



EMC Test Report

Product Name: Fixed Wireless Terminal

Model Number: ETS3253

Report No: SYBH(Z-EMC)054072011-2

FCC ID: QISETS3253

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1 General Information

1.1 EUT Description

EUT Description	
Product Name	Fixed Wireless Terminal
Model Number	ETS3253
Serials Number	W22AA10892400171
TX Frequency	GSM850: 824MHz To 849MHz PCS1900: 1850MHz To 1910MHz
RX Frequency	GSM850: 869MHz To 894MHz PCS1900: 1930MHz To 1990MHz
HW Version	WG1ETS3253I VER.A.RF
SW Version	V100R001
EUT Accessory	
Adapter	Adapter Model: HF-050065U1 Input: ~100~240V / 0.2A / 50-60Hz Output: --- +5V, 0.65A Rate power: 3.25W
NI-MH Battery	Battery Model: HGB-2A10x3 Rated capacity: 1000mAh Nominal Voltage: --- +3.5V Charging Voltage: --- +4.2V

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.2 Test Site Information

Test Site1:	RELIABILITY LABORATORY OF HUAWEI TECHNOLOGIES CO., LTD.
Test Site Location:	Bantian Longgang District Shenzhen, P.R. China

1.3 Applied Standard

APPLIED STANDARD

FCC 47 CFR FCC Part 15 SubpartB

2 Summary of Results

Summary of Results				
Test Items	Test Mode	Performance Class & Required Performance Criteria	Result	Site
<u>Radiated Emissions</u> Enclosure Port	Mode1	CLASS B	Pass	Site1
<u>Conducted Emissions</u> <input type="checkbox"/> DC Power Port <input checked="" type="checkbox"/> AC Power Port <input type="checkbox"/> Telecommunication Ports	Mode1 Mode2	CLASS B	Pass	Site1
Note: 1, Measurement taken is within the measurement uncertainty of measurement system. 2, <input checked="" type="checkbox"/> The item has been tested; <input type="checkbox"/> The item has not been tested.				

