



47 CFR PART 15B

# TEST REPORT

of

## CDMA1X EV-DO Modem

Trade Name: Haier  
Brand Name: Haier  
Model Name: CE100  
Report No.: SZ09030174E01  
FCC ID.: SG70904CE100

*prepared for*

### Qingdao Haier Telecom Co.Ltd.

No.1, HaierRoad, Hi-tech Zone, Qingdao, 266101, P.R.China



### Shenzhen Electronic Product Quality Testing Center

#### Morlab Laboratory

3/F, Electronic Testing Building, Shahe Road, Xili,  
Nanshan District, Shenzhen, 518055 P. R. China

Tel: +86 755 86130398

Fax: +86 755 86130218



**Bluetooth®** CTIA Authorized Test Lab

LAB CODE 20081223-00

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## 1. Test Result Certification

Equipment under Test: CDMA1X EV-DO Modem

Brand Name: Haier

Model Name: CE100

FCC ID: SG70904CE100

Applicant: Qingdao Haier Telecom Co.Ltd.

No.1, HaierRoad, Hi-tech Zone, Qingdao, 266101, P.R.China

Manufacturer: Haier

No.1, HaierRoad, Hi-tech Zone, Qingdao, 266101, P.R.China

Emission Designator: 1M25F9W

Test Standards: 47 CFR Part 2

47 CFR Part 15 Subpart B

Test date: April 07, 2009 – April 15, 2009

Test Result: PASS

### \* We Hereby Certify That:


The equipment under test was tested by Shenzhen Morlab Communications Technology Co., Ltd. The test data, data evaluation, test procedures and equipment configurations shown in this report were made in accordance with the requirement of related FCC rules.

The test results of this report only apply for the tested sample equipment identified above. The test report shall be invalid without all the signatures of the test engineer, the reviewer and the approver.

Tested by: Li Yi Dated: 2009.04.22  
Li Yi

Reviewed by: Ni Yong Dated: 2009.04.22  
Ni Yong

Approved by: Wei Yanquan Dated: 2009.04.22  
Wei Yanquan



## 2. General Information

### 2.1 Equipment under Test (EUT) Description

Description .....: CDMA1X EV-DO Modem  
Model Name .....: CE100  
Serial No.....: (n.a)  
MEID.....: (n.a)  
Hardware Version .....: SP  
Software Version .....: HACE100MT01  
Modulation .....: CDMA 1X  
Frequency .....: Tx: 824.7 – 848.31 MHz; Rx: 869.7-893.31MHz  
Tx: 1851.25 MHz -1908.75 MHz; Rx: 1931.25 MHz-1988.75 MHz

#### NOTE:

1. The EUT is a model of CDMA 1X800/1900MHz Wireless Data Terminal supported EVDO . When testing, the EUT was power by a USB point, and a connecting between EUT and base station was established at the start of the test, and maintained during the all test in this report.
2. The EUT can receive the electric power from the PC via USB point and can be used as a storage when inserted with a T-Flash card.
3. For detailed features about the EUT, please see user manual supplied by the applicant.

## 2.2 Test Standards and Results

The objective of the report is to perform tests according to 47 CFR Part 2, Part 15 Part 22 for FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 2 (10-1-05 Edition)	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 15 (10-1-05 Edition)	Radio Frequency Devices

Test detailed items and the results are as below:

No.	Rules	Test Type	Result	Date of Test
FCC Part 15 Requirement				
1	§15.107	Conducted Emissions	PASS	2009-04-13
2	§15.109	Radiated Emissions	PASS	2008-04-13

NOTE:

The tests were performed according to the method of measurements prescribed in ANSI C63.4 2003.

## Facilities and Accreditations

### 2.2.1 Facilities

Shenzhen Electronic Product Quality Testing Center Morlab Laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is CNAS L1659.

All measurement facilities used to collect the measurement data are located at Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen, P. R. China. The site was constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22, the FCC registration number is 741109.

