



TEST REPORT

REPORT NUMBER: I20W00018-EMC

ON

Type of Equipment: IoT Module
Type of Designation: L720
Manufacturer: Shanghai MobileTek Communication Ltd.
Brand name --

ACCORDING TO
Subpart B, PART 15, RADIO FREQUENCY DEVICES , August 24, 2018

Chongqing Academy of Information and Communication Technology

Month date, year
Oct, 21, 2020

Signature

Zhang Yan
Director

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of Chongqing Academy of Information and Communication Technology.



Report No.: I20W00018-EMC

FCC ID: 2AK9D-L720

Report Date: 2020-10-21

Test Firm Name: Chongqing Academy of Information and
Communication Technology

FCC Registration Number: CN1239

Statement

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 15B. The sample tested was found to comply with the requirements defined in the applied rules.

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1 General Information

1.1 Notes

All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part15B.

The test results of this test report relate exclusively to the item(s) tested as specified in section 2.

The following deviation from, additions to, or exclusions from the test specifications have been made. See Annex C.

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1.2 Testers

Name: Chen Xin
Position: Engineer
Department: Department of EMC test
Date: 2020-10-21
Signature:

Editor of this test report:

Name: Xiao Yu
Position: Engineer
Department: Department of EMC test
Date: 2020-10-21
Signature:

Technical responsibility for area of testing:

Name: Zhang Yan
Position: Manager
Department: Department of EMC test
Date: 2020-10-21
Signature:

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1.3 Testing Laboratory information

1.3.1 Location

Name: Chongqing Academy of Information and Communications
Address: Building B, Technology Innovation Center, No.8, Yuma
Road, Chayuan New Area, Nan'an District, Chongqing,
People's Republic of China, 401336
Tel: +86 23 88069965
Fax: +86 23 88608777
Email: liqiao@caict.ac.cn

1.3.2 Details of accreditation status

Accredited by: --
Registration number: --
Standard: --

1.3.3 Test location, where different from section 1.3.1

Name: -----
Address: -----

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1.4 Details of applicant or manufacturer

1.4.1 Applicant

Name: Shanghai MobileTek Communication Ltd.
Address: Free Trade Zone No.33, No.17 building 6H Xiya
Road,shanghai
Country: China
Telephone: 18616835910
Fax: +86-21-54451877
Contact: bin yang
Email: b.yang@mobiletek.cn

1.4.2 Manufacturer (if different from applicant in section 1.4.1)

Name: Shanghai MobileTek Communication Ltd.
Address: Free Trade ZoneNo.33, No.17 building 6H Xiya Road,shanghai
Country: China

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2 Test Item

2.1 General Information

Manufacturer: Shanghai MobileTek Communication Ltd.
Name: IoT Module
Model Number: L720
Serial Number: K4K82101010048
IMEI: 866884045622099
Production Status: Product
Receipt date of test item: 2020-10-20

2.2 Outline of EUT

The EUT, L720 is a module supporting NB-IOT Band 2/4/12 and CAT M1 Band 2/4/12.

2.3 Modifications Incorporated in EUT

The EUT has not been modified from what is described by the brand name and unique type identification stated above.

2.4 Equipment Configuration

Equipment configuration list:

Item	Generic Description	Manufacturer	Type	Serial No.	Remarks
A	Module	Shanghai MobileTek Communication Ltd.	L720	K4K8210101 0048	None

2.5 Other Information

--

3 Summary of Test Results

A brief summary of the tests carried out is shown as following.

Configuration1		
Specification Clause	Name of Test	Result
15.109(a)	Radiated Emission	Pass
15.107(a)	Conducted Emission	Pass

4. Test equipment and Test software

Test equipment Used:						
Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
1	EMI Test Receiver	R/S	ESU	100367	2021-06-25	Normal
2	Ultra Broadband Antenna	R/S	VULB 9163	vulb9163—544	2021-12-24	Normal
3	Double-Ridged Horn Antenna	R/S	HF907	100357	2021-08-20	Normal
4	Fully-Anechoic Chamber	ETS	11.8m×6.5m×6.3m	CT000174-1035	2021-06-25	Normal
5	AMN	R/S	ENV216	101128	2021-06-25	Normal
6	EMI Test Receiver	R/S	ESCI 9KHz-3GHZ	101214	2021-06-25	Normal

