer includes all components following the radio station output high-frequency connector.

Besides conventional independent antennas application, antenna systems designed directly for the network shall be used for some special networks. Radiocommunication network in the subway, railway ribbon networks, antennas for engines, mountain conditions can be mentioned as examples of such special networks and antenna systems.

Another antenna systems and combiners shall enable several radio stations connection without influencing each other.

Rapid increase in radio stations application occurs now, and mutual interference is always creeping up. Radio networks disturb each other, however, also intersystem interference occurs with other electric equipment using semiconductor components, integrated circuits, microprocessors, etc., and alternatively, radio networks are disturbed with such equipment.

Therefore antenna devices comprise also anti-jamming elements such as high-selective filters in receiver inputs, combining circuits, and so on.

Base antenna and all things connected with it, i.e. the mast erection, installation, building intervention etc., are often crucial element in the entire radio network realization, being simultaneously a very costly business as a rule. Antenna is also strained and often vulnerable part of the entire radiocommunication chain. It is usually not reserved as a rule. Possible failure can result in total radiocommunication destruction regardless the quality and complexity of parts.

It is therefore necessary to pay maximum attention to the antenna and accessories selection regarding electrical and mechanical properties, quality, etc.

On the basis of our experience in many situations that were resolved for users of radio stations made by various manufacturers, we hold for reasonable to offer following services to all present and future users of radio stations and networks.

## 1.2 Services provided by specialized sites of



### 1) Base antenna measurement in band 7 $\pm$ 1000 MHz

Basic parameters measurement

- input impedance
- radiation pattern in both planes (if possible)
- regarding antenna size and design)
- calculation of derived parameters

### 2) Mobile antenna measurement in band 27 $\pm$ 1000 MHz

Input impedance measurement, optimum impedance adjustment by means of the antenna whip length change, matching circuit design and manufacture

- radiation pattern measurement on vehicle (in plane H)
- radiation efficiency determination, informative estimation of the gain at gain antennas, receiving properties during the operation estimation

### 3) Mobile antenna for car radio measurement

Basic properties measurement

- input impedance
- capacity and reception in bands AM/FM
- radiation pattern

If the customer submits several antenna types simultaneously, it is appropriate to perform the comparative measurement. Moreover, it is possible to subject used amplifiers to the complex measurement.

#### **Notice:**

*For mobile antennas measurement, a vehicle with installed antenna should be delivered in some cases after previous agreement - presence of built-in radio station is appropriate.*

### 4) Antennas for portable radio stations

- antennas comparison + radiation viewpoint
- efficiency estimation

### 5) Covered area and operating properties estimation of mobile radio stations

- effective sensitivity measurement
- motor and board consumers interferences influence determination

- 6) Measurement of the field strength and area coverage with the signal for given radio network**
  - field strength measurement in the base radio station and vehicle
  - field strength recording in dependence on the time while driving
  - informative measurement of monitored territory coverage, verification of points with insufficient signal, coverage estimation
  
- 7) Informative calculation of the electromagnetic field strength in given point or territory**
  - calculation on the basis of data provided by the customer
  - technical report preparation as a document intended for the permission obtaining from the sanitation officer (health protection against harmful effects of electromagnetic devices)
  
- 8) Radio networks interference**
  - interference measurement or localization
  - proposal of the interference minimizing or removal method
  
- 9) Measurement for project activities**
  - field strength testing measurement in the field at antennas temporary installation
  
- 10) Multichannel radio networks estimation including several radiocommunication devices operation at the common site from the mutual interferences point of view**
  - intermodulation products
  - antenna couplings estimation
  
- 11) Design and realization of untypical antenna systems**
  - special directional systems
  - omnidirectional systems on framed or cylindrical supporting structures
  
- 12) Consulting activity and orientation in other manufacturers offer (antennas, combiners)**
  - selection, professional estimation
  - equivalents determination

