TEST REPORT

FCC TEST REPORT
Under
FCC 15 Subpart B

Report Reference No. ..... :	EA1710108F 02001
Engineer (name + signature) ..... :	Wite Chen
Approved by (name + signature) ..... :	Fred Zhu
Date of issue ..... :	Nov. 24, 2017
Testing Laboratory ..... :	Dong Guan Anci Electronic Technology Co., Ltd.
Address ..... :	1-2 Floor, Building A, No.11, Headquarters 2 Road, Songshan Lake Hi-tech Industrial Development Zone, Dongguan City, Guangdong Pr., China.
Applicant's name ..... :	Dongguan Haitonglihe Industrial Co., Ltd
Address ..... :	3F, Building A, No. 5 of Cuijing Street, Baiguodong Communit, Zhangmutou Town, Dongguan City, Guangdong Province, P.R., China
Manufacturer ..... :	Dongguan Haitonglihe Industrial Co., Ltd
Address ..... :	3F, Building A, No. 5 of Cuijing Street, Baiguodong Communit, Zhangmutou Town, Dongguan City, Guangdong Province, P.R., China
Test specification:	
Test item description ..... :	Car charger
Trade Mark ..... :	N/A
Model/Type reference ..... :	QK505,QK505L,GM605,GM605L,HW505
Ratings ..... :	Input rating: DC 10-32V, 3.5A Output rating: DC 5V,2.4A Max

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1 GENERAL INFORMATION
1.1 CERTIFICATE

Testing Laboratory.....:	DongGuan Anci Electronic Technology Co., Ltd.
Address .....:	1-2 Floor, Building A, No.11, Headquarters 2 Road, Songshan Lake Hi-tech Industrial Development Zone, Dongguan City, Guangdong Pr., China.
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Manufacturer .....:	Dongguan Haitonglihe Industrial Co., Ltd
Address……:	3F, Building A, No. 5 of Cuijing Street, Baiguodong Communit, Zhangmutou Town, Dongguan City, Guangdong Province, P.R., China
Factory……:	Dongguan Haitonglihe Industrial Co., Ltd
Address……:	3F, Building A, No. 5 of Cuijing Street, Baiguodong Communit, Zhangmutou Town, Dongguan City, Guangdong Province, P.R., China
Test specification:	
Test item description.....:	Car charger
Trade Mark .....:	N/A
Model/Type reference .....:	QK505,QK505L,GM605,GM605L,HW505
Test Sample……..:	QK505
Ratings .....:	Input rating: DC 10-32V, 3.5A Output rating: DC 5V,2.4A Max
Standards .....:	47 CFR FCC Part 15 Subpart B: 2016 ANSI C63.4: 2014

The device described above was tested by Dong Guan Anci Electronic Technology Co., Ltd. to determine the maximum emission levels emanated from the device and severity levels of the device endure and its performance criterion. The measurement results are contained in this test report and Dong Guan Anci Electronic Technology Co., Ltd. assumes full responsibility for the accuracy and completeness of these measurements. This report shows the EUT is technically compliance with the above official standards.

This report applies to the above sample only and shall not be reproduced in part without written approval of Dong Guan Anci Electronic Technology Co., Ltd.

1.2 GENERAL PRODUCT INFORMATION

The equipment models QK505,QK505L,GM605,GM605L,HW505 are CAR CHARGE for the use in information technology equipment.

1.3. NORMATIVE REFERENCES

[1] ANSI C63.4:2014 American National Standard for Methods of Measuring of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

[2] FCC 47 CFR Part 2 General Rules and Regulations

[3] FCC 47 CFR Part 15 Radio Frequency Devices (Subpart B)

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

Emission				
Standard	Test Item	Limit	Judgment	Remark
FCC Part 15B	Conducted Emission	Class B	N/A	
	Radiated Emission	Class B	PASS	

2.1 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %.

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U，(dB)	NOTE
C01	ANSI	150 KHz ~ 30MHz	2.54	

B. Radiated Measurement :

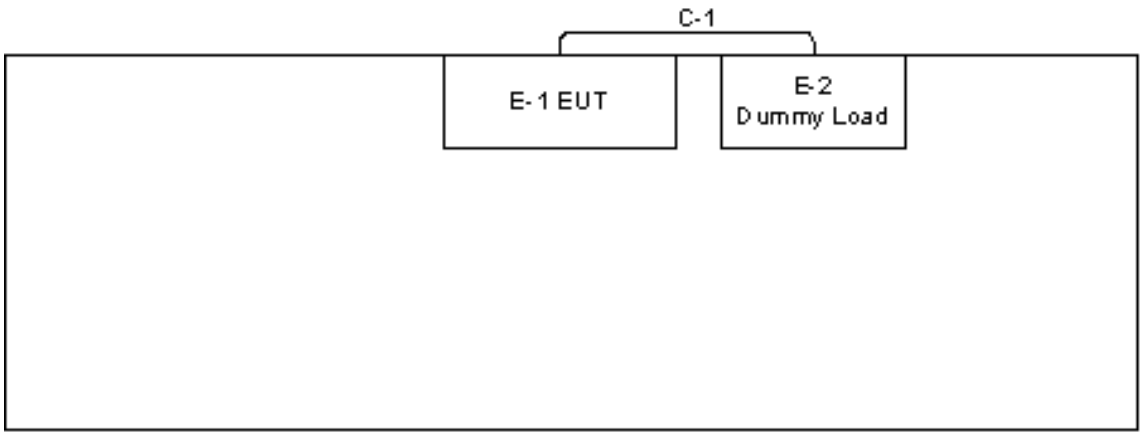
Test Site	Method	Measurement Frequency Range	Ant. H / V	U，(dB)	NOTE
OS02	ANSI	30MHz ~ 200MHz	V	3.0	
		30MHz ~ 200MHz	H	3.0	
		200MHz ~ 1,000MHz	V	3.0	
		200MHz ~ 1,000MHz	H	3.0	

2.2 DESCRIPTION OF TEST MODES

Conducted Emission Test	
Pretest Mode	Description
Mode 1	N/A

For Radiated Test	
Final Test Mode	Description
Mode 1	Full Load

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



C-1 Power Cable

3. CONDUCTED EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 LIMITS OF CONDUCTED EMISSION (MAINS PORT) (Frequency Range 150KHz-30MHz)

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

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.

