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Shenzhen Branch

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TEST REPORT

Application No.: SZEM1710010744CR
Applicant:
Address of Applicant:

Manufacturer:
Address of Manufacturer:

Factory:
Address of Factory:

Equipment Under Test (EUT):

EUT Name:	WIRELESS CHARGER, Wireless charging pad with quick charger
Model No.:	AC51100S, AC52100S, 5458-2, P308.96, OMWLAC52BK ♣
♣	Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade mark:	Please refer to section 2
Standards:	ETSI EN 303 417 V1.1.1
Date of Receipt:	2017-10-19
Date of Test:	2017-11-09 to 2017-11-15
Date of Issue:	2017-11-17
Test Result :	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.

Jack Zhang
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.
If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2017-11-17		Original

Authorized for issue by:				
				
		Peter Geng /Project Engineer		
				
		Eric Fu /Reviewer		

2 Test Summary

Radio Spectrum Matter Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Operating frequency ranges	ETSI EN 303 417 V1.1.1	ETSI EN 303 417 Clause 6.2	ETSI EN 303 417 Clause 4.3.3	Pass
Transmitter H-field requirements	ETSI EN 303 417 V1.1.1	ETSI EN 303 417 Clause 6.2	ETSI EN 303 417 Clause 4.3.4	Pass
WPT system unwanted radiated emissions	ETSI EN 303 417 V1.1.1	ETSI EN 303 417 Clause 6.2	ETSI EN 303 417 Clause 4.3.5	Pass
Transmitter out of band (OOB) emissions	ETSI EN 303 417 V1.1.1	ETSI EN 303 417 Clause 6.2	ETSI EN 303 417 Clause 4.3.6	Pass
Receiver blocking	ETSI EN 303 417 V1.1.1	ETSI EN 303 417 Clause 6.3.2	ETSI EN 303 417 Clause 4.4.2.1	Pass
The device is a transmitter so the rx test item is not applicable				

Remark:

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radiated Frequency.

CH: In this whole report CH means channel.

Volt: In this whole report Volt means Voltage.

Temp: In this whole report Temp meansTemperature.

Humid: In this whole report Humid means humidity.

Press: In this whole report Press means Pressure.

N/A: In this whole report not application

Declaration of EUT Family Grouping:

Model No.: AC51100S, AC52100S, 5458-2, P308.96, OMWLAC52BK

Only the model AC51100S was tested, since the electrical circuit design, PCB layout, components used and internal wiring were identical for the above models, only different on model number and appearance.

Trade mark	Model number	Description
DNS, LBT, IHOME Owltech, nexxtech, iHope ATIVA® Leplus, VIBE, AmazonBasics	AC52100S	 rectangles appearance
	AC51100S	 Square appearance
Tzumi	5458-2	rectangles appearance
Xindao	P308.96	Square appearance
omars	OMWLAC52BK	rectangles appearance

3 Contents

4 General Information

4.1 Details of E.U.T.

Frequency Operation: 115-160kHz
Antenna type: Loop antenna
Power supply: Input: DC 5V/3A, DC 9V/2A
Output: DC 5V/1A, DC 9V/1.1A
Remark: Tests were conducted in both power supply modes and only the worst case(DC 9V/2A) was reported.

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Micro USB Cable	PHILIPS	SWR2101	REF. No.SEA0700
AC charger	provided by client	N/A	
E-Charging	provided by client	DC 9V/1.1A, DC 5V/2A	

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.25 x 10-8
2	Duty cycle	0.37%
3	Occupied Bandwidth	3%
4	RF conducted power	0.75dB
5	RF power density	2.84dB
6	Conducted Spurious emissions	0.75dB
7	RF Radiated power	4.5dB (below 1GHz)
8	Radiated Spurious emission test	4.5dB (30MHz-1GHz)
9	Temperature test	1℃
10	Humidity test	3%
11	Supply voltages	1.5%
12	Time	3%

