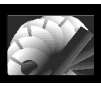


alienconcepts incorporated

DESCRIPTION

GENERAL INFO

JOB Business Conference Center
DATE 6/2/95 -6/8/95
PERFORMED BY Paul F Bergetz (President Alienconcepts Incorporated)
Phone 708-253-9568 Voice mail 708-686-7285

PRE-ANALYSIS

INITIAL FINDINGS After initial setup on 6/2/95 we made a quick RTA test from the central room position .A total lack of LF (below 600hz) energy was found on the right channel. We went to the back of the control room playback rack and found that one of the right channel LF crossover out was only plugged in partially. Another RTA was run and a difference of 7db was noticed between the left and right channel.We proceded to record and calibrate the signal chain using a voltmeter before running any tests.

		6/2/95		6/5/95			
		Ch1	Ch2	Ch1	Ch2	Ch1	Ch2
VOLTAGE	Source Teac Tone Generator -10 level						
	LF tone 400hz	0.31		0.313	0.313		
	HF tone 4000hz	0.146		0.146	0.146		
	Line input at console all eq off (gain +7)						
	Line output at console (fader -10)			0.31	0.31		
	DBX compressor / limiter input			0.108	0.109		
	DBX compressor / limiter output			0.194	0.195		
	Rane 1/3 octave eq input	0.066	0.069	0.204	0.204		
	Rane 1/3 octave eq output	0.15	0.151	0.316	0.316		
	Rane 1/3 octave eq output (bypass)	0.056	0.053	0.17	0.17		
	Rane Electronic Crossover Input	0.034	0.034	0.102	0.102		
	Rane Electronic Crossover HF output	0.034	0.034	0.013	0.013		
	Rane Electronic crossover MR output						
	Rane Electronic crossover LF output	0.034	0.034	0.096	0.096		
	Rane LF crossover point in hz	800hz	800hz	800hz	800hz		
	LF filter			30hz	30hz		
	HF filter			18k	18k		
	HF Amplifier input			0.013	0.013		
	HF Amplifier output	0.322	0.39	0.933	0.933		
	MR Amplifier output						
	LF Amplifier input			0.092	0.095		
	LF Amplifier output	0.397	0.399	2.68	2.502		
IMPEDANCE		ohms	ohms				
	LF driver at amplifier connections	3.3	3.3	3.3	3.3		
	HF driver at amplfier connections	5.5	5.5	5.5	5.5		

ANALYSIS

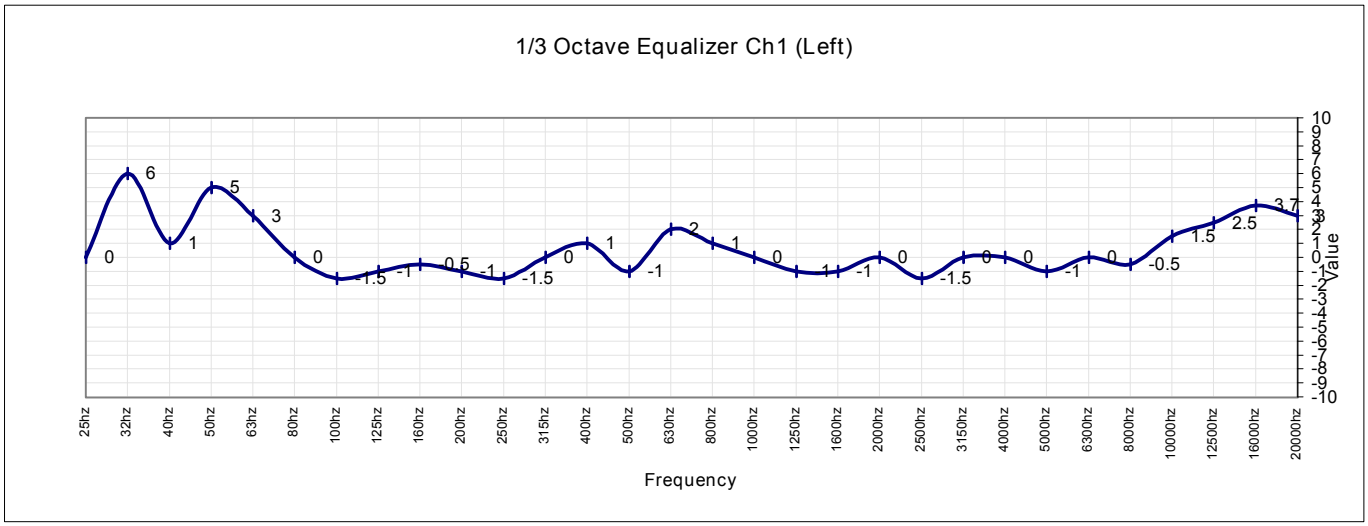
TEF20 PROCEDURES After voltage calibration a complete set of TEF measurements were taken. They included:
Master ETC, RTA, TDS and HDS all from the reference position (row 5 center at listeners ear). These tests were taken one channel at a time aimed at room center position and driver array center. The master RTA was then re-calibrated at point 1(the reference position) and 9 complete sets (ETC,RTA and TDS) were taken with the mic (B&K 4007) aimed at room center. The positions taken were Room Center rows 5,3 & 7 - Room Left rows 5,3 & 7 and Room Right rows 5,3 & 7. These have been graphed in detail on the attached plots.

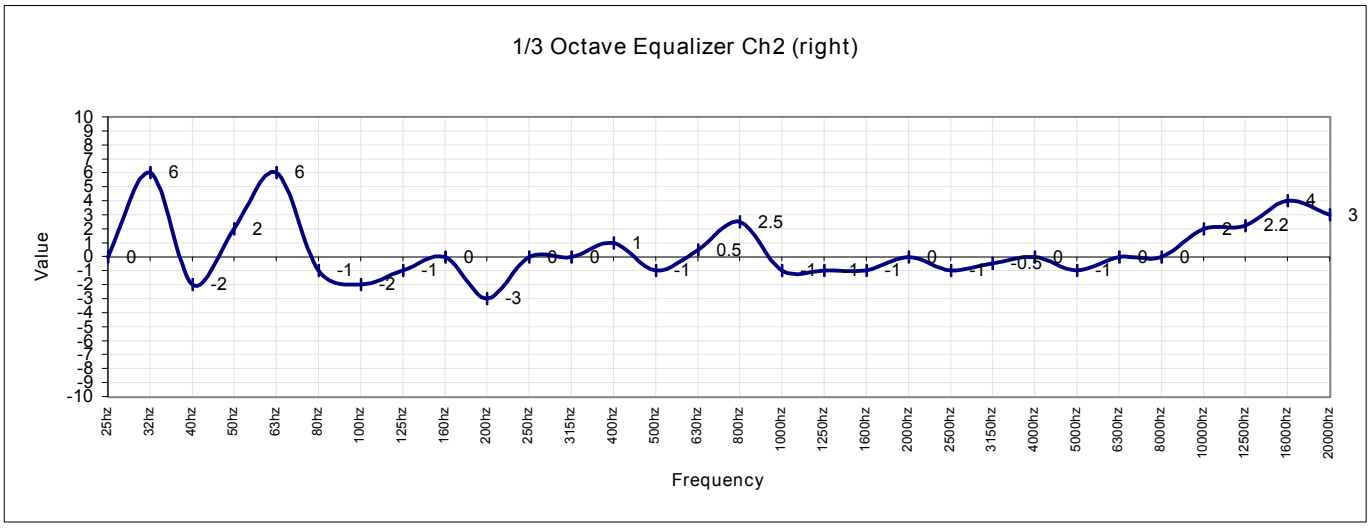
POST-ANALYSIS

FINDINGS After the system was re-calibrated the second time the "house curves" started to fall together very well. I performed listening tests at 85db and 95db (from the reference position row 5 center) with 4 CD's that we use to calibrate our near field systems. They are "Blade Runner" by Vangelis track 1&2 ,"For a Child" by Michael McDonald track 4, "Turbulent Indigo" by Joni Mitchell track 1 and 2 and "Under the table and Dreaming" by the Dave Matthew's Band track 1. The only problems I noticed were on Joni Mitchell the imaging tended to be less-defined from the 5th row as opposed to the 7th row position and on the Dave Matthew's track the room's natural abience tended to mask detail. This is a very difficult cut to play since it is all acoustic with no electronic instruments and tends to be a very "live" sounding cut with a lot rapidly changing energy throughout the audio spectrum.
In all the room sounded quite good on all materials in all positions.

