

EVALUATION REPORT

FCC / ISED

APPLICANT

Safetrust Inc

MODEL NAME

SA500

FCC ID

2ANI5SA500

ISED ID

23133-SA500

REPORT NUMBER

HA221021-SFT-005-R03

TEST REPORT**Date of Issue**
November 2, 2022**Test Site**
Hyundai C-Tech, Inc. dba HCT America, Inc.
1726 Ringwood Ave, San Jose, CA 95131, USA

| | |
|---------------------------|---|
| Applicant | Safetrust Inc |
| Applicant Address | 8116 Mill Creek Rd, Fremont, CA 94539, U.S.A. |
| FCC ID | 2ANI5SA500 |
| ISED ID | 23133-SA500 |
| Model Name | SA500 |
| EUT Type | IoT Sensor |
| Modulation Type | ASK, FSK, PSK / GFSK / OFDM |
| FCC Classification | Digital Transmission System (DTS) Unlicensed National Information Infrastructure (NII) Low Power Transmitter Below 1705 kHz (DCD) Low Power Communication Device Transmitter (DXX) |
| FCC Rule Part(s) | Part 15.225, Part 15.209, Part 15.207 / Part 15.247 / Part 15.407 |
| ISED Rule Part(s) | RSS-210 Issue 10 (April 2020) RSS-247 Issue 2 (February 2017) RSS-Gen Issue 5 Amd 2 (February 2021) |
| Test Reference | KDB 484596 D01 Reference Test Data v01 |

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 |
|----------------------|------------------|---------------|
| HA221021-SFT-005-R03 | November 2, 2022 | Initial Issue |
| | | |
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1. GENERAL INFORMATION

EUT DESCRIPTION

| | | |
|--|---|--|
| Model | SA500 | |
| EUT Type | IoT Sensor | |
| Serial Number | 3BFF | |
| Power Supply | 12 V d.c. | |
| RF Specification | WIFI 5 GHz (U-NII 3) : 802.11a/n(HT20/40)/ ac(VHT20/40/80) Bluetooth LE MCU (1Mbps) Bluetooth LE MESH (1Mbps) RFID (LF/HF) | |
| Transmitter Chain | 5 GHz : SISO Bluetooth LE : SISO | |
| Operating Environment | Indoor and outdoor | |
| Operating Temperature | -20 °C ~ 50 °C | |
| Modulation Type | RFID (LF) | ASK, FSK, PSK |
| | RFID (HF) | ASK |
| | BLE MCU | GFSK |
| | BLE MESH | GFSK |
| | WIFI 5 GHz (U-NII 3) | OFDM |
| Antenna Specification ¹⁾ | RFID (LF) | Loop Antenna |
| | RFID (HF) | Loop Antenna |
| | BLE MCU | Antenna Type : Chip Antenna Peak Gain : 2.0 dBi |
| | BLE MESH | Antenna Type : Chip Antenna Peak Gain : 2.0 dBi |
| | WIFI 5 GHz (U-NII 3) | Antenna Type : Chip Antenna Peak Gain : 6.2 dBi |
| Firmware Version ²⁾ | BLE MCU/RFID (LF/HF) : 1.52.1009 BLE MESH : 1.52.167 WIFI : 1.0.344 | |
| Hardware Version ²⁾ | V4 | |
| Date(s) of Tests | October 21, 2022 ~ November 2, 2022 | |

Note(s) :

1. Antenna information is based on the document provided.
2. Firmware and Hardware Versions are provided by the client.

2. MODEL DIFFERENCES

Model SA500 (FCC ID : 2ANI5SA500) is identical to base model SA530 (FCC ID : 2ANI5SA530) except for keypad function support, loop antenna size, number of receiver antennas for BLE MESH on the antenna board and related electrical circuits.

| Model | Items | | |
|-------|---------|-----------------------------------|--------------------------------|
| | Keypad | No. of receiver ant. for BLE MESH | Loop ant. size of RFID HF (mm) |
| SA530 | Support | 5 | Approx. 68 x 100 (W x D) |
| SA500 | - | 4 | Approx. 39 x 75 (W x D) |

3. REFERENCE DETAIL SECTION

| SPOT CHECK ITEMS | | |
|------------------|-----------------|--------------------------------|
| Reference FCC ID | Equipment Class | Items |
| 2ANI5SA530 | NII | Radiated Spurious Emission |
| | | Radiated Restricted Band Edges |

| REFERENCE TEST DATA | | | |
|---------------------|-----------------|---------------------------|--------------|
| Reference FCC ID | Equipment Class | Reference Test Report No. | Section |
| 2ANI5SA530 | NII | HA220420-SFT-002-R02 | All sections |

