

Prüfbericht-Nr.: Test Report No.:	50285840 001	Auftrags-Nr.: Order No.:	238108322	Seite 1 von 10 Page 1 of 10
Kunden-Referenz-Nr.: Client Reference No.:	N/A	Auftragsdatum: Order date:	23-Jul-2019	
Auftraggeber: Client:	Kingston Technology Company, Inc., 17600 Newhope St, Fountain Valley, CA 92708, USA			
Prüfgegenstand: Test item:	HyperX ChargePlay Clutch Mobile			
Bezeichnung / Typ-Nr.: Identification / Type No.:	HX-CPCM-U, HX-CPCM***** (* = 0-9, A-Z, a-z, - or blank; to indicate different colors, packaging and shipping locations)			
Auftrags-Inhalt: Order content:	Exposure Assessment Report for 110-148kHz			
Prüfgrundlage: Test specification:	CFR47 FCC §1.1307(c) and (d), §1.1310 RSS-102 Issue 5 March 2015 SPR-002 Issue 1 September 2016			
Wareneingangsdatum: Date of receipt:	25-Feb-2019			
Prüfmuster-Nr.: Test sample No.:	A000496041 002			
Prüfzeitraum: Testing period:	07-Mar-2019			
Ort der Prüfung: Place of testing:	ICT Laboratory Taipei			
Prüflaboratorium: Testing laboratory:	TUV Rheinland Taiwan Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
04-Oct-2019 Mars Y.J. Lin / Project Engineer		04-Oct-2019 Arvin Ho / Vice General Manager		
Datum Date	Name / Stellung Name / Position	Unterschrift Signature	Datum Date	Name / Stellung Name / Position
Sonstiges / Other:				
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:		Prüfmuster vollständig und unbeschädigt Test item complete and undamaged		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested				
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.				

Contents

1.	GENERAL REMARKS	3
1.1	COMPLEMENTARY MATERIALS	3
1.2	DECISION RULE OF CONFORMITY	3
2.	TEST SITES	4
1.1	TEST LABORATORY	4
1.2	TEST FACILITY	4
2.1	LIST OF TEST AND MEASUREMENT INSTRUMENTS	5
3.	GENERAL PRODUCT INFORMATION	6
3.1	PRODUCT FUNCTION AND INTENDED USE	6
3.2	SYSTEM DETAILS	6
3.3	INDEPENDENT OPERATION MODES	7
3.4	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	7
3.5	TEST SETUP DIAGRAM	7
3.6	EUT OPERATING CONDITION	8
3.7	REFERENCE LIMITS	8
3.7.1	FCC	8
3.7.2	Health Canada	8
3.8	MEASUREMENT RESULTS	10

1. General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix P: Photo Documentation
(File Name: 50285840APPENDIX P)

Appendix X: Test Setup Photo
(File Name: 50232966APPENDIX X)

Test Specifications

The following standards were applied .

Table 1: Applied Standard and Test Levels

Radio
CFR47 FCC §1.1307(c) and (d), §1.1310
KDB680106 D01
RSS-102 Issue 5 March 2015
SPR-002 Issue 1 September 2016

1.2 Decision Rule of conformity

The decision rule of conformity of this test report is following the requirements of the requested standard in the quotation, and agreed among testing laboratory and manufacturer (applicant) to exclude the consideration of Measurement Uncertainty, unless it is required by the specific standard

2. Test Sites

1.1 Test Laboratory

TUV Rheinland Taiwan Ltd.
Taipei Testing Laboratories

11F. No.758, Sec. 4, Bade Rd., Songshan Dist.
Taipei City 105
Taiwan (R.O.C.)

1.2 Test Facility

TUV Rheinland Taiwan Ltd.

11F. No.758, Sec. 4, Bade Rd., Songshan Dist.
Taipei City 105
Taiwan (R.O.C.)

FCC Registration No.: 180491
IC Canada Registration No.: 9465A
TAF Accredited NCC Test Lab. No.:3567
TAF ISO17025 Certification effective period: 6th-May-2019 to 05th-May-2022



Testing Laboratory
3567

2.1 List of Test and Measurement Instruments

Table 2: List of Test and Measurement Equipment

Kind of Equipment	Manufacture	Type	S/N	Last Calibration	Next Calibration
Exposure Level Tester ELT-400	Narda Safety Test Solutions	BN 2304/03	C-0016	2017-11-22	2020-11-22
Magnetic Field Probe 100cm ²	Narda Safety Test Solutions	BN 2300/90.10	C-0016	2017-11-22	2020-11-22

3. General Product Information

3.1 Product Function and Intended Use

The EUT is a Wireless charge pad. It contains a Qi compatible module enabling the user to communicate data through a Wireless interface.

For details please also refer to the User Guide, Data Sheet and Circuit Diagram.

3.2 System Details

Table 3: Technical Specification of EUT

Item	EUT information
Kind of Equipment	HyperX ChargePlay Clutch Mobile
Type Designation	HX-CPCM-U,HX-CPCM*****
FCC ID	JIC-CPCM
IC ID	3880A-CPCM
HVIN	HX-CPCM-U

Table 4: Technical Specification of EUT

Item	Value
Operating Frequencies	110~205kHz
Operation Voltage	5Vdc
Modulation	FSK

3.3 Independent Operation Modes

Testing was performed near the lowest operating frequency, at an operating frequency in the middle range of the specified frequency band and near the highest operating frequency. The highest value found is shown below in the result section of this report. This was achieved by testing with the battery at low charge, medium charge and near full charge.

