

## Appendix K: Dynamic Frequency Selection Radar Test waveform

### Short Pulse Radar Type 1 - 4

Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

#### Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (μsec)	PRI (μsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a	Roundup $\left\{ \begin{array}{l} \left( \frac{1}{360} \right) \cdot \\ \left( \frac{19 \cdot 10^6}{PRI_{\mu sec}} \right) \end{array} \right\}$	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120
<b>Note 1:</b> Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.					

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms.

## Pulse Repetition Intervals Values for Test A

Pulse Repetition Frequency Number	Pulse Repetition Frequency (Pulses Per Second)	Pulse Repetition Interval (Microseconds)
1	1930.5	518
2	1858.7	538
3	1792.1	558
4	1730.1	578
5	1672.2	598
6	1618.1	618
7	1567.4	638
8	1519.8	658
9	1474.9	678
10	1432.7	698
11	1392.8	718
12	1355	738
13	1319.3	758
14	1285.3	778
15	1253.1	798
16	1222.5	818
17	1193.3	838
18	1165.6	858
19	1139	878
20	1113.6	898
21	1089.3	918
22	1066.1	938
23	326.2	3066

## Long Pulse Radar - Type5

### Long Pulse Radar Test Waveform

Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Number of Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

The parameters for this waveform are randomly chosen. Thirty unique waveforms are required for the Long Pulse Radar Type waveforms. If more than 30 waveforms are used for the Long Pulse Radar Type waveforms, then each additional waveform must also be unique and not repeated from the previous waveforms.

Each waveform is defined as follows:

- 1) The transmission period for the Long Pulse Radar test signal is 12 seconds.
- 2) There are a total of 8 to 20 Bursts in the 12 second period, with the number of Bursts being randomly chosen. This number is Burst Count.
- 3) Each Burst consists of 1 to 3 pulses, with the number of pulses being randomly chosen. Each Burst within the 12 second sequence may have a different number of pulses.
- 4) The pulse width is between 50 and 100 microseconds, with the pulse width being randomly chosen. Each pulse within a Burst will have the same pulse width. Pulses in different Bursts may have different pulse widths.
- 5) Each pulse has a linear frequency modulated chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a transmission period will have the same chirp width. The chirp is centered on the pulse. For example, with a radar frequency of 5300 MHz and a 20 MHz chirped signal, the chirp starts at 5290 MHz and ends at 5310 MHz.
- 6) If more than one pulse is present in a Burst, the time between the pulses will be between 1000 and 2000 microseconds, with the time being randomly chosen. If three pulses are present in a Burst, the random time interval between the first and second pulses is chosen independently of the random time interval between the second and third pulses.
- 7) The 12 second transmission period is divided into even intervals. The number of intervals is equal to Burst Count. Each interval is of length  $(12,000,000 / \text{Burst Count})$  microseconds. Each interval contains one Burst. The start time for the Burst, relative to the beginning of the interval, is between 1 and  $[(12,000,000 / \text{Burst Count}) - (\text{Total Burst Length}) + (\text{One Random PRI Interval})]$  microseconds, with the start time being randomly chosen. The step interval for the start time is 1 microsecond. The start time for each Burst is chosen randomly.

**LPluse\_Radar\_No.01**

Trial Number:			1			
Number of Bursts in Trial:			15			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	77.8	13.0	1665.0	1477.0	636185
2	1	51.9	13.0	1074.0	-	32674
3	1	63.8	13.0	1584.0	-	226294
4	3	96.6	13.0	1682.0	1786.0	417976
5	3	85.9	13.0	1795.0	1215.0	611152
6	2	73.7	13.0	1198.0	1549.0	8789
7	2	77.2	13.0	1837.0	1819.0	201917
8	2	68.4	13.0	1587.0	1114.0	395530
9	2	76.7	13.0	2000.0	1155.0	588564
10	1	53.2	13.0	1147.0	-	783794
11	3	85.7	13.0	1433.0	1695.0	177933
12	3	94.3	13.0	1670.0	1426.0	370624
13	2	77.6	13.0	1294.0	1671.0	564893
14	1	65.7	13.0	1512.0	-	759583
15	3	93.5	13.0	1444.0	1130.0	154262

