

Test report No:  
NIE: 69323REM.001A1

## Test report

**FCC Rules and Regulations CFR 47, Part 15, Subpart B  
(10-1-19 Edition) & ICES-003 Issue 7 (October 2020)**

|                                           |                                                                                                             |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| (*) Identification of item tested         | TCAM: Telematics and Connectivity Antenna Module                                                            |
| (*) Trademark                             | Continental                                                                                                 |
| (*) Model and /or type reference          | TCAM1NA2                                                                                                    |
| Other identification of the product       | FCC ID: KR5TCAM1NA2<br>IC: 7812D-TCAM1NA2<br>HW version: E4.4<br>SW version: 11.16.11                       |
| (*) Features                              | 2G, 3G, LTE, GNSS, WLAN, BLE, ISM Receiver                                                                  |
| Manufacturer                              | Continental Automotive GmbH<br>Siemensstrasse 12, 93055 Regensburg, Germany                                 |
| Test method requested, standard           | FCC Rules and Regulations CFR 47, Part 15, Subpart B<br>(10-1-19 Edition) & ICES-003 Issue 7 (October 2020) |
| Summary                                   | IN COMPLIANCE                                                                                               |
| Approved by (name / position & signature) | Rafael López<br>EMC Consumer & RF Lab. Manager                                                              |
| Date of issue                             | 2021-11-16                                                                                                  |
| Report template No                        | FDT08_23<br>(*) "Data provided by the client"                                                               |

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## Acronyms

| Acronym ID | Acronym Description |
|------------|---------------------|
| Code       | EMC Test Code       |
| Freq Rng   | Frequency Range     |
| OM         | Operation Mode      |
| S/         | Sample              |
| V          | Verdict             |

## Competences and guarantees

DEKRA Testing and Certification S.A.U. is a testing laboratory accredited by the National Accreditation Body (ENAC -Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

In order to assure the traceability to other national and international laboratories, DEKRA Testing and Certification S.A.U. has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification S.A.U. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Testing and Certification S.A.U. at the time of performance of the test.

DEKRA Testing and Certification S.A.U. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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## General conditions

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1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification S.A.U.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification S.A.U. and the Accreditation Bodies.

## Uncertainty

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Uncertainty (factor  $k=2$ ) was calculated according to the DEKRA Testing and Certification S.A.U. internal document PODT000.

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 30 MHz to 1000 MHz is  $I = \pm 4,9$  dB for quasi-peak measurements,  $I = \pm 4,6$  dB for peak measurements ( $k=2$ ).

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 1000 MHz to 26GHz is  $I = \pm 2,6$  dB for peaks and average measurements ( $k=2$ ).

## Data provided by the client

---

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested")
2. The sample consists of a TCAM: Telematics and Connectivity Antenna Module.

### The TCAM1NA2 main parts are:

Antennas for cellular, WLAN, BLE, ISM receiver (RKE), SDARS with LNA

GNSS with LNA for Navigation: Beidou, Galileo, GPS, Glonass

Antenna selection via RF switches

TCAM internal antennas (all are TCAM internal, no extern antenna connections):

Tel1 ant: 2G, 3G, 4G/LTE1 (vehicle outside)

Tel2 ant: LTE2 (Rx only) (vehicle outside)

MIMO with LTE1- and LTE2-antenna. LTE2 is Rx only

Backup telephone antenna: 2G, 3G, 4G/LTE (vehicle inside)

Wi-Fi internal antenna (vehicle inside)

Wi-Fi external antenna (vehicle outside)

BLE antenna (vehicle outside)

Stacked patch antenna featuring GNSS

ISM receiver antenna

SDARS antenna

CAT4 NAD with 2G/3G/4G/LTE and GNSS, FCC certified

VoLTE

ISM receiver module (434MHz) for: RKE (Remote Keyless Entry), PASE (Passive Start and Entry, TPMS (Tire Pressure Monitoring System), FCC tested

Wi-Fi chip

BLE chip

1st internal embedded Sim-IC

Service calls

**External interfaces:**

Main power supply

External backup battery

External SIM card slot (2nd private customer SIM, optional)

External microphone in the OHC (Overhead Compartment)

A2B

External backup speaker

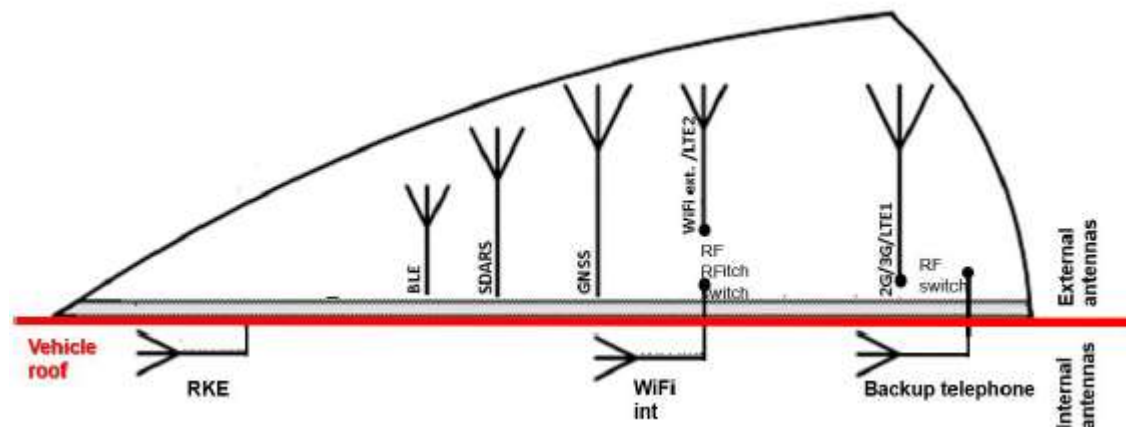
BroadR-Reach

CEM connection (K-Line)

Infotainment CAN

Airbag input

Debug interfaces (USB, UART)



DEKRA Testing and Certification S.A.U. declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

## Usage of samples

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Samples undergoing test have been selected by: The client.

| Id         | Control Number | Description                   | Model    | Serial N° | Date of Reception | Application        |
|------------|----------------|-------------------------------|----------|-----------|-------------------|--------------------|
| S/01       | 69323_11.1     | Antenna module (OTA main 2)   | TCAM1NA2 | 00076376  | 2021-07-14        | Element Under Test |
| S/01, S/02 | 69323_8.1      | Harness                       | --       | --        | 2021-07-13        | Element Under Test |
| S/02       | 69323_5.1      | Antenna module (OTA backup 2) | TCAM1NA2 | 00076359  | 2021-07-13        | Element Under Test |

Notes referenced to samples during the project.