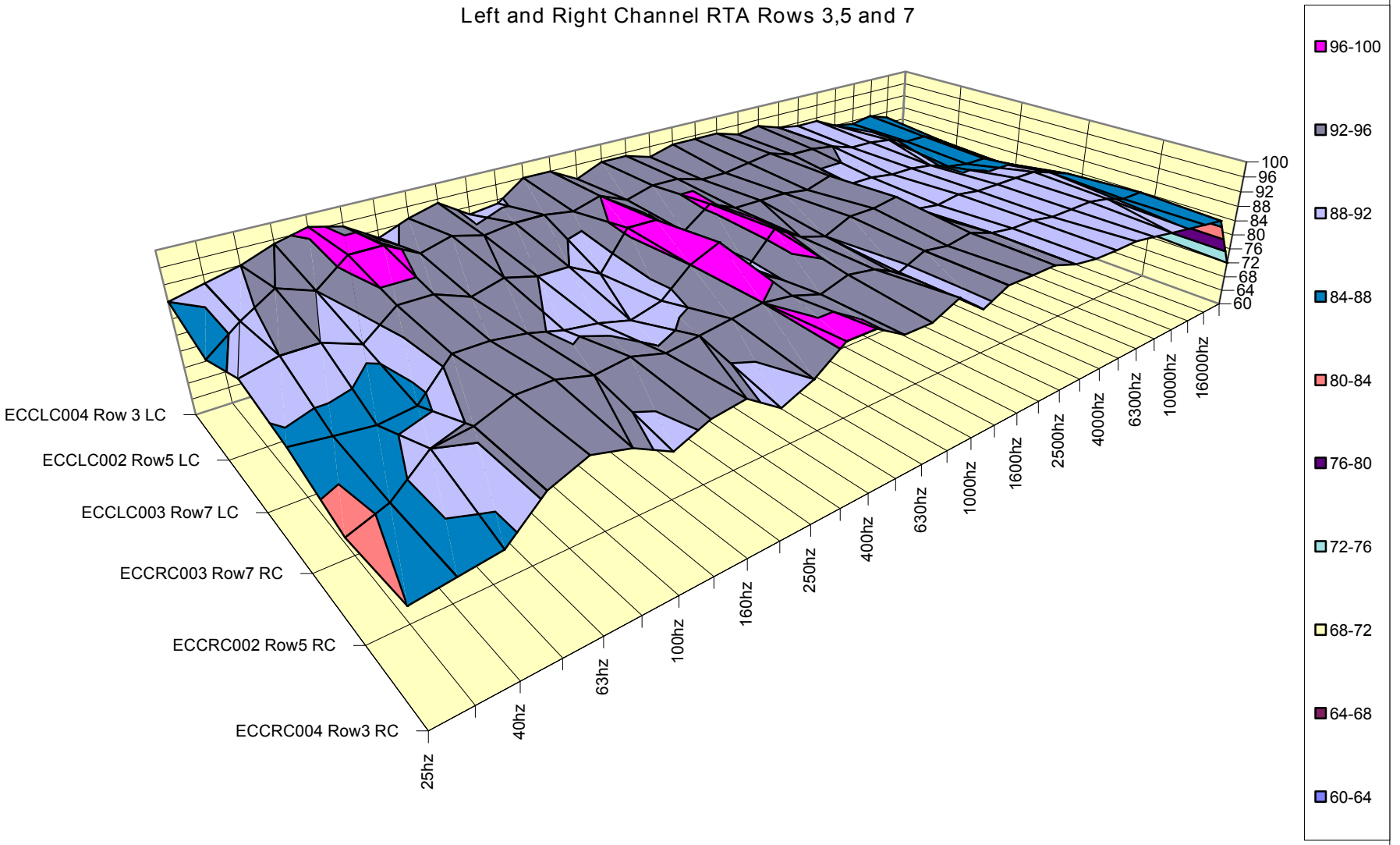
The overall room RTA came out quite good as is indicated in the accompanying color contour plots. The only adjustments I would recommend after viewing the contour plots are as noted:
Reduce EQ on both channels by 1db at 16000hz, 1db at 400hz, 2db at 63hz ,1db at 50hz and 2db at 32hz.

The cross over plots show a slight shift from left channel to right channel. This may be a result of delay line error or poorly calibrated points on the trim pots.

