

# FCC TEST REPORT

**Product Name:** DP CONNECTING KIT(SMART CONTROLLER)  
**Trade Mark:** N/A  
**Model No.:** 2042811  
**Add. Model No.:** N/A  
**Report Number:** 180919023RFM-1  
**Test Standards:** FCC 47 CFR Part 22 Subpart H  
FCC 47 CFR Part 24 Subpart E  
FCC 47 CFR Part 2  
**FCC ID:** 2ALCP2042811S  
**Test Result:** PASS  
**Date of Issue:** October 18, 2018

Prepared for:

**LF Beauty Limited**  
2/F., HK Spinners Industrial Building, Phases I & II, 800 Cheung  
ShaWan Road, Kowloon, Hong Kong

Prepared by:

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**  
16/F, Block A, Building 6, Baoneng Science and Technology Park,  
Qingxiang Road No.1, Longhua New District, Shenzhen, China  
**TEL: +86-755-2823 0888**  
**FAX: +86-755-2823 0886**

Tested by:   
Henry Liu  
Project Engineer

Reviewed by:   
Kevin Liang  
Assistant Manager

Approved by:   
Billy Li  
Technical Director

Date:   
October 18, 2018

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China  
Tel: +86-755-28230888 Fax: +86-755-28230886 E-mail: info@uttlab.com [Http://www.uttlab.com](http://www.uttlab.com)

**Version**

Version No.	Date	Description
V1.0	October 18, 2018	Original



## CONTENTS

<b>1. GENERAL INFORMATION</b> .....	<b>4</b>
<b>1.1 CLIENT INFORMATION</b> .....	<b>4</b>
<b>1.2 EUT INFORMATION</b> .....	<b>4</b>
1.2.1 GENERAL DESCRIPTION OF EUT .....	4
1.2.2 DESCRIPTION OF ACCESSORIES.....	4
<b>1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD</b> .....	<b>4</b>
<b>1.4 DESCRIPTION OF SUPPORT UNITS</b> .....	<b>5</b>
<b>1.5 TEST LOCATION</b> .....	<b>5</b>
<b>1.6 TEST FACILITY</b> .....	<b>5</b>
<b>1.7 DEVIATION FROM STANDARDS</b> .....	<b>6</b>
<b>1.8 ABNORMALITIES FROM STANDARD CONDITIONS</b> .....	<b>6</b>
<b>1.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER</b> .....	<b>6</b>
<b>1.10 MEASUREMENT UNCERTAINTY</b> .....	<b>6</b>
<b>2. TEST SUMMARY</b> .....	<b>7</b>
<b>3. EQUIPMENT LIST</b> .....	<b>8</b>
<b>4. TEST CONFIGURATION</b> .....	<b>9</b>
<b>4.1 ENVIRONMENTAL CONDITIONS FOR TESTING</b> .....	<b>9</b>
4.1.1 NORMAL OR EXTREME TEST CONDITIONS .....	9
<b>4.2 TEST SETUP</b> .....	<b>9</b>
4.2.1 FOR RADIATED EMISSIONS TEST SETUP .....	9
<b>4.3 TEST CHANNELS</b> .....	<b>11</b>
<b>4.4 SYSTEM TEST CONFIGURATION</b> .....	<b>11</b>
<b>4.5 PRE-SCAN</b> .....	<b>11</b>
<b>5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION</b> .....	<b>12</b>
<b>5.1 REFERENCE DOCUMENTS FOR TESTING</b> .....	<b>12</b>
<b>5.2 EFFECTIVE RADIATED POWER (ERP)</b> .....	<b>12</b>
<b>5.3 FIELD STRENGTH OF SPURIOUS RADIATION</b> .....	<b>14</b>
<b>APPENDIX 1 PHOTOS OF TEST SETUP</b> .....	<b>39</b>
<b>APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS</b> .....	<b>39</b>

## 1. GENERAL INFORMATION

### 1.1 CLIENT INFORMATION

<b>Applicant:</b>	LF Beauty Limited
<b>Address of Applicant:</b>	2/F., HK Spinners Industrial Building, Phases I & II, 800 Cheung ShaWan Road, Kowloon, Hong Kong
<b>Manufacturer:</b>	LF Beauty Limited
<b>Address of Manufacturer:</b>	2/F., HK Spinners Industrial Building, Phases I & II, 800 Cheung ShaWan Road, Kowloon, Hong Kong

### 1.2 EUT INFORMATION

#### 1.2.1 General Description of EUT

<b>Product Name:</b>	DP CONNECTING KIT(SMART CONTROLLER)	
<b>Model No.:</b>	2042811	
<b>Add. Model No.:</b>	N/A	
<b>Trade Mark:</b>	N/A	
<b>DUT Stage:</b>	Identical Prototype	
<b>EUT Supports Function:</b>	<b>GSM Bands:</b>	GSM850/1900
	<b>UTRA Bands:</b>	Band II/ Band V
	<b>2.4 GHz ISM Band:</b>	Bluetooth V4.0 (Only LE)
<b>Sample Received Date:</b>	September 19, 2018	
<b>Sample Tested Date:</b>	September 19, 2018 to October 16, 2018	

#### 1.2.2 Description of Accessories

None.

### 1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

<b>Support Networks:</b>	GPRS, EDGE, WCDMA, HSDPA, HSUPA	
<b>Type of Modulation:</b>	<b>GPRS:</b>	GMSK
	<b>EDGE:</b>	GMSK, 8PSK
	<b>WCDMA</b>	BPSK
	<b>HSDPA:</b>	QPSK
	<b>HSUPA:</b>	QPSK
<b>Frequency Range:</b>	<b>GPRS/EDGE 850:</b>	824.2-848.8 MHz
	<b>GPRS/EDGE 1900:</b>	1850.2-1909.8 MHz
	<b>WCDMA Band II:</b>	1852.4-1907.6 MHz
	<b>WCDMA Band V:</b>	826.4-846.6 MHz
<b>Max RF Output Power:</b>	<b>GPRS 850:</b>	32.14 dBm
	<b>EDGE 850:</b>	26.29 dBm
	<b>GPRS 1900:</b>	29.10 dBm
	<b>EDGE 1900:</b>	25.70 dBm
	<b>WCDMA Band II:</b>	23.70 dBm
	<b>WCDMA Band V:</b>	23.24 dBm
<b>Type of Emission:</b>	<b>GPRS 850:</b>	247KGXW
	<b>EDGE 850:</b>	247KG7W
	<b>GPRS 1900:</b>	245KGXW
	<b>EDGE 1900:</b>	245KG7W
	<b>WCDMA Band II:</b>	4M14F9W

	WCDMA Band V:	4M15F9W
<b>Antenna Type:</b>	External Antenna	
<b>Antenna Gain:</b>	GSM 850:	2 dBi
	GSM 1900:	2 dBi
	WCDMA Band II:	2 dBi
	WCDMA Band V:	2 dBi
<b>GPRS/EDGE Class:</b>	Class 12	
<b>Normal Test Voltage:</b>	120V~60Hz	

### 1.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.

1) Support Equipment

Description	Manufacturer	Model No.	Serial Number	Supplied by
--	--	--	--	--

2) Support Cable

Cable No.	Description	Connector	Length	Supplied by
1	Antenna Cable	SMA	0.80 Meter	UnionTrust

### 1.5 TEST LOCATION

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China 518109  
 Telephone: +86 (0) 755 2823 0888  
 Fax: +86 (0) 755 2823 0886

### 1.6 TEST FACILITY

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

**CNAS-Lab Code: L9069**

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

**IC-Registration No.: 21600-1**

The 3m Semi-anechoic chamber of Shenzhen UnionTrust Quality and Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 21600-1.

**A2LA-Lab Certificate No.: 4312.01**

Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

**FCC Accredited Lab.**

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Designation Number: CN1194  
Test Firm Registration Number: 259480

---

## 1.7 DEVIATION FROM STANDARDS

None.

## 1.8 ABNORMALITIES FROM STANDARD CONDITIONS

None.

## 1.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

## 1.10 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Measurement Uncertainty
1	Conducted emission 9KHz-150KHz	±3.8 dB
2	Conducted emission 150KHz-30MHz	±3.4 dB
3	Radiated emission 9KHz-30MHz	±4.9 dB
4	Radiated emission 30MHz-1GHz	±4.7 dB
5	Radiated emission 1GHz-18GHz	±5.1 dB
6	Radiated emission 18GHz-26GHz	±5.2 dB
7	Radiated emission 26GHz-40GHz	±5.2 dB

## 2. TEST SUMMARY

FCC 47 CFR Part 22 Subpart H Test Cases			
Test Item	Test Requirement	Test Method	Result
Effective Radiated Power (ERP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 22.913(a)	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 22.913(a)	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	Verified (See Note 1)
Peak-to-average ratio	FCC 47 CFR Part 22.913(a)	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	Verified (See Note 1)
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h)	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	Verified (See Note 1)
Band Edge at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 22.917(a)	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	Verified (See Note 1)
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 22.917(a)(b)	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	Verified (See Note 1)
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 22.917(a)(b)	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 22.355	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	Verified (See Note 1)
<b>Note:</b>			
1. The 2042811 equipments with FCC tested HSPA module (FCC ID: QISMU609) – Refer to FCC test report [report no.: SYBH(Z-RF)005052013-2001] of FCC 47 CFR Part 22 Subpart H provided by applicant.			

FCC 47 CFR Part 24 Subpart E Test Cases			
Test Item	Test Requirement	Test Method	Result
Equivalent Isotropic Radiated Power (EIRP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 24.232(c)	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 24.232(c)	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	Verified (See Note 1)
Peak-to-average ratio	FCC 47 CFR Part 24.232(d)	KDB 971168 D01v03r01	Verified (See Note 1)
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h) & FCC 47 CFR Part 24.238(b)	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	Verified (See Note 1)
Band Edge at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 24.238(a)	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	Verified (See Note 1)
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 24.238(a)(b)	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	Verified (See Note 1)
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 24.238(a)(b)	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 24.235	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	Verified (See Note 1)
<b>Note:</b>			
1. The 2042811 equipments with FCC tested HSPA module (FCC ID: QISMU609) – Refer to FCC test report [report no.: SYBH(Z-RF)005052013-2001] of FCC 47 CFR Part 24 Subpart E provided by applicant.			

### 3. EQUIPMENT LIST

Radiated Emission Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm dd, yyyy)	Cal. Due date (mm dd, yyyy)
<input checked="" type="checkbox"/>	3M Chamber & Accessory Equipment	ETS-LINDGREN	3M	N/A	Dec. 20, 2015	Dec. 19, 2018
<input checked="" type="checkbox"/>	Receiver	R&S	ESIB26	100114	Dec. 10, 2017	Dec. 10, 2018
<input checked="" type="checkbox"/>	Broadband Antenna	ETS-LINDGREN	3142E	00201566	Dec. 17, 2017	Dec. 17, 2018
<input checked="" type="checkbox"/>	Preamplifier	HP	8447F	2805A02960	Dec. 10, 2017	Dec. 10, 2018
<input checked="" type="checkbox"/>	Broadband Antenna (Pre-amplifier)	ETS-LINDGREN	3142E-PA	00201891	May 19, 2018	May 19, 2019
<input checked="" type="checkbox"/>	Horn Antenna	ETS-LINDGREN	3117	00164202	Dec. 17, 2017	Dec. 17, 2018
<input checked="" type="checkbox"/>	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201874	May 22, 2018	May 22, 2019
<input checked="" type="checkbox"/>	Horn Antenna	ETS-LINDGREN	3116C	00200180	May 20, 2018	May 20, 2019
<input checked="" type="checkbox"/>	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	Dec. 17, 2017	Dec. 17, 2018
<input checked="" type="checkbox"/>	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
<input checked="" type="checkbox"/>	Test Software	Audix	e3	Software Version: 9.160323		



## 4. TEST CONFIGURATION

### 4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

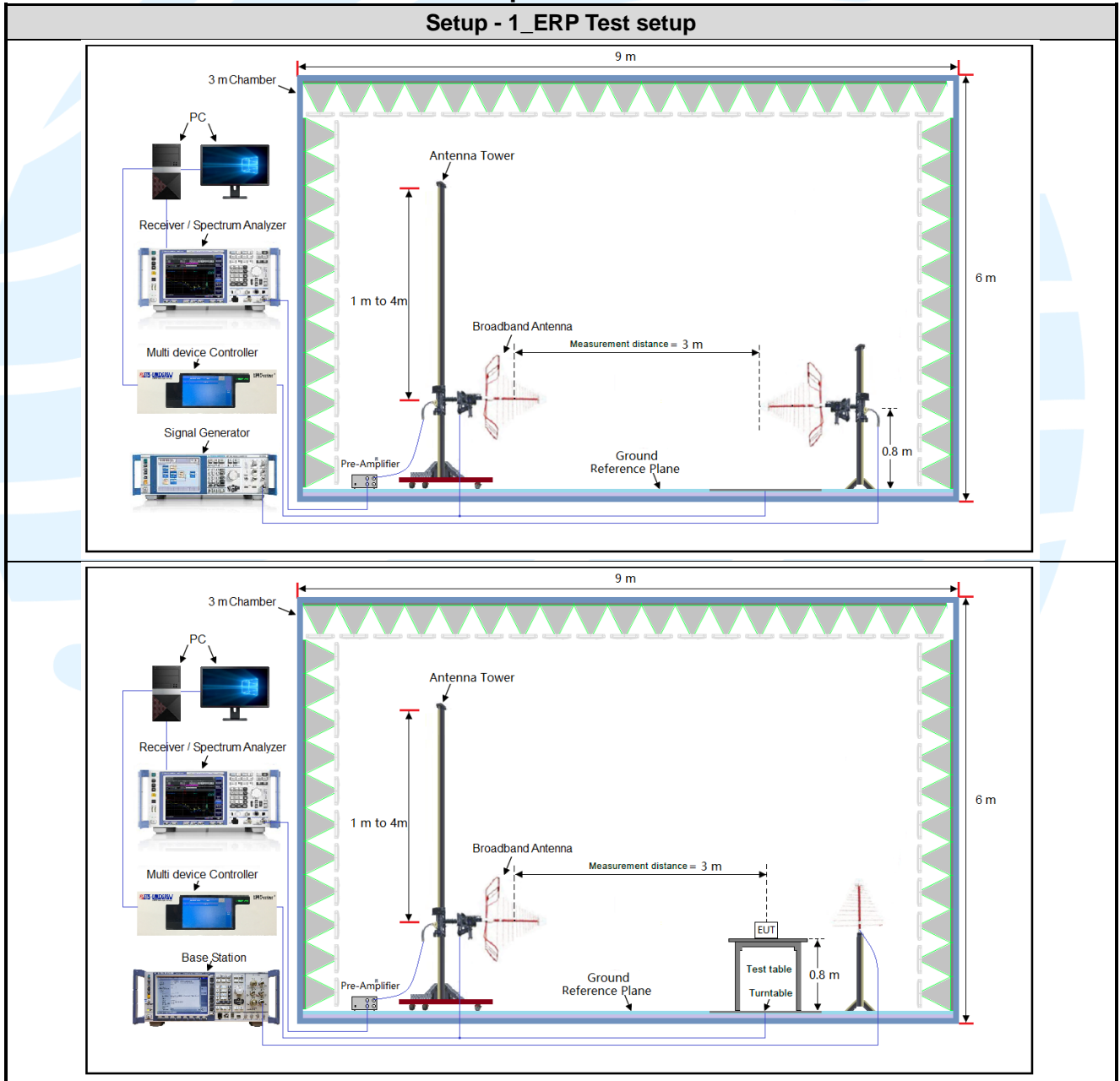
#### 4.1.1 Normal or Extreme Test Conditions

