3. MCS PLANNING STANDARD FOR AIR SOURCE HEAT PUMPS

3.1 The MCS Planning Standard for air source heat pumps is as follows:

(a) The air source heat pump product shall be certificated in accordance with MCS 007[3];
(b) The air source heat pump shall be installed by an installation company certificated in accordance with MIS 3005[4]; and
(c) The installation shall be carried out in compliance with the calculation procedure contained in Table 2. Installers must complete the 'results/notes' column in Table 2 for each step of the calculation procedure to show how it has been followed.

Air source heat pump calculation procedure

3.2 The air source heat pump calculation procedure is set out in Table 2. MCS installation companies must complete one table for each assessment position that could potentially be affected by noise from the air source heat pump. To follow the instructions and complete the table, installation companies will need to refer to the definitions at the start of the table and Notes 1-7 set out after the table. A glossary of terms can be found in Section 4.

3.3 Installation companies must insert their results in the 'results/notes' column for each step of the calculation procedure to show how it has been followed. Installation companies must retain one copy of the completed table for their records and provide another copy to the client.

3.4 Explanation of the calculation procedure is supported by a worked example which is in italics at the end of each step in the table. In the example, an air source heat pump with a sound power of 55 dB(A) mounted on the ground and against a single wall is used. An assessment position is 4 metres away. This example is used for the purposes of illustrating the calculation procedure only.

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[3] The Microgeneration Certification Scheme standard MCS 007 – Issue 2.1.Product Certification Scheme Requirements: Heat Pumps. Dated 26/10/2011 available from http://microgenerationcertification.org/admin/documents/MCS%20007%20-%20Issue%202%201%20Product%20Certification%20Scheme%20Requirements%20-%20Heat%20Pumps%202011.10.26.pdf

[4] The Microgeneration Certification Scheme Installer Standard MIS 3005 – Issue 3.0. Requirements for Contractors Undertaking the Supply, Design, Installation, Set to Work Commissioning and Handover of Microgeneration Heat Pump Systems. Dated 05/09/2011 available from http://microgenerationcertification.org/admin/documents/MIS%203005%20Issue%203%200%20Heat%20Pump%20Systems%202011.09.05.pdf

TABLE 2: Use one table for each assessment position tested.

Date calculation undertaken:

Note: for the purposes of this calculation procedure:

- **Assessment position** means a position one metre external to the centre point of any door or window to a habitable room of a neighbouring property as measured perpendicular to the plane of the door or window.
- **Habitable room** means a room other than a bathroom, shower room, water closet or kitchen.
- **Neighbouring property.** Means any building used for any of the purposes of Class C of the Town and Country Planning (Use Classes) Order 1987 (as amended) (includes dwellinghouses, hotels, residential institutions and houses in multiple occupation). In instances where the air source heat pump would be installed on block of flats, neighbouring property includes flats within the same block of flats (excluding the flat of the "owner(s)" of the air source heat pump.

Description of assessment position tested **(This must be detailed enough to allow for identification, including property address and exact location of window / door opening and floor level. It is recommended that a map, sketch, photo or other record be attached to these workings.)**
THE ONLY RELEVANT ASSESSMENT POSITION IS THE ROOFLIGHT OF NUMBER 25e AS PER THE ATTACHED MARKED-UP AERIAL PHOTOGRAPH. IT IS 7 METRES AWAY FROM THE PROPOSED AIR SOURCE HEAT PUMP.
Example : The assessment position is the first floor bedroom window of 1 Oak Street and it is 4 metres away from the location of the proposed air source heat pump.

