

Shenzhen HUAK Testing Technology Co., Ltd. Report No.: HK1905211107-1ER

# **TEST REPORT**

	J19-03)/			
EN 55032:2015/EN 55035:2017				

Report Reference No..... HK1905211107-1ER

Compiled by

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Date of issue .....: 2019/05/27

Representative Laboratory Name ....: Shenzhen HUAK Testing Technology Co., Ltd.

Heping Community, Fuhai Street, Bao'an District, Shenzhen, China

Applicant's name.....:

Address.....

#### Test specification:

 Draft ETSI EN 301 489-1 V2.2.1 (2019-03)/ ETSI EN 301 489-3

 V2.1.1 (2019-03)/EN 55032:2015/EN EN 55035:2017

 TRF Originator
 Shenzhen HUAK Testing Technology Co., Ltd.

Master TRF.....: Dated 2017-05

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Test item description	: Bamboo wireless charging power b	oank(7121-71, P3	22.02)
Trade Mark	.: N/A		
Model/Type reference	.: UP-9154		
Listed Models	.: UP-9149		
Hardware Version	.: V2.0		
Software Version	.: V2.0		
Rating	: Input: DC 5V/2A Output 1: DC5V/1A Output 2: DC5V/2.1A Wireless Output: DC 5V/1A		
Result	.: Positive	AV TESTING	

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# TEST REPORT

			2019/0	5/27		
lest Report No. :	HK1905	HK1905211107-1ER		Date of issue		
Equipment under Test	: Bamboo wirele	ess charging powe	r bank(7121-71, P3	22.02)		
Model /Type	: UP-9154					
The WAX TESTING						
Listed Models	: UP-9149					
Applicant	Un					
Address	:					
Manufacturer	:					
Address	:					
0	STANG					
<b>Fest Result</b> according standards on page 4:	to the	INCTESTING	Positive	ING LAK TESTING		
	O when	Contraction of the second seco	(Carlor Carlor C			
The test report merely of It is not permitted to laboratory.	corresponds to the t copy extracts of t	est sample. hese test result v	vithout the written	permission of the		

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THE ORIGINAL CAN ONLY

TOOL ON 2019-07-16.

# \*\* Modifited History \*\*

Revison				<b>P</b> .
Revsion 1.0	Description	ISSL ase 201	Jed Data	Remark
		201	5,05/21	James Zhou
STATES STATES	1 <sup>G</sup>	STING		and the

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# HUAK TESTING 1. TEST STANDARDS

The tests were performed according to following standards:

#### Draft ETSI EN 301 489-1 V2.2.1 (2019-03)

ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU

#### ETSI EN 301 489-3 V2.1.1 (2019-03)

ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU

EN 55032:2015 Electromagnetic compatibility of multimedia equipment – Emission Requirements

EN 55035:2017 Electromagnetic compatibility of multimedia equipment – Immunity requirements

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# 2. <u>SUMMARY</u>

# 2.1. General Remarks

Date of receipt of test sample	:	2019/05/21	
TESTIN		TESTING TESTING	
Testing commenced on	100	2019/05/21	
w	0		
Testing concluded on	:	2019/05/27	

# 2.2. Product Description

Name of EUT	Bamboo wireless charging power bank(7121-71, P322.02)			
Model(s) Number	UP-9154			
List Models	UP-9149			
Difference descrption	All model's the function, software and electric circuit are			
	the same, only with a product color and model named			
	different. Test sample model: UP-9154.			
Hardware version	V2.0			
Software version	V2.0			
Antenna Type	Coil Antenna			

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# 2.3. Equipment under Test

# Power supply system utilised

Power supply voltage	:	0	120V / 60 Hz	0	115V / 60Hz	
TSTING TSTING		0	12 V DC	0	24 V DC	TESTINO
pr Hubs	AUN COL	•	Other (specified in blank b	elow)	WAR	HURK .
	S.	[	DC 5V From micro USB	I.		w.

# 2.4. Short description of the Equipment under Test (EUT)

For details, refer to the user's manual of EUT.

