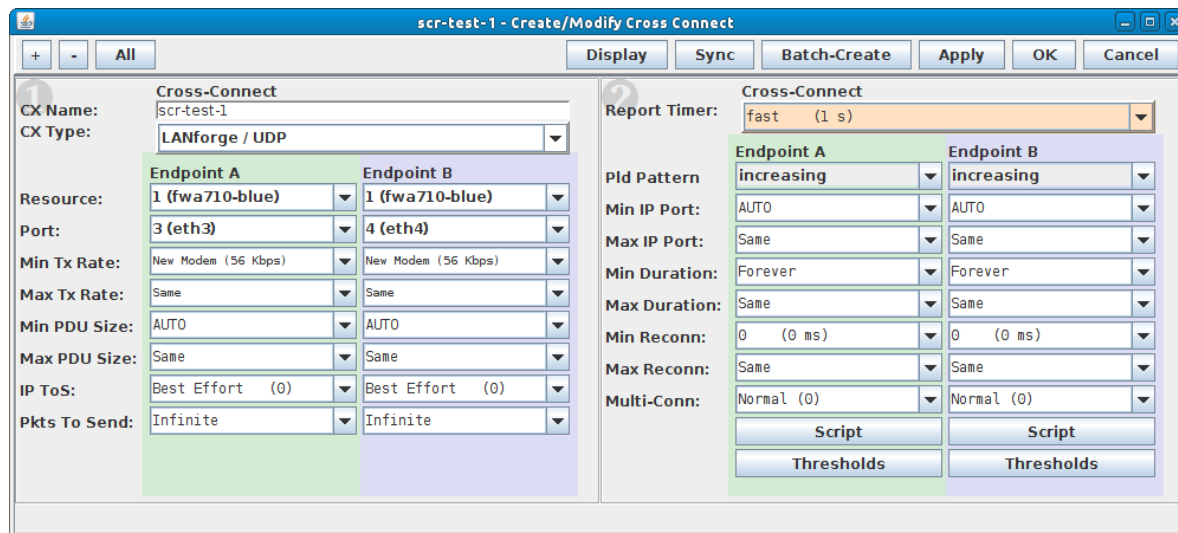


Scripted Layer-3 Test

Goal: Use [RFC-2544](#) as a guide to create a Layer-3 connection that can run automatically through various payload sizes and rates for a specified duration.

In this example, LANforge is used to set up a scripted connection that will iterate through a user-defined list of payload sizes and transmission rates. Each iteration will run for a user-defined duration with a user-defined pause between iterations. A summary text report is generated at the conclusion of all iterations.

1. Create a Layer-3 connection. For more information see [Generating Traffic to a Switched Network](#)
2. Modify the Layer-3 connection to add the script.
 - A. Highlight the Layer-3 connection and select **Modify**.



scr-test-1 - Create/Modify Cross Connect

CX Name: scr-test-1
CX Type: LANforge / UDP

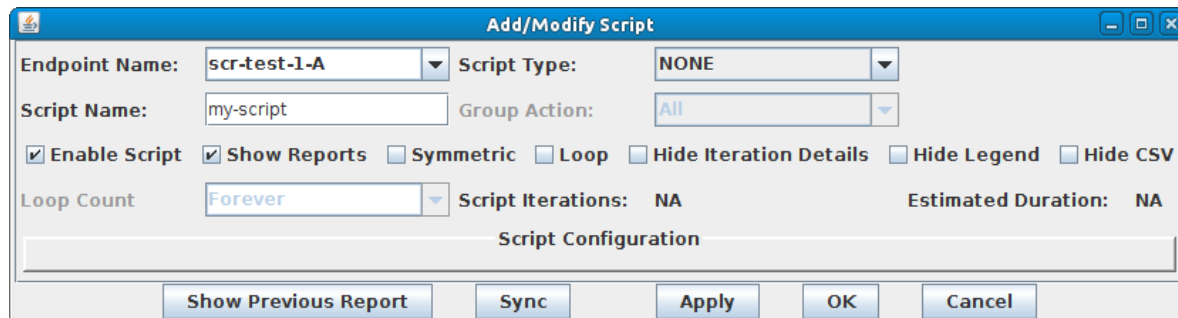
	Endpoint A	Endpoint B
Resource:	1 (fwa710-blue)	1 (fwa710-blue)
Port:	3 (eth3)	4 (eth4)
Min Tx Rate:	New Modem (56 Kbps)	New Modem (56 Kbps)
Max Tx Rate:	Same	Same
Min PDU Size:	AUTO	AUTO
Max PDU Size:	Same	Same
IP ToS:	Best Effort (0)	Best Effort (0)
Pkts To Send:	Infinite	Infinite