STEP	INSTRUCTIONS	INSTALLER RESULTS / NOTES
1.	From manufacturer's data, obtain the **A-weighted** sound power level of the heat pump. See '**Note 1: Sound power level**'. The highest sound power level specified should be used (the power in "low noise mode" should not be used). *Example: Manufacturer's data states the sound power level of the heat pump is 55 dB(A).*	STEP 1 RESULT = MANUFACTURER'S DATA STATES THE SOUND POWER LEVEL OF THE HEAT PUMP IS 67dB(A).
2.	Use '**Note 2: Sound pressure level**' and '**Note 3: Determination of directivity**' below to establish the directivity 'Q' of the heat pump noise. *Example: The heat pump is to be installed on the ground and against a single wall hence the directivity (Q) of the heat pump noise is Q4.*	STEP 2 RESULT = The heat pump is to be installed on the ground against a wall & a fence, hence the directivity (Q) of the heat pump noise is Q8.
3.	**Measure the distance from the heat pump to the assessment position in metres.** *Example: Distance between heat pump and assessment position is 4 metres.*	STEP 3 RESULT = DISTANCE BETWEEN HEAT PUMP & ASSESSMENT POSITION IS 7 METRES.
4.	Use table in '**Note 4: dB distance reduction**' **below to obtain a dB reduction.** *Example: 4metres @ Q4 = -17 dB.*	STEP 4 RESULT = 7 METRES @ Q8 = -17dB
5.	**Establish whether there is a solid barrier between the heat pump and the assessment position using 'Note 5: Barriers between the heat pump and the assessment position'** and note any dB reduction. *Example: There is a brick wall between the heat pump and the assessment position. Moving less than 25cm enables the assessment position to be seen. dB reduction = -5 dB.*	STEP 5 RESULT = There is a fence between the heat pump and the assessment position. Moving less that 25cm enables the assessment position to be seen. dB reduction = -5dB
6.	Calculate the sound pressure level (see '**Note 2: Sound pressure level**') **from the heat pump at the assessment position using the following calculation:** **(STEP 1) + (STEP 4) + (STEP 5)** *Example (55) + (-17) + (-5)=55 – 17 – 5 =33 dB(A) Lp*	STEP 6 RESULT = (67)+(-17)+(-5) = 45 = 45 dB(A) Lp.

7.	**Background noise level. For the purposes of the MCS Planning Standard for air source heat pumps the background noise level is assumed to be 40 dB(A) Lp. For information see '<u>Note 6: MCS Planning Standard for air source heat pumps background noise level</u>'.** *Example: Background noise level is 40 dB(A).*	STEP 7 RESULT = 40 dB(A)
8.	**Determine the difference between STEP 7 background noise level and the heat pump noise level using the following calculation:** (STEP 7) – (STEP 6) *Example: 40 dB(A) (background) – 33 dB(A) (heat pump) = 7dB(A).*	STEP 8 RESULT = (background) (heat pump) 40dB(A) - 45dB(A) = -5dB(A).
9.	**Using the table in '<u>Note 7: Decibel correction</u>' obtain an adjustment figure and then add this to whichever is the higher dB figure from <u>STEP 6</u> and <u>STEP 7. Round this number up to the nearest whole number.</u>** *Example: Adjustment figure is 0.8 dB and the higher figure is 40 dB(A).* *40 + 0.8 = 40.8 dB(A).* *Rounded up to 41 dB(A)* *Final result at this assessment position is 41 dB(A).*	FINAL RESULT= Adjustment figure is 1.2 and the higher figure is 45 dB(A). 45 + 1.2 = 46.2 dB(A) Rounded to 46 dB(A). Final Result at this assessment position is: 46 dB(A)
10.	**Is the FINAL RESULT in STEP 9 lower than the permitted development noise limit of 42 dB(A)?** **If <u>YES</u> - the air source heat pump will comply with the permitted development noise limit for this assessment position and may be permitted development (subject to compliance with other permitted development limitations/conditions and parts of this standard). NOTE - <u>Other assessment positions may also need to be tested.</u>** **If <u>NO</u> – the air source heat pump will not be permitted development. This installation may still go ahead if planning permission is granted by the local planning authority.** *Example: 41 dB(A) is lower than 42 dB(A).*	Final result is lower than 42 dB(A) ~~YES~~ / NO (delete as appropriate) 46 is higher than 42. The heat pump therefore requires permission (planning permission) but is only 4dB(A) above the permitted development noise limit.