Prüfbericht-Nr.: *Test report no.:*	**CN24FMXH 005**	**Auftrags-Nr.:** *Order no.:*	168515554	Seite 1 von 24 *Page 1 of 24*
Kunden-Referenz-Nr.: *Client reference no.:*	N/A	**Auftragsdatum:** *Order date:*	2024-11-26	
Auftraggeber: *Client:*	Guangdong World Precision Technology Co., Ltd. No. 6 Wanjiang Section, Gangkou Avenue, Wanjiang Subdistrict, Dongguan City, Guangdong Province, 523061, China			
Prüfgegenstand: *Test item:*	Presto 2			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	9040034310			
Auftrags-Inhalt: *Order content:*	Test Report			
Prüfgrundlage: *Test specification:*	CFR47 FCC Part 2.1093 KDB 680106 D01 Wireless Power Transfer v04			

Wareneingangsdatum: *Date of sample receipt:*	2024-11-26	Please refer to Photo Document
Prüfmuster-Nr.: *Test sample no:*	A003873212-001~009	
Prüfzeitraum: *Testing period:*	2024-12-05 - 2024-12-10	
Ort der Prüfung: *Place of testing:*	TÜV Rheinland (Shenzhen) Co., Ltd.	
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Shenzhen) Co., Ltd.	
Prüfergebnis*: *Test result*:*	Pass	

geprüft von: tested by:	x Breeze Jiang Signed by: Breeze Jiang	**genehmigt von:** *authorized by:*	x Bell Hu Signed by: Bell Hu
Datum: *Date:* 2025-01-23		**Ausstellungsdatum:** *Issue date:* 2025-01-23	
Stellung / Position:	Sachverständige(r)/Expert	**Stellung** / Position:	Sachverständige(r)/Expert

Sonstiges / *Other:* FCC ID: 2BD9P-310398M056

Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery:* Prüfmuster vollständig und unbeschädigt *Test item complete and undamaged*

* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
** Legend:*	*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 above mentioned 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.

Anmerkungen
Remarks

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. *The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system.* *Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.*
2	Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben. Informationen zur Verifizierung der Authentizität unserer Dokumente erhalten Sie auf folgender Webseite: go.tuv.com/digital-signature *As contractually agreed, this document has been signed digitally only. TUV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TUV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged. For information on verifying the authenticity of our documents, please visit the following website: go.tuv.com/digital-signature*
3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. *Test clauses with remark of * are subcontracted to qualified subcontractors and descripted under the respective test clause in the report.* *Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.*
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnisen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezueglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. *The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the “Zero Guard Band Rule” and “Simple Acceptance” in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.*

Contents

1 GENERAL REMARKS 4
1.1 COMPLEMENTARY MATERIALS 4
2 TEST SITES 5
2.1 TEST FACILITIES 5
2.2 LIST OF TEST AND MEASUREMENT INSTRUMENTS 5
2.3 TRACEABILITY 5
2.4 CALIBRATION 5
2.5 MEASUREMENT UNCERTAINTY 5
2.6 LOCATION OF ORIGINAL DATA 6
2.7 STATUS OF FACILITY USED FOR TESTING 6
3 GENERAL PRODUCT INFORMATION 7
3.1 PRODUCT FUNCTION AND INTENDED USE 7
3.2 RATINGS AND SYSTEM DETAILS 7
3.3 OPERATION MODES 8
3.4 COIL DESCRIPTION 9
3.5 COIL SPECIFICATIONS 10
3.6 GENERATING AND NOISE SUPPRESSING PARTS 11
3.7 SUBMITTED DOCUMENTS 11
3.8 SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT 11
4 RADIO FREQUENCY EXPOSURE COMPLIANCE 11
4.1 TEST PROCEDURES ACCORDING TO THE TECHNICAL STANDARDS 11
4.2 LIMIT OF MAXIMUM PERMISSIBLE EXPOSURE 11
4.3 TEST RESULT 12
4.3.1 General Description 12
4.3.2 Test Result for Coil 1, 110.5-148kHz for Phone, 7.5W max 13
4.3.3 Test Result for Coil 1~6, 110.5-148kHz for Phone, 45W max 18
5 PHOTOGRAPHS OF THE TEST SET-UP 24
6 LIST OF TABLES 24

1 General Remarks

1.1 Complementary Materials

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

Appendix A: Photographs of the Test Set-up

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

Address: No. 362 Huanguan Road Middle, Longhua District, 518110, Shenzhen, P. R. China.

FCC Test Site Number: CN1260

ISED Test Lab CAB identifier:CN0078

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

EMF					
Equip. No.	**Description**	**Manufacturer**	**Model**	**Serial No.**	**Calibrated until (DD.MM.YYYY)**
9050046	Electric and Magnetic Field Analyzer	Narda	EHP200A	180ZX20517	21.09.2025

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basics using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table.

Table 2: Measurement Uncertainty

Parameter	Uncertainty
Magnetic Field Emissions (A/m)	1.5dB
Electric Field Emissions (V/m)	1.5dB

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

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) Co., Ltd. file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

TÜV Rheinland (Shenzhen) Co., Ltd. test facility located at No. 362 Huanguan Road Middle, Longhua District, 518110, Shenzhen, P. R. China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUT is a Presto 2 which supports wireless charging (WPT) and NFC functions.

The Presto 2 is a fixture designed for charging and recognizing compatible wireless devices.
The fixture consists of 6 wireless Qi chargers, 6 NFC readers that are interconnected and controlled through a USB HUB and USB Relay and powered via an internal power supply.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 3: Technical Specification of EUT

