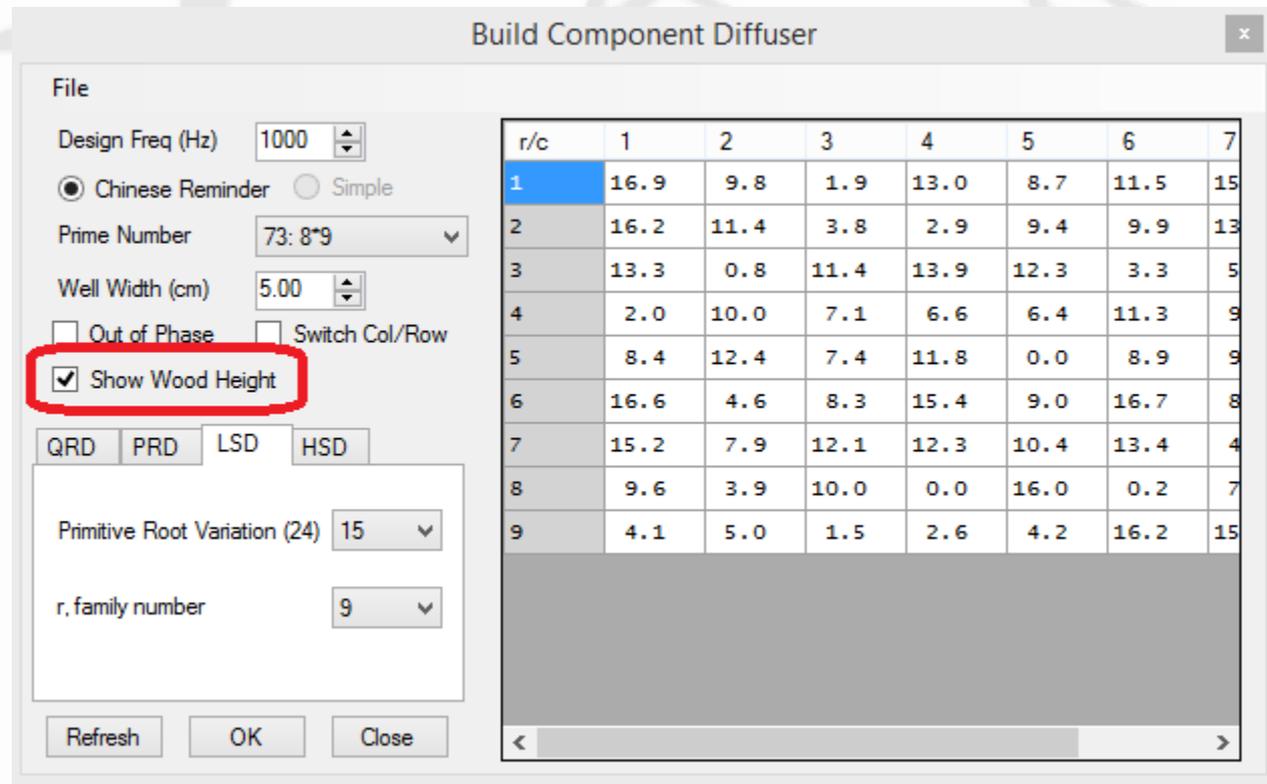


Sound Splash Tips

1. Show divider in 2D Schroeder Diffuser
2. Alternative Way of Inputting Huffman Sequence Index
3. Creating a Symmetrical QRD
4. Copy Pasting the 2D MLS Sequence to Clipboard

1. Show divider in 2D Schroeder Diffuser

Schroeder diffuser always calculates the well depth for each opening. In the 2D Schroeder Diffuser module, the default is showing the wood height (see the picture below).



The screenshot shows the 'Build Component Diffuser' window. The 'File' menu is open, and the 'Show Wood Height' checkbox is checked and highlighted with a red box. The table on the right displays the following data:

r/c	1	2	3	4	5	6	7
1	16.9	9.8	1.9	13.0	8.7	11.5	15.0
2	16.2	11.4	3.8	2.9	9.4	9.9	13.0
3	13.3	0.8	11.4	13.9	12.3	3.3	5.0
4	2.0	10.0	7.1	6.6	6.4	11.3	9.0
5	8.4	12.4	7.4	11.8	0.0	8.9	9.0
6	16.6	4.6	8.3	15.4	9.0	16.7	8.0
7	15.2	7.9	12.1	12.3	10.4	13.4	4.0
8	9.6	3.9	10.0	0.0	16.0	0.2	7.0
9	4.1	5.0	1.5	2.6	4.2	16.2	15.0

1. Show divider in 2D Schroeder Diffuser

If the check box is unchecked the program will show the well depth. To understand which one is referred as well depth or wood height, right click on the picture and activate show divider option.

