

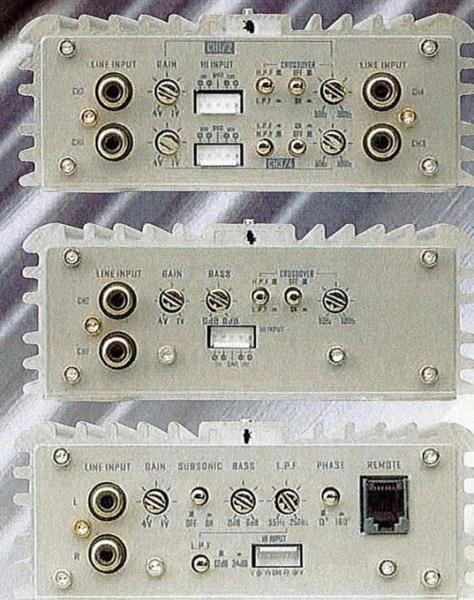
Reference CC - compact amplifier range from DLS

# Sweden takes on England

DLS is now releasing a brand new range of amplifiers to specialist retailers, which is striking both for its chic appearance and its promising name "Reference CC". We requested samples of the three Swedish beauties for testing.

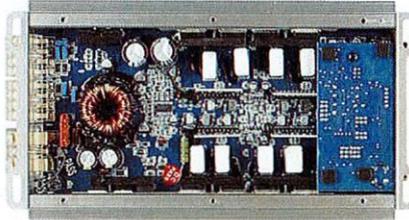
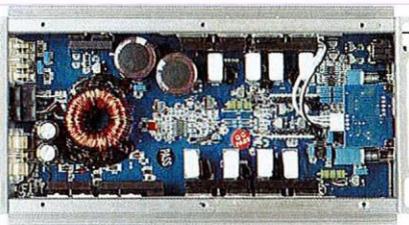
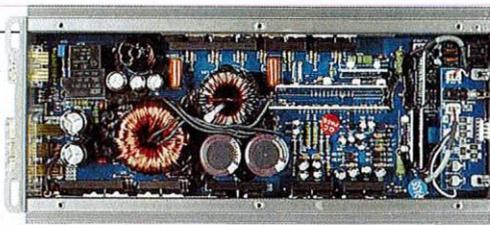
DLS is an institution in the in-car Hi-Fi business. The Swedish company has been a popular player on the sound quality scene for decades, not least because with almost monotonous regularity, they bring out units which are set up simply to provide good sound. But first of all, let's have a look at what we have in store. There are three models, the Mono CC-500, the dual-channel CC-2 and the Quad CC4. All have the same, beautifully styled continuously cast heat sinks, which come in three different lengths. The terminals are solid and even gold-plated,

the Mono includes the extra large version that can accommodate current straps up to 25 mm<sup>2</sup> - that should be enough. CC-2 and CC-4 come with a set of crossovers as standard, namely high-pass or low-pass from 50 - 500 Hz. The filters can also be bypassed completely using switches. The Mono is tastefully equipped in comparison, in addition to the obligatory low-pass filter it also has a switchable subsonic filter as well as on-board boost. A remote control is included and the low-pass filter is even switchable from 12 to 24 dB/oct.



Compact front terminals with metal panels and high-level inputs come with all CCs. The Mono comes with remote control and is fully equipped with subsonic and boost.

In addition, all Reference CCs have high-level inputs and Auto start. The inner workings of the amps are pushed hard because of their compact design. The most packed is the Mono, which in addition to the large-scale components, mains transformer and low-pass coil for recovering the PWM-amplified useful signal,



The bass power amplifier (left), is a Class D design, the multi-channel models are Class-A/B amplifiers. On the power semiconductors there are additional internal screw-on heat sinks.

also includes a careful output filtering stage with four caps and a coil on board, and finally a protection relay. In addition, we can count no less than six daughterboards - lots of complexity for a bass amplifier. The multi-channel units are somewhat better organized, even though there is a lot in them. It only looks like there is not much there because of the extensive use of SMD components. The question remains as to

the English sound tuning announced on the label, and it is here that manufacturers and retailers are keeping mysteriously silent.

There is talk of an English amplifier guru, of selected components and mysterious electrolytic capacitors ... but unfortunately very few facts.

On visual inspection the main things to be seen are three components, subsequently soldered

in, but surely these are the result of a pre-production batch? The English expert was probably responsible for choosing the correct components in terms of sonic harmony, but unfortunately we can only guess. Whatever the case may be, the power amplifiers deliver great performance figures on our indomitable System One. We found extremely low noise, and very low distortion in the CC-2 and CC-4.

