

CSA.31

Cellular Device Active Mode Testing – TIS



Service name:

CSA.31 Cellular Device Active Mode Testing – TIS

Deliverables

TIS Performance Report

Duration:

2 Days

Service Delivery Objectives:

- A. Test in Taoglas 3D anechoic chamber – Full TIS test on North America bands (850/1900)
- B. If fail consult with Noise Control Division

Variant

CSA.31.1 Full CTIA (850/1900MHz) USA channel analysis

CSA.31.2 Full TIS (900/1800MHz) Europe channel analysis



What is the problem or concern we are addressing?

Post-integration verification of device Total Isotropic Sensitivity (TIS) 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) and receive (TIS).

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 risk of certification failure and costly design and tooling changes late in the design cycle. The best way to test these parameters is through completing the real testing in a real chamber.

Taoglas can currently perform these tests with any GSM, GPRS, CDMA2000 1xRTT, CDMA2000 EV-DO, or UMTS (with 2G fall-back support) device. UMTS devices will be tested in GSM or GPRS mode; CDMA EV-DO devices will be tested in 1xRTT mode.

Sensitive cellular radio receivers can be subject to in-band interference, commonly called self-jamming, 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 setup your device in our chamber and power the device as 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 US 850 and 1900 cellular 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 (2) complete devices, with all the bits and pieces. The devices need to be functional enough to enable the cellular modem and enable AT command access to the modem. The devices should be built-up as much as possible, the closer to the final assembly the more accurate the results. Batteries, displays, and metallic sub-assemblies will impact the test results and should be included.
- One complete set of any support devices such as spare battery packs, battery charger, interface cables, etc.
- Instructions on how to connect the device, power on the device, and connect to the AT command interface. If the battery will need to be charged or replaced, include instructions on how to do so.
- For GSM/GPRS/UMTS/LTE devices, Taoglas will need access to the SIM card, or for an embedded SIM, a 3GPP test profile configured on the SIM.

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. Deliverables Taoglas will compile a report on the TIS measurements, including:

- Device test setup picture.
- TIS values for low, middle, and high channels in the 850MHz and 1900MHz cellular bands.

