PRODUCT CHANGE NOTIFICATION

Title	Notification change of IC to next generation.
Keywords	Product Change Notification: IC change SMXXD, SMXXH, SMXXM, SMXXG and SMXXT series to next generation IC.
Article:	**Products Affected: Pletronics SM77H, SM77D, SM77M, SM77G, SM55T, SM55M, SM55G, SM44T, and SM33T**

Description and Purpose of Change: IC change to next generation IC. Oscillator performance will remain unchanged. Old part number series and next generation IC will be form, fit and function equivalent. This notice is written in accordance with Pletronics ISO requirements.

- Form, fit and function equivalent
- Comparable rise and fall time
- Improved phase noise and jitter performance
- Reduced lead time
- See data below for comparison

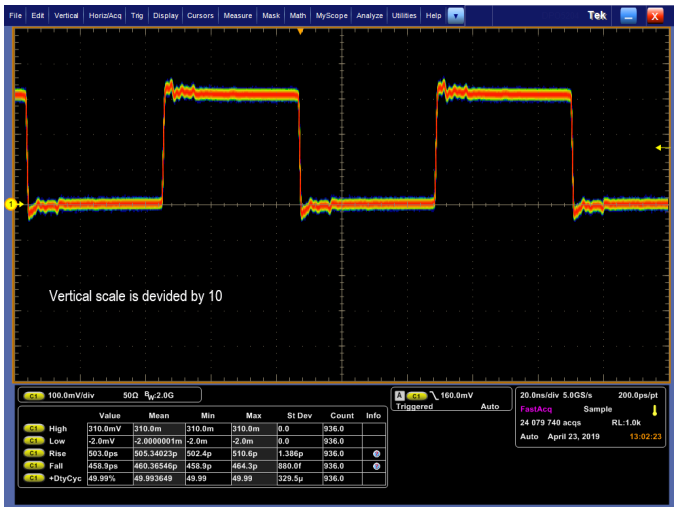
Pletronics Inc. certifies this device is in accordance with the RoHS (2015/863/EC) and WEEE (2012/19/EC) directives.

Implementation Plan: Products manufactured using next generation IC are identified by date code.

