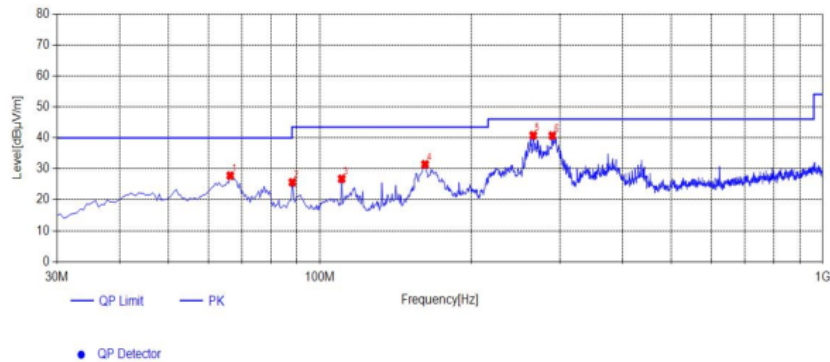


Version D:

Adapter: ADS-65HI-19A-124036F

## Horizontal

Test Graph



Suspected List

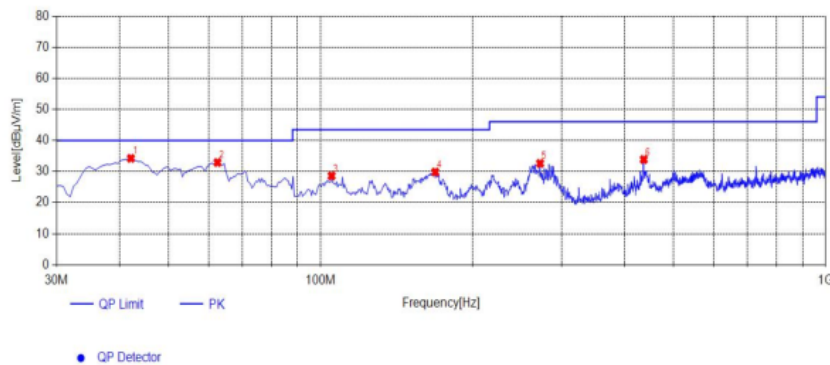
| NO. | Frequency [MHz] | Reading [dBμV/m] | Factor [dB] | Result [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Height [cm] | Angle [°] | Detector | Polarity   | Remark |
|-----|-----------------|------------------|-------------|-----------------|----------------|-------------|-------------|-----------|----------|------------|--------|
| 1   | 66.375          | 40.86            | -13.06      | 27.80           | 40.00          | 12.20       | 100         | 272       | PK       | Horizontal | PASS   |
| 2   | 88.2            | 39.12            | -13.50      | 25.62           | 43.50          | 17.88       | 100         | 3         | PK       | Horizontal | PASS   |
| 3   | 110.51          | 38.33            | -11.56      | 26.77           | 43.50          | 16.73       | 100         | 118       | PK       | Horizontal | PASS   |
| 4   | 161.92          | 44.52            | -13.08      | 31.44           | 43.50          | 12.06       | 100         | 289       | PK       | Horizontal | PASS   |
| 5   | 265.71          | 48.85            | -8.05       | 40.80           | 46.00          | 5.20        | 100         | 308       | PK       | Horizontal | PASS   |
| 6   | 289.96          | 48.37            | -7.66       | 40.71           | 46.00          | 5.29        | 100         | 266       | PK       | Horizontal | PASS   |

Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

## Vertical

Test Graph



Suspected List

| NO. | Frequency [MHz] | Reading [dBμV/m] | Factor [dB] | Result [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Height [cm] | Angle [°] | Detector | Polarity | Remark |
|-----|-----------------|------------------|-------------|-----------------|----------------|-------------|-------------|-----------|----------|----------|--------|
| 1   | 42.125          | 45.85            | -11.60      | 34.25           | 40.00          | 5.75        | 100         | 166       | PK       | Vertical | PASS   |
| 2   | 62.495          | 44.82            | -11.89      | 32.93           | 40.00          | 7.07        | 100         | 186       | PK       | Vertical | PASS   |
| 3   | 105.175         | 40.07            | -11.44      | 28.63           | 43.50          | 14.87       | 100         | 354       | PK       | Vertical | PASS   |
| 4   | 168.71          | 42.62            | -12.76      | 29.86           | 43.50          | 13.64       | 100         | 76        | PK       | Vertical | PASS   |
| 5   | 272.015         | 40.49            | -7.86       | 32.63           | 46.00          | 13.37       | 100         | 153       | PK       | Vertical | PASS   |
| 6   | 436.43          | 38.02            | -4.13       | 33.89           | 46.00          | 12.11       | 100         | 334       | PK       | Vertical | PASS   |

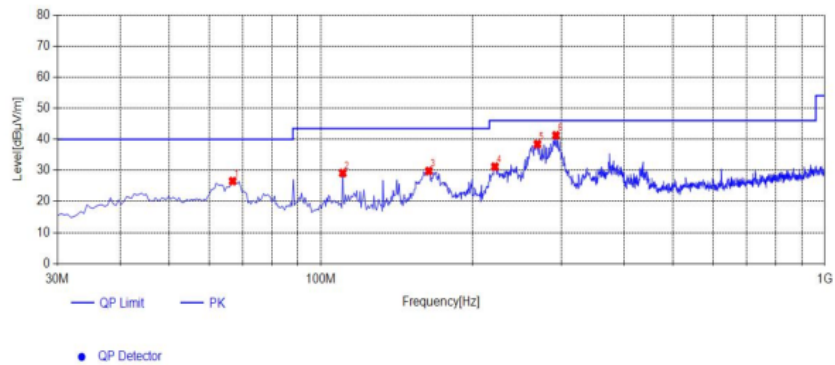
Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Adapter: SOY-2400150-332-A

## Horizontal

Test Graph



## Suspected List

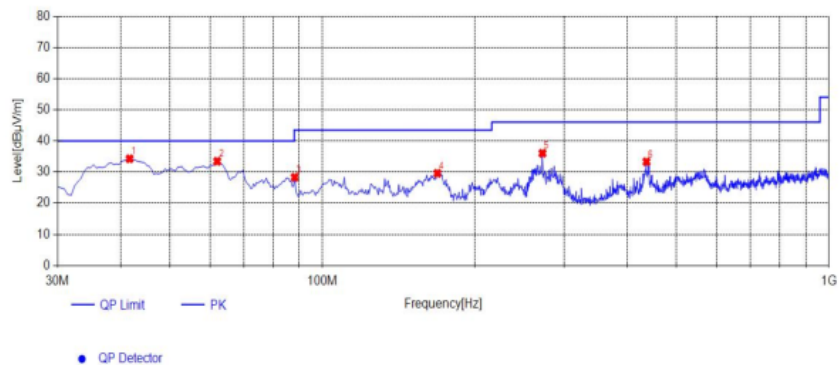
| NO. | Frequency [MHz] | Reading [dBμV/m] | Factor [dB] | Result [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Height [cm] | Angle [°] | Detector | Polarity   | Remark |
|-----|-----------------|------------------|-------------|-----------------|----------------|-------------|-------------|-----------|----------|------------|--------|
| 1   | 66.86           | 39.76            | -13.20      | 26.56           | 40.00          | 13.44       | 100         | 292       | PK       | Horizontal | PASS   |
| 2   | 110.51          | 40.71            | -11.56      | 29.15           | 43.50          | 14.35       | 100         | 87        | PK       | Horizontal | PASS   |
| 3   | 163.86          | 42.76            | -12.96      | 29.80           | 43.50          | 13.70       | 100         | 305       | PK       | Horizontal | PASS   |
| 4   | 221.575         | 40.70            | -9.49       | 31.21           | 46.00          | 14.79       | 100         | 32        | PK       | Horizontal | PASS   |
| 5   | 269.105         | 46.35            | -7.91       | 38.44           | 46.00          | 7.56        | 100         | 301       | PK       | Horizontal | PASS   |
| 6   | 292.87          | 48.89            | -7.61       | 41.28           | 46.00          | 4.72        | 100         | 184       | PK       | Horizontal | PASS   |

Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

## Vertical

Test Graph



## Suspected List

| NO. | Frequency [MHz] | Reading [dBμV/m] | Factor [dB] | Result [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Height [cm] | Angle [°] | Detector | Polarity | Remark |
|-----|-----------------|------------------|-------------|-----------------|----------------|-------------|-------------|-----------|----------|----------|--------|
| 1   | 41.64           | 45.96            | -11.68      | 34.28           | 40.00          | 5.72        | 100         | 96        | PK       | Vertical | PASS   |
| 2   | 62.01           | 45.22            | -11.76      | 33.46           | 40.00          | 6.54        | 100         | 135       | PK       | Vertical | PASS   |
| 3   | 88.2            | 41.81            | -13.50      | 28.31           | 43.50          | 15.19       | 100         | 27        | PK       | Vertical | PASS   |
| 4   | 168.71          | 42.37            | -12.76      | 29.61           | 43.50          | 13.89       | 100         | 79        | PK       | Vertical | PASS   |
| 5   | 272.015         | 43.91            | -7.86       | 36.05           | 46.00          | 9.95        | 100         | 135       | PK       | Vertical | PASS   |
| 6   | 436.43          | 37.45            | -4.13       | 33.32           | 46.00          | 12.68       | 100         | 336       | PK       | Vertical | PASS   |

