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FLOORSTANDING LOUDSPEAKER

ATC SCM40

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Two things are expected to attract the attention of anyone who comes into contact for the first time, with the new SCM40. The curved side panels which give a distinctive look to the loudspeaker while ensuring higher rigidity and, being non-parallel, reduce the standing waves inside the enclosure and the somewhat peculiar metal mesh used to protect the drivers. This lightweight metal construction with the large honeycomb-like openings attaches magnetically to the front baffle and as we will see, it is, perhaps, the best construction we have come across in terms of non-measurable effect on sound. Its aesthetics is, in my opinion, somewhat questionable but this is, obviously, quite subjective.



Apart from the iconic soft dome midrange driver, the main external features of the new SCM40 are the curved side panels of the enclosure and the magnetically attached protective metal mesh.

The SCM40 is a three-way design, featuring an 164 mm SC series woofer with a long travel suspension (typical for ATC), a 75 mm soft dome midrange driver and the brand new SH25-76 1-inch tweeter, developed and manufactured by the company. According to the published details, the SH25-76 is a design that uses several elements from other ATC drivers, especially the double suspension of the mid drivers and the SC (Short Coil) technology of the woofers. According to the company, the double suspension ensures greater rigidity to the overall structure therefore better mechanical performance and precision in movement which frees the tweeter from the need to use magnetic fluid in the gap. This fluid tends to dry over and changes its behavior. Also, the use of a “short” voice coil (i.e. a coil with a winding smaller in its width and a greater in its height) which does not come off the magnetic field, ensures very good linearity and thus low distortion. For the tweeter dome itself, the company does not give many details beyond that it is optimized for maximum power transfer from the voice coil and for smooth off-axis response. The magnetic system uses neodymium, while the metal waveguide located around the dome is designed to optimize the response (on and off-axis).



ATC's 75mm soft dome midrange is used along with the first tweeter developed and manufactured by them. The SH25-76, as it is called, uses a double suspension and a short coil similar to those used in the other drivers produced by the company. The metal waveguide was designed to optimize the frequency response (on and off-axis).



The SC series 164 mm woofer features a long travel suspension and it is loaded with a closed-type enclosure, a combination that seems to offer the SCM40 an accurate character and a potential for high SPLs.

The three drivers are connected to a passive filter with crossover frequencies at 380Hz and 3.5kHz. ATC uses high quality components here, like polypropylene capacitors, air-core coils and wirewound resistors with ceramic cores for better heat dissipation. The SCM 40 is a closed-box type loudspeaker and uses four classic adjustable spikes for positioning. The user has to install by himself a piece of the base (which supports the front spikes), something that is easily done with two Allen-type screws and then level off the loudspeaker as usual. The terminals for connecting the loudspeaker to the amplifier seems to be of fair quality, accept cables with all the usual termination methods and support both bi- and tri-wiring.



The loudspeaker is supported by four standard, adjustable spikes.



The SCM40 features connection terminals of fair quality and accept cables with all the usual termination methods, also supporting both bi- and tri-wiring.

