

Shenzhen Jingwah Information Technology Co., Ltd

Application
For
Certification
FCC ID: RBD-M710GZ

Tablet PC

Model: M710GZ
Additional Model: ST7, ST7-D

Tablet Computer

Report No.: 150717001SZN-004

Prepared and Checked by:

Approved by:

Sign on file

Robert Li
Project Engineer

Andy Yan
Senior Project Engineer
Date: August 12, 2015

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
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TRF No.: FCC 15C_PC_b

INTERTEK TESTING SERVICES

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MEASUREMENT / TECHNICAL REPORT

Shenzhen Jingwah Information Technology Co., Ltd

MODEL: M710GZ

Additional Model: ST7, ST7-D

FCC ID: RBD-M710GZ

This report concerns (check one:) Original Grant ☒ Class II Change ☐

Equipment Type: JBC-Class B Computing Device/Personal Computer

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes ☐ No ☒

If yes, defer until: _____
date

Company Name agrees to notify the Commission by: _____
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes ☐ No ☒

If no, assumed Part 15, Subpart B for unintentional radiator – the new 47 CFR [10-01-13 Edition] provision.

Report prepared by:

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List of attached file

Exhibit Type	File Description	Filename
Test Report	Test Report	report.pdf
Test Setup Photo	Radiated photos	radiated photos.pdf
Test Setup Photo	Conducted photos	conducted photos.pdf
External Photo	External Photos	external photos.pdf
Internal Photo	Internal Photos	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
ID Label / Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Cover Letter	Confidential Letter	request.pdf
Cover Letter	Letter of Agency	agency.pdf

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EXHIBIT 1

GENERAL DESCRIPTION

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1.0 **General Description**

1.1 Product Description

The Equipment Under Test (EUT) is a Tablet PC. The device can be used to connect PC USB ports. The EUT can be powered by 3.7 VDC Li-ion rechargeable battery and charged by USB Port. For more detail information pls. refer to the user manual.

The Model: ST7, ST7-D are same as the model M710GZ in hardware aspect. The difference is colour and silk-screen only.

1.2 Related Submittal(s) Grants

This is an application for certification of a tablet computer.

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1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2014). Radiated emission measurement was performed in Semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

1.4 Test Facility

The Semi-anechoic chamber and shielding room used to collect the radiated data and conducted data are **Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch** and located at 6F, D Block, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number: 242492).

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EXHIBIT 2

SYSTEM TEST CONFIGURATION

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2.0 **System Test Configuration**

2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4 (2014).

The EUT was powered by a 3.7 VDC fully charged Li-ion rechargeable battery which is charged by USB port through PC (The PC was powered by AC120V/60Hz) during the test. The worst case data was reported in this report.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. The step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The rear of unit shall be flushed with the rear of the table.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was placed on turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

The frequency range from 30MHz to 6GHz was searched for spurious emissions from the device. Only those emissions reported were detected. All other emissions were at least 20 dB below the applicable limits.

2.2 EUT Exercising Software

N/A

2.3 Special Accessories

110cm shielded USB Cable was used during test.

2.4 Equipment Modification

Any modifications installed previous to testing by Shenzhen Jingwah Information Technology Co., Ltd will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch.

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2.5 Measurement Uncertainty

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

2.6 Support Equipment List and Description

This product was tested in the following configuration:

Refer List:

Description	Manufacturer	Model No.
Laptop	HP	ProBook 430 G1
Hard Disk	Smart.drive	HD-003
USB Cable	Smart.drive	Unshielded, Length 120cm
RJ45 Cable	N/A	Unshielded, Length 400cm
Head Phone	N/A	Un-Shielded, Length 120cm
TF Card	SanDisk	BE0934314559D
USB Cable	N/A	Shielded, Length 110cm

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EXHIBIT 3

EMISSION RESULTS

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3.0 **Emission Results**

Data is included worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

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3.1 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

$$FS = RA + AF + CF - AG + PD + AV$$

where FS = Field Strength in dB μ V/m

RA = Receiver Amplitude (including preamplifier) in dB μ V

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB/m

AG = Amplifier Gain in dB

PD = Pulse Desensitization in dB

AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$$FS = RA + AF + CF - AG + PD + AV$$