## Test sample description

### Test Sample description (compulsory information for EMC and RF testing services)

|                                               |                                                                                 |                                |                          |                      |          |                                   |     |
|-----------------------------------------------|---------------------------------------------------------------------------------|--------------------------------|--------------------------|----------------------|----------|-----------------------------------|-----|
| Ports..... :                                  | Port name and description                                                       |                                | Cable                    |                      |          |                                   |     |
|                                               |                                                                                 |                                | Specified max length [m] | Attached during test | Shielded | Coupled to patient <sup>(3)</sup> |     |
|                                               | USB diagnostic                                                                  |                                | ~3m                      | [ ]                  | [ ]      | [ ]                               |     |
|                                               | UART diagnostic                                                                 |                                | ~3m                      | [ ]                  | [ ]      | [ ]                               |     |
|                                               | BRR diagnostic                                                                  |                                | ~3m                      | [ ]                  | [ ]      | [ ]                               |     |
| Supplementary information to the ports..... : | .....                                                                           |                                |                          |                      |          |                                   |     |
| Rated power supply .....                      | Voltage and Frequency                                                           |                                | Reference poles          |                      |          |                                   |     |
|                                               |                                                                                 |                                | L1                       | L2                   | L3       | N                                 | PE  |
|                                               | [ ]                                                                             | AC: .....                      | [ ]                      | [ ]                  | [ ]      | [ ]                               | [ ] |
|                                               | [ ]                                                                             | AC: .....                      | [ ]                      | [ ]                  | [ ]      | [ ]                               | [ ] |
|                                               | [X]                                                                             | DC: 12 V                       |                          |                      |          |                                   |     |
|                                               | [ ]                                                                             | DC: .....                      |                          |                      |          |                                   |     |
| Rated Power .....                             | 4.2 W dc (cellular, Wi-Fi, BLE, GNSS active)                                    |                                |                          |                      |          |                                   |     |
| Clock frequencies.....                        | 32.768kHz, 16MHz, 19.2MHz, 24MHz, 25MHz, 27.6MHz, 48MHz                         |                                |                          |                      |          |                                   |     |
| Other parameters .....                        | Operating temperature Range: -10°C to 55°C Supply Voltage Range: 8 V to 16 V DC |                                |                          |                      |          |                                   |     |
| Software version .....                        | 11.16.11                                                                        |                                |                          |                      |          |                                   |     |
| Hardware version .....                        | E4.4                                                                            |                                |                          |                      |          |                                   |     |
| Dimensions in cm (W x H x D) .....            | 10.5cm x 15.5cm x 9cm                                                           |                                |                          |                      |          |                                   |     |
| Mounting position .....                       | [ ]                                                                             | Table top equipment            |                          |                      |          |                                   |     |
|                                               | [ ]                                                                             | Wall/Ceiling mounted equipment |                          |                      |          |                                   |     |
|                                               | [ ]                                                                             | Floor standing equipment       |                          |                      |          |                                   |     |
|                                               | [ ]                                                                             | Hand-held equipment            |                          |                      |          |                                   |     |

|                                               |                                                                              |                                                        |                                |
|-----------------------------------------------|------------------------------------------------------------------------------|--------------------------------------------------------|--------------------------------|
|                                               | [X]                                                                          | Other: Vehicular environment equipment                 |                                |
| Modules/parts.....:                           | Module/parts of test item                                                    | Type                                                   | Manufacturer                   |
|                                               | Network Access Device (NAD), (cellular, GNSS)                                | Model: BL28NA-RD1                                      | Continental Automotive Systems |
|                                               | ISM/RKE 434 MHz RF receiver module                                           | Model: A2C38291300                                     | Continental Automotive Systems |
| Accessories (not part of the test item) ..... | Description                                                                  | Type                                                   | Manufacturer                   |
|                                               | 1-2 x test harnesses with USB<br>1 x test harness without USB (if necessary) | .....                                                  | Continental                    |
|                                               | Laptop (if necessary)                                                        | Elite Book                                             | HP                             |
|                                               | BLE eval board (if necessary)                                                | .....                                                  | TI                             |
|                                               | Load boxes (if necessary)                                                    | Multiple                                               | Multiple                       |
|                                               |                                                                              |                                                        |                                |
| Documents as provided by the applicant.....:  | Description                                                                  | File name                                              | Issue date                     |
|                                               | RF guide                                                                     | 21cw12_TCAM_Country_RF_Manual                          | .....                          |
|                                               | Functional Guide                                                             | User Guide for Functional Testing on Component Level 2 | .....                          |
|                                               | Additional Guides (if necessary)                                             | Multiple                                               | .....                          |

<sup>(3)</sup> Only for Medical Equipment



## Identification of the client

Continental Automotive GmbH  
Siemensstrasse 12, 93055 Regensburg, Germany

## Testing period and place

|               |                                        |
|---------------|----------------------------------------|
| Test Location | DEKRA Testing and Certification S.A.U. |
| Date (start)  | 2021-08-06                             |
| Date (finish) | 2021-08-09                             |