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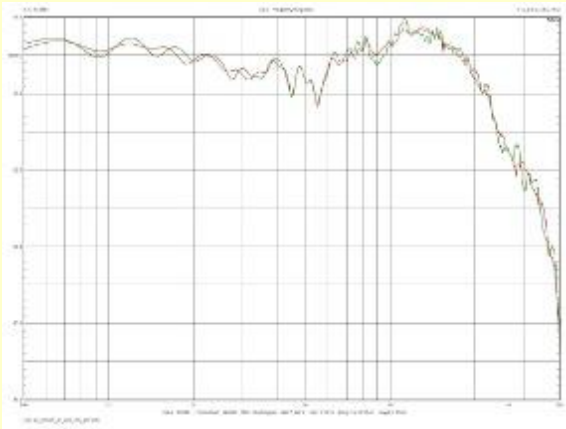
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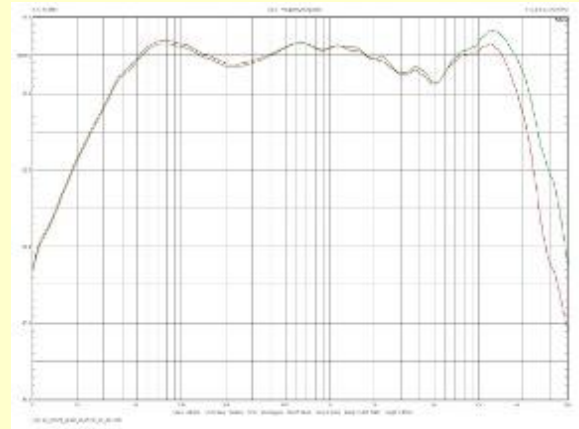
SCM40 quasi-anechoic frequency response (down to 500Hz) shows a loudspeaker with good pass band behavior, with only small amplitude deviations. The most interesting findings in the relevant graph are a decrease in sensitivity in the 2-7kHz region and an increase trend towards very high frequencies above 10kHz or so. Compared with the calculated average sensitivity the largest decrease occurs just above the 5.5kHz point (about -6.5dB) with a bandwidth clearly narrower than 1kHz. The bigger increase in sensitivity appears a little over the 11kHz point (3.4dB). The same graph (that does not include any smoothing) clearly shows that the role of the protective grill is significantly limited. Although one can see that there is some coloration introduced, of about 1dB (maximum) in the region between 5 and 10kHz, the choice of ATC is proved a correct one since this is a much better behavior compared to most grills.

Summed near-field response of the SCM40, obtained by splicing near field and far field quasi-anechoic measurements (including a 0.33oct smoothing), confirms the initial impression of a good pass band behavior. Average sensitivity, as calculated using values between 125Hz and 16kHz in one octave steps, is approximately 81dB SPL. This is lower than the 85dB SPL given by ATC, but keep in mind that the average method tends, more often than not, towards lower results anyway. This graph also gives a somewhat more general idea about the behavior between 2 and 7kHz as well as about the behavior of the tweeter. Bass alignment appears to be towards an accurate and neutral character with the region between 50 and 150Hz being just 1.5dB above the average sensitivity. Cut-off behavior at both ends of the spectrum is smooth with no visible acute dome resonance, at least up to 40kHz. Based on this graph and the average sensitivity, -6dB points are close to 35Hz and 22kHz for the low and high frequency part respectively. Of particular interest,

finally, is the comparison between the on-axis and the off-axis horizontally and vertically averaged response. The two curves seems to differ significantly only above 7kHz and only in level terms, a finding that leaves some promises for a quite smooth off-axis behavior and is consistent with ATC's statements about their new tweeter.



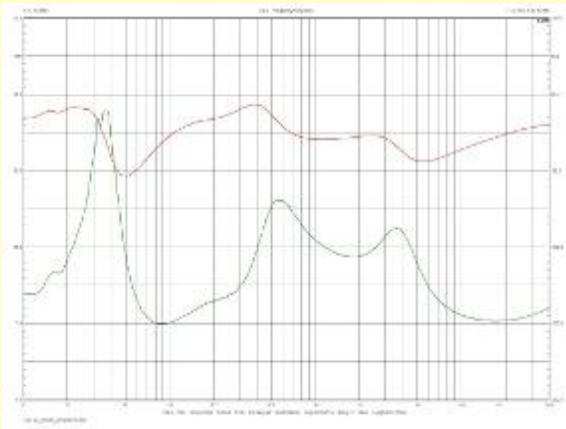
Quasi-anechoic frequency response (dB SPL/2.83V/m) above 500Hz, measurement at 2m distance, with and without the protective grill (green and red curve, respectively).