Date Created	7/1/2019
Created By	Pletronics Engineering

CMOS 12.0MHz 3.3V Waveform

NPC 5027 IC



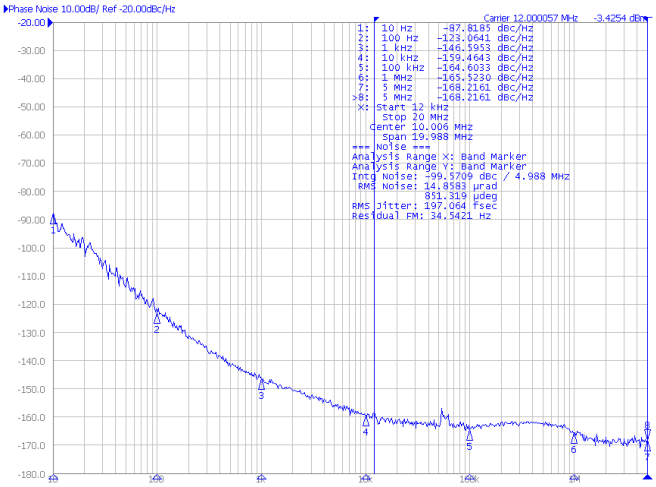
NPC 5052 IC

Rise Time	572 ps
Fall Time	517 ps

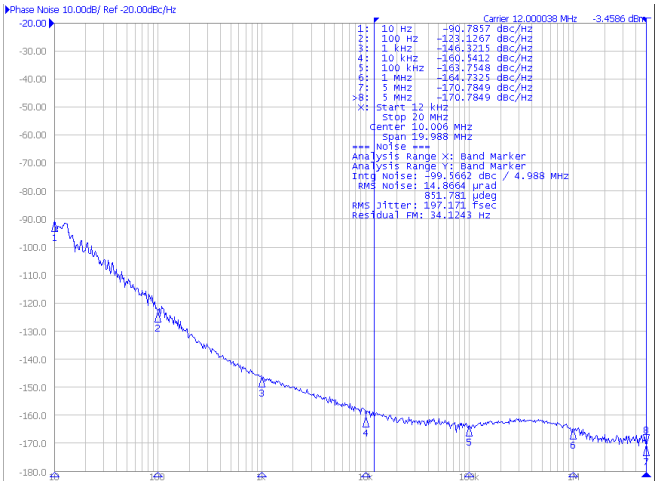
Better

Rise Time	506 ps
Fall Time	461 ps

CMOS 12.0MHz 3.3V Phase Noise



NPC 5027 IC



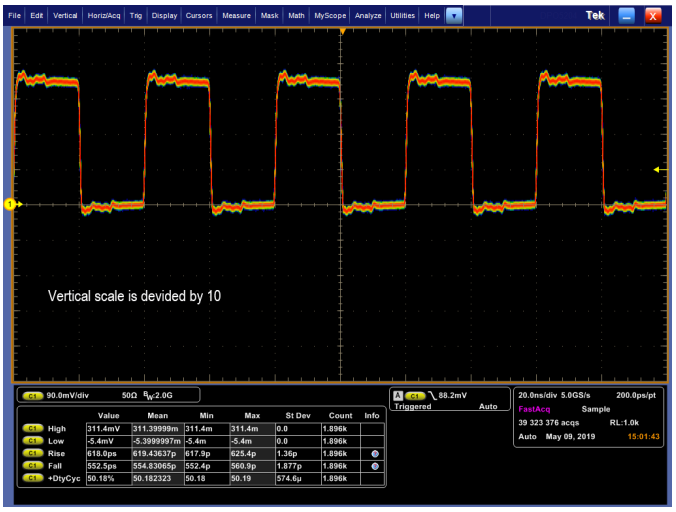
NPC 5052 IC

Equivalent

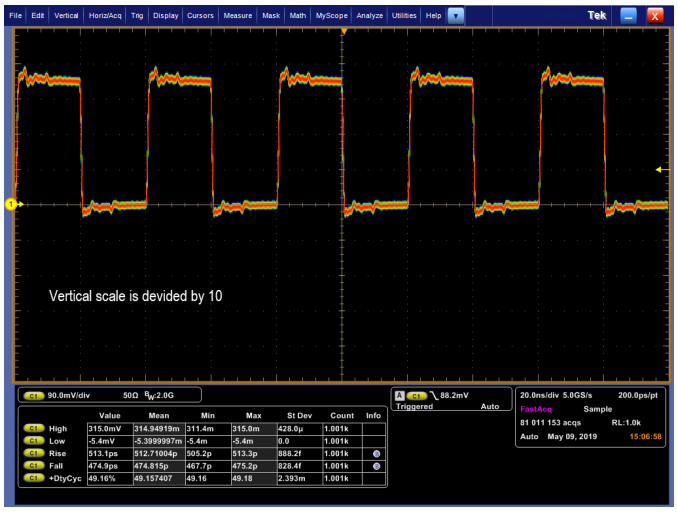
10 Hz	-87 dBc/Hz
100 Hz	-123 dBc/Hz
1 kHz	-146 dBc/Hz
10 kHz	-159 dBc/Hz
100 kHz	-165 dBc/Hz
1 MHz	-168 dBc/Hz
5 MHz	-168 dBc/Hz

10 Hz	-90 dBc/Hz
100 Hz	-123 dBc/Hz
1 kHz	-146 dBc/Hz
10 kHz	-160 dBc/Hz
100 kHz	-163 dBc/Hz
1 MHz	-164 dBc/Hz
10 MHz	-170 dBc/Hz

CMOS 25.0MHz 3.3V Waveform



NPC 5027 IC



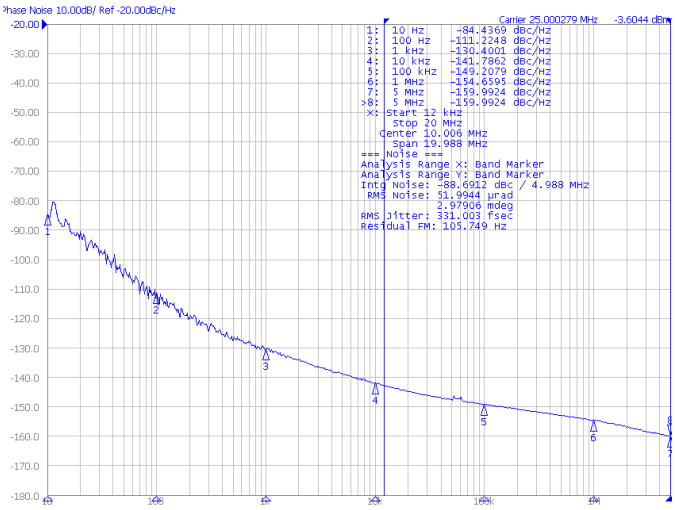
NPC 5052 IC

Rise Time	620 ps
Fall Time	555 ps

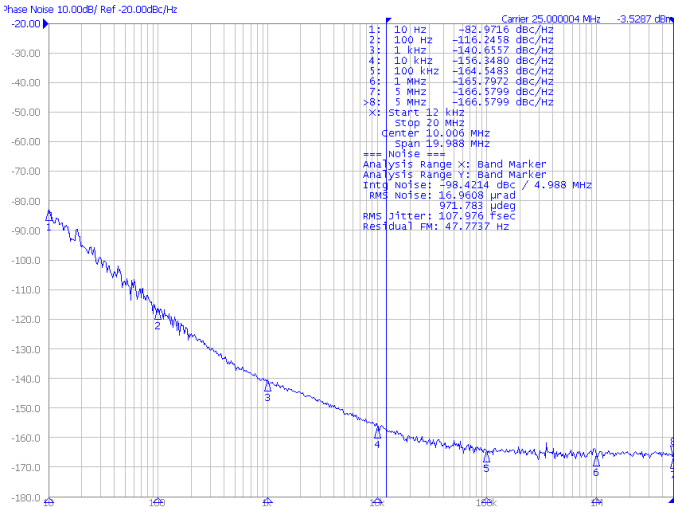
Better

Rise Time	513 ps
Fall Time	475 ps

CMOS 25.0MHz 3.3V Phase Noise



NPC 5027 IC



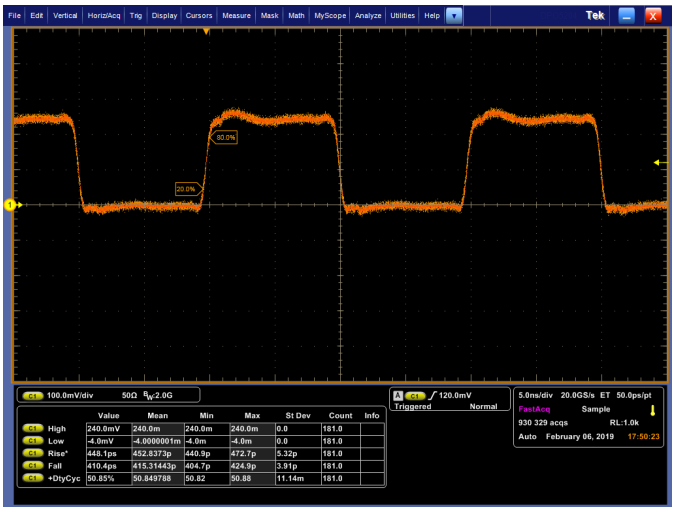
NPC 5052 IC

10 Hz	-84 dBc/Hz
100 Hz	-111 dBc/Hz
1 kHz	-130 dBc/Hz
10 kHz	-141 dBc/Hz
100 kHz	-149 dBc/Hz
1 MHz	-154 dBc/Hz
5 MHz	-159 dBc/Hz