General Information of EUT		**Value**
Kind of Equipment:		Presto 2
Type Designation:		9040034310
FCC ID:		2BD9P-310398M056
Rated Input		AC 100-240V, 50/60Hz
Rated Output:		Output 1~6: 7.5W (for Phone) Total Output: 45W MAX
Test Voltage:		AC 120V, 60Hz
Technical Specification of WPT		
Output 1 (Coil 1)	Frequency Range:	110.5kHz to 205kHz
	Type of Modulation:	FSK
	Antenna Type:	Coil antenna
	Antenna Number:	1
	Wireless output power:	123.8~146.7KHz: 7.5W
Output 2 (Coil 2)	Frequency Range:	110.5kHz to 205kHz
	Type of Modulation:	FSK
	Antenna Type:	Coil antenna
	Antenna Number:	1
	Wireless output power:	123.8~146.7KHz: 7.5W
Output 3 (Coil 3)	Frequency Range:	110.5kHz to 205kHz
	Type of Modulation:	FSK
	Antenna Type:	Coil antenna
	Antenna Number:	1
	Wireless output power:	123.8~146.7KHz: 7.5W
Output 4 (Coil 4)	Frequency Range:	110.5kHz to 205kHz
	Type of Modulation:	FSK
	Antenna Type:	Coil antenna
	Antenna Number:	1
	Wireless output power:	123.8~146.7KHz: 7.5W
Output 5	Frequency Range:	110.5kHz to 205kHz

(Coil 5)	Type of Modulation:	FSK
	Antenna Type:	Coil antenna
	Antenna Number:	1
	Wireless output power:	123.8~146.7KHz: 7.5W
Output 6 (Coil 6)	Frequency Range:	110.5kHz to 205kHz
	Type of Modulation:	FSK
	Antenna Type:	Coil antenna
	Antenna Number:	1
	Wireless output power:	123.8~146.7KHz: 7.5W

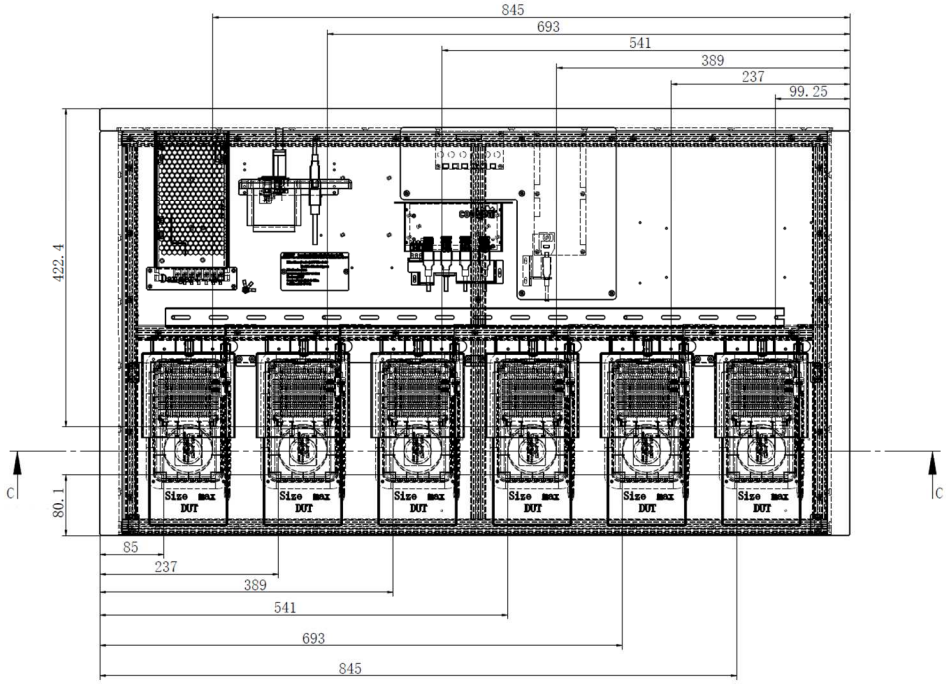
3.3 Operation Modes

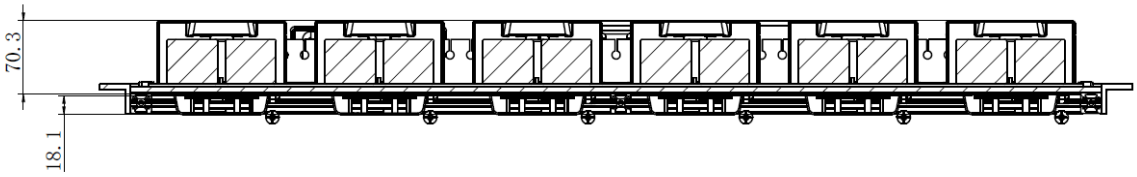
Operating Mode	Description of Mode
Single Coil Charging (E/H Field)	
1	On, Maximum Power Charging (7.5W max) Coil 1 @ 123.8~146.7KHz for Phone
2	On, Idle
3	On, Direct Exposure During Device Removal
All 6 Coil Charging (E/H Field)	
4	On, Maximum Power Charging (7.5W max) Coil 1 @ 123.8~146.7KHz for Phone
5	On, Idle
6	On, Direct Exposure During Device Removal
Multilpe Coils Maximum Power Charging (E/H Field): N/A	

3.4 Coil Description

Coil 1~6:	
Size (geometry)	50±0.5mm × 35±0.5mm
Number of turns	5
Note: All coil are working at same time.	

Coil(s) Location within the EUT (unit: mm)