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.5 Test Facility

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

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

- **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

5 Equipment List

RF conducted test						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date (yyyy-mm-dd)**	**Cal. Due date (yyyy-mm-dd)**
1	DC Power Supply	ZhaoXin	PS-3005D	SEM011-05	2017-09-27	2018-09-26
2	Spectrum Analyzer (20Hz-43GHz)	Rohde & Schwarz	FSU43	SEM004-08	2017-04-14	2018-04-13
3	Signal Generator (9kHz-40GHz)	KEYSIGHT	N5173B	SEM006-05	2017-09-27	2018-09-26
4	Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.6	N/A	N/A	N/A
5	Coaxial Cable	SGS	N/A	SEM031-01	2017-07-13	2018-07-12
6	Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A

RE in Chamber						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date (yyyy-mm-dd)**	**Cal. Due date (yyyy-mm-dd)**
1	10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2017-05-10	2018-05-09
2	EMI Test Receiver (9k-7GHz)	Rohde & Schwarz	ESR	SEM004-03	2017-04-14	2018-04-13
3	Trilog-Broadband Antenna(30M-1GHz)	Schwarzbeck	VULB9168	SEM003-18	2016-06-29	2019-06-28
4	Pre-amplifier (9kHz-1GHz)	Sonoma Instrument Co	310N	SEM005-04	2017-06-05	2018-06-04
5	Loop Antenna (9kHz-30MHz)	ETS-Lindgren	6502	SEM003-08	2017-08-22	2020-08-21
6	Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
7	Coaxial Cable	SGS	N/A	SEM029-01	2017-07-13	2018-07-12

General used equipment						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date (yyyy-mm-dd)**	**Cal. Due date (yyyy-mm-dd)**
1	Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2017-09-29	2018-09-28
2	Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2017-09-29	2018-09-28
3	Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2017-09-29	2018-09-28
4	Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2017-04-18	2018-04-17

6 Radio Spectrum Matter Test Results

6.1 Operating frequency ranges

Test Requirement ETSI EN 303 417 Clause 4.3.3.1
Test Method: ETSI EN 303 417 Clause 6.2
Limit: ETSI EN 303 417 Clause 4.3.3.3

6.1.1 E.U.T. Operation

Operating Environment:
Temperature: 23.0 °C Humidity: 56 % RH Atmospheric Pressure: 1020 mbar
Test mode o:TX mode_Keep the EUT in transmitting mode

6.1.2 Measurement Data

Measurement Conditions		f_L(kHz)	f_H(kHz)	Limit (kHz)	Result
T_{normal} (24°C)	V_{norm}: 9.0V dc	114.898	159.475	100-300	PASS

6.2 H-field requirements

Test Requirement ETSI EN 303 417 Clause 4.3.4.1
Test Method: ETSI EN 303 417 Clause 6.2
Measurement Distance: 10m
Limit: ETSI EN 303 417 Clause 4.3.4.3

Table 3: H-field limits

Frequency range [MHz]	H-field strength limit [dBµA/m at 10 m]	Comments
0,019 ≤ f < 0,021	72	
0,059 ≤ f < 0,061	69,1 descending 10 dB/dec above 0,059 MHz	See note 1
0,079 ≤ f < 0,090	67,8 descending 10 dB/dec above 0,079 MHz	See note 2
0,100 ≤ f < 0,119	42	
0,119 ≤ f < 0,135	66 descending 10 dB/dec above 0,119 MHz	See note 1
0,135 ≤ f < 0,140	42	
0,140 ≤ f < 0,1485	37,7	
0,1485 ≤ f < 0,30	-5	
6,765 ≤ f < 6,795	42	
NOTE 1: Limit is 42 dBµA/m for the following spot frequencies: 60 kHz ± 250 Hz and 129,1 kHz ± 500 Hz. NOTE 2: At the time of preparation of the present document the feasibility of increased limits for high power wireless power transmission systems to charge vehicles [i.4] was prepared. New specific requirements for such systems (e.g. higher H-field emission limits in the 79 - 90 kHz band) will be reflected within a future revision of the present document.		

