

FUNCTION OF SEMICONDUCTORS  
GMR645-2CK(UT916ZH)

REF No	DESCRIPTION	SPEC	UNIDEN P/N	MANUFACTURER	CIRCUIT FUNCTION
D101	DIODE	KDS114E-RTK	BDAY0992001	KEC	ANTENNA SWITCHING
D102	DIODE	KDS114E-RTK	BDAY0992001	KEC	ANTENNA SWITCHING
D201	DIODE	KDS160E-RTK	BDAY0993001	KEC	REVERSE CURRENT PROTECTION
D202	DIODE	GD LL4148	BDAY1168001	MITSUBISHI	REVERSE CURRENT PROTECTION
D302	DIODE	GD LL4148	BDAY1168001	MITSUBISHI	REVERSE CURRENT PROTECTION
D303	DIODE	GD LL4148	BDAY1168001	MITSUBISHI	REVERSE CURRENT PROTECTION
D304	DIODE	GD LL4148	BDAY1168001	MITSUBISHI	REVERSE CURRENT PROTECTION
D305	LED	LTST-S320GKT	BDAY1164001	LITEON	LCD BACK LIGHT
D306	LED	LTST-S320GKT	BDAY1164001	LITEON	LCD BACK LIGHT
D307	DIODE	GD LL4148	BDAY1168001	MITSUBISHI	REVERSE CURRENT PROTECTION
D401	VARACTOR DIODE	MA2SV0200L	BDAY1231001	MATSUSHITA	VCO FREQUENCY CONTROL
D402	VARACTOR DIODE	HVU307	BDAY0940001	HITACHI	REFERENCE OSC. MODULATION
D403	DIODE	KDS160E-RTK	BDAY0993001	KEC	REVERSE CURRENT PROTECTION
D404	VARACTOR DIODE	MA2SV0200L	BDAY1231001	MATSUSHITA	VCO FREQUENCY CONTROL
IC101	INTEGRATED CIRCUIT	LMV3211DBVR	BDEY3652003	TEXAS INSTRUMENTS	RX CTCSS FILTER
IC102	INTEGRATED CIRCUIT	NJM386M TE3	BDEY1895002	JRC	AF POWER AMPLIFIER
IC201	INTEGRATED CIRCUIT	NJM2904M	BDEY0703001	JRC	TX AF LIMITING/ROLL-OFF FILTER
IC202	INTEGRATED CIRCUIT	NJM2904M	BDEY0703001	JRC	TX AF LPF for CTCSS
IC202	INTEGRATED CIRCUIT	NJM2904M	BDEY0703001	JRC	TX CTCSS FILTER
IC301	INTEGRATED CIRCUIT	NJM2904M	BDEY0703001	JRC	RX AF BPF/VOLTAGE COMPARATOR
IC302	INTEGRATED CIRCUIT	NJM2870F03	BDEY4114003	JRC	3.0V VOLTAGE REGULATOR
IC303	INTEGRATED CIRCUIT	XC61CC2202MR/XC61AC2202MR	BDEY3883003	TREX	VOLTAGE COMPARATOR for MPU RESET
IC304	INTEGRATED CIRCUIT	AT24CO2N-10SI-1.8	BDEY3517003	ATMEL	EEPROM
IC401	INTEGRATED CIRCUIT	AN6311NFA-V	BDEY3509001	MATSUSHITA	RX 2nd MIX, 2nd IF AMP & DETECTOR / PLL
IC801	INTEGRATED CIRCUIT	MB89985L	---	FUJITSU	MICROPROCESSOR
Q101	TRANSISTOR	2SC5065-Y	BDBC5065124	TOSHIBA	RX RF AMPLIFIER
Q102	TRANSISTOR	2SC5065-Y	BDBC5065124	TOSHIBA	RX 1st MIXER AMPLIFIER
Q103	TRANSISTOR	2SC3052-1F	BDBC3052106	MITSUBISHI	POWER SOURCE SWITCHING for AF POWER AMPLIFIER
Q104	TRANSISTOR	2SA1365-T12-F T1	BDBA1365106	MITSUBISHI	POWER SOURCE SWITCHING for AF POWER AMPLIFIER
Q151	TRANSISTOR	2SC5065-Y	BDBC5065124	TOSHIBA	RX RF AMPLIFIER
Q201	TRANSISTOR	NESG250134	BDBZ1086001	NEC	TX FINAL AMPLIFIER
Q202	TRANSISTOR	55GN01M-TL	BDBZ1075001	SANYO	TX DRIVER AMPLIFIER
Q203	TRANSISTOR	55GN01M-TL	BDBZ1075001	SANYO	TX DRIVER AMPLIFIER
Q205	TRANSISTOR	2SC3052-1F	BDBC3052106	MITSUBISHI	MICROPHONE MUTE
Q206	TRANSISTOR	2SA1365-T12-F T1	BDBA1365106	MITSUBISHI	TX POWER CONTROL
Q207	TRANSISTOR	2SC3052-1F	BDBC3052106	MITSUBISHI	TX POWER CONTROL
Q301	TRANSISTOR	2SA1235A-1F	BDBA1235106	MITSUBISHI	DC SWITCH
Q302	TRANSISTOR	2SA1235A-1F	BDBA1235106	MITSUBISHI	DC SWITCH
Q305	TRANSISTOR	2SC3052-1F	BDBC3052106	MITSUBISHI	VOLTAGE LEVEL SHIFTER
Q306	TRANSISTOR	2SC3052-1F	BDBC3052106	MITSUBISHI	POWER SOURCE SWITCH for LCD BACKLIGHT
Q401	TRANSISTOR	2SC5635-T22-1U	BDBC5635697	MITSUBISHI	VCO BUFFER AMPLIFIER
Q402	TRANSISTOR	2SC5065-Y	BDBC5065124	TOSHIBA	VOLTAGE CONTROLLED OSCILLATOR (VCO)
Q403	TRANSISTOR	2SC3052-1F	BDBC3052106	MITSUBISHI	VCO RIPPLE FILTER
Q405	TRANSISTOR	2SA1235A-1F	BDBA1235106	MITSUBISHI	TX FINAL BIAS SWITCHING
Q406	TRANSISTOR	2SA1235A-1F	BDBA1235106	MITSUBISHI	POWER SOURCE SWITCHING for RX
Q407	TRANSISTOR	2SA1235A-1F	BDBA1235106	MITSUBISHI	POWER SOURCE SWITCHING for TX
Q408	TRANSISTOR	2SA1235A-1F	BDBA1235106	MITSUBISHI	POWER SOURCE SWITCHING for VCO
Q409	TRANSISTOR	2SA1235A-1F	BDBA1235106	MITSUBISHI	POWER SOURCE SWITCHING for RX
Q410	TRANSISTOR	55GN01M-TL	BDBZ1075001	SANYO	VOLTAGE CONTROLLED OSCILLATOR (VCO)
Q411	TRANSISTOR	2SC2714-Y	BDBC2714124	TOSHIBA	VCO BUFFER AMPLIFIER
Q414	TRANSISTOR	2SC3052-1F	BDBC3052106	MITSUBISHI	TX FINAL BIAS SWITCHING
TH402	THERMISTOR	TBPS1TBPS1R101K315H5Q	BDFY0118001	TAIYO YUDEN	TEMPERATURE COMPENSATION for REFERENCE OSC.

