

The following FCC correspondence was used in determining the most appropriate set of frequencies and duty cycles required for demonstrating DUT compliance. While the garage door opener in question is not a Learned Mode Transmitter, it performs a similar function and its testing is thus guided to some extent by the procedure used in testing such a device.

Currently Display Inquiry Tracking Number: **642164**

Contact Information:

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Inquiry Details:

First Inquiry Category: **Radio Service Rules**
Second Inquiry Category: **Part 15 Intentional Radiators**
Third Inquiry Category: **Remote Control Devices**

We are in the process of testing and preparing submission for certification of a Lear Corporation transmitter. This transmitter is designed to emulate existing garage door / gate control transmitters and have the ability to transmit on multiple user-selected frequencies. This is not a learning transmitter, as the user selects a protocol (frequency and code) from an available pre-defined set based on make, model, or more detailed information about their door/gate opener. Attached is a more detailed letter and test proposal. We hope to make this application through a TCB. Please review.

---Reply from Customer on 07/24/2005---

1) We have proposed the 30 %, 50 %, and 80 % duty cycle tests based on the test procedure used for learning garage door transmitters. Since this device performs the same function we chose to test it in a similar manner. Like the learning transmitters, it has an internal attenuator that adjusts the output level as a function of duty cycle. However, from the comments above would the FCC find it sufficient that the device be tested with only the worst case duty factor (device on for the longest period of time / 100ms at the proposed test frequencies)? 2) Yes, the bandwidth will be aggregated when multiple frequencies are transmitted during the same button press. 3) Is it satisfactory that a TCB review this application?

---Reply from Customer on 08/02/2005---

If you can, please respond to the relpy above. thank you

Response:

1). Test worst case duty cycle. The dip settings shown in Table 2 do not produce maximum on time. Please explain.
2). Please be aware that when computing bandwidths you must use an aggregate of all bandwidths of frequencies used when activated.
Follow the procedure in paragraph 3 of the Public Notice on learned mode or trainable transmitters concerning duty cycle. Be sure to include the test of the worst case duty cycle. You may review this application.



PUBLIC NOTICE

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October 28, 2002

FCC Clarifies Equipment Certification Procedures for "Learned Mode" or "Trainable" Transmitters

This Public Notice is intended to clarify the information that should be provided in an application for certification of "Learned Mode" or "Trainable" transmitters.

"Learned Mode" or "Trainable" transmitters are typically sold as universal replacements or duplicates for garage door opener controls, keyless entry systems, security alarm systems, remote switches, and similar types of radio controlled devices. These transmitters are designed to recognize and replicate the operating frequency, duty cycle and coding scheme of the targeted radio system. They accomplish this only when operated in very close proximity to a system's receiver in order to prevent use for theft. These devices are subject to certification to ensure compliance with the technical requirements in Part 15 of the FCC Rules (47 CFR Part 15).

A significant number of the applications for certification of "Learned Mode" or "Trainable" transmitters have been incomplete or incorrect. For example, applicants did not properly specify the range of operating frequencies. In some cases the devices were found to be capable of transmitting in restricted frequency bands in violation of 47 CFR 15.205, which could potentially cause interference to radio services used for public safety. Applicants often did not determine the duty cycle properly, or apply it correctly when calculating the maximum field strength.

The following guidance is provided to ensure that future applications for certification of such equipment are complete and correct:

1. The application for certification must include a complete description of the operation of the devices, including the process it uses to learn and replicate the characteristics of the target system. The application should state how the learning process is constrained so as to minimize any potential for abuse. The statement must be consistent with the user manual instructions on replicating the frequencies and code of the target transmitter. In addition, it must provide assurances that there are no means (either software or hardware) for the end user to change the operating parameters from those reported in the application. A statement should also be included in the application that the Commission

will be notified, in writing, of any changes in the software or programming of the device that could affect the device's RF characteristics.

2. The test report must clearly state the specific frequencies or range of frequencies over which the transmitter is intended to operate. Test results must show that the transmitter operates only on the intended frequencies and is incapable of operating in the restricted frequency bands, as required by 47 CFR 15.205 and 15.209. If the device is designed to learn over a range of frequencies, the test report must include measurements that verify that the device does not exceed the field strength limits set forth in Section 15.231 with a source transmitter or equivalent signal generator operating on a low, medium and high frequency within the intended range (*see* Section 15.31(m)). The test report must include measurements that verify that the device's emissions do not exceed the limits in Section 15.231(b) for that specific frequency (or frequencies). Operating frequencies that have harmonics that fall in a restricted band below 1 GHz should also be tested. These harmonics must show compliance with 15.205. Below 1000 MHz measurements must be made with a CISPR Quasi-peak detector and above 1000 MHz with an average detector.
3. The test report must provide sufficient information to determine how the average value of the emission was determined for all operating conditions of the transmitter. The carrier of transmitters operating under 47 CFR 15.231 is typically pulsed. Peak levels of emissions are measured, then the average levels are obtained by subtracting the duty cycle factor from the peak levels. Section 15.35 (c) of the rules provides a procedure for calculating the duty cycle and average value. A procedure for calculating the duty cycle is also provided in Section 13.1.4.2 of the American National Standard identified as ANSI Standard, C63.4 -2001. Unless a trainable transmitter is capable of only learning over a range of duty cycles, compliance should be based on the worst case duty cycle. The test report must include measurements that demonstrate compliance for the worst case duty cycle for all "targeted transmitters". That is, the highest duty cycle factor must be calculated and used for determining compliance. If the trainable transmitter is capable of learning only over a specific range of duty cycles, compliance should be based on measurements using low, middle and high (worst case) duty cycles within the range.

Questions regarding this Public Notice may be addressed to Mr. Raymond LaForge at 1-301-362-3031 or rlaforge@fcc.gov.