Robison Detector Testing Plan

System test plan

Some tests were done before integrating the product such as Microcontroller test, Alert message test, and Volume control test. These tests were done in the initial stages of the product. However, after regression testing of the above mentioned tests we decided to perform tests with the integrated unit.

Final product testing

Below are some scenarios that were taken into consideration while making test cases:

1) Rain Noise
2) Nearby Traffic
3) Distance
4) Stationary v/s Non-Stationary user-vehicle

In order for thorough testing of the product, we tested Robison detector internally and externally with respect to the environment.

Test 1:

ENVIRONMENT CONDITIONS	TEST
Rainy weather, Nearby Traffic, Distance of ambulance and user-vehicle	Stationary – In this case user-vehicle will be stationary and ambulance will approach from different directions i.e. Front/Back/Side
Rainy weather, Nearby Traffic, Distance of ambulance and user-vehicle	Non-Stationary - In this case user-vehicle will be stationary and ambulance will approach from different directions i.e. Front/Back/Side

Table1. External testing with environment conditions

Please note that external testing was performed in BC Ambulance Services located at 8100 Nordel Way in Delta.

We talked to Rob Howland, Director, Fleet Operation, BC Ambulance Service and made some test cases that are common in the real life situations. The results that were performed at the BC Ambulance Services are attached to the Appendix of this document.

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Test 2:

SIREN TYPE	INTERNAL CONDITIONS	TEST	PASS OR FAIL?
SIREN1	Computer generated ambient noise, lots of interpersonal communication between people along with siren sound	Performed inside a room/building to detect the siren	
SIREN1	No Noise, clean siren sound	Performed inside a room/building to detect the siren	
SIREN1	Incrementing/Decrementing distance between emergency siren sound source and microphone	Performed inside a room/building to detect the siren	
SIREN1	Playing music/song along with the Siren sound source	Performed inside a room/building to detect the siren	

Table2. Internal testing with SIREN1

SIREN TYPE	INTERNAL CONDITIONS	TEST	PASS OR FAIL?
SIREN2	Computer generated ambient noise, lots of interpersonal communication between people along with siren sound	Performed inside a room/building to detect the siren	
SIREN2	No Noise, clean siren sound	Performed inside a room/building to detect the siren	
SIREN2	Incrementing/Decrementing distance between emergency siren sound source and microphone	Performed inside a room/building to detect the siren	
SIREN2	Playing music/song along with the Siren sound source	Performed inside a room/building to detect the siren	

Table2. Internal testing with SIREN2

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Appendix

Trial #	Background noise	Siren Tested	Pass or Fail?	Time to detection (sec)	Notes
1	rain, car noise, nearby highway traffic	1st siren-wail	Fail	N/A	Toyota stationary and ambulance drove from **BEHIND**
2	rain, car noise, nearby highway traffic	1st siren-wail	Fail	N/A	Toyota stationary and ambulance drove from **BEHIND**
3	rain, car noise, nearby highway traffic	2nd siren-yelp	Pass	5	Toyota stationary and ambulance drove from **BEHIND**
4	rain, car noise, nearby highway traffic	1st siren-wail	Pass	5	Ambulance stationary and Toyota drove by on the **RIGHT** side
5	rain, car noise, nearby highway traffic	2nd siren-yelp	Pass	5	Toyota stationary and ambulance drove toward it from the **RIGHT** side
6	rain, car noise, nearby highway traffic	2nd siren-yelp	Pass	5	Both cars moving in opposite directions driving by one another
7	rain, car noise, nearby highway traffic	1st siren-wail	Pass	5	Both cars moving in opposite directions driving by one another
8	rain, car noise, nearby highway traffic	1st siren-wail	Pass	5	Toyota stationary and ambulance drove toward it from the **RIGHT** side
9	rain, car noise, nearby highway traffic	1st siren-wail	Pass	5	Toyota stationary and ambulance drove from **BEHIND**
10	rain, car noise, nearby highway traffic	1st siren-wail	Pass	5	Both cars moving in same direction, while ambulance passed by from the **RIGHT** side