### 2.2.2 Test Equipments

No.	Description	Specification
1	System Simulator	Manufacturer: Rohde&Schwarz Model No.: CMU200 Serial No.: 100448
2	System Simulator	Manufacturer: Agilent Model No.: E5515C Serial No.: GB43130131
3	Spectrum Analyzer	Manufacturer: Agilent Model No.: E7405A Serial No.: US44210471
4	Telecommunication Antenna	Manufacturer: European Antennas Model No.: PSA-45010R/356 Serial No.: 403688-001
5	Trilogy Antenna	Manufacturer: Schwarzbeck Model No.: VULB 9163 Serial No.: 9163-274
6	Horn Antenna	Manufacturer: Schwarzbeck Model No.: BBHA 9120C Serial No.: 9120C-384
7	Power Splitter	Manufacturer: WEINSCHEL Model No.: 1506A Serial No.: NW521
8	Anechoic Chamber	Manufacturer: Albatross Projects GmbH
9	DC Power Supply	Manufacturer: Good Will Instrument Co., Ltd.
10	Temperature Chamber	Manufacturer: Chongqing YinHe Experimental Equip. Co., Ltd.

**NOTE:**

1. Equipments listed above have been calibrated and are in the period of validation.

**2.2.3 Test Environment Conditions**

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

Temperature:	20 - 25°C
Relative Humidity:	40 - 60%
Atmospheric Pressure:	86-106kPa

### 3. 47 CFR Part 15B Requirements

#### 3.1 General Information

##### 3.1.1 Test Mode

The test modes of the EUT are showed as below:

(1) Call Mode:

The EUT configuration of the emission tests was EUT + PC.

During the measurement, the lithium battery was installed into the PC, and the charger was connected to the PC. A communication link was established between the EUT and a System Simulator (SS).

(2) EVDO Mode

The EUT configuration of the emission tests was EUT + PC.

During the measurement, the lithium battery was installed into the PC, and the charger was connected to the PC. A data connection was established between the EUT and a System Simulator (SS) via EVDO.

(3) USB Mode

The EUT configuration of the emission tests is TransFlash Card + EUT + PC.

In this test mode, the EUT with a TransFlash Card embedded is connected with a PC via the USB. During the measurement, the data is transmitting between the PC and the TransFlash Card of the EUT.

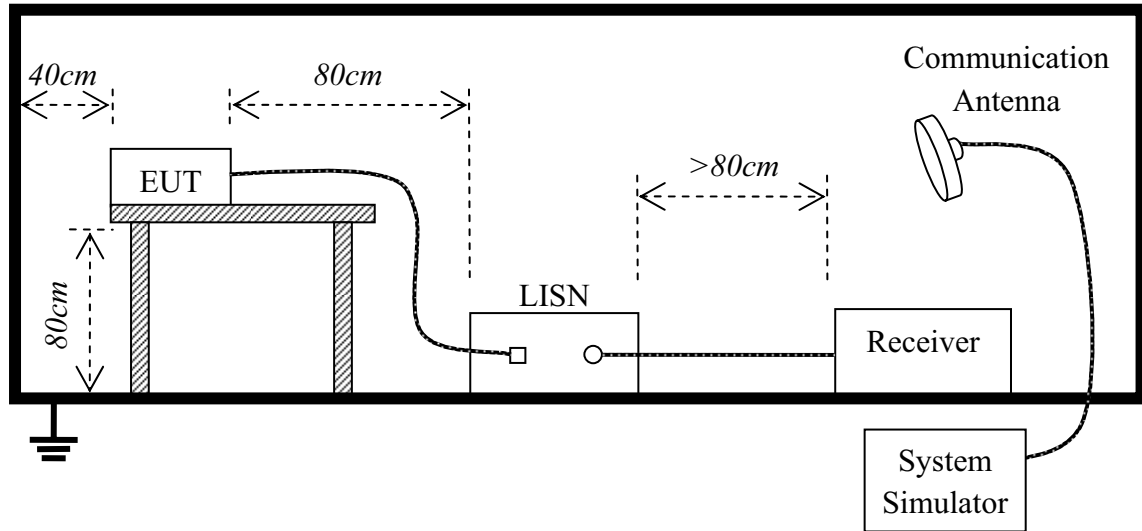
NOTE:

1. All test modes are performed, only the worst cases are recorded in this report, so we just display result of Call Mode and USB Mode.