Sound Splash - 2D Schroeder Diffuser Builder

File Build Setting About

Build Component Diffusers Generate Complex Diffuser

Component Diffuser Summary

Unit	Col	Row	Type	Freq(Hz)	N: c*r	Width (cm)	Active
U1	1	1	LSD C	1000	73: 8*9	5.00	<input checked="" type="checkbox"/>

Polar Response Control

Freq (Hz) 500

Distance (m) 100.0

Min. Value (dB) -60.0

Refresh

Graph Style Surface

Color Style Jet

Data	Show	Title
1	<input checked="" type="checkbox"/>	500Hz, 100m

Complex Diffuser Schematics

Export As Picture

- Hide Dividers
- Show Dividers
- Hide Dividers

Polar Response

500Hz, 100m

0.0dB

-15.0dB

-30.0dB

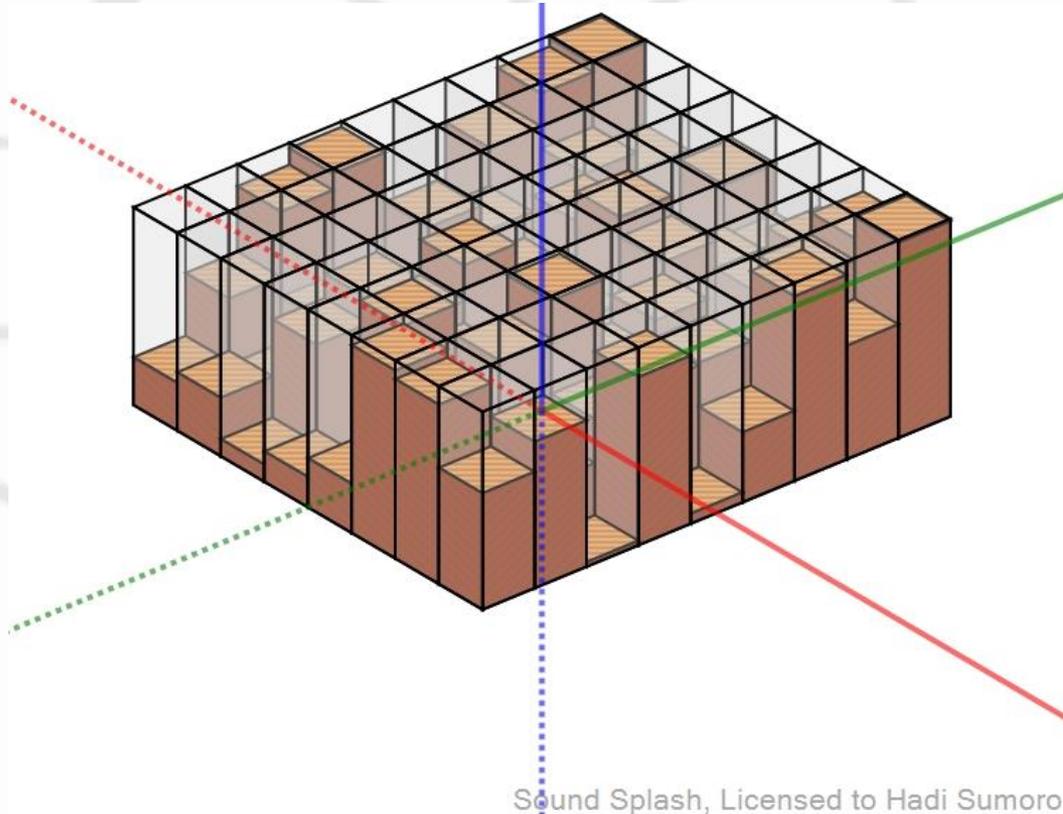
-45.0dB

-60.0dB

Complex Diffuser Dimension (m): 0.40 * 0.45 * 0.17 (X*Y*Z)

1. Show divider in 2D Schroeder Diffuser

The wood (at the bottom) is showing the wood height and the light blue color is showing the well depth.



