RF Exposure Evaluation Report

APPLICANT	:	ZTE CORPORATION
EQUIPMENT	:	Wireless Access Terminal
BRAND NAME	:	ZTE
MODEL NAME	:	Z723EL
FCC ID	:	SRQ-Z723EL
STANDARD	:	47 CFR Part 2.1091

We, Sporton International (KunShan) INC., would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091, and pass the limit. Without written approval of Sporton International (KunShan) INC., the test report shall not be reproduced except in full.

Mark Qu

Prepared by: Mark Qu / Manager

Jones Tsai

Approved by: Jones Tsai / Manager

Sporton International (KunShan) INC.
No.3-2, Pingxiang Road, Kunshan Development Zone, Jiangsu, China

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA710507	Rev. 01	Initial issue of report	Apr. 01, 2017

1. Administration Data

1.1. Testing Laboratory

Testing Laboratory	
Test Site	Sporton International (KunShan) INC.
Test Site Location	No.3-2, Pingxiang Road, Kunshan Development Zone, Jiangsu, China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958

Applicant	
Company Name	ZTE CORPORATION
Address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

Manufacturer	
Company Name	ZTE CORPORATION
Address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Wireless Access Terminal
Brand Name	ZTE
Model Name	Z723EL
FCC ID	SRQ-Z723EL
IMEI Code	863579030001415
Wireless Technology and Frequency Range	LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz
Mode	LTE: QPSK, 16QAM
Antenna Type	Fixed External Antenna
HW Version	Z723ELHWV1.0
SW Version	Z723ELV1.0.0B02
EUT Stage	Identical Prototype
Remark: 1. The device supports VOLTE function 2. There are two antennas for EUT, one is TX/Rx function, another is Rx function only.	

3. Maximum RF average output power among production units

<LTE>

LTE Band 2				
Average Power (dBm)				
Modulation	BW (MHz)	RB size	MPR	Target Power
QPSK	20	≤ 18	0	23.5
QPSK	20	> 18	0-1	22.5
16QAM	20	≤ 18	0-1	22.5
16QAM	20	> 18	0-2	21.5
QPSK	15	≤ 16	0	23.5
QPSK	15	> 16	0-1	22.5
16QAM	15	≤ 16	0-1	22.5
16QAM	15	> 16	0-2	21.5
QPSK	10	≤ 12	0	23.5
QPSK	10	> 12	0-1	22.5
16QAM	10	≤ 12	0-1	22.5
16QAM	10	> 12	0-2	21.5
QPSK	5	≤ 8	0	23.5
QPSK	5	> 8	0-1	22.5
16QAM	5	≤ 8	0-1	22.5
16QAM	5	> 8	0-2	21.5
QPSK	3	≤ 4	0	23.5
QPSK	3	> 4	0-1	22.5
16QAM	3	≤ 4	0-1	22.5
16QAM	3	> 4	0-2	21.5
QPSK	1.4	≤ 5	0	23.5
QPSK	1.4	> 5	0-1	22.5
16QAM	1.4	≤ 5	0-1	22.5
16QAM	1.4	> 5	0-2	21.5

LTE Band 4				
Average Power (dBm)				
Modulation	BW (MHz)	RB size	MPR	Target Power
QPSK	20	≤ 18	0	23.5
QPSK	20	> 18	0-1	22.5
16QAM	20	≤ 18	0-1	22.5
16QAM	20	> 18	0-2	21.5
QPSK	15	≤ 16	0	23.5
QPSK	15	> 16	0-1	22.5
16QAM	15	≤ 16	0-1	22.5
16QAM	15	> 16	0-2	21.5
QPSK	10	≤ 12	0	23.5
QPSK	10	> 12	0-1	22.5
16QAM	10	≤ 12	0-1	22.5
16QAM	10	> 12	0-2	21.5
QPSK	5	≤ 8	0	23.5
QPSK	5	> 8	0-1	22.5
16QAM	5	≤ 8	0-1	22.5
16QAM	5	> 8	0-2	21.5
QPSK	3	≤ 4	0	23.5
QPSK	3	> 4	0-1	22.5
16QAM	3	≤ 4	0-1	22.5
16QAM	3	> 4	0-2	21.5
QPSK	1.4	≤ 5	0	23.5
QPSK	1.4	> 5	0-1	22.5
16QAM	1.4	≤ 5	0-1	22.5
16QAM	1.4	> 5	0-2	21.5