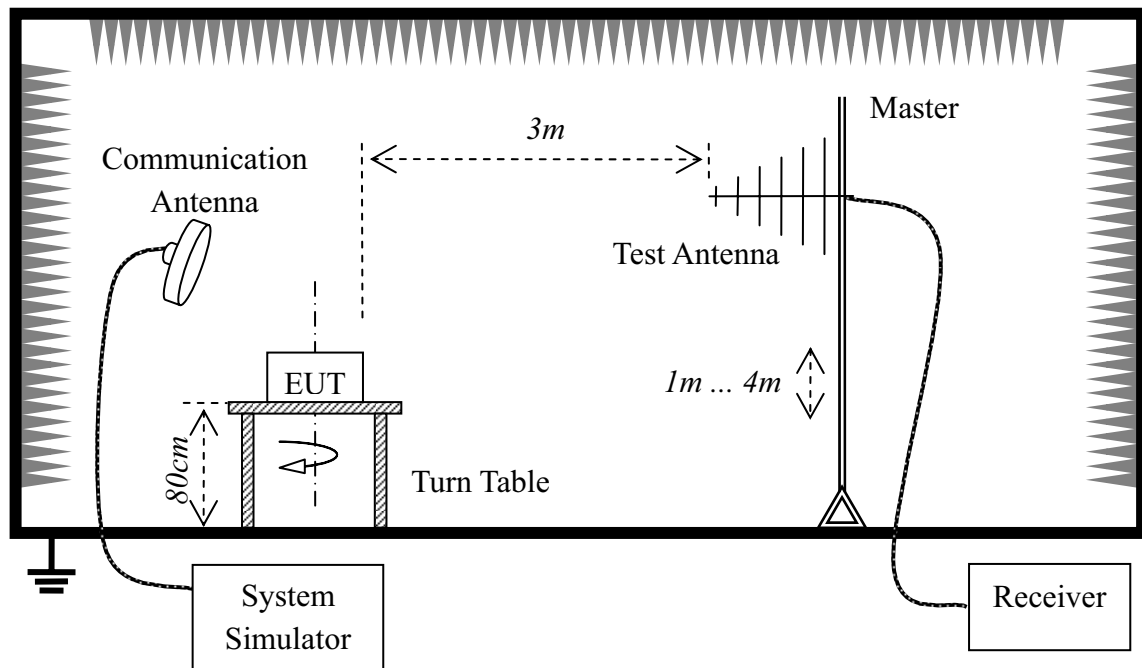
### 3.1.2 Test Setup

#### 3.1.2.1 Conducted Emission Test



1. The test is performed in a Shield Room; the factors of the test system are calibrated to correct the reading.
2. The EUT is placed on a 0.8 meters high insulating table and keeps 0.4 meters away from the conducting wall of the Shield Room.
3. The EUT is connected to the power mains through a Line Impedance Stabilization Network (LISN). The LISN provides  $50\Omega/50\mu\text{H}$  of coupling impedance for the measuring instrument.

### 3.1.2.2 Radiated Emission Test



1. The test is performed in a Semi-anechoic Chamber; the factors of the test system are calibrated to correct the reading.
2. The EUT is placed on a 0.8 meters high insulating table and keeps 3 meters away from the Test Antenna, which is mounted on the top of a variable-height antenna Master tower.

#### NOTE:

1. The test method is the substitution method according to TIA-603-C.

## 3.2 Conducted Emission

### 3.2.1 Requirement

According to FCC §15.107, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 $\mu$ H/50 $\Omega$  line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

1. The limit subjects to the Class B digital device.
2. The lower limit shall apply at the band edges.
3. The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