3.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-669	2018-06-23
2	Pulse Limiter	ROHDE&SCHWARZ	ESH3-Z2	101661	2018-06-04
3	Test Cable	N/A	C01	N/A	2018-06-04
4	EMI Test Receiver	ROHDE&SCHWARZ	ESCI	101358	2018-06-07

Remark: ” N/A” denotes No Model No. , Serial No. or No Calibration specified.

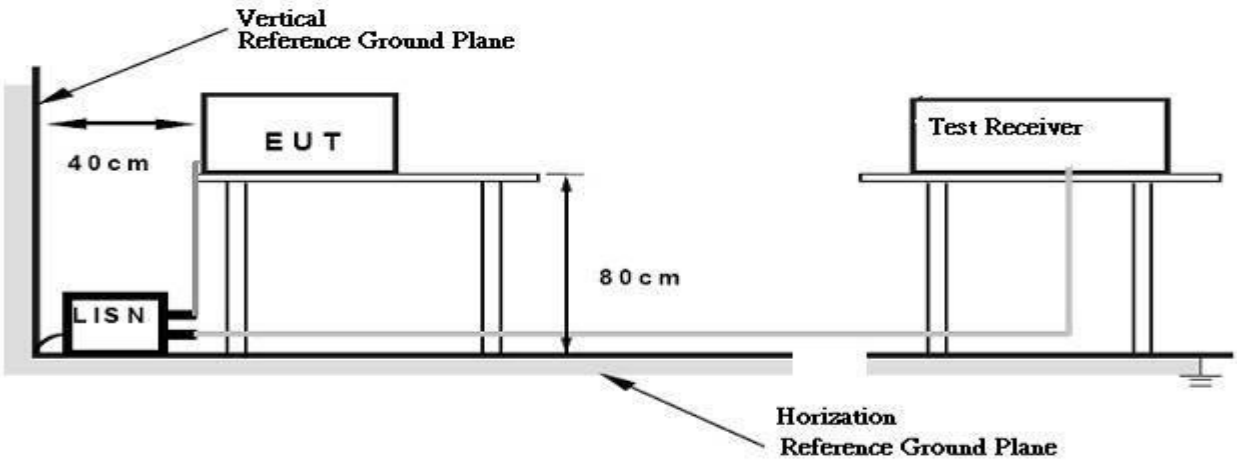
3.1.3 TEST PROCEDURE

The EUT is put on the table that is 0.8m high above the ground and at least away from other Metallic surface 0.4m. The EUT is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohms coupling impedance for the testing equipment; and the peripheral equipment powers form other L.I.S.N. Please refer to the block diagram of the test setup and photographs. Both sides of AC line (Line & Neutral) are checked for maximum conducted interference. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables must be changed according to FCC part 15 B.
The bandwidth of the field strength meter (R&S Test Receiver ESCI) is set at 120 KHz.
The frequency range from 150KHz to 30MHz is checked. The details of test modes are listed as follows, and the test data has been listed in section **3.1.7**

3.1.4 DEVIATION FROM TEST STANDARD

No deviation

3.1.5 TEST SETUP



3.1.6 EUT OPERATING CONDITIONS

The EUT exercise program used during radiated and/or conducted emission measurement was designed to exercise the various system components in a manner similar to a typical use.

3.1.7 TEST RESULTS

No applicable to DC supply product.

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT (Below 1000MHz)

Frequency MHz	Class A (at 3m)	Class B (at 3m)
	dBuV/m	dBuV/m
30 ~ 88	49.0	40.0
88 ~ 216	53.5	43.5
216 ~ 960	56.4	46.0
960 ~ 1000	59.5	54.0

Notes:

(1) The limit for radiated test was performed according to as following: FCC PART 15B

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (GHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000MHz	79.5	59.5	74.0	54.0

Notes:

(1) The limit for radiated test was performed according to FCC PART 15B.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5^{th} harmonic of the highest frequency or 40 GHz, whichever is lower

3.2.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Log-Bicon Antenna	SCHWARZBECK MESS	VULB 9163	9163-588	2018-06-05
2	Test Cable	N/A	10M_OS01	N/A	2018-06-04
3	Test Cable	N/A	C01-1/-2	N/A	2018-06-04
4	Pre-Amplifier	HP	8447D	N/A	2018-06-04
5	Spectrum Analyzer	Agilent	E4407B	N/A	2018-06-04
6	Test Receiver	ROHDE&SCHWARZ	ESVD	832497/002	2018-06-07
7	Antenna Mast	N/A	N/A	N/A	N/A
8	Turn Table	N/A	N/A	N/A	N/A
9	Positioning Controller	Max-Full Antenna Corp.	MF7802	N/A	N/A

Remark: ” N/A” denotes No Model No. / Serial No. and No Calibration specified.