3 System Configuration during EMC Test

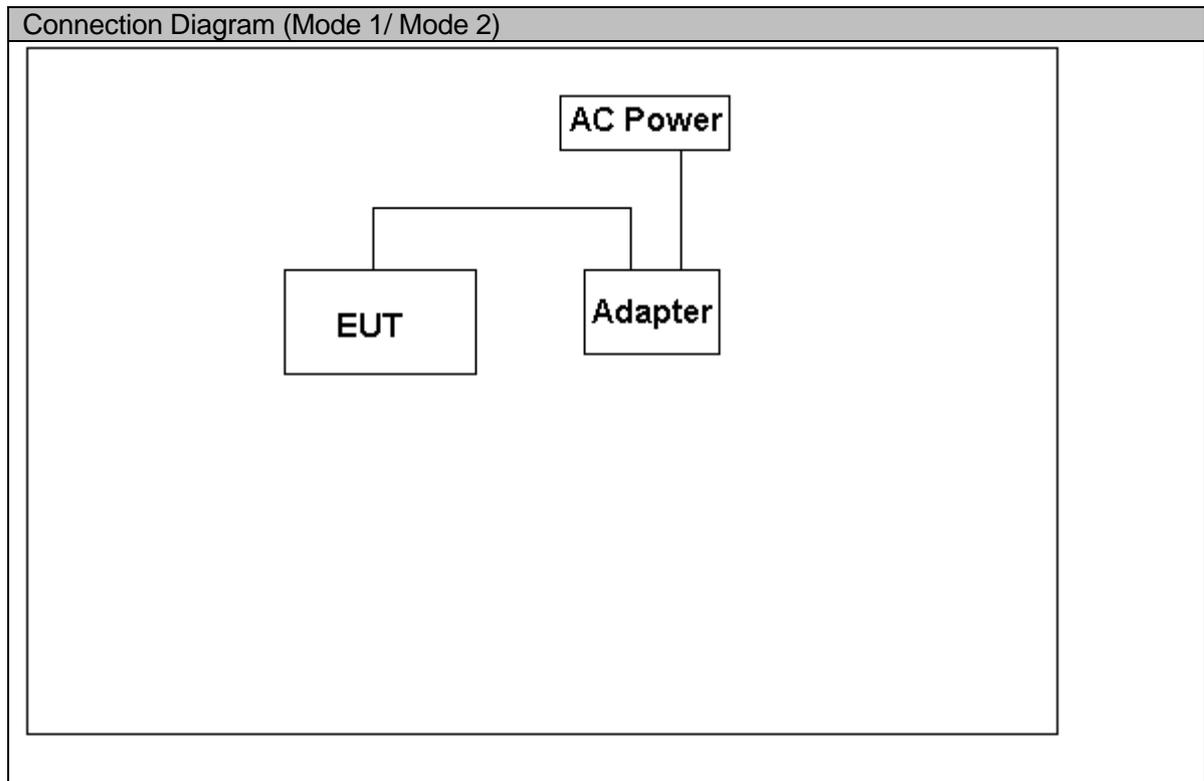
3.1 Test Mode

Huawei has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was in this test report and defined as:

Test Mode	
Mode 1:	adapter + Idle
Mode 2:	adapter + Traffic

Remark: When the EUT have multiple adapters, need separate test with multiple adapters . All test modes are performed, only the worst cases are recorded in this report.

3.2 Configurations of Test System



3.3 Cables Used during Test

Cable	Quantity	Length	Type of Cable
AC Power	1	1.5m	shielded

3.4 Associated Equipment Used during Test

Name	Model	Manufacturer	S/N	Cal Date
Radio Communication Tester	CMU200	R&S	3607111817	2010-7-23
Printer	C4200	HP	CC200-80021	/
Notebook	IBM T61	Lenovo	L3-X6409	/

4 Electromagnetic Interference (EMI)

4.1 Radiated Disturbance 30MHz to 18GHz

4.1.1 Test Procedure

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.4. The test distance was 3m. The set-up and test methods were according to ANSI C63.4.

A preliminary scan and a final scan of the emissions were made from 30 MHz to 18 GHz by using test script of software; the emissions were measured using Quasi-Peak Detector (30MHz~1GHz) and AV/PK detector (above 1GHz). The maximal emission value was acquired by adjusting the antenna height, polarisation and turntable azimuth in accordance with the software setup.

Normally, the height range of antenna was 1m to 4m, the azimuth range of turntable was 0° to 360°, The receive antenna has two polarizations V and H.

EUT was configured in idle mode and the test performed at worst emission state.

