

## **TEST REPORT**

**Application No:**

ZR/2020/80074

**Applicant:**

vivo Mobile Communication Co., Ltd.

**Address of Applicant**

#283, BBK Road, Wusha, Chang'An, DongGuan City, China

**Manufacturer:**

vivo Mobile Communication Co., Ltd.

**Address of Manufacturer:**

#283, BBK Road, Wusha, Chang'An, DongGuan City, China

**EUT Description:**

Mobile phone

**Model No.:**

V2028

**Trade Mark:**

vivo

**FCC ID:**

2AUCY-V2027

**Standard(s) :**

47 CFR Part 15, Subpart B

**Date of Receipt:**

2020/9/3

**Date of Test:**

2020/9/3 to 2020/9/15

**Date of Issue:**

2020/9/17

**Test Result:**

**Pass\***

\* In the configuration tested, the EUT complied with the standards specified above.

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone:(86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

1/F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, 710086 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
Xi'an, Shaanxi, China

中国·西安·沣东新城科源三路 137 号康鸿橙方科技园 1 号楼 D 单元一层

邮编 710086 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)



<b>Revision Record</b>				
<b>Version</b>	<b>Chapter</b>	<b>Date</b>	<b>Modifier</b>	<b>Remark</b>
01		2020/9/17		Original

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone:(86-755) 8307 1443, or email: CN.Doccheck@sgs.com

1/F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, 710086 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
Xi'an, Shaanxi, China

中国·西安·沣东新城科源三路 137 号康鸿橙方科技园 1 号楼 D 单元一层

邮编 710086 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

**Test Summary**

<b>Emission Part</b>				
<b>Item</b>	<b>Standard</b>	<b>Method</b>	<b>Requirement</b>	<b>Result</b>
Conducted Emissions at Mains Terminals (150kHz-30MHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass
Radiated Emissions (above 1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass

<b>Internal Source</b>	<b>Upper Frequency</b>
Below 1.705MHz	30MHz
1.705MHz to 108MHz	1GHz
108MHz to 500MHz	2GHz
500MHz to 1GHz	5GHz
Above 1GHz	5th harmonic of the highest frequency or 40GHz, whichever is lower

Checked By

David Chen  
Reviewer

Test By

Daniel Wang  
Project Engineer

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone:(86-755) 8307 1443, or email: CN.Doccheck@sgs.com

1/F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, 710086 www.sgsgroup.com.cn  
Xi'an, Shaanxi, China

中国·西安·沣东新城科源三路 137 号康鸿橙方科技园 1 号楼 D 单元一层

邮编 710086 sgs.china@sgs.com

## Contents

<b>1 GENERAL INFORMATION .....</b>	<b>5</b>
1.1 DESCRIPTION OF SUPPORT UNITS .....	7
1.2 TEST LOCATION .....	7
1.3 TEST FACILITY .....	7
1.4 DEVIATION FROM STANDARDS .....	7
1.5 ABNORMALITIES FROM STANDARD CONDITIONS .....	7
<b>2 EMISSION TEST RESULTS.....</b>	<b>8</b>
2.1 CONDUCTED EMISSIONS AT MAINS TERMINALS (150kHz-30MHz).....	8
2.1.1 <i>E.U.T. Operation</i> .....	8
2.1.2 <i>Test Setup Diagram</i> .....	8
2.1.3 <i>Measurement Data</i> .....	8
2.2 RADIATED EMISSIONS (30MHz-1GHz) .....	11
2.1.4 <i>E.U.T. Operation</i> .....	11
2.1.5 <i>Test Setup Diagram</i> .....	11
2.1.6 <i>Measurement Data</i> .....	11
2.3 RADIATED EMISSIONS (ABOVE 1GHz).....	14
2.1.7 <i>E.U.T. Operation</i> .....	14
2.1.8 <i>Test Setup Diagram</i> .....	14
2.1.9 <i>Measurement Data</i> .....	14
<b>3 EQUIPMENT LIST .....</b>	<b>17</b>
<b>4 MEASUREMENT UNCERTAINTY.....</b>	<b>18</b>
<b>5 PHOTOGRAPHS .....</b>	<b>19</b>
5.1 TEST SETUP .....	19
5.2 EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS) .....	19

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone:(86-755) 8307 1443, or email: CN.Doccheck@sgs.com

1/ F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, 710086 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
Xi'an, Shaanxi, China

