## FCC Part 22H 24E

# Measurement And Test Report For

## weeCONOMY ASIA LIMITED.

Unit B, 11 Floor, Silvercorp International Tower, 707-713 Nathan Road, KowLoon HongKong

FCC ID: 2AFSQWP11

May 18, 2015

This Report Concerns:  ☑ Original Report	Equipment Type: weePHONE
Report Number:	MTI150410001RF-2
	17.// //
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TEST RESULT CERTIFICATION		
Applicant's name:	weeCONOMY ASIA LIMITED.	
Address:	Unit B, 11 Floor, Silvercorp International Tower, 707-713 Nathan Road, KowLoon HongKong	
Manufacture's Name:	weeCONOMY ASIA LIMITED.	
Address:	Unit B, 11 Floor, Silvercorp International Tower, 707-713 Nathan Road, KowLoon HongKong	
Product description		
Product name:	weePHONE	
Model and/or type reference :	WP11	
Serial Model	N/A	
Standards:	FCC Part22 & FCC P24	
Test procedure	ANSI C63.4-2009	

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## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

Description of Test Item	Standard	Results
	FCC PART 2: 2.1046	
Conducted Output power	FCC PART 22H: 22.913 (a)	PASS
	FCC PART 24E: 24.232 (c)	
Dadiated Output naviar/arm/aim)	FCC PART 22H:22.913 (a)	PASS
Radiated Output power(erp/eirp)	FCC PART 24E:24.232(c)	PASS
	FCC PART 2: 2.1049	
Occupied bandwidth	FCC PART 22H: 22.917 (b)	PASS
	FCC PART 24E: 24.238 (b)	
	FCC PART 2: 2.1055	
Frequency stability	FCC PART 22H: 22.355	PASS
	FCC PART 24E: 24.235	
Conducted spurious emission	FCC PART 2: 2.1051	
·	FCC PART 22H: 22.917	PASS
(Antenna terminal)	FCC PART 24E: 24.238	
	FCC PART 2: 2.1053	
Radiated spurious emissions	FCC PART 22H: 22.917	PASS
	FCC PART 24E: 24.238	
Dand adaa aanalianaa	FCC PART 22H: 22.917 (b)	DACC
Band edge compliance	FCC PART 24E: 24.238 (b)	PASS
Power Line Conducted Emission	FCC Part 15: 15.207	PASS
Test	ANSI C63.4: 2009	FAGG

## NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

#### 1.1 TEST FACILITY

Shenzhen Toby Technology Co., Ltd.

Add.: 10/F.,A Block,Jiada R&D Bldg.,No.5 Songpingshan, Road, Science&Technology Park,

Shenzhen, 518057

FCC Registration No.:811562

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## 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $\mathbf{y} \pm \mathbf{U}$ , where expended uncertainty  $\mathbf{U}$  is based on a standard uncertainty multiplied by a coverage factor of  $\mathbf{k=2}$ , providing a level of confidence of approximately  $\mathbf{95}$ %.

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

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## 2. GENERAL INFORMATION

## 2.1 GENERAL DESCRIPTION OF EUT

Equipment	weePHONE		
Trade Name	weeCONOMY		
Model Name	WP11		
Serial Model	N/A		
Model Difference	N/A		
	The EUT is a weePHOI	NE	
	Operation Frequency:	WCDMA1900	
	Modulation Type:	QPSK	
	Antenna Designation:	Please see Note 3.	
Product Description	Output	23.56 dBm	
	Power(Conducted):		
	Antenna Gain (dBi)	1dbi	
	User's Manual, the EU1	n, features, or specification exhibited in is considered as an ITE/Computing EUT technical specification, please	
Channel List	Please refer to the Note		
Channel List			
Adapter	Model: GE0061U-0510 AC Power Input: 100-24		
•	Output: 5.01V		
Battery	DC 3.8V, 2000mAh (7.6Wh)		
Connecting I/O Port(s)	Please refer to the User's Manual		

#### Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

## 2. Test Mode

Mode	Channel	Frequency(MHz)	
	9262	1852.4	
WCDMA1900	9400	1880.0	
	9538	1907.6	

## 3. Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
Α	N/A	N/A	internal antenna	Pifa-type	1dbi	Antenna

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#### 2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	WCDMA1900
Mode 2	Link Mode

For Conducted Emission	
Final Test Mode	Description
Mode2	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	WCDMA1900

#### Note:

- (1) The measurements are performed at the highest, middle, lowest available channels.
- (2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

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## 2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



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## 2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	weePHONE	weeCONOMY	WP11	N/A	EUT
E-2	Adapter	N/A	GE0061U-05100	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	1.0m	
C-2	NO	NO	0.8m	

#### Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in <code>"Length\_"</code> column.