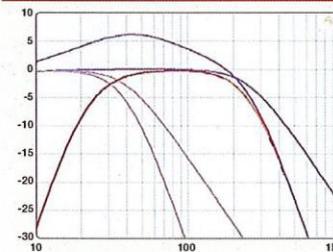
The Dual has rich performance too, and in the Quad there is a good 46 watts into 4 Ohms - these levels won't get the juices flowing. The Mono

achieves the promised 500 W into 1 Ohm, and almost 400 W into 2 Ohms and a solid 250 W into 4 Ohms.

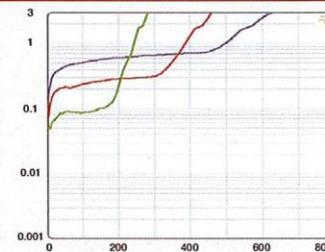
### Sound

#### Technical details: bass power amplifier

##### • DLS CC-500



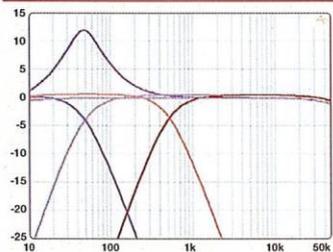
With subsonic, boost and phase the CC-500 delivers everything you need. The low-pass filter is even switchable from 12 to 24 dB/oct



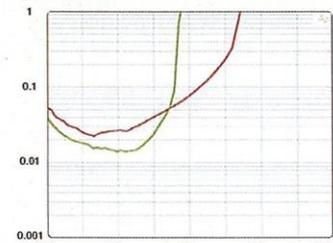
At 1 Ohm the CC-500 manages half a kilowatt. Its behaviour is typical and depending on the load, it trades off low distortion for maximum power

#### Technical details: multi-channel power amplifiers

##### • DLS CC-2

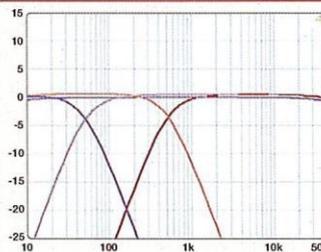


Standard range with high- or low-pass filter for separating Sub or front systems. The CC-2 also has a bass boost

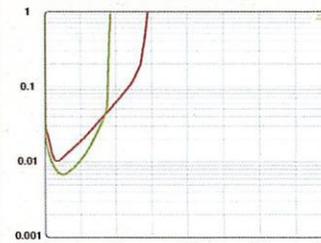


The CC-2 packs a punch and its low noise is exemplary. A good 90 W into 4 Ohm is respectable, not only for a compact amplifier stage

##### • DLS CC-4



In the CC-4 both channel pairs have high- or low-pass filters, which can also be switched off. Otherwise DLS avoids any frills



The Quad shows a "soft" power supply characteristic with continuously increasing distortion. With just 46 W into 4 Ohm it is no power monster

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The Swedes proudly announce their cooperation with an English amplifier guru

Well balanced - as the British would say - when the CC-2 and CC-4 are playing. From the beginning it sounds musical and rounded, and lacks none of the necessary corners and edges. And the sense of spaciousness even tends toward the grandiose. So finely differentiated is the virtual stage that with eyes closed you almost feel yourself entering it. Right in the middle there is no problem at all with the CCs technology. Female voices move effortlessly from ultra-delicate to strong, and musical instruments such as the saxophone are a delight. When required it even gets right down into the bass range, where in comparison to larger power amplifiers the consistent grip is only rarely missing. However, even the CC-2 has no problem with fat bass notes and it drives even more demanding components effortlessly. Only the single-channel CC-500 goes cautiously into the bass range. What comes across as disappointing for the bass freak at first, on closer listening turns out to be very good integration into the overall sound. Everything is there, and even in rapid passages the CC 500 doesn't fall down. Even when the dual tweeter is bridged down from 4 to 1 Ohm, it is also behaves as you would expect in terms of levels. So in the CC-500 you have a little bass marvel in a compact design that can be used in a wide variety of situations.

### Summary

With the Reference CC, DLS has released a nice little audio amp range which has got the lot. The amps show excellent performance figures and they sound great too. Swedish amplifier design or English sound tuning? Either way, as long as the result works.

