



**Foreign Trade Corporation dba. Technocel**

Application  
For  
Certification

**FCC ID: SZQ-T160**

**Verizon Wireless Charging Pad**

**Model: VZW4COIL-WC**

**Brand: Verizon**

**Transmitter**

Report No.: 161017006SZN-001

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator, mention 47 CFR [10-1-15]

Prepared and Checked by:

Approved by:

Sign on file

Harry Wu  
Engineer

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Kidd Yang  
Senior Project Engineer  
Date: October 31, 2016

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
- This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results referenced from this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.
- For Terms And Conditions of the services, it can be provided upon request.
- The evaluation data of the report will be kept for 3 years from the date of issuance.

TRF No.: FCC 15C\_Tx\_b

**Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch**

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# INTERTEK TESTING SERVICES

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<i>EXHIBIT 8:</i>	Miscellaneous Information
<i>EXHIBIT 9:</i>	Test Equipment List

# INTERTEK TESTING SERVICES

## MEASUREMENT / TECHNICAL REPORT

Applicant: Foreign Trade Corporation dba. Technocel  
Address: 685 Cochran St. Simi Valley, California, 93065, United State

Manufacturer: Salcomp (Shenzhen) Co., Ltd.  
Address: Salcomp Road, Furong Industrial Area, Xinqiao, Shajing, Baoan District,  
Shenzhen 518125 China.

MODEL: VZW4COIL-WC

FCC ID: SZQ-T160

This report concerns (check one:)      Original Grant  Class II Change

Equipment Type: DCD-Low Power Transmitter Below 1705 kHz

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)?      Yes       No

If yes, defer until: \_\_\_\_\_  
date

Company Name agrees to notify the Commission by: \_\_\_\_\_  
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37?      Yes       No

If no, assumed Part 15, Subpart C for intentional radiator – the new 47 CFR [10-1-15 Edition] provision.

Report prepared by:

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# INTERTEK TESTING SERVICES

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## INTERTEK TESTING SERVICES

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List of attached file

Exhibit Type	File Description	Filename
Test Report	Test Report	report.pdf
Test Setup Photo	Radiated photos	radiated photos.pdf
Test Setup Photo	Conducted Emission	conducted photos.pdf
External Photo	External Photos	external photos.pdf
Internal Photo	Internal Photos	internal photos.pdf
Schematics	Circuit Diagram	circuit.pdf
Operation Description	Technical Description	descri.pdf
Block Diagram	Block Diagram	block.pdf
ID Label / Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Cover Letter	Letter of Agency	agency.pdf

# INTERTEK TESTING SERVICES

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## EXHIBIT 1

### GENERAL DESCRIPTION

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## INTERTEK TESTING SERVICES

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### 1.0 General Description

#### 1.1 Product Description

The equipment under test (EUT) is a Verizon Wireless Charging Pad operating at the frequency of 115KHz. The EUT is powered by DC15V from Adapter. You can charge your phone or other compatible device without the hassle of untangling charger cables. Just put your phone on the charging plate to start charging.

Antenna Type: Integral antenna (embedded coil antenna)  
For electronic filing, the brief circuit description is saved with filename: descri.pdf.

#### 1.2 Related Submittal(s) Grants

This is an application for certification of the Wireless Charging portion. And there is no corresponding unit for certification.

#### 1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10 (2013). Radiated emission measurement was performed in Semi-anechoic chamber. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

#### 1.4 Test Facility

The Semi-Anechoic chamber and shield room used to collect the radiated data and conducted data are **Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch** and located at 6F, D Block, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number: 242492).

**EXHIBIT 2**  
**SYSTEM TEST CONFIGURATION**



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## INTERTEK TESTING SERVICES

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### 2.0 **System Test Configuration**

#### 2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.10 (2013).

The EUT was powered by DC 15V from the Adapter with AC 120V 60Hz input during the testing, only the worst data was reported in this report.