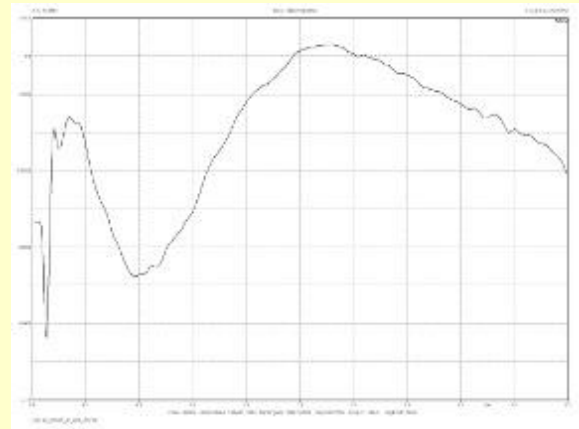
Summed near-field frequency response (dB SPL/2.83V/m), far field/near field splicing, with 0.33oct smoothing. On-axis (green curve) and averaged on/off axis response (red curve).

Impedance measurements shows that the SCM40 is a well cared loudspeaker in terms of its behavior as a load to the amplifier. Minimum impedance magnitude at low frequencies is about 5.95 Ohm (at 90Hz), therefore the loudspeaker could be classified as an 8-ohm design. The total magnitude variation (around 14 Ohms) would suggest that an amplifier with a low damping factor could drive the SCM40 without some serious deviation in its frequency response. On the other hand, the rather low sensitivity seems to ask for some power and a low output impedance if one needs some serious SPL. Impedance phase variation is not of concern (the range is ± 34 degrees with a slight capacitive behavior overall) therefore the amplifier power stage will not be burdened with large heat losses. Based on these data and sensitivity, if a listener needs to really exhaust the full potential of the SCM40, he needs to use a powerful amplifier to drive it but, also, one which will not be punished by overheating.

The step response of the loudspeaker is characterized by a rather smooth behavior. The design is not time aligned (something that happens with the vast majority of loudspeakers) but the delay between the tweeter and the midrange is very small. The transition from the tweeter to the midrange shows some slight discontinuity while the woofer's behavior during the decay part of the response is without significant problems.



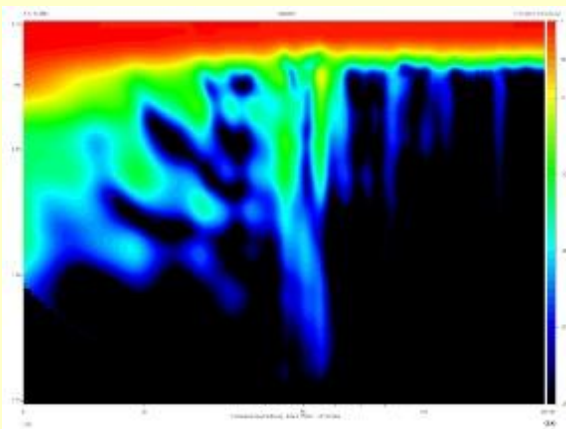
Impedance magnitude and phase (green and red curve, respectively).



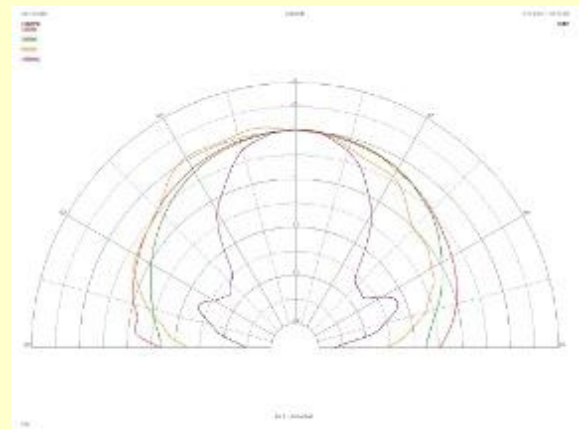
Step response.

The cumulative spectral decay graph shows a loudspeaker which is quite fast. Important findings here are a number of resonances around 5.5kHz with the one at 4.5kHz being the slower in decay time terms (2.3mS for a -25dB decay), a resonance at 7.9kHz (1.6mS) and one at 15.3kHz (1.2 mS).

