

Technical Note:

Technical Specifications of A500 (56D98)

Handset

Model Name	A500 (56D98)		
Brand	BenQ		
HW version	EPR1		
SW version	1.0		
	Name	Signature	Date
Initiator	Bryan Liou	<i>Bryan Liou</i>	<i>24-May-2004</i>
Reviewer	Jerry L Liu	<i>Jerry L Liu</i>	<i>24-May-2004</i>
Approver	YJ Chen	<i>YJ Chen</i>	<i>24 May, 2004</i>

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BenQ A500 GSM/GPRS Mobile Phone Specifications

Profile

Handset Appearance	
Dimensions	83.5 x 45 x 23.1 mm
Volume	< 90 c.c.
Handset Weight	< 95 g (including battery weight)
Battery Weight	
Li-ion 800 mAh Battery	< 26g
Operating Temperature Range	-20 to +55 °C

Basic Services

Tele Service	
	Telephony (Speech)
	Emergency Call
Short Message Service	
	Delivery Report
	Short Message Service MT/MO
	Cell Broadcast
Bearer Service	
	Data circuit duplex asynchronous up to 9600 bit/sec (TBD)

Supplementary Services

Number identification	
	Calling line identification presentation(CLIP) Calling line identification restriction (CLIR) Connected line identification presentation(CoLP) Connected line identification restriction (CoLR)
Call offering	
	Call forwarding unconditional (CFU) Call forwarding on mobile subscriber busy (CFB) Call forwarding on no reply (CFNRy) Call forwarding on mobile subscriber not reachable (CFNRc)
Call completion	
	Call waiting (CW) Call hold (HOLD)
Multi Party	(MPTY)
Charging	
	Advice of charge-information (AoCI) Advice of charge-charging (AoCC)
Call barring	
	Barring of all outgoing calls (BAOC) Barring of outgoing international calls (BOIC) Barring of outgoing international calls (BOIC-exHC) Barring of all incoming calls (BAIC) Barring of incoming calls when roaming (BIC-Roam)

GSM Basic Specifications (Phase 2+ Features)

EGSM band (900 MHz)	
Frequency Range	TX 880-915 MHz; RX 925-960 MHz
Channel Spacing	200 KHz
Number of Channels	174 Carriers x 8 (TDMA)
Modulation	GMSK
Duplex Spacing	45 MHz
Frequency Stability	+/- 0.1 ppm (Uplink TX)
Power Output	33 dBm Class 4 (2 W peak)
Output Impedance	50 Ohm
Spurious Emission	-36 dBm up to 1 GHz (< -30 dBm when frequency > 1 GHz)
Receiver Sensitivity	< -102 dBm, RBER ≤ 2.0%
DCS band (1800 MHz)	
Frequency Range	TX 1710-1785 MHz; RX 1805-1880 MHz
Channel Spacing	200 KHz
Number of Channels	374 Carriers x 8 (TDMA)
Modulation	GMSK
Duplex Spacing	95 MHz
Frequency Stability	+/- 0.1 ppm (Uplink TX)
Power Output	30 dBm Class 1 (1 watt peak)
Output Impedance	50 Ohm
Spurious Emission	-36 dBm up to 1 GHz (< -30 dBm when frequency > 1 GHz) Compatible with phase 2 feature
Receiver Sensitivity	< -102 dBm, RBER ≤ 2.0%
PCS band (1900 MHz)	
Frequency Range	TX 1850 ~ 1910MHz; RX 1930 ~ 1990MHz
Channel Spacing	200 KHz
Number of Channels	299 Carriers x 8 (TDMA)
Modulation	GMSK
Duplex Spacing	80 MHz
Frequency Stability	+/- 0.1 ppm (Uplink TX)
Power Output	30 dBm
Output Impedance	50 Ohm
Spurious Emission	-36 dBm up to 1 GHz (< -30 dBm when frequency > 1 GHz) Compatible with phase 2 feature
Receiver Sensitivity	< -102dBm, RBER <2.0%
Voltage Operation	
Li-ion Battery	DC 3.3 - 4.2 V

Power Consumption	
Working Current Average	< 260 mA
Standby Current	< 7 mA
Talking Time*	> 162 minutes (With Li-ion 700 mAH)
Standby Time*	> 100 hours (With Li-ion 700 mAH)
DTX / DTR	Yes

Typical RF Performances

GSM band

Item		ARFCN: 001	ARFCN: 62	ARFCN: 124
RMS Phase Error		< $\pm 5^\circ$	< $\pm 5^\circ$	< $\pm 5^\circ$
Peak Phase Error		< $\pm 20^\circ$	< $\pm 20^\circ$	< $\pm 20^\circ$
Output Power	PCL5	33dBm \pm 2dB	33dBm \pm 2dB	33dBm \pm 2dB
	PCL12	19dBm \pm 3dB	19dBm \pm 3dB	19dBm \pm 3dB
	PCL19	5dBm \pm 4dB	5dBm \pm 4dB	5dBm \pm 4dB
Frequency Error		< ± 89 Hz	< ± 89 Hz	< ± 89 Hz
Reference Sensitivity < 2%		< -102dBm	< -102dBm	< -102dBm

Note: The maximum output power for PCL5 is calibrated at +31.8dBm in BenQ factory