For maximizing emissions below 30 MHz, the EUT was rotated through 360°, the centre of the loop antenna was placed 1 meter above the ground, and the antenna polarization was changed. For maximizing emission at and above 30 MHz, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step by step procedure for maximizing emissions led to the data report in Exhibit 3.0.

The rear of unit was flushed with the rear of the table when it was powered by adapter up to 1GHz.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was placed on turntable, which enabled the Engineer to maximize emissions through its placement in the three orthogonal axes.

#### 2.2 EUT Exercising Software

N/A.

#### 2.3 Special Accessories

N/A.

#### 2.4 Equipment Modification

Any modifications installed previous to testing by Foreign Trade Corporation dba. Technocel will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch.

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## INTERTEK TESTING SERVICES

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### 2.5 Measurement Uncertainty

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

### 2.6 Support Equipment List and Description

This product was tested in the following configuration:

Refer List:

Description	Manufacturer	Model No.
Mobile Phone	Samsung	SM-G9350
AC/DC adaptor	Salcomp	S53A02

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**EXHIBIT 3**  
**EMISSION RESULTS**

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### 3.0 Emission Results

Data is included worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

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### 3.1 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

$$FS = RA + AF + CF - AG + PD + AV$$

where FS = Field Strength in dB $\mu$ V/m

RA = Receiver Amplitude (including preamplifier) in dB $\mu$ V

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB

AG = Amplifier Gain in dB

PD = Pulse Desensitization in dB

AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$$FS = RA + AF + CF - AG + PD + AV$$

#### Example

Assume a receiver reading of 62.0dB $\mu$ V is obtained. The antenna factor of 7.4dB and cable factor of 1.6dB is added. The amplifier gain of 29dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0dB, and the resultant average factor was -10dB. The net field strength for comparison to the appropriate emission limit is 32dB $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

$$RA = 62.0\text{dB}\mu\text{V}$$

$$AF = 7.4\text{dB}$$

$$CF = 1.6\text{dB}$$

$$AG = 29.0\text{dB}$$

$$PD = 0\text{dB}$$

$$AV = -10\text{dB}$$

$$FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32\text{dB}\mu\text{V/m}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(32\text{dB}\mu\text{V/m})/20] = 39.8\mu\text{V/m}$$

## INTERTEK TESTING SERVICES

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### 3.2 Radiated Emission Data and Configuration Photograph

Worst Case Radiated Emission  
At  
45.142 MHz

Judgement: Passed by 7.7 dB

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos.pdf.

#### **TEST PERSONNEL:**

*Sign on file*

Harry Wu, Engineer  
*Typed / Printed Name*

October 26, 2016  
*Date*

## INTERTEK TESTING SERVICES

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Company: Foreign Trade Corporation dba. Technocel  
Date of Test: October 26, 2016  
Model: VZW4COIL-WC  
Operating Mode: Transfer initiation & termination mode at 115KHz

**Table 1**

**Radiated Emissions**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Vertical	0.115	66.9	0.0	14.8	81.7	106.4	-24.7
Vertical	0.230	40.4	0.0	15.1	55.5	100.4	-44.9
Horizontal	115.845	35.5	20.0	9.5	25.0	43.5	-18.5
Horizontal	164.830	34.4	20.0	11.0	25.4	43.5	-18.1
Horizontal	219.150	34.8	20.0	12.4	27.2	46.0	-18.8
Vertical	45.142	41.6	20.0	10.7	32.3	40.0	-7.7
Vertical	64.920	40.8	20.0	8.0	28.8	40.0	-11.2
Vertical	116.330	42.5	20.0	9.5	32.0	43.5	-11.5