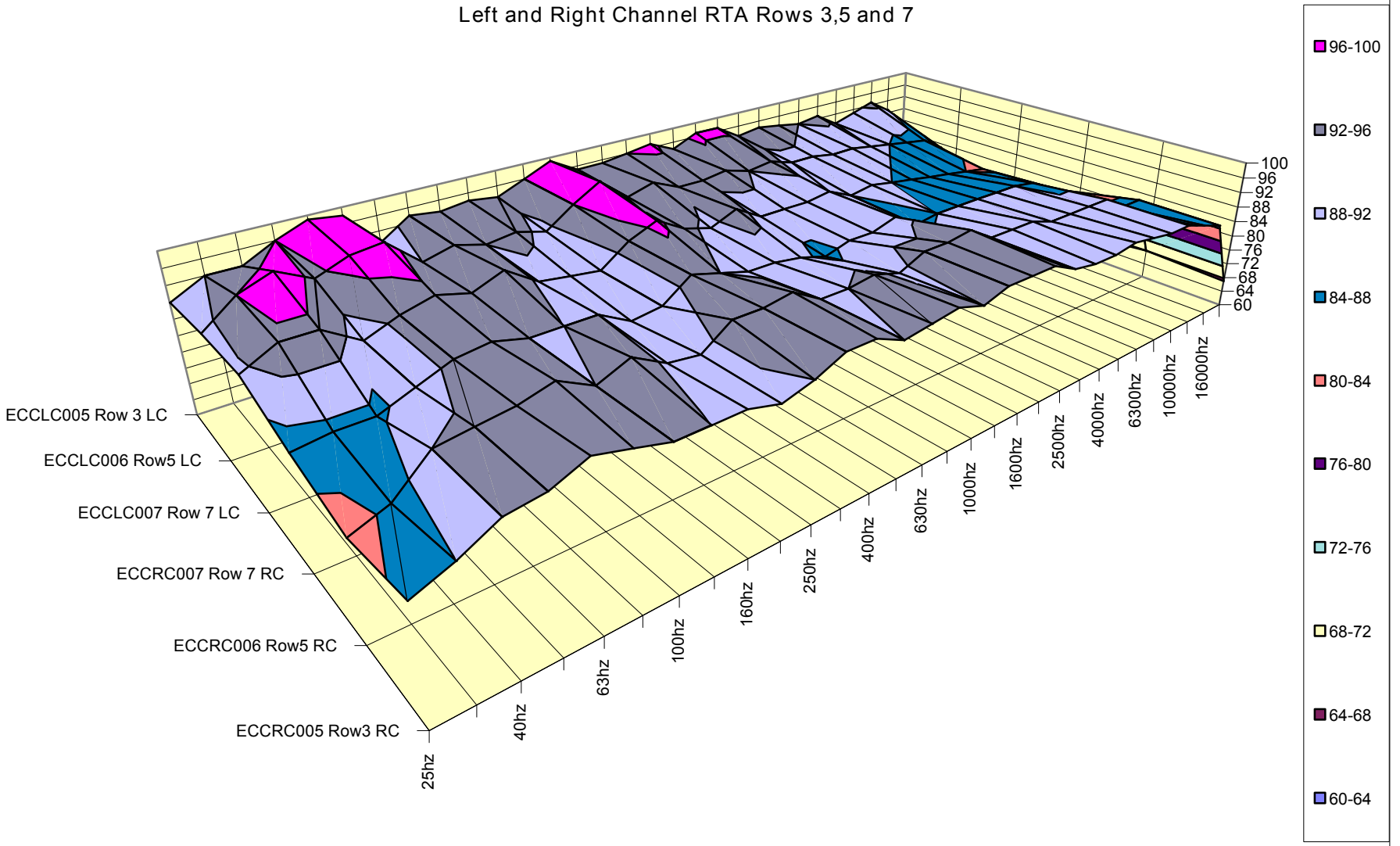




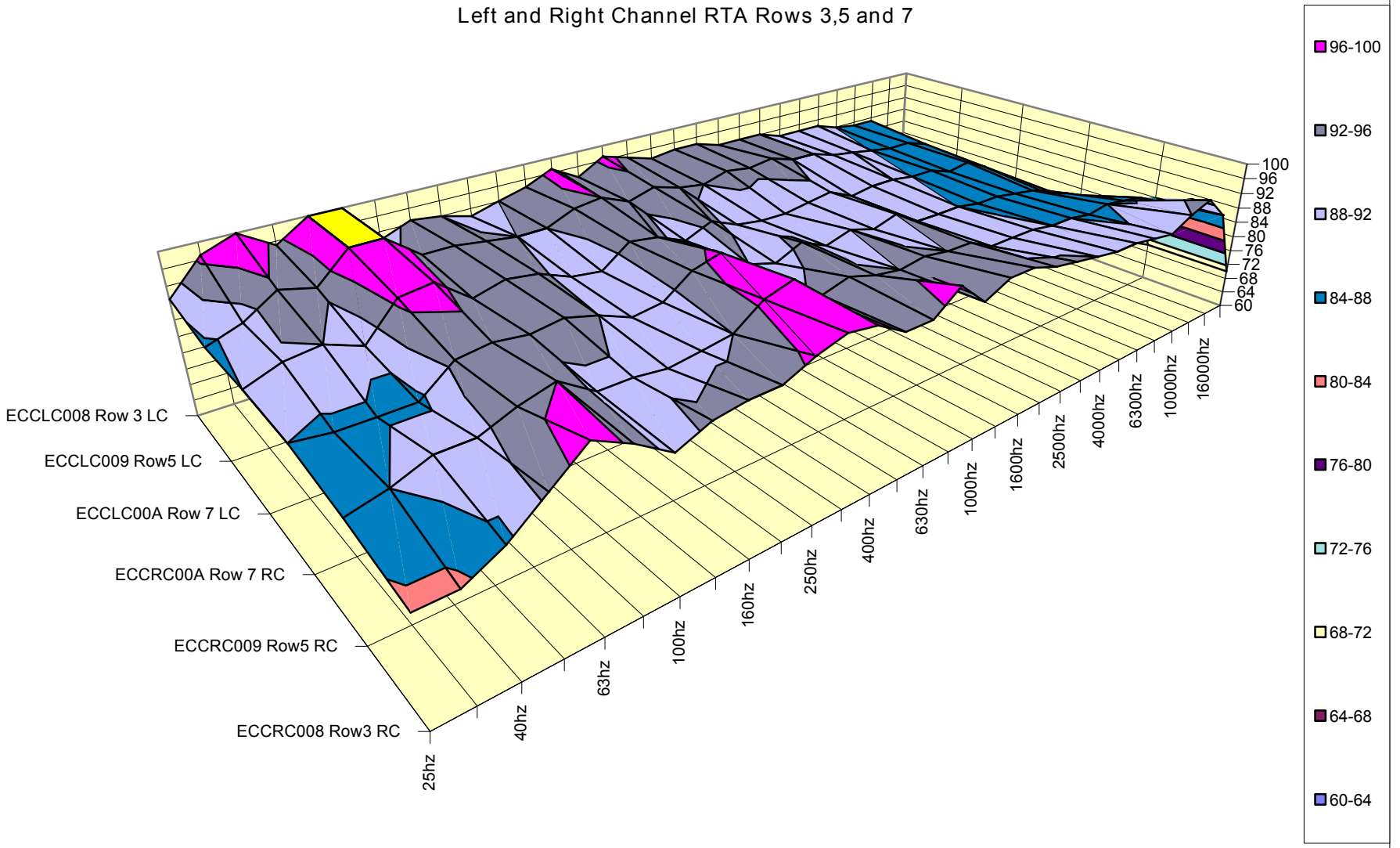
ECC BCC Auditorium Center
Left and Right Channel RTA Rows 3,5 and 7