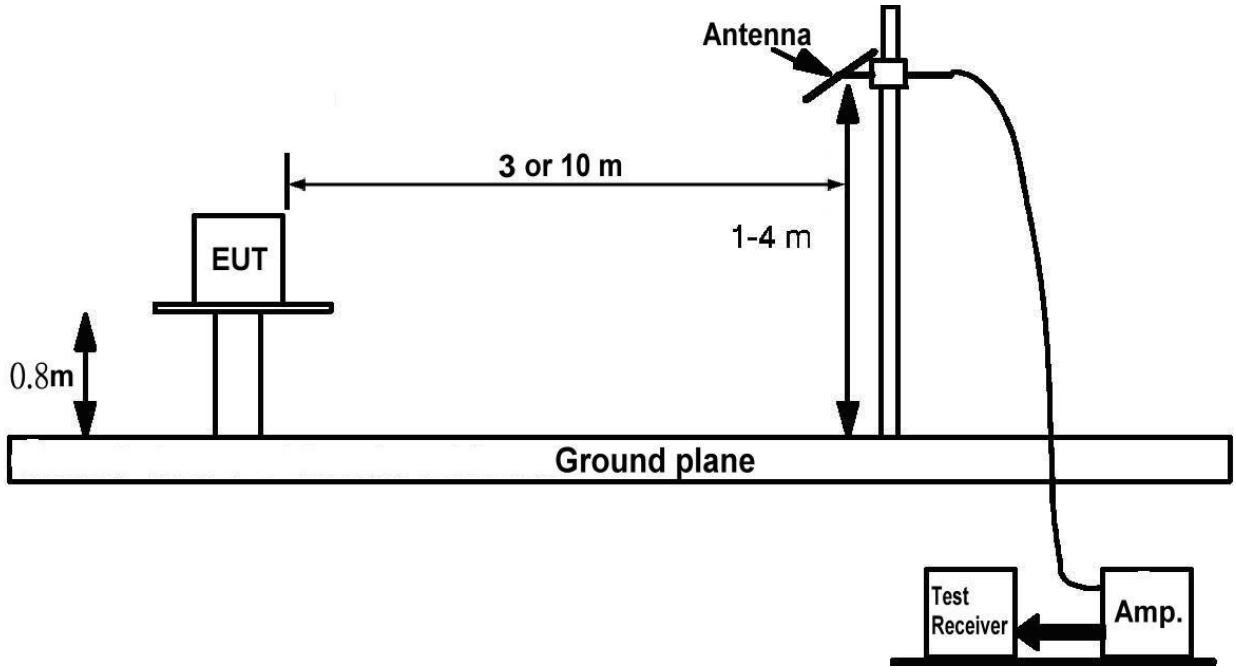
3.2.3 TEST PROCEDURE

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m or 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.4 DEVIATION FROM TEST STANDARD

No deviation

3.2.5 TEST SETUP



3.2.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 3.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.7 TEST RESULTS

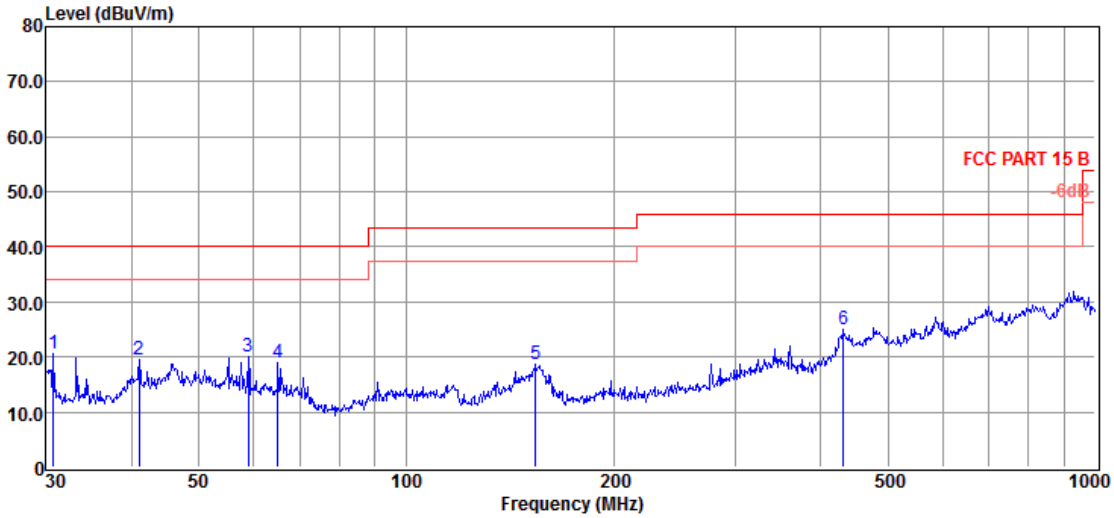
EUT：	Car Charger	**Model No. ：**	QK505
Temperature：	24.5℃	**Relative Humidity：**	55 %
Pressure：	1008 hPa	**Test Power ：**	DC12V, DC24V
Test Mode ：	Full Load		

Remark：

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Detector or Peak Detector.
(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
(3) Measuring frequency range from 30MHz to 1000MHz.
(4) If the peak scan value lower limit more than 20dB, then this signal data does not how in table.