2. Alternative way of inputting Huffman sequence index

Let's take an example of a Huffman sequence index as shown below.

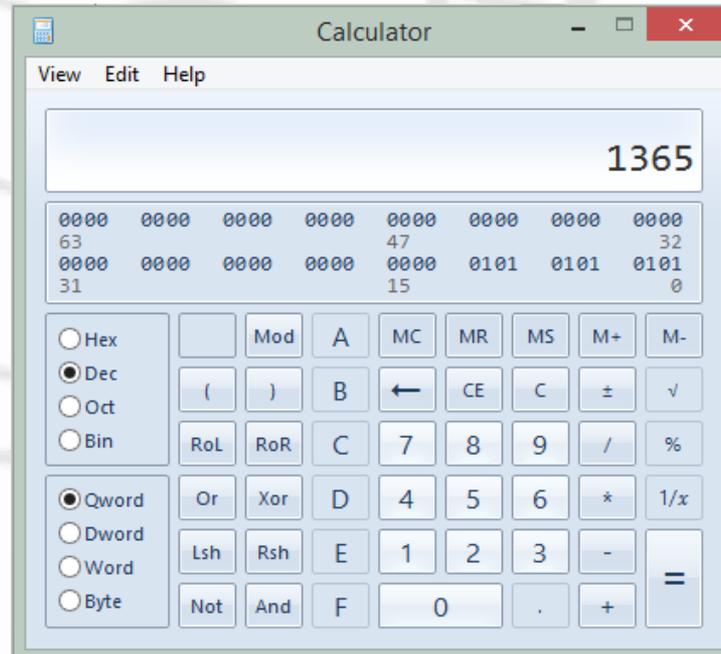
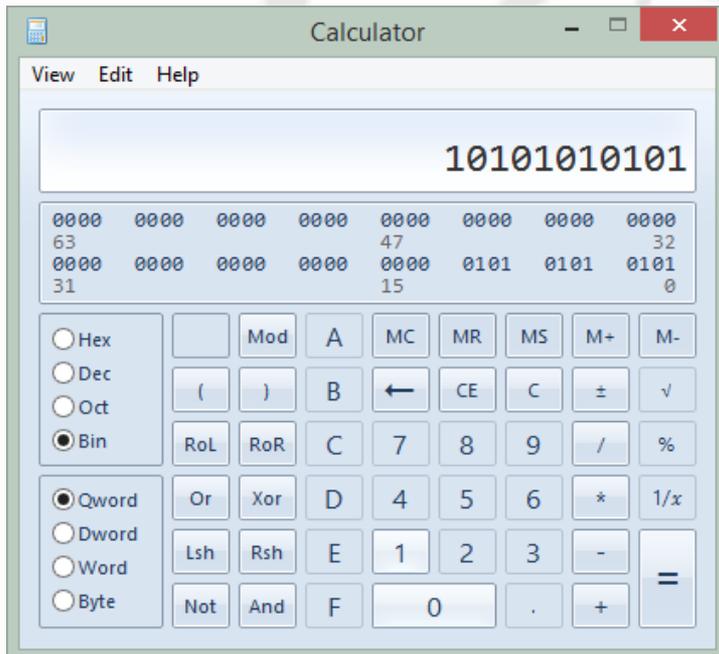
Well	Schematics	Well Depth (cm)	Wood Height(cm)
1		34.43	0.00
2		1.18	33.25
3		19.01	15.42
4		26.60	7.83
5		22.37	12.06
6		12.94	21.49
7		6.14	28.29
8		0.00	34.43

The sequence is: 1011111111100111111110. We can break this sequence as follow: a. ignore the first number, b. split the rest in the middle, and c. ignore the last half numbers.

