

ZONDA 3 FX

NOISE MEASUREMENTS

AYRTON

1 Inspection instructions

This test was carried out in the semi-silencing room of Guangzhou Quality Supervision and Testing Institute (GQT) The indoor environmental noise was less than 5dB (A). The stage lamp was placed on the standard test table of the semi- silencing room.

When the stage lamp was turned on, the test microphone was 1m away from the four directions of the stage lamp to detect its sound pressure level.

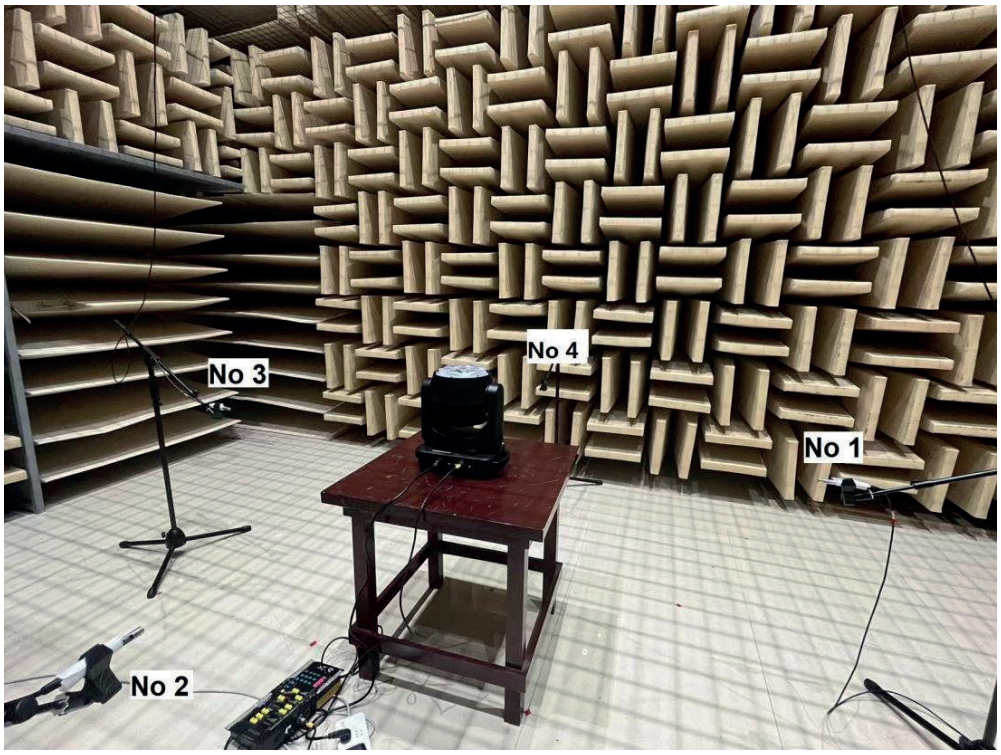

Figure 1 Test setup



Figure 2 Sample serial number information

2 Noise Detection Results of Stage Luminaires (The Auto mode)

Frequency (Hz)	Sound Pressure Level in Auto Mode (dB)							
	Static				Dynamic			
	No 1	No 2	No 3	No 4	No 1	No 2	No 3	No 4
63	15.3	18.6	19.4	14.0	22.4	21.9	22.7	17.2
80	13.4	15.9	17.3	14.7	24.7	26.5	24.8	26.8
100	18.6	18.3	22.2	17.0	29.3	32.4	31.6	32.1
125	13.9	15.1	13.9	15.8	24.0	24.6	25.7	23.1
160	10.3	13.7	11.8	14.9	19.6	22.4	22.5	20.2
200	15.8	20.8	17.5	21.8	28.9	32.0	30.5	30.6
250	15.7	17.8	17.0	20.6	36.1	37.1	36.5	35.6
315	17.9	19.0	19.3	23.9	38.2	38.4	38.8	37.8
400	21.2	20.6	21.9	22.8	37.2	38.9	39.6	37.3
500	18.7	19.6	19.0	29.8	33.6	35.4	34.7	34.5
630	19.9	23.2	24.3	29.3	37.4	39.8	38.8	37.6
800	18.4	18.9	20.1	25.5	30.9	30.7	33.0	30.2
1000	19.3	19.8	20.4	24.7	29.5	30.3	30.9	29.1
1250	21.3	23.4	23.5	25.2	29.8	31.4	31.8	29.5
1600	19.7	22.1	21.1	25.6	32.7	35.2	34.3	32.2
2000	14.2	17.6	15.9	22.7	31.1	32.3	33.2	31.9
2500	9.5	12.9	11.3	18.8	28.8	29.7	30.7	29.0
3150	8.4	11.8	10.1	17.7	26.2	27.4	27.3	26.0
4000	7.7	14.3	9.2	16.7	20.4	22.5	21.8	19.8
5000	8.3	9.6	8.4	12.3	21.5	21.4	22.3	20.5
6300	12.8	10.0	9.5	13.1	20.5	19.3	19.0	17.3
8000	11.7	9.4	9.7	14.3	19.1	17.1	17.8	16.9
10000	9.0	8.3	8.3	9.8	14.7	13.8	13.0	12.6
12500	7.0	9.0	8.1	8.0	18.9	18.8	17.5	17.6
16000	11.6	15.2	13.4	13.9	19.2	20.4	19.7	19.0
20000	31.4	36.0	33.7	34.6	35.6	37.4	37.3	36.5

Frequency (Hz)	Sound Pressure Level in Auto Mode (dB)							
	Static				Dynamic			
	No 1	No 2	No 3	No 4	No 1	No 2	No 3	No 4
Leq	37.0	39.4	39.4	40.2	48.5	48.8	50.0	49.8
A-weighted dB (A)	29.4	32.0	31.1	35.5	42.5	44.1	44.1	42.5
Average sound pressure level dB(A)	32.0				43.3			

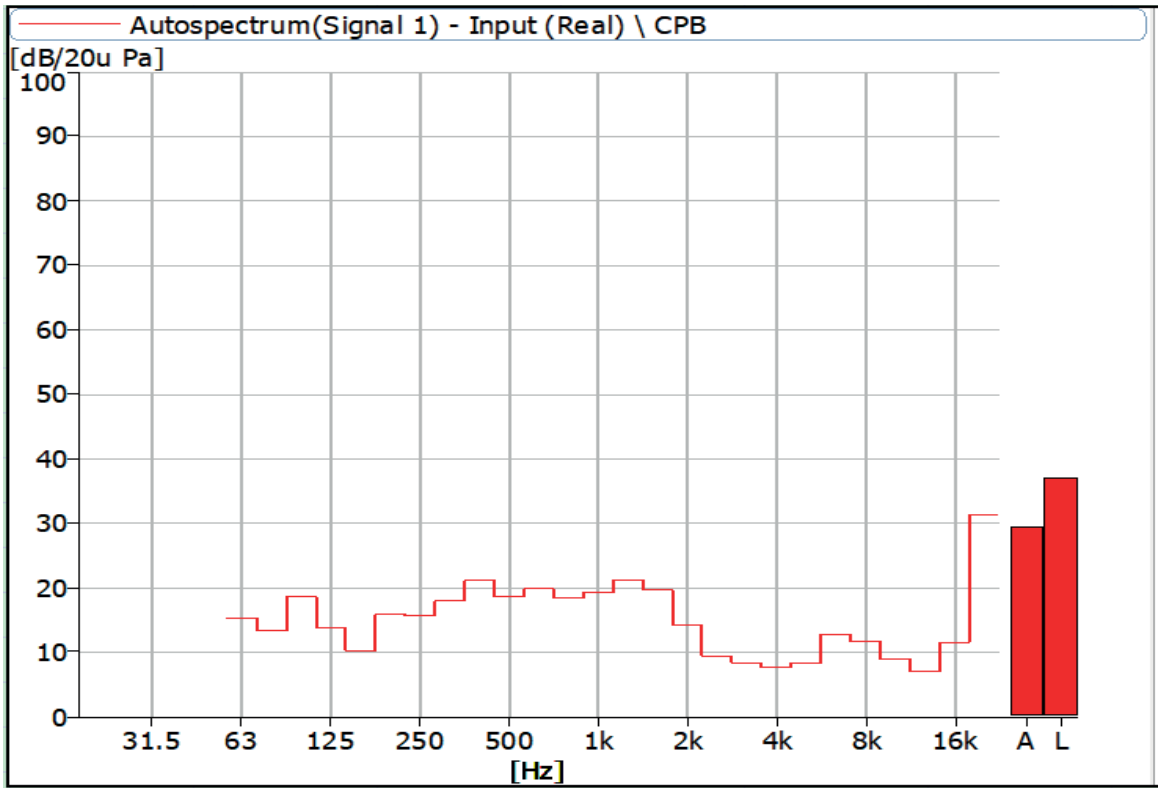

Figure 3 Noise Spectrum of Stage Luminaires (The Auto mode, Static, No 1)

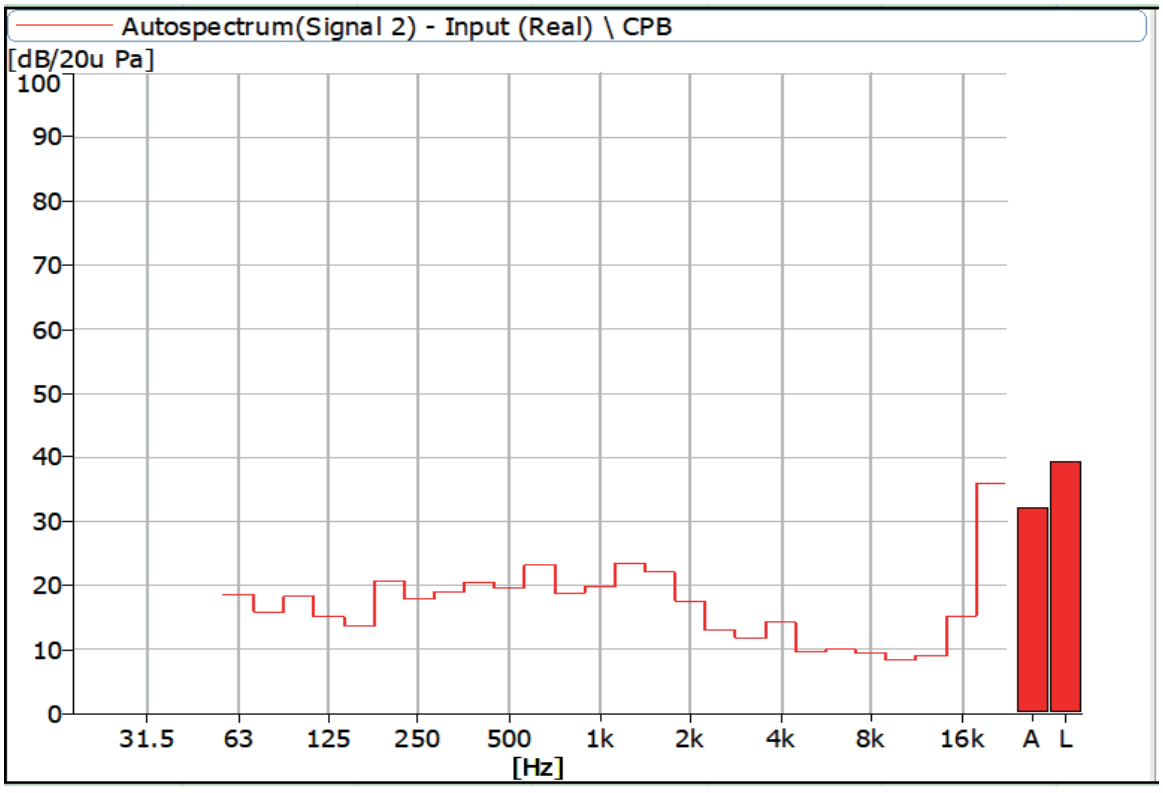

Figure 4 Noise Spectrum of Stage Luminaires (The Auto mode, Static, No 2)

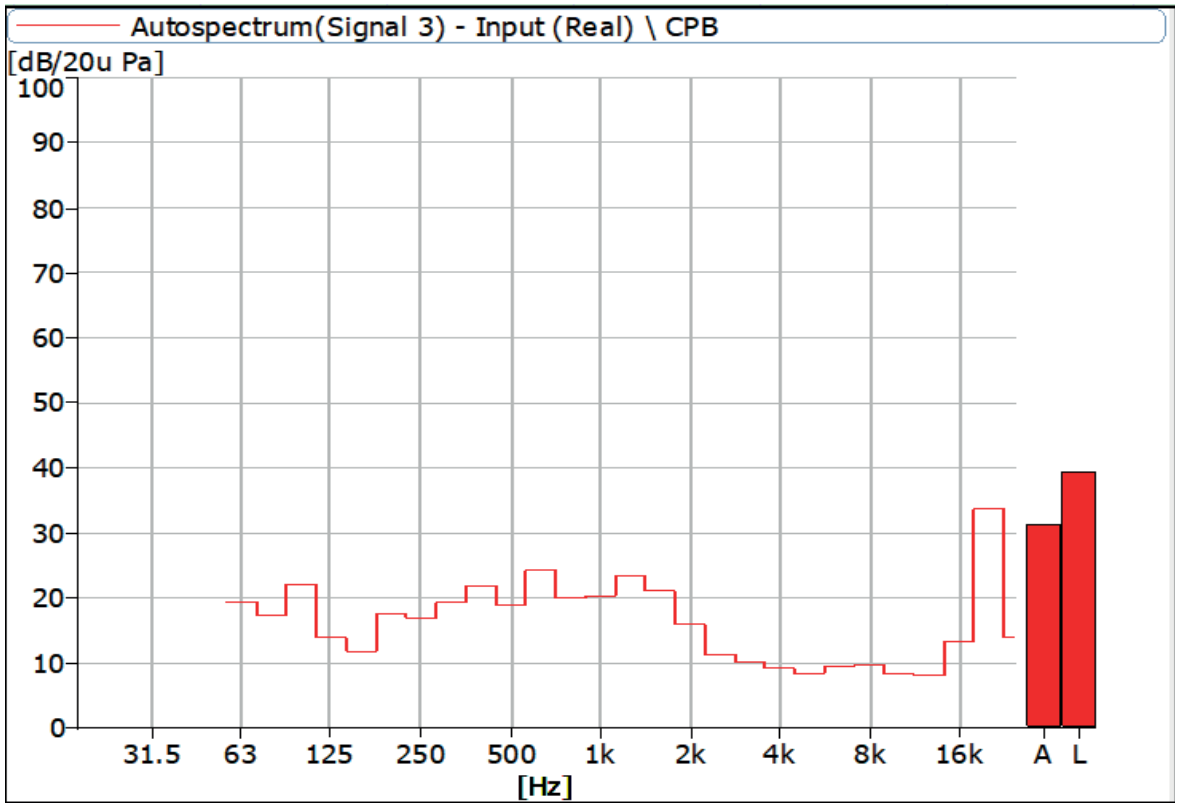

Figure 5 Noise Spectrum of Stage Luminaires (The Auto mode, Static, No 3)

