CSK Fixed Count Distribution Tier0 Source Code Details

The shift-register-based binary codes of the last 50 years cannot vary in lengths outside of the (2 ^ N) - 1 maximal length codes from N-stage shift registers. This is an extreme limitation of the PN codes used today. A unique synchronization scheme is required for each unique and orthogonal binary code requiring unique time-keeping software for each transmitter and each receiver.

The CSK Code Generator of **Patent No. US 10056937 B1 dated Aug. 21, 2018,** expands the shift-register codes to large network embodiment configurations containing unlimited numbers of orthogonal CSK Codes of lengths of 300 to 412 binary bits. This paper focuses on details of worst-case cross-correlations of Quarter Symbol receive detection principles applied to the detection of a 16-ary CSK Code symbol pair cross-correlations present in a 20-microsecond time slots. The quarter symbol length is only 75 binary bits but needs to have cross-correlation parameters filtered to maximum values below 10 chips out of 75 chip codes. This is only possible with half CSK symbol codes. The critical parameter is the maximum cross-correlation that could cause “false autocorrelation” events. The below test of quarter code length symbols for 400-bit CSK codes uses 100-bit symbols to represent 4-bits of data in each 5-microsecond subset of the 20-microssecond receive slot. This resulted in the cross-correlations shown in the figure. The maximum in percent of symbol length is 30.66% which is considered excessive for errorless detection of symbols. The half-code symbol option provides a controllable selection of half-codes with a maximum cross correlation of 9% of the half-length CSK Code and is therefore the preferred configuration.

400-CSK MEMORY AND ANALYSIS TRAILOR

BEFF377588FFA796FFAC6362476CFC3D1DCD30F3F26F0E0D441E67E18020BF5F8B807187A39
F353851B0181B89F6CDCE38780715BD6D70B87EF824B7E706B03C1C22072D8A7D0E31CD5A51
F708E947FD9AE00D0407DDF560C22B32F375B127A924212C99C6DB013381476FCE07E4813C1
FE3D0B23941417354603C783BF7121F051F3CB31FFFF06703B1040273BC15FC97C9BA72CF93
F1DB2199D14FF3DDF84499C4FC5003FE6DE67B7F2378E0C0FC28D4183007005924E57A79A3F
- ABOVE ARE THE TOP 5 FILTRED CSKS OF THE 400 ACCEPTED IN THIS FILE
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- BELOW IS THE ALAYSIS TRAILOR ADDRESSING ALL QUARTER-SYMBOL CROSS-CORRELATIONS

CODE CSKnnn CHIPRATE mm MHZ ANALYSIS
Root Full Code PulseWidth Count 50, 10Term Distribution:
CURRENT FRAME QUARTER SYMBOL CROSS-CORR ANALYSIS for 400 Accepted CSKs:
Mean QSym Cross-Corr: 6.985
Mean in MyPercent of Length: 9.313333333333333333333333330%
Max QSym Corr: 23 For 400 Accepted CSKs
Max in MyPercent of Length 75: 30.6666666666667%
Total Used of 600 sample base: 477

Primary CSK Symbol Half-Codes Advantages

- The optimized configuration for half CSK Code lengths with a mean cross-correlation of about 6.5%
- The controllable CSK Code selections ensure a maximum cross-correlation of about 10% of half-code bit lengths