**NOTES:**

1. Average detector is used for 9~90 KHz, 110~490 KHz and Quasi-Peak detector is used for other frequency band.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3 meter distances were measured at 0.3- meter and an inverse proportional extrapolation was performed to compare the signal level to the 3 meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Loop Antenna was used for the frequency band below 30MHz.
5. The formula of limit at frequencies below 30MHz is extrapolated according to FCC part 15.31 (f) as below.  
Limit dBuV/m at 3m = Limit dBuV/m at 300m + 40log(300/3) dB  
Limit dBuV/m at 3m = Limit dBuV/m at 30m + 40log(30/3) dB

Test Engineer: Harry Wu

## INTERTEK TESTING SERVICES

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### 3.3 Conducted Emission and Data Configuration Photograph

Worst Case Conducted Configuration  
at  
0.786 MHz

Judgement: Passed by 2.7 dB margin

For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

#### **TEST PERSONNEL:**

*Sign on file*

Harry Wu, Engineer  
*Typed/Printed Name*

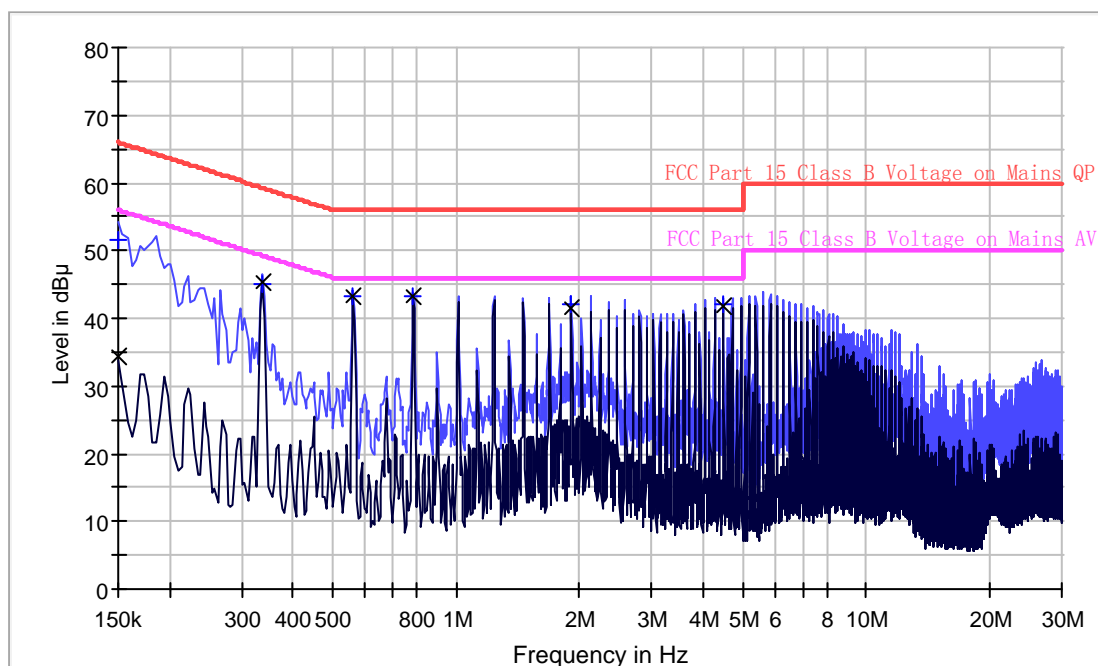
October 26, 2016  
*Date*



## INTERTEK TESTING SERVICES

Company: Foreign Trade Corporation dba. Technocel  
 Date of Test: October 26, 2016  
 Model: VZW4COIL-WC  
 Operating Mode: Transfer initiation & termination mode at 115KHz

### Conducted Emission Test - FCC



#### Limit and Margin QP

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.150000	51.6	L1	9.6	14.4	66.0
0.338000	45.1	L1	9.7	14.2	59.3
0.562000	43.2	L1	9.7	12.8	56.0
0.786000	43.3	L1	9.7	12.7	56.0
1.910000	42.1	L1	9.7	13.9	56.0
4.498000	42.1	L1	9.8	13.9	56.0

