

CONFIDENTIAL

**TEST REPORT ON DETERMINATION OF
RANDOM INCIDENCE SOUND ABSORPTION COEFFICIENT OF
ACOUSTICAL PERFORATED GYPSUM BOARD PANEL**

NO. NVH/4844/2015-16/590(V-2)-3

18th September 2015

- 1.0 CUSTOMER NAME :** Gyptech Systems
C-17, Miraj Apartments, Near Natubhai Centre
Race Course (W), Vadodara-390 007
- 2.0 LETTER REF. :** E-mail dated 7th September 2015
- 3.0 TEST COMPONENT DETAILS :** Acoustical perforated gypsum board panel with
round and capsule perforation style and of 12 mm
with following details given by customer:
- Density and thickness : 700 kg/m³ and 12 mm
 - Size of one panel : Acoustical perforated gypsum board panel of
595mm X 595mm – total 16 tiles
 - Type of mounting : Type E-300 mounting

4.0 TEST REQUIREMENTS :

Measurement of Random incidence sound absorption coefficient on above mentioned acoustical perforated gypsum board panel with 300 mm air gap as per ASTM C-423 / ISO 354 in reverberation chamber.

5.0 TEST PROCEDURE :

The Random incidence sound absorption coefficient measurement was carried out on acoustical perforated gypsum board panel and acoustical perforated gypsum board panel with 50 mm glass wool with 300 mm air gap as per ASTM C-423 / ISO 354 in reverberation chamber. The test sample was mounted on the floor with Type E 300 mounting. Please refer figure 1 for test set up and test component details. The measurement was carried out at temperature 25°C +/- 1°C and humidity 68%.

6.0 DATE OF EVALUATION :

The Random incidence sound absorption coefficient measurement was carried out on above mentioned Acoustical perforated gypsum board panel on 15th September 2015.

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7.0 INSTRUMENTATION :

Sr. No	Instrument Name	Type / Model No	Make	Calibrated on	Calibration due on
1	Multi-channel Data Acquisition System	3560 D	Brue! & Kjaer, Denmark	30-Jul-14	30-Jul-15
2	½" Random Incidence Microphone	378B20 (Sr. No. 109015)	PCB, USA	17-Jun-15	17-Jun-16
3	Power Amplifier	2716	Brue! & Kjaer, Denmark	-	-
4	Omni directionnel sound source	Omni power 4296	Brue! & Kjaer, Denmark	-	-
5	Reverberation room	110 m ³	-	-	-

8.0 TEST RESULTS :

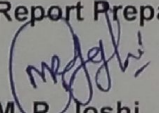
8.1 Table 1 shows the average values for random incidence sound absorption coefficient of acoustical perforated gypsum board panel with and without 50 mm glass wool with 300 mm air gap in the frequency range of 125 Hz to 5000 Hz.

8.2 Figure 2 shows the plot for random incidence sound absorption coefficient of acoustical perforated gypsum board panel with and without 50 mm glass wool with 300 mm air gap in the frequency range of 125 Hz to 5000 Hz.

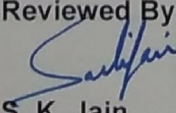
9.0 CONCLUSIONS :

The Noise Reduction Coefficient (NRC) and Sound Absorption Average(SAA) is calculated as per ASTM C- 423		
Sample Name	Acoustical perforated gypsum board panel with 300 mm air gap	Acoustical perforated gypsum board panel with 50 mm glass wool with 300 mm air gap
Noise Reduction Coefficient (NRC)	0.49	0.61
Sound Absorption Average(SAA)	0.49	0.61

