

# CERTIFICATION TEST REPORT

**Report Number.** : 4790776103-E7V2

**Applicant** : SAMSUNG ELECTRONICS CO., LTD.  
129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI,  
GYEONGGI-DO, 16677, KOREA

**Model** : SM-X716B

**FCC ID** : A3LSMX716B

**EUT Description** : GSM/WCDMA/LTE 5G NR Tablet + BT/BLE, DTS/UNII a/b/g/n/ac/ax  
and WPT.

**Test Standard(s)** : FCC 47 CFR PART 15 SUBPART C

**Date Of Issue:**

2023-05-31

**Prepared by:**

UL KOREA LTD.

26th floor, 152, Teheran-ro, Gangnam-gu Seoul, 06236, Korea

Suwon Test Site: UL KOREA LTD. Suwon Laboratory

218 Maeyeong-ro, Yeongtong-gu,  
Suwon-si, Gyeonggi-do, 16675, Korea

TEL: (031) 337-9902

FAX: (031) 213-5433

Revision History

| <u>Rev.</u> | <u>Issue Date</u> | <u>Revisions</u>                  | <u>Revised By</u> |
|-------------|-------------------|-----------------------------------|-------------------|
| V1          | 2023-05-15        | Initial issue                     | Yeonhee Lim       |
| V2          | 2023-05-31        | Updated to address TCB'q question | Yeonhee Lim       |

## TABLE OF CONTENTS

|  |           |
|--|-----------|
| <b>1. ATTESTATION OF TEST RESULTS .....</b>        | <b>4</b>  |
| <b>2. TEST METHODOLOGY .....</b>                   | <b>5</b>  |
| <b>3. FACILITIES AND ACCREDITATION .....</b>       | <b>5</b>  |
| <b>4. CALIBRATION AND UNCERTAINTY .....</b>        | <b>6</b>  |
| 4.1. <i>MEASURING INSTRUMENT CALIBRATION.....</i>  | 6         |
| 4.2. <i>SAMPLE CALCULATION.....</i>                | 6         |
| 4.3. <i>MEASUREMENT UNCERTAINTY.....</i>           | 6         |
| 4.4. <i>DECISION RULE.....</i>                     | 6         |
| <b>5. EQUIPMENT UNDER TEST .....</b>               | <b>7</b>  |
| 5.1. <i>DESCRIPTION OF EUT.....</i>                | 7         |
| 5.2. <i>MAXIMUM E-FIELD STRENGTH.....</i>          | 7         |
| 5.3. <i>PRELIMINARY TEST CONFIGURATIONS.....</i>   | 8         |
| 5.4. <i>MODIFICATIONS.....</i>                     | 9         |
| 5.5. <i>DESCRIPTION OF TEST SETUP.....</i>         | 9         |
| <b>6. TEST AND MEASUREMENT EQUIPMENT .....</b>     | <b>12</b> |
| <b>7. APPLICABLE LIMITS AND TEST RESULTS .....</b> | <b>13</b> |
| 7.1. <i>RADIATED EMISSIONS.....</i>                | 13        |
| 7.2. <i>AC MAINS LINE CONDUCTED EMISSIONS.....</i> | 20        |

# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** SAMSUNG ELECTRONICS CO., LTD.  
**EUT DESCRIPTION:** GSM/WCDMA/LTE 5G NR Tablet + BT/BLE, DTS/UNII a/b/g/n/ac/ax and WPT.  
**MODEL NUMBER:** SM-X716B  
**SERIAL NUMBER:** R32W300H3JA (RADIATED);  
**DATE TESTED:** 2023-05-14 ~ 2023-05-15;

| APPLICABLE STANDARDS     |              |
|--------------------------|--------------|
| STANDARD                 | TEST RESULTS |
| 47 CFR Part 15 Subpart C | Complies     |

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For  
UL KOREA LTD. By:



Seokhwan Hong  
Suwon Lab Engineer  
UL KOREA LTD.

Tested By:



Yeonhee Lim  
Suwon Lab Engineer  
UL KOREA LTD.

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with following methods.

1. FCC 47 CFR Part 2.
2. FCC 47 CFR Part 15.
3. ANSI C63.10-2013.
4. 680106 D01 RF Exposure Wireless Charging Apps v03r01.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea. Line conducted emissions are measured only at the 218 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

| 218 Maeyeong-ro                     |                                     |
|-------------------------------------|-------------------------------------|
| <input type="checkbox"/>            | Chamber 1(3m semi-anechoic chamber) |
| <input checked="" type="checkbox"/> | Chamber 2(3m semi-anechoic chamber) |
| <input type="checkbox"/>            | Chamber 3(3m semi-anechoic chamber) |
| <input type="checkbox"/>            | Chamber 4(3m Full-anechoic chamber) |
| <input type="checkbox"/>            | Chamber 5(3m Full-anechoic chamber) |

UL KOREA LTD. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at <https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf>.

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

$$\begin{aligned} \text{Corrected Reading (dBuV)} &= \text{Meter Reading (dBuV)} + \text{External Cable (dB)} + \\ &\text{Cableloss (dB)} \\ 46.62 \text{ dBuV} + 9.8 \text{ dB} + 0.1 \text{ dB} &= 56.52 \text{ dBuV} \end{aligned}$$

### 4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER                             | UNCERTAINTY |
|---------------------------------------|-------------|
| Conducted Disturbance, 0.15 to 30 MHz | 2.80 dB     |
| Radiated Disturbance, 9 kHz to 30 MHz | 1.69 dB     |
| Radiated Disturbance, 30 MHz to 1 GHz | 3.92 dB     |

Uncertainty figures are valid to a confidence level of 95%.

### 4.4. DECISION RULE

Decision rule for statement(s) of conformity is based on Procedure 2, Clause 4.4.3 in IEC Guide 115:2021.

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

GSM/WCDMA/LTE 5G NR Tablet + BT/BLE, DTS/UNII a/b/g/n/ac/ax and WPT.  
This test report addresses the Wireless low power transmitter DCD (WPT) operational mode.

