



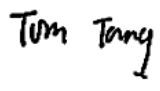
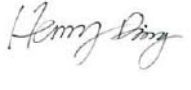
# FCC PART 27 MEASUREMENT AND TEST REPORT

For

**Portal 724, LLC**

275 Hartz Way::105, Secaucus, New Jersey, United States, 07094

**FCC ID: 2ABGJ-CN-MN724**

<b>Report Type:</b> Revised Report	<b>Product Name:</b> Tablet PC
<b>Test Engineer:</b> <u>Tom Tang</u> 	
<b>Report Number:</b> <u>RDG161110006D-M1</u>	
<b>Report Date:</b> <u>2017-02-07</u>	
<b>Reviewed By:</b> <u>Henry Ding</u>  EMC Leader	
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## **TABLE OF CONTENTS**

<b>DOCUMENT REVISION HISTORY.....</b>	<b>3</b>
<b>GENERAL INFORMATION .....</b>	<b>4</b>
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) .....	4
OBJECTIVE .....	4
RELATED SUBMITTAL(S)/GRANT(S) .....	4
TEST METHODOLOGY .....	4
TEST FACILITY .....	5
<b>SYSTEM TEST CONFIGURATION .....</b>	<b>6</b>
JUSTIFICATION.....	6
EQUIPMENT MODIFICATIONS .....	6
SUPPORT EQUIPMENT LIST AND DETAILS.....	6
CONFIGURATION OF TEST SETUP .....	6
BLOCK DIAGRAM OF TEST SETUP .....	7
<b>SUMMARY OF TEST RESULTS.....</b>	<b>8</b>
<b>FCC §1.1310 &amp; §2.1093- RF EXPOSURE .....</b>	<b>9</b>
APPLICABLE STANDARD.....	9
TEST RESULT .....	9
<b>FCC §2.1047 - MODULATION CHARACTERISTIC .....</b>	<b>10</b>
<b>FCC § 2.1046&amp; § 27.50 - RF OUTPUT POWER.....</b>	<b>11</b>
APPLICABLE STANDARD.....	11
TEST PROCEDURE .....	11
TEST EQUIPMENT LIST AND DETAILS .....	12
TEST DATA .....	12
<b>FCC §2.1053, §22.917 &amp; §24.238 &amp; §27.53- SPURIOUS RADIATED EMISSIONS.....</b>	<b>15</b>
APPLICABLE STANDARD.....	15
TEST PROCEDURE .....	15
TEST EQUIPMENT LIST AND DETAILS .....	16
TEST DATA .....	16

## DOCUMENT REVISION HISTORY

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Revision Number	Report Number	Description of Revision	Date of Revision
0	RDG161110006D	Original Report	2017-01-10
1	RDG161110006D-M1	Revised Report	2017-02-07

Note: This report is to supersede the original report: RDG161110006D.

## GENERAL INFORMATION

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### Product Description for Equipment under Test (EUT)

The **Portal 724, LLC** 's product, model number: **MN-724 (FCC ID: 2ABGJ-CN-MN724)** (the "EUT") in this report was a **Tablet PC**, which was measured approximately: 20.06 cm (L) × 12.46 cm (W) × 1.41 cm (H), rated input voltage: DC3.7V battery or DC5V charging from adapter. The device build in a certified module, module model number: ME206v-561, FCC ID: QISME206V-561, cetified on 2014-06-06, only LTE band 4 and band 13 were enabled in this device.

#### Adapter Information:

MODEL: KA1517-0502000USU

INPUT: 100-240V~ 50/60Hz 0.35A Max

OUTPUT: DC5V 2000mA

*\*All measurement and test data in this report was gathered from final production sample, serial number: 161110006 (assigned by the BACL, Chengdu). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2016-11-14, and EUT conformed to test requirement.*

### Objective

This report is prepared on behalf of **Portal 724, LLC** in accordance with: Part 2-Subpart J, part 27 of the Federal Communications Commission's rules.

The objective is to determine compliance with FCC rules for output power, modulation characteristic, occupied bandwidth, spurious emissions at antenna terminal, spurious radiated emission, frequency stability and band edge.

### Related Submittal(s)/Grant(s)

FCC Part 15B JBP submissions with FCC ID: 2ABGJ-CN-MN724.

FCC Part 15C DTS submissions with FCC ID: 2ABGJ-CN-MN724.

FCC Part 15C DSS submissions with FCC ID: 2ABGJ-CN-MN724.

### Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J, Part 27.

Applicable Standards: TIA/EIA 603-D-2010.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Chengdu).

## **Test Facility**

The test site used by BACL to collect test data is located in the 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, China.

