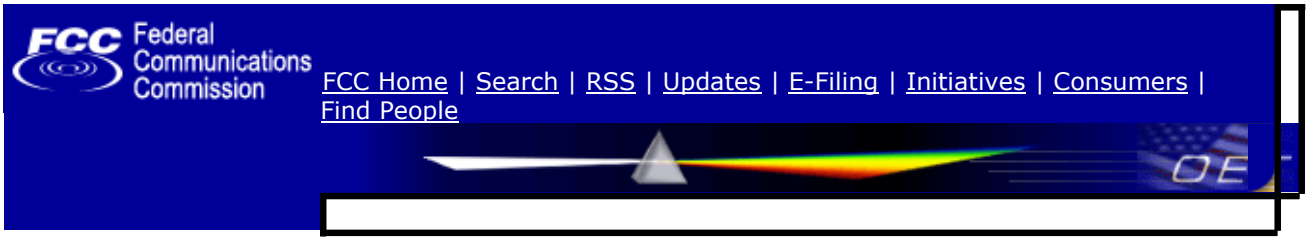
**Subject:** Response to Inquiry to FCC (Tracking Number 796294)




**Office of Engineering and Technology**

**Inquiry:**
We are preparing for certification testing of a product we have developed and want to verify that it would fall under Section 15.231, paragraph (a). The product is used to reduce the spread of communicable diseases by ensuring compliance with corporate or government hand sanitization policies. A radio in a hand sanitization dispenser (Tag) transmits a message to a receiving Hub when the hand sanitizer is manually activated. The messages received by the Hub control an alarm when the usage characteristics of the dispenser are not consistent with the policies of the organization, such as when a person enters a room but does not clean his hands within a certain period of time. Since the product is manually activated and controls an alarm based on that activation, it would seem to fall under 15.231 paragraph (a). Can you confirm our interpretation of the rules under this section?

Regards,
Brad Cole

**Response:**

From your description, it appears that the device you describe can be certified under rule part 15.231(a). If it is manually activated, it would have to have a switch to initiate the transmission. The rule part is such that data with a control signal is permitted. The device would also to have to comply with the radiated field strength as specified in 15.231 (b). The device must not transmit in the restricted band of operation as shown in rule part 15.205. Rule part 15.231 is as follows;

**§ 15.231 Periodic operation in the band 40.66?40.70 MHz and above 70 MHz.**

**(a) The provisions of this section are restricted to periodic operation within the band 40.66?40.70 MHz and above 70 MHz.** Except as shown in paragraph (e) of this section, the intentional radiator is restricted to the transmission of a control signal such as those used with alarm systems, door openers, remote switches, etc. Continuous transmissions, voice, video and the radio control of toys are not permitted. Data is permitted to be sent with a control signal. The following conditions shall be met to comply with the provisions for this periodic operation:

**(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.**

**(2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.**

(3) Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.

(4) Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition

(5) Transmission of set-up information for security systems may exceed the transmission duration limits in paragraphs (a)(1) and (a)(2) of this section, provided such transmissions are under the control of a professional installer and do not exceed ten seconds after a manually operated switch is released or a transmitter is activated automatically. Such set-up information may include data.

**(b) In addition to the provisions of §15.205, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:**

| Fundamental frequency (MHz) | Field strength of fundamental (microvolts/meter) | Field strength of spurious emissions (microvolts/meter) |
|---|---|---|
| 40.66?40.70 | 2,250 | 225 |
| 70?130 | 1,250 | 125 |
| 130?174 | [1]1,250 to 3,750 | [1]125 to 375 |
| 174?260 | 3,750 | 375 |
| 260?470 | [1]3,750 to 12,500 | [1]375 to 1,250 |
| Above 470 | 12,500 | 1,250 |

**[1]Linear interpolations.**

(1) The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges.

(2) Intentional radiators operating under the provisions of this section shall demonstrate compliance with the limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions. As an alternative, compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR quasi-peak detector. The specific method of measurement employed shall be specified in the application for equipment authorization. If average emission measurements are employed, the provisions in §15.35 for averaging pulsed emissions and for limiting peak emissions apply. Further, compliance with the provisions of §15.205 shall be demonstrated using the measurement instrumentation specified in that section.

(3) The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in §15.209, whichever limit permits a higher field strength.