Serial number: Prototype

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# 2.5. EUT operation mode

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The equipment under test was operated during the measurement under the following conditions:

		restitem			
EMI					
Mode 1	Charging + Discharging	-7146		TING	TRIG
Mode 2	Charging + Wireles Discharging	10K TES	LOK TE		I DAY TES
Mode 3	Wireles Discharging	0,"	0	6)	ALC: NO.
Mode 4	Discharging	~	~		
Mode 5	Charging		STING		
EMS					
Mode 1	Charging + Discharging	UNKTE	0	LAX TE	÷.
Mode 2	Charging + Wireles Discharging	Par -		0	
Mode 3	Wireles Discharging		STANS		
Mode 4	Discharging		under 10		11.
Mode 5	Charging		26) · · ·	dia.	- We cha

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# 2.6. EUT configuration

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The following peripheral devices and interface cables were connected during the measurement:

- - supplied by the manufacturer
- - Supplied by the lab

	<u></u>		<b>W</b>		
		-mG		- OG	
	THE		TNG	WAX TEST	
	HUAKTES	0	- WAXTES	0	THURK TES
3		allG	0	- and	0
		UNAR TEST		NIAK TEST	

Adapter information

N/A

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# 2.7. Performance level

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The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test relative to a performance criteria defined by its manufacturer or the requestor of the test, or agreed between the manufacturer and the purchaser of the product. Examples of functions defined by the manufacturer to be evaluated during testing include, but are not limited to, the following:

- essential operational modes and states;
- tests of all peripheral access(hard disks, floppy disks, printers, keyboard, mouse, etc.);
- quality of software execution
- quality of data display and transmission
- quality of speech transmission

#### General performance criteria

- based on the used product standard
- O based on the declaration of the manufacturer, requestor or purchaser
- performance criteria A for immunity tests with phenomena of a continuous nature;
- performance criteria B for immunity tests with phenomena of a transient nature;
- performance criteria C for immunity tests with power interruptions exceeding a certain time. The equipment shall meet the minimum performance criteria as specified in the following clauses.

#### Performance table

#### Table 1: Performance criteria

Criteria	a During test	After test
A	Shall operate as intended.	Shall operate as intended.
	May show degradation of performance	Shall be no degradation of performance (see note 2).
	(see note 1).	Shall be no loss of function.
	Shall be no loss of function.	Shall be no loss of stored data or user programmable
	Shall be no unintentional transmissions.	functions.
B	May show loss of function (one or more).	Functions shall be self-recoverable.
	May show degradation of performance	Shall operate as intended after recovering.
	(see note 1).	Shall be no degradation of performance (see note 2).
	No unintentional transmissions.	Shall be no loss of stored data or user programmable
		functions.
С	May be loss of function (one or more).	Functions shall be recoverable by the operator.
		Shall operate as intended after recovering.
		Shall be no degradation of performance (see note 2).
NOTE 1:	Degradation of performance during the test is u	inderstood as a degradation to a level not below a
	minimum performance level specified by the ma	anufacturer for the use of the apparatus as intended. In
	some cases the specified minimum performance	e level may be replaced by a permissible degradation
	of performance.	
	If the minimum performance level or the permis	sible performance degradation is not specified by the
	manufacturer then either of these may be deriv	ed from the product description and documentation
	(including leaflets and advertising) and what the	e user may reasonably expect from the apparatus if
NOTEO	used as intended.	
NOTE 2:	No degradation of performance after the test is	understood as no degradation below a minimum
	performance level specified by the manufacture	er for the use of the apparatus as intended. In some
	cases the specified minimum performance leve	I may be replaced by a permissible degradation of
	performance. After the test no change of actual	operating data or user retrievable data is allowed.
	If the minimum performance level or the permis	sible performance degradation is not specified by the
	manufacturer then either of these may be deriv	ed from the product description and documentation
	(including leaflets and advertising) and what the	e user may reasonably expect from the apparatus if
	used as intended.	