- 13) Dipoles, quadripoles measurement**
- filters, amplifiers, coupling elements, loads etc. s-parameters measurement in bands 7.5 ÷ 1000 MHz 50 Ω 75 Ω
- 14) Arbitrary duplexers and circulators frequency change**
- changeover to other frequencies defined by user
- 15) Consulting activity in the area of coaxial connectors and cables**
- selection and recommendation
  - sale mediation
  - direct sale in the form of our products accessories
- 16) Consulting activity and realization of radio communication elements in closed space (tunnels etc.)**
- consultations
  - recommendation of parts from our offer
- design and realization of special links
- 17) Special development works and measurement**
- on the basis of a contract for particular order
- 18) Mobile antennas homologation from the passive safety point of view**
- consultation, documentation estimation
  - contact with authorized test shops
  - requests preparation for approval

### **1.3 Detail survey of the basic assortment with necessary data for the order and essential description:**

#### **ANTENNAS (portable, mobile, base)**

- portable - whip, suspension and miniature (miniflex) design for frequency bands 40, 80, 160, 300, and 450 MHz
- mobile - for radio stations, car radios, mobile radiotelephones and civil band radio stations (CB). They are manufactured for frequency bands 27, 40, 80, 160, 300, 450 and 900 MHz
- base - for radiocommunication devices applications (base, retransmission etc.). Manufactured base antennas are omnidirectional, gain and directional antennas in frequency bands 40, 80, 160, 300, and 450 MHz

#### **COMBINERS (type sets of combining systems)**

- they enable the operation of several base radio stations into a single antenna system. They can be applied also in trunked networks. Combining systems are manufactured in bands 160, 300, and 450 MHz

#### **ACCESSORIES (for antennas, combining system components)**

- reflectometers, cavity resonators, hybrid circuits, divider, filters and power loads

#### **ANTENNA SYSTEMS COMPLEMENTS**

Basic assortment can be adapted to the customer's demands.

## **2. QUALITY ASSURANCE**

T.E.S.L.A. CZ strategy is oriented on customers needs and stresses on high quality standard of delivered products. This demand determines managing system of the enterprise which integrated part is the quality assurance system.

The system is based on procedures, technologies and human resources coming from long term tradition of production, research and development of complicated electronic equipments delivered for special customers (army, MoI).

The conception of the quality assurance system stays on the ideas of the ISO 9000 standards and has the aim to meet fully demands of the standard ISO 9001 - Quality assurance model at design, development, production, instalation and maintenance. It is documented by organisation rules, standards of the enterprise and production - technical documentation. It was in parts successfully screened in line of customers audits.

More information will be given on demand.

## PORTABLE ANTENNAS

Antenna name	Type marking	Drawing no.	Frequency band (MHz)	Input	Note
Antenna INIFLEX	PA 31	QK 405 74 QK 405 75	73÷78 78÷84	TNCM	
	PA 311	QK 405 102 QK 405 103	73÷78 78÷84	TESLA series WK 411	
	PA 312	QK 405 109 QK 405 110	73÷78 78÷84	1/4"	for MIDLAND
	PA 313	QK 405 133 QK 405 133	73÷78 78÷84	BNC	
	PA 41	QK 405 84 QK 405 85 QK 405 86 QK 405 93 QK 406 00 QK 405 94	150÷158 158÷166 166÷174 300÷308 336÷344 440÷470	TNC	
	PA 411	QK 405 104 QK 405 105 QK 405 106	150÷158 158÷166 166÷174	TESLA series WK 411	
	PA 412	QK 405 126 QK 405 127 QK 405 128 QK 405 129 QK 405 130 QK 405 131	150÷158 158÷166 166÷174 300÷308 336÷344 440÷470	1/4"	for MIDLAND and MAXON
	PA 413	QK 405 134 QK 404 135 QK 405 136 QK 405 137 QK 405 138 QK 405 139	150÷158 158÷166 166÷174 300÷308 336÷344 440÷470	BNC	
	PA 43	QK 405 83	44÷46	TNC	
WHIP ANTENNA FOR PORTABLE RADIOSTATIONS	PA 32	QK 404 42 QK 404 32	44÷46 73÷84	TNC	shortened $\lambda/4$
	PA 321	QK 404 55	73÷84	1/4"	for MIDLAND
	PA 42	QK 405 81	152÷174	TNC	cca $\lambda/4$
	PA 421	QK 405 123	152÷174	BNC	
WIRE HALF WAVE ANTENNA	PA 33	QK 405 72 QK 405 73 QK 405 76 QK 405 77 QK 405 100 QK 405 97 QK 405 98	73÷84 73÷84 158÷170 158÷170 44÷46 300÷308 300÷308	BNC TNC BNC TNC TNC BNC BNC	approx $\lambda/2$ , for portable stations range extending + special applications (hidden assembly etc.)  cable 2.5 m cable 5 m