中国·西安·沣东新城科源三路 137 号康鸿橙方科技园 1 号楼 D 单元一层

邮编 710086 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

## 1 General Information

Product Name:	Mobile phone		
Model No.(EUT):	V2028		
Trade Mark:	vivo		
Hardware Version:	MP_0.1		
Software Version:	PD2042F_EX_A_3.3.8		
Frequency Bands:	Band	Tx (MHz)	Rx (MHz)
	GSM850	824~849	869~894
	GSM1900	1850~1910	1930~1990
	WCDMA Band II	1850~1910	1930~1990
	WCDMA Band IV	1710~1755	2110~2155
	WCDMA Band V	824~849	869~894
	LTE Band 2	1850~1910	1930~1990
	LTE Band 4	1710~1755	2110~2155
	LTE Band 5	824~849	869~894
	LTE Band 7	2500~2570	2620~2690
	LTE Band 38	2570~2620	2570~2620
	LTE Band 41	2535~2655	2535~2655
	Wi-Fi 2.4G	2412~2472	2412~2472
	Bluetooth	2402~2480	2402~2480
	Wi-Fi 5G	5150~5850	5150~5850
	FM	/	88~108
	GNSS	/	1559~1610

**Accessory:**

Accessory Equipment	Manufacturer/trademark	Model	Specification
Adapter1	Dongguan Aohai Technology CO., LTD.	V1020D-EU	DC 5V/2A
Adapter2	Phihong Technology Co., Ltd.	V1020D-US	DC 5V/2A
Earphone	VIVO	XE160	/
Battery	Huizhou Desay Battery Co., Ltd.	B-O5	4910mAh 3.87V
USB Cable	VIVO	BK-C-19	97cm

Remark: All accessory equipment above were conduct test in this report.

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone:(86-755) 8307 1443, or email: CN.Doccheck@sgs.com

1/ F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, 710086 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
Xi'an, Shaanxi, China

中国·西安·沣东新城科源三路 137 号康鸿橙方科技园 1 号楼 D 单元一层

邮编 710086 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

**Test modes:**

Pretest these modes to find the worst case:

- a: Transfer data between the EUT and the PC+USB cable
- b: Telecom Idle+BT+WLAN5G+GNSS +Playing MP4+USB Cable+adapter1+earphone+Battery
- c: Telecom Idle+BT+WLAN5G+GNSS +camera(Front)+USB Cable+adapter2+earphone+Battery
- d: Telecom Idle+BT+WLAN2.4G+GNSS+camera(Back)+USB Cable+adapter(worst)+earphone+Battery
- e: GSM850 Idle+BT+WLAN2.4G+GNSS+Playing MP4+USB Cable+adapter(worst)+earphone+Battery
- f: WCDMA Band V Idle+BT+WLAN2.4G+GNSS+Playing MP4+USB Cable+adapter(worst)+earphone+Battery
- g: LTE Band5 Idle+BT+WLAN2.4G+GNSS+Playing MP4+USB Cable+adapter(worst)+earphone+Battery
- h: FM mode\_98MHz

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone:(86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

1/F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, 710086 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
Xi'an, Shaanxi, China

中国·西安·沣东新城科源三路 137 号康鸿橙方科技园 1 号楼 D 单元一层

邮编 710086 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

## 1.1 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Laptop	Lenovo	T430u	REF. No. SEA1800
Mouse	Lenovo	M-U0025-O	REF. No.: SEA2400
Router	NETGEAR	DGN2200	REF. No. SEA2200

## 1.2 Test Location

All tests were performed at:

Company:	SGS-CSTC Standards Technical Services Co., Ltd. Xi'an Branch
Address:	Single floor D, building 1, Kanghong orange square science and technology park, No.137 keyuan 3rd road, fengdong new town, Xi 'an city, Shaanxi China
Post code:	710000
Telephone:	+86 (0) 29 6282 7885
Fax:	+86 (0) 29 6282 7885
E-mail:	ee.xian@sgs.com

No tests were sub-contracted.

## 1.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **A2LA (Certificate No. 4854.01)**

SGS-CSTC STANDARDS TECHNICAL SERVICES CO., LTD. XIAN BRANCH

is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4854.01.

Test Site No.:	SGS Xian Site No.		FCC Designation No.
	CO01-XA	03CH01-XA	
			CN1271

## 1.4 Deviation from Standards

None

## 1.5 Abnormalities from Standard Conditions

None

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone:(86-755) 8307 1443, or email: CN.Doccheck@sgs.com

1/ F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, 710086 www.sgsgroup.com.cn  
Xi'an, Shaanxi, China