Test software Used:				
Number	Test item	Test software name	Manufacturer	Version:
1	Radiated Emission	EMC32	R/S	V8.51.0
2	Conducted Emission	EMC32	R/S	V8.51.0

5 Test Results

5.1 Radiated Emission(unintentional radiators.)

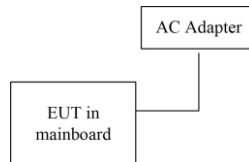
Specifications:	15.109(a)
Date of Tests	2020-09-08-2020-09-23
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
Operation Mode	Normal
Test Results:	Pass

Limit Level Construction:

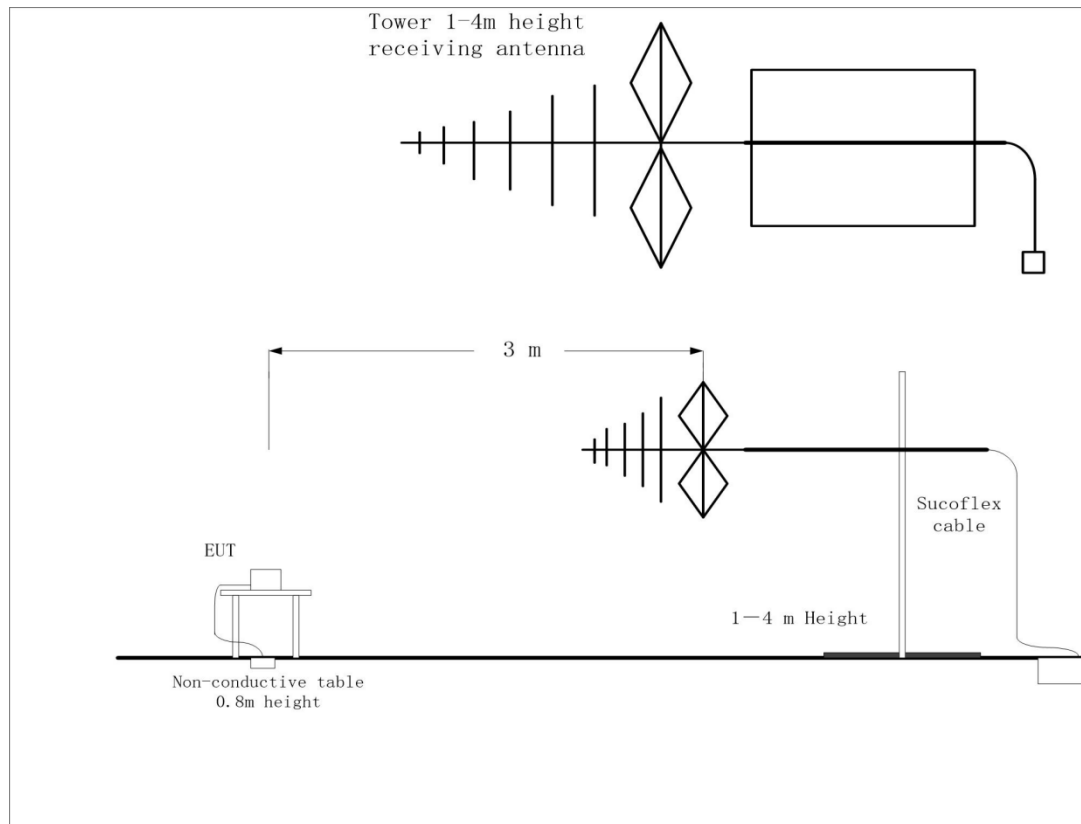
Frequency Range (MHz)	Quasi-Peak (dBuV/m)
30-88	40
88-216	43.5
216-960	46
Above 960	54

Frequency Range (MHz)	Peak (dBuV/m)	Average (dBuV/m)
Above 1000	74	54

EUT Setup:



EUT is in the mainboard, power supplied by mainboard. Mainboard is connected to AC Adapter.