### 5.2. MAXIMUM E-FIELD STRENGTH

- Mode 1 / S-pen charging mode(Zoom scan)

| Fundamental Frequency [kHz] | Test Case | E-field (30m distance) FCC[dBuV/m] |
|-----------------------------|-----------|------------------------------------|
| 530 – 593                   | 1         | 19.89                              |

- Mode 2 / S-Pen charging mode (Reverse position) (Zoom scan)

| Fundamental Frequency [kHz] | Test Case | E-field (30m distance) FCC[dBuV/m] |
|-----------------------------|-----------|------------------------------------|
| 530 – 593                   | 3         | 18.56                              |

- Mode 3 / Digitizer (Zoom scan)

| Fundamental Frequency [kHz] | Test Case | E-field (30m distance) FCC[dBuV/m] |
|-----------------------------|-----------|------------------------------------|
| 530 – 593                   | 5         | 7.45                               |

### 5.3. PRELIMINARY TEST CONFIGURATIONS

The EUT was investigated in three orthogonal orientations X, Y and Z it was determined that In S-Pen charging mode & S-Pen charging mode (Reverse position) mode the X orientation is the worst-case orientation, and in Digitizer the Y orientation is the worst-case orientation; therefore, radiated testing was reported with the EUT in X or Y orientation.

● **WORST-CASE CONFIGURATION AND MODE**

| Mode                | Test Case | Description                                  |
|---------------------|-----------|--|
| S-Pen charging mode | 1         | Charging from EUT to S-Pen                   |
|                     | 2         | Charging from EUT(Charging from TA) to S-Pen |

| Mode                                   | Test Case | Description                                  |
|--|-----------|--|
| S-Pen charging mode (reverse position) | 3         | Charging from EUT to S-Pen                   |
|  | 4         | Charging from EUT(Charging from TA) to S-Pen |

| Mode      | Test Case | Description  |
|-----------|-----------|--|
| Digitizer | 5         | Charging from EUT to S-Pen through Display Scan          |
|           | 6         | Charging from EUT(with TA) to S-Pen through Display Scan |

For radiated test, test case 1/3/5, the EUT can operate the S-Pen charging mode and Digitizer mode when battery level is over 30%. Because test results are not different between fully charged status and battery level 30% status(EUT condition), test were performed fully charged condition.

For S-pen, both fully charged and non-fully charged condition were investigated, test case 1/2/3/4 were performed non-fully charged condition as worst case.

During radiated test for test case 1/3/5, the EUT didn't connected AC adapter, but for AC line conducted test for all test case was performed with connected with AC adapter.



## 5.4. MODIFICATIONS

No modifications were made during testing.

## 5.5. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

| Support Equipment List |             |          |                 |        |
|------------------------|-------------|----------|-----------------|--------|
| Description            | Manufacture | Model    | Serial Number   | FCC ID |
| Charger                | SAMSUNG     | EP-TA800 | R37T7CAG0XRASEA | N/A    |
| Data Cable             | SAMSUNG     | EP-DW767 | GH39-02132A     | N/A    |

### I/O CABLE

| I/O Cable List |          |                      |                |            |                  |         |
|----------------|----------|----------------------|----------------|------------|------------------|---------|
| Cable No.      | Port     | # of identical ports | Connector Type | Cable Type | Cable Length (m) | Remarks |
| 1              | DC Power | 1                    | C Type         | Shielded   | 1.8 m            | N/A     |

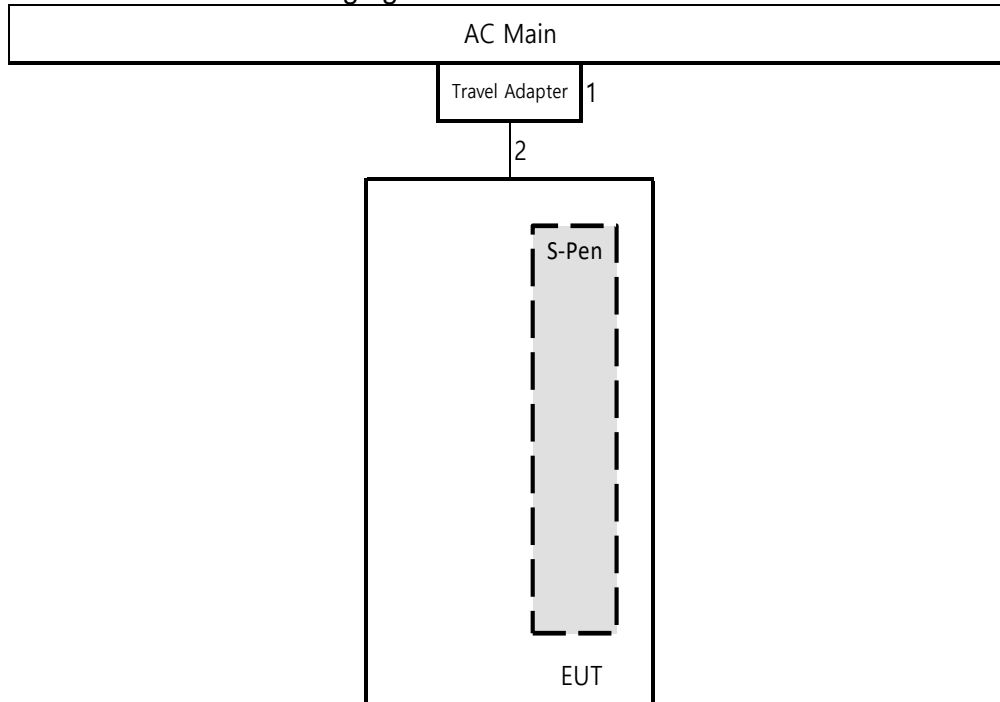
### TEST SETUP

The EUT is installed in a typical configuration. Charging from EUT.