中国·西安·沣东新城科源三路 137 号康鸿橙方科技园 1 号楼 D 单元一层

邮编 710086 sgs.china@sgs.com

## 2 Emission Test Results

## 2.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)

Test Requirement: 47 CFR Part 15, Subpart B

Test Method: ANSI C63.4:2014

Frequency Range: 150kHz to 30MHz

### Limit:

0.15M-0.5MHz 66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average

0.5M-5MHz 56dB(μV) quasi-peak, 46dB(μV) average

5M-30MHz 60dB(μV) quasi-peak 50dB(μV) average

Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

### 2.1.1 E.U.T. Operation

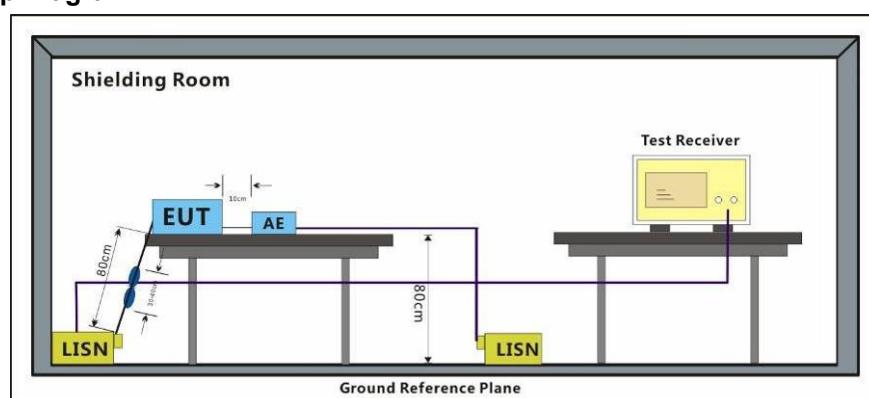
## Operating Environment:

Temperature: 20.5 °C      Humidity: 55.3 % RH      Atmospheric Pressure: 1000 mbars

The worst case e: GSM850 Idle+BT+Wi-Fi+AN2+4G+GNSS+Playing MP4+USB

for final test: Cable+adapter(worst)+earphone+Battery

## 2.1.2 Test Setup Diagram



### 2.1.3 Measurement Data

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

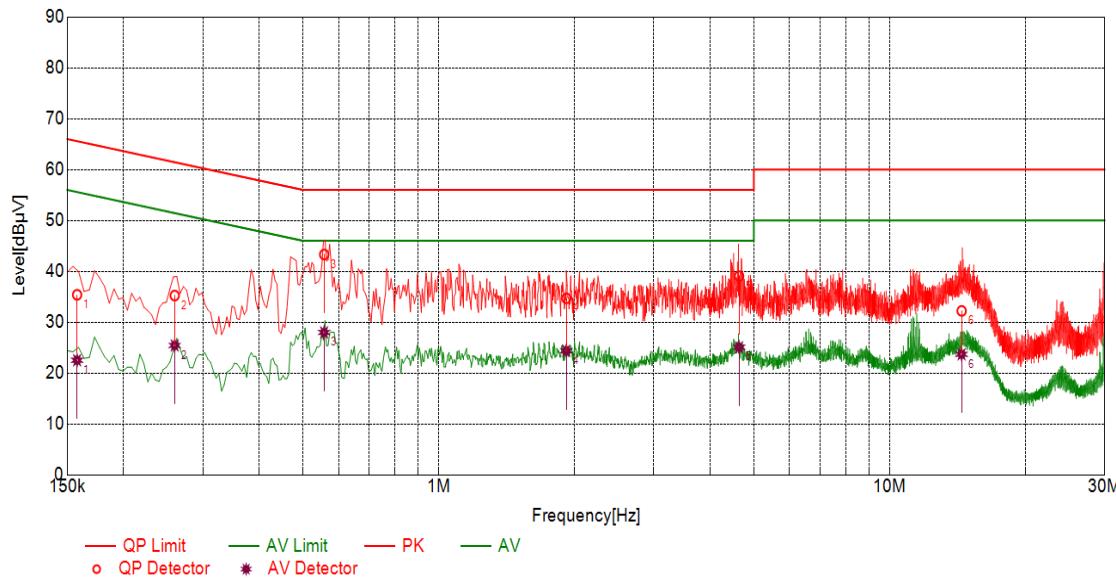
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sas.com

CN.Dotcheck@sgs.com  
1/F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, 710086 www.sgsgroup.com.cn  
Yan'an, Shaanxi, China

中国·西安·沣东新城科源三路 137 号 唐骏楼 1 号楼 D 单元

邮编 710086 sgs\_china@sgs.com

Mode:e; Line:Live Line

**Final Data List**

NO.	Freq. [MHz]	Factor [dB]	QP Value	QP Limit	QP Margin	AV Value	AV Limit	AV Margin	Type
1	0.1578	10.10	35.39	65.58	30.19	22.52	55.58	33.06	L
2	0.2597	10.10	35.24	61.44	26.20	25.43	51.44	26.01	L
3	0.5571	10.10	43.31	56.00	12.69	27.99	46.00	18.01	L
4	1.9187	10.10	34.70	56.00	21.30	24.39	46.00	21.61	L
5	4.6375	10.10	39.06	56.00	16.94	25.07	46.00	20.93	L
6	14.4437	10.11	32.22	60.00	27.78	23.69	50.00	26.31	L