Test Setup:**Test Method:**

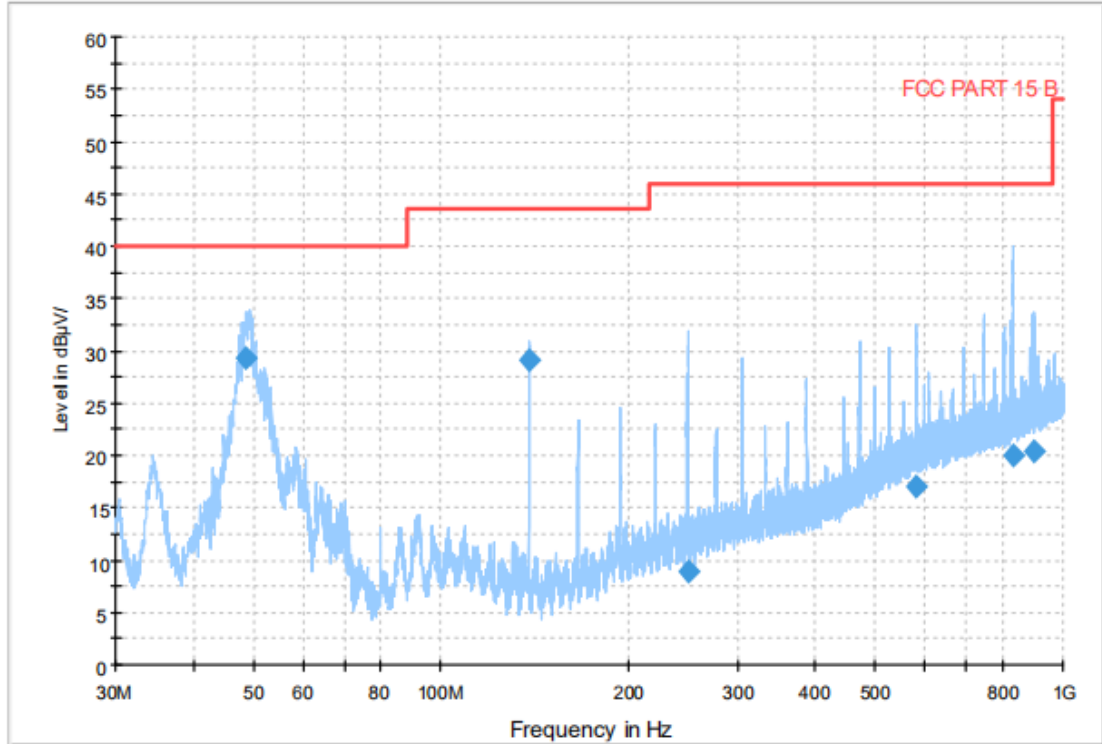
For 30-1000MHz, the EUT was placed on the top of a rotating 0.8m table above the ground at a semi-anechoic chamber. The distance between the EUT and the received antenna was 3 meters. The table was rotated 360 degree and the received antenna mounted on a variable-height antenna tower was varied from 1m to 4m to find the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna were set during the measurement. Tested in accordance with the procedures of ANSI C63.4-2014, section 8.3.

For 1000-18000MHz, the maximal emission value was acquired by adjusting the antenna height, and the table was rotated 360 degree to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna were set during the measurement.