Test site at BACL has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on April 24, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 560332. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

## SYSTEM TEST CONFIGURATION

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### Justification

The EUT was configured for testing according to TIA/EIA-603-D-2010.

The test items were performed with the EUT operating at testing mode.

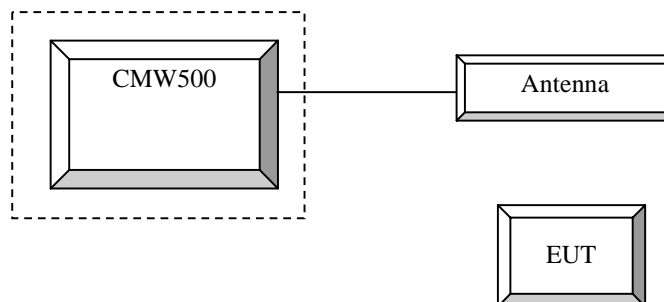
### Equipment Modifications

No modification was made to the EUT.

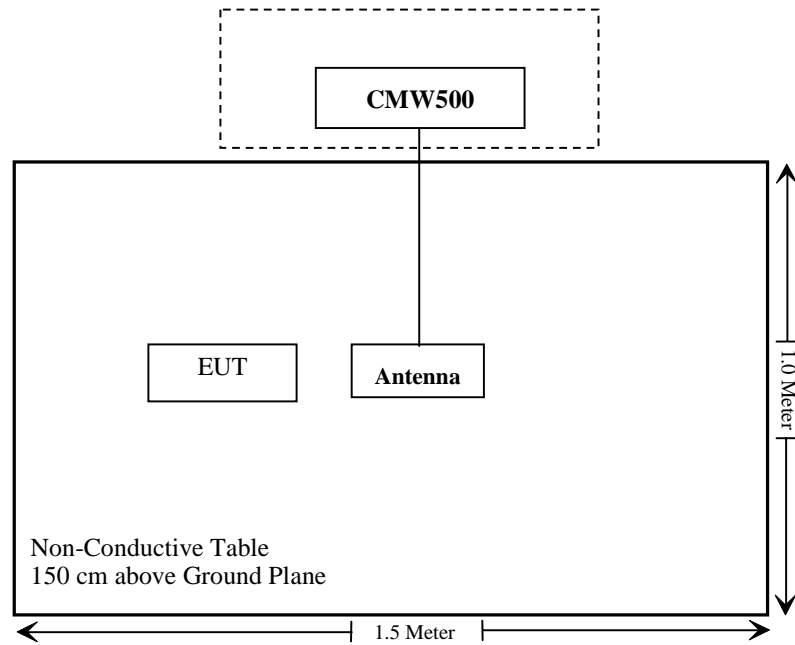
### Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	Universal Radio Communication Tester	CMW500	106891
N/A	ANTENNA	N/A	N/A

### Configuration of Test Setup



## Block Diagram of Test Setup



## SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310, §2.1093	RF Exposure	Compliance
§2.1046; §27.50	RF Output Power	Compliance
§ 2.1047	Modulation Characteristics	Compliance*
§ 2.1049; §27.53	Occupied Bandwidth	Compliance*
§ 2.1051, §27.53	Spurious Emissions at Antenna Terminal	Compliance*
§ 2.1053 §27.53	Spurious Radiation Emissions	Compliance
§27.53	Out of band emission, Band Edge	Compliance*
§ 2.1055 §27.54	Frequency stability vs. temperature Frequency stability vs. voltage	Compliance*

**Note:**

Compliance\*: the device build in a certified module, module model number: ME206v-561, FCC ID: QISME206V-561, cetified on 2014-06-06, please refer to the module report SYBH(Z-RF)038052014-2001 which was issued on 2014-05-30 by Huawei Proprietary and Confidential Copyright © Huawei Technologies Co., Ltd.



## **FCC §1.1310 & §2.1093- RF EXPOSURE**

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### **Applicable Standard**

FCC§1.1310 and §2.1093.

### **Test Result**

Compliant, please refer to the SAR report: RDG161110006-20M1.

## **FCC §2.1047 - MODULATION CHARACTERISTIC**

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According to FCC § 2.1047(d), Part 27 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

## FCC § 2.1046& § 27.50 - RF OUTPUT POWER

### Applicable Standard

According to FCC §2.1046 and §27.50 (d), (4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

### Test Procedure

#### LTE (FDD):

The following tests were conducted according to the test requirements in 3GPP TS36.101

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3

Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

The allowed A-MPR values specified below in Table 6.2.4-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signalling Value of "NS\_01".