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

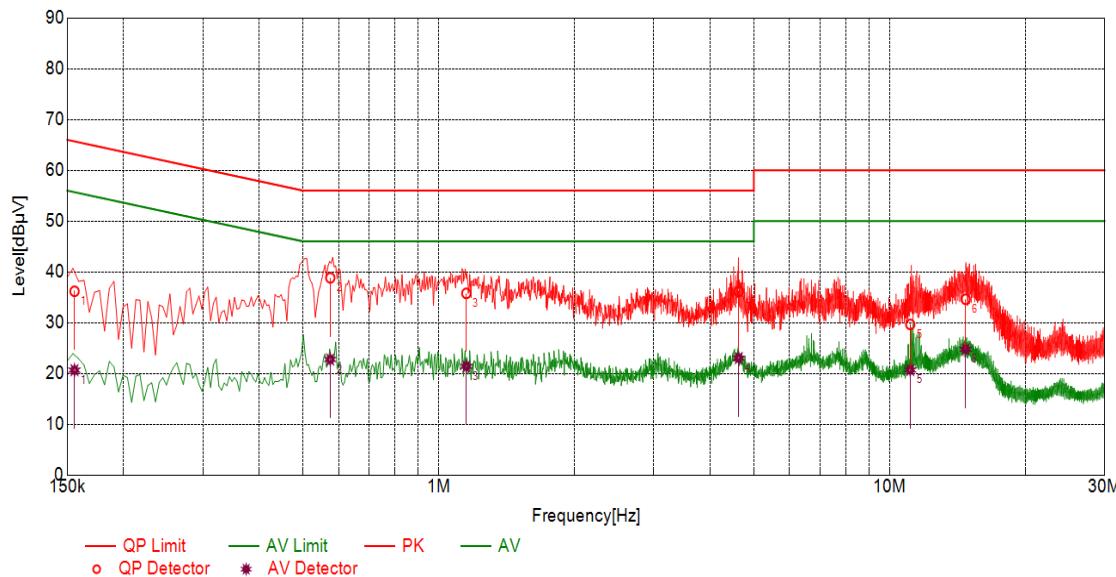
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone:(86-755) 8307 1443, or email: CN.Doccheck@sgs.com

1/F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, 710086 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
Xi'an, Shaanxi, China

中国·西安·沣东新城科源三路 137 号康鸿橙方科技园 1 号楼 D 单元一层

邮编 710086 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Mode:e; Line:Neutral Line

**Final Data List**

NO.	Freq. [MHz]	Factor [dB]	QP Value	QP Limit	QP Margin	AV Value	AV Limit	AV Margin	Type
1	0.1557	10.10	36.18	65.69	29.51	20.64	55.69	35.05	N
2	0.5748	10.10	38.82	56.00	17.18	22.75	46.00	23.25	N
3	1.1514	10.10	35.77	56.00	20.23	21.39	46.00	24.61	N
4	4.6287	10.10	36.18	56.00	19.82	23.01	46.00	22.99	N
5	11.1116	10.10	29.65	60.00	30.35	20.68	50.00	29.32	N
6	14.7459	10.11	34.60	60.00	25.40	24.76	50.00	25.24	N

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone:(86-755) 8307 1443, or email: CN.Doccheck@sgs.com

1/ F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, 710086 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
Xi'an, Shaanxi, China

中国·西安·沣东新城科源三路 137 号康鸿橙方科技园 1 号楼 D 单元一层

邮编 710086 sgs.china@sgs.com

## 2.2 Radiated Emissions (30MHz-1GHz)

Test Requirement: 47 CFR Part 15, Subpart B

Test Method: ANSI C63.4:2014

Frequency Range: 30MHz to 1GHz

Measurement Distance: 3m

Limit:

