

## FCC PART 90

## TEST REPORT

For

### Hytera Communications Co., Ltd.

Hyt Tower, Hi-Tech Industrial Park North, Nanshan District, Shenzhen, China

**FCC ID: YAMPD79XEXVHF**

<b>Report Type:</b> Class II Permissive Change	<b>Product Type:</b> Ex Digital Radio
<b>Test Engineer:</b> Rocky Kang <i>Rocky Kang</i>	
<b>Report Number:</b> RSZ141208002-00AA1	
<b>Report Date:</b> 2015-01-04	
<b>Reviewed By:</b> Jimmy Xiao RF Engineer	<i>Jimmy Xiao</i>
<b>Prepared By:</b> Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 <a href="http://www.baclcorp.com.cn">www.baclcorp.com.cn</a>	

**Note:** This test report is prepared for the customer shown above and for the equipment described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

## **TABLE OF CONTENTS**

<b>GENERAL INFORMATION.....</b>	<b>3</b>
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) .....	3
OBJECTIVE .....	3
RELATED SUBMITTAL(S)/GRANT(S).....	3
TEST METHODOLOGY .....	3
TEST FACILITY .....	4
<b>SYSTEM TEST CONFIGURATION.....</b>	<b>5</b>
DESCRIPTION OF TEST CONFIGURATION .....	5
EQUIPMENT MODIFICATIONS .....	5
SUPPORT EQUIPMENT LIST AND DETAILS .....	5
BLOCK DIAGRAM OF TEST SETUP .....	5
<b>SUMMARY OF TEST RESULTS .....</b>	<b>6</b>
<b>FCC §1.1307(b) &amp; §2.1093 - RF EXPOSURE.....</b>	<b>7</b>
APPLICABLE STANDARD .....	7
<b>FCC §2.1053 &amp; §90.210 - RADIATED SPURIOUS EMISSIONS .....</b>	<b>8</b>
APPLICABLE STANDARD .....	8
TEST EQUIPMENT LIST AND DETAILS.....	8
TEST PROCEDURE .....	8
TEST DATA .....	9
<b>PRODUCT SIMILARITY DECLARATION LETTER.....</b>	<b>10</b>

## GENERAL INFORMATION

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

The Hytera Communications Co., Ltd.'s product, model number: PD710Ex VHF (FCC ID: YAMPD79XEXVHF) or the "EUT" in this report was a Ex Digital Radio, which was measured approximately: 155 mm (L) x 65 mm (W) x 45 mm (H), rated with input voltage: DC 7.4V battery.

*Note: This series products model: PD710Ex VHF, PD712Ex VHF, PD715Ex VHF, PD716Ex VHF, PD718Ex VHF and HD715Ex VHF are identical schematics, the difference among them is just the model number, model PD712Ex was selected for fully testing, the detailed information can be referred to the attached declaration letter that stated and guaranteed by the applicant.*

*\* All measurement and test data in this report was gathered from production sample serial number: 1412071 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2014-12-08.*

### Objective

This test report is prepared on behalf of Hytera Communications Co., Ltd. in accordance with Part 2, and Part 90 of the Federal Communication Commissions rules.

This is a CIIPC application of the device, the differences between the original device and the current one are as follows:

1. Removing the display screen and keyboard in new product, they have the same main board between the new model and original models.
2. Changing the model, the original model is PD79X Ex VHF, and the new models are PD710Ex VHF, PD712Ex VHF, PD715Ex VHF, PD716Ex VHF, PD718Ex VHF and HD715Ex VHF.
3. Changing the antenna, original one's length of antennas are different due to different frequency range; but the length of new one's antennas are same.

For the change made to the device, the test item "spurious radiated emissions" was performed.

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

No related submittal.

### 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 as well as the following individual parts:

Part 90 – Private Land Mobile Radio Service

Applicable Standards: TIA 603-D and ANSI 63.4-2009.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement uncertainty with radiated emission is 5.91 dB for 30MHz-1GHz and 4.92 dB for above 1GHz, 1.95dB for conducted measurement.

## **Test Facility**

The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) 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 December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. 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

### Description of Test Configuration

The system was configured for testing in a test mode which has been done in the factory.

