



**JAX ESSENTIAL SERIES**  
**( AudioUnit Colletion )**

**MANUAL**

# **JAX ESSENTIAL SERIES**

## **AUDIOUNITS**

The JAX ESSENTIAL Series is an universal collection of several MIDI enabled AudioUnits for usage with any AUv3 supporting host application across all modern Apple devices (iPhone / iOS, iPadOS, Intel and Apple Silicon based Macs).

### **Truly Universal**

These units show identical behavior on all mobile devices and the desktop Macs running on MacOS natively and are for instance selectable within GarageBand, MainStage3 and Logic Pro X and all host applications, which support Apple's latest AUv3 standard. On the Mac, the units can process optionally in-process or out-of-process, which is configurable with the host application.

### **Unified parametric interface**

The units inside the collection come with an unified, simple and easy to use parametric interface, which is specifically optimized for touch screen usage, freely size-able and this way operating on any screen size and orientation. Especially in Logic Pro X, the windows can be freely adjusted to any size.

### **Presets**

The presets of the audio units are based on Apples human readable \*.plist XML format and shareable across all supported devices. Most of the plugins come with a factory

set of around 200 presets for instant selection. For a complete preset list, please see the addendum.

## **MIDI Automation**

The most important parameters are directly MIDI automatable by just assigning a controller number to the desired parameters. Multiple assignments are possible. Please note, that MIDI values are by nature quantized to 128 concrete values. However AudioUnit automation will always use full floating point resolution for the parameters.

## **Next Step Evolution**

For more specialized applications, the JAX SELECTIVE RANGE (SR) Series will enhance many of the essential series effects with a unique frequency band-bass split filter, well suited for mastering tasks and frequency selective enhancements. Applying modulation effects to the whole frequency spectrum often will not give optimal results, so we enhanced the basic concept for selective frequency ranges and instant setup and access.

The SR Series effects also come with a more advanced graphical user interface, emulating hardware controls for the main parameters.

# JAX ESSENTIAL SERIES

## JAX FLANGER



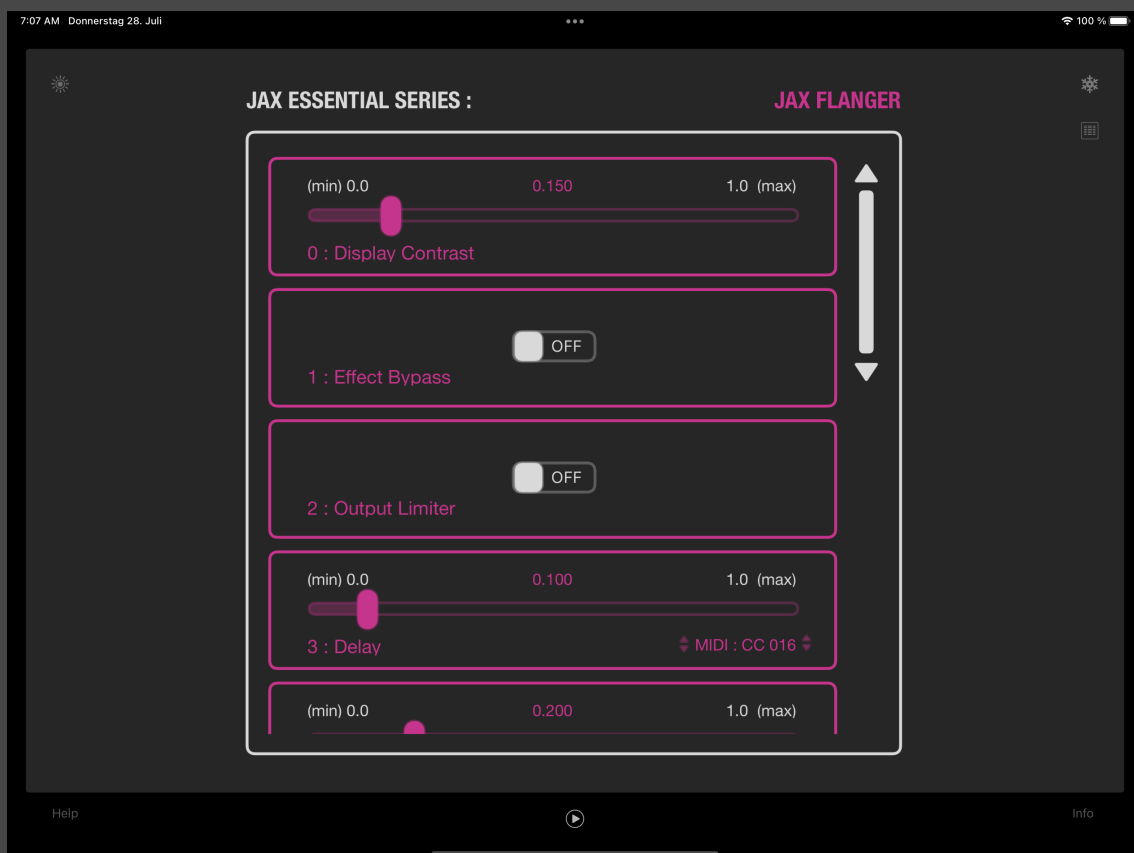
The JAX Flanger AudioUnit is a delay based stereo audio effect processor with the following parameters:

- Display Contrast,
- Bypass,
- Final Limiter,
  
- Delay,
- Depth,
- Rate,
- Feedback,
- Stereo Phase,
- LFO On/Off,
  
- Dry,
- Wet,



- Active,
- Gain In,
- Gain Out,

Flangers are so-called modulation effects, which periodically alter the frequency components of the audio stream in realtime by overlapping and varying copies of the input signal. So flangers are by default based on delay lines and very similar to comb filters. One of the most distinguished kind of sound is the famous “air jet” effect. Flangers are very similar to chorus effects but with usually much shorter delay buffers and without any applied pitch modulation.



### JAX ESSENTIAL SERIES : JAX FLANGER

(min) 0.0 0.150 1.0 (max)

0 : Display Contrast

1 : Effect Bypass OFF

2 : Output Limiter OFF

(min) 0.0 0.100 1.0 (max)

3 : Delay MIDI : CC 016

(min) 0.0 0.200 1.0 (max)

OFF

100 1.0 (max)

200 1.0 (max)

MIDI : CC 016

7-13

JAX ESSENTIAL SERIES : JAX FLANGER

0.0 0.100 1.0 (max)

0 : Display Contrast

1 : Effect Bypass OFF

2 : Output Limiter OFF

0.0 0.100 1.0 (max)

3 : Delay MIDI : CC 016

0.0 0.200 1.0 (max)