**LPluse\_Radar\_No.02**

Trial Number:			2			
Number of Bursts in Trial:			8			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	75.0	5.0	1880.0	1527.0	653020
2	3	99.4	5.0	1401.0	1262.0	1015643
3	2	67.4	5.0	1531.0	1403.0	1379398
4	2	73.6	5.0	1449.0	1041.0	245489
5	1	65.9	5.0	1432.0	-	609113
6	3	83.8	5.0	1356.0	1292.0	970852
7	1	65.5	5.0	1543.0	-	1335913
8	3	98.6	5.0	1548.0	1796.0	200406

**LPluse\_Radar\_No.03**

Trial Number:			3			
Number of Bursts in Trial:			11			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	73.8	9.0	1806.0	1538.0	409565
2	2	69.5	9.0	1117.0	1649.0	673692
3	1	51.9	9.0	1651.0	-	938562
4	3	84.6	9.0	1976.0	1032.0	113209
5	3	95.4	9.0	1060.0	1903.0	376726
6	2	68.0	9.0	1368.0	1351.0	641212
7	3	89.6	9.0	1338.0	1514.0	903714
8	2	81.9	9.0	1022.0	1689.0	80863
9	3	88.3	9.0	1810.0	1330.0	344067
10	1	53.7	9.0	1597.0	-	609331
11	3	91.3	9.0	1961.0	1106.0	871542

**LPluse\_Radar\_No.04**

Trial Number:			4			
Number of Bursts in Trial:			20			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	68.1	19.0	1339.0	1355.0	26541
2	1	58.7	19.0	1251.0	-	171821
3	2	75.3	19.0	1136.0	1640.0	316229
4	1	56.4	19.0	1753.0	-	461864
5	3	99.7	19.0	1196.0	1708.0	8677
6	1	57.7	19.0	1013.0	-	153995
7	1	59.5	19.0	1072.0	-	299238
8	2	80.0	19.0	1482.0	1369.0	443177
9	2	82.0	19.0	1993.0	1197.0	587671
10	2	82.8	19.0	1883.0	1005.0	135674
11	3	88.0	19.0	1061.0	1928.0	279928
12	3	93.2	19.0	1207.0	1907.0	424279
13	2	70.4	19.0	1526.0	1360.0	570132
14	3	95.3	19.0	1171.0	1955.0	117439
15	2	81.9	19.0	1690.0	1545.0	262502
16	3	98.5	19.0	1975.0	1169.0	406573
17	1	65.0	19.0	1767.0	-	553328
18	3	85.4	19.0	1011.0	1637.0	99799
19	3	91.6	19.0	1878.0	1445.0	244095
20	2	67.3	19.0	1091.0	1218.0	390012

**LPluse\_Radar\_No.05**

Trial Number:			5			
Number of Bursts in Trial:			17			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	67.9	16.0	1320.0	1133.0	629614
2	1	62.3	16.0	1957.0	-	96856
3	1	53.3	16.0	1592.0	-	267719
4	3	90.0	16.0	1900.0	1153.0	436784
5	2	77.1	16.0	1166.0	1646.0	608289
6	3	83.9	16.0	1278.0	1232.0	75610
7	3	89.1	16.0	1240.0	1384.0	245638
8	2	81.8	16.0	1833.0	1676.0	416355
9	1	50.3	16.0	1075.0	-	588736
10	3	87.1	16.0	1116.0	1996.0	54571
11	2	71.3	16.0	1225.0	1815.0	225175
12	3	97.5	16.0	1884.0	1465.0	394825
13	3	90.6	16.0	1561.0	1040.0	565361
14	3	86.3	16.0	1596.0	1183.0	33643
15	3	97.6	16.0	1365.0	1073.0	203957
16	3	84.7	16.0	1021.0	1718.0	373812
17	3	99.7	16.0	1150.0	1244.0	544060

