

WARNER BROS. HOME ENTERTAINMENT INC.

Application
For
Certification

FCC ID: 2ADL5-3000061480

ZEUS XBOX 360 PORTAL

Model: 3000061480

Class B Personal Computer Peripherals

Report No.: SZHH00944908-002

Prepared and Checked by:

Approved by:

Sign on file

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Senior Engineer

Andy Yan
Senior Project Engineer
Date: April 24, 2015

- 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.
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- The evaluation data of the report will be kept for 3 years from the date of issuance.

TRF No.: FCC 15C_PC_b

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INTERTEK TESTING SERVICES

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MEASUREMENT / TECHNICAL REPORT

WARNER BROS. HOME ENTERTAINMENT INC.

MODEL: 3000061480

FCC ID: 2ADL5-3000061480

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

Equipment Type: JBP-Part 15 Class B Computing Device/Peripherals

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 B for unintentional radiator – the new 47 CFR [10-01-13 Edition] provision.

Report prepared by:

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List of attached file

| Exhibit type | File Description | Filename |
|-------------------|----------------------------|----------------------|
| Test Report | Test Report | report.pdf |
| Test Setup Photo | Radiated Emission | radiated photos.pdf |
| Test Setup Photo | Conducted Emission | conducted photos.pdf |
| External Photo | External Photo | external photos.pdf |
| Internal Photo | Internal Photo | internal photos.pdf |
| Block Diagram | Block Diagram | block.pdf |
| ID Label/Location | Label Artwork and Location | label.pdf |
| User Manual | User Manual | manual.pdf |
| Cover Letter | Confidentiality Letter | request.pdf |
| Cover Letter | Letter of Agency | agency.pdf |

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EXHIBIT 1

GENERAL DESCRIPTION

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1.0 General Description

1.1 Product Description

The equipment under test (EUT) is a transceiver for a ZEUS XBOX 360 PORTAL model: 3000061480 operating at 13.56 MHz. The EUT is powered by DC 5.0V with power by USB host Unit. Data can be transferred through USB port between the personal computers and the EUT. For more detailed features description, please refer to the user's manual.

1.2 Related Submittal(s) Grants

This is an application for certification of a computer peripherals.

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2009). Radiated emission measurement was performed in Semi-anechoic chamber and conducted emission measurement was performed in shield room. 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 shielding room used to collect the radiated data and conducted data are **Intertek Test 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

INTERTEK TESTING SERVICES

2.0 **System Test Configuration**

2.1 Justification

The system was configured for Test in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4 (2009).

The EUT was powered by DC 5.0V USB Port through the notebook (the notebook was powered through AC 120V/60Hz) during test.

For maximizing emissions, 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 step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The rear of unit shall be flushed with the rear of the table.

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

The frequency range from 30MHz to 1GHz (EUT highest frequency is less than 1GHz, so according to 15.33, the test range is update to 1GHz) was searched for spurious emissions from the device. Only those emissions reported were detected. All other emissions were at least 20 dB below the applicable limits.

2.2 EUT Exercising Software

The EUT exercise program (provided by client) used during radiated and conducted Test was designed to exercise the various system components in a manner similar to a typical use. The worst case configuration is used in all specified Test.

2.3 Special Accessories

There are no special accessories necessary for compliance of this product.

2.4 Equipment Modification

Any modifications installed previous to Test by WARNER BROS. HOME ENTERTAINMENT INC. Will be incorporated in each production model sold / leased in the United States.

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

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. |
|-------------|--------------|--------------------------|
| Laptop | Lenovo | T420 |
| Hard Disk | Smart.drive | HD-003 |
| 1394 Cable | Smart.drive | Unshielded, Length 180cm |
| USB Cable | Smart.drive | Unshielded, Length 120cm |

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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 μ V/m

RA = Receiver Amplitude (including preamplifier) in dB μ 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 μ 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 μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

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

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

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

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

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

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

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

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

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3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
At
40.67MHz (Data transfer Mode)

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

3.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 5.8dB margin (Data transfer Mode)

TEST PERSONNEL:

Sign on file

Jimmy Wen Senior Engineer
Typed/Printed Name

April 11, 2015
Date

INTERTEK TESTING SERVICES

Applicant: WARNER BROS. HOME ENTERTAINMENT INC.

