

SAR TEST EXCLUSION REPORT

Applicant: Haier Information Technology(Shenzhen) Co., Ltd

Address of Applicant: ROOM B4 OF FLOOR 21, NO.3 TOWER BUILDING,
CHINESE TECHNOLOGY RESEARCH PARK, CHINA
TECHNOLOGY EXPLOITATION INSTITUTE, GAOXIN
SOUTH FIRST STREET NO.009, NANSHAN DISTRICT,
SHENZHEN CITY, GUANGDONG PROVINCE, CHINA

Equipment Under Test (EUT)

Product Name: laptop

Model No.: Y11C

Trade mark: Haier

FCC ID: 2ACZD-Y11C

Applicable standards: FCC 47 CFR Part 2.1093

Result: Pass

Authorized Signature:



Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2 Version

| Version No. | Date | Description |
|-------------|---------------|-------------|
| 00 | 11 Jul., 2017 | Original |
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Prepared by:

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Date:

11 Jul., 2017

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Date:

11 Jul., 2017

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4 General Information

4.1 Client Information

| | |
|--------------------------|---|
| Applicant: | Haier Information Technology(Shenzhen) Co., Ltd |
| Address of Applicant: | ROOM B4 OF FLOOR 21, NO.3 TOWER BUILDING, CHINESE TECHNOLOGY RESEARCH PARK, CHINA TECHNOLOGY EXPLOITATION INSTITUTE, GAOXIN SOUTH FIRST STREET NO.009, NANSHAN DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA |
| Manufacturer: | Haier Information Technology(Shenzhen) Co., Ltd |
| Address of Manufacturer: | ROOM B4 OF FLOOR 21, NO.3 TOWER BUILDING, CHINESE TECHNOLOGY RESEARCH PARK, CHINA TECHNOLOGY EXPLOITATION INSTITUTE, GAOXIN SOUTH FIRST STREET NO.009, NANSHAN DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA |
| Factory: | CHUNGHSIN INTERNATIONAL ELECTRONICS CO.,LTD. |
| Address of Factory: | 618-2# Gongren West Road, Jiaojiang, Taizhou City, Zhejiang, PR.China |

4.2 General Description of EUT

| | | |
|--------------------------|---|---|
| Product Name: | laptop | |
| Model No.: | Y11C | |
| Category of device | Portable device | |
| Operation Frequency: | Bluetooth: 2402 MHz ~ 2480 MHz Wi-Fi: 802.11b/g/n-HT20: 2412MHz ~ 2462 MHz 802.11n-HT40 :2422MHz~2452MHz 802.11a/n/ac: 5180MHz ~5240MHz | |
| Modulation technology: | Bluetooth: GFSK/ π /4DQPSK/8DPSK Wi-Fi: 802.11b: DSSS, 802.11a/ac/g/n: OFDM | |
| Antenna Type: | Internal Antenna | |
| Antenna Gain: | Ant1:2.4GHz WIFI: -3.46dBi, 5.2GHz WIFI: -3.46dBi, Ant2: 2.4GHz WIFI: -3.46dBi, 5.2GHz WIFI: -3.46dBi, BT: -4.0 dBi | |
| Dimensions (L*W*H): | 295mm (L)× 198mm (W)× 21mm (H) | |
| Accessories information: | Adapter(1): Model: EE1230-105 Input: AC100-240V 50/60Hz 0.5A Output: DC 12.0V, 3.0A Adapter(2): Model: PS36A120Y3000H Input: AC100-240V 50/60Hz 1.0A Output: DC 12.0V, 3.0A Adapter(3): Model: SOY-1200300 Input: AC100-240V 50/60Hz 1.2A Output: DC 12.0V, 3.0A | Battery: Rechargeable Li-ion Battery DC7.6V-5000mAh |

