the provisions contained in the measurement procedures shall take precedence.


§ 15.32 Test procedures for CPU boards and computer power supplies.

Power supplies and CPU boards used with personal computers and for which separate authorizations are required to be obtained shall be tested as follows:

(a) CPU boards shall be tested as follows:

(1) Testing for radiated emissions shall be performed with the CPU board installed in a typical enclosure but with the enclosure’s cover removed so that the internal circuitry is exposed at the top and on at least two sides. Additional components, including a power supply, peripheral devices, and subassemblies, shall be added, as needed, to result in a complete personal computer system. If the oscillator and the microprocessor circuits are contained on separate circuit boards, both boards, typical of the combination that would normally be employed, must be used in the test. Testing shall be in accordance with the procedures specified in §15.31. Under this procedure, CPU boards that comply with the limits in §15.109 must be marketed together with the specific enclosure used for the test.

(3) The test demonstrating compliance with the AC power line conducted limits specified in §15.107 shall be performed in accordance with the procedures specified in §15.31 using an enclosure, peripherals, power supply and subassemblies that are typical of the type with which the CPU board under test would normally be employed.

(b) The power supply shall be tested installed in an enclosure that is typical of the type within which it would normally be installed. Additional components, including peripheral devices, a CPU board, and subassemblies, shall be added, as needed, to result in a complete personal computer system. Testing shall be in accordance with the procedures specified in §15.31 and must demonstrate compliance with all of the standards contained in this part.


§ 15.33 Frequency range of radiated measurements.

(a) For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to at least the frequency shown in this paragraph:
§ 15.33

(1) If the intentional radiator operates below 10 GHz; to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

(2) If the intentional radiator operates at or above 10 GHz and below 30 GHz; to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.

(3) If the intentional radiator operates at or above 30 GHz; to the fifth harmonic of the highest fundamental frequency or to 200 GHz, whichever is lower, unless specified otherwise elsewhere in the rules.

(4) If the intentional radiator contains a digital device, regardless of whether this digital device controls the functions of the intentional radiator or the digital device is used for additional control or function purposes other than to enable the operation of the intentional radiator, the frequency range shall be investigated up to the range specified in paragraphs (a)(1) through (a)(3) of this section or the range applicable to the digital device, as shown in paragraph (b)(1) of this section, whichever is the higher frequency range of investigation.

(b) For unintentional radiators:

(1) Except as otherwise indicated in paragraphs (b)(2) or (b)(3) of this section, for an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

<table>
<thead>
<tr>
<th>Highest frequency generated or used in the device or on which the device operates or tunes (MHz)</th>
<th>Upper frequency of measurement range (MHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 1.705</td>
<td>30</td>
</tr>
<tr>
<td>1.705–10</td>
<td>400</td>
</tr>
<tr>
<td>10–30</td>
<td>500</td>
</tr>
</tbody>
</table>

(2) A unintentional radiator, excluding a digital device, in which the highest frequency generated in the device, the highest frequency used in the device and the highest frequency on which the device operates or tunes are less than 30 MHz and which, in accordance with §15.109, is required to comply with standards on the level of radiated emissions within the frequency range 9 kHz to 30 MHz, such as a CB receiver or a device designed to conduct its radio frequency emissions via connecting wires or cables, e.g., a carrier current system not intended to radiate, shall be investigated from the lowest radio frequency generated or used in the device, without going below 9 kHz (25 MHz for CB receivers), up to the frequency shown in the following table. If the unintentional radiator contains a digital device, the upper frequency to be investigated shall be that shown in the table below or in the table in paragraph (b)(1) of this section, as based on both the highest frequency generated and the highest frequency used in the digital device, whichever range is higher.

<table>
<thead>
<tr>
<th>Highest frequency generated or used in the device or on which the device operates or tunes (MHz)</th>
<th>Upper frequency of measurement range (MHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 1.705</td>
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<td>1.705–10</td>
<td>400</td>
</tr>
<tr>
<td>10–30</td>
<td>500</td>
</tr>
</tbody>
</table>

(c) The above specified frequency ranges of measurements apply to the measurement of radiated emissions and, in the case of receivers, the measurement to demonstrate compliance with the antenna conduction limits specified in §15.111. The frequency range of measurements for AC power line conducted limits is specified in §§15.107 and 15.207 and applies to all equipment subject to those regulations. In some cases, depending on the frequency(ies) generated and used by
§ 15.37 Transition provisions for compliance with the rules.

(a) For all intentional and unintentional radiators, except for receivers:

(b) Unless otherwise stated, on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurements are specified in this part, including emission measurements below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules, e.g., see §§15.255, 15.509 and 15.511. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz. Measurements of AC power line conducted emissions are performed using a CISPR quasi-peak detector, even for devices for which average radiated emission measurements are specified.