4. SUMMARY OF THE SPOT CHECK RESULTS

| Equipment Class | Test Item | Mode / Channel | SA530 Result [dBuV/m] | | SA500 Result [dBuV/m] | | Difference [dB] | |
|-----------------|---|-----------------------------------|-----------------------|------|-----------------------|------|-----------------|------|
| | | | AV | PK | AV | PK | AV | PK |
| NII | Radiated Spurious Emission ¹ | 802.11a / CH149 (5745 MHz) | - | - | - | - | - | - |
| | Radiated Restricted Band Edges | 802.11ac VHT80 / CH155 (5775 MHz) | - | 56.8 | - | 58.5 | - | +1.7 |

Note(s) :

1. No major peak found.

5. SPOT CHECK RESULTS

Radiated Spurious Emission

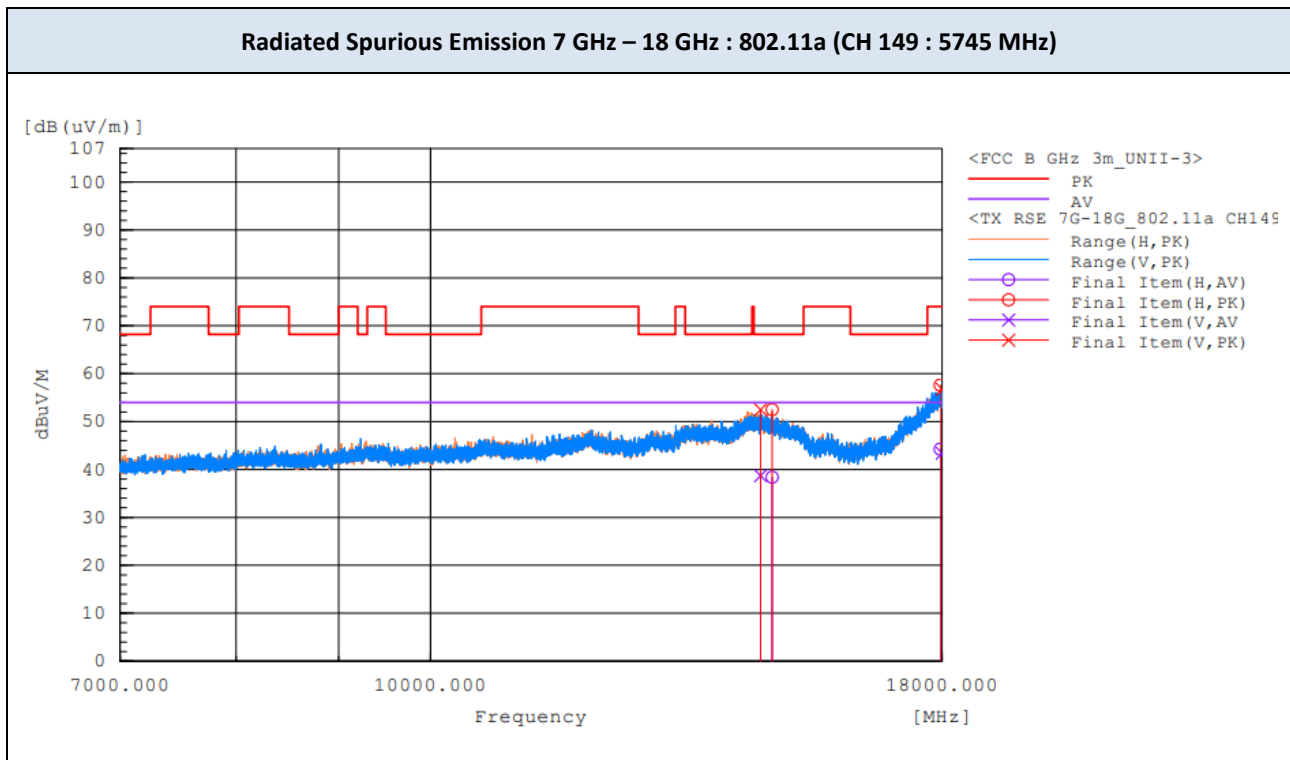
Test Mode 802.11a : TX mode
 Operating Frequency 5745 MHz (CH 149)

| Frequency (MHz) | Polarization | Reading (dBuV) | | Factor (dB) | | Level (dBuV/m) | | Limit (dBuV/m) | | Margin (dB) | |
|---------------------|--------------|----------------|----|---------------------|------|----------------|----|----------------|----|-------------|----|
| | | AV | PK | Corr. ¹⁾ | Duty | AV | PK | AV | PK | AV | PK |
| No major peak found | | | | | | | | | | | |

Note(s) :

1. Correction Factor: Antenna Factor + Cable loss + Preamplifier Gain
2. AV Level = Measured Power(dBm) + Correction Factor(dB) + Duty Cycle Factor(dB).

