FCC Part 15 C
MEASUREMENT AND TEST REPORT

For

Shenzhen YONES Technology Co., Ltd.

1-2F, 2nd Building, 1268 Zhong Guan Hong Hua Ling-North Zone,
Tao Yuan Street, LiuXian Road, Xi Li Town, Nan Shan District,
Shenzhen, P.R.China

FCC ID: WT6A-4321

October 27, 2008

This Report Concerns:	**Equipment Type:**
☒ Original Report	GPS Navigation System

Test Engineer:	Robert Lee
Report Number:	**SE08J-167F**
Test Date:	October 27, 2008
Reviewed By:	
Prepared By:	**S&E Technologies Laboratory Ltd** Room407,Block A Shennan Garden,Hi-Tech Industrial Park, Shenzhen 518057, P.R. China. Tel: 86-755-26636573, 26630631 Fax: 86-755-26630557

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1 – General Information

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	**Shenzhen YONES Technology Co., Ltd.**
Address of applicant:	1-2F, 2nd Building, 1268 Zhong Guan Hong Hua Ling-North Zone, Tao Yuan Street, LiuXian Road, Xi Li Town, Nan Shan District, Shenzhen, P.R.China
	Tel: 86-755-89638059 Fax: 86-755-89638159
Manufacturer:	**Shenzhen YONES Technology Co., Ltd.**
Address of manufacturer:	1-2F, 2nd Building, 1268 Zhong Guan Hong Hua Ling-North Zone, Tao Yuan Street, LiuXian Road, Xi Li Town, Nan Shan District, Shenzhen, P.R.China
	Tel: 86-755-89638059 Fax: 86-755-89638159

General Description of E.U.T

The **Shenzhen YONES Technology Co., Ltd.** 's product, model number: **A-4321** or the "EUT" as referred to in this report is a GPS navigation system.

The technical data has been listed following:

Items	Description
EUT Description:	GPS Navigation System
Trade Name:	N/A
Model No. (EUT):	A-4321
Supplementary Model:	LSY-750FM, A-4320, A-4306, A-4307
Difference between models:	LSY-750FM is identical with the EUT, it has the different model number just for future different markets. A-4320, A-4306, A-4307 and the EUT share the same schematic diagram, PCB layout and antenna, the only difference among them is that the different outer enclosures and colors.
Power Supply:	DC 3.7V
Frequency range:	88.1MHz-107.9MHz
Antenna Designation:	Non-user replaceable
Product Class:	Low power communication device transmitter

** The tuning controls were manually adjusted to verify each rated frequency.*
** The test data gathered are from the production sample provided by the manufacturer.*

1.2 Test Standards

The following Declaration of Conformity report of EUT is prepared in accordance with

FCC Rules and Regulations Part 15 Subpart C Section15.239

The objective of the manufacturer is to demonstrate compliance with the described above standards.

1.3 Test Summary

For the EUT described above. The standards used is FCC Part 15 Subpart C Section 15.239

Tests Carried Out Under FCC Part 15 Subpart C Section 15.239

Standard	Test Items	Status	Application
Part 15 Subpart C Section 15.239	Disturbance Voltage at The Mains Terminals	X	N/A, without AC power supply
	Radiation Emission	√	
	Occupied Bandwidth	√	

√ Indicates that the test is applicable
× Indicates that the test is not applicable

1.4 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

The maximum emission levels emanating from the device are compared to the Part 15 SubpartC Section 15.239 limits for radiation emissions and the measurement results contained in this test report show that EUT is to be technically compliant with FCC requirements.

All measurement required was performed at laboratory of SAE Technologies Development (Dongguan) Co., Ltd. at Zhenan Hi-Tech Industrial Park, Changan Zhen, Dongguan City, Guangdong Province, China 523875.

1.5 Test Facility

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

FCC – Registration No.: 732901

SAE Technologies Development (Dongguan) Co., Ltd. has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 732901, July 23, 2008.