Help

ad Pro (12.9-inch)  
n generation - iOS 15.2

stag 28. Juli

iPhone 12 Pro Max - iOS

# JAX ESSENTIAL SERIES

## JAX PHASER



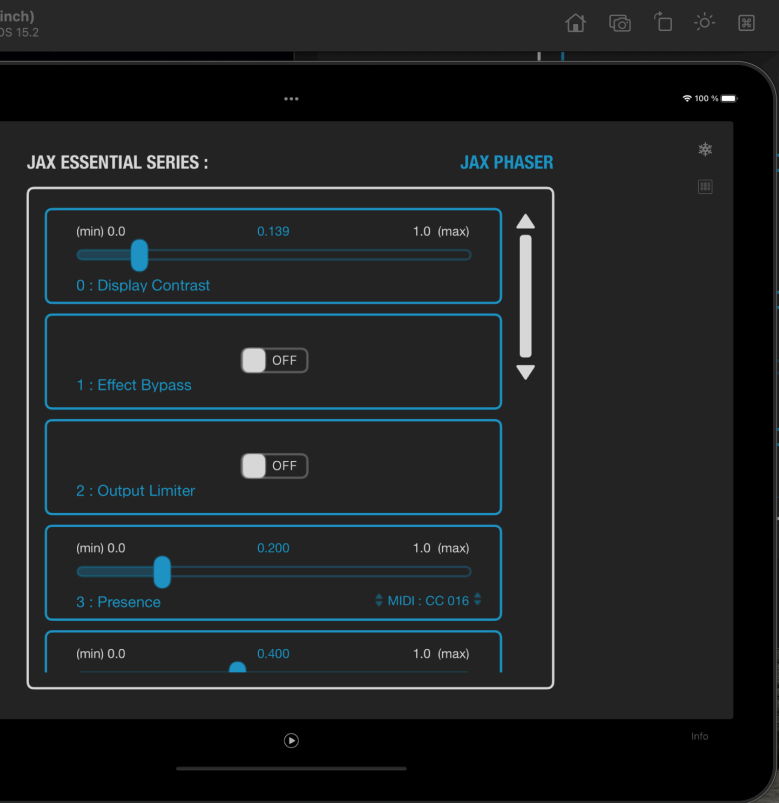
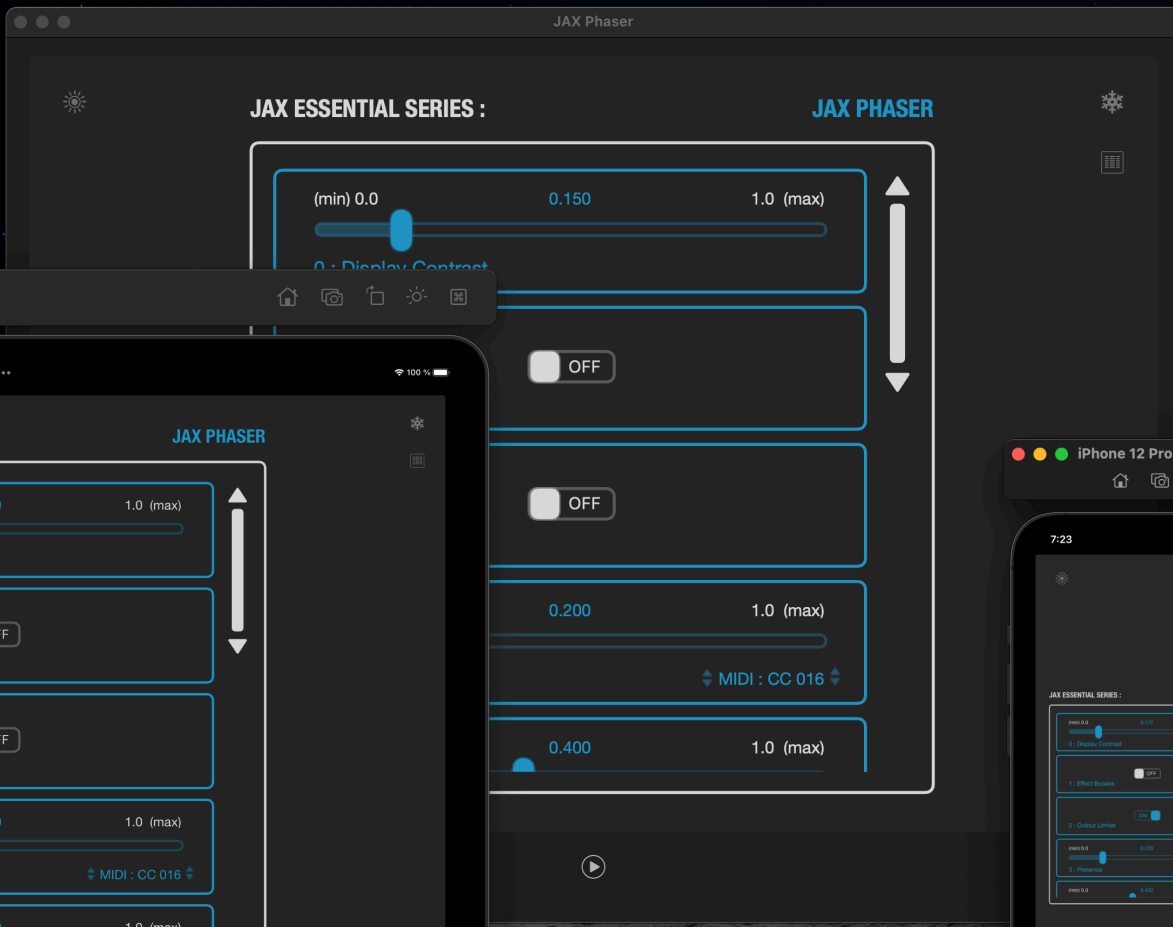
The JAX Phaser AudioUnit is a classic stereo multi-stage phaser audio processor with the following parameters:

- Display Contrast,
- Bypass,
- Final Limiter,
  
- Frequency,
- Depth,
- Rate,
- Feedback,
- Stages,
- Stereo Phase,
- LFO On/Off,

- Dry,
- Wet,
  
- Active,
- Gain In,
- Gain Out,

Phasers are modulation effects, which periodically emphasize some frequencies due to continuous phase shifting, caused by specialized all-pass filters. The resulting sound is slightly different to flanger effects and has more tonal characteristics. Raising the number of stages (up to 12) will drastically emphasize the result. Phasers will sweep and emphasize certain frequency content with a distinguished tonal result, mostly periodically modulated by low frequency oscillators.





# JAX ESSENTIAL SERIES

## JAX CHORUS



The JAX Chorus AudioUnit is a delay based multi-stage stereo audio effect processor with the following parameters:

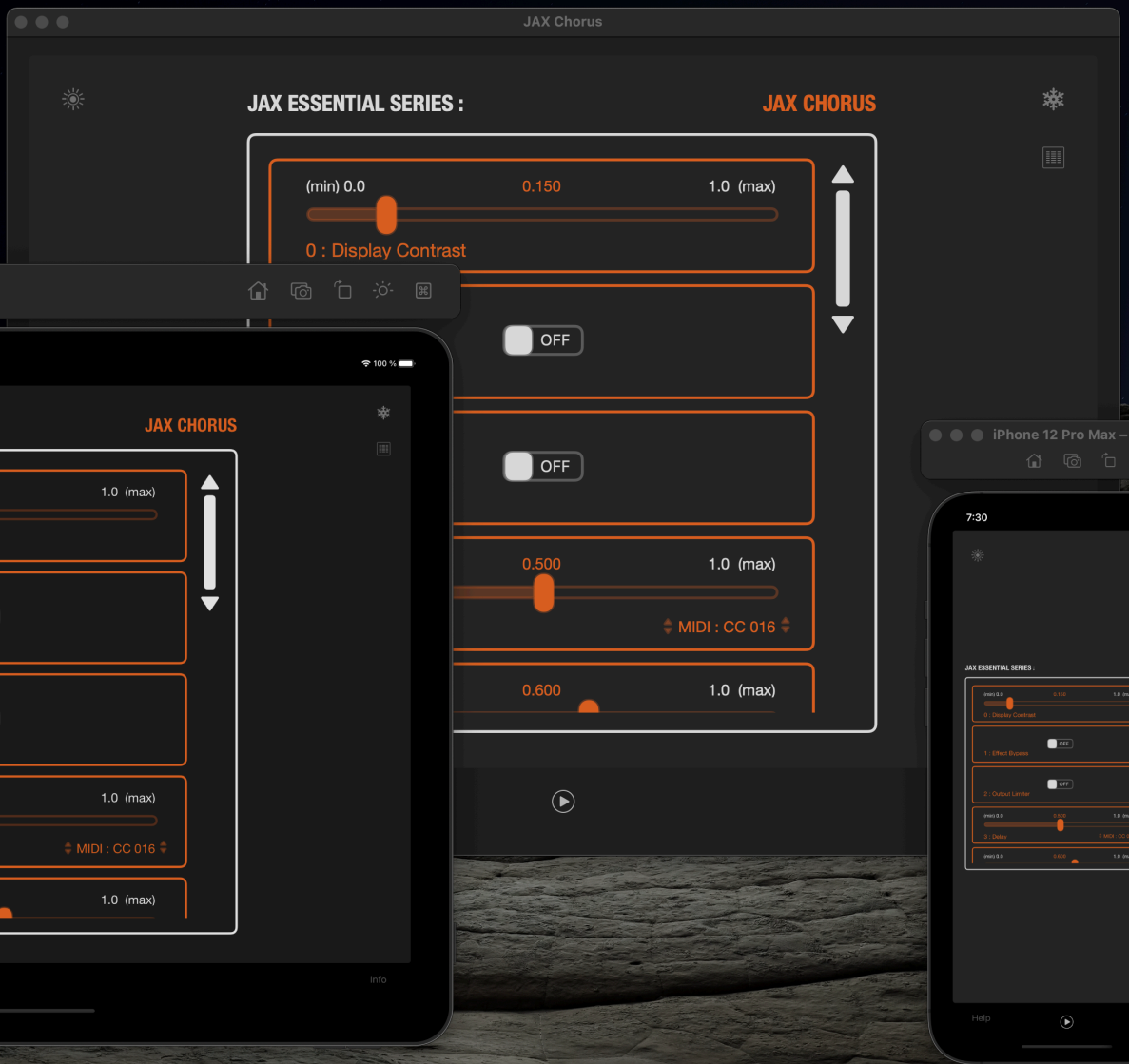
- Display Contrast,
- Bypass,
- Final Limiter,
  
- Delay,
- Depth,
- Rate,
- Stereo Phase,
- Stages,
- Phase Offset,
- Frequency 1,
- Frequency 2,

- Peak,
- Overlapp,
- LFO On/Off,
  
- Dry,
- Wet,
  
- Active,
- Gain In,
- Gain Out,

Chorus is a kind of modulation effect, which uses short delay lines and microtonal pitch shifting by altering the speed of the read pointers into these buffers in realtime. It is also a delay based effect processor. This kind of effect is often used to generate a number of detuned copies (up to 8 stages or ‚voices‘) , clones of the input signal. The pitch of each voice is altered and modulated by low frequency oscillators.

A more decent version of the chorus effect is the so-called ‚ensemble‘ effect, which does not use periodic LFO modulation but static detuned voice copies, simulating unisono playing.

If you want this kind of higher quality chorus, we recommend our **JAX Unisonic AudioUnit**, which provides up to 8 detuned stereo voices and independent delay lines for more complex harmonizing-alike effects.





