Federal Communications Commission

§ 90.213 Frequency stability.

(a) Unless noted elsewhere, transmitters used in the services governed by this part must have a minimum frequency stability as specified in the following table.

(b) 

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>Frequency Stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 kHz to 1 MHz</td>
<td>100 Hz/l/min</td>
</tr>
<tr>
<td>1 MHz to 10 MHz</td>
<td>10 Hz/l/min</td>
</tr>
<tr>
<td>Above 10 MHz</td>
<td>1 Hz/l/min</td>
</tr>
</tbody>
</table>

(c) Station identification shall be transmitted in the unscrambled analog mode (clear voice) or Morse code in accordance with the provisions of §90.207(i).


§ 90.212 Provisions relating to the use of scrambling devices and digital voice modulation.

(a) Analog scrambling techniques may be employed at any station authorized the use of A3E, F3E, or G3E emission, subject to the provisions of paragraph (d) of this section.

(b) The use of digital scrambling techniques or digital voice modulation requires the specific authorization of F1E or G1E emission, and these emissions will only be authorized subject to the provisions of paragraph (d) of this section.

(c) The transmission of any non-voice information or data under the authorization of F1E or G1E emission is prohibited. However, stations authorized the use of F1E or G1E emission may also be authorized F1D, F2D, G1D or G2D emission for non-voice communication purposes, pursuant to §90.207(i).

(d) Station identification shall be transmitted in the unscrambled analog mode (clear voice) or Morse code in accordance with the provisions of §90.207(i).

### § 90.214 Transient frequency behavior.

Transmitters designed to operate in the 150-174 MHz and 421-512 MHz frequency bands must maintain transient frequency differences within the maximum frequency difference limits during the time intervals indicated:

<table>
<thead>
<tr>
<th>Time intervals</th>
<th>Maximum frequency difference</th>
<th>All equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>150 to 174 MHz</td>
</tr>
<tr>
<td>Transient Frequency Behavior for Equipment Designed to Operate on 25 kHz Channels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>t_{11}</td>
<td>±12.5 kHz</td>
<td>5.0 ms</td>
</tr>
<tr>
<td>t_{12}</td>
<td>±25.0 kHz</td>
<td>20.0 ms</td>
</tr>
<tr>
<td>t_{13}</td>
<td>±50.0 kHz</td>
<td>5.0 ms</td>
</tr>
<tr>
<td>Transient Frequency Behavior for Equipment Designed to Operate on 12.5 kHz Channels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>t_{21}</td>
<td>±12.5 kHz</td>
<td>5.0 ms</td>
</tr>
<tr>
<td>t_{22}</td>
<td>±25.0 kHz</td>
<td>20.0 ms</td>
</tr>
<tr>
<td>t_{23}</td>
<td>±50.0 kHz</td>
<td>5.0 ms</td>
</tr>
<tr>
<td>Transient Frequency Behavior for Equipment Designed to Operate on 6.25 kHz Channels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>t_{31}</td>
<td>±6.25 kHz</td>
<td>5.0 ms</td>
</tr>
<tr>
<td>t_{32}</td>
<td>±12.5 kHz</td>
<td>20.0 ms</td>
</tr>
<tr>
<td>t_{33}</td>
<td>±25.0 kHz</td>
<td>5.0 ms</td>
</tr>
</tbody>
</table>

- $t_{1n}$ is the instant when a 1 kHz test signal is completely suppressed, including any capture time due to phasing.
- $t_{2n}$ is the time period immediately following $t_{1n}$.
- $t_{3n}$ is the time period from the instant when the transmitter is turned off until $t_{2n}$.
- $t_{2n}$ is the instant when the 1 kHz test signal starts to rise.
- During the time from the end of $t_{2n}$ to the beginning of $t_{3n}$, the frequency difference must not exceed the limits specified in §90.213.
- Difference between the actual transmitter frequency and the assigned transmitter frequency.
- If the transmitter carrier output power rating is 6 watts or less, the frequency difference during this time period may exceed the frequency differece limits for this time period.