5 Conducted RF Output Power

5.1 WLAN 2.4 GHz Band Conducted Power

| Average Power (dBm) | | | | |
|---------------------|-----------------|-------|--------------|--------------|
| Channel | Frequency (MHz) | ANTS | 802.11 b | 802.11 g |
| CH 01 | 2412 | ANT 1 | 15.04 | 13.20 |
| | | ANT 2 | 14.44 | 11.24 |
| CH 06 | 2437 | ANT 1 | 15.16 | 13.12 |
| | | ANT 2 | 14.70 | 11.67 |
| CH 11 | 2462 | ANT 1 | 15.15 | 13.17 |
| | | ANT 2 | 14.79 | 11.86 |

| Average Power (dBm) | | | | |
|---------------------|-----------------|-------|-------------------|-------------------|
| Channel | Frequency (MHz) | ANTS | 802.11n 20 (MIMO) | Total power (dBm) |
| CH 01 | 2412 | ANT 1 | 8.63 | 11.23 |
| | | ANT 2 | 7.77 | |
| CH 06 | 2437 | ANT 1 | 8.68 | 11.53 |
| | | ANT 2 | 8.35 | |
| CH 11 | 2462 | ANT 1 | 8.82 | 11.73 |
| | | ANT 2 | 8.61 | |

| Average Power (dBm) | | | | |
|---------------------|-----------------|-------|-------------------|-------------------|
| Channel | Frequency (MHz) | ANTS | 802.11n 40 (MIMO) | Total power (dBm) |
| CH 03 | 2422 | ANT 1 | 8.66 | 11.37 |
| | | ANT 2 | 8.03 | |
| CH 06 | 2437 | ANT 1 | 8.67 | 11.53 |
| | | ANT 2 | 8.37 | |
| CH 09 | 2452 | ANT 1 | 8.64 | 11.59 |
| | | ANT 2 | 8.52 | |

| ANT 1 WIFI 2.4 GHz Max Tune-up (dBm) | | | | |
|--------------------------------------|----------|----------|----------------|----------------|
| mode | 802.11 b | 802.11 g | 802.11n (HT20) | 802.11n (HT40) |
| Low | 15.5 | 13.5 | 11.5 | 11.5 |
| Middle | 15.5 | 13.5 | 12.0 | 12.0 |
| High | 15.5 | 13.5 | 12.0 | 12.0 |

| ANT 2 WIFI 2.4 GHz Max Tune-up (dBm) | | | | |
|--------------------------------------|----------|----------|----------------|----------------|
| mode | 802.11 b | 802.11 g | 802.11n (HT20) | 802.11n (HT40) |
| Low | 14.5 | 11.5 | 11.5 | 11.5 |
| Middle | 15.0 | 12.0 | 12.0 | 12.0 |
| High | 15.0 | 12.0 | 12.0 | 12.0 |

Note:

1. Per KDB 248227 D01v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion.
2. Per KDB 248227 D01v02r02, In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. SAR is not required for the following 2.4 GHz OFDM conditions:
 - 1) When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.
 - 2) When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

3. Per KDB 248227 D01v02r02, for MIMO configurations, the aggregate maximum output power of all simultaneous transmitting antennas in all transmission chains may be used to determine SAR test exclusion for each frequency band and transmission mode configuration.
4. The output power of all data rate were pre-scan, just the worst case (the lowest data rate) of all mode were shown in report.

5.2 WLAN 5.2GHz Band Conducted Power

| 802.11 a Average Power (dBm) | | | |
|------------------------------|-----------------|-------|------------------------------|
| Channel | Frequency (MHz) | ANTS | Conducted Output power (dBm) |
| CH 36 | 5180 | ANT 1 | 12.58 |
| | | ANT 2 | 12.13 |
| CH 40 | 5200 | ANT 1 | 12.25 |
| | | ANT 2 | 12.39 |
| CH 48 | 5240 | ANT 1 | 11.63 |
| | | ANT 2 | 11.43 |

| 802.11n (HT20) (MIMO) Average Power (dBm) | | | | |
|---|-----------------|-------|------------------------------|-------------------|
| Channel | Frequency (MHz) | ANTS | Conducted Output power (dBm) | Total power (dBm) |
| CH 36 | 5180 | ANT 1 | 9.30 | 11.85 |
| | | ANT 2 | 8.33 | |
| CH 40 | 5200 | ANT 1 | 8.65 | 11.39 |
| | | ANT 2 | 8.10 | |
| CH 48 | 5240 | ANT 1 | 8.30 | 11.18 |
| | | ANT 2 | 8.04 | |