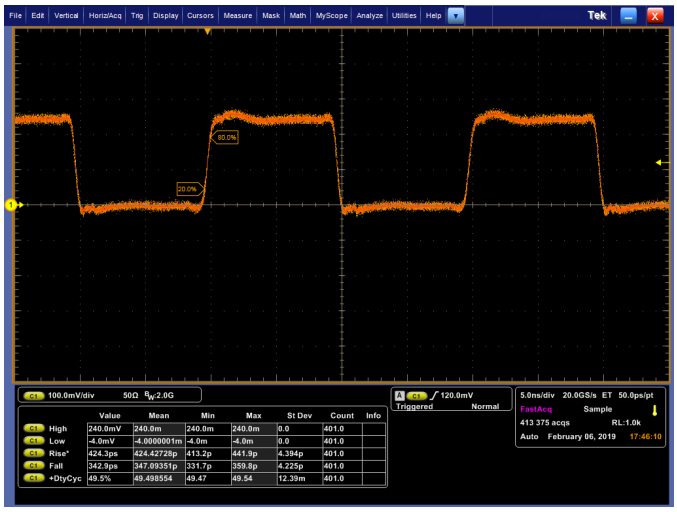
Equivalent

10 Hz	-82 dBc/Hz
100 Hz	-116 dBc/Hz
1 kHz	-140 dBc/Hz
10 kHz	-156 dBc/Hz
100 kHz	-164 dBc/Hz
1 MHz	-165 dBc/Hz
10 MHz	-166 dBc/Hz