Finally, the polar response of the SCM40 confirms the first impression of a smooth off-axis character. Up to 8kHz the -6dB angle is greater than 60 degrees and only at very high frequencies (16kHz) the sound radiation lobe narrows significantly below this value. In practice, this means, that it is not necessary to toe-in the loudspeakers at least for every day casual listening (off-axis losses exist, but they are rather small). Moreover, the spectrum of the reverberation field the SCM40 creates could be smooth and complete, given a decent listening room. Based on these findings, the SCM40 can be listened to from both short and long distances without significant problems. Additionally, the listener has some freedom to fine-tune the feeling at high frequencies by choosing whether to rotate the loudspeaker towards the listening position (the averaged frequency response graph is probably more revealing of that option).



Cumulative Spectral Decay graph, on-axis, quasi-anechoic measurement.



Polar response diagram in the horizontal plane. Frequencies : 1kHz (red curve), 2kHz (green curve), 4kHz (gray curve), 8kHz (orange curve) and 16kHz (purple curve).

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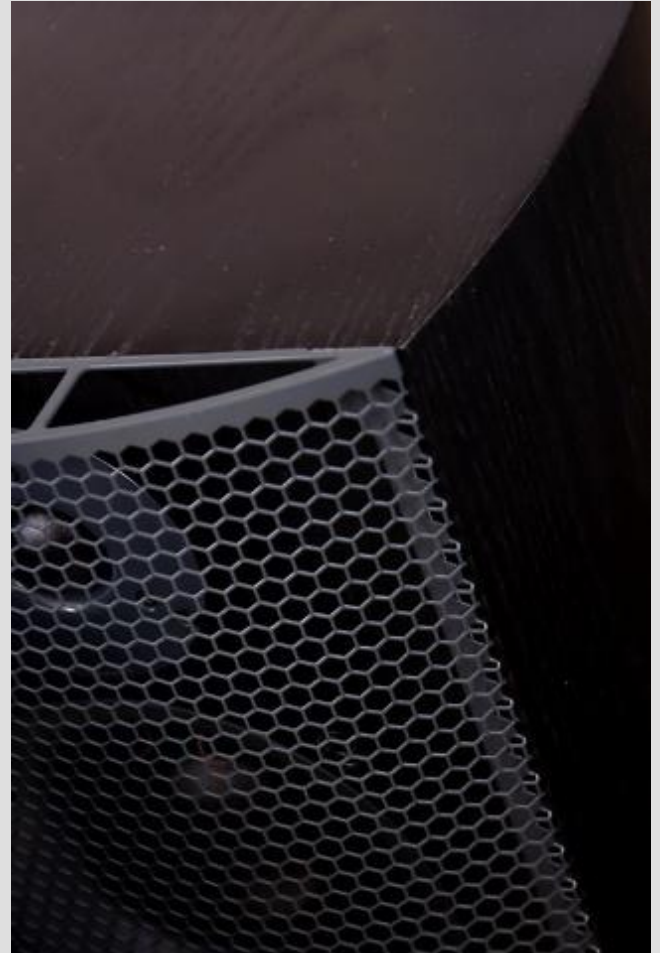
The SCM40 replaced the reference loudspeakers that I use on a regular basis (ATC SCM50 PSL) and was driven by a Parasound HCA3500. The rest of the system was as usual with a Teac Esoteric P70/D70 (at 4x upsampling and dual AES-3 connection between the transport and the DAC, using a pair of Nirvana DC-110 cables) and the Melos Plus Series Line tube preamplifier.

Placement of the loudspeaker proved to be rather easy. I chose a place with a distance of about half a meter from the back walls and 2.6m from the listening position. Leveling of the loudspeaker was made with relative ease using the adjustable spikes.

The fact that the reference loudspeaker belongs to the same company is certainly a review parameter that should not go unremarked. The truth is that the ATC sound character is well known and likeable to me despite the fact that often the 50s can be frustrating if the recording and/or production quality are below average. So the first question to be answered here is this: are there any strong similarities between the two loudspeakers and if the answer is “yes” what are they? The short answer to this question is, indeed, “yes”, enough to be considered as closely related sound-wise, but certainly not enough to be considered as similar.