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## 2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

## Radiation Test equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal	Cal.Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Mar. 20, 2015	Mar. 19, 2016
Spectrum Analyzer	ROHDE&SCHWARZ	FSP30	DE25181	Aug. 10, 2014	Aug. 09, 2015
EMI Test Receiver	ROHDE&SCHWARZ	ESCI	101165	Aug. 10, 2014	Aug. 09, 2015
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar. 07, 2015	Mar. 06, 2016
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Mar. 07, 2015	Mar. 06, 2016
Hom Antenna	ETS-LINDGREN	3117	00143207	Mar. 07, 2015	Mar. 06, 2016
Hom Antenna	ETS-LINDGREN	3117	00143209	Mar. 07, 2015	Mar. 06, 2016
Pre-anplifier	HP	11909A	185903	Mar. 07, 2015	Mar. 06, 2016
Pre-anplifier	HP	8447B	3008A00849	Mar. 07, 2015	Mar. 06, 2016
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar. 07, 2015	Mar. 06, 2016
Signal Generator	ROHDE&SCHWARZ	SML03	IKW682-054	Feb. 11, 2015	Feb. 10, 2016
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A

## Conduction Test equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal	Cal.Due Date
EMI Test Receiver	ROHDE&SCHWARZ	ESCI	1000321	2014-08-10	2015-08-09
50Ω Coaxial Switch	Anntsu	MP59B	X10321	2014-08-10	2015-08-09
LISN	ROHDE&SCHWARZ	ENV216	101131	2014-08-10	2015-08-09
LISN	SCHWARZBECK	NNBL 8226-2	8226-2/164	2014-08-10	2015-08-09

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#### 3. CONDUCTED OUTPUT POWER

#### 3.1 APPLIED PROCEDURES / LIMIT

Section	Test Item	Limit	Result
22.913 (a) 24.232 (c)	Conducted Output power	38.5dBm(ERP) for GSM850 33dBm for GSM1900	PASS

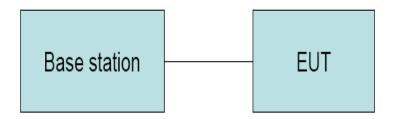
#### 3.1.1 TEST PROCEDURE

- (1) The EUT's RF output port was connected to base station.
- (2) A call is set up by the SS according to the generic call set up procedure
- (3) Set EUT at maximum power level through base station by power level command
- (4) Measure the maximum output power of EUT at each frequency band and mode by base station.

#### 3.1.2 DEVIATION FROM STANDARD

No deviation.

#### 3.1.3 TEST SETUP



#### 3.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

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## 3.1.5 TEST RESULTS

EUT :	weePHONE	Model Name :	WP11
Temperature :	<b>25</b> ℃	Relative Humidity:	60%
Pressure :	1012 hPa	Test Voltage :	DC 5Vfrom adapter
Test Mode :	WCDMA1900		

		PK Output	Limit	
Mode	Channel	Power(dBm)	ERP(dBm)	EIRP(dBm)
	9262	22.05	/	33
WCDMA1900	9400	22.32	/	33
	9538	22.28	/	33

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#### 4. RADIATED OUTPUT POWER

#### 4.1 APPLIED PROCEDURES / LIMIT

Section	Test Item	Limit	Result
22.913 (a) 24.232 (c)	Conducted Output power	38.5dBm(ERP) for GSM850 33dBm for GSM1900	PASS