Model: 3000061480

Worst case operating Mode: Data transfer and transmitting

Radiated Emissions (30MHz~1GHz)

| Polarization | Frequency (MHz) | Reading (dBμV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m (dBμV/m) | Limit at 3m (dBμV/m) | Margin (dB) |
|--------------|-----------------|----------------|-------------------|---------------------|--------------------|----------------------|-------------|
| Horizontal | 54.240 | 30.8 | 20.0 | 16.8 | 27.6 | 40.0 | -12.4 |
| Horizontal | 121.665 | 29.0 | 20.0 | 20.8 | 29.8 | 43.5 | -13.7 |
| Horizontal | 242.430 | 34.9 | 20.0 | 22.7 | 37.6 | 46.0 | -8.4 |
| Vertical | 40.670 | 37.4 | 20.0 | 16.8 | 34.2 | 40.0 | -5.8 |
| Vertical | 94.990 | 25.5 | 20.0 | 20.8 | 26.3 | 43.5 | -17.2 |
| Vertical | 110.025 | 24.8 | 20.0 | 22.7 | 27.5 | 43.5 | -16.0 |

NOTES:

1. Quasi-Peak detector is used for frequency up to 1GHz.
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.

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3.4 Conducted Emission Configuration Photograph

Worst Case Conducted Configuration
at
13.562 MHz (Data transfer Mode)

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

3.5 Conducted Emission Data

Judgement: Passed by 7.1 dB margin (Data transfer Mode)

TEST PERSONNEL:

Sign on file

Jimmy Wen Senior Engineer
Typed/Printed Name

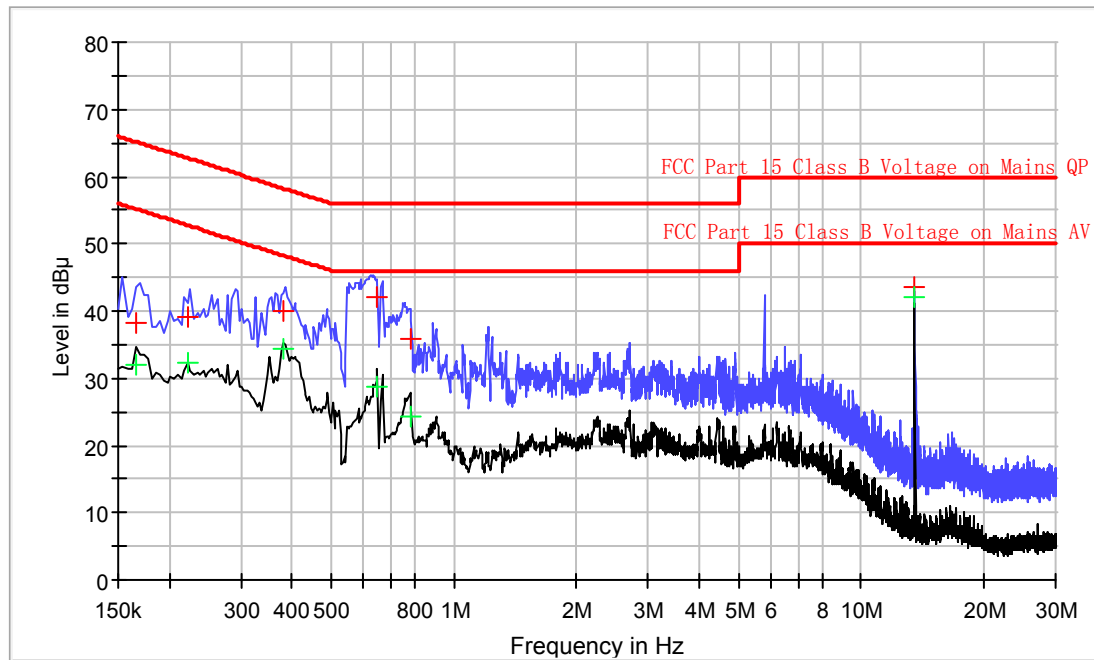
April 11, 2015
Date

INTERTEK TESTING SERVICES

Applicant: WARNER BROS. HOME ENTERTAINMENT INC.
Model: 3000061480
Worst case operating Mode: Data transfer and transmitting
Line: Live