**LPluse\_Radar\_No.06**

Trial Number:			6			
Number of Bursts in Trial:			14			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	92.9	12.0	1085.0	1564.0	15438
2	2	67.7	12.0	1744.0	1747.0	222486
3	1	65.8	12.0	1092.0	-	430731
4	1	56.3	12.0	1851.0	-	637784
5	1	53.7	12.0	1727.0	-	845342
6	3	83.5	12.0	1679.0	1930.0	196720
7	1	65.8	12.0	1519.0	-	404955
8	3	85.9	12.0	1134.0	1034.0	610711
9	2	76.3	12.0	1606.0	1926.0	818057
10	2	81.5	12.0	1891.0	1714.0	171459
11	3	89.4	12.0	1310.0	1594.0	377969
12	1	63.4	12.0	1568.0	-	586875
13	2	69.6	12.0	1307.0	1925.0	792834
14	2	74.5	12.0	1264.0	1846.0	146044



**LPluse\_Radar\_No.07**

Trial Number:			7			
Number of Bursts in Trial:			15			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	96.6	13.0	1182.0	1609.0	329022
2	3	96.7	13.0	1829.0	1799.0	521718
3	3	86.5	13.0	1923.0	1396.0	714222
4	2	73.3	13.0	1908.0	1318.0	112450
5	1	55.8	13.0	1688.0	-	306283
6	1	55.4	13.0	1145.0	-	500239
7	3	85.3	13.0	1336.0	1504.0	690932
8	2	79.4	13.0	1344.0	1893.0	88645
9	1	65.7	13.0	1476.0	-	282508
10	2	68.6	13.0	1008.0	1028.0	475842
11	2	77.7	13.0	1972.0	1835.0	667887
12	2	79.6	13.0	1882.0	1331.0	64845
13	3	94.9	13.0	1830.0	1070.0	257755
14	1	61.4	13.0	1451.0	-	452335
15	3	90.6	13.0	1233.0	1562.0	643395

**LPluse\_Radar\_No.08**

Trial Number:			8			
Number of Bursts in Trial:			12			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	52.6	10.0	1210.0	-	51446
2	3	84.1	10.0	1314.0	1725.0	292696
3	3	97.7	10.0	1139.0	1868.0	533989
4	3	97.3	10.0	1341.0	1446.0	775564
5	3	98.8	10.0	1544.0	1386.0	21542
6	2	72.2	10.0	1771.0	1184.0	263385
7	2	67.6	10.0	1175.0	1027.0	505581
8	2	75.7	10.0	1026.0	1871.0	747058
9	1	60.9	10.0	1798.0	-	989976
10	1	64.2	10.0	1138.0	-	234024
11	2	78.8	10.0	1784.0	1604.0	475207
12	3	87.5	10.0	1511.0	1712.0	715825

**LPluse\_Radar\_No.09**

Trial Number:			9			
Number of Bursts in Trial:			14			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	54.1	13.0	1415.0	-	823112
2	1	50.7	13.0	1221.0	-	174965
3	1	52.3	13.0	1974.0	-	382216
4	3	99.8	13.0	1558.0	1696.0	587395
5	2	68.4	13.0	1014.0	1099.0	796897
6	2	80.8	13.0	1736.0	1505.0	149042
7	1	62.5	13.0	1778.0	-	356750
8	2	74.8	13.0	1149.0	1204.0	563824
9	1	50.8	13.0	1049.0	-	772314
10	1	54.0	13.0	1417.0	-	123796
11	1	63.0	13.0	1730.0	-	331215
12	3	91.8	13.0	1143.0	1270.0	537402
13	2	79.3	13.0	1274.0	1992.0	744805
14	1	64.3	13.0	1937.0	-	98172

**LPluse\_Radar\_No.10**

Trial Number:			10			
Number of Bursts in Trial:			8			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	63.4	6.0	1415.0	1043.0	-
2	1	52.0	6.0	1221.0	1863.0	-
3	3	97.2	6.0	1974.0	1973.0	1605
4	2	78.7	6.0	1558.0	1466.0	1743
5	2	74.2	6.0	1014.0	1280.0	1219
6	3	88.7	6.0	1736.0	1293.0	1934
7	1	54.3	6.0	1778.0	1991.0	-
8	3	95.4	6.0	1937.0	1580.0	1555