#### 4.1.1 TEST PROCEDURE

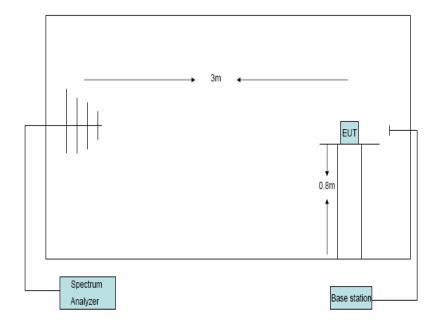
- 1. The EUT was placed on an non-conductive rotating platform with 0.8 meter height in an anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RBW= 3MHz,VBW= 3MHz and peak detector settings.
- 2. During the measurement, the EUT was enforced in maximum power and linked with a base station. The highest emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations
- 3. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by dipole antenna (for frequency lelow 1GHz) or Horn antenna(for frequency above 1GHz) at same location with same polarize of reveiver antenna and then a known power of each measure frequency from S.G. was applied into the dipole antenna or Horn antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. Tx Cable loss + Substitution antenna gain –Substitution antenna Loss(only for Dipole antenna) Analyzer reading. Then the EUT's EIRP was calculated with the correction factor, EIRP= LVL + Correction factor and ERP = EIRP 2.15

#### 4.1.2 DEVIATION FROM STANDARD

No deviation.

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## 4.1.3 TEST SETUP



## **4.1.4 EUT OPERATION CONDITIONS**

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

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## 4.1.5 TEST RESULTS

EUT:	weePHONE	Model Name :	WP11
Temperature :	<b>25</b> ℃	Relative Humidity:	60%
Pressure :	1012 hPa	Test Voltage :	DC 5Vfrom adapter
Test Mode :	WCDMA1900		

Marila	01	LVL	Correction	ERP	EIRP	Li	mit
Mode	Channel	(dBm)	factor(dB)	(dBm)	(dBm)	ERP(dBm)	EIRP(dBm)
	9262	-2.9	22.59	/	19.69	/	33
WCDMA1900	9400	-2.6	22.61	/	20.01	/	33
	9538	-2.7	22.63	/	19.93	/	33
Note: EIRP=LVL+Correction factor							

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## 5. OCCUPY BANDWIDTH

#### 5.1 APPLIED PROCEDURES / LIMIT

Section	Test Item	Limit	Result
22.917 (b) 24.238 (b)	Occupied bandwidth	/	PASS

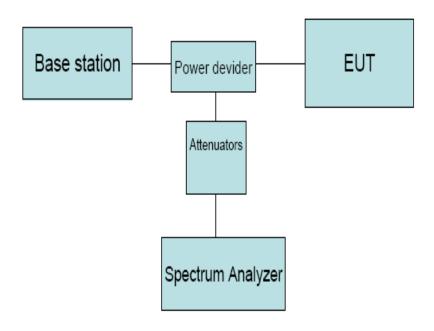
#### **5.1.1 TEST PROCEDURE**

- 1. The EUT' RF output port was connected to Spectrum Analyzer and Base Station via power divider.
- 2. Spectrum analyzer's occupied bandwidth measure function was used to measure 99% bandwidth and -26dBc bandwidth

#### **5.1.2 DEVIATION FROM STANDARD**

No deviation.

#### 5.1.3 TEST SETUP



#### **5.1.4 EUT OPERATION CONDITIONS**

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

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#### **5.1.5 TEST RESULTS**

EUT:	weePHONE	Model Name :	WP11
Temperature :	25 ℃	Relative Humidity:	60%
Pressure :	1015 hPa	Test Voltage :	DC 5Vfrom adapter
Test Mode :	WCDMA1900		

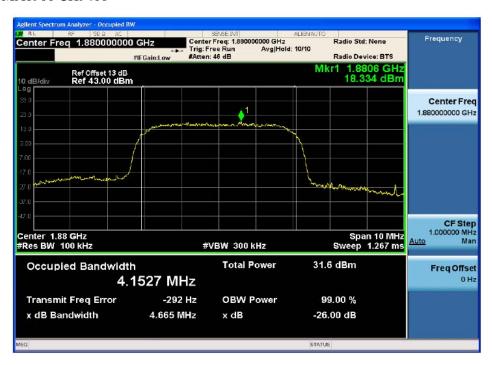
Mode	Channel	-26dBc bandwidth (KHz)	99% bandwidth (KHz)	Limit
	9262	4646	4138.5	/
WCDMA1900	9400	4665	4152.7	/
	9538	4652	4132.7	/
Note: All mode has been tested, only worst data shown in this report.				

