TEST REPORT

Applicant	Flashbay Electronics
Address	Blgd b & C Xi Feng Cheng IND Zone, No.2 FuYuan Road He Ping, Village, FuYong Town, ShenZhen, China

Manufacturer or Supplier	Flashbay Electronics
Address	Blgd b & C Xi Feng Cheng IND Zone, No.2 FuYuan Road He Ping, Village, FuYong Town, ShenZhen, China
Product	wireless charger
Brand Name	N/A
Model	Aero(AO)
Additional Model & Model Difference	Forest(FR), Loop(LP), See Items 2.1
Date of tests	Apr. 08, 2018 ~ Apr. 19, 2018

The submitted sample of the above equipment has been tested according to the requirements of the following standard:

☒ **AS/NZS 4268:2017**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Tested by Andy Zhu Project Engineer / EMC Department	Approved by Glyn He Supervisor / EMC Department
Andy	Date: May 09, 2018

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RC180408N021	Original release	May 09, 2018

1. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

Clause	Test Parameter	Remarks	Pass/Fail
	Transmitter Parameters		
6.3	Maximum EIRP	Applicable	Pass
6.4	Transmitter Spurious Emissions	Applicable	Pass
6.5	Emission Bandwidth	Applicable	Pass
6.6	Operating Frequency	Applicable	Pass
	Receiver Parameters		
7.2	Receiver Emissions	Not Applicable(Note)	N/A

Note: These requirements does not apply to receivers used in combination with permanently co-located transmitters continuously transmitting. In these cases the receivers will be tested together with the transmitter in operating mode

1.1. TEST INSTRUMENTS

FREQUENCY 9KHz-30MHz

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR7	101564	Jan. 18,18	Jan. 17,19
Active Loop Antenna	SCHWARZBECK	FMZB 1519B	1519B-045	May 31,17	May 30,18
Amplifier	Burgeon	BPA-530	100210	Apr. 05,18	Apr. 04,19
Test Software	ADT	ADT_Radiated _V8.7.07	N/A	N/A	N/A

NOTES: 1. The test was performed in 10m Chamber.
2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceableto CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

FREQUENCY 30MHz-1GHz

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU26	100005	Jun. 05,17	Jun. 04,18
EMI Test Receiver	Rohde&Schwarz	ESR7	101564	Jan. 18,18	Jan. 17,19
Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-555	Nov. 10, 17	Nov. 09, 18
Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-554	Dec. 10, 17	Dec. 09, 18
Preamplifier	EMCI	EMC1135	980378	Mar. 19,18	Mar. 18,19
Preamplifier	EMCI	EMC1135	980423	Mar. 19,18	Mar. 18,19
10m Semi-anechoic Chamber	CHANGLING	21.4m*12.1m* 8.8m	NSEMC006	Feb. 10,18	Feb. 09,19
Test Software	ADT	ADT_Radiated _V8.7.07	N/A	N/A	N/A

NOTES: 1. The test was performed in 966 Chamber
2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Sensor	Keysight	U2021XA	MY55060016	May 27,17	May 26,18
Power Sensor	Keysight	U2021XA	MY55060018	May 27,17	May 26,18
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 13, 17	Oct.12, 18
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.05,17	Sep. 04,18
Oscilloscope	Agilent	DSO9254A	MY51260160	Nov. 04,17	Nov. 03,18
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	Nov. 04,17	Nov. 03,18
Spectrum Analyzer	Keysight	N9020A	MY55400499	Apr. 05,18	Apr. 04,19
Signal Generator	Agilent	N5183A	MY50140980	Nov. 04,17	Nov. 03,18
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Dec.05, 17	Dec. 04, 19

NOTE:1. The test was performed in RF Oven room.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

1.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT:

PARAMETER	UNCERTAINTY
RF frequency	±1.1 x 10^{-8}
RF power, conducted	±0.34
RF power, radiated	± 3.2 dB
Temperature	± 0.4 °C
Humidity	± 3.1 %

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.3. MAXIMUM MEASUREMENT UNCERTAINTY

For the test methods, according to the present document the uncertainty figures shall be calculated according to the methods described in the TR 100 028 [3] and shall correspond to an expansion factor (coverage factor) k = 1,96 or k = 2(which provide confidence levels of respectively 95 % and 95,45 % in case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

Maximum measurement uncertainty

PARAMETER	UNCERTAINTY
RF frequency	±1 x 10^{-7}
RF power, conducted	±1
RF power, radiated	± 6 dB
Temperature	± 1 °C
Humidity	± 5 %

