Form 442 Question 7: Revised Experimentation Description (which replaces and supersedes the previously submitted Experimentation Description)
File Number: 0266-EX-PL-2014

PaneraTech, Inc. (PaneraTech) seeks this experimental license **to perform tests of its Part 15 fast-stepping, ultra-wide band wall imaging device (Device) which are needed to demonstrate compliance with Part 15 Subpart F of the Commission's rules**, and that PaneraTech may request Commission approval of further operations after such tests show compliance with the applicable technical requirements. PaneraTech will perform Part 15 compliance testing on the Device in situ.

The Device can monitor the integrity of the inner walls of furnaces at manufacturing facilities where glass and other raw materials (e.g., steel, coke etc.) are processed. These furnaces are constructed from refractory ceramic materials such as Chrome Oxide, Zirconia or Aluminum-Zirconia-Silica that are formed into a variety of block shapes that are then stacked. These refractory ceramic walls are subject to erosion and degradation caused by the molten material (i.e., molten glass at 2500F) flowing through the furnace which can cause significant damage to furnaces and presents a safety risk to plant personnel. The Device can monitor the furnace wall thickness from outside the furnace (yet still within the manufacturing facility) while the furnace is operating. The Device employs a very low power RF signal coupled directly into the ceramic wall of the furnace and uses the time delay of the reflection from the interior wall/molten glass (or other raw material) interface to measure the wall thickness (and, thereby, identify wall erosion which, in turn, causes leaks) by attaching either a fixed or mobile sensor to various points on the exterior wall of the furnace area.

The mobile version of the Device will be carried by a trained technician along with a custom antenna connected through a coax cable that is placed against the furnace outer surface at various locations to make sample measurement of the interior erosion. The sensor is in standby, not radiating until the antenna makes contact with the furnace wall. The fixed version of the Device uses an array of antennas attached at various locations around the furnace outer surface with coax cables brought to an access panel from which a technician can connect the portable analyzer. Measurements take place at monthly, quarterly or semi-annual basis intervals depending on the age of the furnace.

The Device will operate between 750 MHz – 5 GHz with frequency steps of between 20 MHz to 70 MHz (which can be varied by adjusting the Device's software), cycle speeds of 100 - 500 milliseconds, and dwell time of 0.5 - 5 milliseconds (per frequency stepped through). Experimental activities will be of limited duration each day on selected days at selected locations in the United States (*i.e.,* usually no more than one (1) minute (in the aggregate) of operational time on a given day at a single location). The Device will implement frequency notching in the bands 1400-1427 MHz, 1660.5-1668.4 MHz, and 2690-2700 MHz.

To the extent that not all of the relevant details and operating parameters associated with this request for experimental license fall squarely within this FCC application form, attached is a supporting document to clarify and describe these additional details and parameters.

To the extent that a waiver of one or more Commission rules is needed to market and operate the device beyond the permitted uses under the experimental license requested pursuant to this application, PaneraTech will seek such a waiver.