#### Performance criteria for Continuous phenomena applied to Transmitters (CT)

The performance criteria A shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission The results shoes not occur: In systems using acknowledgement signals, it is recognized that an ACKnowledgement (ACK) this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com

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or Not ACKnowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

#### Performance criteria for Transient phenomena applied to Transmitters (TT)

The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5 000 ms duration, for which performance criteria C shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an acknowledgement (ACK) or not-acknowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

#### Performance criteria for Continuous phenomena applied to Receivers (CR)

#### The performance criteria A shall apply.

Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

#### Performance criteria for Transient phenomena applied to Receivers (TR)

The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5 000 ms duration for which performance criteria C shall apply.

Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

# 2.8. Modifications

No modifications were implemented to meet testing criteria.

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# 3. TEST ENVIRONMENT

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# 3.1. Address of the test laboratory

Shenzhen HUAK Testing Technology Co., Ltd. 1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2014) and CISPR Publication 22.

# 3.2. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

# 3.3. Configuration of Tested System

#### Fig. 2-1 Configuration of Tested System



#### Table 2-1 Equipment Used in Tested System

No.	Product	Manufacturer	Model No.	I No. FCC ID		
STING	O HUAK TEST	-1116 -511116	O PURK TEST	amo		
2		all The alph		WATER STREET		

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# 3.4. Test Description

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Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.1 EN 55032: 2015 Annex A.2	PASS			
Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.1	PASS			
Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.1	N/A			
EN 55032: 2015 Annex A.3				
Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.1	Ν/Δ			
EN 61000-3-2: 2014	19/7			
Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.1	NI/A			
EN 61000-3-3: 2013				
Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.1	N/A			
Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.2	PASS			
Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.2	PASS			
Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.2	N/A			
Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.2	N/A			
Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.2	N/A			
Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.2	N/A			
Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.2	N/A			
	Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.1         EN 55032: 2015 Annex A.2         Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.1         Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.1         EN 55032: 2015 Annex A.3         Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.1         EN 61000-3-2: 2014         Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.1         EN 61000-3-2: 2014         Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.1         EN 61000-3-3: 2013         Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.1         EN 61000-3-3: 2013         Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.2         Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.2         Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.2         Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.2         Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.2         Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.2         Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.2         Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.2         Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.2         Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.2         Draft ETSI EN 301 489-1 V2.2.1 (2019-03) Clause 7.2			

Remark: The measurement uncertainty is not included in the test result.

# 3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the Dongguan Dongdian Testing Service Co.,Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Dongguan Dongdian Testing Service Co., Ltd is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.24 dB	(1)
Radiated Emission	1~18GHz	5.16 dB	(1)
Radiated Emission	18-40GHz	5.54 dB	(1)
Conducted Disturbance	0.15~30MHz	3.39 dB	(1)

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

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# 3.6. Equipments Used during the Test

CONDUCTED EMISSION

				26.11			
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibra tion period
1	LISN	R&S	ENV216	HKE-002	Dec. 27, 2018	Dec. 26, 2019	1 year
2	LISN	R&S	ENV216	HKE-029	Dec. 27, 2018	Dec. 26, 2019	1 year
3	EMI Test Receiver	R&S	ESCI-7	HKE-010	Dec. 27, 2018	Dec. 26, 2019	1 year

## RADIATED TEST SITE

ltem	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibra tion period
1	Broadband antenna	Schwarzbeck	VULB 9163	HKE-012	Dec. 27, 2018	Dec. 26, 2019	1 year
2	EMI Test Receiver	R&S ESCI-7 HKE-010 Dec. 27, 2		Dec. 27, 2018	Dec. 26, 2019	1 year	
3	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 27, 2018	Dec. 26, 2019	1 year
4	Horn antenna	Schwarzbeck	9120D	HKE-013	Dec. 27, 2018	Dec. 26, 2019	1 year
5	Preamplifie r	EMCI	EMC051845SE	HKE-015	Dec. 27, 2018	Dec. 26, 2019	1 year
6	Preamplifie r	Agilent	83051A	HKE-016	Dec. 27, 2018	Dec. 26, 2019	1 year
7	Position controller	Taiwan MF	MF7802	HKE-011	Dec. 27, 2018	Dec. 26, 2019	1 year

# HARMONICS AND FILCK

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibra tion period
1	Harmonic flicker tester	California Instruments	5001ix	HKE-037	Dec. 27, 2018	Dec. 26, 2019	1 year