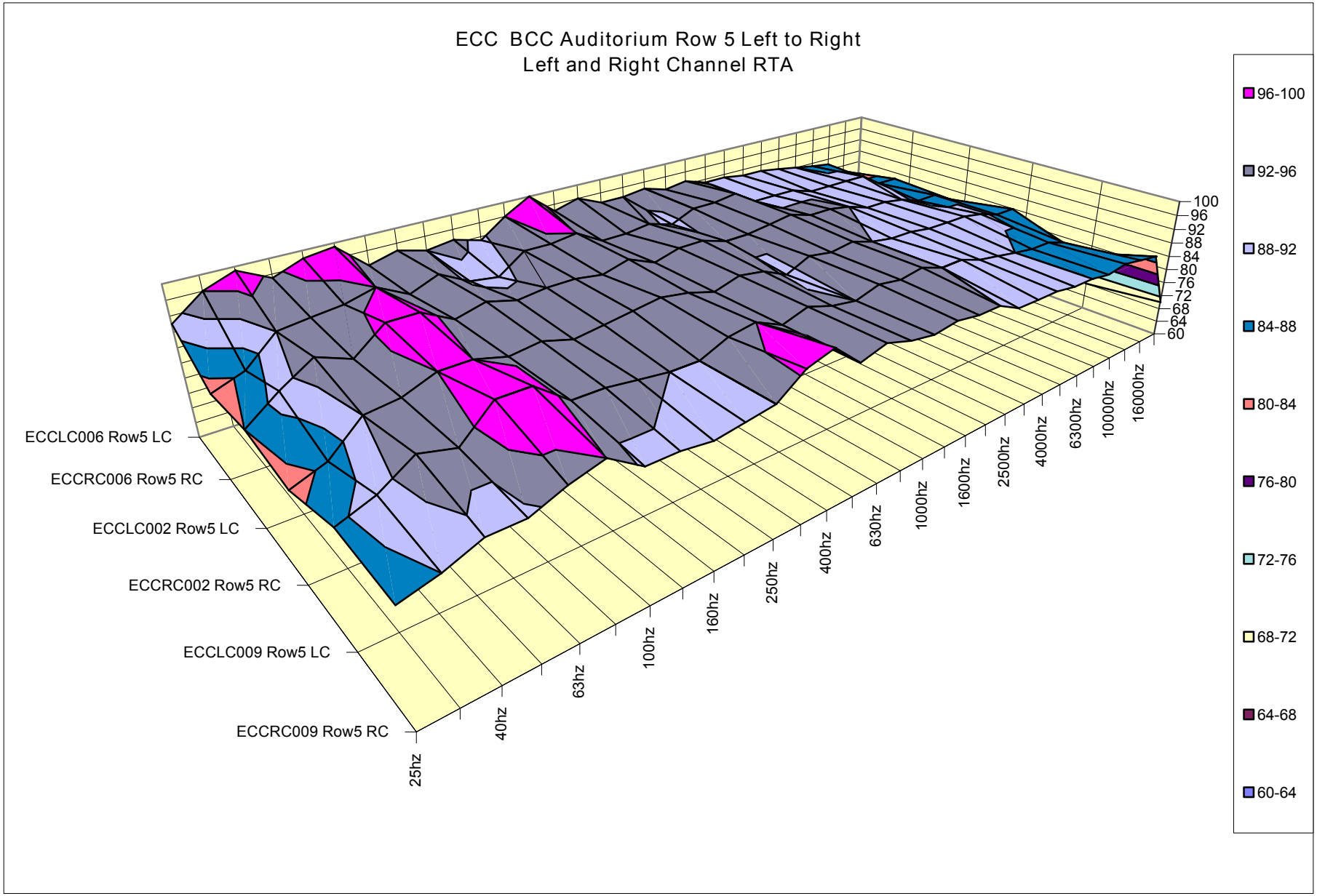


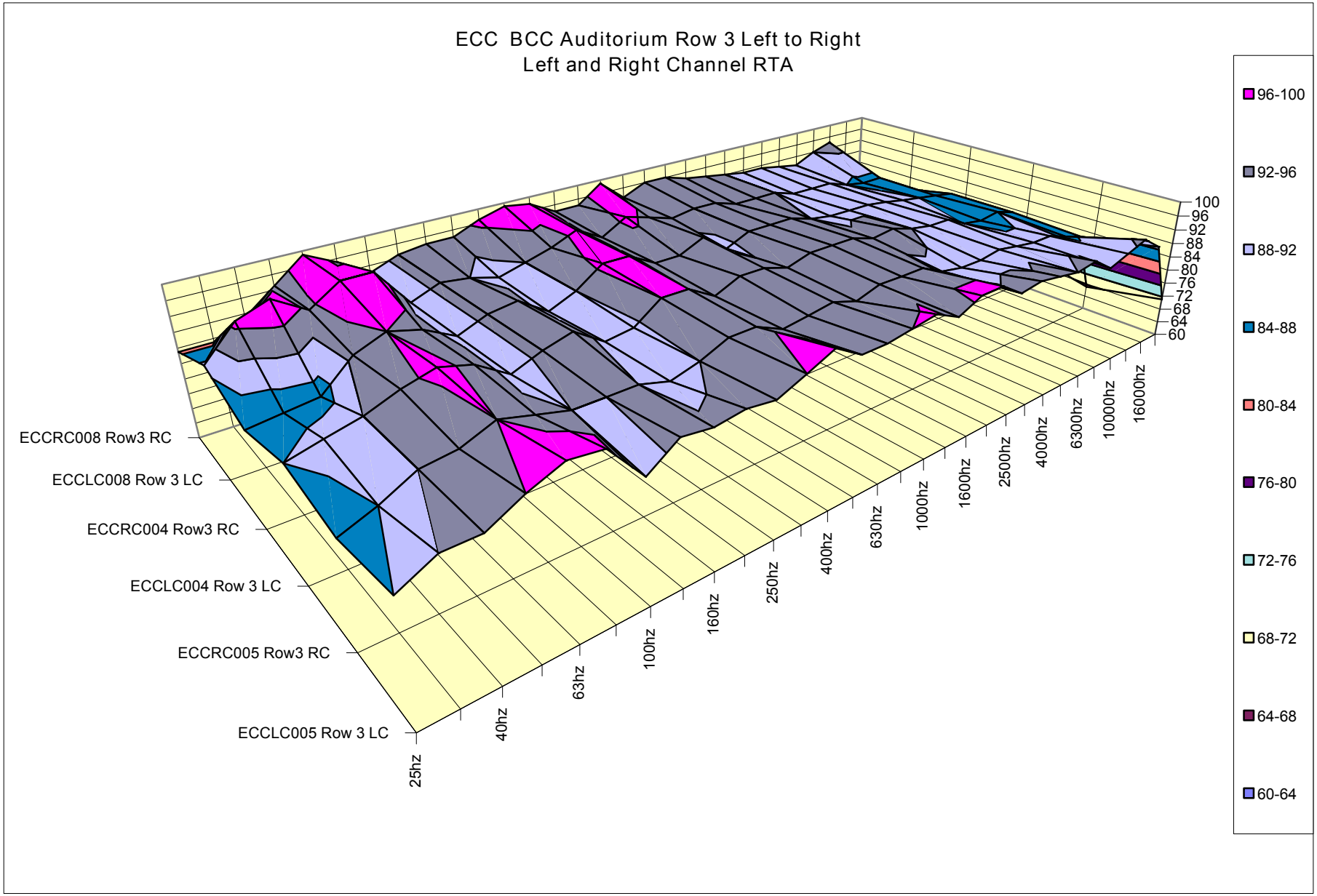
ECC BCC Auditorium Left
Left and Right Channel RTA Rows 3,5 and 7