6.2.1 E.U.T. Operation

Operating Environment:
Temperature: 25.0 °C Humidity: 55 % RH Atmospheric Pressure: 1020 mbar
Test mode o:TX mode_Keep the EUT in transmitting mode

6.2.2 Measurement Data

Frequency	Measured Level(dBµA/m)	Limit(dBµA/m)	Result
139.1kHz	-29.41	42	Pass

6.3 Transmitter spurious emissions

Test Requirement ETSI EN 303 417 Clause 4.3.5
Test Method: ETSI EN 300 330 Clause 6.2
Measurement Distance: Below 30MHz: 10m;
30MHz~1GHz: 3m

Limit:

Table 4

State (see note)	Frequency 9 kHz ≤ f < 10 MHz	Frequency 10 MHz ≤ f < 30 MHz
Operating	27 dBµA/m at 9 kHz descending 10 dB/dec	-3,5 dBµA/m
Standby	5,5 dBµA/m at 9 kHz descending 10 dB/dec	-25 dBµA/m
NOTE: "Operating" means mode 2, 3 and 4 according to Table 2; "standby" means mode 1 according to Table 2.		

The power of any radiated spurious emission between 30 MHz and 1 GHz shall not exceed the values given in Table 5.

Table 5

State (see note)	47 MHz to 74 MHz 87,5 MHz to 118 MHz 174 MHz to 230 MHz 470 MHz to 790 MHz	Other frequencies between 30 MHz to 1 000 MHz
Operating	4 nW	250 nW
Standby	2 nW	2 nW
NOTE: "Operating" means mode 2, 3 and 4 according to Table 2; "standby" means mode 1 according to Table 2.		

6.3.1 E.U.T. Operation

Operating Environment:
Temperature: 25.0 °C Humidity: 55 % RH Atmospheric Pressure: 1020 mbar
Test mode o:TX mode_Keep the EUT in transmitting mode

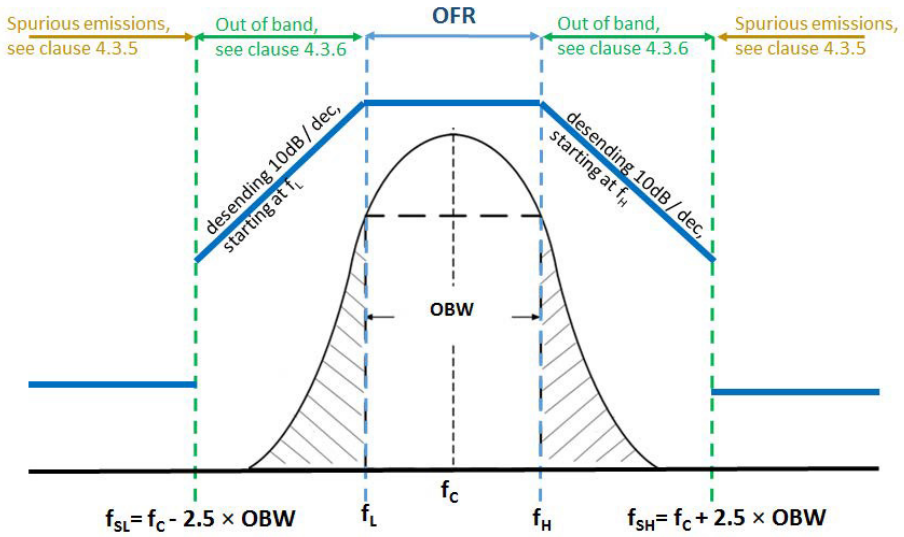
6.3.2 Measurement Data

EUT operating with normal modulation			
Freq (MHz)	Spurious Emission Level(dBμA/m)	Limit(dBμA/m)	Over limit
0.01004	-1.9	5.03	-6.93
0.01676	-11.47	2.81	-14.28
0.03156	-17.35	0.07	-17.42
0.06652	-25.44	-3.16	-22.28
0.09617	-29.77	-4.75	-25.02
0.14021	-30.78	-6.38	-24.4
0.17491	-13.54	-7.34	-6.2
0.26025	-17.95	-9.06	-8.89
1.928	-32.39	-17.73	-14.66
5.836	-40.2	-22.52	-17.68
13.841	-46.74	-25	-21.74
27.562	-44.81	-25	-19.81

