

# RF TEST REPORT

Report No.: DDT-B21122007-1E01

<b>Applicant</b>	:	Quectel Wireless Solutions Co., Ltd.
<b>Applicant Address</b>	:	7th Floor, Hongye Building, No.1801 Hongmei Road, Xuhui District, Shanghai 200233, China
<b>Equipment Under Test</b>	:	LTE Module
<b>Model No.</b>	:	SC600Y-NA, SC600T-NA
<b>Trade Mark</b>	:	Quectel
<b>FCC ID</b>	:	XMR2019SC600NA
<b>Manufacturer</b>	:	Quectel Wireless Solutions Co., Ltd.
<b>Manufacturer Address</b>	:	7th Floor, Hongye Building, No.1801 Hongmei Road, Xuhui District, Shanghai 200233, China

**Issued By:** Tianjin Dongdian Testing Service Co., Ltd.

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## Test Report Declare

<b>Applicant</b>	:	Quectel Wireless Solutions Co., Ltd.
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<b>Address</b>	:	7th Floor, Hongye Building, No.1801 Hongmei Road, Xuhui District, Shanghai 200233, China

### Test Standard Used:

FCC Rules and Regulations: 47 CFR Part2, Part22, Part24, Part27, Part90

### Test Procedure Used:

ANSI C63.26:2015, KDB 971168 D01 v03r01

### We Declare:

The equipment described above is tested by Tianjin Dongdian Testing Service Co., Ltd and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Tianjin Dongdian Testing Service Co., Ltd is assumed of full responsibility for the accuracy and completeness of these tests.

**After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC standards.**

<b>Report No:</b>	DDT-B21122007-1E01		
<b>Date of Receipt:</b>	Dec. 22, 2021	<b>Date of Test:</b>	Dec. 22, 2021 ~ Jan. 10, 2022

**Prepared By:**

Leon Li

Leon Li/Engineer

**Approved By:**

Aaron Zhang

Aaron Zhang/EMC Manager



Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Tianjin Dongdian Testing Service Co., Ltd.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

## Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Jan. 10, 2022	

## 1. Summary of Test Results

### 1.1. UMTS Band II / LTE Band2 / Band25

Summary of Test Results			
Test Item	Standard	Requirements	Result
Effective (Isotropic) Radiated Power	FCC §2.1046, §24.232	EIRP: ≤2W	Pass <sup>1</sup>
Peak-to-Average Ratio	FCC §2.1046, §24.232	Limit: ≤13dB	Pass <sup>1</sup>
Modulation Characteristics	FCC §2.1047	Digital modulation	Pass <sup>1</sup>
Occupied Bandwidth	§2.1049	No limit	Pass <sup>1</sup>
Band Edges Compliance	FCC §2.1051, §24.238	Limit: ≤ P(dBm)- [43 + 10 log(P(w))] dBm/1Mhz	Pass <sup>1</sup>
Spurious Emission at Antenna Terminals	FCC §2.1051, §24.238	Limit: ≤ P(dBm)- [43 + 10 log(P(w))] dBm/1Mhz	Pass <sup>1</sup>
Field Strength of Spurious Radiation	FCC §2.1053, §24.238	Limit: ≤ P(dBm)- [43 + 10 log(P(w))] dBm/1Mhz	Pass <sup>2</sup>
Frequency Stability	FCC §2.1055, §24.235	Emission must remain in band	Pass <sup>1</sup>

Note 1:  
The above "pass<sup>1</sup>" items data are refer from the original report issued by SGS-CSTC Standards Technical Services, Co., Ltd. Shenzhen Branch. (Date of Test: 2019/05/30 ~2019/07/03). The detailed data can refer to Appendix B.1-WCDMA BAND II & IV & V and Appendix B.2-LTE Band 2 and Appendix B.10-LTE Band 25.

Note2:  
The above "pass<sup>2</sup>" item is tested by Tianjin Dongdian Testing Service Co., Ltd.

### 1.2. UMTS Band IV / LTE Band4 / Band66

Summary of Test Results			
Test Item	Standard	Requirements	Result
Effective (Isotropic) Radiated Power	FCC §2.1046, §27.50	EIRP: ≤1W	Pass <sup>1</sup>
Peak-to-Average Ratio	FCC §2.1046, §27.50	Limit: ≤13dB	Pass <sup>1</sup>
Modulation Characteristics	FCC §2.1047	Digital modulation	Pass <sup>1</sup>
Occupied Bandwidth	FCC §2.1049	No limit	Pass <sup>1</sup>
Band Edges Compliance	FCC §2.1051, §27.53	Limit: ≤ P(dBm)- [43 + 10 log(P(w))] dBm/1MHz	Pass <sup>1</sup>
Spurious Emission at Antenna Terminals	FCC §2.1051, §27.53	Limit: ≤ P(dBm)- [43 + 10 log(P(w))] dBm/1MHz	Pass <sup>1</sup>
Field Strength of Spurious Radiation	FCC §2.1053, §27.53	Limit: ≤ P(dBm)- [43 + 10 log(P(w))] dBm/1MHz	Pass <sup>2</sup>
Frequency Stability	FCC §2.1055, §27.54	Emission must remain in band	Pass <sup>1</sup>

## Note 1:

The above "pass<sup>1</sup>" items data are refer from the original report issued by SGS-CSTC Standards Technical Services, Co., Ltd. Shenzhen Branch. (Date of Test: 2019/05/30 ~2019/07/03). The detailed data can refer to Appendix B.1-WCDMA BAND II & IV & V and Appendix B.3-LTE Band 4 and Appendix B.14-LTE Band 66.

## Note2:

The above "pass<sup>2</sup>" item is tested by Tianjin Dongdian Testing Service Co., Ltd.

### 1.3. UMTS Band V / LTE Band5 / Band26(824-849MHz)

Summary of Test Results			
Test Item	Standard	Requirements	Result
Effective (Isotropic) Radiated Power	FCC §2.1046, §22.913	ERP: ≤ 7W	Pass <sup>1</sup>
Peak-to-Average Ratio	FCC §2.1046	Limit: ≤13dB	Pass <sup>1</sup>
Modulation Characteristics	FCC §2.1047	Digital modulation	Pass <sup>1</sup>
Occupied Bandwidth	FCC §2.1049	No limit	Pass <sup>1</sup>
Band Edges Compliance	FCC §2.1051, §22.917	Limit: 1) ≤ P(dBm)- [43 + 10 log(P (w))] dBm/100kHz(Below 1GHz) 2) ≤ P(dBm)- [43 + 10 log(P (w))] dBm/1MHz(Above 1GHz)	Pass <sup>1</sup>
Spurious Emission at Antenna Terminals	FCC §2.1051, §22.917	Limit: 1) ≤ P(dBm)- [43 + 10 log(P (w))] dBm/100kHz(Below 1GHz) 2) ≤ P(dBm)- [43 + 10 log(P (w))] dBm/1MHz(Above 1GHz)	Pass <sup>1</sup>
Field Strength of Spurious Radiation	FCC §2.1053, §22.917	Limit: 1) ≤ P(dBm)- [43 + 10 log(P (w))] dBm/100kHz(Below 1GHz) 2) ≤ P(dBm)- [43 + 10 log(P (w))] dBm/1MHz(Above 1GHz)	Pass <sup>2</sup>
Frequency Stability	FCC §2.1055, §22.355	Δ: <±2.5ppm	Pass <sup>1</sup>
Note 1: The above "pass <sup>1</sup> " items data are refer from the original report issued by SGS-CSTC Standards Technical Services, Co., Ltd. Shenzhen Branch. (Date of Test: 2019/05/30 ~2019/07/03). The detailed data can refer to Appendix B.1-WCDMA BAND II & IV & V and Appendix B.4-LTE Band 5 and Appendix B.12-LTE Band 26(824-849MHz). Note2: The above "pass <sup>2</sup> " item is tested by Tianjin Dongdian Testing Service Co., Ltd.			

### 1.4. LTE Band7 / Band41

Summary of Test Results			
Test Item	Standard	Requirements	Result
Effective (Isotropic) Radiated Power	FCC §2.1046, §27.50	EIRP: ≤2W	Pass <sup>1</sup>
Peak-to-Average Ratio	FCC §2.1046, §27.50	Limit: ≤13dB	Pass <sup>1</sup>
Modulation Characteristics	FCC §2.1047	Digital modulation	Pass <sup>1</sup>
Occupied Bandwidth	FCC §2.1049	FCC: No limit	Pass <sup>1</sup>
Band Edges Compliance	FCC §2.1051, §27.53	Limit: 1) ≤ P(dBm)- [40 + 10 log(P (w))] dBm/1MHz between the channel edge and 5 megahertz from the	Pass <sup>1</sup>

		channel edge, 2) $\leq P(\text{dBm}) - [43 + 10 \log(P(\text{w}))]$ dBm/1MHz between 5 megahertz and X megahertz from the channel edge and between 2490.5 MHz and 2496 MHz, X=Max {6MHz, EBW} 3) $\leq P(\text{dBm}) - [55 + 10 \log(P(\text{w}))]$ dBm/1MHz on all frequencies more than X megahertz from the channel edge and or below 2490.5 MHz.	
Spurious Emission at Antenna Terminals	FCC §2.1051, §27.53	Limit: 1) $\leq P(\text{dBm}) - [40 + 10 \log(P(\text{w}))]$ dBm/1MHz between the channel edge and 5 megahertz from the channel edge, 2) $\leq P(\text{dBm}) - [43 + 10 \log(P(\text{w}))]$ dBm/1MHz between 5 megahertz and X megahertz from the channel edge and between 2490.5 MHz and 2496 MHz, X=Max {6MHz, EBW} 3) $\leq P(\text{dBm}) - [55 + 10 \log(P(\text{w}))]$ dBm/1MHz on all frequencies more than X megahertz from the channel edge and or below 2490.5 MHz.	Pass <sup>1</sup>
Field Strength of Spurious Radiation	FCC §2.1053, §27.53	Limit: 1) $\leq P(\text{dBm}) - [40 + 10 \log(P(\text{w}))]$ dBm/1MHz between the channel edge and 5 megahertz from the channel edge, 2) $\leq P(\text{dBm}) - [43 + 10 \log(P(\text{w}))]$ dBm/1MHz between 5 megahertz and X megahertz from the channel edge and between 2490.5 MHz and 2496 MHz, X=Max {6MHz, EBW} 3) $\leq P(\text{dBm}) - [55 + 10 \log(P(\text{w}))]$ dBm/1MHz on all frequencies more than X megahertz from the channel edge and or below 2490.5 MHz.	Pass <sup>2</sup>
Frequency Stability	FCC §2.1055, §27.54	Emission must remain in band	Pass <sup>1</sup>
<p>Note 1: The above "pass<sup>1</sup>" items data are refer from the original report issued by SGS-CSTC Standards Technical Services, Co., Ltd. Shenzhen Branch. (Date of Test: 2019/05/30 ~2019/07/03). The detailed data can refer to Appendix B.5-LTE Band 7 and Appendix B.13-LTE Band 41.</p> <p>Note2: The above "pass<sup>2</sup>" item is tested by Tianjin Dongdian Testing Service Co., Ltd.</p>			

### 1.5. LTE Band12 / Band17

Summary of Test Results			
Test Item	Standard	Requirements	Result
Effective (Isotropic) Radiated Power	FCC §2.1046, §27.50	ERP: $\leq 3\text{W}$	Pass <sup>1</sup>
Peak-to-Average Ratio	FCC §2.1046, §27.50	Limit: $\leq 13\text{dB}$	Pass <sup>1</sup>
Modulation Characteristics	FCC §2.1047	Digital modulation	Pass <sup>1</sup>

Occupied Bandwidth	FCC §2.1049	No limit	Pass <sup>1</sup>
Band Edges Compliance	FCC §2.1051, §27.53	Limit: $\leq P(\text{dBm}) - [43 + 10 \log(P(w))]$ dBm/100KHz	Pass <sup>1</sup>
Spurious Emission at Antenna Terminals	FCC §2.1051, §27.53	Limit: $\leq P(\text{dBm}) - [43 + 10 \log(P(w))]$ dBm/100KHz	Pass <sup>1</sup>
Field Strength of Spurious Radiation	FCC §2.1053, §27.53	Limit: $\leq P(\text{dBm}) - [43 + 10 \log(P(w))]$ dBm/100KHz	Pass <sup>2</sup>
Frequency Stability	FCC §2.1055, §27.54	Emission must remain in band	Pass <sup>1</sup>

Note 1:

The above "pass<sup>1</sup>" items data are refer from the original report issued by SGS-CSTC Standards Technical Services, Co., Ltd. Shenzhen Branch. (Date of Test: 2019/05/30 ~2019/07/03). The detailed data can refer to Appendix B.6-LTE Band 12 and Appendix B.9-LTE Band 17.

Note2:

The above "pass<sup>2</sup>" item is tested by Tianjin Dongdian Testing Service Co., Ltd.