Order example: Antenna miniflex PA 31/QK 405 74



## MOBILE ANTENNAS

Antenna name	Type marking	Drawing no.	Frequency band (MHz)	Input	Cable	Note
MOBILE WHIP ANTENNA	VA 35	QN 404 60 QN 404 61 QN 404 62 QN 404 63 QN 404 65 QN 404 66 QN 404 67 QN 404 68	73÷84 73÷84 73÷84 73÷84 150÷470 150÷470 150÷470 150÷470	BNC	2 m 3,5 m 5 m 3 m 2m 3,5 m 5 m 3 m	whip $\lambda/4$ with spring, tuned by length, 0 dBd
CAR RADIO ANTENNA	VA 35/C	QN 404 130 QN 404 131 QN 404 132	87,5÷108	DIN	1,3 m 2,6 m 3,9 m	LW, MW, SW, FM, passive whip antenna for car radio
MOBILE WHIP ANTENNA	VA 36	QN 404 100 QN 404 101 QN 404 102	44÷46 44÷46 44÷46	BNC	2 m 3,5 m 5 m	shortened whip $\lambda/4$ , with spring, tuned by length, 0÷-1 dBd
WHIP GAIN ANTENNA $5/8 \lambda$	VA 37	QN 404 105 QN 404 106 QN 404 107	150÷174	BNC	2 m 3,5 m 5 m	whip $5/8\lambda$ with spring, tuned by length, 2,5 dBd
WHIP GAIN ANTENNA $5/8\lambda$	VA 38	QN 404 133 QN 404 134 QN 404 135	155÷174	BNC	2 m 3,5 m 5 m	whip $5/8\lambda$ without spring, tuned by length, optimum for duplex mode, 2,5 dBd
WHIP ANTENNA FOR CB	VA 39	QN 404 144 QN 404 145 QN 404 146	26,96÷27,4	FME	2 m 3,5 m 5 m	shortened whip $\lambda/4$ with spring, tuned by length, 0÷-1 dBd
MOBILE WHIP GAIN ANTENNA $5/8\lambda$	VA 40	QN 404 110 QN 404 111 QN 404 112 QN 404 114 QN 404 115 QN 404 116 QN 404 117 QN 404 119	300÷344   440÷470	BNC	2m 3,5 m 5 m no 2m 3,5 m 5 m no	whip $5/8 \lambda$ tuned by length, 2,5 dBd
MOBILE WHIP ANTENNA	VA 41	QN 404 120 QN 404 121 QN 404 122 QN 404 124	440÷470	BNC	2 m 3,5 m 5 m no	gain whip tuned COLLINEAR by length, 4,5 dBd
LOCOMOTIVE ANTENNA	VA 42	QN 404 125	445÷470	N		unipole $\lambda/4$ in laminate cover, high resistant design, 1,5 dBd