1.6 Test Equipment List and Details

Table 1: Test equipment for emission test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal	Calibration Period
EMI Test Receiver	ROHDE & SCHWARZ	ESCS30	100038	2008/10	1 year
EMI Test Receiver	ROHDE & SCHWARZ	ESPI	100123	2008/03	1 year
Artificial Mains	ROHDE & SCHWARZ	ESH2-Z5	100028	2008/10	1 year
Pulse Limiter	ROHDE & SCHWARZ	ESHSZ2	100044	2008/10	1 year
Ultra-Broadband Antenna	ROHDE & SCHWARZ	HL562	100015	2008/10	1 year
EMI Test Receiver	ROHDE & SCHWARZ	ESI 26	100009	2008/10	1 year
RF Test Panel	ROHDE & SCHWARZ	TS / RSP	335015/ 0017	N/A	N/A
Turntable	ETS	2088	2149	N/A	N/A
Antenna Mast	ETS	2075	2346	N/A	N/A

Table 2: General description of test auxiliary

Description:	Manufacturer	Model No.	Serial No.	Certificate
-	-	-	-	-

2 – System Test Configuration

2.1 Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

2.2 EUT Exercise Software

The EUT exercising program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software offered by manufacture, can let the EUT being normal operation.

2.3 Special Accessories

There are no special accessories necessary for compliance of this product supplied by **Shenzhen YONES Technology Co., Ltd.** and its respective support equipment manufacturers.

2.4 Equipment Modifications

The EUT tested was not modified by S&E Technologies.

2.5 Basic Test Setup Block Diagram

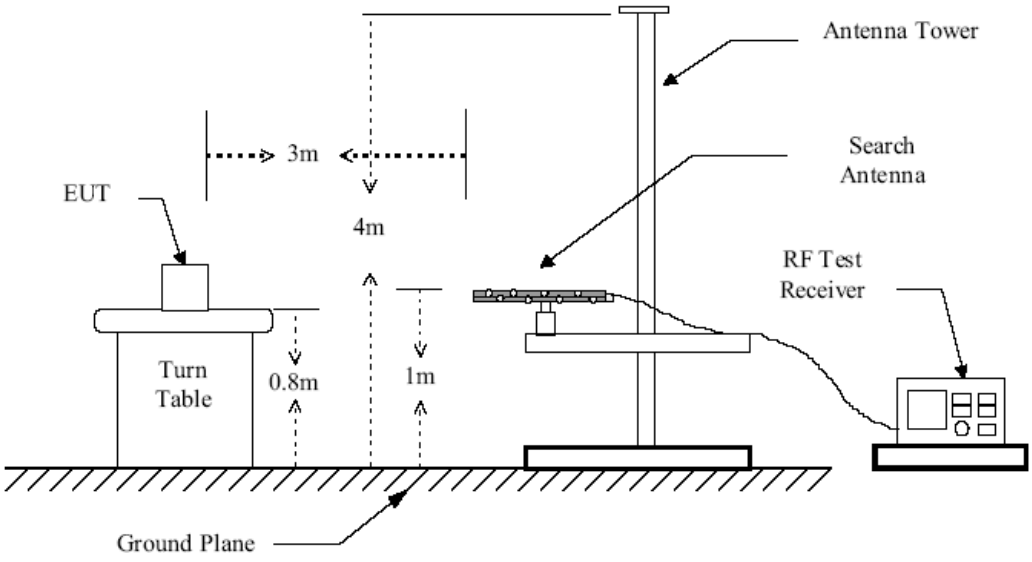


Figure 1 : Frequencies measured below 1 GHz configuration

3 – Disturbance Voltage At The Mains Terminals

3.1 Measurement Uncertainty

All test results complied with Section 15.207 requirements. Measurement Uncertainty is 2.4 dB.

3.2 Applicable Standard

Section 15.207: For a Low-power Radio-frequency Device is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

Frequency Range (MHz)	Limits (dBuV)	
	Quasi-Peak	Average
0.150～0.500	66～56	56～46
0.500～5.000	56	46
5.000～30.00	60	50

3.3 Test Description

The EUT is excused from investigation of Disturbance Voltage at The Mains Terminals, for it is powered by a iPod player (3.3Vd.c.). According to the Section 15.207(d), measurement to demonstrate compliance with the limits of Disturbance Voltage at The Mains Terminals are not required to the devices which only employed bettary power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.

