

# Technical Note:

## Description of Operation of A500 (56D98)

### Handset

Model Name	A500 (56D98)		
Brand	BenQ		
HW version	EPR1		
SW version	1.0		
	Name	Signature	Date
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## 1 Basic information of the handset under-testing

- 1.1 The EUT is a GSM/GPRS mobile phone for voice/data communications; the system utilizes GMSK modulation & demodulation with symbol rate at 270.833kbps.
- 1.2 The EUT is working via a FDD/TDMA methodology with Base Station (BS).
- 1.3 The EUT is powered by a Li-ion battery through a three-terminal pogo connector; One is (+) polar of the battery, one is the (-) polar of battery and the other one is the temperature sensing of the battery. The operating voltage range of the battery is 3.3v to 4.2v with nominal voltage at 3.7v.

## 2 The operation process

- 2.1 The microphone is an input device of voice which is amplified by several buffering stages then post-processed by sampling and quantifying process by a ADC within ABB IC AD6537B, the data bits are to send to DBB IC AD6527 for further data encoding/conversion and traffic data construction. The data stream is flowing through A serial bus between AD6537B & AD6527.
- 2.2 The system control signaling and communication protocol is

generated by AD6527 that run the software load on flash memory.

The generated control/protocol signaling is multiplexed with traffic data that comes from AD6537B to form a complete data stream to be transmitted.

2.3 Before the data stream can be sent out to the handset counterpart, the data stream will be sent back to AD6537B for data bit shaping and filtering via B serial bus. After the bit shaping then the signal are ready to send out through RF transceiver unit.

2.4 The RF transceiver unit comprises basically with RF IC SKY74063 and Power amplifier IC SKY77324. The data shaped signal from AD6537B is modulated by the I/Q modulator and frequency converted through the translation loop circuit within SKY74063. Thus the GMSK signal is formed, and the output-boosting amplifier SKY77324 amplifies the GMSK signal to a certain level that is remotely set by base station. The antenna connects to the RF transceiver unit will radiate the modulated & boosted signal to base station.

2.5 The receiving process is just like a reversal of transmitting. The downlink signal is received through antenna and fed to the receiving path of SKY74063, which is a Direct-down Conversion

Receiver architecture to convert the RX signal from RF directly to baseband. The down-converted signal from I/Q demodulator within SKY74063 is then fed into AD6537B again for demodulation.

- 2.6 The ADC in AD6537 RX path post-process the I/Q signal received by sampling and quantifying then sends the data to AD6527 via B serial bus.
- 2.7 The data stream will be demodulated in AD6527 and de-multiplexed the traffic data from control signaling and protocol.
- 2.8 At last the traffic data will be reformed again for voice signal at AD6537B audio portion, then fed into receiver (ear piece).
- 3 The VC-TCXO (VCTCXO-208C, 26MHz) is a reference clock, which is the 1<sup>st</sup> portion to be powered up while handset is alive. Every portion, no matter RF or BB, all reference to the signal source for the sequential action to be executed.