Publication Number:
213318

Rule Parts:

First Category: Radio Service Rules
Second Category: Testing
Third Category: Licensed Transmitters

Question:

Substitution method for a licensed device radiated spurious emissions, power -- We would like to know the preferred test methods for the substitution method for testing licensed transmitters to provide acceptable test data from the correct test method. Certain questions related to the substitution method is listed below. The questions and answers are provided below.

Answer: The requirements for measuring RF Power and radiated spurious emissions are contained in 47 CFR 2.1046 & 2.1053, respectively.

Q1) We have a question in regards to Section 2.1053 for licensed devices. When will the substitution method takes precedence over field strength measurements?

A1) Always.

Q2) To date we have performed and submitted harmonic emission compliance using a converted -13 dBm to a field strength limit at 3 meters (82.2 dBuV/m for EIRP or 84.2 dBuV/m for ERP). Again, is this still the acceptable method or is the substitution now the only preferred test method?

A2) For consistency, the FCC is requesting everybody to use the substitution method. However, when the initial measured field strength levels of the spurious emissions are more than 20 dB below the above-cited levels, then continuation with the substitution method is not necessary.

Q3) In regards to power output measurements, due to high power license devices (e.g., 2 watts and higher) some signal generators cannot generate those types of field strength, for a substitution test. This is where we use the field strength, which is then converted to a power level. Is this an acceptable alternative test method?

A3) No, if you are attempting to duplicate a field strength reference reading that is higher than possible with the signal generator (and a dipole antenna), then you may run the signal generator at a lower level and then add the dB difference to the output. For example, to simulate a xx dBuV/m field strength reference reading, you may generate a duplicate field strength of xx/10 dBuV/m, and then add 10 db to the signal generator output to determine the proper replacement (substitution) level. Similarly, if the replacement antenna used with the signal generator is not a dipole but provides gain, then you should add the dB gain of the antenna (referenced to a dipole) to obtain the proper replacement (substitution) signal generator output.

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-----Original Message-----
From: Mike Kuo [mailto:MKUO@CCSEMC.com]
Sent: Thursday, May 12, 2005 10:18 PM
To: Rummel, Jeffrey
Subject: RE: Issue Regarding Measurement Procedures

Hi Jeffery :

I attached FCC policy for your reference. To address radiated spurious emission compliance, FCC always require the tests to be performed with substitution method. However, FCC did allow in some specific case to use ANSI C64.3 measurement procedures. When the test lab used other measurement procedures than the one required by FCC, test lab should document the rational in the test report. To address the measurement procedure issue, the test report can revise the test report by quoting the statement from FCC or issue an separate statement.

Best Regards

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