4- Radiated Disturbances

4.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is +4.0 dB.

4.2 Limit of Radiated Disturbances

Frequency (MHz)	Distance (meters)	Field Strengths Limits (dBμV/m)
30 ~ 88	3	40
88~216	3	43.5
216 ~ 960	3	46
960 and above	3	54

Note: (1) The tighter limit shall apply at the edge between two frequency bands.
(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

4.3 EUT Setup

The radiated emission tests were performed in the 3-meter semi-anechoic chamber, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC Part 15 Subpart B limits.

The EUT was placed on the center of the test table. In the frequency range below 1 GHz, Ultra-Broadband Antenna horn-antenna is used. Test setup refer to Section 2.5 Basic Test Setup Block Diagram of this report.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

4.4 Test Receiver Setup

According to FCC Part 15 rule, the frequency was investigated from 30 to 1000 MHz. During the radiated emission test, the test receiver was set with the following configurations:

Test Receiver Setting for frequency range below 1000MHz:

Detector……..Peak & Quasi-Peak
IF Band Width……..100KHz
Frequency Range……30MHz to 1000MHz
Turntable Rotated……0 to 360 degrees

Antenna Position:

Height……1m to 4m
Polarity……...Horizontal and Vertical

4.5 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

1). Configure the EUT according to ANSI C63.4-2003.

2). The EUT was placed on the top of the turntable 0.8 meter above ground.

3). The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.

4). Power on the EUT and all the supporting units.

5). The turntable was rotated by 360 degrees to determine the position of the highest radiation.

6). For each suspected emission, the antenna tower was scanned (from 1 m to 4 m) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading of both horizontal and vertical polarization.

7). Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode. Then all data was recorded in the peak detection mode. Quasi-peak readings performed only when an emission was found to be marginal (within -10 dBμV of specification limits), and are distinguished with a "QP" in the data plots.

8). The tuning controls were manually adjusted to verify each rated frequency.

4.6 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dBμV means the emission is 7dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. –Limit

4.7 Radiated Emissions Test Result

Temperature (℃)	22~23
Humidity (%RH)	50~54
Barometric Pressure (mbar)	950~1000
EUT	GPS Navigation System
M/N	A-4321
Operating Mode	Continuous Transmitting

Fundamental Emission Test Data

Peak Measurement					
Test Frequency (MHz)	Measuring Level (dBμV/m)		Limits (dBμV/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
88.10	45.2	45.9	68.0	22.8	22.1
Average Measurement					
88.10	42.9	43.2	48.0	5.1	4.8

Peak Measurement					
Test Frequency (MHz)	Measuring Level (dBμV/m)		Limits (dBμV/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
98.10	38.1	44.1	68.0	29.9	23.9
Average Measurement					
98.10	37.4	42.8	48.0	10.6	5.2

Peak Measurement					
Test Frequency (MHz)	Measuring Level (dBμV/m)		Limits (dBμV/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
107.90	37.9	41.0	68.0	30.1	27.0
Average Measurement					
107.90	36.3	39.2	48.0	11.7	8.8

Harmonics & Spurious Emission

88.10MHz Spurious Emission							
Maximum Frequency (MHz)	Position and Level					Limit	Margin
	Polarity	Ant. Hei. m	Value dBμV/m	Transd	Result dBμV/m	dBμV/m	dBμV/m
160.241	H	2.0	39.2	12.0	27.2	43.5	16.3
239.940	H	1.0	56.1	11.5	44.6	46.0	1.4
319.639	H	1.0	44.6	8.3	36.3	46.0	9.7
560.681	H	3.0	35.7	2.7	33.0	46.0	13.0
640.381	H	1.0	34.4	1.2	33.2	46.0	12.8
Others					-		
160.241	V	1.0	34.2	12.0	22.2	43.5	21.3
239.940	V	1.0	47.5	11.5	36.0	46.0	10.0
319.639	V	1.9	35.8	8.3	27.5	46.0	18.5
560.681	V	1.0	35.2	2.7	32.5	46.0	13.5
640.381	V	1.0	39.8	1.2	38.6	46.0	7.4
Others					-		

Remark: Datum of measurement within this frequency range shown "-"in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