4.1.2 Test setup

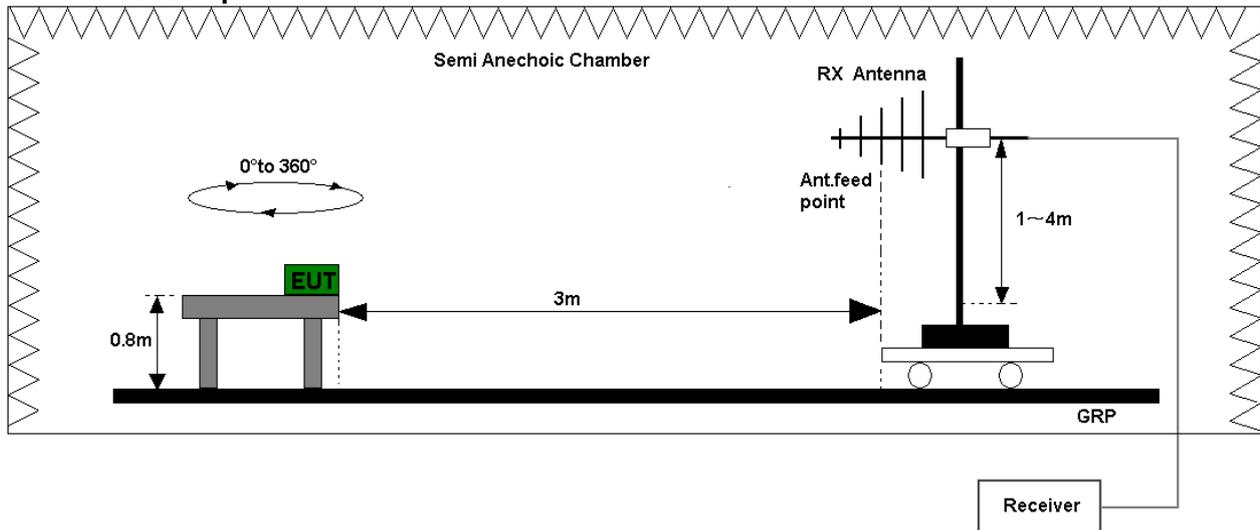


Figure 1. Test set-up of radiated disturbance(30MHz-1GHz)

Figure 2.

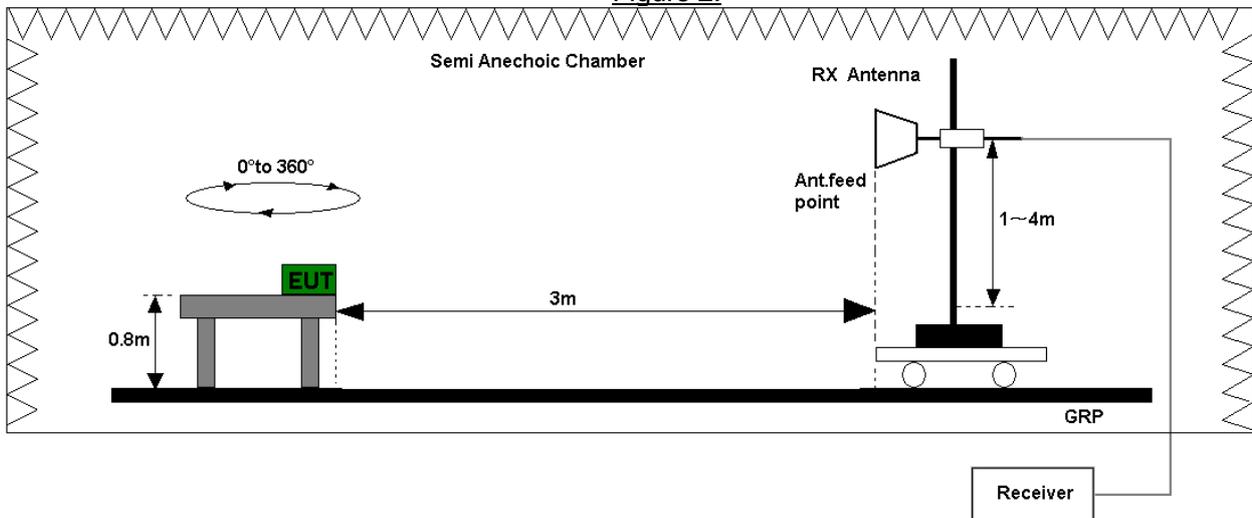


Figure 3. Test set-up of radiated disturbance(above 1GHz)

4.1.3 Test Results

The EUT has met the requirements for Radiated Emission of enclosure port.
The test data see section 7.1 of this report.

Test Limits				
Frequency of Emission (MHz)	Radiated Limit			
	Unit(μ V/m)		Unit(dB μ V/m)	
30-88	100		40	
88-216	150		43.5	
216-960	200		46	
Above 960	500		54	
Above 1000	AV	PK	AV	PK
	500	5000	54	74

Note: Highest frequency generated or used in the device or on which the device operates or tunes less than 108MHz, so only frequency ranges were tested from 30MHz to 1GHz.

