Are Your Company's Consumer Electronics Exempt from FCC Marketing Regulations?

By Ronald E. Quirk, Jr.

Consumer electronics (CE) are integral parts of the Internet of Things (IoT). Manufacturers are designing and marketing CE devices that can perform functions that were unheard of only a year or so ago. The exponential growth of the IoT is, in part, the result of manufacturers adding wireless modules into all manner of products, which subjects those products to federal radio frequency (RF) equipment rules. With the exception of certain appliance categories that I will discuss later, virtually all types of CE that are manufactured, imported, and/or marketed in the United States, whether IoT devices or not, are subject to stringent regulations.

FEDERAL COMMUNICATIONS COMMISSION WARNS: COMPLY BEFORE YOU MARKET!

CE are clearly on the regulatory radar screen. During the past few years, the U.S. Federal Communications Commission (FCC) has imposed, and will continue to impose, substantial fines and other sanctions on manufacturers, importers, vendors, and distributors for marketing unauthorized CE and other RF devices. Entities that market RF devices in violation of the Communications Act of 1934, as amended (the Act) (47 U.S.C. § 151 et seq.) and/or the corresponding FCC rules are subject to, among other things, a base sanction of US$10,000 [47 U.S.C. § 302(b)] as well as a US$500 per day fine for willful violation of FCC rules (47 U.S.C. § 501). Each noncompliant RF device that is marketed constitutes a separate violation (see 47 U.S.C. § 502).

In recent years, the FCC has not been reticent about levying large financial sanctions on companies that market noncompliant RF devices, some of which have totaled in the hundreds of thousands of dollars [see, e.g., *ASUSTEK Computer, Inc.*, 29 FCC Rcd. 9974 (2014); *Pilot Travel Centers, LLC*, 19 FCC Rcd. 23113 (2004)]. The FCC is currently levying record fines against suppliers of noncompliant RF equipment and other rule violators. The FCC is facing criticism from Congress and getting pushback from industry over its eye-popping fines and other enforcement actions, but it's unlikely that the agency will alter its aggressive tactics in response. The FCC's Enforcement Bureau levied a record-setting US$100 million proposed fine against AT&T and has followed that up with several other multimillion-dollar fines. [See "GOP Criticism Unlikely to Deter Aggressive FCC Enforcement," *Law360*, (Nov. 25, 2015).] The FCC has also been actively using its authority to order unauthorized or illegal RF devices off the market [see, e.g., *Phong Le Company*, 28 FCC Rcd. 08188 (2013)]. Accordingly, it is critical that all responsible parties have a solid understanding of the FCC's rules and ensure compliance with them before introducing their CE products to the U.S. market.

CE CLASSIFICATIONS AND FCC AUTHORIZATION REQUIREMENTS

The crux of the FCC's CE rules is the mandate that CE may not be marketed in the United States until they have been tested for compliance with the applicable technical requirements and properly authorized (47 U.S.C. § 302). The FCC defines marketing very broadly: "The sale or lease, or offering for sale or lease, including advertising for sale or lease, or importation, shipment, or distribution for the purpose of selling or leasing or offering for sale or lease" [47 C.F.R. § 2.803(a)].

The testing and authorization requirements of CE vary considerably, depending on the FCC's regulatory classification of a given device. The more interference potential a device has, the more stringent the authorization requirements. In the CE realm, the FCC's rules include three general categories of regulated RF equipment, each with specific and unique interference prevention and regulatory approval requirements: 1) incidental radiators, 2) unintentional radiators, and 3) intentional radiators [see 47 C.F.R. §§ 15.3(n),(o),(z)].

INCIDENTAL RADIATORS

An incidental radiator is a device that generates RF energy during its operation

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but does not transmit or utilize RF energy for any purpose [47 C.F.R. § 15.3(n)]. Incidental radiators include equipment such as mechanical light switches and dc current motors. These devices are very lightly regulated. The FCC requires only that manufacturers of incidental radiators employ good engineering practices to diminish the risk of harmful interference before marketing (47 C.F.R. § 15.13).