TEST PLOTS



Radiated Restricted Band Edges

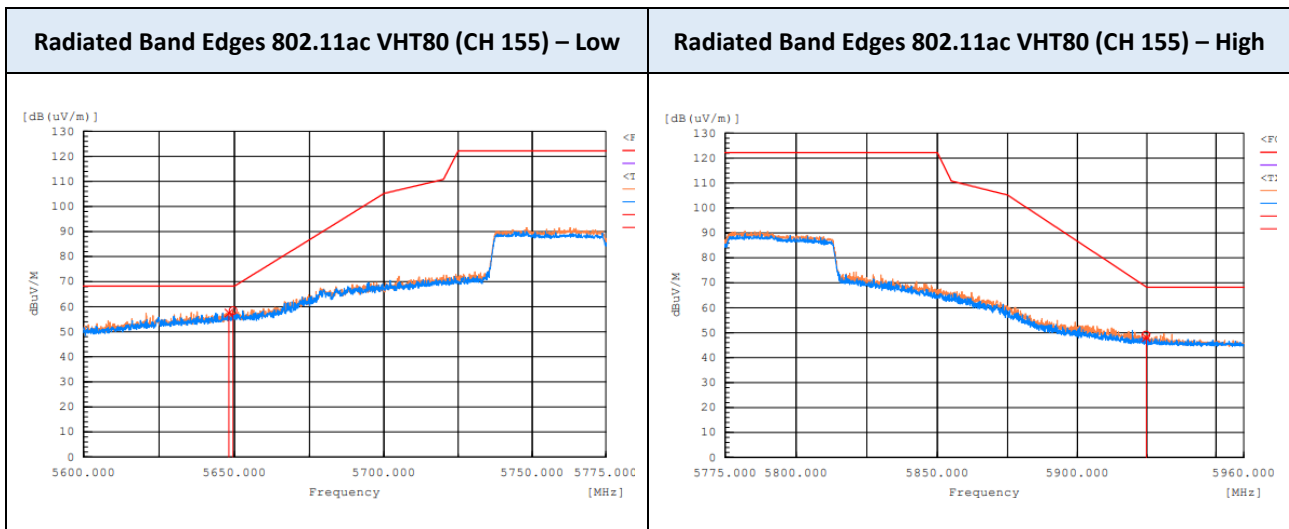
Test Mode 802.11ac VHT80 : TX mode
 Operating Frequency 5775 MHz (CH 155)

| Frequency (MHz) | Polarization | Reading (dBuV) | Factor (dB) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|--------------|----------------|---------------------|----------------|----------------|-------------|
| | | PK | Corr. ¹⁾ | PK | PK | PK |
| 5648.154 | V | 61.4 | -3.9 | 57.5 | 68.2 | 10.7 |
| 5649.536 | H | 62.4 | -3.9 | 58.5 | 68.2 | 9.7 |
| 5924.648 | H | 52.4 | -3.3 | 49.1 | 68.5 | 19.4 |
| 5924.792 | V | 51.3 | -3.3 | 48.0 | 68.4 | 20.4 |

Notes:

1. Correction Factor: Antenna Factor + Cable loss

TEST PLOTS



6. LIST OF TEST EQUIPMENT

| No. | Instrument | Model No. | Calibration Due (mm/dd/yy) | Manufacture | Serial No. |
|-------------------------------------|---------------------------------------|--------------------------------|----------------------------|-----------------|------------|
| <input checked="" type="checkbox"/> | Signal Analyzer (20 Hz ~ 40.0 GHz) | ESU40 | 12/03/2022 | Rohde & Schwarz | 100529 |
| <input checked="" type="checkbox"/> | Signal Analyzer (1 Hz ~ 40.0 GHz) | ESW44 | 10/25/2023 | Rohde & Schwarz | 102015 |
| <input type="checkbox"/> | Loop Antenna (0.009 ~ 30 MHz) | HLA 6121 | 09/15/2023 | TESEQ | 43964 |
| <input checked="" type="checkbox"/> | Horn Antenna (1 GHz ~ 18 GHz) | DRH-118 | 01/18/2023 | Sunol | A061616 |
| <input checked="" type="checkbox"/> | LNA (1 GHz ~ 18 GHz) | PAM-118A | 06/21/2023 | Com-Power | 18040074 |
| <input checked="" type="checkbox"/> | High Pass Filter | WHKX8-6090- 7000-18000-40SS | 01/13/2023 | Wainwright | 23 |

Note(s) :

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.

APPENDIX A. TEST SETUP PHOTOS

The setup photos are provided as a separate document.

APPENDIX B. PHOTOGRAPHS OF EUT

B.1. EXTERNAL PHOTOS

The external photos are provided as a separate document.

B.2. INTERNAL PHOTOS

The internal photos are provided as a separate document.

END OF TEST REPORT