

# MAINTENANCE MANUAL EURODACS ETS MODIFICATION RANGR UHF MOBILE RADIO 19C851829P11 & P13

## TABLE OF CONTENTS

	<b>Page</b>
MODIFICATION .....	Front Cover
SPECIFICATIONS:	
GENERAL .....	1
TRANSMITTER .....	1
RECEIVER .....	1
DATA APPLICATIONS .....	2
MECHANICAL LAYOUT .....	2
SCHEMATIC DIAGRAM .....	3

### MODIFICATION

The RANGR UHF Mobile Radio has been modified to meet ETS Specifications as follows:

- |   |  |                 |         |                       |         |                |         |
|---|--|-----------------|---------|-----------------------|---------|----------------|---------|
| <ol style="list-style-type: none"> <li>1. A 0.5 pf capacitor C94 (B19/5CMAB01122) added on Power Amplifier Board to increase the power turn down range for the transmitter power coupler.</li> <li>2. Data filter IC615 replaced with new filter (B19/AFM14F4600C1).</li> <li>3. Capacitors C638, C650 and C696 removed from System Control Board to improve receive audio frequency response.</li> <li>4. Capacitor C631 on System Control Board changed to 1200 pf chip (B19/5CAAD01718).</li> <li>5. A 0.047 <math>\mu</math>f chip capacitor C638 (B19/5CAAD01777) added across R638 on System Control Board to reduce aliasing of transmit audio.</li> </ol> | <ol style="list-style-type: none"> <li>6. Capacitor C88 on PA Board replaced with a 0.47 <math>\mu</math>f (B19/5CRAA00419).</li> <li>7. Two grounding clips (B19/MTB207087) added to the transmitter filter and a modified gasket to the radio bottom cover to improve transmitter spurious.</li> <li>8. A shield cover (B19/MPBC30755) added over the transmitter PA.</li> <li>9. A shield (B19/MTB155695) added over power module HC1.</li> <li>10. The rubber pad on the bottom cover in the transmitter area removed.</li> <li>11. Transmitter power output adjusted for 10 watts (<math>\pm</math>1.0 dB).</li> <li>12. Deviation requirements for 20 kHz systems are:               <table style="margin-left: 20px; border: none;"> <tr> <td>Voice deviation</td> <td>3.0 kHz</td> </tr> <tr> <td>Sub-audible deviation</td> <td>0.6 kHz</td> </tr> <tr> <td>Data deviation</td> <td>2.4 kHz</td> </tr> </table> </li> </ol> | Voice deviation | 3.0 kHz | Sub-audible deviation | 0.6 kHz | Data deviation | 2.4 kHz |
| Voice deviation   | 3.0 kHz  |                 |         |                       |         |                |         |
| Sub-audible deviation   | 0.6 kHz  |                 |         |                       |         |                |         |
| Data deviation  | 2.4 kHz  |                 |         |                       |         |                |         |

## SPECIFICATIONS

The following specifications apply to the EURODACs ETS radio unit.

### GENERAL

SPECIFICATIONS	LIMIT OR VALUE	ETS 300 086 SPEC
Type	Mobile	2.1
Alignment Range	403-470 MHz	3.1.2
Switching Range	450 to 470 MHz	3.1.2
Switching Range Category	AR1	3.1.3
Approval Category	3.1.9	3.1.9
Manufacturer	Ericsson or Ericsson GE	3.2.4
Package Numbers	N9P41 - 19C851829P11 (403-423 MHz)	3.2.4
	N9U41 - 19C851829P13 (450-470 MHz)	
Type approval numbers and country of approval	None	3.2.4
Channel separation	20 & 25 kHz	
Nominal test voltage	13.2 Vdc	5.3.2
Extreme temperature	-25°C to +55°C	5.4.1
Extreme test voltage	10.8 to 15.6 Vdc	5.4.2
Speaker Impedance	4 ohms	
Receiver audio power	10 watts	
Receiver audio frequency response	+1/-3 dB 300-3000 Hz	
Transmit audio frequency response	+1/-3 dB 300-3000 Hz	
Receiver audio distortion	<5% @ 10 W @ 1000 Hz 300-3000 Hz	
Transmitter audio distortion	< 5% @ 10 W @ 60% dev. 300-3000 Hz	