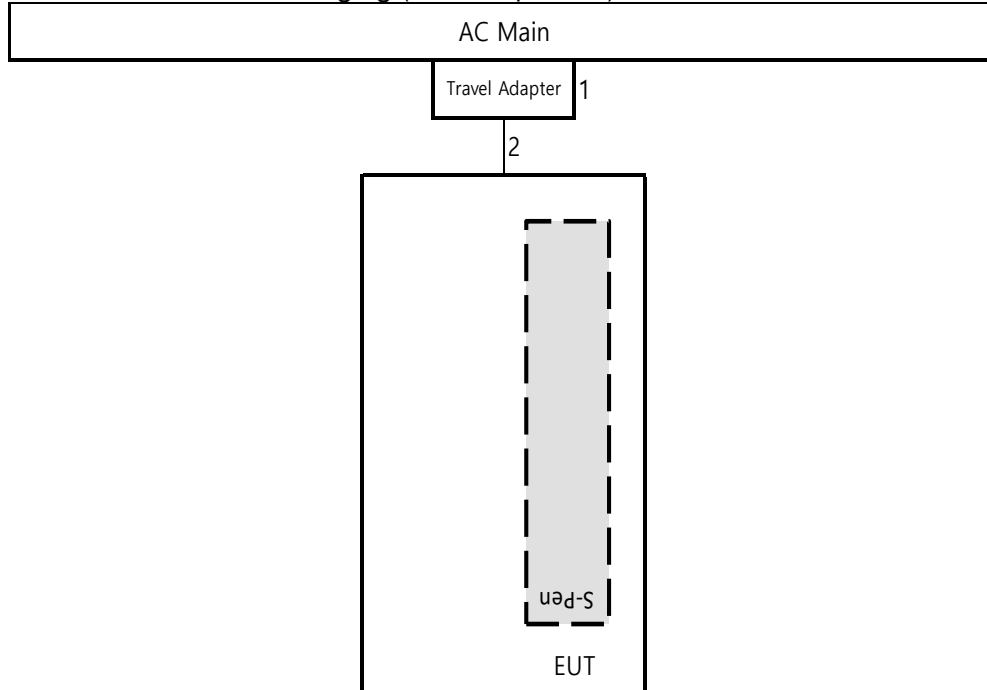
TEST SETUP DIAGRAM

NOTE : Test case 1/3/5, EUT did not connected with Travel adapter(AC Main) in below set-up diagram for radiated test.

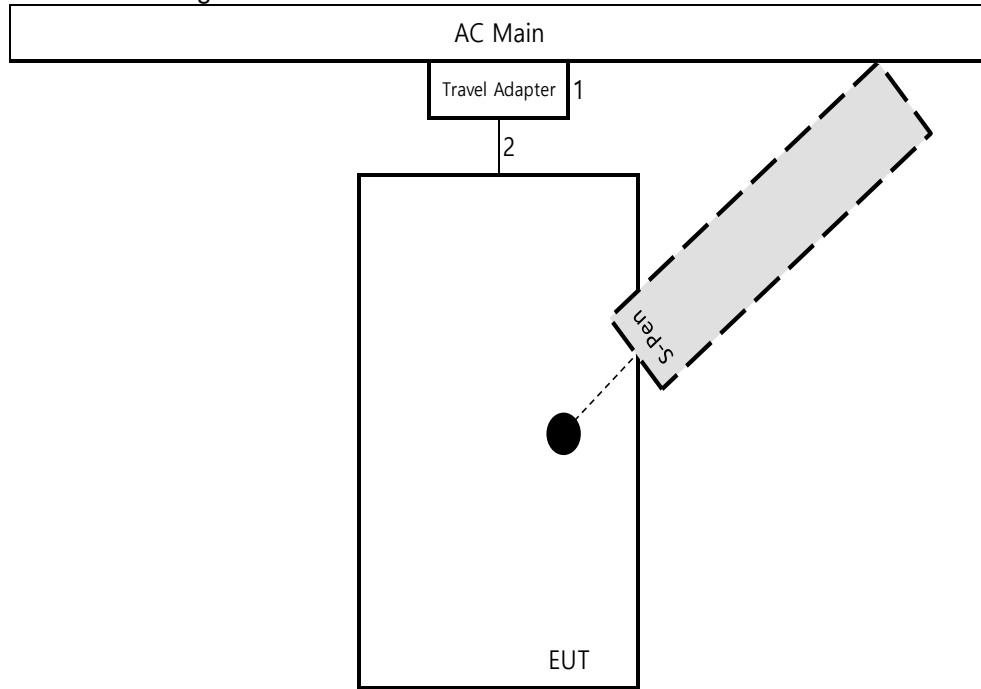
- Test Case 1/2 : S-Pen Charging



- Test Case 3/4 : S-Pen Charging (Reverse position)



- Test case 5/6 : Digitizer



## 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| Test Equipment List        |              |          |            |            |
|----------------------------|--------------|----------|------------|------------|
| Description                | Manufacturer | Model    | S/N        | Cal Due    |
| Antenna, Bilog, 30MHz-1GHz | SCHWARZBECK  | VULB9163 | 845        | 2024-08-15 |
| Antenna, Bilog, 30MHz-1GHz | SCHWARZBECK  | VULB9163 | 749        | 2024-08-15 |
| Preamplifier, 1000 MHz     | Sonoma       | 310N     | 341282     | 2023-08-02 |
| Preamplifier, 1000 MHz     | Sonoma       | 310N     | 351741     | 2023-08-02 |
| EMI Test Receive, 40 GHz   | R&S          | ESU40    | 100457     | 2023-07-29 |
| EMI Test Receive, 3 GHz    | R&S          | ESR3     | 101832     | 2023-08-01 |
| Spectrum Analyzer, 7 GHz   | Agilent / HP | N9010A   | MY54200580 | 2023-08-01 |
| LISN                       | R&S          | ENV-216  | 101837     | 2023-08-04 |
| Antenna, Loop, 9kHz-30MHz  | R&S          | HFH2-Z2  | 100418     | 2023-10-06 |
| UL Software                |              |          |            |            |
| Description                | Manufacturer | Model    | Version    |            |
| Radiated software          | UL           | UL EMC   | Ver 9.5    |            |
| AC Line Conducted software | UL           | UL EMC   | Ver 9.5    |            |

## 7. APPLICABLE LIMITS AND TEST RESULTS

### 7.1. RADIATED EMISSIONS

#### TEST PROCEDURE

ANSI C63.10: 2013

The highest clock frequency generated or used in the EUT is 110 kHz therefore the frequency range was investigated from 9 kHz to 30 MHz.