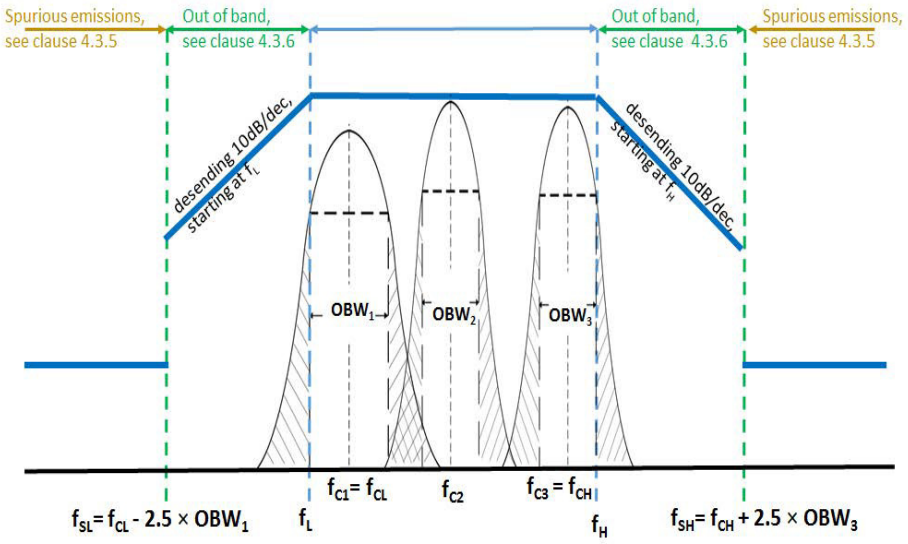
Freq (MHz)	Spurious Emission Level(dBm/m)	Limit_Line (dBm/m)	Over_Limit (dB)	Polaxis
46.995	-76.07	-36	-40.07	V
113.316	-74.39	-54	-20.39	V
147.404	-82.05	-36	-46.05	V
425.028	-80.66	-36	-44.66	V
663.473	-75.83	-54	-21.83	V
932.272	-71.01	-36	-35.01	V
47.492	-68.39	-54	-14.39	H
114.515	-73.23	-54	-19.23	H
179.386	-79.43	-54	-25.43	H
399.03	-80.24	-36	-44.24	H
636.134	-75.61	-54	-21.61	H
989.536	-71.6	-36	-35.6	H

6.4 Transmitter out of band (OOB) emissions

Test Requirement ETSI EN 303 417 Clause 4.3.6
Test Method: ETSI EN 300 330 Clause 6.2
Measurement Distance: Below 30MHz: 10m;
Limit:



Out of band and spurious domain of a single frequency WPT system



Out of band and spurious domain of a multi - frequency system (during one WPT system cycle time)

6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 25.0 °C Humidity: 55 % RH Atmospheric Pressure: 1020 mbar

Test mode o:TX mode_Keep the EUT in transmitting mode

6.4.2 Measurement Data

For the H-Field emissin is below the unwanted radiated emissions limit, the OOB test result complied with the OOB requirement.

6.5 Receiver blocking

Test Requirement ETSI EN 303 417 Clause 4.4.2

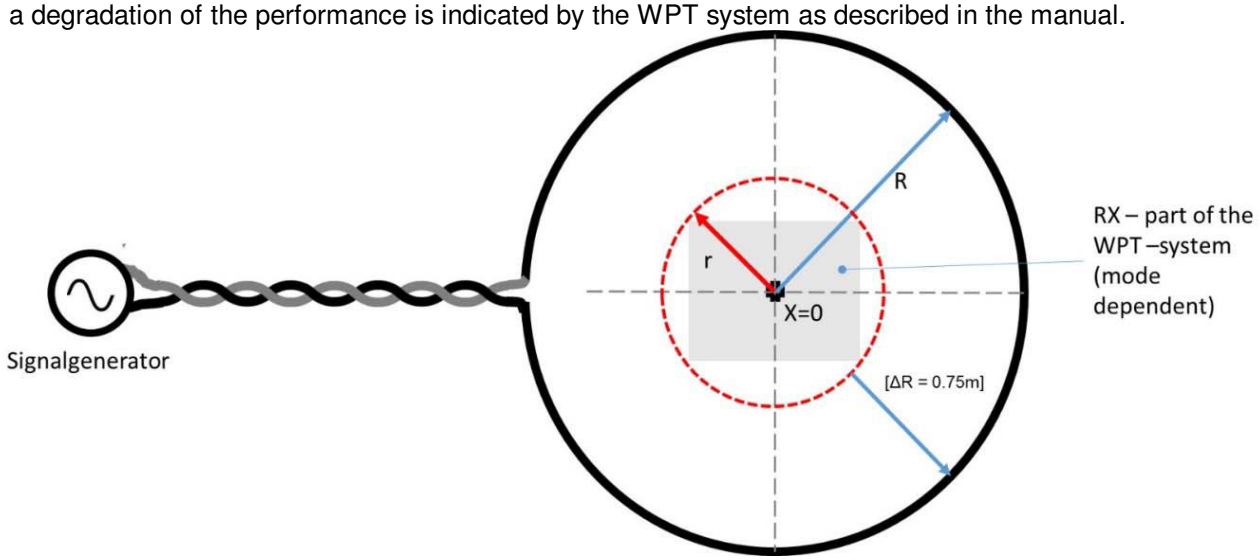
Test Method: ETSI EN 303 417 Clause 6.3.2
ETSI EN 303 417 Clause 4.4.2.3