First, it takes just a few minutes of serious listening to understand that the basic sound characteristics ATC is known of are present in SCM40. The loudspeaker is able to create an excellent stereo image with highly accurate description of the position of individual sound objects, the air between them and the feeling of movement in the sound stage. The listener has a sense of proximity and receives a full description of the sound mix with a lot of detail and depth information, qualities that make the whole listening experience enjoyable especially in high quality recordings. These attributes make the listening to small groups and orchestras

quite interesting. On the other hand, the ability of the loudspeaker to reproduce fine details and the ability to follow -without any problems- the dynamics of the composition, even at high levels (given a potent amplifier), offers a sense of comfort in the case of large symphonic works with multiple sound stage levels and numerous organic groups. The SCM40 fills the space with an imposing manner and does not seem to have the slightest problem with the orchestra size, or the kind of the instruments used or the listening level. Obviously this is an all around highly capable loudspeaker we are talking about here.



SCM40 proved to be quite good in the low frequency region, with good extension and control, capable to offer a detailed description of both acoustic and electronic instruments rich in low frequency components. Rhythm section was quite fast and clear, even in some high SPL listening sessions, without showing any sign of compression or any tendency towards a tiresome character. Compared with the SCM50 used as the reference (a loudspeaker in a different price range, with a larger woofer and reflex loading, therefore quite different) the SCM40 sounded tighter and perhaps a little bit over-controlled (to my taste that is) leaving a desire for something more in the lowest end of the spectrum. Probably, this is a price one must pay for an accurate and not boomy and somewhat exaggerated result in this price. Additionally, the long travel suspension of the woofer offered not only the possibility of high level and undistorted sound but also the ability to work seamlessly in a digitally equalized system, where long woofer excursions are sometimes required. Indeed, it took some effort to reach the limit of the loudspeaker and when this was done it happened at a very high level, at least for

this particular set up.

Quality of the mid band reproduction is probably among the strongest sides in SCM40s sound identity, and this should be probably attributed to the midrange driver being used. The loudspeaker proved extremely clear and detailed though at the same time it appears that there is a character somewhat tolerant to mediocre recordings. The differences at this point between the SCM40 and the reference loudspeaker is -to my opinion- small but crucial. The general impression here is that we are dealing with a design decision to offer a loudspeaker that is just a little more pleasant to the ear and acceptable to a wider group of listeners than just to present another studio monitor. Musical instruments were characterized by very good presence while voices, both solo and chorus, were detailed, perfectly focused and with very good description of both the feeling of motion and the transition between different groups in the sound stage.

The high-frequency part of the spectrum had its own significance, because of the new tweeter. Given that we are facing a driver designed by ATC (persistently and thoroughly I would say, based on time spent...), we are justified to assume this is a real world incarnation of their views about how a tweeter (and a whole loudspeaker, in fact) should sound in this category. Well, I tend to agree with their point of view and I think that we are dealing with one of the best products reviewed in this class within the last few years. SCM40 offers a live, transparent high frequency region, with a good sense of scale, correct time related sound attributes and creates the impression that you are listening to a loudspeaker that is neither stingy nor excessive in its description of harmonic content, just neutral. Compared with the reference loudspeaker the SCM40 lied on the slightly thinner side, and was somewhat hasty in the decay/release parts of impulsive sounds but given the price difference this is something easily accepted and not annoying. Everything considered, the overall feel of the SCM40 appears to be founded in the synergy between the two drivers (the midrange and the tweeter) and at this point ATC seems to have done a very good job, indeed.

Conclusion

It is clear that the SCM40 includes some of the key elements that have made ATC especially likeable to a specific audience: It is an accurate, neutral loudspeaker with some considerable potential for high SPL listening. However, this is not just a "carrying out" design and the SCM40 does not represent just a monitor in a lower price range. Instead, it seems that we are dealing with a product designed with the discerning listener in mind. A listener with a music collection both significant in size and variable in quality, who needs to take advantage of this collection by using an all around and user-friendly loudspeaker. For anyone who belongs to this profile, the SCM40 sets -in my opinion- a reference level.