

TEST REPORT
CBSD-SAS Interoperability**Applicant Name:**

SEOWON INTECH CO., LTD. Co. Ltd.

69, LS-ro

115beon-gil, Gunpo-si

Gyeonggi-do, 15809 South Korea

Date of Testing:

2/14/2022

Test Report Issue Date:

05/16/2022

Test Site/Location:

Element, Columbia, MD, USA

Test Report Serial No.:

1M2202090014-01.V7M

FCC ID:**V7MESLCTGA****APPLICANT:****SEOWON INTECH CO., LTD.****Application Type:**

Certification

Model:

SLC-150T42GA

EUT Type:

LTE Indoor CPE

FCC Classification:

Citizens Band End User Devices (CBE)

FCC Rule Part(s):

96

Test Procedure(s):

KDB 940660 D01 v03, WINNF-18-IN-00178 v1.0.0.00


This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §2.947. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.



RJ Ortanez
Executive Vice President




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1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission.


1.2 Element Test Location

These measurement tests were conducted at the Element laboratory located at 7185 Oakland Mills Road, Columbia, MD 21046.

1.3 Test Facility / Accreditations

Measurements were performed at Element laboratory located in Columbia, MD 21046, U.S.A.

- Element is a OnGo Alliance Approved Test Lab (ATL)
- Element is a WInnForum Approved Test Lab
- Element is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.02 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- Element TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISSED Standards (RSS).
- Element facility is a registered (22831) test laboratory with the site description on file with ISSED.

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **SEOWON INTECH CO., LTD., LTE Indoor CPE FCC ID: V7MESLCTGA**. The test data contained in this report pertains only to the additional requirements for end user devices specified in 96.47 of the FCC rules for LTE Band 48 operation in the CBRS band. Per FCC Part 96, this device is evaluated as a Citizens Band End User Devices (CBE).

Test Device Serial Number(s): KRS0104C150T42GA

Test Device Hardware Version: 1.2

2.2 Device Capabilities

This device contains the following capabilities:

LTE Band 48, 2.4GHz WIFI (802.11b/g/n), UNII 5GHz (802.11ac)

2.3 Test Configuration


The EUT was connected to a certified CBSD (Ruckus FCC ID: S9GQ910US00) which is connected to a SAS Test Harness developed by WINNF WG4-CBSD. The latest version of the SAS Test Harness (V1.0.0.2) provided by CBRS Alliance was used. The SAS Test Harness is synchronized to UTC time.

2.4 Software and Firmware

Testing was performed on device(s) using software/firmware version 2.20.1 installed on the EUT.

2.5 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

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3.0 TEST EQUIPMENT CALIBRATION DATA


3.1 Measurement Procedure

The measurement procedures described in KDB 940660 D01 v03 and WINNF-18-IN-00178 v1.0.0.00 were used in the measurement of the EUT to address the additional requirements for End User Devices.

Deviation from Measurement Procedure.....None

3.2 Additional Requirements for End User Devices


See Section 7.2 of this report for a description of the specific test(s) run in order to demonstrate compliance to this requirement under Part 96.47 of the FCC Rules.

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4.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014. All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty (\pm dB)
Conducted Bench Top Measurements	1.13
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

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5.0 TEST EQUIPMENT CALIBRATION DATA


Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST).

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Keysight	N9030A	PXA Signal Analyzer	1/6/2022	Annual	1/6/2023	MY55410501
Dell	Latitude 5590	Test Harness Laptop	N/A	N/A	N/A	BHN3QV2
Mini-Circuits	ZN4PD1-63W-S+	4-Way Power Divider/Combiner	N/A	N/A	N/A	SF259501217
Weinschel	4T-20	20dB Attenuator	N/A	N/A	N/A	N/A

Table 5-1. Annual Test Equipment Calibration Schedule


Notes:

Equipment with a calibration date of “N/A” shown in this list was not used to make direct calibrated measurements.