## MOBILE ANTENNAS

Antenna name	Type marking	Drawing no.	Frequency band (MHz)	Input	Cable	Note
MOBILE ANTENNA WITH MAGNETIC HOLDER	VA 43	QN 404 142	66÷84	BNC	3 m	whip $\lambda/4$ , without spring tuned by length, (whip $\lambda/4$ with spring QK 404 49 66÷84 MHz and QK 404 50 140÷170 MHz)  whip $5/8\lambda$ with spring tuned by length, 2,5 dBd whip $5/8\lambda$ without spring tuned by length, 2,5 dBd whip $5/8\lambda$ , tuned by length, 2,5 dBd whip $5/8\lambda$ tuned by length 2,5 dBd colinear whip, 4,5 dBd magnet. holder
		QN 404 143	140÷174			
		QN 404 138	300÷470			
		QN 404 150	150÷174			
		QK 404 154	144÷146			
		QN 404 151	155÷174			
		QN 404 139	300÷344			
		QN 404 140	440÷470			
MOBILE WHIP ANTENNA including MAGNET MOUNT	VA 45	QK 405 119	160÷960	FME	0,2 m 2 m 3,5 m 5 m no	ant. base
		QK 405 120				
		QK 405 121				
		QK 405 122				
		QK 405 150				
	VA 49	QN 405 157	160÷960	BNC FME	3 m	magnet. holder
		QN 405 158				
	Whips	QK 404 56	132÷174			whip $\lambda/4$ tuned by lenght 0dBd $\lambda/4$ , fix lenght 0dBd $5/8\lambda$ , tuned by lenght 2.5dBd  colinear, tuned b.l. 4dBd colinear, 4dBd/VA45 colinear, 4dBd/VA49
		QK 404 57	280÷470			
		QK 404 58	870÷960			
		QK 404 66	300÷344			
		QK 404 67	440÷470			
QK 404 64		440÷470				
QK 404 65		890÷960				
QK 404 68	890÷960					
Cables	QK 641 244		FME/BNC FME/FME		3,5m cable / accessories for QK 405 150 (VA 45) base	
	QK 641 245					
MOBILE ANTENNA COUPLER	VX 48	QN 057 62	140÷500 (rdst) 0÷108 (car radio)	BNC FME		for car radio and radio station simultaneous operation
		QN 057 63				
	Cables	PSK 41 410 PSK 41 411 PSK 41 407 PSK 41 408	0÷108	BNC/ /DIN FME/ /DIN	1,3 m 2,6 m 1,3 m 2,6 m	VX 48 accessories, cables for car radio connection
LOCOMOTIVE ANTENNA	VA 46	QN 405 137	150÷159	N		unipole $\lambda/4$ , robust design, 0 dBd
ANTENNA WITH MAGNETIC HOLDER	VA 47	QN 404 152	26,96÷27,4	FME	3 m	shortened whip $\lambda/4$ with spring, tuned by length, 0÷ -1 dBd
ANTENNA WITH MAGNETIC HOLDER	VA 48	QN 404 153	44÷46	BNC	3 m	shortened whip $\lambda/4$ with spring, tuned by length,

## MOBILE ANTENNAS

Antenna name	Type marking	Drawing no.	Frequency band (MHz)	Input	Cable	Note
MOBILE SPIRAL ANTENNA	VYA 311	QN 405 71 QN 405 92 QN 405 122 QN 405 123 QN 405 165	44÷46 73÷84 150÷174 150÷174 73÷84	direct	no	shortened unipole $\lambda/4$ , spec. lowered structure  (other base) (other base)

**Order example: Mobile whip antenna VA 35/QN 404 60**

(complete antenna)

OR: **Ant. base VA 45 QK 405 119**

**Whip QK 404 56**

(ant. base or magnet. holder and whip)

