

# RF TEST REPORT

## FCC Part 96.47

APPLICANT

**SAMSUNG Electronics Co., Ltd.**

MODEL NAME

**SM-G990U2**

FCC ID

**A3LSMG990U2**

REPORT NUMBER

**HA220720-SSE-001-R07**

# TEST REPORT

**Date of Issue**

July 28, 2022

**Test Site**

Hyundai C-Tech, Inc. dba HCT America, Inc.  
1726 Ringwood Ave, San Jose, CA 95131, USA

<b>Applicant</b>	SAMSUNG Electronics Co., Ltd.
<b>Applicant Address</b>	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
<b>FCC ID</b>	A3LSMG990U2
<b>Model Name</b>	SM-G990U2
<b>EUT Type</b>	Mobile phone
<b>FCC Classification</b>	Citizens Band End User Devices (CBE)
<b>FCC Rule Part(s)</b>	§96.47
<b>Test Procedure</b>	KDB 940660 D01 v01 WINNF-18-IN-00178 v1.0.0.00

The device bearing the trade name and model specified above, has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures required. The results of testing in this report apply only to the product which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

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.

Hyundai C-Tech, Inc. dba HCT America, Inc. certifies that no party to application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 862

**Tested By**

Yongsoo Park

Test Engineer

**Reviewed By**

Sunwoo Kim

Technical Manager

## REVISION HISTORY

*The revision history for this document is shown in table.*

TEST REPORT NO.	DATE	DESCRIPTION
HA220720-SSE-001-R07	07/24/2022	Initial Issue
HA220720-SSE-001-R07	07/28/2022	Revised test condition in summary of test results on page 8.

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## 1. GENERAL INFORMATION

### RF SPECIFICATION SUBJECT TO THE REPORT

<b>FCC ID:</b>	A3LSMG990U2	
<b>RF Specification:</b>	5G Sub6	n48
<b>Operating Frequency Range</b>	5G Sub6 n48	3550 – 3700 MHz (UL/ DL)
<b>Tx Frequency:</b>	3555.00 – 3694.98 : (Sub6 n48(10 MHz)) 3560.01 – 3690.00 : (Sub6 n48(20 MHz)) 3570.00 – 3679.98 : (Sub6 n48(40 MHz))	
<b>Equipment Category:</b>	Citizens Band End User Devices (CBE)	
<b>Applicable Standard(s):</b>	§96.47	
<b>EUT Type:</b>	Mobile Phone	
<b>Model(s):</b>	SM-G990U2	
<b>Additional Model(s):</b>	SM-G990U3/DS	
<b>SCS(kHz):</b>	30	
<b>Bandwidth:</b>	10 MHz / 20 MHz / 40 MHz	
<b>Waveform:</b>	CP-OFDM, DFT-S-OFDM	
<b>Modulation Type:</b>	DFT-S-OFDM: PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM	
<b>Date(s) of Tests:</b>	July 18, 2022 ~ July 22, 2022	
<b>Serial number:</b>	R3CT30Q0QVR	

## 2. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment's, which is traceable to recognized national standards. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).

### 3. FACILITIES AND ACCREDITATIONS

#### FACILITIES

The SAC (Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at 1726 Ringwood Avenue, San Jose, California 95131, USA.

The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2014) and CISPR Publication 22.



#### EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

#### 4. SUMMARY OF TEST RESULTS

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
End User Device Additional Requirements (CBSD Protocol)	§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.	Radiated	PASS