2. Alternative way of inputting Huffman sequence index

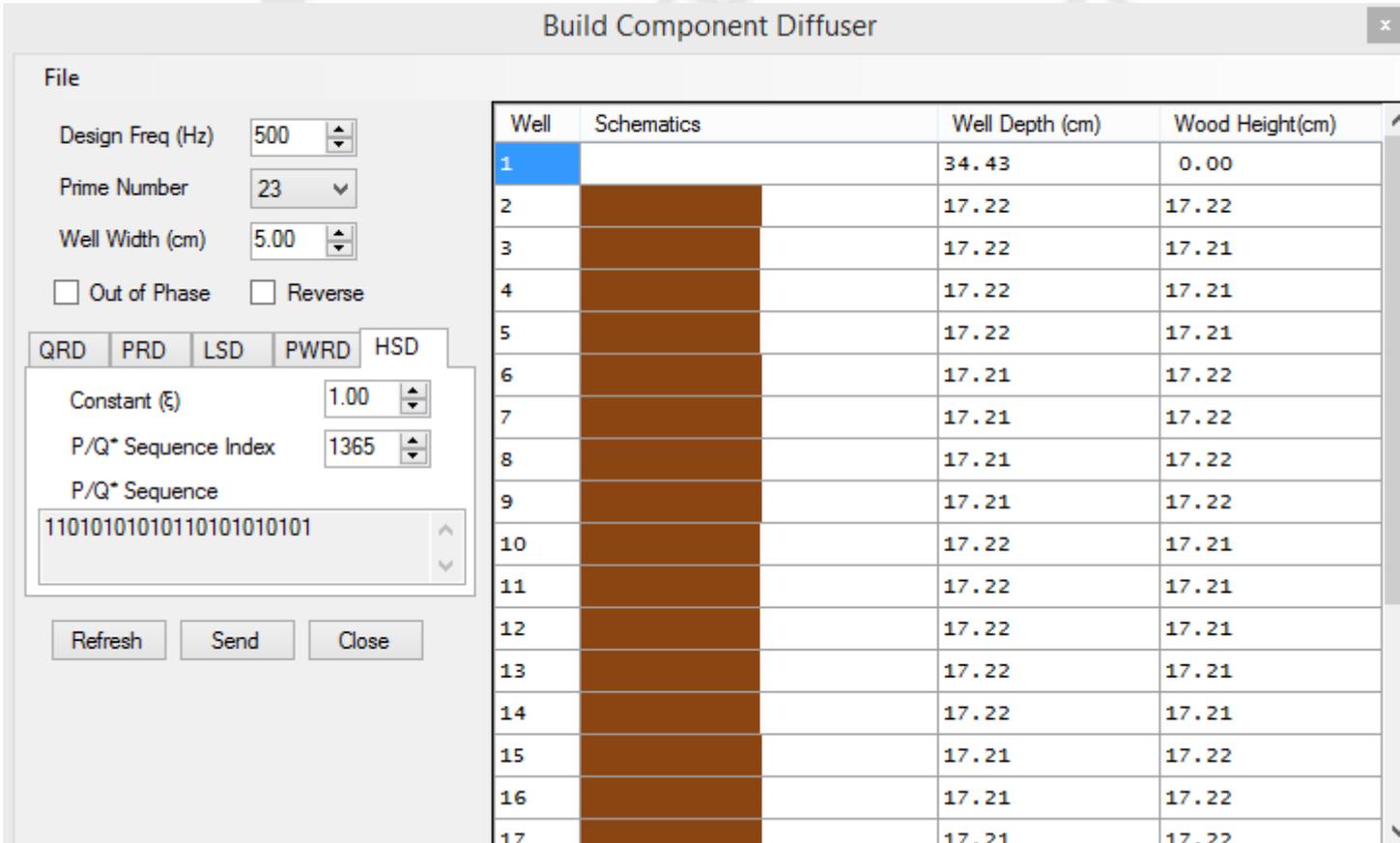
[1] 01111111110 [01111111110]

The ignored numbers are inside the square parentheses. With the same length, we can define a binary sequence, let's say: 10101010101. To find the index, we can use a calculator to convert from binary to decimal of this sequence. The result is 1365.



2. Alternative way of Inputting Huffman Sequence Index

Input 1365 in Sound Splash Huffman sequence index box and the result is 1 10101010101 10101010101 (two spaces are inserted for easier visual comparison).



The screenshot shows the 'Build Component Diffuser' software interface. The 'HSD' tab is selected, and the 'P/Q* Sequence Index' is set to 1365. The resulting 'P/Q* Sequence' is displayed as '11010101010110101010101'. The table below shows the parameters for 17 wells.

Well	Schematics	Well Depth (cm)	Wood Height(cm)
1		34.43	0.00
2		17.22	17.22
3		17.22	17.21
4		17.22	17.21
5		17.22	17.21
6		17.21	17.22
7		17.21	17.22
8		17.21	17.22
9		17.21	17.22
10		17.22	17.21
11		17.22	17.21
12		17.22	17.21
13		17.22	17.21
14		17.22	17.21
15		17.21	17.22
16		17.21	17.22
17		17.21	17.22

3. Creating a Symmetrical QRD

By default, QRD diffuser generation is shown in the picture below. Please note the asymmetric well sequence.