CMOS 50.0MHz 2.5V Waveform



NPC 5027 IC



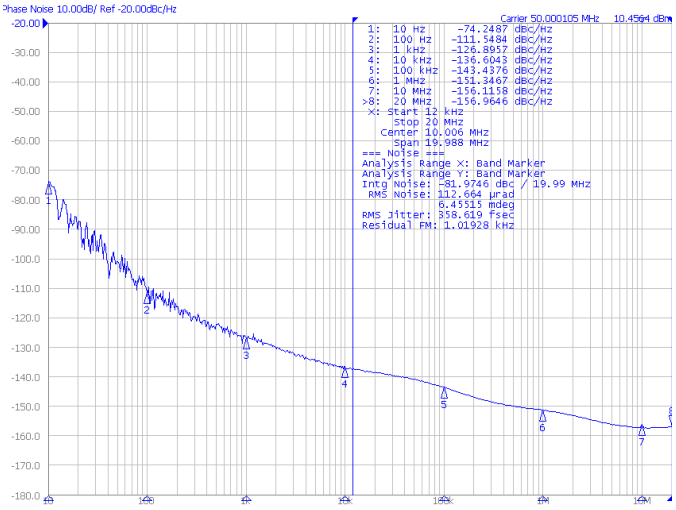
NPC 5054 IC

Rise Time	453 ps
Fall Time	416 ps

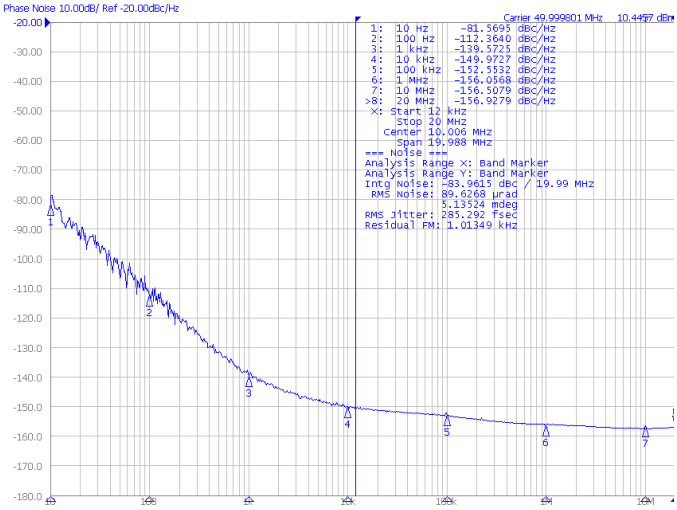
Better

Rise Time	425 ps
Fall Time	348 ps

CMOS 50.0MHz 2.5V Phase Noise



NPC 5027 IC



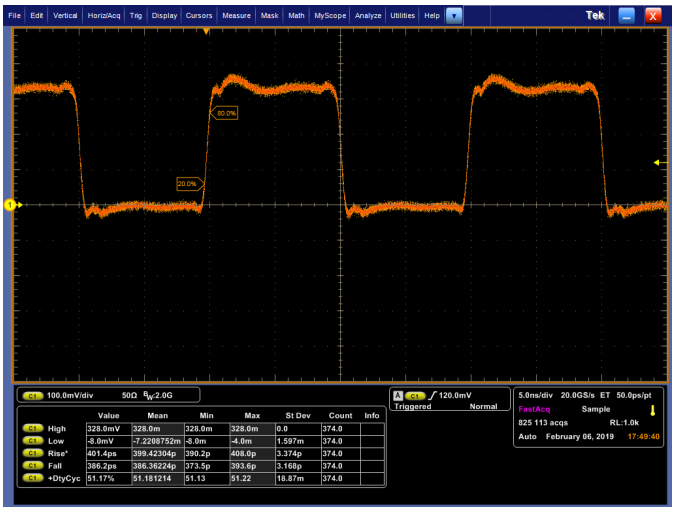
NPC 5054 IC

Equivalent

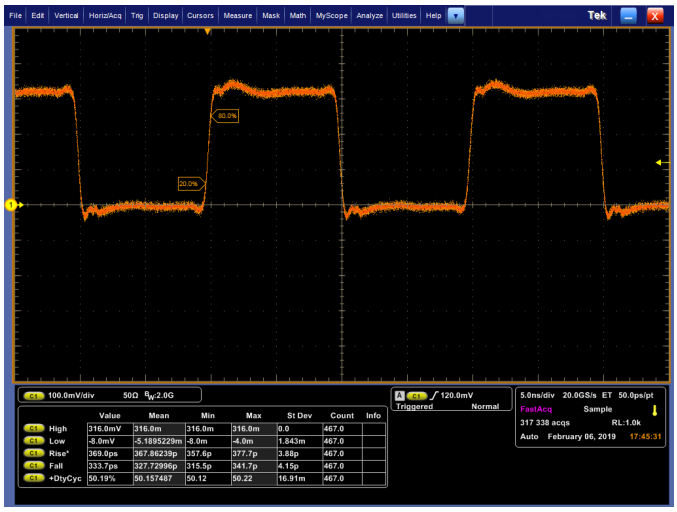
10 Hz	-74 dBc/Hz
100 Hz	-111 dBc/Hz
1 kHz	-126 dBc/Hz
10 kHz	-136 dBc/Hz
100 kHz	-143 dBc/Hz
1 MHz	-151 dBc/Hz
10 MHz	-156 dBc/Hz

10 Hz	-81 dBc/Hz
100 Hz	-112 dBc/Hz
1 kHz	-139 dBc/Hz
10 kHz	-149 dBc/Hz
100 kHz	-152 dBc/Hz
1 MHz	-156 dBc/Hz
10 MHz	-156 dBc/Hz

CMOS 50.0MHz 3.3V Waveform



NPC 5027 IC



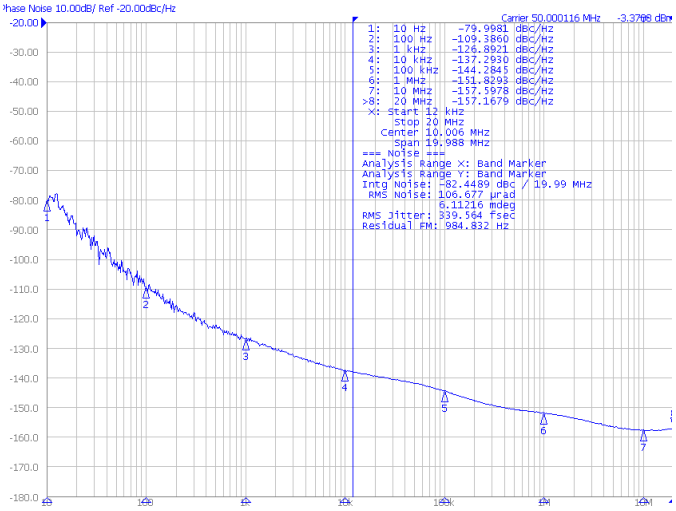
NPC 5054 IC

Rise Time	400 ps
Fall Time	387 ps

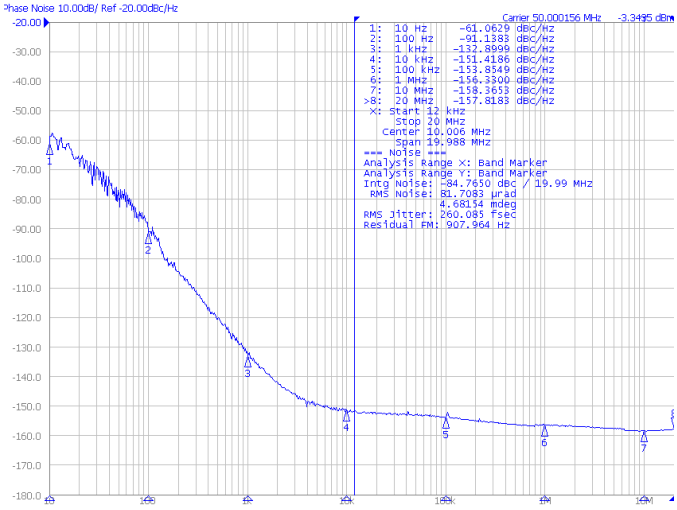
Better

Rise Time	368 ps
Fall Time	328 ps

CMOS 50.0MHz 3.3V Phase Noise



NPC 5027 IC



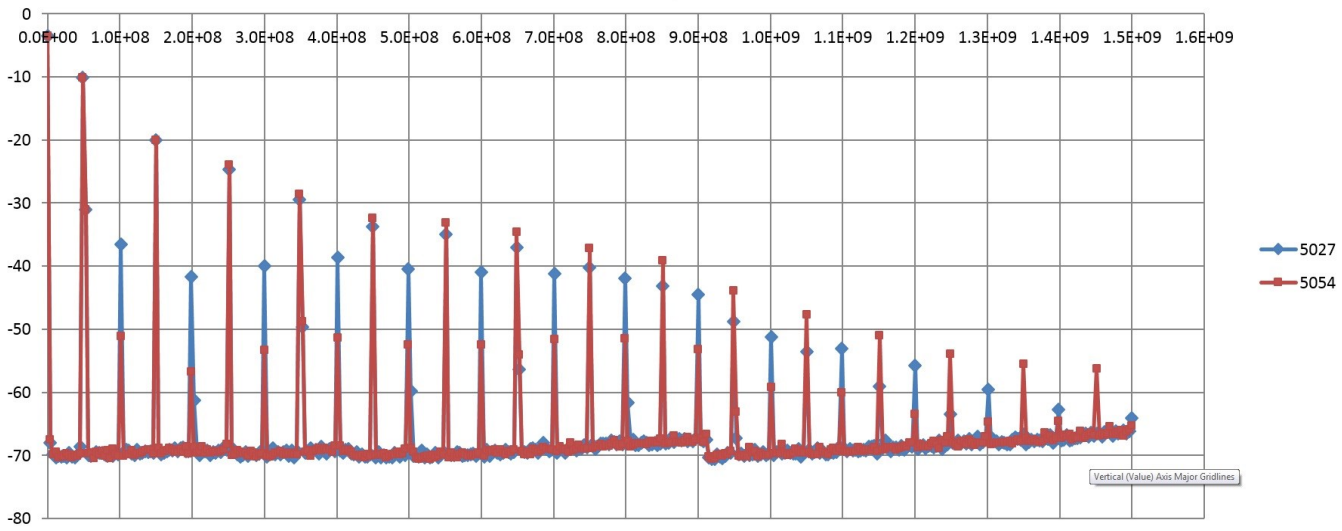
NPC 5054 IC

Equivalent

10 Hz	-79 dBc/Hz
100 Hz	-109 dBc/Hz
1 kHz	-126 dBc/Hz
10 kHz	-137 dBc/Hz
100 kHz	-144 dBc/Hz
1 MHz	-151 dBc/Hz
10 MHz	-157 dBc/Hz

