



Test Report No.: W7L-P22020005SA01



# VARIANT RF EXPOSURE REPORT

**Product:** FE5NA0020

**Model Name:** FE5NA0020

**FCC ID:** LHJ-FE5NA0020

**Applicant:** Continental Automotive Systems, Inc.

**Address:** 21440 W Lake Cook Rd., Deer Park, IL 60010, USA

**Manufacturer:** Continental Automotive Systems, Inc.

**Address:** 21440 W Lake Cook Rd., Deer Park, IL 60010, USA

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**Report No.:** W7L-P22020005SA01

**Received Date:** Jun. 15, 2021

**Test Date:** Jun. 16, 2021 ~ Mar. 07, 2022

**Issued Date:** Mar. 07, 2022

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P20210616-3SA01	Original release	Dec. 29, 2021
W7L-P22020005SA01	Based on W7L-P20210616-3SA01, LTE CA Uplink Band (B7C, B66B, B41C) and EN-DC combination DC_71A_n2A, DC_71A_n66A are added by software. In addition, EN-DC N77 Class 2 power level is added. Fixed EN-DC N77 antenna path matching.	Mar. 07, 2022



# 1 CERTIFICATION

**PRODUCT:** FE5NA0020  
**BRAND NAME:** Continental  
**MODEL NAME:** FE5NA0020  
**APPLICANT:** Continental Automotive Systems, Inc.  
**TESTED:** Jun. 16, 2021 ~ Mar. 07, 2022  
**TEST SAMPLE:** Production Unit  
**STANDARDS:** **FCC Part 2 (Section 2.1091)**  
**FCC OET Bulletin 65, Supplement C (01-01)**  
**KDB 447498 D01 General RF Exposure Guidance v06**  
**IEEE C95.1**  
**FCC Designation No.** CN1171

The above equipment has been tested by **BV 7Layers Communications Technology (Shenzhen) Co. Ltd** and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY :** Simon , **DATE:** Mar. 07, 2022  
(Simon Wang / Engineer)

**APPROVED BY :** Luke Lu , **DATE:** Mar. 07, 2022  
( Luke Lu / Manager)



## 2 GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	FE5NA0020	
<b>MODEL NAME</b>	FE5NA0020	
<b>NOMINAL VOLTAGE</b>	EUT 4.0V	
<b>OPERATING TEMPERATURE RANGE</b>	-40-85 °C	
<b>MODULATION TYPE</b>	<b>GPRS/EDGE</b>	GMSK,8PSK
	<b>WCDMA</b>	QPSK
	<b>LTE</b>	QPSK/16QAM/64QAM
	<b>5G NR</b>	DFT-s-OFMA( $\pi/2$ BPSK,QPSK,16QAM,64QAM,256QAM); CP-OFMA(QPSK,16QAM,64QAM,256QAM);
<b>OPERATING FREQUENCY</b>	<b>GPRS/EDGE</b>	824.2MHz ~ 848.8MHz (FOR GSM 850) 1850.2MHz ~ 1909.8MHz (FOR GSM 1900)
	<b>WCDMA</b>	1852.4MHz ~ 1907.6MHz(FOR WCDMA Band 2) 1712.4MHz ~ 1752.6MHz(FOR WCDMA Band 4) 826.4MHz ~ 846.6MHz(FOR WCDMA Band 5)
	<b>LTE</b>	1850.7MHz ~ 1909.3MHz (FOR LTE Band2) 1710.7MHz ~ 1754.3MHz (FOR LTE Band4) 824.7MHz ~ 848.3MHz (FOR LTE Band5) 2502.5MHz ~ 2567.5MHz (FOR LTE Band7) 2505.5MHz ~ 2560MHz (FOR LTE Band7C) 699.7MHz ~ 715.3MHz (FOR LTE Band12) 779.5MHz ~ 784.5MHz (FOR LTE Band13) 790.5MHz ~ 795.5MHz (FOR LTE Band14) 706.5MHz ~ 713.5MHz (FOR LTE Band17) 1850.7MHz ~ 1914.3MHz (FOR LTE Band25) 814.7MHz ~ 848.3MHz (FOR LTE Band26) 2498.5MHz ~ 2687.5MHz (FOR LTE Band41/ LTE41-HPUE) 2499.3 MHz ~2668.3MHz (FOR LTE Band41C/ LTE Band41C-HPUE) 1710.7MHz ~ 1779.3MHz (FOR LTE Band66) 1712.5MHz ~ 1772.7MHz (FOR LTE Band66B ) 1713.3MHz ~ 1776.7MHz (FOR LTE Band66C )