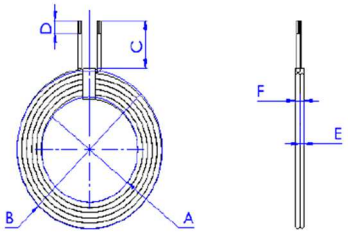


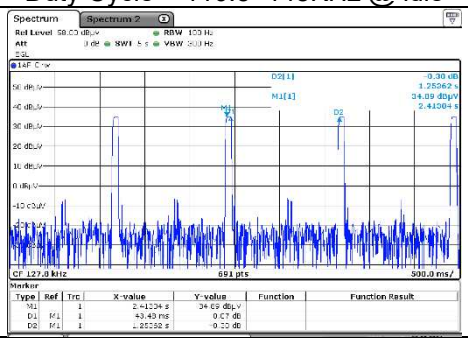
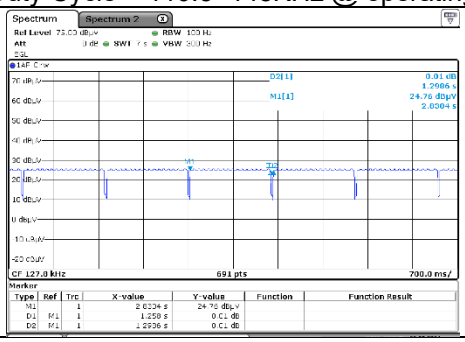
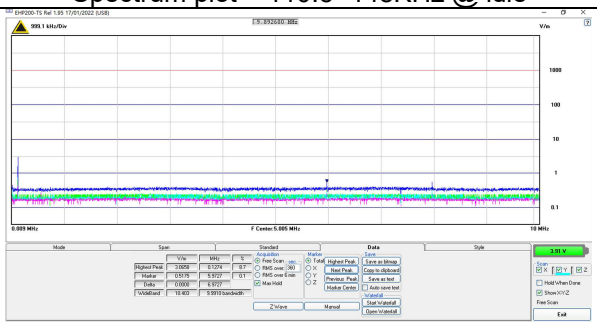
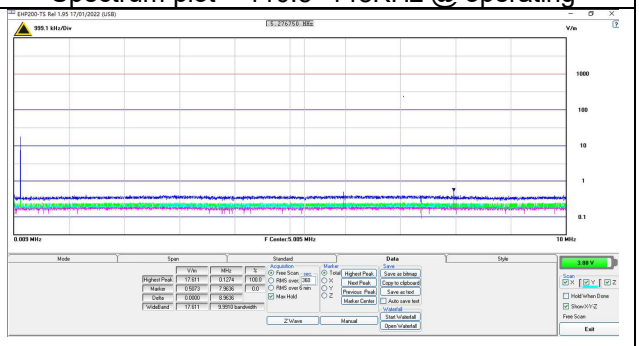


3.5 Coil Specifications

Coli 1~6 – 7.5W

Layer: 1

product size	Φ 50*Φ35*H3.5	Bonding mode	Acetone self-adhesive		
				A	35±0.5
				B	50±0.5
				C	19±2
				D	4 MAX
				E	1.6±0.05
				F	3.5±0.1
				unit: mm	
wire	0.1*90股	way of winding	Single wire folded	remark	The coil is counterclockwise with adhesive backing
Number of turns	2*5 Ts	L	12.1uH		
Coil size	Φ 50*35	Measurement frequency	123.8-146.7KHz	Test mode	Series test

Duty Cycle – 110.5~148KHz @ idle	Duty Cycle – 110.5~148KHz @ operating
	
Spectrum plot – 110.5~148KHz @ idle	**Spectrum plot – 110.5~148KHz @ operating**
	

3.6 Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.7 Submitted Documents

- Application Form
- Block Diagram
- ID Label and Location Info
- User Manual
- Schematics
- Operation Description

3.8 Special Accessories and Auxiliary Equipment

Description	Manufacturer	Model	Remark
Notebook Computer	N/A	N/A	Provided by Client
Cellphone*6	N/A	N/A	Provided by Client

4 Radio Frequency Exposure Compliance

4.1 Test Procedures According to the Technical Standards

Standard Section	Test Item	Judgment
FCC CFR 47 part1, 1.1310 KDB 680106 D01 Wireless Power Transfer v04	Electric Field Strength (E) (V/m)	PASS
	Magnetic Field Strength (H) (A/m)	PASS

4.2 Limit of Maximum Permissible Exposure

Limits for Occupational / Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time $\|E\|^2$,$\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6

1500-100,000			5	6

Limits for General Population / Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time |E|²,|H|² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180 / f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1	30

Note 1: f = frequency in MHz ; *Plane-wave equivalent power density.
Note 2: For the applicable limit, see FCC 1.1310, KDB 680106 D01 Wireless Power Transfer v04.
Note 3: Emissions between 100 kHz to 300 kHz should be assessed versus the limits at 300 kHz in Table 1 of Section 1.1310: 614 V/m and 1.63 A/m. A KDB inquiry is required to determine the applicable exposure limits below 100 kHz.

4.3 Test result

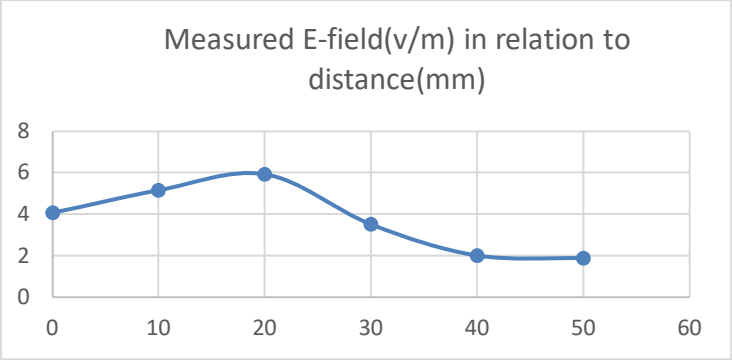
4.3.1 General Desciription

The Probe parameters as below:

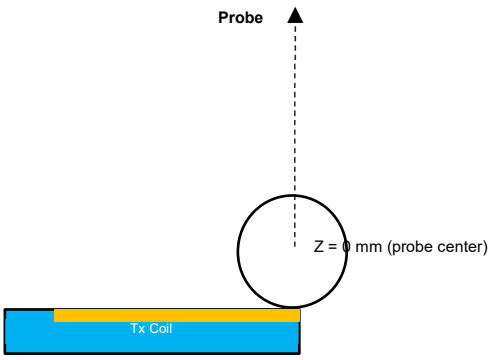
Probe: EHP200A	Probe Center to edge	46mm
	E-field Sensor Dp	52mm
	H-field Sensor Dp	76mm
	1.7Dp E-field	88mm
	1.7Dp H-field	129mm

E–field and H–field Test Procedures:

1. The grid of 10mm by 10mm is used as the size between the EUT and the probe when measurement
2. The probe is used to measure the E-field and H-field from the EUT
3. Measurements are made perpendicular to the XY plane
4. Locate the MFS in the XY plane; take coil 1 for example
5. These initial measurements are made at Z = 70 mm from the surface of the XY plane when 1.7Dp E-field=88mm, and 1.7Dp H-field=129mm of the probe
6. The resulting magnetic H-field strength was plotted against the distance in below figure:



7. The maximum E-field strength (5.95V/m) on this plot occurs at 20 mm from the center of the coil
8. The probe must therefore be placed at 20 mm from the center of the coil to gather electric or magnetic values when measuring along the Z-axis