ESD	(C) TO		HUM		(C) <sup>10</sup>	(C) HO			
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibra tion period		
1	ESD device	Schloder	SESD 216	HKE-023	Dec. 27, 2018	Dec. 26, 2019	1 year		
RS	RS								
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibra tion period		
1	Signal generator	Agilent	83630A	HKE-028	Dec. 27, 2018	Dec. 26, 2019	1 year		
2	Hf antenna	Schwarzbeck	LB-180400-KF	HKE-031	Dec. 27, 2018	Dec. 26, 2019	1 year		
3	Power amplifier	R&S	NTWPA- 1060040E	HKE-035	Dec. 27, 2018	Dec. 26, 2019	1 year		
4	Broadband antenna	Schwarzbeck	VULB 9163	HKE-012	Dec. 27, 2018	Dec. 26, 2019	1 year		
5	Power amplifier	R&S	5225F	HKE-058	Dec. 27, 2018	Dec. 26, 2019	1 year		

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# SURGE, EFT/BURST, VOLTAGE INTERRUPTION/DIPS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibra tion period
smc 1	Full- featured immunity tester	HTEC	HV1P16T	HKE-017	Dec. 27, 2018	Dec. 26, 2019	1 year
2	Group pulse coupling clamp	HTEC	НЗС	HKE-024	Dec. 27, 2018	Dec. 26, 2019	1 year

#### INJECTION CURRENT

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibra tion period
1 STANO	Integrated Conduction Sensitivity Test System	Schloder	CDG6000	HKE-033	Dec. 27, 2018	Dec. 26, 2019	1 year

#### PFMF

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibra tion period
1	Power frequency induction coil	HTEC Instruments Ltd.	HPFMF	HKE-049	Dec. 27, 2018	Dec. 26, 2019	1 year

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# 4. TEST CONDITIONS AND RESULTS

# 4.1. REQUIREMENTS

#### 4.1.1. Radiated Emission

#### LIMIT

Please refer to ETSI EN 301 489-1 Clause 8.2.3

The ancillary equipment shall meet the class B limits given in CENELEC EN 55032 [1], annex A tables A.4 and A.5.

Alternatively, for ancillary equipment intended to be used exclusively in an industrial environment or telecommunication centres, the class A limits given in CENELEC EN 55032 [1], annex A tables A.2 and A.3 may be used.

If EUT is also a FM Receiver, it shall meet CENELEC EN 55032 [3], annex A tables A.6

#### **TEST CONFIGURATION**

(a) Radiated Emission Test Set-Up, Frequency below 1000MHz



#### (b) Radiated Emission Test Set-Up, Frequency above 1000MHz



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#### **TEST PROCEDURE**

Please refer to ETSI EN 301 489-1 Clause 8.2.2 and The test method shall be in accordance with CENELEC EN 55032 [1], annex A.2. for the measurement methods.

#### Climatic conditions

- ambient temperature : 25 °C
- relative humidity: 55%
- atmospheric pressure: 960 mbar

#### TEST RESULTS

#### Below 1000MHz



Suspe	ected List							
	Freq.	Level	Factor	Limit	Margin	Height	Angle	Delevity
NO.	[MHz]	[dBµV/m]	[dB]	[dBµV/m]	[dB]	[cm]	[°]	Polarity
1	45.5200	19.55	-13.65	40.00	20.45	100	360	Horizontal
2	106.630	22.90	-15.42	40.00	17.10	100	220	Horizontal
3	204.600	21.95	-14.94	40.00	18.05	100	22	Horizontal
4	330.215	30.61	-11.59	47.00	16.39	100	359	Horizontal
5	426.245	27.96	-9.92	47.00	19.04	100	288	Horizontal
6	836.555	33.04	-2.52	47.00	13.96	100	174	Horizontal

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss. 2. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