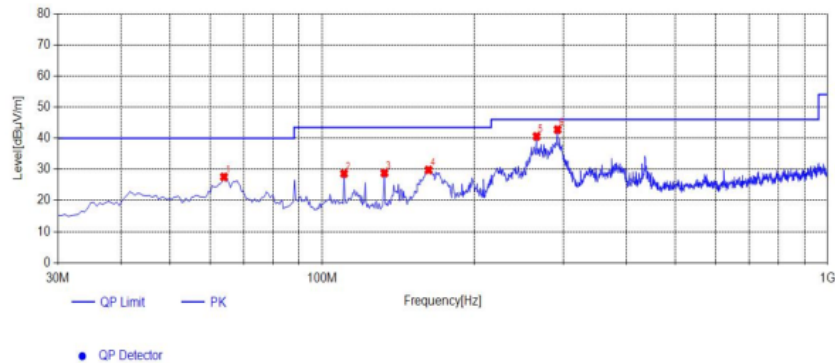
Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Adapter: CYZS36-240150

## Horizontal

Test Graph



## Suspected List

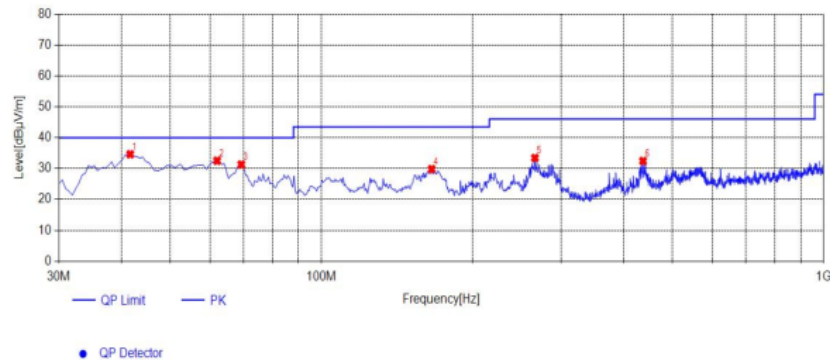
| NO. | Frequency [MHz] | Reading [dBμV/m] | Factor [dB] | Result [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Height [cm] | Angle [°] | Detector | Polarity   | Remark |
|-----|-----------------|------------------|-------------|-----------------|----------------|-------------|-------------|-----------|----------|------------|--------|
| 1   | 63.95           | 39.92            | -12.34      | 27.58           | 40.00          | 12.42       | 100         | 281       | PK       | Horizontal | PASS   |
| 2   | 110.51          | 40.21            | -11.56      | 28.65           | 43.50          | 14.85       | 100         | 101       | PK       | Horizontal | PASS   |
| 3   | 132.82          | 42.68            | -13.85      | 28.83           | 43.50          | 14.67       | 100         | 101       | PK       | Horizontal | PASS   |
| 4   | 162.405         | 42.86            | -13.05      | 29.81           | 43.50          | 13.69       | 100         | 285       | PK       | Horizontal | PASS   |
| 5   | 265.71          | 48.65            | -8.05       | 40.60           | 46.00          | 5.40        | 100         | 311       | PK       | Horizontal | PASS   |
| 6   | 292.385         | 50.41            | -7.63       | 42.78           | 46.00          | 3.22        | 100         | 357       | PK       | Horizontal | PASS   |

Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

## Vertical

Test Graph



## Suspected List

| NO. | Frequency [MHz] | Reading [dBμV/m] | Factor [dB] | Result [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Height [cm] | Angle [°] | Detector | Polarity | Remark |
|-----|-----------------|------------------|-------------|-----------------|----------------|-------------|-------------|-----------|----------|----------|--------|
| 1   | 41.64           | 46.31            | -11.68      | 34.63           | 40.00          | 5.37        | 100         | 17        | PK       | Vertical | PASS   |
| 2   | 62.01           | 44.30            | -11.76      | 32.54           | 40.00          | 7.46        | 100         | 125       | PK       | Vertical | PASS   |
| 3   | 69.285          | 45.16            | -13.85      | 31.31           | 40.00          | 8.69        | 100         | 30        | PK       | Vertical | PASS   |
| 4   | 165.8           | 42.67            | -12.84      | 29.83           | 43.50          | 13.67       | 100         | 56        | PK       | Vertical | PASS   |
| 5   | 266.195         | 41.46            | -8.03       | 33.43           | 46.00          | 12.57       | 100         | 132       | PK       | Vertical | PASS   |
| 6   | 436.915         | 36.58            | -4.12       | 32.46           | 46.00          | 13.54       | 100         | 331       | PK       | Vertical | PASS   |

Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Note: All modes have been tested and the worst mode is recorded in the report, NFC has two optional antennas, with the worst mode recorded in the report (NFC antenna Model:DS2-52).

**For 1GHz to 25GHz****GFSK /Channel 0 / 2402 MHz(Worst Case)**

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark  | Pol.       |
|-----------|--------------|----------------|--------------|--------------|-----------------|--------------|-----------|---------|------------|
| 4804.00   | 49.45        | 32.44          | 30.25        | 7.95         | 59.59           | 74.00        | -14.41    | Peak    | Horizontal |
| 4804.00   | 35.59        | 32.44          | 30.25        | 7.95         | 45.73           | 54.00        | -8.27     | Average | Horizontal |
| 4804.00   | 50.17        | 31.60          | 36.50        | 7.00         | 52.27           | 74.00        | -21.73    | Peak    | Vertical   |
| 4804.00   | 35.44        | 31.60          | 36.50        | 7.00         | 37.54           | 54.00        | -16.46    | Average | Vertical   |

**Channel 39 / 2441 MHz**

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark  | Pol.       |
|-----------|--------------|----------------|--------------|--------------|-----------------|--------------|-----------|---------|------------|
| 4882.00   | 50.91        | 32.52          | 30.31        | 8.12         | 61.24           | 74.00        | -12.76    | Peak    | Horizontal |
| 4882.00   | 37.17        | 32.52          | 30.31        | 8.12         | 47.50           | 54.00        | -6.50     | Average | Horizontal |
| 4882.00   | 49.98        | 31.02          | 36.50        | 7.60         | 52.10           | 74.00        | -21.90    | Peak    | Vertical   |
| 4882.00   | 35.95        | 31.02          | 36.50        | 7.60         | 38.07           | 54.00        | -15.93    | Average | Vertical   |

**Channel 78 / 2480 MHz**

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark  | Pol.       |
|-----------|--------------|----------------|--------------|--------------|-----------------|--------------|-----------|---------|------------|
| 4960.00   | 50.20        | 32.68          | 30.27        | 7.88         | 60.49           | 74.00        | -13.51    | Peak    | Horizontal |
| 4960.00   | 36.30        | 32.68          | 30.27        | 7.88         | 46.59           | 54.00        | -7.41     | Average | Horizontal |
| 4960.00   | 51.71        | 31.58          | 36.20        | 7.82         | 54.91           | 74.00        | -19.09    | Peak    | Vertical   |
| 4960.00   | 37.83        | 31.58          | 36.20        | 7.82         | 41.03           | 54.00        | -12.97    | Average | Vertical   |

**Note: All modes were tested and the worst mode was recorded in the report (version A\_Adapter: ADS-65HI-19A-124036F\_NFC antenna Model:DS2-52).**

## GFSK /Channel 0 / 2402 MHz(Worst Case)

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark  | Pol.       |
|-----------|--------------|----------------|--------------|--------------|-----------------|--------------|-----------|---------|------------|
| 4804.00   | 50.38        | 32.44          | 30.25        | 7.95         | 60.52           | 74.00        | -13.48    | Peak    | Horizontal |
| 4804.00   | 34.96        | 32.44          | 30.25        | 7.95         | 45.10           | 54.00        | -8.90     | Average | Horizontal |
| 4804.00   | 50.47        | 31.60          | 36.50        | 7.00         | 52.57           | 74.00        | -21.43    | Peak    | Vertical   |
| 4804.00   | 36.14        | 31.60          | 36.50        | 7.00         | 38.24           | 54.00        | -15.76    | Average | Vertical   |