30MHz -88MHz 40.0(dB $\mu$ V/m) quasi-peak

88MHz-216MHz 43.5(dB $\mu$ V/m) quasi-peak

216MHz-960MHz 46.0(dB $\mu$ V/m) quasi-peak

960MHz-1000MHz 54.0(dB $\mu$ V/m) quasi-peak

Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to1000MHz

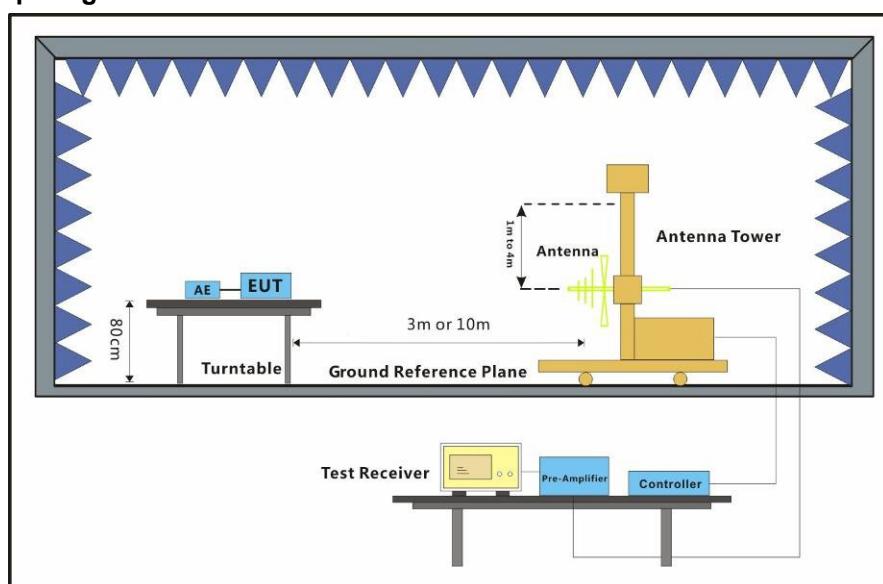
### 2.1.4 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 66.5 % RH Atmospheric Pressure: 1010 mbar

The worst case a: Transfer data between the EUT and the PC+USB cable  
for final test:

### 2.1.5 Test Setup Diagram



### 2.1.6 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

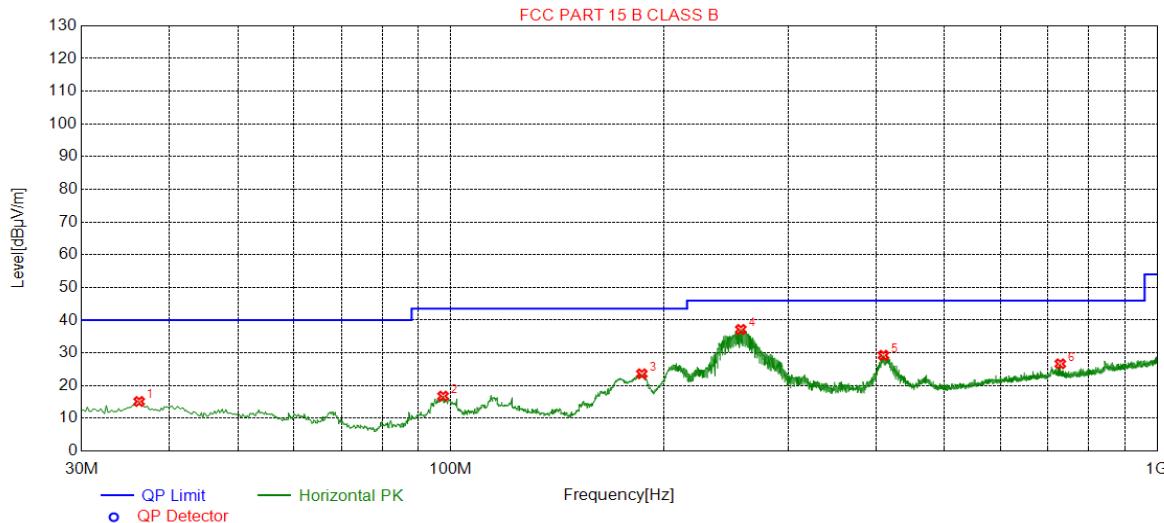
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone:(86-755) 8307 1443, or email: CN.Doccheck@sgs.com

1/ F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, 710086 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
Xi'an, Shaanxi, China

中国·西安·沣东新城科源三路 137 号康鸿橙方科技园 1 号楼 D 单元一层

邮编 710086 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Mode:a; Polarization:Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	36.2092	15.15	-29.57	40.00	24.85	200	257	Horizontal
2	97.5255	16.79	-32.44	43.50	26.71	200	236	Horizontal
3	186.395	23.61	-32.62	43.50	19.89	100	209	Horizontal
4	257.413	37.18	-29.45	46.00	8.82	100	111	Horizontal
5	409.733	29.28	-25.33	46.00	16.72	100	55	Horizontal
6	729.315	26.66	-18.82	46.00	19.34	100	282	Horizontal