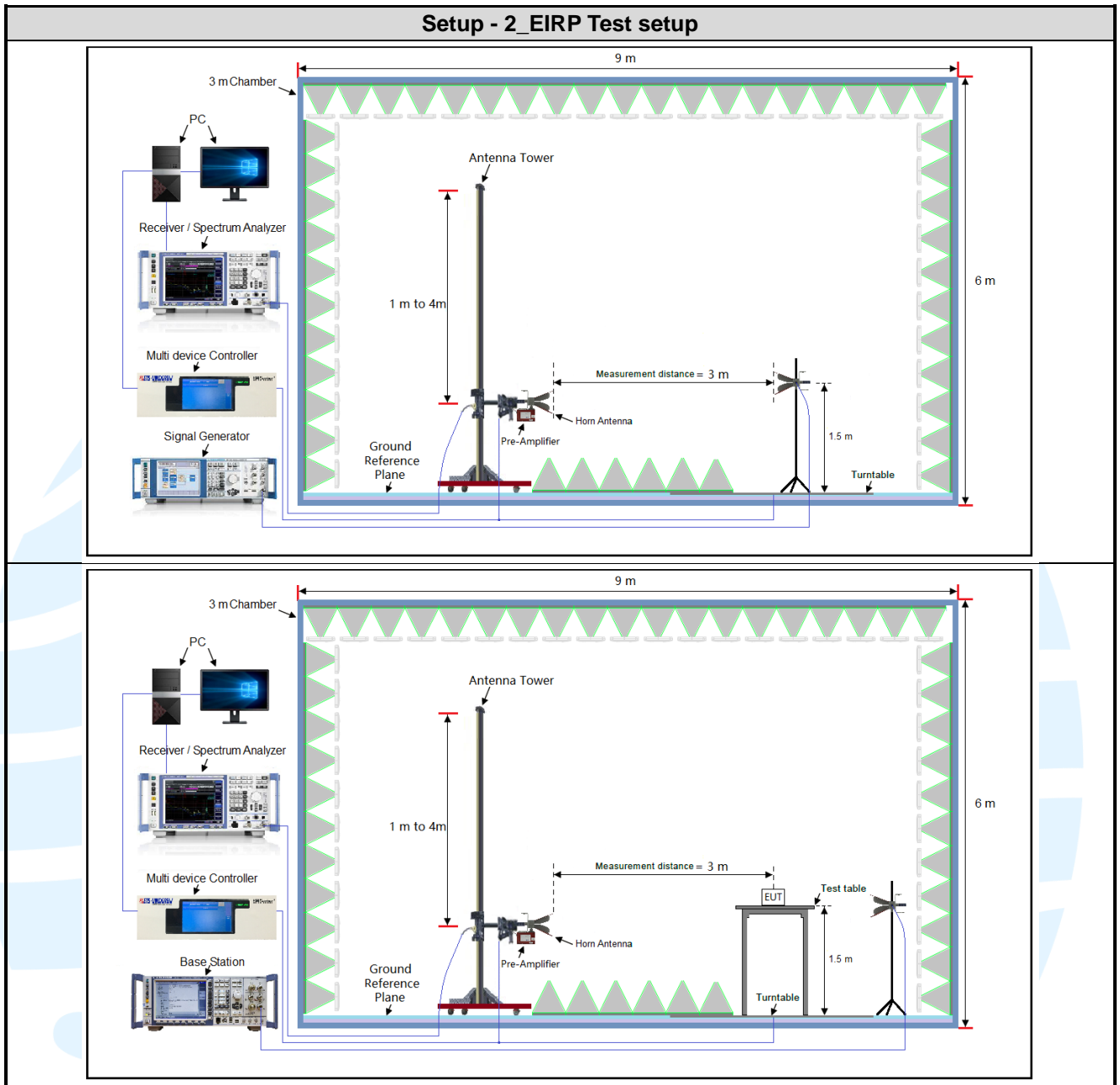
Test Environment	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage (V)	Relative Humidity (%)
TN/VN	+15 to +35	120V~60Hz	20 to 75

**Remark:**  
 1) VN: Normal Voltage; TN: Normal Temperature;

### 4.2 TEST SETUP

#### 4.2.1 For Radiated Emissions test setup





### 4.3 TEST CHANNELS

Band	Tx/Rx Frequency	RF Channel		
		Low(L)	Middle(M)	High(H)
GPRS/ EDGE850	Tx (824 MHz ~ 849 MHz)	Channel 128	Channel 190	Channel 251
		824.2 MHz	836.6 MHz	848.8 MHz
WCDMA band V	Tx (824 MHz ~ 849 MHz)	Channel 4132	Channel 4182	Channel 4233
		826.4 MHz	836.4 MHz	846.6 MHz

Band	Tx/Rx Frequency	RF Channel		
		Low(L)	Middle(M)	High(H)
GPRS/ EDGE1900	Tx (1850 MHz-1910 MHz)	Channel 512	Channel 661	Channel 810
		1850.2 MHz	1880.0 MHz	1909.8 MHz
WCDMA Band II	Tx (1850 MHz-1910 MHz)	Channel 9262	Channel 9400	Channel 9538
		1852.4 MHz	1880.0 MHz	1907.6 MHz

### 4.4 SYSTEM TEST CONFIGURATION

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, radiated emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario. It was powered by a 120V~60Hz. Only the worst case data were recorded in this test report.

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, X/Y/Z axis, and antenna ports. The worst case was found when positioned as the table below.

Band	Mode	Antenna Port	Worst-case axis positioning
GSM 850	1TX	Chain 0	Z axis
GSM 1900	1TX	Chain 0	Z axis
WCDMA Band II	1TX	Chain 0	Z axis
WCDMA Band V	1TX	Chain 0	Z axis

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000MHz. The resolution is 1 MHz or greater for frequencies above 1000MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

### 4.5 PRE-SCAN

Pre-scan all mode, find worse case mode are chosen to the report, the worse mode applicability and tested channel detail as below:

Band	Radiated	Conducted
GPRS/ EDGE 850/1900	1) GPRS (GMSK, 1Tx-slot) Link 2) EDGE (8PSK, 1Tx-slot) Link	1) GPRS (GMSK, 1Tx-slot) Link 2) EDGE (8PSK, 1Tx-slot) Link
WCDMA Band II/IVV	RMC 12.2Kbps Link	RMC 12.2Kbps Link

## 5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION

### 5.1 REFERENCE DOCUMENTS FOR TESTING

No.	Identity	Document Title
1	FCC 47 CFR Part 2 Subpart J	Frequency allocations and radio treaty matters; general rules and regulations
2	FCC 47 CFR Part 22 Subpart H	Cellular Radiotelephone Service
3	FCC 47 CFR Part 24 Subpart E	PART 24 – PERSONAL COMMUNICATIONS SERVICES Subpart E – Broadband PCS
4	ANSI/TIA-603-E-2016	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
5	KDB 971168 D01	KDB 971168 D01 Power Meas License Digital Systems v03r01

### 5.2 EFFECTIVE RADIATED POWER (ERP)

**Test Requirement:** FCC 47 CFR Part 2.1046(a),  
FCC 47 CFR Part 22.913(a),  
FCC 47 CFR Part 24.232(c)

**Test Method:** KDB 971168 D01v03r01& ANSI/TIA-603-E-2016

**Limit:**

**FCC 47 CFR Part 22.913(a)**

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

**FCC 47 CFR Part 24.232(c)**

Mobile and portable stations are limited to 2 watts EIRP.

**FCC 47 CFR Part 27.50(d)(4)**

Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

**Test Procedure:**

Test procedure as below:

- 1) The EUT was powered ON and placed on a 0.8/1.5m high table at a 3 meter semi/fully Anechoic Chamber. The antenna of the transmitter was extended to its maximum length. Modulation mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- 2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 3) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.
- 4) Steps 1) to 3) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.
- 5) The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.
- 6) A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 3) is obtained for this set of conditions.
- 7) The output power into the substitution antenna was then measured.
- 8) Steps 6) and 7) were repeated with both antennas polarized.
- 9) Calculate power in dBm by the following formula:

$$ERP(dBm) = Pg(dBm) - \text{cable loss (dB)} + \text{antenna gain (dBd)}$$

$$EIRP(dBm) = Pg(dBm) - \text{cable loss (dB)} + \text{antenna gain (dBi)}$$

$$EIRP = ERP + 2.15dB$$

where:

Pg is the generator output power into the substitution antenna.

- 10) Test the EUT in the lowest channel, the middle channel the Highest channel
- 11) The radiation measurements are performed in X, Y, Z axis positioning for EUT operation mode, and found the Z axis positioning which it is worse case.
- 12) Repeat above procedures until all frequencies measured was complete.

**Receiver Setup:**

Frequency	Detector	RBW	VBW	Remark
-----------	----------	-----	-----	--------

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

[Http://www.uttlab.com](http://www.uttlab.com)

30MHz-1GHz	Peak	100kHz	300kHz	Peak
Above 1GHz	Peak	1MHz	3MHz	Peak

**Test Setup:** Refer to section 4.2.1 for details.  
**Instruments Used:** Refer to section 3 for details  
**Test Mode:** Link mode  
**Test Results:** Pass  
**Test Data:** See table below

Maximum ERP (dBm)					
Channel	GPRS 850 1Tx-slot	EDGE 850 1Tx-slot	WCDMA Band V RMC 12.2Kbps	Limit (dBm)	Result
Lowest	31.59	26.09	23.99	38.45	Pass
Middle	31.91	26.07	24.01	38.45	Pass
Highest	31.99	26.14	24.30	38.45	Pass

Maximum EIRP (dBm)					
Channel	GPRS 1900 1Tx-slot	EDGE 1900 1Tx-slot	WCDMA Band II RMC 12.2Kbps	Limit (dBm)	Result
Lowest	31.05	27.70	25.24	33.01	Pass
Middle	31.06	27.64	25.14	33.01	Pass
Highest	31.10	27.02	25.19	33.01	Pass

### 5.3 FIELD STRENGTH OF SPURIOUS RADIATION

**Test Requirement:** FCC 47 CFR Part 2.1051,  
 FCC 47 CFR Part 22.917(a)(b),  
 FCC 47 CFR Part 24.238(a)(b),  
 FCC 47 CFR Part 27.53(h)(1)

**Test Method:** ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01

**Receiver Setup:**

Frequency	Detector	RBW	VBW	Remark
0.009 MHz-30 MHz	Peak	10 kHz	30 KHz	Peak
30 MHz-1 GHz	Quasi-peak	100 kHz	300 KHz	Peak
Above 1 GHz	Peak	1 MHz	3 MHz	Peak

**Limits:**

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to -13 dBm.

**Test Setup:** Refer to section 4.2.1 for details.

**Test Procedures:**

1. Scan up to 10th harmonic, find the maximum radiation frequency to measure.
2. The technique used to find the Spurious Emissions of the transmitter was the antenna substitution method. Substitution method was performed to determine the actual ERP/EIRP emission levels of the EUT.

Test procedure as below:

- 1) The EUT was powered ON and placed on a 0.8/1.5m high table at a 3 meter semi/fully Anechoic Chamber. The antenna of the transmitter was extended to its maximum length. Modulation mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- 2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 3) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.
- 4) Steps 1) to 3) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.
- 5) The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.
- 6) A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 3) is obtained for this set of conditions.
- 7) The output power into the substitution antenna was then measured.
- 8) Steps 6) and 7) were repeated with both antennas polarized.
- 9) Calculate power in dBm by the following formula:

$$ERP(dBm) = Pg(dBm) - \text{cable loss (dB)} + \text{antenna gain (dBd)}$$

$$EIRP(dBm) = Pg(dBm) - \text{cable loss (dB)} + \text{antenna gain (dBi)}$$

$$EIRP = ERP + 2.15dB$$

where:

Pg is the generator output power into the substitution antenna.