Radiated Emission Test Result

Test Site	: 966 Chamber		
Test Date	: 2017-11-22	**Tested By**	: Grant
EUT	: Car Charger	**Model Number**	: QK505
Power Rating	: DC 12V	**Test Mode**	: Full Load
Condition	: Temp:20℃,Humi:52%	**Antenna/Distance**	: VULB9163-1/(3m)
Memo	:		

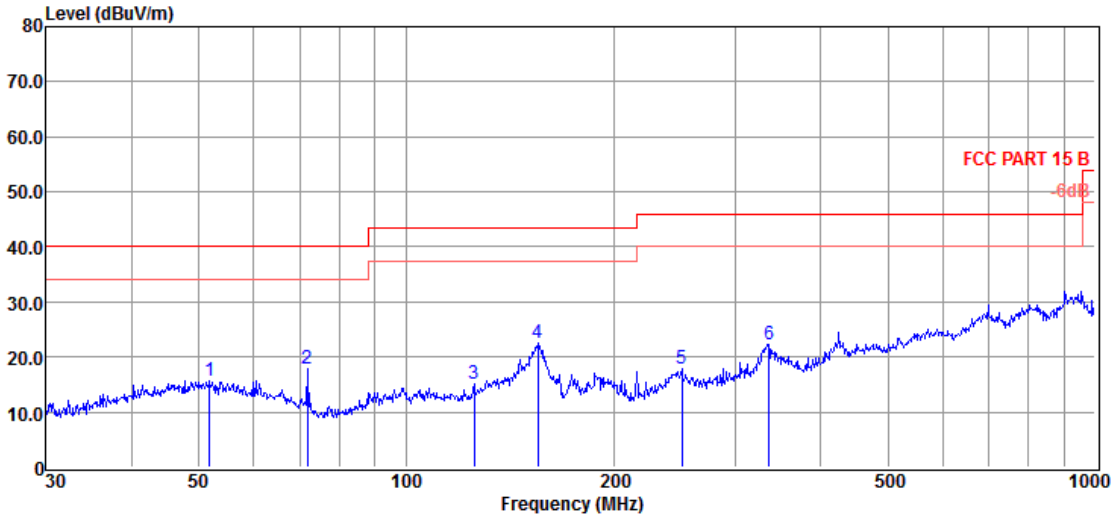


Item (Mark)	Freq (MHz)	Read Level (dBμV)	Factor dB	Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	30.75	34.11	-13.55	20.56	40.00	-19.44	Peak	VERTICAL
2	40.99	30.31	-10.82	19.49	40.00	-20.51	Peak	VERTICAL
3	59.03	30.93	-10.96	19.97	40.00	-20.03	Peak	VERTICAL
4	65.11	30.38	-11.51	18.87	40.00	-21.13	Peak	VERTICAL
5	154.28	32.71	-13.95	18.76	43.50	-24.74	Peak	VERTICAL
6	431.03	29.52	-4.38	25.14	46.00	-20.86	Peak	VERTICAL

Note: 1. Result Level = Read Level + Factor
2. If PK Result complies with QP limit, QP Result is deemed to comply with QP limit

Radiated Emission Test Result

Test Site	: 966 Chamber		
Test Date	: 2017-11-22	**Tested By**	: Grant
EUT	: Car Charger	**Model Number**	: QK505
Power Rating	: DC 12V	**Test Mode**	: Full Load
Condition	: Temp:20℃,Humi:52%	**Antenna/Distance**	: VULB9163-1/(3m)
Memo	:		

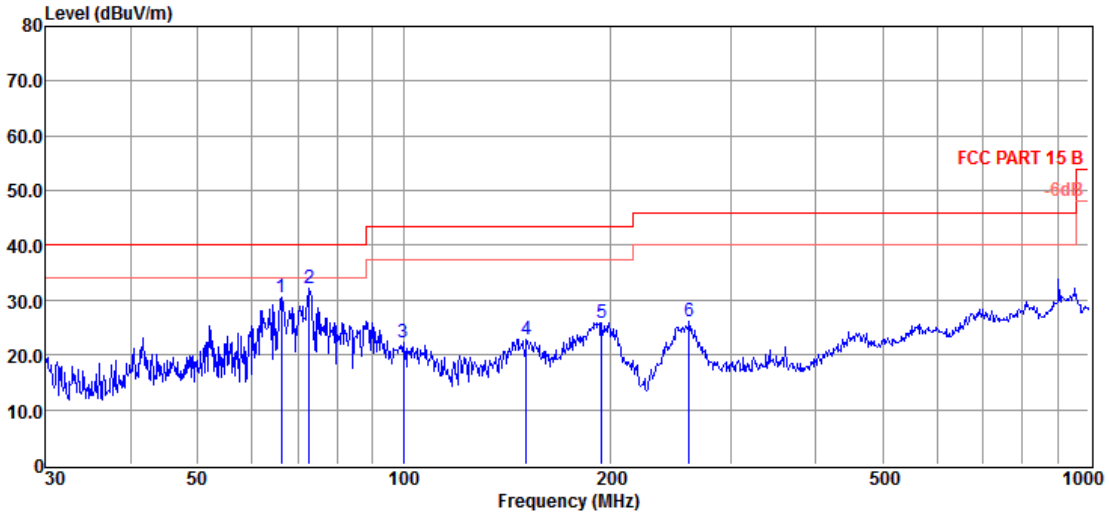


Item (Mark)	Freq (MHz)	Read Level (dBμV)	Factor dB	Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	51.84	25.68	-9.91	15.77	40.00	-24.23	Peak	HORIZONTAL
2	71.83	31.83	-14.00	17.83	40.00	-22.17	Peak	HORIZONTAL
3	125.45	28.56	-13.47	15.09	43.50	-28.41	Peak	HORIZONTAL
4	155.36	36.35	-13.89	22.46	43.50	-21.04	Peak	HORIZONTAL
5	251.18	26.91	-9.03	17.88	46.00	-28.12	Peak	HORIZONTAL
6	336.04	28.78	-6.55	22.23	46.00	-23.77	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Factor
2. If PK Result complies with QP limit, QP Result is deemed to comply with QP limit