| 802.11n (HT40) (MIMO) Average Power (dBm) | | | | |
|---|-----------------|-------|------------------------------|-------------------|
| Channel | Frequency (MHz) | ANTS | Conducted Output power (dBm) | Total power (dBm) |
| CH 38 | 5190 | ANT 1 | 8.66 | 11.47 |
| | | ANT 2 | 8.24 | |
| CH 46 | 5230 | ANT 1 | 8.41 | 11.28 |
| | | ANT 2 | 8.12 | |

| 802.11ac (MIMO) Average Power (dBm) | | | | |
|-------------------------------------|-----------------|-------|----------|-----------------------|
| Channel | Frequency (MHz) | ANTS | 802.11 a | 802.11n (HT20) (MIMO) |
| CH 42 | 5210 | ANT 1 | 8.00 | 11.09 |
| | | ANT 2 | 8.16 | |

| ANT 1 WIFI 5.2 GHz Max Tune-up (dBm) | | | | |
|--------------------------------------|----------|----------------|----------------|-----------|
| mode | 802.11 a | 802.11n (HT20) | 802.11n (HT40) | 802.11 ac |
| Low | 13.0 | 12.0 | 11.5 | / |
| Middle | 12.5 | 11.5 | / | 11.5 |
| High | 12.0 | 11.5 | 11.5 | / |

| ANT 2 WIFI 5.2 GHz Max Tune-up (dBm) | | | | |
|--------------------------------------|----------|----------------|----------------|-----------|
| mode | 802.11 a | 802.11n (HT20) | 802.11n (HT40) | 802.11 ac |
| Low | 12.5 | 12.0 | 11.5 | / |
| Middle | 12.5 | 11.5 | / | 11.5 |

| | | | | |
|------|------|------|------|---|
| High | 11.5 | 11.5 | 11.5 | / |
|------|------|------|------|---|

Note:

1. Per KDB 248227 D01v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion.
2. Per KDB 248227 D01v02r02, for MIMO configurations, the aggregate maximum output power of all simultaneous transmitting antennas in all transmission chains may be used to determine SAR test exclusion for each frequency band and transmission mode configuration.
3. The output power of all data rate were pre-scan, just the worst case (the lowest data rate) of all mode were shown in report.

5.3 Bluetooth Conducted Power

| Average Power (dBm) | | | | |
|---------------------|-----------------|-------------|----------------|-------|
| Channel | Frequency (MHz) | GFSK | $\pi/4$ -DQPSK | 8DPSK |
| CH 01 | 2402 | 4.30 | 0.44 | 0.71 |
| CH 39 | 2441 | 4.00 | 0.16 | 0.38 |
| CH 78 | 2480 | 3.52 | -0.36 | -0.14 |

| Bluetooth Max Tune-up dBm) | | | |
|----------------------------|------|----------------|-------|
| mode | GFSK | $\pi/4$ -DQPSK | 8DPSK |
| Low | 4.5 | 0.5 | 1.0 |
| Middle | 4.5 | 0.5 | 0.5 |
| High | 4.0 | 0.0 | 0.0 |

Note:

1. The output power of all data rate were pre-scan, just the worst case of all mode were shown in report.

6 Exposure Positions Consideration

6.1 EUT Antenna Locations

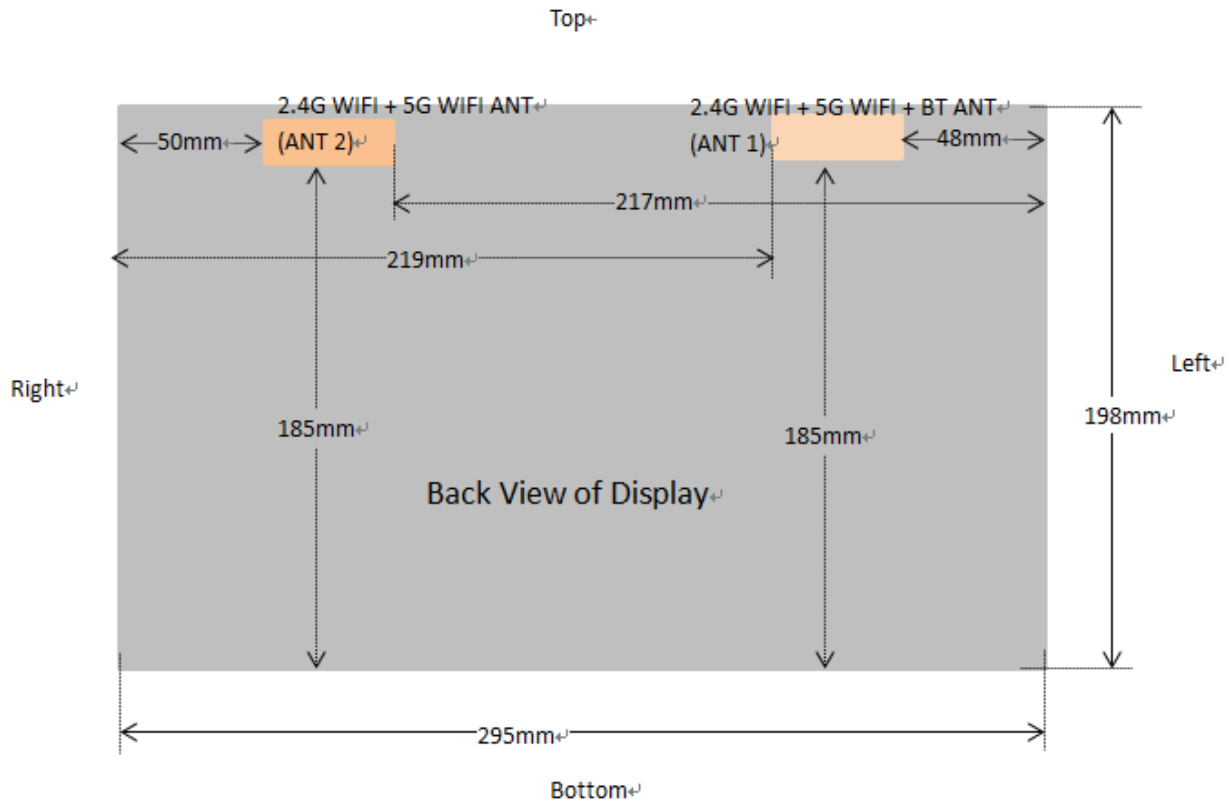


Fig.14.1 EUT Antenna Locations

6.2 SAR Test Exclusion Consideration

| SAR exclusion calculations for antenna < 50mm from the user | | | | | |
|---|-------------|--------------------|-------|-----------------------------------|--|
| Antennas | Freq. (MHz) | Max. tune-up Power | | Distance of Antennas to user (mm) | Calculated Threshold Value (≤ 3.0 SAR is not required) |
| | | dBm | mW | Back of display | Back of display |
| 2.4GHz 802.11b (ANT 1) | 2437 | 15.5 | 35.48 | 25 | 2.21 |
| 2.4GHz 802.11b (ANT 2) | 2462 | 15.0 | 31.62 | 25 | 1.99 |
| 2.4GHz 802.11g (ANT 1) | 2412 | 13.5 | 22.39 | 25 | 1.39 |
| 2.4GHz 802.11g (ANT 2) | 2462 | 12.0 | 15.85 | 25 | 1.00 |
| 5.2GHz 802.11a (ANT 1) | 5180 | 13.0 | 19.95 | 25 | 1.82 |
| 5.2GHz 802.11a (ANT 2) | 5200 | 12.5 | 17.78 | 25 | 1.62 |
| Bluetooth | 2402 | 4.5 | 2.82 | 25 | 0.17 |

| Test Positions | |
|------------------------|-----------------|
| Antennas | Back of display |
| 2.4GHz 802.11b (ANT 1) | No |
| 2.4GHz 802.11b (ANT 2) | No |
| 2.4GHz 802.11g (ANT 1) | No |
| 2.4GHz 802.11g (ANT 2) | No |
| 5.2GHz 802.11a (ANT 1) | No |
| 5.2GHz 802.11a (ANT 2) | No |
| Bluetooth | No |

Note:

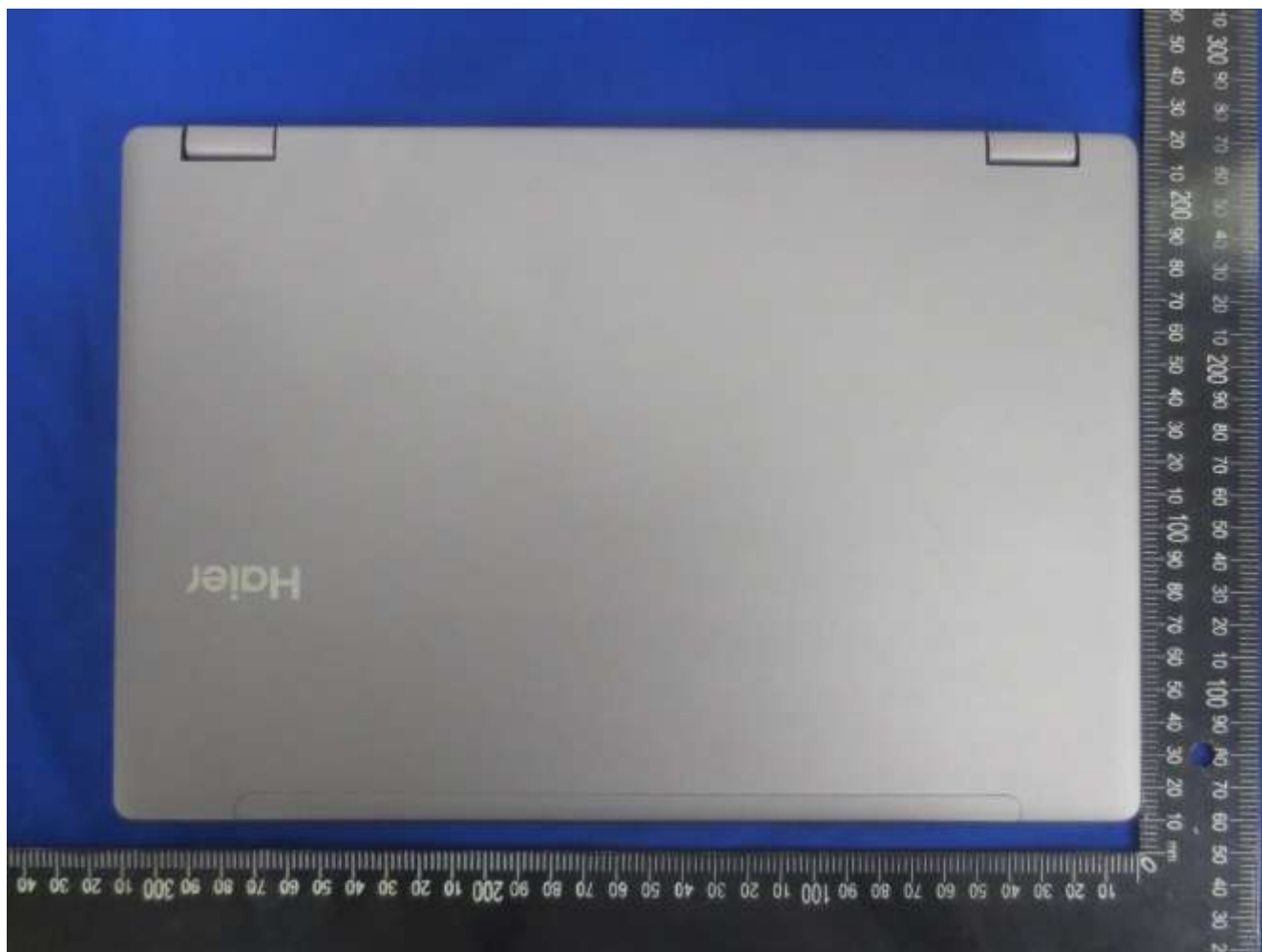
- Per KDB 447498 D01v06, section 4.3.1, the 1-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$$
for 1-g SAR, where
 - f(GHz) is the RF channel transmit frequency in GHz
 - Power and distance are rounded to the nearest mW and mm before calculation
 - The result is rounded to one decimal place for comparison
- According to KDB 616217 D04 SAR for laptop and tablets v01r02, section 4.2, item e), when the SAR Test Exclusion Threshold in KDB Publication 447498 D01 applies, a minimum test separation distance of 25 mm is required to determine test exclusion for the display, and 5 mm for the keyboard compartment.
- Per KDB 616217 D04v01r02, SAR tests for bystander exposure from the edges of the keyboard and display screen of laptop computers are generally not required.