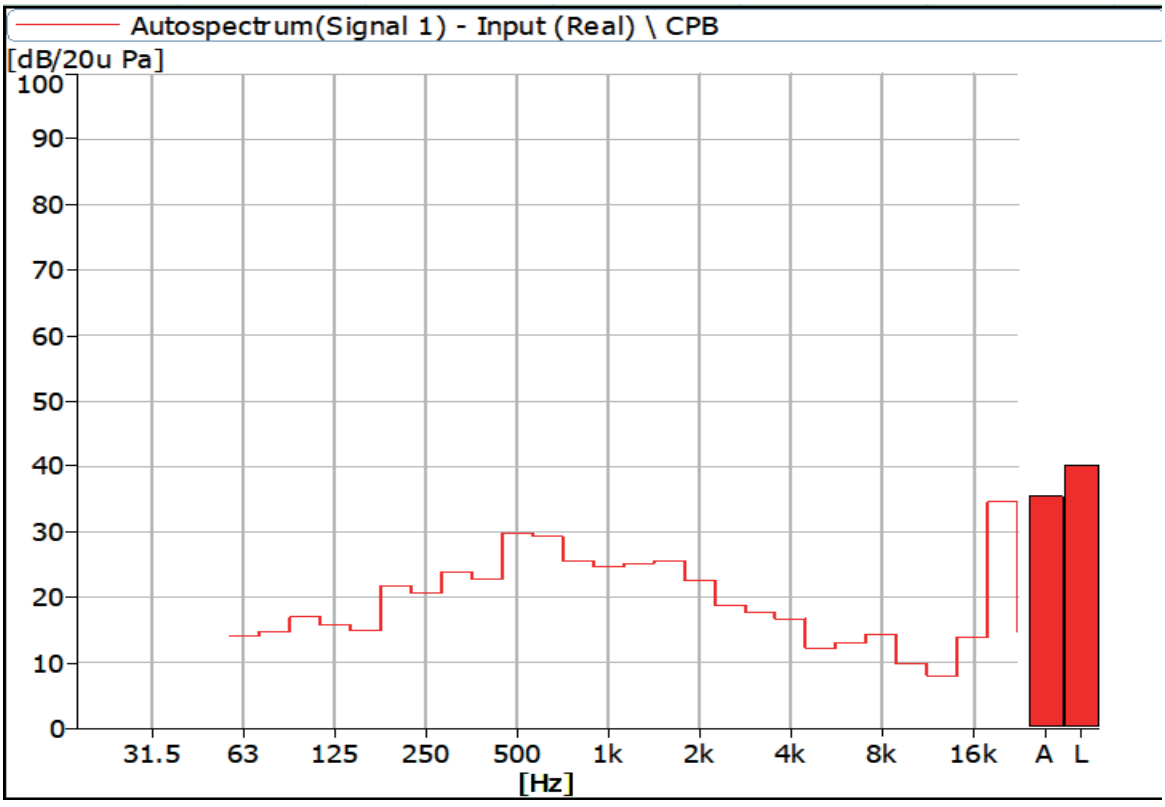

Figure 6 Noise Spectrum of Stage Luminaires (The Auto mode, Static, No 4)

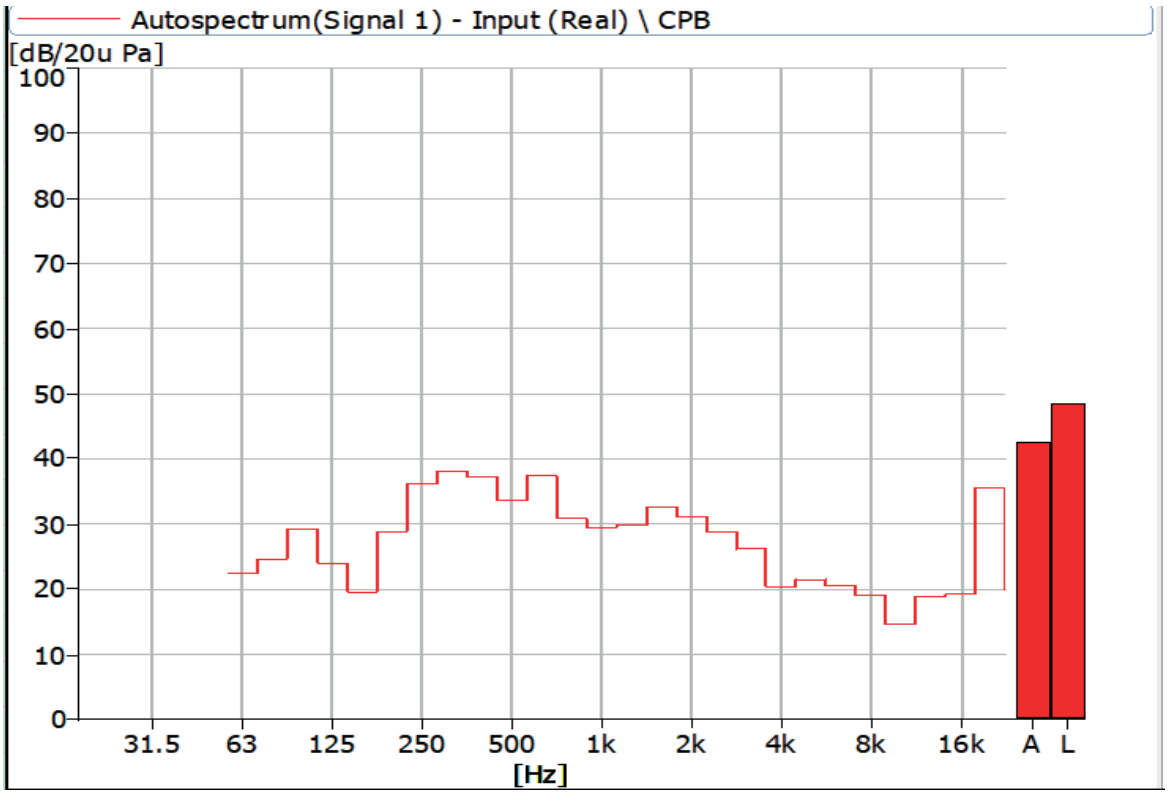

Figure 7 Noise Spectrum of Stage Luminaires (The Auto mode, Dynamic, No 1)

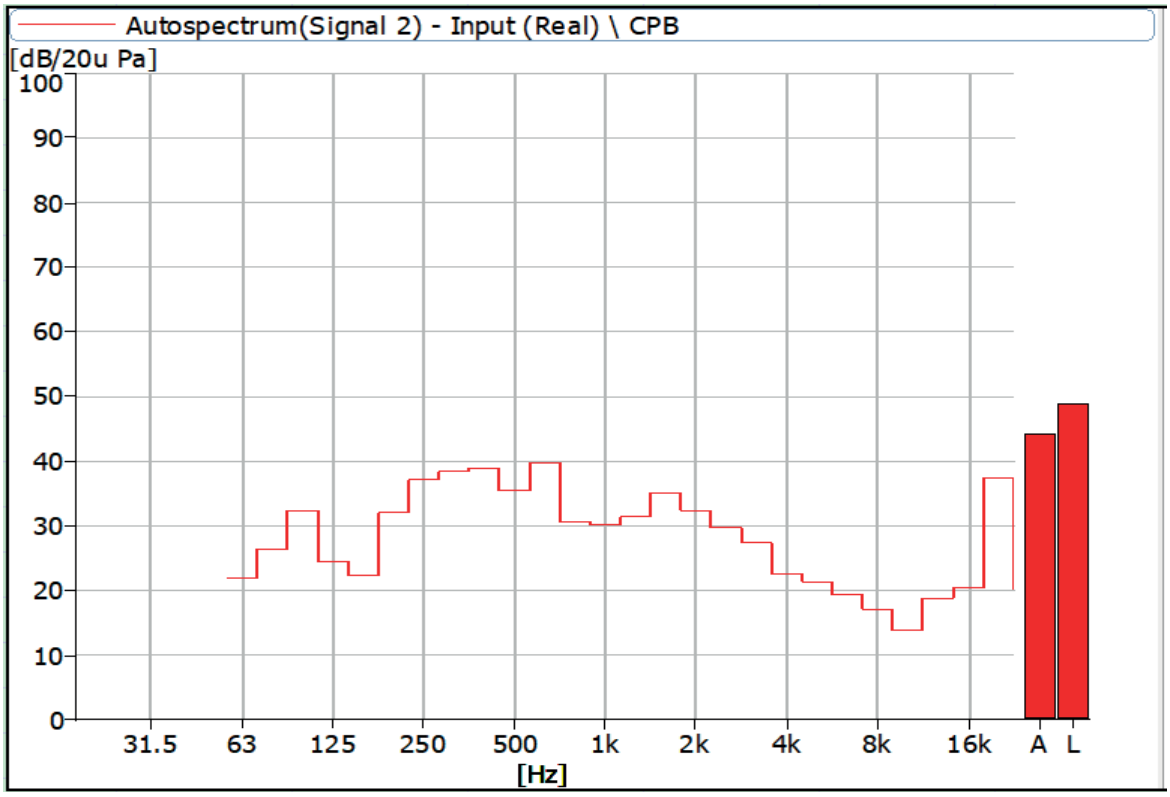

Figure 8 Noise Spectrum of Stage Luminaires (The Auto mode, Dynamic, No 2)

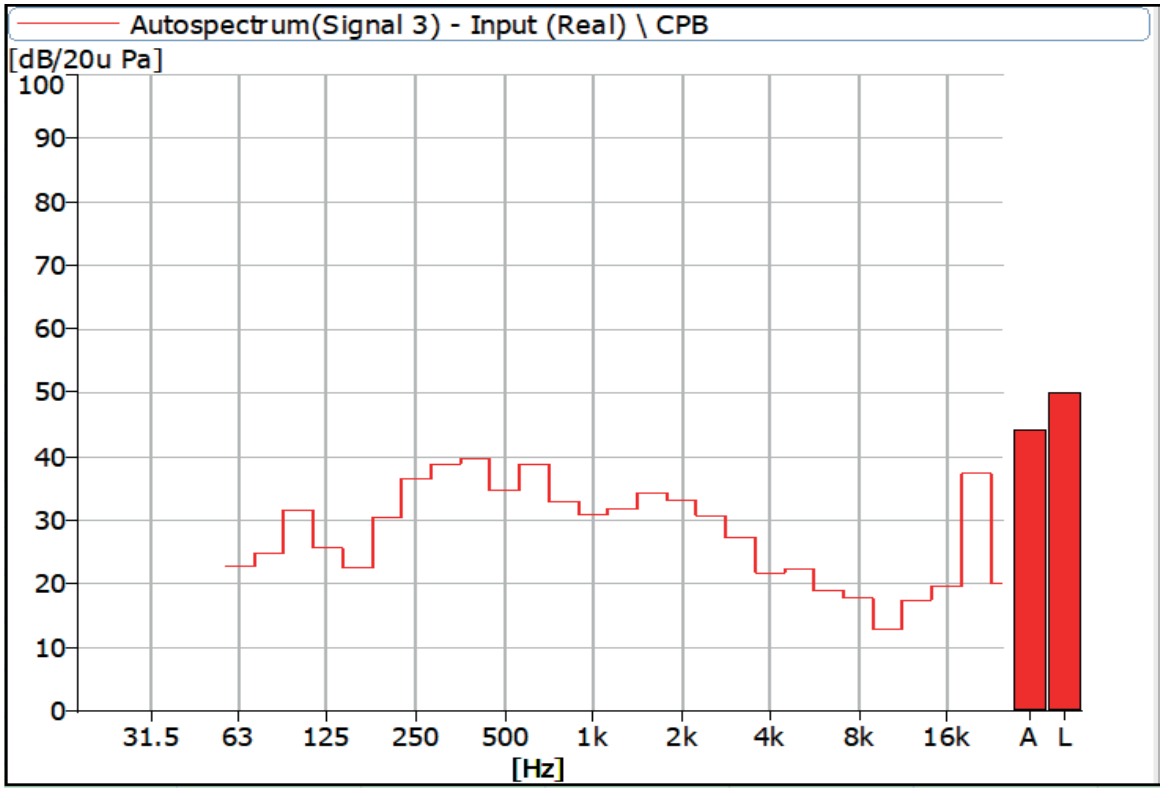

Figure 9 Noise Spectrum of Stage Luminaires (The Auto mode, Dynamic, No 3)