98.10MHz Spurious Emission							
Maximum Frequency (MHz)	**Position and Level**					**Limit**	**Margin**
	Polarity	**Ant. Hei. m**	**Value dBμV/m**	**Transd**	**Result dBμV/m**	**dBμV/m**	**dBμV/m**
195.231	H	1.0	46.4	10.5	35.9	43.5	7.6
294.369	H	1.0	52.6	9.6	43.0	46.0	3.0
587.896	H	2.0	34.6	2.0	32.6	46.0	13.4
Others					-		
195.231	V	1.0	41.0	10.5	30.5	43.5	13.0
294.369	V	2.0	45.2	9.6	35.6	46.0	10.4
587.896	V	1.0	41.5	2.0	39.5	46.0	6.5
Others					-		

Remark: Datum of measurement within this frequency range shown "-"in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

107.90MHz Spurious Emission							
Maximum Frequency (MHz)	**Position and Level**					**Limit**	**Margin**
	Polarity	**Ant. Hei. m**	**Value dBμV/m**	**Transd**	**Result dBμV/m**	**dBμV/m**	**dBμV/m**
214.670	H	1.0	45.1	10.6	34.5	43.5	9.0
247.716	H	2.0	36.6	11.6	25.0	46.0	21.0
323.527	H	1.0	49.4	8.1	41.3	46.0	4.7
Others					-		
214.670	V	1.0	39.8	10.6	29.2	43.5	14.3
247.716	V	1.0	32.5	11.6	20.9	46.0	25.1
323.527	V	2.0	39.9	8.1	31.8	46.0	14.2
Others					-		

Remark: Datum of measurement within this frequency range shown "-"in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5- Occupied Bandwidth

5.1 Requirement of Occupied Bandwidth

Emission from the intentional radiator shall be confined within a band 200kHz wide centered on the operation frequency. The 200kHz band shall lie wholly within the frequency range of 88~108MHz.

5.2 Test Procedure

1). The EUT was placed on the top of the turntable 0.8 meter above ground.

2). The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.

3). Power on the EUT and all the supporting units. Start FM transmitting function with mp3 format music of audio file.

4). The turntable was rotated by 360 degrees to determine the position of the highest radiation.

5). For each suspected emission, the antenna tower was scanned (from 1 m to 4 m) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading of both horizontal and vertical polarization.

6). Set EMI test receiver with Max hold. Mark peak, -20dB.