Report Timer: fast (1 s)

	Endpoint A	Endpoint B
Pld Pattern	increasing	increasing
Min IP Port:	AUTO	AUTO
Max IP Port:	Same	Same
Min Duration:	Forever	Forever
Max Duration:	Same	Same
Min Reconn:	0 (0 ms)	0 (0 ms)
Max Reconn:	Same	Same
Multi-Conn:	Normal (0)	Normal (0)

Buttons: Script, Thresholds

- B. Select the **Script** button on Endpoint A.



Add/Modify Script

Endpoint Name: scr-test-1-A Script Type: NONE

Script Name: my-script Group Action: All

Enable Script Show Reports Symmetric Loop Hide Iteration Details Hide Legend Hide CSV

Loop Count: Forever Script Iterations: NA Estimated Duration: NA

Script Configuration

Buttons: Show Previous Report, Sync, Apply, OK, Cancel

C. Select the Script Type, RFC-2544.

The screenshot shows the 'Add/Modify Script' dialog box for an RFC-2544 script. The 'Endpoint Name' is 'scr-test-1-A' and the 'Script Type' is 'RFC-2544'. The 'Script Name' is 'my-script' and the 'Group Action' is 'All'. The 'Enable Script' checkbox is checked, along with 'Show Reports'. Other options like 'Symmetric', 'Loop', 'Hide Iteration Details', 'Hide Legend', and 'Hide CSV' are unchecked. The 'Loop Count' is set to 'Forever', 'Script Iterations' is 27 (27), and 'Estimated Duration' is 15.75 m (15.75 m).

The 'Script Configuration' section includes checkboxes for 'Show Dups', 'Show OOO', 'Show Attenuation', 'Hide Latency Distributions', and 'Hide Constraints'. Below these are several dropdown menus: 'Run Duration' (30 s), 'Pause Duration' (5 s), 'Max Drop Percent' (5%), 'Max-Tx-Underrun' (10%), 'Max Jitter' (high), and 'Max RT Latency' (500ms). The 'Max Failed OK' is set to 0.

At the bottom, there are five panels for configuration: 'Rates A' (bps, 10Mbps, 100Mbps, 1Gbps), 'Rates B' (bps, 10Mbps, 100Mbps, 1Gbps), 'Payload Sizes A' (60, 128, 256, 512, 1024, 1280, 1460, 1472, 1514), 'Payload Sizes B' (60, 128, 256, 512, 1024, 1280, 1460, 1472, 1514), and 'Attenuations (ddB)' (NONE, 100, 300, 400, 600, 800, 955). At the very bottom are buttons for 'Show Previous Report', 'Sync', 'Apply', 'OK', and 'Cancel'.

- A. **Note:** A default set of payload sizes are set up based on RFC-2544 but, can be changed by typing over the default values.
- B. **Note:** For Layer-3 UDP and TCP connections, 'payload size' refers to size of the payload being carried by the protocol and not the ethernet frame size.

3. Set up script options. For details refer to: [LANforge User's Guide: Scripted Cross Connect](#)

A. Select **Symmetric** for the script to run both endpoints for a bi-directional traffic test.

Add/Modify Script

Endpoint Name: **scr-test-1-A** Script Type: **RFC-2544**

Script Name: **my-script** Group Action: **All**

Enable Script Show Reports **Symmetric** Loop Hide Iteration Details Hide Legend Hide CSV

Loop Count: **Forever** Script Iterations: **27 (27)** Estimated Duration: **15.75 m (15.75 m)**

Script Configuration

Show Dups Show OOO Show Attenuation Hide Latency Distributions Hide Constraints

Run Duration: **30 s (30 s)** Pause Duration: **5 s (5 s)**

Max Drop Percent: **5% (5%)** Max-Tx-Underrun: **10% (10%)**

Max Jitter: **high (100 ms)** Max RT Latency: **500ms (500 ms)**

Max Failed OK: **0**

Rates A **Rates B** **Payload Sizes A** **Payload Sizes B** **Attenuations (dB)**

bps 10Mbps 100Mbps 1Gbps

60 128 256 512 1024 1280 1460 1472 1514

60 128 256 512 1024 1280 1460 1472 1514

NONE

100 300 400 600 800 955

Show Previous Report Sync Apply OK Cancel

B. Set the **Run** and **Pause Duration**.

Add/Modify Script

Endpoint Name: **scr-test-1-A** Script Type: **RFC-2544**

Script Name: **my-script** Group Action: **All**

Enable Script Show Reports **Symmetric** Loop Hide Iteration Details Hide Legend Hide CSV

