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To: **Kyriakos Papanagiotou**
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Date: **29 July 2019**
Our Ref: **190729FUS**

Dear **Kyriakos,**

Analysis of Acoustic Performance Tests and Ratings. Fusion Partitions.

Further to your enquiry, I write to provide you with my analysis of the ISO 10140-3 tests and ISO 717-1 ratings carried out on behalf of Fusion Partitions.

1 Analysis Objectives

The objectives of this study are to identify any anomalies, non-compliance with the testing and rating standards and/or unusual results should these exist on the provided Acoustic Performance statements.

2 Elements Tested.

I have reviewed 64 documents pertaining to different partition types as supplied by Fusion Partitions. These are various glazed building elements and plasterboard partitioning systems. These are tabulated in subsequent paragraphs.

3 Summary of Analysis.

After analysing the 64 documents I have divided them under two categories:

1. Certificate with single rating number R_w only (30 documents).
2. Certificates with single rating number and 1/3-octave band breakdown of results (34 documents).

There is not much that can be said from the first category except that the quoted results look reasonable for the type of partitions under test. The documents under this category are listed below.

- CDG-AP10 -Mullion D.glazed 12.8 x 12.8-iss.4-Apr16.pdf
- CDG-AP12 -Glass dr-D.glazed-iss.3-Apr16.pdf
- CDG-AP13 -Glass dr-D.glazed-T.seal-iss.3-Apr16.pdf
- CDG-AP14 -D.glazed-Deflec Hd 10 x 12-iss.3- Apr16.pdf
- CDG-AP15 -D.glazed-Deflec Hd 12 x 12-iss.3-Apr16.pdf
- CDG-AP16 -D.glazed-Deflec Hd 10 x 12.8-iss.4-Apr16.pdf
- CDG-AP17 -D.glazed-Deflec Hd 10.8 x 12.8-iss.4-Apr16.pdf
- CDG-AP18 -D.glazed-Deflec Hd 12.8 x 12.8-iss.4-Apr16.pdf
- CDG-AP3 -Mullion D.glazed 6 x 10-iss.3-Apr16.pdf
- CDG-AP4 -Mullion D.glazed 10 x 12.8-iss.4-Apr16.pdf
- CDG-AP5 -Mullion D.glazed 10.8 x 12.8-iss.4-Apr16.pdf
- CDG-AP7 -D.glazed 12 x 12-iss.3-Apr16.pdf
- CGD-AP10 -Contempo-S.glazed 1 x 12-iss.2-Dec18.pdf
- CSG-AP5 -Glass dr-S.glazed-iss.3-Apr16.pdf
- CSG-AP6 -Glass dr-S.glazed-T.seal-iss.3-Apr16.pdf
- CSG-AP7 -Clear S.glazed-Deflec Hd 1 x 10-iss.4-Apr16.pdf

- CSG-AP8 -Clear S.glazed-Deflec Hd 1 x 12-iss.4-Apr16.pdf
- CSG-AP9 -Clear S.glazed-Deflec Hd 1 x 12.8-iss.5-Apr16.pdf
- F100-AP1 -Solid 2 x 12.5 Wallboard-iss.3-Apr16.pdf
- F100-AP2 -Soild 2 x 12.5 SounBloc-iss.3-Apr16.pdf
- F100-AP3 -Solid 2 x 12.5 Wallboard-Deflec Hd-iss.3-Apr16.pdf
- F100-AP4 -Solid 2 x 12.5 SoundBloc-Defle Hd-iss.3-Apr16.pdf
- F75-AP1 -Solid 12.5 Wallboard-iss.3-Apr16.pdf
- F75-AP2 -Solid 12.5 SoundBloc-iss.3-Apr16.pdf
- F75-AP3 -Solid 12.5 Wallboard-Deflec Hd-iss.3-Apr16.pdf
- F75-AP4 -Solid 12.5 SoundBloc-Deflec Hd-iss.3-Apr16.pdf
- FTD-AP2 -Timb dr-Timb frame-iss.3-May18.pdf
- FTD-AP3 -Timb dr-MDF frame-iss.3-May18.pdf
- FTD-AP4 -Timb dr-F54 alum frame-iss.1-Mar17.pdf
- FTD-AP5 -54mm timb dr-F54 alum frame-iss.1-Mar17.pdf

The second category can be analysed further as they present an ISO 717-1 standard 1/3-octave breakdown. All testing data analysed was consistent with expected results for the partition types under test. For example, there are clear coincidence dips in single glazing panes at critical frequencies consistent with their quoted thickness. Other characteristics such as mass-law and panel resonances were identified as consistent with the respective partition types. These documents are listed below.

