



VARIANT FCC RF TEST REPORT

| Applicant: | Continental Automotive Systems, Inc. | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Address: | 21440 W Lake Cook Rd., Deer Park, IL 60010, USA | | | |
| | | | | |
| Manufacturer or Supplier: | Continental Automotive Systems, I | nc. | | |
| Address: | 21440 W Lake Cook Rd., Deer Pa | rk, IL 60010, USA | | |
| Product: | FE5NA0010, FE5NA0011 | FE5NA0010, FE5NA0011 | | |
| Brand Name: | Continental | | | |
| Model Name: | FE5NA0010, FE5NA0011 | | | |
| FCC ID: | LHJ-FE5NA0010 | | | |
| Date of tests: | Jan. 19, 2023 ~ Feb. 23, 2023 | | | |
| The tests have bee | The tests have been carried out according to the requirements of the following standard: | | | |
| ☐ FCC PART 22, Subpart H ☐ FCC PART 24, Subpart E ☐ ANSI/TIA/EIA-603-D ☐ ANSI/TIA/EIA-603-E ☐ ANSI/TIA/EIA-603-E ☐ FCC PART 24, Subpart E ☐ FCC Part 27, Subpart C, M ☐ FCC Part 27 ☐ FCC Part 27< | | | | |
| CONCLUSION: The submitted sample was found to COMPLY with the test requirement | | | | |
| Prepared by Simon Wang Engineer / Mobile Department Approved by Luke Lu Manager / Mobile Department | | • • • • • • • • • • • • • • • • • • • • | | |
| Simon Wang | | lupe lu | | |
| | ate: Feb. 23, 2023 corporates by reference, the Conditions of Testing as posted at the helabour-us/our-business/cps/abour-us/erms-conditions/ and is in | Date: Feb. 23, 2023 e date of issuance of this report at ntended for your exclusive use. Any copying or replication of this report to or for any other person or | | |

Into Jepon is governed by, and incorporates by reference, the Conditions or resting as posted at time date of issuance of this report at http://www.bureauveritas.com/home/about-us/cur-business/cps/about-us/fems-conditions/and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or ormission caused by our negligener if you require measurement uncertainty, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



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RELEASE CONTROL RECORD

| ISSUE NO. | REASON FOR CHANGE | DATE ISSUED |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| W7L-220214W001RF05 | Original release | Jul. 30, 2022 |
| W7L-230201W001RF05 | Based on the original product changing the software version, The new sample only verify conducted power. The results of conducted power are similar or lower, so the report conducted power doesn't updated. | Feb. 23, 2023 |

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1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC Part 22/24/27 & Part 2 | | |
|----------------------------------------------|----------------------------------------------------|----------|
| STANDARD SECTION | TEST TYPE | RESULT |
| §2.1046 | Conducted Output Power | See Note |
| §22.913 (a) | Equivalent Radiated Power (5G NR n5) | See Note |
| §24.232(c) | Equivalent Isotropically Radiated Power (5G NR n2) | See Note |
| §2.1055 §22.355 §24.235 | Frequency Stability | See Note |
| § 2.1049 | Occupied Bandwidth | See Note |
| §22.913 (d) §24.232(d) | Peak to average ratio* | See Note |
| §2.1051 §22.917(a) §24.238(a) | Band Edge Measurements | See Note |
| §2.1051 §22.917(a) §24.238(a) | Conducted Spurious Emissions | See Note |
| §2.1053 §22.917(a) §24.238(a) | Radiated Spurious Emissions | See Note |

^{*} Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01.

NOTE: Please refer to the original report W7L-220214W001RF05.