Elmar Michels

**KLANGTIPP**  
Spitzenklasse  
CAR & HIFI 1/2015



### Bass Power Amplifier

Sales	Soundfashion Friedrichshafen	07544 7414750
Hotline	07544 7414750	
Internet www.	dls.de	
Sound	20%	1.1
Depth	5%	1.0
Pressure	5%	1.5
Cleanliness	5%	1.0
Dynamic range	5%	1.0
Laboratory	55%	1.8
Performance	40%	1.5
Damping Factor	5%	2.0
Signal to noise ratio	5%	3.0
THD	5%	1.5
Practice	25%	1.2
Features	15%	1.0
Processing electronics	5%	1.5
Processing mechanical	5%	1.5

#### Technical Data

Channels	1
Power in 4 ohm	246
Power in 2 ohm	391
Power in 1 ohm	503
Sensitivity max. mV	1,110
Sensitivity min. V	4.6
THD+N (<22 kHz) @ 5 W	0.042
THD+N (<22 kHz) @	0.076
Signal to noise ratio dB(A)	53
Damping factor 20 Hz	149
Damping factor 40 Hz	149
Damping factor 60 Hz	140
Damping factor 80 Hz	140
Damping factor 100 Hz	135
Damping factor 120 Hz	131

#### Features

Low Pass Filter	35 - 250 Hz
High-pass	-
Bandpass	27 - 250 Hz
Bass boost	0 - 6 dB
Subsonic filter	0, 27 Hz/24 dB
Phase shift	0.180°
High-level inputs	-
Auto start (Autosense)	*, at Hi-in
Cinch outputs	-
Dimensions (L x W x H in mm)	304 x 129 x 51
Other	Remote Control TP 12/24 dB

#### Assessment

Price	Around 350 Euro
Sound	20% 1.1
Laboratory	55% 1.8
Practice	25% 1.2
Price-performance	Very good

**CAR & HIFI** Top Notch  
Edition 1/2015 **1,4**

"The extremely compact and even 1-ohm stable CC-500 provides half a kW."

### Multi-channel Power Amplifiers



Sales	Soundfashion Friedrichshafen	07544 7414750	Soundfashion Friedrichshafen	07544 7414750
Hotline	dls.de			
Internet www.	dls.de			
Sound	40%	1,2	1,2	1,2
Bass reproduction	8%	1,5	1,5	1,5
Neutrality	8%	1,5	1,5	1,5
Transparency	8%	1,0	1,0	1,0
Space	8%	1,0	1,0	1,0
Dynamic range	8%	1,0	1,0	1,0
Laboratory	35%	1,6	2,0	2,0
Performance	20%	2,0	3,0	3,0
Damping Factor	5%	1,5	1,0	1,0
Signal to noise ratio	5%	0,5	0,5	0,5
THD	10%	1,0	0,5	0,5
Practice	25%	1,5	1,8	1,8
Features	15%	1,5	2,0	2,0
Processing electronics	5%	1,5	1,5	1,5
Processing	5%	1,5	1,5	1,5

#### Technical Data

Channels	2	4
Power in 4 ohms (x4/x2)	93	46
Power in 2 ohms (x4/x2)	134	71
Power in 1 ohm (x4/X2)	0	0
Mono bridge mode 4 ohms (X2/X1)	268	142
Mono bridge mode 2 ohms (X2/X1)	0	0
Sensitivity max. mV	1,000	1,000
Sensitivity min. V	4.6	3.8
THD+N (<22 kHz) @ 5 W	0.022	0.007
THD+N (<22 kHz) @ half-load	0.014	0.009
Signal to noise ratio dB(A)	102	104
Damping factor 20 Hz	213	319
Damping factor 40 Hz	186	299
Damping factor 60 Hz	186	298
Damping factor 80 Hz	186	299
Damping factor 100 Hz	179	263
Damping factor 120 Hz	154	227

#### Features

Low Pass Filter	45 - 500 Hz	45 - 500 Hz
High-pass	45 - 500 Hz	45 - 500 Hz
Bandpass	-	-
Bass boost	0-12 dB/45 Hz	-
Subsonic filter	-	-
Phase shift	-	-
High-Level inputs	-	-
Auto start (Autosense)	* at Hi-in	* at Hi-in
Cinch outputs	-	-
Dimensions (L x W x H in mm)	260 x 129 x 51	250 x 129 x 51
Other	-	-

#### Assessment

Price	Around 350 Euro	Around 350 Euro
Sound 40%	1,2	1,2
Laboratory 35%	1,6	2,0
Practice 25%	1,5	1,8
Price-performance	Very good	Very good

**CAR & HIFI** Top Notch  
Edition 1/2015 **1,4** **1,6**

"Refined, nice looking and good: The Reference-CC amps are recommended as a compact alternative for sound buffs."