## 5. DESCRIPTION OF TESTS

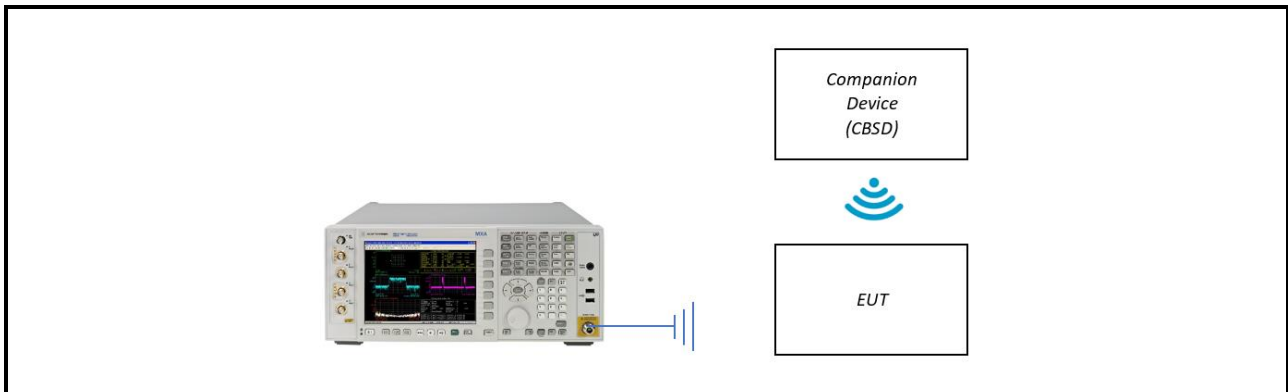
### LIMIT

#### §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 SETUP



### TEST OVERVIEW

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.

