Analysis Report

The Equipment Under Test is a Gaming Headset of 2.4GHz Wireless Headphone with Dongle and Docking (Cradle). The EUT operates at frequency range of 2403.35MHz to 2479.35MHz. There are total 39 channels with 2MHz channel spacing. The USB port on the Headphone is for charging purpose only. The EUT is powered by 3.7V rechargeable battery. The EUT has two antenna.

2.4GHz portion
(Antenna 1)
Antenna Type: Internal, Integral
Antenna Gain: 0dBi
EIRP peak power range: -5 dBm to +5 dBm

According to the KDB 447498:

Conducted Power (maximum)
= 5 dBm (3.16 mW)

The SAR Exclusion Threshold Level:
= 3.0 * (min. test separation distance, mm) / sqrt(freq. in GHz)
= 3.0 * 5 / sqrt (2.480) mW
= 9.53 mW

Since the above conducted output power is well below the SAR Exclusion threshold level, so the EUT is considered to comply with SAR requirement without testing.

2.4GHz portion
(Antenna 2)
Antenna Type: Internal, Integral
Antenna Gain: 0dBi
EIRP peak power range: -5 dBm to +5 dBm

According to the KDB 447498:

Conducted Power (maximum)
= 5 dBm (3.16 mW)

The SAR Exclusion Threshold Level:
= 3.0 * (min. test separation distance, mm) / sqrt(freq. in GHz)
= 3.0 * 5 / sqrt (2.480) mW
= 9.53 mW

Since the above conducted output power is well below the SAR Exclusion threshold level, so the EUT is considered to comply with SAR requirement without testing.

Simultaneous Transmission SAR exclusion considerations

Since the both antenna of this device may operate simultaneously, simultaneous transmission analysis is required. Per KDB 447498, simultaneous transmission SAR test exclusion can be applied when the sum of 1-g SAR of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit (≤ 1.6W/kg). When the standalone SAR test exclusion is applied, the standalone 1-g SAR must be estimated according to the following equation,

$$\text{Estimated SAR} = (\sqrt{F(GHz)}\,/\,7.5)x(P\max/TD)$$

where
F(GHz) is the RF channel transmit frequency in GHz
Pmax is the max. power of channel, including tune-up tolerance, mW
TD is the min. test separation distance, mm

For Antenna 1,

Maximum Time-averaged Conducted Power of this device = 3.16 **mW**

Therefore, the Estimated SAR will be determined as follow,

$$\text{Estimated SAR} = (\sqrt{F(GHz)}\,/\,7.5)x(P\max/TD)$$
$$= \textbf{0.133 W/kg}$$

where *Pmax* = 3.16 mW, *TD* = 5 mm and *F(GHz)* = 2.47935 GHz

For Antenna 2,

Maximum Time-averaged Conducted Power of this device = 3.16 **mW**

Therefore, the Estimated SAR will be determined as follow,

$$\text{Estimated SAR} = (\sqrt{F(GHz)}\,/\,7.5)x(P\max/TD)$$
$$= \textbf{0.133 W/kg}$$

where *Pmax* = 3.16 mW, *TD* = 5 mm and *F(GHz)* = 2.47935 GHz

Simultaneous Transmission Analysis

2.4GHz Antenna 1 SAR (W/kg)	2.4GHz Antenna 2 SAR (W/kg)	Σ SAR (W/kg)	Simultaneous SAR Required
0.133	0.133	0.266	No

Conclusion

Since the above summed SAR result for all simultaneous transmission conditions were below the SAR limit (1.6 W/kg), SAR evaluation for simultaneous transmission configuration are not required.