## Channel 39 / 2441 MHz

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark  | Pol.       |
|-----------|--------------|----------------|--------------|--------------|-----------------|--------------|-----------|---------|------------|
| 4882.00   | 49.97        | 32.52          | 30.31        | 8.12         | 60.30           | 74.00        | -13.70    | Peak    | Horizontal |
| 4882.00   | 37.58        | 32.52          | 30.31        | 8.12         | 47.91           | 54.00        | -6.09     | Average | Horizontal |
| 4882.00   | 51.13        | 31.02          | 36.50        | 7.60         | 53.25           | 74.00        | -20.75    | Peak    | Vertical   |
| 4882.00   | 36.64        | 31.02          | 36.50        | 7.60         | 38.76           | 54.00        | -15.24    | Average | Vertical   |

## Channel 78 / 2480 MHz

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark  | Pol.       |
|-----------|--------------|----------------|--------------|--------------|-----------------|--------------|-----------|---------|------------|
| 4960.00   | 51.29        | 32.68          | 30.27        | 7.88         | 61.58           | 74.00        | -12.42    | Peak    | Horizontal |
| 4960.00   | 36.56        | 32.68          | 30.27        | 7.88         | 46.85           | 54.00        | -7.15     | Average | Horizontal |
| 4960.00   | 52.55        | 31.58          | 36.20        | 7.82         | 55.75           | 74.00        | -18.25    | Peak    | Vertical   |
| 4960.00   | 37.92        | 31.58          | 36.20        | 7.82         | 41.12           | 54.00        | -12.88    | Average | Vertical   |

**Note: All modes were tested and the worst mode was recorded in the report (version B\_Adapter: ADS-65HI-19A-124036F\_NFC antenna Model:DS2-52).**

## GFSK /Channel 0 / 2402 MHz(Worst Case)

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark  | Pol.       |
|-----------|--------------|----------------|--------------|--------------|-----------------|--------------|-----------|---------|------------|
| 4804.00   | 51.26        | 32.44          | 30.25        | 7.95         | 61.40           | 74.00        | -12.60    | Peak    | Horizontal |
| 4804.00   | 34.99        | 32.44          | 30.25        | 7.95         | 45.13           | 54.00        | -8.87     | Average | Horizontal |
| 4804.00   | 51.00        | 31.60          | 36.50        | 7.00         | 53.10           | 74.00        | -20.90    | Peak    | Vertical   |
| 4804.00   | 35.22        | 31.60          | 36.50        | 7.00         | 37.32           | 54.00        | -16.68    | Average | Vertical   |

## Channel 39 / 2441 MHz

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark  | Pol.       |
|-----------|--------------|----------------|--------------|--------------|-----------------|--------------|-----------|---------|------------|
| 4882.00   | 49.91        | 32.52          | 30.31        | 8.12         | 60.24           | 74.00        | -13.76    | Peak    | Horizontal |
| 4882.00   | 37.99        | 32.52          | 30.31        | 8.12         | 48.32           | 54.00        | -5.68     | Average | Horizontal |
| 4882.00   | 51.19        | 31.02          | 36.50        | 7.60         | 53.31           | 74.00        | -20.69    | Peak    | Vertical   |
| 4882.00   | 34.82        | 31.02          | 36.50        | 7.60         | 36.94           | 54.00        | -17.06    | Average | Vertical   |

## Channel 78 / 2480 MHz

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark  | Pol.       |
|-----------|--------------|----------------|--------------|--------------|-----------------|--------------|-----------|---------|------------|
| 4960.00   | 50.60        | 32.68          | 30.27        | 7.88         | 60.89           | 74.00        | -13.11    | Peak    | Horizontal |
| 4960.00   | 35.64        | 32.68          | 30.27        | 7.88         | 45.93           | 54.00        | -8.07     | Average | Horizontal |
| 4960.00   | 52.31        | 31.58          | 36.20        | 7.82         | 55.51           | 74.00        | -18.49    | Peak    | Vertical   |
| 4960.00   | 37.60        | 31.58          | 36.20        | 7.82         | 40.80           | 54.00        | -13.20    | Average | Vertical   |

**Note: All modes were tested and the worst mode was recorded in the report (version C\_Adapter: ADS-65HI-19A-124036F\_NFC antenna Model:DS2-52).**

## GFSK /Channel 0 / 2402 MHz(Worst Case)

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark  | Pol.       |
|-----------|--------------|----------------|--------------|--------------|-----------------|--------------|-----------|---------|------------|
| 4804.00   | 49.49        | 32.44          | 30.25        | 7.95         | 59.63           | 74.00        | -14.37    | Peak    | Horizontal |
| 4804.00   | 35.73        | 32.44          | 30.25        | 7.95         | 45.87           | 54.00        | -8.13     | Average | Horizontal |
| 4804.00   | 49.96        | 31.60          | 36.50        | 7.00         | 52.06           | 74.00        | -21.94    | Peak    | Vertical   |
| 4804.00   | 36.22        | 31.60          | 36.50        | 7.00         | 38.32           | 54.00        | -15.68    | Average | Vertical   |

## Channel 39 / 2441 MHz

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark  | Pol.       |
|-----------|--------------|----------------|--------------|--------------|-----------------|--------------|-----------|---------|------------|
| 4882.00   | 49.03        | 32.52          | 30.31        | 8.12         | 59.36           | 74.00        | -14.64    | Peak    | Horizontal |
| 4882.00   | 37.71        | 32.52          | 30.31        | 8.12         | 48.04           | 54.00        | -5.96     | Average | Horizontal |
| 4882.00   | 51.21        | 31.02          | 36.50        | 7.60         | 53.33           | 74.00        | -20.67    | Peak    | Vertical   |
| 4882.00   | 34.81        | 31.02          | 36.50        | 7.60         | 36.93           | 54.00        | -17.07    | Average | Vertical   |

## Channel 78 / 2480 MHz

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark  | Pol.       |
|-----------|--------------|----------------|--------------|--------------|-----------------|--------------|-----------|---------|------------|
| 4960.00   | 50.73        | 32.68          | 30.27        | 7.88         | 61.02           | 74.00        | -12.98    | Peak    | Horizontal |
| 4960.00   | 36.46        | 32.68          | 30.27        | 7.88         | 46.75           | 54.00        | -7.25     | Average | Horizontal |
| 4960.00   | 51.03        | 31.58          | 36.20        | 7.82         | 54.23           | 74.00        | -19.77    | Peak    | Vertical   |
| 4960.00   | 36.98        | 31.58          | 36.20        | 7.82         | 40.18           | 54.00        | -13.82    | Average | Vertical   |

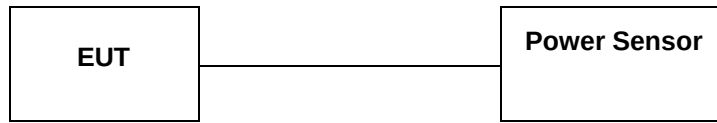
**Note: All modes were tested and the worst mode was recorded in the report (version D\_Adapter: ADS-65HI-19A-124036F\_NFC antenna Model:DS2-52).**

## Notes:

- 1). Measuring frequencies from 9 KHz~10<sup>th</sup> harmonic or 26.5GHz (which is less), No emission found between lowest internal used/generated frequency to 30MHz.
- 2). Radiated emissions measured in frequency range from 9 KHz~10<sup>th</sup> harmonic or 26.5GHz (which is less) were made with an instrument using Peak detector mode.
- 3). Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4). Measured= Reading- Pre. Fac.+ Ant. Fac.+ Cab. Loss
- 5). Margin = Measured- Limit

### 4.3. Maximum Peak Output Power

#### TEST CONFIGURATION



#### TEST PROCEDURE

According to ANSI C63.10:2013 Maximum peak conducted output power for HFSS devices:

The maximum peak conducted output power may be measured using a broadband peak RF power meter.

The power meter shall have a video bandwidth that is greater than or equal to the HFSS bandwidth and shall utilize a fast-responding diode detector.

The maximum Average conducted output power may be measured using a wideband RF power meter with a thermocouple detector or equivalent. The power meter shall have a video bandwidth that is greater than or equal to the HFSS bandwidth and shall utilize a fast-responding diode detector.

#### LIMIT

For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.

#### TEST RESULTS

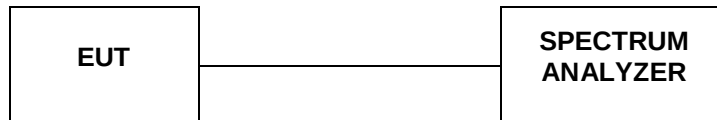
For reporting purpose only.

Please refer to Appendix A.3.



#### 4.4. 99% and 20dB Bandwidth

##### TEST CONFIGURATION



##### TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW=30KHz and VBW=100KHz. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

##### LIMIT

For frequency hopping systems operating in the 2400MHz-2483.5MHz no limit for 20dB bandwidth.

##### TEST RESULTS

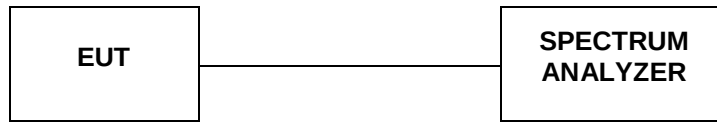
For reporting purpose only.

