

Rail noise and reflections from facades

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In general SoundPLAN handles reflections in vertical obstacles by introducing mirror sources. This approach does not comply with all standards. E. g. NMT96 has a unique way to take reflections into account: A 'facade correction' should be added; this correction is 3 dB at a distance 2 m from the facade, 0 dB 20 m from the building, and in between the correction decreases gradually with distance. In the area 0,5 m to 2 m from the building a fixed value of 3 dB should be used. The standard does not deal with receivers closer to the facade than 0,5 m. See Fig 1.

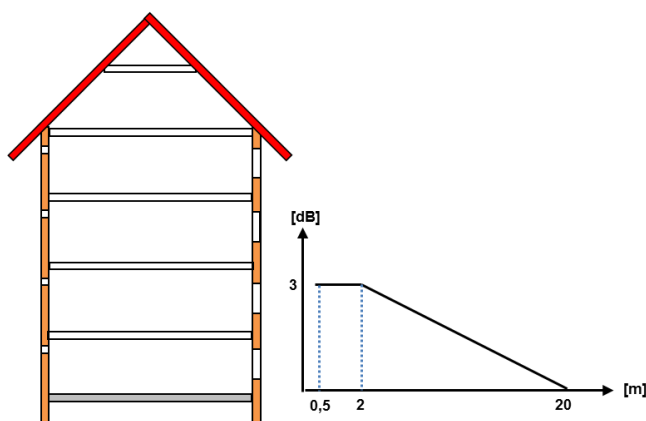


Fig 1 Facade correction according to NMT96

First, please pay attention to the fact that you yourself must tell SoundPLAN, if you want reflections to be included and - if so - how you want the reflections to be calculated. This is done on the index card 'Facade correction' in the standard settings for NMT96. On this index card you can put a hook for 'Add Facade correction for receivers, which are assigned to a building'.

The implementation of NMT96 in SoundPLAN makes it possible to include this special 'facade correction'. Three conditions must be fulfilled:

- 1) In the standard settings for NMT96 you must active 'Add Facade correction for receivers, which are assigned to a building', see Fig 2
- 2) The receiver must be attached to 'own facade'
- 3) In the run set up you should not activate 'Calculate reflection of assigned facade and ignore standard dependant facade correction', see Fig 3

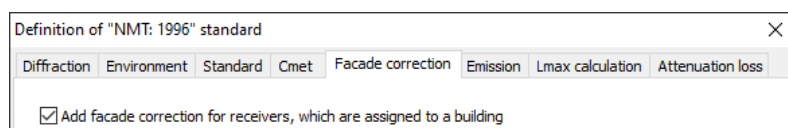


Fig 2 Standard settings for NMT96 if special NMT96 facade correction is wanted

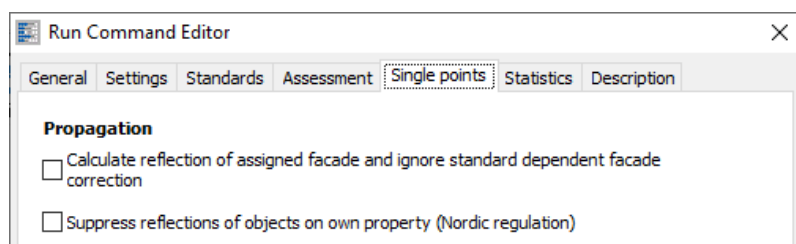


Fig 3 Run set up if special NMT96 facade correction is wanted

If none of the two features shown in Fig 2 and 3 is activated, and the receiver is attached to the buildings, the calculation will report the free field level (as usual).

If 'Calculate reflection of assigned...' is activated in the run set up and the receiver is attached to the facade, the program will add the contribution from the mirror source to the free field level; this addition will be approx. 2,5 dB if the default reflection loss of the facade (1 dB) is kept. In this case it will change nothing if 'Add Facade correction

in the standard settings is activated or not.

For free receivers the two features in Fig 2 and 3 have no effect on the calculated level; the result will include contributions from mirror sources.

To see the special NMT96 facade correction in the Result Tables you must look in the protocol for 'dLFacade'. The Mean Propagation table does not show it.

Most noise limits are expressed in terms of free field level. According to the statements above you get the free field level, if you attach the receiver and deactivate both features shown in Fig 2 and 3.