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

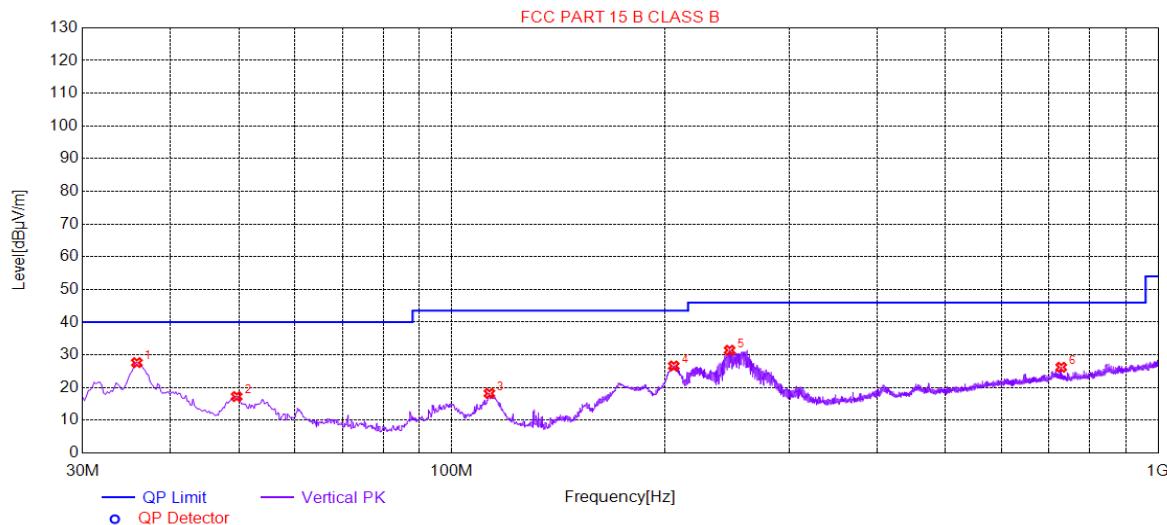
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone:(86-755) 8307 1443, or email: CN.Doccheck@sgs.com

1/ F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, 710086 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
Xi'an, Shaanxi, China

中国·西安·沣东新城科源三路 137 号康鸿橙方科技园 1 号楼 D 单元一层

邮编 710086 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Mode:a; Polarization:Vertical

**Suspected List**

NO.	Freq. [MHz]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	35.8212	27.64	-29.69	40.00	12.36	100	9	Vertical
2	49.5979	17.26	-30.37	40.00	22.74	100	261	Vertical
3	113.048	18.22	-32.48	43.50	25.28	100	161	Vertical
4	206.187	26.62	-31.06	43.50	16.88	100	287	Vertical
5	247.323	31.42	-29.77	46.00	14.58	100	341	Vertical
6	729.121	26.23	-18.82	46.00	19.77	100	302	Vertical

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone:(86-755) 8307 1443, or email: CN.Doccheck@sgs.com

1/ F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, 710086 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
Xi'an, Shaanxi, China

中国·西安·沣东新城科源三路 137 号康鸿橙方科技园 1 号楼 D 单元一层

邮编 710086 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

## 2.3 Radiated Emissions (above 1GHz)

Test Requirement: 47 CFR Part 15, Subpart B

Test Method: ANSI C63.4:2014

Frequency Range: Above 1GHz

Measurement Distance: 3m

Limit:

Above 1GHz 74(dB $\mu$ V/m) peak, 54(dB $\mu$ V/m) average

Detector: Peak for pre-scan (1000kHz resolution bandwidth) 1000M to18000MHz

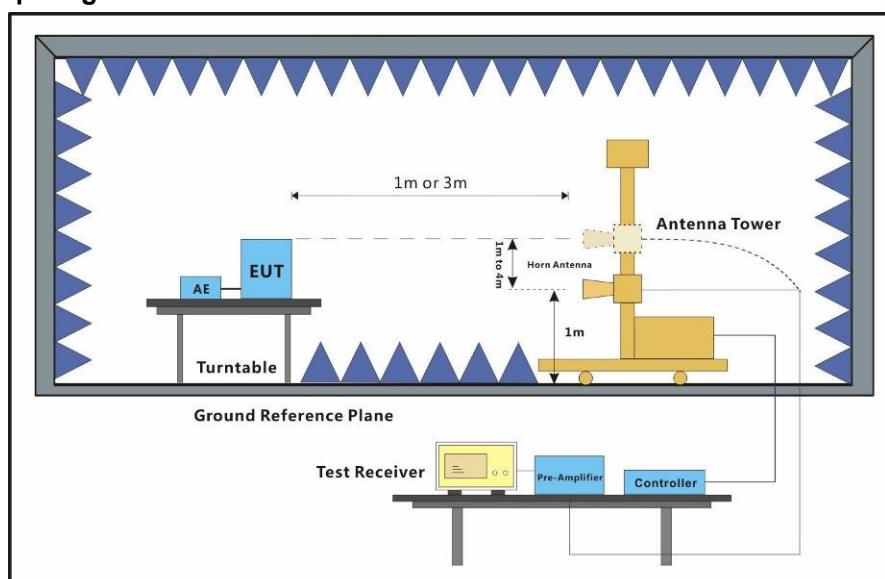
### 2.1.7 E.U.T. Operation

Operating Environment:

Temperature: 21.7 °C Humidity: 56.4 % RH Atmospheric Pressure: 1010 mbar

The worst case e: GSM850 Idle+BT+WLAN2.4G+GNSS+Playing MP4+USB  
for final test: Cable+adapter(worst)+earphone+Battery