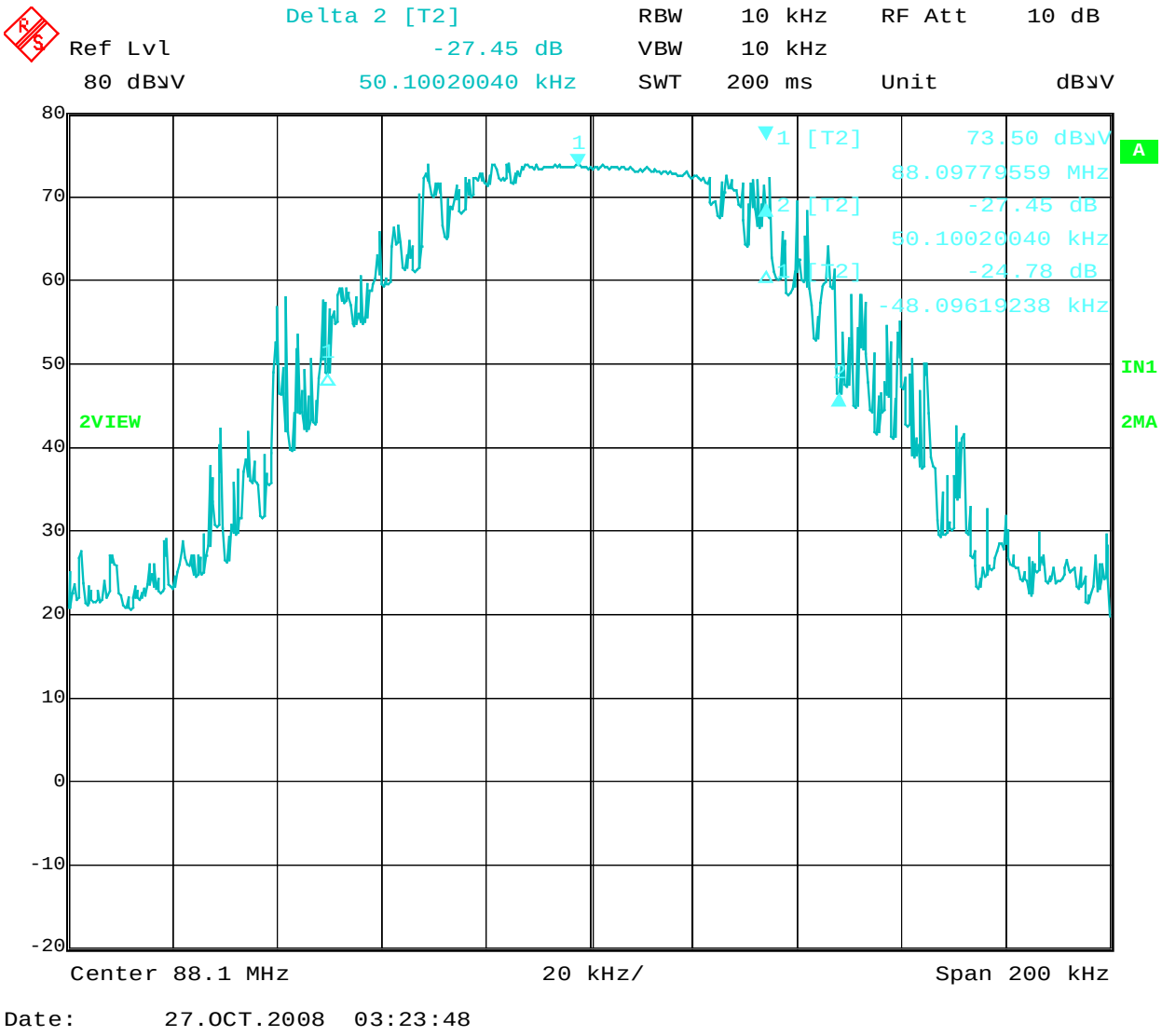
5.3 Occupied Bandwidth Test Result

Temperature (℃)	22~23
Humidity (%RH)	50~54
Barometric Pressure (mbar)	950~1000
EUT	GPS Navigation System
M/N	A-4321
Operating Mode	Continuous Transmitting