Please refer to Appendix A.1.

Please refer to Appendix A.2.

## 4.5. Frequency Separation

### TEST CONFIGURATION



### TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW=100KHz and VBW=300KHz.

### LIMIT

According to 15.247(a)(1), frequency hopping systems shall have hopping channel carrier frequencies separated by minimum of 25KHz or the  $\frac{2}{3} \times 20\text{dB}$  bandwidth of the hopping channel, whichever is greater.

### TEST RESULTS

For reporting purpose only.

Please refer to Appendix A.4.

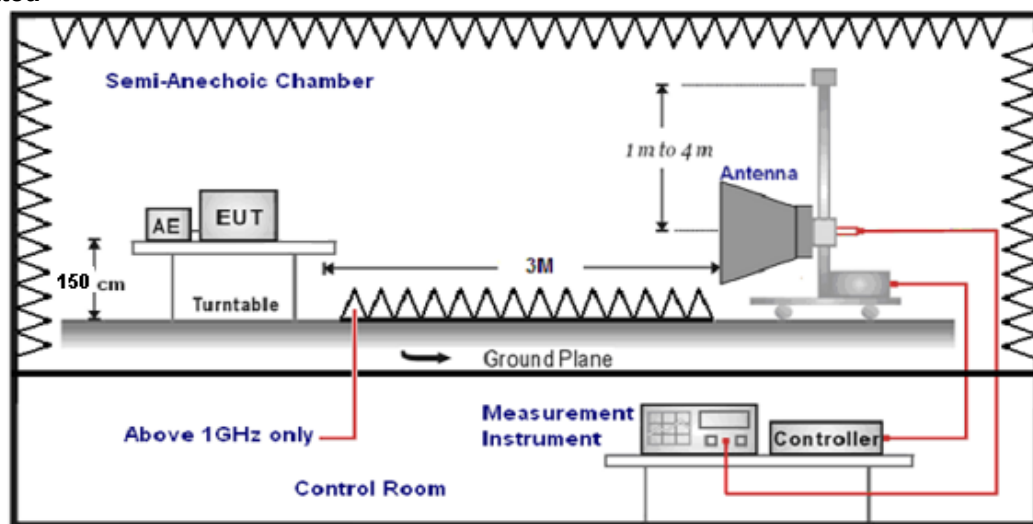
## 4.6. Conducted Spurious Emissions and Band Edge Compliance of RF Emission

### TEST REQUIREMENT

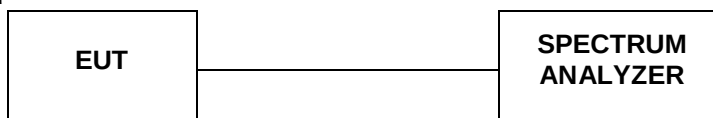
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

### TEST CONFIGURATION

#### For Radiated



#### For Conducted



### TEST PROCEDURE

1. The EUT was placed on a turn table which is 1.5m above ground plane.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0° to 360° to acquire the highest emissions from EUT.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed..
5. The distance between test antenna and EUT was 3 meter:
6. Setting test receiver/spectrum as following table states:

| Test Frequency range | Test Receiver/Spectrum Setting                                                                            | Detector |
|----------------------|-----------------------------------------------------------------------------------------------------------|----------|
| 1GHz-40GHz           | Peak Value: RBW=1MHz/VBW=3MHz,<br>Sweep time=Auto<br>Average Value: RBW=1MHz/VBW=10Hz,<br>Sweep time=Auto | Peak     |

### LIMIT

Below -20dB of the highest emission level in operating band.

Radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)

## **TEST RESULTS**

Remark: we measured all conditions(DH1,DH3,DH5) and recorded worst case at DH1.

### **4.6.1 For Radiated Bandedge Measurement**

For reporting purpose only.

Please refer to Appendix A.9.

### **4.6.2 For Conducted Bandedge Measurement**

For reporting purpose only.

Please refer to Appendix A.7.

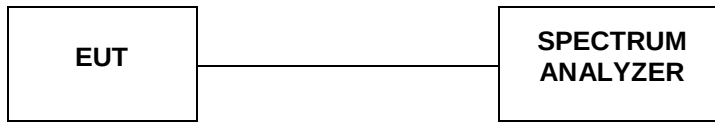
### **4.6.3 For Conducted Spurious Emissions Measurement**

For reporting purpose only.

Please refer to Appendix A.8.

#### 4.7. Number of hopping frequency

##### TEST CONFIGURATION



##### TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. Set spectrum analyzer start 2400MHz to 2483.5MHz with RBW=100KHz and VBW=300KHz.

##### LIMIT

Frequency hopping systems in the 2400–2483.5MHz band shall use at least 15 channels.

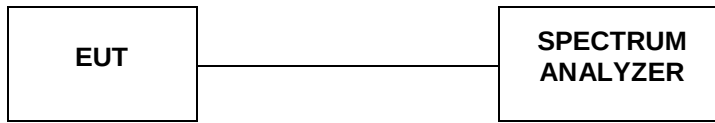
##### TEST RESULTS

For reporting purpose only.

Please refer to Appendix A.6.

#### 4.8. Time Of Occupancy(Dwell Time)

##### TEST CONFIGURATION



##### TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. Set center frequency of spectrum analyzer=operating frequency with RBW=1MHz and VBW=3MHz, Span=0Hz.

##### LIMIT

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a pe-riod of 0.4 seconds multiplied by the number of hopping channels employed.

##### TEST RESULTS

For reporting purpose only.

Please refer to Appendix A.5.

## 4.9. Pseudorandom Frequency Hopping Sequence

### TEST APPLICABLE

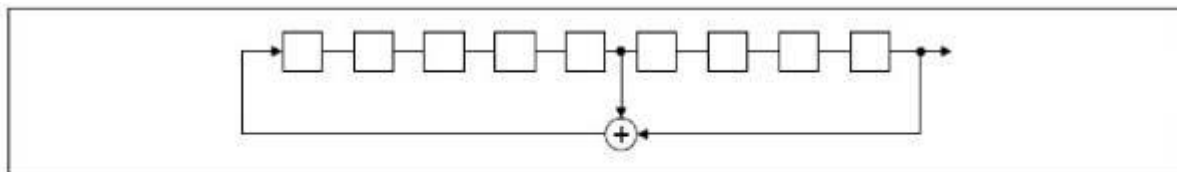
For 47 CFR Part 15C section 15.247 (a)(1) requirement:

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

### EUT Pseudorandom Frequency Hopping Sequence Requirement

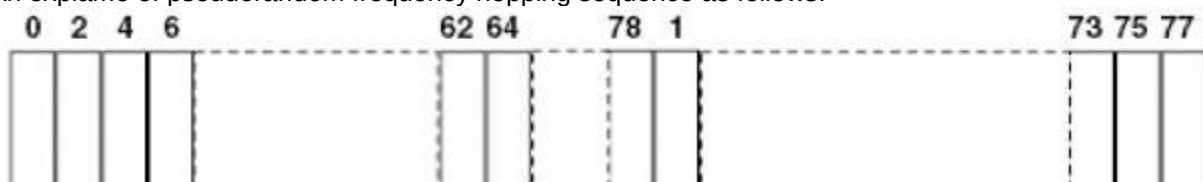
The pseudorandom frequency hopping sequence may be generated in a nine-stage shift register whose 5<sup>th</sup> and 9<sup>th</sup> stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first one of 9 consecutive ones, for example: the shift register is initialized with nine ones.

- Number of shift register stages: 9
- Length of pseudo-random sequence:  $2^9 - 1 = 511$  bits
- Longest sequence of zeros: 8 (non-inverted signal)



*Linear Feedback Shift Register for Generation of the PRBS sequence*

An example of pseudorandom frequency hopping sequence as follows:



Each frequency used equally on the average by each transmitter.

The system receiver has input bandwidths that match the hopping channel bandwidths of their corresponding transmitter and shifts frequencies in synchronization with the transmitted signals.

#### 4.10. Antenna Requirement

##### Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

##### Test Result

The antenna used for this product is Internal Antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 2.05dBi.

Reference to the **Internal photos**.