#### LIMIT

FCC §15.209 (a)

| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (m) |
|-----------------|-----------------------------------|--------------------------|
| 0.009–0.490     | 2400/F(kHz)                       | 300                      |
| 0.490–1.705     | 24000/F(kHz)                      | 30                       |
| 1.705–30.0      | 30                                | 30                       |
| 30–88           | 100                               | 3                        |
| 88 to 216       | 150                               | 3                        |
| 216 to 960      | 200                               | 3                        |
| Above 960 MHz   | 500                               | 3                        |

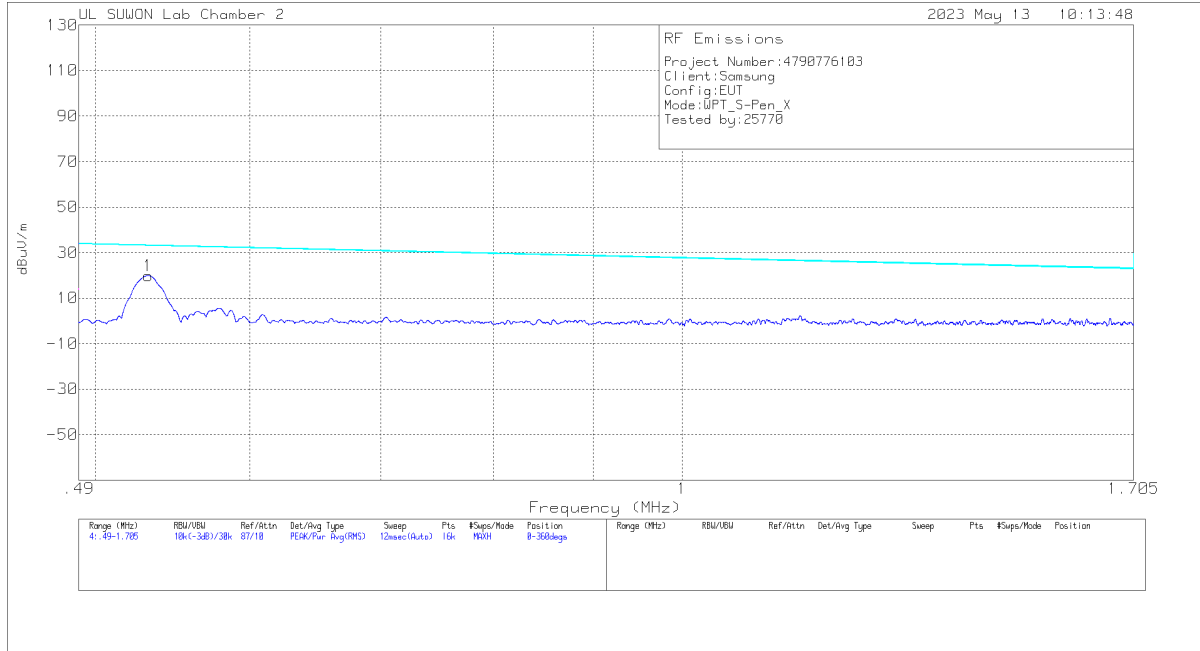
Note: The lower limit shall apply at the transition frequency.

#### RESULTS

The EUT belongs to Test Case 1&3&5.

Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 300 m open field test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788 D01.

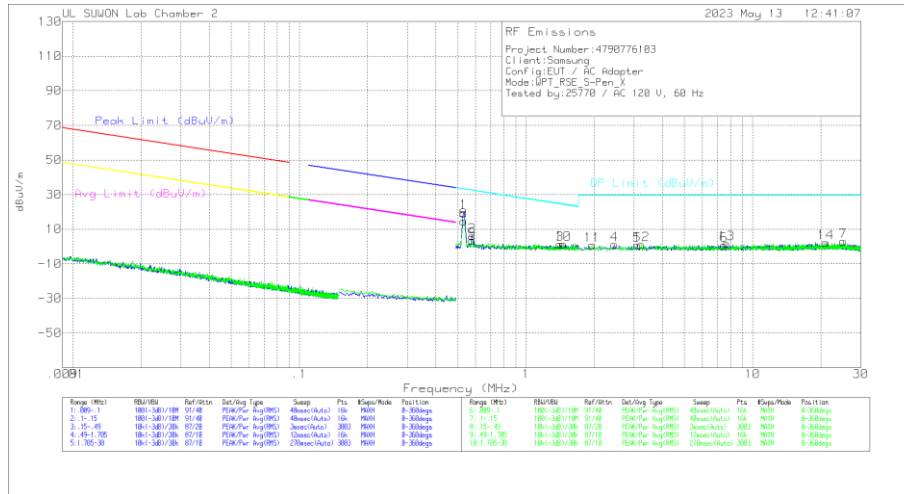
**RADIATED EMISSIONS 9 KHz to 30 MHz(S-Pen charging mode Test Case 1)**



**Trace Markers**

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | HFH2-Z2_Loop Antenna | Cable Loss | Dist Corr 30m | Corrected Reading dBuV/m | QP Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|----------------------|------------|---------------|--------------------------|-------------------|-------------|----------------|
| 1      | .53184          | 39.79                | Pk  | 20                   | .1         | -40           | 19.89                    | 33.09             | -13.2       | 0-360          |

Pk - Peak detector



Trace Markers  
 Face on

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | HFH2-Z2_Loop Antenna | Cable Loss | Dist Corr 30m | Corrected Reading dBuV/m | QP Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|----------------------|------------|---------------|--------------------------|-------------------|-------------|----------------|
| **1    | .53176          | 39.6                 | Pk  | 20                   | .1         | -40           | 19.7                     | 33.09             | -13.39      | 0-360          |
| 2      | .57805          | 25.92                | Pk  | 20                   | .1         | -40           | 6.02                     | 32.37             | -26.35      | 0-360          |
| 3      | 1.40952         | 21.22                | Pk  | 20                   | .2         | -40           | 1.42                     | 24.65             | -23.23      | 0-360          |
| 4      | 2.459           | 20.75                | Pk  | 20.1                 | .2         | -40           | 1.05                     | 29.5              | -28.45      | 0-360          |
| 5      | 3.0999          | 20.24                | Pk  | 20.2                 | .3         | -40           | .74                      | 29.5              | -28.76      | 0-360          |
| 6      | 7.48253         | 20.18                | Pk  | 20.2                 | .4         | -40           | .78                      | 29.5              | -28.72      | 0-360          |
| 7      | 25.13555        | 21.69                | Pk  | 20.5                 | .8         | -40           | 2.99                     | 29.5              | -26.51      | 0-360          |