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6.0 ENVIRONMENTAL CONDITIONS

The temperature is controlled within range of 15°C to 35°C. The relative humidity is controlled within range of 10% to 75%. The atmospheric pressure is monitored within the range 86-106kPa (860-1060mbar).

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7.0 TEST SUMMARY

7.1 Summary

Company Name: SEOWON INTECH CO., LTD.

FCC ID: V7MESLCTGA

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference
CONDUCTED	End User Device Additional Requirements (CBSD Protocol)	96.47	<p>End User Devices may operate only if they can positively receive and decode an authorization signal transmitted by a CBSD, including the frequencies and power limits for their operation.</p> <p>An End User Device must discontinue operations, change frequencies, or change its operational power level within 10 seconds of receiving instructions from its associated CBSD.</p>	PASS	Section 7.2

Table 7-1. Summary of Test Results

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7.2 End User Device Additional Requirement (CBSD Protocol)

§96.47

Test Overview and Limit

End user device additional requirements (CBSD Protocol) are tested per the test procedures listed below. During testing, the EUT is connected to a certified CBSD as a companion device to show compliance with Part 96.47.

End User Devices may operate only if they can positively receive and decode an authorization signal transmitted by a CBSD, including the frequencies and power limits for their operation.

An End User Device must discontinue operations, change frequencies, or change its operational power level within 10 seconds of receiving instructions from its associated CBSD.

Test Procedure Used

KDB 940660 D01 v03, WINNF-18-IN-00178 v1.0.0.00


Test Setup/Method

The EUT was connected via an RF cable to a certified CBSD and spectrum analyzer. The following procedure is performed by applying WINNF-18-IN-00178 v1.0.0.00 CBRS End User Device as UUT Test Guidelines

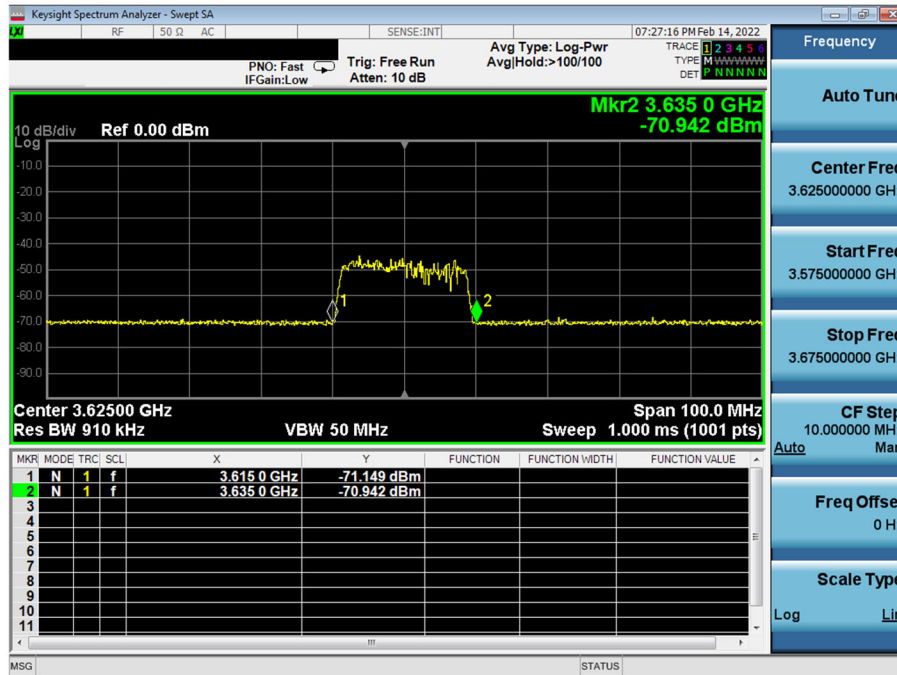
1. Run#1:
 - a. Setup WINNF.PT.C.HBT.1 with 3615MHz – 3635MHz.
 - b. Enable AP service from Ruckus Cloud management.
 - c. Check EUT Tx frequency.
 - d. Disable AP service from Ruckus Cloud management and check EUT stop transmission within 10s.
2. Run#2:
 - a. Setup WINNF.PT.C.HBT.1 with 3660MHz – 3680MHz.
 - b. Enable AP service from Ruckus Cloud management.
 - c. Check EUT Tx frequency.
 - d. Disable AP service from Ruckus Cloud management and check EUT stop transmission within 10s.