DCS band

Item		ARFCN: 512	ARFCN: 700	ARFCN: 885
RMS Phase Error		< $\pm 5^\circ$	< $\pm 5^\circ$	< $\pm 5^\circ$
Peak Phase Error		< $\pm 20^\circ$	< $\pm 20^\circ$	< $\pm 20^\circ$
Output Power	PCL0	30dBm \pm 2dB	30dBm \pm 2dB	30dBm \pm 2dB
	PCL7	16dBm \pm 3dB	16dBm \pm 3dB	16dBm \pm 3dB
	PCL15	0dBm \pm 4dB	0dBm \pm 4dB	0dBm \pm 4dB
Frequency Error		< ± 171 Hz	< ± 171 Hz	< ± 171 Hz
Reference Sensitivity < 2%		< -102dBm	< -102dBm	< -102dBm

Note: The maximum output power for PCL0 is calibrated at +29.7dBm in BenQ factory

PCS band

Item		ARFCN: 512	ARFCN: 660	ARFCN: 810
RMS Phase Error		< $\pm 5^\circ$	< $\pm 5^\circ$	< $\pm 5^\circ$
Peak Phase Error		< $\pm 20^\circ$	< $\pm 20^\circ$	< $\pm 20^\circ$
Output Power	PCL0	30dBm \pm 2dB	30dBm \pm 2dB	30dBm \pm 2dB
	PCL7	16dBm \pm 3dB	16dBm \pm 3dB	16dBm \pm 3dB
	PCL15	0dBm \pm 4dB	0dBm \pm 4dB	0dBm \pm 4dB
Frequency Error		< ± 185 Hz	< ± 185 Hz	< ± 185 Hz
Reference Sensitivity < 2%		< -102dBm	< -102dBm	< -102dBm

Note: The maximum output power for PCL0 is calibrated at +29.2dBm in BenQ factory

SW Interface (Man-Machine-Interface)

Description	Comment
Battery Power Meter	Y
Control Keys (3 side keys) Up key Down key Select key	Y
Control Keys (11 in main body) 4 direction keys Send key Ok key Power (end) key C key Shortcut key for Input switch Soft key (2)	
Signal Strength Display	Y
Low Battery Warning	Y
Alert types 40 polyphony melody Ring plus vibrate 20 default ringer tones SMS/MMS tones Keypad tone	Y Y Y Y Y
User define melody User Programmable Melody Downloadable Melody SMS PC-sync	Y (5)
Personalized Quick Access List	Y (12)
Animated Icons	Y
Analog Clock Display	Y
PC sync of Contact / schedule	Y
Integration of SMS schedule w/ handset schedule	Y
Call Related Features	
Auto Redial (on system busy)	Y
Mute call	Y
Selectable ringer tones	Y
Key Answer only	Y
Auto Answer	Y
Any Key Answer	Y
Clear last digit/all digits	Y

Keypad tones On/Off	Y
Cost Control/Security	
Advice of charge (units/charges)	Y
Call Restrictions	Y
Change unlock codes	Y
Display call timers/ Charge meters	Y
Auto lock	Y
Keypad lock	Y
PIN Entry (enable/ disable/ change/ unblock)	Y
PIN 2 (enter/ change)	Y
Call Timers (non programmable)	Y
Store Charge Rate	Y
SIM Lock (lock level by request)	Y
Network Related	
EFR/FR/HR	Y
Display owner name (from SIM card)	Y
SIM Application Tool Class 2	Y
Automatic registration/deregistration	Y
International roaming	Y
EGSM	Y
GPRS (Class 8)	Y
Memories	
Phonebook storage (500 + SIM)	Y
SIM card (dependent on SIM)	Y
Speed dial	Y
SIM copy (Single Record Copy between SIM and Phone memories)	Y
Find by Name	Y
Memory, Grouping by Icon Tags	Y
Memory, Grouping by Ring Tones	Y
Call Management	
DTMF Tones	Y
Reminder beeps	Y
Caller Line identification	Y
Call Waiting	Y
Call Hold	Y
Fixed dialing	Y
Long Tone DTMF	Y
Restore default	Y
Conference Call	Y
Private Line	Y
Date, Time stamp (for missed call and received call)	Y
Message waiting notification	Y
Call Diverting On busy No reply Not reachable Unconditional	Y

Call Barring Inbound Inbound when roaming Outbound Outgoing international calls Outgoing international calls except home country	Y
Missed call indication	Y
Missed Call List (Show Duplicates)	Y
Call list Add to Handset/ SIM card Last numbers dialed Last numbers received	Y (30)
Non Voice Features	
Short Message Service GSM mobile originated Cell broadcast Mobile terminated	Y
SMS-Mobile Originated canned messages, user defined + pre-stored	Y
Group SMS	Y
Time / Date / Caller ID stamp for SMS (provided at front of message)	Y
Concatenated SMS-MT	Y
Concatenated SMS-MO	Y
SMS Chat	Y
Sending (edit) Ringer Tone via SMS	Y
SMS icon Messaging – Icons	Y
SMS animation icon Messaging – Animated icon	Y
USSD Phase II	Y
Predictive Text entry for Chinese	Y
Predictive Text entry for English	Y
WAP 2.0	Y
Real Time Clock with Alarm	Y
Scheduled Power On/Off	Y
Calendar with Notes	Y
Screen Saver Animations	Y
Downloadable Screen Saver Animations	Y
Games	Y
GPRS	Y
CSD (T/NT)	Y
Profiles	Y
PC Connectivity (Data Service)	Y
Automatic World Clock (Network time)	Y
Calculator	Y
Currency Converter	Y
Stopwatch	Y

EMS	Y
MMS	Y
Java platform support	Y
IrDA	Y
Photo Caller ID/ Video Caller ID	Y
Voice Recording / Voice Ring Tone	Y
Photographing	Y
Videotaping without Voice	Y