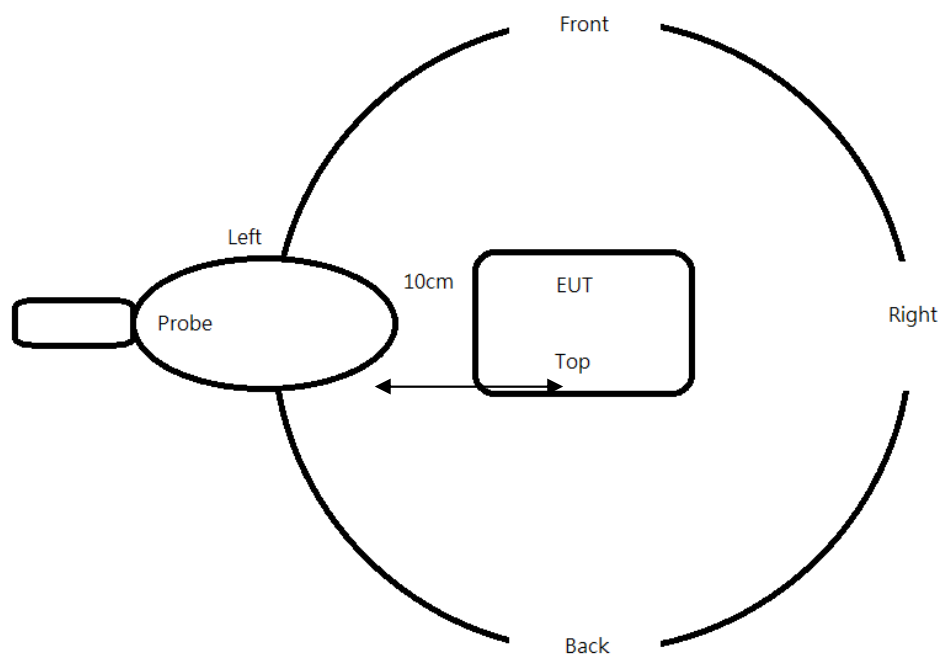
The measurement of the Electrical Field is not necessary, where the External Field is only a Leakage Field.

3.4 Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

Kind of Equipment	Manufacturer	Model Name	S/N
WPC load	N/A	10W	N/A

3.5 Test Setup Diagram



3.6 EUT Operating Condition

Measures taken to maximize magnetic Flux: Power on the EUT and put Load device on it. EUT will start providing wireless power. Power transmission and load status detection is done simultaneously using the fundamental frequency in the range of 110 – 205 KHz.

3.7 Reference limits

3.7.1 FCC

CFR47 FCC §1.1307(c) and (d), §1.1310

According to §1.1310, the criteria listed in the following table shall be used to evaluate the environment impact of a human exposure to RF radiation.

FCC LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	842/f	2.19/f	*(180/f ²)	30

* = Plane-wave equivalent power density

Measurement is done in a distance of 10 cm. The power transfer is achieved by inductive coupling. Therefore, in the table below only the magnetic field is measured. The electric field component would have to be measured at a distance of more than $\lambda/2$ and will therefore be far below the limits shown in above table.

3.7.2 Health Canada

According to RSS-102/SPR-002, the criteria listed in the following table shall be used to evaluate the

environment impact of a human exposure to RF radiation.

HEALTH CANADA LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Reference Level Basis	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.003-10	170	180	NS	instantaneous
0.1-10	--	$1.6 / f$	SAR	6
1.129-10	$193 / f^{0.5}$	--	SAR	6
(B) Limits for General Population/Uncontrolled Exposure				
0.003-10	83	90	NS	instantaneous
0.1-10	--	$0.73 / f$	SAR	
1.1 -10	$87 / f^{0.5}$	--	SAR	6

f is frequency in MHz.

* = Plane-wave equivalent power density

NS = Nerve Stimulation

For WPT devices designed for desktop applications (e.g. wireless charging pads), RF exposure shall be evaluated at 10 cm away from all sides and from the top of the WPT device / system. The 10 cm shall be as measured from the probe centre to the WPT device / system edge.

Measurement is done in a distance of 10 cm. The power transfer is achieved by inductive coupling. Therefore, in the table below only the magnetic field is measured. The electric field component would have to be measured at a distance of more than $\lambda/2$ and will therefore be far below the limits shown in above table.

LIMB EXPOSURE LIMIT RELAXATION

Exposure Condition	Relaxation Factor	Electric Field (V/m r.m.s.)	Magnetic Field (A/m r.m.s.)
Whole Body / Torso / Head	1.0	83	90
Leg	1.5	124.5	135
Arm	2.5	207.5	225
Hand/Foot	5.0	415	450

Note: The values of the electric field and the magnetic field in Table 2 are for indication purposes only and do not supersede the levels specified in RSS-102.

3.8 Measurement Results

Maximum H-field strength at 10 cm from the edges surrounding the EUT:

Table 5:

For FCC Magnetic field strength (A/m) measure result.

\Values Position\	Display uT	Value A/m	Limit A/m	Result	Remark
Left	0.051	0.041	1.67	PASS	--
Right	0.051	0.041	1.67	PASS	--
Front	0.064	0.051	1.67	PASS	Ambient 0.044uT
Back	0.062	0.049	1.67	PASS	--
Top	0.085	0.068	1.67	PASS	--

For Health Canada:

The EUT is Type 3 (Category I Radio Apparatus)

The maximum operating frequency of the device is 148 kHz

Thus, the minimum limit for Canada is $0.73 / f = 0.73 / 0.148 = 4.93 \text{ A/m}$ > maximum H-field strength
 0.068 A/m => **PASS**

The Magnetic Field Limit is 90 A/m.