9. Repeat the step1~8 to confirm the maximum H-field strength
10. Test was performed on operating mode with client device, 10%, 50%, 90% battery status of client device, here the worst-case status data are shown

4.3.2 Test Result for Coil 1, 123.8~146.7KHz for Phone, 7.5W max

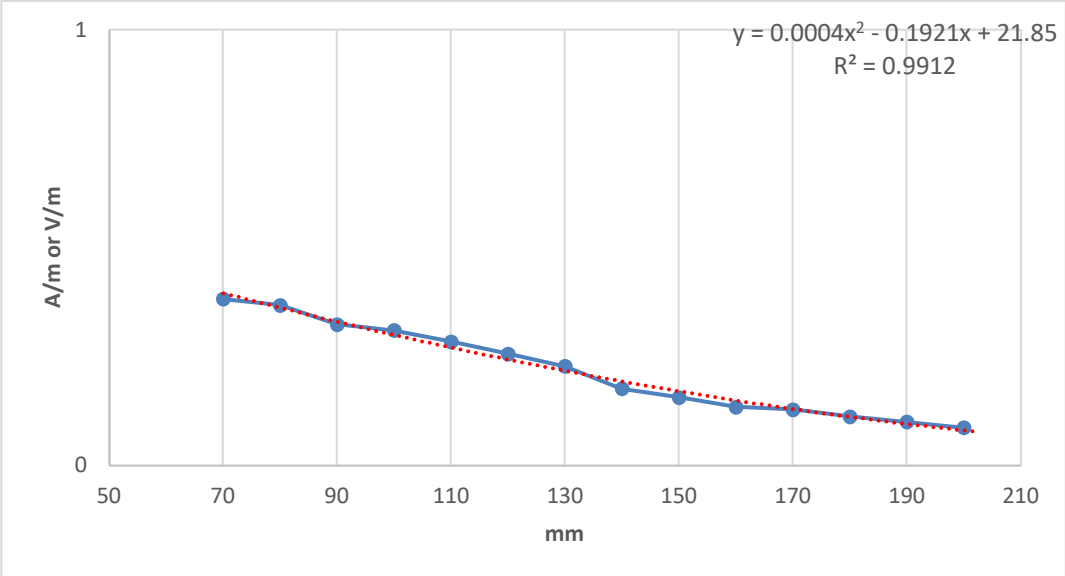
Data Collecting Process

Operating, Device removal and standby modes use the same test method, only the power of the test load is changed. The data only reflects the worst mode EUT+Mobile Phone (battery status: <20%).

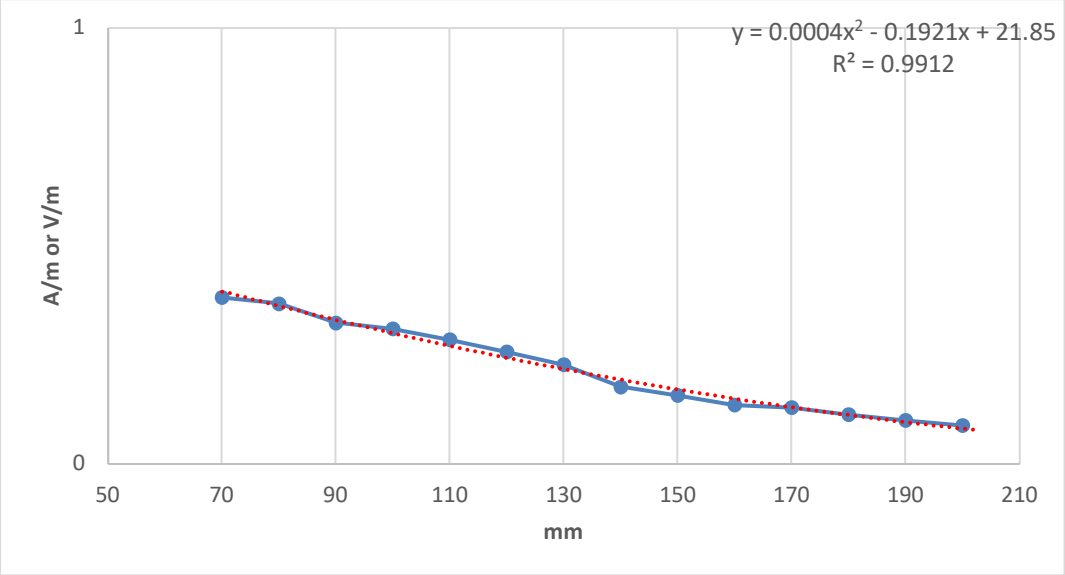
Test Distance (mm)	E-Field (V/m): EUT + Mobile Phone (Battery Status: <20%)	H-Field (A/m): EUT + Mobile Phone (Battery Status: <20%)
70	5.476	0.352
80	5.234	0.331
90	4.879	0.302
100	4.328	0.281
110	3.961	0.258
120	3.472	0.221
130	3.12	0.193
140	2.978	0.162
150	2.619	0.141
160	2.234	0.119
170	1.983	0.103
180	1.788	0.082
190	1.522	0.074
200	1.328	0.062

Performing Curve-fitting
Four (4) regression techniques were used to validate their model errors.
Model 1: Quadratic Regression
Model 2: Cubic Regression
Model 3: Quartic Regression
Model 4: 5th Order Regression
The Data Analysis package included in MS Excel was used to perform the regression analyses.
Operating mode (Battery Status: <20%))-Worst case