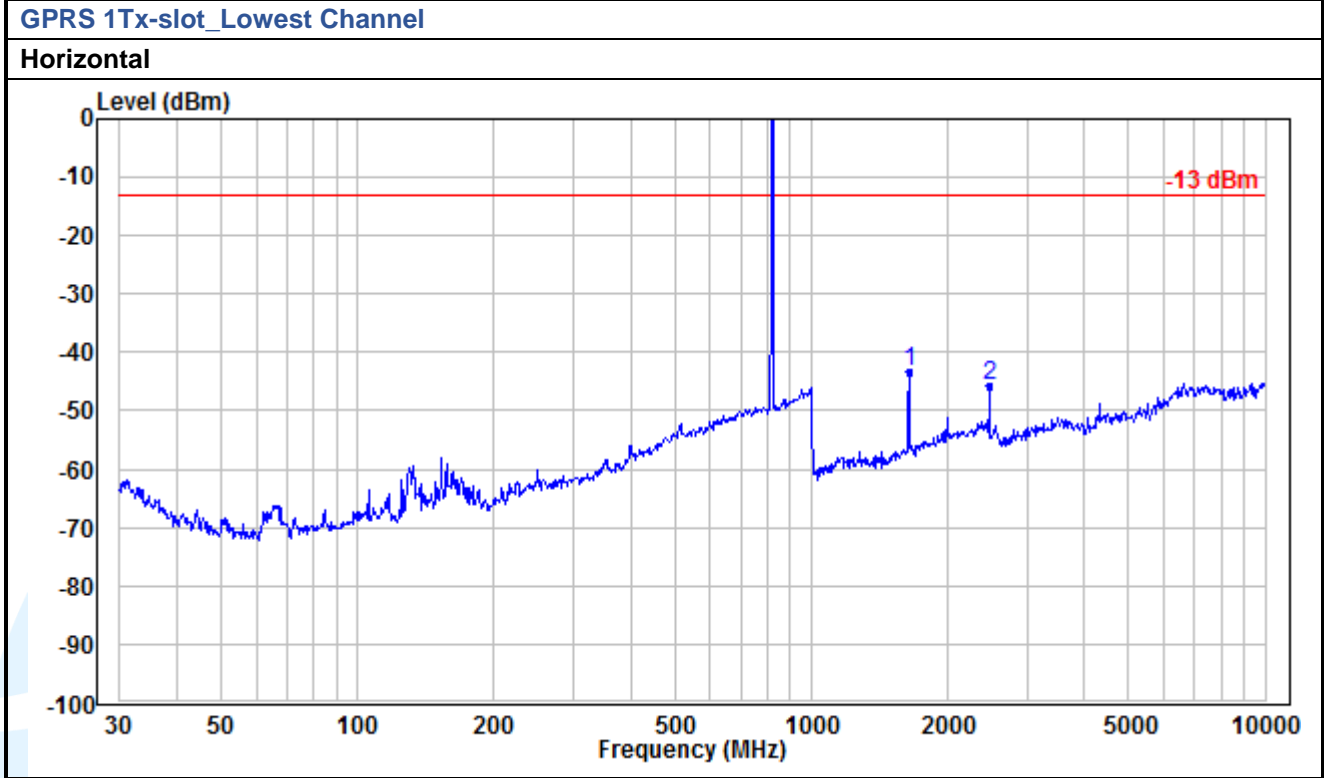
- 10) Test the EUT in the lowest channel, the middle channel the Highest channel
- 11) The radiation measurements are performed in X, Y, Z axis positioning for EUT operation mode, and found the Z axis positioning which it is worse case.
- 12) Repeat above procedures until all frequencies measured was complete.

**Equipment Used:** Refer to section 3 for details.

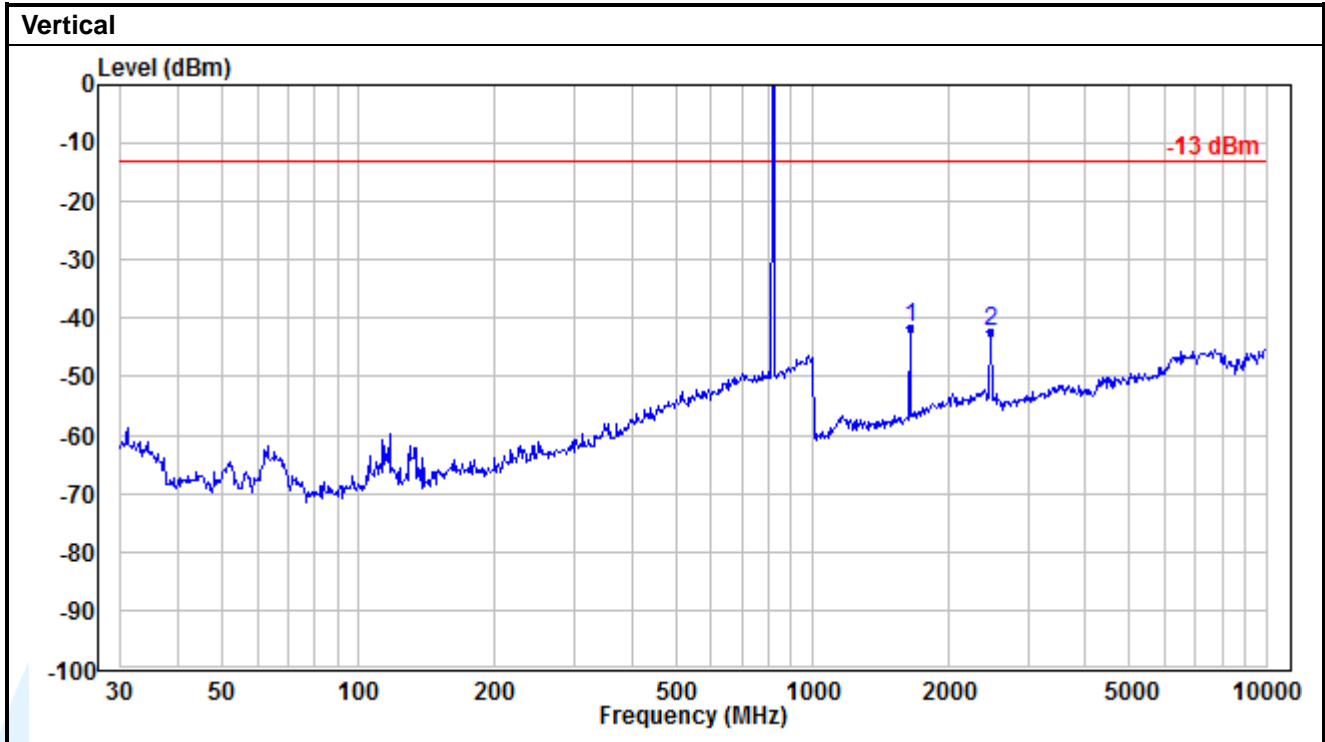
**Test Result:** Pass

**The measurement data as follows:**

**Radiated Emission Test Data**  
**GPRS 850**



No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1648.400	-46.73	3.59	-43.14	-13.00	-30.14	Peak
2	2472.600	-56.85	11.19	-45.66	-13.00	-32.66	Peak

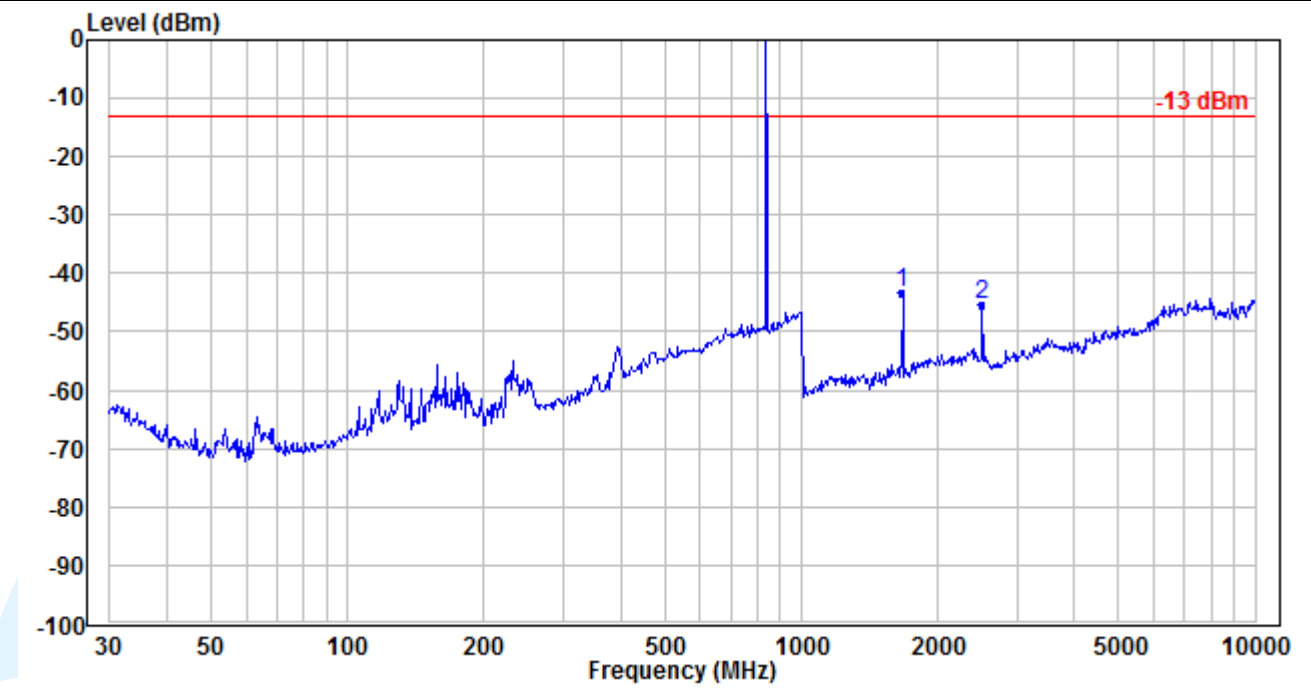


No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1648.400	-45.09	3.59	-41.50	-13.00	-28.50	Peak
2	2472.600	-53.52	11.19	-42.33	-13.00	-29.33	Peak