## **ADDENDUM**

## AU VALIDATION REPORTS

### Remarks:

We take special care of the MacOS validation processing, which mostly will be the reason, why AUv3 units that are performing perfectly on iOS, WILL NOT LOAD correctly or not even available for user selection with Logic Pro X, MainStage 3 or GarageBand on all actual versions of MacOS.

Making cross-compiled AudioUnits available to all platforms is a really complicated ,trial & error' process, even if Apple promotes this as a feature and often requires very special code injections, that merely ensure a correct validation processing by a stupidly written, hidden MacOS AU validation tool.

On the Mac all audio units are validated automatically with this tool called ,auval, a command line processor, prior being able to load into Apples host applications. Otherwise these most probably will not even correctly registered for usage with other 3rd party audio hosts. This tool does ,check' quite questionable things and often also reports false ,errors' and and misleading ,problems' or dumps out just idiotic and cryptic error codes, which no human actually could understand.

However, we ensured, that our latest releases are validated correctly and compatible with all the promoted supported platforms. But we unfortunately cannot make any promises for future macOS and host versions, as Apple is well known for breaking existing code.

*NOTE: We recommend to use our AUv3 units as in-process audio units on the mac (default) for optimal performance.*

# JAX FLANGER - AU VALIDATION REPORT



AU Validation Tool  
Version: 1.8.0  
Copyright 2003-2019, Apple Inc. All Rights Reserved.  
Specify -h (-help) for command options

-----  
VALIDATING AUDIO UNIT: 'aumf' - 'jxfl' - 'DGST'  
-----

Manufacturer String: DGST  
AudioUnit Name: JAX Flanger Extension  
Component Version: 1.6.0 (0x10600)

\* \* PASS

-----  
TESTING OPEN TIMES:  
COLD:

Loaded AudioUnit out-of-process: true  
Time to open AudioUnit: 530.012 ms  
WARM:

Loaded AudioUnit out-of-process: true  
Time to open AudioUnit: 104.097 ms  
This AudioUnit is a version 3 implementation.  
FIRST TIME:  
Time for initialization: 36.031 ms

\* \* PASS

-----  
VERIFYING DEFAULT SCOPE FORMATS:

Input Scope Bus Configuration:  
Default Bus Count:1  
Default Format: AudioStreamBasicDescription: 2 ch, 48000 Hz, 'lpcm' (0x00000029)  
32-bit little-endian float, deinterleaved

Output Scope Bus Configuration:  
Default Bus Count:1  
Default Format: AudioStreamBasicDescription: 2 ch, 48000 Hz, 'lpcm' (0x00000029)  
32-bit little-endian float, deinterleaved

\* \* PASS

-----  
VERIFYING REQUIRED PROPERTIES:

\* \* PASS

-----  
VERIFYING RECOMMENDED PROPERTIES:

VERIFYING PROPERTY: Latency  
PASS  
VERIFYING PROPERTY: Tail Time  
PASS  
VERIFYING PROPERTY: Bypass Effect  
PASS

\* \* PASS

-----  
VERIFYING OPTIONAL PROPERTIES:

\* \* PASS

-----  
VERIFYING SPECIAL PROPERTIES:

VERIFYING CUSTOM UI

Cocoa Views Available: 0

WARNING: CurrentPreset property is deprecated. AU should implement PresentPreset

HAS FACTORY PRESETS

ID: 0	Name: Addis Ababa Flanger
ID: 1	Name: Sarajevo Flanger
ID: 2	Name: Dakar Flanger
ID: 3	Name: Vienna Flanger
ID: 4	Name: Kathmandu Flanger
ID: 5	Name: Copenhagen Flanger
ID: 6	Name: Libreville Flanger
ID: 7	Name: Kigali Flanger
ID: 8	Name: Bishkek Flanger
ID: 9	Name: Paramaribo Flanger
ID: 10	Name: Yaren Flanger
ID: 11	Name: Bern Flanger
ID: 12	Name: Damascus Flanger
ID: 13	Name: Ulaanbaatar Flanger
ID: 14	Name: Manila Flanger
ID: 15	Name: Nassau Flanger
ID: 16	Name: Djibouti Flanger
ID: 17	Name: Maputo Flanger
ID: 18	Name: Athens Flanger
ID: 19	Name: Helsinki Flanger
ID: 20	Name: New Delhi Flanger
ID: 21	Name: Vientiane Flanger

ID: 22	Name: Majuro Flanger
ID: 23	Name: Bangkok Flanger
ID: 24	Name: Bujumbura Flanger
ID: 25	Name: Jakarta Flanger
ID: 26	Name: Dili Flanger
ID: 27	Name: Hanoi Flanger
ID: 28	Name: Vatican City Flanger
ID: 29	Name: Brussels Flanger
ID: 30	Name: San Marino Flanger
ID: 31	Name: Mbabane Flanger
ID: 32	Name: Stockholm Flanger
ID: 33	Name: Kingstown Flanger
ID: 34	Name: Luxembourg Flanger
ID: 35	Name: Tegucigalpa Flanger
ID: 36	Name: Tarawa Flanger
ID: 37	Name: Yamoussoukro Flanger
ID: 38	Name: Ankara Flanger
ID: 39	Name: Freetown Flanger
ID: 40	Name: São Tomé Flanger
ID: 41	Name: Podgorica Flanger
ID: 42	Name: Nairobi Flanger
ID: 43	Name: Port Vila Flanger
ID: 44	Name: Taipei Flanger
ID: 45	Name: Cairo Flanger
ID: 46	Name: Kuala Lumpur Flanger
ID: 47	Name: Budapest Flanger
ID: 48	Name: Port-au-Prince Flanger
ID: 49	Name: Banjul Flanger
ID: 50	Name: Bratislava Flanger
ID: 51	Name: Tripoli Flanger
ID: 52	Name: Moscow Flanger
ID: 53	Name: Nicosia Flanger
ID: 54	Name: Bucharest Flanger
ID: 55	Name: Bangui Flanger
ID: 56	Name: Pyongyang Flanger
ID: 57	Name: Wellington Flanger
ID: 58	Name: Santo Domingo Flanger
ID: 59	Name: Jerusalem Flanger
ID: 60	Name: Lomé Flanger
ID: 61	Name: Vaduz Flanger
ID: 62	Name: Muscat Flanger
ID: 63	Name: Juba Flanger
ID: 64	Name: Funafuti Flanger
ID: 65	Name: Phnom Penh Flanger
ID: 66	Name: Ottawa Flanger
ID: 67	Name: Yerevan Flanger
ID: 68	Name: Nukualofa Flanger
ID: 69	Name: Thimphu Flanger
ID: 70	Name: Reykjavík Flanger
ID: 71	Name: Vilnius Flanger
ID: 72	Name: St. George's Flanger
ID: 73	Name: Belmopan Flanger
ID: 74	Name: Islamabad Flanger
ID: 75	Name: Khartoum Flanger
ID: 76	Name: Sana'a Flanger
ID: 77	Name: Port Louis Flanger
ID: 78	Name: Riga Flanger
ID: 79	Name: Tehran Flanger
ID: 80	Name: Roseau Flanger
ID: 81	Name: Abu Dhabi Flanger
ID: 82	Name: Kinshasa Flanger
ID: 83	Name: Accra Flanger
ID: 84	Name: Ouagadougou Flanger
ID: 85	Name: Bridgetown Flanger
ID: 86	Name: Kampala Flanger
ID: 87	Name: Buenos Aires Flanger
ID: 88	Name: Lisbon Flanger
ID: 89	Name: Kabul Flanger
ID: 90	Name: Manama Flanger
ID: 91	Name: Beirut Flanger
ID: 92	Name: Belgrade Flanger
ID: 93	Name: Tashkent Flanger
ID: 94	Name: Rabat Flanger