- CDG-AP11 -D.glazed 12.8 x 12.8-iss.4-Apr16.pdf
- CDG-AP19 -D.glazed 10 x 10-iss.2-Apr16.pdf
- CDG-AP20 -F10.100 D.glazed 12.8 x 12.8-iss.3-Apr18.pdf
- CDG-AP21 -100mm D.glazed 12.8 x 12.8-iss.2-Apr18.pdf
- CDG-AP22 -F10-100 D.glazed 10 x 12-iss.1-Apr17.pdf
- CDG-AP23 -F10-100 D.glazed 12 x 12-iss.1-Apr17.pdf
- CDG-AP24 -F10-100mm D.glazed 12 x 12.8-iss.1-Apr18.pdf
- CDG-AP25 -F10-100mm D.glazed 10.8 x 12.8-iss.1-Apr18.pdf
- CDG-AP26 -100mm D.glazed 10 x 12-iss.2-Apr18.pdf
- CDG-AP27 -100mm D.glazed 12 x 12-iss.2-Apr18.pdf
- CDG-AP28 -100mm D.glazed 12 x 12.8-iss.1-Apr18.pdf
- CDG-AP29 -100mm D.glazed 10.8 x 12.8-iss.1-Apr18.pdf
- CDG-AP6 -D.glazed 10 x 12-iss.4-Apr16.pdf
- CDG-AP8 -D.glazed 10 x 12.8-iss.4-Apr16.pdf
- CDG-AP9 -D.glazed 10.8 x 12.8-iss.4-Apr16.pdf
- CGD-AP1 -Contempo-S.glazed 1 x 12.8-iss.3-Dec18.pdf
- CGD-AP11 -Contempo-54S rebate dr-iss.2-Dec18.pdf
- CGD-AP3 -Contempo-Glide S.glazed 1 x 12.8-iss.2-Apr16.pdf
- CGD-AP4 -Contempo-Glide S.glazed 1 x 12-iss.2-Apr16.pdf
- CGD-AP5 -Contempo-Pocket S.glazed 1 x 12.8-iss.1-Aug16.pdf
- CGD-AP6 -Contempo-Pocket S.glazed 1 x 12-iss.1-Aug16.pdf
- CGD-AP7 -Contempo-D.glazed Type S- iss.2-Dec18.pdf
- CGD-AP8 -Contempo-54 rebate dr-2 x 6-iss.2-Dec18.pdf
- CGD-AP9 -Contempo-Pocket D.glazed Type S- iss.1-Oct16.pdf
- CSG-AP2 -Clear S.glazed 1 x 12-iss.5-Apr16.pdf
- CSG-AP3 -Clear S.glazed 1 x 12.8-iss.4-Apr16.pdf
- FDG-AP1 -Fineline D.glazed 12.8 x 12.8-iss.1-July16.pdf
- FDG-AP2 -Fineline D.glazed 12 x 12.8-iss.1-Aug18.pdf
- FSG-AP3 -Fineline S.O.glazed 1 x 12.8-iss.1-July16.pdf
- FTD-AP1 -Timb dr-F04 alum frame-iss.3-May18.pdf

Four documents in the second category were found to have an inconsistency in the 1/3-band plot, as the ISO 717-1 reference curved was plotted without being fitted to the measured data. The R_w rating number is taken from this reference curve at 500 Hz once this reference curve has been fitted to the data. In these documents the reference curve returns a value of 40 dB R_w (as taken from the 500 Hz band, denoted by red arrows in figure 1) which is different from the stated R_w value.

