

digitalvoicemodes

Type	Vendor	Status	Primary Use	Channel Bandwidth	Modulation	Multiple Access	Codec	Bit Rate (Channel)	Encryption	Monitoring
APCO Project 25 (phase 1) APCO Project 25 (phase 2)	Inter-Agency Standard - APCO Defined Inter-Agency Standard - APCO Defined	Active In Development	Public Safety/Law Enforcement Public Safety/Law Enforcement	12.5 kHz, 6.25 kHz	C4FM, CQPSK	FDMA Only FDMA, TDMA	IMBE AMBE	9.6kbps	Optional: DES or AES based Optional: DES or AES based	Several scanner brands, also software from Winradio and Digital Speech Decoder (software package) Standard not yet finalized
EDACS Provoice EDACS Aegis Opensky Motorola ASTRO VSELP	M/A-COM (Harris Corp) M/A-COM (Harris Corp) M/A-COM (Harris Corp) Motorola	Active Deprecated (limited use) Active Superseded by P-25 Version	Public Safety/Law Enforcement Public Safety/Law Enforcement Public Safety/Law Enforcement Public Safety/Law Enforcement	25 kHz, 12.5 kHz 25 kHz, 12.5 kHz 12.5 kHz	GFSK GFSK GFSK C4FM	FDMA FDMA 4x TDMA FDMA Only	IMBE AEGIS AMBE VSELP	9.6kbps 9.6kbps 19.2 kbps 9.6kbps	Optional ESK Optional ESK Optional Optional	Digital Voice Decoder (software package) - Rumors that some P25 receivers can be reflashed. Unconfirmed. No known monitoring other than official equipment. No known monitoring other than official equipment. No known monitoring other than official equipment.
NXDN DMR (Digital Mobile Radio) dPMR	NXDN Forum (Kenwood / Icom) Open Standard - ETSI Open Standard - ETSI	Active Active Active	Professional Radio / Public Safety Professional Radio Professional Radio / Public Safety	12.5 kHz, 6.25 kHz 12.5 kHz, 6.25 kHz 6.25 kHz	4-FSK 4-FSK 4-FSK	FDMA Only FDMA, 2-Slot TDMA FDMA	AMBE+2 AMBE+2 AMBE+2	4.8 kbps 9.6kbps, 4.8 kbps 4.8 kbps	Optional 15-bit (32,768 keys) Optional Optional	Digital Voice Decoder (software package) Digital Voice Decoder (software package) Wavecom W-Code (software package)
DRM D-STAR G4GUO FDMDV ITU-TV.32	Open Open (JARL, Icom) Open (AOR Makes Equipment) Open Open (Alinco)	Active Active Active Active Active	Amateur Radio / Broadcasters Amateur Radio Amateur Radio Amateur Radio Amateur Radio	4.5 kHz, 9 kHz, 18 kHz, 100 kHz 6KHz 300 Hz - 2500 Hz 1.125 kHz	COFDM GMSK OFDM OFDM GMSK	No No No No No	Mpeg-4 (HVXC, CELP) AMBE (2020) AMBE MELP CVSD	Varies 4.8 kbps Varies Varies 4.8 kbps	No No No No No	Various software programs. Hardware by numerous vendors. Equipment manufactured primarily by Icom. Various homebrew systems. AOR voice modems. Homebrew hardware/software systems such as "DV-Dongle" systems. Freely available software. Alinco radios. Homebrew setups.
TETRA TETRAPOL	Inter-Agency Standard - ETSI Inter-Agency Standard - ETSI	Active Active	Public Safety/Law Enforcement Public Safety/Professional	25 kHz 12.5 kHz	QPSK GMSK	TDMA FDMA		7.2 Kbps	TEA 80-bit Yes - Mandatory	No No
iDen GSM IS-54 / IS-136 / D-AMPS IS-95 / cdmaOne	Motorola GSM Association Open EIA/ANSI Qualcomm	Active Active Deprecated for GSM Active	Mobile Phone/Trunked Radio Mobile Phone Mobile Phone Mobile Phone	25 kHz 200 kHz 30 kHz 1.25 MHz	M16-QAM GMSK DQPSK QPSK/OQPSK	6x TDMA 8x TDMA and Frequency Hopping 3-Slot TDMA CDMA	VSELP GSM Codec Family: (GSM-HR, GSM-FR, GSM-EFF) EFR QCELP, EVRC	19.2 Kbps 6.5-13.5 kbps 48.6 kbps 9.6kbps	yes A5/1, A5/2, A5/3 CMEA Security is Inherent to the CDMA system	Systems are available to law enforcement. Systems are available to law enforcement. Other attempts have been made with varying success. Generally illegal. Systems are available to law enforcement. Systems are available to law enforcement.
Iridium GlobalStar Inmarsat-B Inmarsat-M Inmarsat Mini-M GMR (GEO-Mobile Radio Interface)	Iridium LLC GlobalStar Inmarsat Inmarsat Inmarsat ETSI (Thuraya, IsatPhone, ACeS)	Active Active Legacy Active Active Active	Satellite LEO - Global Satellite LEO - Regional Satellite GEO Satellite GEO Satellite GEO - Spot Beam Satellite GEO - Handheld	31.5 kHz 1.23 MHz 20 kHz 10 kHz 5 kHz 27.7 kHz	DE-QPSK QPSK QPSK OQPSK OQPSK CQPSK	FDMA / TDMA CDMA FDMA FDMA FDMA 8x TDMA	AMBE QCELP, EVRC APC-MLQ IMBE AMBE GSM Codec Family, AMBE	2.4 kbps 2.4 kbps 16 kbps 4.8 kbps 4.8 kbps 3.6 -9.6kbps		??? ??? Wavecom Brand Decoders (possibly others???) Wavecom Brand Decoders (possibly others???) Wavecom Brand Decoders (possibly others???) ???
CT2 "Telepoint" DECT	Open Standard	Mostly Depreciated - Units still in use Active	Portable/Cordless Telephone Portable/Cordless Telephone	100 kHz	GFSK	TDD (Time division duplexing) FDMA, TDD, TDMA	ADPCM G.726	32kbps 32kbps	No? Yes - DSC - Very Weak Encryption	??? Software reportedly exists. Possibly GNU Radio module

