



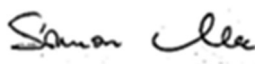
## FCC RF EXPOSURE REPORT

For

### Corning Optical Communication LLC

475 Sycamore Drive, Milpitas, CA 95035, USA

**FCC ID: OJFRN510**

|                                                                                                                                                |                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>Report Type:</b><br>Class II Permissive Change Report                                                                                       | <b>Product Type:</b><br>5G mmWave SmallCell Radio Node                               |
| <b>Prepared By:</b><br>Giriraj Gurjar<br>Test Engineer                                                                                         |  |
| <b>Report Number:</b><br>R2106163 RF Exposure                                                                                                  |                                                                                      |
| <b>Report Date:</b><br>2021-08-06                                                                                                              |                                                                                      |
| <b>Reviewed By:</b><br>Simon Ma<br>RF Supervisor                                                                                               |  |
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**Note:** This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report **must not** be used by the customer to claim product certification, approval, or endorsement by A2LA\*, NIST, or any agency of the Federal Government.

\* This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "\*" (Rev 2)

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**DOCUMENT REVISION HISTORY**

| <b>Revision Number</b> | <b>Report Number</b> | <b>Description of Revision</b> | <b>Date of Revision</b> |
|------------------------|----------------------|--------------------------------|-------------------------|
| 0                      | R2106163 RF Exposure | Original report                | 2021-08-06              |

## 1 General Description

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### 1.1 Product Description for Equipment under Test (EUT)

This test report was prepared on behalf of *Corning Optical Communication LLC*, and their product model: SCRN-510-28G1, FCC ID: OJFRN510 or the “EUT” as referred to in this report. It is a 5G mmWave SmallCell Radio Node. The device is a Fixed Base Station Device.

### 1.2 Mechanical Description of EUT

SCRN-510-28G1 measures approximately 30 cm (Length) x 30 cm (Width) x 10.5 cm (High), and weighs approximately 5.45kg.

*The data gathered are from the production samples provided by Corning Optical Communication SN: 693920025*

### 1.3 Objective

This report was prepared on behalf of Corning Optical Communication LLC in accordance with FCC RF Exposure rules.

The objective was to determine continue compliance with FCC Part 1.1307 & 1.1310 rules for RF exposure for the additionally enabled modulation and carrier component configurations.

### 1.4 Related Submittal(s)/Grant(s)

N/A

### 1.5 Test Methodology

All measurements contained in this report were conducted in accordance with ANSI C63.26-2015, American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services, and FCC KDB 842590 D01 Upper Microwave Flexible Use Service v01r01.

## 1.6 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

| Parameter                         | Measurement uncertainty |
|-----------------------------------|-------------------------|
| Occupied Channel Bandwidth        | $\pm 5 \%$              |
| RF output power, conducted        | $\pm 0.57 \text{ dB}$   |
| Power Spectral Density, conducted | $\pm 1.48 \text{ dB}$   |
| Unwanted Emissions, conducted     | $\pm 1.57 \text{ dB}$   |
| All emissions, radiated           | $\pm 4.0 \text{ dB}$    |
| AC power line Conducted Emission  | $\pm 2.0 \text{ dB}$    |
| Temperature                       | $\pm 2^\circ \text{ C}$ |
| Humidity                          | $\pm 5 \%$              |
| DC and low frequency voltages     | $\pm 1.0 \%$            |
| Time                              | $\pm 2 \%$              |
| Duty Cycle                        | $\pm 3 \%$              |

## 1.7 Test Facility Registrations

BACL's test facilities that are used to perform Radiated and Conducted Emissions tests are currently recognized by the Federal Communications Commission as Accredited with NIST Designation Number US1129.

BACL's test facilities that are used to perform Radiated and Conducted Emissions tests are currently registered with Industry Canada under Registration Numbers: 3062A-1, 3062A-2, and 3062A-3.

BACL is a Chinese Taipei Bureau of Standards Metrology and Inspection (BSMI) validated Conformity Assessment Body (CAB), under Appendix B, Phase I Procedures of the APEC Mutual Recognition Arrangement (MRA). BACL's BSMI Lab Code Number is: SL2-IN-E-1002R

BACL's test facilities that are used to perform AC Line Conducted Emissions, Telecommunications Line Conducted Emissions, Radiated Emissions from 30 MHz to 1 GHz, and Radiated Emissions from 1 GHz to 6 GHz are currently recognized as Accredited in accordance with the Voluntary Control Council for Interference [VCCI] Article 15 procedures under Registration Number A-0027.