## 5. TEST SETUP PHOTOS OF THE EUT

Photo of Radiated Emissions Measurement

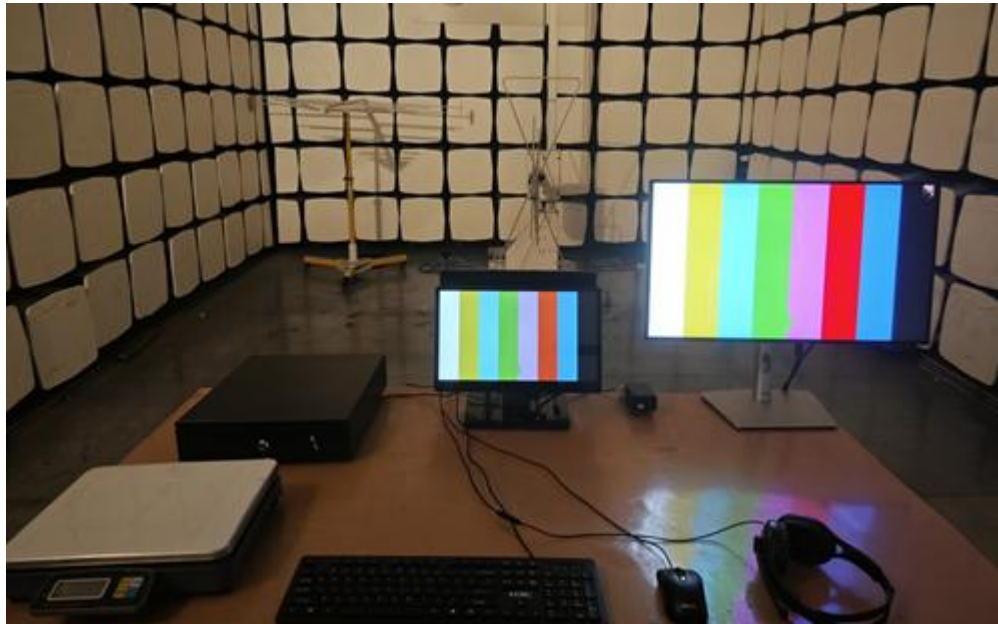


Fig. 1



Fig. 2

Photo of Conducted Emission Measurement



Fig. 3

## 6. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

### External photos of the EUT

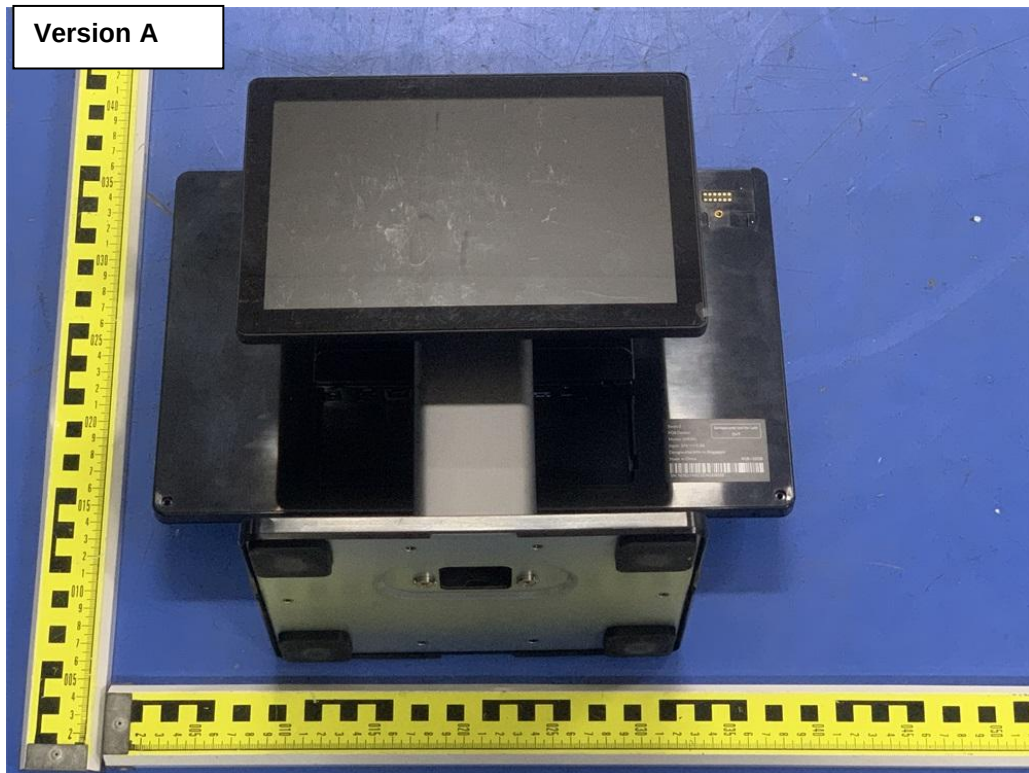