Radiated Emission Test Result

Test Site	: 966 Chamber		
Test Date	: 2017-11-22	**Tested By**	: Grant
EUT	: Car Charger	**Model Number**	: QK505
Power Rating	: DC 24V	**Test Mode**	: Full Load
Condition	: Temp:20℃,Humi:52%	**Antenna/Distance**	: VULB9163-1/(3m)
Memo	:		

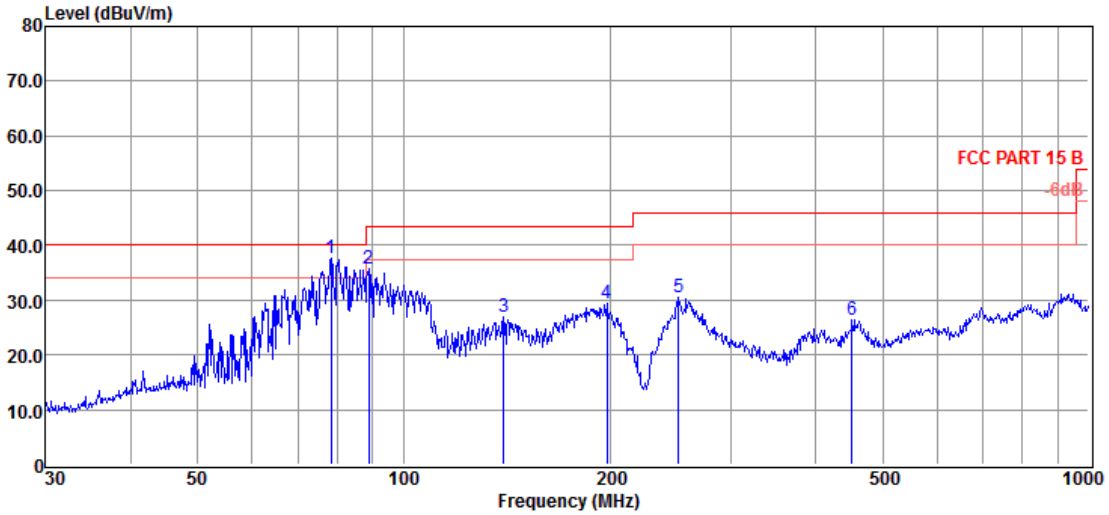


Item (Mark)	Freq (MHz)	Read Level (dBμV)	Factor dB	Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	66.27	42.26	-11.82	30.44	40.00	-9.56	Peak	VERTICAL
2	72.85	46.52	-14.27	32.25	40.00	-7.75	Peak	VERTICAL
3	99.88	32.91	-10.56	22.35	43.50	-21.15	Peak	VERTICAL
4	151.07	37.05	-14.11	22.94	43.50	-20.56	Peak	VERTICAL
5	194.45	36.99	-11.02	25.97	43.50	-17.53	Peak	VERTICAL
6	261.06	34.77	-8.76	26.01	46.00	-19.99	Peak	VERTICAL

Note: 1. Result Level = Read Level + Factor
2. If PK Result complies with QP limit, QP Result is deemed to comply with QP limit

Radiated Emission Test Result

Test Site	: 966 Chamber		
Test Date	: 2017-11-22	**Tested By**	: Grant
EUT	: Car Charger	**Model Number**	: QK505
Power Rating	: DC 24V	**Test Mode**	: Full Load
Condition	: Temp:20℃,Humi:52%	**Antenna/Distance**	: VULB9163-1/(3m)
Memo	:		



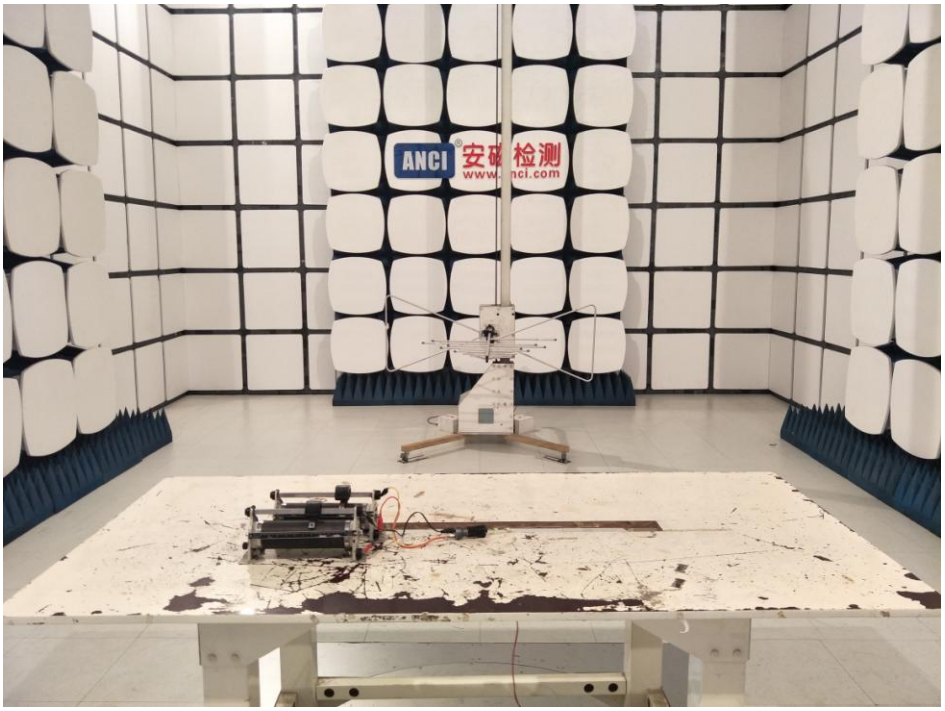
Item (Mark)	Freq (MHz)	Read Level (dBμV)	Factor dB	Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	78.41	52.56	-14.90	37.66	40.00	-2.34	Peak	HORIZONTAL
2	88.96	48.24	-12.57	35.67	43.50	-7.83	Peak	HORIZONTAL
3	139.85	41.33	-14.32	27.01	43.50	-16.49	Peak	HORIZONTAL
4	197.89	40.15	-10.75	29.40	43.50	-14.10	Peak	HORIZONTAL
5	252.06	39.46	-9.00	30.46	46.00	-15.54	Peak	HORIZONTAL
6	451.14	30.66	-4.17	26.49	46.00	-19.51	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Factor
2. If PK Result complies with QP limit, QP Result is deemed to comply with QP limit