(c) The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

(d) For devices operating within the frequency band 40.66?40.70 MHz, the bandwidth of the emission shall be confined within the band edges and the frequency tolerance of the carrier shall be ±0.01%. This frequency tolerance shall be maintained for a temperature variation of ?20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to

115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

(e) Intentional radiators may operate at a periodic rate exceeding that specified in paragraph (a) of this section and may be employed for any type of operation, including operation prohibited in paragraph (a) of this section, provided the intentional radiator complies with the provisions of paragraphs (b) through (d) of this section, except the field strength table in paragraph (b) of this section is replaced by the following:

| **Fundamental frequency (MHz)** | **Field strength of fundamental (microvolts/meter)** | **Field strength of spurious emission (microvolts/meter)** |
|---|---|---|
| 40.66?40.70 | 1,000 | 100 |
| 70?130 | 500 | 50 |
| 130?174 | 500 to 1,500[1] | 50 to 150[1] |
| 174?260 | 1,500 | 150 |
| 260?470 | 1,500 to 5,000[1] | 150 to 500[1] |
| Above 470 | 5,000 | 500 |

[1] Linear interpolations.

In addition, devices operated under the provisions of this paragraph shall be provided with a means for automatically limiting operation so that the duration of each transmission shall not be greater than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission but in no case less than 10 seconds.

### § 15.205 Restricted bands of operation.

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| **MHz** | **MHz** | **MHz** | **GHz** |
|---|---|---|---|
| 0.090?0.110 | 16.42?16.423 | 399.9?410 | 4.5?5.15 |
| [1]0.495?0.505 | 16.69475?16.69525 | 608?614 | 5.35?5.46 |
| 2.1735?2.1905 | 16.80425?16.80475 | 960?1240 | 7.25?7.75 |
| 4.125?4.128 | 25.5?25.67 | 1300?1427 | 8.025?8.5 |
| 4.17725?4.17775 | 37.5?38.25 | 1435?1626.5 | 9.0?9.2 |
| 4.20725?4.20775 | 73?74.6 | 1645.5?1646.5 | 9.3?9.5 |
| 6.215?6.218 | 74.8?75.2 | 1660?1710 | 10.6?12.7 |
| 6.26775?6.26825 | 108?121.94 | 1718.8?1722.2 | 13.25?13.4 |
| 6.31175?6.31225 | 123?138 | 2200?2300 | 14.47?14.5 |
| 8.291?8.294 | 149.9?150.05 | 2310?2390 | 15.35?16.2 |
| 8.362?8.366 | 156.52475?156.52525 | 2483.5?2500 | 17.7?21.4 |
| 8.37625?8.38675 | 156.7?156.9 | 2690?2900 | 22.01?23.12 |
| 8.41425?8.41475 | 162.0125?167.17 | 3260?3267 | 23.6?24.0 |
| 12.29?12.293 | 167.72?173.2 | 3332?3339 | 31.2?31.8 |
| 12.51975?12.52025 | 240?285 | 3345.8?3358 | 36.43?36.5 |
| 12.57675?12.57725 | 322?335.4 | 3600?4400 | ([2]) |

| | | | |
|---|---|---|---|
| 13.36?13.41 | | | |

[1] Until February 1, 1999, this restricted band shall be 0.490?0.510 MHz.

[2] Above 38.6

(b) Except as provided in paragraphs (d) and (e) of this section, the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

(c) Except as provided in paragraphs (d) and (e) of this section, regardless of the field strength limits specified elsewhere in this subpart, the provisions of this section apply to emissions from any intentional radiator.

(d) The following devices are exempt from the requirements of this section:

(1) Swept frequency field disturbance sensors operating between 1.705 and 37 MHz provided their emissions only sweep through the bands listed in paragraph (a) of this section, the sweep is never stopped with the fundamental emission within the bands listed in paragraph (a) of this section, and the fundamental emission is outside of the bands listed in paragraph (a) of this section more than 99% of the time the device is actively transmitting, without compensation for duty cycle.

(2) Transmitters used to detect buried electronic markers at 101.4 kHz which are employed by telephone companies.

(3) Cable locating equipment operated pursuant to §15.213.

(4) Any equipment operated under the provisions of §§15.253, 15.255 or 15.257.

(5) Biomedical telemetry devices operating under the provisions of §15.242 of this part are not subject to the restricted band 608?614 MHz but are subject to compliance within the other restricted bands.

(6) Transmitters operating under the provisions of subparts D or F of this part.

(7) Devices operated pursuant to §15.225 are exempt from complying with this section for the 13.36?13.41 MHz band only.

(8) Devices operated in the 24.075?24.175 GHz band under §15.245 are exempt from complying with the requirements of this section for the 48.15?48.35 GHz and 72.225?72.525 GHz bands only, and shall not exceed the limits specified in §15.245(b).

(9) Devices operated in the 24.0?24.25 GHz band under §15.249 are exempt from complying with the requirements of this section for the 48.0?48.5 GHz and 72.0?72.75 GHz bands only, and shall not exceed the limits specified in §15.249(a).

(e) Harmonic emissions appearing in the restricted bands above 17.7 GHz from field disturbance sensors operating under the provisions of §15.245 shall not exceed the limits specified in §15.245(b).

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