
VARIANT TEST REPORT

Report No.: SRTC2022-9004(F)-22022202(A)

Product Name: LTE/WCDMA Multi-Mode Digital Mobile Phone

Product Model: Z5158

Marketing Name: ZTE Avid 589

Applicant: ZTE Corporation.

Manufacturer: ZTE Corporation.

Specification: FCC Part 24E, Part 22H, Part 2 (2020)

FCC ID: SRQ-Z5158

The State Radio_monitoring_center Testing Center (SRTC)

15th Building, No.30 Shixing Street, Shijingshan District, Beijing, P.R.China

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1. GENERAL INFORMATION

1.1 Notes of the test report

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1.2 Information about the testing laboratory

Company:	The State Radio_monitoring_center Testing Center (SRTC)
Address:	15th Building, No.30 Shixing Street, Shijingshan District, P.R.China
City:	Beijing
Country or Region:	P.R.China
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Email:	liujiaf@srtc.org.cn
Registration number:	239125

1.3 Applicant's details

Company:	ZTE Corporation.
Address:	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R.China
City:	Shenzhen
Country or Region:	China
Contacted person:	Gong Yu
Tel:	021-68895397
Fax:	---
Email:	gongyu@zte.com.cn

1.4 Manufacturer's details

Company:	ZTE Corporation.
Address:	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R.China
City:	Shenzhen
Country or Region:	China
Contacted person:	Gong Yu
Tel:	021-68895397
Fax:	---
Email:	gongyu@zte.com.cn

1.5 Test Environment

Date of Receipt of test sample at SRTC:	2022-02-22
Testing Start Date:	2022-02-26
Testing End Date:	2022-03-01

Environmental Data:	Temperature (°C)	Humidity (%)
Ambient:	25	40
Maximum Extreme:	55	---
Minimum Extreme:	0	---

Normal Supply Voltage (V d.c.):	4.0
Maximum Extreme Supply Voltage (V d.c.):	4.3
Minimum Extreme Supply Voltage (V d.c.):	3.8

2 DESCRIPTION OF THE DEVICE UNDER TEST

2.1 Final Equipment Build Status

Frequency Range:	GSM850:Tx:824~849MHz Rx:869~894MHz PCS1900:Tx:1850~1910MHz Rx:1930~1990MHz WCDMA Band II:Tx:1852.4~1907.6MHz Rx:1932.4~1987.6MHz WCDMA Band IV:Tx:1712.4~1752.6MHz Rx:2112.4~2152.6MHz WCDMA Band V:Tx:826.4~846.6MHz Rx:871.4~891.6MHz LTE Band 2: Tx:1850~1910MHz Rx:1930~1990MHz LTE Band 4: Tx:1710~1755MHz Rx:2110~2155MHz LTE Band 5: Tx:824~849 MHz Rx:869 ~894MHz LTE Band 12: Tx:699~716MHz Rx:729~746MHz LTE Band 41: Tx:2496~2690 MHz Rx:2496~2690MHz LTE Band 66: Tx:1710.7~1779.3 MHz Rx: 2110.7~2179.3 MHz LTE Band 71: Tx:665.5~695.5 MHz Rx: 619.5~649.5 MHz Bluetooth: 2.402GHz~2.480GHz 802.11b/g/n(HT20) : 2.412GHz~2.462GHz
Antenna Type:	FPC
Antenna Gain:	GSM850: -3.3dBi/PCS1900: -1.5dBi W2: -1.5dBi/W4: -1.5dBi/W5: -3.3dBi LTE B2/B4/B66: -1.5dBi LTE B5: -3.3dBi LTE B41: -1.6dBi LTE B12/B71: -3.4dBi Bluetooth/802.11b/g/n(HT20):1.1dBi
Power Supply:	Battery or Charger
Hardware Version:	Z5158HW1.0
Software Version:	Z5158_CCv1.0.0B01

2.2 Support Equipment

The following support equipment was used to exercise the DUT during testing:

Equipment:	Battery
Manufacturer:	Jiade Energy Technology(zhuhai) CO., LTD
Model Number:	Li3830T43P8h486375

3 REFERENCE SPECIFICATION

Specification	Version	Title
FCC Part2	2022	Frequency allocations and radio treaty matters; general rules and regulations
FCC Part22	2022	Public mobile services
FCC Part24	2022	Personal communications services
ANSI C63.26	2015	American national standard for compliance testing of transmitters used in licensed radio services
KDB 971168 D01	April 9, 2018	Measurement guidance for certification of licensed digital transmitters
TIA-603-E-2016	March 2016	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards

4 KEY TO NOTES AND RESULT CODES

The following are the definition of the test result.