## 1.8 Test Facility Accreditations

Bay Area Compliance Laboratories Corp. (BACL) is:

**A- An independent, 3<sup>rd</sup>-Party, Commercial Test Laboratory accredited to ISO/IEC 17025:2005 by A2LA (Test Laboratory Accreditation Certificate Number 3297.02),** in the fields of: Electromagnetic Compatibility and Telecommunications. Unless noted by an Asterisk (\*) in the Compliance Matrix (See Section 3 of this Test Report), BACL's ISO/IEC 17025:2005 Scope of Accreditation includes all of the Test Method Standards and/or the Product Family Standards detailed in this Test Report.

BACL's ISO/IEC 17025:2005 Scope of Accreditation includes a comprehensive suite of EMC Emissions, EMC Immunity, Radio, RF Exposure, Safety and wireline Telecommunications test methods applicable to a wide range of product categories. These product categories include Central Office Telecommunications Equipment [including NEBS - Network Equipment Building Systems], Unlicensed and Licensed Wireless and RF devices, Information Technology Equipment (ITE); Telecommunications Terminal Equipment (TTE); Medical Electrical Equipment; Industrial, Scientific and Medical Test Equipment; Professional Audio and Video Equipment;

Industrial and Scientific Instruments and Laboratory Apparatus; Cable Distribution Systems, and Energy Efficient Lighting.

**B- A Product Certification Body accredited to ISO/IEC 17065:2012 by A2LA (Product Certification Body Accreditation Certificate Number 3297.03) to certify**

- For the USA (Federal Communications Commission):

- 1- All Unlicensed radio frequency devices within FCC Scopes A1, A2, A3, and A4;
- 2- All Licensed radio frequency devices within FCC Scopes B1, B2, B3, and B4;
- 3- All Telephone Terminal Equipment within FCC Scope C.

- For the Canada (Industry Canada):

- 1 All Scope 1-Licence-Exempt Radio Frequency Devices;
- 2 All Scope 2-Licensed Personal Mobile Radio Services;
- 3 All Scope 3-Licensed General Mobile & Fixed Radio Services;
- 4 All Scope 4-Licensed Maritime & Aviation Radio Services;
- 5 All Scope 5-Licensed Fixed Microwave Radio Services
- 6 All Broadcasting Technical Standards (BETS) in the Category I Equipment Standards List.

- For Singapore (Info-Communications Development Authority (IDA)):

- 1 All Line Terminal Equipment: All Technical Specifications for Line Terminal Equipment – Table 1 of IDA MRA Recognition Scheme: 2011, Annex 2
2. All Radio-Communication Equipment: All Technical Specifications for Radio-Communication Equipment – Table 2 of IDA MRA Recognition Scheme: 2011, Annex 2

- For the Hong Kong Special Administrative Region:

- 1 All Radio Equipment, per KHCA 10XX-series Specifications;
- 2 All GMDSS Marine Radio Equipment, per HKCA 12XX-series Specifications;
- 3 All Fixed Network Equipment, per HKCA 20XX-series Specifications.

- For Japan:

- 1 MIC Telecommunication Business Law (Terminal Equipment):
  - All Scope A1 - Terminal Equipment for the Purpose of Calls;
  - All Scope A2 - Other Terminal Equipment
- 2 Radio Law (Radio Equipment):
  - All Scope B1 - Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 1 of the Radio Law
  - All Scope B2 - Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 2 of the Radio Law
  - All Scope B3 - Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 3 of the Radio Law

**C- A Product Certification Body accredited to ISO/IEC 17065:2012 by A2LA (Product Certification Body Accreditation Certificate Number 3297.01) to certify Products to USA's Environmental Protection Agency (EPA) ENERGY STAR Product Specifications for:**

- 1 Electronics and Office Equipment:
  - for Telephony (ver. 3.0)
  - for Audio/Video (ver. 3.0)
  - for Battery Charging Systems (ver. 1.1)
  - for Set-top Boxes & Cable Boxes (ver. 4.1)
  - for Televisions (ver. 6.1)
  - for Computers (ver. 6.0)
  - for Displays (ver. 6.0)
  - for Imaging Equipment (ver. 2.0)
  - for Computer Servers (ver. 2.0)
- 2 Commercial Food Service Equipment
  - for Commercial Dishwashers (ver. 2.0)
  - for Commercial Ice Machines (ver. 2.0)
  - for Commercial Ovens (ver. 2.1)
  - for Commercial Refrigerators and Freezers

- 3 Lighting Products
  - For Decorative Light Strings (ver. 1.5)
  - For Luminaires (including sub-components) and Lamps (ver. 1.2)
  - For Compact Fluorescent Lamps (CFLs) (ver. 4.3)
  - For Integral LED Lamps (ver. 1.4)
- 4 Heating, Ventilation, and AC Products
  - for Residential Ceiling Fans (ver. 3.0)
  - for Residential Ventilating Fans (ver. 3.2)
- 5 Other
  - For Water Coolers (ver. 3.0)

***D- A NIST Designated Phase-I and Phase-II Conformity Assessment Body (CAB) for the following economies and regulatory authorities under the terms of the stated MRAs/Treaties:***

