

MPE Analysis Report

The Equipment Under Test (EUT) is a 24-Channel Digital Mixer/Recorder, equipped with multi-channel XLR/line input/output, headphone output, WiFi, LAN and USB Interface. Its operation can be controlled by a Smartphone/Notebook over WiFi link. The WiFi module covers both 2.4GHz and 5GHz band. For the 2.4GHz band, the EUT has only 802.11b mode that occupies a frequency range from 2412MHz to 2462MHz (11 channels with channel spacing of 5MHz). For 5GHz band, the EUT has only 802.11a mode that occupies a frequency range from 5180MHz to 5240MHz (4 channels with channel spacing of 20MHz) and another frequency range from 5745MHz to 5825MHz (5 channels with channel spacing of 20MHz). The EUT is powered by 100-240VAC. HDMI function is not implemented for this product. The applicant declared that the EUT is a non-MIMO master unit without DFS function. The 2.4GHz and 5GHz portion of WiFi will not transmit simultaneously.

The EUT has one antenna.

(Model: 1705000182-716000 ; Impedance: 50-ohm)

Antenna Type: external, detachable, with reverse-SMA connector.

2.4GHz portion

Antenna Gain: 2.26dBi

2412MHz to 2462MHz

Operating mode	Nominal Conducted	Production Tolerance	Modulation Type Power
<u>Antenna 1</u> WiFi 802.11b	12.06 dBm	+/- 3dB	DSSS

5GHz portion

Antenna Gain: 3.66dBi

5180MHz to 5240MHz

Operating mode	Nominal Conducted Power	Production Tolerance	Modulation Type
<u>Antenna 1</u> WiFi 802.11a	12.511 dBm	+/- 3dB	OFDM

5GHz portion

Antenna Gain: 3.66dBi

5745MHz to 5825MHz

Operating mode	Nominal Conducted Power	Production Tolerance	Modulation Type
<u>Antenna 1</u> WiFi 802.11a	2.695 dBm	+/- 3dB	OFDM

For Maximum Permissible Exposure (MPE) evaluation of the Ui24R, the maximum power density at 20 cm from this mobile transmitter shall be less than the General Population / Uncontrolled MPE limit in OET Bulletin 65.

For the WiFi 802.11b, maximum conducted power measured within its production tolerance was 15.06 dBm (maximum). The antenna gain is 2.26 dBi = 1.68 (num gain) and the maximum source-based time-averaging duty factor is 100%. From these data, the exposed power density at a distance (R) of 20cm from the center of radiation of the antenna can be calculated according to OET Bulletin 65 as follow:

The conducted power = 15.06 dBm (32.06 mW)

The radiated (EIRP) source-based time-averaging output power
= (32.06 * 1.68) mW
= 53.86 mW

The power density at 20 cm from the antenna
= $EIRP / 4\pi R^2$
= 0.01 mW cm⁻²

For the WiFi 802.11a, maximum conducted power measured within its production tolerance was 15.511 dBm (maximum). The antenna gain is 3.66 dBi = 2.32 (num gain) and the maximum source-based time-averaging duty factor is 100%. From these data, the exposed power density at a distance (R) of 20cm from the center of radiation of the antenna can be calculated according to OET Bulletin 65 as follow:

The conducted power = 15.511 dBm (35.57 mW)

The radiated (EIRP) source-based time-averaging output power
= (35.57 * 2.32) mW
= 82.52 mW

The power density at 20 cm from the antenna
= $EIRP / 4\pi R^2$
= 0.02 mW cm⁻²

In the frequency range of 1,500 - 100,000MHz, the MPE limit is 1.0 mWcm⁻² for general population and uncontrolled exposure. As the measured power density at 20cm from the transmitter is lower than the MPE limit, the compliance to the MPE limit can be ensured by indicating the minimum 20cm separation between the transmitter's radiating structures and body of the user or nearby persons. The following RF exposure statement is proposed to be included in the user manual:

“FCC RF Radiation Exposure Statement

Caution: To maintain compliance with the FCC's RF exposure guidelines, place the product at least 20cm from nearby persons.”

FCC ID: API-MICROCORE

IC: 2483A-MICROCORE