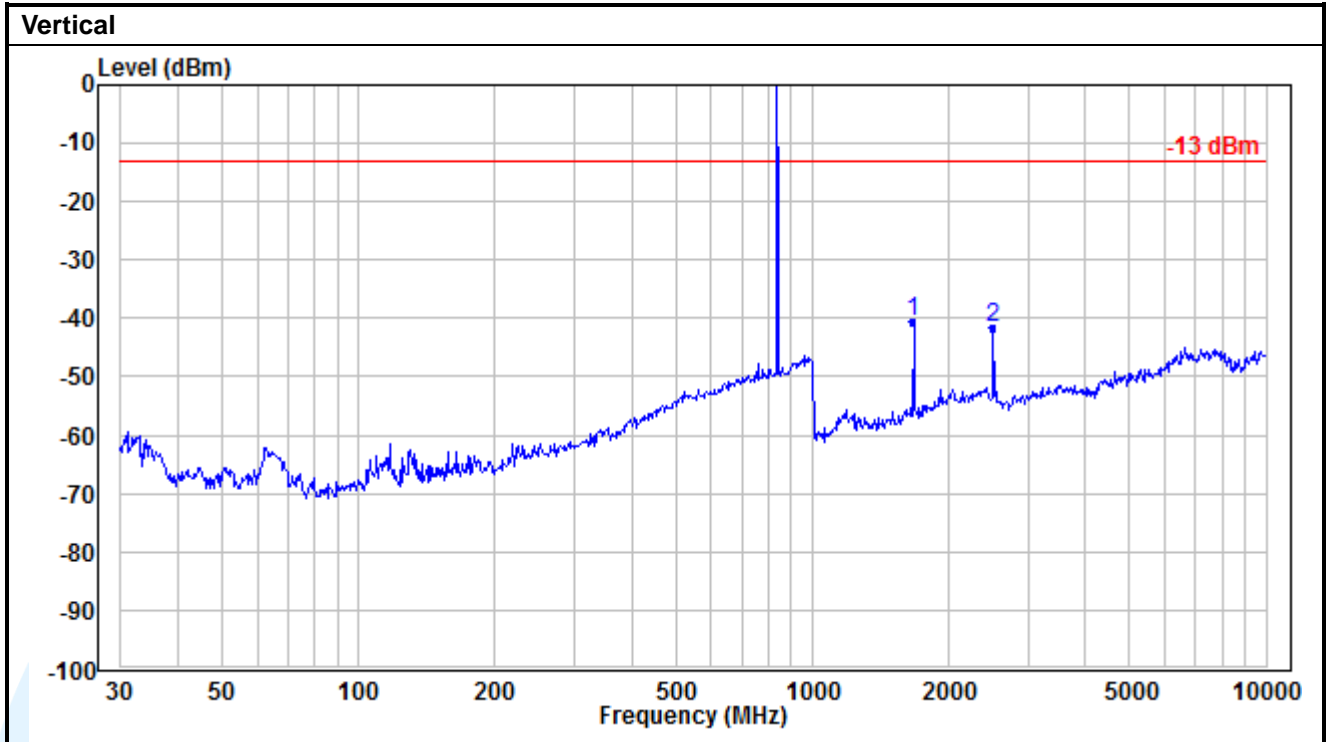


GPRS 1Tx-slot\_Middle Channel

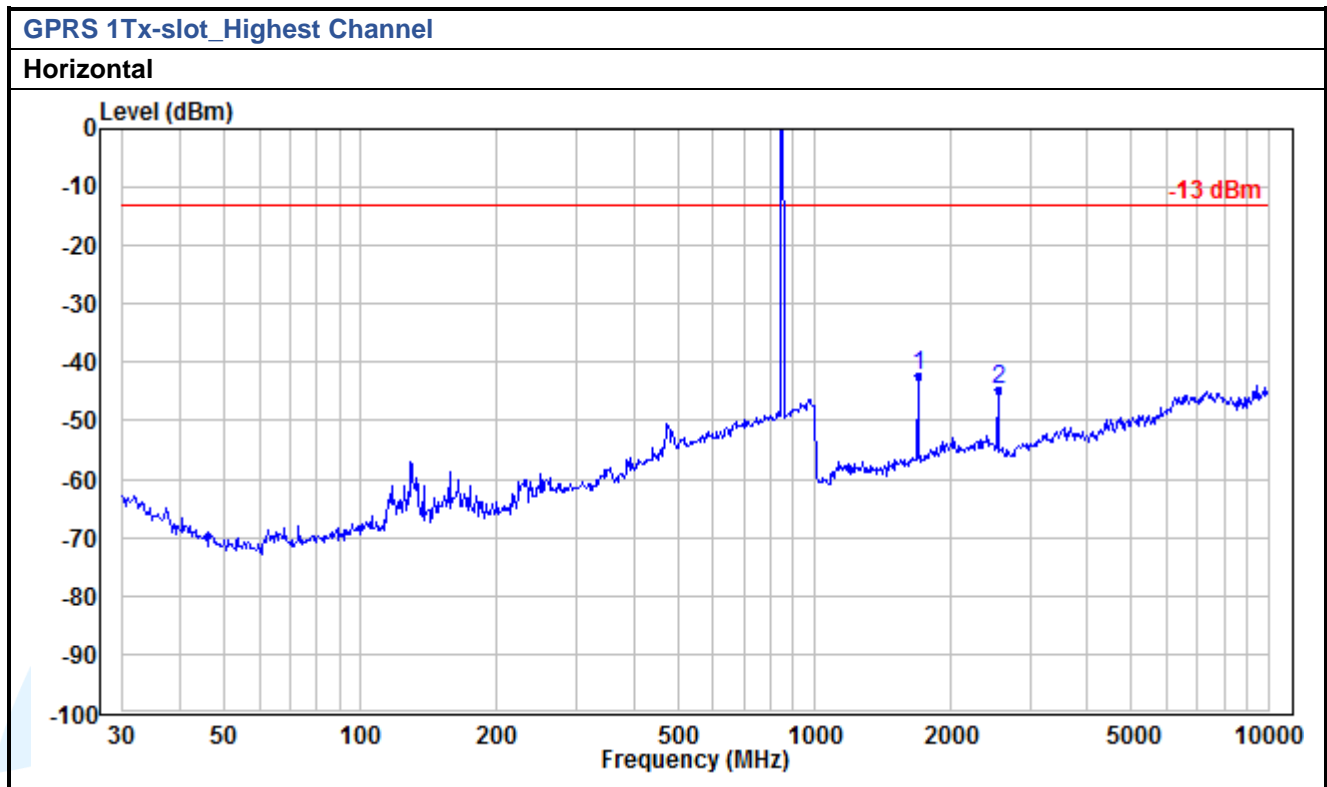
Horizontal



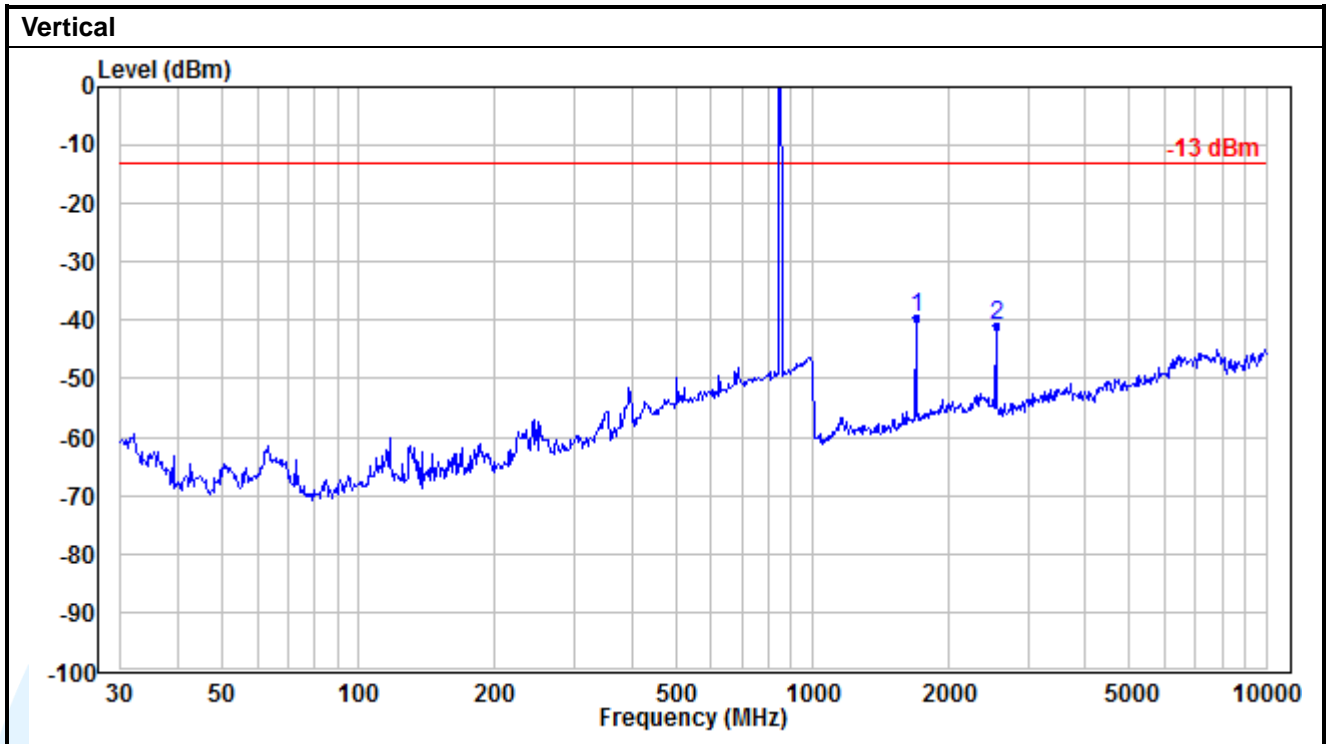
No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1673.200	-47.17	3.88	-43.29	-13.00	-30.29	Peak
2	2509.800	-56.68	11.16	-45.52	-13.00	-32.52	Peak



No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1673.200	-44.31	3.88	-40.43	-13.00	-27.43	Peak
2	2509.800	-52.74	11.16	-41.58	-13.00	-28.58	Peak



No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1697.600	-46.38	4.17	-42.21	-13.00	-29.21	Peak
2	2546.400	-55.93	11.14	-44.79	-13.00	-31.79	Peak

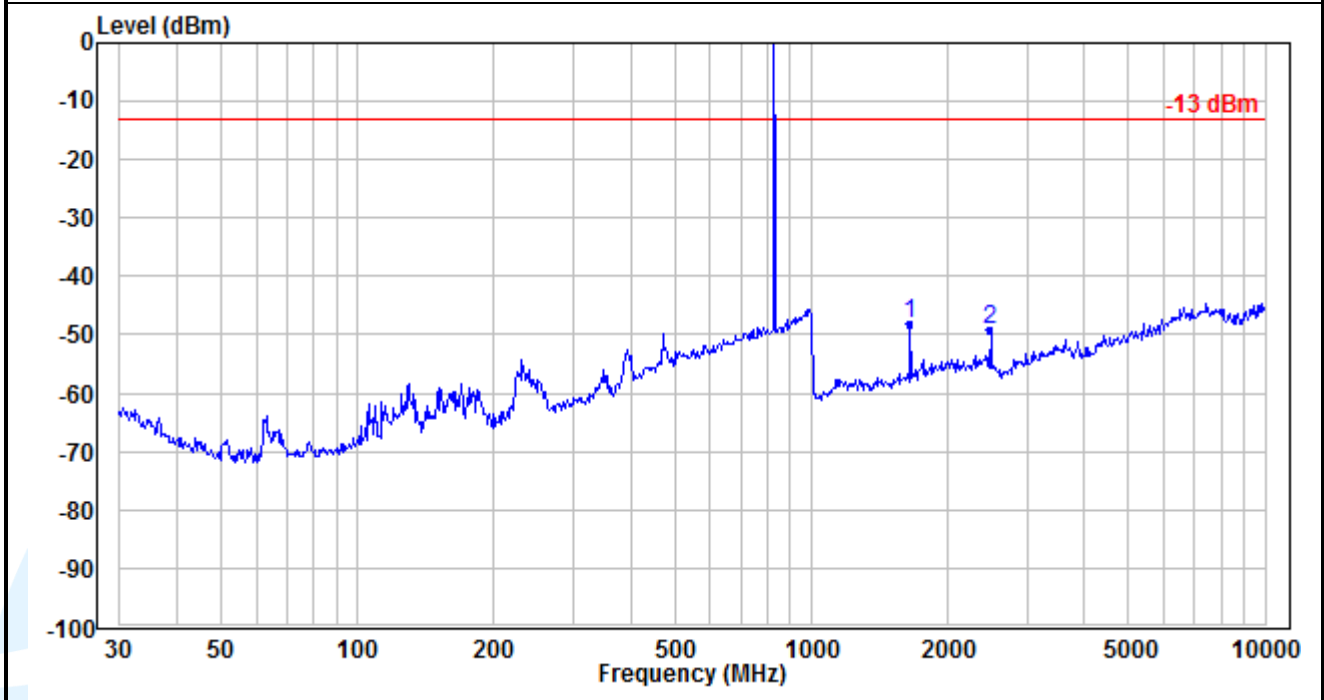


No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1697.600	-43.71	4.17	-39.54	-13.00	-26.54	Peak
2	2546.400	-52.17	11.14	-41.03	-13.00	-28.03	Peak

