Inquiry Details on 10/21/2021:

First category:	RF Exposure *
Second category:	SAR (RF Exposure)
Third category:	
Subject:	Test Plan Acceptance
Inquiry:	Please see the attached document for information and photos of the device and test setup.

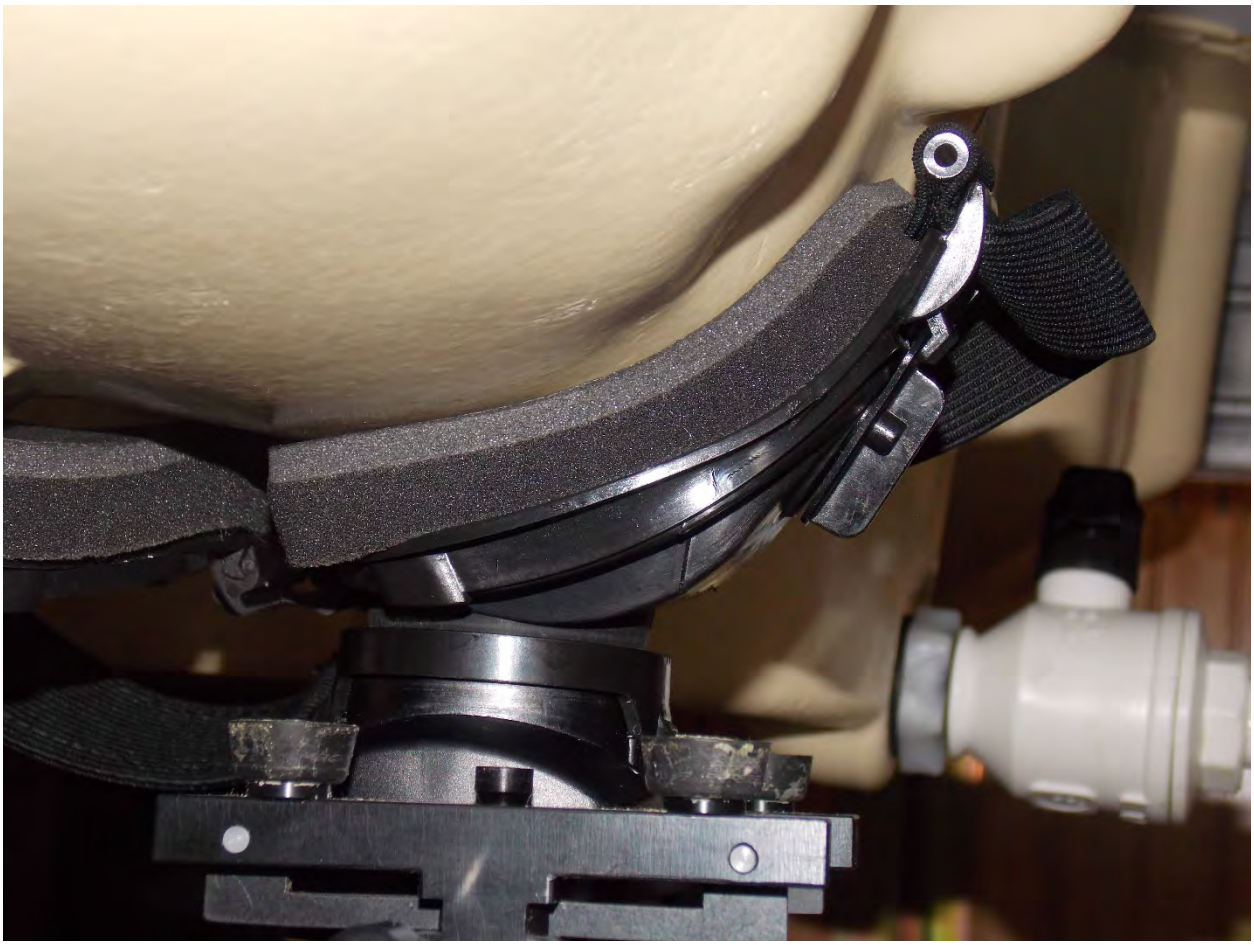
Attachment:

I have a client that has a Video-scope that measures eye movement. The device is mounted on a pair of goggles that are worn over the eyes. The camera is mounted on one side of the goggles in front of the eye.