4. ATTACHMENT

4.1. EUT TEST PHOTO

Radiated Measurement Photo



4.2. EUT PRODUCT PHOTO

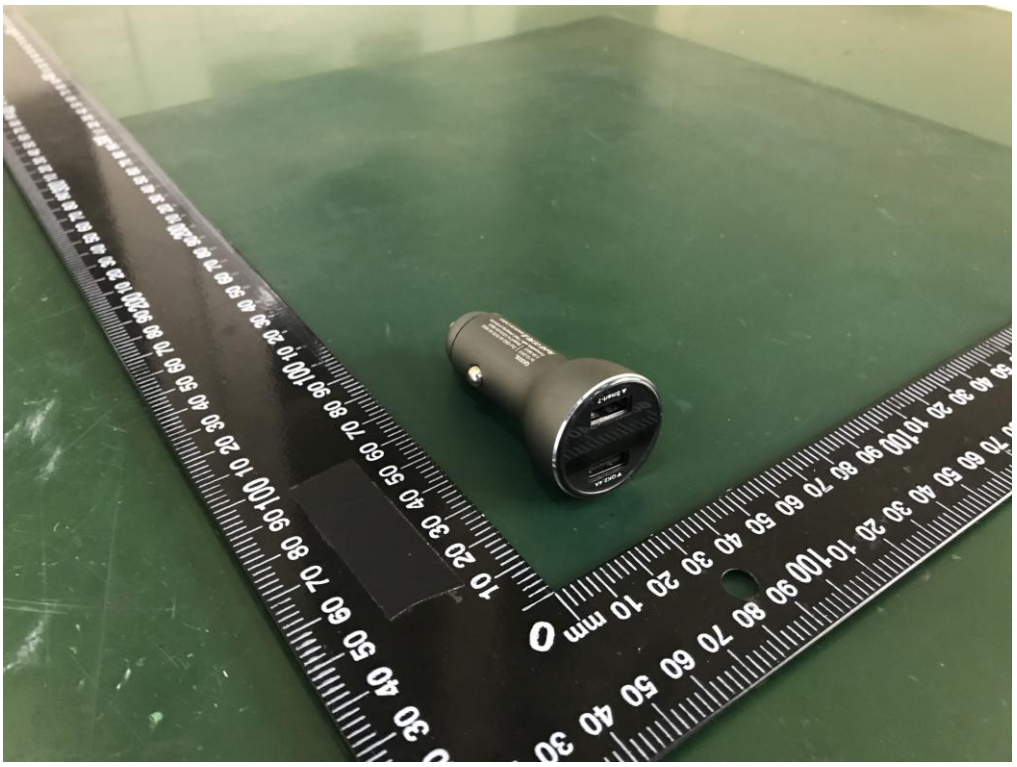


Figure 1 Overall View of unit