## Document history

| Report number  | Date       | Description                                                                                                                       |
|----------------|------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 69323REM.001   | 2021-11-04 | First release                                                                                                                     |
| 69323REM.001A1 | 2021-11-16 | First modification due to typos and missing info. This modification test report cancels and replaces the test report 69323REM.001 |

## Environmental conditions

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In the control chamber, the following limits were not exceeded during the test:

|                          |                                   |
|--------------------------|-----------------------------------|
| <b>Temperature</b>       | Min. = 15 °C<br>Max. = 35 °C      |
| <b>Relative humidity</b> | Min. = 30 %<br>Max. = 75 %        |
| <b>Air pressure</b>      | Min. = 860mbar<br>Max. = 1060mbar |

In the semianechoic chamber, the following limits were not exceeded during the test.

|                          |                                   |
|--------------------------|-----------------------------------|
| <b>Temperature</b>       | Min. = 15 °C<br>Max. = 35 °C      |
| <b>Relative humidity</b> | Min. = 30 %<br>Max. = 75 %        |
| <b>Air pressure</b>      | Min. = 860mbar<br>Max. = 1060mbar |

In the chamber for conducted measurements, the following limits were not exceeded during the test:

|                          |                                   |
|--------------------------|-----------------------------------|
| <b>Temperature</b>       | Min. = 15 °C<br>Max. = 35 °C      |
| <b>Relative humidity</b> | Min. = 30 %<br>Max. = 75 %        |
| <b>Air pressure</b>      | Min. = 860mbar<br>Max. = 1060mbar |

## Remarks and comments

The tests have been performed by the technical personnel: Lorena Oviedo Aranda.

## Testing verdicts

|                |     |
|----------------|-----|
| Fail           | F   |
| Inconclusive   | I   |
| Not applicable | N/A |
| Not measured   | N/M |
| Pass           | P   |

## List of equipment used during the test

| Control No. | Equipment                                | Model                  | Manufacturer                | Next Calibration |
|-------------|------------------------------------------|------------------------|-----------------------------|------------------|
| 4523        | EMI TEST RECEIVER 20Hz-26.5GHz           | ESU26                  | ROHDE AND SCHWARZ           | 2023-03-15       |
| 2942        | EMI TEST RECEIVER 20Hz-40GHz             | ESU40                  | ROHDE AND SCHWARZ           | 2021-09-17       |
| 6132        | ETHERNET TEMPERATURE AND HUMIDITY LOGGER | HWg-STE                | HW GROUP                    | 2022-04-05       |
| 6126        | ETHERNET TEMPERATURE AND HUMIDITY LOGGER | HWg-STE                | HW GROUP                    | 2022-04-05       |
| 4612        | HORN ANTENNA 1-18GHz                     | BBHA 9120 D            | SCHWARZBECK MESS-ELEKTRONIK | 2024-07-13       |
| 4657        | HORN ANTENNA 18-40GHz                    | BBHA 9170              | SCHWARZBECK                 | 2023-05-05       |
| 3541        | HYBRID BILOG ANTENNA 30MHz-6GHz          | JB6                    | SUNOL SCIENCES CORPORATION  | 2021-10-10       |
| 8856        | PRE-AMPLIFIER G>30dB 18-40GHz            | BLMA 1840-4A           | BONN ELEKTRONIK             | 2023-09-08       |
| 7203        | PREAMPLIFIER 30dB 500MHz-18GHz           | AMF-3D-00501800-24-10P | NARDA                       | 2022-01-14       |
| 6064        | SEMIANECHOIC ABSORBER LINED CHAMBER      | SAC-3                  | FRANKONIA                   | ---              |
| 6329        | SHIELDED ROOM                            | ---                    | FRANKONIA                   | ---              |

## Summary

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| Test Specification.                                   | Requirement – Test case                                | Verdict | Remark |
|-------------------------------------------------------|--------------------------------------------------------|---------|--------|
| FCC 47 CFR Part 15B                                   | RE Radiated emission.<br>Electromagnetic field measure | Pass    | ---    |
| <u>Supplementary information and remarks:</u><br>None |                                                        |         |        |

## Appendix A: Test results

# Appendix A content

DESCRIPTION OF THE OPERATION MODES .....15

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*FCC CFR 47, Part 15, Subpart B* .....17

## Description of the operation modes

---

The operation modes described in this paragraph constitute a functionality of the sample under test for itself. Every operation mode takes a failure criteria for the immunity test that they were applying to it and a monitoring to guarantee performance of the same ones.

The operation modes used by the samples to which the present report refers, are shown in the following table:

| Id    | Description                                                                                                                                                                                                                                                                     |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OM/01 | EUT ON. Bluetooth without communication established. GPS active and receiving positioning signal. SRD 433MHz active and receiving signal. WiFi 2.4 GHz not communication established. WiFi 5 GHz not communication established MS in IDLE mode. LTE Band 5. Power supply: 12Vdc |

## Test standards version applied

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The product standards and test standards applied for each test cases are shown in the following table:

| Product Test Standard                                                                    | Test standard     | Requirement – Test case |
|------------------------------------------------------------------------------------------|-------------------|-------------------------|
| FCC CFR 47, Part 15, Subpart B<br>(10-1-19 Edition) & ICES-003 Issue 7<br>(October 2020) | ANSI C63.4 (2014) | RE Radiated emission.   |



## Test Cases Details

### FCC CFR 47, Part 15, Subpart B (10-1-19 Edition) & ICES-003 Issue 7 (October 2020) RE Radiated emission. Electromagnetic field measure