LTE Band 12				
Average Power (dBm)				
Modulation	BW (MHz)	RB size	MPR	Target Power
QPSK	10	≤ 12	0	23.5
QPSK	10	> 12	0-1	22.5
16QAM	10	≤ 12	0-1	22.5
16QAM	10	> 12	0-2	21.5
QPSK	5	≤ 8	0	23.5
QPSK	5	> 8	0-1	22.5
16QAM	5	≤ 8	0-1	22.5
16QAM	5	> 8	0-2	21.5
QPSK	3	≤ 4	0	23.5
QPSK	3	> 4	0-1	22.5
16QAM	3	≤ 4	0-1	22.5
16QAM	3	> 4	0-2	21.5
QPSK	1.4	≤ 5	0	23.5
QPSK	1.4	> 5	0-1	22.5
16QAM	1.4	≤ 5	0-1	22.5
16QAM	1.4	> 5	0-2	21.5

LTE Band 13				
Average Power (dBm)				
Modulation	BW (MHz)	RB size	MPR	Target Power
QPSK	10	≤ 12	0	23.5
QPSK	10	> 12	0-1	22.5
16QAM	10	≤ 12	0-1	22.5
16QAM	10	> 12	0-2	21.5
QPSK	5	≤ 8	0	23.5
QPSK	5	> 8	0-1	22.5
16QAM	5	≤ 8	0-1	22.5
16QAM	5	> 8	0-2	21.5

Remark: By design, maximum LTE RF power of smaller supported bandwidth does not exceed the RF power of largest supported bandwidth; the information is included in “tune-up procedure” exhibit.

<table>
<tr><th colspan="2">Summarized necessary items addressed in KDB 941225 D05 v02r05</th></tr>
<tr><td>FCC ID</td><td>SRQ-Z723EL</td></tr>
<tr><td>EUT</td><td>Wireless Access Terminal</td></tr>
<tr><td>Operating Frequency Range of each LTE transmission band</td><td>LTE Band 2: 1850.7 MHz ~ 1909.3 MHz
LTE Band 4: 1710.7 MHz ~ 1754.3 MHz
LTE Band 12: 699.7 MHz ~ 715.3 MHz
LTE Band 13: 779.5 MHz ~ 784.5 MHz</td></tr>
<tr><td>Channel Bandwidth</td><td>LTE Band 2:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 4:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 13: 5MHz, 10MHz</td></tr>
<tr><td>uplink modulations used</td><td>QPSK, and 16QAM</td></tr>
<tr><td>LTE Voice / Data requirements</td><td>Voice and Data</td></tr>
<tr><td>LTE MPR permanently built-in by design</td><td>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (RB)</th><th rowspan="2">MPR (dB)</th></tr>
<tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr>
<tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr>
</table></td></tr>
<tr><td>LTE A-MPR</td><td>In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)</td></tr>
<tr><td>Spectrum plots for RB configuration</td><td>A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.</td></tr>
<tr><td>LTE Release Version</td><td>R10, Cat 4</td></tr>
<tr><td>CA Support</td><td>NO</td></tr>
</table>

Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900
LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 12								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711

Band 13				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Frequency (MHz)	Channel #	Frequency (MHz)
L	23205	779.5	23230	782
M	23230	782		
H	23255	784.5		

4. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f2)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f2)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:
S = Power Density
P = Output Power at Antenna Terminals
G = Gain of Transmit Antenna (linear gain)
R = Distance from Transmitting Antenna

5. Radio Frequency Radiation Exposure Evaluation

5.1. Standalone Power Density Calculation

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum ERP/EIRP (W)	Maximum output power Limit (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm2)	Limit (mW/cm2)
LTE Band 2	1850.7	1	23.5	24.50	0.28	281.84	0.06	1.00
LTE Band 4	1710.7	-0.5	23.5	23.00	0.20	199.53	0.04	1.00
LTE Band 12	699.7	-1.6	23.5	21.90	0.15	154.88	0.03	0.47
LTE Band 13	779.5	-1.8	23.5	21.70	0.15	147.91	0.03	0.52

Note: For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.