

## Specifications

### Frequency

Transmission	1.5 MHz to 30 MHz
Reception	10 kHz to 30 MHz
Frequency setting	decadic in 1-Hz steps
Frequency error	$<1 \times 10^{-7}/^{\circ}\text{C}$ $<1 \times 10^{-7}/\text{day}$ $<1 \times 10^{-7}/\text{year}$
Aging	
Channel memory	
User-programmable channels	401
Half-duplex channels thereof	100
Fixed-programmed channels (ITU)	401 to 2240
Additional channels for ALE	120
Transmit power	150 W PEP into 50 $\Omega$ 3 power levels – A1A (CW) – J3E (USB, LSB) – H3E (AME/USB) – J7B (A7J, J3E for data transmission) – B8E (ISB) – F1B (FSK, AFSK, baud rate 50 to 600 Bd, shift 42.5 kHz to 425 kHz) – F3E (FM) – F1C (FAX)

### Classes of emission

Switchover times	
Tx/Rx, Rx/Tx	$<10$ ms
Frequency change	$<30$ ms

### Transmission

Output power into 50 $\Omega$ /VSWR $<1.5$	150 W +0.5/–1 dB PEP 100 W +0.5/–1 dB CW (power reduction according to VSWR, no switchoff for VSWR $\infty$ )
Power levels	10/30/100 W
Spurious suppression	$>70$ dB, typ. 80 dB (into 50 $\Omega$ )
Harmonics suppression	$>45$ dB, typ. $>60$ dB (into 50 $\Omega$ )
Intermodulation products	$>32$ dB, typ. $>36$ dB (referred to PEP)
S/N ratio	$>150$ dB (referred to 1 Hz test bandwidth, $\Delta f >1$ MHz)
Weighted S/N ratio (H3E)	$>50$ dB (referred to PEP), weighted to CCIT (0.41/P53)
Carrier suppression	$>60$ dB, typ. $>70$ dB (referred to PEP)
Suppression of unwanted sideband	$>60$ dB (referred to PEP)
Voice compression	built-in

### Reception

Input impedance	50 $\Omega$ , VSWR $<3$
Noise figure	
without preamplifier	17 dB
with preamplifier	9 dB
Input sensitivity (typ.) (for S/N = 10 dB, f = 0.2 MHz to 30 MHz)	
without preamplifier	
A1A (CW)	0.4 $\mu\text{V}$ EMF, BW = 300 Hz
J3E (SSB), J7B	1.0 $\mu\text{V}$ EMF, BW = 2.7 kHz
H3E (AME), 1 kHz, m = 60%	2.7 $\mu\text{V}$ EMF, BW = 6 kHz
with preamplifier	
A1A (CW)	0.15 $\mu\text{V}$ EMF, BW = 300 Hz
J3E (SSB), J7B	0.4 $\mu\text{V}$ EMF, BW = 2.7 kHz
H3E (AME), 1 kHz, m = 60%	1.0 $\mu\text{V}$ EMF, BW = 6 kHz
Receiving bandwidths	3 dB $\pm 75$ Hz $\pm 150$ Hz $\pm 300$ Hz $\pm 500$ Hz $\pm 750$ Hz $\pm 1050$ Hz $\pm 1200$ Hz $\pm 1350$ Hz $\pm 1550$ Hz $\pm 3000$ Hz $\pm 4000$ Hz $<3$ dB (1 mV to 1 V EMF)

### AGC

Response to a 60 dB step variation	
Attack time	$<10$ ms
Decay time	25/150/500 ms/1 s/3 s
AF distortion	
Line output 0 dBm	$<1\%$
Loudspeaker	$<10\%$ at rated power
Weighted S/N ratio (H3E)	$>46$ dB SINAD for 1 mV EMF, weighted with filter to CCIT (0.41/P53)

Nonlinearities (1.5 MHz to 30 MHz)

Blocking	3 dB signal attenuation ( $\Delta f = 30$ kHz, useful signal 2 mV EMF, interfering signal 5 V EMF)
Desensitization	$>20$ dB SINAD ( $\Delta f >30$ kHz, BW = 2.7 kHz, useful signal 30 $\mu\text{V}$ , interfering signal 100 mV)
Intercept point IP <sub>3</sub>	$>30$ dB ( $\Delta f >30$ kHz, interfering signal 2 x 0 dBm)
Crossmodulation	$<10\%$ ( $\Delta f >30$ kHz, useful signal 1 mV EMF, interfering signal 4 V EMF, 1 kHz, m = 30%) $<-113$ dBm, with few exceptions
Inherent spurious signal	
Immunity to interference ( $\Delta f >30$ kHz)	
Image-frequency rejection	$>80$ dB, typ. $>90$ dB
IF rejection	$>80$ dB, typ. $>90$ dB
Oscillator reradiation	$<10$ $\mu\text{V}$ (at antenna input)
Protection of receiver input	$<100$ V EMF (f $<30$ MHz)