#### Limits

Limits of interference Class B

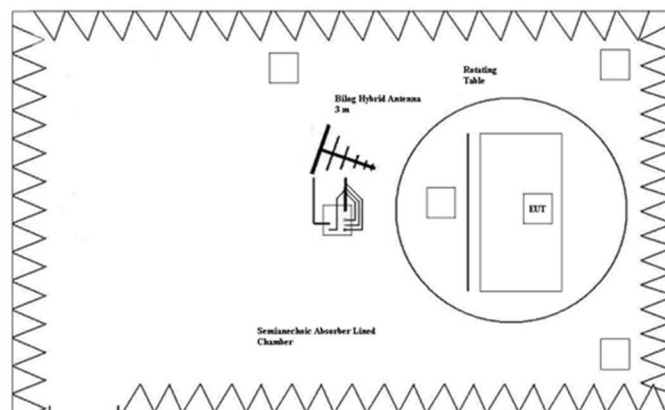
The applied limit for radiated emissions, 3 m distance, according to the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-1-19 Edition), Secs. 15.109 & ICES-003 Issue 7 (October 2020)

| Frequency range<br>(MHz) | FCC Part 15B     |                | ICES-003 Issue 7 |                | FCC Part 15B & ICES-003 Issue 7 |                   |
|--------------------------|------------------|----------------|------------------|----------------|---------------------------------|-------------------|
|                          | QP Limit for 3 m |                | QP Limit for 3 m |                | PK Limit for 3 m                | AVG Limit for 3 m |
|                          | ( $\mu$ V/m)     | (dB $\mu$ V/m) | ( $\mu$ V/m)     | (dB $\mu$ V/m) | (dB $\mu$ V/m)                  | (dB $\mu$ V/m)    |
| 30 to 88                 | 100              | 40             | 100              | 40             | ---                             | ---               |
| 88 to 216                | 150              | 43.5           | 150              | 43.5           | ---                             | ---               |
| 216 to 230               | 200              | 46             | 200              | 46             | ---                             | ---               |
| 230 to 960               | 200              | 46             | 224              | 47             | ---                             | ---               |
| 960 to 1000              | 500              | 54             | 500              | 54             | ---                             | ---               |
| Above 1000               | ---              | ---            | ---              | ---            | 74                              | 54                |

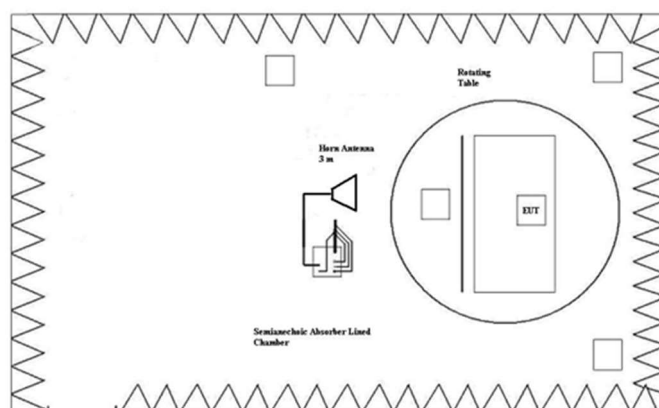
**NOTE: FCC QP and AVG limits are in concordance with RSS-Gen Issue 5 (March 2019), Secs. 7.1 and 7.3.**

Limits according to FCC Part 15B, equal to o more stringent than those of ICES-003 Issue 7.

#### Setup for measurements



Setup for measurements < 1GHz.



Setup for measurements > 1GHz.

## Results

| S/ | OM    | Code      | Freq Rng (MHz) | V |
|----|-------|-----------|----------------|---|
| 01 | OM/01 | RE0101LR  | [30, 1000]     | P |
| 01 | OM/01 | RE0101HR  | [1000, 17000]  | P |
| 01 | OM/01 | RE0101HR2 | [17000, 26000] | P |
| 02 | OM/01 | RE0201LR  | [30, 1000]     | P |
| 02 | OM/01 | RE0201HR  | [1000, 17000]  | P |
| 02 | OM/01 | RE0201HR2 | [17000, 26000] | P |

## Verdict

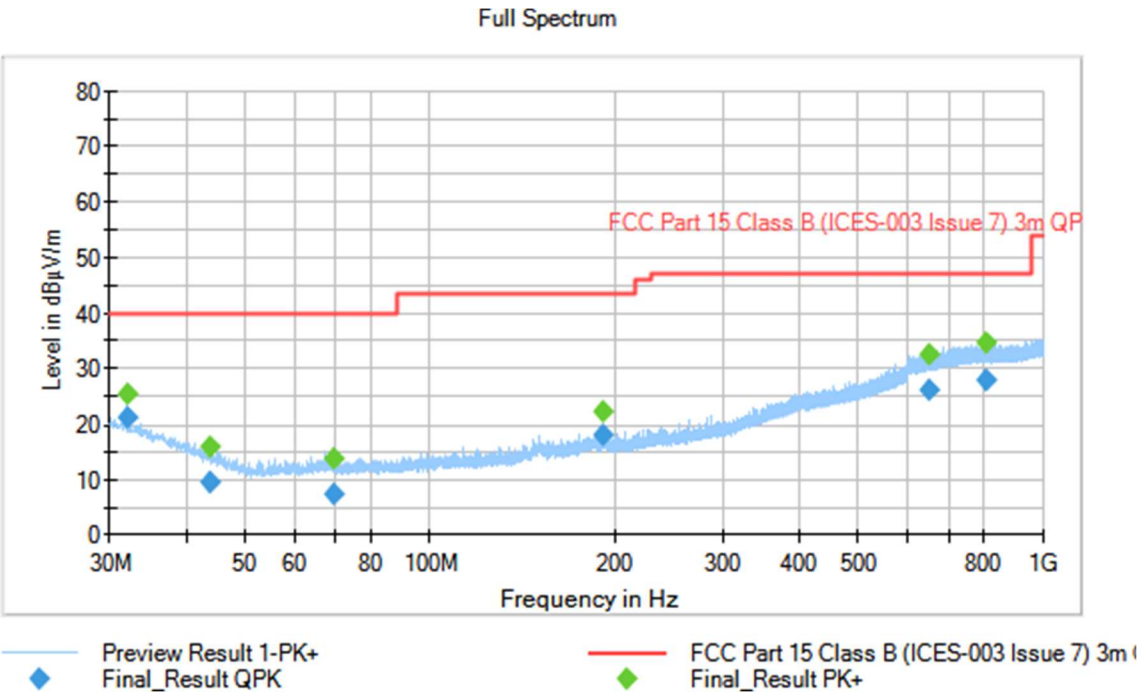
Pass

EMC Test Code = RE0101LR, Frequency Range MHz = [30, 1000]