10 Hz	-61 dBc/Hz
100 Hz	-91 dBc/Hz
1 kHz	-132 dBc/Hz
10 kHz	-151 dBc/Hz
100 kHz	-153 dBc/Hz
1 MHz	-156 dBc/Hz
10 MHz	-158 dBc/Hz

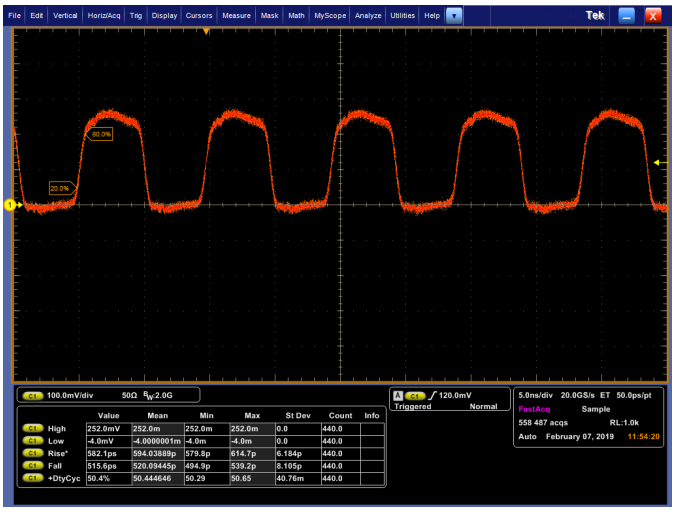
Output Spectrum EMI Comparison VCC=3.3 volts



NPC 5027 IC Offset from Carrier	dBc
0	-3.477
48750000	-10.124
1.01E+08	-36.568
1.5E+08	-20.018
1.99E+08	-41.635
2.51E+08	-24.646
3E+08	-39.94
3.49E+08	-29.469
4.01E+08	-38.658
4.5E+08	-33.735
4.99E+08	-40.514
5.51E+08	-34.965
6E+08	-40.964
6.49E+08	-37.013
7.01E+08	-41.181
7.5E+08	-40.233
7.99E+08	-41.892
8.51E+08	-43.141
9E+08	-44.461
9.49E+08	-48.756
1E+09	-51.182
1.05E+09	-53.586
1.1E+09	-53.084
1.15E+09	-59.058
1.2E+09	-55.751
1.25E+09	-63.5
1.3E+09	-59.596
1.35E+09	-66.641
1.4E+09	-62.756
1.45E+09	-66.568
1.5E+09	-64.08

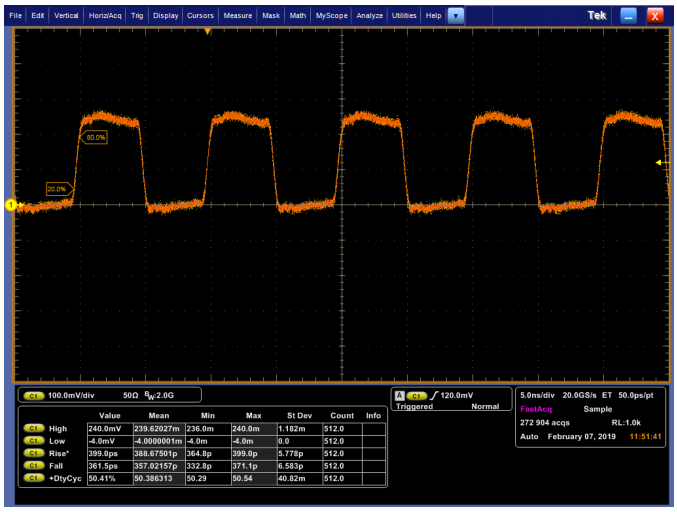
NPC 5054 IC Offset from Carrier	dBc
0	-3.473
48750000	-10.093
1.01E+08	-51.097
1.5E+08	-19.981
1.99E+08	-56.749
2.51E+08	-23.981
3E+08	-53.294
3.49E+08	-28.593
4.01E+08	-51.316
4.5E+08	-32.393
4.99E+08	-52.459
5.51E+08	-33.141
6E+08	-52.515
6.49E+08	-34.592
7.01E+08	-51.61
7.5E+08	-37.216
7.99E+08	-51.461
8.51E+08	-39.17
9E+08	-53.2
9.49E+08	-43.939
1E+09	-59.165
1.05E+09	-47.632
1.1E+09	-60.03
1.15E+09	-51.028
1.2E+09	-63.483
1.25E+09	-53.958
1.3E+09	-64.687
1.35E+09	-55.461
1.4E+09	-64.572
1.45E+09	-56.199
1.5E+09	-65.289

CMOS 104.0MHz/100.0MHz 2.5V Waveform



NPC 5027 IC (104.0 MHz)