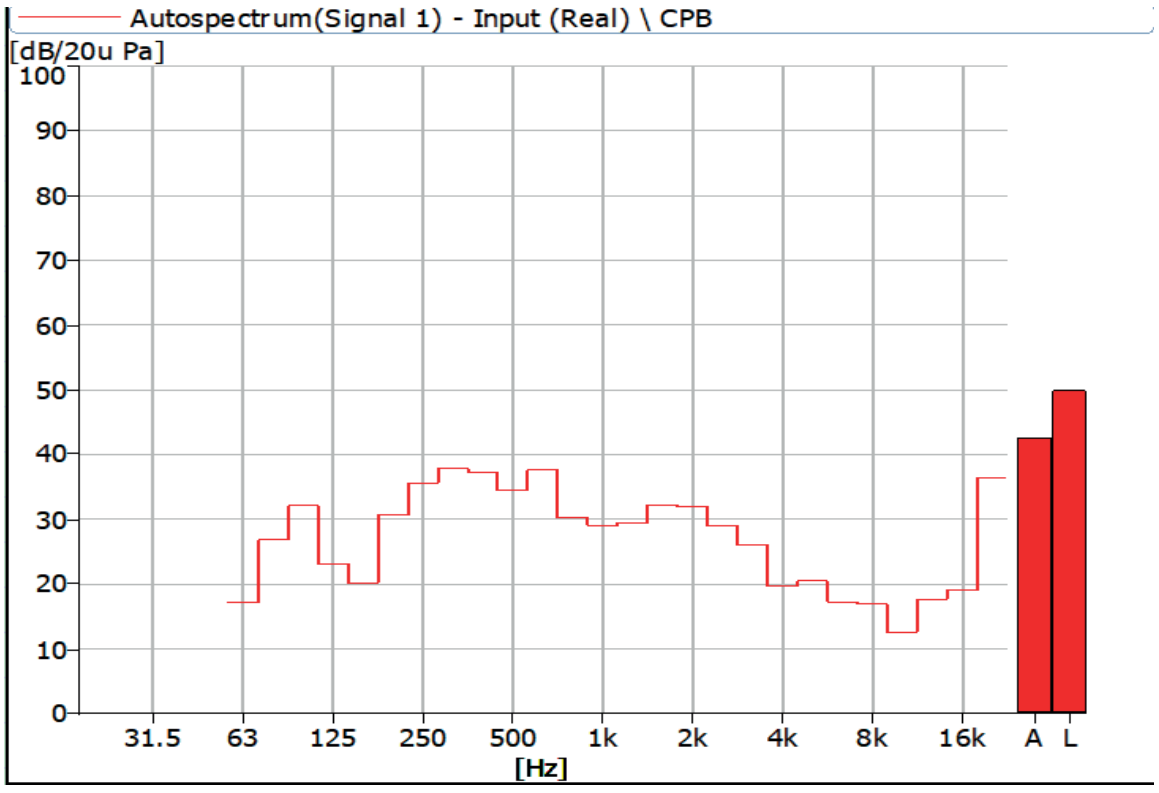

Figure 10 Noise Spectrum of Stage Luminaires (The Auto mode, Dynamic, No 4)

3 Noise Detection Results of Stage Luminaires (The Stage mode)

Frequency (Hz)	Sound Pressure Level in Stage Mode (dB)							
	Static				Dynamic			
	No 1	No 2	No 3	No 4	No 1	No 2	No 3	No 4
63	14.2	16.8	17.3	15.1	17.2	22.4	23.6	15.9
80	15.0	16.9	17.9	15.6	26.4	28.1	25.9	27.9
100	23.6	24.8	27.3	20.2	29.6	33.8	33.6	33.4
125	18.2	17.9	22.7	24.9	27.1	27.3	28.7	26.4
160	14.6	17.8	17.1	16.9	20.8	23.7	24.1	21.6
200	18.4	21.3	18.4	19.5	29.1	31.9	30.7	30.3
250	26.8	30.9	25.9	29.0	36.4	38.5	38.0	36.9
315	26.7	25.8	27.9	26.3	38.6	40.3	40.5	39.3
400	27.0	27.0	29.1	26.4	37.0	38.9	39.5	37.1
500	29.3	31.1	29.8	32.3	35.2	36.8	36.2	35.9
630	30.0	31.5	31.8	33.3	38.5	40.8	39.9	38.9
800	29.7	27.9	31.7	30.4	34.4	33.1	36.7	32.9
1000	27.6	28.2	29.3	29.7	32.2	32.7	33.6	31.8
1250	28.8	30.6	31.0	29.5	32.7	34.2	34.7	32.6
1600	28.7	30.0	29.8	30.2	34.2	36.0	35.7	33.6
2000	25.0	26.5	27.0	27.7	32.6	33.1	34.6	32.7
2500	22.3	22.6	24.4	24.1	32.3	32.2	33.8	31.2
3150	19.4	22.0	21.8	23.6	28.0	28.7	29.3	27.2
4000	16.2	21.1	18.0	21.6	24.4	25.8	25.5	22.8
5000	15.7	15.7	16.4	17.2	24.7	24.0	25.6	23.2
6300	19.4	15.9	16.7	16.7	22.6	21.7	22.1	19.6
8000	17.8	14.1	15.8	15.7	20.2	18.9	20.2	18.4
10000	10.7	9.6	11.2	10.9	14.4	15.0	15.3	13.6
12500	8.3	9.2	9.3	8.5	16.4	17.0	16.8	15.9
16000	8.9	9.9	12.9	12.9	19.0	21.1	20.6	19.7
20000	23.0	25.7	32.9	33.2	35.9	37.8	37.8	36.8

Frequency (Hz)	Sound Pressure Level in Stage Mode (dB)							
	Static				Dynamic			
	No 1	No 2	No 3	No 4	No 1	No 2	No 3	No 4
Leq	40.2	41.2	42.3	42.2	48.2	47.9	52.1	50.7
A-weighted dB (A)	37.4	38.5	39.2	39.4	44.2	44.0	45.5	45.9
Average sound pressure level dB(A)	38.6				44.9			

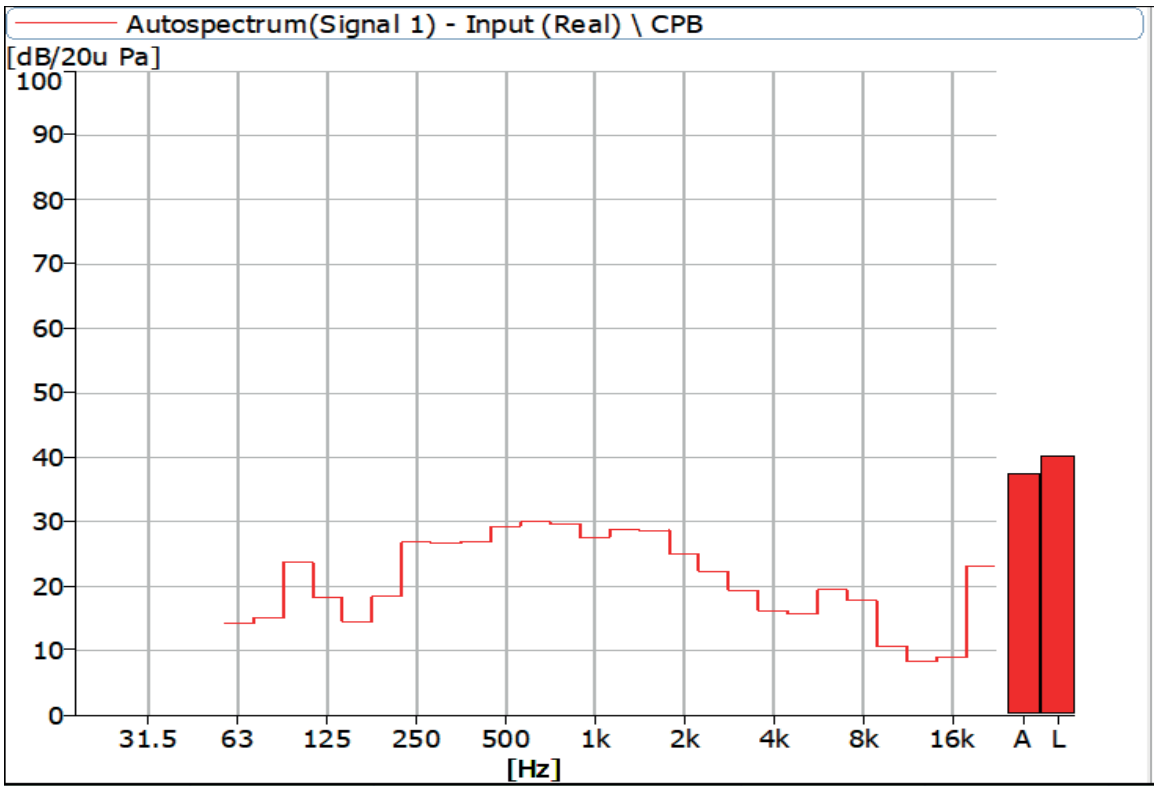

Figure 11 Noise Spectrum of Stage Luminaires (The Stage mode, Static, No 1)

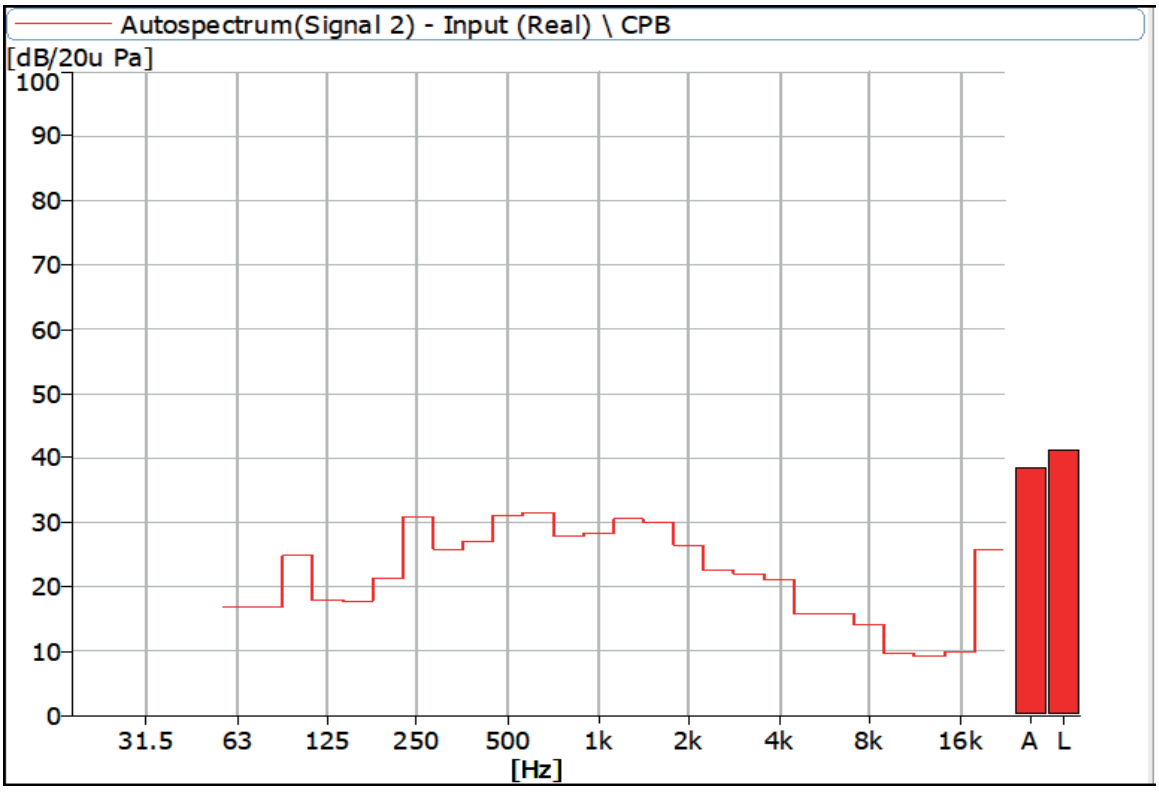

Figure 12 Noise Spectrum of Stage Luminaires (The Stage mode, Static, No 2)

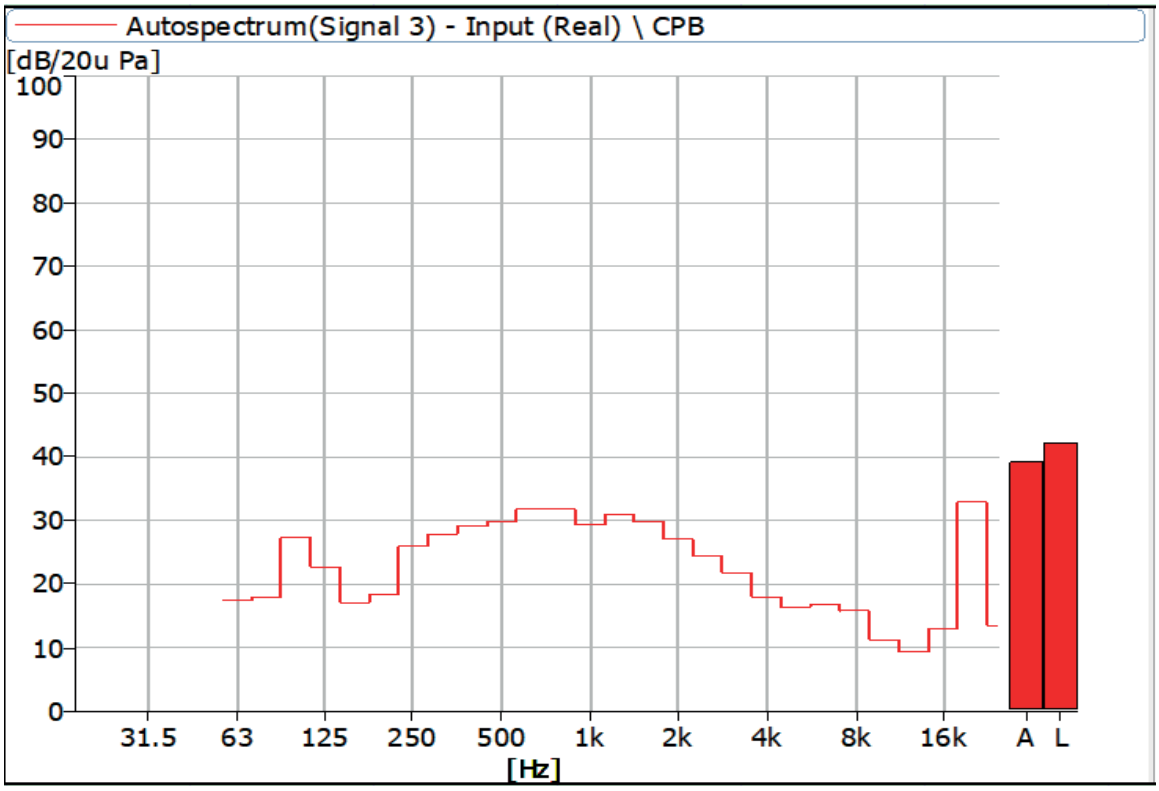

Figure 13 Noise Spectrum of Stage Luminaires (The Stage mode, Static, No 3)