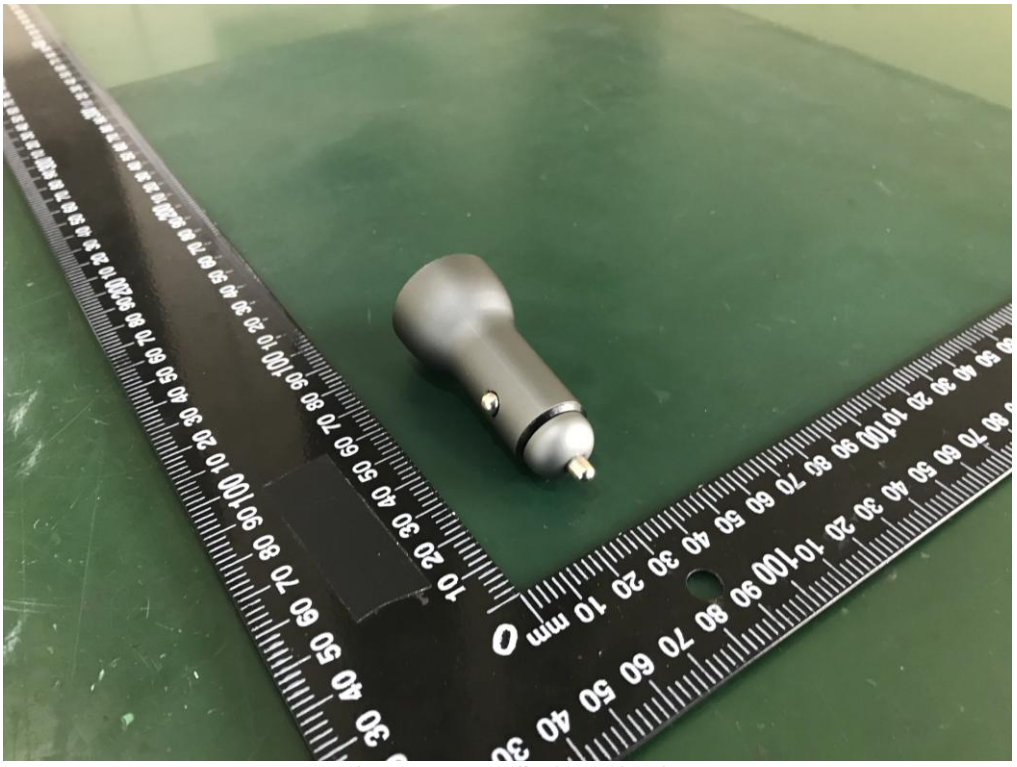


Figure 2 Overall View of unit

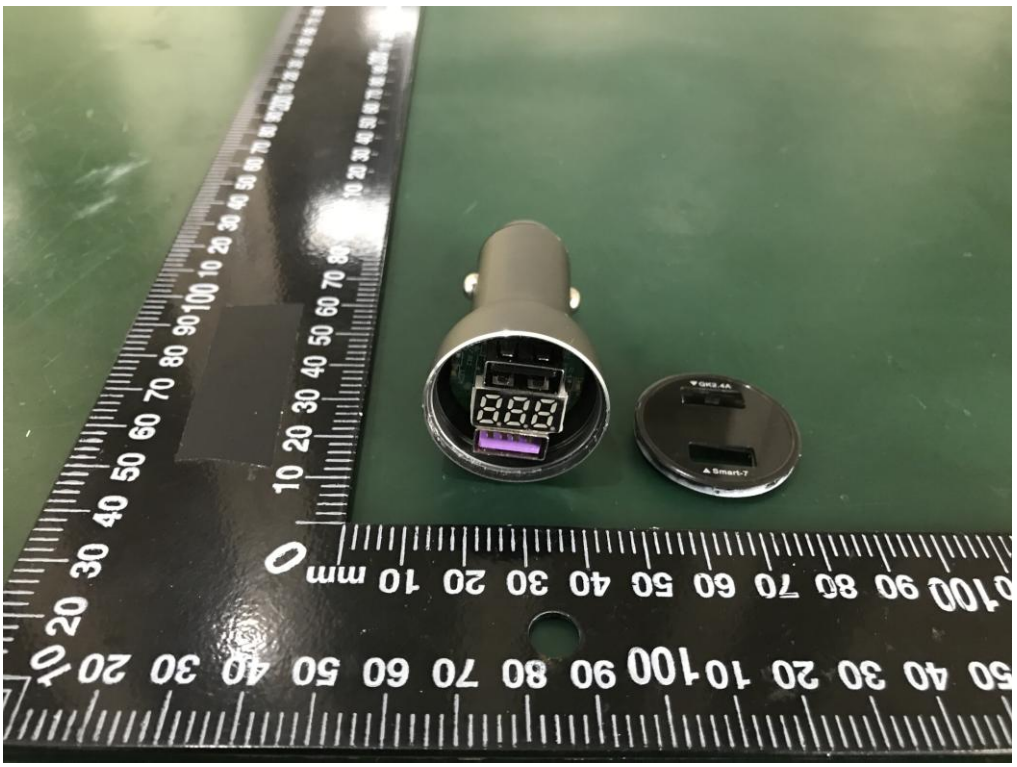


Figure 3 Inside View of unit

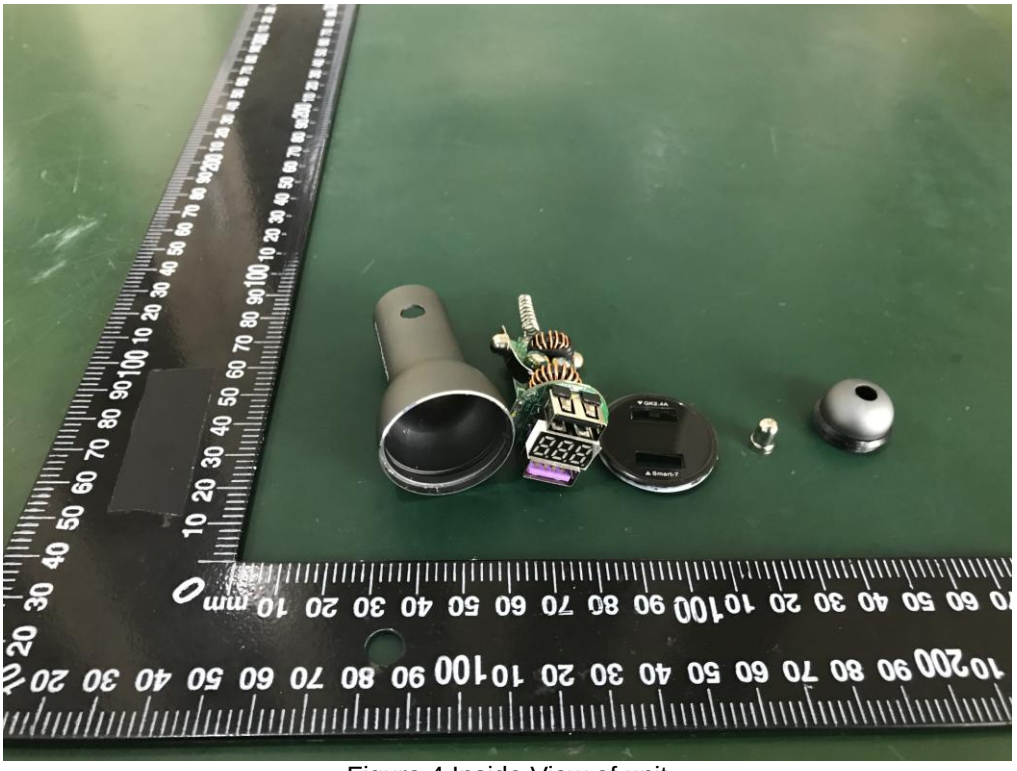