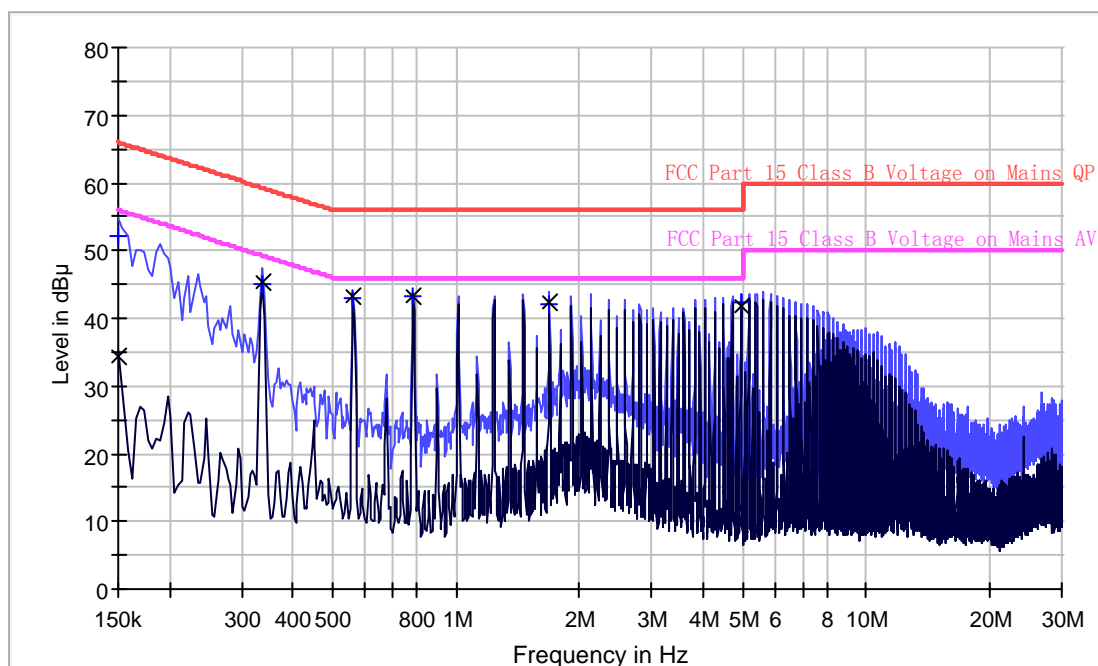
#### Limit and Margin AV

Frequency (MHz)	Average (dB $\mu$ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.150000	34.3	L1	9.6	21.7	56.0
0.338000	45.4	L1	9.7	3.9	49.3
0.562000	43.1	L1	9.7	2.9	46.0
0.786000	43.3	L1	9.7	2.7	46.0
1.910000	41.6	L1	9.7	4.4	46.0
4.498000	41.8	L1	9.8	4.2	46.0

## INTERTEK TESTING SERVICES

Company: Foreign Trade Corporation dba. Technocel  
 Date of Test: October 26, 2016  
 Model: VZW4COIL-WC  
 Operating Mode: Transfer initiation & termination mode at 115KHz

### Conducted Emission Test - FCC



#### Limit and Margin QP

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.150000	52.2	N	9.6	13.8	66.0
0.338000	44.9	N	9.7	14.4	59.3
0.562000	43.0	N	9.7	13.0	56.0
0.786000	43.1	N	9.7	12.9	56.0
1.686000	42.1	N	9.7	13.9	56.0
4.949000	42.3	N	9.8	13.7	56.0

#### Limit and Margin AV

Frequency (MHz)	Average (dB $\mu$ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.150000	34.5	N	9.6	21.5	56.0
0.338000	45.3	N	9.7	4.0	49.3
0.562000	43.2	N	9.7	2.8	46.0
0.786000	43.2	N	9.7	2.8	46.0
1.686000	42.3	N	9.7	3.7	46.0
4.949000	41.8	N	9.8	4.2	46.0

**INTERTEK TESTING SERVICES**

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**EXHIBIT 4**  
**EQUIPMENT PHOTOGRAPHS**

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### 4.0 Equipment Photographs

For electronic filing, photographs of the tested EUT are saved with filename: external photos.pdf and internal photos.pdf.