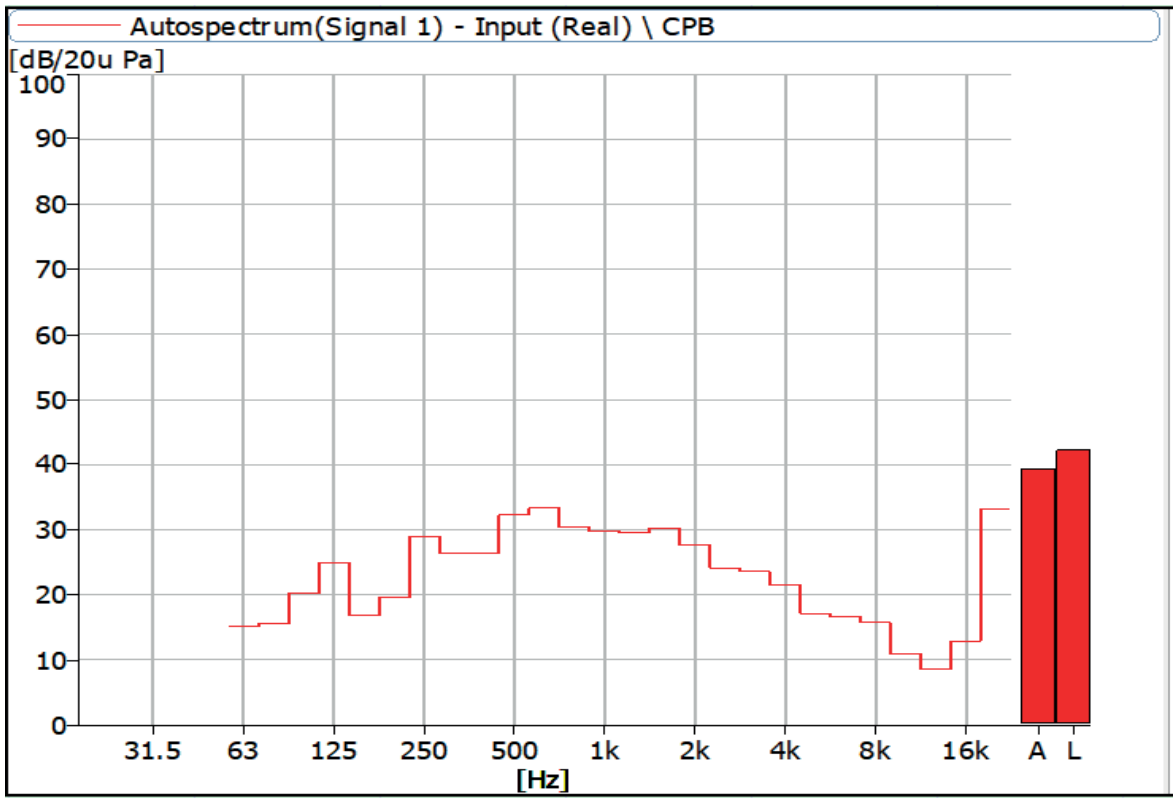

Figure 14 Noise Spectrum of Stage Luminaires (The Stage mode, Static, No 4)

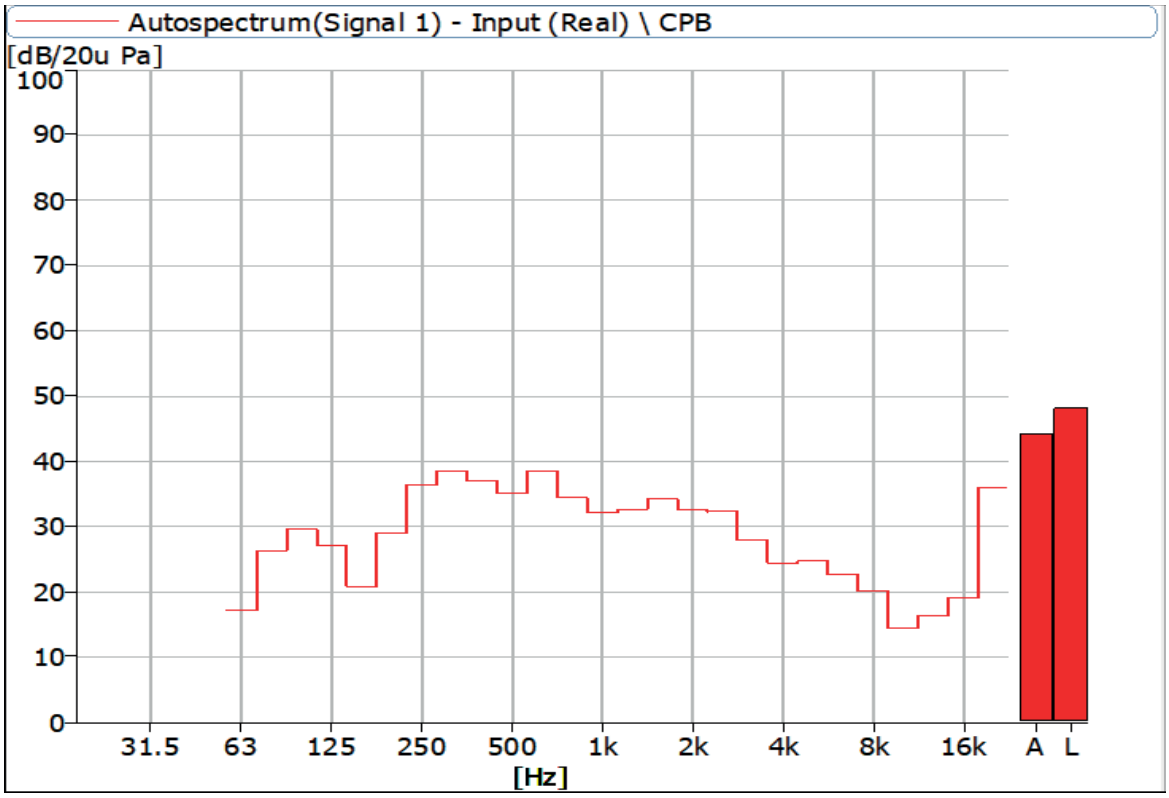

Figure 15 Noise Spectrum of Stage Luminaires (The Stage mode, Dynamic, No 1)

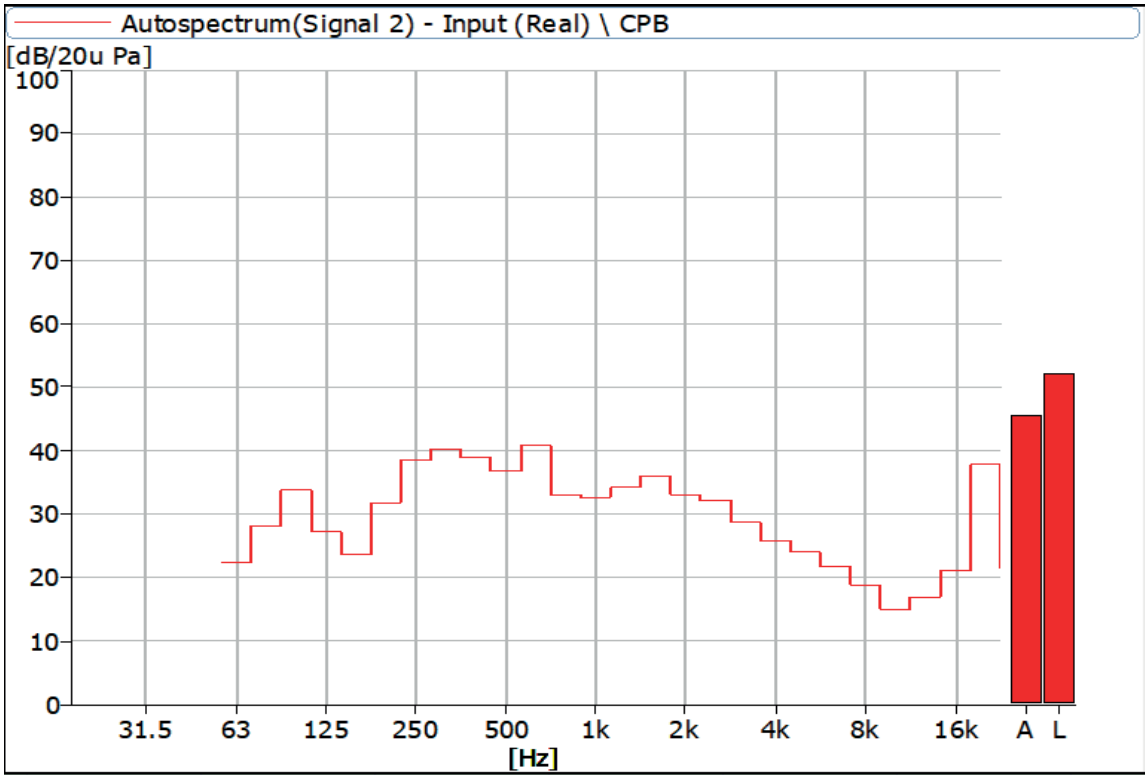

Figure 16 Noise Spectrum of Stage Luminaires (The Stage mode, Dynamic, No 2)

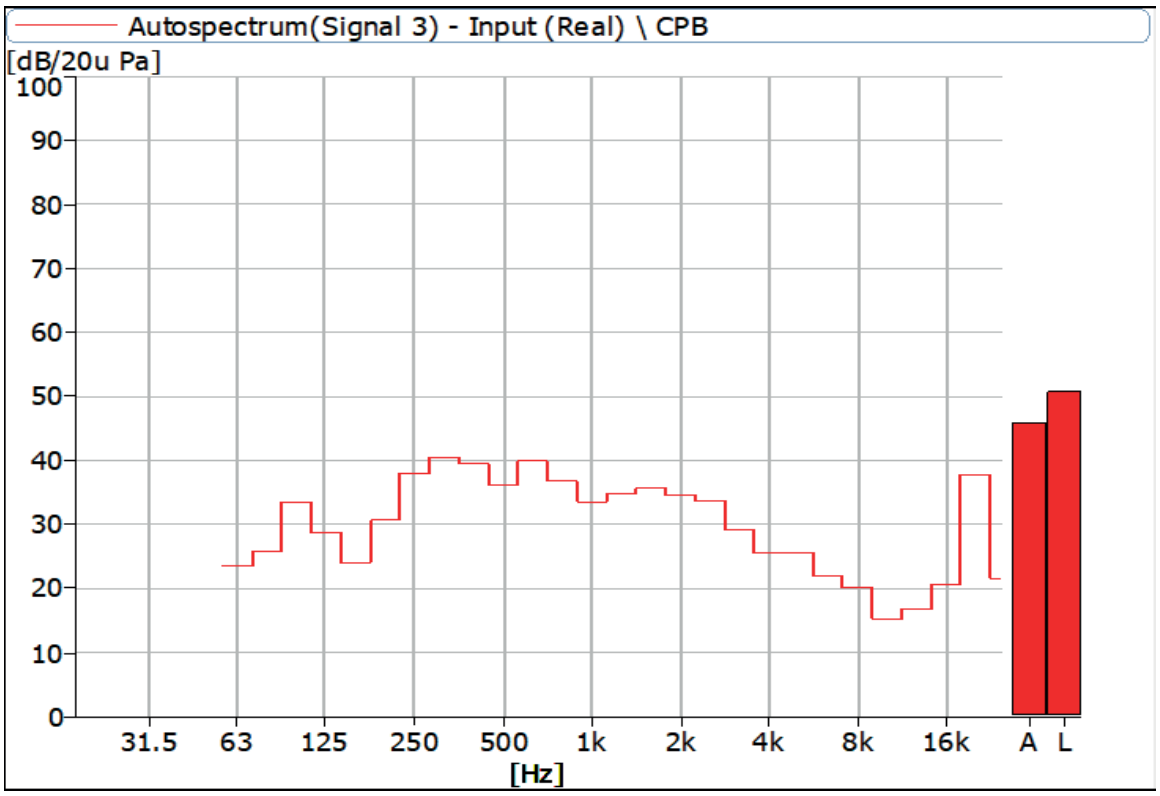

Figure 17 Noise Spectrum of Stage Luminaires (The Stage mode, Dynamic, No 3)