ID: 95	Name: London Flanger
ID: 96	Name: Honiara Flanger
ID: 97	Name: St. John's Flanger
ID: 98	Name: Chisinau Flanger
ID: 99	Name: Havana Flanger
ID: 100	Name: Mogadishu Flanger
ID: 101	Name: Georgetown Flanger
ID: 102	Name: Bamako Flanger
ID: 103	Name: Paris Flanger
ID: 104	Name: Ljubljana Flanger
ID: 105	Name: Port Moresby Flanger
ID: 106	Name: Tbilisi Flanger
ID: 107	Name: Skopje Flanger
ID: 108	Name: Maseru Flanger
ID: 109	Name: Luanda Flanger
ID: 110	Name: Tunis Flanger
ID: 111	Name: Malé Flanger
ID: 112	Name: Malabo Flanger
ID: 113	Name: Sofia Flanger
ID: 114	Name: Praia Flanger
ID: 115	Name: Santiago Flanger
ID: 116	Name: Mexico City Flanger
ID: 117	Name: Porto Novo Flanger
ID: 118	Name: Seoul Flanger
ID: 119	Name: Warsaw Flanger
ID: 120	Name: Lima Flanger
ID: 121	Name: Naypyidaw Flanger
ID: 122	Name: Suva Flanger
ID: 123	Name: N'Djamena Flanger
ID: 124	Name: San José Flanger
ID: 125	Name: Brazzaville Flanger
ID: 126	Name: Guatemala City Flanger
ID: 127	Name: Minsk Flanger
ID: 128	Name: Kuwait City Flanger
ID: 129	Name: Doha Flanger
ID: 130	Name: Pristina Flanger
ID: 131	Name: Beijing Flanger
ID: 132	Name: Monrovia Flanger
ID: 133	Name: Kiev Flanger
ID: 134	Name: Kingston Flanger
ID: 135	Name: Amsterdam Flanger
ID: 136	Name: Sucre Flanger
ID: 137	Name: Rome Flanger
ID: 138	Name: Canberra Flanger
ID: 139	Name: Bandar Seri Begawan Flanger
ID: 140	Name: Washington D.C. Flanger
ID: 141	Name: Dhaka Flanger
ID: 142	Name: Gaborone Flanger
ID: 143	Name: Berlin Flanger
ID: 144	Name: Brasilia Flanger
ID: 145	Name: Quito Flanger
ID: 146	Name: Yaoundé Flanger
ID: 147	Name: Panama City Flanger
ID: 148	Name: Pretoria Flanger
ID: 149	Name: Tallinn Flanger
ID: 150	Name: Dublin Flanger
ID: 151	Name: Antananarivo Flanger
ID: 152	Name: Oslo Flanger
ID: 153	Name: Dushanbe Flanger
ID: 154	Name: Baku Flanger
ID: 155	Name: Dodoma Flanger
ID: 156	Name: Basseterre Flanger
ID: 157	Name: Victoria Flanger
ID: 158	Name: Conakry Flanger
ID: 159	Name: Amman Flanger
ID: 160	Name: Managua Flanger
ID: 161	Name: Tirana Flanger
ID: 162	Name: Astana Flanger
ID: 163	Name: Lusaka Flanger
ID: 164	Name: Sri Jayawardenapura Kotte Flanger
ID: 165	Name: Windhoek Flanger
ID: 166	Name: Lilongwe Flanger
ID: 167	Name: Madrid Flanger

ID: 168 Name: Niamey Flanger  
ID: 169 Name: Asmara Flanger  
ID: 170 Name: Montevideo Flanger  
ID: 171 Name: Moroni Flanger  
ID: 172 Name: Andorra la Vella Flanger  
ID: 173 Name: Harare Flanger  
ID: 174 Name: Prague Flanger  
ID: 175 Name: Nouakchott Flanger  
ID: 176 Name: Caracas Flanger  
ID: 177 Name: Tokyo Flanger  
ID: 178 Name: Singapore Flanger  
ID: 179 Name: Algiers Flanger  
ID: 180 Name: Apia Flanger  
ID: 181 Name: Ashgabat Flanger  
ID: 182 Name: Riyadh Flanger  
ID: 183 Name: San Salvador Flanger  
ID: 184 Name: Valletta Flanger  
ID: 185 Name: East Jerusalem Flanger  
ID: 186 Name: Bissau Flanger  
ID: 187 Name: Abuja Flanger  
ID: 188 Name: Monaco Flanger  
ID: 189 Name: Asunción Flanger  
ID: 190 Name: Zagreb Flanger  
ID: 191 Name: Port of Spain Flanger  
ID: 192 Name: Palikir Flanger  
ID: 193 Name: Bogota Flanger  
ID: 194 Name: Melekeok Flanger  
ID: 195 Name: Castries Flanger  
ID: 196 Name: Baghdad Flanger

VERIFYING CLASS INFO  
PASS

TESTING HOST CALLBACKS  
PASS

\* \* PASS

-----  
PUBLISHED PARAMETER INFO:

# # # 25 Global Scope Parameters:

# # Parameters for clump: 1969674052  
# Full Clump Name: JAX Flanger Parameters  
# Short (4 Chars limit) Clump Name: JAX Flanger Parameters  
Parameter ID:-711225013  
Name: Delay  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.100000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-711220047  
Name: Depth  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.200000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-1322558488  
Name: Rate  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.100000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-876481183  
Name: Feedback  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.800000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-1391002834  
Name: Stereo Phase  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.250000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-327146791  
Name: LFO On/Off  
Parameter Type: Boolean  
Values: Minimum = 0.000000, Default = 1.000000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-40092213  
Name: Dry  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.100000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-40071956  
Name: Wet  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.400000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:782742873  
Name: Active  
Parameter Type: Boolean  
Values: Minimum = 0.000000, Default = 1.000000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:1014792051  
Name: Input Gain  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.500000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-871593804  
Name: Output Gain  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.500000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

## Parameters for clump: -573167359  
# Full Clump Name: JAX Flanger Global  
# Short (4 Chars limit) Clump Name: JAX Flanger Global  
Parameter ID:-760188482  
Name: Display Contrast  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.150000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-107453460  
Name: Effect Bypass  
Parameter Type: Boolean  
Values: Minimum = 0.000000, Default = 0.000000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-1163577286  
Name: Output Limiter  
Parameter Type: Boolean  
Values: Minimum = 0.000000, Default = 0.000000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS



```

# # Parameters for clump: -474274393
# Full Clump Name: JAX Flanger Controllers
# Short (4 Chars limit) Clump Name: JAX Flanger Controllers
Parameter ID:295442194
Name: Delay MIDI CCO
Parameter Type: MIDI Controller
Values: Minimum = 0.000000, Default = 16.000000, Maximum = 255.000000
Flags: Readable, Writable
-parameter PASS

Parameter ID:369107448
Name: Depth MIDI CCO
Parameter Type: MIDI Controller
Values: Minimum = 0.000000, Default = 17.000000, Maximum = 255.000000
Flags: Readable, Writable
-parameter PASS

Parameter ID:303737231
Name: Rate MIDI CCO
Parameter Type: MIDI Controller
Values: Minimum = 0.000000, Default = 18.000000, Maximum = 255.000000
Flags: Readable, Writable
-parameter PASS

Parameter ID:-17303608
Name: Feedback MIDI CCO
Parameter Type: MIDI Controller
Values: Minimum = 0.000000, Default = 19.000000, Maximum = 255.000000
Flags: Readable, Writable
-parameter PASS

Parameter ID:657483029
Name: Stereo Phase MIDI CCO
Parameter Type: MIDI Controller
Values: Minimum = 0.000000, Default = 20.000000, Maximum = 255.000000
Flags: Readable, Writable
-parameter PASS

Parameter ID:1429021984
Name: LFO 0/Off MIDI CCO
Parameter Type: MIDI Controller
Values: Minimum = 0.000000, Default = 21.000000, Maximum = 255.000000
Flags: Readable, Writable
-parameter PASS

Parameter ID:1495740114
Name: Dry MIDI CCO
Parameter Type: MIDI Controller
Values: Minimum = 0.000000, Default = 22.000000, Maximum = 255.000000
Flags: Readable, Writable
-parameter PASS

Parameter ID:638163763
Name: Wet MIDI CCO
Parameter Type: MIDI Controller
Values: Minimum = 0.000000, Default = 23.000000, Maximum = 255.000000
Flags: Readable, Writable
-parameter PASS

Parameter ID:1210193504
Name: Active MIDI CCO
Parameter Type: MIDI Controller
Values: Minimum = 0.000000, Default = 24.000000, Maximum = 255.000000
Flags: Readable, Writable
-parameter PASS

Parameter ID:1634060538
Name: Gain In MIDI CCO
Parameter Type: MIDI Controller
Values: Minimum = 0.000000, Default = 25.000000, Maximum = 255.000000
Flags: Readable, Writable

```

-parameter PASS

Parameter ID:571096027  
Name: Gain Out MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 26.000000, Maximum = 255.000000  
Flags: Readable, Writable  
-parameter PASS

Testing that parameters retain value across reset and initialization  
PASS

\* \* PASS

-----  
FORMAT TESTS:

Reported Channel Capabilities (explicit):  
[2, 2]

Input/Output Channel Handling:

1-1	1-2	1-4	1-5	1-6	1-7	1-8	2-2	2-4	2-5	2-6	2-7	2-8	4-4	4-5
5-5	6-6	7-7	8-8											

X

WARNING: Can Initialize Unit to un-supported num channels:InputChan:1, OutputChan:1  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:1, OutputChan:2

\* \* PASS

-----  
RENDER TESTS:

Input Format: AudioStreamBasicDescription: 2 ch, 48000 Hz, 'lpcm' (0x00000029) 32-bit  
little-endian float, deinterleaved  
Output Format: AudioStreamBasicDescription: 2 ch, 48000 Hz, 'lpcm' (0x00000029) 32-bit  
little-endian float, deinterleaved  
Render Test at 512 frames  
Slicing Render Test at 64 frames  
PASS

Render Test at 64 frames, sample rate: 22050 Hz  
Render Test at 137 frames, sample rate: 96000 Hz  
Render Test at 4096 frames, sample rate: 48000 Hz  
Render Test at 4096 frames, sample rate: 192000 Hz  
Render Test at 4096 frames, sample rate: 11025 Hz  
Render Test at 512 frames, sample rate: 44100 Hz  
PASS