Loop Count: **Forever** Script Iterations: **27 (27)** Estimated Duration: **2.7 m (2.7 m)**

Script Configuration

Show Dups Show OOO Show Attenuation Hide Latency Distributions Hide Constraints

Run Duration: **5 s (5 s)** Pause Duration: **1 s (1 s)**

Max Drop Percent: **5% (5%)** Max-Tx-Underrun: **10% (10%)**

Max Jitter: **high (100 ms)** Max RT Latency: **500ms (500 ms)**

Max Failed OK: **0**

Rates A **Rates B** **Payload Sizes A** **Payload Sizes B** **Attenuations (dB)**

bps 10Mbps 100Mbps 1Gbps

60 128 256 512 1024 1280 1460 1472 1514

60 128 256 512 1024 1280 1460 1472 1514

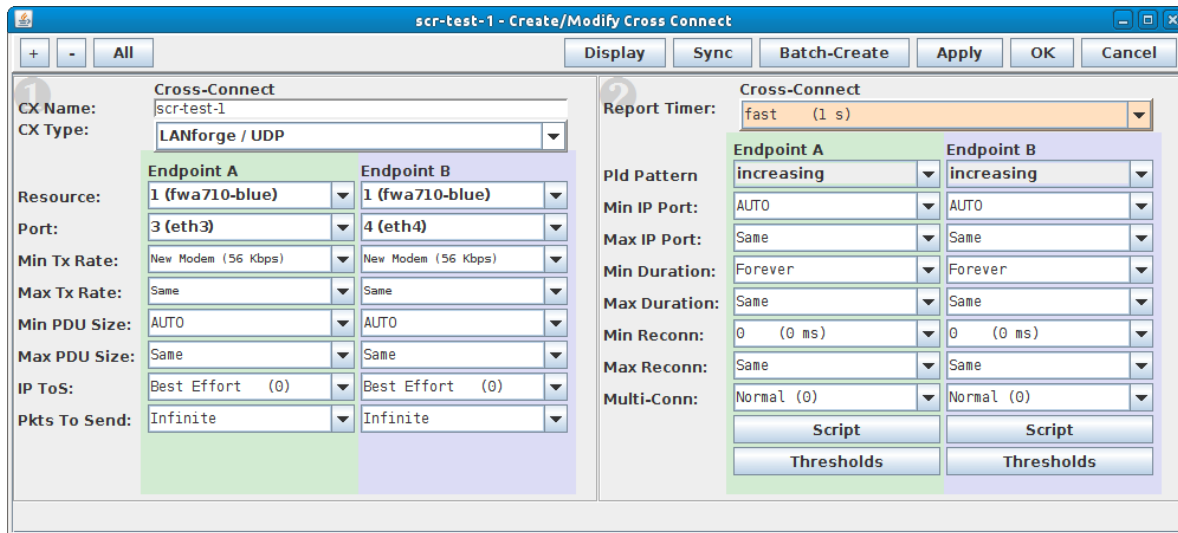
NONE

100 300 400 600 800 955

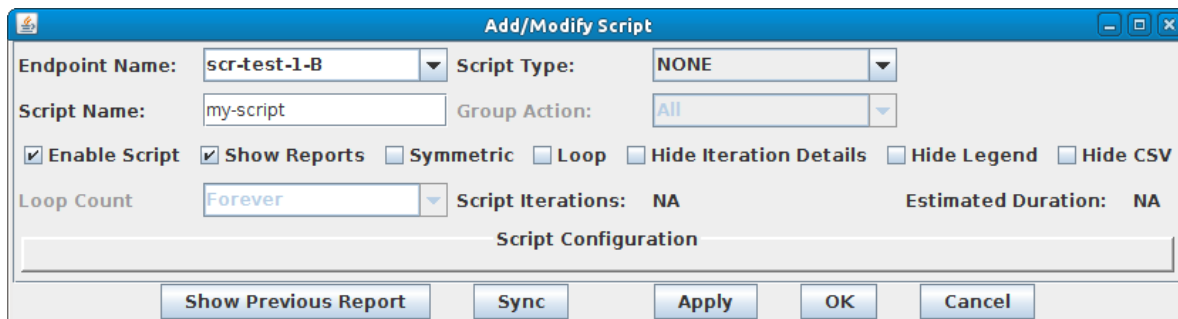
Show Previous Report Sync Apply OK Cancel

A. Note the total number of **Script Iterations** and **Estimated Total Duration** to help determine how long it will take to run this script.