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3.1 Field Strength Calculation (cont'd)

Example

Assume a receiver reading of 62.0dB μ V is obtained. The antenna factor of 7.4dB/m and cable factor of 1.6dB is added. The amplifier gain of 29dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0dB, and the resultant average factor was -10dB. The net field strength for comparison to the appropriate emission limit is 32dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$RA = 62.0\text{dB}\mu\text{V}$$

$$AF = 7.4\text{dB/m}$$

$$CF = 1.6\text{dB}$$

$$AG = 29.0\text{dB}$$

$$PD = 0\text{dB}$$

$$AV = -10\text{dB}$$

$$FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32\text{dB}\mu\text{V/m}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(32\text{dB}\mu\text{V/m})/20] = 39.8\mu\text{V/m}$$

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3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
At
480.017MHz (Download Mode)

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos.pdf.

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3.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 4.4dB margin (Download Mode)

TEST PERSONNEL:

Sign on file

Robert Li Project Engineer

Typed/Printed Name

August 12, 2015

Date

INTERTEK TESTING SERVICES

Company: Shenzhen Jingwah Information Technology Co., Ltd

Date of Test: August 12, 2015

Model: M710GZ

Operating Mode: Down load

Table 1

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	365.135	41.3	20.0	17.6	38.9	46.0	-7.1
Horizontal	480.017	41.7	20.0	19.9	41.6	46.0	-4.4
Horizontal	960.052	37.1	20.0	26.7	43.8	54.0	-10.2
Horizontal	3687.000	15.2	20.0	29.8	25.0	54.0	-29.0
Vertical	55.220	37.7	20.0	14.7	32.4	40.0	-7.6
Vertical	364.650	44.5	20.0	11.4	35.9	46.0	-10.1
Vertical	729.370	35.8	20.0	25.0	40.8	46.0	-5.2
Vertical	3686.300	15.4	20.0	29.1	24.5	54.0	-29.5

NOTES:

1. Quasi-Peak detector is used for frequency up to 1GHz and Peak detector is used for frequency from 1-6GHz.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3 meter distances were measured at 0.3- meter and an inverse proportional extrapolation was performed to compare the signal level to the 3 meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. All emissions up to 1GHz are below the QP limit and all emissions between 1-6GHz are below the AV limit.

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3.4 Conducted Emission at Mains Terminal

3.5 Conducted Emission Configuration Photograph

Worst Case Conducted Configuration
at
0.382 MHz(Download Mode)

For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

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3.6 Conducted Emission Data

Judgement: Passed by 7.5 dB margin (Download Mode)

TEST PERSONNEL:

Sign on file

Robert Li Project Engineer
Typed/Printed Name

August 12, 2015
Date

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Company: Shenzhen Jingwah Information Technology Co., Ltd