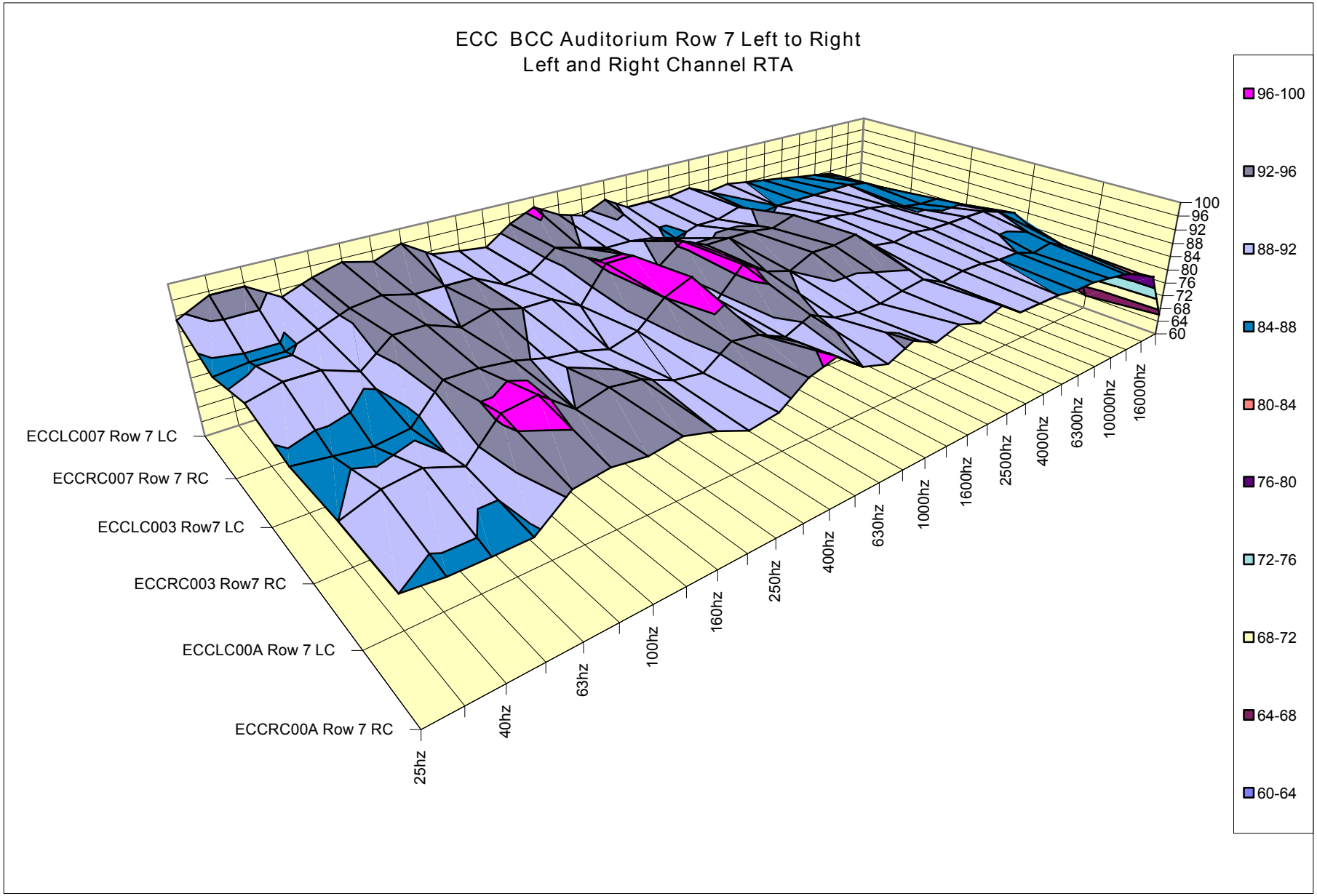


ECC BCC Auditorium Right
Left and Right Channel RTA Rows 3,5 and 7

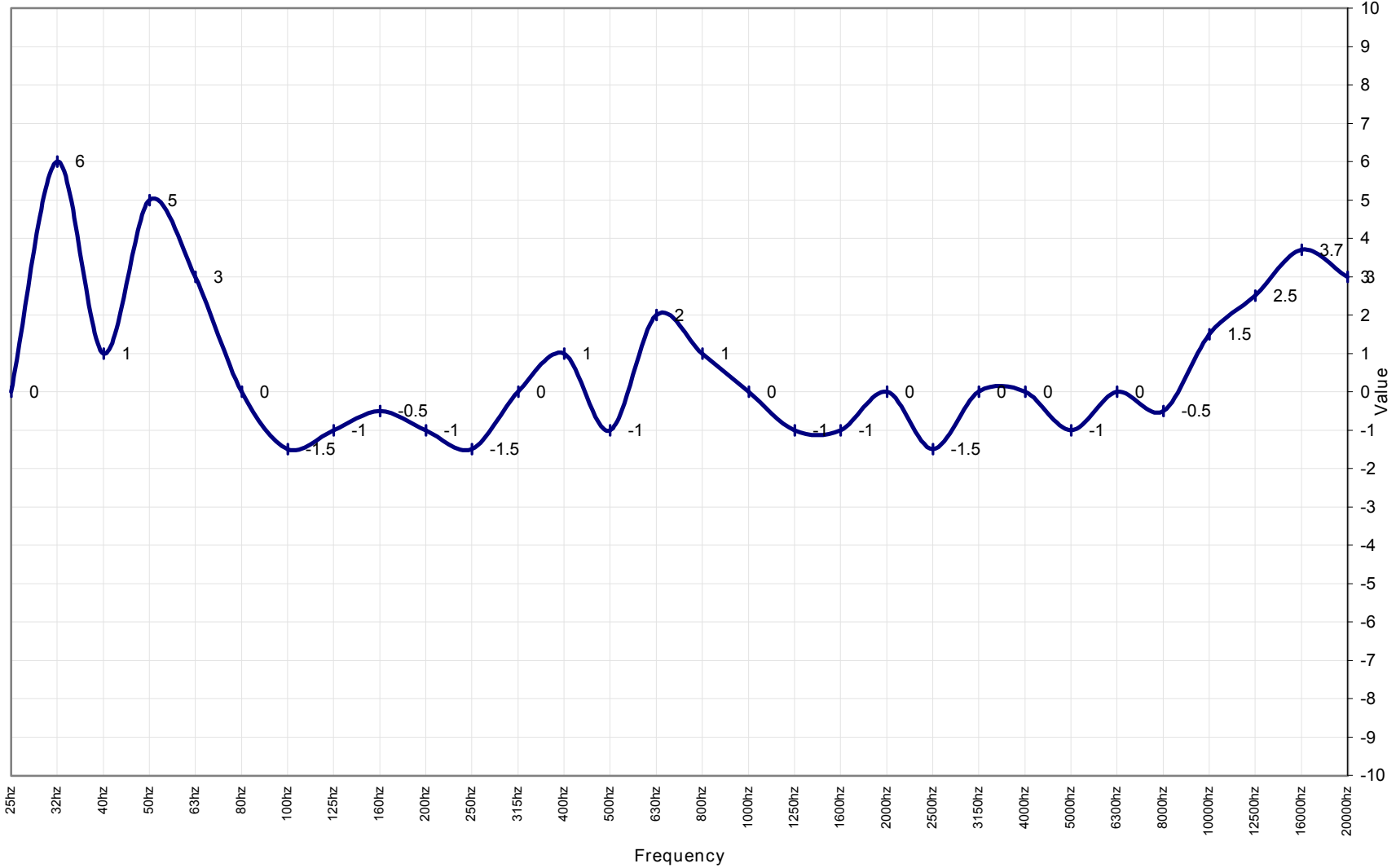


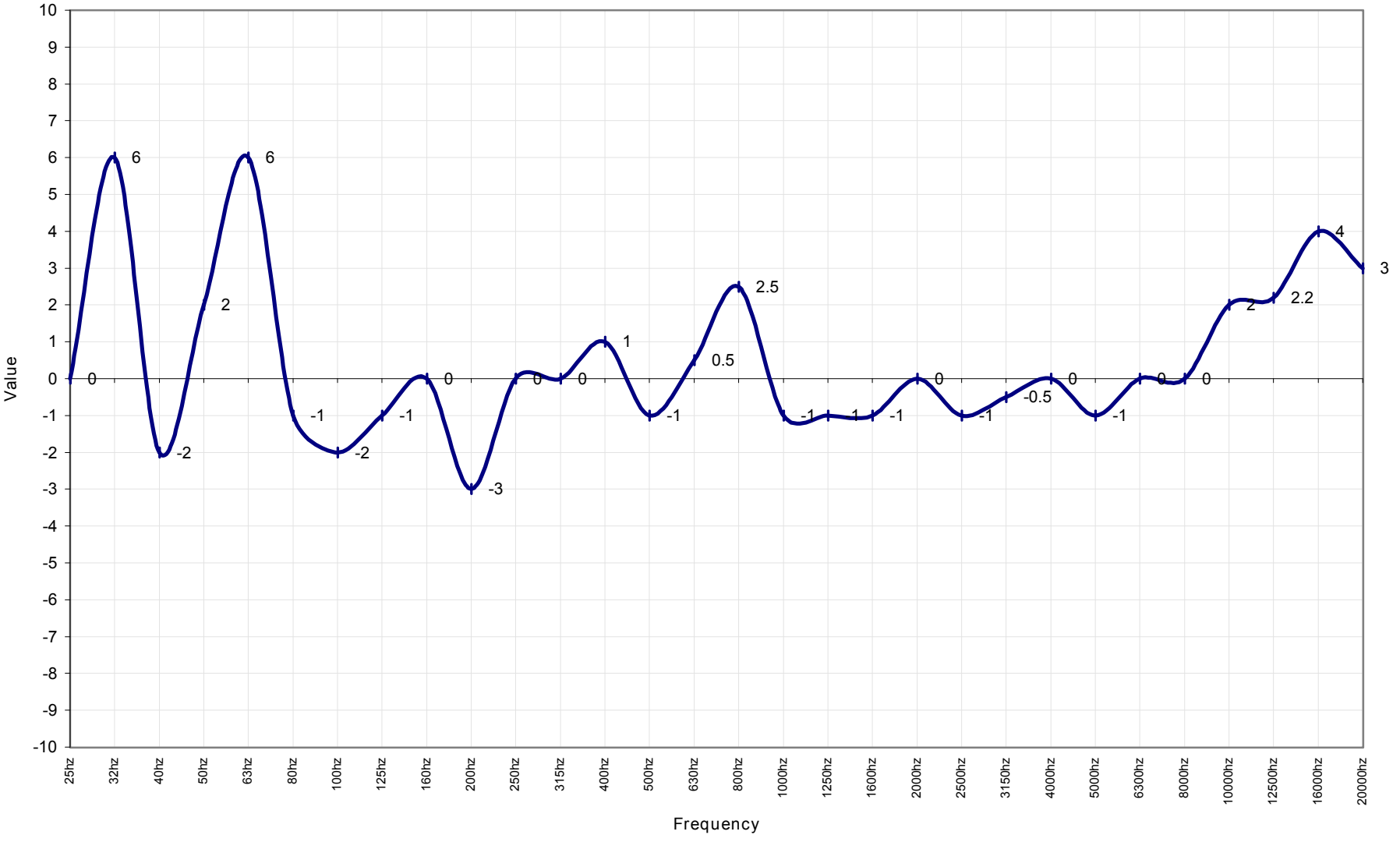

ECC BCC Auditorium Row 5 Left to Right
Left and Right Channel RTA
96-100
92-96
88-92
84-88
80-84
76-80
72-76
68-72
64-68
60-64
100
96
92
88
84
80
76
72
68
64
60
ECCLC006 Row5 LC
ECCRC006 Row5 RC
ECCLC002 Row5 LC
ECCRC002 Row5 RC
ECCLC009 Row5 LC
ECCRC009 Row5 RC
25hz
40hz
63hz
100hz