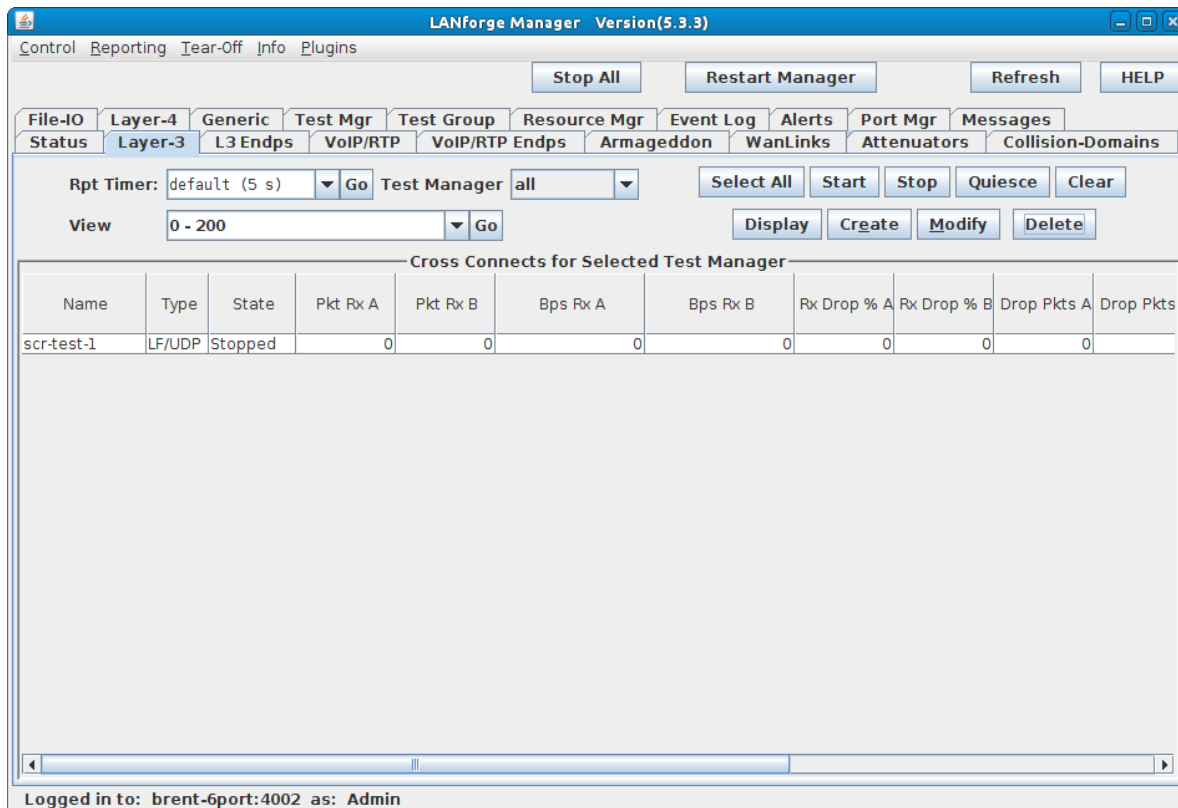
C. Select OK to close the Add/Modify Script window.



D. The Script Type for Endpoint B is set to NONE because Endpoint A is controlling both ends of the connection in this symmetric script example.



E. Select OK to close the Create/Modify Cross Connect window.



4. Start the Scripted Layer-3 Cross Connect.
 - A. Highlight the Layer-3 connection and select Start.

The screenshot shows the LANforge Manager interface. The 'Layer-3' tab is selected, displaying a table titled 'Cross Connects for Selected Test Manager'. The table has the following data:

Name	Type	State	Pkt Rx A	Pkt Rx B	Bps Rx A	Bps Rx B	Rx Drop % A	Rx Drop % B	Drop Pkts A	Drop Pkts B
scr-test-1	LF/UDP	Run	147,780	148,011	7,831,535	7,711,319	0	0	0	0

Below the table, the status 'Logged in to: brent-6port:4002 as: Admin' is visible.