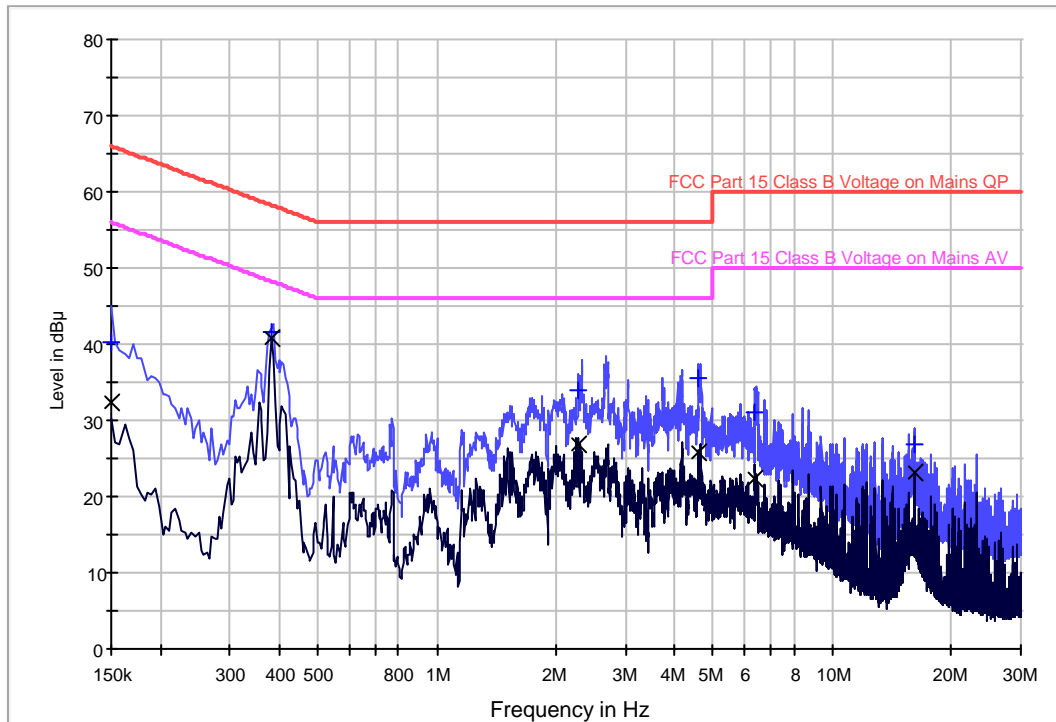
Date of Test: August 12, 2015

Model: M710GZ

Operating Mode: Download

Phase: Live

Conducted Emission Test - FCC



Limit and Margin QP

Frequency (MHz)	QuasiPeak (dB μV)	Line	Corr. (dB)	Margin (dB)	Limit (dB μV)
0.150000	40.4	L1	9.8	25.6	66.0
0.382000	41.6	L1	9.9	16.6	58.2
2.278000	33.9	L1	9.9	22.1	56.0
4.594000	35.6	L1	10.0	20.4	56.0
6.390000	31.0	L1	10.0	29.0	60.0
16.230000	26.9	L1	10.1	33.1	60.0

Limit and Margin AV

Frequency (MHz)	Average (dB μV)	Line	Corr. (dB)	Margin (dB)	Limit (dB μV)
0.150000	32.2	L1	9.8	23.8	56.0
0.382000	40.7	L1	9.9	7.5	48.2
2.278000	26.8	L1	9.9	19.2	46.0
4.594000	25.7	L1	10.0	20.3	46.0
6.390000	22.5	L1	10.0	27.5	50.0
16.230000	23.2	L1	10.1	26.8	50.0

Test Engineer: Robert Li

TRF No.: FCC 15C_PC_b

FCC ID: RBD-M710GZ

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Company: Shenzhen Jingwah Information Technology Co., Ltd