Model 1: Quadratic Regression
E-Field

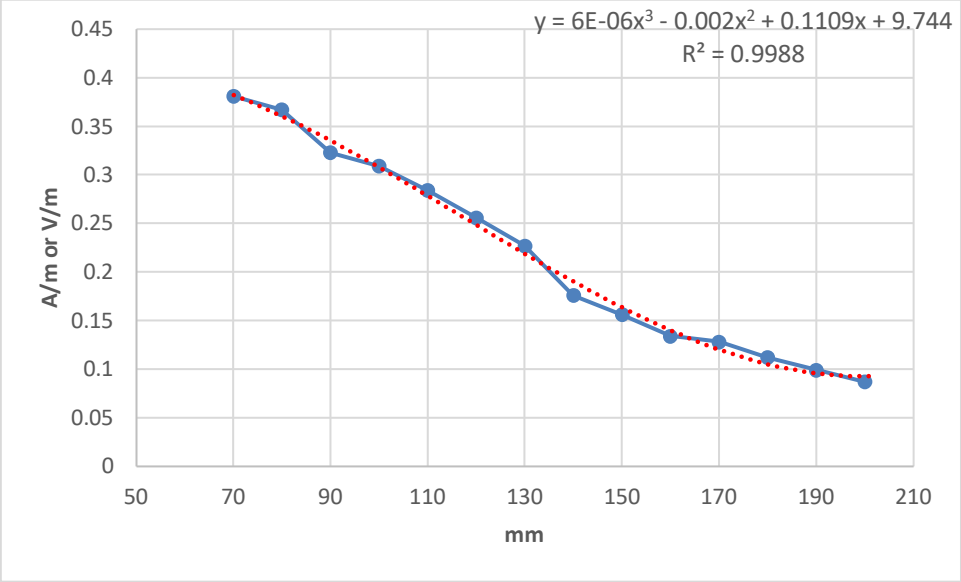


H-Field

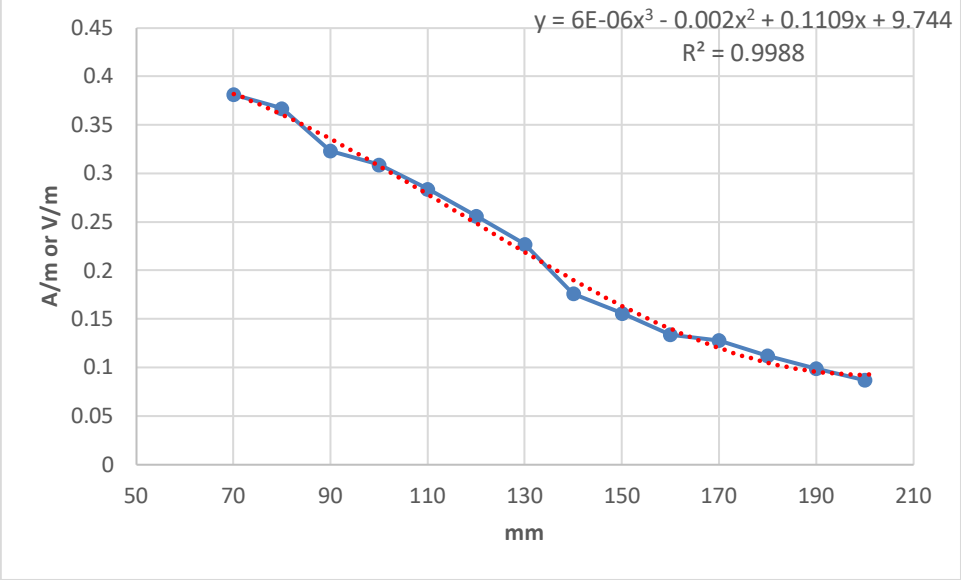


Model 2: Cubic Regression

E-Field

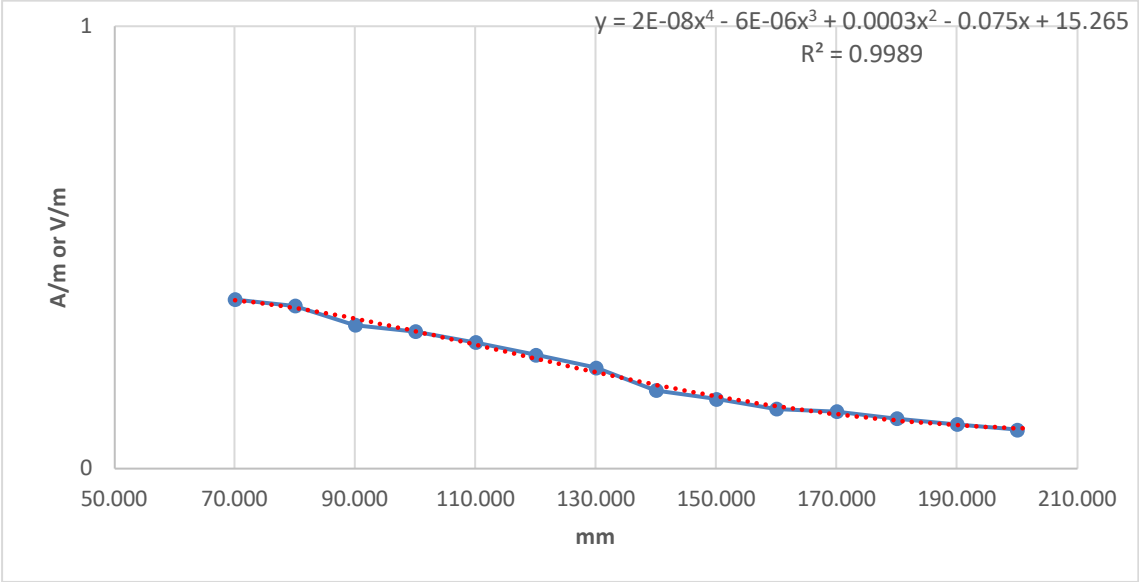


H-Field

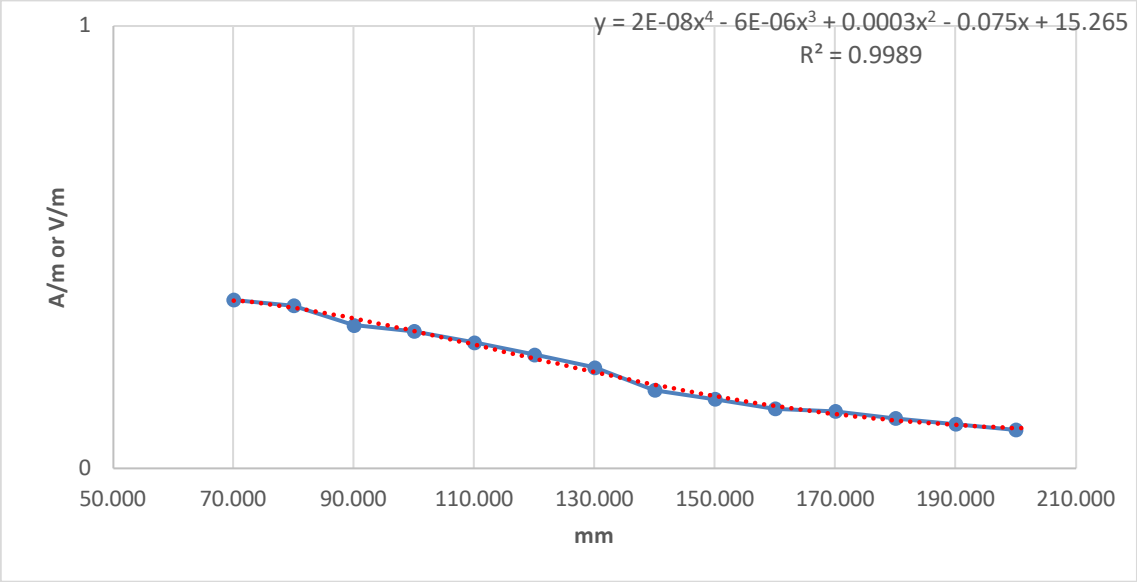


Model 3: Quartic Regression

E-Field



H-Field



Analyzing Results

E-Field

Parameter	Quadratic Regression	Cubic Regression	Quartic Regression
Multiple R	0.998	0.999	0.999
R Square	0.997	0.997	0.998
Adjusted R Square	0.996	0.996	0.997
Standard Error (S)	0.084	0.085	0.079
Number of data points used	14	14	14
Estimated magnetic field strength at touch position (V/m)	9.272	8.405	3.283
Limit (V/m)	614	614	614
Result	Pass		
Note: The regression analysis utilized a confidence level of 95%, which is the minimum value that should be used by applicants, by using curve fitting techniques for modeling and calculation.			

H-Field

Parameter	Quadratic Regression	Cubic Regression	Quartic Regression
Multiple R	0.998	0.999	1.000
R Square	0.995	0.999	0.999
Adjusted R Square	0.994	0.999	0.999