**LPluse\_Radar\_No.11**

Trial Number:			11			
Number of Bursts in Trial:			17			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	73.7	16.0	1208.0	1497.0	209249
2	3	97.4	16.0	1942.0	1754.0	378386
3	3	91.7	16.0	1999.0	1702.0	548411
4	1	66.2	16.0	1393.0	-	17733
5	2	70.8	16.0	1968.0	1821.0	187952
6	1	52.3	16.0	1740.0	-	359277
7	2	78.9	16.0	1308.0	1984.0	528886
8	2	70.9	16.0	1050.0	1358.0	700166
9	2	75.6	16.0	1437.0	1430.0	167197
10	1	59.1	16.0	1697.0	-	338262
11	2	77.0	16.0	1397.0	1304.0	508324
12	2	67.9	16.0	1803.0	1083.0	678689
13	2	81.2	16.0	1720.0	1932.0	146031
14	2	78.7	16.0	1247.0	1121.0	316923
15	1	63.3	16.0	1634.0	-	488056
16	2	68.9	16.0	1849.0	1423.0	657326
17	1	59.3	16.0	1093.0	-	125509

**LPluse\_Radar\_No.12**

Trial Number:		12				
Number of Bursts in Trial:		19				
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	98.9	19.0	1381.0	1680.0	263736
2	2	82.3	19.0	1716.0	1855.0	416459
3	3	86.7	19.0	1211.0	1400.0	567902
4	3	89.7	19.0	1861.0	1068.0	92979
5	3	98.6	19.0	1507.0	1194.0	245155
6	2	71.1	19.0	1921.0	1789.0	397609
7	1	55.9	19.0	1947.0	-	551431
8	2	67.9	19.0	1350.0	1372.0	74413
9	3	84.4	19.0	1203.0	1107.0	226559
10	1	58.8	19.0	1715.0	-	380056
11	1	65.6	19.0	1017.0	-	533408
12	2	78.5	19.0	1911.0	1704.0	55547
13	2	82.3	19.0	1845.0	1686.0	207876
14	3	90.1	19.0	1938.0	1071.0	359771
15	3	90.2	19.0	1989.0	1089.0	511297
16	2	83.1	19.0	1943.0	1406.0	36803
17	1	58.8	19.0	1742.0	-	189652
18	2	77.0	19.0	1187.0	1657.0	341809
19	1	55.0	19.0	1012.0	-	495737

**LPluse\_Radar\_No.13**

Trial Number:			13			
Number of Bursts in Trial:			15			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	58.1	13.0	1929.0	-	22911
2	1	52.1	13.0	1910.0	-	216473
3	1	59.9	13.0	1971.0	-	410004
4	1	60.2	13.0	1812.0	-	603671
5	3	95.9	13.0	1399.0	1906.0	794160
6	2	79.9	13.0	1626.0	1859.0	192251
7	2	78.5	13.0	1238.0	1917.0	385590
8	1	53.8	13.0	1763.0	-	579862
9	1	64.7	13.0	1800.0	-	773423
10	1	61.4	13.0	1390.0	-	168898
11	2	83.2	13.0	1692.0	1858.0	361606
12	3	84.7	13.0	1533.0	1677.0	553866
13	3	88.7	13.0	1703.0	1528.0	747241

**LPluse\_Radar\_No.14**

Trial Number:			14			
Number of Bursts in Trial:			12			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	75.3	10.0	1994.0	1612.0	664275
2	1	56.3	10.0	1456.0	-	907886
3	2	67.7	10.0	1617.0	1185.0	151316
4	1	55.6	10.0	1337.0	-	393746
5	2	75.2	10.0	1421.0	1267.0	635093
6	2	76.3	10.0	1359.0	1305.0	876993
7	3	85.7	10.0	1547.0	1362.0	121278
8	3	98.4	10.0	1873.0	1550.0	362696
9	3	86.4	10.0	1779.0	1439.0	604342
10	3	93.6	10.0	1059.0	1031.0	846453
11	1	63.3	10.0	1328.0	-	91871
12	3	92.4	10.0	1412.0	1673.0	333050