### 2.1.8 Test Setup Diagram



### 2.1.9 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn antenna with 2 orthogonal polarities.

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

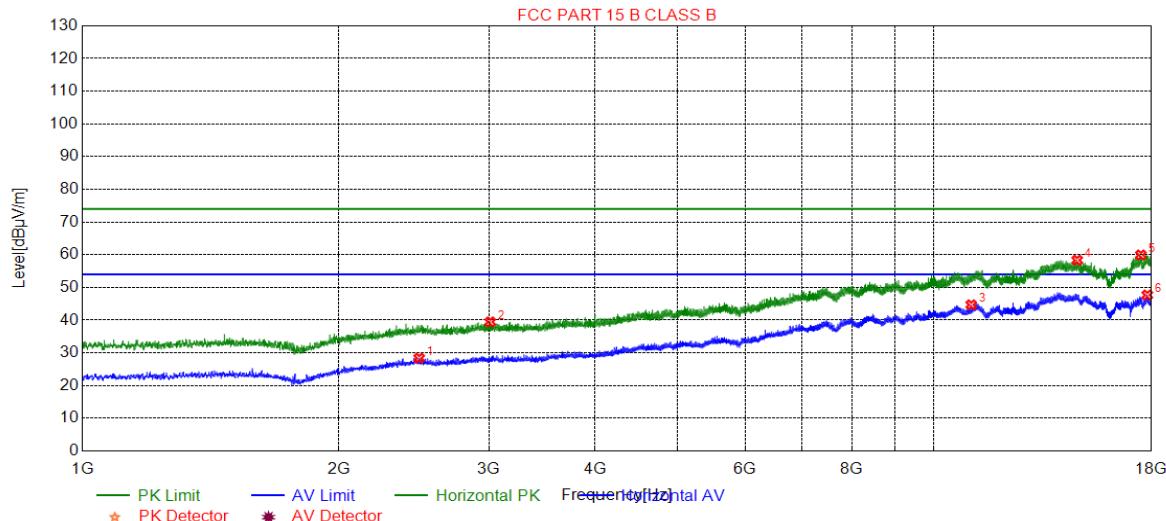
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone:(86-755) 8307 1443, or email: CN.Doccheck@sgs.com

1/ F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, 710086 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
Xi'an, Shaanxi, China

中国·西安·沣东新城科源三路 137 号康鸿橙方科技园 1 号楼 D 单元一层

邮编 710086 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Mode:e; Polarization:Horizontal

**Suspected List**

NO.	Freq. [MHz]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2485.02	28.39	-25.95	54.00	25.61	100	267	Horizontal
2	3011.20	39.48	-24.50	74.00	34.52	100	305	Horizontal
3	11054.3	44.71	-2.65	54.00	9.29	200	128	Horizontal
4	14719.6	58.35	1.69	74.00	15.65	200	241	Horizontal
5	17488.2	59.95	1.49	74.00	14.05	100	192	Horizontal
6	17795.9	47.70	0.70	54.00	6.30	200	278	Horizontal

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

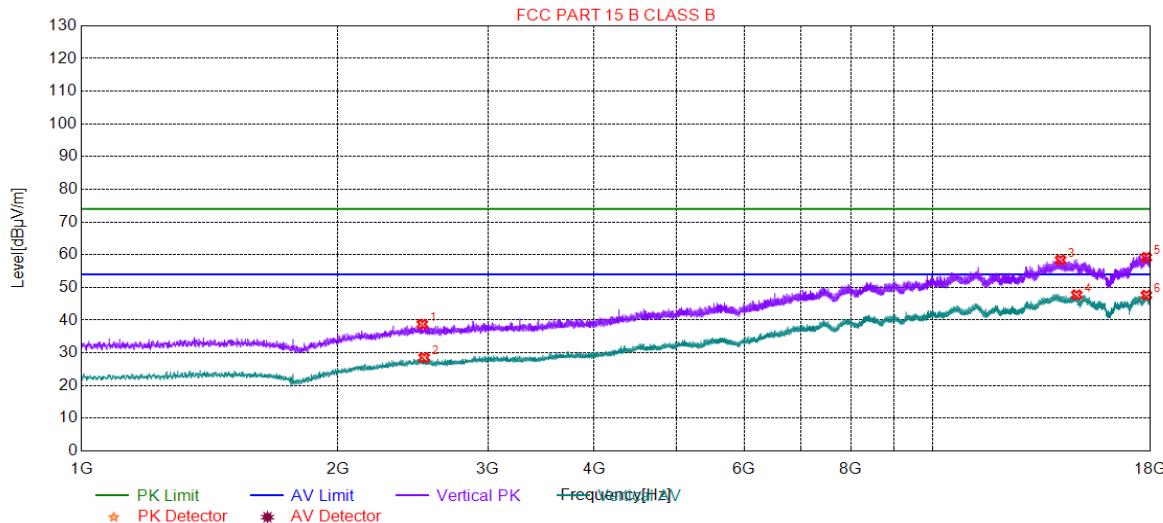
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone:(86-755) 8307 1443, or email: CN.Doccheck@sgs.com

