WSUTIL User Guide
Release 2.7.0

Specifications documented here are subject to change.
Please contact your account manager to obtain the latest revision.

REVISION HISTORY

REV	ECO#	DESCRIPTION OF CHANGE	ORIGINATOR
Prerelease-A		• Initial Issue	Qing Li
Prerelease B		• Reviewed and updated for WSP	Michael Roelens
C		• Updated to version 1.5.8	Qing Li
D		• Updated to version 2.7.0	Qing Li
REV	**ECO#**	**DESCRIPTION OF CHANGE**	**ORIGINATOR**
A00	138564	• Initial formal release	Joseph Zagari

Table 1: Revision History

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1 INTRODUCTION

WSUTIL is a console program for computing and loading filter profiles on to a WaveShaper device. It generates the WaveShaper profile from a WaveShaper configuration file (.wsconfig) and a WaveShaper Preset file (.wsp). This software automatically initializes the WaveShaper and then loads the generated profile. This software also supports firmware updates.

2 WSP FILE FORMAT

The WaveShaper Preset (WSP) file format allows the user to specify arbitrary filter shapes and control the port to which the light is sent within the operating range of the WaveShaper. The format of a WSP filter is a tab delimited text string with four columns: Absolute Frequency (THz), Attenuation (dB), Phase (Rad) and Port Number. The following rules must be followed to create a valid WSP filter/switch specification:

1. The frequencies need to be defined in absolute values, in units of THz, and with a resolution of 0.001 THz (1 GHz). For C-band WaveShapers, the frequency range in the file should be within the range of 191.250 to 196.275 THz. Frequency values must increment in 0.001 THz (1 GHz) steps. A partial definition that covers a continuous range within the valid frequency range is also allowed.
2. The port needs to be defined in the fourth column. Selecting Port 0 sets that frequency to “Block”. Please ensure that the ports specified in this column are ports that are available on the WaveShaper (“0” and “1” are valid in the case of a WaveShaper 1000, values 0-4 are valid for a WaveShaper 4000).
3. The minimum bandwidth of each band of frequencies that is to be sent to a particular output port needs to be at least 0.010 THz (10 GHz).

An example of a WSP that covers Frequency range from 191.25 THz to 191.26THz is shown below.

Frequency	Attenuation	Phase	Port (NOTE: Header is not part of WSP text)
191.250	22.80047795	-1.57079	1
191.251	21.44946085	-1.57079	1
191.252	20.45124262	-1.57079	1
191.253	19.67334849	-1.57079	1
191.254	19.04887819	-1.57079	1
191.255	18.53944068	-1.57079	1
191.256	18.12109447	-1.57079	1
191.257	17.77804197	-1.57079	1
191.258	17.49945843	-1.57079	1
191.259	17.27776055	-1.57079	1

3 INSTALLATION

The WaveShaper command line software is automatically installed upon installation of the WaveManager package. Please refer to the latest WaveShaper manual for more information on this installation procedure.

4 USER INSTRUCTIONS

Before executing the program, connect the WaveShaper to a PC USB port, and switch on the WaveShaper.

Note that WaveShaper device needs about 30 seconds to complete initialization after power up. Please wait for about one minute after powering up the device, before loading a filter profile.
In order to access the latest functions, it is recommended to upgrade the WaveShaper firmware to ws25G-02_02_17.bin; please see section '4.2 Update Firmware' for instructions.

4.1 COMPUTE AND LOAD WAVESHAPER PROFILE

To compute and load a WaveShaper profile, the user needs to specify the WaveShaper configuration file (.wsconfig) and .wsp file. The command format is as below.

```
wsutil <wsconfig> -l <wsp>
```

Example

```
wsutil snxxxxx.wsconfig –l test.wsp
```

4.2 UPDATE FIRMWARE

To download and upgrade the firmware, the user needs to specify the WaveShaper configuration file (.wsconfig) and firmware file (.bin file).

```
wsutil <wsconfig> -f <firmware file>
```

Example

```
wsutil snxxxxx.wsconfig  -f firmware.bin
```

5 PROGRAM OPTIONS

5.1 OVERVIEW

```
wsutil version:1.5.8
Usage: wsutil <wsconfig> [OPTION] ..
  <wsconfig> waveshaper config file (e.g. sn009070.wsconfig) - This is a
required parameter for all actions
  -l, --loadprofile <wspfile> load profile(accepted file type: *.wsp)
  -f, --firmware <binfile>     upload firmware(accepted file type: *.bin)
  --list                       list serial numbers of all connected
WaveShapers
  --sno <sno>                  specify serial number for wconfig and
rconfig
  --rconfig <wsconfig>         read config file from embedded flash memory
  --wconfig <wsconfig>         write config file to embedded flash memory
  --cfg <config>               select sub-configuration part
  -h, --help                   print this help information
Example: Upload filter profile to waveshaper.
  wsutil sn009070.wsconfig -l test.wsp
```

5.2 WAVESHAPER CONFIGURATION FILE

A WaveShaper configuration file (.wsconfig) is a required parameter for all actions.

5.3 LOAD PROFILE

Format: -l, --loadprofile <wsp file>

This option executes the download of a new filter profile. The command line looks as follows in this case:

```
wsutil <wsconfig> -l <wsp>
```

5.4 SELECT SUB-CONFIGURATION PART

Format: --cfg <subconfig>

This option selects the sub-configuration part on WaveShaper with multiple configuration regions. The command line looks as follows in this case:

```
wsutil <wsconfig> --cfg <subconfig> -l <wsp>
```

5.5 LOAD FIRMWARE

Format: -f, --firmware <filename>

This option selects the load firmware function. The command line looks as follows in this case:

```
wsutil <wsconfig> -f <firmware file>
```

5.6 LIST CONNECTED WAVESHAPER

Format: --list

This option lists all serial numbers of connected WaveShaper.

5.7 READ EMBEDDED WAVESHAPER CONFIGURATION

Format: --rconfig <filename>

This option reads WaveShaper configuration from WaveShaper device then saves the configuration as filename supplied in option. The command line looks as follows in this case:

```
wsutil --sno <SNO> --rconfig <configuration filename>
```

5.8 WRITE EMBEDDED WAVESHAPER CONFIGURATION

Format: --wconfig <filename>

This option writes WaveShaper configuration to WaveShaper device. The command line looks as follows in this case:

```
wsutil --sno <SNO> --wconfig <configuration filename>
```

5.9 READ FIRMWARE VERSION

Format: --fwver

This option reads WaveShaper device firmware version. The command line looks as follows in this case:

```
wsutil <wsconfig> --fwver
```

5.10 HELP

Format: -h, --help

Print help information.