UNINTENTIONAL RADIATORS

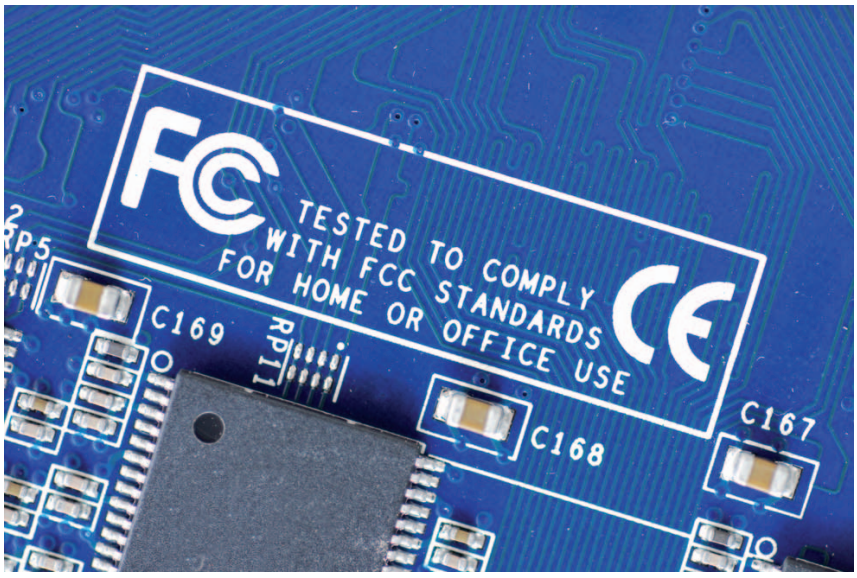
An unintentional radiator is a device that generates RF energy for use within the device or that sends RF signals by conduction to associated equipment via wiring but does not transmit RF energy [47 C.F.R. § 15.3(z)]. In general, any RF device (except an incidental radiator) that does not transmit RF energy is classified as an unintentional radiator.

Many types of CE and IoT devices are unintentional radiators. Examples include (but are not limited to) TV and radio receivers, personal computers and peripherals, central processing unit boards and power supplies, radio interface devices, smart battery chargers, and radar detectors as well as virtually any RF device containing a secure digital card that does not contain a transmitter (see 47 C.F.R. § 15.101).

Unintentional radiators that use digital techniques are subdivided into two categories:

- Class A digital devices: digital unintentional radiators marketed for use in business and industrial environments [47 C.F.R. § 15.3(h)]
- Class B digital devices: digital unintentional radiators marketed for use in residential environments [47 C.F.R. § 15.3(i)].

The FCC does not permit Class A digital devices to be marketed to the general public [see 47 C.F.R. § 15.3(h)]. Because Class B digital devices are intended to be sold to the public, they are subject to more stringent RF interference protection standards than are Class A digital devices (see, e.g., 47 C.F.R. § 15.109). Accordingly, if a digital device is going to be marketed to the public, the responsible party should ensure that it is clearly categorized as a Class B digital device when submitting it to a laboratory for compliance testing and authorization.



This FCC label includes a unique identifier, the trade name of the product, the model number, and whether it is a Class A or Class B digital device. "Home or office" indicates a Class B device.

Most unintentional radiators are subject to one of two types of premarketing authorization: 1) verification or 2) declaration of conformity (DoC) [47 C.F.R. § 15.101(a)]. The majority of unintentional radiator types are subject to verification, but it is essential to be certain that the correct authorization procedure for a given device is utilized, as improper authorization can result in substantial financial penalties or other FCC sanctions. The FCC's rules list the specific types of unintentional radiators that are subject to verification or DoC. [47 C.F.R. § 15.101(a). Examples of devices subject to DoC include PCs and peripherals, microwave ovens, radio receivers, and TV interface devices. A very few types of unintentional radiators are subject to certification prior to marketing. The certification procedure is described later.]

VERIFICATION

Verification is a procedure wherein the responsible party tests a device to ensure that it complies with the FCC's technical requirements and obtains documentation to prove compliance with the FCC's rules [47 C.F.R. § 2.902(a)]. This is typically done by submitting a prototype and other required information to a testing lab, obtaining a verification certificate from the lab (assuming the device passes the required tests), and retaining the certificate and testing records in case the FCC conducts an audit. Testing labs typically charge US$2,500–5,000 for product testing, and the turnaround time is usually two weeks or fewer. There is no need to submit any information to the FCC unless requested [47 C.F.R. § 2.902(a)].