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Susp	Suspected List										
	Freq.	Level	Factor	Limit	Margin	Height	Angle	Delerity			
NO.	[MHz]	[dBµV/m]	[dB]	[dBµV/m]	[dB]	[cm]	[°]	Polarity			
1	35.3350	28.04	-16.04	40.00	11.96	100	60	Vertical			
2	44.0650	27.16	-13.82	40.00	12.84	100	348	Vertical			
3	68.3150	29.45	-17.25	40.00	10.55	100	56	Vertical			
4	109.055	23.01	-15.43	40.00	16.99	100	10	Vertical			
5	212.360	21.31	-14.74	40.00	18.69	100	117	Vertical			
6	570.290	32.90	-6.41	47.00	14.10	100	228	Vertical			

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss. 2. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

Radiated Emission From 1 GHz to 6 GHz

EUT Highest frequency is less than 108MHz, so this test report is not applicable.

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## 4.1.2. Conducted Emission (AC Mains)

#### LIMIT

Please refer to ETSI EN 301 489-1 Clause 8.4.3

The equipment shall meet the class B limits given in CENELEC EN 55032 [1], annex A table A.10.

Alternatively, for equipment intended to be used in an industrial environment or a telecommunication centre, the class A limits given in CENELEC EN 55032 [1], annex A table A.9 can be used.

If EUT is also a FM Receiver, it shall meet CENELEC EN 55032 [3], annex A tables A.13

#### **TEST CONFIGURATION**



#### **TEST PROCEDURE**

Please refer to ETSI EN 301 489-1 Clause 8.4.3 and EN 55032 Clause 5 for the measurement methods.

#### **Climatic conditions**

- ambient temperature : 25 °C
- relative humidity: 55%
- atmospheric pressure: 960 mbar

#### TEST RESULTS

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Ρ	Detector	AV Detector

0 G

Suspected List								
NO	Freq.	Level	Factor	Limit	Margin	Detector		
	[MHz]	[dBµV]	[dB]	[dBµV]	[dB]	Dottottor		
1	0.1860	49.59	10.05	64.26	14.67	РК		
2	0.4875	43.23	10.04	56.24	13.01	РК		
3	1.4190	39.08	10.11	56.00	16.92	РК		
4	3.0660	42.16	10.22	56.00	13.84	РК		
5	6.9225	41.12	10.20	60.00	18.88	РК		
6	19.1895	43.83	10.07	60.00	16.17	РК		

Note: 1. Result Level = Read Level +LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz), Step size: 4 kHz, Scan time: auto.

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Suspected List								
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Detector		
1	0.2175	51.68	10.05	62.95	11.27	PK		
2	0.3075	47.28	10.05	60.13	12.85	РК		
3	1.5135	38.16	10.11	56.00	17.84	PK		
4	4.2045	35.90	10.25	56.00	20.10	PK		
5	8.9070	35.66	10.11	60.00	24.34	РК		
6	19.0005	42.23	10.07	60.00	17.77	PK		

Note: 1. Result Level = Read Level +LISN Factor + Pulse Limiter Factor + Cable loss.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz), Step size: 4 kHz, Scan time:

auto.

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## 4.1.3. Conducted Emission (Telecommunication Ports)

LIMIT

Please refer to ETSI EN 301 489-1 Clause 8.7.3

The wired network ports shall meet the class B limits given in CENELEC EN 55032 [1], annex A table A.12.

Alternatively, for equipment intended to be used exclusively in an industrial environment or a telecommunication centre, the class A limits given in CENELEC EN 55032 [1] annex A table A.11 can be used.

#### **TEST CONFIGURATION**



#### TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 8.7.2 and The test method shall be in accordance with CENELEC EN 55032 [1], annex A.3. for the measurement methods.

#### **Climatic conditions**

- ambient temperature : 25 °C
- relative humidity: 55%
- atmospheric pressure: 960 mbar

## TEST RESULTS

Not applicable

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4.1.4. Harmonic Current Emission

## LIMIT

Please refer to EN 61000-3-2

#### **TEST CONFIGURATION**



#### TEST PROCEDURE

Please refer to EN 61000-3-2 for the measurement methods.

#### Climatic conditions

- ambient temperature : 25 °C
- relative humidity: 55%
- atmospheric pressure: 960 mbar

#### TEST RESULTS

Test product is test by DC power supply, Not applicable.