Fig. 1



Fig. 2





Fig. 3

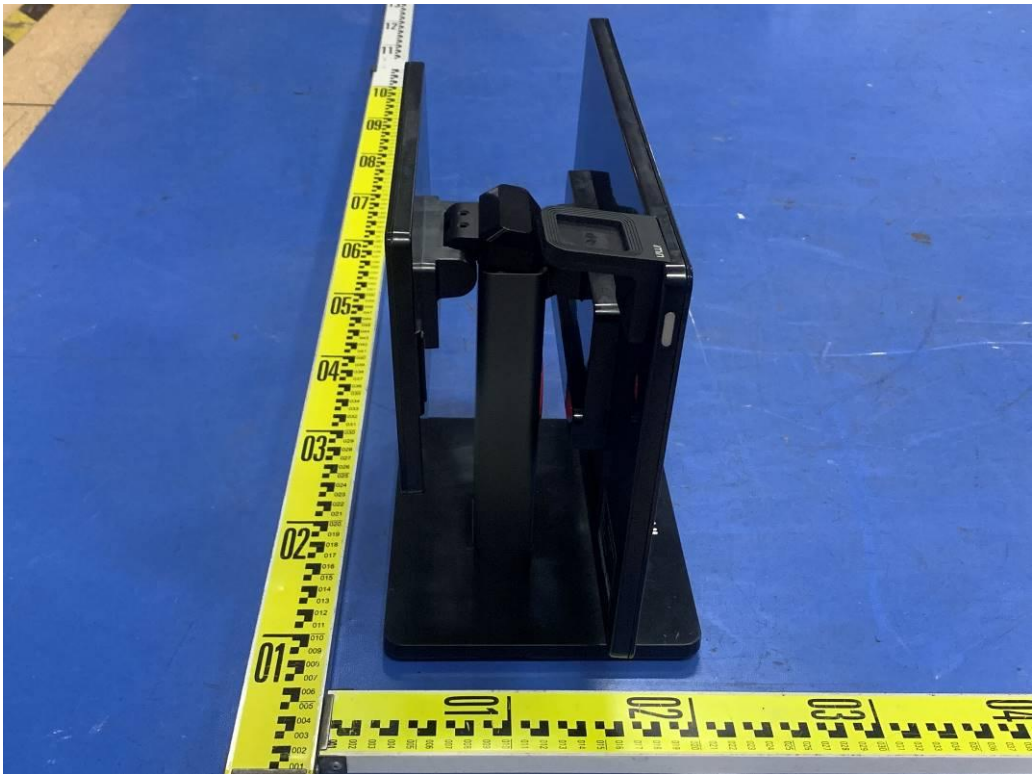


Fig. 4



Fig. 5

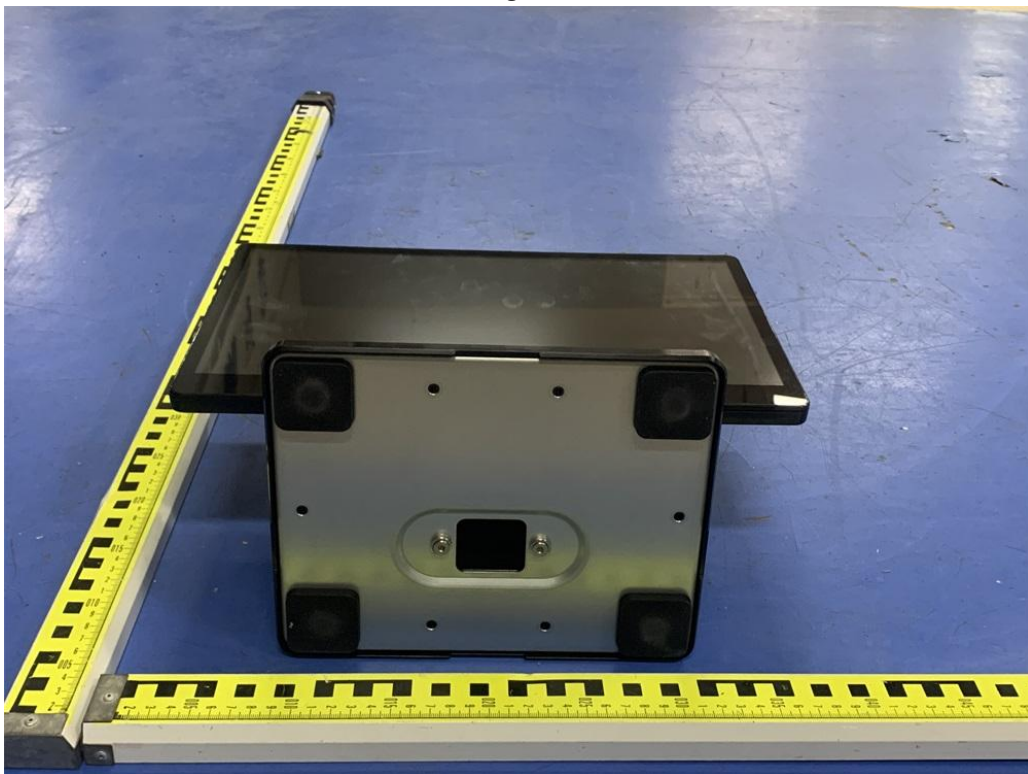


Fig. 6





Fig. 7



Fig. 8

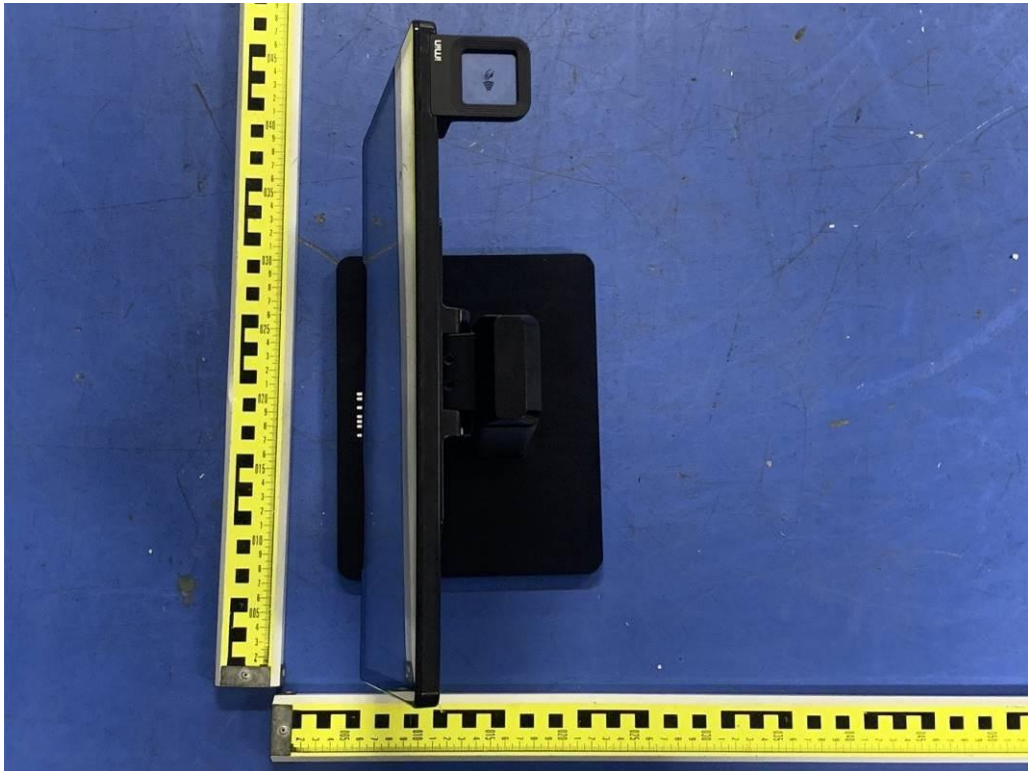


Fig. 9

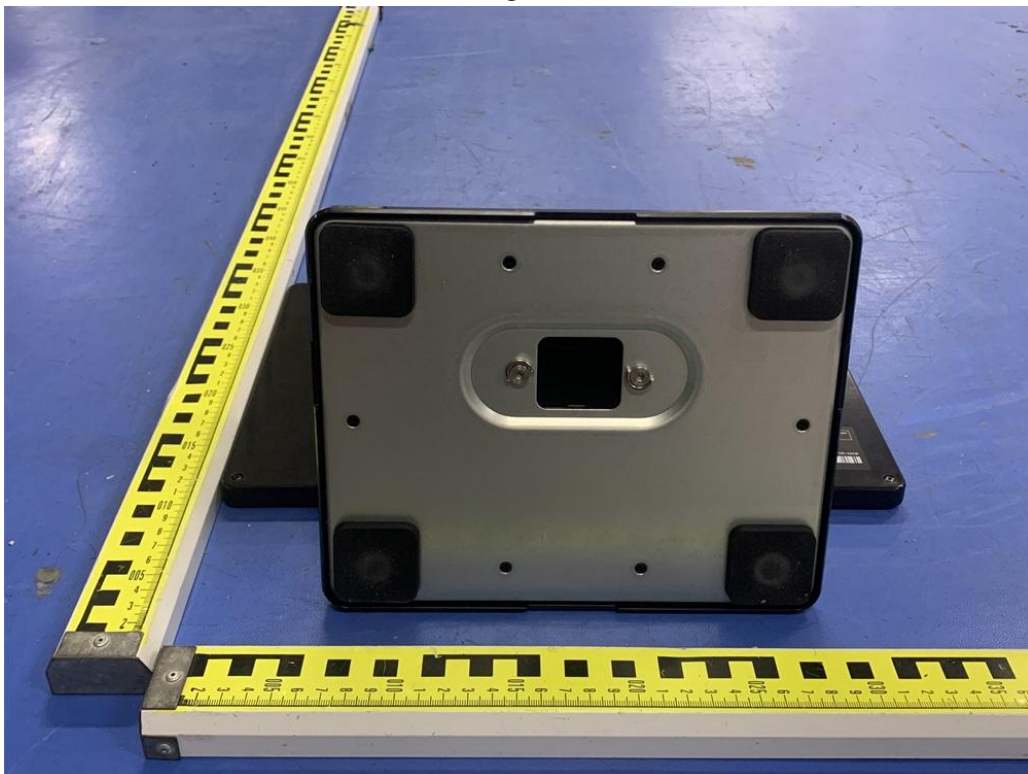