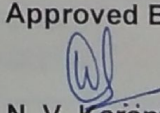
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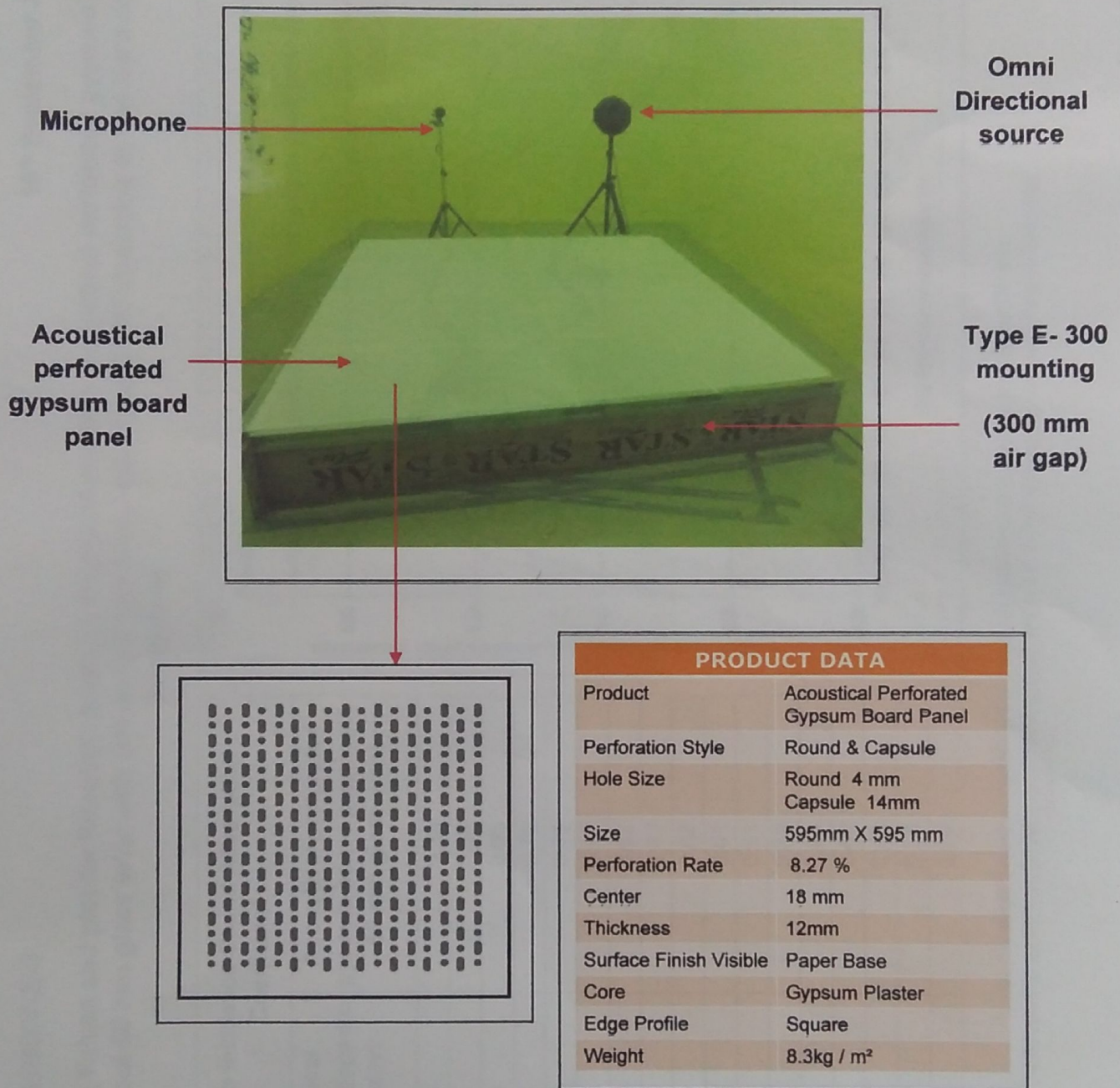
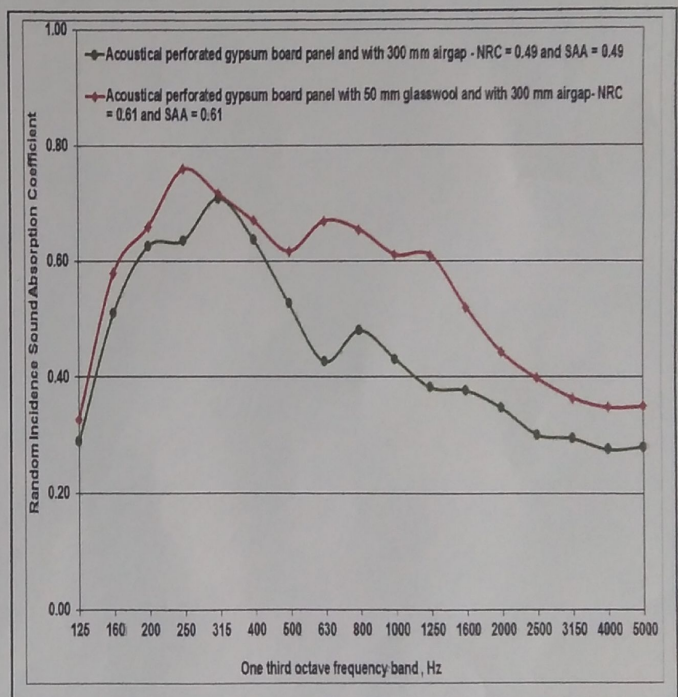


Figure 1: Test set up for mounting and testing of Acoustical perforated gypsum board panel in reverberation chamber

Table 1 and Figure 2: Values and plot for Random Incidence Sound Absorption Acoustical perforated gypsum board panel with and without 50 mm glass wool with 300 mm air gap along with Type E-300 mounting at one third octave frequencies

One third octave frequency, Hz	Random Incidence Sound Absorption Coefficient	
	Acoustical perforated gypsum board panel	Acoustical perforated gypsum board panel with 50 mm glass wool
125	0.29	0.33
160	0.51	0.58
200	0.63	0.66
250	0.64	0.76
315	0.71	0.72
400	0.64	0.67
500	0.53	0.62
630	0.43	0.67
800	0.48	0.66
1000	0.43	0.61
1250	0.38	0.61
1600	0.38	0.52
2000	0.35	0.44
2500	0.30	0.40
3150	0.29	0.36
4000	0.27	0.35
5000	0.28	0.35



Note: (*Measurement uncertainty for Random incidence sound absorption coefficient evaluation is $\pm 4.23\%$ at 95.45% confidence level and $k = 2$ in the frequency range 125 Hz to 5000 Hz)