2. GENERAL INFORMATION

2.1. GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless Charger
MODEL NO.	Aero(AO)
ADDITIONAL MODELS	Forest(FR), Loop(LP)
NOMINAL VOLTAGE	Input: DC5V from USB Host Unit Output: DC5V 1A
OPERATING VOLTAGE RANGE	Vnom= 5V Vmin= 4.25V Vmax= 5V
OPERATING TEMPERATURE RNAGE	0^{o}C ~ +45^{o}C
MODULATION TYPE	FSK
OPERATING FREQUENCY	110KHz ~ 205KHz
OUTPUT POWER	-6.24 dBμA/m (Measured Max.)
ANTENNA TYPE	Coil Antenna
CABLE SUPPLIED	USB Line: Unshielded, Detachable 80cm
I/O PORTS	Refer to user's manual

NOTE:

1. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
2. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
3. Please refer to the EUT photo document (Reference No.: 180408N021) for detailed product photo.
4. Additional models Forest(FR), Loop(LP) are identical with the test model Aero(AO) except the appearance and model name for trading purpose.

2.2. DESCRIPTION OF TEST MODES

Test mode	TEST FREQUENCY	TEST MODE
1	122.621 KHz	Operating
2	175.344 KHz	Standby

2.2.1. TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	ERP/EIRP	OF	EB	SE<1G	SE<30M	
	√	√	√	√	√	DC 5V From Adapter

Where **EIRP**: Effective Isotropically Radiated Power (eirp) **SE**<1G: Spurious Emissions below 1GHz
OF: Operating Frequencies **SE**<30M: Spurious Emissions below 30MHz
EB: Emission bandwidth

MAXIMUM ERP/EIRP:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rate and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT configure mode	Tested Frequency	Modulation Type
1	122.621 KHz	FSK
2,	175.344 KHz	FSK

EMISSION BANDWIDTH:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rate and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT configure mode	Tested Frequency	Modulation Type
1	122.621 KHz	FSK
2,	175.344 KHz	FSK

OPERATING FREQUENCY:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rate and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT configure mode	Tested Frequency	Modulation Type
1	122.621 KHz	FSK
2,	175.344 KHz	FSK

TRANSMITTER/RECEIVER SPURIOUS EMISSIONS TEST:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rate and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT configure mode	Tested Frequency	Modulation Type
1	122.621 KHz	FSK
2,	175.344 KHz	FSK

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP/EIRP	25deg. C, 60%RH	DC5V from adapter	Robert Cheng
OF	25deg. C, 60%RH	DC5V from adapter	Robert Cheng
BE	21deg. C, 54%RH	DC5V from adapter	Robert Cheng
SE<1G	21deg. C, 54%RH	DC5V from adapter	Xin Peng
SE<30M	25deg. C, 55%RH	DC5V from adapter	Xin Peng

2.3. GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

AS/NZS 4268:2017

All test items have been performed and recorded as per the above standards.

2.4. DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Adapter	Apple	A1443	N/A	N/A
2	Iphone X	Apple	A1865	N/A	N/A
3	Mobile Phone	SUMSUNG	SM-G950FD	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1, 2, 3	N/A

3. TEST PROCEDURES AND RESUTLS

TRANSMITTER PARAMETERS

3.1 MAXIMUM ERP

3.1.1 LIMITS OF ERP

Frequency Range (MHz)	EIRP Limit	Magnetic Field Ftrength Limit @ 10 m
0.07~0.16	3 μW	20.65 dBuA/m
0.16~0.19	1 μW	15.88 dBuA/m

3.1.2 TEST PROCEDURES

Please refer to Subclause 6.2.4 of EN 300 330 V2.1.1 (2017-02).

3.1.3 DEVIATION FROM TEST STANDARD

No deviation.

3.1.4 TEST SETUP

The test setup has been constructed as the normal use condition. Controlling software (provided by manufacturer) has been activated to set the EUT on specific status.