Sample ID: S/01

Operation Mode: OM/01. EUT ON. Bluetooth without communication established. GPS active and receiving positioning signal. SRD 433MHz active and receiving signal. WiFi 2.4 GHz not communication established. WiFi 5 GHz not communication established MS in IDLE mode. LTE Band 5. Power supply: 12Vdc

Images:



Documents:

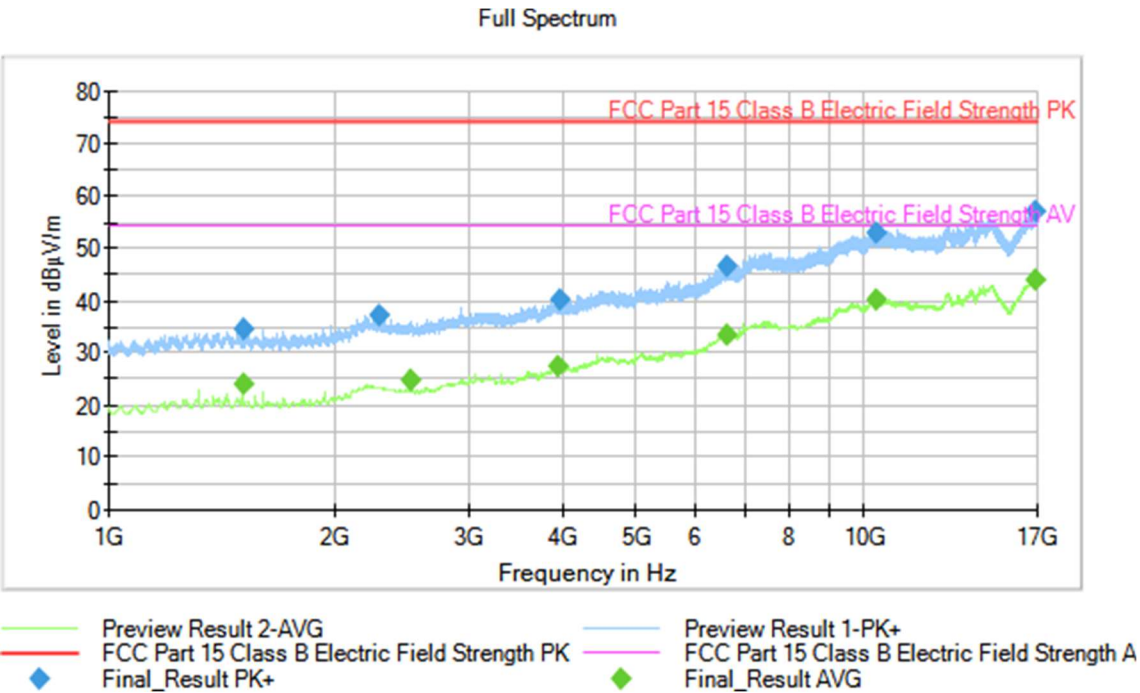
| Frequency(MHz) | QuasiPeak(dBµV/m) | MaxPeak(dBµV/m) | Limit(dBµV/m) | Margin(dB) | Height(cm) | Pol | Azimuth(deg) |
|----------------|-------------------|-----------------|---------------|------------|------------|-----|--------------|
| 32.010000      | 21.16             | ---             | 40.00         | 18.84      | 114.0      | V   | 6.0          |
| 32.010000      | ---               | 25.46           | ---           | ---        | 114.0      | V   | 6.0          |
| 43.693000      | 9.58              | ---             | 40.00         | 30.42      | 384.0      | V   | 59.0         |
| 43.693000      | ---               | 15.93           | ---           | ---        | 384.0      | V   | 59.0         |
| 69.645000      | 7.52              | ---             | 40.00         | 32.48      | 209.0      | H   | 57.0         |
| 69.645000      | ---               | 13.84           | ---           | ---        | 209.0      | H   | 57.0         |
| 191.991000     | ---               | 22.17           | ---           | ---        | 118.0      | H   | 86.0         |
| 191.991000     | 17.92             | ---             | 43.52         | 25.60      | 118.0      | H   | 86.0         |
| 649.344000     | 26.33             | ---             | 47.00         | 20.67      | 395.0      | V   | 34.0         |
| 649.344000     | ---               | 32.50           | ---           | ---        | 395.0      | V   | 34.0         |
| 805.628000     | ---               | 34.80           | ---           | ---        | 236.0      | H   | 147.0        |
| 805.628000     | 27.95             | ---             | 47.00         | 19.05      | 236.0      | H   | 147.0        |

EMC Test Code = RE0101HR, Frequency Range MHz = [1000, 17000]

Sample ID: S/01

Operation Mode: OM/01. EUT ON. Bluetooth without communication established. GPS active and receiving positioning signal. SRD 433MHz active and receiving signal. WiFi 2.4 GHz not communication established. WiFi 5 GHz not communication established MS in IDLE mode. LTE Band 5. Power supply: 12Vdc

Images:



Documents:

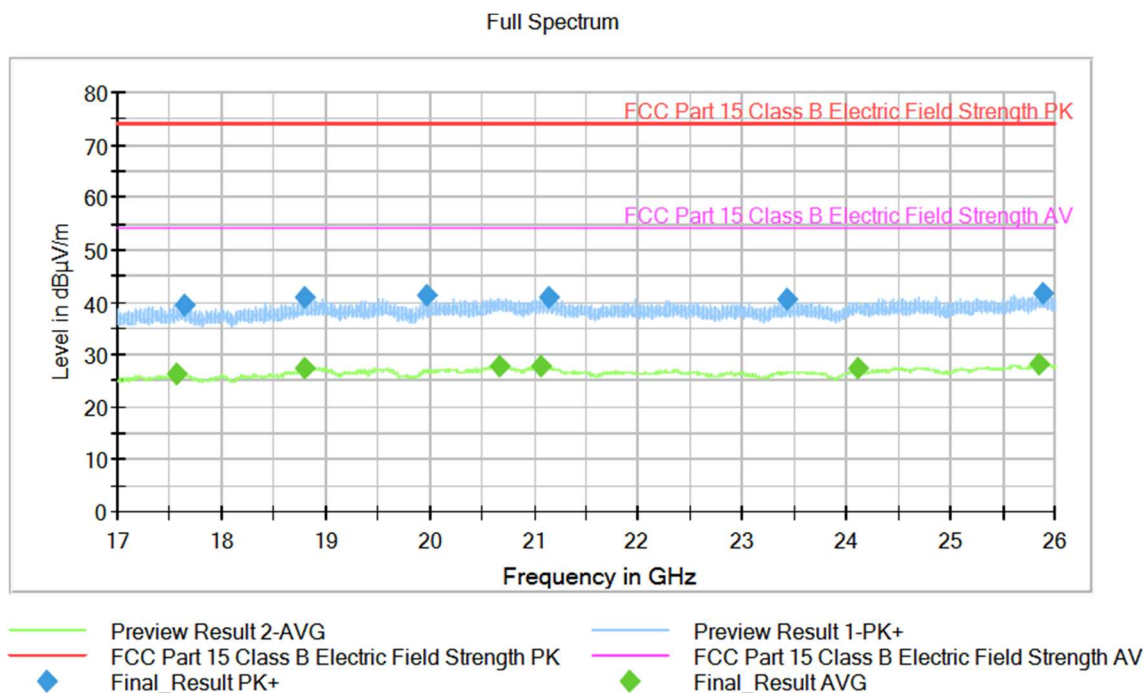
| Frequency(MHz) | MaxPeak(dBµV/m) | Average(dBµV/m) | Limit(dBµV/m) | Margin(dB) |
|----------------|-----------------|-----------------|---------------|------------|
| 1500.000000    | ---             | 23.90           | 53.97         | 30.07      |
| 1500.400000    | 34.44           | ---             | 73.97         | 39.53      |
| 2280.800000    | 37.28           | ---             | 73.97         | 36.69      |
| 2500.000000    | ---             | 24.96           | 53.97         | 29.01      |
| 3937.600000    | ---             | 27.27           | 53.97         | 26.70      |
| 3951.600000    | 40.37           | ---             | 73.97         | 33.60      |
| 6575.600000    | 46.49           | ---             | 73.97         | 27.48      |
| 6579.600000    | ---             | 33.45           | 53.97         | 20.52      |
| 10360.800000   | 53.11           | ---             | 73.97         | 20.86      |
| 10362.400000   | ---             | 40.17           | 53.97         | 13.80      |
| 16937.600000   | ---             | 44.09           | 53.97         | 9.88       |
| 16938.800000   | 57.08           | ---             | 73.97         | 16.89      |

**EMC Test Code = RE0101HR2, Frequency Range MHz = [17000, 26000]**

Sample ID: S/01

Operation Mode: OM/01. EUT ON. Bluetooth without communication established. GPS active and receiving positioning signal. SRD 433MHz active and receiving signal. WiFi 2.4 GHz not communication established. WiFi 5 GHz not communication established MS in IDLE mode. LTE Band 5. Power supply: 12Vdc

**Images:**



**Documents:**

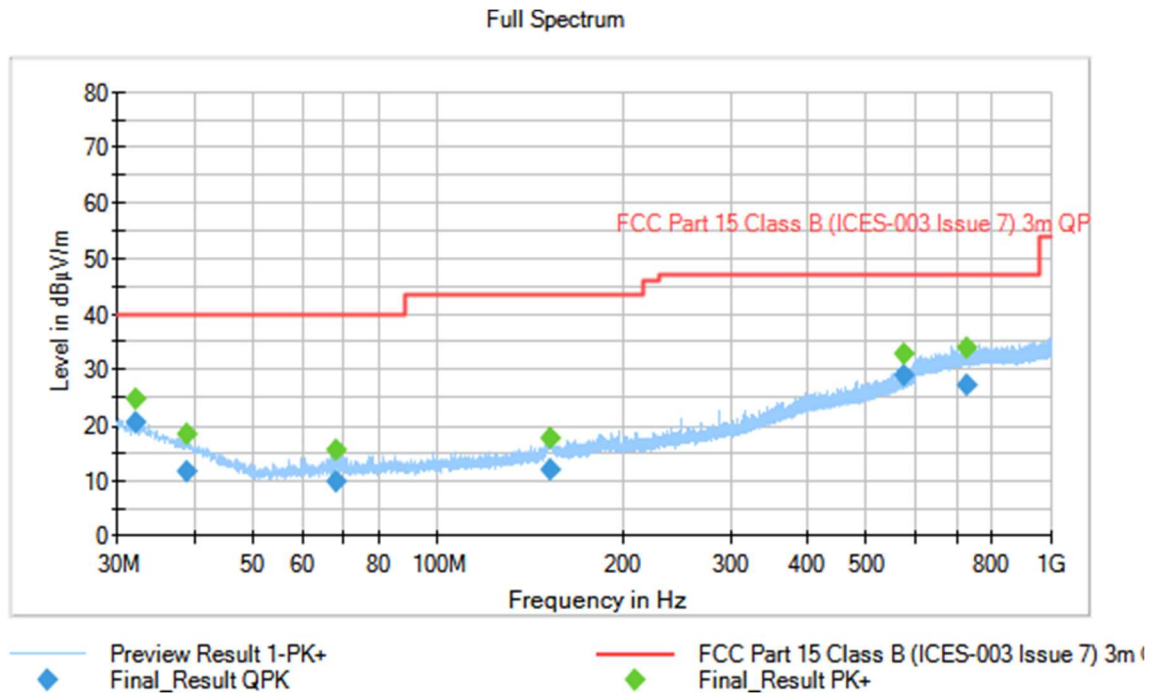
| Frequency(MHz) | MaxPeak(dBµV/m) | Average(dBµV/m) | Limit(dBµV/m) | Margin(dB) |
|----------------|-----------------|-----------------|---------------|------------|
| 17567.600000   | ---             | 26.31           | 53.97         | 27.66      |
| 17636.000000   | 39.38           | ---             | 73.97         | 34.59      |
| 18788.000000   | 40.87           | ---             | 73.97         | 33.10      |
| 18798.800000   | ---             | 27.55           | 53.97         | 26.42      |
| 19968.800000   | 41.25           | ---             | 73.97         | 32.72      |
| 20661.600000   | ---             | 27.82           | 53.97         | 26.15      |
| 21069.200000   | ---             | 27.61           | 53.97         | 26.36      |
| 21131.600000   | 40.80           | ---             | 73.97         | 33.17      |
| 23430.000000   | 40.69           | ---             | 73.97         | 33.28      |
| 24101.200000   | ---             | 27.31           | 53.97         | 26.66      |
| 25848.400000   | ---             | 28.30           | 53.97         | 25.67      |
| 25884.400000   | 41.59           | ---             | 73.97         | 32.38      |