Continued

Continued

### TRANSMITTER

SPECIFICATIONS	LIMIT OR VALUE	ETS 300 086 SPEC
Frequency error	<± 2.00 kHz	4.1.1 & 7.1
Carrier power (W) rated and adj. range	6 to 20 Watts	4.1.2 & 7.2
Power stability vs extreme test cond.	+2/-3 dB	4.1.2 & 7.2.2
Lowest modulation freq.	300 Hz	4.1.4.1
Maximum frequency dev.	20 kHz chans ±4.0kHz 25 kHz chans ±5.0kHz	4.1.4.1 & 7.4.1
Deviation at 6 kHz deviation	30% of max freq.	4.1.4.2 & 7.4.2
Deviation > 6 kHz to 1 channel spacing	< 14 dB/Octave	4.1.4.2 & 7.4.2
Adj. channel power	-70 dBC	4.1.5 & 7.5
Conducted spurious	<-36.0 dBm < 1 GHz <-30.0 dBm > 1 GHz	4.1.6 & 7.6
Radiated spurious	<-36.0 dBm < 1 GHz <-30.0 dBm > 1 GHz	4.1.6 & 7.6
Intermodulation (base station only)	40 dB	4.1.7 & 7.7
Transient frequency time periods (mS)	t1 10 mS t2 25 mS t3 10 mS	4.1.8 & 7.8
Max frequency error during transient periods	t1 1 channel spacing t2 1/2 channel spacing t3 1 channel spacing	4.1.8 & 7.8 *

### RECEIVER

SPECIFICATIONS	LIMIT OR VALUE	ETS 300 086 SPEC
Usable sensitivity	6.0 dBuV	4.2.1 & 8.1
Amplitude characteristic	3 dB	4.2.3 & 8.3
Co-channel rejection	-8.0 to 0 dB	4.2.4 & 8.4
Adjacent channel selectivity	Normal 70 dB Extreme Cond 60 dB	4.2.5 & 8.5
Spurious response rejection	70 dB	4.2.6 & 8.6
Intermodulation response rejection	65 dB*	4.2.7 & 8.7 *