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks ( $N_{RB}$ )	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4, 10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10,15,20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	n/a
NS_07	6.6.2.2.3	13	10	Table 6.2.4-2	Table 6.2.4-2
	6.6.3.3.2				
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 <sup>1</sup>	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-

Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.

*Radiated method:*

ANSI/TIA 603-D section 2.2.17

## Test Equipment List and Details

Manufacturer	Description	Model Number	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2016-12-02	2017-12-01
Sunol Sciences	Broadband Antenna	JB3	A101808	2016-04-10	2019-04-09
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2016-12-02	2017-12-01
ETS	Horn Antenna	3115	003-6076	2016-12-02	2017-12-01
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-0113024	2014-06-16	2017-06-15
EMCO	Adjustable Dipole Antenna	3121C	9109-258	N/A	N/A
HP	Signal Generator	8648C	3623A04150	2016-05-23	2017-05-22
WILTRON	SWEPT FREQUENCY SYNTHESIZER	6737	213001	2016-05-23	2017-05-22
EMCT	Semi-Anechoic Chamber	966	N/A	2015-04-24	2018-04-23
N/A	RF Cable (below 1GHz)	NO.1	N/A	2016-11-10	2017-11-09
N/A	RF Cable (below 1GHz)	NO.4	N/A	2016-11-10	2017-11-09
N/A	RF Cable (above 1GHz)	NO.2	N/A	2016-11-10	2017-11-09
R&S	Wideband Radio Communication Tester	CMW500	106891	2016-11-23	2017-11-23

\* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

## Test Data

### Environmental Conditions

<b>Temperature:</b>	26.3 °C
<b>Relative Humidity:</b>	41 %
<b>ATM Pressure:</b>	100.8 kPa

*The testing was performed by Tom Tang on 2016-12-12.*

Note: Conducted output power please refer to the module report SYBH(Z-RF)038052014-2001, which was issued on 2014-05-30 by Huawei Proprietary and Confidential Copyright © Huawei Technologies Co., Ltd.

ERP & EIRP

LTE Band 13

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK 5M BW Middle Channel								
782	H	93.23	16.5	0.0	0.6	15.9	34.8	18.9
782	V	94.58	18	0.0	0.6	17.4	34.8	17.4
16-QAM 5M BW Middle Channel								
782	H	93.01	16.3	0.0	0.6	15.7	34.8	19.1
782	V	94.23	17.7	0.0	0.6	17.1	34.8	17.7
QPSK 10M BW Middle Channel								
782	H	92.98	16.3	0.0	0.6	15.7	34.8	19.1
782	V	94.12	17.6	0.0	0.6	17.0	34.8	17.8
16-QAM 10M BW Middle Channel								
782	H	92.23	15.5	0.0	0.6	14.9	34.8	19.9
782	V	93.73	17.2	0.0	0.6	16.6	34.8	18.2

**LTE Band IV**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK 1.4 MHz Middle Channel								
1732.5	H	86.11	10.7	7.9	0.9	17.7	30.0	12.3
1732.5	V	87.02	12.7	7.9	0.9	19.7	30.0	10.3
QPSK 3 MHz Middle Channel								
1732.5	H	84.17	8.7	7.9	0.9	15.7	30.0	14.3
1732.5	V	86.57	12.2	7.9	0.9	19.2	30.0	10.8
QPSK 5 MHz Middle Channel								
1732.5	H	82.95	7.5	7.9	0.9	14.5	30.0	15.5
1732.5	V	86.24	11.9	7.9	0.9	18.9	30.0	11.1
QPSK 10 MHz Middle Channel								
1732.5	H	81.78	6.3	7.9	0.9	13.3	30.0	16.7
1732.5	V	85.45	11.1	7.9	0.9	18.1	30.0	11.9
QPSK 15 MHz Middle Channel								
1732.5	H	81.05	5.6	7.9	0.9	12.6	30.0	17.4
1732.5	V	84.87	10.5	7.9	0.9	17.5	30.0	12.5
QPSK 20 MHz Middle Channel								
1732.5	H	81.05	5.6	7.9	0.9	12.6	30.0	17.4
1732.5	V	84.87	10.5	7.9	0.9	17.5	30.0	12.5
16QAM 1.4 MHz Middle Channel								
1732.5	H	86.1	10.7	7.9	0.9	17.7	30.0	12.3
1732.5	V	87.01	12.7	7.9	0.9	19.7	30.0	10.3
16QAM 3 MHz Middle Channel								
1732.5	H	85.59	10.1	7.9	0.9	17.1	30.0	12.9
1732.5	V	86.12	11.8	7.9	0.9	18.8	30.0	11.2
16QAM 5 MHz Middle Channel								
1732.5	H	85.31	9.9	7.9	0.9	16.9	30.0	13.1
1732.5	V	86.16	11.8	7.9	0.9	18.8	30.0	11.2
16QAM 10 MHz Middle Channel								
1732.5	H	84.85	9.4	7.9	0.9	16.4	30.0	13.6
1732.5	V	85.03	10.7	7.9	0.9	17.7	30.0	12.3
16QAM 15 MHz Middle Channel								
1732.5	H	83.79	8.3	7.9	0.9	15.3	30.0	14.7
1732.5	V	85.52	11.2	7.9	0.9	18.2	30.0	11.8
16QAM 20 MHz Middle Channel								
1732.5	H	82.13	6.7	7.9	0.9	13.7	30.0	16.3
1732.5	V	84.59	10.3	7.9	0.9	17.3	30.0	12.7