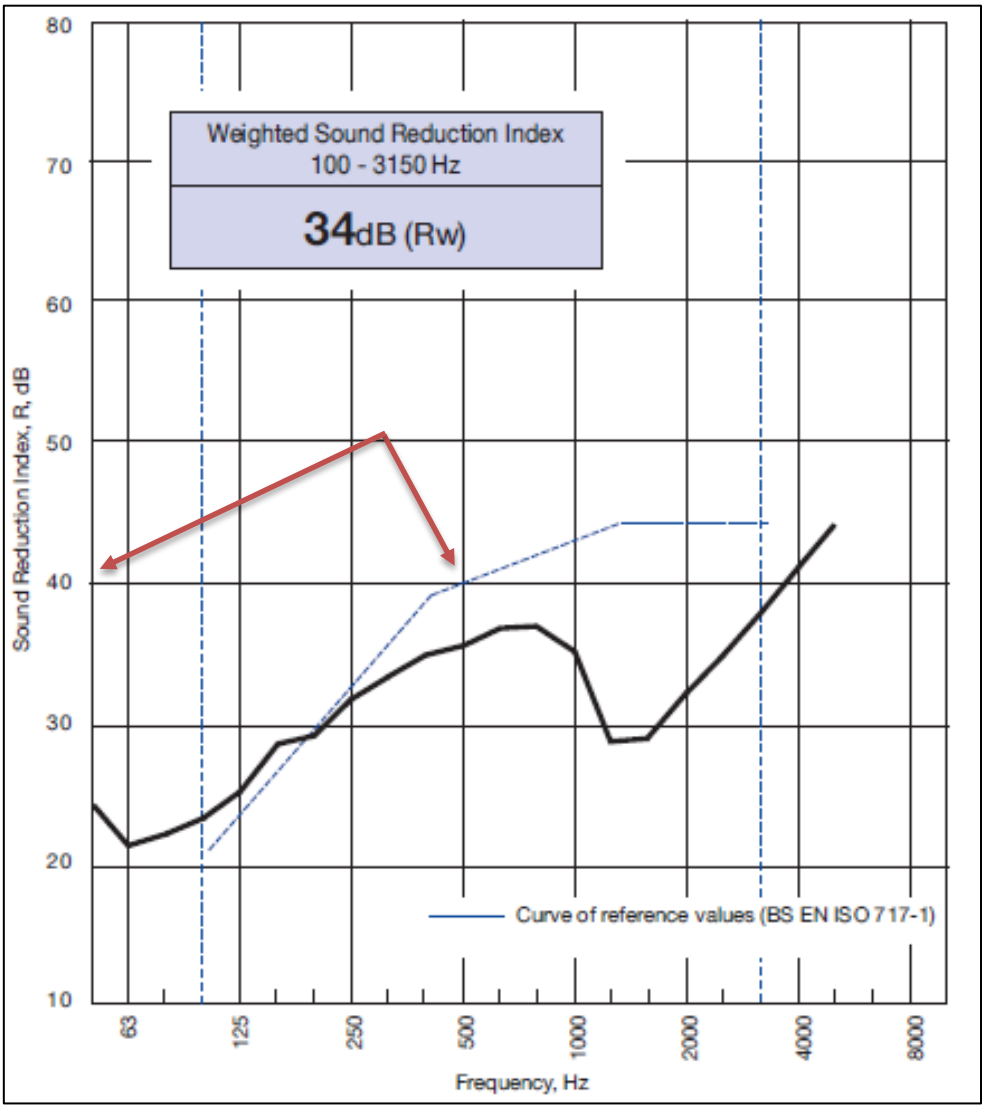

Figure 1.- CSG-AP1 Reference curve not fitting data.

My analysis of the measured data indicates that the stated R_w value is *correct*, and only the placement of the reference curve in the plot is non-compliant with the rating standard data plotting guidelines, so I consider this to be a minor technical issue that does not change the quoted performance value. The documents with the wrongly fitted ISO 717-1 reference curve are:

- CGD-AP2 -Contempo-D.glazed 2 x 6-iss.3-Dec18.pdf
- CSG-AP1 -Clear s.glazed 1 x 10-iss.5-Apr16.pdf
- FSG-AP1 -Fineline S.O.glazed 1 x 10-iss.1-July16.pdf
- FSG-AP2 -Fineline S.O.glazed 1 x 12-iss.1-July16.pdf

4 Conclusion

I have reviewed 64 acoustic performance documents from Fusion Partitions. None of the quoted performance ratings were found to be anomalous. Approximately half of the documents did not have a 1/3-octave band results plot. From the documents that had it, only four have a minor error in the location of the reference curve In relation to the test data and quoted rating value, but the quoted value is correct nevertheless.

I hope that the above satisfies your requirements. If you have any queries please let me know.

Yours sincerely

Signed by

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Independent Acoustic Consultant