## 1.6. LTE Band13

Summary of Test Results			
Test Item	Standard	Requirements	Result
Effective (Isotropic) Radiated Power	FCC §2.1046, §27.50	ERP: $\leq 3W$	Pass <sup>1</sup>
Peak-to-Average Ratio	FCC §2.1046, §27.50	Limit: $\leq 13\text{dB}$	Pass <sup>1</sup>
Modulation Characteristics	FCC §2.1047	Digital modulation	Pass <sup>1</sup>
Occupied Bandwidth	FCC §2.1049	No limit	Pass <sup>1</sup>
Band Edges Compliance	FCC §2.1051, §27.53	Limit: 1) $\leq P(\text{dBm}) - [43 + 10 \log(P(w))]$ dBm/100kHz on any frequency outside the 776-788 MHz band. 2) $\leq P(\text{dBm}) - [65 + 10 \log(P(w))]$ dBm/6.25kHz on all frequencies between 763-775 MHz and 793-805 MHz 3) EIRP: $\leq 70\text{dBW/MHz}$ (wideband) on 1559-1610MHz. 4) EIRP: $\leq 80\text{dBW}$ (narrowband <700Hz) on 1559-1610MHz.	Pass <sup>1</sup>
Spurious Emission at Antenna Terminals	FCC §2.1051, §27.53	Limit: 1) $\leq P(\text{dBm}) - [43 + 10 \log(P(w))]$ dBm/100kHz on any frequency outside the 776-788 MHz band. 2) $\leq P(\text{dBm}) - [65 + 10 \log(P(w))]$ dBm/6.25kHz on all frequencies between 763-775 MHz and 793-805 MHz 3) EIRP: $\leq 70\text{dBW/MHz}$ (wideband) on 1559-1610MHz. 4) EIRP: $\leq 80\text{dBW}$ (narrowband <700Hz) on 1559-1610MHz.	Pass <sup>1</sup>
Field Strength of Spurious Radiation	FCC §2.1053, §27.53	Limit: 1) $\leq P(\text{dBm}) - [43 + 10 \log(P(w))]$ dBm/100kHz on any frequency outside the 776-788 MHz band. 2) $\leq P(\text{dBm}) - [65 + 10 \log(P(w))]$ dBm/6.25kHz on all frequencies between	Pass <sup>2</sup>



		763-775 MHz and 793-805 MHz 3) EIRP: $\leq 70$ dBW/MHz (wideband) on 1559-1610 MHz. 4) EIRP: $\leq 80$ dBW (narrowband < 700 Hz) on 1559-1610 MHz.	
Frequency Stability	FCC §2.1055, §27.54	Emission must remain in band	Pass <sup>1</sup>
<p>Note 1: The above "pass<sup>1</sup>" items data are refer from the original report issued by SGS-CSTC Standards Technical Services, Co., Ltd. Shenzhen Branch. (Date of Test: 2019/05/30 ~2019/07/03). The detailed data can refer to Appendix B.7-LTE Band 13.</p> <p>Note2: The above "pass<sup>2</sup>" item is tested by Tianjin Dongdian Testing Service Co., Ltd.</p>			

### 1.7. LTE Band14

Summary of Test Results			
Test Item	Standard	Requirements	Result
Effective (Isotropic) Radiated Power	FCC §2.1046, §90.542	ERP: $\leq 3$ W	Pass <sup>1</sup>
Peak-to-Average Ratio	FCC §2.1046, §90.542	Limit: $\leq 13$ dB	Pass <sup>1</sup>
Modulation Characteristics	FCC §2.1047	Digital modulation	Pass <sup>1</sup>
Occupied Bandwidth	FCC §2.1049	No limit	Pass <sup>1</sup>
Emission Mask	FCC §90.210	Limit: 1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB. 2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB. 3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least $43 + 10 \log(P)$ dB.	Pass <sup>1</sup>
Band Edges Compliance	FCC §2.1051, §90.543	Limit: 1) $\leq P(\text{dBm}) - [65 + 10 \log(P(w))]$ dBm/6.25kHz on all frequencies between 769-775 MHz and 799-805 MHz. 2) $\leq P(\text{dBm}) - [43 + 10 \log(P(w))]$ dBm/100kHz on any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz.	Pass <sup>1</sup>
Spurious Emission at Antenna Terminals	FCC §2.1051, §90.543	Limit: 1) $\leq P(\text{dBm}) - [65 + 10 \log(P(w))]$ dBm/6.25kHz on all frequencies between 769-775 MHz and 799-805 MHz. 2) $\leq P(\text{dBm}) - [43 + 10 \log(P(w))]$ dBm/100kHz on any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz. 3) $\leq P(\text{dBm}) - [43 + 10 \log(P(w))]$	Pass <sup>1</sup>

		dBm/100kHz on below 1GHz, $\leq P(\text{dBm}) - [43 + 10 \log(P(w))]$ dBm/1MHz on above 1GHz. 4) $\leq (\text{EIRP}) - 70 \text{ dBW/MHz}$ between 1559-1610 MHz when signal over 700Hz, and $\leq (\text{EIRP}) - 80 \text{ dBW/MHz}$ between 1559-1610 MHz when signal less 700Hz	
Field Strength of Spurious Radiation	FCC §2.1051, §90.543	Limit: 1) $\leq P(\text{dBm}) - [65 + 10 \log(P(w))]$ dBm/6.25kHz on all frequencies between 769-775 MHz and 799-805MHz. 2) $\leq P(\text{dBm}) - [43 + 10 \log(P(w))]$ dBm/100kHz on any frequency between 775-788 MHz, above 805 MHz, and below 758MHz. 3) $\leq P(\text{dBm}) - [43 + 10 \log(P(w))]$ dBm/100kHz on below 1GHz, $\leq P(\text{dBm}) - [43 + 10 \log(P(w))]$ dBm/1MHz on above 1GHz. 4) $\leq (\text{EIRP}) - 70 \text{ dBW/MHz}$ between 1559-1610 MHz when signal over 700Hz, and $\leq (\text{EIRP}) - 80 \text{ dBW/MHz}$ between 1559-1610 MHz when signal less 700Hz (narrowband $\leq 700\text{Hz}$ )	Pass <sup>2</sup>
Frequency Stability	FCC §2.1055, §90.213	Emission must remain in band	Pass <sup>1</sup>
<p>Note 1: The above "pass<sup>1</sup>" items data are refer from the original report issued by SGS-CSTC Standards Technical Services, Co., Ltd. Shenzhen Branch. (Date of Test: 2019/05/30 ~2019/07/03). The detailed data can refer to Appendix B.8-LTE Band 14.</p> <p>Note2: The above "pass<sup>2</sup>" item is tested by Tianjin Dongdian Testing Service Co., Ltd.</p>			

### 1.8. LTE Band26 partial(814-824MHz)

Summary of Test Results			
Test Item	Standard.	Requirements	Result
Conducted Output Power	FCC §2.1046, §90.635	Limit: $\leq 100\text{W}$	Pass <sup>1</sup>
Peak-to-Average Ratio	FCC §2.1046	Limit: $\leq 13\text{dB}$	Pass <sup>1</sup>
Modulation Characteristics	FCC §2.1047	Digital modulation	Pass <sup>1</sup>
Occupied Bandwidth	FCC §2.1049	No limit	Pass <sup>1</sup>
Band Edges Compliance / Emission mask	FCC §2.1051, §90.691	Limit: 1) $\leq P(\text{dBm}) - [50 + 10 \log(P(w))]$ dBm for any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz. 2) $\leq P(\text{dBm}) - [43 + 10 \log(P(w))]$ dBm for any frequency removed from the EA licensee's frequency block greater than 37.5 kHz.	Pass <sup>1</sup>
Spurious Emission at Antenna Terminals	FCC §2.1051, §90.691	Limit: 1) $\leq P(\text{dBm}) - [50 + 10 \log(P(w))]$	Pass <sup>1</sup>

		dBm for any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz.  2) $\leq P(\text{dBm}) - [43 + 10 \log(P(w))]$ dBm for any frequency removed from the EA licensee's frequency block greater than 37.5 kHz.	
Field Strength of Spurious Radiation	FCC §2.1053, §90.691	Limit: 1) $\leq P(\text{dBm}) - [50 + 10 \log(P(w))]$ dBm for any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz.  2) $\leq P(\text{dBm}) - [43 + 10 \log(P(w))]$ dBm for any frequency removed from the EA licensee's frequency block greater than 37.5 kHz.	Pass <sup>2</sup>
Frequency Stability	FCC §2.1055, §90.213	$\Delta: < \pm 2.5 \text{ ppm}$	Pass <sup>1</sup>
<p>Note 1: The above "pass<sup>1</sup>" items data are refer from the original report issued by SGS-CSTC Standards Technical Services, Co., Ltd. Shenzhen Branch. (Date of Test: 2019/05/30 ~2019/07/03). The detailed data can refer to Appendix B.11-LTE Band 26(814-824MHz).</p> <p>Note2: The above "pass<sup>2</sup>" item is tested by Tianjin Dongdian Testing Service Co., Ltd.</p>			

### 1.9. LTE Band71

Summary of Test Results			
Test Item	Standard.	Requirements	Result
Effective (Isotropic) Radiated Power	FCC §2.1046, §27.50	ERP: $\leq 3\text{W}$	Pass <sup>1</sup>
Peak-to-Average Ratio	FCC §2.1046, §27.50	Limit: $\leq 13\text{dB}$	Pass <sup>1</sup>
Modulation Characteristics	FCC §2.1047	Digital modulation	Pass <sup>1</sup>
Occupied Bandwidth	FCC §2.1049	No limit	Pass <sup>1</sup>
Band Edges Compliance	FCC §2.1051, §27.53	Limit: $\leq P(\text{dBm}) - [43 + 10 \log(P(w))]$ dBm/100KHz	Pass <sup>1</sup>
Spurious Emission at Antenna Terminals	FCC §2.1051, §27.53	Limit: $\leq P(\text{dBm}) - [43 + 10 \log(P(w))]$ dBm/100KHz	Pass <sup>1</sup>
Field Strength of Spurious Radiation	FCC §2.1053, §27.53	Limit: $\leq P(\text{dBm}) - [43 + 10 \log(P(w))]$ dBm/100KHz	Pass <sup>2</sup>
Frequency Stability	FCC §2.1055, §27.54	Emission must remain in band	Pass <sup>1</sup>
<p>Note 1: The above "pass<sup>1</sup>" items data are refer from the original report issued by SGS-CSTC Standards Technical Services, Co., Ltd. Shenzhen Branch. (Date of Test: 2019/05/30 ~2019/07/03). The detailed data can refer to Appendix B.15-LTE Band 71.</p> <p>Note2: The above "pass<sup>2</sup>" item is tested by Tianjin Dongdian Testing Service Co., Ltd.</p>			

## 2. General Test Information

### 2.1. Description of EUT

EUT Description	: LTE Module											
Model Number	: SC600Y-NA, SC600T-NA											
Trade Mark	: Quectel											
IMEI	: 861451040009907 861451040009915											
Serial Number	: N/A											
Hardware Version	: R1.0											
Software Version	: SC600YNAPAR05A02											
Sample Type	: Module											
Frequency band	UMTS	Tx (MHz)		Rx (MHz)		Supported Channel Bandwidth						
	Band II	1850-1910		1930-1990		5MHz						
	Band IV	1710-1755		2110-2155		5MHz						
	Band V	824-849		869-894		5MHz						
	E-UTRA LTE	Duplex Mode	Tx (MHz)		Rx (MHz)		Supported Channel Bandwidth					
	Band 2	FDD	1850-1910		1930-1990		1.4	3	5	10	15	20
	Band 4	FDD	1710-1755		2110-2155		☑	☑	☑	☑	☑	☑
	Band 5	FDD	824-849		869-894		☑	☑	☑	☑	---	---
	Band 7	FDD	2500-2570		2620-2690		---	---	☑	☑	☑	☑
	Band 12	FDD	699-716		729-746		☑	☑	☑	☑	---	---
	Band 13	FDD	777-787		746-756		---	---	☑	☑	---	---
	Band 14	FDD	788-798		758-768		---	---	☑	☑	---	---
	Band 17	FDD	704-716		734-746		---	---	☑	☑	---	---
	Band 25	FDD	1850-1915		1930-1995		☑	☑	☑	☑	☑	☑
	Band 26	FDD	814-824		859-869		☑	☑	☑	☑	---	---
	Band 26	FDD	824-849		869-894		☑	☑	☑	☑	☑	---
	Band 41	TDD	2496-2690		2496-2690		---	---	☑	☑	☑	☑
	Band 66	FDD	1710-1780		2110-2200		☑	☑	☑	☑	☑	☑
	Band 71	FDD	663-698		617-652		---	---	☑	☑	☑	☑
	Target Power & Power Class	: UMTS Band II(PC3): 24dBm UMTS Band IV(PC3): 24dBm UMTS Band V(PC3): 24dBm LTE Band 2(PC3): 24dBm LTE Band 4(PC3): 24dBm LTE Band 5(PC3): 24dBm LTE Band 7(PC3): 24dBm LTE Band 12(PC3): 24dBm LTE Band 13(PC3): 24dBm LTE Band 14(PC3): 24dBm LTE Band 17(PC3): 24dBm LTE Band 25(PC3): 24dBm LTE Band 26(PC3): 24dBm LTE Band 41(PC3): 24dBm LTE Band 66(PC3): 24dBm LTE Band 71(PC3): 24dBm										

Type of modulation	UMTS	WCDMA: UL: BPSK, DL: QPSK HSPA: QPSK, 16QAM
	E-UTRA	LTE: QPSK, 16QAM
Antenna Type	External Antenna	
Antenna Gain	UMTS Band II: 4dBi UMTS Band IV: 4dBi UMTS Band V: 4dBi LTE Band 2: 4dBi LTE Band 4: 4dBi LTE Band 5: 4dBi LTE Band 7: 4dBi LTE Band 12: 4dBi LTE Band 13: 4dBi LTE Band 14: 4dBi LTE Band 17: 4dBi LTE Band 25: 4dBi LTE Band 26: 4dBi LTE Band 41: 4dBi LTE Band 66: 4dBi LTE Band 71: 4dBi	
Power Supply	DC by 3.85V power supply	

Note: EUT is the abbreviation of equipment under test.

