

## Definitions and Abbreviations

### Definitions:

1. **Vocoder:** A vocoder is a technique of speech coding that analyzes and synthesizes the human voice signal in digital form for audio data compression, multiplexing, voice encryption or voice transformation.
2. **Automatic Link Establishment:** Automatic link establishment (ALE) was developed to automatically select a frequency that will support automatic linking between stations in a network or point-to-point communication without operator assistance.
3. **Selective Calling:** Selective calling locks out all signals except one with the correct digital code. Selective calling systems can overlap other formats of calling i.e. group call and DTMF individual calling. Selective calling prevents the user from hearing others on a shared channel. It does not eliminate interference from co-channel users (other users on the same radio channel). If two users try to talk at the same time, the signal will be affected by the other party using the channel.
4. **Digital FSK Coding:** Frequency-shift keying (FSK) is a frequency modulation scheme in which digital information is encoded on a carrier signal by periodically shifting the frequency of the carrier between several discrete frequencies.
5. **Code Excited Linear Prediction:** Code Excited Linear Prediction (CELP), a speech compression method that achieves high compression ratios along without compromising audio quality.
6. **Mixed Excited Linear Prediction:** Mixed-excitation linear prediction (MELP) is a speech coding standard used mainly in military applications and satellite communications for secure voice and secure radio devices.
7. **Sensitivity of Receiver System:** Sensitivity of a receiver is its ability to identify and amplify weak signals at the receiver output. Whereas in voltage terms, minimum signal level ( $\mu\text{V}$  or  $\text{dBm}$ ) at the input of the receiver for demodulation and audio listening of the received signal. The minimum audible signal with acceptable quality shall be determined by a SINAD measurement.
8. **Selectivity of Receiver System:** Selectivity of radio receiver is the ability of a receiver to accept the wanted signal and to reject the unwanted signals.
9. **Fidelity of Receiver:** Fidelity of a receiver is its ability to reproduce the exact replica of the transmitted signals at the receiver output.



10. **Squelch:** Squelch is the process of removing unwanted background noise from a receiver. This is done to allow receiver to decode strong signal whereas, weak signals near or below the level of the receiver's sensitivity are rejected.
11. **Frequency Hopping:** Frequency hopping is a communication technique of transmitting radio signals by rapidly changing the carrier frequency among many frequencies occupying a large spectrum band within specified range. The changes are controlled by a code known to both transmitter and receiver. Signals are difficult to intercept if the frequency hopping pattern is not known at the same time Jamming is also difficult if the hopping pattern is discrete (unknown).
12. **Automatic Link Establishment 2G/3G:** Automatic link establishment (ALE) is a communication system that permits HF radio stations to call and link on the best HF channel automatically without operator assistance. Typically, ALE systems make use of recently measured radio channel characteristics stored in a memory matrix to select the best frequency. The system works much like a telephone in that each radio in a network is assigned an address (similar to a call sign). When not in use, each radio receiver constantly scans through its assigned frequencies, listening for calls addressed to it. There are two version of ALE i.e. 2G and 3G and ALE 3G has edge over ALE 2G as ALE 3G works on synchronous mode and Asynchronous mode. ALE 3G provides a more robust waveform and quicker linking times (Synchronous Mode) in comparison to ALE 2G. Quicker linking times is achieved with the connection of a GPS receiver with HF radio set. The GPS receiver allows the station to obtain Universal Time Coordination (UTC) and Time of the day (TOD) and therefore network scanning synchronization takes place.

**Abbreviations:**

<b>BPS:</b>	Bits per Second
<b>FSK:</b>	Frequency Shift Keying
<b>ALE:</b>	Automatic Link Establishment
<b>PTT:</b>	Press to Talk
<b>GPS:</b>	Global Positioning System
<b>LCD:</b>	Liquid-crystal display
<b>MIL-STD:</b>	Military Standards
<b>SAG:</b>	Scientific Analysis Group
<b>2G/3G:</b>	Second/ Third Generation
<b>OEM:</b>	Original Equipment Manufacturer
<b>NABL:</b>	National Accreditation Board for Testing and Calibration Laboratories
<b>SINAD:</b>	Signal to Noise and Distortion
<b>SNR:</b>	Signal to Noise ratio
<b>BER:</b>	Bit Error Rate
<b>DTMF:</b>	Dual tone multi-frequency