Verification, and all other forms of authorization, attach to subsequently

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITION; (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDERSIRED OPERATION.

A conspicuous label containing a statement that the device complies with Part 15 of the FCC's rules.

Any company in the CE supply chain should be familiar with the FCC's marketing rules, policies, and assignment of responsibility.

marketed devices, that is, all devices that are identical (the FCC defines the term *identical* to mean, "Identical within the variation that can be expected to arise as a result of quantity production techniques"); (47 C.F.R. § 2.908) to the tested and authorized prototype must comply with the FCC's rules when they are marketed or operated [47 C.F.R. § 2.902(b)]. Hence, it is critical that responsible parties have strict quality control procedures in place to ensure that all identical RF devices marketed after testing and authorization comply with the pertinent FCC rules.

All devices subject to verification must be labeled before marketing [47 C.F.R. § 15.19(a)(3)]. A label must be placed in a conspicuous location on the device and contain a statement that the device complies with Part 15 of the FCC's rules and that operation is subject to two conditions: 1) it may not cause harmful interference, and 2) it must accept any interference received [47 C.F.R. § 15.19(a)(3)].

The labeling requirements extend to advertising. All advertisements for RF devices (no matter how authorized) must include proper labeling information. Labeling is critically important because a violation of this requirement is often the first thing that is noticed by competitors, which, when brought to the FCC's attention, will almost certainly trigger an enforcement action.

DECLARATION OF CONFORMITY

DoC is a procedure very similar to that of verification: The subject device is tested for compliance with FCC technical requirements, and (assuming the device passes the tests) the responsible party obtains a DoC that must be retained in the event of an FCC audit [47 C.F.R. § 2.906(a)]. Unlike verification (wherein any credible testing lab may be used), devices requiring a DoC must be tested by a laboratory accredited by the National Voluntary Laboratory Accreditation Program, the American Association of Laboratory Accreditation, or an accredited laboratory designated by the FCC under the terms of a negotiated mutual recognition agreement with other countries (see www.fcc.gov/oet/ea/procedures.html).

The labeling/user manual requirements for DoC-authorized devices require a "unique identifier" on the label as well as the trade name of the product, the model number, and, for some devices, information as to whether the device was tested after assembling or assembled from tested components [see 49 C.F.R. §§ 2.1074, 15.19(b)]. All advertisements for DoC devices must contain the required labeling information.

INTENTIONAL RADIATORS

The FCC defines an intentional radiator as a "device that intentionally generates and emits radio frequency energy by radiation or induction" [47 C.F.R. § 15.3(o)]. Basically, any device that transmits RF energy is an intentional radiator. Examples include cell phones, walkie-talkies, wireless connections, Bluetooth connections, short-range broadcast equipment, wireless key-access systems, citizens band radios, and high-power transmitters, such as commercial mobile two-way radio transmitters. Many types of low-power, unlicensed RF devices are subject to the FCC's Part 15 rule technical requirements. Low-power industrial, scientific, and medical equipment is subject to Part 18 technical requirements. Higher-powered, licensed devices are subject to the technical requirements in various other FCC rule sections:

1) Part 22 [cellular and other commercial mobile radio services (CMRS)]
2) Part 24 [personal communication service (PCS)]
3) Part 25 (satellite)
4) Part 27 (miscellaneous wireless services)
5) Part 73 (broadcast)
6) Part 74 (broadcast translators and boosters)
7) Part 80 (very high frequency transceivers and maritime radio)
8) Part 84 (respiratory protective devices)
9) Part 87 (aviation devices)
10) Part 90 (private land mobile devices)
11) Part 95 (personal radio devices)
12) Part 97 (amateur radio services) and
13) Part 101 (fixed microwave devices).

Intentional radiators are authorized by the certification process [47 C.F.R. § 2.907(a)].