Rise Time	595 ps
Fall Time	521 ps

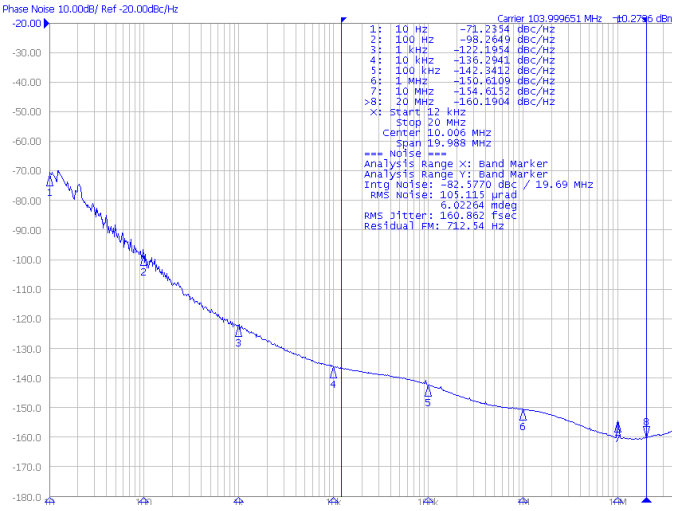


NPC 5054 IC (100.0 MHz)

Better

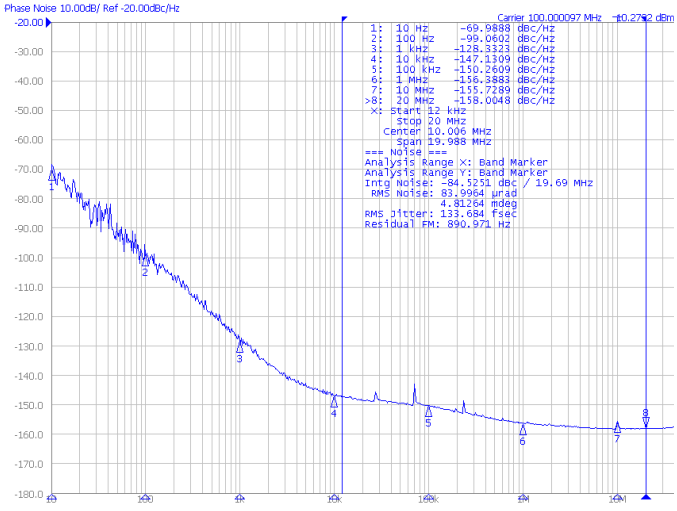
Rise Time	389 ps
Fall Time	358 ps

CMOS 104.0MHz/100.0MHz 2.5V Phase Noise



NPC 5027 IC (104.0 MHz)

10 Hz	-71 dBc/Hz
100 Hz	-98 dBc/Hz
1 kHz	-122 dBc/Hz
10 kHz	-136 dBc/Hz
100 kHz	-142 dBc/Hz
1 MHz	-150 dBc/Hz
10 MHz	-154 dBc/Hz

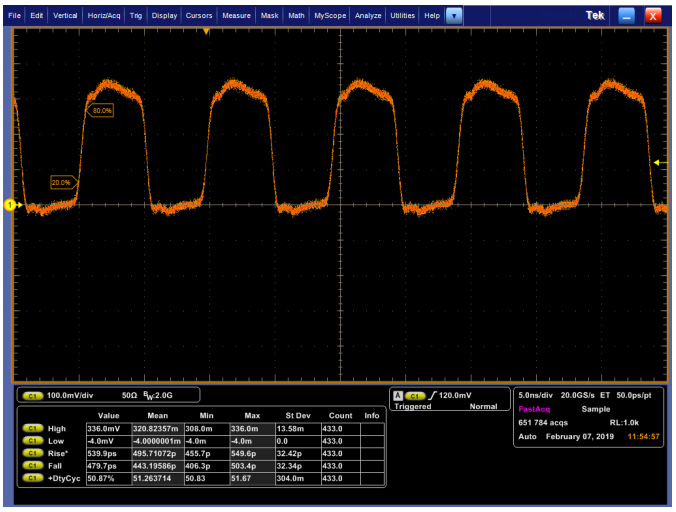


NPC 5054 IC (100.0 MHz)

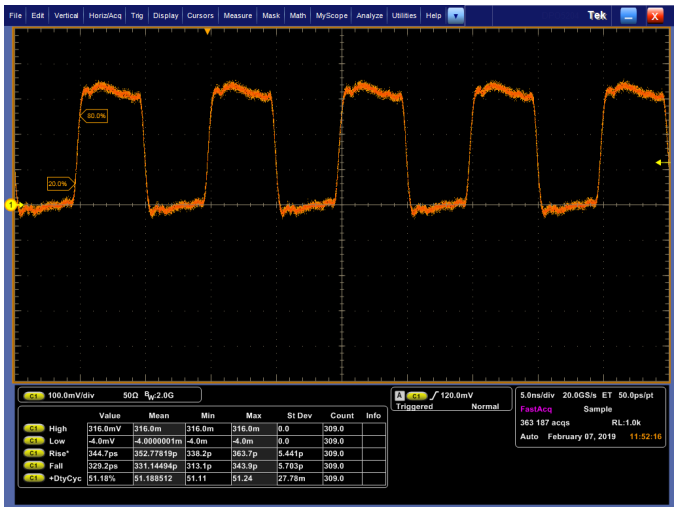
Equivalent

10 Hz	-69 dBc/Hz
100 Hz	-99 dBc/Hz
1 kHz	-128 dBc/Hz
10 kHz	-147 dBc/Hz
100 kHz	-150 dBc/Hz
1 MHz	-156 dBc/Hz
10 MHz	-155 dBc/Hz

CMOS 104.0MHz/100.0MHz 3.3V Waveform



NPC 5027 IC (104.0 MHz)