- Australia: ACMA (Australian Communication and Media Authority) – APEC Tel MRA -Phase I;
- Canada: (Innovation, Science and Economic development Canada - ISED) Foreign Certification Body – FCB – APEC Tel MRA -Phase I & Phase II;
- Chinese Taipei (Republic of China – Taiwan):
  - o BSMI (Bureau of Standards, Metrology and Inspection) APEC Tel MRA -Phase I;
  - o NCC (National Communications Commission) APEC Tel MRA -Phase I;
- European Union:
  - o EMC Directive 2014/30/EU US-EU EMC & Telecom MRA CAB (NB)
  - o Radio Equipment (RE) Directive 2014/53/EU US-EU EMC & Telecom MRA CAB (NB)
  - o Low Voltage Directive (LVD) 2014/35/EU
- Hong Kong Special Administrative Region: (Office of the Telecommunications Authority – OFTA) APEC Tel MRA -Phase I & Phase II
- Israel – US-Israel MRA Phase I
- Republic of Korea (Ministry of Communications - Radio Research Laboratory) APEC Tel MRA -Phase I
- Singapore: (Infocomm Media Development Authority - IMDA) APEC Tel MRA -Phase I & Phase II;
- Japan: VCCI - Voluntary Control Council for Interference US-Japan Telecom Treaty VCCI Side Letter-
- USA:
  - o ENERGY STAR Recognized Test Laboratory – US EPA
  - o Telecommunications Certification Body (TCB) – US FCC;
  - o Nationally Recognized Test Laboratory (NRTL) – US OSHA
- Vietnam: APEC Tel MRA -Phase I;

## 2 Summary of Test Results

| FCC Rules        | Description of Test | Result    |
|------------------|---------------------|-----------|
| §1.1307, §1.1310 | RF Exposure         | Compliant |

### 3 FCC §1.1307 & §1.1310 - RF Exposure

#### 3.1 Applicable Standards

FCC §1.1307 & §1.1310.

According to FCC §1.1310 (e)(1), the following table sets forth limits for Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields.

Limits for General Population/Uncontrolled Exposure

| Frequency Range (MHz)                               | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm <sup>2</sup> ) | Averaging Time (minutes) |
|-----------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| Limits for General Population/Uncontrolled Exposure |                               |                               |                                     |                          |
| 0.3-1.34                                            | 614                           | 1.63                          | * (100)                             | 30                       |
| 1.34-30                                             | 824/f                         | 2.19/f                        | * (180/f <sup>2</sup> )             | 30                       |
| 30-300                                              | 27.5                          | 0.073                         | 0.2                                 | 30                       |
| 300-1500                                            | /                             | /                             | f/1500                              | 30                       |
| 1500-100,000                                        | /                             | /                             | 1.0                                 | 30                       |

Where: f = frequency in MHz

\* = Plane-wave equivalent power density

#### 3.2 MPE Prediction

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = power density

P = power input to 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

### 3.3 MPE Results

*Worst Case: 3CC-64QAM Middle Channel, 27925 MHz*

|                                                                                             |              |
|---------------------------------------------------------------------------------------------|--------------|
| <u>Maximum EIRP(dBm):</u>                                                                   | <u>42.44</u> |
| <u>Maximum EIRP(mW):</u>                                                                    | <u>17520</u> |
| <u>Prediction distance (cm):</u>                                                            | <u>40</u>    |
| <u>Prediction frequency (MHz):</u>                                                          | <u>27925</u> |
| <u>Power density of prediction frequency at 20.0 cm (mW/cm<sup>2</sup>):</u>                | <u>0.87</u>  |
| <u>FCC MPE limit for uncontrolled exposure at prediction frequency (mW/cm<sup>2</sup>):</u> | <u>1.0</u>   |

The device is compliant with the requirement MPE limit for uncontrolled exposure. The maximum power density at the distance of 40 cm is 0.87mW/cm<sup>2</sup>.

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## **4 Annex A (Normative) - EUT Test Setup Photographs**

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Please refer to the attachment.

**5 Annex B (Normative) - A2LA Electrical Testing Certificate****Accredited Laboratory**

A2LA has accredited

**BAY AREA COMPLIANCE LABORATORIES CORP.**

Sunnyvale, CA

for technical competence in the field of

**Electrical Testing**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This laboratory also meets A2LA R222 - Specific Requirements EPA ENERGY STAR Accreditation Program. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

Presented this 10<sup>th</sup> day of March 2021.

A handwritten signature in blue ink, appearing to read 'Trace McInturff'.

Trace McInturff, Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 3297.02  
Valid to September 30, 2022

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

Please follow the web link below for a full ISO 17025 scope

<https://www.a2la.org/scopepdf/3297-02.pdf>

--- END OF REPORT ---