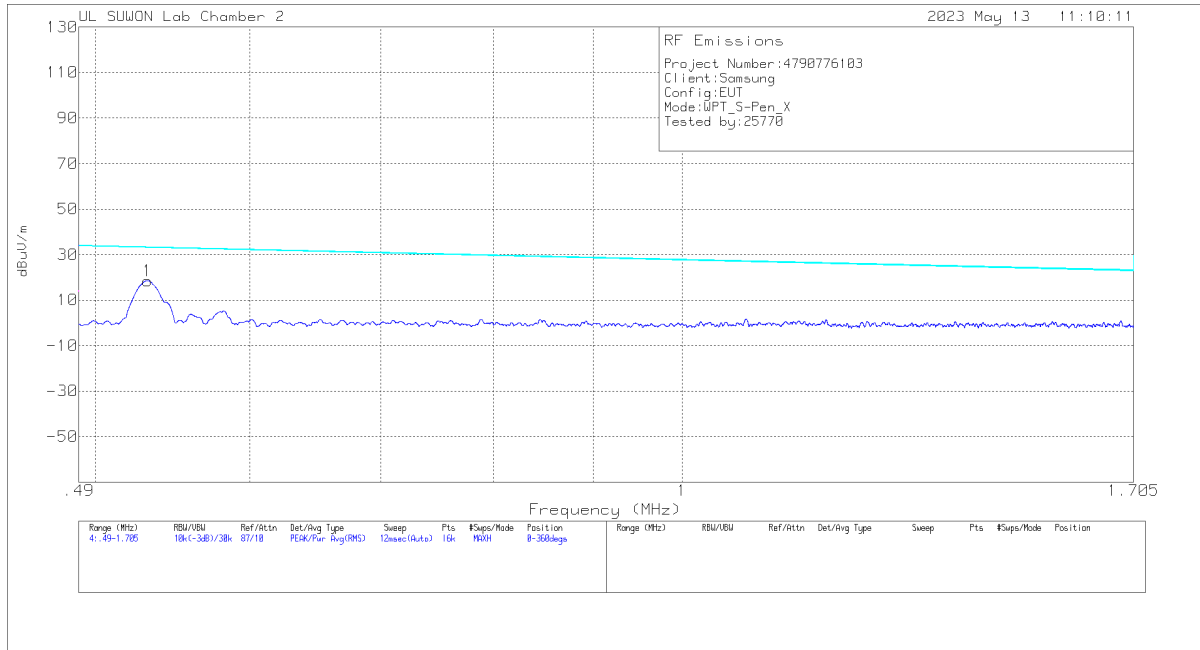
Face off

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | HFH2-Z2_Loop Antenna | Cable Loss | Dist Corr 30m | Corrected Reading dBuV/m | QP Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|----------------------|------------|---------------|--------------------------|-------------------|-------------|----------------|
| **8    | .53131          | 34.52                | Pk  | 20                   | .1         | -40           | 14.62                    | 33.1              | -18.48      | 0-360          |
| 9      | .57903          | 23.51                | Pk  | 20                   | .1         | -40           | 3.61                     | 32.35             | -28.74      | 0-360          |
| 10     | 1.45889         | 21.19                | Pk  | 20                   | .2         | -40           | 1.39                     | 24.35             | -22.96      | 0-360          |
| 11     | 1.95948         | 20.52                | Pk  | 20.1                 | .2         | -40           | .82                      | 29.5              | -28.68      | 0-360          |
| 12     | 3.23185         | 20.57                | Pk  | 20.2                 | .3         | -40           | 1.07                     | 29.5              | -28.43      | 0-360          |
| 13     | 7.68045         | 21.14                | Pk  | 20.2                 | .4         | -40           | 1.74                     | 29.5              | -27.76      | 0-360          |
| 14     | 21.0451         | 20.93                | Pk  | 20.5                 | .7         | -40           | 2.13                     | 29.5              | -27.37      | 0-360          |

Pk - Peak detector  
 \*\*Fundamental

Note : Radiated test were investigated with three receiving antenna axes: Face-on, Face-off and horizontal (parallel to the ground plane) and the worse orientations of Face-on and Face-off were set for final test.

**RADIATED EMISSIONS 9 KHz to 30 MHz(S-Pen charging mode (Reverse position) Test Case 3)**

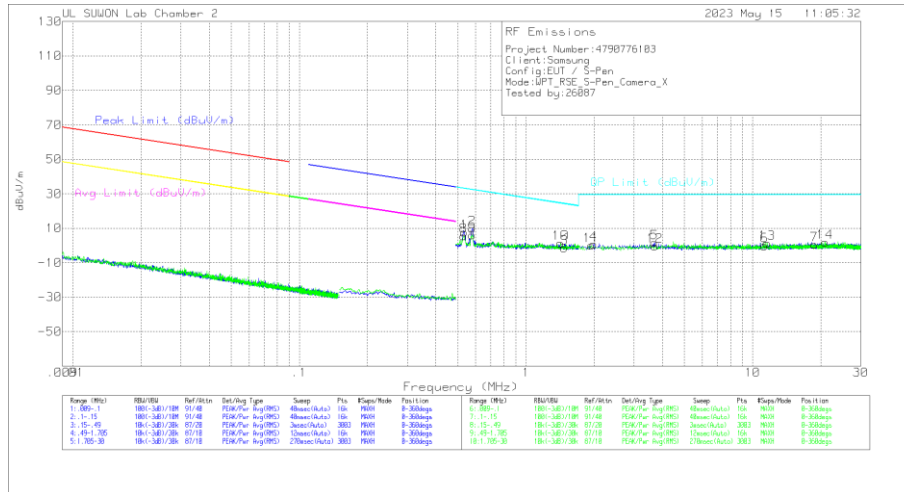


**Trace Markers**

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | HFH2-Z2_Loop Antenna | Cable Loss | Dist Corr 30m | Corrected Reading dBuV/m | QP Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|----------------------|------------|---------------|--------------------------|-------------------|-------------|----------------|
| 1      | .53153          | 38.46                | Pk  | 20                   | .1         | -40           | 18.56                    | 33.1              | -14.54      | 0-360          |

Pk - Peak detector





Trace Markers  
 Face on

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | HFH2-Z2_Loop Antenna | Cable Loss | Dist Corr 30m | Corrected Reading dBuV/m | QP Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|----------------------|------------|---------------|--------------------------|-------------------|-------------|----------------|
| **1    | .53423          | 27.51                | Pk  |                      | .1         | -40           | 7.61                     | 33.05             | -25.44      | 0-360          |
| 2      | .57995          | 29.73                | Pk  | 20                   | .1         | -40           | 9.83                     | 32.34             | -22.51      | 0-360          |
| 3      | 1.47325         | 18.46                | Pk  | 20                   | .2         | -40           | -1.34                    | 24.27             | -25.61      | 0-360          |
| 4      | 1.98775         | 20.62                | Pk  | 20.1                 | .2         | -40           | .92                      | 29.5              | -28.58      | 0-360          |
| 5      | 3.69368         | 21.08                | Pk  | 20.2                 | .3         | -40           | 1.58                     | 29.5              | -27.92      | 0-360          |
| 6      | 11.29023        | 19.17                | Pk  | 20.2                 | .5         | -40           | -.13                     | 29.5              | -29.63      | 0-360          |
| 7      | 18.66058        | 19.54                | Pk  | 20.4                 | .7         | -40           | .64                      | 29.5              | -28.86      | 0-360          |