## **FCC §2.1053, §22.917 & §24.238 & §27.53- SPURIOUS RADIATED EMISSIONS**

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### **Applicable Standard**

FCC § 2.1053, §22.917, § 24.238 and § 27.53.

### **Test Procedure**

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB =  $10 \lg (\text{TXpwr in Watts}/0.001)$  – the absolute level

Spurious attenuation limit in dB =  $43 + 10 \text{Log}_{10} (\text{power out in Watts})$

## Test Equipment List and Details

Manufacturer	Description	Model Number	Serial Number	Calibration Date	Calibration Due Date
Agilent	Amplifier	8447D	2944A10442	2016-12-02	2017-12-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2016-12-02	2017-12-01
Sunol Sciences	Broadband Antenna	JB3	A101808	2016-04-10	2019-04-09
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2016-12-02	2017-12-01
ETS	Horn Antenna	3115	003-6076	2016-12-02	2017-12-01
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-0113024	2014-06-16	2017-06-15
EMCO	Adjustable Dipole Antenna	3121C	9109-258	N/A	N/A
HP	Signal Generator	8648C	3623A04150	2016-05-23	2017-05-22
WILTRON	SWEPT FREQUENCY SYNTHESIZER	6737	213001	2016-05-23	2017-05-22
Mini-circuits	Amplifier	ZVA-183-S+	771001215	2016-05-20	2017-05-19
EMCT	Semi-Anechoic Chamber	966	N/A	2015-04-24	2018-04-23
N/A	RF Cable (below 1GHz)	NO.1	N/A	2016-11-10	2017-11-09
N/A	RF Cable (below 1GHz)	NO.4	N/A	2016-11-10	2017-11-09
N/A	RF Cable (above 1GHz)	NO.2	N/A	2016-11-10	2017-11-09

\* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

## Test Data

### Environmental Conditions

<b>Temperature:</b>	26.5 °C
<b>Relative Humidity:</b>	41 %
<b>ATM Pressure:</b>	101 kPa

*The testing was performed by Tom Tang on 2017-01-06.*

*EUT Operation Mode: Transmitting*



**LTE Band IV (30MHz-18GHz):**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK, Frequency:1732.500 MHz								
244.32	H	37.06	-77.1	0.0	0.3	-77.4	-13.0	64.4
218.17	V	38.58	-73.7	0.0	0.2	-73.9	-13.0	60.9
3465	H	32.72	-63.8	8.8	1.3	-56.3	-13.0	43.3
3465	V	33.64	-63	8.8	1.3	-55.5	-13.0	42.5
5197.5	H	31.93	-61.3	10.0	1.7	-53.0	-13.0	40.0
5197.5	V	32.58	-60.5	10.0	1.7	-52.2	-13.0	39.2

**LTE Band 13 (30MHz-10GHz)**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK, Frequency: 782.000 MHz								
244.32	H	37.69	-76.5	0.0	0.3	-76.8	-13.0	63.8
218.17	V	39.45	-72.9	0.0	0.2	-73.1	-13.0	60.1
1564	H	34.72	-68.5	7.8	0.8	-61.5	-13.0	48.5
1564	V	35.17	-67.2	7.8	0.8	-60.2	-13.0	47.2
2346	H	33.56	-66.1	8.7	1.3	-58.7	-13.0	45.7
2346	V	34.32	-62.6	8.7	1.3	-55.2	-13.0	42.2

Note:

- 1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
- 2) Absolute Level = SG Level - Cable loss + Antenna Gain
- 3) Margin = Limit-Absolute Level

\*\*\*\*\* **END OF REPORT** \*\*\*\*\*