7 Conclusion

SAR test for this laptop is exclusion.

APPENDIX: DUT Photos

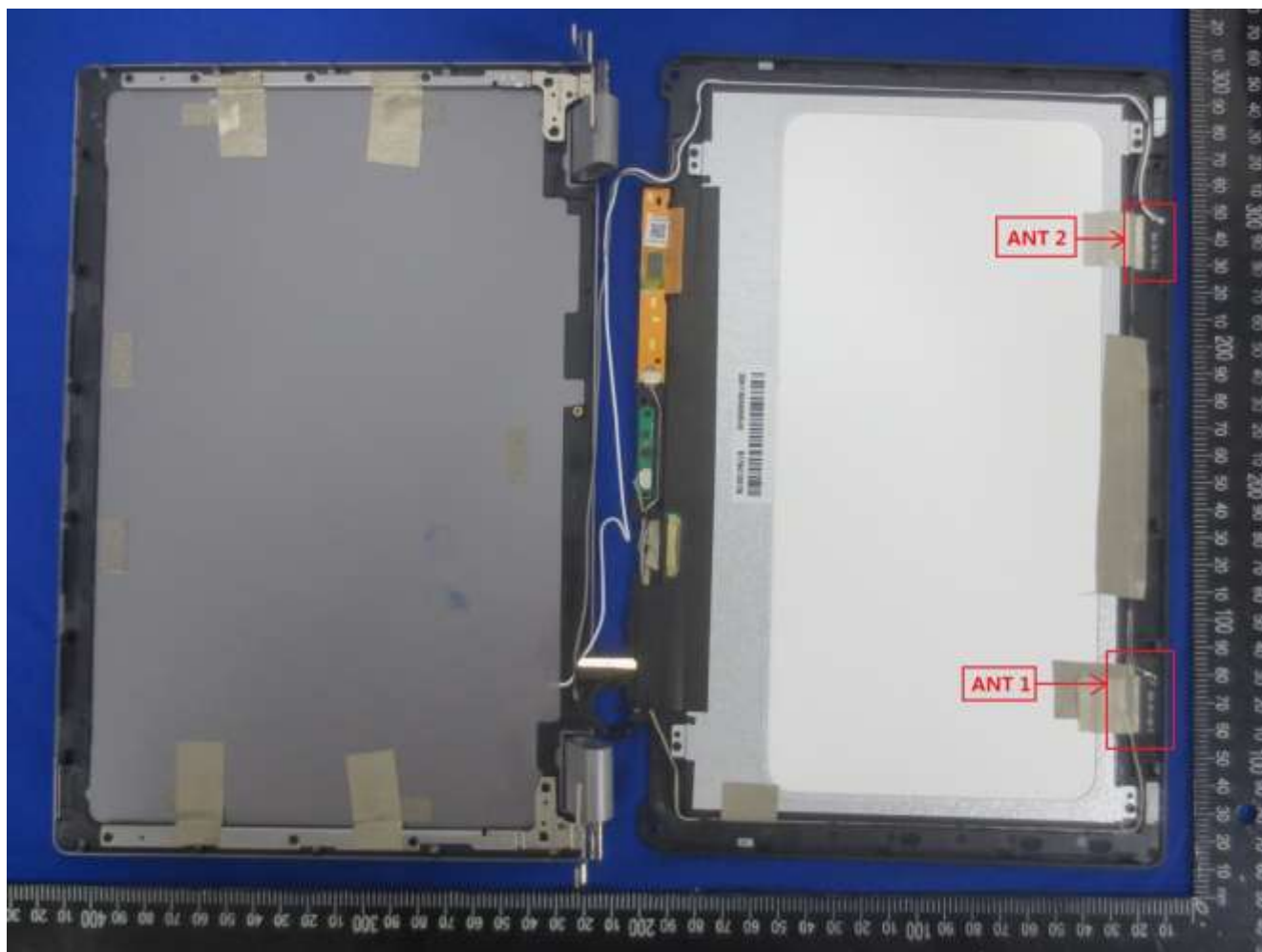








Display of DUT



ANTs located on display