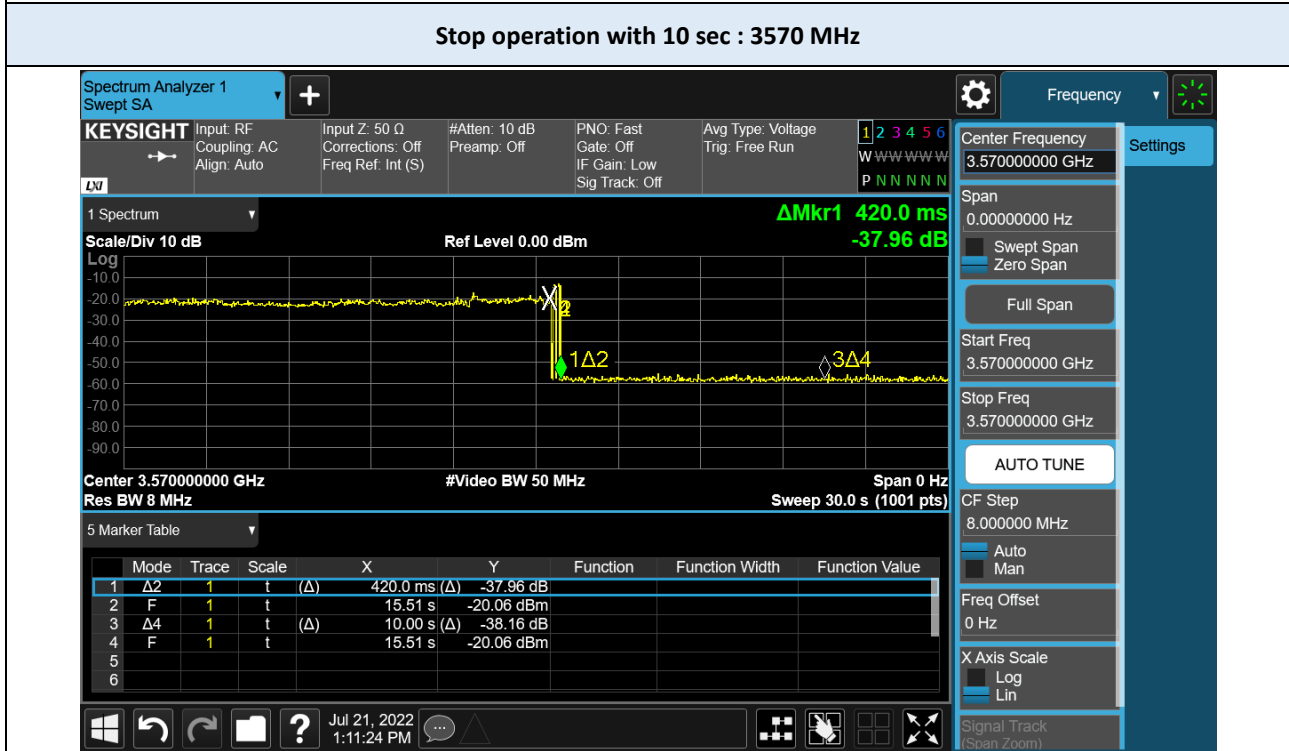
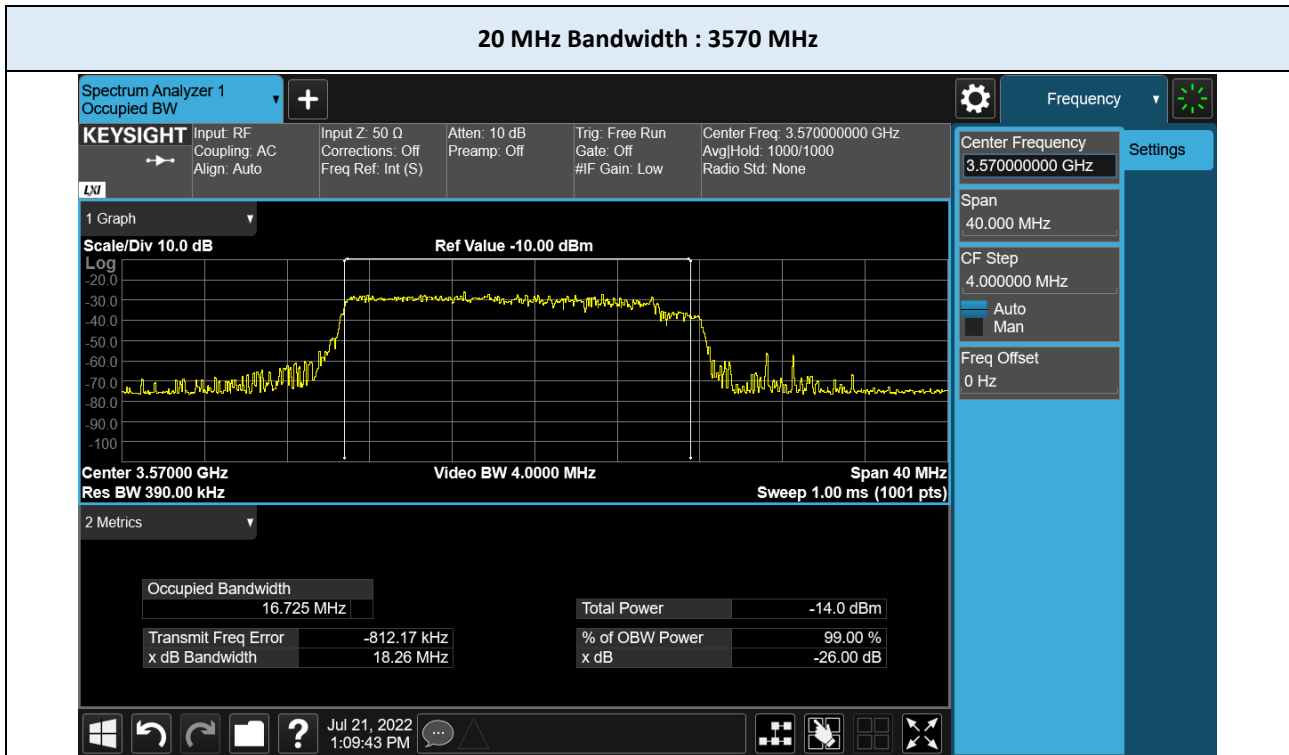
### Test Channel & Power

1. Setup companion device with 3560 MHz - 3580 MHz and power level 20 dBm
2. Setup companion device with 3600 MHz - 3620 MHz and power level 10 dBm

### TEST PROCEDURE

1. Enable AP service from companion device.
2. EUT is connected to a companion device.
3. Check EUT Tx frequency and power.
4. Disable AP service from companion device and check EUT stop transmission within 10 s.

