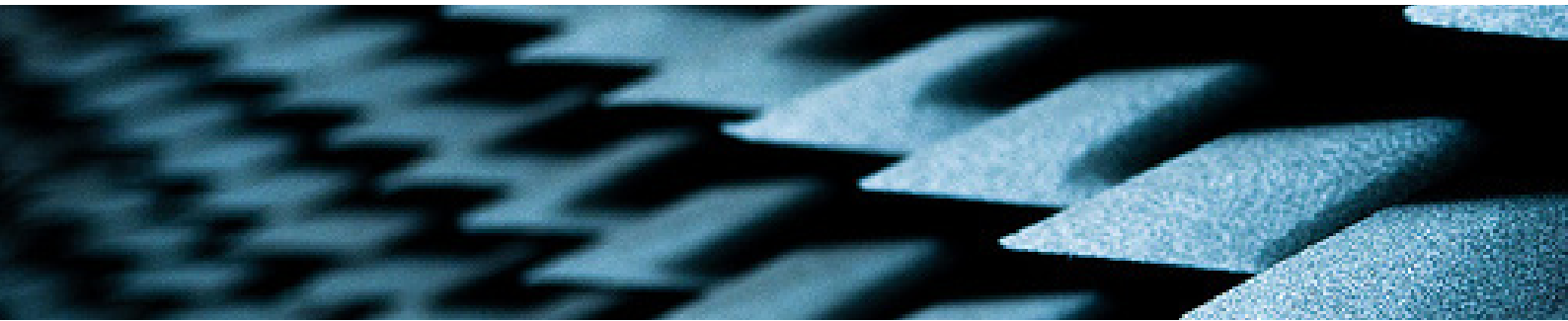


CSA.71

RF Interference Mitigation for Audio



Service name:

CSA.71 RF Interference Mitigation for Audio

Deliverables

- Report
- Modified copy of hardware if possible

Duration:

1 Week

Service Delivery Objectives:

- A. Detailed analysis of implemented hardware and all design files
- B. Report with recommended changes for long-term design fixes
- C. Addition of RF shielding material on prototypes to attempt short term fix



What is the problem or concern we are addressing?

Taoglas can evaluate and solve issues that relate to the antenna and RF performance, receiver interference, audio interference and spurious transmitter emissions that cause performance and certification issues. All wireless, and particularly cellular devices, face common performance and certification challenges, regardless of the types of radios being used. GSM audio & voice devices, in particular, are prone to selfinterference causing audible “TDMA noise”. This service offering is focused on addressing this interference in order to meet customer or certification expectations.

TDMA noise is a common problem experienced by GSM audio and voice devices. The cause may not be obvious: the transmitted RF signal (from the mobile to the basestation) turns on only for short “slots” of time. These “slots” reoccur at a rate of approximately 216 per second, or 216Hz. This RF signal is picked up by the audio circuitry, adding this to the sound the user hears. Because the rate (216Hz) is within the audible frequency range, filtering is often not an option. Therefore, other methods are required to mitigate the issue. To compound the issue, some certification bodies require test verification that the problem is not present.

After you’ve experienced this certification failure, or find the problem is beyond your customer’s expectations, Taoglas engineering can evaluate your device, the testing that has been done, and any additional testing that needs to be completed. Our engineers will then proceed with evaluating the device and reviewing the design files.

In evaluating the design files, our engineers will review all relevant schematics, PCB layout files, and mechanical design files to first understand the design intent and then analyze the pertinent portions of the design. This analysis guides the mitigation effort.



Taoglas engineering will then use samples of the device to reproduce the failure in our controlled lab environment. Once the issue has been reproduced, we will use the previous analysis to devise experiments to determine the underlying failure mode. Once this failure mode is understood, the next experiments will attempt to mitigate that failure mode on the device samples (to the extent that it is possible to do so). Some failure modes are closely tied to the PCB layout and, as such, it may not be possible to prove out a mitigation on the existing device samples. If a mitigation or short-term fix is found and functional device samples exist, these will be provided back to the customer for further verification and testing.

Following all of these efforts, a report is compiled which details the analysis completed and provide recommendations for design changes, both long- and short-term if appropriate.

Deliverables

The output from this effort will be presented in a written report which details the specific mitigations to be applied to each circuit in the system. To the extent it is possible to modify the existing device to demonstrate the effectiveness of the mitigations, a copy of the physical device will be provided. There will be an appendix with any comments from the post implementation review.