Limit:

	In-band signal	OOB signal	Remote-band signal
Frequency	Centre frequency (f_c) of the WPT system (see clause 4.3.3)	$f = f_c \pm F$ (see note)	$f = f_c \pm 10 \times F$ (see note)
Signal level field strength at the EUT	72 dBµA/m	72 dBµA/m	82 dBµA/m
NOTE: F = OFR see clause 4.3.3.			

Wanted performance criteria:
For the purpose of the receiver performance tests, the WPT system shall produce an appropriate output under normal conditions as indicated below:
• use as intended without degradation of performance; or

• a degradation of the performance is indicated by the WPT system as described in the manual.



6.5.1 E.U.T. Operation

Operating Environment:

Temperature: 25.0 °C Humidity: 55 % RH Atmospheric Pressure: 1020 mbar

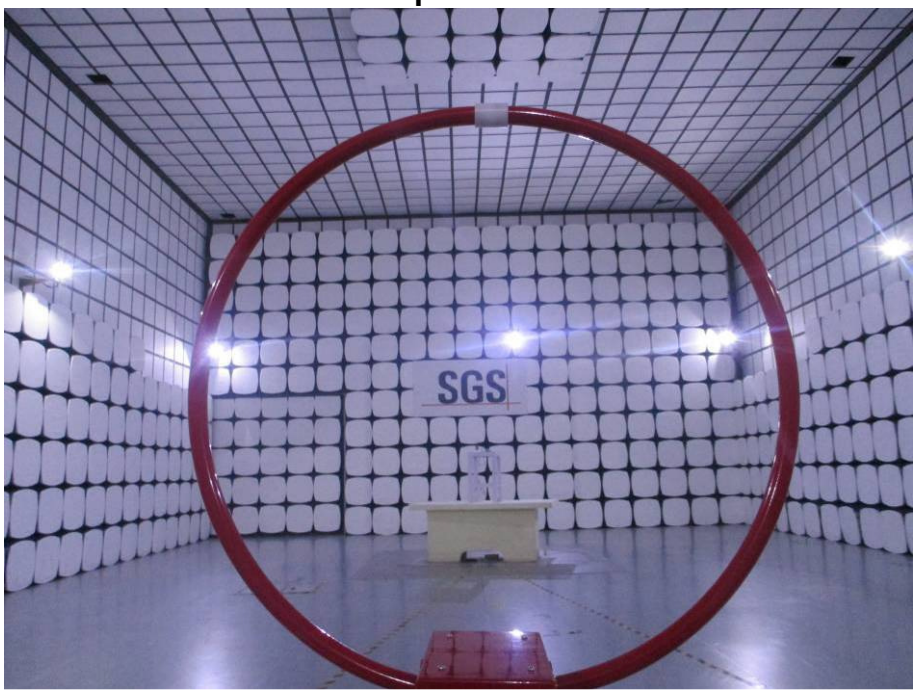
Test mode p:RX mode_Keep the EUT in receiving mode

6.5.2 Measueement Data

For each test frequency the "reaction" of the device be recorded and checked against the performance criterion. The WPT system meets the wanted performance criterion at all times, So the test is passed.

7 Photographs

7.1 Transmitter radiated spurious domain emission < 30 MHz Test Setup



7.2 EUT Constructional Details

Refer to Appendix A - Photographs of EUT Constructional Details for SZEM1710010744CR.

- End of the Report -