Checking connection semantics:  
Connection format:  
AudioStreamBasicDescription: 2 ch, 44100 Hz, 'lpcm' (0x00000029) 32-bit little-endian  
float, deinterleaved  
PASS

Bad Max Frames - Render should fail  
PASS

Checking parameter setting  
Using AudioUnitSetParameter  
Using AudioUnitScheduleParameter  
PASS

Test MIDI  
PASS

\* \* PASS

-----  
AU VALIDATION SUCCEEDED.  
-----

# JAX PHASER - AU VALIDATION REPORT



AU Validation Tool  
Version: 1.8.0  
Copyright 2003-2019, Apple Inc. All Rights Reserved.  
Specify -h (-help) for command options

-----  
VALIDATING AUDIO UNIT: 'aumf' - 'jxph' - 'DGST'

-----  
Manufacturer String: DGST  
AudioUnit Name: JAX Phaser Extension  
Component Version: 1.6.0 (0x10600)

\* \* PASS

-----  
TESTING OPEN TIMES:  
COLD:

Loaded AudioUnit out-of-process: true  
Time to open AudioUnit: 734.553 ms  
WARM:

Loaded AudioUnit out-of-process: true  
Time to open AudioUnit: 105.173 ms  
This AudioUnit is a version 3 implementation.  
FIRST TIME:  
Time for initialization: 30.059 ms

\* \* PASS

-----  
VERIFYING DEFAULT SCOPE FORMATS:

Input Scope Bus Configuration:  
Default Bus Count:1  
Default Format: AudioStreamBasicDescription: 2 ch, 44100 Hz, 'lpcm' (0x00000029)  
32-bit little-endian float, deinterleaved

Output Scope Bus Configuration:  
Default Bus Count:1  
Default Format: AudioStreamBasicDescription: 2 ch, 44100 Hz, 'lpcm' (0x00000029)  
32-bit little-endian float, deinterleaved

\* \* PASS

-----  
VERIFYING REQUIRED PROPERTIES:

\* \* PASS

-----  
VERIFYING RECOMMENDED PROPERTIES:

VERIFYING PROPERTY: Latency  
PASS  
VERIFYING PROPERTY: Tail Time  
PASS  
VERIFYING PROPERTY: Bypass Effect  
PASS

\* \* PASS

-----  
VERIFYING OPTIONAL PROPERTIES:

\* \* PASS

-----  
VERIFYING SPECIAL PROPERTIES:

VERIFYING CUSTOM UI

Cocoa Views Available: 0  
WARNING: CurrentPreset property is deprecated. AU should implement PresentPreset

HAS FACTORY PRESETS

ID: 0	Name: Nassau Phaser
ID: 1	Name: Bandar Seri Begawan Phaser
ID: 2	Name: Dakar Phaser
ID: 3	Name: Port Louis Phaser
ID: 4	Name: Oslo Phaser
ID: 5	Name: Reykjavík Phaser
ID: 6	Name: Port of Spain Phaser
ID: 7	Name: Prague Phaser
ID: 8	Name: Washington D.C. Phaser
ID: 9	Name: Havana Phaser
ID: 10	Name: Minsk Phaser
ID: 11	Name: Suva Phaser
ID: 12	Name: Copenagen Phaser
ID: 13	Name: Podgorica Phaser
ID: 14	Name: Baku Phaser
ID: 15	Name: Amsterdam Phaser
ID: 16	Name: Kabul Phaser
ID: 17	Name: Honiara Phaser
ID: 18	Name: Singapore Phaser
ID: 19	Name: Muscat Phaser
ID: 20	Name: Manama Phaser
ID: 21	Name: Buenos Aires Phaser

ID: 22	Name: Dili Phaser
ID: 23	Name: Mbabane Phaser
ID: 24	Name: Islamabad Phaser
ID: 25	Name: Dushanbe Phaser
ID: 26	Name: Palikir Phaser
ID: 27	Name: Kuwait City Phaser
ID: 28	Name: Seoul Phaser
ID: 29	Name: Brussels Phaser
ID: 30	Name: Juba Phaser
ID: 31	Name: Roseau Phaser
ID: 32	Name: São Tomé Phaser
ID: 33	Name: Algiers Phaser
ID: 34	Name: Abu Dhabi Phaser
ID: 35	Name: Canberra Phaser
ID: 36	Name: Yamoussoukro Phaser
ID: 37	Name: Castries Phaser
ID: 38	Name: Lima Phaser
ID: 39	Name: Dhaka Phaser
ID: 40	Name: Quito Phaser
ID: 41	Name: Ljubljana Phaser
ID: 42	Name: Astana Phaser
ID: 43	Name: Port-au-Prince Phaser
ID: 44	Name: Tashkent Phaser
ID: 45	Name: Chisinau Phaser
ID: 46	Name: Managua Phaser
ID: 47	Name: Kingston Phaser
ID: 48	Name: Lomé Phaser
ID: 49	Name: Sarajevo Phaser
ID: 50	Name: Nairobi Phaser
ID: 51	Name: Freetown Phaser
ID: 52	Name: Majuro Phaser
ID: 53	Name: Bratislava Phaser
ID: 54	Name: Antananarivo Phaser
ID: 55	Name: St. George's Phaser
ID: 56	Name: Asunción Phaser
ID: 57	Name: Belgrade Phaser
ID: 58	Name: Funafuti Phaser
ID: 59	Name: Brazzaville Phaser
ID: 60	Name: Vienna Phaser
ID: 61	Name: Abuja Phaser
ID: 62	Name: Kathmandu Phaser
ID: 63	Name: Malé Phaser
ID: 64	Name: Yaren Phaser
ID: 65	Name: Porto Novo Phaser
ID: 66	Name: Nicosia Phaser
ID: 67	Name: Caracas Phaser
ID: 68	Name: Port Vila Phaser
ID: 69	Name: Sofia Phaser
ID: 70	Name: Moroni Phaser
ID: 71	Name: Kuala Lumpur Phaser
ID: 72	Name: Lusaka Phaser
ID: 73	Name: Apia Phaser
ID: 74	Name: N'Djamena Phaser
ID: 75	Name: Andorra la Vella Phaser
ID: 76	Name: Monaco Phaser
ID: 77	Name: Djibouti Phaser
ID: 78	Name: Lisbon Phaser
ID: 79	Name: Skopje Phaser
ID: 80	Name: Panama City Phaser
ID: 81	Name: Hanoi Phaser
ID: 82	Name: Doha Phaser
ID: 83	Name: Pretoria Phaser
ID: 84	Name: Taipei Phaser
ID: 85	Name: Beijing Phaser
ID: 86	Name: Port Moresby Phaser
ID: 87	Name: Thimphu Phaser
ID: 88	Name: Melekeok Phaser
ID: 89	Name: Tirana Phaser
ID: 90	Name: Nukualofa Phaser
ID: 91	Name: Rome Phaser
ID: 92	Name: Kigali Phaser
ID: 93	Name: Athens Phaser
ID: 94	Name: Damascus Phaser

ID: 95	Name: Wellington Phaser
ID: 96	Name: Jakarta Phaser
ID: 97	Name: Madrid Phaser
ID: 98	Name: Lilongwe Phaser
ID: 99	Name: Santiago Phaser
ID: 100	Name: Manila Phaser
ID: 101	Name: Ulaanbaatar Phaser
ID: 102	Name: Mexico City Phaser
ID: 103	Name: San Marino Phaser
ID: 104	Name: Helsinki Phaser
ID: 105	Name: Praia Phaser
ID: 106	Name: Beirut Phaser
ID: 107	Name: Yaoundé Phaser
ID: 108	Name: Tunis Phaser
ID: 109	Name: Kampala Phaser
ID: 110	Name: Yerevan Phaser
ID: 111	Name: Niamey Phaser
ID: 112	Name: Ouagadougou Phaser
ID: 113	Name: Rabat Phaser
ID: 114	Name: Tarawa Phaser
ID: 115	Name: Naypyidaw Phaser
ID: 116	Name: Moscow Phaser
ID: 117	Name: Phnom Penh Phaser
ID: 118	Name: New Delhi Phaser
ID: 119	Name: Vilnius Phaser
ID: 120	Name: Accra Phaser
ID: 121	Name: Banjul Phaser
ID: 122	Name: Malabo Phaser
ID: 123	Name: Khartoum Phaser
ID: 124	Name: Bucharest Phaser
ID: 125	Name: Bangkok Phaser
ID: 126	Name: Kiev Phaser
ID: 127	Name: St. John's Phaser
ID: 128	Name: Tegucigalpa Phaser
ID: 129	Name: Kingstown Phaser
ID: 130	Name: Vatican City Phaser
ID: 131	Name: Dodoma Phaser
ID: 132	Name: Bangui Phaser
ID: 133	Name: Vientiane Phaser
ID: 134	Name: Vaduz Phaser
ID: 135	Name: Cairo Phaser
ID: 136	Name: Gaborone Phaser
ID: 137	Name: Tbilisi Phaser
ID: 138	Name: San José Phaser
ID: 139	Name: Conakry Phaser
ID: 140	Name: Brasilia Phaser
ID: 141	Name: Pyongyang Phaser
ID: 142	Name: Berlin Phaser
ID: 143	Name: Warsaw Phaser
ID: 144	Name: Pristina Phaser
ID: 145	Name: Bissau Phaser
ID: 146	Name: Luanda Phaser
ID: 147	Name: Stockholm Phaser
ID: 148	Name: London Phaser
ID: 149	Name: Basseterre Phaser
ID: 150	Name: Jerusalem Phaser
ID: 151	Name: Riga Phaser
ID: 152	Name: Asmara Phaser
ID: 153	Name: Maseru Phaser
ID: 154	Name: Ankara Phaser
ID: 155	Name: Bridgetown Phaser
ID: 156	Name: Zagreb Phaser
ID: 157	Name: Mogadishu Phaser
ID: 158	Name: Paris Phaser
ID: 159	Name: Tripoli Phaser
ID: 160	Name: Guatemala City Phaser
ID: 161	Name: Dublin Phaser
ID: 162	Name: Bogota Phaser
ID: 163	Name: Georgetown Phaser
ID: 164	Name: Santo Domingo Phaser
ID: 165	Name: Victoria Phaser
ID: 166	Name: Montevideo Phaser
ID: 167	Name: Paramaribo Phaser