Standard Error (S)	0.008	0.004	0.004
Number of data points used	14	14	14
Estimated magnetic field strength at touch position (A/m)	0.621	0.374	0.179
Limit (A/m)	1.63	1.63	1.63
Result	Pass		
Note: The regression analysis utilized a confidence level of 95%, which is the minimum value that should be used by applicants, by using curve fitting techniques for modeling and calculation.			

4.3.3 Test Result for Coil 1~6, 123.8~146.7KHz for Phone, 45W max

Data Collecting Process

Operating, Device removal and standby modes use the same test method, only the power of the test load is changed. The data only reflects the worst mode EUT+Mobile Phone (battery status: <20%).

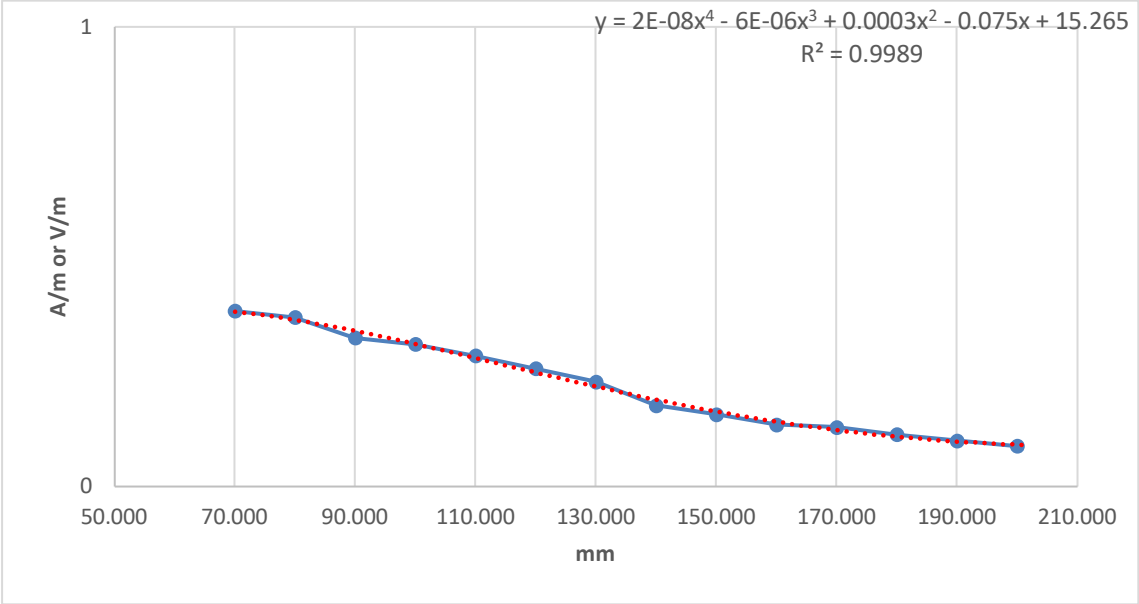
Test Distance (mm)	E-Field (V/m): EUT + Mobile Phone (Battery Status: <20%)	H-Field (A/m): EUT + Mobile Phone (Battery Status: <20%)
70	6.059	0.381
80	5.764	0.367
90	5.128	0.323
100	4.788	0.309
110	4.339	0.284
120	4.107	0.256
130	3.784	0.227
140	3.232	0.176
150	2.887	0.156
160	2.561	0.134
170	2.217	0.128
180	2.018	0.112
190	1.862	0.099
200	1.776	0.087

