Attachment D - Touch Screen Test Plan

Requirement	Description	Test Method	Test Tools
B12	The Touch Screen Monitor provided in the Contractor's Solution must be water-resistant and dust-resistant in accordance to IP54 and National Electrical Manufacturers Association (NEMA) Type 5 standards. For purposes of this requirement IP54 provides protection against harmful deposits of dust and protection against water splashing from any direction. For purposes of this requirement the NEMA 5 requirement is the standard that must be met which ensures that enclosures constructed for indoor use provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of foreign objects (falling dirt and settling airborne dust, lint, fibers and flyings); and to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (dripping and light splashing).	Test: Settling Dust (B12) The unit will be placed into the settling dust chamber. It will be subjected to 8 hours of dust exposure. After the exposure period the unit will be removed from the chamber and excess dust carefully removed with the use of a soft brush. The unit will then be operated if possible. After shutting the unit off the covers will be removed to investigate if dust has penetrated to any areas that may have open voltage sources, such as circuit boards, power contacts, switches etc. Photographs will be used to show results where possible. Test: Water Spray (B12) The unit will be subjected to a water spray, per IEC 60529 Edition 2.1 2001-02, to confirm an IP rating of second numeral 4. The unit will be operated during the spray. Note that the	Water spray bottle, dust chamber

		unit may suffer damage as a result. Optional Drip Test (B12)(***If drip contraption is ready***). Should the spray test prove to be too aggressive, there is a drip test that may be performed that reduces the IP rating to a second numeral 2. This involves placing the item under test beneath a drip rig that simulates rain or splashing water. The free falling drops impact the test item only from above, although splashing may occur if the unit is placed onto a flat test area to simulate a table top. The sample is tested at a 15degree incline in all	
B13	The Touch Screen Monitor provided in the Contractor's Solution must not generate noise levels above 35 decibels (dB).	Test: Noise (B13) The unit will be operated in a quiet area and the noise level will be monitored. Note that background noise cannot be completely eliminated; however the results will be adjusted to account for any background noise.	Portable Sound Level DB Meter

B16	The Touch Screen Monitor provided in the Contractor's Solution must withstand temperatures ranging from -30°C to +50°C when not in operation.	Test: Thermal Testing (B16 and B17) The unit will be placed into a suitably sized thermal chamber and will be subjected to differing thermal environments. The chamber will be reduced to -30C and held for a 24 hour period. • Following the soak period the chamber will be increased to -20C held for a period of 2 hours, or until thermal stability of the test unit is observed. • The monitor will then be turned on. If the monitor starts successfully it will be operated for a period of one hour, or until thermal stability is observed. • If the monitor fails to start at -20C the chamber will be returned to ambient conditions and a further start attempt	Freezer, refrigerator & thermometer. Cardboard box, heat-gun, thermometer & fire extinguisher.

		made. If the start is successful then the chamber will be returned to -20C with the monitor operational. The monitor will be observed to determine at what temperature it ceases to function. • If -20C is achieved with the monitor still being operational, it will be held in the operational state for a period of one hour.	
B17	The Touch Screen Monitor provided in the Contractor's Solution must operate in temperatures ranging from -20°C to +50°C.	Same Test Method as B16	Freezer, refrigerator & thermometer. Cardboard box, heat-gun, thermometer & fire extinguisher.