## BASE ANTENNAS

Antenna name	Type marking	Drawing no.	Frequency band (MHz)	Input	Pattern	Note
ANTENNA ARRAY	ZA 30	QN 405 138	150÷174	N N		2 dipoles one above circular dipole $\lambda/4$ another, 4,5/0 dBd
BASE OMNIDIRECTIONAL ANTENNA	ZA 31	QN 404 155 QN 404 54 QN 404 74 QN 404 75 QN 404 76 QN 405 81 QN 405 82	66÷73 73÷84 150÷158 157÷166 165÷174 162,5÷169 162,5÷169	N	circular	dipole $\lambda/4$ in laminate cover, 0 dBd  with holder without holder
SIDE MOUNT ANTENNA	ZA 32	QN 405 168 QN 405 72 QN 405 110 QN 405 125	66÷73 73÷84 150÷174 118÷137	N	off set	dipole $\lambda/4$ for mounting before the mast +3/-2 dBd +2,8/-3,9 dBd (aeronautical band)
BASE DIRECTIONAL ANTENNA	ZA 33	QN 405 73 QN 405 74 QN 405 75 QN 405 142 QN 405 143	73÷78 77,5÷82 81÷84 150÷162 161÷174	N	directional -	3-element YAGI antenna, 5 dBd
ANTENNA COMBINING SYSTEM	ZA 34	QN 405 96 QN 405 97	75÷82	N	omni-directional	spec. 3-input antenna cca 0 dBd
ANTENNA ARRAY	ZA 35	QN 405 78	73÷84	N	off set	2 dipoles one above another, 4,5/1,5 dBd
ANTENNA ARRAY	ZA 36	QN 405 80	150÷174	N	off set	4 dipoles one above another, 8,3/1,7 dBd
ANTENNA COMBINING SYSTEM	ZA 37	QN 405 89	162,5÷169	N		spec. 3-input antenna, cca 0 dBd
BASE DIRECTIONAL ANTENNA	ZA 38	QN 405 49 QN 405 86 QN 405 87 QN 405 88	162,5÷169 150÷158 157÷166 165÷174	N	circular	6-element YAGI antenna, 7,2 dBd
ANTENNA ARRAY	ZA 40	QN 405 149 QN 405 170 QN 405 151	330÷344 380÷440 440÷470	N	off set	5/0 dBd  5,5/-2,5 dBd 2 dipoles one above another
SIDE MOUNTING ANTENNA	ZA 41	QN 405 101 QN 405 169 QN 405 102	300÷344 380÷440 440÷470	N	off set	dipole $\lambda/2$ with supporting yard 2,6/-1,6 dBd 3/-2 dBd or ellipse cca 1,5 dBd

## BASE ANTENNAS

Antenna name	Type marking	Drawing no.	Frequency band (MHz)	Input	Pattern	Note
BASE DIRECTIONAL ANTENNA	ZA 42	QN 405 103 QN 405 130 QN 405 131 QN 405 147 QN 405 104 QN 405 146 QN 405 147	300÷344 314÷352 314÷352 395÷435 440÷470 470÷512 410÷420	N	directional	14-element YAGI antenna, cca 11 dBd
BASE DIRECTIONAL ANTENNA	ZA 43	QN 405 111	457÷469	N	directional	9-element YAGI antenna in laminate cover, 10 dBd
ANTENNA ARRAY	ZA 44	QN 405 113 QN 405 114	440÷470 440÷470	N	off set elliptic	4 dipoles one above another, 8.2/-0.5 dBd 8.7 dBd
DIRECTIONAL ANTENNAS SET	ZA 46	QP 770 87	457÷469	N		set of two directional YAGI antennas in laminate cover for bidirectional patterns creating incl. dividing element
BASE DIRECTIONAL ANTENNA	ZA 47	QN 405 132 QN 405 129 QN 405 133	300÷344 314÷352 440÷470	N	directional	7-element YAGI antenna, 7 dBd
BASE DIRECTIONAL ANT. WITH SUPPRESSED DIRECTION	ZA 48	QN 405 120 QN 405 121	300÷344 300÷344	N	cardioid	dipoles $\lambda/2$ with two passive elements, suppres. -10 dBd suppression -20 dBd
BASE GAIN MONOLITHIC ANTENNA	ZA 49	QN 405 139 QN 405 140 QN 405 141 QN 405 144 QN 405 145	440÷452 450÷462 460÷470 300÷308 336÷344	N	circular	colinear radiators set in laminate cover, 4,5 dBd
BASE DIRECTIONAL ANTENNA	ZA 50	QN 405 134 QN 405 135 QN 405 171 QN 405 136	300÷344 314÷352 380÷440 440÷470	N	directional	6/5- element YAGI antenna in laminate cover, 7 dBd
LOG-PERIODICAL ANTENNA	ZA 51	QN 405 150 QN 405 152	100÷500 (transmission) 100÷800 (reception)	N	directional	16-element log-per.ant. can be disassembled, 5÷8,5 dBi  different mounting element
LOG-PERIODICAL ANTENNA	ZA 52	QN 405 153	30÷108	N	directional	13-element log-per. ant. can be dis assembled 4,5÷7,3 dBi