Conducted Emission Test – FCC

Pursuant to 15.107 Emissions Requirement



Result Table QP

| Frequency (MHz) | QuasiPeak (dB μ V) | Line | Margin (dB) | Limit (dB μ V) |
|-----------------|--------------------|------|-------------|----------------|
| 0.166000 | 38.1 | L1 | 27.1 | 65.2 |
| 0.222000 | 39.2 | L1 | 23.5 | 62.7 |
| 0.382000 | 40.1 | L1 | 18.1 | 58.2 |
| 0.650000 | 42.1 | L1 | 13.9 | 56.0 |
| 0.782000 | 35.9 | L1 | 20.1 | 56.0 |
| 13.562000 | 43.6 | L1 | 16.4 | 60.0 |

Result Table AV

| Frequency (MHz) | Average (dB μ V) | Line | Margin (dB) | Limit (dB μ V) |
|-----------------|------------------|------|-------------|----------------|
| 0.166000 | 32.0 | L1 | 23.2 | 55.2 |
| 0.222000 | 32.4 | L1 | 20.3 | 52.7 |
| 0.382000 | 34.4 | L1 | 13.8 | 48.2 |
| 0.650000 | 28.8 | L1 | 17.2 | 46.0 |
| 0.782000 | 24.3 | L1 | 21.7 | 46.0 |
| 13.562000 | 42.1 | L1 | 7.9 | 50.0 |

TRF No.: FCC 15C_PC_b
FCC ID: 2ADL5-3000061480
Report No.: SZHH00944908-002

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Applicant: WARNER BROS. HOME ENTERTAINMENT INC.