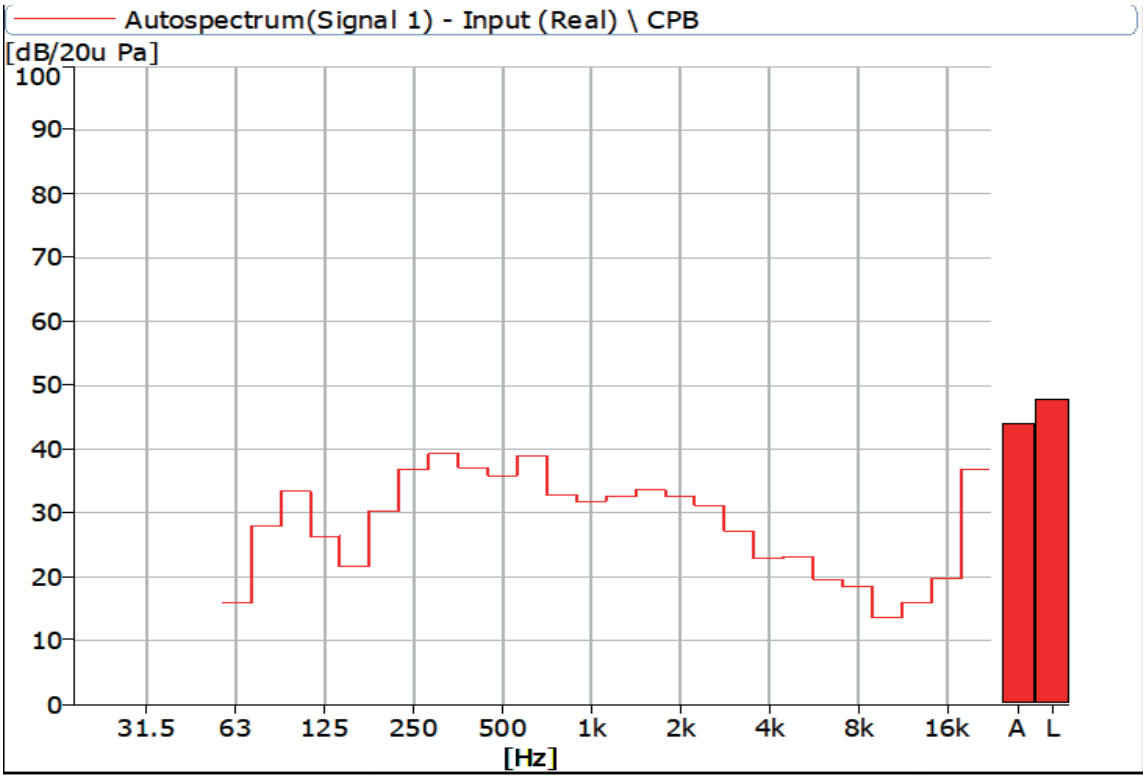

Figure 18 Noise Spectrum of Stage Luminaires (The Stage mode, Dynamic, No 4)

4 Noise Detection Results of Stage Luminaires (The Silence mode)

Frequency (Hz)	Sound Pressure Level in Silence Mode (dB)							
	Static				Dynamic			
	No 1	No 2	No 3	No 4	No 1	No 2	No 3	No 4
63	12.5	14.8	16.3	13.4	14.5	18.3	19.6	16.4
80	13.8	15.8	17.5	16.7	25.1	26.7	25.0	26.9
100	20.1	19.2	24.3	14.7	30.0	33.6	33.1	33.3
125	15.5	15.7	12.5	11.5	23.3	24.6	25.6	23.1
160	15.6	15.4	9.8	9.5	18.8	22.1	22.0	20.0
200	11.9	12.8	12.1	12.0	28.2	31.2	29.5	29.6
250	16.4	16.9	18.1	19.8	35.7	37.5	37.0	36.0
315	20.6	18.8	21.5	23.3	38.3	39.2	39.4	38.5
400	18.0	18.6	20.7	19.7	36.5	38.1	38.5	36.1
500	17.7	19.5	18.4	25.2	32.6	35.1	34.3	34.2
630	17.2	19.9	20.3	23.8	36.7	39.1	38.3	37.1
800	17.8	15.4	20.3	19.0	28.1	28.9	29.9	28.4
1000	14.0	14.6	15.8	18.5	28.8	29.4	30.1	28.1
1250	13.9	15.6	16.1	15.8	30.4	32.2	32.4	30.5
1600	13.6	15.1	15.2	17.3	32.3	34.4	34.0	31.7
2000	9.7	11.0	12.3	15.2	30.6	31.9	32.6	31.5
2500	8.9	9.2	12.0	12.8	29.3	30.8	31.6	29.9
3150	7.1	9.6	9.3	10.8	25.4	26.1	26.0	25.5
4000	8.7	13.3	9.7	12.2	19.2	21.7	20.7	19.5
5000	11.8	10.5	9.8	9.4	21.9	22.6	23.3	22.0
6300	18.0	13.1	12.2	11.9	20.1	19.6	18.5	17.5
8000	16.4	12.6	12.8	13.4	18.2	17.6	17.6	17.1
10000	9.6	9.6	9.6	9.2	12.0	14.0	12.7	12.7
12500	7.7	9.8	9.2	9.4	13.9	15.6	14.5	14.5
16000	7.4	14.1	12.9	14.3	18.7	20.8	20.3	19.5
20000	17.5	34.4	33.0	35.1	36.1	37.6	37.7	36.6

Frequency (Hz)	Sound Pressure Level in Silence Mode (dB)							
	Static				Dynamic			
	No 1	No 2	No 3	No 4	No 1	No 2	No 3	No 4
Leq	35.9	38.4	38.8	39.3	46.2	48.7	47.8	47.9
A-weighted dB (A)	26.2	29.0	29.0	31.0	42.1	43.7	43.7	42.3
Average sound pressure level dB(A)	28.8				43.0			

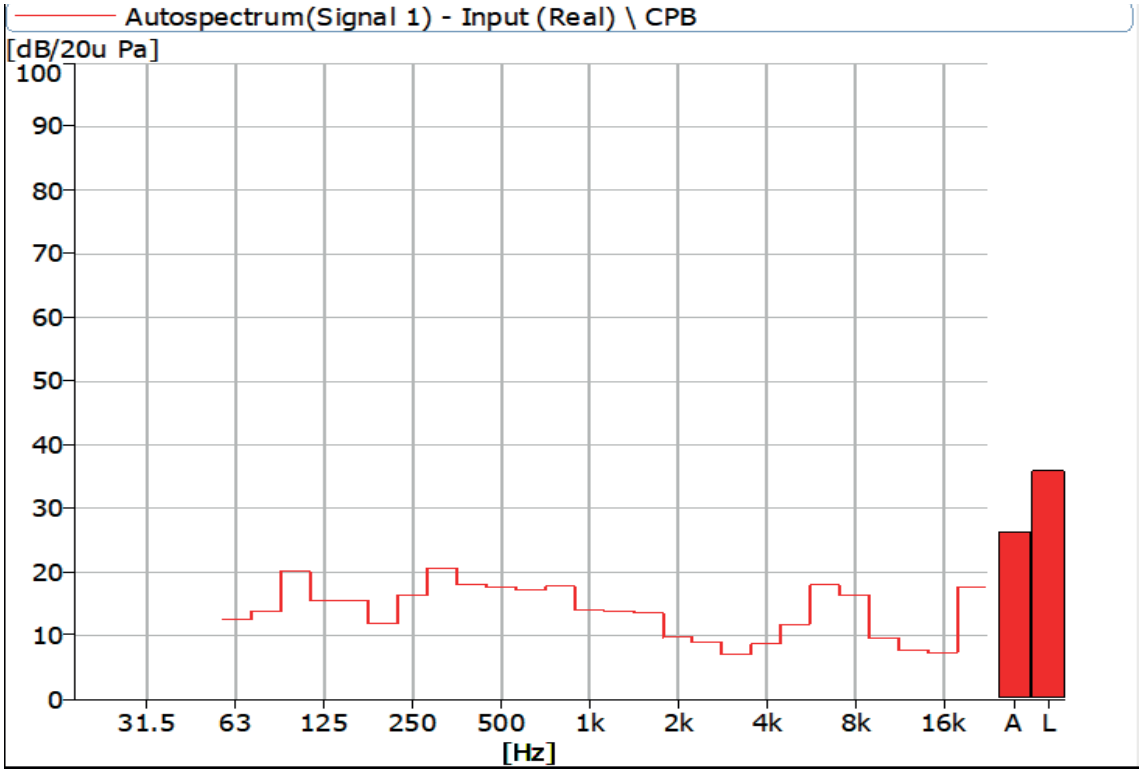

Figure 19 Noise Spectrum of Stage Luminaires (The Silence mode, Static, No 1)

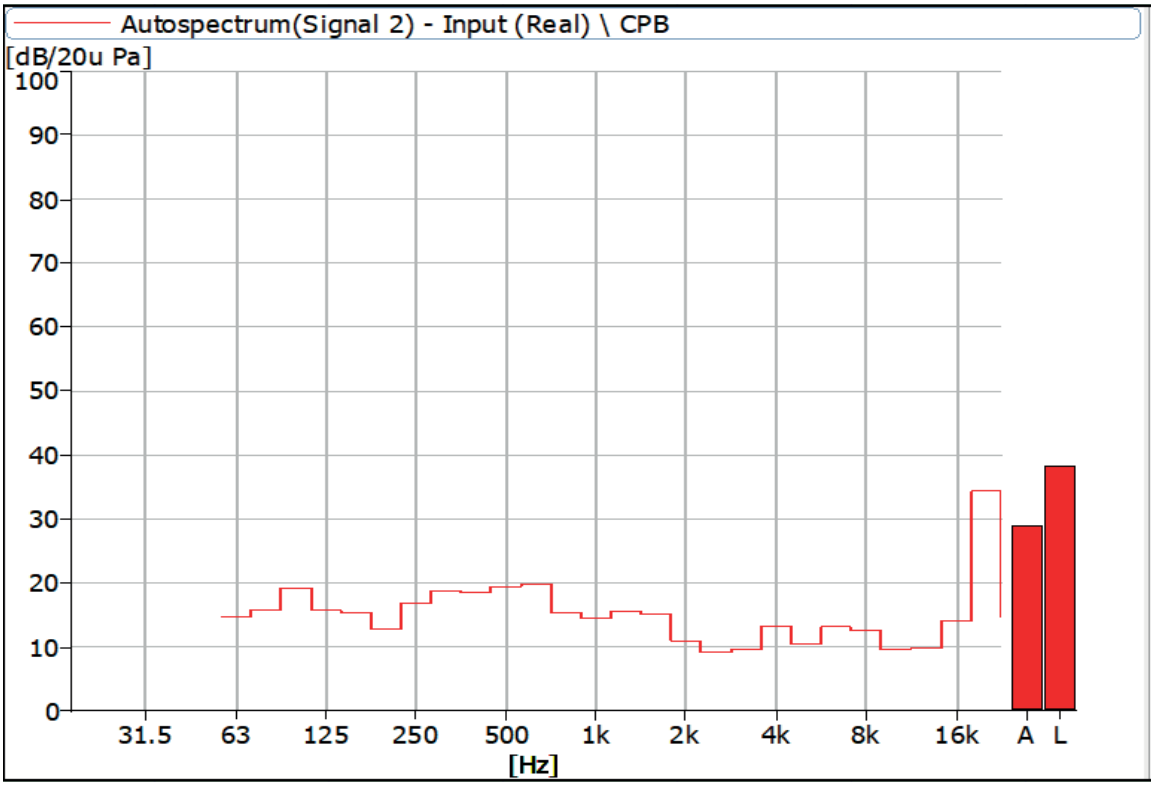

Figure 20 Noise Spectrum of Stage Luminaires (The Silence mode, Static, No 2)

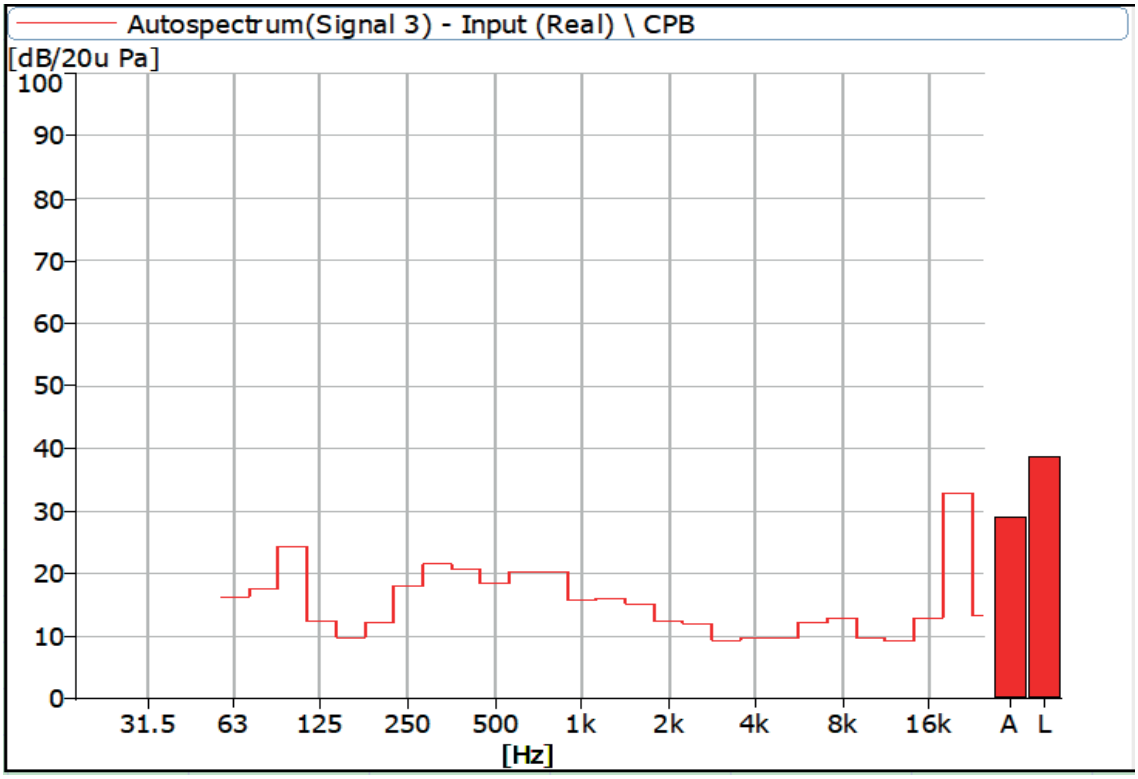

Figure 21 Noise Spectrum of Stage Luminaires (The Silence mode, Static, No 3)