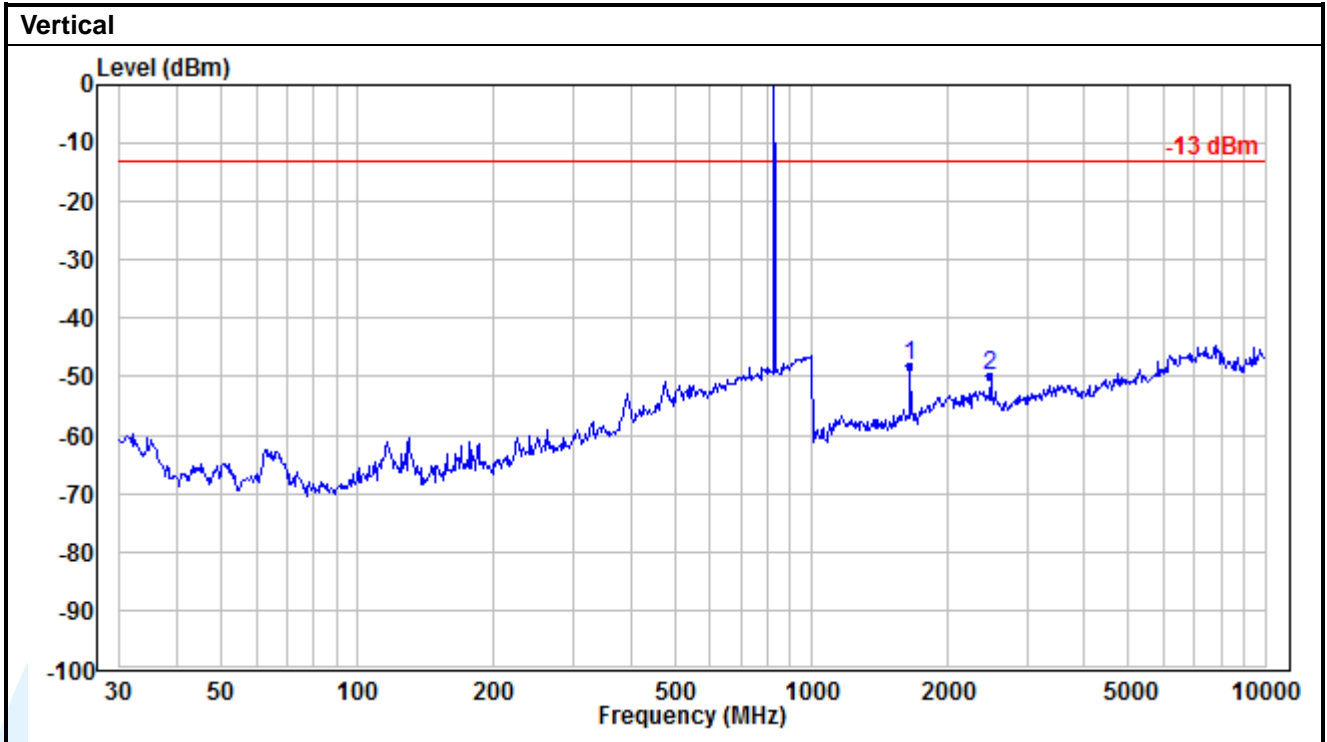
WCDMA Band V

WCDMA RMC 12.2Kbps\_Lowest Channel

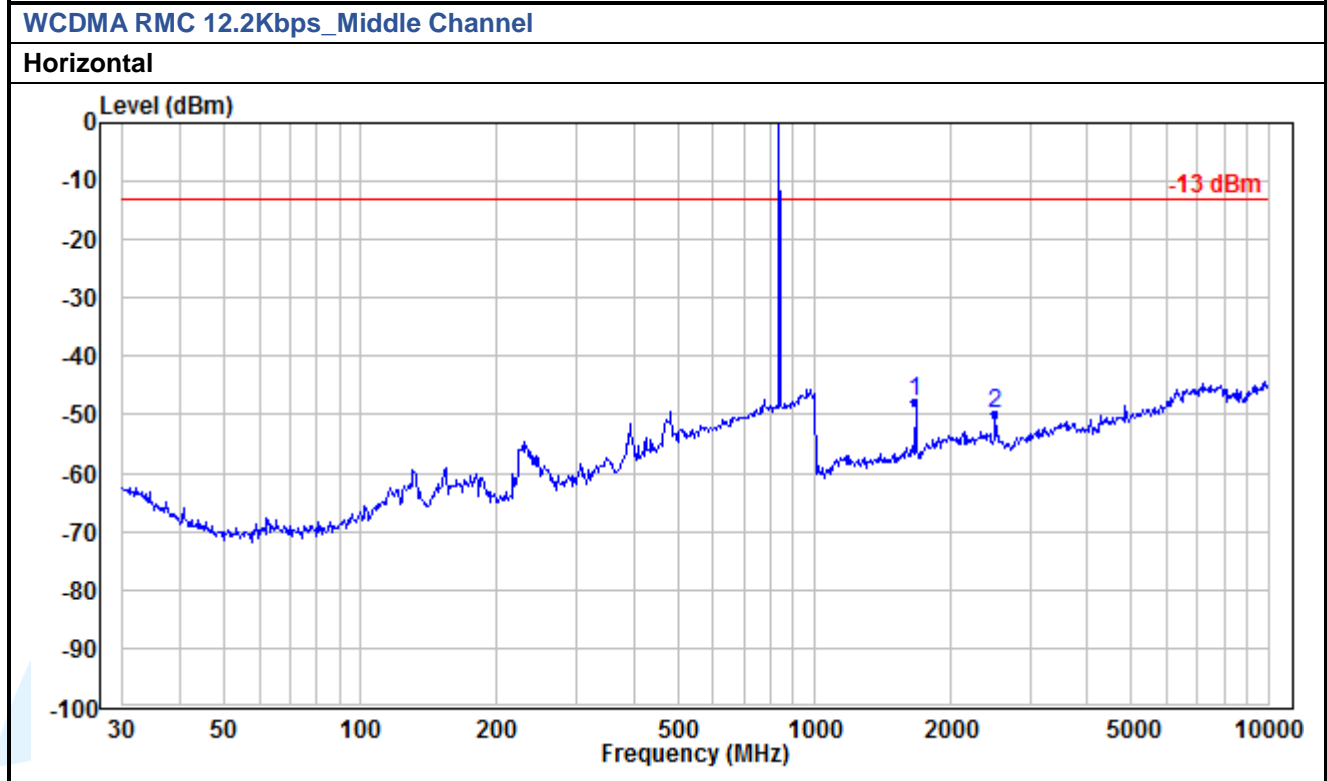
Horizontal



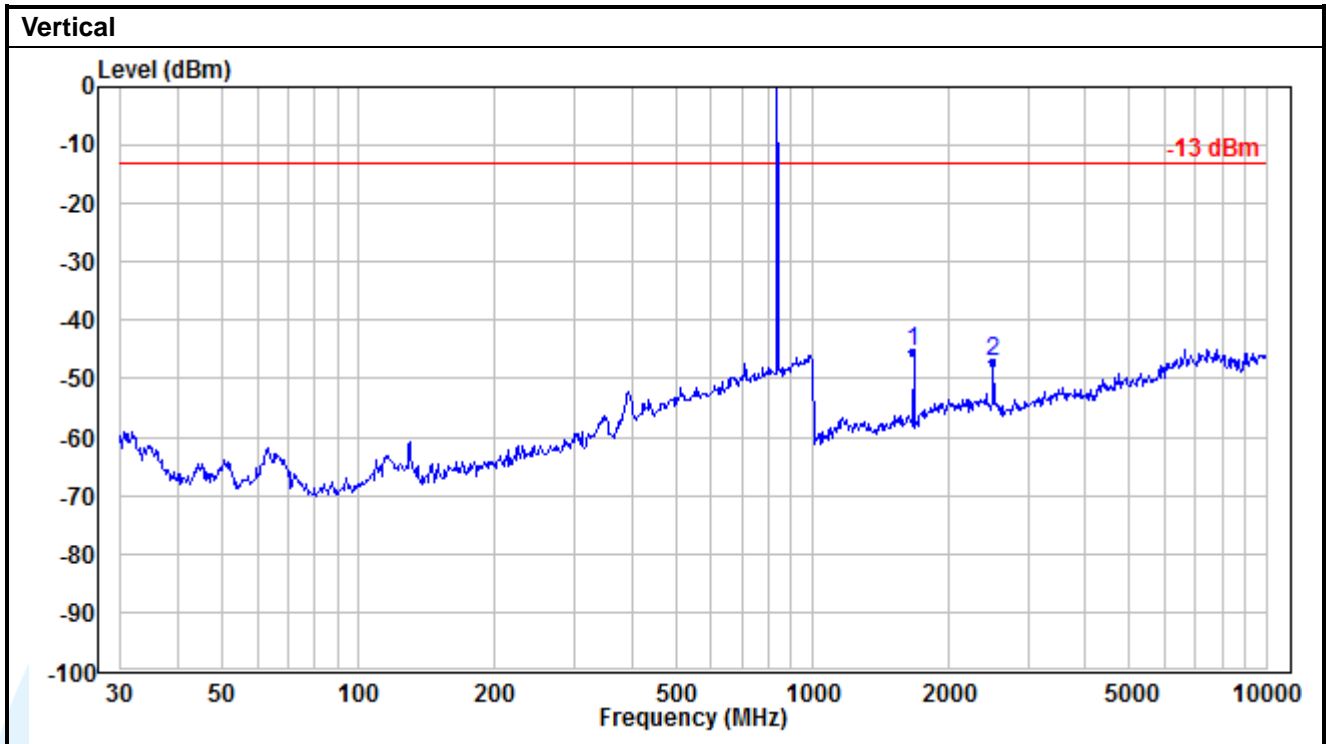
No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1652.800	-51.73	3.64	-48.09	-13.00	-35.09	Peak
2	2479.200	-60.34	11.18	-49.16	-13.00	-36.16	Peak



No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1653.624	-51.63	3.65	-47.98	-13.00	-34.98	Peak
2	2479.200	-60.91	11.18	-49.73	-13.00	-36.73	Peak

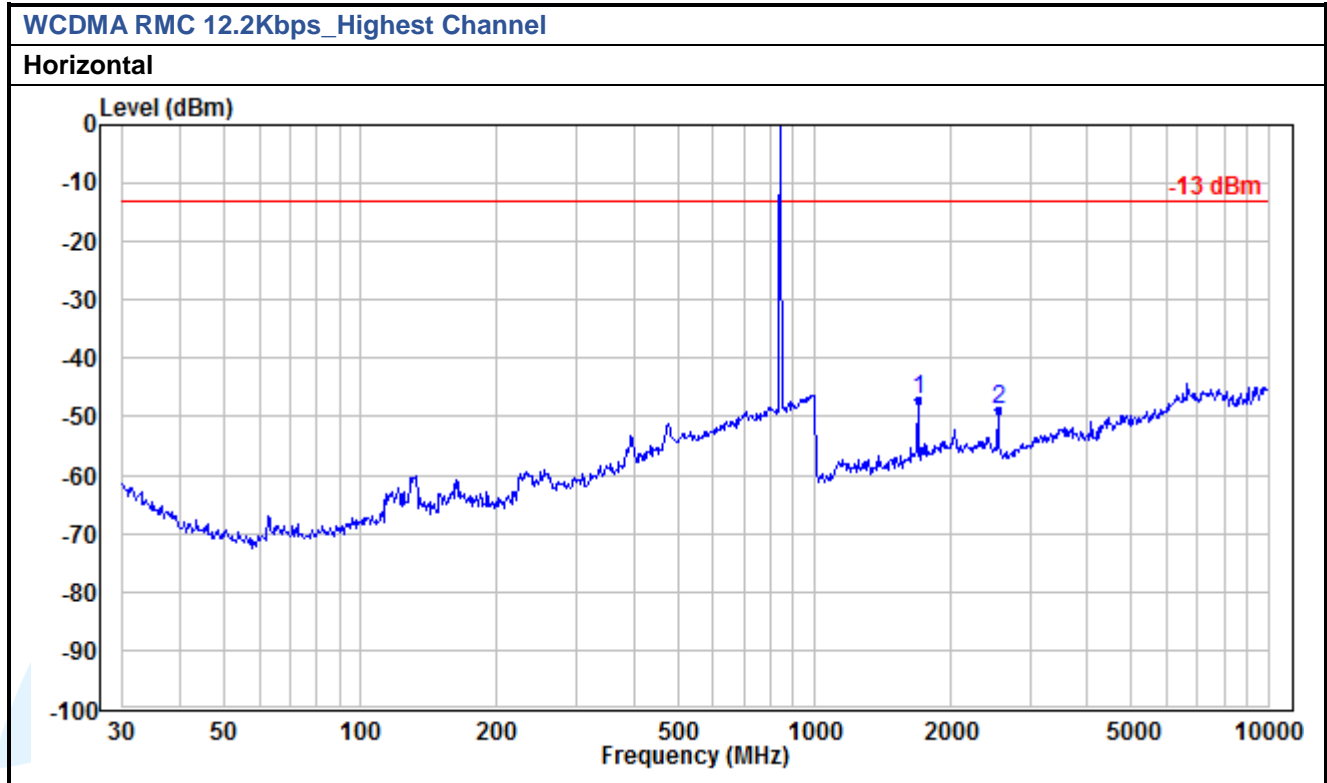


No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1672.800	-51.80	3.88	-47.92	-13.00	-34.92	Peak
2	2509.200	-60.82	11.16	-49.66	-13.00	-36.66	Peak

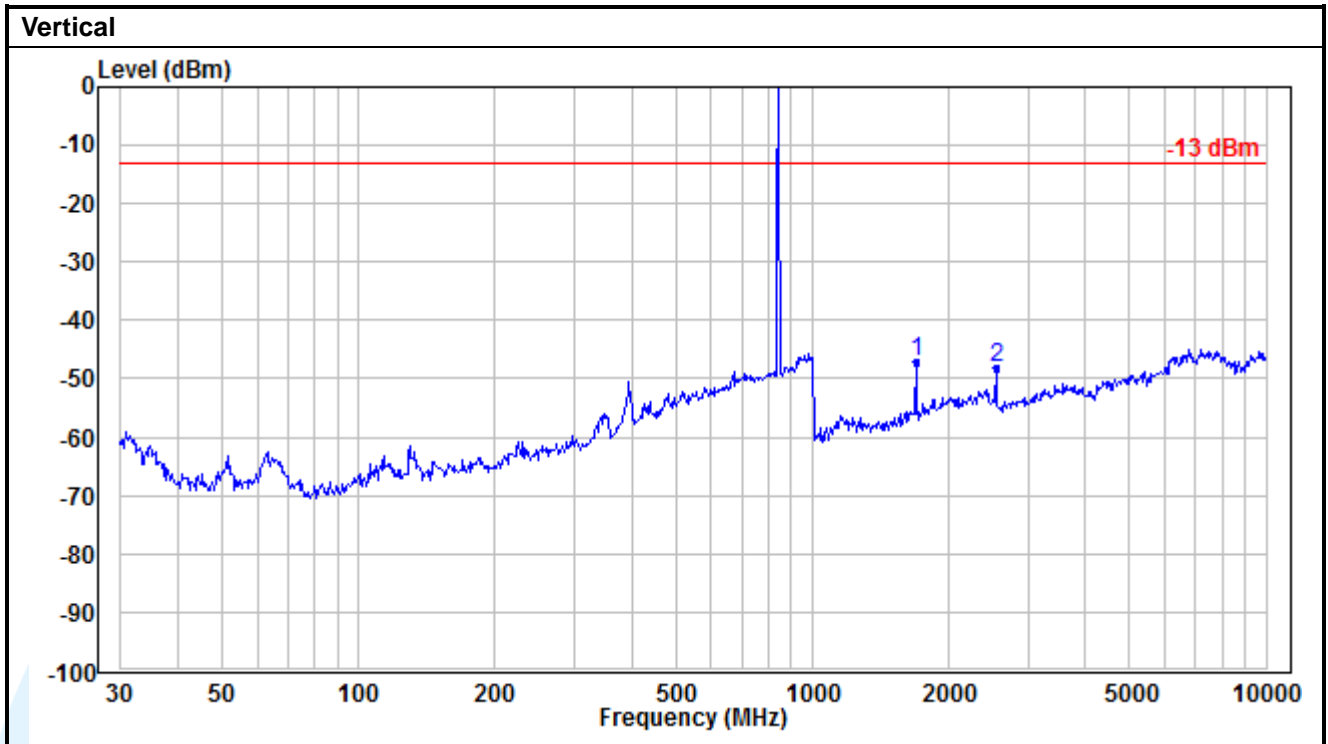


No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1672.800	-49.15	3.88	-45.27	-13.00	-32.27	Peak
2	2509.200	-58.18	11.16	-47.02	-13.00	-34.02	Peak





No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1693.200	-51.24	4.11	-47.13	-13.00	-34.13	Peak
2	2539.800	-59.95	11.14	-48.81	-13.00	-35.81	Peak