Test Mode: not connected to any communication mode, just powered on

Test Data

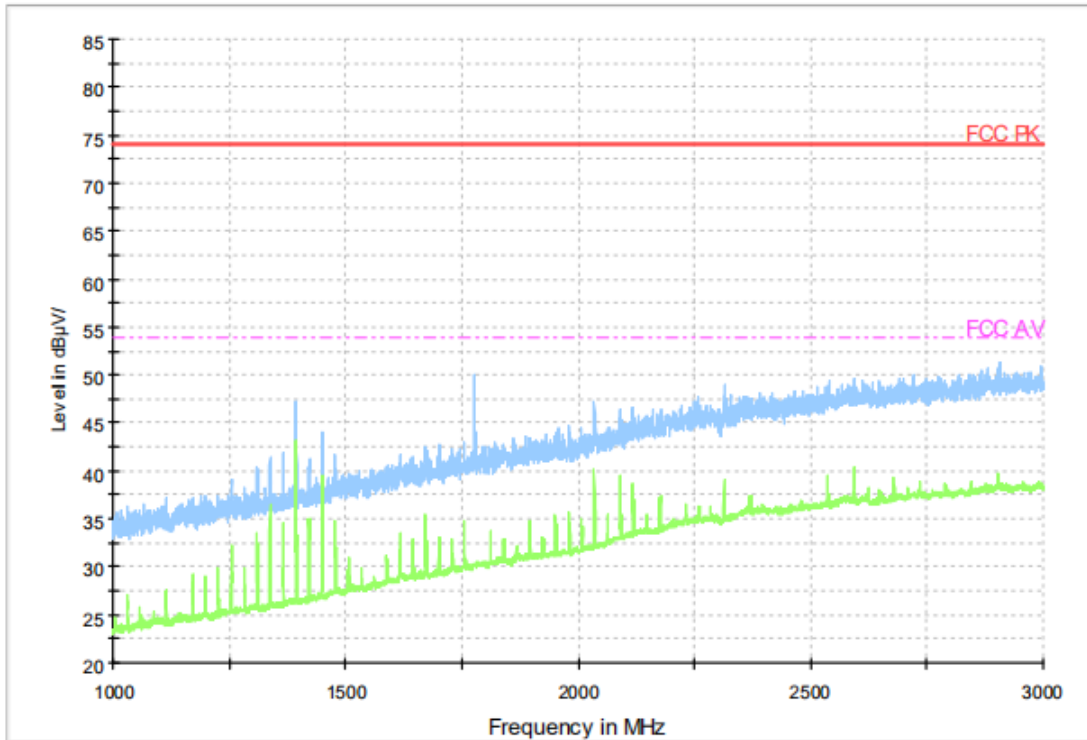
RE 30MHz-1GHz



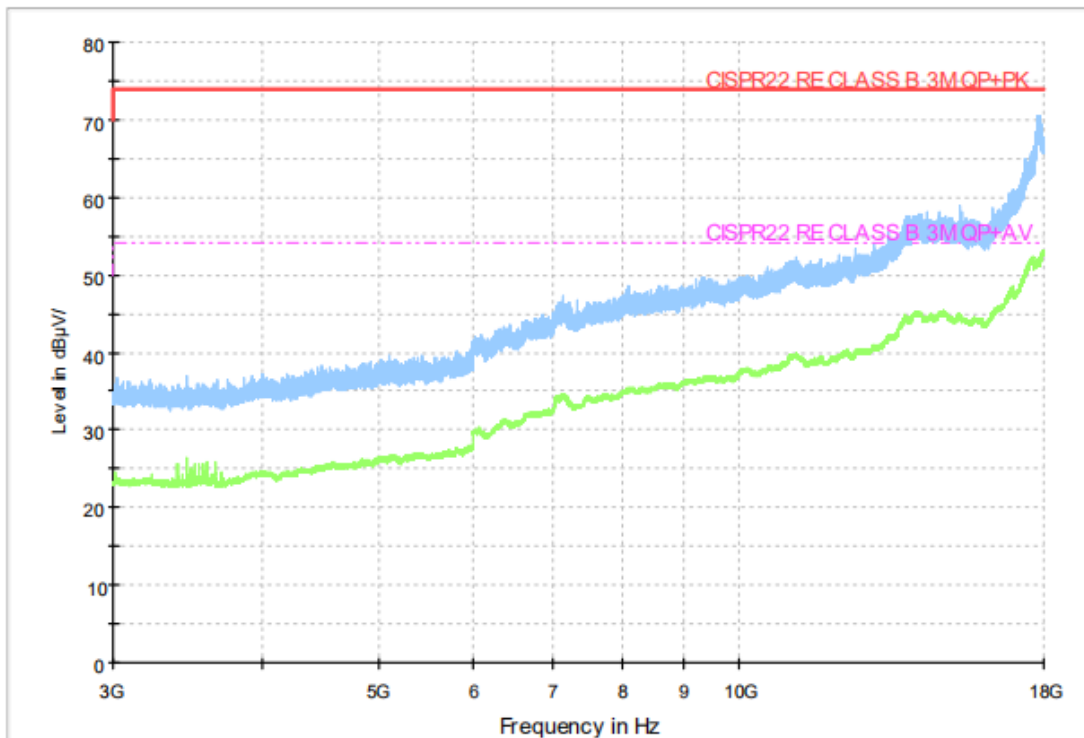
Frequency MHz	QP dBuV/m	Mea.Time ms	RBW KHz	Height cm	Polarity	Azimuth deg	Margin dB	Limit dBuV/m
48.606000	29.3	5000.0	120.000	200.0	V	90.0	10.7	40.0
138.949000	29.1	5000.0	120.000	100.0	V	90.0	10.9	40.0
249.856500	8.9	5000.0	120.000	100.0	H	270.0	38.1	47.0
582.190500	16.9	5000.0	120.000	100.0	V	0.0	30.1	47.0
834.099500	20.1	5000.0	120.000	300.0	V	90.0	26.9	47.0
895.209500	20.3	5000.0	120.000	100.0	H	90.0	26.7	47.0