Code	Meaning
PASS	Test result shows that the requirements of the relevant specification have been met.
FAIL	Test result shows that the requirements of the relevant specification have not been met.
NT	Normal Temperature
NV	Nominal voltage
HV	High voltage
LV	Low voltage

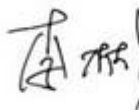
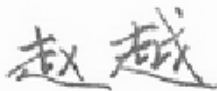
5 RESULT SUMMARY

No.	Test case	FCC reference	Verdict
1	RF Power Output	2.1046	Pass

Notes:

1. This is a variant report for Z5158. The new chip component is pin to pin compatible (approximately the same area as chip of PCB) and no change in radio parameters has occurred. Therefore, only the worst case of RF Power Output was verified for the differences. All the rest tests were performed in the original report: SRTC2021-9004(F)-21070201.

2. Chip Change Description includes detailed information about the changes between the devices.

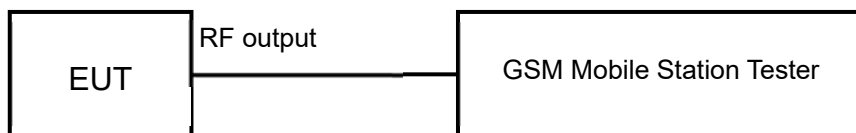
This Test Report Is Issued by: Mr. Peng Zhen 	Checked by: Mr. Li Bin 
Tested by: Mr. Zhao Yue 	Issued date: 20220301

6 TEST RESULT

6.1 RF Power Output

Rule Part(s)
FCC Part 2.1046

Test Setup:



Test procedure:

After a radio link has been established between EUT and Tester, the output power of the cell signal of the testing equipment will be decreased until the output power of the EUT reach a maximum value. Then the test data can be read at the tester screen. The loss between RF output port of the EUT and the input port of the tester will be taken into consideration. The measurement will be conducted at three channels (Low, Middle and High channels)

Limits: No specific conduct power requirements in part 2.1046.

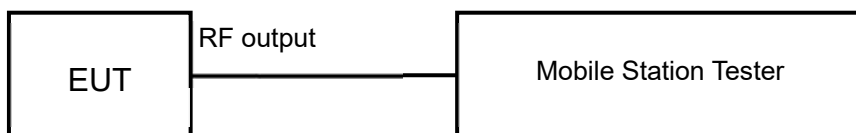
Test result:

The test results are shown in Appendix A.

6.2 Effective Radiated Power and Effective Isotropic Radiated Power

Rule Part(s)
FCC Part 22.913(a)(5)/Part 24.232(c)

Test setup:



Test procedure:
KDB 971168 D01 v03r01 – Section 5.6

Test Settings

Subclause 5.2.5.5 of ANSI C63.26-2015 is applicable, along with the following provisions. For personal/portable radios utilizing an integral antenna, the factor LC is typically negligible. However, in a fixed station transmit system that utilizes a long cable run between the transmitter and the transmitting antenna, this factor can be significant. The minimum cable loss should be used in this equation.

The relevant equation for determining the ERP or EIRP from the conducted RF output power measured is:

$$\text{ERP/EIRP} = \text{PMeas} - \text{LC} + \text{GT}$$

Where:

ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as PMeas, typically dBW or dBm)

PMeas = measured transmitter output power or PSD, in dBW or dBm

LC = signal attenuation in the connecting cable between the transmitter and antenna in dB

GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

Limits for GSM850:

Operation Mode	Power Step	E.R.P. (dBm)
GSM	5	≤38.45
GPRS	3	≤38.45
EDGE	6	≤38.45

Limits for PCS1900:

Operation Mode	Power Step	E.I.R.P. (dBm)
GSM	0	≤33
GPRS	3	≤33
EDGE	5	≤33

Test result:

The test results are shown in Appendix A.