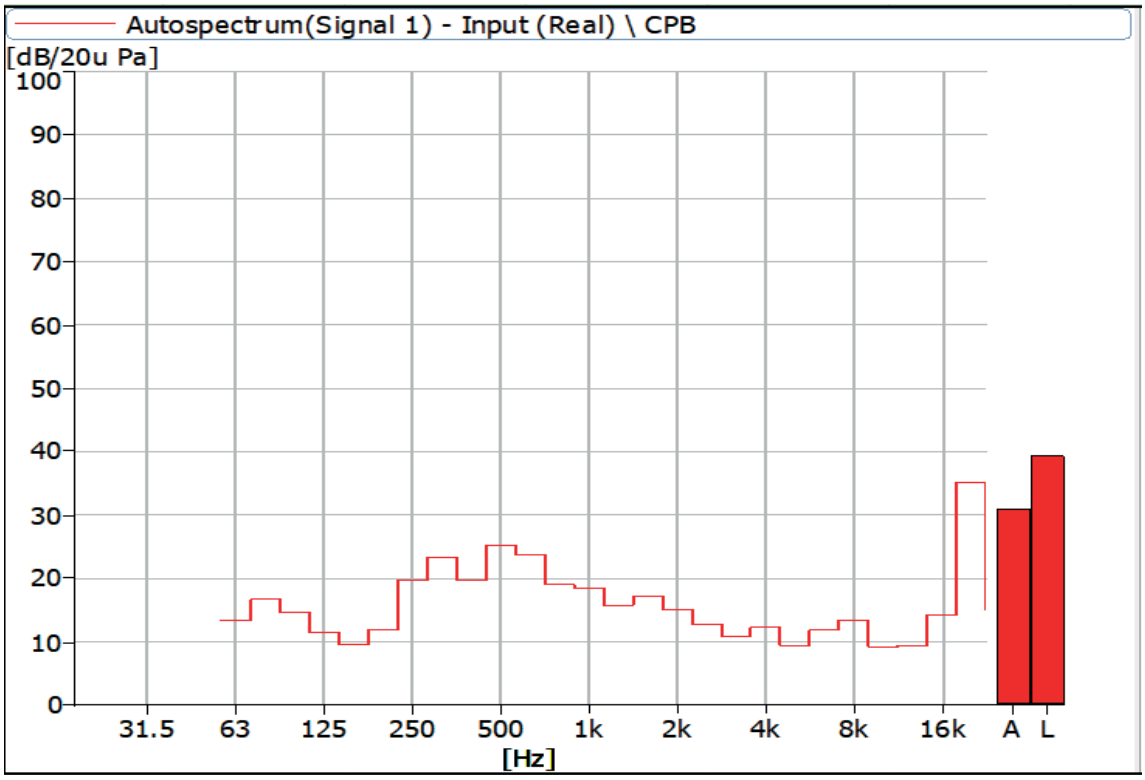

Figure 22 Noise Spectrum of Stage Luminaires (The Silence mode, Static, No 4)

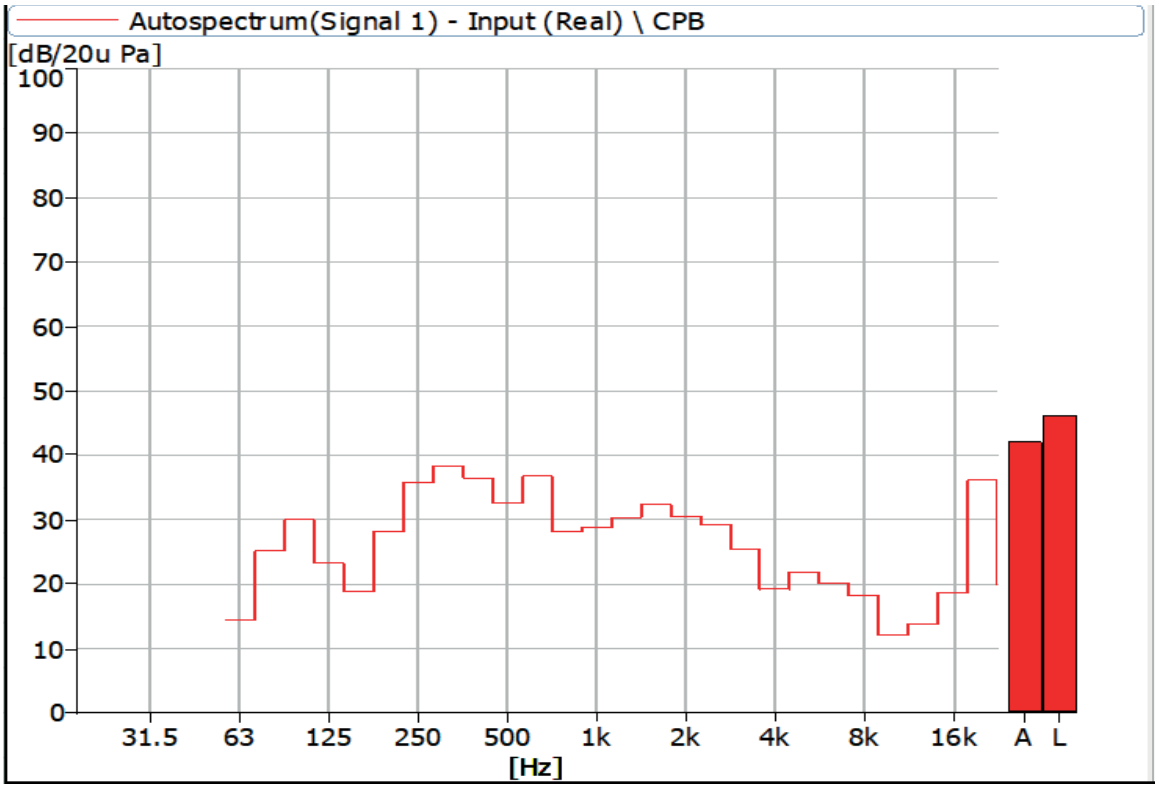

Figure 23 Noise Spectrum of Stage Luminaires (The Silence mode, Dynamic, No 1)

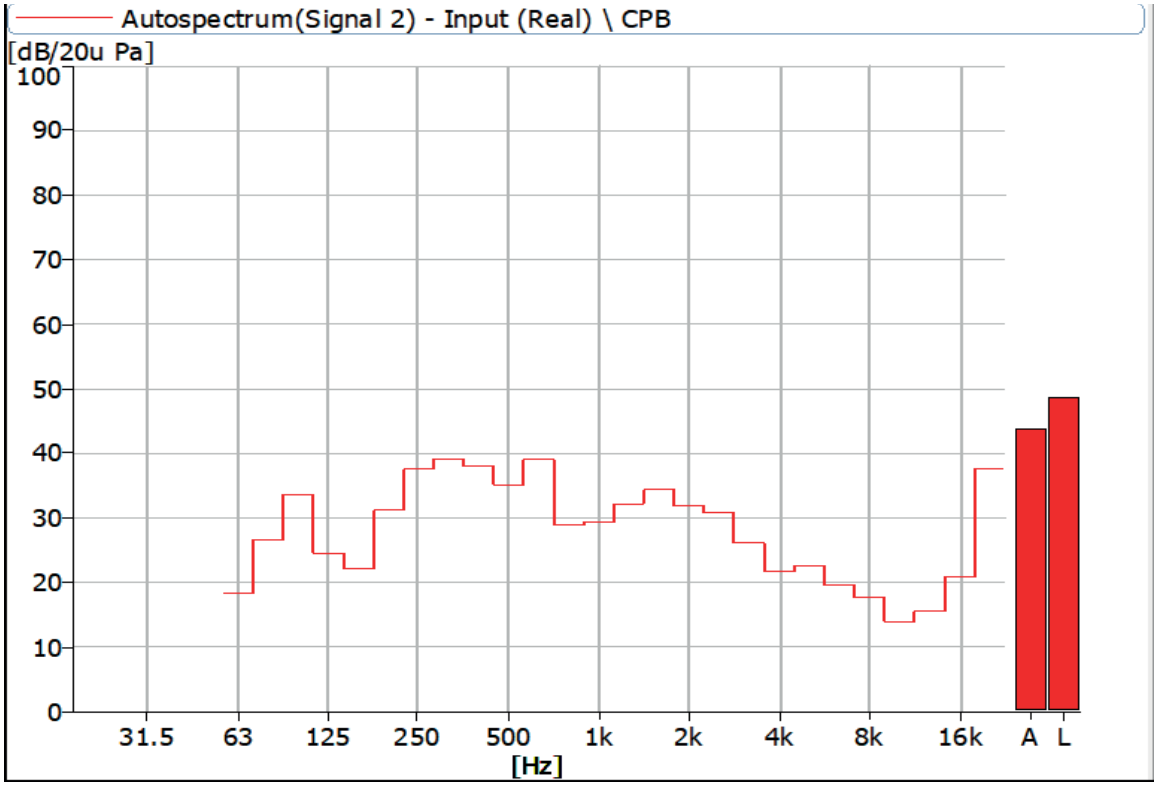

Figure 24 Noise Spectrum of Stage Luminaires (The Silence mode, Dynamic, No 2)

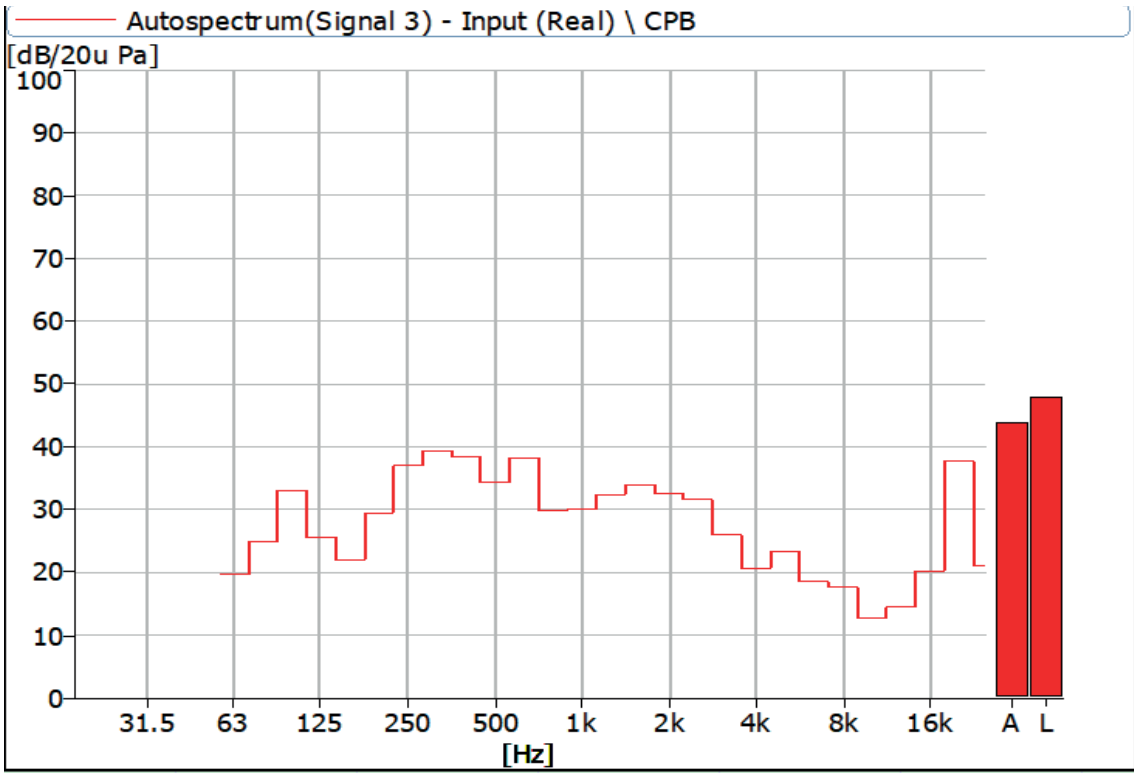

Figure 25 Noise Spectrum of Stage Luminaires (The Silence mode, Dynamic, No 3)

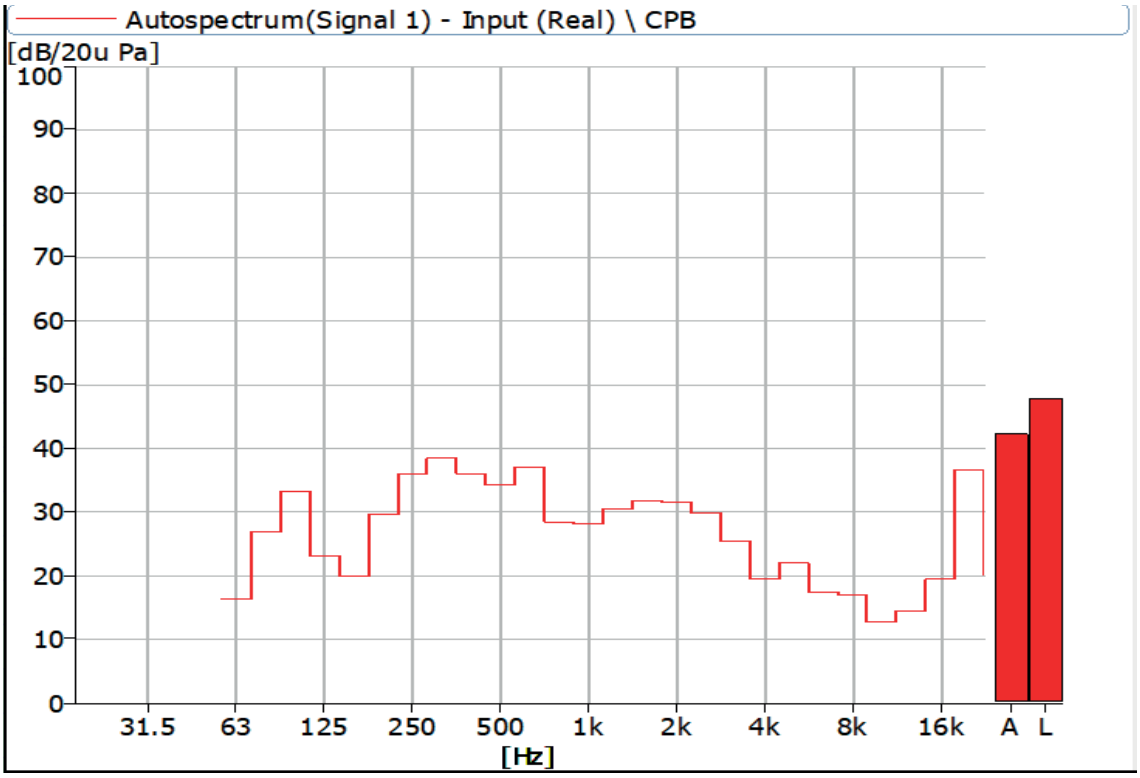

Figure 26 Noise Spectrum of Stage Luminaires (The Silence mode, Dynamic, No 4)