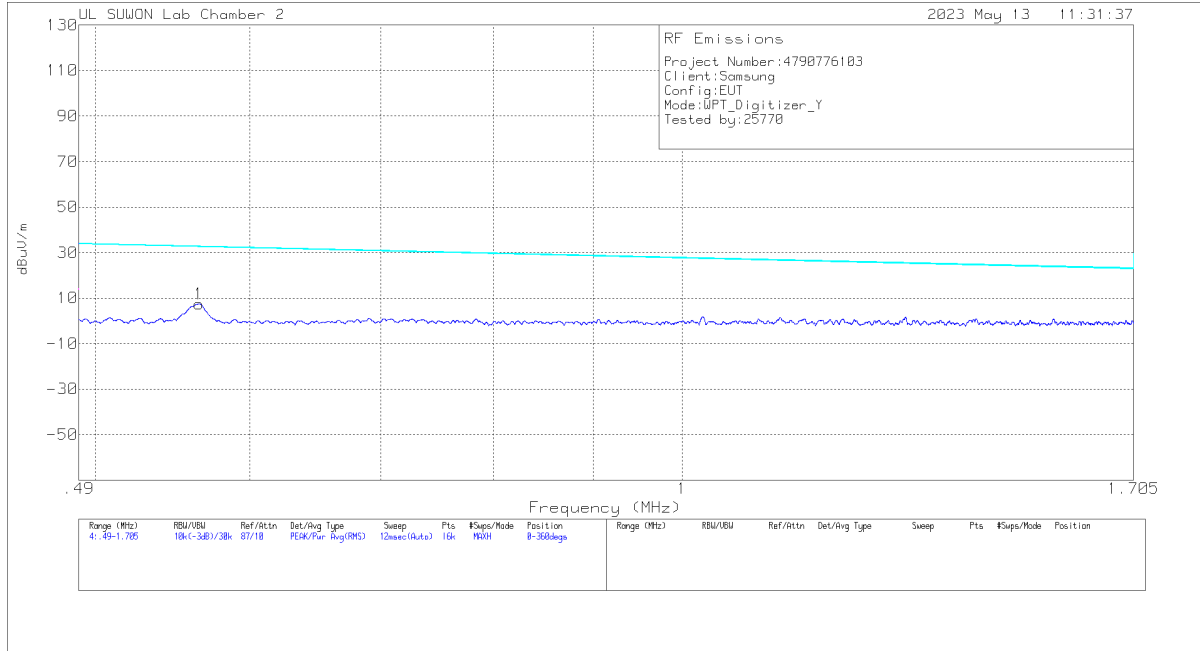
Face off

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | HFH2-Z2_Loop Antenna | Cable Loss | Dist Corr 30m | Corrected Reading dBuV/m | QP Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|----------------------|------------|---------------|--------------------------|-------------------|-------------|----------------|
| **8    | .53055          | 25.47                | Pk  | 20                   | .1         | -40           | 5.57                     | 33.11             | -27.54      | 0-360          |
| 9      | .57835          | 26.08                | Pk  | 20                   | .1         | -40           | 6.18                     | 32.36             | -26.18      | 0-360          |
| 10     | 1.42218         | 21.18                | Pk  | 20                   | .2         | -40           | 1.38                     | 24.57             | -23.19      | 0-360          |
| 11     | 1.94063         | 19.81                | Pk  | 20.1                 | .2         | -40           | .11                      | 29.5              | -29.39      | 0-360          |
| 12     | 3.7031          | 19.31                | Pk  | 20.2                 | .3         | -40           | -.19                     | 29.5              | -29.69      | 0-360          |
| 13     | 11.57769        | 20.63                | Pk  | 20.2                 | .5         | -40           | 1.33                     | 29.5              | -28.17      | 0-360          |
| 14     | 20.84718        | 20.84                | Pk  | 20.5                 | .7         | -40           | 2.04                     | 29.5              | -27.46      | 0-360          |

Pk - Peak detector  
 \*\*Fundamental

Note : Radiated test were investigated with three receiving antenna axes: Face-on, Face-off and horizontal (parallel to the ground plane) and the worse orientations of Face-on and Face-off were set for final test.

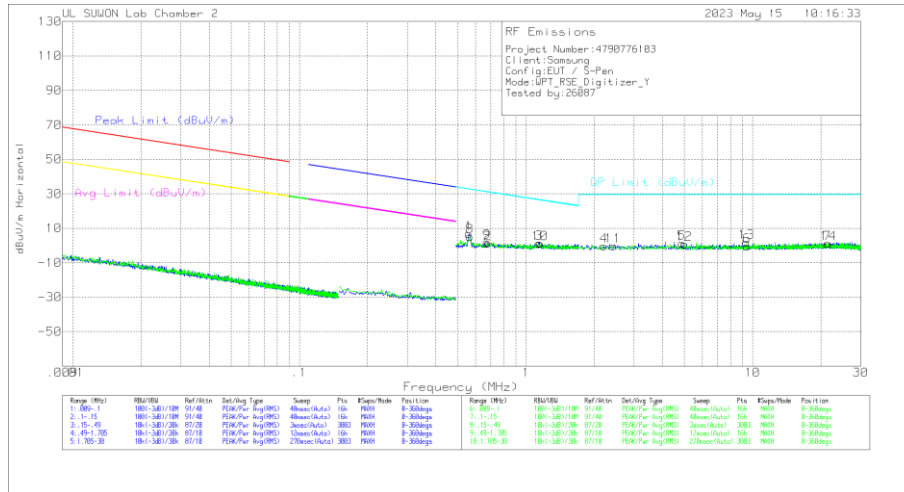
**RADIATED EMISSIONS 9 KHz to 30 MHz(Digitizer mode Test Case 5)**



**Trace Markers**

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | HFH2-Z2_Loop Antenna | Cable Loss | Dist Corr 30m | Corrected Reading dBuV/m | QP Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|----------------------|------------|---------------|--------------------------|-------------------|-------------|----------------|
| 1      | .5649           | 27.35                | Pk  | 20                   | .1         | -40           | 7.45                     | 32.57             | -25.12      | 0-360          |