Performing Curve-fitting

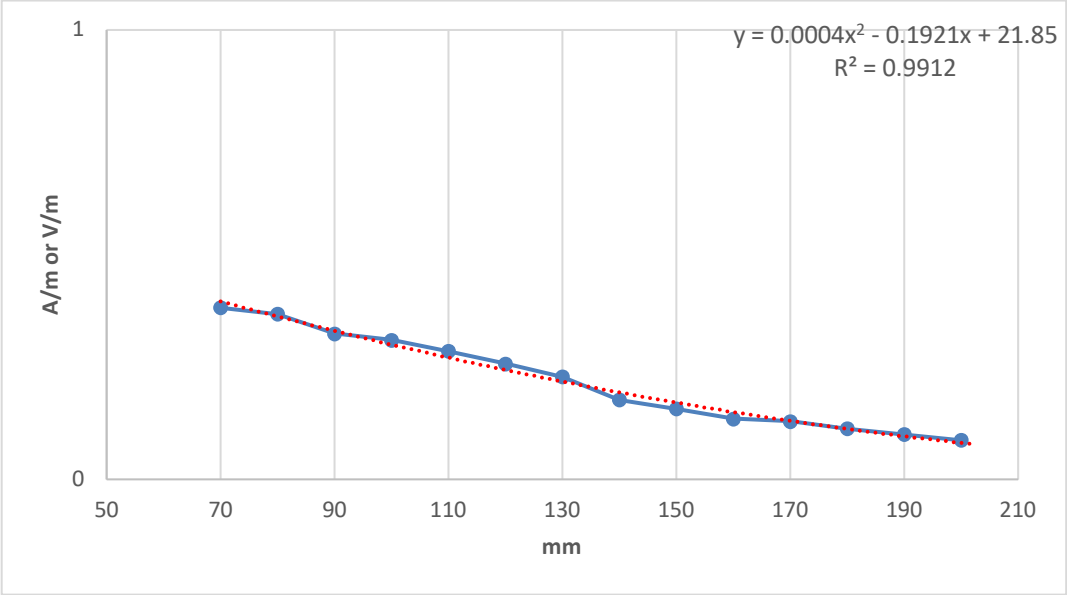
Four (4) regression techniques were used to validate their model errors.
Model 1: Quadratic Regression
Model 2: Cubic Regression
Model 3: Quartic Regression
The Data Analysis package included in MS Excel was used to perform the regression analyses.
Operating mode (Battery Status: <20%))-Worst case