4 Noise Detection Results of Stage Luminaires (The Super Silence mode)

Frequency (Hz)	Sound Pressure Level in Super Silence Mode (dB)							
	Static				Dynamic			
	No 1	No 2	No 3	No 4	No 1	No 2	No 3	No 4
63	12.4	14.5	15.8	12.5	18.7	19.4	20.3	14.9
80	12.0	14.5	16.5	13.8	22.4	24.3	23.0	24.2
100	21.0	20.1	25.5	13.6	27.0	32.0	31.7	31.5
125	10.5	11.4	10.7	10.5	22.2	23.0	24.2	21.6
160	7.0	9.1	8.7	7.4	18.6	20.8	20.6	18.6
200	8.0	9.2	8.0	9.1	27.6	30.1	28.3	28.5
250	12.0	13.2	12.3	12.9	35.8	37.7	37.1	36.1
315	8.8	10.2	10.2	16.6	37.3	38.7	39.0	38.5
400	5.8	6.3	7.8	13.8	35.5	37.5	38.1	36.3
500	5.9	7.5	7.3	16.9	31.9	34.1	33.4	33.7
630	5.9	9.5	8.6	16.1	35.2	37.9	37.0	36.4
800	4.1	4.4	6.3	11.9	26.8	28.1	28.6	28.0
1000	3.7	4.2	4.7	10.3	27.9	28.4	29.4	27.1
1250	12.0	6.7	10.4	6.8	28.9	29.4	30.7	27.5
1600	5.0	6.8	6.5	9.1	32.1	34.2	34.0	31.6
2000	4.2	5.5	5.7	7.4	30.6	31.9	32.2	31.4
2500	6.5	5.9	7.2	6.5	27.6	27.6	28.8	27.2
3150	5.6	7.4	6.9	6.6	25.0	25.9	25.5	24.8
4000	7.5	9.9	7.9	8.6	17.8	20.8	19.4	19.0
5000	9.9	8.8	8.3	8.0	19.7	20.7	21.1	19.8
6300	14.4	11.0	9.7	11.3	18.8	18.2	17.1	16.3
8000	13.0	10.5	10.2	11.8	17.4	16.2	16.1	15.4
10000	9.1	8.4	8.2	9.5	11.5	13.6	12.2	12.5
12500	7.7	11.3	9.1	9.1	13.0	14.2	13.0	13.1
16000	8.1	16.4	13.3	15.3	18.2	20.2	19.6	18.8
20000	24.1	37.4	33.4	36.3	36.1	37.3	37.4	36.2

Frequency (Hz)	Sound Pressure Level in Super Silence Mode (dB)							
	Static				Dynamic			
	No 1	No 2	No 3	No 4	No 1	No 2	No 3	No 4
Leq	35.4	39.5	38.3	39.6	46.3	48.1	47.7	46.3
A-weighted dB (A)	22.1	29.3	26.1	28.8	41.2	42.9	42.9	41.7
Average sound pressure level dB(A)	26.6				42.2			

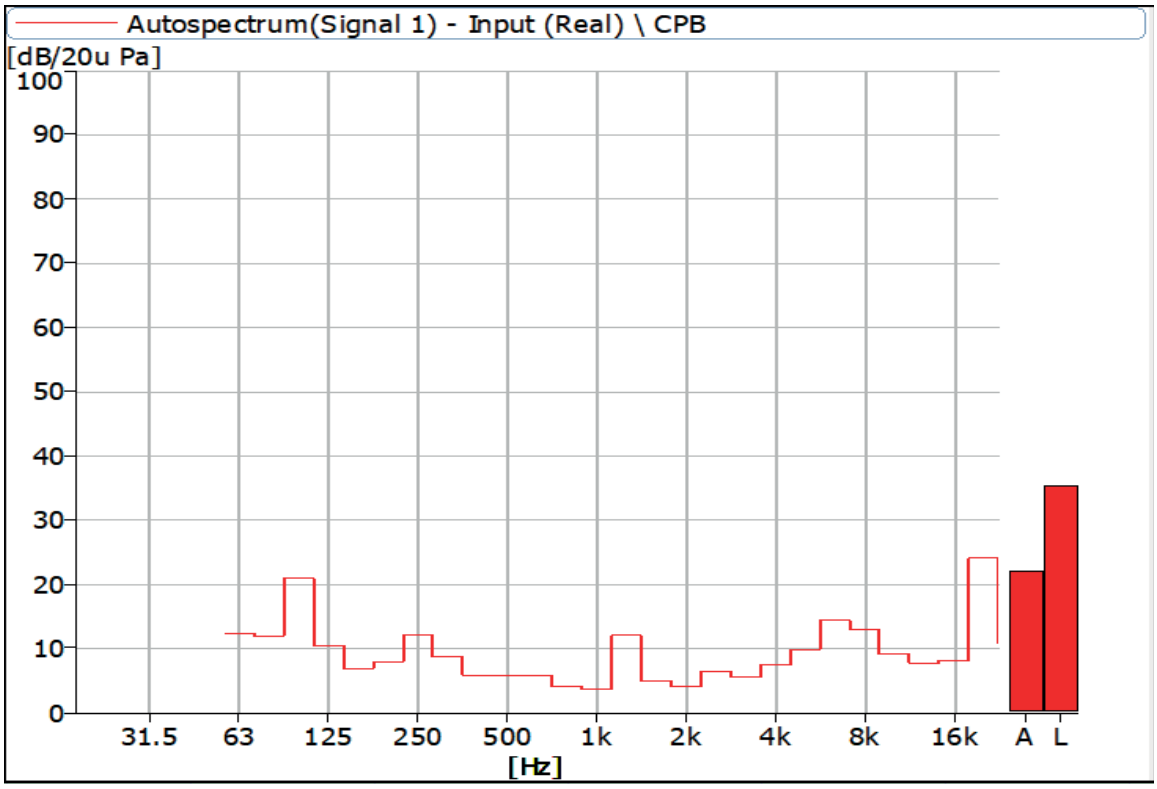

Figure 27 Noise Spectrum of Stage Luminaires (The Super Silence mode, Static, No 1)

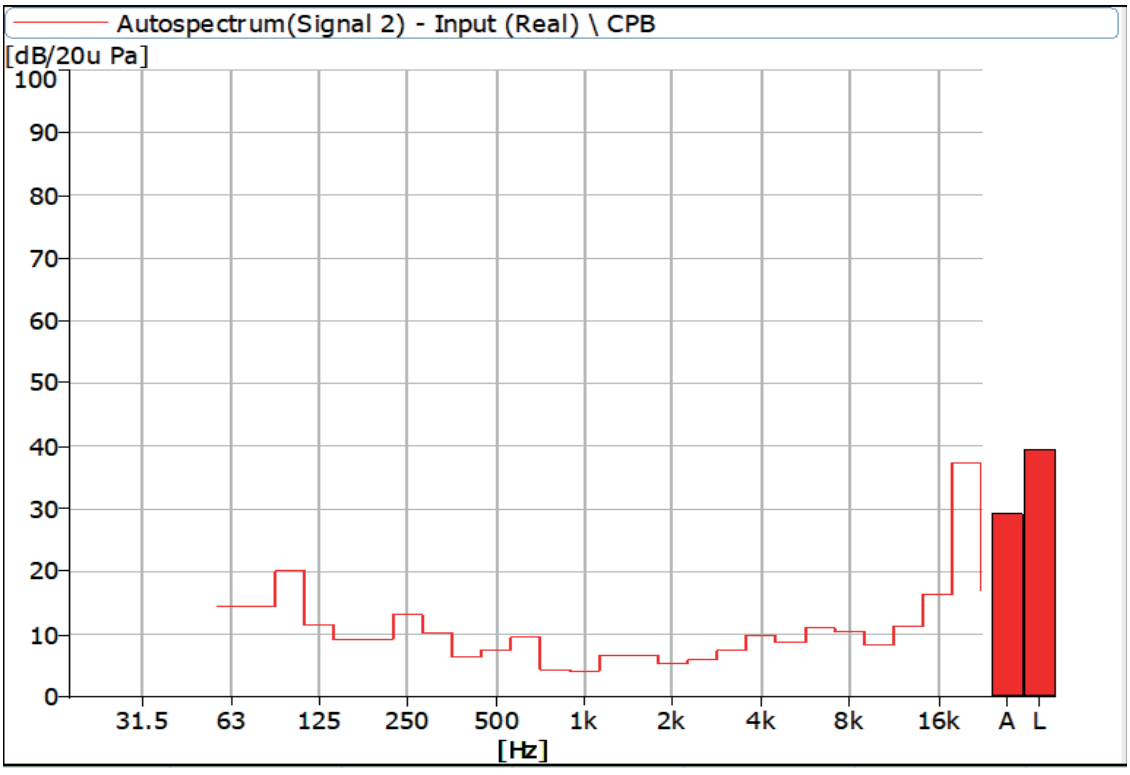

Figure 28 Noise Spectrum of Stage Luminaires (The Super Silence mode, Static, No 2)

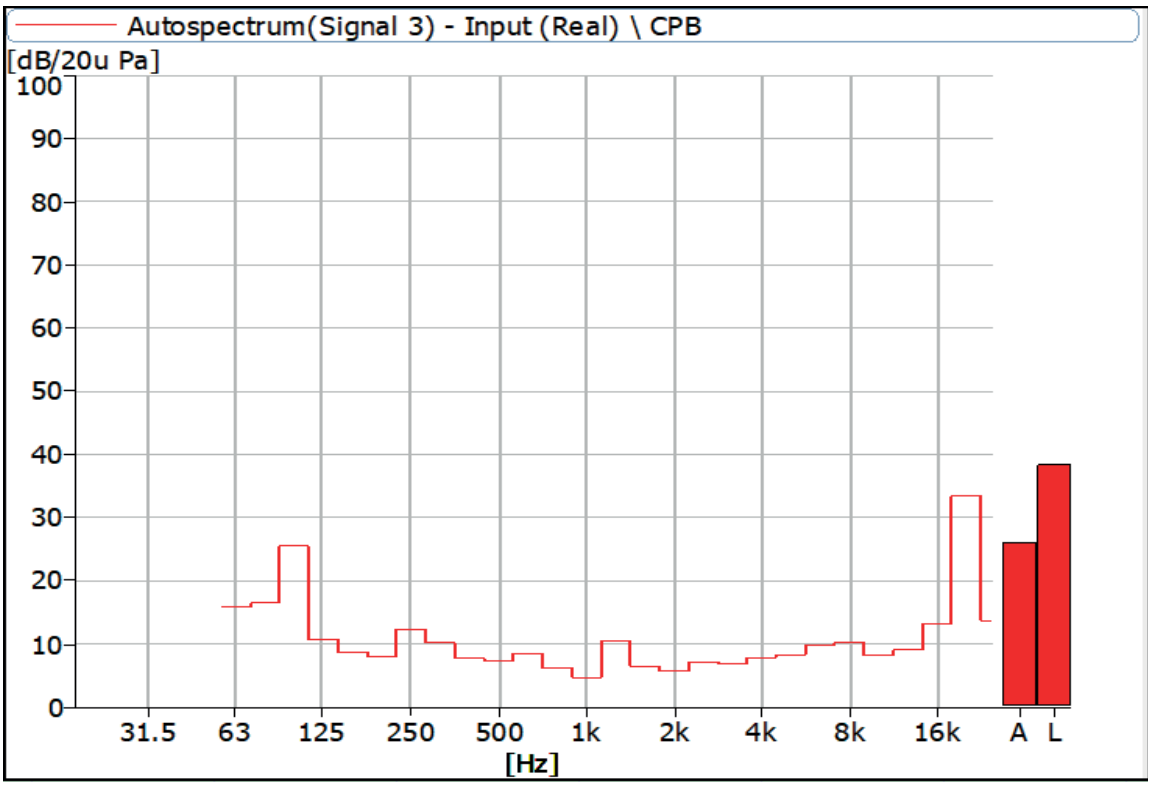

Figure 29 Noise Spectrum of Stage Luminaires (The Super Silence mode, Static, No 3)