3.1.5 TEST RESULTS

Mode1:operating

Frequency: 122.621KHz			H-field stength (dB μ A/m)		
Test Condition			level	Limit	Pass/Fail
T_{nom}(℃)	+20	V_{nom}(v)	-6.26	20.65	Pass
T_{min}(℃)	0	V_{min}(v)	-6.33	20.65	
		V_{max}(v)	**-6.24**	20.65	
T_{max}(℃)	+45	V_{min}(v)	-6.35	20.65	
		V_{max}(v)	-6.26	20.65	

Mode2:Standby

Frequency: 175.344KHz			H-field stength (dB μ A/m)		
Test Condition			level	Limit	Pass/Fail
T_{nom}(℃)	+20	V_{nom}(v)	-11.32	15.88	Pass
T_{min}(℃)	0	V_{min}(v)	-11.35	15.88	
		V_{max}(v)	-11.28	15.88	
T_{max}(℃)	+45	V_{min}(v)	-11.18	15.88	
		V_{max}(v)	-11.15	15.88	

3.2 TRANSMITTER SPURIOUS EMISSIONS

3.2.1 LIMITS OF SPURIOUS DOMAIN EMISSION LIMITS (<30MHz)

FREQUENCY RANGE	9 kHz ≤ f < 10MHz(at 10m)	10MHz ≤ f < 30MHz(at 10m)
Limit (Operating)	27 dBμA/m at 9kHz descending 3 dB/oct	-3.5 dBμA/m
	78.5 dBμV/m descending 3 dB/oct	48 dBμV/m
Limit (Standby)	5.5 dBμA/m at 9kHz descending 3 dB/oct	-25 dBμA/m
	57 dBμV/m descending 3 dB/oct	26.5 dBμV/m

3.2.2 LIMITS OF SPURIOUS DOMAIN EMISSION LIMITS (≥30MHz)

FREQUENCY RANGE	47MHz TO 74MHz 87.5MHz TO 118MHz 174MHz TO 230MHz 470MHz TO 790MHz	OTHER FREQUENCIES BELOW 1GHz
Limit (Operating)	4nW (–54dBm)	250nW (–36dBm)
Limit (Standby)	2nW (–57dBm)	2nW (–57dBm)

3.2.3 TEST PROCEDURES

Please refer to subclause 6.2.8 and 6.2.9 of EN 300 330 V2.1.1 (2017-02)

3.2.4 DEVIATION FROM TEST STANDARD

No deviation.

3.2.5 TEST SETUP

For the actual test configuration, please refer to the related Item in this test report (Photographs of the Test Configuration). The EUT was placed on the turn-table. Set the transmitter part of the EUT under transmitter condition continuously at specific channel frequency.

3.2.6 TEST RESULTS

SPURIOUS EMISSION FREQUENCY RANGE	9kHz ~ 30MHz	TEST MODE	Operating

SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Angle（°）**	**Level (dBμA/m)**	**Limit (dBμA/m)**	**Margin (dB)**
0.011	180	-6.00	26.25	-32.25
0.035	180	-5.28	21.18	-26.46
0.056	180	-18.42	19.21	-37.63
0.072	180	-20.25	18.12	-38.37
0.096	180	-23.73	16.93	-40.66
0.118	180	-11.32	16.04	-27.36
0.130	180	-26.10	15.61	-41.71
0.150	180	-13.44	15.00	-28.44
4.228	180	-26.74	0.29	-27.03
7.572	180	-26.02	-2.27	-23.75
11.452	180	-26.71	-3.50	-23.21
16.743	180	-26.36	-3.50	-22.86
21.691	180	-26.99	-3.50	-23.49
24.500	180	-26.01	-3.50	-22.51
0.011	90	-6.87	26.20	-33.07
0.035	90	-5.26	21.18	-26.44
0.045	90	-15.51	20.16	-35.67
0.065	90	-19.67	18.57	-38.24
0.086	90	-19.31	17.35	-36.66
0.110	90	-11.68	16.32	-28.00
0.128	90	-26.71	15.69	-42.40
0.191	90	-13.90	13.93	-27.83
2.773	90	-25.38	2.15	-27.53
6.952	90	-25.62	-1.90	-23.72
10.001	90	-27.00	-3.50	-23.50
13.295	90	-25.36	-3.50	-21.86
16.153	90	-26.95	-3.50	-23.45
19.963	90	-26.83	-3.50	-23.33