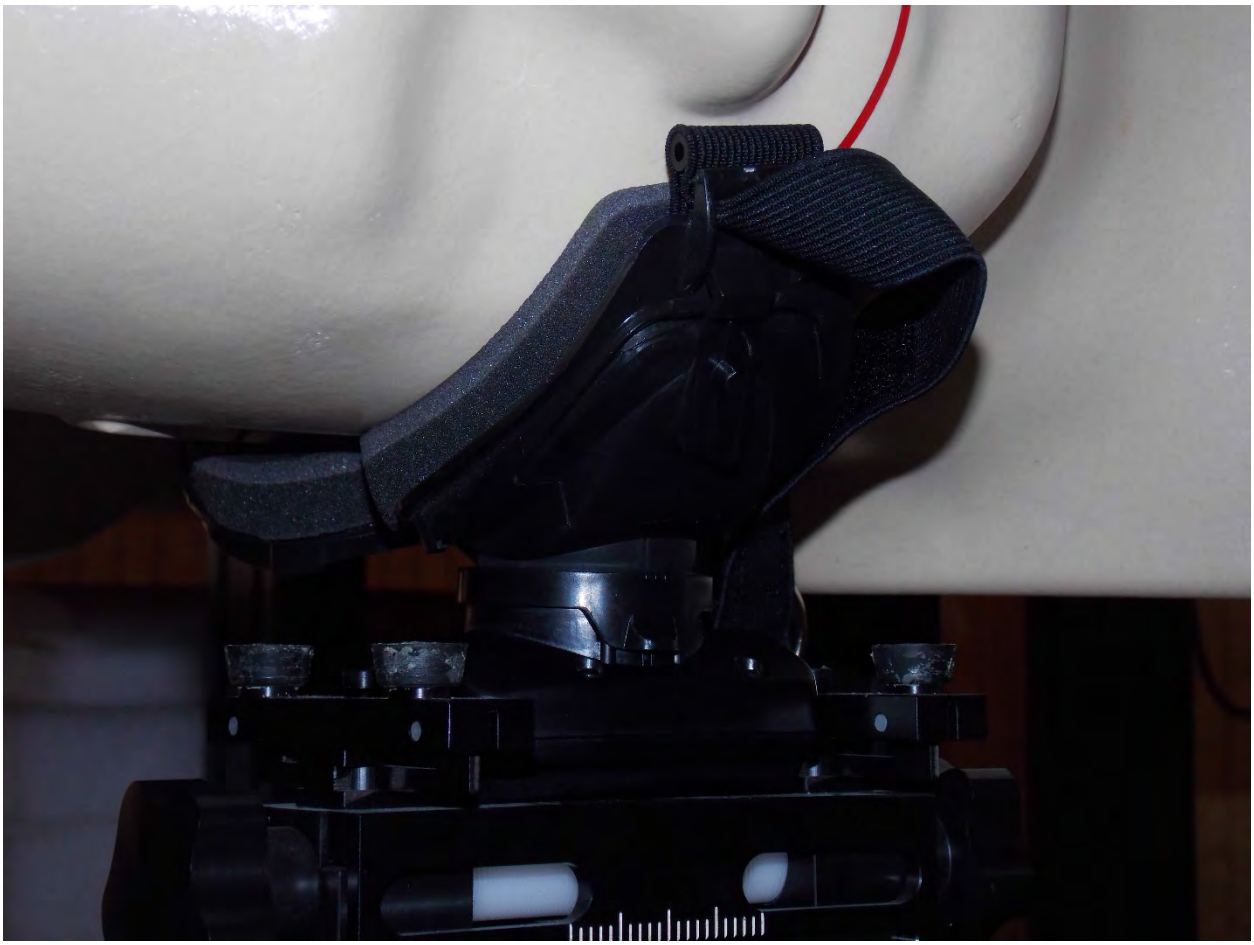
The camera unit contains a Texas Instruments WiFi module model CC3135MOD 1x1. The module is an 802.11 abgn20 WiFi module. The camera assembly has the module installed on the motherboard and there is a single chip antenna mounted on the motherboard. The client will be disabling the 2.4 GHz band and the BLE with software. The 5 GHz band has a maximum of 15.1 dBm conducted power at the module. The antenna location has been marked in the photos below. The specs on the antenna are not available at this time.

The goggles are worn on the eyes of the user. The goggles will not lay flat to allow the use of the flat phantom for the measurements. The goggles do fit on the cheek area of the SAM phantom as shown in the photos below.

I am proposing to do the testing of this device next to the SAM phantom cheek area. The testing for the WiFi bands will be conducted per KDB248227 D01 v02r02.