## 2.2. RF Channel Information

UMTS Band	Transmitter / Receiver	Channel Bandwidth	Lowest range(L)	Middle range(M)	Highest range(H)
Band II	Transmitter	5MHz	Channel 9262 (1852.4MHz)	Channel 9400 (1880.0MHz)	Channel 9538 (1907.6MHz)
	Receiver		Channel 9662 (1932.4MHz)	Channel 9800 (1960.0MHz)	Channel 9938 (1987.6MHz)
Band IV	Transmitter	5MHz	Channel 1312 (1712.4MHz)	Channel 1413 (1732.6MHz)	Channel 1513 (1752.6MHz)
	Receiver		Channel 1537 (2112.4MHz)	Channel 1638 (2132.6MHz)	Channel 1738 (2152.6MHz)
Band V	Transmitter	5MHz	Channel 4132 (826.4MHz)	Channel 4182 (836.4MHz)	Channel 4233 (846.6MHz)
	Receiver		Channel 4357 (871.4MHz)	Channel 4407 (881.4MHz)	Channel 4458 (891.6MHz)

E-UTRA Band	Transmitter/ Receiver	Channel Bandwidth	Frequencies Under Test		
			Lowest range(L)	Middle range(M)	Highest range(H)
Band 2	Transmitter	1.4MHz	Channel 18607 (1850.7MHz)	Channel 18900 (1880MHz)	Channel 19193 (1909.3MHz)
		3MHz	Channel 18615 (1851.5MHz)	Channel 18900 (1880MHz)	Channel 19185 (1908.5MHz)
		5MHz	Channel 18625 (1852.5MHz)	Channel 18900 (1880MHz)	Channel 19175 (1907.5MHz)
		10MHz	Channel 18650 (1855MHz)	Channel 18900 (1880MHz)	Channel 19150 (1905MHz)
		15MHz	Channel 18675 (1857.5MHz)	Channel 18900 (1880MHz)	Channel 19125 (1902.5MHz)
		20MHz	Channel 18700 (1860MHz)	Channel 18900 (1880MHz)	Channel 19100 (1900MHz)
	Receiver	1.4MHz	Channel 607 (1930.7MHz)	Channel 900 (1960MHz)	Channel 1193 (1989.3MHz)
		3MHz	Channel 615 (1931.5MHz)	Channel 900 (1960MHz)	Channel 1185 (1988.5MHz)
		5MHz	Channel 625 (1932.5MHz)	Channel 900 (1960MHz)	Channel 1175 (1987.5MHz)
		10MHz	Channel 650 (1935MHz)	Channel 900 (1960MHz)	Channel 1150 (1985MHz)
		15MHz	Channel 675 (1937.5MHz)	Channel 900 (1960MHz)	Channel 1125 (1982.5MHz)
		20MHz	Channel 700 (1940MHz)	Channel 900 (1960MHz)	Channel 1100 (1980MHz)
Band 4	Transmitter	1.4MHz	Channel 19957 (1710.7MHz)	Channel 20175 (1732.5MHz)	Channel 20393 (1754.3MHz)
		3MHz	Channel 19965 (1711.5MHz)	Channel 20175 (1732.5MHz)	Channel 20385 (1753.5MHz)
		5MHz	Channel 19975 (1712.5MHz)	Channel 20175 (1732.5MHz)	Channel 20375 (1752.5MHz)
		10MHz	Channel 20000	Channel 20175	Channel 20350

	Receiver		(1715MHz)	(1732.5MHz)	(1750MHz)
		15MHz	Channel 20025 (1717.5 MHz)	Channel 20175 (1732.5MHz)	Channel 20325 (1747.5MHz)
		20MHz	Channel 20050 (1720 MHz)	Channel 20175 (1732.5MHz)	Channel 20300 (1745MHz)
		1.4MHz	Channel 1957 (2110.7MHz)	Channel 2175 (2132.5MHz)	Channel 2393 (2154.3MHz)
		3MHz	Channel 1965 (2111.5MHz)	Channel 2175 (2132.5MHz)	Channel 2385 (2153.5MHz)
		5MHz	Channel 1975 (2112.5MHz)	Channel 2175 (2132.5MHz)	Channel 2375 (2152.5MHz)
		10MHz	Channel 2000 (2115MHz)	Channel 2175 (2132.5MHz)	Channel 2350 (2150MHz)
		15MHz	Channel 2025 (2117.5MHz)	Channel 2175 (2132.5MHz)	Channel 2325 (2147.5MHz)
		20MHz	Channel 2050 (2120MHz)	Channel 2175 (2132.5MHz)	Channel 2300 (2145MHz)
		Band5	Transmitter	1.4MHz	Channel 20407 (824.7MHz)
3MHz	Channel 20415 (825.5MHz)			Channel 20525 (836.5MHz)	Channel 20635 (847.5MHz)
5MHz	Channel 20425 (826.5MHz)			Channel 20525 (836.5MHz)	Channel 20625 (846.5MHz)
10MHz	Channel 20450 (829 MHz)			Channel 20525 (836.5MHz)	Channel 20600 (844MHz)
Receiver	1.4MHz		Channel 2407 (869.7MHz)	Channel 2525 (881.5MHz)	Channel 2643 (893.3MHz)
	3MHz		Channel 2415 (870.5MHz)	Channel 2525 (881.5MHz)	Channel 2635 (892.5MHz)
	5MHz		Channel 2425 (871.5MHz)	Channel 2525 (881.5MHz)	Channel 2625 (891.5MHz)
	10MHz		Channel 2450 (874MHz)	Channel 2525 (881.5MHz)	Channel 2600 (889MHz)
Band 7	Transmitter	5MHz	Channel 20775 (2502.5MHz)	Channel 21100 (2535MHz)	Channel 21425 (2567.5MHz)
		10MHz	Channel 20800 (2505MHz)	Channel 21100 (2535MHz)	Channel 21400 (2565MHz)
		15MHz	Channel 20825 (2507.5MHz)	Channel 21100 (2535MHz)	Channel 21375 (2562.5MHz)
		20MHz	Channel 20850 (2510MHz)	Channel 21100 (2535MHz)	Channel 21350 (2560MHz)
	Receiver	5MHz	Channel 2775 (2622.5MHz)	Channel 3100 (2655MHz)	Channel 3425 (2687.5MHz)
		10MHz	Channel 2800 (2625MHz)	Channel 3100 (2655MHz)	Channel 3400 (2685MHz)
		15MHz	Channel 2825 (2627.5MHz)	Channel 3100 (2655MHz)	Channel 3375 (2682.5MHz)
		20MHz	Channel 2850 (2630MHz)	Channel 3100 (2655MHz)	Channel 3350 (2680MHz)
Band 12	Transmitter	1.4MHz	Channel 23017 (699.7MHz)	Channel 23095 (707.5MHz)	Channel 23173 (715.3MHz)
		3MHz	Channel 23025	Channel 23095	Channel 23165

	Receiver		(700.5MHz)	(707.5MHz)	(714.5MHz)
		5MHz	Channel 23035 (701.5MHz)	Channel 23095 (707.5MHz)	Channel 23155 (713.5MHz)
		10MHz	Channel 23060 (704MHz)	Channel 23095 (707.5MHz)	Channel 23130 (711MHz)
		1.4MHz	Channel 5017 (729.7MHz)	Channel 5095 (737.5MHz)	Channel 5173 (745.3MHz)
		3MHz	Channel 5025 (730.5MHz)	Channel 5095 (737.5MHz)	Channel 5165 (744.5MHz)
		5MHz	Channel 5035 (731.5MHz)	Channel 5095 (737.5MHz)	Channel 5155 (743.5MHz)
		10MHz	Channel 5060 (734MHz)	Channel 5095 (737.5MHz)	Channel 5130 (741MHz)
Band 13	Transmitter	5MHz	Channel 23205 (779.5MHz)	Channel 23230 (782MHz)	Channel 23255 (784.5MHz)
		10MHz	Channel 23230 (782MHz)	Channel 23230 (782MHz)	Channel 23230 (782MHz)
	Receiver	5MHz	Channel 5205 (748.5MHz)	Channel 5230 (751MHz)	Channel 5255 (753.5MHz)
		10MHz	Channel 5230 (751MHz)	Channel 5230 (751MHz)	Channel 5230 (751MHz)
Band 14	Transmitter	5MHz	Channel 23305 (790.5MHz)	Channel 23330 (793MHz)	Channel 23355 (795.5MHz)
		10MHz	Channel 23330 (793MHz)	Channel 23330 (793MHz)	Channel 23330 (793MHz)
	Receiver	5MHz	Channel 5305 (760.5MHz)	Channel 5330 (763MHz)	Channel 5355 (765.5MHz)
		10MHz	Channel 5330 (763MHz)	Channel 5330 (763MHz)	Channel 5330 (763MHz)
Band 17	Transmitter	5MHz	Channel 23755 (706.5MHz)	Channel 23790 (710MHz)	Channel 23825 (713.5MHz)
		10MHz	Channel 23780 (709MHz)	Channel 23790 (710MHz)	Channel 23800 (711MHz)
	Receiver	5MHz	Channel 5755 (736.5MHz)	Channel 5790 (740MHz)	Channel 5825 (743.5MHz)
		10MHz	Channel 5780 (739MHz)	Channel 5790 (740MHz)	Channel 5800 (741MHz)
Band 25	Transmitter	1.4MHz	Channel 26047 (1850.7MHz)	Channel 26365 (1882.5MHz)	Channel 26683 (1914.3MHz)
		3MHz	Channel 26055 (1851.5MHz)	Channel 26365 (1882.5MHz)	Channel 26675 (1913.5MHz)
		5MHz	Channel 26065 (1852.5MHz)	Channel 26365 (1882.5MHz)	Channel 26665 (1912.5MHz)
		10MHz	Channel 26090 (1855MHz)	Channel 26365 (1882.5MHz)	Channel 26640 (1910MHz)
		15MHz	Channel 26115 (1857.5MHz)	Channel 26365 (1882.5MHz)	Channel 26615 (1907.5MHz)
		20MHz	Channel 26140 (1860MHz)	Channel 26365 (1882.5MHz)	Channel 26590 (1905MHz)
	Receiver	1.4MHz	Channel 8047 (1930.7MHz)	Channel 8365 (1962.5MHz)	Channel 8683 (1994.3MHz)
		3MHz	Channel 8055	Channel 8365	Channel 8675



			(1931.5MHz)	(1962.5MHz)	(1993.5MHz)
		5MHz	Channel 8065 (1932.5MHz)	Channel 8365 (1962.5MHz)	Channel 8665 (1992.5MHz)
		10MHz	Channel 8090 (1935MHz)	Channel 8365 (1962.5MHz)	Channel 8640 (1990MHz)
		15MHz	Channel 8115 (1937.5MHz)	Channel 8365 (1962.5MHz)	Channel 8615 (1987.5MHz)
		20MHz	Channel 8140 (1940MHz)	Channel 8365 (1962.5MHz)	Channel 8590 (1985MHz)
Band 26 (814- 824)	Transmitter	1.4MHz	Channel 26697 (814.7 MHz)	Channel 26740 (819 MHz)	Channel 26783 (823.3 MHz)
		3MHz	Channel 26705 (815.5 MHz)	Channel 26740 (819 MHz)	Channel 26775 (822.5 MHz)
		5MHz	Channel 26715 (816.5 MHz)	Channel 26740 (819 MHz)	Channel 26765 (821.5 MHz)
		10MHz	Channel 26740 (819 MHz)	Channel 26740 (819 MHz)	Channel 26740 (819 MHz)
	Receiver	1.4MHz	Channel 8697 (859.7 MHz)	Channel 8740 (864MHz)	Channel 8783 (868.3 MHz)
		3MHz	Channel 8705 (860.5 MHz)	Channel 8740 (864MHz)	Channel 8775 (867.5 MHz)
		5MHz	Channel 8715 (861.5 MHz)	Channel 8740 (864MHz)	Channel 8755 (866.5 MHz)
		10MHz	Channel 8740 (864MHz)	Channel 8740 (864MHz)	Channel 8740 (864MHz)
Band 26 (824- 849)	Transmitter	1.4MHz	Channel 26797 (824.7MHz)	Channel 26915 (836.5MHz)	Channel 27033 (848.3MHz)
		3MHz	Channel 26805 (825.5MHz)	Channel 26915 (836.5MHz)	Channel 27025 (847.5MHz)
		5MHz	Channel 26815 (826.5MHz)	Channel 26915 (836.5MHz)	Channel 27015 (846.5MHz)
		10MHz	Channel 26840 (829MHz)	Channel 26915 (836.5MHz)	Channel 26990 (844MHz)
		15MHz	Channel 26865 (831.5MHz)	Channel 26915 (836.5MHz)	Channel 26965 (841.5MHz)
	Receiver	1.4MHz	Channel 8697 (859.7MHz)	Channel 8915 (881.5MHz)	Channel 9033 (893.3MHz)
		3MHz	Channel 8805 (860.5MHz)	Channel 8915 (881.5MHz)	Channel 9025 (892.5MHz)
		5MHz	Channel 8815 (871.5MHz)	Channel 8915 (881.5MHz)	Channel 9015 (891.5MHz)
		10MHz	Channel 8840 (874MHz)	Channel 8915 (881.5MHz)	Channel 8990 (889MHz)
		15MHz	Channel 8865 (876.5MHz)	Channel 8915 (881.5MHz)	Channel 8965 (886.5MHz)
Band 41	Transmitter & Receiver	5MHz	Channel 39675 (2498.5MHz)	Channel 40620 (2593MHz)	Channel 41565 (2687.5MHz)
		10MHz	Channel 39700 (2501MHz)	Channel 40620 (2593MHz)	Channel 41540 (2685MHz)
		15MHz	Channel 39725 (2503.5MHz)	Channel 40620 (2593MHz)	Channel 41515 (2682.5MHz)
		20MHz	Channel 39750 (2506MHz)	Channel 40620 (2593MHz)	Channel 41490 (2680MHz)