Test environment condition:

Performed Item	Item	Required	Actual
Radiated Emission	Ambient temperature	15°C ~ 35°C	23°C
	Relative humidity	25% ~ 75%	50%
	Atmospheric pressure	86 kPa ~ 106kPa	101kPa

4.2 Conducted Disturbance 0.15 MHz to 30MHz

4.2.1 Test Procedure

The Table-top EUT was placed upon a non-metallic table 0.8 m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.4.

Conducted Disturbance at AC Port measurements were undertaken on the L and N Lines. The emissions were measured using a Quasi-Peak Detector and Average Detector.

Huawei Mobile Station was communicated with the BTS simulator through Air interface, the BTS simulator controls the Mobile Station to transmitter the maximum power which defined in specification of product. The Mobile Station operated on the typical channel.

Measurement bandwidth (RBW) for 150kHz to 30 MHz: 9 kHz;

The Mobile Station was setup in the screened chamber and operated under nominal conditions.

4.2.2 Test Setup

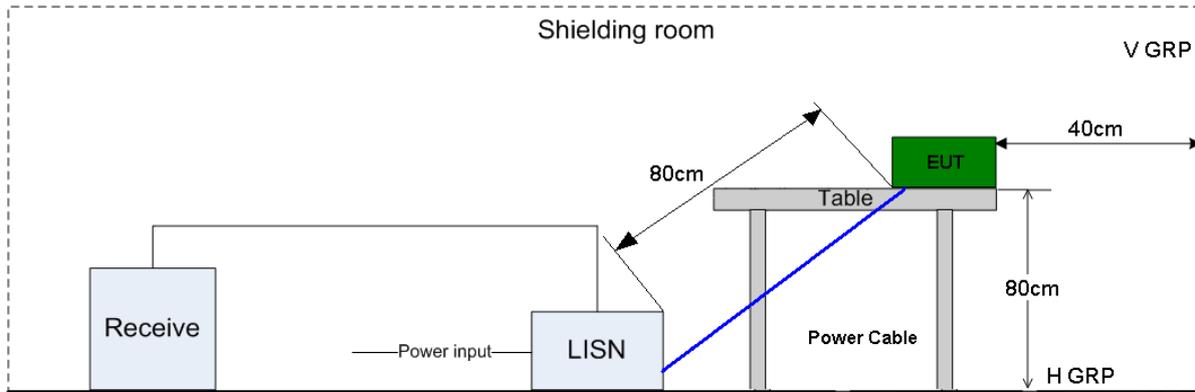


Figure 4. Test Set-up of conducted disturbance

4.2.3 Test Results

The EUT has met requirements for Conducted disturbance of power lines. The test data see section 7.2 of this report.

Test Limit of AC Power Port		
Frequency range	150kHz ~ 30MHz	
Frequency	Voltage limits	
	QP	AV
0.15MHz~0.5MHz	66-56dB μ V	56-46 dB μ V
0.5MHz-5MHz	56dB μ V	46 dB μ V
5MHz~30MHz	60dB μ V	50 dB μ V

Test environment condition:

Performed Item	Item	Required	Actual
Conducted Disturbance	Ambient temperature	15°C ~ 35°C	23°C
	Relative humidity	25% ~ 75%	50%
	Atmospheric pressure	86 kPa ~ 106kPa	101kPa

5 Main Test Instruments

Main Test Equipments					
Test item	Test Instrument	Model	Manufacturer	Cal-Date	Cal Interval (month)
RE/CE	EMI Test receiver	ESU26	R&S	May.30, 2011	12
	Broadband Antenna	VULB 9163	SCHWARZBECK	May.16, 2011	12
	Horn Antenna	HF906	R&S	May.16, 2011	12
	Artificial Mains Network	ENV216	R&S	May.30, 2011	12
Software Information					
Test Item	Software Name	Manufacturer		Version	
RE/CE	ES-K1	R&S		1.7.1	