1/ F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, 710086 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
Xi'an, Shaanxi, China

中国·西安·沣东新城科源三路 137 号康鸿橙方科技园 1 号楼 D 单元一层

邮编 710086 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Mode:e; Polarization:Vertical

**Suspected List**

NO.	Freq. [MHz]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2513.07	38.77	-25.86	74.00	35.23	200	91	Vertical
2	2525.82	28.56	-25.87	54.00	25.44	100	232	Vertical
3	14111.0	58.42	2.33	74.00	15.58	100	118	Vertical
4	14742.6	47.76	1.71	54.00	6.24	100	307	Vertical
5	17794.2	59.19	0.71	74.00	14.81	100	269	Vertical
6	17799.3	47.66	0.69	54.00	6.34	100	118	Vertical

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone:(86-755) 8307 1443, or email: CN.Doccheck@sgs.com

1/ F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, 710086 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
Xi'an, Shaanxi, China

中国·西安·沣东新城科源三路 137 号康鸿橙方科技园 1 号楼 D 单元一层

邮编 710086 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

### 3 Equipment List

Chamber					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
Semi-Anechoic Chamber	Brilliant-emc	966	XAW03-35-01	NCR	NCR
MXA signal analyzer	Keysight	N9020A	XAW01-06-01	2020/4/2	2021/4/2
Radio communication analyzer	ROHDE&SCHWARZ	CMW 500	XAW01-03-02	2020/4/2	2021/4/2
Test receiver	ROHDE&SCHWARZ	ESR	XAW01-08-01	2020/9/6	2021/9/5
				2019/9/7	2020/9/6
Receiving antenna	Rosenberger	VULB 9163	XAW01-09-01	2019/10/13	2021/10/12
Receiving antenna	Rosenberger	BBHA 9120D	XAW01-09-02	2019/10/13	2021/10/12
Receiving antenna	Rosenberger	BBHA 9170	XAW01-09-03	2019/10/13	2021/10/12
Directional antenna rack controller	Max-Full	MF-7802BS	XAW03-03-01	NCR	NCR
High-speed antenna rack controller	Max-Full	MF-7802	XAW03-04-01	NCR	NCR
Filter bank	Tonscend	JS0806-F	XAW03-05-01	NCR	NCR
Filter bank	Tonscend	JS0806s	XAW03-05-02	NCR	NCR
Amplifier	Tonscend	TAP00903040	XAW01-41-01	2019/11/18	2020/11/18
Amplifier	Tonscend	TAP01018048	XAW01-41-02	2019/11/18	2020/11/18
Amplifier	Tonscend	TAP18040048	XAW01-41-03	2019/12/3	2020/12/3
Amplifier	Brilliant-emc	YX28980930	XAW01-41-06	2019/11/18	2020/11/18
Artificial network	ROHDE&SCHWARZ	ENV216	XAW01-19-02	2019-09-16	2020/9/15

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone:(86-755) 8307 1443, or email: CN.Doccheck@sgs.com

1/ F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, 710086 www.sgsgroup.com.cn  
Xi'an, Shaanxi, China

中国·西安·沣东新城科源三路 137 号康鸿橙方科技园 1 号楼 D 单元一层

邮编 710086 sgs.china@sgs.com

## 4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conduction Emission	± 3.4dB (150kHz to 30MHz)
2	Radiated Emission	± 4.8dB (30MHz-1GHz)
		± 5.2dB (1GHz-6GHz)
		± 5.5dB (6GHz-18GHz)
		± 5.02dB (18GHz-40GHz)

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone:(86-755) 8307 1443, or email: CN.Doccheck@sgs.com

1/ F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, 710086 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
Xi'an, Shaanxi, China

中国·西安·沣东新城科源三路 137 号康鸿橙方科技园 1 号楼 D 单元一层

邮编 710086 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

## 5 Photographs

### 5.1 Test Setup

Refer to Appendix A - Photographs of Set-Up for ZR/2020/80074.

### 5.2 EUT Constructional Details (EUT Photos)

Refer to Photographs of EUT Constructional Details

- End of the Report -

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone:(86-755) 8307 1443, or email: CN.Doccheck@sgs.com

1/F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, 710086 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
Xi'an, Shaanxi, China

中国·西安·沣东新城科源三路 137 号康鸿橙方科技园 1 号楼 D 单元一层

邮编 710086 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)