## WCDMA1900 CH9262

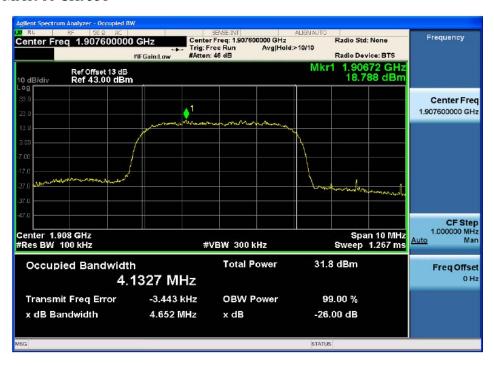


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#### WCDMA1900 CH9400



#### WCDMA1900 CH9538



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#### 6. FREQUENCY STABLITY

#### **6.1 APPLIED PROCEDURES / LIMIT**

Section	Test Item	Limit	Result
22.355 24.235	Frequency stability	± 2.5 ppm	PASS

#### **6.1.1 TEST PROCEDURE**

Test Procedures for Temperature Variation:

- 1. The EUT was set up in the thermal chamber and connected with the base station.
- 2. With power OFF, the temperature was decreased to -10°C and the EUT was stabilized for three hours. Power was applied and the maximum change in frequency was recorded within one minute.
- 3. With power OFF, the temperature was raised in 10°C step up to 45°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.
- 4. If the EUT can not be turned on at -10°C, the testing lowest temperature will be raised in 10°C step until the EUT can be turned on.

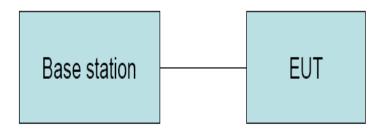
Test Procedures for Voltage Variation

- 1. The EUT was placed in a temperature chamber at 25±5° C and connected with the base station.
- 2. The power supply voltage to the EUT was varied from DC 5V to 3.5V
- 3. The variation in frequency was measured for the worst case.

#### 6.1.2 DEVIATION FROM STANDARD

No deviation.

#### 6.1.3 TEST SETUP



#### **6.1.4 EUT OPERATION CONDITIONS**

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

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## 6.1.5 TEST RESULTS

EUT:	weePHONE	Model Name :	WP11
Temperature :	25 ℃	Relative Humidity:	60%
Pressure :	1015 hPa	Test Voltage :	DC 5Vfrom adapter
Test Mode :	WCDMA1900		

Frequency Stability VS Voltage

Mada	Voltage	Frequency error	frequency error
Mode	(V)	(Hz)	(ppm)
	4.2	39.92	0.02
WCDMA1900	3.7	-25.58	-0.01
CH CH9400 3.5		33.95	0.02
Note: All mode has been tested, only worst data shown in this report.			

Frequency Stability VS Temperature

Mode	Temperature	Frequency error	frequency error
ivioue	(°C)	(Hz)	(ppm)
	-30	-37.46	-0.02
	-20	-23.46	-0.01
	-10	32.19	0.02
	0	37.55	0.02
WCDMA1900 CH CH9400	10	-23.72	-0.01
CH CH9400	20	-32.68	-0.02
	30	38.62	0.02
	40	-25.27	-0.01
	50	-31.28	-0.02

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## 7. CONDUCTED SPURIOUS EMISSIONS

#### 7.1 APPLIED PROCEDURES / LIMIT

Section	Test Item	Limit	Result
22.917 24.238	Conducted spurious emissions	-13dBm	PASS

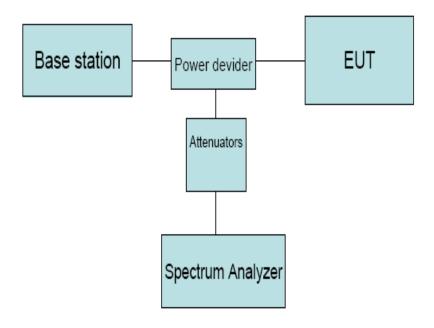
## 7.1.1 TEST PROCEDURE

- 1. The EUT was connected to spectrum analyzer and base station via power divider.
- 2. The low, middle and high channels of each band and mode's spurious emissions for 30MHz to 10th Harmonic were measured by Spectrum analyzer.

## 7.1.2 DEVIATION FROM STANDARD

No deviation.