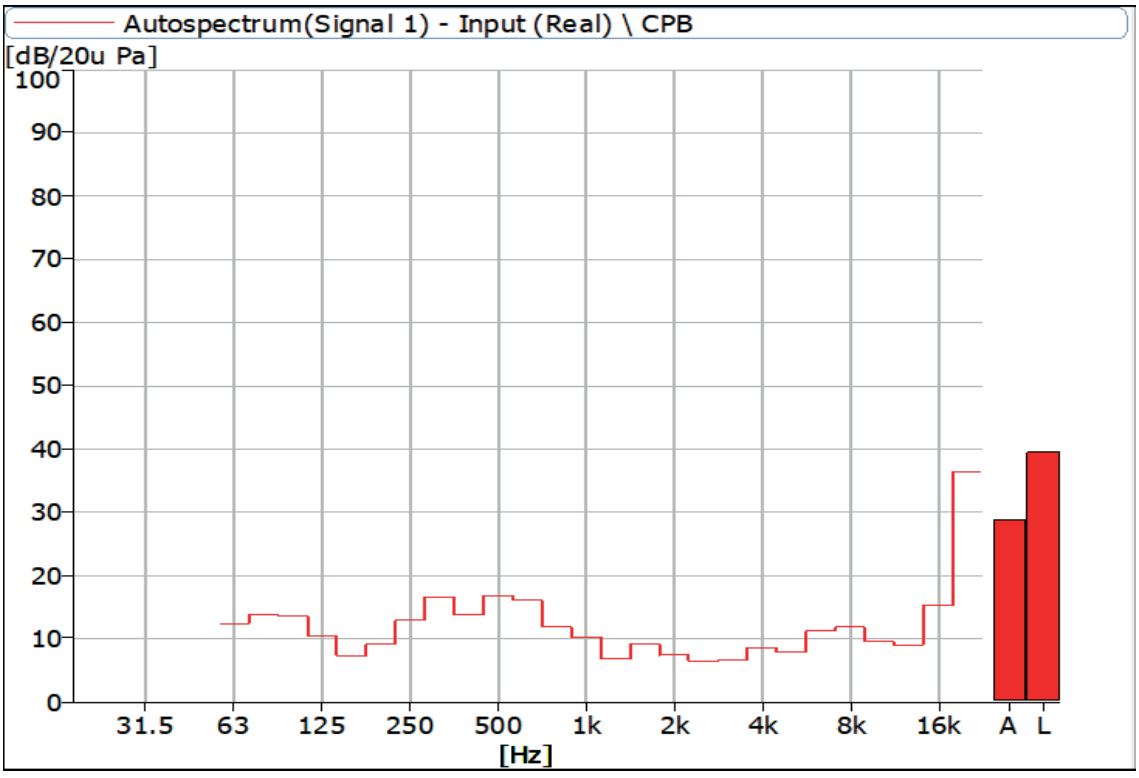

Figure 30 Noise Spectrum of Stage Luminaires (The Super Silence mode, Static, No 4)

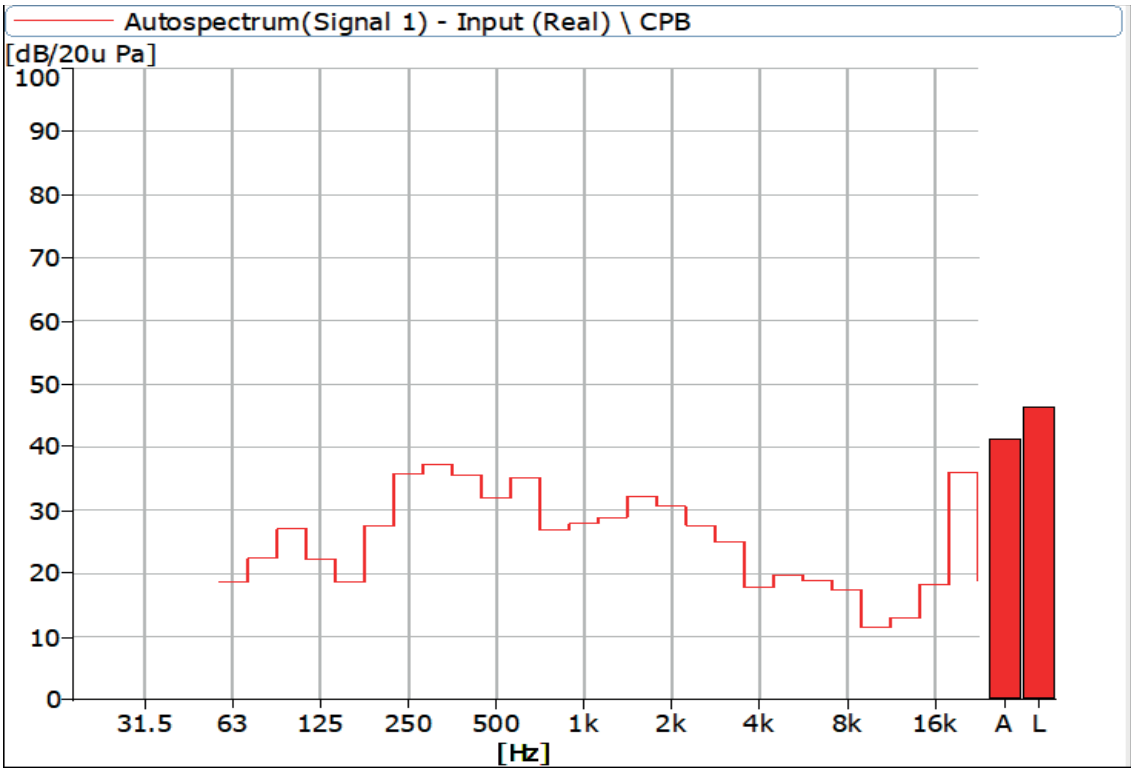

Figure 31 Noise Spectrum of Stage Luminaires (The Super Silence mode, Dynamic, No 1)

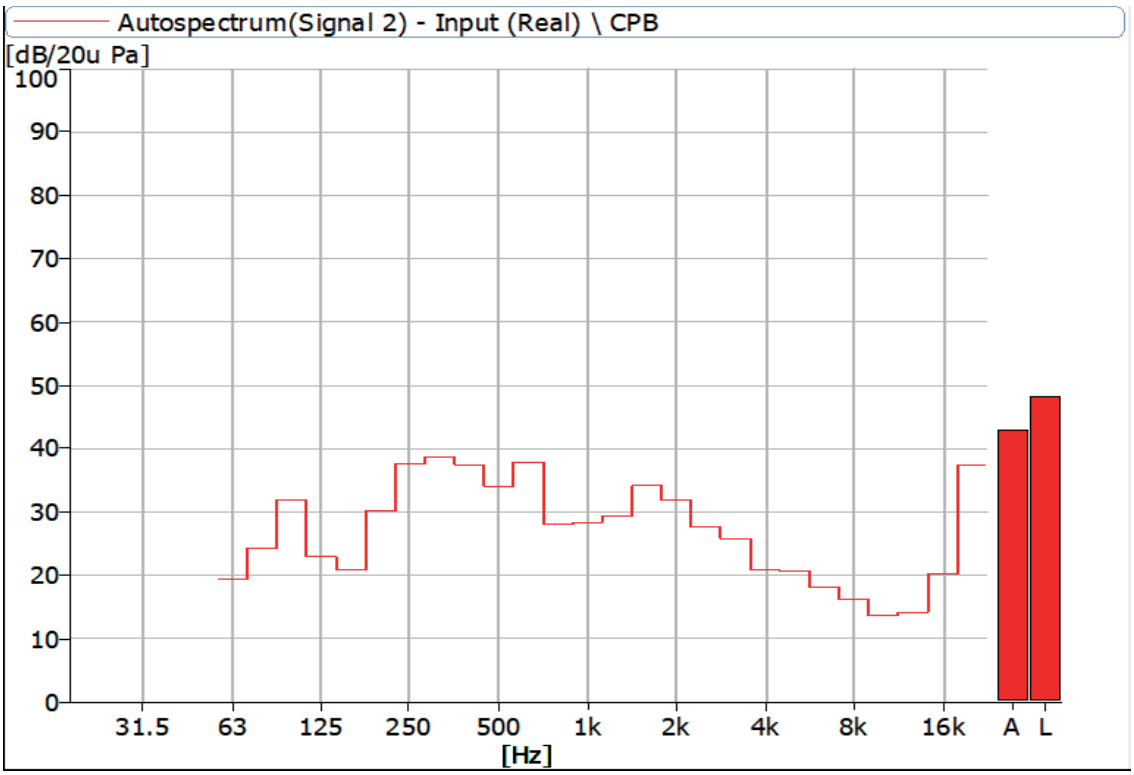

Figure 32 Noise Spectrum of Stage Luminaires (The Super Silence mode, Dynamic, No 2)

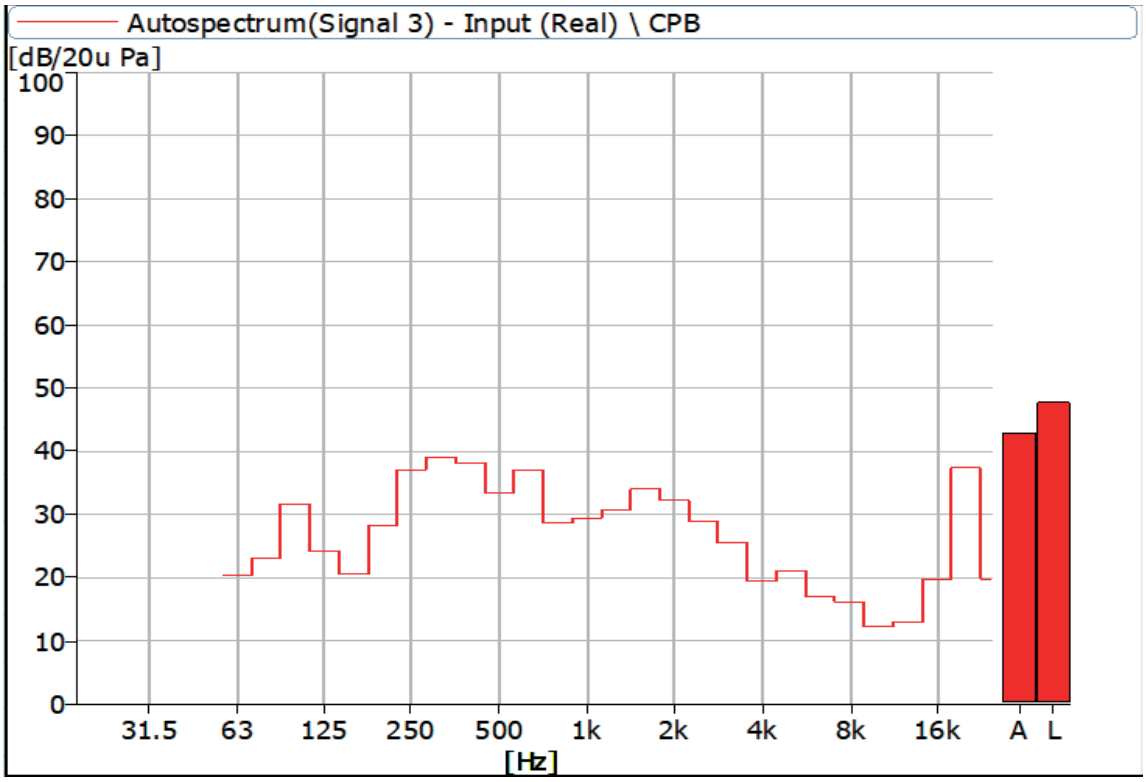

Figure 33 Noise Spectrum of Stage Luminaires (The Super Silence mode, Dynamic, No 3)

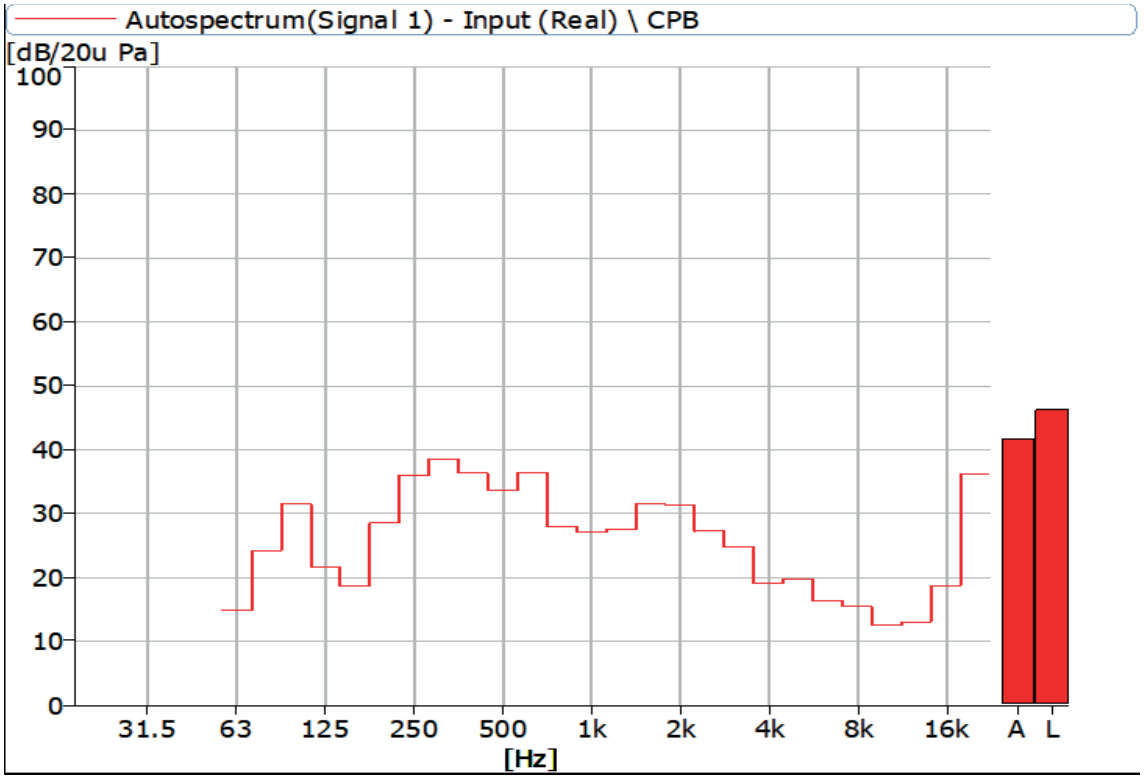

Figure 34 Noise Spectrum of Stage Luminaires (The Super Silence mode, Dynamic, No 4)

Instrumentation

No	Equipment	Type	Number	Calibration Period
1	Anechoicrooms	-	R40010	2023-05-17
2	Noise Analyzer	3160-A-042	R40011-2	2023-06-05
3	Acoustic Calibrator	4231	R40011-1	2023-05-13
4	Gas-Pressure Meter	(970-1050) hPa	T40058-1	2023-07-14
5	Steel Tap	5m	ad040	2024-03-15

AYRTON

Digital Lighting