

FCC PART 15B TEST REPORT

For

Shenzhen Kaliho Technology Development Limited

19F. Block A, Stars plaza, Huaqiang North Road, FuTian District, Shenzhen, China

FCC ID: 2ADBRK918

Report Type: Original Report	Product Type: Smart Phone
Test Engineer: Dean Liu 	
Report Number: RDG150121005-00D	
Report Date: 2015-03-16	
Reviewed By: Sula Huang RF Engineer 	
Test Laboratory: Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn	

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan). This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

TABLE OF CONTENTS

GENERAL INFORMATION.....	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
OBJECTIVE	3
RELATED SUBMITTAL(S)/GRANT(S).....	3
TEST FACILITY	3
SYSTEM TEST CONFIGURATION.....	4
JUSTIFICATION	4
EUT EXERCISE SOFTWARE	4
EQUIPMENT MODIFICATIONS	4
LOCAL SUPPORT EQUIPMENT LIST AND DETAILS	4
SUPPORT CABLE LIST AND DETAILS	4
BLOCK DIAGRAM OF TEST SETUP	5
SUMMARY OF TEST RESULTS	6
FCC §15.107 – AC LINE CONDUCTED EMISSIONS.....	7
MEASUREMENT UNCERTAINTY	7
EUT SETUP	7
EMI TEST RECEIVER SETUP.....	8
TEST EQUIPMENT LIST AND DETAILS.....	8
TEST PROCEDURE	8
CORRECTED AMPLITUDE & MARGIN CALCULATION	8
TEST RESULTS SUMMARY	9
TEST DATA	9
FCC §15.109 - RADIATED EMISSIONS	12
MEASUREMENT UNCERTAINTY	12
EUT SETUP	12
EMI TEST RECEIVER SETUP.....	13
TEST PROCEDURE	13
TEST EQUIPMENT LIST AND DETAILS.....	14
CORRECTED AMPLITUDE & MARGIN CALCULATION	14
TEST RESULTS SUMMARY	14
TEST DATA	14
DECLARATION LETTER.....	19

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Shenzhen Kaliho Technology Development Limited*'s product, model number: *K918 (FCC ID: 2ADBRK918)* (or the "EUT") in this report was a *Smart Phone*, which was measured approximately: 11.5 cm (L) x 6.15 cm (W) x 1.1cm (H), rated input voltage: DC3.7 V rechargeable Li-ion or DC5V charging from adapter.

Adapter Information: HUAJING
Model: TN-050100E2
Input : 100-240V~50/60Hz 0.15A
Output: 5V 1.0A

Note: The series product, model K918 and K928, K938, K948, K958 are electrically identical, the differences between them is model name, we selected K918 for testing, the details was explained in the attached declaration letter.

** All measurement and test data in this report was gathered from production sample serial number: 150121005 (Assigned by applicant). The EUT was received on 2015-01-21.*

Objective

This report is prepared on behalf of *ShenZhen Kaliho Technology Development Limited* in accordance with Part 2, Subpart J, Part 15, Subparts A and B of the Federal Communications Commission's rules.

The objective of the manufacturer is to determine compliance with FCC Part 15B, Class B.

Related Submittal(s)/Grant(s)

FCC Part 15C DSS submissions with FCC ID: 2ADBRK918.
FCC Part 22H, 24E PCE submissions with FCC ID: 2ADBRK918.
FCC Part 15C DTS submissions with FCC ID: 2ADBRK918.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 06, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Justification

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

EUT Exercise Software

The software “winthrax.exe” was used during test.

Equipment Modifications

No modification was made to the EUT tested.