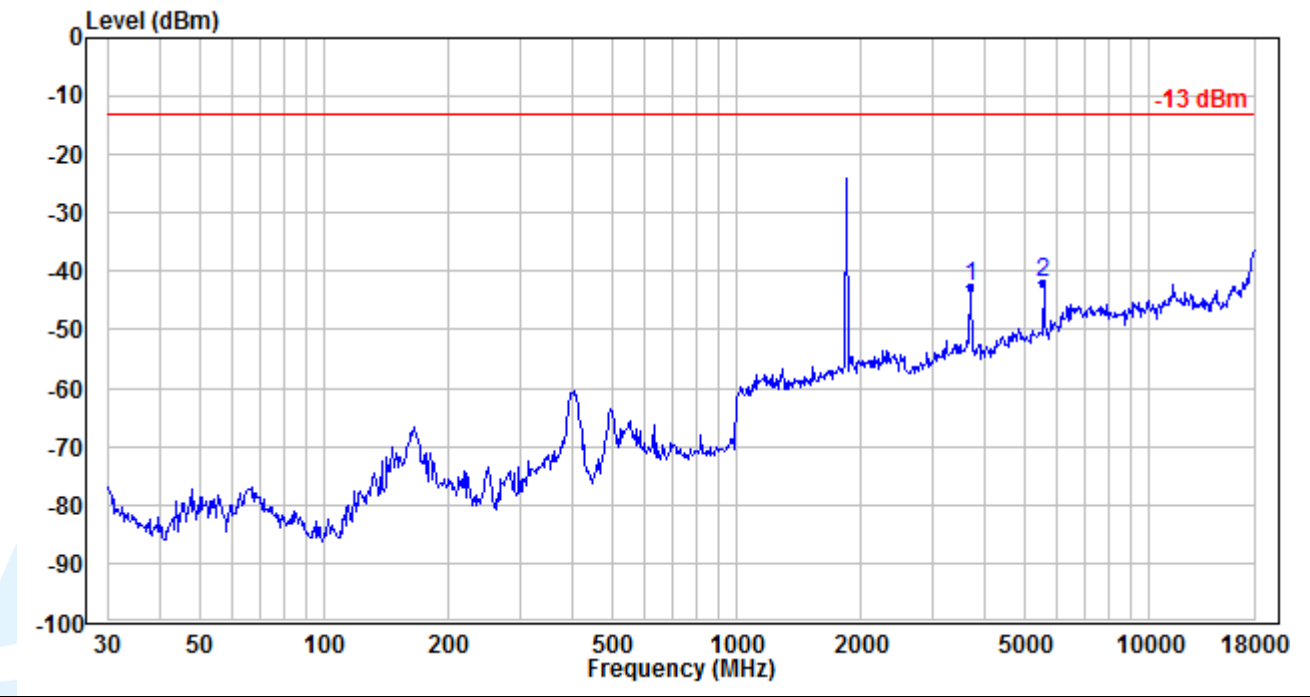


No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1693.200	-51.24	4.11	-47.13	-13.00	-34.13	Peak
2	2539.800	-59.41	11.14	-48.27	-13.00	-35.27	Peak

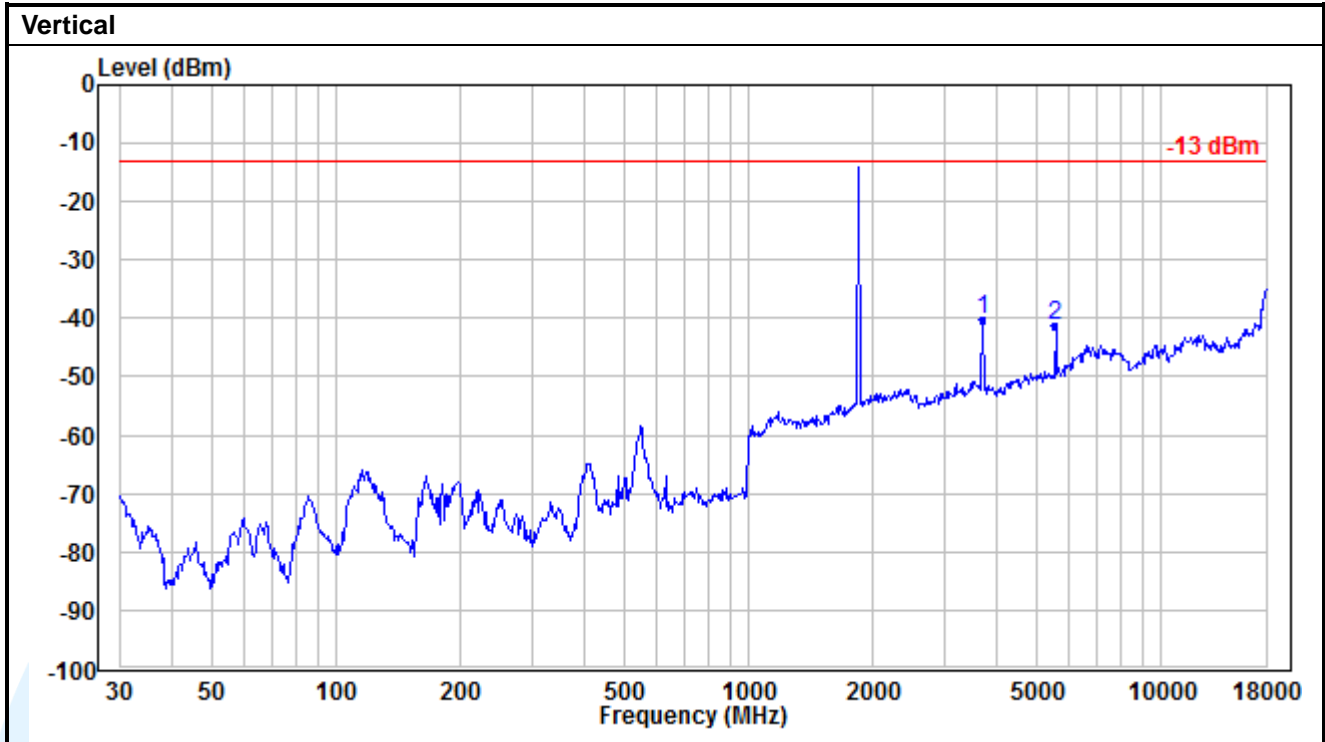
GPRS 1900

GPRS 1Tx-slot\_Lowest Channel

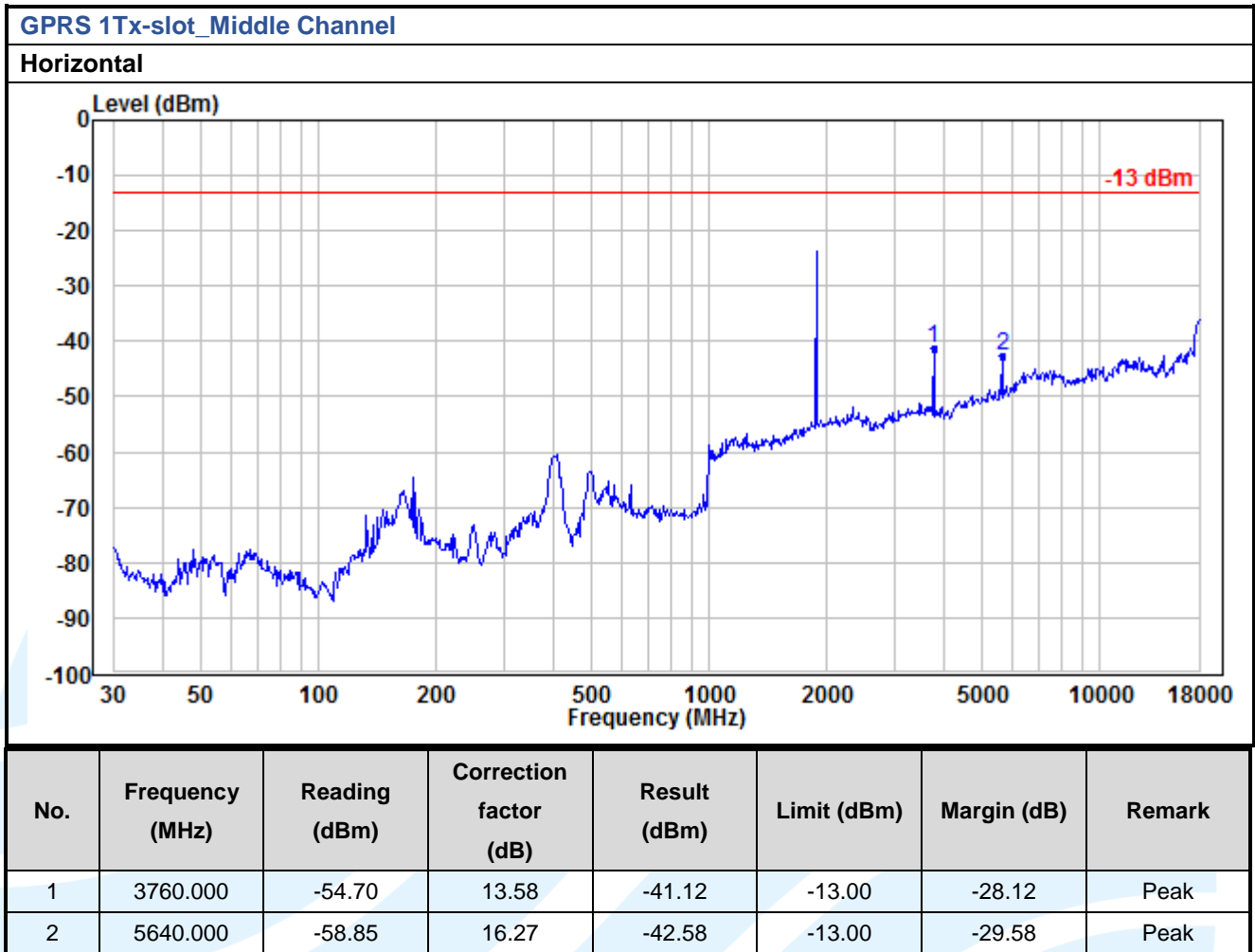
Horizontal

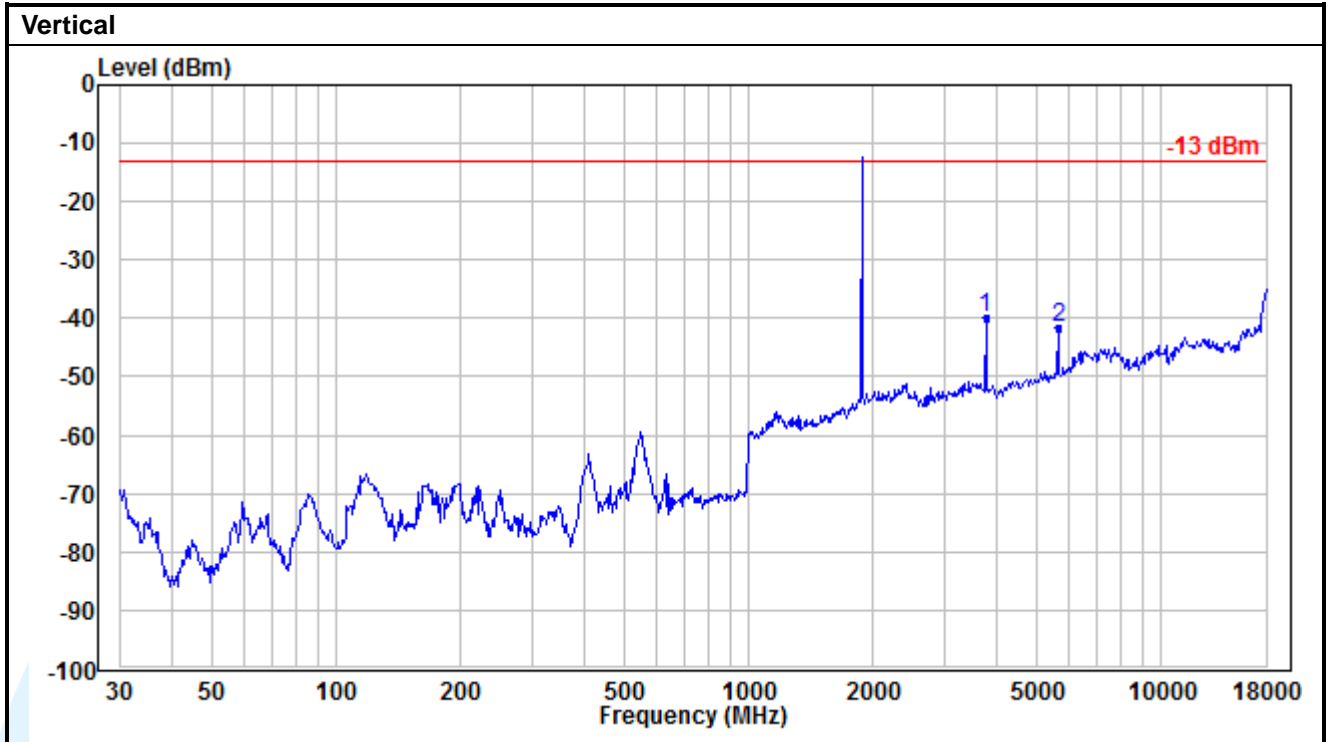


No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3700.400	-56.40	13.73	-42.67	-13.00	-29.67	Peak
2	5550.600	-58.11	16.08	-42.03	-13.00	-29.03	Peak

