

## Acoustic Control

The aim is to produce sound for the human ear, be it live or monitored, that is as accurate as the original source with no colouration, excess reverberation or deadness.

The magic word is RT60

This is how we express reverberation as a standard –

**RT60 is the measurement of the time it takes for a sound to decay by 60 decibels and therefore become irrelevant to speech or quality.**

There have been many models studied to agree the ideal RT60. We use measurement and calculative methods to determine what the existing RT60 time is, giving us what we need to do to correct to the required RT time .

The sounds that are generated within an area can take several seconds to decay and therefore, from any listening position, you hear not only the source sound but also many reflections from the walls floor and ceiling. With sound travelling at over 340 m per second, sound generated within a large room could travel over 1000 metres before it decays to an unperceivable level.

This means that you will hear sounds not only directly, but the same sound delayed and reflected off 1 surface, delayed still further and reflected off 2 surfaces, delayed still further and reflected off 3 surfaces, etc., etc., etc. This can make comprehension of speech almost impossible from any distance and reasonable recording of drama or music impossible.



A factor of sound is that the high frequencies dissipate faster than the low frequencies because they are absorbed more easily, so we design acoustic absorbent walls or wall mounted absorbers that absorb different frequencies at different rates to ensure that the overall RT time is within specification. At an RT of 0.3sec the full acoustic range reduces by 60dB after 0.3 sec

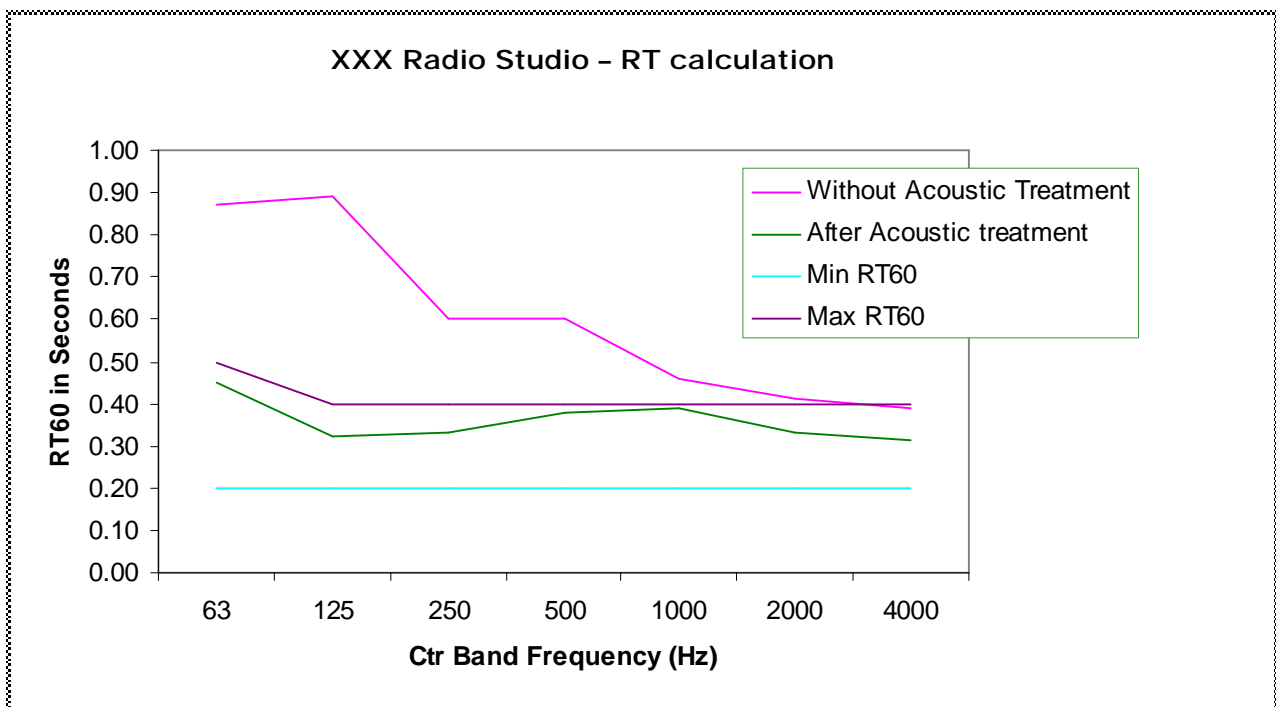
If you take a 20 sqm area with hard walls, carpet tiles, windows and a door the RT60 time will be about 2 seconds, we have seen large untreated halls as high as 5 seconds when even normal speech was unintelligible between persons at 1m

For a small studio you could require the RT60 time to be as low 0.3sec or up to 1.0sec for a large area depending on the use.

The required actual RT time is a factor of volume, wall finishes, floors, doors, glass, curtains, seating, etc – this equates to how quickly the sound will drop the 60dB. And how much absorbancy will be required at all points across the frequencies to produce a flat response across the frequency range.

To set a required RT time, we use experience and recommendations set out by bodies like the BBC who tested favorite studios for TV and radio many years ago and plotted the results.

*Below is a real world graph showing the existing RT60 time in seconds and the result after the acoustic treatment is mounted.*



As you can see controlling the reverberation times within studios and other areas is quite a complicated science and needs an in depth knowledge of the subject. You can buy pieces of foam to attach to your walls – to be honest they make a little bit of difference but it is difficult to predict what the difference will be – it will be in the higher frequencies since that

is all foam can absorb – it will make little difference to mid / bass frequencies and could in fact make the overall acoustics worse.



Studio Schemes design their studio walls to produce the optimum acoustics for the use and we also design and manufacture acoustic absorbers for existing areas, these are across high / mid / low frequencies which when positioned correctly will again produce the optimal effect.



Shown here are two projects – the acoustic correction for university instrument area and the correction of a public hall that originally had a RT60 time of circa 5 secs. Note that in both cases correction was required in the ceiling area.