ID: 168 Name: Baghdad Phaser  
 ID: 169 Name: Tallinn Phaser  
 ID: 170 Name: Budapest Phaser  
 ID: 171 Name: Luxembourg Phaser  
 ID: 172 Name: Bamako Phaser  
 ID: 173 Name: Harare Phaser  
 ID: 174 Name: Kinshasa Phaser  
 ID: 175 Name: Bujumbura Phaser  
 ID: 176 Name: Sana'a Phaser  
 ID: 177 Name: Riyadh Phaser  
 ID: 178 Name: Nouakchott Phaser  
 ID: 179 Name: Tokyo Phaser  
 ID: 180 Name: Bishkek Phaser  
 ID: 181 Name: East Jerusalem Phaser  
 ID: 182 Name: Bern Phaser  
 ID: 183 Name: Maputo Phaser  
 ID: 184 Name: Valletta Phaser  
 ID: 185 Name: Windhoek Phaser  
 ID: 186 Name: Ashgabat Phaser  
 ID: 187 Name: Libreville Phaser  
 ID: 188 Name: Ottawa Phaser  
 ID: 189 Name: San Salvador Phaser  
 ID: 190 Name: Sucre Phaser  
 ID: 191 Name: Tehran Phaser  
 ID: 192 Name: Amman Phaser  
 ID: 193 Name: Belmopan Phaser  
 ID: 194 Name: Monrovia Phaser  
 ID: 195 Name: Addis Ababa Phaser  
 ID: 196 Name: Sri Jayawardenapura Kotte Phaser

VERIFYING CLASS INFO  
 PASS

TESTING HOST CALLBACKS  
 PASS

\* \* PASS

-----  
 PUBLISHED PARAMETER INFO:

# # # 27 Global Scope Parameters:

# # Parameters for clump: 1969674052  
 # Full Clump Name: JAX Phaser Parameters  
 # Short (4 Chars limit) Clump Name: JAX Phaser Parameters  
 Parameter ID:289189522  
 Name: Presence  
 Parameter Type: Generic  
 Values: Minimum = 0.000000, Default = 0.200000, Maximum = 1.000000  
 Flags: Readable, Writable  
 -parameter PASS

Parameter ID:-183357739  
 Name: Depth  
 Parameter Type: Generic  
 Values: Minimum = 0.000000, Default = 0.400000, Maximum = 1.000000  
 Flags: Readable, Writable  
 -parameter PASS

Parameter ID:-785960564  
 Name: Rate  
 Parameter Type: Generic  
 Values: Minimum = 0.000000, Default = 0.100000, Maximum = 1.000000  
 Flags: Readable, Writable  
 -parameter PASS

Parameter ID:-1959265019  
 Name: Feedback  
 Parameter Type: Generic  
 Values: Minimum = 0.000000, Default = 0.750000, Maximum = 1.000000  
 Flags: Readable, Writable  
 -parameter PASS

Parameter ID:-1151571577  
Name: Stages  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.500000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-1151415854  
Name: Stereo Phase  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.500000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:199276619  
Name: LFO On/Off  
Parameter Type: Boolean  
Values: Minimum = 0.000000, Default = 1.000000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:887221999  
Name: Dry  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.100000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:887242256  
Name: Wet  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.400000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:782742873  
Name: Active  
Parameter Type: Boolean  
Values: Minimum = 0.000000, Default = 1.000000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:1014792051  
Name: Input Gain  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.500000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-871593804  
Name: Output Gain  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.500000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

# # Parameters for clump: -573167359  
# Full Clump Name: JAX Phaser Global  
# Short (4 Chars limit) Clump Name: JAX Phaser Global  
Parameter ID:-760188482  
Name: Display Contrast  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.150000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-107453460  
Name: Effect Bypass  
Parameter Type: Boolean  
Values: Minimum = 0.000000, Default = 0.000000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS



```

Parameter ID:-1163577286
Name: Output Limiter
Parameter Type: Boolean
Values: Minimum = 0.000000, Default = 0.000000, Maximum = 1.000000
Flags: Readable, Writable
-parameter PASS

# # Parameters for clump: -474274393
# Full Clump Name: JAX Phaser Controllers
# Short (4 Chars limit) Clump Name: JAX Phaser Controllers
Parameter ID:1789698617
Name: Frequency MIDI CCO
Parameter Type: MIDI Controller
Values: Minimum = 0.000000, Default = 16.000000, Maximum = 255.000000
Flags: Readable, Writable
-parameter PASS

Parameter ID:1896073404
Name: Depth MIDI CCO
Parameter Type: MIDI Controller
Values: Minimum = 0.000000, Default = 17.000000, Maximum = 255.000000
Flags: Readable, Writable
-parameter PASS

Parameter ID:740460499
Name: Rate MIDI CCO
Parameter Type: MIDI Controller
Values: Minimum = 0.000000, Default = 18.000000, Maximum = 255.000000
Flags: Readable, Writable
-parameter PASS

Parameter ID:2056083468
Name: Feedback MIDI CCO
Parameter Type: MIDI Controller
Values: Minimum = 0.000000, Default = 19.000000, Maximum = 255.000000
Flags: Readable, Writable
-parameter PASS

Parameter ID:-1576703410
Name: Stages MIDI CCO
Parameter Type: MIDI Controller
Values: Minimum = 0.000000, Default = 20.000000, Maximum = 255.000000
Flags: Readable, Writable
-parameter PASS

Parameter ID:-492247975
Name: Stereo Phase MIDI CCO
Parameter Type: MIDI Controller
Values: Minimum = 0.000000, Default = 21.000000, Maximum = 255.000000
Flags: Readable, Writable
-parameter PASS

Parameter ID:-1532041422
Name: LFO On/Off MIDI CCO
Parameter Type: MIDI Controller
Values: Minimum = 0.000000, Default = 22.000000, Maximum = 255.000000
Flags: Readable, Writable
-parameter PASS

Parameter ID:-1094036330
Name: Dry MIDI CCO
Parameter Type: MIDI Controller
Values: Minimum = 0.000000, Default = 23.000000, Maximum = 255.000000
Flags: Readable, Writable
-parameter PASS

Parameter ID:-1951612681
Name: Wet MIDI CCO
Parameter Type: MIDI Controller
Values: Minimum = 0.000000, Default = 24.000000, Maximum = 255.000000
Flags: Readable, Writable

```

-parameter PASS

Parameter ID:1210193504  
Name: Active MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 25.000000, Maximum = 255.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:1634060538  
Name: Gain In MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 26.000000, Maximum = 255.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:571096027  
Name: Gain Out MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 27.000000, Maximum = 255.000000  
Flags: Readable, Writable  
-parameter PASS

Testing that parameters retain value across reset and initialization  
PASS

\* \* PASS

-----  
FORMAT TESTS:

Reported Channel Capabilities (explicit):  
[2, 2]

Input/Output Channel Handling:

1-1 1-2 1-4 1-5 1-6 1-7 1-8 2-2 2-4 2-5 2-6 2-7 2-8 4-4 4-5  
5-5 6-6 7-7 8-8

X

WARNING: Can Initialize Unit to un-supported num channels:InputChan:1, OutputChan:1  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:1, OutputChan:2  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:1, OutputChan:4  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:1, OutputChan:5  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:1, OutputChan:6  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:1, OutputChan:7  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:1, OutputChan:8  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:2, OutputChan:4  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:2, OutputChan:5  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:2, OutputChan:6  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:2, OutputChan:7  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:2, OutputChan:8  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:4, OutputChan:4  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:4, OutputChan:5  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:5, OutputChan:5  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:6, OutputChan:6  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:7, OutputChan:7  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:8, OutputChan:8

\* \* PASS

-----  
RENDER TESTS:

Input Format: AudioStreamBasicDescription: 2 ch, 44100 Hz, 'lpcm' (0x00000029) 32-bit  
little-endian float, deinterleaved  
Output Format: AudioStreamBasicDescription: 2 ch, 44100 Hz, 'lpcm' (0x00000029) 32-bit  
little-endian float, deinterleaved  
Render Test at 512 frames  
Slicing Render Test at 64 frames  
PASS