		665.5MHz ~ 695.5MHz (FOR LTE Band71)
	<b>5G NR</b>	NR Band n5:826.5MHz ~ 846.5MHz NR Band n2:1852.5MHz ~ 1907.5MHz NR Band n7: 2502.5MHz ~ 2567.5MHz NR Band n41/n41 HPUE: 2506.02MHz ~ 2679.99MHz NR Band n66: 1712.5MHz ~ 1777.5MHz NR Band n71: 665.5MHz ~ 695.5MHz NR Band n77C/n77C-HPUE: 3710MHz ~ 3970MHz
<b>I/O PORTS</b>	Refer to user's manual	
<b>CABLE SUPPLIED</b>	N/A	

**NOTE:**

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

### 3 RF EXPOSURE

#### 3.1 LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

FREQUENCY RANGE (MHz)	ELECTRIC FIELD STRENGTH (V/m)	MAGNETIC FIELD STRENGTH (A/m)	POWER DENSITY (mW/cm <sup>2</sup> )	AVERAGE TIME (minutes)
<b>LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE</b>				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

#### 3.2 MPE CALCULATION FORMULA

$$Pd = (Pout * G) / (4 * pi * r^2)$$

where

Pd = power density in mW/cm<sup>2</sup>

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.14

R = distance between observation point and center of the radiator in cm

#### 3.3 CLASSIFICATION

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Mobile Device**.



### 3.4 CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

Worst case as below:

#### GSM:

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum AV Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm <sup>2</sup> )	limit (mW/cm <sup>2</sup> )	PASS / FAIL
GSM 850	824.2	7.1	24.47	40.60	11.484	11484	0.286	0.549	PASS
GSM1900	1850.2	11.5	21.47	33.01	2	2000	0.394	1.000	PASS

#### WCDMA

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm <sup>2</sup> )	limit (mW/cm <sup>2</sup> )	PASS / FAIL
WCDMA V	826.4	10.4	24	40.60	11.484	11484	0.548	0.551	PASS
WCDMA IV	1712.4	6	24	30.00	1	1000	0.199	1.000	PASS
WCDMA II	1852.4	9.0	24	33.01	2	2000	0.397	1.000	PASS

#### LTE

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm <sup>2</sup> )	limit (mW/cm <sup>2</sup> )	PASS / FAIL
Band2	1850.7	9	24	33.01	2	2000	0.397	1.000	PASS
Band4	1710.7	6	24	30.00	1	1000	0.199	1.000	PASS
Band5	824.7	10.4	24	40.60	11.484	11484	0.548	0.550	PASS
Band7	2502.5	9	24	33.01	2	2000	0.397	1.000	PASS
Band7C	2505.5	9	24	33.01	2	2000	0.397	1.000	PASS
Band12	699.7	9.6	24	36.92	4.92	4920	0.456	0.466	PASS
Band13	779.5	10.1	24	36.92	4.92	4920	0.512	0.520	PASS
Band14	790.5	10.2	24	36.92	4.92	4920	0.524	0.527	PASS
Band17	706.5	9.7	24	36.92	4.92	4920	0.467	0.471	PASS





Band25	1850.7	9	24	33.01	2	2000	0.397	1.000	PASS
Band26	814.7	10.3	24	40.60	11.484	11484	0.536	0.543	PASS
Band41/41-HPUE	2498.5	6	27	33.01	2	2000	0.397	1.000	PASS
Band41C/41C-HPUE	2499.3	6	27	33.01	2	2000	0.397	1.000	PASS
Band66B	1712.5	6	24	30.00	1	1000	0.199	1	PASS
Band66/66C	1710.7	6	24	30.00	1	1000	0.199	1	PASS
Band71	665.5	9.4	24	36.92	4.92	4920	0.435	0.444	PASS

5G NR

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm <sup>2</sup> )	limit (mW/cm <sup>2</sup> )	PASS / FAIL
NR Band n5	826.5	10.4	24	40.60	11.484	11484	0.548	0.551	PASS
NR Band n2	1852.5	9	24	33.01	2	2000	0.397	1.000	PASS
NR Band n7	2502.5	9	24	33.01	2	2000	0.397	1.000	PASS
NR Band n41/n41 HPUE	2506.02	6	27	33.01	2	2000	0.397	1.000	PASS
NR Band n66	1712.5	6	24	30.00	1	1000	0.199	1.000	PASS
NR Band n71	665.5	9.4	24	36.92	4.92	4920	0.435	0.444	PASS
NR Band n77C/n77C-HPUE	3710	3	27	30.00	1	1000	0.199	1.000	PASS

--END--