Band 66	Transmitter	1.4MHz	Channel 131979 (1710.7MHz)	Channel 132322 (1745MHz)	Channel 132665 (1779.3MHz)
		3MHz	Channel 131987 (1711.5MHz)	Channel 132322 (1745MHz)	Channel 132657 (1778.5MHz)
		5MHz	Channel 131997 (1712.5MHz)	Channel 132322 (1745MHz)	Channel 132647 (1777.5MHz)
		10MHz	Channel 132022 (1715MHz)	Channel 132322 (1745MHz)	Channel 132622 (1775MHz)
		15MHz	Channel 132047 (1717.5MHz)	Channel 132322 (1745MHz)	Channel 132597 (1772.5MHz)
		20MHz	Channel 132072 (1720MHz)	Channel 132322 (1745MHz)	Channel 132572 (1770MHz)
	Receiver	1.4MHz	Channel 66443 (2110.7MHz)	Channel 66786 (2145 MHz)	Channel 67129 (2179.3MHz)
		3MHz	Channel 66451 (2111.5MHz)	Channel 66786 (2145 MHz)	Channel 67121 (2178.5MHz)
		5MHz	Channel 66461 (2112.5MHz)	Channel 66786 (2145 MHz)	Channel 67111 (2177.5MHz)
		10MHz	Channel 66486 (2115MHz)	Channel 66786 (2145 MHz)	Channel 67086 (2175MHz)
		15MHz	Channel 66511 (2117.5MHz)	Channel 66786 (2145 MHz)	Channel 67061 (2172.5MHz)
		20MHz	Channel 66536 (2120MHz)	Channel 66786 (2145 MHz)	Channel 67036 (2170MHz)
Band 71	Transmitter	5MHz	Channel 133147 (665.5MHz)	Channel 133297 (680.5MHz)	Channel 133447 (695.5MHz)
		10MHz	Channel 133172 (668MHz)	Channel 133297 (680.5MHz)	Channel 133422 (693MHz)
		15MHz	Channel 133197 (670.5MHz)	Channel 133297 (680.5MHz)	Channel 133397 (690.5MHz)
		20MHz	Channel 133222 (673MHz)	Channel 133322 (683MHz)	Channel 133372 (688MHz)
	Receiver	5MHz	Channel 68611 (619.5MHz)	Channel 68761 (634.5MHz)	Channel 68911 (649.5MHz)
		10MHz	Channel 68636 (622MHz)	Channel 68761 (634.5MHz)	Channel 68886 (647MHz)
		15MHz	Channel 68661 (624.5MHz)	Channel 68761 (634.5MHz)	Channel 68861 (644.5MHz)
		20MHz	Channel 68686 (627MHz)	Channel 68786 (637MHz)	Channel 68836 (642MHz)

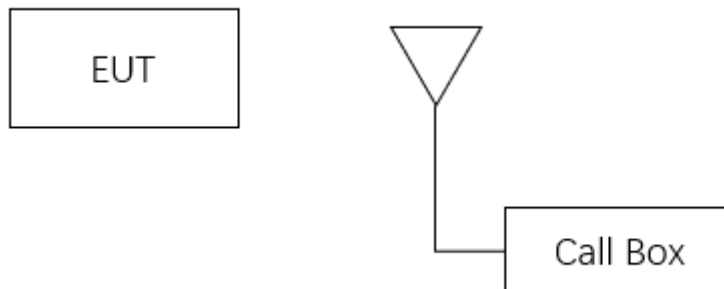
### 2.3. Accessories of EUT

Description of Accessories	Manufacturer	Model number	Description	Remark
N/A	N/A	N/A	N/A	N/A

## 2.4. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	EMC Compliance	SN
N/A	N/A	N/A	N/A	N/A

## 2.5. Block diagram of EUT configuration for test



## 2.6. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

Condition	Normal Condition	Extreme Condition
Pressure range	86-106KPa	N/A
Relative Humidity	30-75%	N/A
Temperature(°C)	NT: 25°C	N/A
Voltage(V)	NV: 3.85V	LV: 3.55V HV: 4.3V

Note: N/A: Not Applicable  
 NV: Normal Voltage  
 LV: Low Extreme Test Voltage  
 HV: High Extreme Test Voltage  
 NT: Normal Temperature  
 LT: Low Extreme Test Temperature  
 HT: High Extreme Test Temperature

## 2.7. Worst-case Configuration and Test Mode

### 2.7.1. Worst-case Radiated test

-The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.

-All modes of operation were investigated and the worst-case configuration results are reports. In the case of radiated spurious emissions, only result that confirmed the maximum radiated power was reported

-The worst case is reported with the EUT positioning, modulations, and paging service configurations shown in the test data.

-All modes of operation were tested and the worst case results are reported.

-Below table show the worst case details:

Test Item	Test Mode	Band	Channel	Modulation	Bandwidth	Communication
Field Strength of Spurious Radiation	Mode1	WCDMA Band II	L	QPSK	5MHz	Circuit
			M	QPSK	5MHz	Circuit
			H	QPSK	5MHz	Circuit
	Mode2	WCDMA Band IV	L	QPSK	5MHz	Circuit
			M	QPSK	5MHz	Circuit
			H	QPSK	5MHz	Circuit
	Mode3	WCDMA Band V	L	QPSK	5MHz	Circuit
			M	QPSK	5MHz	Circuit
			H	QPSK	5MHz	Circuit
	Mode4	LTE Band 2	L	QPSK	20MHz	1@0
			M	QPSK	20MHz	1@0
			H	QPSK	20MHz	1@0
	Mode5	LTE Band 4	L	QPSK	20MHz	1@0
			M	QPSK	20MHz	1@0
			H	QPSK	20MHz	1@0
	Mode6	LTE Band 5	L	QPSK	10MHz	1@0
			M	QPSK	10MHz	1@0
			H	QPSK	10MHz	1@0
Mode7	LTE Band 7	L	QPSK	20MHz	1@0	
		M	QPSK	20MHz	1@0	
		H	QPSK	20MHz	1@0	
Mode8	LTE Band 12	L	QPSK	10MHz	1@0	
		M	QPSK	10MHz	1@0	
		H	QPSK	10MHz	1@0	
Mode9	LTE Band 13	M	QPSK	10MHz	1@0	
Mode10	LTE Band 14	M	QPSK	10MHz	1@0	
Mode11	LTE Band 17	L	QPSK	10MHz	1@0	
		M	QPSK	10MHz	1@0	
		H	QPSK	10MHz	1@0	
Mode12	LTE Band 25	L	QPSK	20MHz	1@0	
		M	QPSK	20MHz	1@0	
		H	QPSK	20MHz	1@0	
Mode13	LTE Band 26	M	QPSK	10MHz	1@0	

	(814-824)					
Mode14	LTE Band 26 (824-849)	L	QPSK	15MHz	1@0	
		M	QPSK	15MHz	1@0	
		H	QPSK	15MHz	1@0	
Mode15	LTE Band 41	L	QPSK	20MHz	1@0	
		M	QPSK	20MHz	1@0	
		H	QPSK	20MHz	1@0	
Mode16	LTE Band 66	L	QPSK	20MHz	1@0	
		M	QPSK	20MHz	1@0	
		H	QPSK	20MHz	1@0	
Mode17	LTE Band 71	L	QPSK	20MHz	1@0	
		M	QPSK	20MHz	1@0	
		H	QPSK	20MHz	1@0	

## 2.8. Test laboratory

Tianjin Dongdian Testing Service Co., Ltd.

Address: Building D-1, No. 19, Weisi Road, Microelectronics Industrial Park Development Area,  
Tianjin, China., 300385

Tel: +86-22-58038033, <http://www.ddttest.com>, Email: ddt@dgddt.com

**NVLAP** (National Voluntary Laboratory Accreditation Program) CODE: 500036-0

**CNAS** (China National Accreditation Service for Conformity Assessment) CODE: L13402

**FCC** Designation Number: CN5004; FCC Test Firm Registration Number: 368676

**ISED** (Innovation, Science and Economic Development Canada) Company Number: 27768

Conformity Assessment Body Identifier: CN0125

**VCCI** Facility Registration Number: C-20089, T-20093, R-20125, G-20122

### 3. Description of Tests

#### 3.1. Radiated Power (ERP/EIRP)

Test Procedure: FCC KDB 971168 D01 V03r01.

Note: Refer test setup 1.

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are calculated by adding highest antenna gain to maximum measured conducted output power.

All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

a) The transmitter antenna port was connected to a Base Station Simulator through the calibrated coaxial cable.

b) Setup the Base Station Simulator to force the transmitter to the maximum power setting.

3) The tests were performed at three channels (low channel, middle channel and high channel) and on the highest power levels, which can be setup on the transmitters.

Calculate power in dBm by the following formula:

ERP (dBm) = Conducted Power (dBm) + antenna gain (dBd)

EIRP (dBm) = Conducted Power (dBm) + antenna gain (dBi)

EIRP=ERP+2.15dB

#### 3.2. Field Strength of Spurious Radiation

Test Procedure: FCC KDB 971168 D01 V03r01.

Note: Refer test setup 2.

a) Place the EUT in the center of the turntable. The EUT shall be configured to transmit into the standard non-radiating load (for measuring radiated spurious emissions), connected with cables of minimal length unless specified otherwise. If the EUT uses an adjustable antenna, the antenna shall be positioned to the length that produces the worst case emission at the fundamental operating frequency.

b) Each emission under consideration shall be evaluated:

1) Raise and lower the measurement antenna, as necessary to enable detection of the maximum emission amplitude relative to measurement antenna height.

2) Rotate the EUT through 360° to determine the maximum emission level relative to the axial position.

3) Return the turntable to the azimuth where the highest emission amplitude level was observed.

4) Vary the measurement antenna height again through 1 m to 4 m again to find the height associated with the maximum emission amplitude.

c) Repeat step b) for each emission frequency with the measurement antenna oriented in both the horizontal and vertical polarizations to determine the orientation that gives the maximum

emissions amplitude.

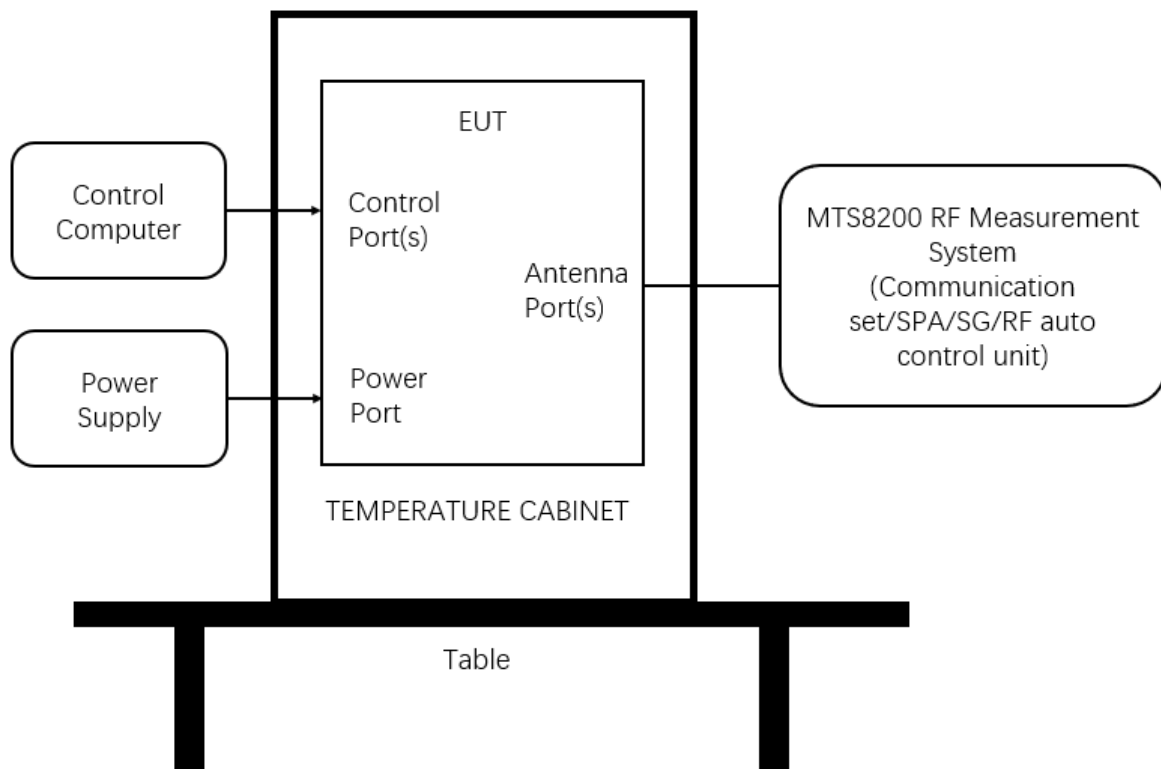
d) EIRP (dBm) = E (dB $\mu$ V/m) + 20 log D - 104.8; where D is the measurement distance in meters.

e) Test the EUT in the lowest channel, the middle channel the Highest channel

f) The radiation measurements are performed in X, Y, Z axis positioning. Only the test worst case mode is recorded in the report.