Render Test at 64 frames, sample rate: 22050 Hz  
Render Test at 137 frames, sample rate: 96000 Hz  
Render Test at 4096 frames, sample rate: 48000 Hz  
Render Test at 4096 frames, sample rate: 192000 Hz

Render Test at 4096 frames, sample rate: 11025 Hz  
Render Test at 512 frames, sample rate: 44100 Hz  
PASS

Checking connection semantics:  
Connection format:  
AudioStreamBasicDescription: 2 ch, 44100 Hz, 'lpcm' (0x00000029) 32-bit little-endian  
float, deinterleaved  
PASS

Bad Max Frames - Render should fail  
PASS

Checking parameter setting  
Using AudioUnitSetParameter  
Using AudioUnitScheduleParameter  
PASS

Test MIDI  
PASS

\* \* PASS

-----  
AU VALIDATION SUCCEEDED.  
-----

# JAX CHORUS - AU VALIDATION REPORT



AU Validation Tool  
Version: 1.8.0  
Copyright 2003-2019, Apple Inc. All Rights Reserved.  
Specify -h (-help) for command options

-----  
VALIDATING AUDIO UNIT: 'aumf' - 'jxch' - 'DGST'  
-----

Manufacturer String: DGST  
AudioUnit Name: JAX Chorus Extension  
Component Version: 1.6.0 (0x10600)

\* \* PASS

-----  
TESTING OPEN TIMES:  
COLD:

Loaded AudioUnit out-of-process: true  
Time to open AudioUnit: 528.684 ms  
WARM:

Loaded AudioUnit out-of-process: true  
Time to open AudioUnit: 100.204 ms  
This AudioUnit is a version 3 implementation.  
FIRST TIME:  
Time for initialization: 29.909 ms

\* \* PASS

-----  
VERIFYING DEFAULT SCOPE FORMATS:

Input Scope Bus Configuration:  
Default Bus Count:1  
Default Format: AudioStreamBasicDescription: 2 ch, 44100 Hz, 'lpcm' (0x00000029)  
32-bit little-endian float, deinterleaved

Output Scope Bus Configuration:  
Default Bus Count:1  
Default Format: AudioStreamBasicDescription: 2 ch, 44100 Hz, 'lpcm' (0x00000029)  
32-bit little-endian float, deinterleaved

\* \* PASS

-----  
VERIFYING REQUIRED PROPERTIES:

\* \* PASS

-----  
VERIFYING RECOMMENDED PROPERTIES:

VERIFYING PROPERTY: Latency  
PASS  
VERIFYING PROPERTY: Tail Time  
PASS  
VERIFYING PROPERTY: Bypass Effect  
PASS

\* \* PASS

-----  
VERIFYING OPTIONAL PROPERTIES:

\* \* PASS

-----  
VERIFYING SPECIAL PROPERTIES:

VERIFYING CUSTOM UI

Cocoa Views Available: 0  
WARNING: CurrentPreset property is deprecated. AU should implement PresentPreset

HAS FACTORY PRESETS

ID: 0	Name: Djibouti Chorus
ID: 1	Name: Andorra la Vella Chorus
ID: 2	Name: Monaco Chorus
ID: 3	Name: Lisbon Chorus
ID: 4	Name: Beijing Chorus
ID: 5	Name: Taipei Chorus
ID: 6	Name: Port Moresby Chorus
ID: 7	Name: Thimphu Chorus
ID: 8	Name: Skopje Chorus
ID: 9	Name: Hanoi Chorus
ID: 10	Name: Panama City Chorus
ID: 11	Name: Pretoria Chorus
ID: 12	Name: Doha Chorus
ID: 13	Name: Damascus Chorus
ID: 14	Name: Athens Chorus
ID: 15	Name: Jakarta Chorus
ID: 16	Name: Wellington Chorus
ID: 17	Name: Tirana Chorus
ID: 18	Name: Melekeok Chorus
ID: 19	Name: Rome Chorus
ID: 20	Name: Nukualofa Chorus
ID: 21	Name: Kigali Chorus

ID: 22	Name: Lomé Chorus
ID: 23	Name: Managua Chorus
ID: 24	Name: Kingston Chorus
ID: 25	Name: Freetown Chorus
ID: 26	Name: Majuro Chorus
ID: 27	Name: Bratislava Chorus
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ID: 31	Name: Funafuti Chorus
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ID: 33	Name: Brazzaville Chorus
ID: 34	Name: Abuja Chorus
ID: 35	Name: Vienna Chorus
ID: 36	Name: Yaren Chorus
ID: 37	Name: Malé Chorus
ID: 38	Name: Kathmandu Chorus
ID: 39	Name: Asunción Chorus
ID: 40	Name: St. George's Chorus
ID: 41	Name: Sofia Chorus
ID: 42	Name: Kuala Lumpur Chorus
ID: 43	Name: Moroni Chorus
ID: 44	Name: Lusaka Chorus
ID: 45	Name: N'Djamena Chorus
ID: 46	Name: Apia Chorus
ID: 47	Name: Porto Novo Chorus
ID: 48	Name: Caracas Chorus
ID: 49	Name: Nicosia Chorus
ID: 50	Name: Port Vila Chorus
ID: 51	Name: Palikir Chorus
ID: 52	Name: Kuwait City Chorus
ID: 53	Name: Seoul Chorus
ID: 54	Name: Dushanbe Chorus
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ID: 56	Name: Mbabane Chorus
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ID: 58	Name: Roseau Chorus
ID: 59	Name: Juba Chorus
ID: 60	Name: Canberra Chorus
ID: 61	Name: Castries Chorus
ID: 62	Name: Yamoussoukro Chorus
ID: 63	Name: São Tomé Chorus
ID: 64	Name: Abu Dhabi Chorus
ID: 65	Name: Algiers Chorus
ID: 66	Name: Ljubljana Chorus
ID: 67	Name: Port-au-Prince Chorus
ID: 68	Name: Astana Chorus
ID: 69	Name: Chisinau Chorus
ID: 70	Name: Tashkent Chorus
ID: 71	Name: Lima Chorus
ID: 72	Name: Dhaka Chorus
ID: 73	Name: Quito Chorus
ID: 74	Name: Dakar Chorus
ID: 75	Name: Nassau Chorus
ID: 76	Name: Bandar Seri Begawan Chorus
ID: 77	Name: Oslo Chorus
ID: 78	Name: Reykjavík Chorus
ID: 79	Name: Prague Chorus
ID: 80	Name: Port of Spain Chorus
ID: 81	Name: Port Louis Chorus
ID: 82	Name: Suva Chorus
ID: 83	Name: Copenhagen Chorus
ID: 84	Name: Washington D.C. Chorus
ID: 85	Name: Minsk Chorus
ID: 86	Name: Havana Chorus
ID: 87	Name: Manama Chorus
ID: 88	Name: Muscat Chorus
ID: 89	Name: Buenos Aires Chorus
ID: 90	Name: Dili Chorus
ID: 91	Name: Amsterdam Chorus
ID: 92	Name: Baku Chorus
ID: 93	Name: Podgorica Chorus
ID: 94	Name: Honiara Chorus

ID: 95	Name: Kabul Chorus
ID: 96	Name: Singapore Chorus
ID: 97	Name: Harare Chorus
ID: 98	Name: Kinshasa Chorus
ID: 99	Name: Riyadh Chorus
ID: 100	Name: Sana'a Chorus
ID: 101	Name: Bujumbura Chorus
ID: 102	Name: Nouakchott Chorus
ID: 103	Name: Luxembourg Chorus
ID: 104	Name: Budapest Chorus
ID: 105	Name: Bamako Chorus
ID: 106	Name: East Jerusalem Chorus
ID: 107	Name: Bern Chorus
ID: 108	Name: Maputo Chorus
ID: 109	Name: Valletta Chorus
ID: 110	Name: Bishkek Chorus
ID: 111	Name: Tokyo Chorus
ID: 112	Name: Tehran Chorus
ID: 113	Name: Amman Chorus
ID: 114	Name: Belmopan Chorus
ID: 115	Name: Windhoek Chorus
ID: 116	Name: San Salvador Chorus
ID: 117	Name: Ottawa Chorus
ID: 118	Name: Libreville Chorus
ID: 119	Name: Ashgabat Chorus
ID: 120	Name: Sucre Chorus
ID: 121	Name: Sri Jayawardenapura Kotte Chorus
ID: 122	Name: Monrovia Chorus
ID: 123	Name: Addis Ababa Chorus
ID: 124	Name: Jerusalem Chorus
ID: 125	Name: Riga Chorus
ID: 126	Name: Asmara Chorus
ID: 127	Name: Ankara Chorus
ID: 128	Name: Maseru Chorus
ID: 129	Name: Zagreb Chorus
ID: 130	Name: Bridgetown Chorus
ID: 131	Name: Dublin Chorus
ID: 132	Name: Guatemala City Chorus
ID: 133	Name: Bogota Chorus
ID: 134	Name: Georgetown Chorus
ID: 135	Name: Mogadishu Chorus
ID: 136	Name: Paris Chorus
ID: 137	Name: Tripoli Chorus
ID: 138	Name: Paramaribo Chorus
ID: 139	Name: Tallinn Chorus
ID: 140	Name: Baghdad Chorus
ID: 141	Name: Victoria Chorus
ID: 142	Name: Santo Domingo Chorus
ID: 143	Name: Montevideo Chorus
ID: 144	Name: St. John's Chorus
ID: 145	Name: Kiev Chorus
ID: 146	Name: Tegucigalpa Chorus
ID: 147	Name: Khartoum Chorus
ID: 148	Name: Bangkok Chorus
ID: 149	Name: Bucharest Chorus
ID: 150	Name: Bangui Chorus
ID: 151	Name: Kingstown Chorus
ID: 152	Name: Dodoma Chorus
ID: 153	Name: Vatican City Chorus
ID: 154	Name: San José Chorus
ID: 155	Name: Conakry Chorus
ID: 156	Name: Brasilia Chorus
ID: 157	Name: Gaborone Chorus
ID: 158	Name: Cairo Chorus
ID: 159	Name: Vientiane Chorus
ID: 160	Name: Vaduz Chorus
ID: 161	Name: Tbilisi Chorus
ID: 162	Name: Pristina Chorus
ID: 163	Name: Warsaw Chorus
ID: 164	Name: Bissau Chorus
ID: 165	Name: Basseterre Chorus
ID: 166	Name: London Chorus
ID: 167	Name: Stockholm Chorus

