

TEST REPORT

FCC MPE Test for CS45-727-827-A0
Certification

APPLICANT
Westell, Inc

REPORT NO.
HCT-RF-2404-FC052

DATE OF ISSUE
April 26, 2024

Tested by
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TEST REPORT

REPORT NO.

HCT-RF-2404-FC052

DATE OF ISSUE

April 26, 2024

Applicant

Westell, Inc

750 North Commons Drive, Aurora, IL 60504 USA

Product Name

DAS

Model Name

CS45-727-827-A0

FCC ID

CH8727827

Date of Test

February 20, 2024 ~ April 23, 2024

Location of Test

☒ Permanent Testing Lab ☐ On Site Testing

(Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea)

Test Standard Used

§ 1.1310, § 2.1091

Test Results

PASS

REVISION HISTORY

The revision history for this test report is shown in table.

| Revision No. | Date of Issue | Description |
|--------------|----------------|-----------------|
| 0 | April 26, 2024 | Initial Release |

Notice

Content

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance.

The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated.

The test results have only been applied with the test methods required by the standard(s).

The laboratory is not accredited for the test results marked *.

Information provided by the applicant is marked **.

Test results provided by external providers are marked ***.

When confirmation of authenticity of this test report is required, please contact www.hct.co.kr

The test results in this test report are not associated with the ((KS Q) ISO/IEC 17025) accreditation by KOLAS (Korea Laboratory Accreditation Scheme) / A2LA (American Association for Laboratory Accreditation) that are under the ILAC (International Laboratory Accreditation Cooperation) Mutual Recognition Agreement (MRA).

RF Exposure Statement

1. Limit

According to § 1.1310, § 2.1091 RF exposure is calculated.

(B) Limits for General Population/Uncontrolled Exposures

| Frequency range (MHz) | Electric field Strength (V/m) | Magnetic field Strength (A/m) | Power density (mW/cm ²) | Averaging time (minutes) |
|--------------------------|----------------------------------|----------------------------------|--|-----------------------------|
| 0.3 - 1.34..... | 614 | 1.63 | #(100) | 30 |
| 1.34 - 30..... | 824/f | 2.19/f | #(180/f ²) | 30 |
| 30 - 300..... | 27.5 | 0.073 | 0.2 | 30 |
| 300 - 1500..... | | | f/1500 | 30 |
| 1500 - 100.000..... | | | 1.0 | 30 |

F = frequency in MHz

= Plane-wave equivalent power density

2. Maximum Permissible Exposure Prediction

Prediction of MPE limit at a given distance

$$S = PG/4\pi R^2$$

S = Power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

3. RESULTS

[Uplink]

- PS Narrowband

| | | |
|---|--------|--------------------|
| Max output Power at antenna input terminal | 25.50 | dBm |
| Max output Power at antenna input terminal | 354.81 | mW |
| Prediction distance | 40.00 | cm |
| Prediction frequency | 799.00 | MHz |
| Antenna Gain(typical) | 11.00 | dBi |
| Antenna Gain(numeric) | 12.59 | - |
| Power density at prediction frequency(S) | 0.2222 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.5327 | mW/cm ² |

- NPSPAC

| | | |
|---|--------|--------------------|
| Max output Power at antenna input terminal | 25.50 | dBm |
| Max output Power at antenna input terminal | 354.81 | mW |
| Prediction distance | 40.00 | cm |
| Prediction frequency | 806.00 | MHz |
| Antenna Gain(typical) | 11.00 | dBi |
| Antenna Gain(numeric) | 12.59 | - |
| Power density at prediction frequency(S) | 0.2222 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.5373 | mW/cm ² |

- B/ILT; SMR

| | | |
|---|--------|--------------------|
| Max output Power at antenna input terminal | 25.50 | dBm |
| Max output Power at antenna input terminal | 354.81 | mW |
| Prediction distance | 40.00 | cm |
| Prediction frequency | 809.00 | MHz |
| Antenna Gain(typical) | 11.00 | dBi |
| Antenna Gain(numeric) | 12.59 | - |
| Power density at prediction frequency(S) | 0.2222 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.5393 | mW/cm ² |

- ESMR (CDMA)

| | | |
|---|--------|--------------------|
| Max output Power at antenna input terminal | 25.50 | dBm |
| Max output Power at antenna input terminal | 354.81 | mW |
| Prediction distance | 40.00 | cm |
| Prediction frequency | 817.00 | MHz |
| Antenna Gain(typical) | 11.00 | dBi |
| Antenna Gain(numeric) | 12.59 | - |
| Power density at prediction frequency(S) | 0.2222 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.5447 | mW/cm ² |

- ESMR (GSM)

| | | |
|---|--------|--------------------|
| Max output Power at antenna input terminal | 25.50 | dBm |
| Max output Power at antenna input terminal | 354.81 | mW |
| Prediction distance | 40.00 | cm |
| Prediction frequency | 817.00 | MHz |
| Antenna Gain(typical) | 11.00 | dBi |
| Antenna Gain(numeric) | 12.59 | - |
| Power density at prediction frequency(S) | 0.2222 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.5447 | mW/cm ² |