## BASE ANTENNAS

Antenna name	Type marking	Drawing no.	Frequency band (MHz)	Input	Pattern	Note
LOG-PERIODICAL ANTENNA	ZA 54	QN 405 154	390÷470	N	directional	10-element log-per. ant. in laminate cover 8,5÷9 dBd
BASE OMNIDIRECTIONAL ANTENNA	VYA 100	QN 405 76	44÷46	direct	circular	unbalanced dipole $\lambda/2$ 0 dBd, direct coax. cable interconnection
BASE DIRECTIONAL ANTENNA	VYA 200	QN 405 77	44÷46	direct	directional	3-element directional antenna with unbalanced radiator 6,3 dBd

**Order example: Base antenna ZA 30/QN 405 138**

## COMBINERS

Antenna name	Type marking	Drawing no.	Frequency band (MHz)	Input	Note
LOW-LOSS CAVITY	ZF 41	QP 714 003	145÷174	N	4-channel cavity Tx combiner 4x50 W
COMBINERS	ZF 43	QP 714 004	440÷470		
RECEIVER MULTI-COUPLER WITH DOUBLE AMPLIFIER	ZX 07/C	QN 350 64	150÷174	N	doubled active part, 1:8, failure indication (1:4 possible), 19" unit
HYBRID COMBINER 160 MHz	ZX 38	QN 380 90	150÷174	N	2 -channel hybrid Tx combiner 2x50 W, expandable to 4-channel, 19" unit

**For example:** Specification consult with manufacturer

## CAVITY RESONATORS

Antenna name	Type marking	Drawing no.	Frequency band (MHz)	Input	Note
BANDPASS CAVITY	XF 41	3QK 294 03	140÷180 400÷540	N	$\lambda/4$ , $3/4 \lambda$ resonator $\varnothing$ 205 mm
	XF 411	QK 294 40 QK 294 42	140÷180 400÷540 380÷500	BNC BNC	profile 80 mm profile 80 mm
BAND REJECT CAVITY	XF 42	QK 294 12 QK 294 14	300÷390 380÷500	BNC	$\lambda/4$ high-selective band-rejection filter $\varnothing$ 205 mm
BANDPASS CAVITY	XF 43	QK 294 06 QK 294 08	300÷390 380÷500	N	$\lambda/4$ rezonator $\varnothing$ 205 mm
BANDPASS REJECT CAVITY	XF 44	QK 294 16 QK 294 18	140÷180 300÷390	N	selective $\lambda/4$ notch filtr $\varnothing$ 205 mm
BANDPASS REJECT CAVITY	XF 441	QK 294 36 QK 294 38	140÷180 400÷540	N	selective $\lambda/4$ notch filtr profile 80 mm
BANDPASS REJECT CAVITYION	XF 45	QK 294 20	400÷540	N	selective $3/4 \lambda$ notch filtr $\varnothing$ 205 mm
CAVITY DUPLEXER	XF 51	QP 794 00 QP 794 01	140÷180 400÷540	N	typical minimum offset 600 kHz 4-cavity high-selective duplexer from cavities $\varnothing$ 205
MOUTING SET	(XF 41 ÷ XF 45)	PSK 125 413			accessories for common mounting of 2 cavities XF 41 series