SPURIOUS EMISSION FREQUENCY RANGE	9kHz ~ 30MHz	OPERATING STATE	Standby

SPURIOUS EMISSION LEVEL				
Frequency (MHz)	Antenna Angle(°)	Level (dBμA/m)	Limit (dBμA/m)	Margin (dB)
0.010	180	-7.15	5.52	-12.67
0.020	180	-10.80	2.63	-13.43
0.035	180	-5.89	0.19	-6.08
0.057	180	-17.24	-1.90	-15.34
0.075	180	-21.24	-3.02	-18.22
0.087	180	-22.77	-3.69	-19.08
0.103	180	-24.27	-4.40	-19.87
0.191	180	-16.10	-7.09	-9.01
3.363	180	-26.34	-20.07	-6.27
7.269	180	-26.70	-23.56	-3.14
9.280	180	-28.14	-24.66	-3.48
14.605	180	-28.74	-25.00	-3.74
17.415	180	-28.53	-25.00	-3.53
19.067	180	-29.03	-25.00	-4.03
0.001	90	-5.12	5.44	-10.56
0.019	90	-11.34	2.81	-14.15
0.035	90	-5.52	0.18	-5.70
0.053	90	-18.77	-1.59	-17.18
0.069	90	-20.79	-2.69	-18.10
0.088	90	-19.89	-3.74	-16.15
0.099	90	-24.98	-4.22	-20.76
0.158	90	-14.81	-6.22	-8.59
4.068	90	-25.93	-20.93	-5.00
7.127	90	-27.12	-23.47	-3.65
11.015	90	-28.01	-25.00	-3.01
14.877	90	-28.71	-25.00	-3.71
17.918	90	-28.78	-25.00	-3.78
22.437	90	-29.29	-25.00	-4.29

Spurious Emission Frequency Range	30 MHz ~ 1 GHz	Operating State	Operating

Spurious Emission Level				
Frequency (MHz)	Antenna Polarization	Level (dBm)	Limit (dBm)	Margin (dB)
30.00	H	-55.21	-36.00	-19.21
30.00	V	-65.04	-36.00	-29.04
42.44	V	-65.84	-36.00	-29.84
93.73	H	-74.97	-54.00	-20.97
113.94	**V**	**-70.27**	**-54.00**	**-16.27**
214.98	V	-77.31	-54.00	-23.31
218.09	H	-73.95	-54.00	-19.95
227.42	V	-78.90	-54.00	-24.90
513.45	H	-75.92	-54.00	-21.92
603.61	H	-73.00	-54.00	-19.00
608.27	V	-72.07	-54.00	-18.07
759.05	H	-71.76	-54.00	-17.76

Spurious Emission Frequency Range	30 MHz ~ 1 GHz	Operating State	Standby

Spurious Emission Level				
Frequency (MHz)	Antenna Polarization	Level (dBm)	Limit (dBm)	Margin (dB)
30.00	**H**	**-60.43**	**-57.00**	**-3.43**
30.00	V	-65.38	-57.00	-8.38
43.99	H	-68.86	-57.00	-11.86
48.65	V	-72.96	-57.00	-15.96
95.29	H	-81.70	-57.00	-24.70
113.94	V	-72.83	-57.00	-15.83
222.76	H	-74.61	-57.00	-17.61
227.42	V	-81.09	-57.00	-24.09
572.52	V	-73.16	-57.00	-16.16
588.06	H	-73.05	-57.00	-16.05
880.30	H	-66.13	-57.00	-9.13
880.30	V	-65.81	-57.00	-8.81

3.3 OPERATING FREQUENCY AND EMISSION BANDWIDTH

3.3.1 LIMIT OF OPERATING FREQUENCY AND EMISSION BANDWIDTH

The upper and lower frequency limits of the transmitter 99%emission power bandwidth shall at all times remain within the 0.07 to 0.16MHz operating frequency limits.
bandwidth shall at all times remain within the 0.16 to 0.19MHz operating frequency limits.

3.3.2 TEST PROCEDURES

Please refer to Subclause 6.2.2.2 of EN 300 330 V2.1.1 (2017-02)

3.3.3 DEVIATION FROM TEST STANDARD

No deviation.

3.3.4 TEST SETUP

For the actual test configuration, please refer to the related Item in this test report (Photographs of the Test Configuration). The EUT was placed on the turn-table. Set the transmitter part of the EUT under transmitter condition continuously at specific channel frequency.

