Communications Modes Table

MODE OF COMMUNICATION	HOW IT WORKS	RELIABILITY	AVAILABILITY	ADVANTAGES	LIMITATIONS
Runners	Volunteers carry messages from one location to another	Extremely reliable	Any reliable person can be used as a runner	- Reliability - Flexibility - Familiar with environment - Availability - No special training	- Distance and time - Requires written information for accuracy - Availability - Requires familiarity with the area
Landline Telephones	Phones that are powered by themselves and rely on local telephone lines	- May operate during power failures, but handheld batteries can die and digital phones may or may not work - Local telephone system generally fails when a large number of people in an area attempt to use phone at the same time	Very common	- Familiarity - Commonplace - Enhanced 9-1-1 - Data transfer	- Not mobile - System overloads easily - Network susceptible to physical damage - May be affected by power failure
Cellular Phones	Phones that transmit signals relayed by cell phone towers	- Vulnerable to the same weaknesses as telephones - Cell phone towers require electricity to operate	Very common	- Familiarity - Mobility - Commonplace - Text messaging	- Towers may fail due to power outage or damage - System overloads easily

Mode of Communication	How it Works	Reliability	Availability	Advantages	Limitations
		▪ Local service (voice) generally fails when a large number of people in an area attempt to use service at the same time		▪ Requires less bandwidth – may get through when voice will not ▪ Camera phones	▪ Requires knowledge of phone numbers ▪ May be dependent on landlines
Satellite Phones	Relays transmissions via satellite.	If other phone systems are down, can only communicate locally with other satellite phones	Rare	▪ Always on ▪ Global operation	▪ Expensive ▪ Rare ▪ Requires visibility to sky or building with compatible antenna
Computer Communications	Transmits data via the Internet or by runners using USB drives or other media such as CDs	▪ May work when other systems are down	Very common	▪ May work when other systems down ▪ Provides electronic record ▪ Versatile network connections ▪ Relatively secure ▪ Large amounts of information ▪ Formatted/pre-formatted information ▪ Thumb drives and discs do not require Internet ▪ Information redistribution	▪ Equipment may not be mobile ▪ May require Internet connectivity ▪ Requires specific hardware ▪ Expensive ▪ Requires power source

MODE OF COMMUNICATION		HOW IT WORKS	RELIABILITY	AVAILABILITY	ADVANTAGES	LIMITATIONS
Two-way Radios	**Family Radio Service (FRS)**	Radios that transmit and receive on certain frequencies	Have a very limited range; useful only for intra-team communications	Common, but becoming increasingly difficult to purchase new	- Inexpensive - Widely used - No license required - Range up to 1 mile 14 channels - Shared communication with GMRS radios - Best used for intra-team communications	- Hard to find - Handheld only - Cannot alter radio (no antennas) = limited range
	General Mobile Radio Service (GMRS)	Radios that transmit and receive on certain frequencies	- Have a greater range than FRS radios - Signals can be improved with antennas and repeaters	New GMRS only radios are not widely available for purchase	- Inexpensive - Range of 2-5 miles - Best used for intra-team communications - Base station or mobile - Boost signal with external antennas or repeaters	- Requires a license (one per family) - Intended for family use - Some business licenses are grandfathered - Limited availability

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	FRS/GMRS Hybrid	Radios designed to be operated on FRS or GMRS frequencies	Have a greater range than FRS or GMRS radios with 22 channels available Have all of the advantages/disadvantages of FRS and GMRS radios because both FRS and GMRS have been combined into one radio	Commonly available; users must have a license to operate on the GMRS channels	Same advantages as FRS and GMRS, depending on which mode is used	Same limitations as FRS and GMRS, depending on which mode is used
	Multiple-Use Radio Service (MURS)	Radios that can be used with repeaters and external antennas	Only 5 channels available for use	Hard to find at general commercial retail stores; more available at hobbyist stores specializing in communications	▪ Handhelds or base units available ▪ 3-4 mile range for handhelds ▪ Increase range with repeaters and external antennas ▪ Transmit voice or data ▪ No license required	▪ Limited to 5 channels ▪ Limited availability ▪ More expensive than FRS/GMRS radios
	Citizen Band (CB)	Radios that transmit and receive on public frequencies	Have 40 channels, but due to frequency they are practically useless for short range transmissions	Common	▪ No license required ▪ 40 channels	▪ Casual conversation ▪ Not reliable ▪ Not recommended for CERT use

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	Public Safety Bands	A special high-powered communication mode used by emergency dispatchers, fire fighters, EMS, police, and other government emergency responders	Extremely reliable	Limited; must be used with jurisdictional protocol	▪ Direct communication to emergency first responders, if authorized ▪ Extremely reliable ▪ Range up to 20 miles with simplex, 50 miles with repeaters ▪ Handheld, mobile, or base units	▪ Requires authorization of jurisdiction ▪ Expensive ▪ Must be used with jurisdictional protocol ▪ Licensed to municipality or government entity

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	Amateur Radio	Available in a variety of configurations; transmit using repeaters and antennas	Very reliable	Widely available	■ Various data types (voice, text, data, photos, documents, e-mail, television) ■ Range in excess of 100 miles with repeaters ■ Operates using simplex or repeaters ■ Good availability ■ Moderately priced ■ Handheld, mobile, and base stations available ■ Reliability ■ Interoperability ■ More simultaneous conversations possible ■ Connect to computer ■ Connect to global positioning system (GPS) and automated position reporting system (APRS)	■ Requires license ■ No business use ■ Operators cannot be paid ■ Complex radios ■ Complex protocols ■ Must work with existing area Emergency Communications Plans