# FCC MPE Evaluation Report

**Report No:** WD-RF-R-190639-D0

| | | |
|---|---|---|
| **Product Name** | : | 20MP Box Camera |
| **Model Name** | : | SR-C-U20-NITIDA-M |
| **Series Model Name** | : | SR-C-U20-NITIDA-M-FR |
| **FCC ID** | : | 2ATPWNITIDA20 |
| **Applicant** | : | SPARK S.R.L. |
| **Received Date** | : | May. 17, 2019 |
| **Tested Date** | : | Sep. 25, 2019 ~ Oct. 09, 2019 |
| **Applicable Standard** | : | 47 CFR FCC Part 2.1091<br>47 CFR FCC Part 1.1310<br>KDB 447498 D01<br>OET Bulletin 65 Supplement C |

**Wendell Industrial Co., Ltd**
**Wendell Electrical Testing Lab.**

# Test Report

Issued Date: October 09, 2019

Project No.: 19Q051701

| | |
|---|---|
| **Product Name** | 20MP Box Camera |
| **Trade Name** | Spark |
| **Model Name** | SR-C-U20-NITIDA-M |
| **Series Model Name** | SR-C-U20-NITIDA-M-FR |
| **FCC ID** | 2ATPWNITIDA20 |
| **Applicant** | SPARK S.R.L. |
| **Manufacturer** | SPARK S.R.L. |
| **EUT Rated Voltage** | AC 24V，DC 12V，PoE |
| **EUT Test Voltage** | AC 120V / 60Hz (DC 12V Adapter) |
| **EUT Supports Radios Application** | WLAN 802.11b/g<br>WLAN 802.11n (HT20/HT40) |
| **Applicable Standard** | 47 CFR FCC Part 2.1091 47 CFR FCC Part 1.1310<br>KDB 447498 D01 OET Bulletin 65 Supplement C |
| **RF Evaluation** | 0.0409 mW/cm$^2$ |
| **Test Result** | Complied |

**Documented :** Emma Lu

( Specialist / Emma Lu )

**Technical Engineer :** Jack Chang

( Deputy Section Manager / Jack Chang )

**Approved :** Gary Wu

( Project Manager / Gary Wu )

# Table of Contents

# Document Revision History

| Report No. | Issue date | Description |
|---|---|---|
| WD-RF-R-190639-D0 | October 09, 2019 | Initial report |

# Reference Testing Standard

| Standard | Description | Version |
|---|---|---|
| 47 CFR FCC Part 2.1091 | Radiofrequency radiation exposure evaluation: mobile devices. | -- |
| 47 CFR FCC Part 1.1310 | Radiofrequency radiation exposure limits. | -- |
| KDB 447498 D01 | RF Exposure procedures and equipment authorization policies for mobile and portable devices. | V06 |
| OET Bulletin 65 Supplement C | Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields. | Edition 01-01 |

# 1 Generation Information

## 1.1 Applicant

SPARK S.R.L.
VIA ANTONIO GRAMSCI, 86/A 42124 REGGIO EMILIA (ITALY)

## 1.2 Manufacturer

SPARK S.R.L.
VIA ANTONIO GRAMSCI, 86/A 42124 REGGIO EMILIA (ITALY)

## 1.3 Description of Equipment under Test

| | |
|---|---|
| **Product Name** | 20MP Box Camera |
| **Model No.** | SR-C-U20-NITIDA-M |
| **Series Model Name** | SR-C-U20-NITIDA-M-FR |
| **FCC ID** | 2ATPWNITIDA20 |
| **Frequency Range** | 802.11b/g/n-20MHz: 2412~2462MHz<br>802.11n-40MHz: 2422~2452MHz |
| **Number of Channels** | 802.11b/g/n-20MHz: 11, n-40MHz: 7 |
| **Antenna Information** | Refer to the table “Antenna List” |

The above equipment was tested by Wendell Electrical Testing Lab. For compliance with the requirements set forth in 47 CFR § 2.1091 / 47 CFR § 1.1310. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties

**Antenna List**

| No. | Manufacturer | Model No. | Antenna Type | Peak Gain |
|---|---|---|---|---|
| 1 | N/A | N/A | PCB Antenna | 1 dBi for 2.4GHz |

Note:

1. This device is a SR-C-U20-NITIDA-M with a built-in Wi-Fi transceiver.
2. The difference between the main model and the serial model is whether or not the intelligent analysis function of the software is supported. The serial model features FR software with the ability to support intelligent image analysis.