Fig. 10



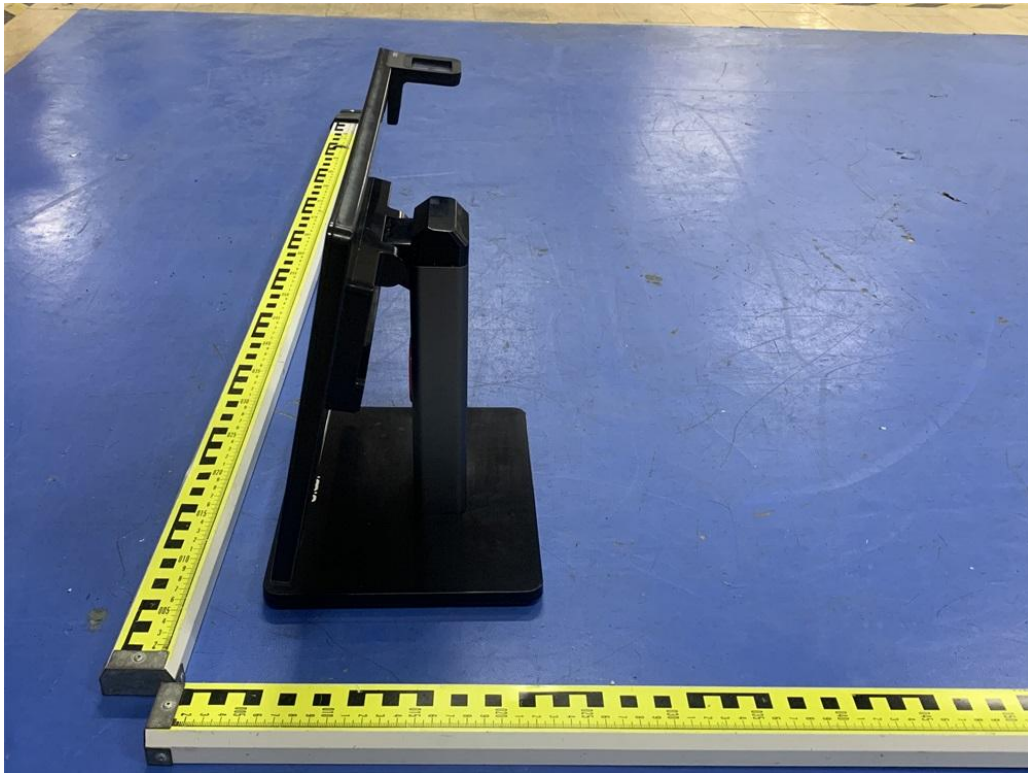


Fig. 11

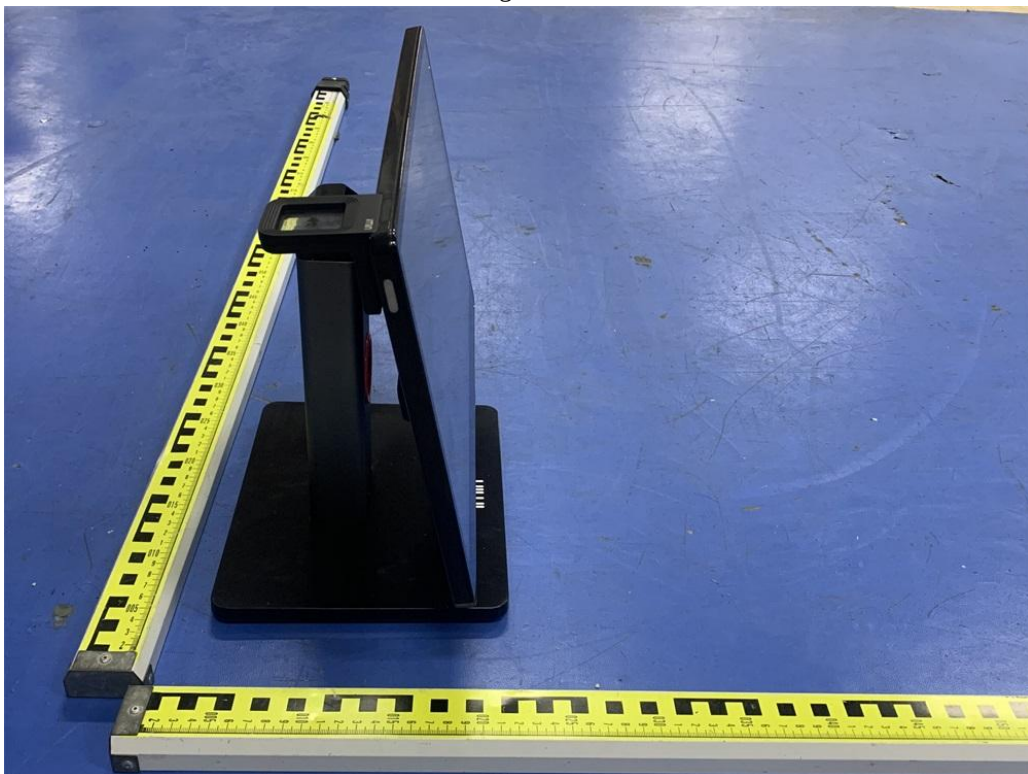


Fig. 12





Fig. 13



Fig. 14



Fig. 15

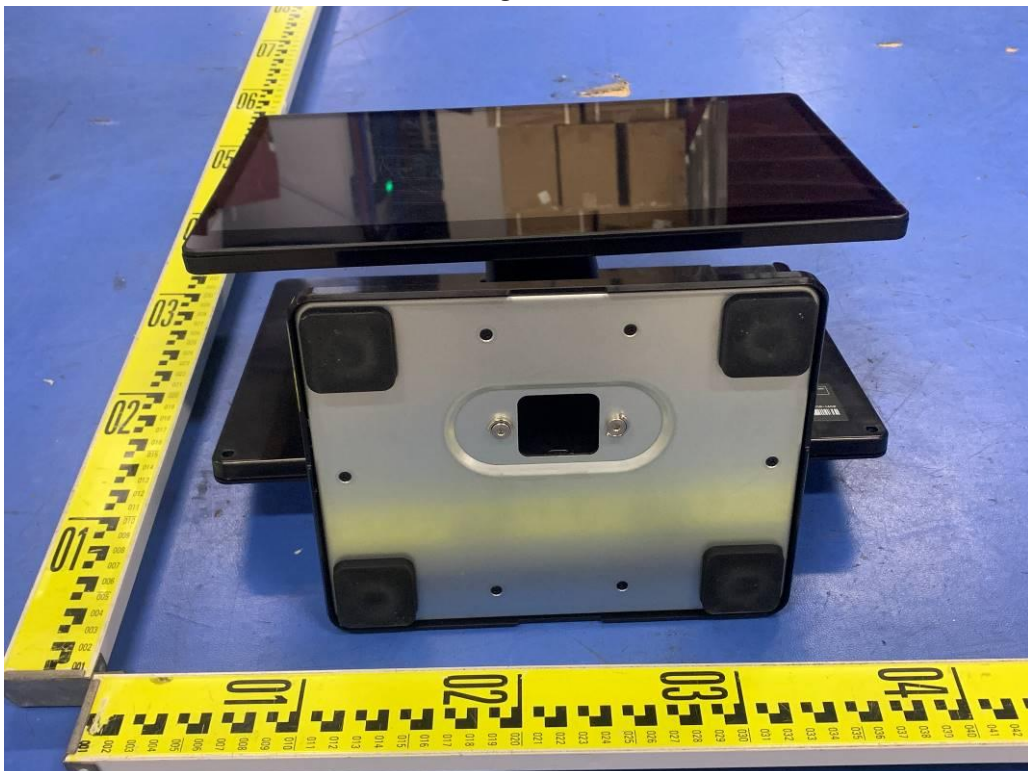


Fig. 16

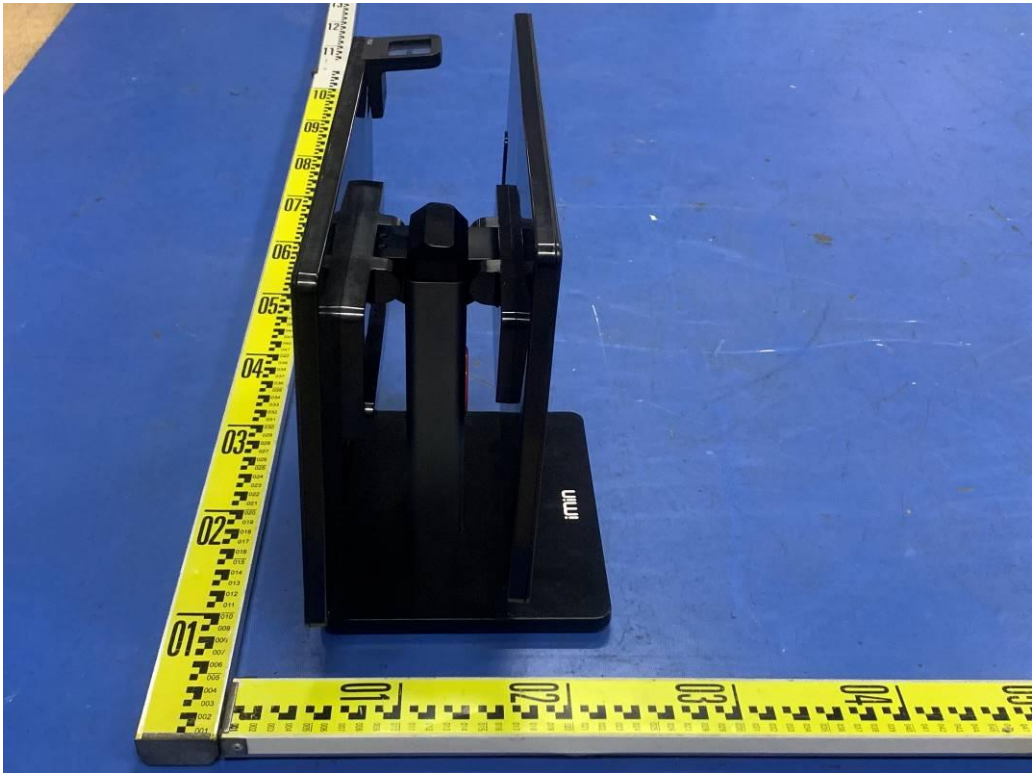


Fig. 17



Fig. 18