#### 7.1.3 TEST SETUP



#### 7.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

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#### 7.1.5 TEST RESULTS

NOTE: ALL MODE HAS BEEN TESTED, ONLY WORST DATA SHOWN IN THIS REPORT.

Test Mode: WCDMA1900 CH9262



Test Mode: WCDMA1900 CH9400



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#### Test Mode: WCDMA1900 CH9538



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#### 8. RADIATED SPURIOUS EMISSIONS

#### 8.1 APPLIED PROCEDURES / LIMIT

Section	Test Item	Limit	Result
22.917 24.238	Radiated Spurious emissions	-13dBm	PASS

#### 8.1.1 TEST PROCEDURE

- 1. The EUT was placed on an non-conductive rotating platform with 0.8 meter height in an anechoic chamber. The radiated spurious emissions from 30MHz to 10<sup>th</sup> harmonious of fundamental frequency were measured at 3m with a test antenna and a spectrum analyzer with RBW= 1MHz,VBW= 1MHz ,peak detector settings.
- 2. During the measurement, the EUT was enforced in maximum power and linked with a base station. All the spurious emissions (record as LVL) at 3m were measured by rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
- 3. Final spurious emissions levels were measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by dipole antenna (for frequency below 1GHz) or Horn antenna (for frequency above 1GHz) at same location with same polarize of receiver antenna and then a known power of each measure frequency from S.G. was applied into the dipole antenna or Horn antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. Tx Cable loss + Substitution antenna gain –Substitution antenna Loss(only for Dipole antenna) Analyzer reading. Then final

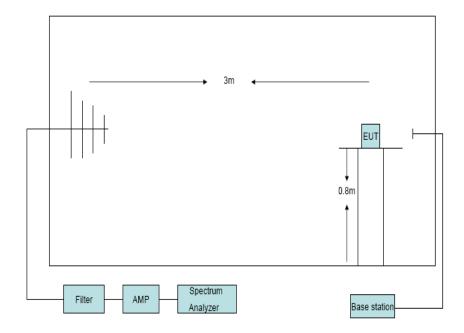
spurious emissions were calculated with the correction factor, EIRP= LVL + Correction factor and ERP = EIRP – 2.15

#### 8.1.2 DEVIATION FROM STANDARD

No deviation.

#### 8.1.3 TEST SETUP

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## **8.1.4 EUT OPERATION CONDITIONS**

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

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8.1.5 TEST RESULTS

NOTE: ALL MODE HAS BEEN TESTED, ONLY WORST DATA SHOWN IN THIS REPORT.

		Test Mode	: WCDMA 190	00 CH9262		
Frequency	Antenna	LVL	Correction	Result	Limit	Margin
(MHz)	polarization	(dBm)	factor(dB)	(ERP)(dBm)	(dBm)	(dB)
689.32	Н	-57.26	-6.53	-63.79	-13.00	50.79
689.32	V	-56.75	-6.53	-63.28	-13.00	50.28
3704.8	Н	-56.36	8.57	-47.79	-13.00	34.79
3704.8	V	-51.46	8.37	-43.09	-13.00	30.09
	Test Mode: WCDMA 1900 CH9400					
3760	Н	-54.12	8.75	-45.37	-13.00	32.37
3760	V	-50.66	8.55	-42.11	-13.00	29.11
Test mode: WCDMA 1900 CH9538						
3815.2	Н	-52.51	8.94	-43.57	-13.00	30.57
3815.2	V	-53.49	8.72	-44.77	-13.00	31.77

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#### 9. BAND EDGE

#### 9.1 APPLIED PROCEDURES / LIMIT

Section	Test Item	Limit	Result
22.917 (b) 24.238 (b)	Band edge	-13dBm	PASS

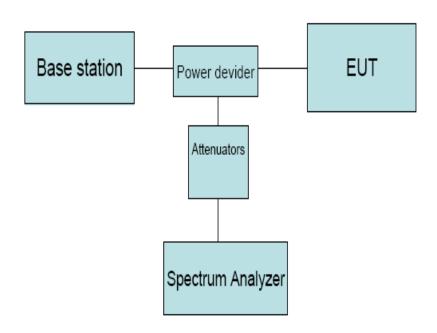
#### 9.1.1 TEST PROCEDURE

- 1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
- 2. The band edges of low and high channels for the highest RF powers were measured.