## ACCESSORIES

Antenna name	Type markin	Drawing no.	Frequency band (MHz)	Input	Note
COAXIAL 50Ω LOADS	XX 52 XX 54 XX 50	QK 056 100 QK 056 72 QK 152 51	0÷1000 0÷1000 0÷1000	BNC N plug N sock.	power 1 W power 2 W power 20÷50 W
POWER DIVIDER "-3 dB" (1:2)	XX 60	QN 350 54 QN 350 55 QN 350 61 QN 350 62	73÷84 150÷174 300÷344 440÷470	N sock.	applicable in antennas incl. cables (N plug)
POWER DIVIDER "-6 dB" (1:4)	XX 61	QN 350 103	150÷174	N	for antenna application without cables
HYBRID	ZF 32 ZX 11	QN 296 00 QK 056 93 QK 055 84 QK 057 70 QK 057 56 QK 057 57	73÷84 150÷174 150÷174 150÷174 300÷336 440÷470	N N N direct	-3dB 180°, 2-double -3dB 180° -3dB 90° -3dB 180°
POWER DIVIDER FOR RECEIVERS 1:2	ZF 14	QN 056 52	150÷174	N	-3dB
POWER DIVIDER FOR RECEIVERS 1:4	ZF 21	QK 350 17 QK 350 20 QK 350 19	150÷174 300÷336 440÷470	direct	-6 dB
CUBE		QF 701 00			direct interconnection 5xN socket
COAXIAL RELAY		QN 599 49	0÷1000		3xN, coil 12 V=

Order example: Bandpass cavity XF 41/3QK 294 03

## **Antenna systems and radio network attachments delivered beyond offered assortment**

### **a) Mobile combiners in bands 80, 160, 330 and 450 MHz**

Simultaneous operation:

- 1 radio station + car radio
- 2 radio stations + car radio
- 2 radio stations in different bands

### **b) Dividing elements and dividing heads for antenna systems in bands 80, 160, 330 and 450 MHz**

Possible modifications beyond current assortment:

- more outputs
- higher output powers
- various clamping methods
- with cables / without cables, etc.

### **c) Cavity filters in bands 160, 330, 450 MHz**

- bandpass filters
- bandpass loads
- notch filters
- various number of elements
- various parameters (insertion loss, slope)
- clamping according to user's demands

### **d) Duplexers (incl. cavity duplexers) in bands 160, 330, 450 MHz**

- various spacing Tx/Rx
- specifications acc. to the spacing Rx/Tx and configuration
- mobile, base configuration
- connectors BNC, N

### **e) Combiners:**

Hybrid combiners

- cavity combiners
- acc. to the user's requirement
- hybrid combiners 2÷8 channels up to 150 W/channel in bands 80, 160, 450 MHz

Cavity combiners 2÷16 channels

- minimum spacing in bands 160, 330, 450 MHz

**f) Distribution amplifiers for receivers in bands 80, 160, 330, 450 MHz**

- 2÷8 outputs

- system gain

- single or double active part

- failure indication possibility

**g) Minute assortment for bands 27, 40, 80, 160, 330, 450 MHz**

- filters, noise suppressing filters, matching elements, diplexing assemblies, balanced-unbalanced transformers

- coaxial extending cables incl. connectors

**h) Mechanical parts for base antennas**

- special holders, tube masts, H-masts, anchoring, flanges, sleeves, grounding material

- all acc. to the agreement with customer

**i) Customer project realization in bands 40, 80, 160, 330, 450 MHz**

- block diagram consultation and amendment

- parts determination (manufactured, purchased, developed)

- mechanical design (19" cabinets, special requirements)

**j) Antennas basic assortment in band 900 MHz**

- largely in development phase

Detail specifications of antennas, combiners and accessories are comprised in a catalog which can be ordered at the manufacturer under following numbers:

QD 803 01 - Czech version

QD 803 00 - English version