

Suggestion of vibration proposal

China
April, 2021

Proposal

China's Draft Proposal for GTR Vibration Test

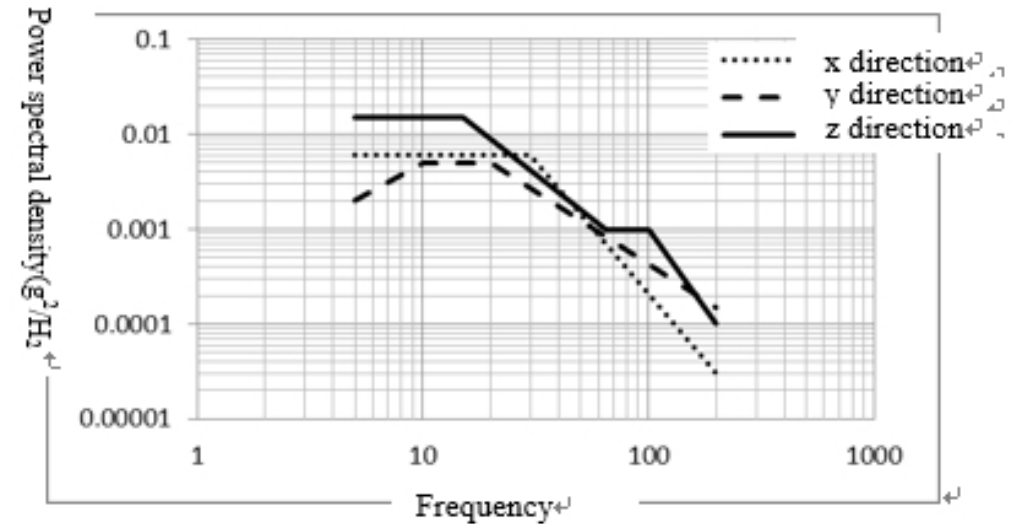
1. GTR should give a recommended vibration profile.

□ Test procedure

For REESS or REESS subsystem(s) on vehicles of classes M1 and N1, the vibration test parameters shall be based on Table 1 and Figure 1.

Table 1 Vibration test conditions for battery packs or systems on vehicles of Classes M₁ and N₁

Random vibration			
Frequency Hz	Power spectral density (PSD) of z axis, g ² /Hz	Power spectral density (PSD) of y axis, g ² /Hz	Power spectral density (PSD) of x axis, g ² /Hz
5	0.015	0.002	0.006
10	/	0.005	/
15	0.015	/	/
20	/	0.005	/
30	/	/	0.006
65	0.001	/	/
100	0.001	/	/
200	0.0001	0.00015	0.00003
RMS	0.64g	0.45g	0.50g
Time	12h	12h	12h
Sinusoidal constant frequency vibration			
Amplitude	±1.5g	±1.0g	±1.0g
Frequency	24Hz	24Hz	24Hz
Time	1h	1h	1h



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1. GTR should give a recommended vibration profile.

□ Test procedure

During the test, the cell voltage and temperature shall be monitored.

Note: termination condition of sharp voltage change provided by the manufacturer, where a test terminated based on using such a condition shall be treated as to fail.

If the test subject has multiple mounting directions (x/y/z), the test shall be performed in the direction with the largest RMS. For battery packs or systems mounted on the vehicle top, the test shall be performed under the vibration test parameters provided by the manufacturer (but not less than those in Table 1 and Figure 1).

At the request of the manufacturer, a higher acceleration level as well as a higher maximum frequency may be used.

At the choice of the manufacturer, a vibration test profile determined by the vehicle manufacturer verified for the vehicle application may be used as a substitute for the frequency - acceleration correlation of Table 1. The REESS certified according to this condition shall be limited to the installation for a specific vehicle type.

The test shall end with an observation period of 2 hour at the ambient temperature conditions of the test environment.

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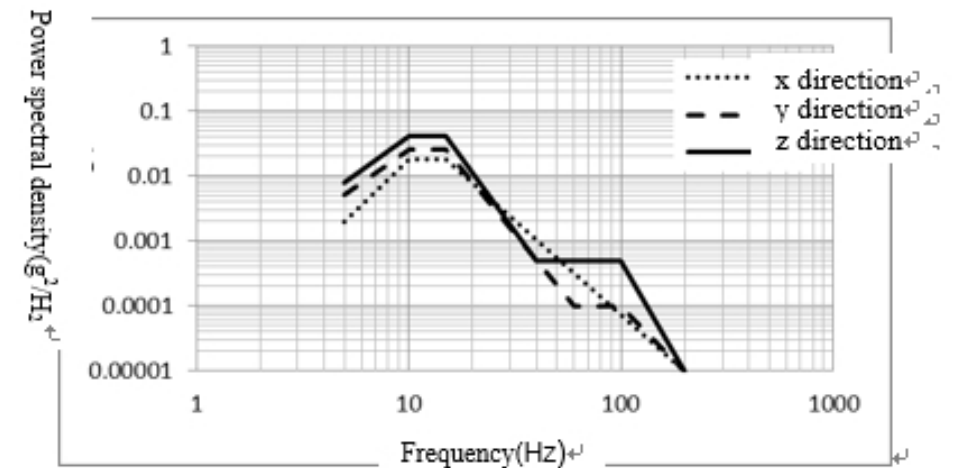
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1. GTR should give a recommended vibration profile.

For REESS or REESS subsystem(s) on vehicles other than Classes M1 and N1, the vibration test parameters shall be based on Table 2 and Figure 2.

Table 2 Vibration test conditions for battery packs or systems on vehicles other than Classes M₁ and N₁

Random vibration			
Frequency Hz	Power spectral density (PSD) of z axis, g ² /Hz	Power spectral density (PSD) of y axis, g ² /Hz	Power spectral density (PSD) of x axis, g ² /Hz
5	0.008	0.005	0.002
10	0.042	0.025	0.018
15	0.042	0.025	0.018
40	0.0005	/	/
60	/	0.0001	/
100	0.0005	0.0001	/
200	0.00001	0.00001	0.00001
RMS	0.73g	0.57g	0.52g
Time	12h	12h	12h
Sinusoidal constant frequency vibration			
Amplitude	±1.5g	±1.5g	±2.0g
Frequency	20Hz	20Hz	20Hz
Time	2h	2h	2h



2. Vibration profile determined by the manufacturer is also allowed, which should be based on vehicle test data.

3. The vibration test by a third party should be conducted.

Thanks for your attention!