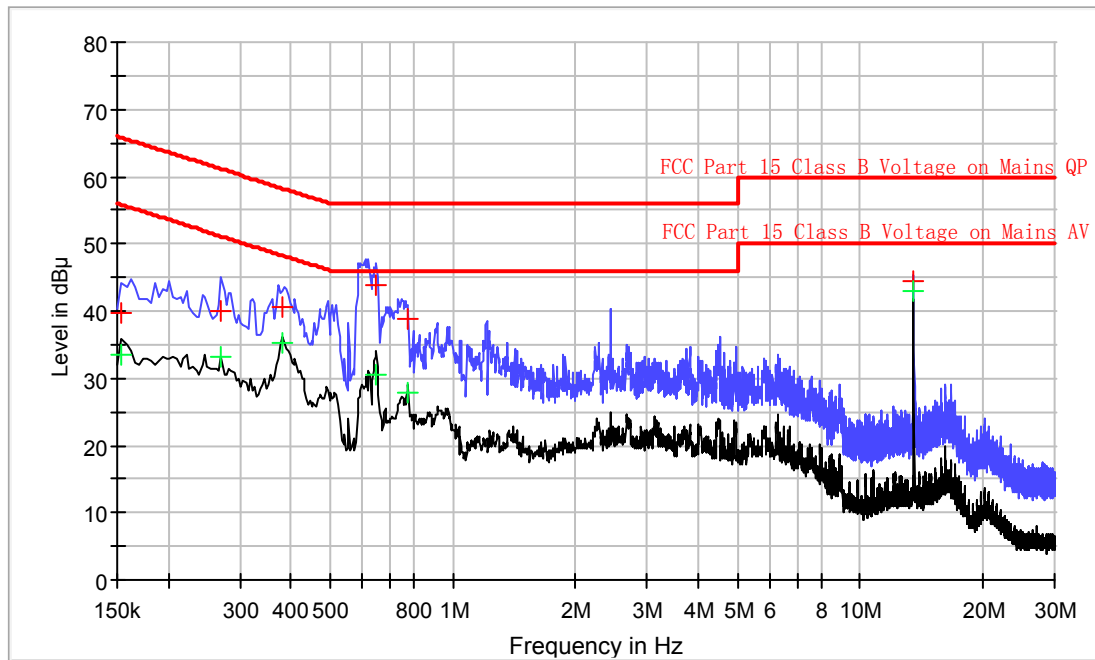
Model: 3000061480

Worst case operating Mode: Data transfer and transmitting

Line: Neutral

Conducted Emission Test – FCC

Pursuant to 15.107 Emissions Requirement



Result Table QP

| Frequency (MHz) | QuasiPeak (dB μ V) | Line | Margin (dB) | Limit (dB μ V) |
|-----------------|------------------------|------|-------------|--------------------|
| 0.154000 | 39.8 | N | 26.0 | 65.8 |
| 0.270000 | 40.0 | N | 21.1 | 61.1 |
| 0.382000 | 40.7 | N | 17.5 | 58.2 |
| 0.650000 | 43.9 | N | 12.1 | 56.0 |
| 0.778000 | 38.8 | N | 17.2 | 56.0 |
| 13.562000 | 44.4 | N | 15.6 | 60.0 |

Result Table AV

| Frequency (MHz) | Average (dB μ V) | Line | Margin (dB) | Limit (dB μ V) |
|-----------------|----------------------|------|-------------|--------------------|
| 0.154000 | 33.6 | N | 22.2 | 55.8 |
| 0.270000 | 33.1 | N | 18.0 | 51.1 |
| 0.382000 | 35.1 | N | 13.1 | 48.2 |
| 0.650000 | 30.4 | N | 15.6 | 46.0 |
| 0.778000 | 27.9 | N | 18.1 | 46.0 |
| 13.562000 | 42.9 | N | 7.1 | 50.0 |

TRF No.: FCC 15C_PC_b

FCC ID: 2ADL5-3000061480

Report No.: SZHH00944908-002

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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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EXHIBIT 5

PRODUCT LABELLING

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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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EXHIBIT 6

TECHNICAL SPECIFICATIONS

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6.0 **Technical Specifications**

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

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EXHIBIT 7

INSTRUCTION MANUAL

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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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EXHIBIT 8

MISCELLANEOUS INFORMATION

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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 Test Services in the measurements of computer peripheral operating under Part 15, Subpart B rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 - 2009.

The computer equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter 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 antenna height and polarization are varied during the Test to search for maximum signal levels. The height of the antenna is varied from one to four meters.

Detector function for radiated emissions are in QP mode from the frequency band 30MHz to 1GHz with RBW setting 120kHz. Detector function for conducted emissions are in QP & AV mode and IFBW setting is 9kHz from the frequency band 150kHz to 30MHz.

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

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8.1 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

Conducted measurements are made as described in ANSI C63.4 - 2009.

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EXHIBIT 9

CONFIDENTIALITY REQUEST

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9.0 **Confidentiality Request**

For electronic filing, the confidentiality request of the tested EUT is saved with filename: request.pdf.

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EXHIBIT 10

TEST EQUIPMENT LIST

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10.0 Test Equipment List

| Equipment No. | Equipment | Manufacturer | Model No. | Serial No. | Cal. Date | Due Date |
|---------------|--------------------|--------------|--------------|------------|-------------|-------------|
| SZ061-03 | BiConiLog Antenna | ETS | 3142C | 00066460 | 28-Jun-2014 | 28-Jun-2015 |
| SZ185-01 | EMI Receiver | R&S | ESCI | 100547 | 10-May-2014 | 10-May-2015 |
| SZ188-01 | Anechoic Chamber | ETS | RFD-F/A-100 | 4102 | 19-Apr-2014 | 19-Apr-2015 |
| SZ062-02 | RF Cable | RADIAL | RG 213U | -- | 03-Jan-2015 | 03-Jan-2016 |
| SZ062-05 | RF Cable | RADIAL | 0.04-26.5GHz | -- | 29-Oct-2014 | 29-Apr-2015 |
| SZ062-12 | RF Cable | RADIAL | 0.04-26.5GHz | -- | 29-Oct-2014 | 29-Apr-2015 |
| SZ185-02 | EMI Test Receiver | R&S | ESCI | 100692 | 01-Nov-2014 | 01-Nov-2015 |
| SZ187-01 | Two-Line V-Network | R&S | ENV216 | 100072 | 01-Nov-2014 | 01-Nov-2015 |
| SZ187-02 | Two-Line V-Network | R&S | ENV216 | 100073 | 16-Jun-2014 | 16-Jun-2015 |
| SZ188-03 | Shielding Room | ETS | RFD-100 | 4100 | 23-Aug-2014 | 23-Aug-2015 |