6 System Measurement Uncertainty

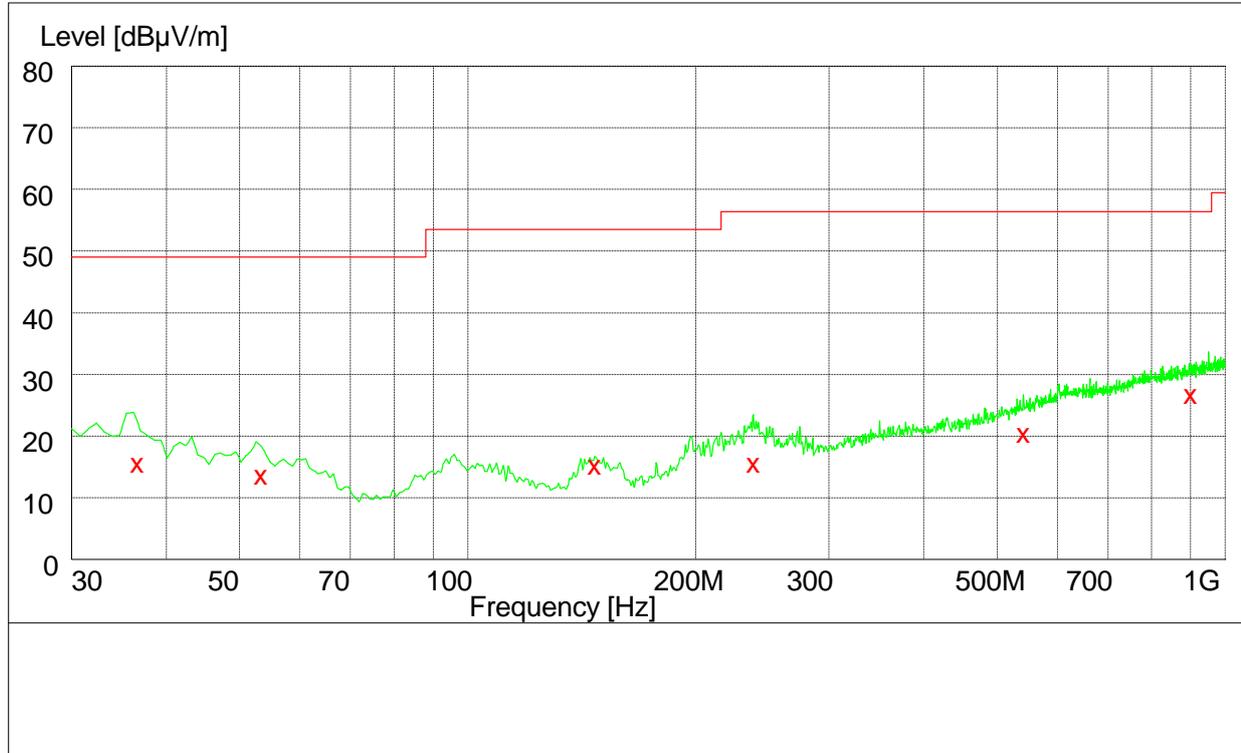
For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty		
Items		Extended Uncertainty
RE(30MHz-1GHz,)	Field strength (dB μ V/m)	U=4.1dB; k=2
RE(1GHz-18GHz)	Field strength (dB μ V/m)	U=4.1dB; k=2
CE	Disturbance Voltage (dB μ V)	U=3.4dB; k=2