Pk - Peak detector



Trace Markers  
 Face on

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | HFH2-Z2_Loop Antenna | Cable Loss | Dist Corr 30m | Corrected Reading dBuV/m | QP Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|----------------------|------------|---------------|--------------------------|-------------------|-------------|----------------|
| **1    | .56041          | 26.7                 | Pk  | 20                   | .1         | -40           | 6.8                      | 32.64             | -25.84      | 0-360          |
| 2      | .67806          | 20.91                | Pk  | 20                   | .1         | -40           | 1.01                     | 30.99             | -29.98      | 0-360          |
| 3      | 1.14029         | 21.29                | Pk  | 20                   | .2         | -40           | 1.49                     | 26.48             | -24.99      | 0-360          |
| 4      | 2.21395         | 19.3                 | Pk  | 20.1                 | .2         | -40           | -.4                      | 29.5              | -29.9       | 0-360          |
| 5      | 4.88123         | 20.82                | Pk  | 20.2                 | .3         | -40           | 1.32                     | 29.5              | -28.18      | 0-360          |
| 6      | 9.45235         | 18.89                | Pk  | 20.2                 | .5         | -40           | -.41                     | 29.5              | -29.91      | 0-360          |
| 7      | 21.43153        | 19.87                | Pk  | 20.5                 | .7         | -40           | 1.07                     | 29.5              | -28.43      | 0-360          |

Face off

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | HFH2-Z2_Loop Antenna | Cable Loss | Dist Corr 30m | Corrected Reading dBuV/m | QP Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|----------------------|------------|---------------|--------------------------|-------------------|-------------|----------------|
| **8    | .56589          | 25.1                 | Pk  | 20                   | .1         | -40           | 5.2                      | 32.55             | -27.35      | 0-360          |
| 9      | .67282          | 21.75                | Pk  | 20                   | .1         | -40           | 1.85                     | 31.05             | -29.2       | 0-360          |
| 10     | 1.15337         | 20.81                | Pk  | 20                   | .2         | -40           | 1.01                     | 26.39             | -25.38      | 0-360          |
| 11     | 2.4213          | 19.41                | Pk  | 20.1                 | .2         | -40           | -.29                     | 29.5              | -29.79      | 0-360          |
| 12     | 4.9849          | 20.29                | Pk  | 20.2                 | .3         | -40           | .79                      | 29.5              | -28.71      | 0-360          |
| 13     | 9.3958          | 21.28                | Pk  | 20.2                 | .5         | -40           | 1.98                     | 29.5              | -27.52      | 0-360          |
| 14     | 21.5729         | 19.85                | Pk  | 20.5                 | .7         | -40           | 1.05                     | 29.5              | -28.45      | 0-360          |

Pk - Peak detector  
 \*\*Fundamental

Note : Radiated test were investigated with three receiving antenna axes: Face-on, Face-off and horizontal (parallel to the ground plane) and the worse orientations of Face-on and Face-off were set for final test.

## 7.2. AC MAINS LINE CONDUCTED EMISSIONS

### TEST PROCEDURE

ANSI C63.10: 2013

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

### LIMIT

FCC §15.207 (a)

| Frequency range<br>(MHz) | Limits (dB $\mu$ V) |           |
|--------------------------|---------------------|-----------|
|                          | Quasi-peak          | Average   |
| 0.15 to 0.50             | 66 to 56*           | 56 to 46* |
| 0.50 to 5                | 56                  | 46        |
| 5 to 30                  | 60                  | 50        |

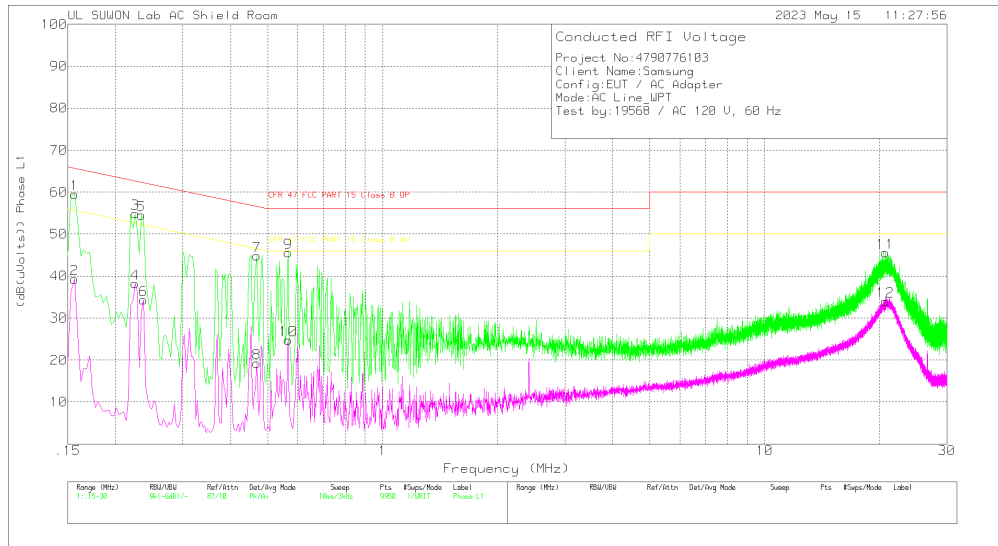
\*Decreases with the logarithm of the frequency.

### RESULTS

The EUT belongs to Test Case 2.