Note:the test results are cumulative (horizontal and vertical)

RE 1GHz-3GHz



RE 3GHz-18GHz



Note:the test results are cumulative (horizontal and vertical)

5.2 Conducted Emission

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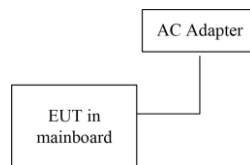
Specifications:	15.107(a)
Date of Tests	2020-10-12
Test conditions:	Ambient Temperature: 15°C-35°C Relative Humidity: 30%-60% Air pressure: 86-106kPa
Operation Mode	Normal
Test Results:	Pass

Limit Level Construction:

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

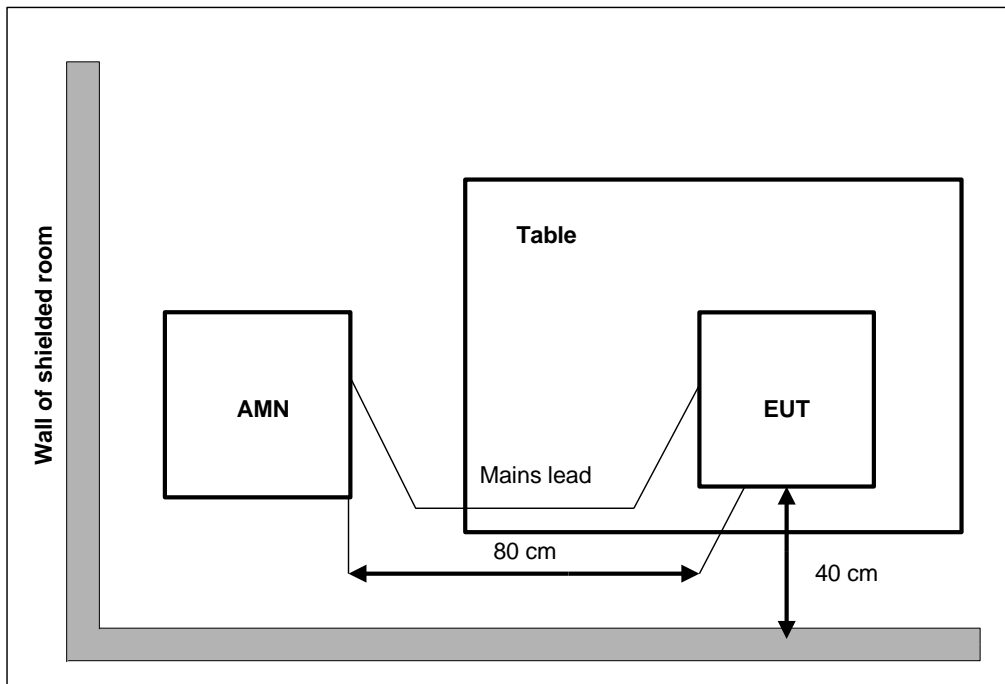
*Decreases with the logarithm of the frequency