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## 4.1.5. Voltage Fluctuation and Flicker

## LIMIT

Please refer to EN 61000-3-3

# TEST CONFIGURATION

Same as the configuration of the Harmonic Current Emission.

#### TEST PROCEDURE

Please refer to EN 61000-3-3 for the measurement methods.

#### **Climatic conditions**

- ambient temperature : 25 °C
- relative humidity: 55%
- atmospheric pressure: 960 mbar

#### TEST RESULTS

Test product is test by DC power supply, Not applicable.

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## 4.1.6. Electrostatic Discharge

#### <u>LIMIT</u>

Please refer to EN 61000-4-2

#### SEVERITY LEVELS OF ELECTROSTATIC DISCHARGE

Test level: Contact Discharge at  $\pm 2KV, \pm 4KV$  Air Discharge at  $\pm 2KV, \pm 4KV, \pm 8KV$ 

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)		
1	2	2		
2	4 A	4 mush		
3 and TES	6	8		
4	8	15		
Х	Special	Special		

#### Performance criterion: B

#### Test Configuration



Ground Reference Plane

#### Test procedure

Please refer to ETSI EN 301 489-1 Clause 9.3.2 and EN 61000-4-2 for the measurement methods.

If EUT is also a FM Receiver, it shall refer to EN 55020:2007/A11:2011 Clause 5.9 for the measurement methods.

#### Test results

#### **Contact Discharge:**

The ESD generator is held perpendicular to the surface to which the discharge is applied and the tip of the discharge electrode touch the surface of EUT. Then turn the discharge switch. The generator is then re-triggered for a new single discharge and repeated at least 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed

The results shAir Discharge: refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

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HUAK TESTING

Air discharge is used where contact discharge can't be applied. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated at least 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

## Indirect discharge for horizontal coupling plane:

At least 10 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT.

## Indirect discharge for vertical coupling plane:

At least 10 single discharges shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

## **Climatic conditions**

- ambient temperature : 25 °C
- relative humidity: 55%
- atmospheric pressure: 960 mbar

# Description of the Electrostatic Discharges (ESD)

Point of Discharge	Applied Voltage (KV)	Total No. of Discharge (Each Point)	Results	Criteria Level	Remark
<i><i>w</i></i>	±2	20	Pass	В	-
Air Test Point	±4	20	Pass	В	-
TING STIND	±8	20	Pass	B	astrone O
Contact Discharge	±2	50	Pass	JUAN THE B	MAU
Test Points	±4 🤍	50	Pass	В	
	±2	50	Pass	В	-
VCP (4 sides)	±4	50	Pass	В	-
	<sup>≥</sup> ±2	50	Pass	B	-514ND
nur (4 sides)	±4 🔬 🕬	50	Pass	B	HUAN

The requirements are Fulfilled

Performance Criterion: B

Remarks: The ancillary equipment's specification for an acceptable level of performance or degradation of performance during and/or after the ESD tests.

# Description of Discharge Point

Contact Discharge					Air Discharge				
HUPK	0	HUPP	Metallic Screws	HUPON	0	- HUA	Plastic Screws		
8	0		Metallic Case	9 - C	•	S.	Plastic Case(gap)		
			Metallic Connect ports		•		Plastic Connect Ports		
			Metallic Junctions				Plastic Junctions		
& TESTING	0	N TESTIN	Others (Antenna Port)	15	0	. TE	Others		
DA		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	100				1 A 120 -		

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# 4.1.7. RF Electromagnetic Field

#### LIMIT

#### Please refer to EN 61000-4-3

#### Test Configuration



#### Test Levels of RF Electromagnetic Field

Test level: RF Field Strength: 3V/m

Level	RF Field Strength(V/m)	AN HUAK TO
<b>1</b>	1	
2	3	TESTING
3	10	G HUPP
X	Special	

Performance criterion: A

#### TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.2.2 and EN 61000-4-3 for the measurement methods.

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## **Climatic conditions**

- ambient temperature : 25 °C
- relative humidity: 55%
- atmospheric pressure: 960 mbar