**LPluse\_Radar\_No.15**

Trial Number:		15				
Number of Bursts in Trial:		19				
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	93.3	18.0	1983.0	1912.0	361323
2	2	69.1	18.0	1102.0	1794.0	515261
3	3	86.9	18.0	1044.0	1152.0	39025
4	3	84.9	18.0	1894.0	1948.0	190900
5	2	72.3	18.0	1094.0	1916.0	343941
6	1	51.7	18.0	1447.0	-	497624
7	1	58.3	18.0	1429.0	-	20319
8	1	60.8	18.0	1979.0	-	172999
9	1	57.1	18.0	1641.0	-	325872
10	3	88.9	18.0	1886.0	1964.0	475841
11	2	72.0	18.0	1909.0	1297.0	1489
12	3	90.9	18.0	1261.0	1566.0	153647
13	1	59.8	18.0	1552.0	-	307096
14	2	70.0	18.0	1759.0	1291.0	458804
15	2	67.2	18.0	1625.0	1881.0	610798
16	3	91.2	18.0	1382.0	1832.0	134759
17	1	56.5	18.0	1483.0	-	288306
18	1	51.2	18.0	1237.0	-	441296
19	2	74.1	18.0	1471.0	1245.0	592780

**LPluse\_Radar\_No.16**

Trial Number:			16			
Number of Bursts in Trial:			14			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	76.9	12.0	1110.0	1140.0	158286
2	1	50.2	12.0	1316.0	-	366024
3	1	62.9	12.0	1520.0	-	573452
4	1	64.7	12.0	1902.0	-	780619
5	3	83.8	12.0	1410.0	1097.0	132455
6	1	65.4	12.0	1944.0	-	340207
7	1	53.2	12.0	1024.0	-	548208
8	1	51.7	12.0	1603.0	-	755333
9	2	78.7	12.0	1804.0	1168.0	107117
10	2	72.4	12.0	1030.0	1343.0	314500
11	1	53.8	12.0	1327.0	-	522447
12	2	73.6	12.0	1524.0	1553.0	728517
13	2	66.7	12.0	1722.0	1122.0	81611
14	2	82.5	12.0	1404.0	1019.0	288948



**LPluse\_Radar\_No.17**

Trial Number:		17				
Number of Bursts in Trial:		20				
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	87.6	20.0	1565.0	1055.0	345766
2	3	85.2	20.0	1735.0	1541.0	490019
3	3	84.8	20.0	1534.0	1889.0	39073
4	2	77.9	20.0	1749.0	1460.0	183923
5	2	76.5	20.0	1518.0	1485.0	328777
6	1	60.9	20.0	1540.0	-	474728
7	2	83.0	20.0	1080.0	1010.0	21394
8	2	80.4	20.0	1824.0	1752.0	165992
9	2	67.5	20.0	1764.0	1181.0	310973
10	1	62.1	20.0	1495.0	-	456884
11	3	86.4	20.0	1773.0	1966.0	3515
12	3	84.3	20.0	1593.0	1188.0	147928
13	2	76.9	20.0	1226.0	1537.0	293225
14	3	95.8	20.0	1192.0	1298.0	436922
15	1	55.2	20.0	1644.0	-	584015
16	1	59.0	20.0	1402.0	-	130832
17	3	94.5	20.0	1296.0	1700.0	274684
18	3	91.9	20.0	1970.0	1978.0	418579
19	3	85.2	20.0	1732.0	1551.0	563464
20	2	69.5	20.0	1038.0	1224.0	112787

**LPluse\_Radar\_No.18**

Trial Number:			18			
Number of Bursts in Trial:			12			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	86.4	10.0	1259.0	1918.0	429224
2	3	92.2	10.0	1598.0	1719.0	670241
3	2	80.4	10.0	1816.0	1899.0	912880
4	1	54.3	10.0	1335.0	-	158603
5	1	53.1	10.0	1303.0	-	400824
6	2	69.4	10.0	1503.0	1546.0	641915
7	2	69.1	10.0	1279.0	1639.0	883823
8	3	100.0	10.0	1375.0	1438.0	128373
9	2	79.6	10.0	1239.0	1705.0	370379
10	3	88.4	10.0	1374.0	1579.0	611194
11	1	53.3	10.0	1016.0	-	855665
12	1	65.3	10.0	1709.0	-	98897