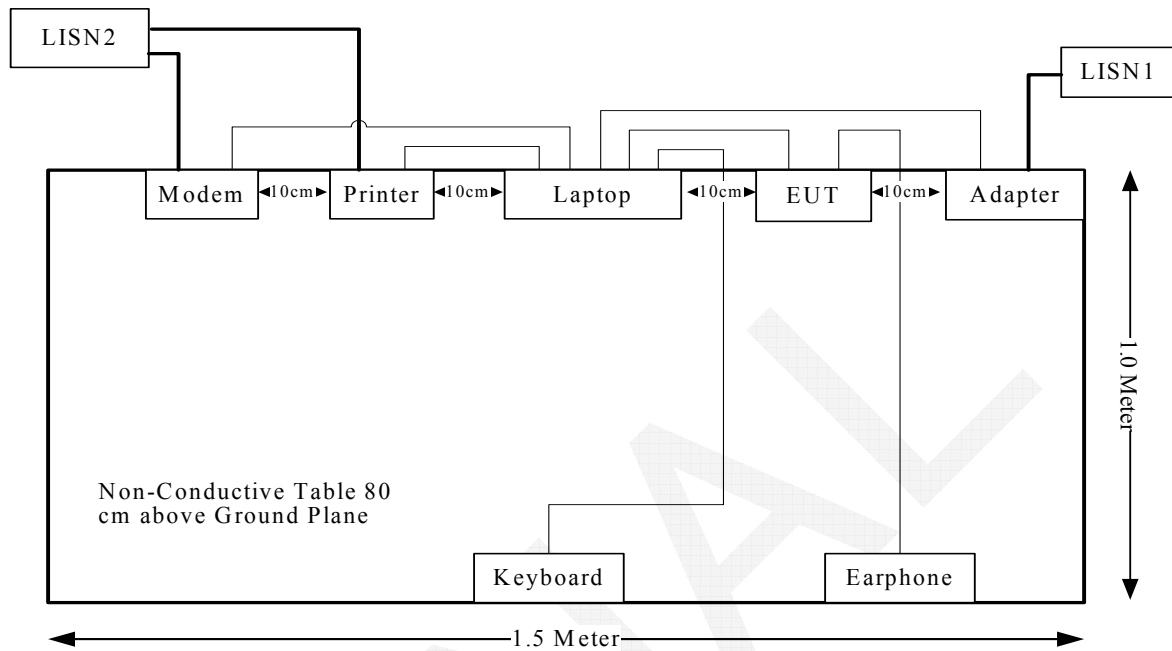
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	QDS-BRCM1017
HP	Printer	C3941A	JPTVOB2337
DELL	Keyboard	L100	CNORH656658907BL05DC
SAST	Modem	AEM-2100	0293

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Serial Cable	Yes	No	1.2	Serial Port of Laptop	Modem
Parallel Cable	Yes	No	1.2	Parallel Port of Laptop	Printer
Keyboard Cable	Yes	No	1.8	USB Port of Laptop	Keyboard
USB Cable	Yes	No	1.0	USB Port of Laptop	EUT
Earphone Cable	No	No	1.1	Audio port of EUT	Earphone

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	AC Line Conducted Emissions	Compliance
§15.109	Radiated Emissions	Compliance

FCC §15.107 – AC LINE CONDUCTED EMISSIONS

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cispr} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} of Table 1, then:

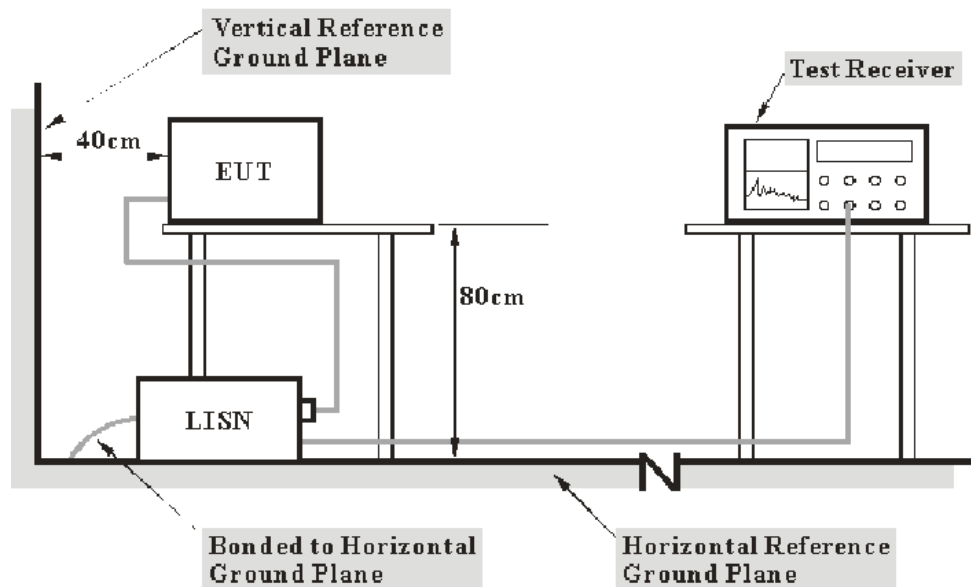
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.46 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cispr}