**EMC Test Code = RE0201LR, Frequency Range MHz = [30, 1000]**

Sample ID: S/02

Operation Mode: OM/01. EUT ON. Bluetooth without communication established. GPS active and receiving positioning signal. SRD 433MHz active and receiving signal. WiFi 2.4 GHz not communication established. WiFi 5 GHz not communication established MS in IDLE mode. LTE Band 5. Power supply: 12Vdc

**Images:**



**Documents:**

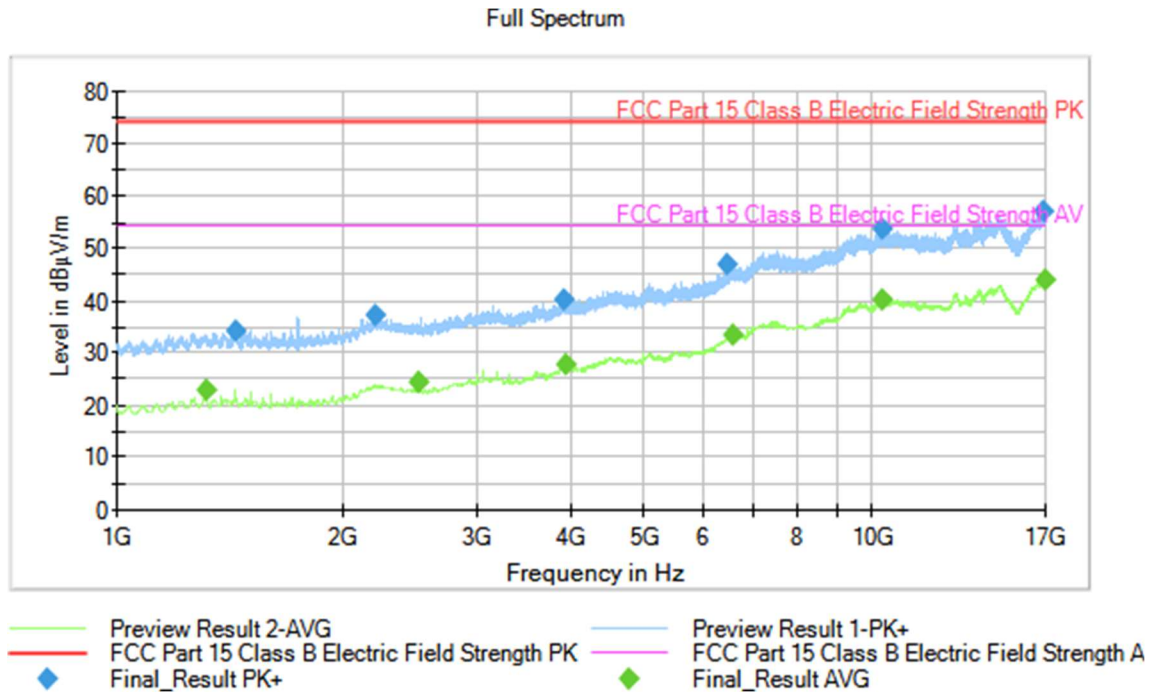
| Frequency(MHz) | QuasiPeak(dBµV/m) | MaxPeak(dBµV/m) | Limit(dBµV/m) | Margin(dB) | Height(cm) | PoI | Azimuth(deg) |
|----------------|-------------------|-----------------|---------------|------------|------------|-----|--------------|
| 32.014000      | 20.49             | ---             | 40.00         | 19.51      | 115.0      | V   | -26.0        |
| 32.014000      | ---               | 24.95           | ---           | ---        | 115.0      | V   | -26.0        |
| 38.771000      | 11.72             | ---             | 40.00         | 28.28      | 400.0      | V   | -13.0        |
| 38.771000      | ---               | 18.36           | ---           | ---        | 400.0      | V   | -13.0        |
| 68.156000      | ---               | 15.47           | ---           | ---        | 179.0      | V   | 101.0        |
| 68.156000      | 10.04             | ---             | 40.00         | 29.96      | 179.0      | V   | 101.0        |
| 152.527000     | ---               | 17.62           | ---           | ---        | 136.0      | V   | -180.0       |
| 152.527000     | 11.94             | ---             | 43.52         | 31.58      | 136.0      | V   | -180.0       |
| 576.009000     | ---               | 33.04           | ---           | ---        | 149.0      | H   | -90.0        |
| 576.009000     | 29.13             | ---             | 47.00         | 17.87      | 149.0      | H   | -90.0        |
| 730.179000     | ---               | 34.06           | ---           | ---        | 138.0      | H   | -18.0        |
| 730.179000     | 27.43             | ---             | 47.00         | 19.57      | 138.0      | H   | -18.0        |