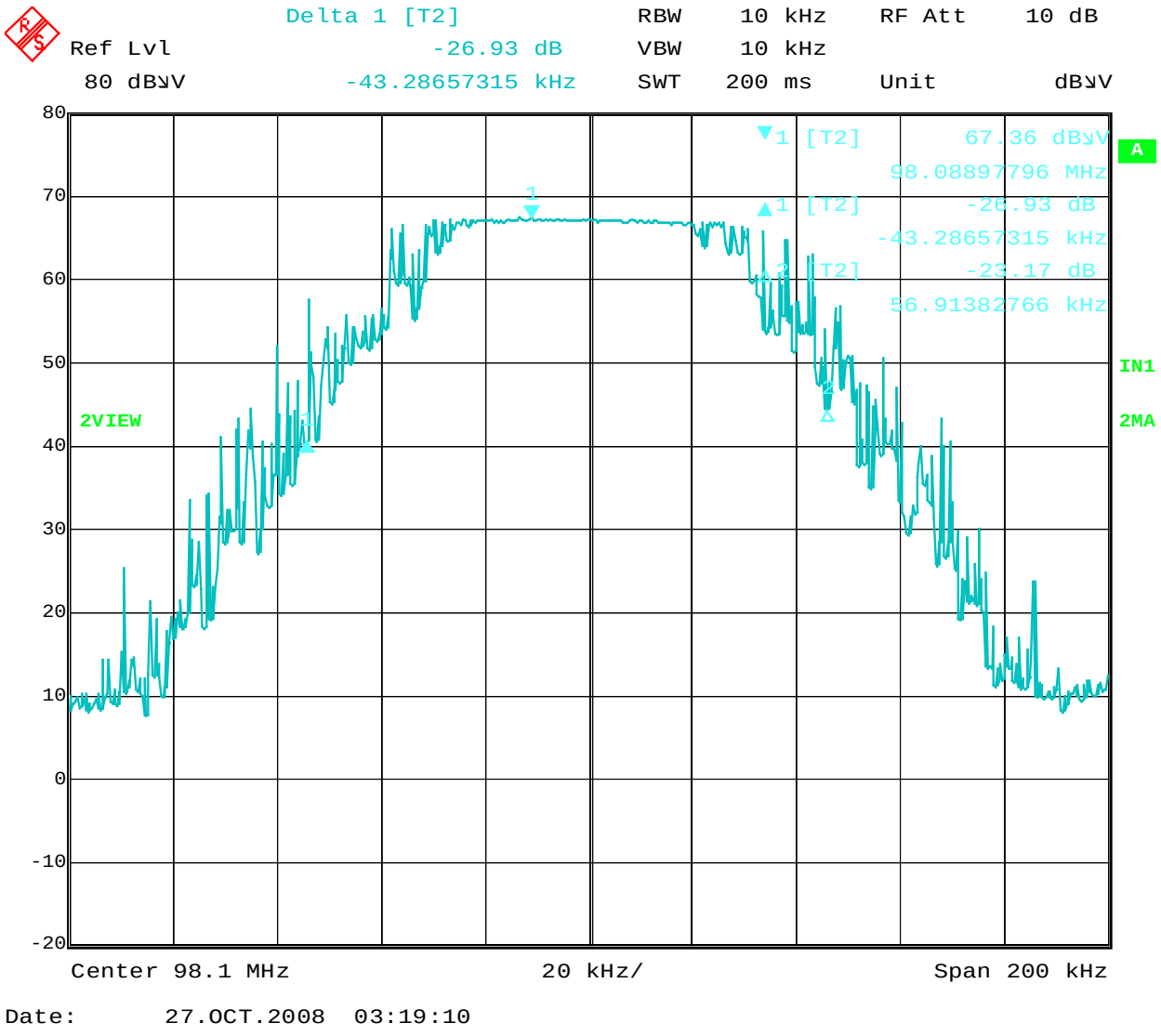
Test Result: pass

Test plots see the following pages

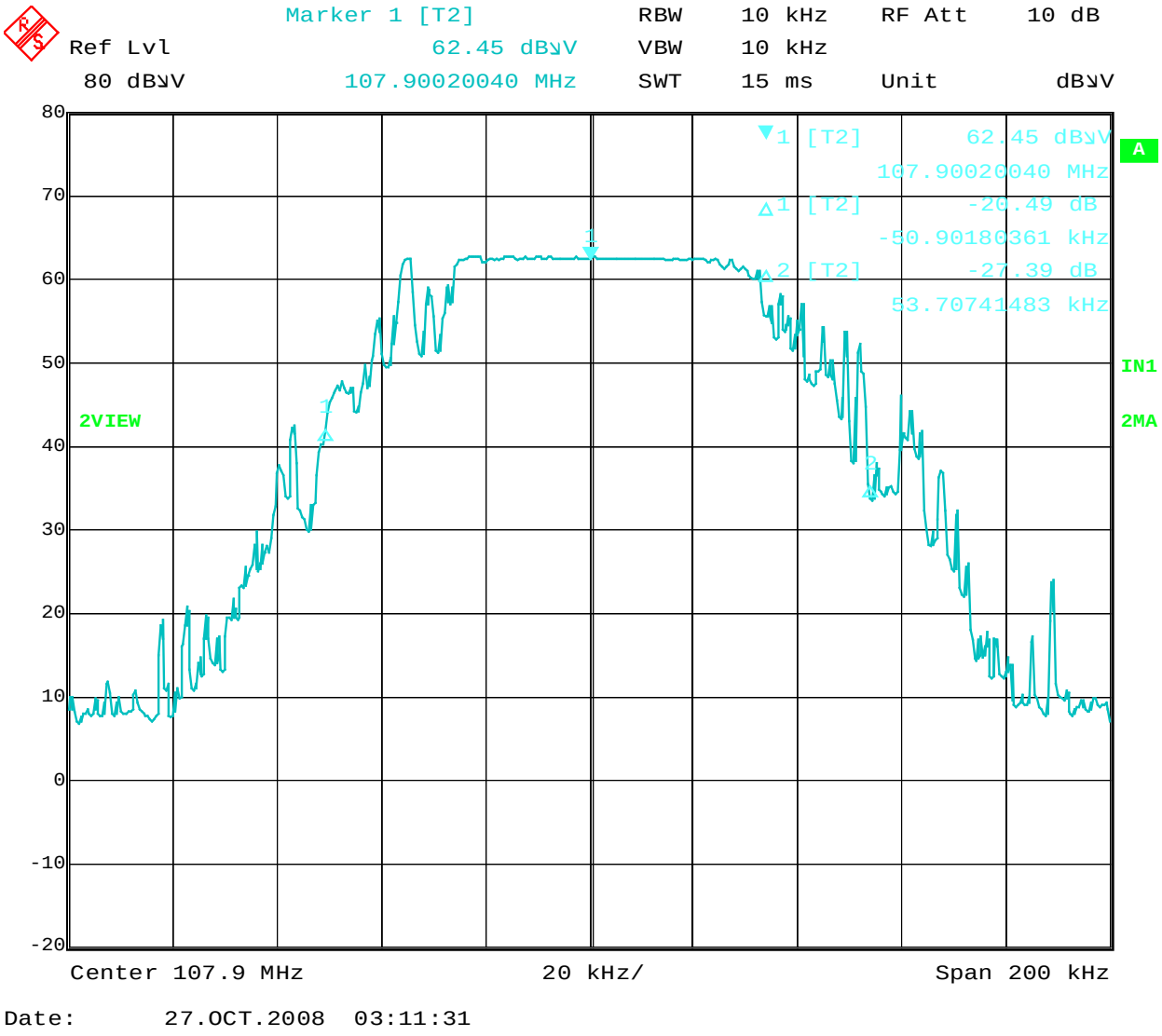
88.10MHz


Delta 2 [T2]
RBW 10 kHz
RF Att 10 dB
Ref Lvl -27.45 dB
VBW 10 kHz
80 dBµV 50.10020040 kHz
SWT 200 ms
Unit dBµV
1 [T2] 73.50 dBµV
88.09779559 MHz
2 [T2] -27.45 dB
50.10020040 kHz
[T2] -24.78 dB
-48.09619238 kHz
A
IN1
2MA
2VIEW
80
70
60
50
40
30
20
10
0
-10
-20
Center 88.1 MHz
20 kHz/
Span 200 kHz
Date: 27.OCT.2008 03:23:48

98.10MHz


Delta 1 [T2]
RBW 10 kHz
RF Att 10 dB
Ref Lvl -26.93 dB
VBW 10 kHz
80 dBµV -43.28657315 kHz
SWT 200 ms
Unit dBµV
1 [T2] 67.36 dBµV
98.08897796 MHz
1 [T2] -26.93 dB
-43.28657315 kHz
2 [T2] -29.17 dB
56.91382766 kHz
2VIEW
A
IN1
2MA
80
70
60
50
40
30
20
10
0
-10
-20
Center 98.1 MHz
20 kHz/
Span 200 kHz
Date: 27.OCT.2008 03:19:10

107.90MHz


Marker 1 [T2]
RBW 10 kHz
RF Att 10 dB
Ref Lvl 62.45 dBµV
VBW 10 kHz
80 dBµV 107.90020040 MHz
SWT 15 ms
Unit dBµV
1 [T2] 62.45 dBµV
107.90020040 MHz
Δ1 [T2] -20.49 dB
-50.90180361 kHz
Δ2 [T2] -27.39 dB
53.70741483 kHz
A
IN1
2MA
2VIEW
80
70
60
50
40
30
20
10
0
-10
-20
Center 107.9 MHz
20 kHz/
Span 200 kHz
Date: 27.OCT.2008 03:11:31

Appendix A – Product Labeling

FCC ID Label Specification

Specification: Text is Black or white in color and is left justified. Labels are printed in indelible ink on permanent adhesive backing and shall be affixed at a conspicuous location on the EUT or silk-screened onto the EUT.

