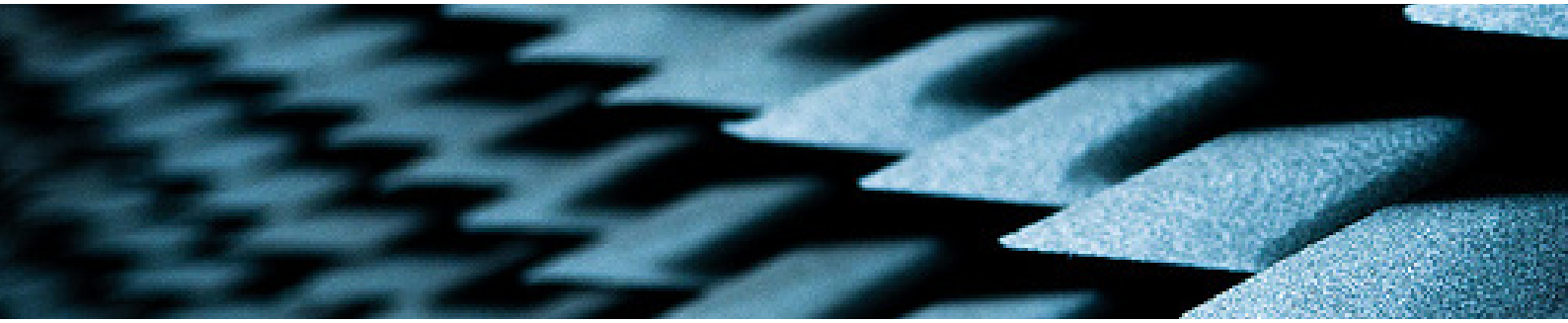
CSA.37

LTE DeviceActive Mode Testing – TRP



Service name:

CSA.37	LTE Device Active Mode Testing – TRP

Deliverables

TRP Performance Report

Duration:

1 Week

Service Delivery Objectives:

A. Test in 3D anechoic chamber – Full TIS analysis

B. If fail consult with Noise Control Division

What is the problem or concern we are addressing?

We provide post-integration verification of device TIS (Total Isotropic Sensitivity) performance. TIS is dependent on both antenna performance and system design, in particular, device emissions control.

Many of the network operators in North America have specific tests and metrics for radiated performance on transmit TRP (Total Radiated Power) receive TIS (Total Isotropic Sensitivity) and co-existence/ interference RSE (Radiated Spurious Emissions). These tests enforce a minimum level of performance on the wireless product. This is done to ensure end customer use-experience expectations are met, thus protecting the carrier's network brand.

Testing these performance parameters early in the design cycle can reduce the risk of certification failure and costly design and tooling changes later in the design cycle. The best way to test these parameters is through completing the real testing in a real chamber.

The large-scale roll-out of LTE networks has enabled LTE-only devices—devices which do not support older 2G and 3G technologies and instead relies completely on LTE technology. Often these devices support two bands. To efficiently service these devices, CSA.37 provides LTE-only TIS testing on two bands. This service offering is intended for these LTE-only devices, but can be used for testing two LTE bands only on any LTE device.

Sensitive cellular radio receivers can be subject to in-band interference, commonly called selfjamming, self-interference, or self-quieting. This type of performance degradation occurs when low-level emissions, usually unrelated to the cellular radio, fall onto the same frequency on which the radio is receiving data. These emissions compete with the received signal to be heard, requiring the received signal to be much more powerful to be heard than for a "quiet" design. Even devices which pass FCC or CE-mark testing can fall victim to this type of performance failure, making early testing a necessity.

The Processes

Part 1

- Taoglas will set up your device in our chamber and power the device on per your instructions. If the device is intended to be used on a person, a phantom will be used.
- A base station emulator will be used to establish a call or test mode connection with the device.
- Taoglas' automated test system will perform the TIS tests at the high, middle, and low channels of the appropriate bands.
- Taoglas will complete the test report detailing the setup and results.

What does Taoglas need?

In all cases Taoglas will require the following:

- Two complete devices should be supplied with enclosures, even if they are mockups. If mockups are provided, they need to be of a representative material, i.e. metal objects need to be metal. One complete set of all other system elements, such as battery, interface cables, charger, etc. should be provided for testing.
- Terminal access to the cell modem's AT command interface is preferred.
- Instructions on how to connect the device, power on the device, and connect to the AT command interface must be provided. If the battery will need to be charged or replaced, include instructions on how to do so.
- The device must be configured so that the radio is automatically enabled when power is applied.
- Device software must be disabled so it does not communicate with the radio.
- The device must have a test SIM. If the device uses a SIM IC, contact the carrier for test SIMs.
- If there is a SIM holder present, Taoglas has test SIMs that can be used.
- Taoglas cannot make adjustments to device software in any way. The device must be able to connect to a standard callbox, such as a CMW500, and remain connected for at least 1 hour without interruption.
- Taoglas will spend no more than 1 hour attempting to achieve this connection before contacting the customer. If the customer directs Taoglas to "keep trying", any time spent beyond this initial hour or any customer directed/guided interactive effort will be billed at $500 USD per hour. If we cannot get the device to connect, we will send the device back to the customer for proper configuration.
- Taoglas will need a method to configure the modem's LTE receive antenna selection. This could be AT command access and documenting the appropriate AT commands, or a selection through the device's user interface. Taoglas cannot start TIS testing without these details.

Part 2

Taoglas engineering, in consultation with the customer on the final report, will determine if the measured performance factors are sufficient for the product to meet its performance and certification requirements. If the TIS performance is not acceptable, Taoglas Sales and Noise Control Division engineering can engage in a design certification readiness review, an ISA.20. If the TIS is acceptable, the next step would be to test RSE.

Deliverables

Taoglas will compile a report on the TRP measurements, including:

- Device test setup picture.
- Primary and Secondary TIS values for low, middle, and high channels in the designated bands.