Measurement	U_{cispr}
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 dB

EUT Setup



- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2009 measurement procedure. The specification used was with the FCC Part 15.107 Class B limits.

The adapter of laptop was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2014-10-16	2015-10-16
R&S	L.I.S.N	ESH3-Z5	843331/015	N/A	N/A
R&S	Two-line V-network	ENV 216	3560.6550.12	2014-12-11	2015-12-11
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Procedure

During the conducted emission test, the adapter of laptop was connected to the outlet of the first LISN and the other support equipments were connected to the outlet of the second LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

$$C_f = A_C + VDF$$

Herein,

V_C (cord. Reading): corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN
C_f: Correction Factor

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

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15 B Class B, with the worst margin reading of:

6.2 dB at 0.150000 MHz in the Line conducted mode

Test Data

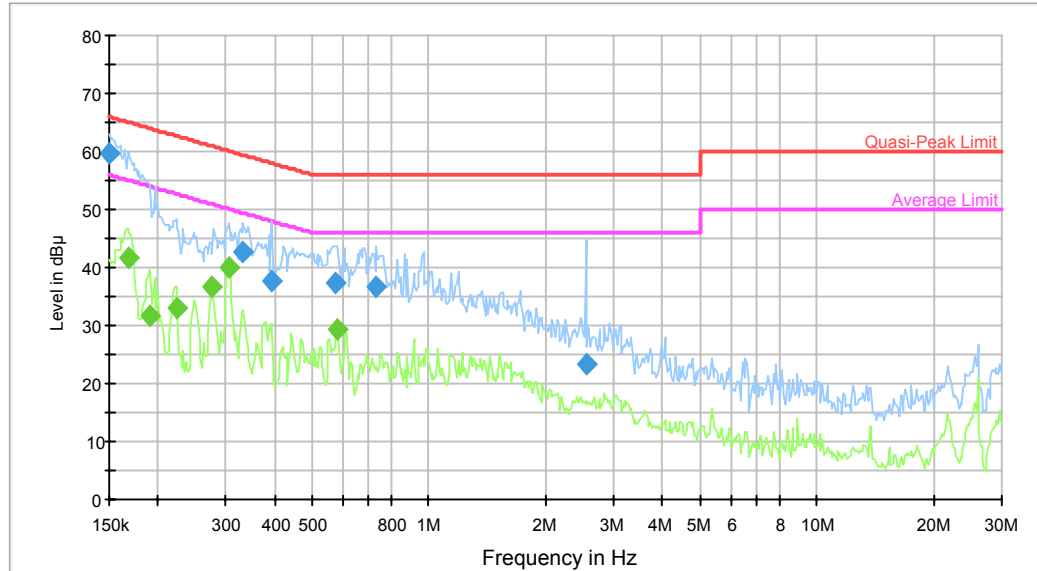
Environmental Conditions

Temperature:	21.1 °C
Relative Humidity:	63 %
ATM Pressure:	101.7 kPa

The testing was performed by Dean Liu on 2015-01-22.