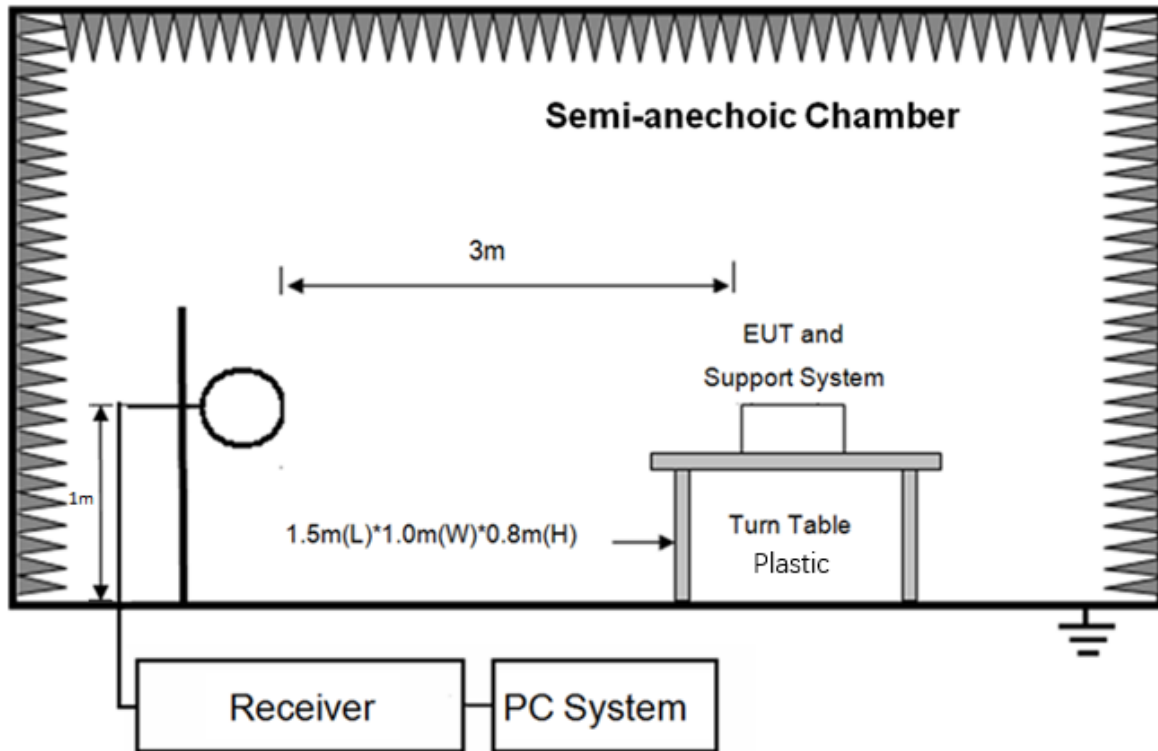
### 3.3. Test Setups

#### 3.3.1. Test Setup 1

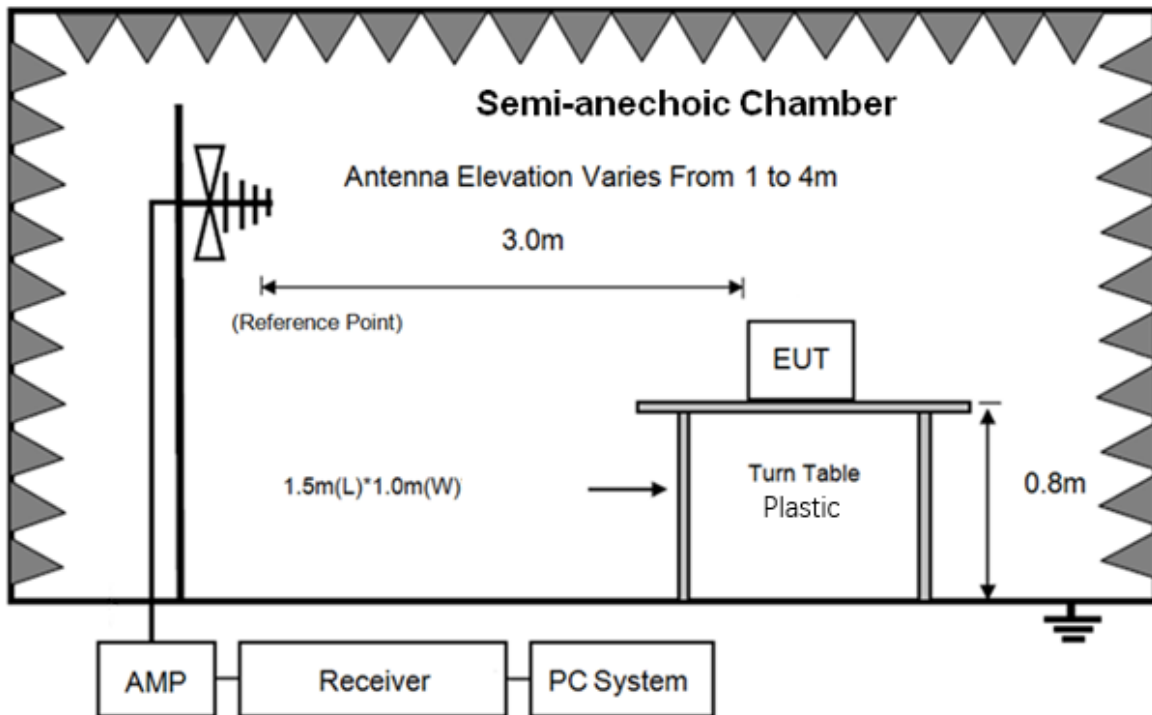


### 3.3.2. Test Setup 2

In 3 m Anechoic Chamber, test setup diagram for 9 kHz - 30 MHz:

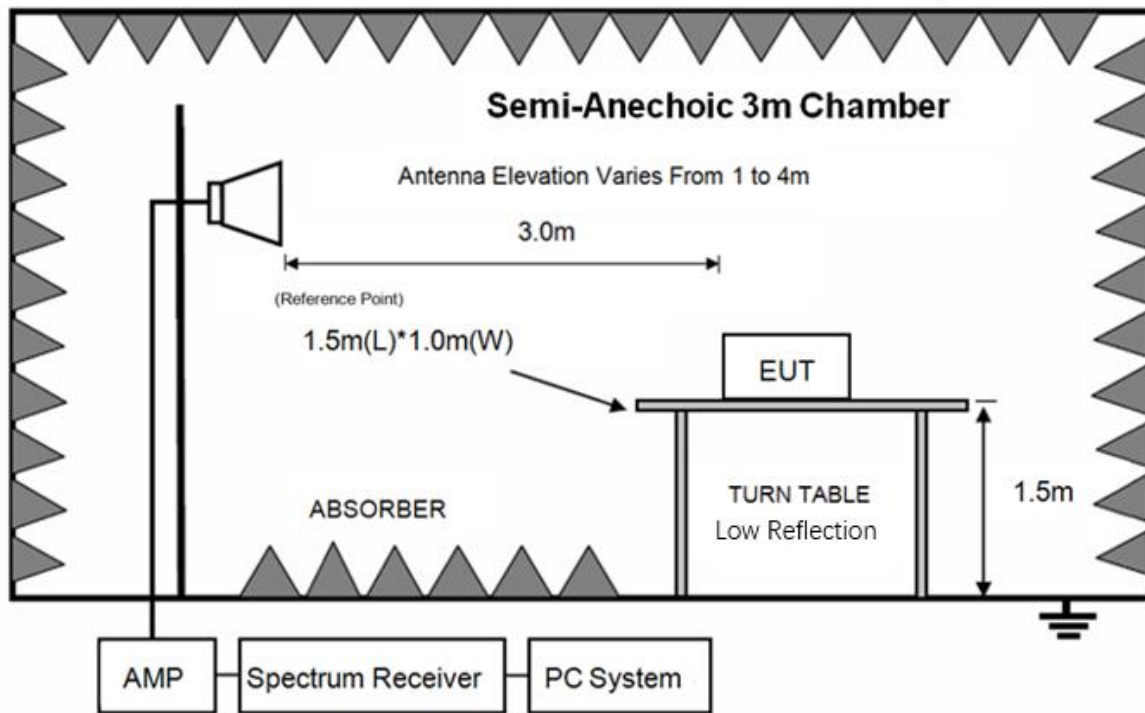


In 3 m Anechoic Chamber, test setup diagram for 30 MHz – 1 GHz:





In 3 m Anechoic Chamber, test setup diagram for frequency above 1 GHz:



#### 4. Measurement uncertainty

No.	Test Item	Uncertainty
1	Transmitter maximum output power	$\pm 0,7\text{dB}$
2	Radiated spurious emissions / Radiated emissions	$\pm 2.72\text{ dB}$ (30MHz-1GHz) $\pm 2.74\text{ dB}$ (1 - 6 GHz) $\pm 2.72\text{ dB}$ (6 GHz - 18 GHz) $\pm 3.54\text{ dB}$ (18 GHz - 26 GHz) $\pm 4.30\text{ dB}$ (26 GHz - 40 GHz)

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

## 5. Equipment Used During Test

Test System					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
PSA Series Spectrum Analyzer	Agilent(Keysight)	E4440A	MY48251036	2021/03/04	1 Year
EXA Signal Analyzer	Keysight	N9010A	MY53281492	2021/03/31	1 Year
RF SELECTOR	TOYO	NS4900	N/A	N/A	N/A
Band SELECTOR	TOYO	NS5800	N/A	N/A	N/A
BiLog Antenna	TESEQ	CBL 6143A	26683	2021/03/18	1 Year
Broadband Amplifier	SONOMA	317	292953	2021/03/03	1 Year
Low noise amplifier	MITEQ	TPA0118-36	0914	2021/02/03	1 Year
Double-Ridged Guide Horn Antenna	ETS-LINDGREN	3115	00102808	2021/03/16	1 Year
Test software	TOYO	EP5/RSE	Ver 1.9.1	N/A	N/A
Test software	Audix	E3	V 6.11111b	N/A	N/A
Active Loop Antenna	R&S	HFH2-Z2	100269	2021/05/08	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	2021/05/28	1 Year
Broadband Horn Antenna	TESEQ	BHA 9118	31754	2021/10/12	1 Year
Low noise amplifier	MITEQ	TPA0118-36	0914	2021/02/03	1 Year
EMI Test Receiver	R&S	ESCI	101024	2021/03/03	1 Year
EMI Test Receiver	R&S	ESCI	101030	2021/05/15	1 Year
Bilog Antenna	TESEQ	CBL6112D	29068	2020/10/12	2 Year
Bilog Antenna	TESEQ	CBL6112D	29069	2020/10/12	2 Year
Amplifier	Sonoma	310N	300913	2021/03/03	1 Year
Amplifier	Sonoma	310N	300914	2021/03/03	1 Year
Ant Mast	Innco	MA4000	N/A	N/A	N/A
Ant Mast	Innco	MA4000	N/A	N/A	N/A
Mast Controller	Innco	CO2000	N/A	N/A	N/A
Mast Controller	Innco	CO2000	N/A	N/A	N/A
RF Selector 4CH	TOYO	NS4904N	Selector1	N/A	N/A
RF Selector 4CH	TOYO	NS4904N	Selector2	N/A	N/A
PSG Analog Signal Generator	Agilent(Keysight)	E8257D	MY49060493	2021/03/08	1 Year
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	158800	2021/05/14	1 Year

