From:	David Sroka - C16440
Sent:	Monday, August 11, 2014 8:49 AM MDT
To:	Don Perkins - C21824; Sal Canu - C15821
CC:	Brigham Steele - C21902; Keith Barber - C11768; Stefan Saenger - M21164; Wayne Liang - C21747; Chris Behal - C12678; Ray Kamps - C12940
Subject:	RE: CarPlay compliance strategy

Couple additional points:

1) Carplay REQUIRES the head unit to become a USB device. This so that the Apple phone is the host and controls the USB bus. In your diagram, the head unit stays the host…….NOT COMPLIANT …right there.
2) CarPlay requires a dedicated path….this solution allows other USB devices to access the host….this is NOT Compliant.

3) Other issues: 1) Authentication process being violated?, 2) This is completely NON-STANDARD USB. Two USB Hosts implementing a single transaction by splitting it into two serial transactions, instead of one. This goes against the primary requirement of USB; one bus / one Host. How can the supplier guarantee the infinite number of applications scenarios that will occur in the Apple host and the Head Unit Host. These hosts will be acting independently of each other but will need to maintain USB specifcations/ timing/time-outs/HID / adequate throughputs as if it was a single bus. Could be demo'd but no way it can be guaranteed.

Dave

From: Don Perkins - C21824
Sent: Monday, August 11, 2014 7:22 AM
To: Sal Canu - C15821; David Sroka - C16440
Cc: Brigham Steele - C21902; Keith Barber - C11768; Stefan Saenger - M21164; Wayne Liang - C21747; Chris Behal - C12678; Ray Kamps - C12940
Subject: RE: CarPlay compliance strategy

HI Sal,

We will provide a slide deck which will illustrate the "considerable" complexity (and lack of USB2 and MFI compliance) to the "end point spoofing" that is being proposed by Unwired. The $2 cost of having a second lane is dwarfed by the cost of the ARM cpu and associated silicon.

Yes, we are going to ask Apple is such a configuration is going to be tolerated. I will let Brigham search the Carplay spec and try and get you a quote from there.

We will be addressing this in detail but I suspect that GM already knows they are in trouble and the Carplay application may not go well in their car.

Thanks,

Don P.

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C.A. No.17-1194-JDW

Don Perkins
Sr Manager of Strategic Marketing
UNG Products Group
Microchip
512-466-2072 Cell
512-418-2230 Office
Don.perkins@microchip.com
www.microchip.com

From: Sal Canu - C15821
Sent: Monday, August 11, 2014 8:40 AM
To: David Sroka - C16440
Cc: Don Perkins - C21824; Brigham Steele - C21902; Keith Barber - C11768; Stefan Saenger - M21164; Wayne Liang - C21747; Chris Behal - C12678; Ray Kamps - C12940
Subject: CarPlay compliance strategy

Dave,

We want to take a strong stance going into OEMs. We went into GM last week and we are going to Chrysler tomorrow. At GM we brought up the design showing 1 Host lane coming down from the Head Unit. We didn't mention Unwired. I drew a different version of Don's slide. See the attached. We pointed it out as a design that we looked at and ruled out due to the CarPlay compliance concern, latency issues, and complexity. We asked them if this solution was demonstrated, approved by Apple, etc. We did not get confirmation any of this was done. We challenged them to check if this were CarPlay complaint but we would like to take in a stronger stance and show them that it is not.

GM said they are constrained by having only 1 lane coming down from the HU and I believe this is a host only lane. I need to clarify the last part. It seems like we are talking about a short-term constraint but I am not sure on the timing. I want to scope things better when we talk to the OEMs. I want to classify the discussion into 3 categories (base-level, mid-level, up-level) with number of port detail and 3 time frames (2015 MY, 2016 MY, 2017 MY). They brought up cost as a factor for not wanting a multi-lane cable. Note that in the further-out future, they said they envision this going to USB3.0.

I am thinking about the loopholes that an OEM/Tier would try to use. For example for the USB compliance, the issue of having 2 hosts on one network might be overcome by saying it is 2 networks. It might be argued that there is a dedicated lane for CarPlay (from the iPhone to the BoB).

I have four questions:

1) Can you send me the CarPlay spec? I wasn't sure how it worked with Microchip having the CarPlay license. Can we share it internally? At a minimum I'd like to get the excerpt saying that CarPlay requires a dedicated USB channel.
2) Can we take the attached one lane diagram into Apple and get their rejection of it so we can let the OEMs know it is not compliant?
3) Can you give me more detail on the complexity? GM seemed to think the CarPlay API would not be all that different in the one-lane solution, as far as in the upper layers. They understand the driver would be different. I wasn't sure if we would have more complexity in the Application Layer as well.

4) I plan to state that Apple wants bandwidth for the display and audio so that one dedicated lane needs to go all the way to the HU. Is that enough to say on this or do you have anything more to add?

Best Regards,

Sal Canu
Field Application Engineer
Microchip Technology Inc.
28100 Cabot Dr.
Novi, MI 48377
Mobile: 248-376-7825