Sound Splash - 1D Schroeder Diffuser Builder

File Build Setting Help

Build Component Diffusers Generate Complex Diffuser

Component Diffuser Summary

Unit	Type	Freq(Hz)	N	Width(cm)	Active	Phase	Reverse
U1	QRD	750	7	6.00	<input checked="" type="checkbox"/>	+	No

Complex Diffuser Summary

Unit	Well	Schematics	Well Depth(cm)
U1	1		0.00
	2		3.28
	3		13.12
	4		6.56
	5		6.56
	6		13.12
	7		3.28

Polar Response Control

Freq (Hz) 3000

Distance (m) 5.0

Min. Value (dB) -40.0

Refresh

Data	Show	Color	Title
1	<input checked="" type="checkbox"/>		3000Hz, 5m

Polar Response

Complex Diffuser Dimension (m): 0.13 * 0.42 (Length*Width)

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3. Creating a Symmetrical QRD

Click on the list, right click to bring the menu. Select Add Well and then Barrier Well. This will duplicate the first well to the end.

Sound Splash - 1D Schroeder Diffuser Builder

File Build Setting Help

Build Component Diffusers Generate Complex Diffuser

Component Diffuser Summary

Unit	Type	Freq(Hz)	N	Width(cm)	Active	Phase	Reverse
U1	QRD	750	7	6.00	<input checked="" type="checkbox"/>	+	No

View Details/Edit
Rebuild
Switch "Active" Status
Move Up
Move Down
Duplicate
Add Diffuser
Add Well
Delete Selected
Delete All
Print Table
Generate Complex Diffuser

Barrier Well
User Defined Well

0.00
3.28
13.12
6.56
6.56
13.12
3.28

5
6
7

Polar Response Control

Freq (Hz) 3000
Distance (m) 5.0
Min. Value (dB) -40.0
Refresh

Data	Show	Color	Title
1	<input checked="" type="checkbox"/>	Red	3000Hz, 5m

Polar Response

90
-10
-20
-30
-40
-60
-90

30
0
-30
-60

3000Hz, 5m

Duplicate the first well and locate it at the end of the selected diffuser.

Complex Diffuser Dimension (m): 0.13 * 0.42 (Length*Width)

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3. Creating a Symmetrical QRD

Unit 2 in the picture below is a well with 0cm depth. The whole sequence is now symmetrical.

The screenshot displays the 'Sound Splash - 1D Schroeder Diffuser Builder' software interface. The main window contains several panels:

- Component Diffuser Summary:** A table listing individual diffuser units.
- Complex Diffuser Summary:** A table showing the sequence of wells and their depths.
- Polar Response Control:** Settings for frequency, distance, and minimum value.
- Polar Response:** A polar plot showing the diffuser's response at 3000Hz and 5m distance.

Component Diffuser Summary Table:

Unit	Type	Freq(Hz)	N	Width(cm)	Active	Phase	Reverse
U1	QRD	750	7	6.00	<input checked="" type="checkbox"/>	+	No
U2	we11	N/A	1	6.00	<input checked="" type="checkbox"/>	N/A	N/A

Complex Diffuser Summary Table:

Unit	Well	Schematics	Well Depth(cm)
U1	1	[Schematic]	0.00
	2	[Schematic]	3.28
	3	[Schematic]	13.12
	4	[Schematic]	6.56
	5	[Schematic]	6.56
	6	[Schematic]	13.12
	7	[Schematic]	3.28
U2	8	[Schematic]	0.00

Polar Response Control Settings:

- Freq (Hz): 3000
- Distance (m): 5.0
- Min. Value (dB): -40.0

Polar Response Plot: A polar plot showing the response at 3000Hz and 5m distance. The plot is symmetrical about the 0-degree axis. The legend indicates the plot is for 3000Hz, 5m.

Complex Diffuser Dimension (m): 0.13 * 0.48 (Length*Width)

4. Copy Pasting the 2D MLS Sequence to Clipboard

After all parameter is completed and calculation is done, left mouse click on the first patch, hold and drag it to the last patch.