A certification is issued by an FCC-authorized telecommunications certification body (TCB) based on representations and test data submitted by the applicant [47 C.F.R. § 2.907(a)]. Any entity seeking to obtain certification of an RF device must comply with the following procedures.

First, the responsible party must obtain an FCC registration number (FRN). An FRN, which is required of all entities that do business with the FCC, is available for free by registering via the FCC's website (see www.fcc.gov/help/getting-fcc-registration-number-frn-universal-licensing-system-uls).

Second, an FCC grantee code must be procured. A grantee code is a three- or five-digit code used to designate the manufacturer or other responsible party (referred to as the *grantee*) for certified RF devices [47 C.F.R. § 2.926(c)]. A Grantee Code, which currently costs US$65, may be obtained by an online application through the FCC's website (see 47 C.F.R. § 1.1103; all FCC fees are subject to change periodically).

Third, a permissible operating frequency for the device must be chosen.

Because many frequencies have restrictions on their use, it is advisable to review the FCC's table of frequencies to determine which would be the most desirable frequency or frequencies on which an intentional radiator can operate (see generally 47 C.F.R. § 2.106).

After choosing the appropriate frequency, a production-ready device should be sent to an FCC-accredited laboratory for testing to ensure compliance with the applicable FCC rules [see 47 C.F.R. §§ 2.907(a), 2.911(d)]. The lab tests for compliance with FCC requirements concerning output power, harmonics, and RF emissions. (The testing and measurement requirements for low-power, unlicensed devices are contained in Part 15 or Part 18, depending on the type of device. See 47 C.F.R. § 2.1041. For licensed devices, the testing and measurement requirements are specified in §§ 2.1046–2.1057 of the FCC's rules.)

After testing is complete, the test results and a certification application are submitted to a TCB for review and determination as to whether certification will be granted. [See 47 C.F.R. § 2.911; see also *In the Matter of Amendment of Parts 0, 1, 2, and 15 of the Commission's Rules Regarding Authorization of Radiofrequency Equipment*, *Report and Order*, 29 FCC Rcd. 16335 (2014) (*RF Equipment Order*) at ¶ 9.] The current certification fee for a receiver device is US$535; for all other applicable RF devices, the fee is US$1,365 per device (see 47 C.F.R. § 1.1103). For many RF devices, the following information must be provided with the application in the form of a technical report: manufacturer name and address, installation and operating instructions, block diagram, test results, FCC ID, and photos of the device and its components (see 47 C.F.R. § 2.1033).

Once the review process has been finished and assuming that the application is complete and testing results are accurate, the TCB will issue a grant of certification within a short period of time. Like unintentional radiators, intentional radiators must be properly labeled and user instructions included prior to being marketed or offered for sale. The label and user instruction content for a certified device is the same as that of a verified device [see 47 C.F.R. § 15.19(a)]. All product advertisements must contain proper labeling information. Certification attaches to all subsequent marketed devices that are identical to the sample tested and found in compliance with the FCC's rules [47 C.F.R. § 2.907(b)].

Table 1. Exempt devices.

Cooking or Food Preparation Devices	
Refrigerators	Freezers
Stoves	Juice extractors
Bread makers	Coffee makers
Food-warming pads	Deep-fat fryers
Appliances for Washing and Drying Clothes	
Washing machines	Clothes dryers
Household Cleaning Devices	
Trash compactors	Rug cleaners
Vacuum cleaners	Dishwashers
Irons	Trash compactors
In-sink garbage disposals	
Household Water and Air-Conditioning Equipment	
Humidifiers and dehumidifiers	Water heaters
Room fan heater	Room air conditioners (window, floor, standing)
Heating, ventilation, and air-conditioning systems (not including external thermostats)	Central air conditioners (split system)

Table 2. Nonexempt devices.

External thermostats	Exercise equipment	Hair dryers
Heat guns	Hair straighteners	Electric blankets
Paper shredders	Bed warmers	Portable personal fan heaters

EXEMPT AND NONEXEMPT CE EQUIPMENT

The FCC's policies concerning CE has evolved over the years to the point where it has exempted entire categories of RF equipment from its marketing rules. Tables 1 and 2 illustrate some of the categories that may be exempt and those that are nonexempt.