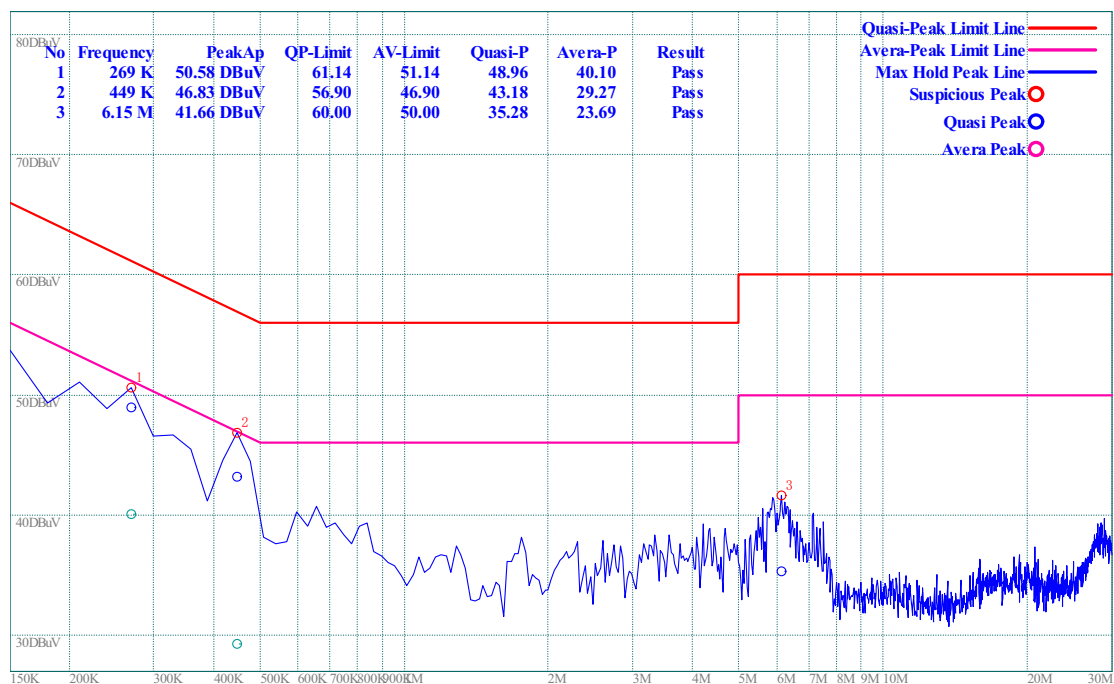
### 3.2.2 Test Procedure

1. Perform test setup as described in section 3.1.2.1.
2. Each test mode in section 3.1.1 should be applied. At each test mode, the frequency range from 150 kHz to 30MHz is searched using the CISPR Quasi-Peak and/or the Average detector of the Receiver. If the emission levels measured with Quasi-Peak detector are lower than the Average Limit, it's not necessary to measure with Average detector.
3. The emission levels at both L phase and N phase should be tested.
4. Record the test result plot and distinct points.
5. In the test report show the worst test data.

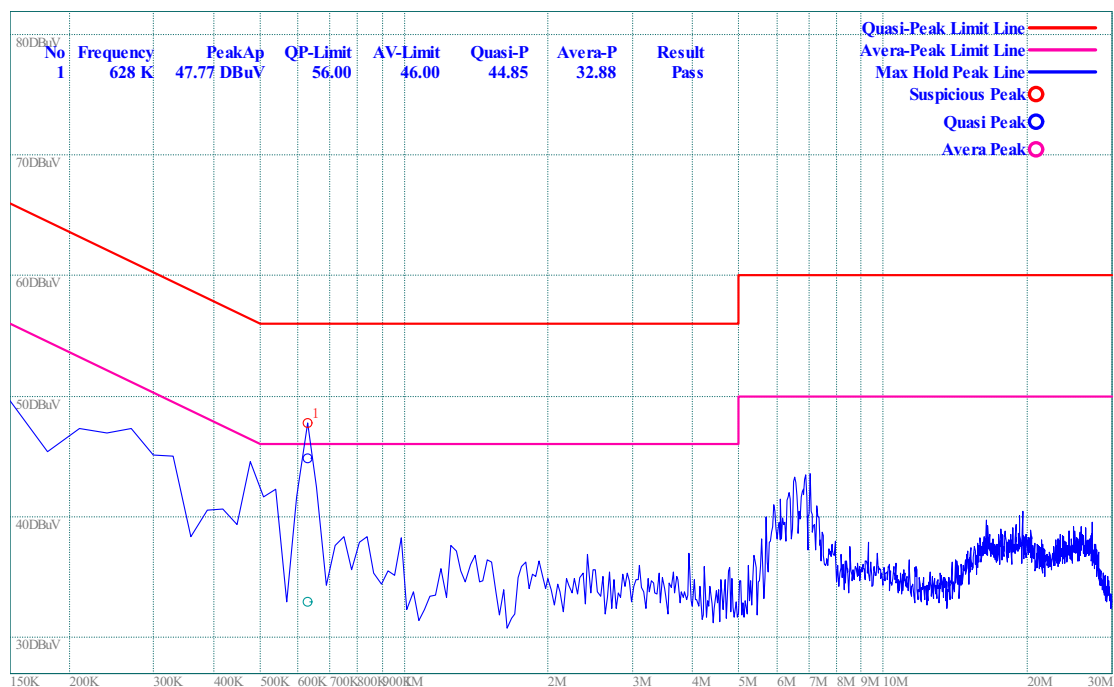
### 3.2.3 Test Result

#### (1) USB Mode

A. Test plot suspicious points:



(Plot A: L Phase)