160hz
250hz
400hz
630hz
1000hz
1600hz
2500hz
4000hz
6300hz
10000hz
16000hz

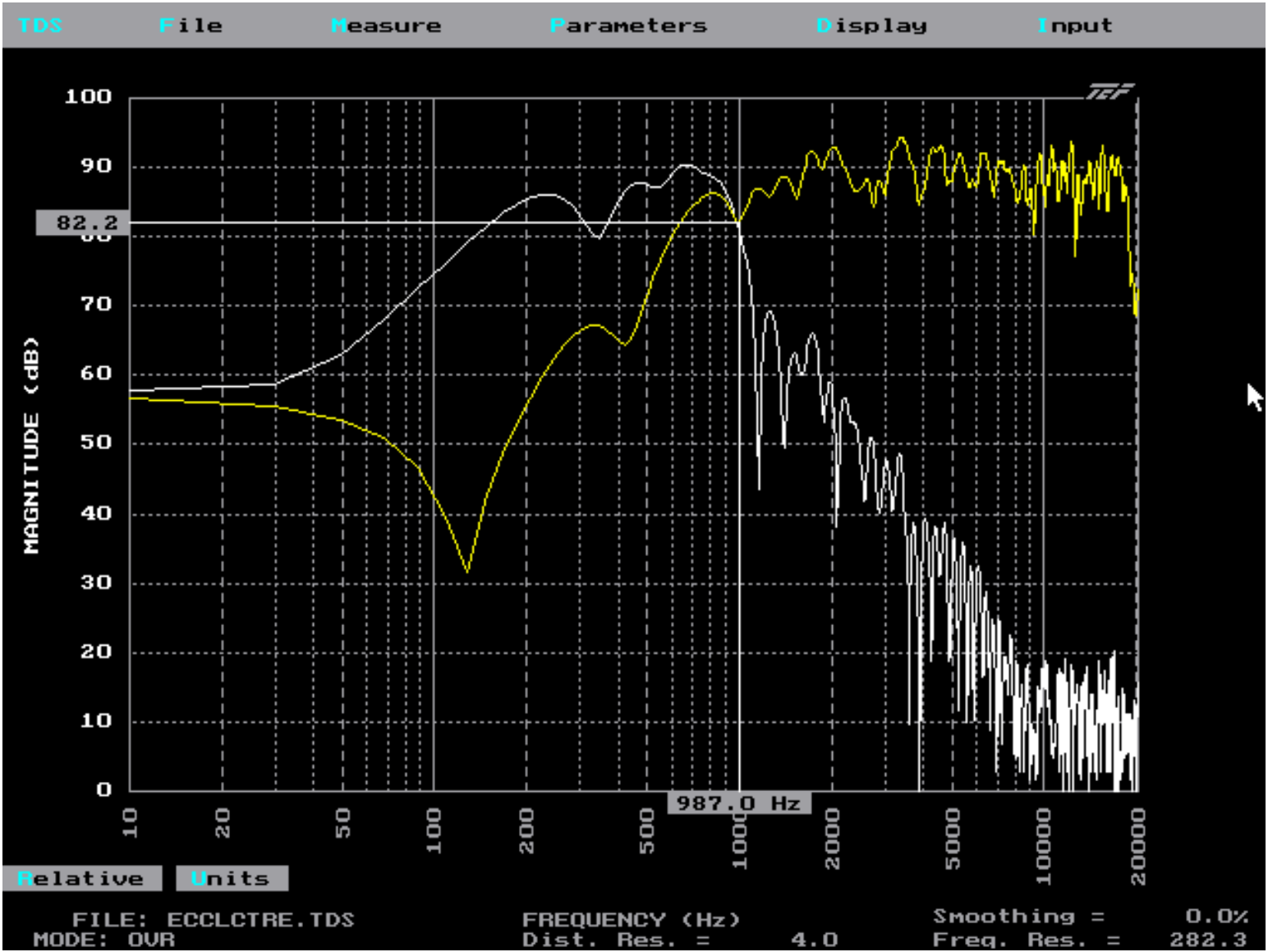

ECC BCC Auditorium Row 3 Left to Right
Left and Right Channel RTA
96-100
92-96
88-92
84-88
80-84
76-80
72-76
68-72
64-68
60-64
100
96
92
88
84
80
76
72
68
64
60
ECCRC008 Row3 RC
ECCLC008 Row 3 LC
ECCRC004 Row3 RC
ECCLC004 Row 3 LC
ECCRC005 Row3 RC
ECCLC005 Row 3 LC
25hz
40hz
63hz
100hz
160hz
250hz
400hz
630hz
1000hz
1600hz
2500hz
4000hz
6300hz
10000hz
16000hz