ID: 168 Name: Luanda Chorus  
ID: 169 Name: Berlin Chorus  
ID: 170 Name: Pyongyang Chorus  
ID: 171 Name: Lilongwe Chorus  
ID: 172 Name: Madrid Chorus  
ID: 173 Name: Santiago Chorus  
ID: 174 Name: Manila Chorus  
ID: 175 Name: Yaoundé Chorus  
ID: 176 Name: Beirut Chorus  
ID: 177 Name: Tunis Chorus  
ID: 178 Name: Ulaanbaatar Chorus  
ID: 179 Name: Mexico City Chorus  
ID: 180 Name: San Marino Chorus  
ID: 181 Name: Praia Chorus  
ID: 182 Name: Helsinki Chorus  
ID: 183 Name: Rabat Chorus  
ID: 184 Name: Tarawa Chorus  
ID: 185 Name: Naypyidaw Chorus  
ID: 186 Name: Kampala Chorus  
ID: 187 Name: Yerevan Chorus  
ID: 188 Name: Ouagadougou Chorus  
ID: 189 Name: Niamey Chorus  
ID: 190 Name: Vilnius Chorus  
ID: 191 Name: Accra Chorus  
ID: 192 Name: Malabo Chorus  
ID: 193 Name: Banjul Chorus  
ID: 194 Name: New Delhi Chorus  
ID: 195 Name: Phnom Penh Chorus  
ID: 196 Name: Moscow Chorus

VERIFYING CLASS INFO  
PASS

TESTING HOST CALLBACKS  
PASS

\* \* PASS

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PUBLISHED PARAMETER INFO:

# # # 35 Global Scope Parameters:

# # Parameters for clump: 1969674052  
# Full Clump Name: JAX Chorus Parameters  
# Short (4 Chars limit) Clump Name: JAX Chorus Parameters  
Parameter ID:1944204544  
Name: Delay  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.500000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:1944209510  
Name: Depth  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.600000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:1621220605  
Name: Rate  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.100000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:338826627  
Name: Stereo Phase  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.500000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS



Parameter ID:450430618  
Name: Stages  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.500000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:1958532002  
Name: Phase Offset  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.200000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:1186015395  
Name: Frequency 1  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.100000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:483802421  
Name: Frequency 2  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.300000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-1461250078  
Name: Peak  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.000000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:1798717578  
Name: Overlap  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.750000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:1096102492  
Name: LFO On/Off  
Parameter Type: Boolean  
Values: Minimum = 0.000000, Default = 1.000000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:2131521600  
Name: Dry  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.500000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:2131541857  
Name: Wet  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.500000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:782742873  
Name: Active  
Parameter Type: Boolean  
Values: Minimum = 0.000000, Default = 1.000000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:1014792051  
Name: Input Gain  
Parameter Type: Generic

Values: Minimum = 0.000000, Default = 0.500000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-871593804  
Name: Output Gain  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.500000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

# # Parameters for clump: -573167359  
# Full Clump Name: JAX Chorus Global  
# Short (4 Chars limit) Clump Name: JAX Chorus Global  
Parameter ID:-760188482  
Name: Display Contrast  
Parameter Type: Generic  
Values: Minimum = 0.000000, Default = 0.150000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-107453460  
Name: Effect Bypass  
Parameter Type: Boolean  
Values: Minimum = 0.000000, Default = 0.000000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-1163577286  
Name: Output Limiter  
Parameter Type: Boolean  
Values: Minimum = 0.000000, Default = 0.000000, Maximum = 1.000000  
Flags: Readable, Writable  
-parameter PASS

# # Parameters for clump: -474274393  
# Full Clump Name: JAX Chorus Controllers  
# Short (4 Chars limit) Clump Name: JAX Chorus Controllers  
Parameter ID:1185267879  
Name: Delay MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 16.000000, Maximum = 255.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:1258933133  
Name: Depth MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 17.000000, Maximum = 255.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-1491405692  
Name: Rate MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 18.000000, Maximum = 255.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-43040438  
Name: Stereo Phase MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 19.000000, Maximum = 255.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:1301003041  
Name: Stages MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 20.000000, Maximum = 255.000000  
Flags: Readable, Writable

-parameter PASS

Parameter ID:1015583177  
Name: Phase MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 21.000000, Maximum = 255.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:178890122  
Name: Frequency 1 MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 22.000000, Maximum = 255.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:1593911548  
Name: Frequency 2 MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 23.000000, Maximum = 255.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:390864009  
Name: Peak MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 24.000000, Maximum = 255.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:1111166321  
Name: Overlap MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 25.000000, Maximum = 255.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:1152117379  
Name: LFO On/Off MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 26.000000, Maximum = 255.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:790589223  
Name: Dry MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 27.000000, Maximum = 255.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:-66987128  
Name: Wet MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 28.000000, Maximum = 255.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:1210193504  
Name: Active MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 29.000000, Maximum = 255.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:1634060538  
Name: Gain In MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 30.000000, Maximum = 255.000000  
Flags: Readable, Writable  
-parameter PASS

Parameter ID:571096027

Name: Gain Out MIDI CCO  
Parameter Type: MIDI Controller  
Values: Minimum = 0.000000, Default = 31.000000, Maximum = 255.000000  
Flags: Readable, Writable  
-parameter PASS

Testing that parameters retain value across reset and initialization  
PASS

\* \* PASS

-----  
FORMAT TESTS:

Reported Channel Capabilities (explicit):  
[2, 2]

Input/Output Channel Handling:

1-1 1-2 1-4 1-5 1-6 1-7 1-8 2-2 2-4 2-5 2-6 2-7 2-8 4-4 4-5  
5-5 6-6 7-7 8-8

X

WARNING: Can Initialize Unit to un-supported num channels:InputChan:1, OutputChan:1  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:1, OutputChan:2  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:1, OutputChan:4  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:1, OutputChan:5  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:1, OutputChan:6  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:1, OutputChan:7  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:1, OutputChan:8  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:2, OutputChan:4  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:2, OutputChan:5  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:2, OutputChan:6  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:2, OutputChan:7  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:2, OutputChan:8  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:4, OutputChan:4  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:4, OutputChan:5  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:5, OutputChan:5  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:6, OutputChan:6  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:7, OutputChan:7  
WARNING: Can Initialize Unit to un-supported num channels:InputChan:8, OutputChan:8

\* \* PASS

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RENDER TESTS:

Input Format: AudioStreamBasicDescription: 2 ch, 44100 Hz, 'lpcm' (0x00000029) 32-bit  
little-endian float, deinterleaved  
Output Format: AudioStreamBasicDescription: 2 ch, 44100 Hz, 'lpcm' (0x00000029) 32-bit  
little-endian float, deinterleaved  
Render Test at 512 frames  
Slicing Render Test at 64 frames  
PASS

Render Test at 64 frames, sample rate: 22050 Hz  
Render Test at 137 frames, sample rate: 96000 Hz  
Render Test at 4096 frames, sample rate: 48000 Hz  
Render Test at 4096 frames, sample rate: 192000 Hz  
Render Test at 4096 frames, sample rate: 11025 Hz  
Render Test at 512 frames, sample rate: 44100 Hz  
PASS

Checking connection semantics:

Connection format:

AudioStreamBasicDescription: 2 ch, 44100 Hz, 'lpcm' (0x00000029) 32-bit little-endian  
float, deinterleaved  
PASS

Bad Max Frames - Render should fail  
PASS

Checking parameter setting

Using AudioUnitSetParameter

Using AudioUnitScheduleParameter

PASS

Test MIDI  
PASS

\* \* PASS

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AU VALIDATION SUCCEEDED.  
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