7 Graph and Data of Emission Test

7.1 Radiated Disturbance

7.1.1 30MHz~1GHz



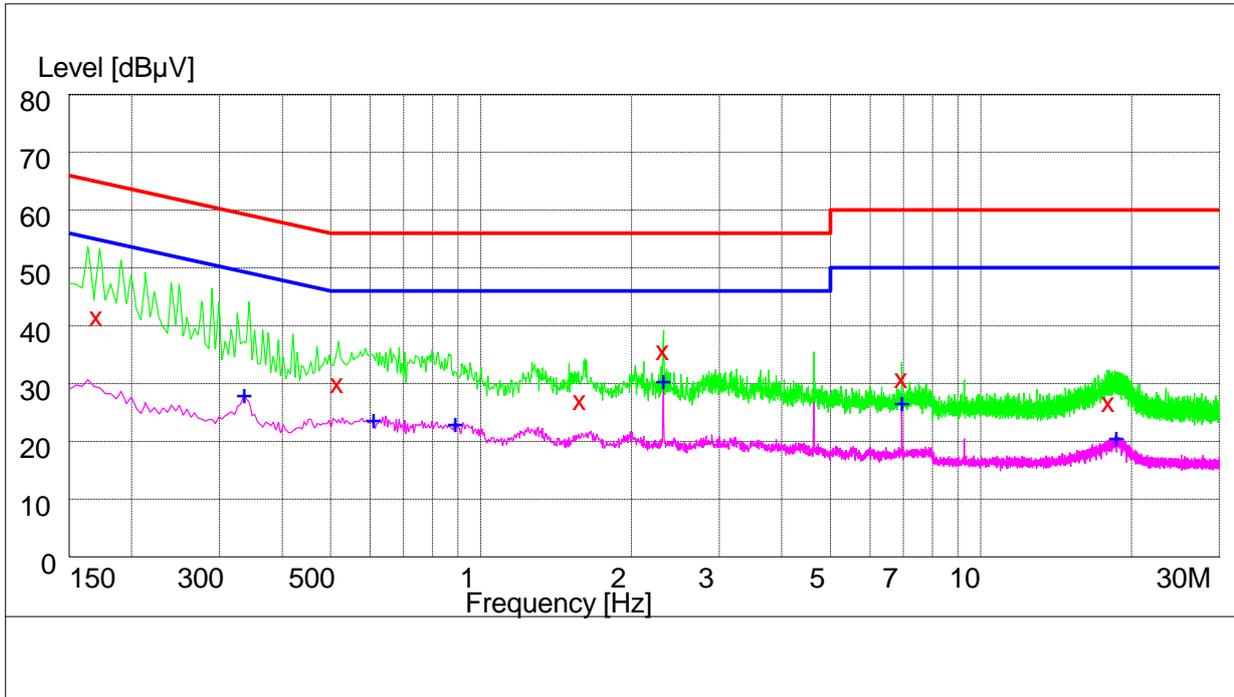
MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
36.660000	16.60	12.2	49.0	32.4	103.0	342.00	VERTICAL
53.340000	14.60	12.7	49.0	34.4	103.0	239.00	VERTICAL
147.060000	16.30	8.9	53.5	37.2	194.0	181.00	HORIZONTAL
238.560000	16.70	14.0	56.4	39.7	117.0	294.00	HORIZONTAL
542.100000	20.60	21.2	56.4	35.8	166.0	282.00	HORIZONTAL
901.320000	26.80	26.2	56.4	29.6	182.0	58.00	VERTICAL

Note: Highest frequency generated or used in the device or on which the device operates or tunes less than 108MHz, so only frequency ranges were tested from 30MHz to 1GHz.

7.2 Conducted Disturbance

7.2.1 AC Port Test Data



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.170000	41.80	10.1	65	23.2	N	FLO
0.516000	30.00	10.1	56	26.0	L1	FLO
1.578000	27.30	10.1	56	28.7	L1	FLO
2.314000	35.60	10.1	56	20.4	N	FLO
6.940000	30.10	10.2	60	29.9	N	FLO
18.018000	26.60	10.3	60	33.4	N	FLO

MEASUREMENT RESULT: AV Detector

s MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.336000	28.40	10.0	49	20.6	L1	FLO
0.608000	24.10	10.1	46	21.9	N	FLO
0.890000	23.10	10.1	46	22.9	L1	FLO
2.312000	31.10	10.1	46	14.9	N	FLO
6.936000	27.00	10.2	50	23.0	N	FLO
18.674000	20.90	10.3	50	29.1	N	FLO

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