Continued

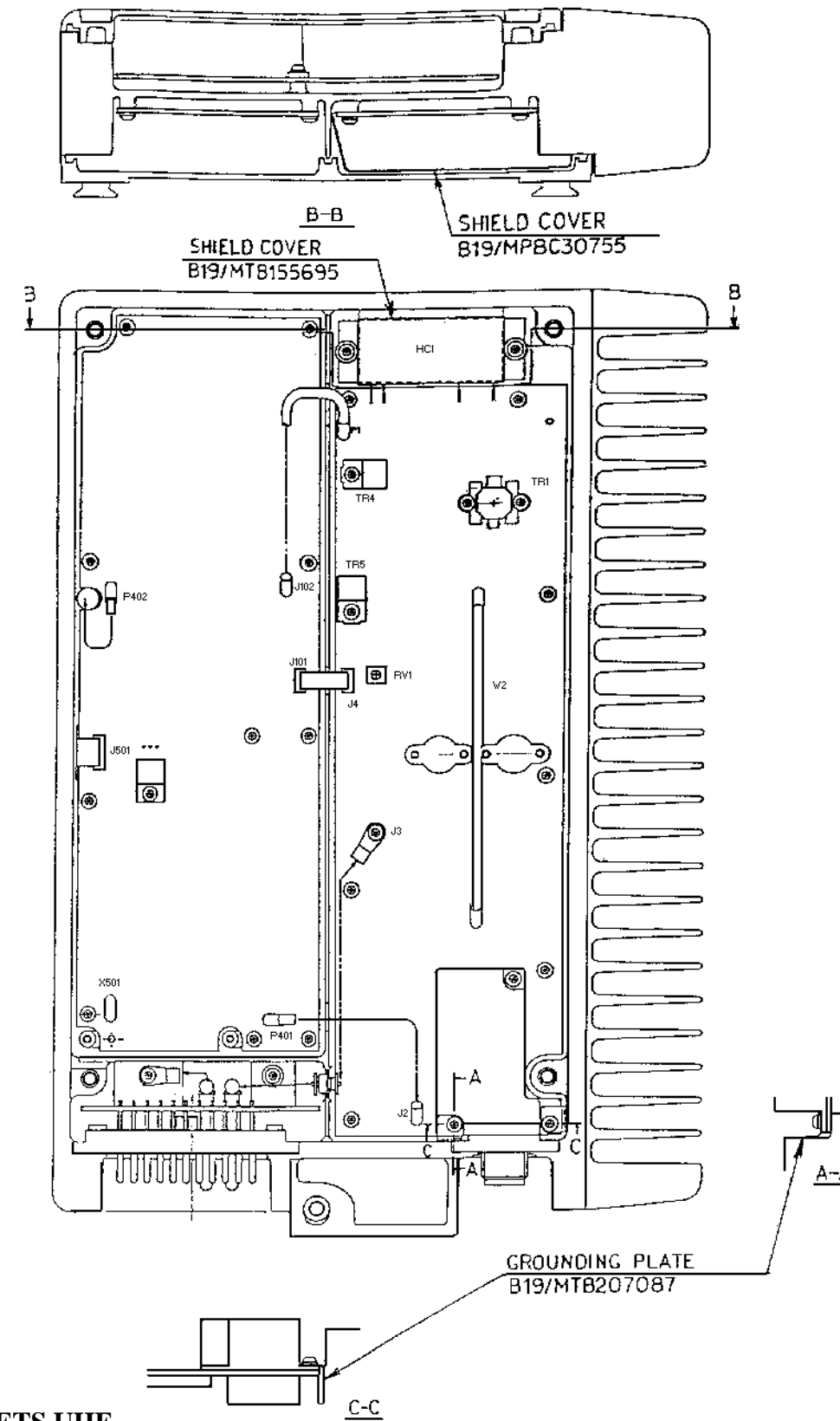
Continued

**RECEIVER**

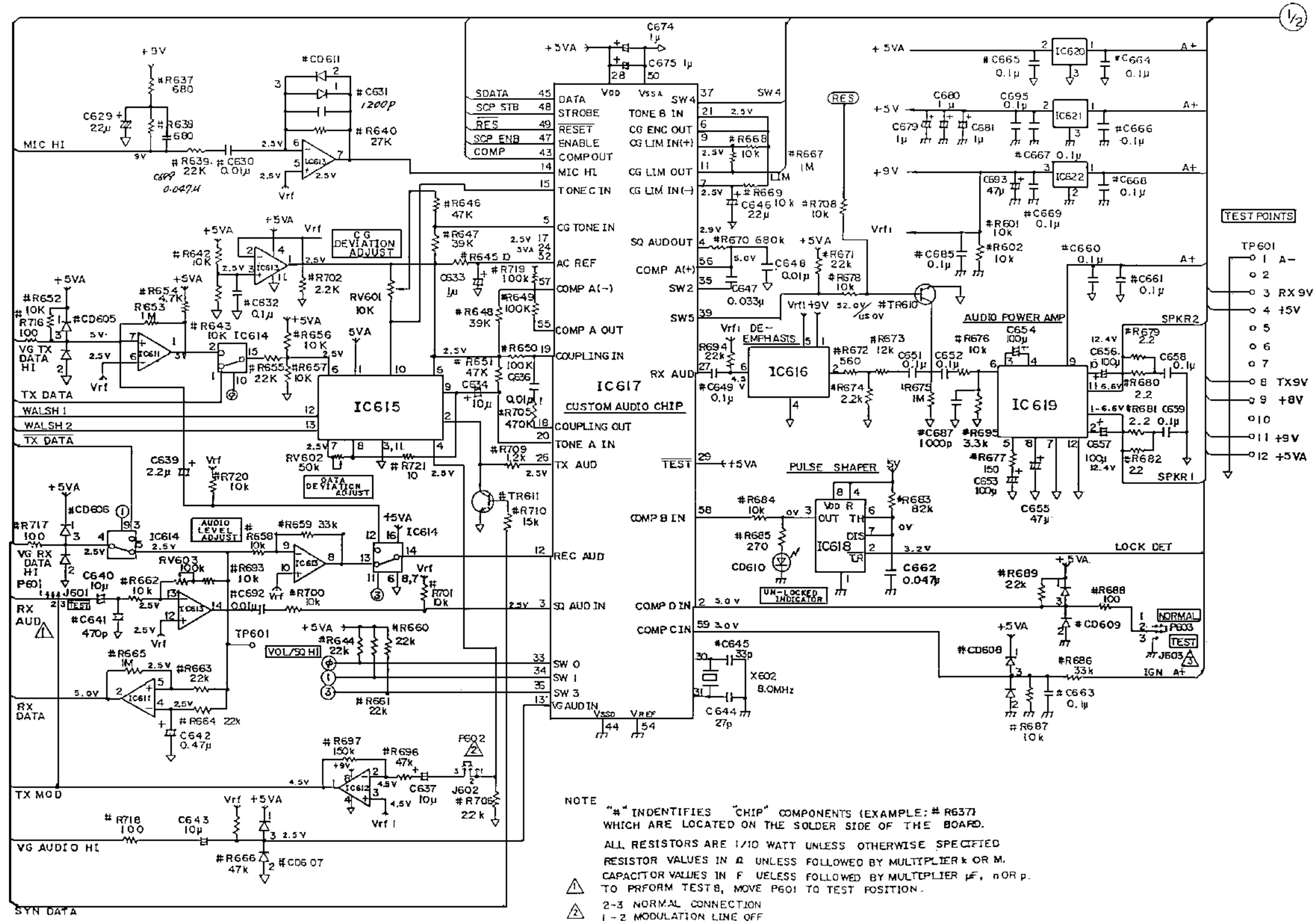
SPECIFICATIONS	LIMIT OR VALUE	ETS 300 086 SPEC
Blocking	84 dB	4.2.8 & 8.8
Spurious radiations (conducted and radiated)	-57.0 dBm ≤ 1 GHz -47.0 dBm > 1 GHz	4.2.8 & 8.9

