True Image for CA33
Upmix surround
2025 07 10
ggm

1st order allpass: calculating
coefficients from fc (Hz)

$N = (\pi \cdot fc / fs - 1) / (\pi \cdot fc / fs + 1)$

a0 = N
a1 = 1
a2 = 0

b1 = N
b2 = 0

Left Front

Right Front

Left Surround

Right Surround

* -1

+

EQ Peak
1.3 kHz, -4 dB
Q=0.5

Changes relative to CA44
are the parameters for this
biquad

EQ LowShelf
100 Hz, -12 dB
Q=0.5

High Shelf
-9 dB
3 kHz
Q = 0.5

Delay
12 ms

* 0.63

SurroundLookup01

Slider value	dB	Linear
0	-4	0.63
1	-3	0.71
2	-2	0.79
3	-1	0.89
4	0	1
5	0	1
6	0	1
7	1	1.12
8	2	1.26
9	3	1.41
10	4	1.58

SurroundLookup02

Slider value	dB	Linear
0	-3	0.71
1	-6	0.50
2	-9	0.35
3	-12	0.25
4	-18	0.13
5	-100	0
6	-100	0
7	-100	0
8	-100	0
9	-100	0
10	-100	0

SurroundLookup03

Slider value	dB	Linear
0	-6	0.50
1	-5	0.56
2	-4	0.63
3	-3	0.71
4	-2	0.79
5	0	1
6	0	1
7	0	1
8	0	1
9	0	1
10	0	1

**Note that these lookup tables do no directly match the old
versions - 01 and 03 are swapped**

SurroundLookup01

*

72 - input * 4

$440 \cdot 2^{((input-69)/12)}$

1st order
allpass

Slider - Spatial: ENVELOPMENT
Range 0-10

72 + input * 4

$440 \cdot 2^{((input-69)/12)}$

1st order
allpass

SurroundLookup02

SurroundLookup03

*

*

*

*

+

+

Left Surround
Upmix

Right Surround
Upmix

Left Surround

Right Surround