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**INTERTEK TESTING SERVICES**

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**EXHIBIT 5**  
**PRODUCT LABELLING**

## INTERTEK TESTING SERVICES

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### 5.0 **Product Labelling**

For electronics filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

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**INTERTEK TESTING SERVICES**

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**EXHIBIT 6**

**TECHNICAL SPECIFICATIONS**

## INTERTEK TESTING SERVICES

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### 6.0 Technical Specifications

For electronic filing, the block diagram of the tested EUT is saved with filename: block.pdf and circuit.pdf respectively.



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**INTERTEK TESTING SERVICES**

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**EXHIBIT 7**  
**INSTRUCTION MANUAL**

## INTERTEK TESTING SERVICES

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### 7.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold / leased in the United States.

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**INTERTEK TESTING SERVICES**

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**EXHIBIT 8**

**MISCELLANEOUS INFORMATION**

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## INTERTEK TESTING SERVICES

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### 8.0 Miscellaneous Information

This miscellaneous information includes emission measuring procedure.

### 8.1 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of transmitter operating under Part 15, Subpart C rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.10 (2013).

The Transmitter equipment under test (EUT) is placed on a styrene turntable which is four feet in diameter, up to 1GHz 0.8m in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjust through all three orthogonal axes to obtain maximum emission levels. For maximizing emissions below 30 MHz, the EUT was rotated through 360°, the centre of the loop antenna was placed 1 meter above the ground, and the antenna polarization was changed. For maximizing emission at and above 30 MHz, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed.

The IF bandwidth used for measurement of radiated signal strength was 10 KHz for emission below 30 MHz and 120 KHz for emission from 30 MHz to 1000 MHz.

For radiated emission, the frequency range scanned is 9KHz to 1GHz. For line conducted emissions, the range scanned is 150 KHz to 30 MHz.

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**INTERTEK TESTING SERVICES**

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**EXHIBIT 9**  
**TEST EQUIPMENT LIST**

## INTERTEK TESTING SERVICES

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### 9.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-12	BiConiLog Antenna	ETS	3142E	00166158	9-Sep-2016	9-Sep-2017
SZ185-01	EMI Receiver	R&S	ESCI	100547	23-Jan-2016	23-Jan-2017
SZ061-06	Active Loop Antenna	Electro-Metrics	EM-6876	217	11-May-2016	11-May-2017
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	23-Jan-2016	23-Jan-2017
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	16-Apr-2016	16-Apr-2018
SZ062-02	RF Cable	RADIAL	RG 213U	--	27-Jun-16	27-Dec-2016
SZ062-05	RF Cable	RADIAL	0.04-26.5GHz	--	26-Sep-2016	26-Mar-2017
SZ062-12	RF Cable	RADIAL	0.04-26.5GHz	--	26-Sep-2016	26-Mar-2017
SZ067-04	Notch Filter	Micro-Tronics	BRM5070 2-02	--	23-May-2016	23-May-2017
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	3-Nov-2015	3-Nov-2016
SZ187-01	Two-Line V-Network	R&S	ENV216	100072	3-Nov-2015	3-Nov-2016
SZ187-02	Two-Line V-Network	R&S	ENV216	100073	1-Jul-2016	1-Jul-2017
SZ188-03	Shielding Room	ETS	RFD-100	4100	17-Aug-2016	17-Aug-2018

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## INTERTEK TESTING SERVICES

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### 10.0 Annex

#### Document History

Report No.	Issue Date	Comments
161017006SZN-001	October 31, 2016	Original