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1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| MEASUREMENT | UNCERTAINTY | |
|-----------------------------------|---------------|--|
| Maximum Peak Output Power | ±2.06dB | |
| Frequency Stability | \pm 76.97Hz | |
| Radiated emissions (30MHz~1GHz) | ±4.98dB | |
| Radiated emissions (1GHz ~6GHz) | ±4.70dB | |
| Radiated emissions (6GHz ~18GHz) | ±4.60dB | |
| Radiated emissions (18GHz ~40GHz) | ±4.12dB | |
| Conducted emissions | ±4.01dB | |
| Occupied Channel Bandwidth | ±43.58KHz | |
| Band Edge Measurements | ±4.70dB | |
| Peak to average ratio | ±0.76dB | |

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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1.2 TEST SITE AND INSTRUMENTS

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---------------------------------------------|-------------------|---------------------------------|-------------------------------------|-------------|-------------|
| MXE EMI Receiver | KEYSIGHT | N9038A-544 | MY54450026 | Feb. 21,22 | Feb. 20,23 |
| EXA Signal Analyzer | KEYSIGHT | N9010A-544 | MY54510355 | May.15,22 | May.14,23 |
| Loop Antenna | Schwarzbeck | FMZB 1519B | 00173 | Sep.04,22 | Sep.03,23 |
| Bilog Antenna | ETS-LINDGRE N | 3143B | 00161965 | Mar. 06,22 | Mar. 05,23 |
| Horn Antenna | ETS-LINDGRE N | 3117 | 00168692 | Mar. 06,22 | Mar. 05,23 |
| Horn Antenna (18GHz-40GHz) | N/A | QWH-SL-18-40-K- SG/QMS-00361 | 15433 | Aug. 24, 22 | Aug. 23, 23 |
| Radio Communication Analyzer | ANRITSU | MT8820C | 6201465426 | Feb. 15,22 | Feb. 14,23 |
| Radio Communication Analyzer | ANRITSU | MT8820C | 6201465426 | Feb. 14,23 | Feb. 13,24 |
| Signal Pre-Amplifier | EMSI | EMC 9135 | 980249 | May.12,22 | May.11,23 |
| Signal Pre-Amplifier | EMSI | EMC 012645B | 980257 | May.12,22 | May.11,23 |
| Signal Pre-Amplifier | EMSI | EMC 184045B | 980259 | Feb. 21,22 | Feb.20,23 |
| 3m Semi-anechoic Chamber | ETS-LINDGRE N | 9m*6m*6m | Euroshieldpn- CT0001143-121 6 | May. 19,20 | May. 18,23 |
| Test Software | E3 | V 9.160323 | N/A | N/A | N/A |
| Test Software | JS1120 | 3.1.36 | N/A | N/A | N/A |
| 10dB Attenuator | JFW/USA | 50HF-010-SMA | 1505 | May. 07,22 | May. 06,23 |
| Power Meter | Anritsu | ML2495A | 1506002 | Feb. 22,22 | Feb. 21,23 |
| Power Sensor | Anritsu | MA2411B | 1339352 | May. 07,22 | May. 06,23 |
| Temperature Chamber | ESPEC | SH-242 | 93000855 | May. 12,22 | May. 11,23 |
| MXG Analog Microvave Signal Generator | KEYSIGHT | N5183A | MY50143024 | Feb. 18,22 | Feb. 17,23 |
| MXG Analog Microvave Signal Generator | KEYSIGHT | N5183A | MY50143024 | Feb. 17,23 | Feb. 16,24 |
| Base station R&S CMW500 | Rohde&Schwa rz | CMW500 | 153085 | May.12,22 | May.11,23 |
| DC Source | Kikusui/JP | PMX18-5A | 0000001 | Aug. 24,22 | Aug. 23,23 |

NOTE: 1. The calibration interval of the above test instruments is 12 months or 24 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

- 2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.
- 3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
- 4. The FCC Site Registration No. is 525120; The Designation No. is CN1171.