EUT Setup:



Test Setup:

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Test Method:

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies with the band 150 kHz to 30MHz shall not exceed the limits. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

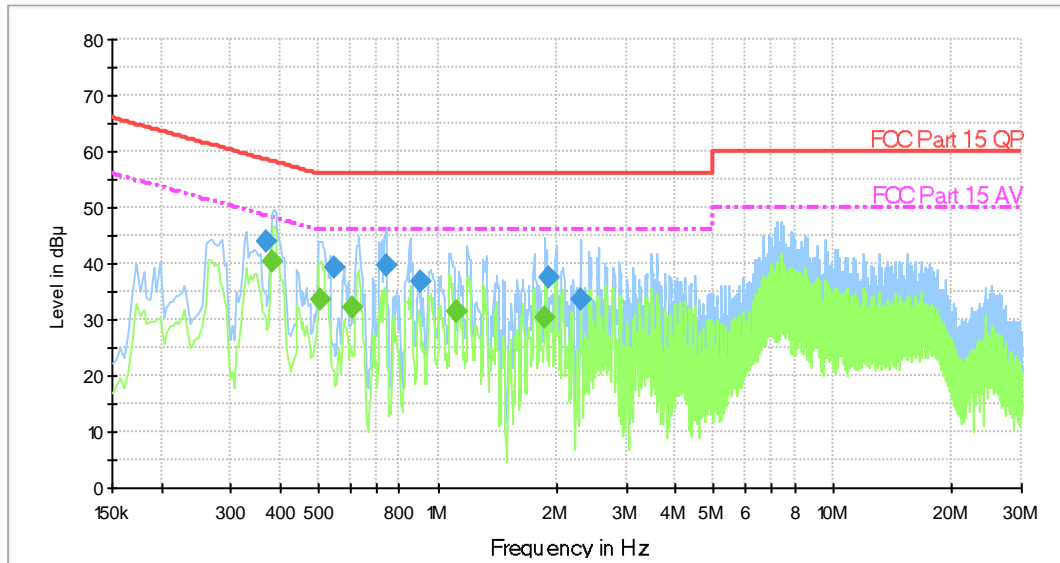
Tested in accordance with the procedures of ANSI C63.4-2014, section 7.3

Test Mode: not connected to any communication mode, just powered on

Test result

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CISPR N&L1 Voltage 150k to 30MHz-Class B



- CISPR32_T2_Class B_Voltage at Mains Ports_QP.LimitLine
- - - CISPR32_T2_Class B_Voltage at Mains Ports_AV.LimitLine
- Preview Result 1-PK+
- Preview Result 2-AVG
- ◆ Final Result 1-Q PK
- ◆ Final Result 2-CAV

Line L&N

Note:the test results are cumulative (L and N)

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.367069	44.0	1000.0	9.000	On	L1	9.7	14.5	58.6
0.545331	39.3	1000.0	9.000	On	L1	9.7	16.7	56.0
0.745538	39.6	1000.0	9.000	On	L1	9.7	16.4	56.0
0.909475	36.9	1000.0	9.000	On	L1	9.7	19.1	56.0
1.900375	37.5	1000.0	9.000	On	L1	9.7	18.5	56.0
2.289469	33.6	1000.0	9.000	On	L1	9.7	22.4	56.0

Final Result 2

Frequency (MHz)	Caverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.383069	40.5	1000.0	9.000	On	L1	9.7	7.7	48.2
0.502469	33.5	1000.0	9.000	On	L1	9.7	12.5	46.0
0.605600	32.2	1000.0	9.000	On	L1	9.7	13.8	46.0
1.120481	31.3	1000.0	9.000	On	L1	9.7	14.7	46.0
1.121888	31.3	1000.0	9.000	On	L1	9.7	14.7	46.0
1.860375	30.4	1000.0	9.000	On	L1	9.7	15.6	46.0

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Test photo

See the Pic1~2 in document" L720_EMC Test Setup Photos".

Annex A External Photos

See the document" L720 -External Photos".

Annex B Internal Photos

See the document" L720 -Internal Photos".

ANNEX C Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

_____ **The End of this Report** _____

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