**LPluse\_Radar\_No.19**

Trial Number:			19			
Number of Bursts in Trial:			14			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	55.3	12.0	1920.0	-	292143
2	1	58.3	12.0	1797.0	-	499633
3	2	72.3	12.0	1610.0	1039.0	706377
4	3	84.8	12.0	1131.0	1761.0	58989
5	2	82.5	12.0	1875.0	1431.0	266161
6	1	63.3	12.0	1095.0	-	474469
7	2	80.0	12.0	1119.0	1913.0	680544
8	3	90.3	12.0	1660.0	1853.0	33519
9	3	91.1	12.0	1539.0	1783.0	240319
10	3	96.6	12.0	1525.0	1036.0	447400
11	2	82.7	12.0	1710.0	1990.0	654516
12	1	50.7	12.0	1234.0	-	8083
13	2	78.4	12.0	1047.0	1109.0	215435
14	3	99.5	12.0	1299.0	1965.0	421325

**LPluse\_Radar\_No.20**

Trial Number:			20			
Number of Bursts in Trial:			12			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	88.6	10.0	1501.0	1067.0	733725
2	1	57.4	10.0	1723.0	-	977882
3	3	96.6	10.0	1086.0	1658.0	221197
4	2	69.7	10.0	1751.0	1945.0	462915
5	2	77.9	10.0	1642.0	1317.0	705071
6	1	62.0	10.0	1866.0	-	947923
7	3	88.4	10.0	1997.0	1077.0	191373
8	3	97.3	10.0	1790.0	1896.0	432561
9	3	96.2	10.0	1391.0	1787.0	674004
10	3	95.4	10.0	1020.0	1892.0	915842
11	1	54.8	10.0	1084.0	-	162176
12	2	80.4	10.0	1850.0	1436.0	403553

**LPluse\_Radar\_No.21**

Trial Number:			21			
Number of Bursts in Trial:			16			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	74.7	15.0	1619.0	1611.0	483470
2	1	57.1	15.0	1560.0	-	666072
3	3	91.9	15.0	1392.0	1475.0	98810
4	2	83.1	15.0	1809.0	1772.0	279914
5	1	50.7	15.0	1003.0	-	462536
6	2	79.2	15.0	1574.0	1600.0	642324
7	1	58.7	15.0	1186.0	-	76831
8	2	71.0	15.0	1521.0	1567.0	257785
9	2	79.0	15.0	1777.0	1960.0	438554
10	2	68.5	15.0	1284.0	1428.0	620397
11	2	73.5	15.0	1904.0	1352.0	54310
12	2	70.5	15.0	1864.0	1115.0	235506
13	2	76.6	15.0	1045.0	1300.0	417036
14	2	81.2	15.0	1160.0	1675.0	597974
15	1	61.8	15.0	1277.0	-	32086
16	3	94.9	15.0	1450.0	1206.0	212751

**LPluse\_Radar\_No.22**

Trial Number:			22			
Number of Bursts in Trial:			12			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	78.5	9.0	1653.0	1698.0	526149
2	3	89.8	9.0	1174.0	1962.0	767135
3	1	59.4	9.0	1982.0	-	12955
4	2	79.6	9.0	1633.0	1890.0	254612
5	2	76.0	9.0	1112.0	1811.0	496588
6	1	53.6	9.0	1144.0	-	739728
7	2	80.9	9.0	1220.0	1053.0	980872
8	1	61.6	9.0	1724.0	-	225249
9	1	53.4	9.0	1901.0	-	467279
10	1	59.9	9.0	1379.0	-	709720
11	1	60.4	9.0	1453.0	-	951847
12	3	91.4	9.0	1768.0	1726.0	194839