The appliance categories listed in Tables 1 and 2 are high-level descriptions; the devil is in the details. For example, concerning devices that contain digital circuitry, only the digital circuitry directly responsible for the operation of the basic functions associated with the appliance is exempt, and it must be contained within the major appliance and not remotely connected via wire, cable, or other communication system. This would include, for example, the digital controller board for a washing machine responsible for different cycles and washing modes.

Appliances that 1) contain other ancillary functions (not directly responsible for the basic functions) or 2) contain

other nonhousekeeping appliance or other functions are not exempt from equipment authorization procedures and regulations. These other functions require testing and compliance to the appropriate equipment authorization procedures and regulations.

For example, a stove that contains an in-house communication function over power lines to communicate with a home automation system or an integrated television receiver does not exempt the home automation system and television receiver functions from their applicable equipment authorization requirements. Many other appliances, such as consumer inductive cooking stoves and microwave ovens, are subject to various technical standards and equipment authorization procedures. Moreover, all appliances are subject to the FCC requirements that they not cause harmful interference to other devices, and the FCC reserves the right to inspect all CE devices.

RESPONSIBLE PARTIES

The FCC has very specific rules as to who is responsible for regulatory compliance regarding various types of RF devices. Different rules apply for RF devices subject to various types of authorization. The responsible party is the exclusive party that is required to ensure that RF devices under its custody comply with FCC rules. This includes all identical devices marketed after authorization. Because the responsible party is liable for noncompliant RF devices and related matters, that party will be subject to FCC enforcement actions in the event potential rule violations are discovered (see 47 C.F.R. § 2.909).

In the case of RF equipment subject to certification, the responsible party is the party to whom the certification grant is issued (typically, but not always, the manufacturer or importer of the subject device) [47 C.F.R. § 2.909(a)]. But, if an unauthorized party not affiliated with the grantee modifies the equipment, that party becomes the responsible party for the particular device [47 C.F.R. § 2.909(a)].

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For RF equipment subject to verification, the responsible party is the manufacturer or, in the case of equipment imported into the United States, the importer [47 C.F.R. § 2.909(b)]. Any unauthorized party that modifies the equipment becomes the responsible party [47 C.F.R. § 2.909(b)].

For domestic RF equipment subject to a DoC, the responsible party is the manufacturer [47 C.F.R. § 2.909(c)(1)]. If, however, a system is assembled from individual component parts and the resulting system is subject to a DoC, the assembler is the responsible party [47 C.F.R. § 2.909(c)(1)]. For imported equipment subject to a DoC, the importer is the responsible party [47 C.F.R. § 2.909(c)(2)]. Any unauthorized party that modifies the equipment becomes the responsible party [47 C.F.R. § 2.909(c)(4)]. And, unlike responsible parties for certified or verified equipment, a responsible party for DoC equipment may contract with retailers or the original manufacturer to transfer responsible party status [47 C.F.R. § 2.909(c)(3)].

CONCLUSION

Due to the increase in FCC enforcement actions of its equipment authorization rules, any company in the CE supply chain should understand the FCC's rules and policies concerning RF equipment marketing and which company is responsible for rule compliance. It is strongly recommended that manufacturers, importers, and vendors make every effort to meet the specific technical standards, follow appropriate FCC equipment authorization procedures, and comply with quality practices to ensure all units marketed are, and will remain, compliant.

Additionally, it is very important that parties to equipment vendor or distribution contracts understand their rights and responsibilities and ensure that they are covered in the event of an FCC enforcement action. Finally, if a company is the subject of an FCC enforcement action, competent legal representation is a must. Companies that try to face the FCC alone could find themselves facing stiff financial penalties and being ordered to take their products off the market.

Note that the FCC is in the process of revising some of its RF equipment rules [see Amendment of Parts 0, 1, 2, 15 and 18 of the FCC's Rules Regarding Authorization of Radiofrequency Equipment, *Notice of Proposed Rulemaking*, 30 FCC Rcd. 7725 (2015)]. The new rules will likely be released in the second quarter of 2017.

ABOUT THE AUTHOR

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