



TECHNICAL PAPER 14

Previous Technology Shift From AM/FM To Shift Register Based Digital Codes

Draft overview of the Previous WWII to digital shift register Communications-Navigation Technology Upgrade events:

- 1964** Navy Grad School Monterey CA First Course in Shift Register binary codes.
- 1967** First shift register based digital voice radio (Air Force) with Low Probability Intercept (LPI) and Anti-Jam (AJ), by MRL Torrance CA.
- 1972** First Navy Round the Mast UHF Digital shift register radio by MRL Torrance (R&D Program).
- 1973-1975** First NATO shift register based UHF Modulator-Demodulator (MODEM) by MRL Torrance CA.
- 1975-1979** First shift registers-based L-Band GPS Navigation System (Receiver by MRL Torrance CA, Payload Transmitter by ATT Nutley NJ).
- 1978** Founding of Google Corp and initial new technology for Google Precision Mapping technology
- 1980** Apple and IBM and Chromenco and Compucolor Desktop Processors PLUS Programmable Calculator available to Public.
- 1985** First Smart satellite system with shift register based Communications for Tri-Service Users.
- 2005** Initial Services introduced for Google Maps by Google Corp for integration with GPS satellite shift register based navigation.
- 2010** Combining of GLONASS (Russian GPS) and US GPS under one time reference and one cell phone positioning system software package in all cell phones.

Beginning of New Era in digital communications and terrestrial navigation options using Memory Based unlimited orthogonal CSK Binary Codes

- 2018** FIRST STEP to NEXT Communications and Navigation System Technology Revolution: The transition from shift-register limited orthogonal binary codes to UNLIMITED ORTHOGONAL RANDOM 16ary CSK binary codes.
- Patent No. US 10056937 B1 published Aug. 21, 2018**, defines 16ary Code Shift Key (CSK) Code Generators for non-shift register binary codes designed for Memory Based access to 1-second epoch orthogonal CSK code sets for NEXT Generation of Digital Communication Networking and NEXT Generation of Terrestrial Navigation Systems with 6+ fixes per second and fix accuracy to less than 6 inches.