8960 Series 10 Wireless Communications Test Set	Agilent(Keysight)	E5515C	MY48280272	2021/05/25	1 Year
Radio Communication Test Station	Anritsu	MT8000A	6262302490	2021/03/26	1 Year
Radio Communication Analyzer	Anritsu	MT8821C	6262257930	2021/03/22	1 Year
Coupler-Antenna	European Antenna	PSA-7501R/170	406310-0001	N/A	N/A
tunable notch-filter 820/860Mhz	Wainwright	WRCT 820/860-0.4/40-5SSK	SN8	N/A	N/A
tunable notch-filter 840/920Mhz	Wainwright	WRCT 840/920-0.4/40-5SSK	SN9	N/A	N/A
tunable notch-filter 1700/1800Mhz	Wainwright	WRCD 1700/1800-0.2/40-5SSK	SN41	N/A	N/A
tunable notch-filter 1800/2000Mhz	Wainwright	WRCD 1800/2000-0.2/40-5SSK	SN31	N/A	N/A
band reject filter 1870/1890Mhz	Wainwright	WRCG 1877/1883-1870/1890-40/6EE	SN20	N/A	N/A
band reject filter 1940/1960Mhz	Wainwright	WRCG 1947/1953-1940/1960-40/6SS	SN28	N/A	N/A
band reject filter 2400/2483.5Mhz	Wainwright	WRCTF 2402/2480-2400/2483.5-35/12+9SS	SN42	N/A	N/A
Low pass filter 1.5Ghz	Wainwright	WLK1.5/18G-10SS	SN5	N/A	N/A
High pass filter 1.5G	Wainwright	WHKX1.5/15G-10SS	SN50	N/A	N/A
High pass filter 2.5G	Wainwright	WHKX 2.5/18G-12SS	SN5	N/A	N/A
High pass filter 3G	Kangmaiwei	ZHPF6-M3000-18000-996	03210746	N/A	N/A
High pass filter 6.5G	Kangmaiwei	ZHPF6-M6500-18000-547	03210747	N/A	N/A
High pass filter 1.0G	Kangmaiwei	ZHPF6-C1000-3000-548	11210354	N/A	N/A

## 6. Details Test Result

### 6.1. Re-Test statement

The EUT is operating at the same power level with the original testing of SGS-CSTC Standards Technical Services, Co., Ltd. Shenzhen Branch.

Item	The Original Reports	Re-Test Reports
File name:	test report RF	RF test report
Test location:	SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch	Tianjin Dongdian Testing Service Co., Ltd.

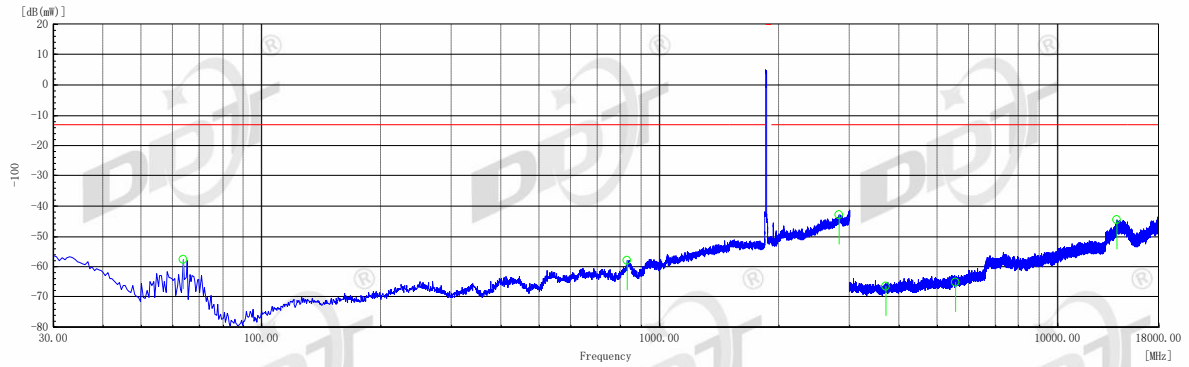
WCDMA BAND	Modulation	Channel	Test Original Reports Level(dBm)	Re-Test Reports Level(dBm)
WCDMA Band II	QPSK	9262	24.65	24.57
WCDMA Band II	QPSK	9400	24.64	24.52
WCDMA Band II	QPSK	9538	24.74	24.58
WCDMA Band IV	QPSK	1312	24.70	24.66
WCDMA Band IV	QPSK	1413	24.69	24.63
WCDMA Band IV	QPSK	1513	24.60	24.58
WCDMA Band V	QPSK	4132	23.93	24.01
WCDMA Band V	QPSK	4182	23.82	23.86
WCDMA Band V	QPSK	4233	24.02	23.95

LTE BAND	Bandwidth	Modulation	Channel	RB Configuration	Test Original Reports Level(dBm)	Re-Test Reports Level(dBm)
Band 2	20MHz	QPSK	18700	1RB#0	23.51	23.63
Band 2	20MHz	QPSK	18900	1RB#0	23.35	23.44
Band 2	20MHz	QPSK	19100	1RB#0	23.90	23.58
Band4	20MHz	QPSK	20050	1RB#0	23.12	23.19
Band4	20MHz	QPSK	20175	1RB#0	23.00	23.21
Band4	20MHz	QPSK	20300	1RB#0	23.00	23.27
Band5	10MHz	QPSK	20450	1RB#0	23.08	23.24
Band5	10MHz	QPSK	20525	1RB#0	23.45	23.28
Band5	10MHz	QPSK	20600	1RB#0	23.63	23.45
Band7	20MHz	QPSK	20850	1RB#0	23.38	23.31
Band7	20MHz	QPSK	21100	1RB#0	23.17	23.26
Band7	20MHz	QPSK	21350	1RB#0	23.31	23.43
Band12	10MHz	QPSK	23060	1RB#0	23.24	23.19
Band12	10MHz	QPSK	23095	1RB#0	23.10	23.08
Band12	10MHz	QPSK	23130	1RB#0	23.43	23.45
Band13	10MHz	QPSK	23230	1RB#0	23.02	22.97
Band14	10MHz	QPSK	23330	1RB#0	23.07	23.26
Band17	10MHz	QPSK	23780	1RB#0	23.20	23.14
Band17	10MHz	QPSK	23790	1RB#0	22.88	23.03
Band17	10MHz	QPSK	23800	1RB#0	23.15	23.72
Band25	20MHz	QPSK	26140	1RB#0	23.50	23.39
Band25	20MHz	QPSK	26365	1RB#0	23.36	23.20
Band25	20MHz	QPSK	26590	1RB#0	23.84	23.65
Band26 (814-824)	10MHz	QPSK	26740	1RB#0	23.05	23.25
Band26 (824-849)	15MHz	QPSK	26865	1RB#0	23.56	23.64

Band26 (824-849)	15MHz	QPSK	26915	1RB#0	23.62	23.81
Band26 (824-849)	15MHz	QPSK	26965	1RB#0	23.89	23.75
Band66	20MHz	QPSK	132072	1RB#0	23.23	23.16
Band66	20MHz	QPSK	132322	1RB#0	23.31	23.61
Band66	20MHz	QPSK	132572	1RB#0	23.28	23.35
Band71	20MHz	QPSK	133222	1RB#0	23.41	23.18
Band71	20MHz	QPSK	133322	1RB#0	23.59	23.55
Band71	20MHz	QPSK	133372	1RB#0	23.31	23.24

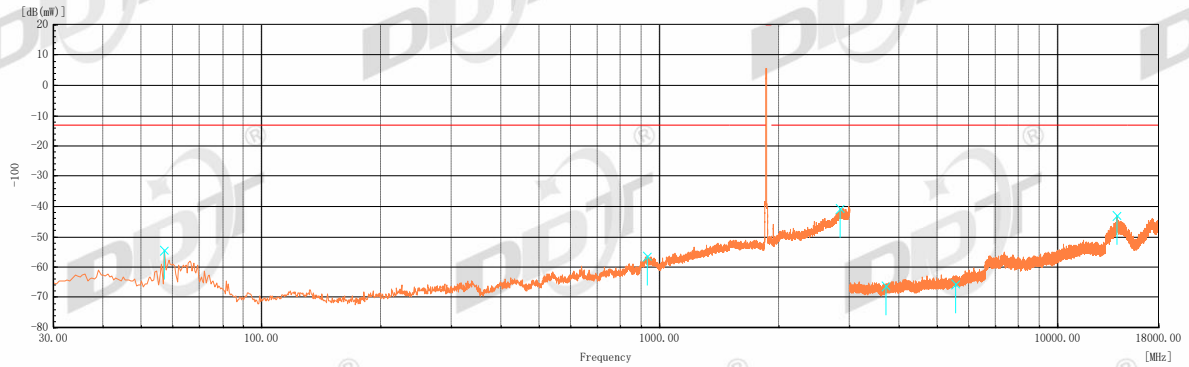
### 6.2. Radiated Spurious Emissions

Test Mode1: WCDMA Band II L channel (horizontal)



Frequency [MHz]	Pol	Level [dB $\mu$ V/m]	Level [dB(mW)]	Limit [dB(mW)]	Margin [dB]	Height [cm]	Azimuth [°]
63.5	H	37.7	-57.6	-13	44.6	120	315.6
831	H	37.3	-58	-13	45	118	315.6
2828.5	H	52.4	-42.9	-13	29.9	125	270.3
3704.5	H	28.7	-66.6	-13	53.6	109	225.7
5557	H	29.9	-65.4	-13	52.4	109	315.6
14140	H	50.8	-44.5	-13	31.5	159	270.3

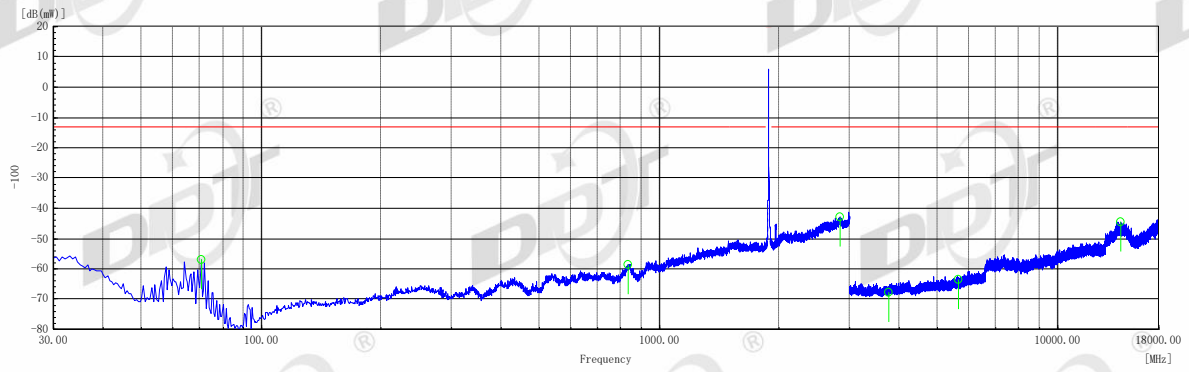
Test Mode1: WCDMA Band II L channel (vertical)



Frequency [MHz]	Pol	Level [dB $\mu$ V/m]	Level [dB(mW)]	Limit [dB(mW)]	Margin [dB]	Height [cm]	Azimuth [°]
57	V	40.9	-54.4	-13	41.4	154	224.6
930	V	38.9	-56.4	-13	43.4	129	44.5
2838	V	54.8	-40.5	-13	27.5	156	179.6
3705	V	29.2	-66.1	-13	53.1	129	44.5
5557	V	29.6	-65.7	-13	52.7	173	224.6
14145.5	V	52.3	-43	-13	30	148	315.6

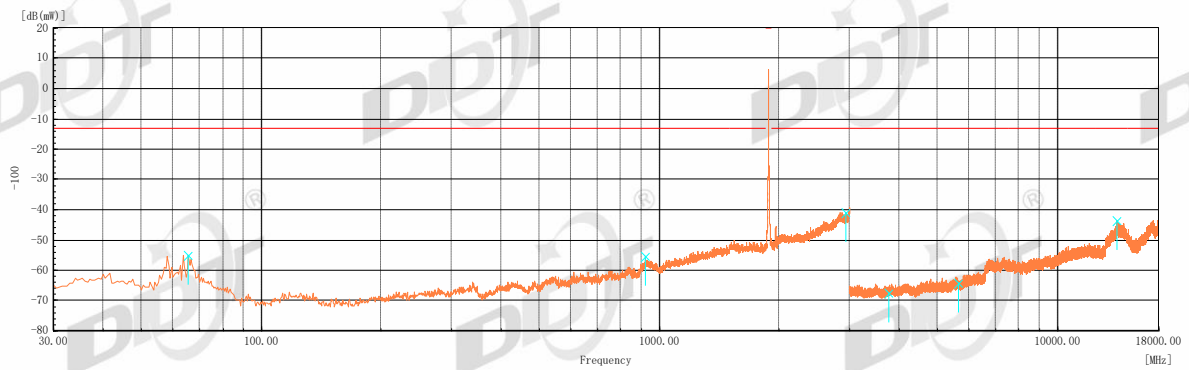


Test Mode1: WCDMA Band II M channel (horizontal)