(Plot A: N Phase)

### 3.3 Radiated Emission

#### 3.3.1 Requirement

According to FCC §15.109, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency range (MHz)	Field Strength	
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

NOTE:

1. Field Strength ( $\text{dB}\mu\text{V/m}$ ) =  $20 \cdot \log[\text{Field Strength } (\mu\text{V/m})]$ .
2. In the emission tables above, the tighter limit applies at the band edges.

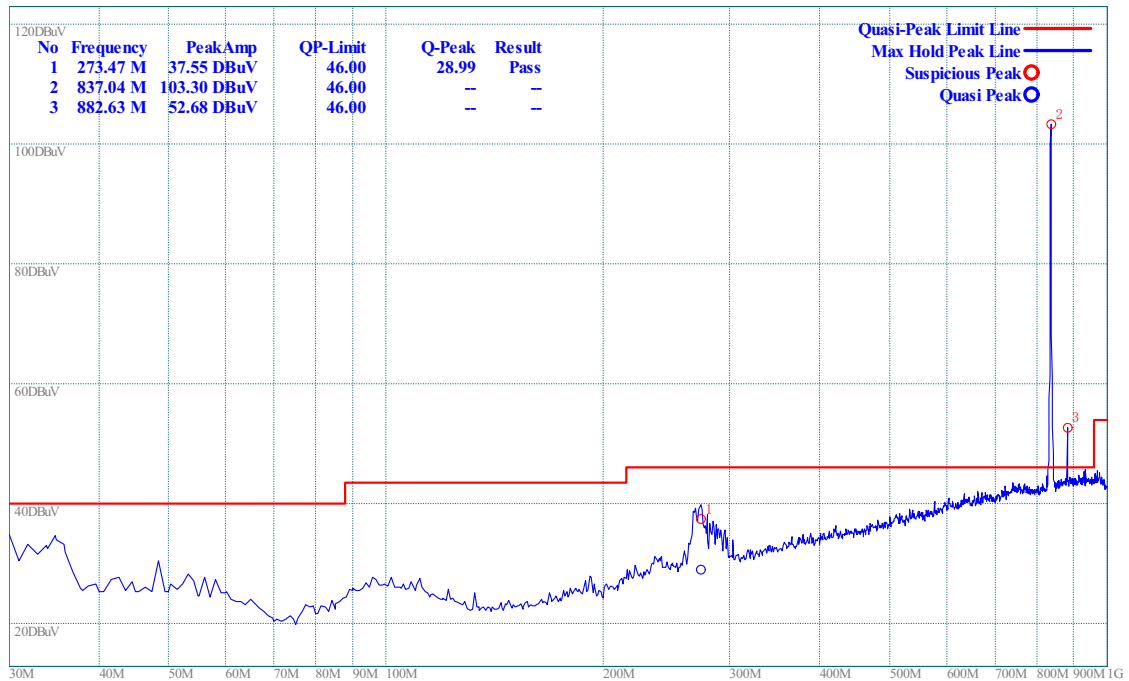
#### 3.3.2 Test Procedure

1. Perform test setup as described in section 3.1.2.2.
2. Each test mode in section 3.1.1 should be applied. At each test mode, the Turn Table turns from 0 degrees to 360 degrees to find the maximum reading; for the suspected points, the Test Antenna varies from 1 meter to 4 meters to determine the maximum value of the field strength.
3. The Receiver is set to Peak Detector function and specified bandwidth with maximum hold mode. If the emission level of the EUT in peak mode is 6dB lower than the limit specified, then testing could be stopped and the peak values would be reported; otherwise the emission less than 6dB margins would be retested one by one using the quasi-peak method.
4. The emission levels at both horizontal and vertical polarizations should be tested.
5. Record the test result plot and distinct points.
6. In the test report show the worst test data.