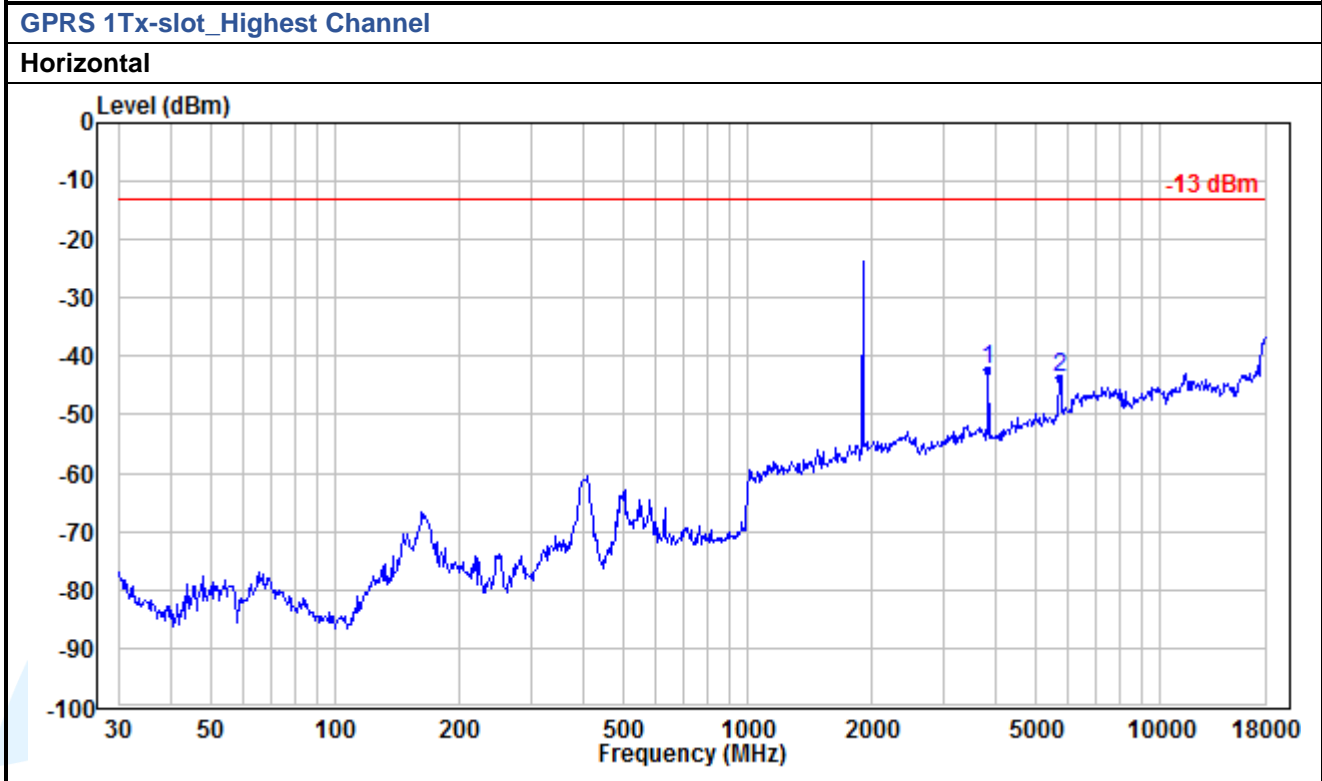


No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3700.400	-53.91	13.73	-40.18	-13.00	-27.18	Peak
2	5550.600	-57.23	16.08	-41.15	-13.00	-28.15	Peak

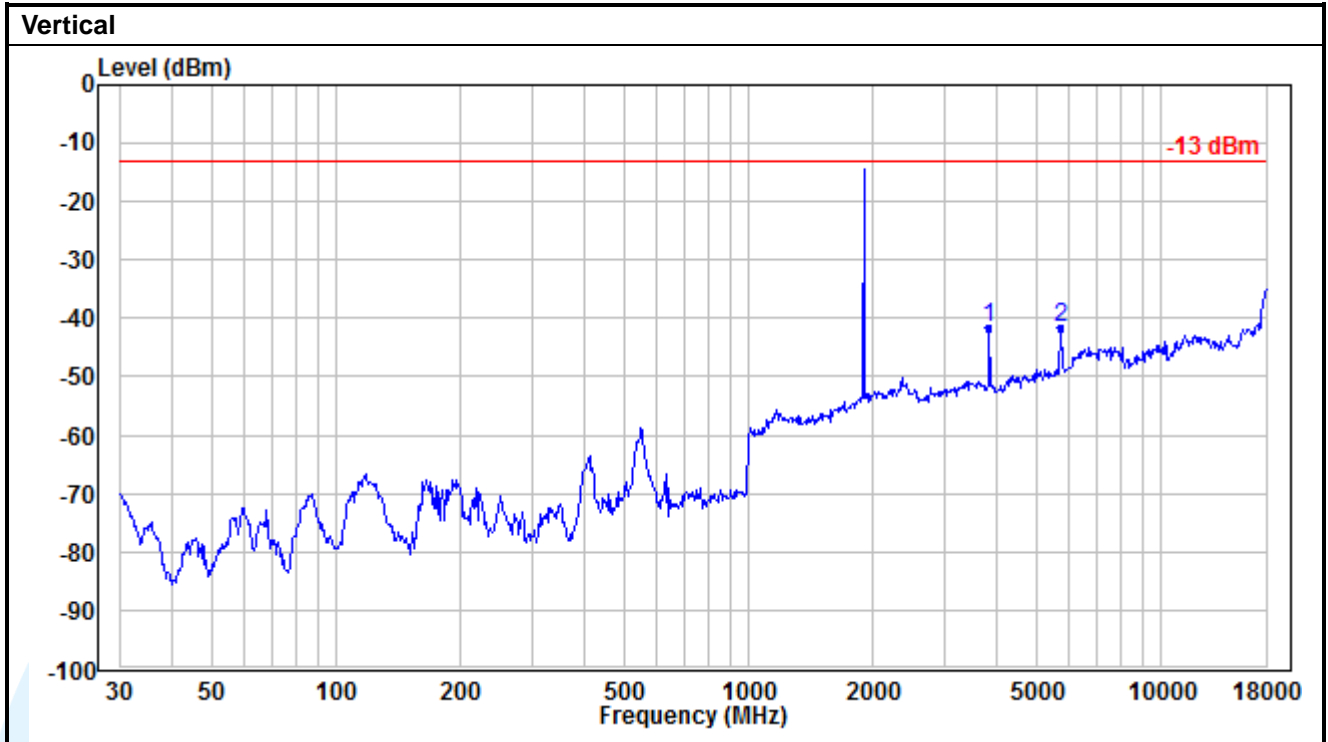




No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3760.000	-53.39	13.58	-39.81	-13.00	-26.81	Peak
2	5640.000	-57.80	16.27	-41.53	-13.00	-28.53	Peak



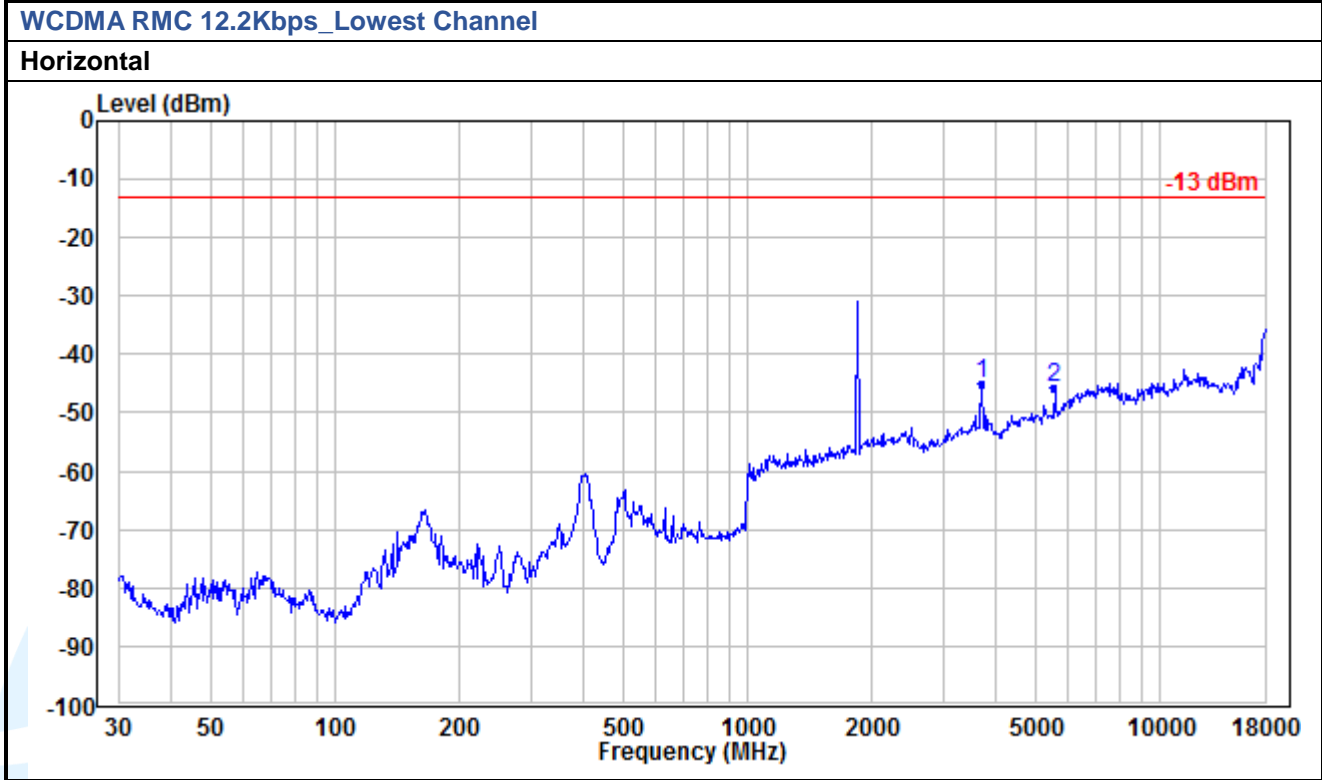
No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3819.600	-55.55	13.44	-42.11	-13.00	-29.11	Peak
2	5729.400	-60.36	16.66	-43.70	-13.00	-30.70	Peak



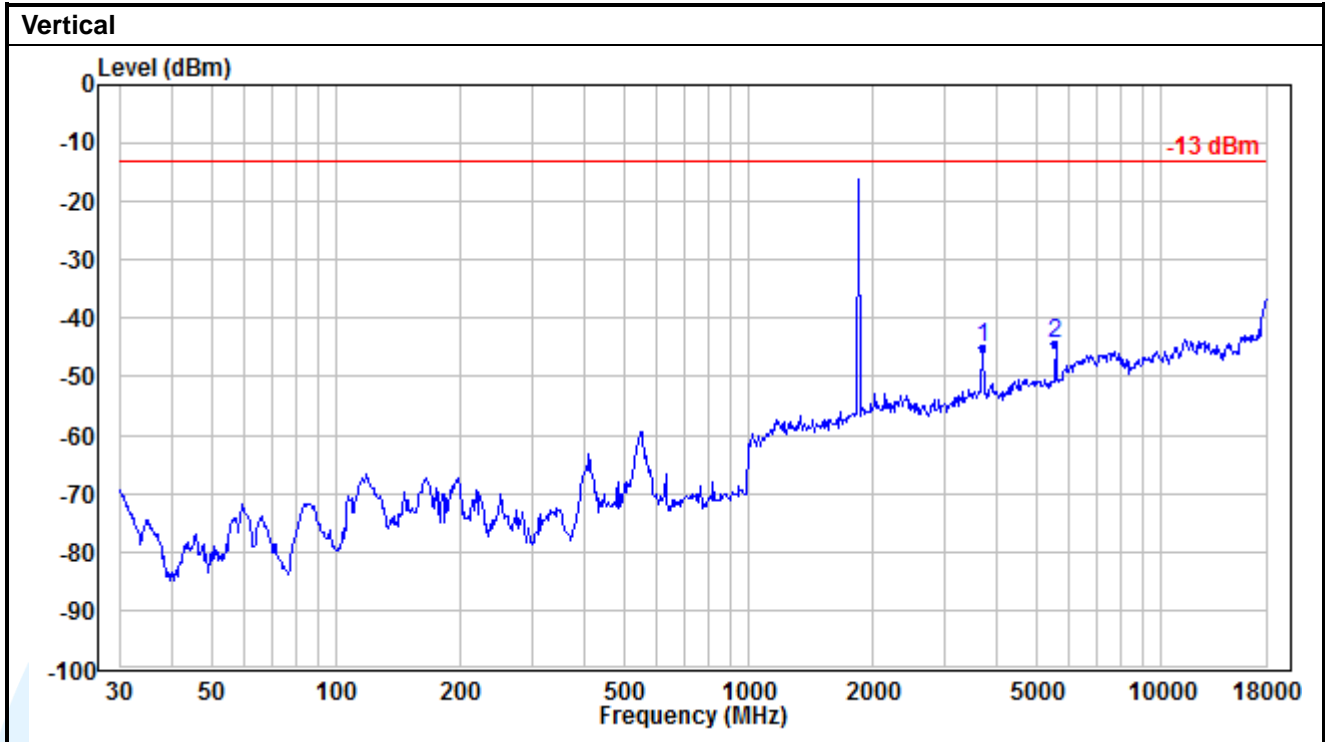
No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3819.600	-55.00	13.44	-41.56	-13.00	-28.56	Peak
2	5729.400	-58.27	16.66	-41.61	-13.00	-28.61	Peak