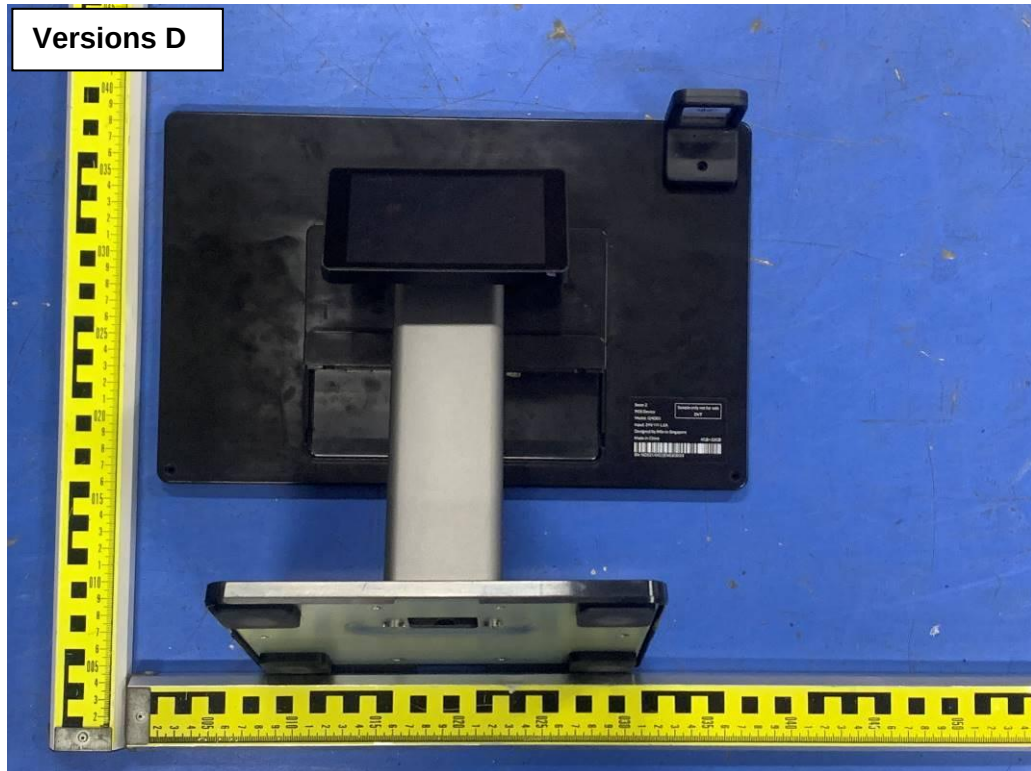


Fig. 19



Fig. 20

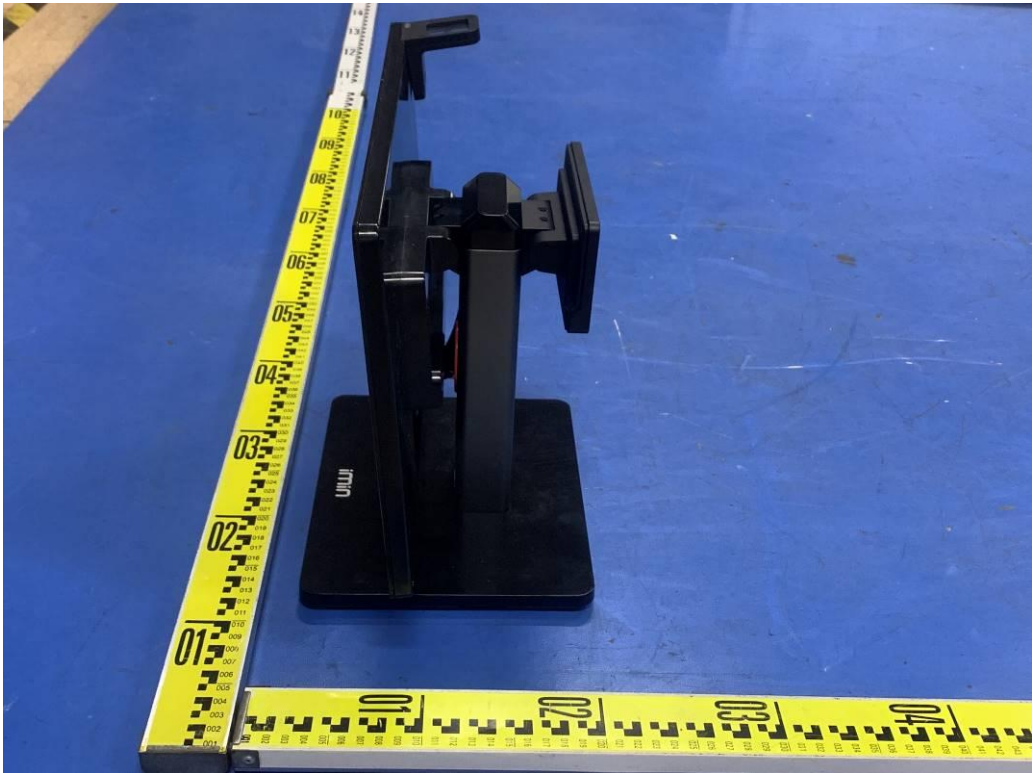


Fig. 21

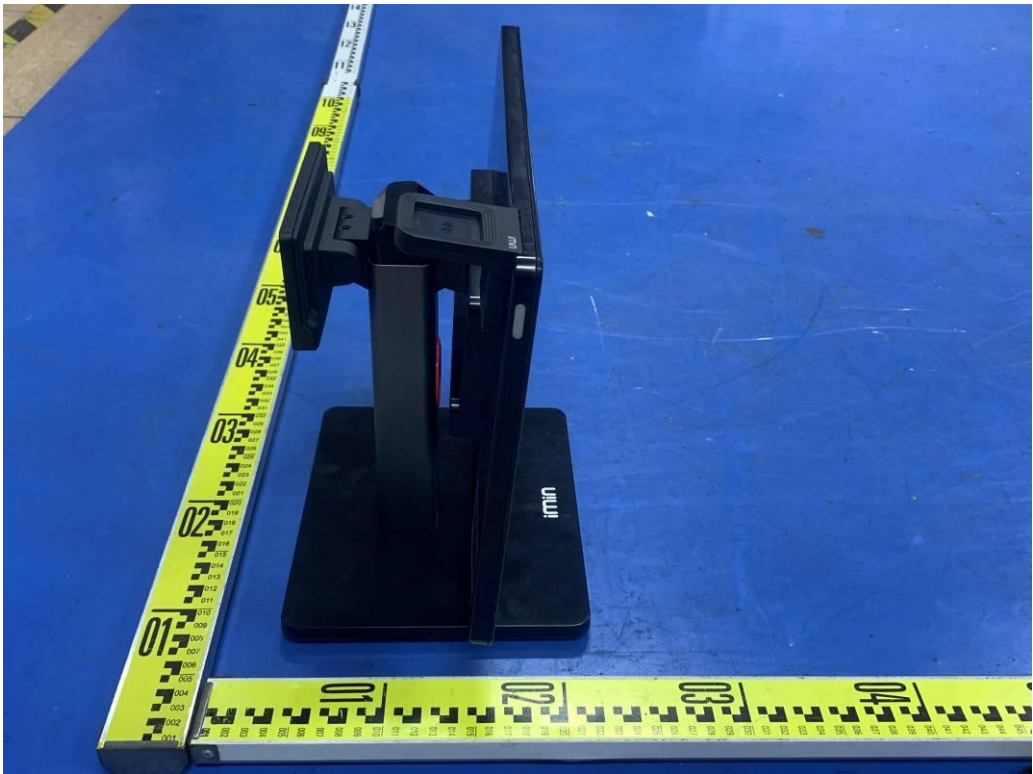


Fig. 22



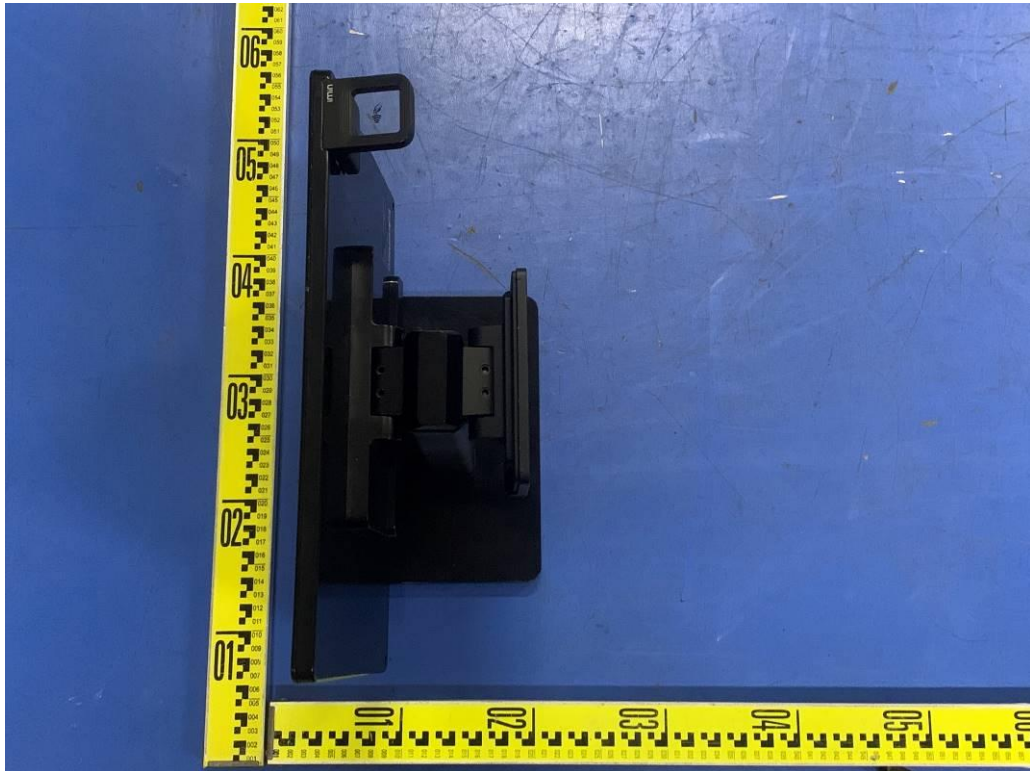


Fig. 23



Fig. 24





Fig. 25



Fig. 26



Fig. 27



Fig. 28





Fig. 29