Proposed Test Position on SAM Phantom Top View of Device



Proposed Test Position on SAM Phantom Side View of Device

Proposed Test Position on SAM Phantom Bottom View of Device

Top View of Goggles with Camera Installed

Front View of Goggles with Camera Installed

Front View of Goggles without Camera Installed

View of Camera Unit

Antenna Location in Camera Unit

FCC Response on 10/22/2021:

Your test proposal looks promising. For these non-standard testing positions it is important to ensure there is sufficient probe access and the area scan and hotspot are fully captured. Please respond to this inquiry with the SAR scans/distributions so they can be reviewed and we will provide feedback. Thank you.

---Reply from Customer on 10/27/2021---

I have attached the requested information. Sorry for the delay, but I was waiting on the client to send me the control software to control the transmitter for testing.

Attachment:

Below is the SAR scan of the highest measured value. The antenna is approximately 20 mm from the outer surface of the head phantom. The maximum Tx power of the transmitter is 15.5

dBm. The measured value of the transmitter for the channel shown is 13.92 dBm. The scaled SAR value for this channel is 0.04 W/kg.

Based on KDB447498 D01 v06 section 4.3.1 a) on page 12, the transmitter would be excluded from SAR testing. However, due to this device being used in a doctor's office, the client wants to have the SAR report issued and filed.

Please let me know if you approve the test plan for this device.

RF Exposure Lab

DUT: WNS Monocular; Type: Camera for Vision; Serial: SC1-21000001

Communication System: WiFi 802.11a (OFDM, 6 Mbps); Frequency: 5785 MHz; Duty Cycle: 1:1
Medium: HSL3-6GHz; Medium parameters used (interpolated): f = 5785 MHz; σ = 5.325 S/m; ε_r = 34.56; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: Date: 10/27/2021; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN7531; ConvF(4.75, 4.75, 4.75); Calibrated: 4/16/2021
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1321; Calibrated: 1/13/2021
Phantom: SAM with CRP; Type: SAM; Serial: 1416
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

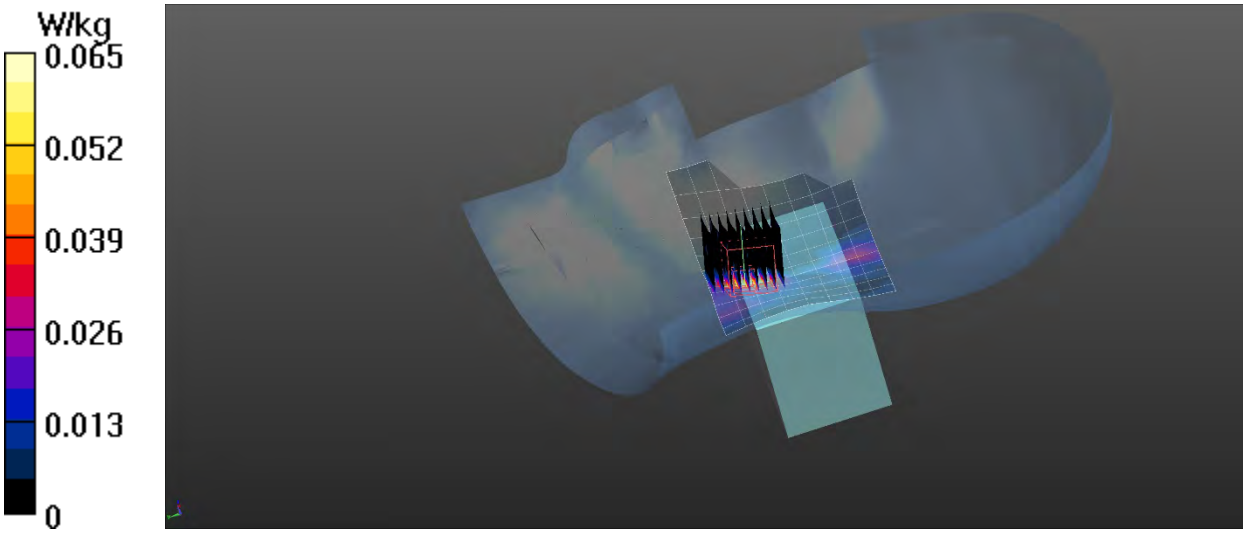
Procedure Notes:

5800 MHz/Channel 157/Area Scan (13x9x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.0607 W/kg

5800 MHz/Channel 157/Zoom Scan (9x9x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=4mm
Reference Value = 0.8710 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.200 W/kg
SAR(1 g) = 0.029 W/kg; SAR(10 g) = 0.010 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.0652 W/kg



FCC Response on 10/29/2021:

Thank you for your response. The SAR Distribution Plot you provided does not show a good view of the hotspot. Please reorient the plot to show the hotspot more clearly so we can verify it is fully captured.