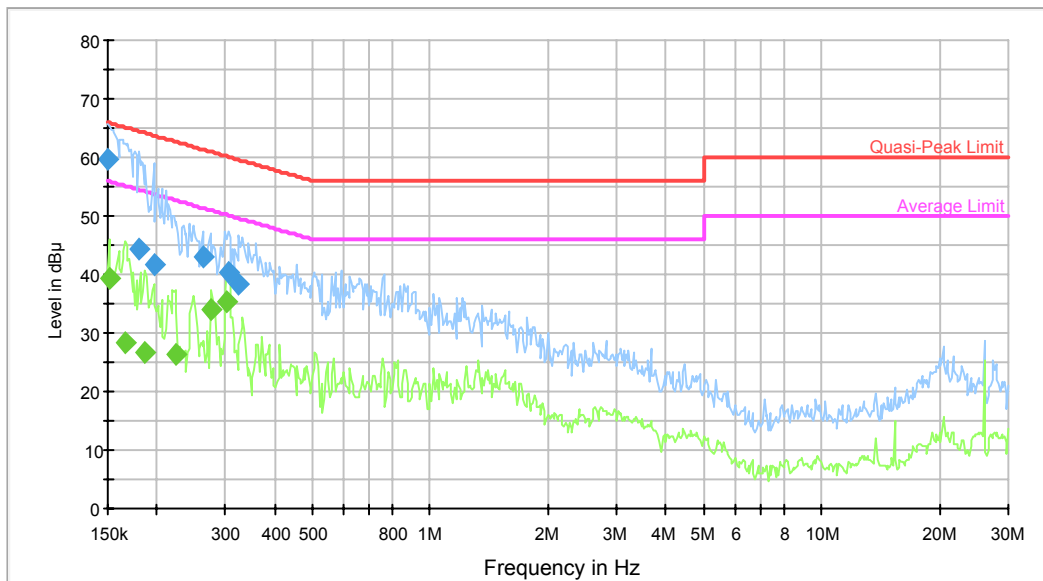
Test mode: USB Downloading

AC 120V/60Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	59.8	9.000	L1	10.0	6.2	66.0	Compliance
0.332770	42.6	9.000	L1	10.7	16.8	59.4	Compliance
0.393383	37.6	9.000	L1	10.6	20.4	58.0	Compliance
0.576662	37.3	9.000	L1	10.4	18.7	56.0	Compliance
0.732382	36.8	9.000	L1	10.6	19.2	56.0	Compliance
2.538519	23.2	9.000	L1	10.5	32.8	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.167702	41.5	9.000	L1	10.3	13.6	55.1	Compliance
0.190505	31.7	9.000	L1	10.6	22.3	54.0	Compliance
0.223418	32.9	9.000	L1	10.7	19.8	52.7	Compliance
0.277046	36.6	9.000	L1	10.7	14.3	50.9	Compliance
0.304845	39.9	9.000	L1	10.7	10.2	50.1	Compliance
0.581275	29.2	9.000	L1	10.4	16.8	46.0	Compliance

AC 120V/60Hz, Neutral:

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	59.5	9.000	N	10.2	6.5	66.0	Compliance
0.180171	44.2	9.000	N	10.9	20.3	64.5	Compliance
0.196675	41.5	9.000	N	11.3	22.2	63.7	Compliance
0.262017	43	9.000	N	11.2	18.4	61.4	Compliance
0.304845	40.4	9.000	N	11.1	19.7	60.1	Compliance
0.324910	38.2	9.000	N	11.1	21.4	59.6	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.151200	39.4	9.000	N	10.3	16.5	55.9	Compliance
0.166371	28.4	9.000	N	10.6	26.7	55.1	Compliance
0.186006	26.7	9.000	N	11.0	27.5	54.2	Compliance
0.223418	26.4	9.000	N	11.3	26.3	52.7	Compliance
0.277046	34.1	9.000	N	11.2	16.8	50.9	Compliance
0.302425	35.5	9.000	N	11.1	14.7	50.2	Compliance

FCC §15.109 - RADIATED EMISSIONS

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cisp} of Table 2, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cisp} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:

30M~200MHz: 5.0 dB

200M~1GHz: 6.2 dB

1G~6GHz: 4.45 dB

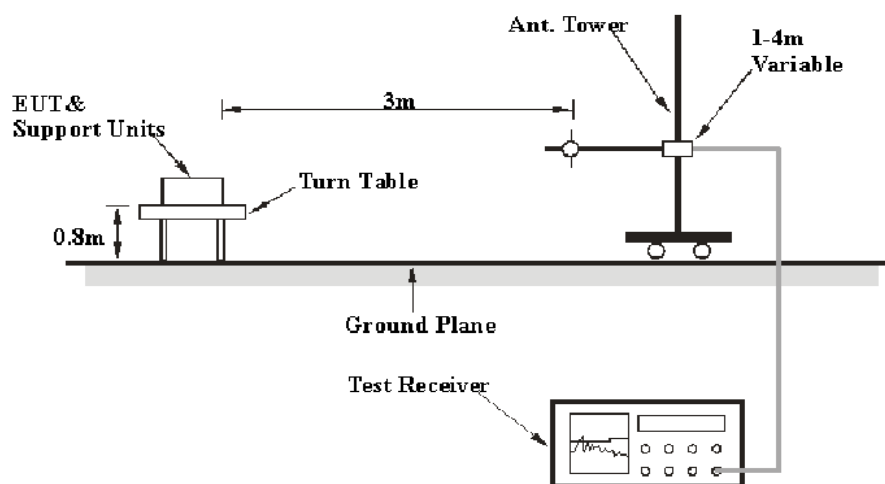
6G~18GHz: 5.23 dB

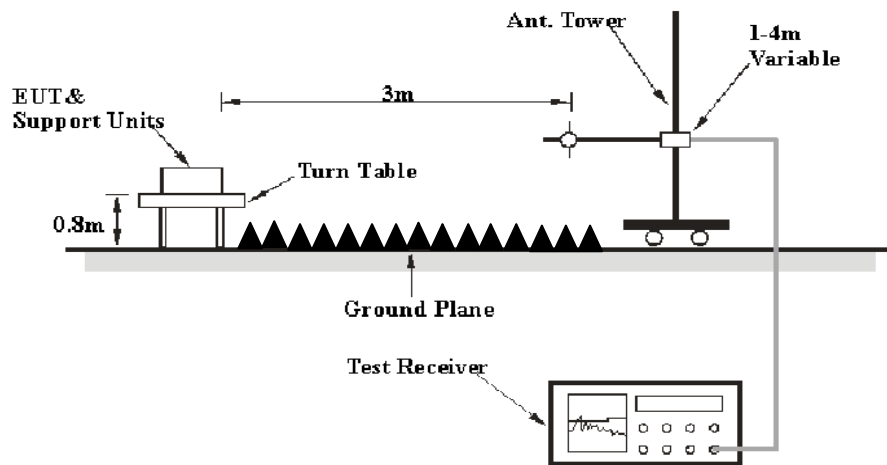
Table 2 – Values of U_{cisp}

Measurement	U_{cisp}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

EUT Setup

Below 1 GHz:



Above 1GHz:

The radiated emission test was performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC Part 15.109, Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The adapter of laptop was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

According to FCC 15.33 requirements, the system was measured from 30 MHz to 6GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

Test Procedure

For the radiated emissions test, the adapter of laptop was connected to the first AC floor outlet and the other support equipments were connected to the second AC floor outlet.

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

The data was recorded in Quasi-peak detection mode for 30 MHz to 1 GHz, Peak and average detection mode above 1 GHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2014-05-09	2015-05-09
Sunol Sciences	Antenna	JB3	A060611-3	2014-07-28	2017-07-27
HP	Amplifier	8447E	2434A02181	2014-09-01	2015-09-01
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09
ETS-Lindgren	Horn Antenna	3115	000 527 35	2012-09-06	2015-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2014-02-19	2015-02-19
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Corrected Amplitude & Margin Calculation

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

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

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

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15 B Class B, with the worst margin reading of:

0.90 dB at 672.1400 MHz in the Horizontal polarization

Test Data

Environmental Conditions

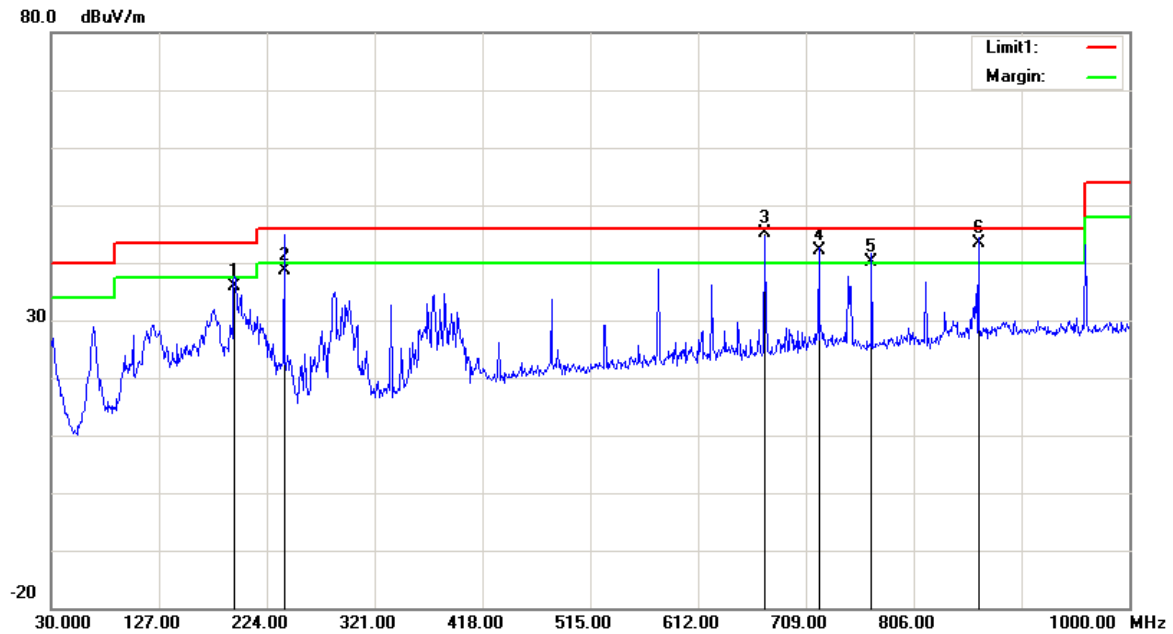
Temperature:	20.2-21.1 °C
Relative Humidity:	60-63 %
ATM Pressure:	101.5-101.7 kPa

The testing was performed by Dean Liu on 2015-01-22 & 2015-01-23

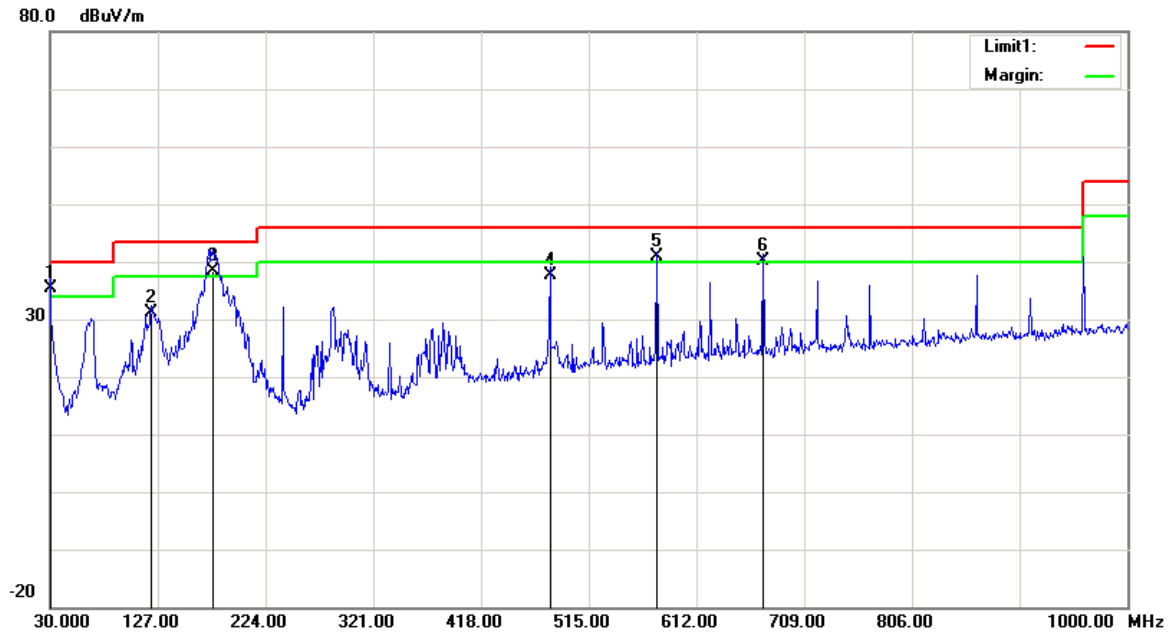
Test mode: USB Downloading

1) Below 1GHz

Horizontal:



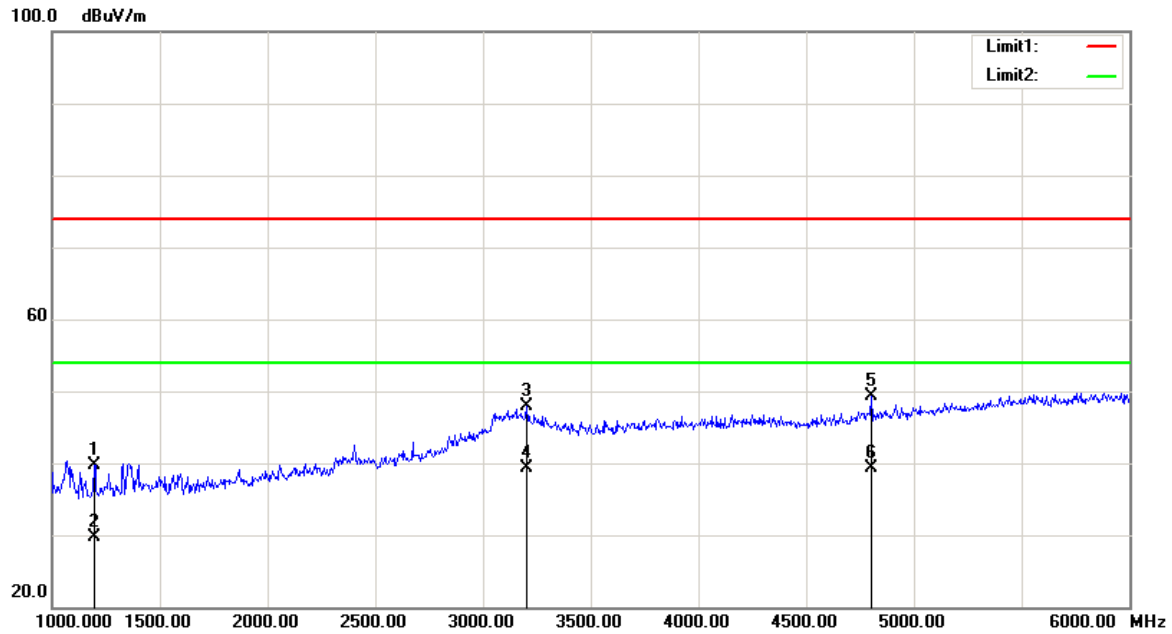
Frequency (MHz)	Receiver Reading (dBμV)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
194.9000	43.70	QP	-7.80	35.90	43.50	7.60
239.5200	46.67	QP	-7.97	38.70	46.00	7.30
672.1400	44.51	QP	0.59	45.10	46.00	0.90
720.6400	40.58	QP	1.52	42.10	46.00	3.90
768.1700	38.37	QP	1.83	40.20	46.00	5.80
864.2000	40.08	QP	3.32	43.40	46.00	2.60

Vertical:

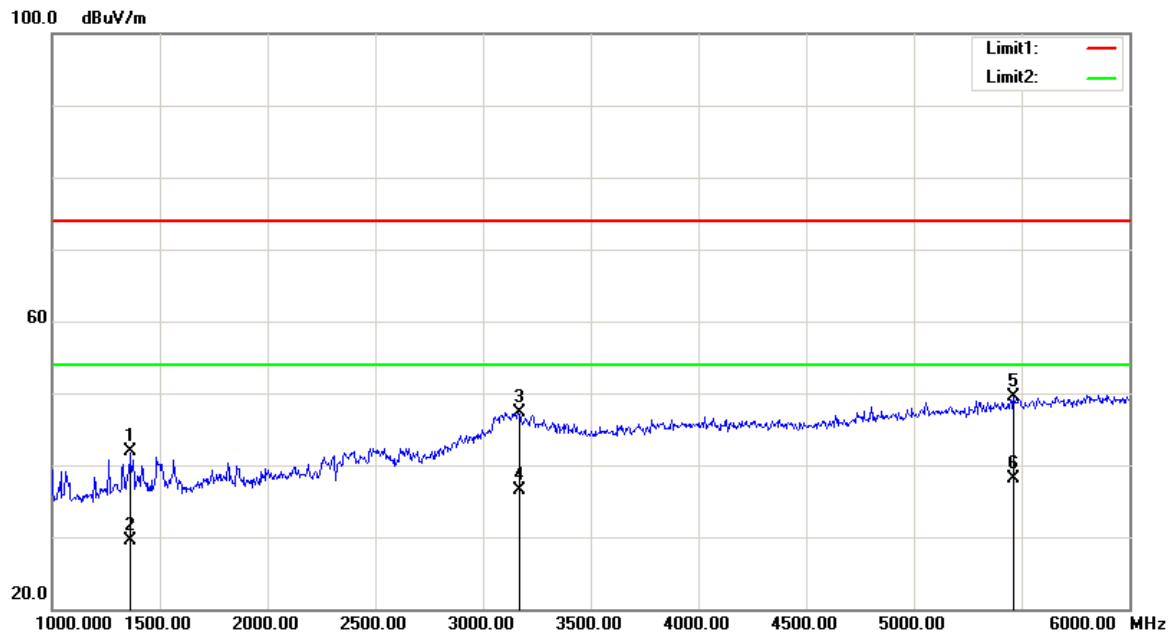
Frequency (MHz)	Receiver Reading (dBμV)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
30.0000	32.02	QP	3.38	35.40	40.00	4.60
121.1800	36.83	QP	-5.63	31.20	43.50	12.30
176.4700	46.84	QP	-8.34	38.50	43.50	5.00
480.0800	39.03	QP	-1.43	37.60	46.00	8.40
576.1100	41.51	QP	-0.51	41.00	46.00	5.00
672.1400	39.51	QP	0.59	40.10	46.00	5.90

2) Above 1GHz

Horizontal:



Frequency (MHz)	Receiver Reading (dBμV)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1195.391	40.90	peak	-1.20	39.70	74.00	34.30
1195.391	30.90	AVG	-1.20	29.70	54.00	24.30
3204.409	40.80	peak	7.06	47.86	74.00	26.14
3204.409	32.25	AVG	7.06	39.31	54.00	14.69
4802.605	40.13	peak	9.16	49.29	74.00	24.71
4802.605	30.19	AVG	9.16	39.35	54.00	14.65

Vertical:

Frequency (MHz)	Receiver Reading (dBμV)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1360.721	42.62	peak	-0.68	41.94	74.00	32.06
1360.721	30.23	AVG	-0.68	29.55	54.00	24.45
3164.329	39.69	peak	7.70	47.39	74.00	26.61
3164.329	28.82	AVG	7.70	36.52	54.00	17.48
5463.928	38.54	peak	11.03	49.57	74.00	24.43
5463.928	26.99	AVG	11.03	38.02	54.00	15.98

DECLARATION LETTER

Shenzhen Kaliho Technology Development Limited
19F. Block A, Stars plaza, HuaQiang North Road, FuTian District, ShenZhen, China
Contact Phone: 0755-36886291 Contact Fax: 0755-36886291

Product Similarity Declaration

Date: 2015-03-17

To Whom It May Concern,

We, Shenzhen Kaliho Technology Development Limited, hereby declare that our product Smart phone, Model Number: K918, K928, K938, K948, K958 are electrically identical with the same electromagnetic emissions and electromagnetic compatibility characteristics. Model Number: K928, K938, K948, K958 is electrically identical with the Model Number: K918 that was certified by BACL. Their only difference is the model name.

The rest are the same.

Please contact me if you have any question.

Signature:

Evan Li

Manager



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