3.3.5 TEST RESULTS

Mode1:Operating

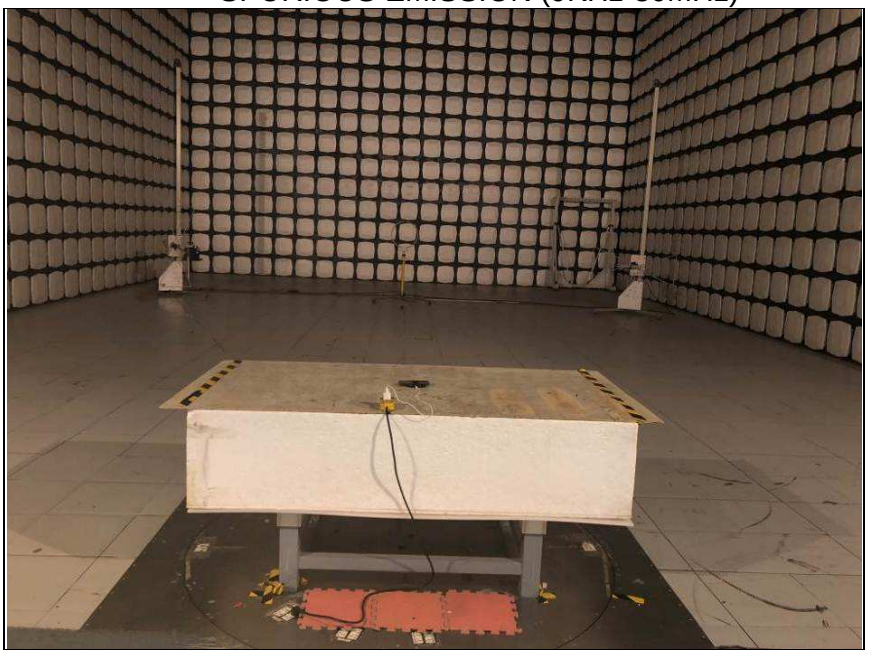
Frequency (175KHz)			Measured Frequencies		Limit	Pass/Fail
Test Condition			F_L (MHz)	F_H (MHz)		
T_{nom}(℃)	+20	V_{nom}(v)	122.302	122.940	F_L > 70 KHz and F_H < 160 KHz	Pass
T_{min}(℃)	0	V_{min}(v)	122.302	122.940		
		V_{max}(v)	122.302	122.940		
T_{max}(℃)	+45	V_{min}(v)	122.302	122.940		
		V_{max}(v)	122.302	122.940		

Mode2:Standby

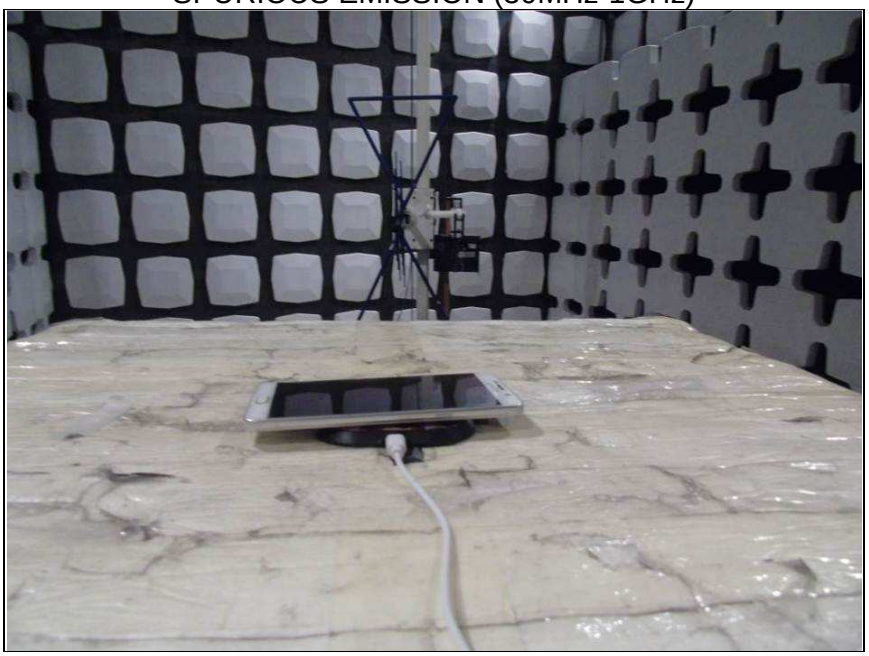
Frequency (175KHz)			Measured Frequencies		Limit	Pass/Fail
Test Condition			F_L (MHz)	F_H (MHz)		
T_{nom}(℃)	+20	V_{nom}(v)	174.988	175.700	F_L > 160 KHz and F_H < 190 KHz	Pass
T_{min}(℃)	0	V_{min}(v)	174.988	175.700		
		V_{max}(v)	174.988	175.700		
T_{max}(℃)	+45	V_{min}(v)	174.988	175.700		
		V_{max}(v)	174.988	175.700		

4. PHOTOGRAPHS OF THE TEST CONFIGURATION

SPURIOUS EMISSION (9KHz-30MHz)



SPURIOUS EMISSION (30MHz-1GHz)



5. APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications were made to the EUT by the lab during the test.

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