Model 1: Quadratic Regression

E-Field

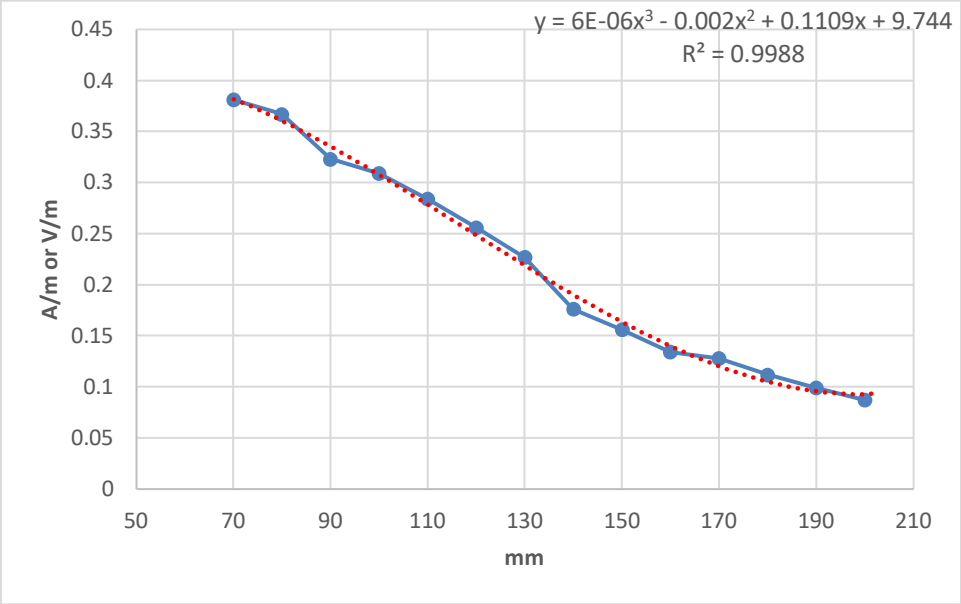


H-Field

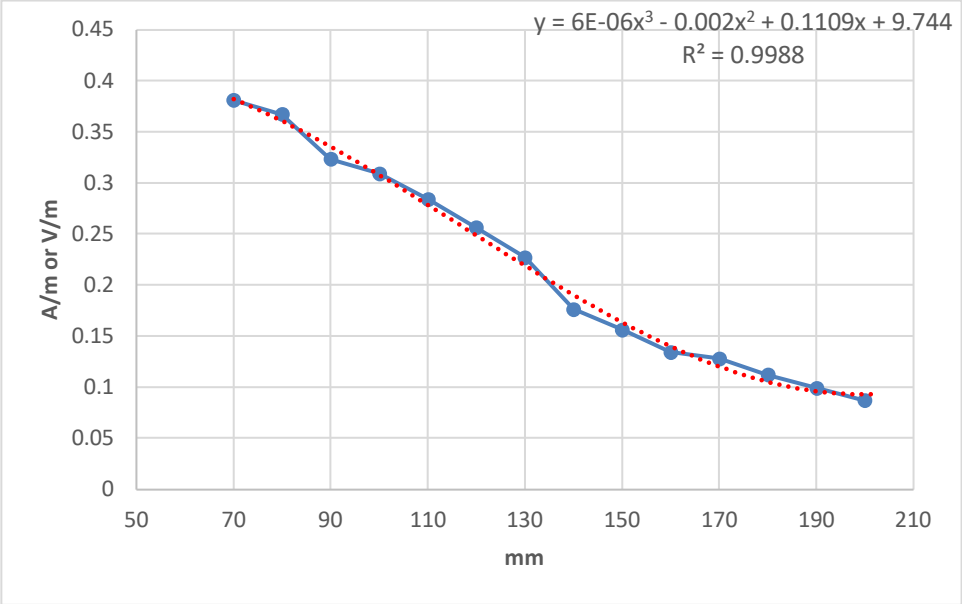


Model 2: Cubic Regression

E-Field

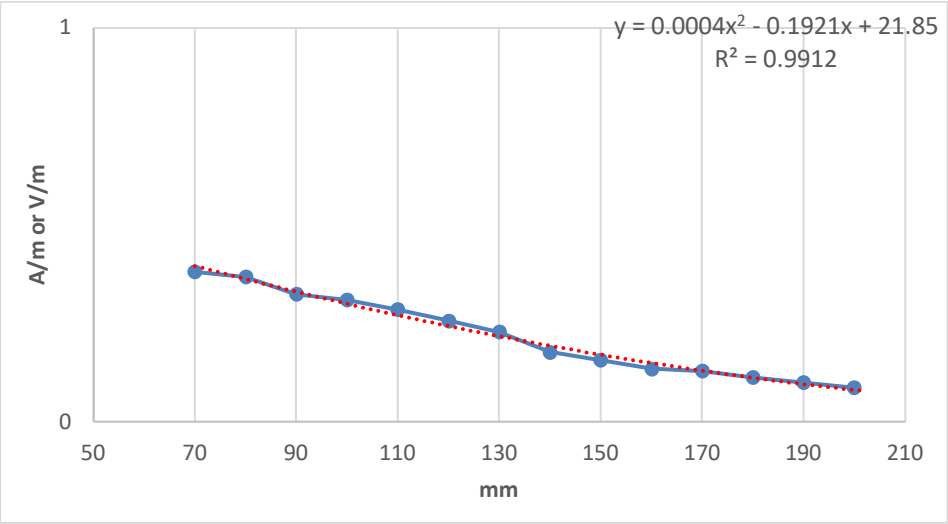


H-Field

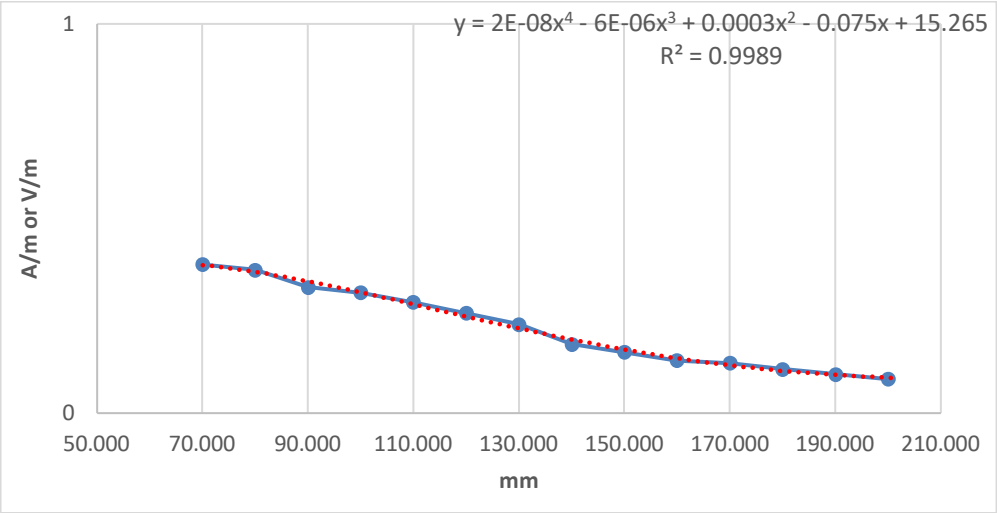


Model 3: Quartic Regression

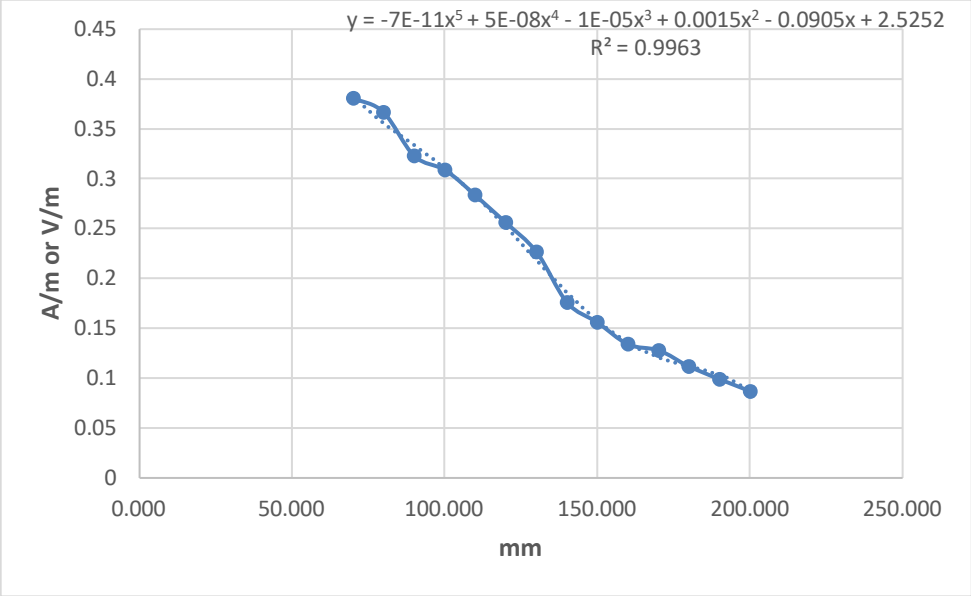
E-Field



H-Field



Model 4: **5th Order Regression**
E-Field



Analyzing Results
E-Field

Parameter	Quadratic Regression	Cubic Regression	Quartic Regression	5th Order Regression
Multiple R	0.998	0.999	0.999	0.999
R Square	0.996	0.997	0.998	0.998
Adjusted R Square	0.995	0.996	0.997	0.997
Standard Error (S)	0.106	0.089	0.080	0.085
Number of data points used	14	14	14	14
Estimated magnetic field strength at touch position (V/m)	10.104	7.774	13.768	14.248
Limit (V/m)	614	614	614	614
Result	Pass			
Note: The regression analysis utilized a confidence level of 95%, which is the minimum value that should be used by applicants, by using curve fitting techniques for modeling and calculation.				

H-Field

Parameter	Quadratic Regression	Cubic Regression	Quartic Regression
Multiple R	0.994	0.997	0.997
R Square	0.988	0.994	0.995
Adjusted R Square	0.986	0.992	0.992
Standard Error (S)	0.012	0.009	0.009
Number of data points used	14	14	14
Estimated magnetic field strength at touch position (A/m)	0.675	0.361	0.080
Limit (A/m)	1.63	1.63	1.63
Result	Pass		
Note: The regression analysis utilized a confidence level of 95%, which is the minimum value that should be used by applicants, by using curve fitting techniques for modeling and calculation.			

5 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the appendix A.

6 List of Tables

Table 1: List of Test and Measurement Equipment 5
Table 2: Measurement Uncertainty 5
Table 3: Technical Specification of EUT 7