## 1.4 Test Facility

| Items | Required (IEC 60068-1) | Actual |
|---|---|---|
| Temperature (°C) | 15-35 | 25 |
| Humidity (% RH) | 25-75 | 65 |
| Barometric pressure (mbar) | 860-1060 | 1001 |

**Description:** Accredited by TAF
Accredited Number: 2965

**Issued by:** Wendell Industrial Co., Ltd

**Lab Address:** 6F/6F-1, No.188, Baoqiao Rd., Xindian Dist.,
New Taipei City 23145, Taiwan R.O.C

**Test Lab:** Wendell Electrical Testing Lab.

**Test Location:** No.67-9, Shimen Rd., Tucheng Dist.,
New Taipei City 236, Taiwan R.O.C

**FCC Accreditation Number:** TW2965

# 2 Mobile device Assessment Procedure

In 47 CFR § 2.1091, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. In this context, the term “fixed location” means that the device is physically secured at one location and is not able to be easily moved to another location.

A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained

between the transmitter's radiating structure(s) and the body of the user or nearby persons.

# 3 RF Exposure Assessment

Estimation of the expected exposure in power density can be made with the following equation:

$$S = \frac{P \times G}{4\pi \times R^2} = \frac{EIRP}{4\pi \times R^2}$$

S: power density

P: power input to the antenna

G: power gain of the antenna in the direction of interest relative to an isotropic radiator.

R: distance to the center of radiation of the antenna.

EIRP: Effective Isotropic Radiated Power

# 4 Limit Requirement

In 47 CFR § 1.1310, use of the device as based upon the user's awareness and ability to exercise control over human exposure. The two categories defined are Occupational/Controlled Exposure and General Population/Uncontrolled. These two categories are defined as follow:

**Occupational/Controlled Exposure:**

Occupational/controlled exposure limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure.

**General Population/Uncontrolled:**

General population/uncontrolled exposure limits apply in situations in which the general public may be exposed, or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

| Limits for Occupational / Controlled Exposure | | | | |
|---|---|---|---|---|
| **Frequency Range (MHz)** | **Electric Field Strength (E) (V/m)** | **Magnetic Field Strength (H) (A/m)** | **Power Density (S) (mW/ cm²)** | **Averaging Time\|E\|²,\|H\|² or S (minutes)** |
| 0.3-3.0 | 614 | 1.63 | (100)* | 6 |
| 3.0-30 | 1,842 / f | 4.89 / f | ($900 / f^2$)* | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1,500 | -- | -- | f / 300 | 6 |
| 1,500-100,000 | -- | -- | 5 | 6 |

Note：

(1) f = frequency in MHz

(2) * = Plane-wave equivalent power density

| Limits for General Population / Uncontrolled Exposure | | | | |
|---|---|---|---|---|
| **Frequency Range (MHz)** | **Electric Field Strength (E) (V/m)** | **Magnetic Field Strength (H) (A/m)** | **Power Density (S) (mW/ cm²)** | **Averaging Time\|E\|²,\|H\|² or S (minutes)** |
| 0.3-1.34 | 614 | 1.63 | (100)* | 30 |
| 1.34-30 | 824 / f | 2.19 / f | ($180 / f^2$)* | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | -- | -- | f / 1,500 | 30 |
| 1,500-100,000 | -- | -- | 1.0 | 30 |

Note：

(1) f = frequency in MHz

(2) * = Plane-wave equivalent power density

# 5 Test Results

| Mode | Max. Average Power (E.I.R.P) | | Distance (cm) | Power Density ($mW/cm^2$) | Limit ($mW/cm^2$) | Result |
|---|---|---|---|---|---|---|
| | dBm | mW | | | | |
| WLAN 2.4G | 24.47 | 279.90 | 20 | 0.05568 | 1 | Pass |

Note：

＊ The Numeric Gain calculated by 10^(dBi/10).

＊ Each Function of the max power which perform MPE of any configurations.

＊ The allowed Frequency (Range) of the WLAN 2.4G function is 2400~2483.5MHz, and the exemption limit is e.i.r.p. less than or equal to 1mW.

＊ The limit is equal to the minimum value.

＊ The Max total MPE = WLAN 2.4G = 0.0409 (mW/cm^2)

**--- END ---**