## 6. TEST RESULTS

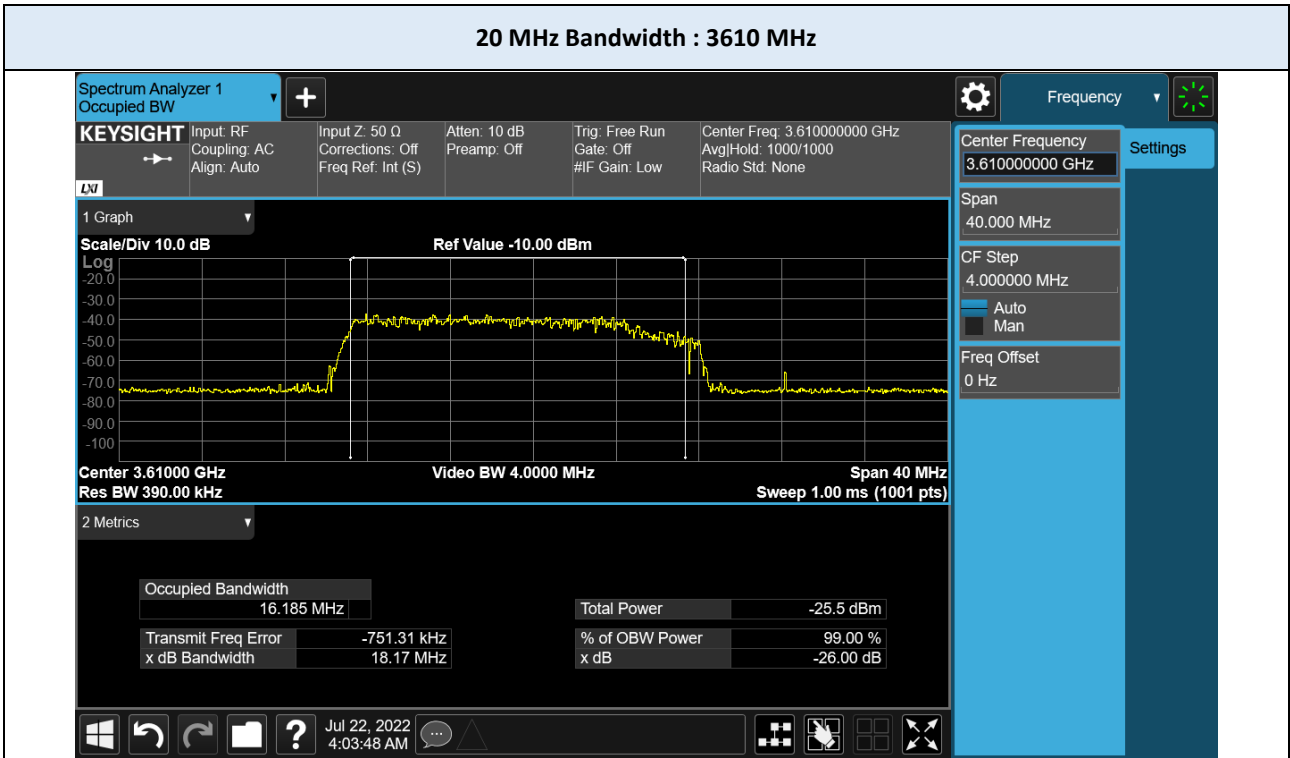


**Note:**

Marker 2: CBSD sends instructions to discontinue NR n48 operations.

Marker 1Δ2: EUT discontinues operation. (420 ms)

Marker 3Δ4: 10 seconds elapsed time from CBSD sending instructions to EUT.(10.0 s)



**Note:**

Marker 2: CBSD sends instructions to discontinue NR n48 operations.

Marker 1Δ2: EUT discontinues operation. (360 ms)

Marker 3Δ4: 10 seconds elapsed time from CBSD sending instructions to EUT.(10.0 s)

## 7. LIST OF TEST EQUIPMENT

No.	Instrument	Model No.	Calibration Due (mm/dd/yy)	Manufacture	Serial No.
<input checked="" type="checkbox"/>	Signal Analyzer (10 Hz ~ 26.5 GHz)	N9020B	07/14/2023	Keysight	MY57431494
<input checked="" type="checkbox"/>	Horn Antenna (1 GHz ~ 18 GHz)	DRH-118	01/28/2023	Sunol Sciences	A061616
<input checked="" type="checkbox"/>	Companion device (FCC ID: PIDAS2900)	AirSpeed 2900	-	Airspan Networks Inc	-

**Note:**

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date

**END OF TEST REPORT**