**WORST EMISSIONS(S-pen charging mode Test Case 2) Worst case**

**LINE 1 RESULTS**



**Trace Markers**

Range 1: Phase L1 .15 - 30MHz

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | 101836_Wit h EX_L1[dB] | CABLELOS S(dB) | Corrected Reading (dB(uVolts)) | CFR 47 FCC PART 15 Class B QP | Margin (dB) | CFR 47 FCC PART 15 Class B AV | Margin (dB) |
|--------|-----------------|----------------------|-----|------------------------|----------------|--------------------------------|-------------------------------|-------------|-------------------------------|-------------|
| 1      | .156            | 49.61                | Pk  | 9.8                    | .1             | 59.51                          | 65.67                         | -6.16       | -                             | -           |
| 2      | .156            | 29.38                | Av  | 9.8                    | .1             | 39.28                          | -                             | -           | 55.67                         | -16.39      |
| 3      | .225            | 45                   | Pk  | 9.7                    | .2             | 54.9                           | 62.63                         | -7.73       | -                             | -           |
| 4      | .225            | 28.3                 | Av  | 9.7                    | .2             | 38.2                           | -                             | -           | 52.63                         | -14.43      |
| 5      | .234            | 44.68                | Pk  | 9.7                    | .2             | 54.58                          | 62.31                         | -7.73       | -                             | -           |
| 6      | .237            | 24.45                | Av  | 9.7                    | .2             | 34.35                          | -                             | -           | 52.2                          | -17.85      |
| 7      | .468            | 34.71                | Pk  | 9.9                    | .2             | 44.81                          | 56.55                         | -11.74      | -                             | -           |
| 8      | .468            | 9.15                 | Av  | 9.9                    | .2             | 19.25                          | -                             | -           | 46.55                         | -27.3       |
| 9      | .567            | 35.58                | Pk  | 9.8                    | .2             | 45.58                          | 56                            | -10.42      | -                             | -           |
| 10     | .567            | 14.72                | Av  | 9.8                    | .2             | 24.72                          | -                             | -           | 46                            | -21.28      |
| 11     | 20.676          | 34.93                | Pk  | 10.2                   | .4             | 45.53                          | 60                            | -14.47      | -                             | -           |
| 12     | 20.682          | 23.33                | Av  | 10.2                   | .4             | 33.93                          | -                             | -           | 50                            | -16.07      |

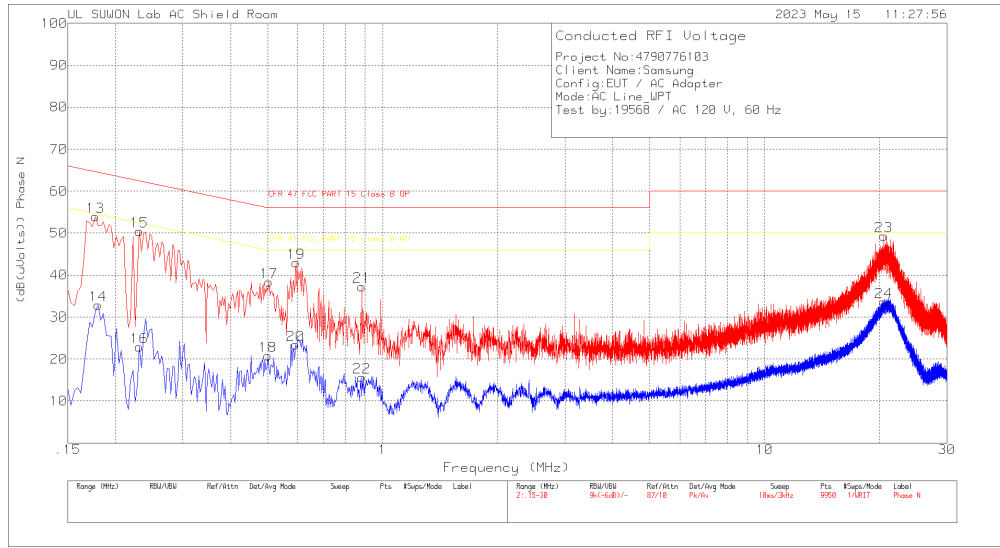
**Quasi-Peak Emissions**

Range 1: Phase L1 .15 - 30MHz

| Frequency (MHz) | Meter Reading (dBuV) | Det | 101836_Wit h EX_L1[dB] | CABLELOS S(dB) | Corrected Reading (dB(uVolts)) | CFR 47 FCC PART 15 Class B QP | Margin (dB) | CFR 47 FCC PART 15 Class B AV | Margin (dB) |
|-----------------|----------------------|-----|------------------------|----------------|--------------------------------|-------------------------------|-------------|-------------------------------|-------------|
| .15675          | 46.06                | Qp  | 9.8                    | .1             | 55.96                          | 65.63                         | -9.67       | -                             | -           |
| .22575          | 28.42                | Qp  | 9.7                    | .2             | 38.32                          | 62.6                          | -24.28      | -                             | -           |
| .23325          | 38.89                | Qp  | 9.7                    | .2             | 48.79                          | 62.33                         | -13.54      | -                             | -           |

Qp - Quasi-Peak detector

**LINE 2 RESULTS**



**Trace Markers**

Range 2: Phase N .15 - 30MHz

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | 101836_With EX_N[dB] | CABLELOS S(dB) | Corrected Reading (dB(uVolts)) | CFR 47 FCC PART 15 Class B QP | Margin (dB) | CFR 47 FCC PART 15 Class B AV | Margin (dB) |
|--------|-----------------|----------------------|-----|----------------------|----------------|--------------------------------|-------------------------------|-------------|-------------------------------|-------------|
| 13     | .177            | 43.79                | Pk  | 9.9                  | .2             | 53.89                          | 64.63                         | -10.74      | -                             | -           |
| 14     | .18             | 22.8                 | Av  | 9.9                  | .2             | 32.9                           | -                             | -           | 54.49                         | -21.59      |
| 15     | .231            | 40.51                | Pk  | 9.7                  | .2             | 50.41                          | 62.41                         | -12         | -                             | -           |
| 16     | .231            | 13.01                | Av  | 9.7                  | .2             | 22.91                          | -                             | -           | 52.41                         | -29.5       |
| 17     | .504            | 28.2                 | Pk  | 9.9                  | .2             | 38.3                           | 56                            | -17.7       | -                             | -           |
| 18     | .501            | 10.65                | Av  | 9.9                  | .2             | 20.75                          | -                             | -           | 46                            | -25.25      |
| 19     | .594            | 32.82                | Pk  | 9.9                  | .2             | 42.92                          | 56                            | -13.08      | -                             | -           |
| 20     | .591            | 13.23                | Av  | 9.9                  | .2             | 23.33                          | -                             | -           | 46                            | -22.67      |
| 21     | .882            | 27.18                | Pk  | 9.8                  | .3             | 37.28                          | 56                            | -18.72      | -                             | -           |
| 22     | .882            | 5.53                 | Av  | 9.8                  | .3             | 15.63                          | -                             | -           | 46                            | -30.37      |
| 23     | 20.508          | 38.62                | Pk  | 10.3                 | .4             | 49.32                          | 60                            | -10.68      | -                             | -           |
| 24     | 20.508          | 22.93                | Av  | 10.3                 | .4             | 33.63                          | -                             | -           | 50                            | -16.37      |

Pk - Peak detector  
 Av - Average detection

**END OF TEST REPORT**