**LPluse\_Radar\_No.23**

Trial Number:			23			
Number of Bursts in Trial:			20			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	77.0	20.0	1191.0	1363.0	261858
2	1	58.1	20.0	1248.0	-	407646
3	1	62.1	20.0	1836.0	-	552319
4	2	76.9	20.0	1334.0	1236.0	99107
5	2	80.0	20.0	1914.0	1852.0	243514
6	1	52.0	20.0	1701.0	-	389464
7	3	88.6	20.0	1693.0	1995.0	531093
8	2	72.9	20.0	1922.0	1387.0	81159
9	3	98.5	20.0	1839.0	1746.0	225245
10	1	57.9	20.0	1193.0	-	371906
11	3	95.9	20.0	1659.0	1870.0	514197
12	1	53.5	20.0	1162.0	-	63561
13	3	92.0	20.0	1745.0	1654.0	207510
14	1	57.3	20.0	1834.0	-	353638
15	2	70.5	20.0	1684.0	1586.0	497515
16	2	70.0	20.0	1042.0	1664.0	45553
17	3	84.0	20.0	1765.0	1630.0	189821
18	2	76.1	20.0	1557.0	1057.0	335330
19	3	93.2	20.0	1985.0	1018.0	478825
20	3	96.8	20.0	1760.0	1614.0	27594

**LPluse\_Radar\_No.24**

Trial Number:			24			
Number of Bursts in Trial:			14			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	50.1	12.0	1841.0	-	247117
2	3	93.5	12.0	1590.0	1081.0	453362
3	2	68.8	12.0	1707.0	1577.0	660875
4	1	56.3	12.0	1056.0	-	14140
5	3	86.0	12.0	1953.0	1108.0	220734
6	2	75.2	12.0	1572.0	1536.0	428367
7	1	54.4	12.0	1517.0	-	636681
8	2	71.1	12.0	1329.0	1243.0	843157
9	2	76.2	12.0	1940.0	1770.0	195585
10	2	80.2	12.0	1098.0	1209.0	403231
11	2	79.7	12.0	1588.0	1214.0	610202
12	3	90.9	12.0	1615.0	1862.0	815229
13	2	68.7	12.0	1377.0	1441.0	170267
14	2	67.4	12.0	1872.0	1313.0	377306

**LPluse\_Radar\_No.25**

Trial Number:			25			
Number of Bursts in Trial:			13			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	94.0	11.0	1643.0	1748.0	628071
2	2	70.8	11.0	1177.0	1201.0	853391
3	1	56.3	11.0	1006.0	-	156223
4	3	96.7	11.0	1230.0	1163.0	378734
5	3	90.6	11.0	1217.0	1582.0	601331
6	2	74.5	11.0	1569.0	1281.0	825462
7	3	92.6	11.0	1065.0	1669.0	128265
8	3	89.0	11.0	1493.0	1135.0	351161
9	3	96.5	11.0	1607.0	1822.0	573425
10	2	70.5	11.0	1141.0	1178.0	798431
11	3	94.0	11.0	1009.0	1629.0	100737
12	1	55.8	11.0	1290.0	-	324661
13	3	87.7	11.0	1435.0	1963.0	546278

**LPluse\_Radar\_No.26**

Trial Number:			26			
Number of Bursts in Trial:			8			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	68.6	5.0	1306.0	1161.0	1253842
2	2	83.1	5.0	1420.0	1315.0	119486
3	1	60.9	5.0	1687.0	-	482958
4	2	77.7	5.0	1776.0	1158.0	845641
5	2	77.4	5.0	1793.0	1510.0	1208428
6	2	66.8	5.0	1576.0	1323.0	74748
7	1	63.7	5.0	1333.0	-	438300
8	3	91.2	5.0	1409.0	1681.0	800152



**LPluse\_Radar\_No.27**

Trial Number:			27			
Number of Bursts in Trial:			17			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	83.6	16.0	1632.0	1195.0	545865
2	3	89.4	16.0	1173.0	1627.0	14067
3	1	55.8	16.0	1532.0	-	184953
4	3	90.9	16.0	1981.0	1554.0	353759
5	1	54.7	16.0	1825.0	-	526388
6	3	97.7	16.0	1734.0	1202.0	694806
7	2	67.5	16.0	1571.0	1434.0	163568
8	3	96.7	16.0	1589.0	1469.0	333410
9	2	68.3	16.0	1750.0	1954.0	504006
10	2	78.3	16.0	1591.0	1082.0	675297
11	1	55.0	16.0	1427.0	-	142890
12	3	84.9	16.0	1129.0	1936.0	312479
13	2	74.6	16.0	1959.0	1856.0	482953
14	1	63.3	16.0	1885.0	-	655022
15	3	99.8	16.0	1035.0	1515.0	121457
16	1	63.6	16.0	1647.0	-	292606
17	3	87.3	16.0	1931.0	1051.0	461322