- B. A script report window will pop up and show the details of each iteration of the scripted connection as it is run.

The screenshot shows a 'Script Report for: scr-test-1-A' window. It displays the following test results for three iterations:

```

# peer: rx-pkts: 12202 rx-bytes: 6247424 rx-pps: 2440 rx-pps-ll: 2440
# rx-bps: 9995878 rx-bps-low-level: 10815853
# dropped: 0 drop percent: 0.0000 avg-rx-latency(us): 0 avg-rt-latency(us): 0 peer-machine-load: 0.15
# rx-signal: 0 tx-link-speed: 1000000000 rx-link-speed: 1000000000 attenuation: 0 peer-rx-signal: 0 peer-tx-link-speed: 1000000000
peer-rx-link-speed: 1000000000
# peer-dropped: 0 peer drop percent: 0.0000
# * Passed constraints *

# iteration: 4/27 Endpoint: scr-test-1-A now: 1446685446147ms duration: 5001ms paused: 1000ms
# payload-size: 1024 cfg-rate: 10000000
# tx-pkts: 6042 tx-bytes: 6187008 tx-bytes-low-level: 6440772 tx-pps: 1208
# tx-bps: 9897233 tx-bps-low-level: 10303175
# rx-pkts: 6042 rx-bytes: 6187008 rx-bytes-low-level: 6440772
# rx-pps: 1208 rx-bps: 9897233 rx-bps-low-level: 10303175
# rx-drops: 0 rx-dups: 0 rx-ooo: 0 machine-load: 0.14
# peer: rx-pkts: 6042 rx-bytes: 6187008 rx-pps: 1208 rx-pps-ll: 1208
# rx-bps: 9897233 rx-bps-low-level: 10303175
# dropped: 0 drop percent: 0.0000 avg-rx-latency(us): 0 avg-rt-latency(us): 0 peer-machine-load: 0.14
# rx-signal: 0 tx-link-speed: 1000000000 rx-link-speed: 1000000000 attenuation: 0 peer-rx-signal: 0 peer-tx-link-speed: 1000000000
peer-rx-link-speed: 1000000000
# peer-dropped: 0 peer drop percent: 0.0000
# * Passed constraints *

# iteration: 5/27 Endpoint: scr-test-1-A now: 1446685452148ms duration: 5000ms paused: 1001ms
# payload-size: 1280 cfg-rate: 10000000
# tx-pkts: 4880 tx-bytes: 6246400 tx-bytes-low-level: 6451360 tx-pps: 976
# tx-bps: 9994240 tx-bps-low-level: 10322176
# rx-pkts: 4880 rx-bytes: 6246400 rx-bytes-low-level: 6451360
# rx-pps: 976 rx-bps: 9994240 rx-bps-low-level: 10322176
# rx-drops: 0 rx-dups: 0 rx-ooo: 0 machine-load: 0.11
# peer: rx-pkts: 4880 rx-bytes: 6246400 rx-pps: 976 rx-pps-ll: 976
# rx-bps: 9994240 rx-bps-low-level: 10322176
# dropped: 0 drop percent: 0.0000 avg-rx-latency(us): 0 avg-rt-latency(us): 0 peer-machine-load: 0.11
# rx-signal: 0 tx-link-speed: 1000000000 rx-link-speed: 1000000000 attenuation: 0 peer-rx-signal: 0 peer-tx-link-speed: 1000000000
peer-rx-link-speed: 1000000000
# peer-dropped: 0 peer drop percent: 0.0000
# * Passed constraints *
  
```

At the bottom of the window, there are buttons for 'Pause', 'Close', 'Save File', 'Graphical Display', and 'Invert RX-Signal X Axis'.