Figure 4 Inside View of unit

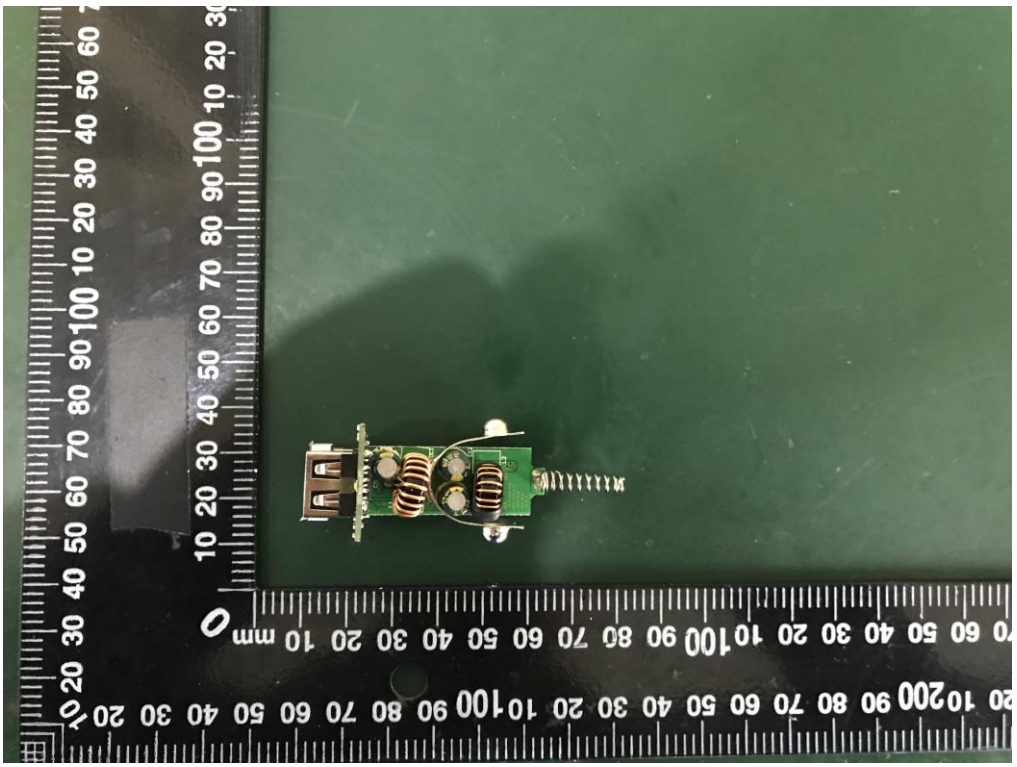


Figure 5 Top view of PCB

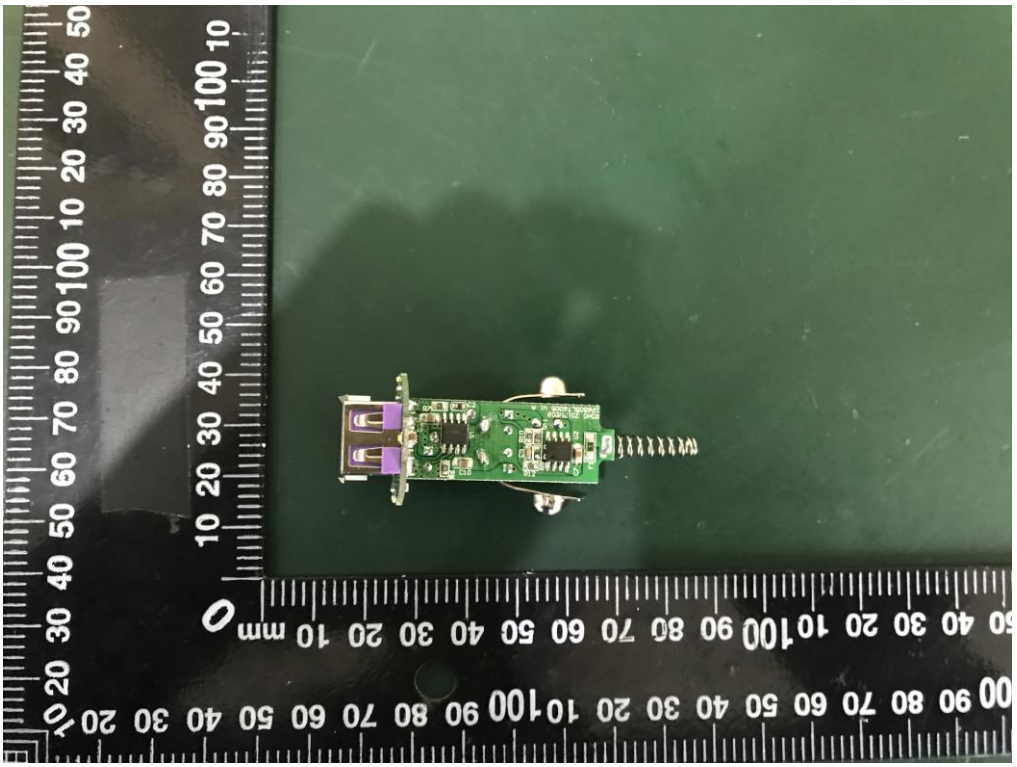


Figure 6 Bottom view of PCB