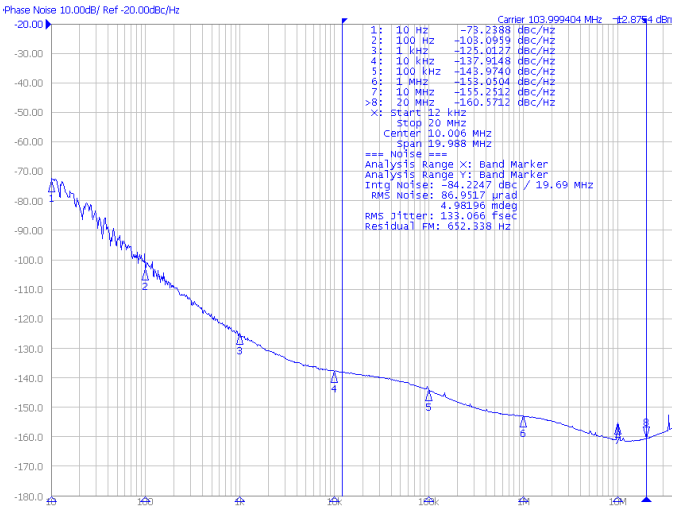
NPC 5054 IC (100.0 MHz)

Rise Time	496 ps
Fall Time	444 ps

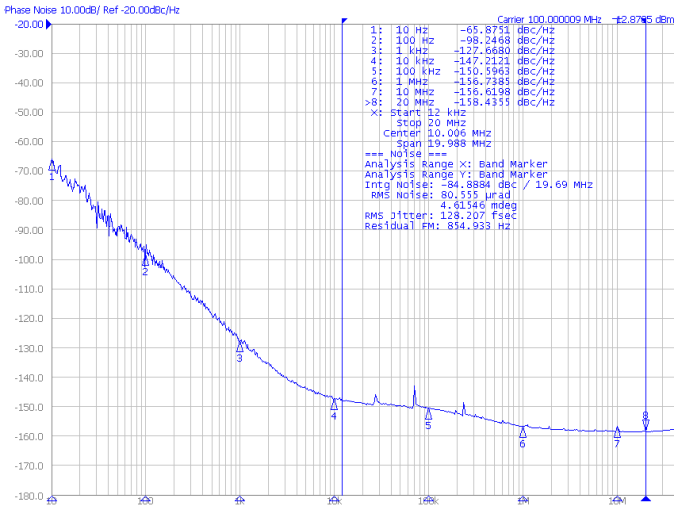
Better

Rise Time	353 ps
Fall Time	332 ps

CMOS 104.0MHz/100.0MHz 3.3V Phase Noise



NPC 5027 IC (104.0 MHz)



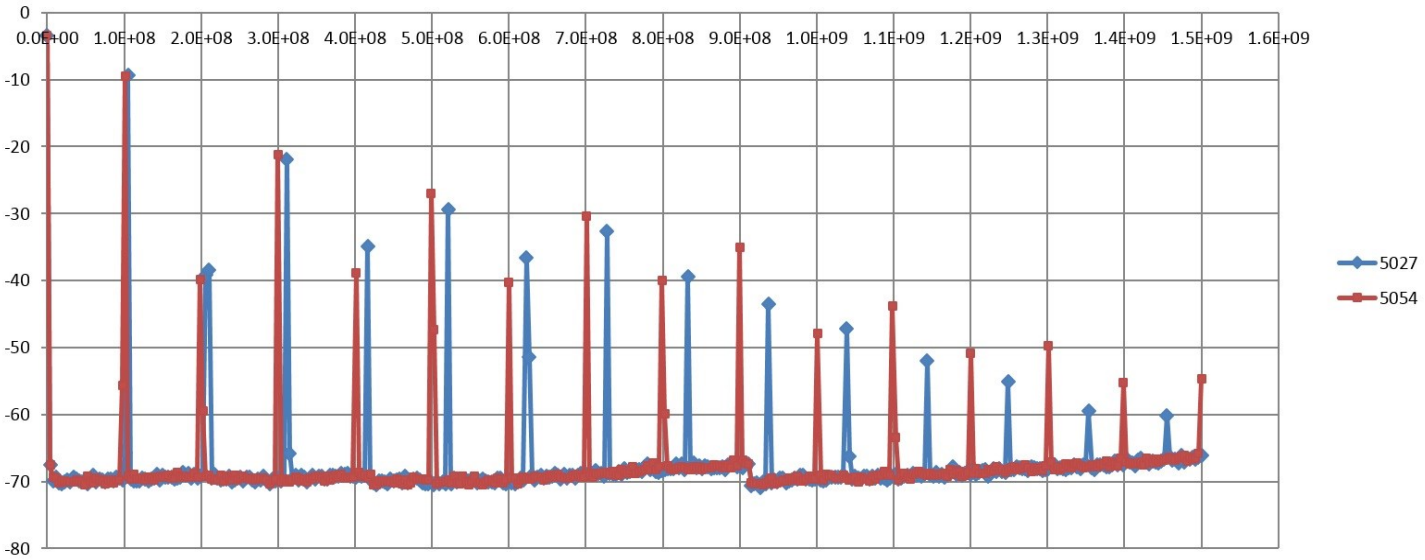
NPC 5054 IC (100.0 MHz)

10 Hz	-73 dBc/Hz
100 Hz	-103 dBc/Hz
1 kHz	-125 dBc/Hz
10 kHz	-137 dBc/Hz
100 kHz	-143 dBc/Hz
1 MHz	-153 dBc/Hz
10 MHz	-155 dBc/Hz

Equivalent

10 Hz	-65 dBc/Hz
100 Hz	-98 dBc/Hz
1 kHz	-127 dBc/Hz
10 kHz	-147 dBc/Hz
100 kHz	-150 dBc/Hz
1 MHz	-156 dBc/Hz
10 MHz	-156 dBc/Hz