## ALIGNMENT PROCEDURE FOR MODEL GMR645-2CK (UT916Z)

## TRANSMITTER

STEP	MODE	CHANNEL	FREQUENCY	CONDITION	ADJUST	METHOD
1	TX	1	462.5625MHz	CONNECT RF WATTMETER TO THE ANTENNA PATTERN ON THE PCB.	RT202	KEY THE TRANSMITTER, AND ADJUST THE OUTPUT POWER AT $0.5W \pm 0.05W$
2	TX	1	462.5625MHz	CONNECT FREQUENCY COUNTER TO THE ANTENNA PATTERN ON THE PCB WITH AN APPROPRIATE ATTENUATOR.	RT403	KEY THE TRANSMITTER WITHOUT ANY MODULATION. ADJUST TRANSMISSION FREQUENCY TO $462.562500MHz \pm 100Hz$
3	TX	1	462.5625MHz	CONNECT MODULATION ANALYZER TO THE ANTENNA PATTERN ON THE PCB. HPF:OFF LPF:3KHz DE-EMP:OFF  CONNECT OSCILLOSCOPE TO MODULATION OUTPUT OF THE MODULATION ANALYZER.  CONNECT AUDIO GENERATOR TO TP3 WAVEFORM:20Hz SQUARE WAVE MAGNITUDE:1.5Vp-p	RT402	KEY THE TRANSMITTER, AND ADJUST RT402 AS THE WAVEFORM ON THE OSCILLOSCOPE COMES TO BE A CERTAIN SQUARE WAVE
4	TX	1 +CTCSS No. 27	462.5625MHz	CONNECT MODULATION ANALYZER TO THE ANTENNA PATTERN ON THE PCB. HPF:OFF LPF:15KHz DE-EMP:OFF  INJECT 1KHz 60mVp-p SINE WAVE TO MICROPHONE JACK FROM AUDIO GENERATOR.	RT201	KEY THE TRANSMITTER, AND ADJUST RT201 AS THE MODULATION ANALYZER INDICATES $\pm 2.25KHz \pm 0.1KHz$ DEVIATION.

## RECEIVER

STEP	MODE	CHANNEL	FREQUENCY	CONDITION	ADJUST	METHOD
1	RX	1	462.5625MHz	CONNECT DC VOLTMETER TO TP2  INJECT -47dBm RF SIGNAL WITHOUT MODULATION FROM SSG TO THE ANTENNA PATTERN ON THE PCB.	L403	ADJUST L403 AS THE VOLTMETER INDICATES $1.6V \pm 0.05V$
2	RX	1	462.5625MHz	CONNECT SINAD METER TO SPEAKER JACK WITH $16\Omega$ DUMMY LOAD.  INJECT RF SIGNAL FROM SSG AS FOLLOWING CONDITION. MAGNITUDE:AS LARGE AS THE RECEIVER OBTAINS 10dB SINAD SENSITIVITY. DEVIATION: $\pm 1.5KHz$ AF FREQUENCY:1KHz	RT401	TURN RT401 FULLY C.C.W., THEN TURN SLOWLY TO C.W. AND SET IT AT THE POINT WHERE WAVEFORM APPEARS AT THE SPEAKER OUT.