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

| 2.1 GENERAL DESCRIPTION OF EUT | | | | |
|------------------------------------|-------------------------------------------|---------------------------------------------------------------------------------------|--|--|
| PRODUCT | FE5NA0010, FE5NA00 | 011 | | |
| BRAND NAME | Continental | | | |
| MODEL NAME | FE5NA0010, FE5NA0011 | | | |
| NOMINAL VOLTAGE | EUT 4.0V | | | |
| MODULATION TYPE | NR Band n2/n5 | DFT-s-OFMA(π/2 BPSK,QPSK,16QAM,64QAM,256QAM); CP-OFMA(QPSK,16QAM,64QAM,256QAM); | | |
| | | 5A_n2 | | |
| | NR Band n2 | 12A_n2 | | |
| SUPPORT ENDC COMBINE | | 14A_n2 | | |
| | ND Donale 5 | 2A_n5 | | |
| | NR Band n5 | 66A_n5 | | |
| EDECHENCY DANCE | NR Band n2 | 1852.5MHz ~ 1907.5MHz | | |
| FREQUENCY RANGE | NR Band n5 | 826.5MHz ~ 846.5MHz | | |
| MAX. ERP POWER MAX. ERP/EIRP POWER | NR Band n2 Channel Bandwidth: 5MHz | 421.70mW | | |
| | NR Band n2 Channel Bandwidth: 10MHz | 418.79mW | | |
| | NR Band n2 Channel Bandwidth: 15MHz | 422.67mW | | |
| | NR Band n2 Channel Bandwidth: 20MHz | 423.64mW | | |
| | NR Band n5 Channel Bandwidth: 5MHz | 171.00mW | | |
| | NR Band n5 Channel Bandwidth: 10MHz | 172.19mW | | |

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| VERITAS | | | |
|-----------------|---------------------------------------------------|----------------------------------|--|
| | NR Band n5 Channel Bandwidt 15MHz | h: 171.79mW | |
| | NR Band n5 Channel Bandwidt 20MHz | h: 172.98mW | |
| | | 2BPSK: 4M51G7D | |
| | NR Band n5 | QPSK: 4M49G7D | |
| | | h: 16QAM: 4M49W7D | |
| | 5MHz | 64QAM: 4M50W7D | |
| | | 256QAM: 4M50W7D | |
| | | 2BPSK: 8M92G7D | |
| | NR Band n5 | QPSK: 8M91G7D | |
| | | h: 16QAM: 8M92W7D | |
| | 10MHz | 64QAM: 8M91W7D | |
| EMISSION | | 256QAM: 8M92W7D | |
| DESIGNATORGOGN | | 2BPSK: 13M5G7D | |
| | NR Band n5 | QPSK: 13M5G7D | |
| | | h: 16QAM: 13M5W7D | |
| | 15MHz | 64QAM: 13M5W7D | |
| | | 256QAM: 13M5W7D | |
| | | 2BPSK: 17M9G7D | |
| | NR Band n5 | QPSK: 17M9G7D | |
| | | h: 16QAM: 17M9W7D | |
| | 20MHz | 64QAM: 17M9W7D | |
| | | 256QAM: 17M9W7D | |
| ANTENNA TYPE | • | with 2.45dBi gain for NR Band n2 | |
| | Monopole Antenna with 0.58dBi gain for NR Band n5 | | |
| HW VERSION | FE5NA0010 P4.1 | | |
| OW VEDOLOT: | FE5NA0011 P4.2 | | |
| SW VERSION | MODEMSA515M_LE2.1_01.14.39 | | |
| I/O PORTS | Refer to user's manual | | |
| CABLE SUPPLIED | N/A | | |
| EXTREME | -40-85 °C | | |
| TEMPERATURE | +0-00 O | | |
| EXTREME VOLTAGE | EUT 3.8V - EUT 4.2V | | |
| | | | |



NOTE:

- 1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and one receiver.

| MODULATION MODE | TX FUNCTION | |
|-----------------|-------------|--|
| 5G NR | 1TX/4RX | |

- 3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
- 4. Max ERP/EIRP is according to Max conducted power calculate for EN_DC combine.
- 5. According to the information provided by the manufacturer, The difference between FE5NA0010, FE5NA0011 is as follows:

| TA-code | L2/L5 GNSS | Band Difference |
|-----------|-------------|-----------------------------------------------------------------------|
| FE5NA0010 | support | / |
| FE5NA0011 | not support | BOM change: depopulated passive components from the GNSS RF front-end |

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2.2 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2

FCC 47 CFR Part 22

FCC 47 CFR Part 24

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-D

ANSI/TIA/EIA-603-E

ANSI C63.26-2015

NOTE: All test items have been performed and recorded as per the above standards.

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PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).

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4 INFORMATION ON THE TESTING LABORATORIES

We, BV 7LAYERS COMMUNICATIONS TECHNOLOGY (SHENZHEN) CO. LTD., were founded in 2015 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.

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5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---

BV 7Layers Communications Technology

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