- ESMR (LTE 5 MHz)

| | | |
|---|--------|--------------------|
| Max output Power at antenna input terminal | 25.50 | dBm |
| Max output Power at antenna input terminal | 354.81 | mW |
| Prediction distance | 40.00 | cm |
| Prediction frequency | 817.00 | MHz |
| Antenna Gain(typical) | 11.00 | dBi |
| Antenna Gain(numeric) | 12.59 | - |
| Power density at prediction frequency(S) | 0.2222 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.5447 | mW/cm ² |

[Downlink]

- PS Narrowband

| | | |
|---|--------|--------------------|
| Max output Power at antenna input terminal | 28.50 | dBm |
| Max output Power at antenna input terminal | 707.95 | mW |
| Prediction distance | 40.00 | cm |
| Prediction frequency | 769.00 | MHz |
| Antenna Gain(typical) | 3.00 | dBi |
| Antenna Gain(numeric) | 2.00 | - |
| Power density at prediction frequency(S) | 0.0703 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.5127 | mW/cm ² |

- NPSPAC

| | | |
|---|--------|--------------------|
| Max output Power at antenna input terminal | 28.50 | dBm |
| Max output Power at antenna input terminal | 707.95 | mW |
| Prediction distance | 40.00 | cm |
| Prediction frequency | 851.00 | MHz |
| Antenna Gain(typical) | 3.00 | dBi |
| Antenna Gain(numeric) | 2.00 | - |
| Power density at prediction frequency(S) | 0.0703 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.5673 | mW/cm ² |

- B/ILT; SMR

| | | |
|---|--------|--------------------|
| Max output Power at antenna input terminal | 28.50 | dBm |
| Max output Power at antenna input terminal | 707.95 | mW |
| Prediction distance | 40.00 | cm |
| Prediction frequency | 854.00 | MHz |
| Antenna Gain(typical) | 3.00 | dBi |
| Antenna Gain(numeric) | 2.00 | - |
| Power density at prediction frequency(S) | 0.0703 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.5693 | mW/cm ² |

- ESMR (CDMA)

| | | |
|---|--------|--------------------|
| Max output Power at antenna input terminal | 28.50 | dBm |
| Max output Power at antenna input terminal | 707.95 | mW |
| Prediction distance | 40.00 | cm |
| Prediction frequency | 862.00 | MHz |
| Antenna Gain(typical) | 3.00 | dBi |
| Antenna Gain(numeric) | 2.00 | - |
| Power density at prediction frequency(S) | 0.0703 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.5747 | mW/cm ² |

- ESMR (GSM)

| | | |
|---|--------|--------------------|
| Max output Power at antenna input terminal | 28.50 | dBm |
| Max output Power at antenna input terminal | 707.95 | mW |
| Prediction distance | 40.00 | cm |
| Prediction frequency | 862.00 | MHz |
| Antenna Gain(typical) | 3.00 | dBi |
| Antenna Gain(numeric) | 2.00 | - |
| Power density at prediction frequency(S) | 0.0703 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.5747 | mW/cm ² |

- ESMR (LTE 5 MHz)

| | | |
|---|--------|--------------------|
| Max output Power at antenna input terminal | 28.50 | dBm |
| Max output Power at antenna input terminal | 707.95 | mW |
| Prediction distance | 40.00 | cm |
| Prediction frequency | 862.00 | MHz |
| Antenna Gain(typical) | 3.00 | dBi |
| Antenna Gain(numeric) | 2.00 | - |
| Power density at prediction frequency(S) | 0.0703 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.5747 | mW/cm ² |

Simultaneous band emission conditions

[Uplink]

| Band | MPE Ratio (Power density / Limit) | Sum of MPE Ratio | |
|---------------|-----------------------------------|------------------|----------|
| PS Narrowband | 0.4171 | 0.8305 | ≤ 1 |
| NPSPAC | 0.4135 | | |

[Downlink]

| Band | MPE Ratio (Power density / Limit) | Sum of MPE Ratio | |
|---------------|-----------------------------------|------------------|----------|
| PS Narrowband | 0.1370 | 0.2609 | ≤ 1 |
| NPSPAC | 0.1238 | | |

Note:

- The result of each band was applied to the worst value.
- Simultaneous transmission band condition

| 700 MHz band | 800 MHz band |
|---------------|----------------------------|
| PS Narrowband | NPSPAC or B/ILT; SMR, ESMR |

Resultantly, the worst combination of simultaneous transmission is PS Narrowband + NPSPAC.

- MPE ratios are calculated as

$$[(\text{Power density}_1 / \text{MPE Limit}) + [(\text{Power density}_2 / \text{MPE Limit}) + \dots] \leq 1$$