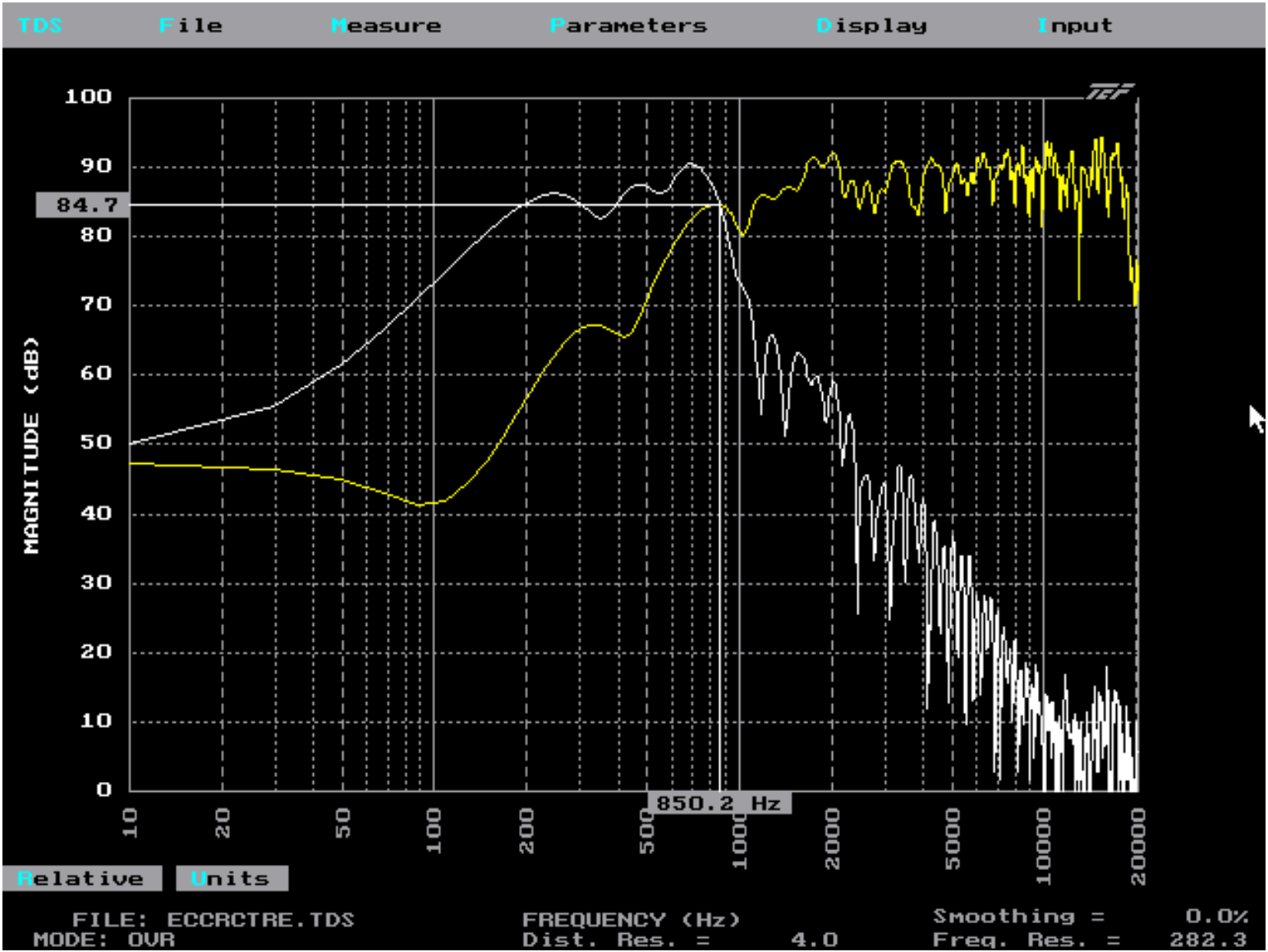

ECC BCC Auditorium Row 7 Left to Right
Left and Right Channel RTA
96-100
92-96
88-92
84-88
80-84
76-80
72-76
68-72
64-68
60-64
100
96
92
88
84
80
76
72
68
64
60
ECCLC007 Row 7 LC
ECCRC007 Row 7 RC
ECCLC003 Row7 LC
ECCRC003 Row7 RC
ECCLC00A Row 7 LC
ECCRC00A Row 7 RC
25hz
40hz
63hz
100hz
160hz
250hz
400hz
630hz
1000hz
1600hz
2500hz
4000hz
6300hz
10000hz
16000hz

1/3 Octave Equalizer Ch1 (Left)

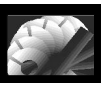



1/3 Octave Equalizer Ch2 (right)
Value
Frequency
10
9
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
25hz
32hz
40hz
50hz
63hz
80hz
100hz
125hz
160hz
200hz
250hz
315hz
400hz
500hz
630hz
800hz
1000hz
1250hz
1600hz
2000hz
2500hz
3150hz
4000hz
5000hz
6300hz
8000hz
10000hz
12500hz
16000hz
20000hz
6
-2
6
2
-1
-2
-1
0
-3
0
0
1
-1
0.5
2.5
-1
-1
-1
0
-1
-0.5
0
-1
0
0
2
2.2
4
3


TDS
File
Measure
Parameters
Display
Input
100
90
82.2
70
60
50
40
30
20
10
0
MAGNITUDE (dB)
10
20
50
100
200
500
1000
2000
5000
10000
20000
987.0 Hz
Relative
Units
FILE: ECCLCTRE.TDS
MODE: OVR
FREQUENCY (Hz)
Dist. Res. = 4.0
Smoothing = 0.0%
Freq. Res. = 282.3


TDS
File
Measure
Parameters
Display
Input
100
90
84.7
80
70
60
50
40
30
20
10
0
MAGNITUDE (dB)
10
20
50
100
200
500
850.2 Hz
1000
2000
5000
10000
20000
Relative
Units
FILE: ECCRCTRE.TDS
MODE: OVR
FREQUENCY (Hz)
Dist. Res. = 4.0
Smoothing = 0.0%
Freq. Res. = 282.3

ACOUSTIC ANALYSIS REPORT



alienconcepts incorporated

DESCRIPTION

GENERAL INFO

JOB Business Conference Center Room 119 ,Room 123 and Room 159
DATE 6/2/95 -6/8/95
PERFORMED BY (Alienconcepts Incorporated)
Phone 708-253-9568 Voice mail 708-686-7285

PRE-ANALYSIS

INITIAL FINDINGS These 3 room presented a problem in the fact that the amplifiers and signal processing equipment was located several hundred feet from two of the rooms we had to use a 2 way commincation systems to adjust the RTA. Of concern is the output gain difference between the rooms which we did not change.

		R119		R123		R159	
		Ch1	Ch2	Ch1	Ch2	Ch1	Ch2
VOLTAGE	Source Teac Tone Generator -10 level						
	Tone 4000hz	0.146	0.146	0.146	0.146	0.146	0.146
	"Audio 1" eq off (gain via computer fader set @ .75)	0.146	0.146	0.146	0.146	0.146	0.146
	Rane 1/2 octave eq input	0.144	0.144	0.348	0.328	0.17	0.174
	Rane 1/2 octave eq output	0.144	0.144	0.348	0.346	0.175	0.175
	Rane 1/2 octave eq output (bypass)	0.144	0.144	0.346	0.346	0.168	0.172
	Amplifier output (at speaker terminals)	0.48	0.45	11.02	11.38	2.823	2.819

ANALYSIS

TEF20 PROCEDURES After voltage calibration a complete set of TEF measurements were taken. They included:
Master ETC, RTA, TDS and HDS all from the reference position (row 3 center at listeners ear). These tests were taken one channel at a time aimed at room center position and driver array center. The master RTA was then re-calibrated at point 1(the reference position) and 5 complete sets (ETC,RTA and TDS) were taken with the mic (B&K 4007) aimed at room center. The positions taken were Room Center rows 1 and 3 - Room Left rows 1 and 3 and Room Right rows 1 and 3. These have been graphed in detail on the attached plots.