**EMC Test Code = RE0201HR, Frequency Range MHz = [1000, 17000]**

Sample ID: S/02

Operation Mode: OM/01. EUT ON. Bluetooth without communication established. GPS active and receiving positioning signal. SRD 433MHz active and receiving signal. WiFi 2.4 GHz not communication established. WiFi 5 GHz not communication established MS in IDLE mode. LTE Band 5. Power supply: 12Vdc

**Images:**



**Documents:**

| Frequency(MHz) | MaxPeak(dBµV/m) | Average(dBµV/m) | Limit(dBµV/m) | Margin(dB) |
|----------------|-----------------|-----------------|---------------|------------|
| 1310.400000    | ---             | 22.86           | 53.97         | 31.11      |
| 1436.800000    | 34.11           | ---             | 73.97         | 39.86      |
| 2200.000000    | 37.00           | ---             | 73.97         | 36.97      |
| 2500.000000    | ---             | 24.59           | 53.97         | 29.38      |
| 3897.200000    | 40.06           | ---             | 73.97         | 33.91      |
| 3937.600000    | ---             | 27.89           | 53.97         | 26.08      |
| 6438.400000    | 46.80           | ---             | 73.97         | 27.17      |
| 6532.400000    | ---             | 33.44           | 53.97         | 20.53      |
| 10319.600000   | 53.77           | ---             | 73.97         | 20.20      |
| 10360.000000   | ---             | 40.11           | 53.97         | 13.86      |
| 16911.600000   | 57.18           | ---             | 73.97         | 16.79      |
| 16950.000000   | ---             | 44.00           | 53.97         | 9.97       |

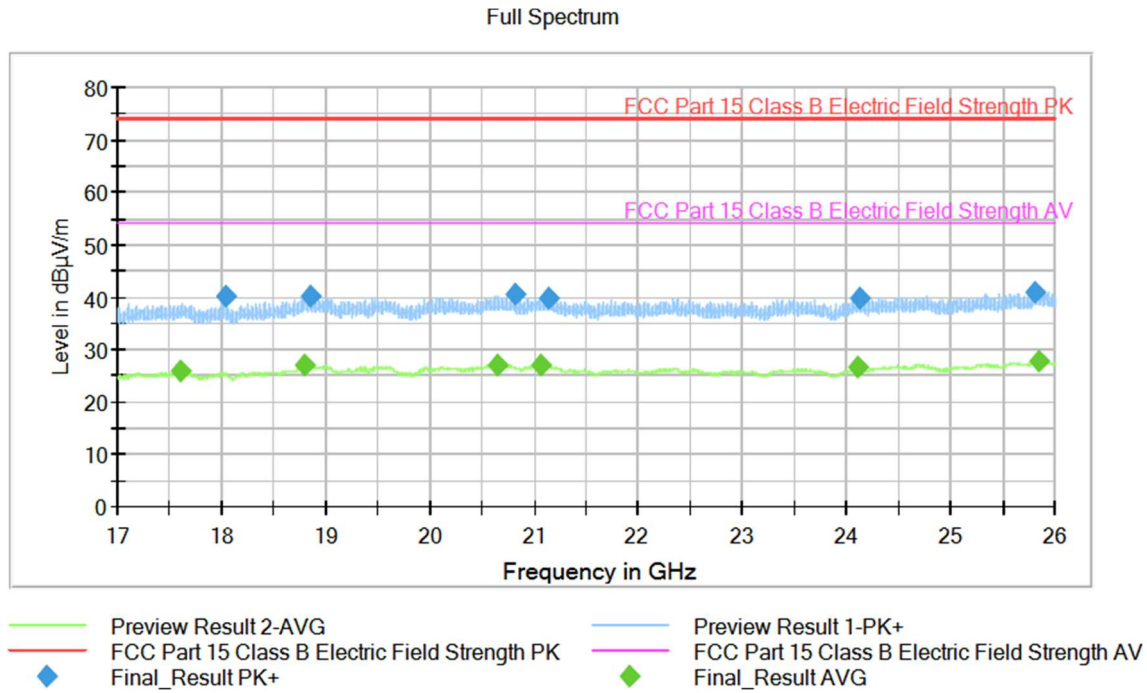


**EMC Test Code = RE0201HR2, Frequency Range MHz = [17000, 26000]**

Sample ID: S/02

Operation Mode: OM/01. EUT ON. Bluetooth without communication established. GPS active and receiving positioning signal. SRD 433MHz active and receiving signal. WiFi 2.4 GHz not communication established. WiFi 5 GHz not communication established MS in IDLE mode. LTE Band 5. Power supply: 12Vdc

**Images:**



**Documents:**

| Frequency(MHz) | MaxPeak(dBµV/m) | Average(dBµV/m) | Limit(dBµV/m) | Margin(dB) |
|----------------|-----------------|-----------------|---------------|------------|
| 17613.200000   | ---             | 25.83           | 53.97         | 28.14      |
| 18041.200000   | 40.02           | ---             | 73.97         | 33.95      |
| 18802.400000   | ---             | 27.09           | 53.97         | 26.88      |
| 18845.200000   | 40.15           | ---             | 73.97         | 33.82      |
| 20650.400000   | ---             | 27.13           | 53.97         | 26.84      |
| 20815.200000   | 40.61           | ---             | 73.97         | 33.36      |
| 21074.000000   | ---             | 26.91           | 53.97         | 27.06      |
| 21140.800000   | 39.80           | ---             | 73.97         | 34.17      |
| 24101.200000   | ---             | 26.75           | 53.97         | 27.22      |
| 24131.600000   | 39.96           | ---             | 73.97         | 34.01      |
| 25802.800000   | 40.98           | ---             | 73.97         | 32.99      |
| 25850.000000   | ---             | 27.91           | 53.97         | 26.06      |