



Test Report No.: W7L-P20210616-3SA01



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

Prepared by: BV 7Layers Communications Technology (Shenzhen) Co. Ltd

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Report No.: W7L-P20210616-3SA01

Received Date: Jun. 15, 2021

Test Date: Jun. 16, 2021 ~ Nov. 03, 2021

Issued Date: Dec. 29, 2021

This report should not be used by the client to claim product certification, approval, or endorsement by A2LA or any government agencies.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P20210616-3SA01	Original release	Dec. 29, 2021



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1 CERTIFICATION

PRODUCT: FE5NA0020
BRAND NAME: Continental
MODEL NAME: FE5NA0020
APPLICANT: Continental Automotive Systems, Inc.
TESTED: Jun. 16, 2021 ~ Nov. 03, 2021
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:** Dec. 29, 2021
(Simon Wang / Engineer)

APPROVED BY : Luke Lu, **DATE:** Dec. 29, 2021
(Luke Lu / Manager)



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	FE5NA0020	
MODEL NAME	FE5NA0020	
NOMINAL VOLTAGE	EUT 4.0V	
OPERATING TEMPERATURE RANGE	-40-85 °C	
MODULATION TYPE	GPRS/EDGE	GMSK,8PSK
	WCDMA	QPSK
	LTE	QPSK/16QAM/64QAM
	5G NR	DFT-s-OFMA($\pi/2$ BPSK,QPSK,16QAM,64QAM,256QAM); CP-OFMA(QPSK,16QAM,64QAM,256QAM);
OPERATING FREQUENCY	GPRS/EDGE	824.2MHz ~ 848.8MHz (FOR GSM 850) 1850.2MHz ~ 1909.8MHz (FOR GSM 1900)
	WCDMA	1852.4MHz ~ 1907.6MHz(FOR WCDMA Band 2) 1712.4MHz ~ 1752.6MHz(FOR WCDMA Band 4) 826.4MHz ~ 846.6MHz(FOR WCDMA Band 5)
	LTE	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) 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) 1710.7MHz ~ 1779.3MHz (FOR LTE Band66) 665.5MHz ~ 695.5MHz (FOR LTE Band71)
	5G NR	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



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		NR Band n71: 665.5MHz ~ 695.5MHz NR Band n77C/n77C-HPUE: 3710MHz ~ 3970MHz
I/O PORTS	Refer to user's manual	
CABLE SUPPLIED	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 ²)	AVERAGE TIME (minutes)
LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

3.2 MPE CALCULATION FORMULA

$$P_d = (P_{out} * G) / (4 * \pi * r^2)$$

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 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 ²)	limit (mW/cm ²)	PASS / FAIL
GSM 850	824.2	7.1	24.47	40.60	11.484	11484	0.286	0.549	PASS
GSM1900	1850.2	10.5	21.47	33.01	2	2000	0.313	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 ²)	limit (mW/cm ²)	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	8.5	24	33.01	2	2000	0.354	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 ²)	limit (mW/cm ²)	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
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
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 ²)	limit (mW/cm ²)	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	3	2999	0.435	0.444	PASS
NR Band n77C/n77C-HPUE	3710	3	27	30.00	1	1000	0.199	1.000	PASS

--END--