Test Notes

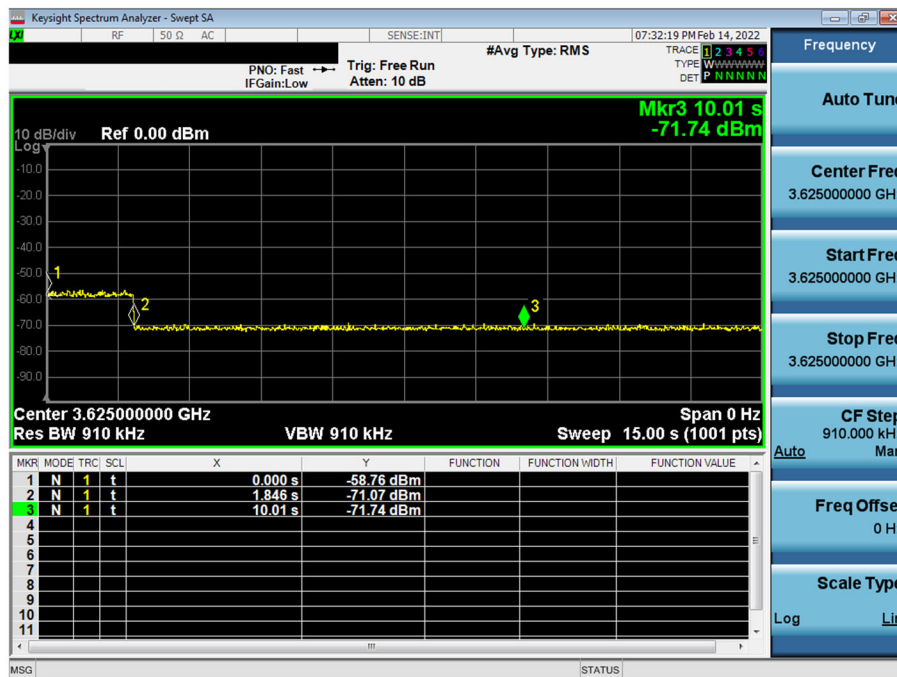
The EUT is an End User Device.

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Run#1:



Plot 7-1. Run#1 End User Device Frequency of Operations (3625MHz)




Plot 7-2. Run#1 End User Device Discontinues Operations within 10s

Note:

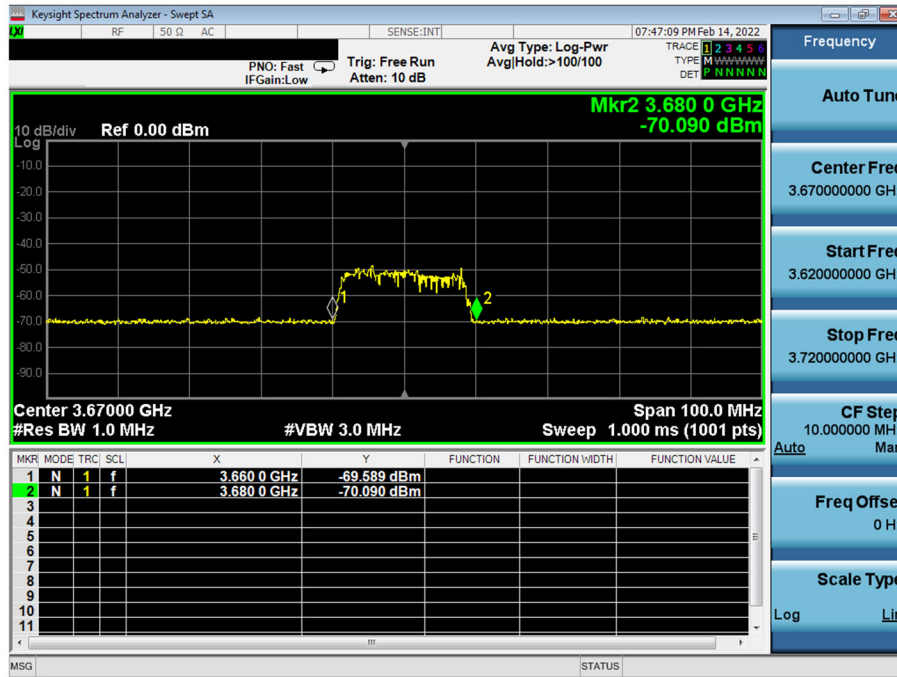
Marker 1: CBSD sends instructions to discontinue LTE operations.

Marker 2: EUT discontinues operation.

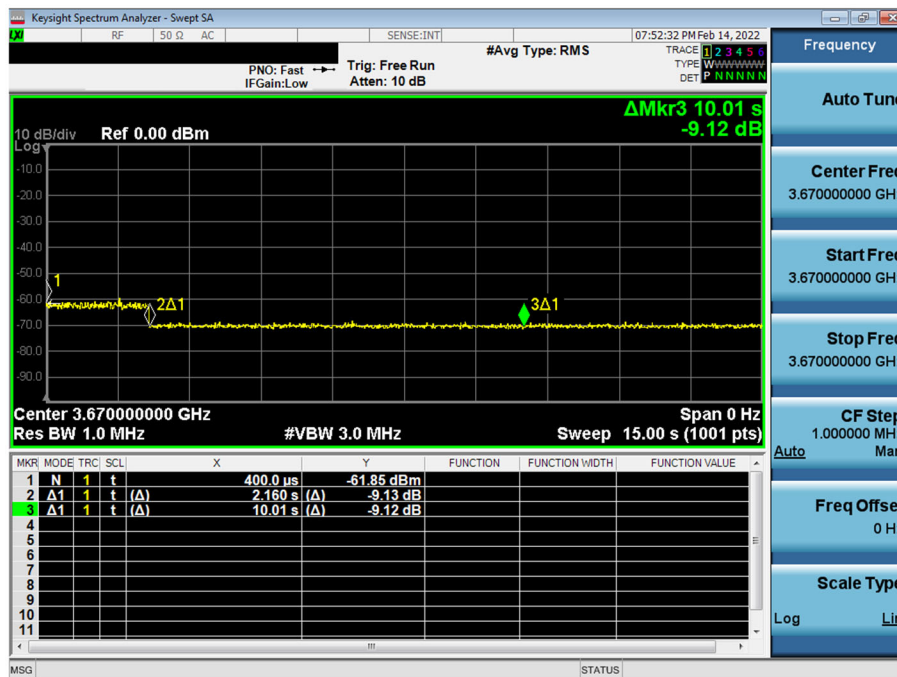
Marker 3: 10 seconds elapsed time from CBSD sending instructions to EUT.

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Run#2:



Plot 7-3. Run#2 End User Device Frequency of Operations (3670MHz)



Plot 7-4. Run#2 End User Device Discontinues Operations within 10s


Note:

- Marker 1: CBSD sends instructions to discontinue LTE operations.
- Marker 2: EUT discontinues operation.
- Marker 3: 10 seconds elapsed time from CBSD sending instructions to EUT.

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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **SEOWON INTECH CO., LTD., LTE Indoor CPE FCC ID: V7MESLCTGA** complies with the Additional Requirements for End User Devices specified in 96.47 of the FCC Rules for LTE operation only.

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