FCC ID: WT6A-4321

Proposed Label Location on EUT

Appendix B - EUT Photographs

JT - External View

EUT - Bottom View

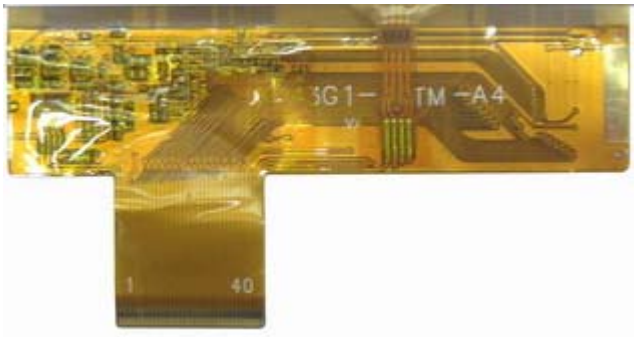
EUT - Top View

EUT - Side View

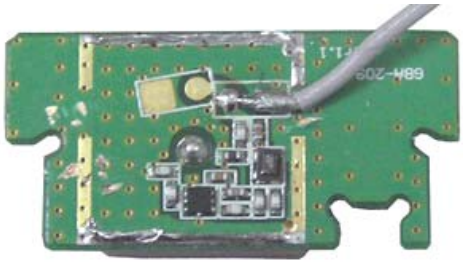
EUT - Accessories View

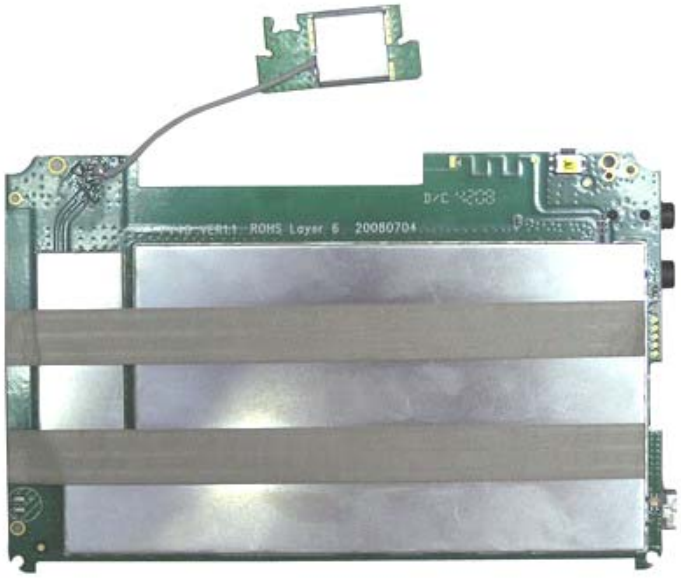
EUT - Internal View

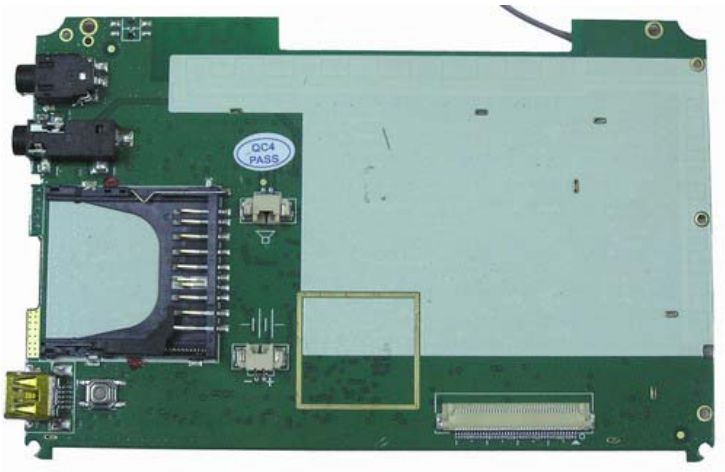
EUT – PCB View




CIROCOMM
578E






QC4
PASS

Appendix C – Test Setup Photographs

Radiated Emission

Appendix D – EUT Photographs

Supplementary Model: LSY-750FM

Supplementary Model: A-4306

Supplementary Model: A-4307

Supplementary Model: A-4320