Output Spectrum EMI Comparison VCC=3.3volts



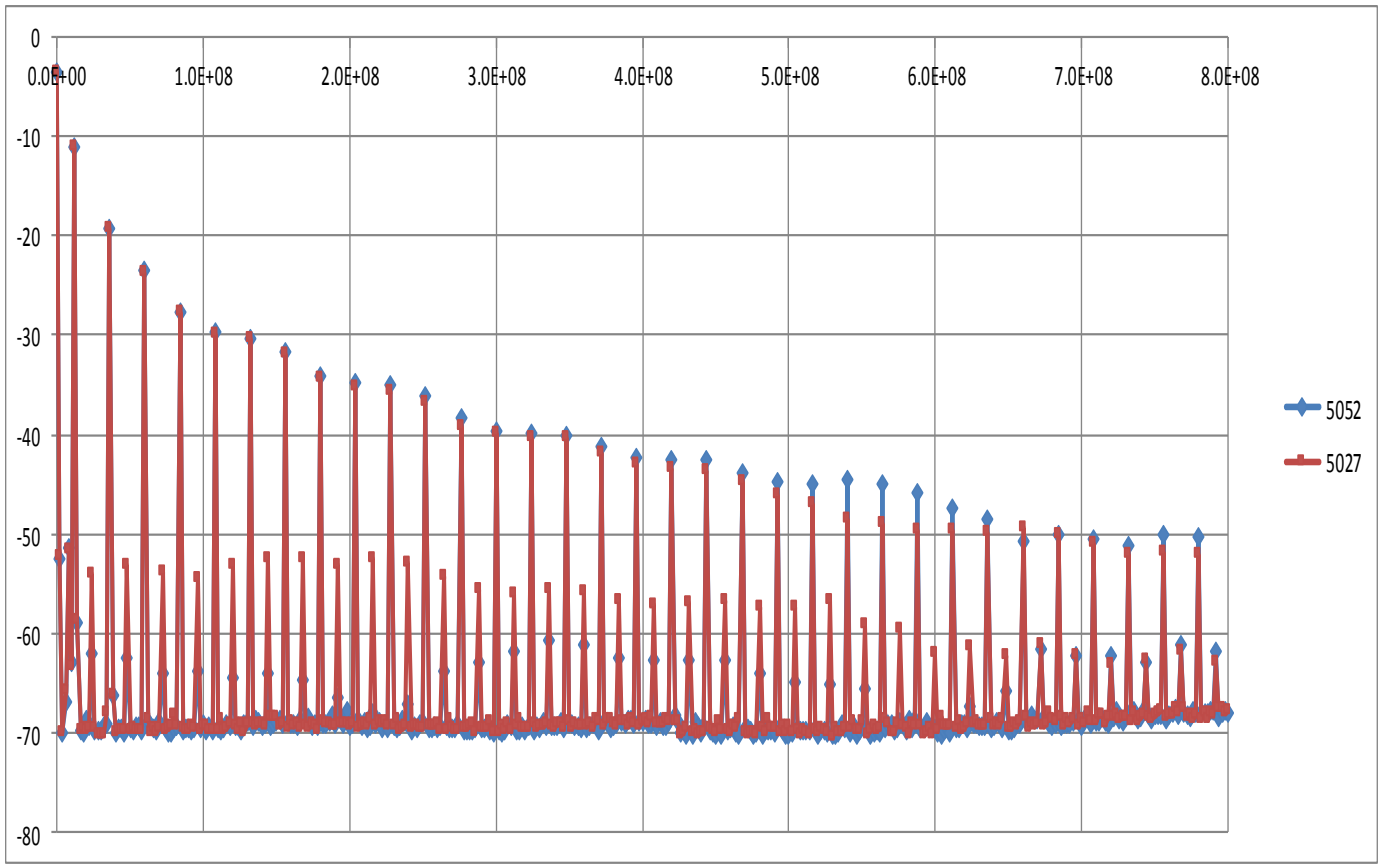
NPC 5027 IC (104.0 MHz)

Offset from Carrier	dBC
0	-3.479
1.05E+08	-9.348
2.06E+08	-39.125
3.11E+08	-21.941
4.16E+08	-34.855
5.21E+08	-29.353
6.23E+08	-36.601
7.28E+08	-32.673
8.33E+08	-39.422
9.38E+08	-43.532
1.04E+09	-47.194
1.14E+09	-52.054
1.25E+09	-55.165
1.35E+09	-59.500
1.46E+09	-60.112

NPC 5054 IC (100.0 MHz)

Offset from Carrier	dBC
0	-3.486
1.01E+08	-9.466
1.99E+08	-39.862
3E+08	-21.152
4.01E+08	-38.808
4.99E+08	-27.049
6E+08	-40.286
7.01E+08	-30.396
7.99E+08	-40.057
9E+08	-34.983
1E+09	-47.963
1.1E+09	-43.838
1.2E+09	-50.89
1.3E+09	-49.794
1.4E+09	-55.293
1.5E+09	-54.653

Output Spectrum EMI Comparison VCC=3.3volts



NPC 5027

Offset from Carrier	dBC
0	-3.421
12000000	-11.016
36000000	-19.264
60000000	-23.634
84000000	-27.771
1.08E+08	-29.8
1.32E+08	-30.434
1.56E+08	-31.892
1.8E+08	-34.438
2.04E+08	-35.173
2.28E+08	-35.769
2.52E+08	-36.848
2.76E+08	-39.113
3E+08	-39.913
3.24E+08	-40.343
3.48E+08	-40.437
3.72E+08	-41.787
3.96E+08	-42.992
4.2E+08	-43.37
4.44E+08	-43.691
4.68E+08	-44.864
4.92E+08	-46.056
5.16E+08	-46.975
5.4E+08	-48.635

NPC 5054

Offset from Carrier	dBC
0	-3.43
12000000	-10.98
36000000	-19.21
60000000	-23.56
84000000	-27.66
1.08E+08	-29.65
1.32E+08	-30.25
1.56E+08	-31.76
1.8E+08	-34.17
2.04E+08	-34.86
2.28E+08	-34.93
2.52E+08	-36.01
2.76E+08	-38.34
3E+08	-39.56
3.24E+08	-39.83
3.48E+08	-40.03
3.72E+08	-41.17
3.96E+08	-42.35
4.2E+08	-42.52
4.44E+08	-42.63
4.68E+08	-43.94
4.92E+08	-44.82
5.16E+08	-45.08
5.4E+08	-44.56