---Reply from Customer on 11/01/2021---

I have attached a top view of the area scan. The black lines are the measurement points for the zoom scan.

Attachment:

RF Exposure Lab

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Communication System: WiFi 802.11a (OFDM, 6 Mbps); Frequency: 5785 MHz; Duty Cycle: 1:1
Medium: HSL3-6GHz; Medium parameters used (interpolated): f = 5785 MHz; σ = 5.325 S/m; ε_r = 34.56; ρ = 1000 kg/m^3
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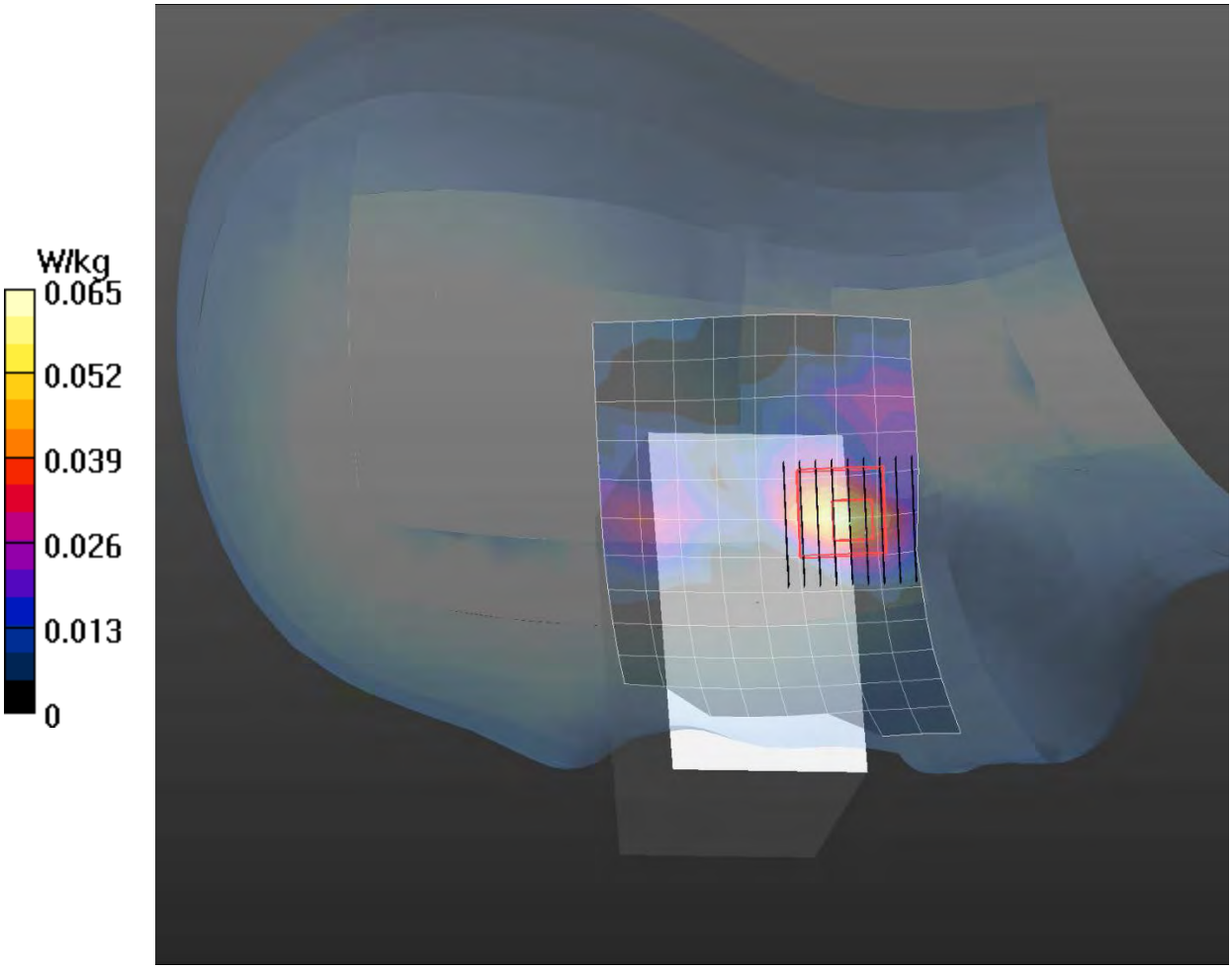

FCC Response on 11/02/2021:

Thank you for the updated SAR distribution plot. It is a much better view. It is apparent the hotspot is fully captured. Your test proposal is acceptable. You may proceed.