**LPluse\_Radar\_No.28**

Trial Number:		28				
Number of Bursts in Trial:		19				
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	85.6	19.0	1946.0	1078.0	565136
2	2	68.6	19.0	1029.0	1780.0	89970
3	1	54.2	19.0	1111.0	-	243121
4	1	61.2	19.0	1104.0	-	396034
5	3	97.1	19.0	1157.0	1969.0	546225
6	3	98.3	19.0	1142.0	1699.0	70998
7	1	62.4	19.0	1655.0	-	224093
8	2	80.2	19.0	1126.0	1769.0	376127
9	3	87.5	19.0	1216.0	1448.0	527806
10	3	85.8	19.0	1847.0	1348.0	52247
11	3	88.1	19.0	1023.0	1124.0	204582
12	1	65.3	19.0	1848.0	-	357941
13	1	52.5	19.0	1470.0	-	510977
14	1	52.3	19.0	1312.0	-	33698
15	2	74.1	19.0	1915.0	1200.0	186023
16	1	54.9	19.0	1479.0	-	339327
17	2	76.2	19.0	1376.0	1502.0	491053
18	1	60.4	19.0	1758.0	-	14858
19	2	81.5	19.0	1491.0	1103.0	167387

**LPluse\_Radar\_No.29**

Trial Number:			29			
Number of Bursts in Trial:			12			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	50.5	10.0	1857.0	-	507709
2	1	55.7	10.0	1246.0	-	750249
3	3	85.8	10.0	1774.0	1002.0	989003
4	2	76.9	10.0	1125.0	1474.0	235634
5	2	75.1	10.0	1254.0	1052.0	477675
6	3	92.3	10.0	1180.0	1486.0	718312
7	2	78.1	10.0	1301.0	1757.0	960895
8	3	92.2	10.0	1898.0	1252.0	205370
9	3	89.0	10.0	1260.0	1706.0	446940
10	2	70.9	10.0	1578.0	1620.0	689225
11	1	63.1	10.0	1782.0	-	932305
12	1	55.3	10.0	1522.0	-	176231

**LPluse\_Radar\_No.30**

Trial Number:			30			
Number of Bursts in Trial:			18			
Burst	Number of Pulses	Pulse Width (µsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	83.4	17.0	1454.0	1205.0	277485
2	3	97.3	17.0	1319.0	1826.0	437880
3	3	90.4	17.0	1079.0	1986.0	598445
4	3	91.8	17.0	1563.0	1151.0	97088
5	3	98.2	17.0	1876.0	1977.0	257251
6	1	59.5	17.0	1952.0	-	419893
7	2	80.0	17.0	1253.0	1137.0	580724
8	3	86.5	17.0	1054.0	1128.0	77366
9	3	91.1	17.0	1105.0	1599.0	238032
10	3	93.5	17.0	1867.0	1373.0	398605
11	1	60.7	17.0	1033.0	-	562025
12	2	67.2	17.0	1288.0	1405.0	57684
13	1	61.8	17.0	1585.0	-	219083
14	2	79.4	17.0	1933.0	1667.0	379234
15	2	81.4	17.0	1096.0	1464.0	540896
16	1	65.7	17.0	1496.0	-	37916
17	2	76.0	17.0	1733.0	1255.0	198794
18	2	81.0	17.0	1326.0	1668.0	359754

## Frequency Hopping Radar - Type6

### Long Pulse Radar Test Waveform

Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	1	9	0.333	300	70%	30

For the Frequency Hopping Radar Type, the same Burst parameters are used for each waveform. The hopping sequence is different for each waveform and a 100-length segment is selected from the hopping sequence defined by the following algorithm:

The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250 – 5724 MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues until all 475 frequencies are chosen for the set. For selection of a random frequency, the frequencies remaining within the group are always treated as equally likely.