C. At the conclusion of the script, the report window will display a summary of the entire scripted connection results. Full Script Report for this example:

Script Report for: scr-test-1-A

Started test at: Fri Nov 6 15:42:43 2015
 Iteration Duration: 5000ms Pause Duration: 1000ms
 Number of running endpoints at end of first iteration: 2
 System Load at end of first iteration: 0.00

Endpoint Information:
 Endpoint ID: scr-test-1-A Type: LANFORGE_UDP Peer Endpoint ID: scr-test-1-B

Summary data for each iteration:

##	pld-size - (bytes)	cfg-rate (bps)	tx-bps	rx-bps peer	rx-bps-LL peer	tx-pps	rx-pps peer	tx-pkts	rx-pkts peer	cx-drops peer	drop% peer	rx-lat(ms) peer
0*	60	10000000	9998592	9998592	16997606	20830	20830	104152	104152	0	0.000	0
1*	128	10000000	9996288	9996288	13276320	9762	9762	48810	48810	0	0.000	0
2*	256	10000000	9997926	9997926	11638211	4882	4882	24409	24409	0	0.000	0
3*	512	10000000	9995878	9995878	10815853	2440	2440	12202	12202	0	0.000	0
4*	1024	10000000	9997517	9997517	10407571	1220	1220	6102	6102	0	0.000	0
5*	1280	10000000	9998336	9998336	10326406	976	976	4882	4882	0	0.000	0
6*	1460	10000000	9998080	9998080	10285696	856	856	4280	4280	0	0.000	0
7*	1472	10000000	9997824	9997824	10283088	849	849	4245	4245	0	0.000	0
8*	1514	10000000	9994822	9994822	10549357	825	825	4126	4126	0	0.000	0
9*	60	10000000	99995059	99995059	169997971	208342	208342	1041710	1041710	0	0.000	0
10*	128	10000000	99988275	99988275	132796928	97645	97645	488224	488224	0	0.000	0
11*	256	10000000	99968691	99968691	116369804	48813	48813	244113	244113	0	0.000	0
12*	512	10000000	99971072	99971072	108171824	24407	24407	122035	122035	0	0.000	0
13*	1024	10000000	99984998	99984998	104085946	12205	12205	61026	61026	0	0.000	0
14*	1280	10000000	99973120	99973120	103253488	9763	9763	48815	48815	0	0.000	0
15*	1460	10000000	99983136	99983136	102859363	8560	8560	42801	42801	0	0.000	0
16*	1472	10000000	99964109	99964109	102816346	8489	8489	42444	42444	0	0.000	0
17*	1514	10000000	99962758	99962758	105508909	8253	8253	41266	41266	0	0.000	0
18	60	1000000000	198339321	40513536	68923642	413872	84554	2069775	422854	1646921	79.570	107
--- Failed transmit-percent constraint, reported: 19.8339% min: 90												
--- Failed peer transmit-percent constraint, reported: 19.8217% min: 90												
--- Failed drop-percent constraint, reported: 79.57% max: 5												
--- Failed peer-drop-percent constraint, reported: 79.5695% max: 5												
19	128	1000000000	424376963	88404651	117412427	414431	86333	2072982	431836	1641146	79.168	105
--- Failed transmit-percent constraint, reported: 42.4377% min: 90												
--- Failed peer transmit-percent constraint, reported: 42.4185% min: 90												
--- Failed drop-percent constraint, reported: 79.1684% max: 5												
--- Failed peer-drop-percent constraint, reported: 79.1657% max: 5												
20	256	1000000000	710144921	289658292	337180356	346750	141435	1734099	707315	1026784	59.211	19
--- Failed transmit-percent constraint, reported: 71.0145% min: 90												
--- Failed peer transmit-percent constraint, reported: 70.9948% min: 90												
--- Failed drop-percent constraint, reported: 59.2114% max: 5												
--- Failed peer-drop-percent constraint, reported: 59.2126% max: 5												
21*	512	1000000000	1000025293	999352730	1081330883	244147	243983	1220734	1219913	821	0.067	0
22*	1024	1000000000	999858176	999858176	1040867984	122053	122053	610265	610265	0	0.000	0
23*	1280	1000000000	999888896	999888896	1032697750	97645	97645	488227	488227	0	0.000	0
24*	1460	1000000000	999903776	999903776	1028668131	85608	85608	428041	428041	0	0.000	0
25*	1472	1000000000	999692902	999692902	1028216749	84892	84892	424462	424462	0	0.000	0
26*	1514	1000000000	999671187	999671187	1055135110	82536	82536	412678	412678	0	0.000	0

Pause

 Invert RX-Signal X Axis

- A. per iteration details
- B. raw CSV data for all iterations
- C. spreadsheet matrices for creating your own 3D graphs
- D. system information