#### 9.1.2 DEVIATION FROM STANDARD

No deviation.

#### 9.1.3 TEST SETUP



#### 9.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

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#### 9.1.5 TEST RESULTS

NOTE: ALL MODE HAS BEEN TESTED, ONLY WORST DATA SHOWN IN THIS REPORT.

Test Mode: WCDMA1900





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## 10. CONDUCTED EMISSION MEASUREMENT

## 10.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

	Class A	(dBuV)	Class B	(dBuV)	Standard
FREQUENCY (MHz)	Quasi-peak	Average	Quasi-peak	Average	Statiuatu
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

#### Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

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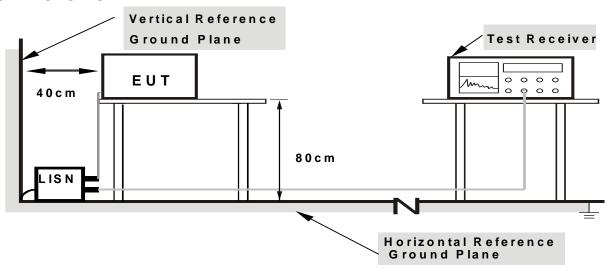
## **10.2 TEST PROCEDURE**

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item -EUT Test Photos.

#### 10.3 DEVIATION FROM TEST STANDARD

No deviation

#### **10.4 TEST SETUP**



Note: 1. Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

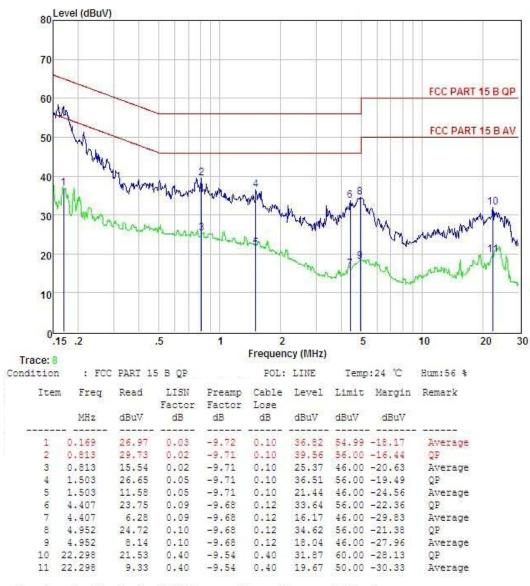
#### **10.5 EUT OPERATING CONDITIONS**

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

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#### **10.6 TEST RESULTS**

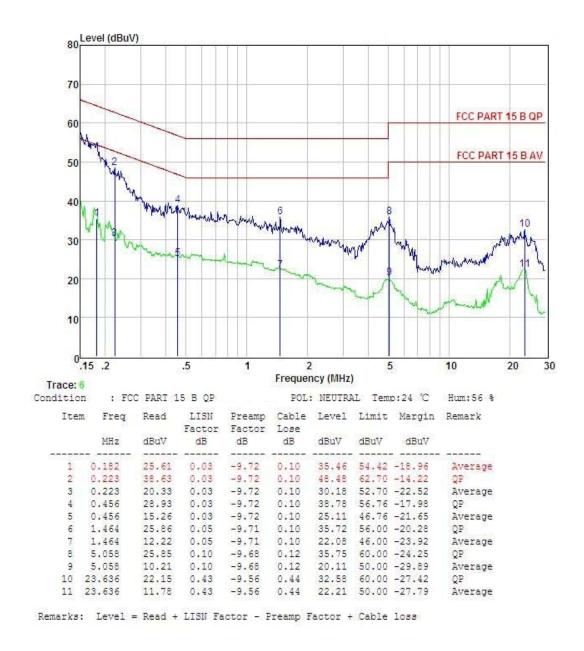
EUT:	weePHONE	Model Name. :	WP11
Temperature :	26 ℃	Relative Humidity:	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5Vfrom adapter AC 120V/60Hz	Test Mode :	Mode 4



Remarks: Level = Read + LISN Factor - Preamp Factor + Cable loss

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EUT:	weePHONE	Model Name. :	WP11
Temperature :	26 ℃	Relative Humidity:	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5Vfrom adapter AC 120V/60Hz	Test Mode :	Mode 4



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