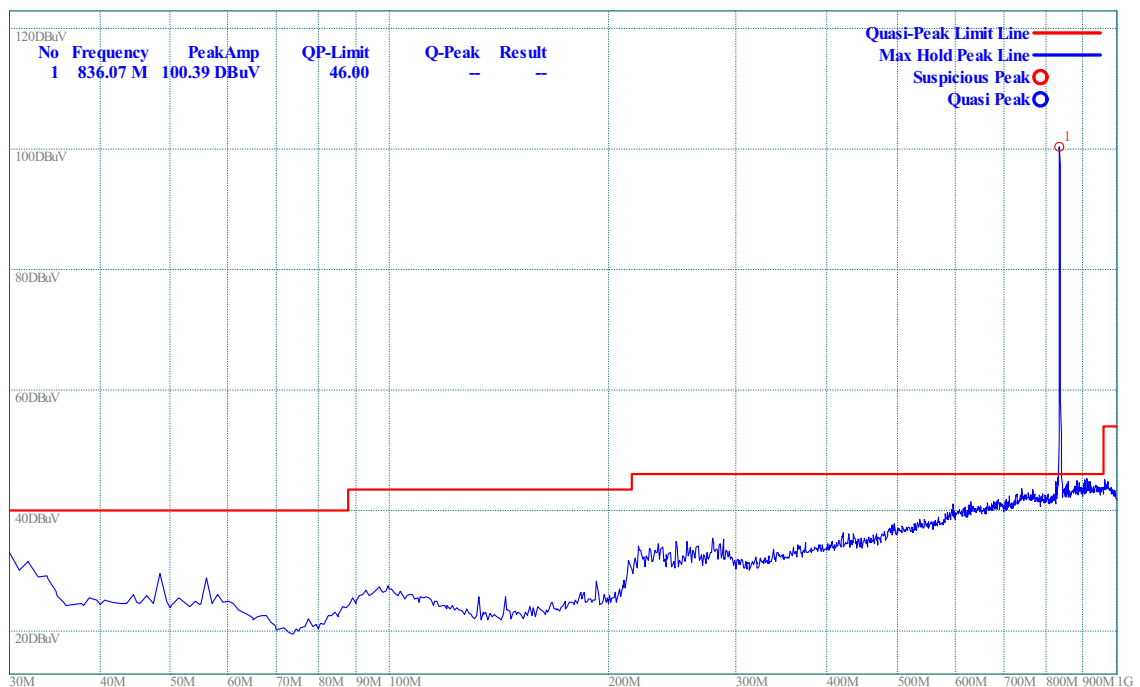
### 3.3.3 Test Result

#### (1) Call Mode

A. Test plot and suspicious points:



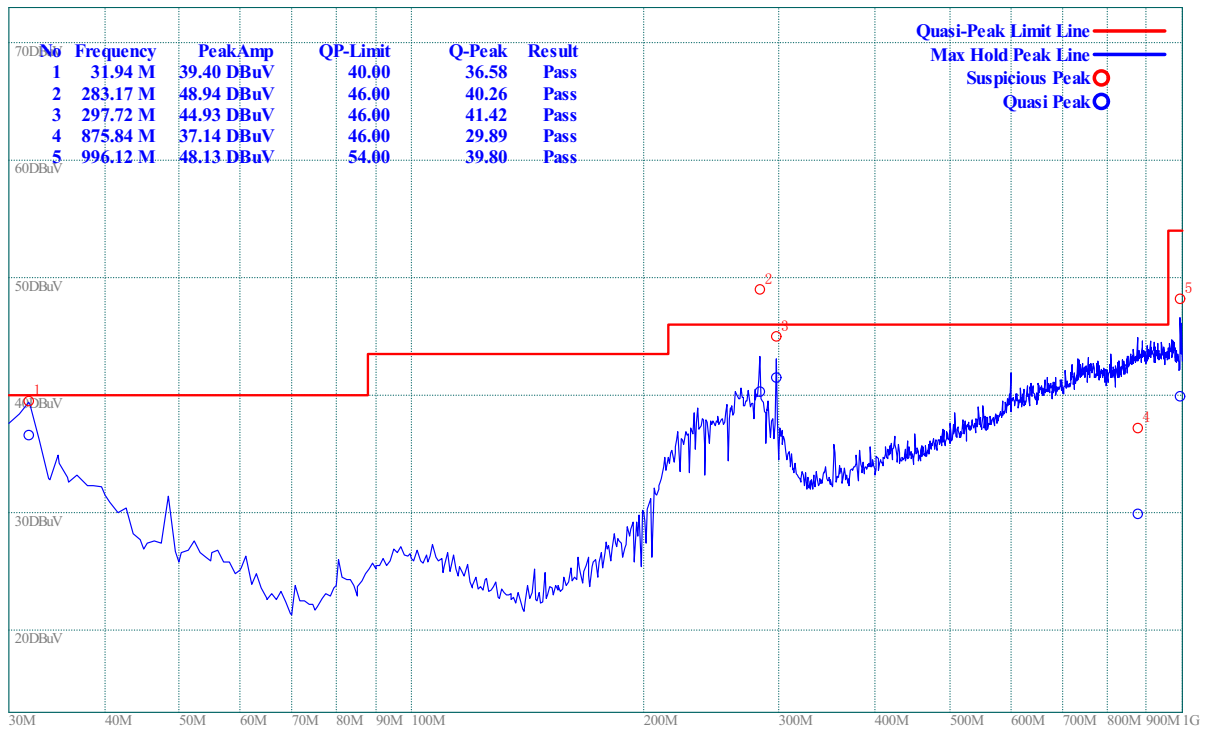
(Plot A: Test Antenna Vertical)