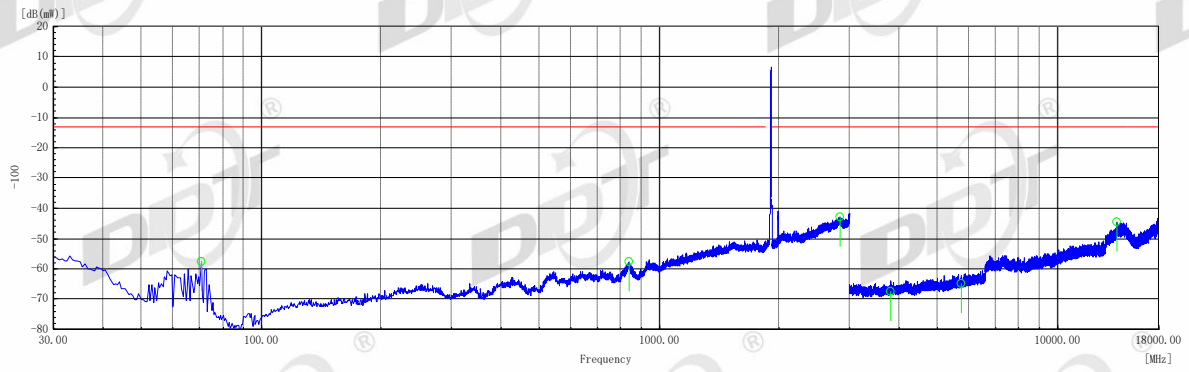
Frequency [MHz]	Pol	Level [dBμV/m]	Level [dB(mW)]	Limit [dB(mW)]	Margin [dB]	Height [cm]	Azimuth [°]
70.5	H	38.3	-57	-13	44	123	45.3
833.5	H	36.8	-58.5	-13	45.5	109	180.3
2845	H	52.3	-43	-13	30	108	90.1
3760	H	27.5	-67.8	-13	54.8	158	90.1
5640	H	31.8	-63.5	-13	50.5	156	269.9
14409.5	H	50.8	-44.5	-13	31.5	104	90.1

Test Mode1: WCDMA Band II M channel (vertical)



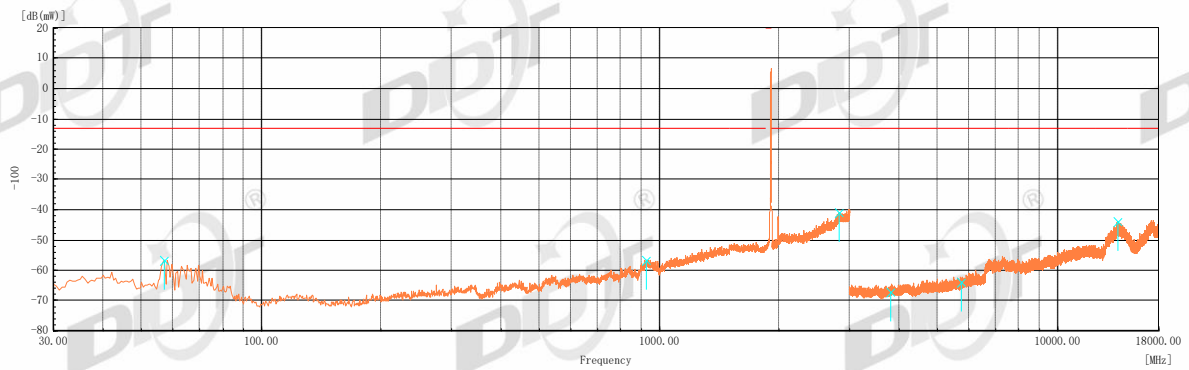
Frequency [MHz]	Pol	Level [dBμV/m]	Level [dB(mW)]	Limit [dB(mW)]	Margin [dB]	Height [cm]	Azimuth [°]
65.5	V	40.3	-55	-13	42	147	0.3
923	V	39.9	-55.4	-13	42.4	108	315.3
2939	V	54.5	-40.8	-13	27.8	129	315.3
3760	V	27.7	-67.6	-13	54.6	174	135
5640	V	31.0	-64.3	-13	51.3	121	179.5
14145.5	V	51.7	-43.6	-13	30.6	106	135

Test Mode1: WCDMA Band II H channel (horizontal)



Frequency [MHz]	Pol	Level [dBμV/m]	Level [dB(mW)]	Limit [dB(mW)]	Margin [dB]	Height [cm]	Azimuth [°]
70.5	H	37.5	-57.8	-13	44.8	124	45.6
837	H	37.6	-57.7	-13	44.7	111	90.7
2851	H	52.4	-42.9	-13	29.9	179	90.7
3815	H	27.8	-67.5	-13	54.5	115	90.7
5722.5	H	30.5	-64.8	-13	51.8	144	225.1
14138	H	50.8	-44.5	-13	31.5	128	270.4

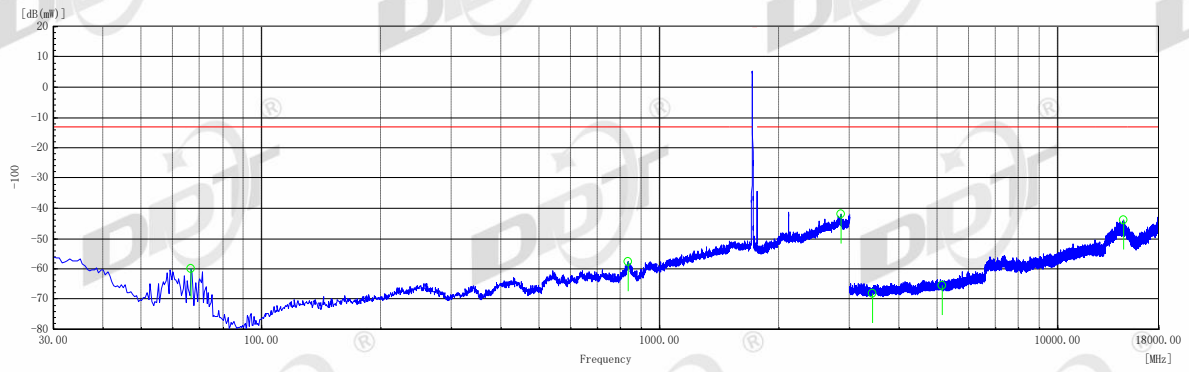
Test Mode1: WCDMA Band II H channel (vertical)



Frequency [MHz]	Pol	Level [dBμV/m]	Level [dB(mW)]	Limit [dB(mW)]	Margin [dB]	Height [cm]	Azimuth [°]
57	V	38.6	-56.7	-13	43.7	128	269.3
926.5	V	38.7	-56.6	-13	43.6	136	224.8
2833	V	54.2	-41.1	-13	28.1	104	269.3
3815	V	28.2	-67.1	-13	54.1	153	89.4
5723	V	31.5	-63.8	-13	50.8	144	359.9
14167	V	51.2	-44.1	-13	31.1	148	269.3

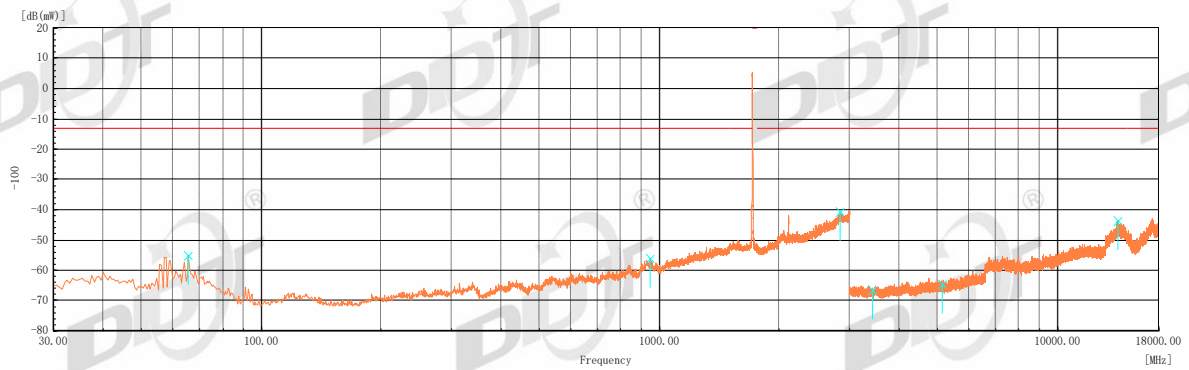


Test Mode2: WCDMA Band IV L channel (horizontal)



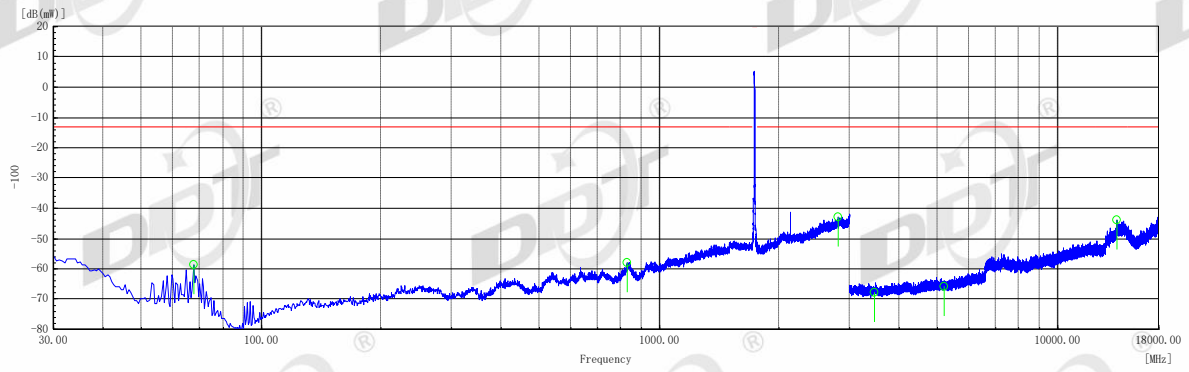
Frequency [MHz]	Pol	Level [dBμV/m]	Level [dB(mW)]	Limit [dB(mW)]	Margin [dB]	Height [cm]	Azimuth [°]
66.5	H	35.1	-60.2	-13	47.2	141	134.9
833.5	H	37.5	-57.8	-13	44.8	100	134.9
2854.5	H	53.4	-41.9	-13	28.9	115	270.5
3425	H	27.2	-68.1	-13	55.1	168	315.9
5137	H	29.6	-65.7	-13	52.7	137	359.9
14655	H	51.2	-44.1	-13	31.1	140	90.3

Test Mode2: WCDMA Band IV L channel (vertical)



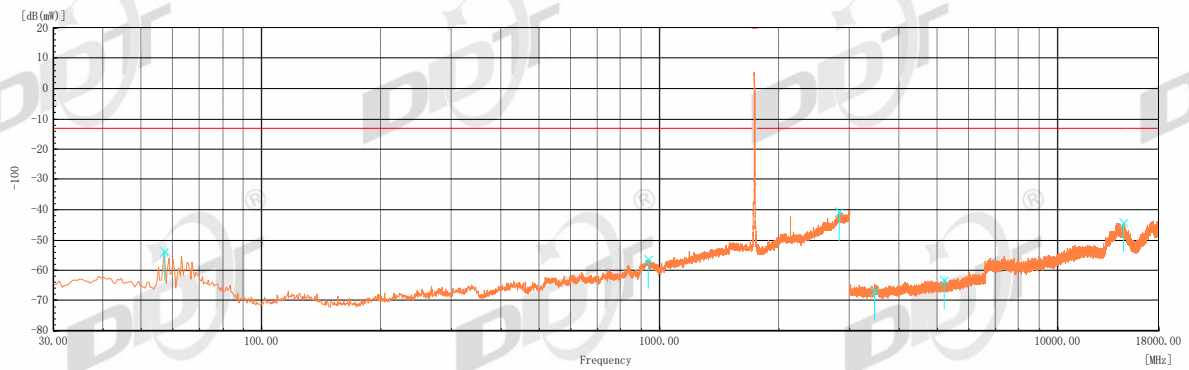
Frequency [MHz]	Pol	Level [dBμV/m]	Level [dB(mW)]	Limit [dB(mW)]	Margin [dB]	Height [cm]	Azimuth [°]
65.5	V	40.3	-55	-13	42	161	0.2
946.5	V	39.2	-56.1	-13	43.1	176	90
2840.5	V	54.5	-40.8	-13	27.8	176	224.4
3425	V	28.7	-66.6	-13	53.6	131	0.2
5137	V	30.7	-64.6	-13	51.6	151	90
14175	V	51.6	-43.7	-13	30.7	143	224.4

Test Mode2: WCDMA Band IV M channel (horizontal)