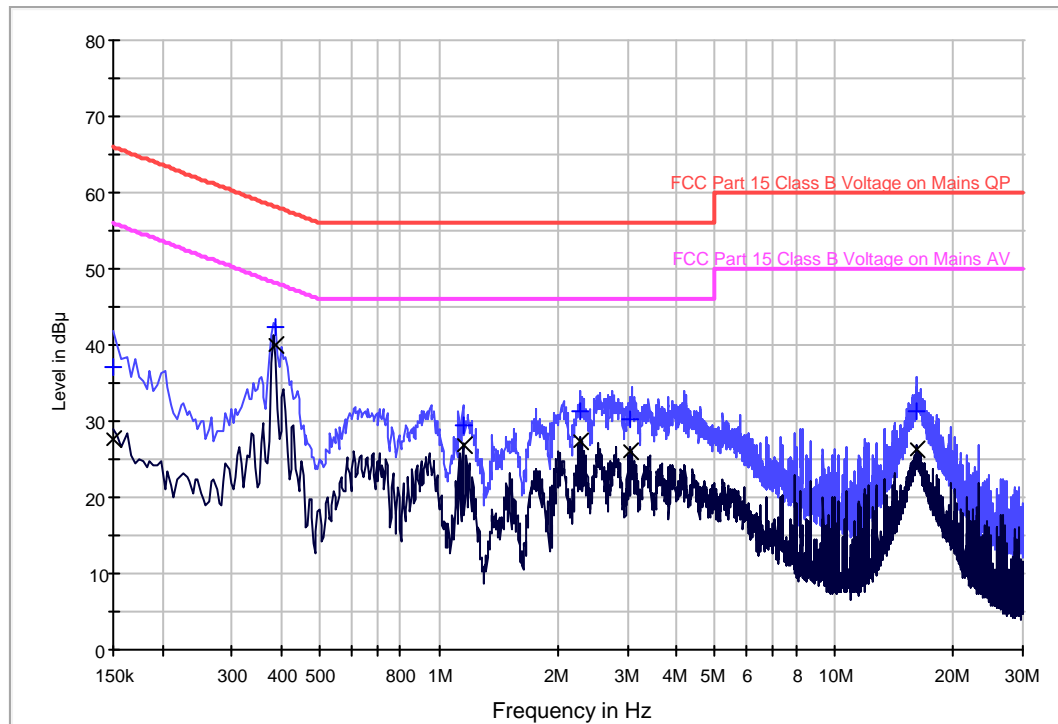
Date of Test: August 12, 2015

Model: M710GZ

Operating Mode: Download

Phase: Neutral

Conducted Emission Test - FCC



Limit and Margin QP

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.150000	37.2	N	10.2	28.8	66.0
0.384000	42.3	N	10.2	15.9	58.2
1.150000	29.4	N	10.3	26.6	56.0
2.274000	31.4	N	10.3	24.6	56.0
3.042000	30.2	N	10.3	25.8	56.0
16.226000	31.4	N	10.4	28.6	60.0

Limit and Margin AV

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.150000	27.7	N	10.2	28.3	56.0
0.384000	40.0	N	10.2	8.2	48.2
1.150000	26.9	N	10.3	19.1	46.0
2.274000	27.4	N	10.3	18.6	46.0
3.042000	26.0	N	10.3	20.0	46.0
16.226000	26.4	N	10.4	23.6	50.0

Test Engineer: Robert Li

TRF No.: FCC 15C_PC_b

FCC ID: RBD-M710GZ

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EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

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4.0 **Equipment Photographs**

For electronic filing, photographs of the tested EUT are saved with filename: external photos.pdf and internal photos.pdf.

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EXHIBIT 5

PRODUCT LABELLING

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5.0 **Product Labelling**

For electronics filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

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EXHIBIT 6

TECHNICAL SPECIFICATIONS

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6.0 **Technical Specifications**

For electronic filing, the block diagram of the tested EUT is saved with filename: block.pdf.

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EXHIBIT 7

INSTRUCTION MANUAL

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7.0 **Instruction Manual**

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold / leased in the United States.

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EXHIBIT 8

MISCELLANEOUS INFORMATION

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8.0 **Miscellaneous Information**

This miscellaneous information includes emission measuring procedure.

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8.1 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of computer peripheral operating under Part 15, Subpart B rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 – 2014.

The computer peripheral equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The antenna height and polarization are varied during the testing to search for maximum signal levels. The height of the antenna is varied from one to four meters.

Detector function for radiated emissions are in QP mode from the frequency band 30MHz to 1GHz with RBW setting 120kHz and in PK & AV mode from frequency band 1GHz to 6GHz with RBW setting 1MHz. Detector function for conducted emissions are in QP & AV mode and IFBW setting is 9kHz from the frequency band 150kHz to 30MHz.

For radiated emission, the frequency range scanned is 30MHz to 6GHz. For line-conducted emissions, the range scanned is 150kHz to 30MHz.

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8.1 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

Conducted measurements are made as described in ANSI C63.4 – 2014.

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EXHIBIT 9

TEST EQUIPMENT LIST

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9.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-03	BiConiLog Antenna	ETS	3142C	00066460	14-Jun-15	14-Jun-16
SZ061-08	Horn Antenna	ETS	3115	00092346	19-Oct-14	19-Oct-15
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	1-Nov-14	1-Nov-15
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	02 Mar 2013	19-Apr-14	19-Apr-16
SZ062-02	RF Cable	RADIALL	RG 213U	--	30-Jun-15	30-Dec-15
SZ056-03	Spectrum Analyzer	R&S	FSP30	100692	8-Jun-15	8-Jun-16
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	1-Nov-14	1-Nov-15
SZ187-01	Two-Line V-Network	R&S	ENV216	100072	1-Nov-14	1-Nov-15
SZ187-02	Two-Line V-Network	R&S	ENV216	100073	1-Nov-14	1-Nov-15
SZ188-03	Shielding Room	ETS	RFD-100	4100	23-Aug-14	23-Aug-15