POST-ANALYSIS

FINDINGS The overall room RTA came out fair as is indicated in the accompanying color contour plots. There are three areas of concern:

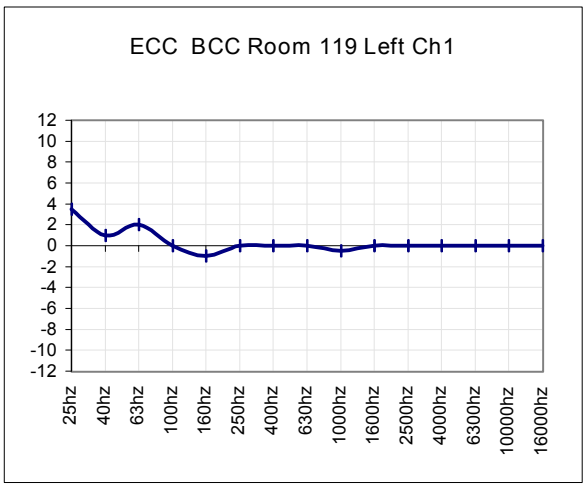
1 The near 100db peaks at 355hz and 710hz in room 159 that show up on the left side in the first row need to be investigated as to what is there cause. (all eq was out except for the Rane units) These peaks are causing a rise in all the adjacent area also.

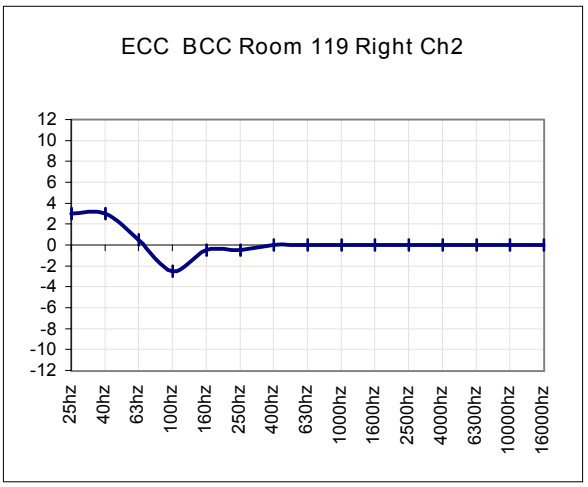
2 The excessive distortion on the right channel in room 123. The testers claim they noticed an excessive amount of rattle and buzz from the "metal ceiling area on the right channel during the TEF measurements.(this is also the room with the high reading on the amplifier out terminals) possibly this amp is being over-driven, however the problem only shows up on the right channel.

3 The monitors appear to be totally miss-aligned to the seating area when moving from room to room. One speaker was actually aiming up.

4 The excessive swing in output voltage from room 119 to room 123 needs to be accounted for.

EQ SETTINGS


ECC BCC Room 119 Left Ch1
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
25hz
40hz
63hz
100hz
160hz
250hz
400hz
630hz
1000hz
1600hz
2500hz
4000hz
6300hz
10000hz
16000hz


ECC BCC Room 119 Right Ch2
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
25hz
40hz
63hz
100hz
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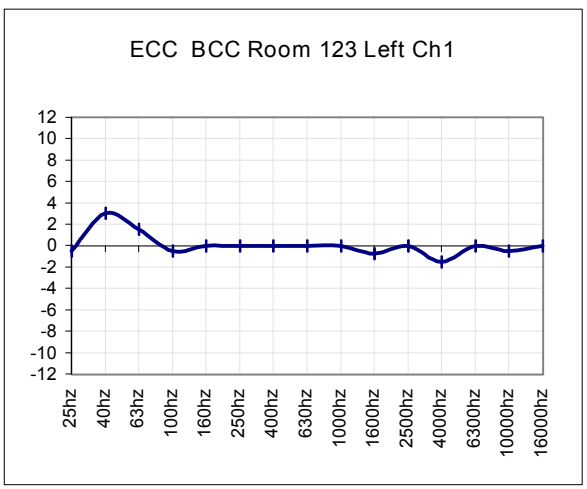
2500hz
4000hz
6300hz
10000hz
16000hz


ECC BCC Room 123 Left Ch1
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
25hz
40hz
63hz
100hz
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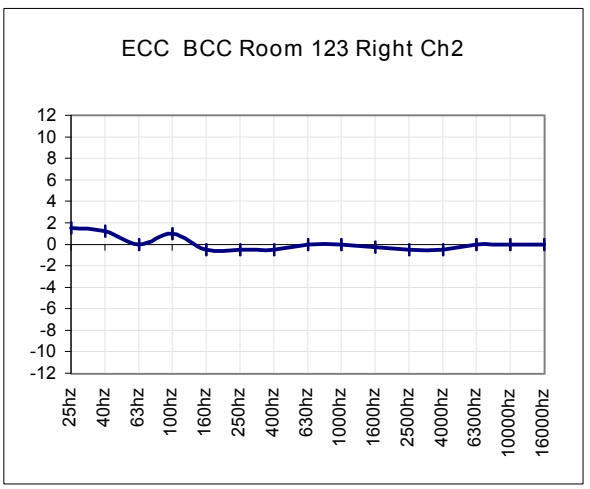
2500hz
4000hz
6300hz
10000hz
16000hz


ECC BCC Room 123 Right Ch2
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
25hz
40hz
63hz
100hz
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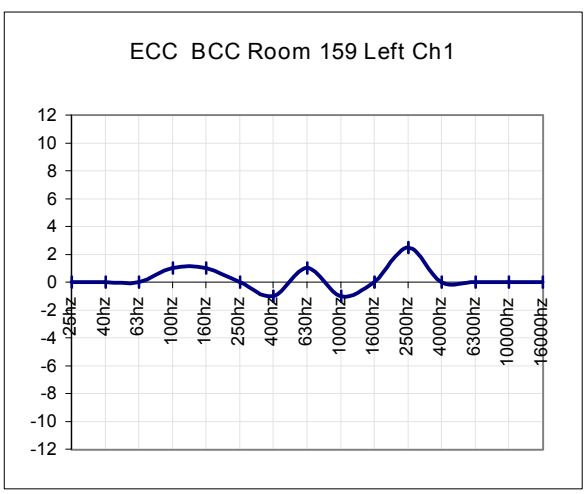
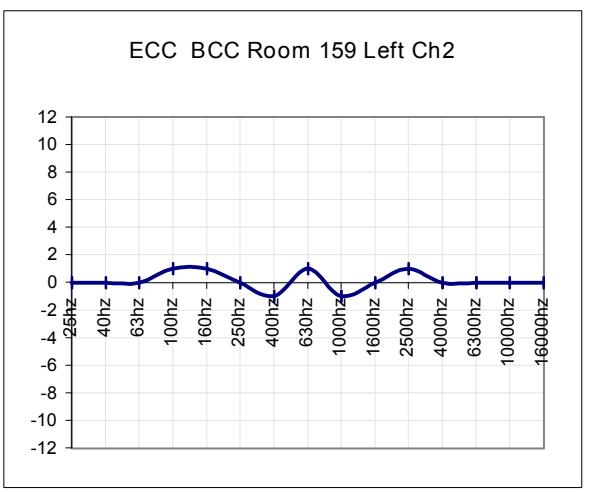
2500hz
4000hz
6300hz
10000hz
16000hz


ECC BCC Room 159 Left Ch1
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
25hz
40hz
63hz
100hz
160hz
250hz
400hz
630hz
1000hz
1600hz
2500hz
4000hz
6300hz
10000hz
16000hz


ECC BCC Room 159 Left Ch2
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
25hz
40hz
63hz
100hz
160hz
250hz
400hz
630hz
1000hz
1600hz
2500hz
4000hz
6300hz
10000hz
16000hz