7 MEASUREMENT UNCERTAINTIES

Items	Uncertainty
RF Power Output	0.6 dB
Effective Radiated Power and Effective Isotropic Radiated Power	0.6 dB

8 TEST EQUIPMENTS

No.	Name/Model	Manufacturer	S/N	Calibration Date	Calibration Due Date
1	Mobile Station Tester / MT8820C	Anritsu	6201300660	2021.06.21	2022.06.20
2	Radio Communication Station / CMW500	R&S	161702	2021.06.21	2022.06.20
3	Spectrum Analyzer / FSV40	R&S	101065	2021.06.21	2022.06.20
4	Spectrum Analyzer / N9020A	Agilent	MY48010771	2021.05.18	2022.05.17
5	Power Divider / 11667A	HP	19632	2021.06.21	2022.06.20
6	DC Power Supply / E3645A	Agilent	MY40000741	2021.04.22	2022.04.21
7	Temperature chamber / SH241	ESPEC	92013758	2021.06.21	2022.06.20

APPENDIX A – TEST DATA OF CONDUCTED EMISSION

1. RF Power Output

PCS1900

GSM Measured Power:

Carrier frequency (MHz)	Channel No.	RF Power Output (dBm)
1850.2	512	29.37
1880	661	28.99
1909.8	810	28.57

GPRS Measured Power:

Carrier frequency (MHz)	Channel No.	TX Mode	RF Power Output (dBm)
1850.2	512	4Downlink1uplink	29.38
1880	661		28.96
1909.8	810		28.54
1850.2	512	3Downlink2uplink	28.67
1880	661		28.27
1909.8	810		27.97
1850.2	512	2Downlink3uplink	26.96
1880	661		26.55
1909.8	810		26.28
1850.2	512	1Downlink4uplink	25.89
1880	661		25.47
1909.8	810		25.20

EGPRS (8PSK) Measured Power:

Carrier frequency (MHz)	Channel No.	TX Mode	RF Power Output (dBm)
1850.2	512	8PSK 4Downlink1uplink	26.79
1880	661		25.44
1909.8	810		25.11
1850.2	512	8PSK 3Downlink2uplink	24.52
1880	661		24.22
1909.8	810		23.93
1850.2	512	8PSK 2Downlink3uplink	23.09
1880	661		22.09
1909.8	810		21.78
1850.2	512	8PSK 1Downlink4uplink	21.94
1880	661		20.95
1909.8	810		20.64

2. Effective Radiated Power and Effective Isotropic Radiated Power

PCS1900

GSM Measured Power:

Carrier frequency (MHz)	Channel No.	Conducted Power (dBm)	ERP/EIRP (dBm)	ERP/EIRP (W)
1850.2	512	29.37	27.87	0.612
1880	661	28.99	27.49	0.561
1909.8	810	28.57	27.07	0.509

GPRS Measured Power:

Carrier frequency (MHz)	Channel No.	TX Mode	Conducted Power (dBm)	ERP/EIRP (dBm)	ERP/EIRP (W)
1850.2	512	4Downlink1uplink	29.38	27.88	0.614
1880	661		28.96	27.46	0.557
1909.8	810		28.54	27.04	0.506
1850.2	512	3Downlink2uplink	28.67	27.17	0.521
1880	661		28.27	26.77	0.475
1909.8	810		27.97	26.47	0.444
1850.2	512	2Downlink3uplink	26.96	25.46	0.352
1880	661		26.55	25.05	0.320
1909.8	810		26.28	24.78	0.301
1850.2	512	1Downlink4uplink	25.89	24.39	0.275
1880	661		25.47	23.97	0.249
1909.8	810		25.20	23.70	0.234

EGPRS (8PSK) Measured Power:

Carrier frequency (MHz)	Channel No.	TX Mode	Conducted Power (dBm)	ERP/EIRP (dBm)	ERP/EIRP (W)
1850.2	512	8PSK 4Downlink1uplink	26.79	25.29	0.338
1880	661		25.44	23.94	0.248
1909.8	810		25.11	23.61	0.230
1850.2	512	8PSK 3Downlink2uplink	24.52	23.02	0.200
1880	661		24.22	22.72	0.187
1909.8	810		23.93	22.43	0.175
1850.2	512	8PSK 2Downlink3uplink	23.09	21.59	0.144
1880	661		22.09	20.59	0.115
1909.8	810		21.78	20.28	0.107
1850.2	512	8PSK 1Downlink4uplink	21.94	20.44	0.111
1880	661		20.95	19.45	0.088
1909.8	810		20.64	19.14	0.082

---End of Test Report---