#### TEST RESULTS

# Result of Final Tests (Operating Mode & Standby (Receiving) Mode)

					2.2752	attan bill	
	Freq. Range (MHz)	Field	Modulation	Polarity	Position	Mode	Result (Pass/Fail)
CTING	80-1000	3V/m	Yes	H/V	Front	15	Pass
0 <sup>000</sup> 10 <sup>1</sup>	$\begin{array}{c} 1800(\pm1\%),\\ 2600(\pm1\%),\\ 3500(\pm1\%),\\ 5000(\pm1\%) \end{array}$	3V/m	Yes	H/V	Front	Normal Operating	Pass
TESTIN	80-1000	3V/m	Yes	H/V	Right		Pass
2	$\begin{array}{c} 1800(\pm1\%),\\ 2600(\pm1\%),\\ 3500(\pm1\%),\\ 5000(\pm1\%) \end{array}$	3V/m	Yes	H/V	Right	Normal Operating	Pass
0	80-1000	3V/m	Yes	H/V	Back		Pass
sau resmi <sup>3</sup>	$\begin{array}{c} 1800(\pm1\%),\\ 2600(\pm1\%),\\ 3500(\pm1\%),\\ 5000(\pm1\%) \end{array}$	3V/m	Yes	H/V	Back	Normal Operating	Pass
	80-1000	3V/m	Yes	H/V	Left		Pass
4	$\begin{array}{c} 1800(\pm1\%),\\ 2600(\pm1\%),\\ 3500(\pm1\%),\\ 5000(\pm1\%) \end{array}$	3V/m	Yes	H/V	Left	Normal Operating	Pass

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# 4.1.8. Fast Transients Common Mode

## LIMIT

Please refer to EN 61000-4-4

#### **TEST CONFIGURATION**



#### TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.4.2 and EN 61000-4-4 for the measurement methods.

If EUT is also a FM Receiver, it shall refer to EN 55020:2007/A11:2011 Clause 5.6 for the measurement methods.

#### Climatic conditions

- ambient temperature : 25 °C
- relative humidity: 55%
- atmospheric pressure: 960 mbar

#### TEST RESULTS

Test product is test by DC power supply, Not applicable.

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# 4.1.9. Surges, Line to Line and Line to Ground

# LIMIT

Please refer to EN 61000-4-5

#### **TEST CONFIGURATION**



#### TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.4.2 and EN 61000-4-5 for the measurement methods.

#### **Climatic conditions**

- ambient temperature : 25 °C
- relative humidity: 55%
- atmospheric pressure: 960 mbar

# TEST RESULTS

Test product is test by DC power supply, Not applicable.

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# 4.1.10. RF- Common Mode 0.15MHz to 80MHz

## LIMIT

Please refer to EN 61000-4-6

#### TEST CONFIGURATION



#### TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.5.2 and EN 61000-4-6 for the measurement methods.

#### **Climatic conditions**

- ambient temperature : 25 °C
- relative humidity: 55%
- atmospheric pressure: 960 mbar

#### TEST RESULTS

Test product is test by DC power supply, Not applicable.

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# 4.1.11. Voltage Dips and Interruptions

## LIMIT

Please refer to EN 61000-4-11

## TEST CONFIGURATION



## TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.7.2 and EN 61000-4-11 for the measurement methods

#### **Climatic conditions**

- ambient temperature : 25 °C
- relative humidity: 55%
- atmospheric pressure: 960 mbar

#### TEST RESULTS

Test product is test by DC power supply, Not applicable.

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# 5. Test Set-up Photos of the EUT



**Conducted Emission** 



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# 6. PHOTOS OF THE EUT



 $40 30 50 10500 a0 80 20 00 20 40 30 50 10100 a0 80 20 00 20 40 30 50 <math>\frac{1}{100}$ 



o 10500 ao 80 10 60 20 40 30 50 10100 ao 80 10 60 20 y

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50 10500 ao 80 20 60 20 40 30 50 10100 ao 80 20 60 20 40



50 10500 a0 80 10 60 20 40 30 50 10100 a0 80 10 60 20 40 30 50

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