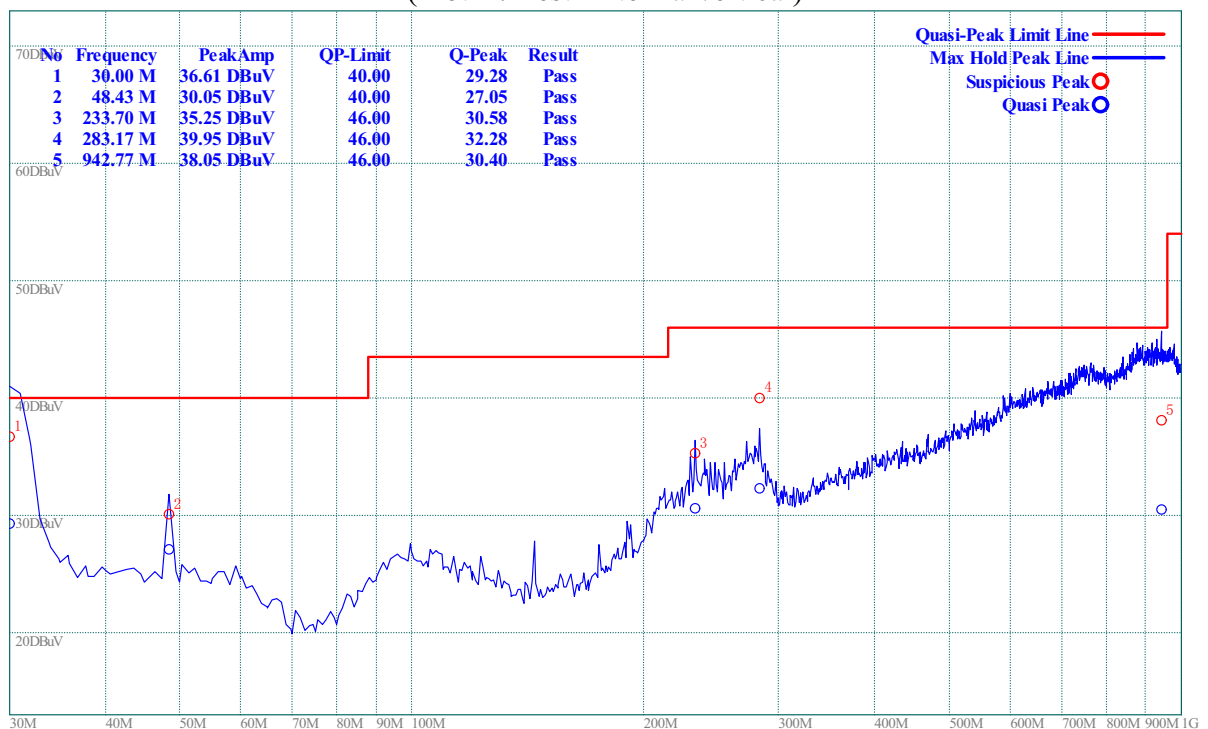
(Plot B: Test Antenna Horizontal)

#### (2) USB Mode

# A. Plot and suspicious points



(Plot A: Test Antenna Vertical)



(Plot B: Test Antenna Horizontal)

\*\*\*\*\* END OF REPORT\*\*\*\*\*