Gregory Czumak

Subject: FW: ELVATRPH_ATCB019015 Willow Run Test Labs, LLC

From: Joseph Brunett [mailto:joe@wrtest.com]
Sent: Friday, May 6, 2016 7:37 PM
To: Gregory Czumak <gczumak@acbcert.com>
Cc: Timothy R. Johnson <tjohnson@acbcert.com>; Jennifer Sanchez <jennifers@acbcert.com>
Subject: Re: ELVATRPH_ATCB019015 Willow Run Test Labs, LLC

Note that the RBW in the plot attached here is 28 MHz, thus the signal observed in that measurement is the total on-time for all hopped frequencies in response to a single button press by the user on the paired fob. 902-928 MHz is 26 MHz < 28 MHz RBW.

This is not the "single channel on time". It is the total on-time for single button press across all channels, as stated in the table (Full Band). Add the two frame sets that result from the fob inquiry shown in the plot and you get 7.4 seconds, the total on time across all channels in response to a remote start request from the fob.

A user would not repeatedly press the remote start button on the fob for 6 minutes. As I understand it, a single press on the remote will only get a response back from this unit if the vehicle has started, successive button presses would not result in a repeated transmissions. This is the total source based on-time in response to a remote start request... unless you go out and shut off your car and then use the remote start again within 6 minutes... how does one quantify that...

Joe

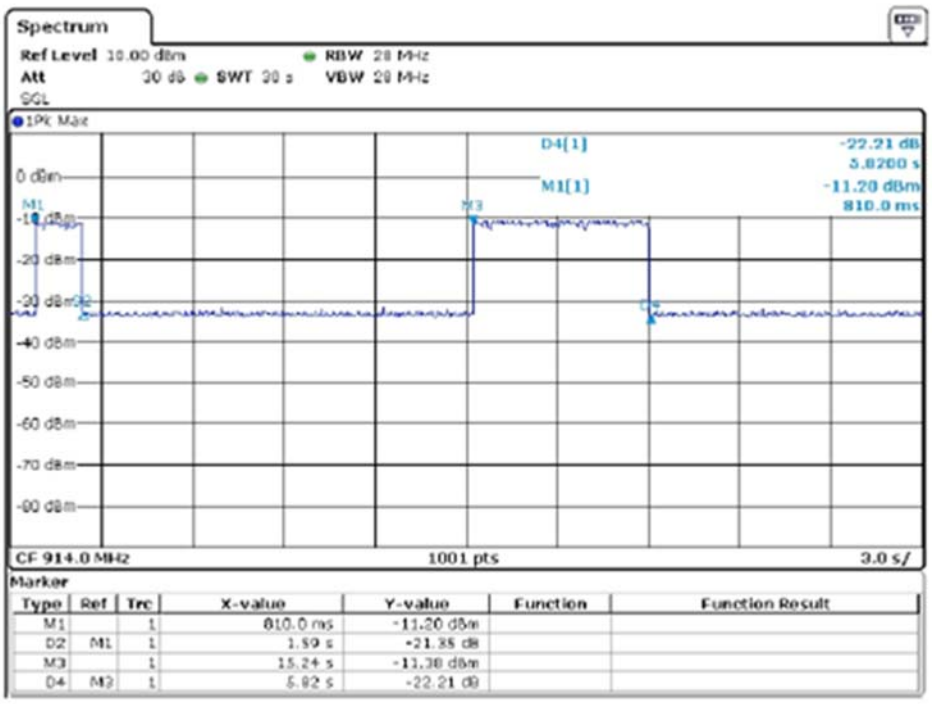
On Fri, May 6, 2016 at 6:42 PM, Gregory Czumak <gczumak@acbcert.com> wrote:

> In Section 3.2.1 at the top of p.11, in the lower row of the table (see below), you list a 6 minute exposure window with an on-time of 7.4 s. The note under the table (looks like the bottom note should have 3 asterisks, not 2) states that this was the worst case on-time over all channels "upon a single button press." The first note implies that the EUT's response to a single button press is to run thru its hopping sequence twice… how do you get 7.4 seconds of transmission from a single button press? Was the button actually pressed repeatedly for 6 minutes?

Pulsed Operation / Duty Cycle							
Transmit Mode	Symbol Rate (Msym/s)	Mod. / Data Rate (Mbps)	Voltage (V)	Observation Freq (MHz)	Tx Cycle Time* (ms)	On-Time** (ms)	Dut
Hopping	-	GFSK	3.0	914.0	>100	62.6	
Transmit Mode	Symbol Rate (Msym/s)	Mod. / Data Rate (Mbps)	Voltage (V)	Observation Freq (MHz)	Exposure Window (min)	On-Time*** (s)	Dut
Hopping	-	GFSK	3.0	Full Band	6.0	7.4	2

* For a single remote button press, the EUT's response hopping transmission only traverses each channel twice, thus only two frames are
** Worst case observed on-time at a single channel (same on average for all channels in pseudo-random FHSS protocol).
** Worst case observed on-time over all channels upon single button press.
Equipment Used: RSFSV30001

Also, on the next page there is a plot that shows an on-time of just under 6 seconds (see below)- this is on a single channel… how is the total on-time, over all 50 channels, 7.4 seconds in 6 minutes, when a single transmission on one channel is 5.82 seconds? As you know, a correction based on dwell time per channel cannot be used in RFx calculations, only the total (source-based) on-time of the transmitter.



Since these issues are related to RFx, we want to be sure that they are completely clear in the report. If you could provide an explanation about these things, and revise the report if appropriate, we'll be able to continue with the grant process for this app.

Please contact me with any questions.

Thanks! Have a good weekend.

Greg

Gregory M. Czumak

Review Engineer

American Certification Body, Inc.

6731 Whittier Ave., C110

McLean, VA 22101

email: gczumak@acbcert.com

USA corporate phone: 703-847-4700

USA corporate fax: 703-847-6888

--
Joe Brunett, Ph.D.
NCE# EMC-002790-NE

Willow Run Test Labs, LLC
Corporate: (734) 252-WRTL
Direct/Cell: (734) 252-9505
Fax: (734) 926-WRTL