### General data

Operating temperature range	$-25^{\circ}\text{C}$ to $+55^{\circ}\text{C}$
Storage temperature range	$-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$
Supply voltage	$+21$ V to $+31$ V DC
Maximum altitude	3000 m above sea level, T <sub>amb</sub> = $35^{\circ}\text{C}$ to MIL-STD-810E, Meth. 507.3, $26^{\circ}\text{C}/41^{\circ}\text{C}$ , 95% RH, 5 days
Humidity	

### Mechanical test (with shockmount OS150T1)

Vibration	6 g / 5 Hz to 500 Hz
Shock	3000 g / 0.2 to 0.5 ms
EMC	MIL-STD-461
MTBF	$>9600$ h
Dimensions (W x H x D)	435 mm x 130 mm x 291 mm
Weight	15 kg

### Remote Control Unit D0150T

Channel memory	10
Selection	rotary switch (rotation $>360^{\circ}$ )
Indication	2 characters on LCD
Transmit indication	LED, green
Fault indication	LED, red + error message on LCD (13 characters max.)

### Operational information

Operation temperature range	$-25^{\circ}\text{C}$ to $+55^{\circ}\text{C}$
Storage temperature range	$-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$
Mechanical test	
Vibration	6 g / 5 Hz to 500 Hz
Shock	3000 g / 0.2 ms to 0.5 ms
EMC	MIL-STD-461
Dimensions (W x H x D)	175 mm x 67 mm x 52 mm
Weight	0.5 kg

### Antenna Tuning Unit AD150T

Frequency range	1.5 MHz to 30 MHz
Input power	150 W PEP, 100 W CW + 0.5 dB
Input impedance	50 $\Omega$
VSWR	$<1.5$ (typ. 1.3)
Matchable antennas (1.5 MHz to 30 MHz)	5 to 7 m whip antenna 7 to 12 m rod antenna $\geq 3$ m whip antenna (1.5 MHz to 2 MHz) duty cycle 1:1 long-wire and broadband antennas

### Tuning time

Initial tuning	typ. 1 s, max. 6 s
Repeated tuning	typ. $<0.2$ s
Silent tuning	$<30$ ms
Number of memory channels	approx. 250
RF tuning power	30 W $\pm 1$ dB (VSWR $<3$ )

### Connectors

RF input	N connector
Antenna	ceramic insulator
Antenna for f $<1.5$ MHz	N connector (optional)
Control data	via inner conductor, 9600 Bd
Power supply	via inner conductor of RS150T (21 V to 31 V, approx. 1 A)

### Permissible distances

Antenna feedpoint – ATU	$<0.3$ m
ATU – transceiver	$<50$ m (coaxial cable)

## Filling Device PK150T

Memory SRAM	256 byte (battery buffered, min. 1 year)
EEPROM	8192 byte
SRAM erase	pushbutton
Battery condition indicator	LED, yellow
Filling	via RS-232-C (I <sup>2</sup> C format)
Temperature ranges	
Operation	-25 °C to +55 °C
Storage	-40 °C to +85 °C
Dimensions (diameter x length)	39.5 mm x 132 mm
Weight	0.2 kg
Interface	D0150T (connector type Amphenol 162GB-36T12-10-PN for direct con- necting to D0150T)

## Handset with Control MB150T

Channel control	pushbutton up/down
Channel indication	00 to 99 on LCD
Squelch control	pushbutton SQ
ALE control	pushbutton CALL & SCAN
LCD Light	pushbutton LITE (duration 10 s ±3 s)
Power supply	typ. +12 V DC
Speaker	
Impedance	25 Ω ±20%
Sensitivity at 80 mW	>72 dB
Volume change (push button)	6 dB ±2 dB
Output power	0.5 W max.
Microphone output voltage (1 kHz, acoustic pressure 80 dB at mic., distance from tone source 20 mm)	>100 mV
Operating temperature range	-25 °C to +55 °C
Storage temperature range	-40 °C to +85 °C
Dimensions (W x H x D)	58 mm x 210 mm x 91 mm
Cable length (quiescent state)	645 mm
Weight	0.45 kg

## Ordering information

<b>HF Transceiver</b>	RS150T	6091.9004.02
HF Modem	RM150T	6091.9104.02
Remote Control Unit	DO150T	6091.9204.02
Antenna Tuning Unit	AD150T	6091.9304.02
Filling Device	PK150T	6091.9404.02
Handset with Control	MO150T	6091.9504.02
Handset without Control	MB150T	6091.9604.02
Coaxial Cable	KA150T	6091.9704.02
Cable for Interconnection	KS150T1	6091.9804.02
Shockmount for Transceiver	OS150T1	6091.9904.02
Shockmount for ATU	OA150T1	6092.0000.02