**DATA APPLICATIONS**

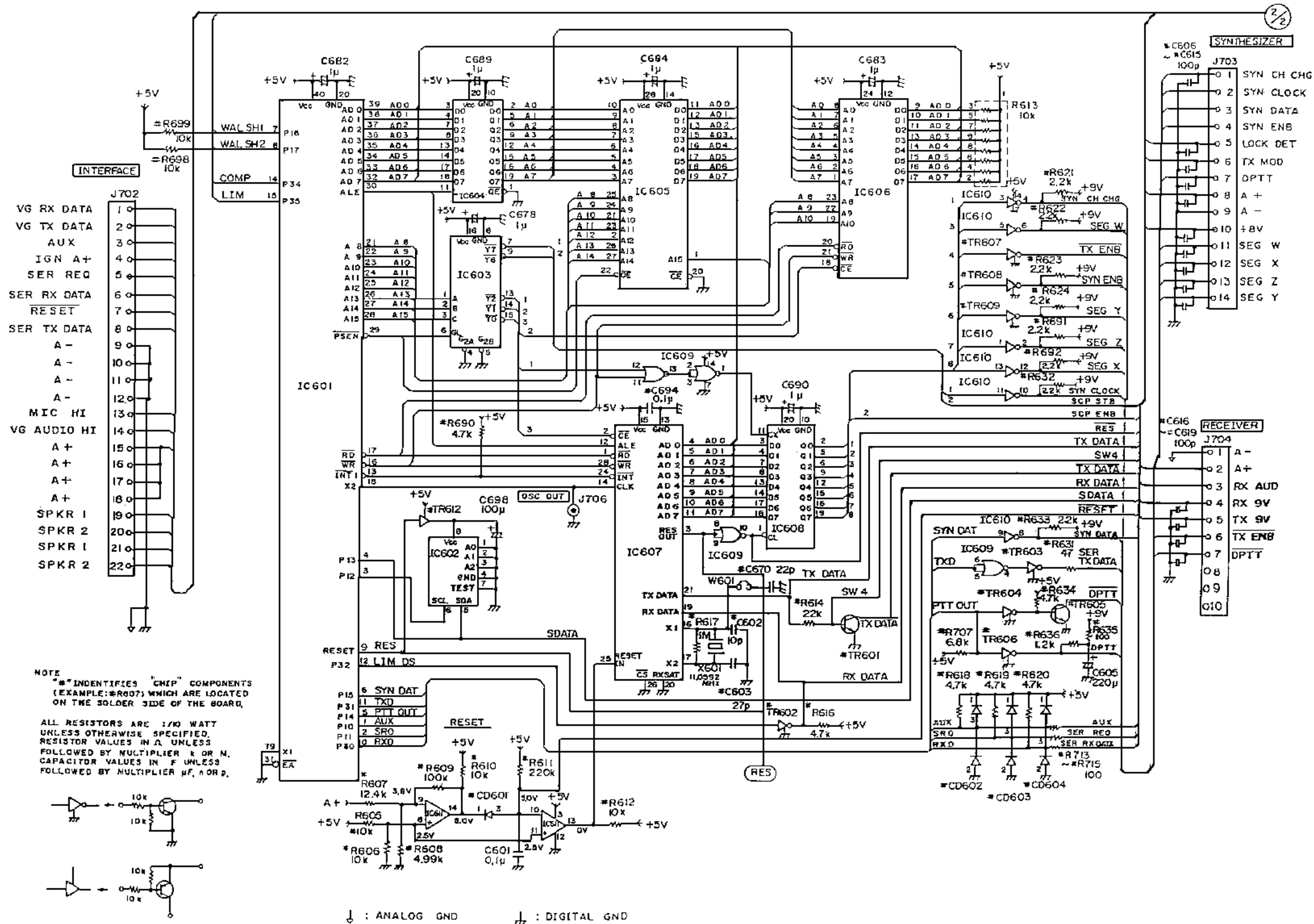
SPECIFICATIONS	LIMIT OR VALUE	ETS 300 086 SPEC
Adjacent channel power	70 dB	4.1.4 & 7.5
Spurious emissions (conducted & radiated)	Tx operating 0.25 uW ≤ 1 GHz 1.0 uW > 1 GHz Tx standby 2.0 nW ≤ 1 GHz 20 nW > 1 GHz	4.1.5 & 7.6
Transmitter attack time	< 25 mS	4.1.7 & 7.8
Transmitter release time	< 20 mS	4.1.8 & 7.9
Transient behavior of the transmitter	Attack & release slew rates between -6 and -30 dB points ≤ 0.20 mS	4.1.9 & 7.10
	Transient power -60 dBC	
Usable sensitivity (data, conducted)	+3.0 dBuV	4.2.1 & 8.1
Usable sensitivity under extreme conditions (data, conducted)	+9.0 dBuV	4.2.1 & 8.1
Bit error rate	< 2 errors per 3 min.	4.2.3 & 8.4
Co-channel rejection	-8.0 to 0 dB	4.2.4 & 8.5
Adjacent channel selectivity	Normal conditions 70dB Extreme conditions 60dB	4.2.5 & 8.6



RANGR ETS UHF



**RANGR UHF MOBILE RADIO**  
System Control



**RANGR UHF MOBILE RADIO**  
System Control

*This page intentionally left blank*