AES-IntelliNet

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SERVICE MANUAL
MODEL 7085-UE

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GENERAL SPECIFICATIONS

POWER   SOURCE ....+12VD.C. nominal(+10.8 to +15.6V)

TEMPERATURE RANGE

      STORAGE ....80℃ maximum   -40℃ min.

                                          25℃ nominal

      OPERATING ....60℃ maximum   -20℃ min.

ANTENNA   IMPEDANCE ....50 Ω

FREQUENCY   CONTROL ....PLL SYNTHESISER

FREQUENCIES OF OPERATION 410MHZ–440MHZ

FREQUENCY TOLERANCE AND STABILITY ....±5PPM

HIGH   HUMIDITY 90%

CHANNEL   CAPABILITY 1

NOMINAL   DIMENSIONS ....134 mm(L)X60 mm(W)X20 mm(H)

WEIGHT 190g

RADIO DATA TRANSCEIVER NOMINAL PERFORMANCE
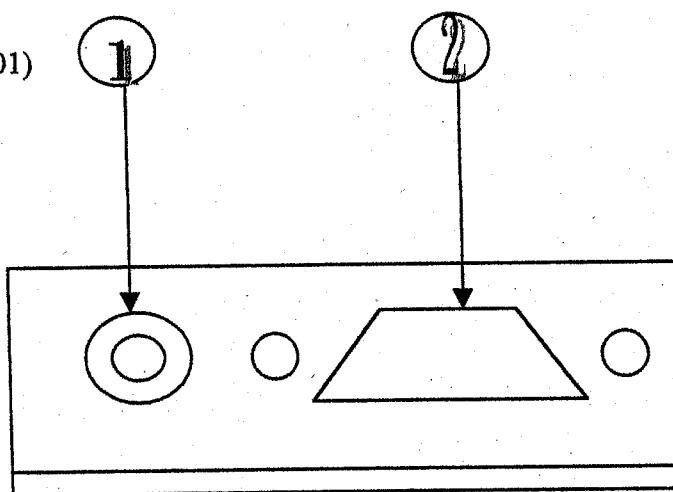
PERFORMANCE SPECIFICATIONS.........................ETSI 300-113

RF   OUTPUT   POWER ....6W / 1W   PROGRAMMABLE

MODULATION   TYPE ....FM

INTERMEDIATE   FREQUENICES ....45 MHZ

                                        455 KHZ

CHANNEL   SPACING ....12.5 KHZ ,25KHZ(PROGRAMMABLE)

TRANSMIT   ATTACK   TIME ....<25 mS

CURRENT   CONSUMPTION

      TRANSMIT ....1500mA@5W, 800mA@1W

      RECEIVE 85mA

EXTERNAL CONNECTIONS

1- 50Ω BNC SOCKET
2- 9 WAY " D " TYPE PLUG(J501)

D-TYPE INTERCONNECTIONS

PIN	FUNCTION	TYPE	RANGE	DESCRIPTION
J501-1	DATA_IN	ANALOGUE	100Mv-2.5VP-P	EXTERNAL MODULATION INPUT
J501-2	DATA_OUT	ANALOGUE	1VP-P	RECEIVER AF OUTPUT
J501-3	PTT	INPUT	0V/+5V	TRANSMIT ENABLE
J501-4	GND	GND	0V	GND
J501-5	B+	V+	+13.8V	POWER SUPPLY
J501-6	CDS	OUTPUT	OPEN/SHORT	RF CARRIER DETECT
J501-7	NC	NC	NC	NC
J501-8	PGM_DATA	INPUT	0V/NC	PROGRAMMER DATA INPUT
J501-9	PGM_ENB	INPUT	0V/5V	PROGRAMMING ENABLE

Crystal X1,connected to pin 1 of IC6, determines the second local oscillator frequency. In this case the crystal has a frequency of 44.545MHz. The first IF signal is applied to the mixer and resultant frequency of 455KHz, is the difference between the IF signal and second local oscillator.

The 455KHz IF signal is output from pin 3 and is applied to a 455KHz band-pass filter, CF1(20/25 kHz channel spacing) or CF2 (12.5 kHz channel spacing). The selection of the filters is accomplished by diodes D13(input) and D14(output) whose bias is controlled by software and applied to the diodes from pin 21 of IC501.

The output of CF1/CF2 is passed via pin 5 to a high gain IF amplifier coupled to the adjustable quadrature detector T2 (pin 8).Any detected signal is produced at pin 9 of IC6 and applied to the Receiver Audio Circuit and the Mute (Squelch) Circuit.

Squelch (MUTE) Circuit

The noise detect circuit in conjunction with IC6 consists of diode D11 and RV2.

Any noise signal is amplified by IC6 internal noise amplifier rectified by D11 .D11 Signal is applied to pin12 of IC6. The squelch trigger output (pin 14,IC6) is applied to the pin 6 of J501.

When noise is present, the voltage at pin 12 of IC6 is less than 0.7V. The squelch trigger output is 0V(logic 0) It's make pin 6 of J501 open state.

When no noise is present, the voltage at pin 12 of IC6 exceeds 0.7v and pin 14 of IC6 IS AT 5v(logic 1). This make pin 6 of J501 short state.

Carrier Detect

A Carrier Detect (MUTE DETECT) output is available on pin 6 of J501 .

AF Output Low Pass Filter

A low pass filter formed by C134, C135 and R82 removes any extraneous 455kHz energy from the AF output of the FM receiver chip (pin 9 of IC6).

The filtered signal is passed to pin 2 of J501.

Microcontroller

The PIC 16C57 microcontroller IC controls the programmable features and frequency synthesizer Data.

The alignment and performance test procedures assume the use of the following equipment.

Discrete test equipment

Volt Meter

RF Power Meter.

DC Power Supply, 0-15V 2A min

Oscilloscope, 20 MHz dual beam

RF Frequency Counter,

100 kHz - 600 MHz

AF Signal Generator 0 – 20 kHz

RF Signal Generator

SINAD Meter

Modulation Meter

Audio Power Meter

Spectrum Analyser and notch filter(option)

Coupler (20dB isolation)