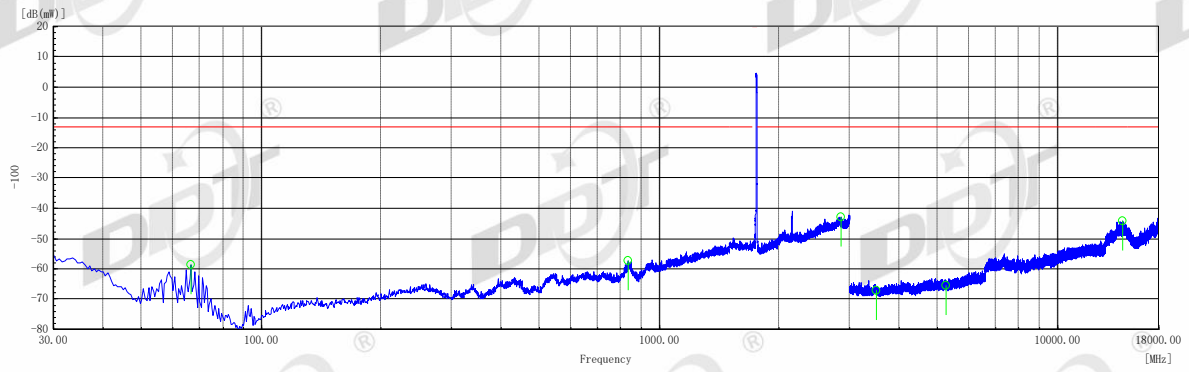
Frequency [MHz]	Pol	Level [dBμV/m]	Level [dB(mW)]	Limit [dB(mW)]	Margin [dB]	Height [cm]	Azimuth [°]
67.5	H	36.7	-58.6	-13	45.6	111	315.3
830	H	37.3	-58	-13	45	163	315.3
2819.5	H	52.5	-42.8	-13	29.8	153	45.6
3465	H	27.4	-67.9	-13	54.9	169	315.3
5197.5	H	29.5	-65.8	-13	52.8	138	135.4
14142	H	51.4	-43.9	-13	30.9	146	45.6

Test Mode2: WCDMA Band IV M channel (vertical)



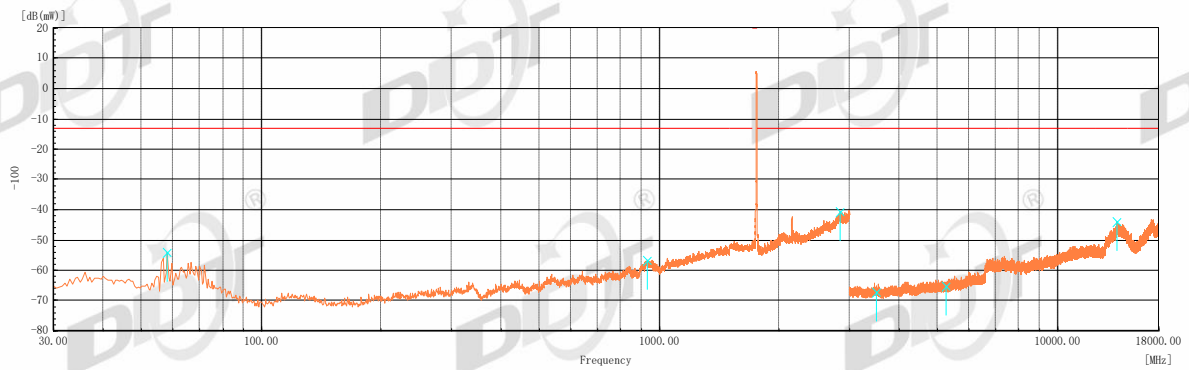
Frequency [MHz]	Pol	Level [dBμV/m]	Level [dB(mW)]	Limit [dB(mW)]	Margin [dB]	Height [cm]	Azimuth [°]
57	V	41.4	-53.9	-13	40.9	130	180
938	V	38.8	-56.5	-13	43.5	116	180
2828.5	V	54.6	-40.7	-13	27.7	151	315.3
3465	V	28.3	-67	-13	54	139	224.6
5198	V	32.2	-63.1	-13	50.1	127	224.6
14669	V	50.9	-44.4	-13	31.4	168	44.8

Test Mode2: WCDMA Band IV H channel (horizontal)



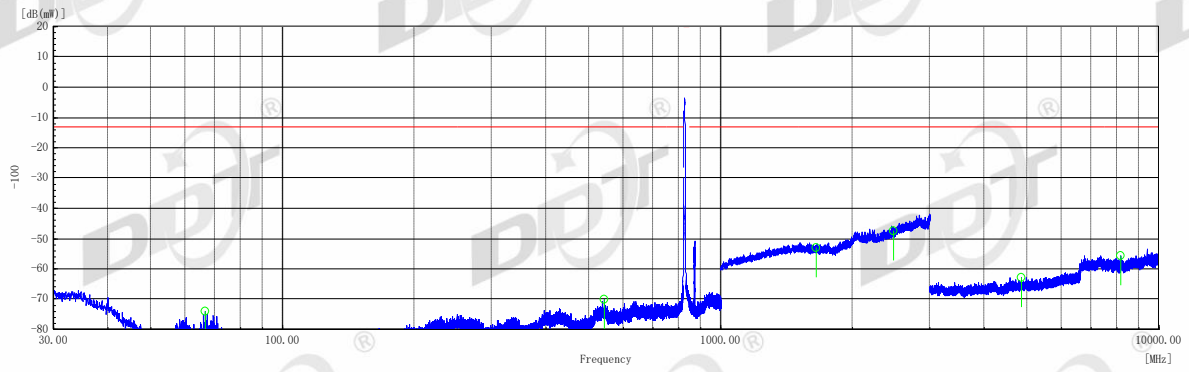
Frequency [MHz]	Pol	Level [dBμV/m]	Level [dB(mW)]	Limit [dB(mW)]	Margin [dB]	Height [cm]	Azimuth [°]
66.5	H	36.5	-58.8	-13	45.8	135	315.8
832.5	H	37.9	-57.4	-13	44.4	134	359.9
2854	H	52.5	-42.8	-13	29.8	149	134.7
3505	H	28.2	-67.1	-13	54.1	106	270.4
5258	H	29.7	-65.6	-13	52.6	123	134.7
14629	H	50.9	-44.4	-13	31.4	173	134.7

Test Mode2: WCDMA Band IV H channel (vertical)



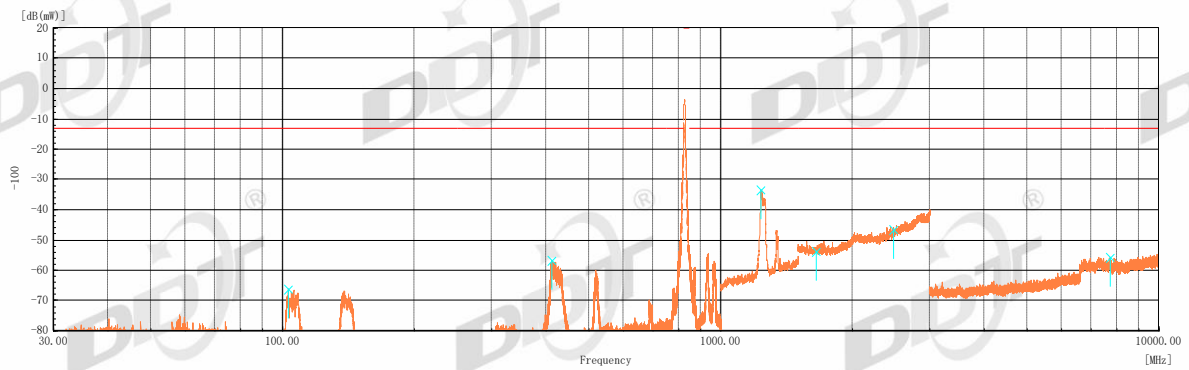
Frequency [MHz]	Pol	Level [dBμV/m]	Level [dB(mW)]	Limit [dB(mW)]	Margin [dB]	Height [cm]	Azimuth [°]
58	V	41.2	-54.1	-13	41.1	115	179.8
930.5	V	38.7	-56.6	-13	43.6	116	315.8
2845.5	V	54.6	-40.7	-13	27.7	176	134.8
3505	V	27.9	-67.4	-13	54.4	120	269.3
5258	V	30.0	-65.3	-13	52.3	130	89.2
14122	V	51.4	-43.9	-13	30.9	154	315.8

Test Mode3: WCDMA Band V L channel (horizontal)



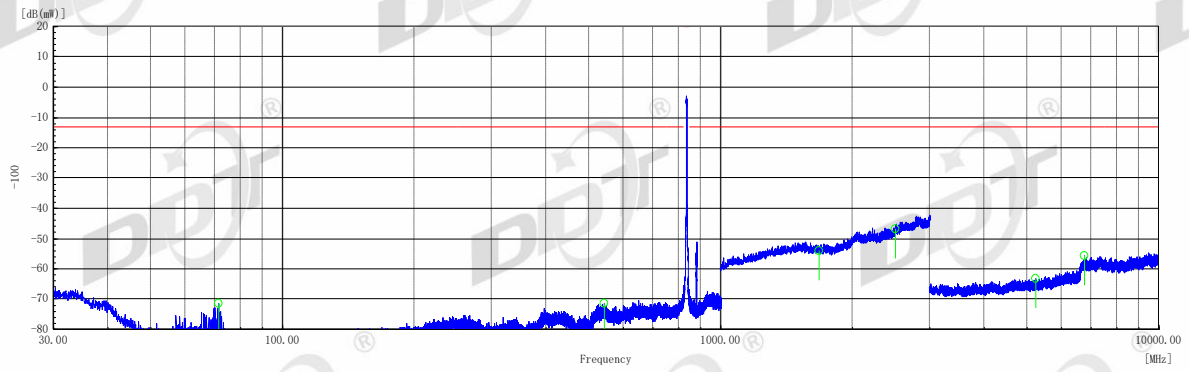
Frequency [MHz]	Pol	Level [dBμV/m]	Level [dB(mW)]	Limit [dB(mW)]	Margin [dB]	Height [cm]	Azimuth [°]
66.6	H	21.3	-74	-13	61	167	315.1
543.55	H	25.0	-70.3	-13	57.3	150	315.1
1653	H	42.1	-53.2	-13	40.2	107	270.6
2479.5	H	47.7	-47.6	-13	34.6	122	180.7
4863	H	32.5	-62.8	-13	49.8	110	45
8200.501	H	39.5	-55.8	-13	42.8	104	180.7

Test Mode3: WCDMA Band V L channel (vertical)



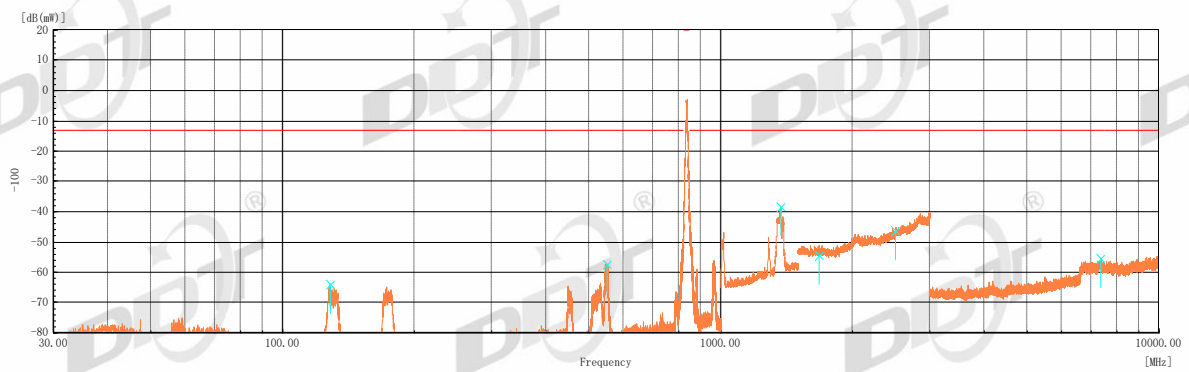
Frequency [MHz]	Pol	Level [dBμV/m]	Level [dB(mW)]	Limit [dB(mW)]	Margin [dB]	Height [cm]	Azimuth [°]
103.05	V	29.1	-66.2	-13	53.2	124	315.1
411.15	V	38.5	-56.8	-13	43.8	171	179
1235.5	V	61.7	-33.6	-13	20.6	108	89.4
1652.5	V	41.5	-53.8	-13	40.8	101	0
2479	V	48.6	-46.7	-13	33.7	152	135.2
7753.001	V	39.6	-55.7	-13	42.7	157	89.4

Test Mode3: WCDMA Band V M channel (horizontal)



Frequency [MHz]	Pol	Level [dB $\mu$ V/m]	Level [dB(mW)]	Limit [dB(mW)]	Margin [dB]	Height [cm]	Azimuth [°]
71.4	H	23.8	-71.5	-13	58.5	103	45.7
541.15	H	23.9	-71.4	-13	58.4	153	315.2
1673	H	41.2	-54.1	-13	41.1	132	90.4
2509	H	48.4	-46.9	-13	33.9	169	134.9
5225	H	32.0	-63.3	-13	50.3	114	45.7
6777.001	H	39.5	-55.8	-13	42.8	168	90.4

Test Mode3: WCDMA Band V M channel (vertical)



Frequency [MHz]	Pol	Level [dB $\mu$ V/m]	Level [dB(mW)]	Limit [dB(mW)]	Margin [dB]	Height [cm]	Azimuth [°]
128.2	V	31.5	-63.8	-13	50.8	120	179.1
551.5	V	38.0	-57.3	-13	44.3	127	179.1
1372.5	V	57.0	-38.3	-13	25.3	172	89.4
1673	V	41.0	-54.3	-13	41.3	144	89.4
2509	V	49.2	-46.1	-13	33.1	103	44.5
7371.001	V	39.9	-55.4	-13	42.4	103	315.2