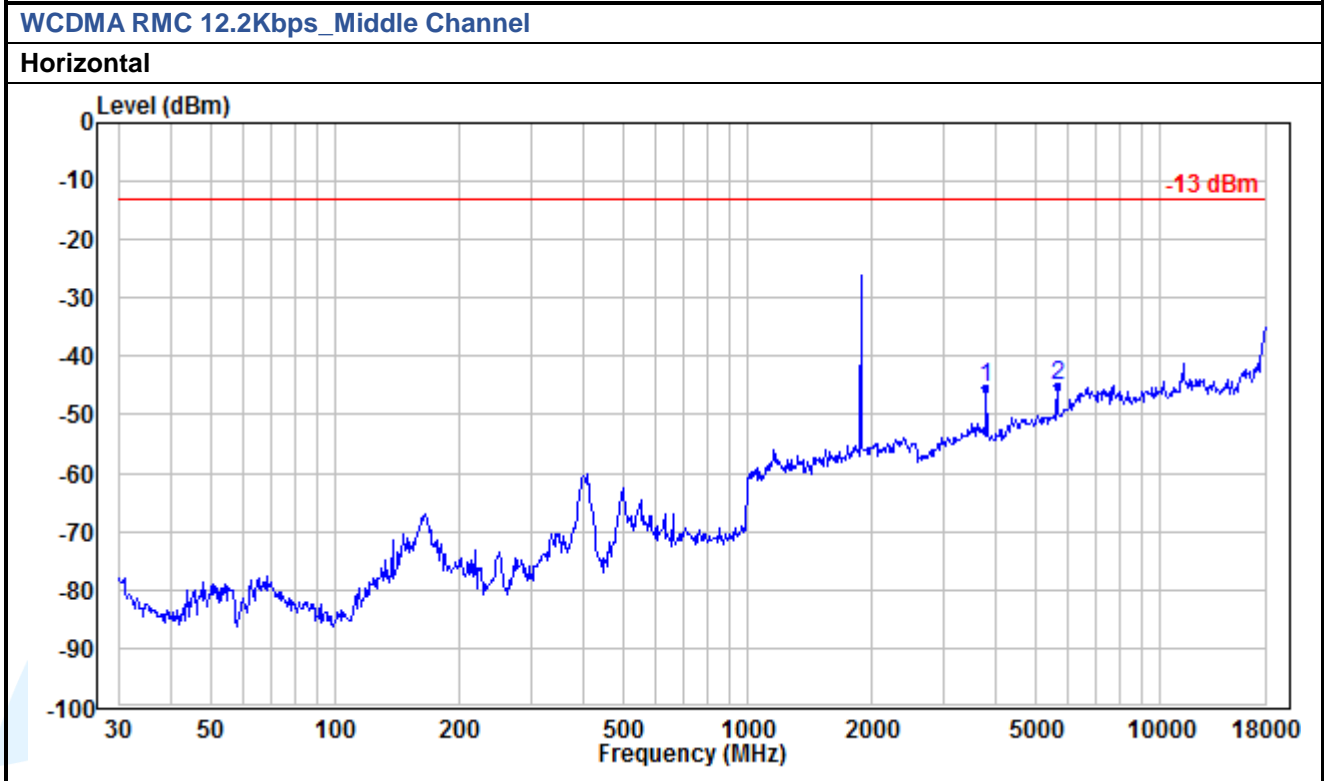
WCDMA Band II



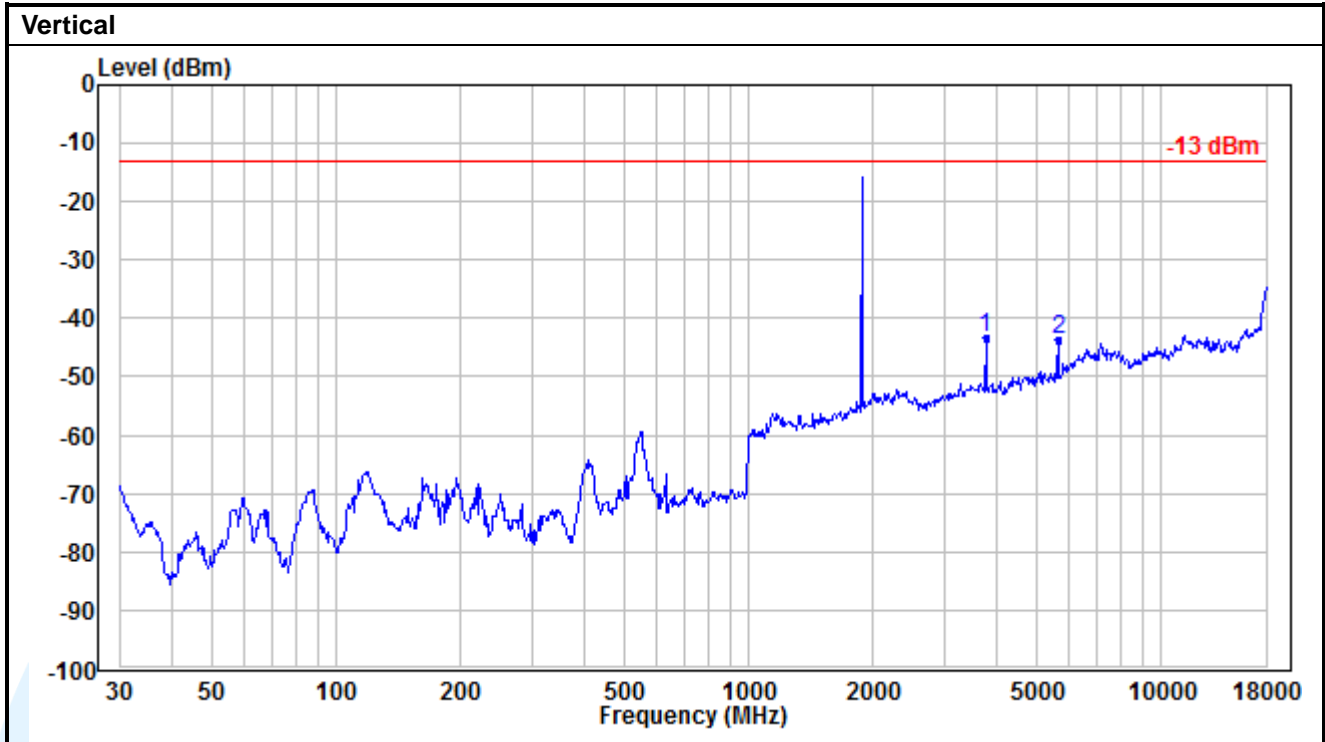
No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3704.800	-58.84	13.71	-45.13	-13.00	-32.13	Peak
2	5557.200	-61.91	16.08	-45.83	-13.00	-32.83	Peak



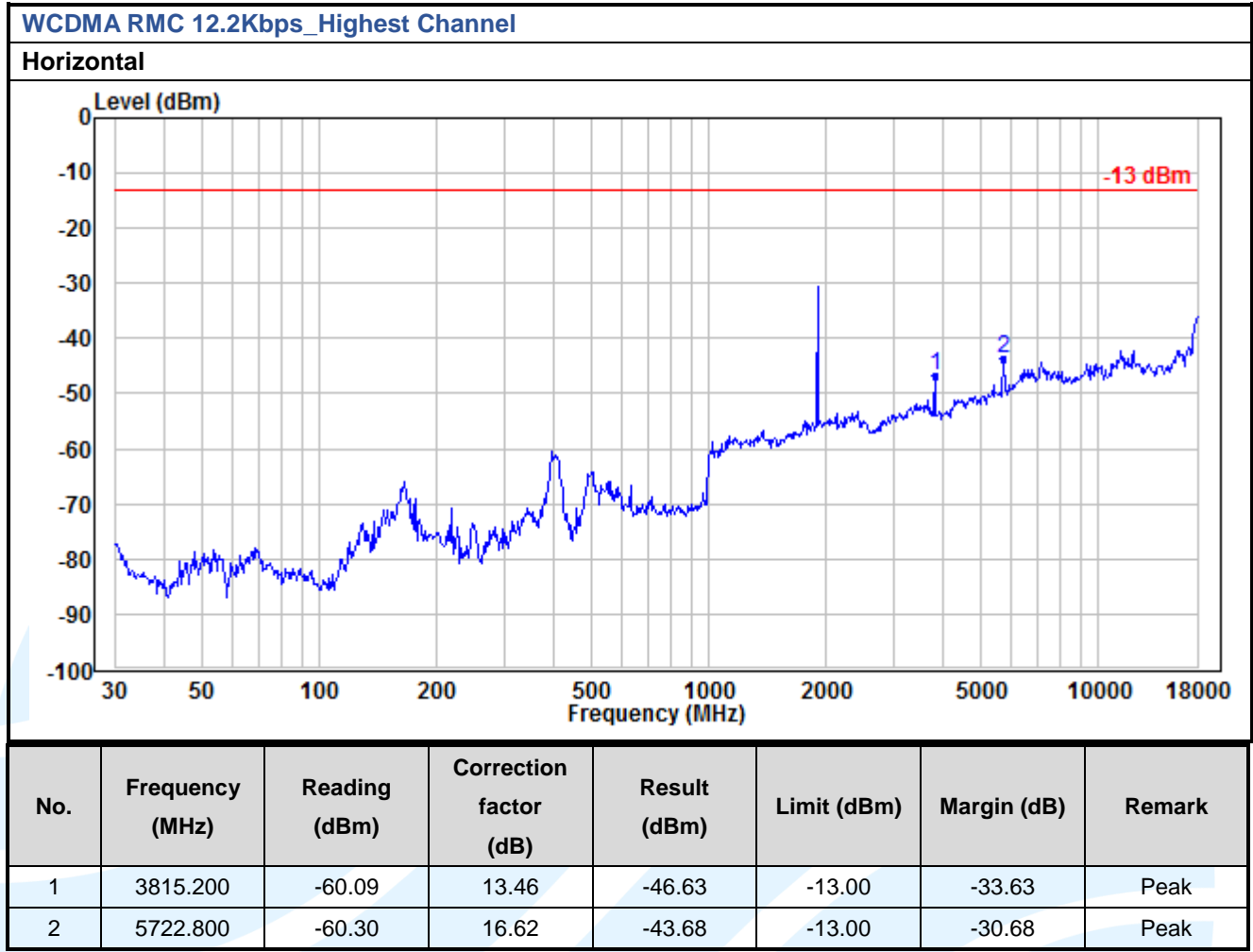
No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3704.800	-58.82	13.71	-45.11	-13.00	-32.11	Peak
2	5557.200	-60.34	16.08	-44.26	-13.00	-31.26	Peak

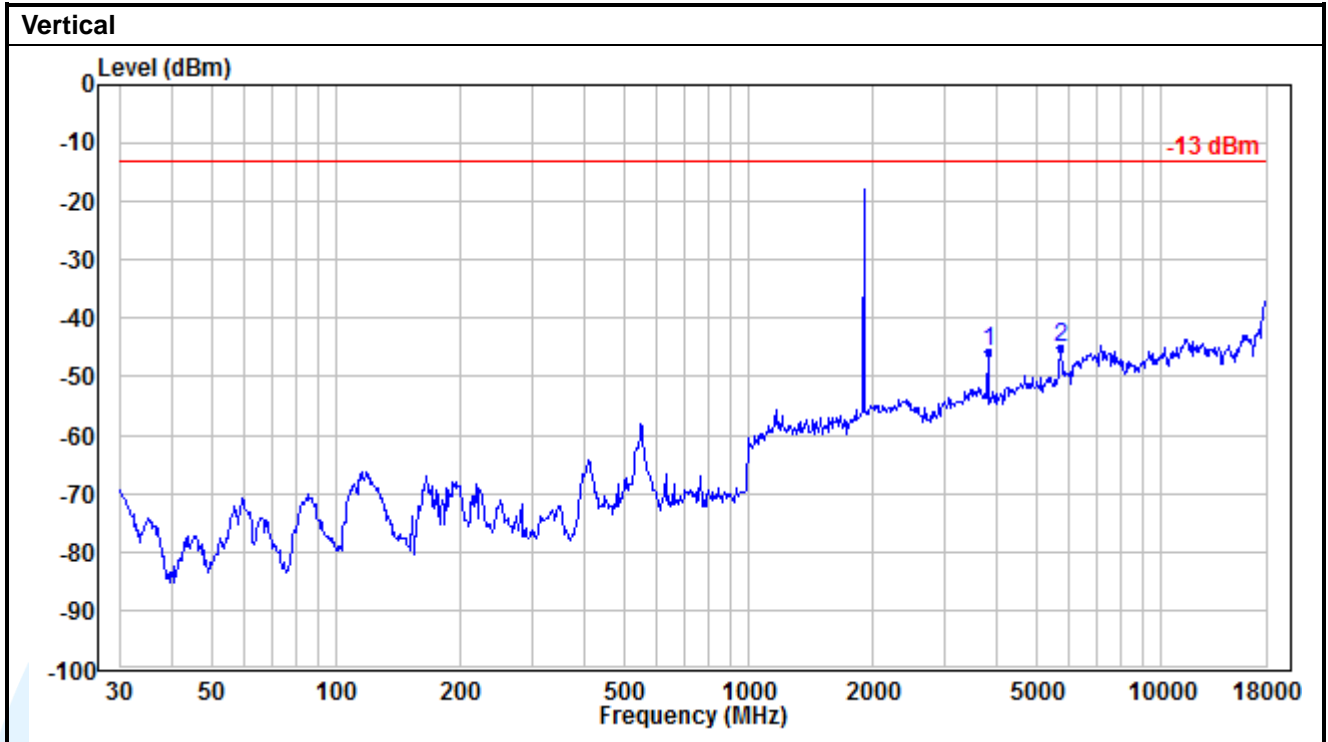


No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3780.000	-58.88	13.54	-45.34	-13.00	-32.34	Peak
2	5640.000	-61.34	16.27	-45.07	-13.00	-32.07	Peak



No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3760.000	-57.04	13.58	-43.46	-13.00	-30.46	Peak
2	5640.000	-59.97	16.27	-43.70	-13.00	-30.70	Peak





No.	Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3815.200	-59.07	13.46	-45.61	-13.00	-32.61	Peak
2	5722.800	-61.60	16.62	-44.98	-13.00	-31.98	Peak

**Remark:**

1) All the above radiation data, the fundamental frequency is not marked, it may exceed the limit, please ignore it.

## APPENDIX 1 PHOTOS OF TEST SETUP

See test photos attached in Appendix 1 for the actual connections between Product and support equipment.

## APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photos.

\*\*\* End of Report \*\*\*

---

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of UnionTrust, this report can't be reproduced except in full.

---