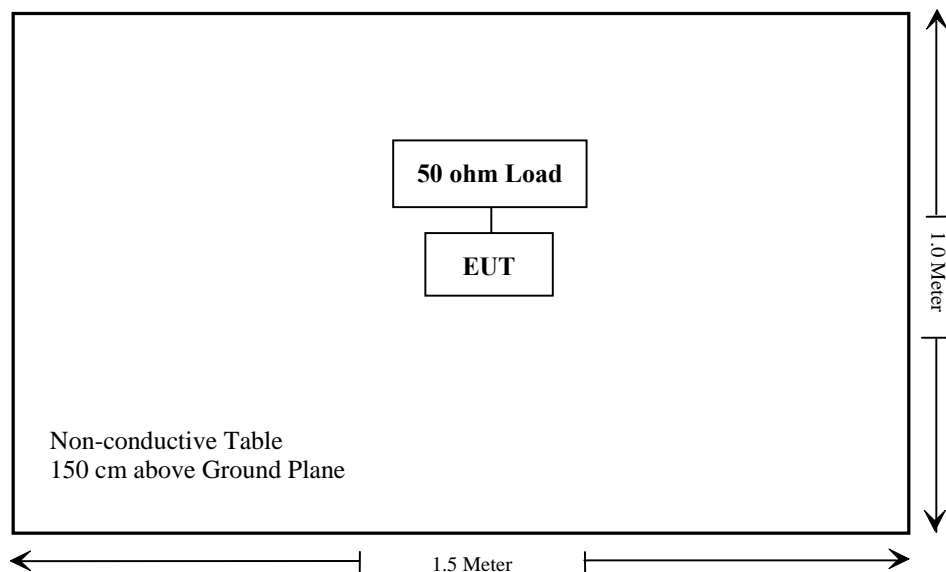
### Equipment Modifications

No modification was made to the EUT tested.

### Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
N/A	50 ohm Load	N/A	N/A

### Block Diagram of Test Setup



**SUMMARY OF TEST RESULTS**

FCC Rules	Description of Test	Results
§1.1307(b), §2.1093	RF Exposure	Compliance
§2.1046; § 22.727; §74.461; § 80.215; §90.205	RF Output Power	Compliance*
§2.1047; §74.463; §80.213;§90.207	Modulation Characteristic	Compliance*
§2.1049;§22.357;§ 22.731; §74.462; § 80.205; § 80.207;§90.209; §90.210	Occupied Bandwidth & Emission Mask	Compliance*
§2.1051; §22.861; §74.461; § 80.211;§90.210	Spurious Emission at Antenna Terminal	Compliance*
§2.1053;§90.210	Spurious Radiated Emissions	Compliance
§2.1055; § 22.355; §74.464; § 80.209;§90.213	Frequency Stability	Compliance*
§90.214	Transient Frequency Behavior	Compliance*

Compliance\*: Please referred to FCC ID: YAMPD79XEXVHF granted on 2012-12-27, report No.: R1DG120904005 that issued on 2012-01-05.

---

## **FCC §1.1307(b) & §2.1093 - RF EXPOSURE**

---

### **Applicable Standard**

According to FCC §1.1307(b) and §2.1093, portable device operates Part 90 should be subjected to routine environmental evaluation for RF exposure prior or equipment authorization or use.

**Result:** Compliance.

Please refer to SAR Report Number: RSZ141208001-20A1

**FCC §2.1053 & §90.210 - RADIATED SPURIOUS EMISSIONS****Applicable Standard**

FCC §2.1053 and §90.210

**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2014-11-03	2015-11-03
HP	Amplifier	8447E	1937A01046	2014-05-06	2015-05-06
Sunol Sciences	Broadband Antenna	JB3	A111513	2014-06-18	2017-06-17
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2014-11-12	2015-11-12
Sunol Sciences	Horn Antenna	DRH-118	A052304	2012-12-01	2015-11-30
HP	Synthesized Sweeper	8341B	2624A00116	2014-05-09	2015-05-09
Mini-Circuits	Amplifier	ZVA-183-S+	5969001149	2014-04-03	2015-04-03
A.H. System	Horn Antenna	SAS-200/571	135	2012-02-11	2015-02-10
COM POWER	Dipole Antenna	AD-100	041000	NCR	NCR

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

**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 teeth 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 (TXpwr in Watts/0.001)-the absolute level

Spurious attenuation limit in dB = 50 + 10 Log<sub>10</sub> (power out in Watts) for EUT with a 12.5 kHz channel bandwidth.



**Test Data****Environmental Conditions**

<b>Temperature:</b>	27 °C
<b>Relative Humidity:</b>	55 %
<b>ATM Pressure:</b>	101.0 kPa

The testing was performed by Rocky Kang on 2014-12-30

Test Mode: Transmitting

**30MHz - 5GHz:**

Frequency (MHz)	Receiver Reading (dBμV)	Turn Table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 90	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
Analog Modulation (155.5 MHz)										
311	40.41	321	1.2	H	-56.6	0.18	0	-56.78	-20	36.78
311	41.45	108	1.3	V	-55.6	0.18	0	-55.78	-20	35.78
1555	35.87	70	2.0	H	-59.6	1.30	6.70	-54.20	-20	34.20
1555	36.23	63	1.1	V	-64.0	1.30	6.70	-58.60	-20	38.60
Digital Modulation (155.5 MHz)										
311	38.40	152	1.6	H	-58.6	0.18	0	-58.78	-20	38.78
311	39.38	306	1.8	V	-57.6	0.18	0	-57.78	-20	37.78
1555	36.12	353	1.4	H	-59.4	1.30	6.70	-54.00	-20	34.00
1555	37.45	339	2.3	V	-62.8	1.30	6.70	-57.40	-20	37.40

Note:

Absolute Level = SG Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

## **PRODUCT SIMILARITY DECLARATION LETTER**

---



Hytera Communications Corporation Ltd.

Add: HYT Tower, Hi-Tech Industrial Park North, Nanshan District, Shenzhen China.  
518057

Tel: +86-0755-26972999

Fax: +86-0755-86137130

2015-01-20

### **Product Similarity Declaration**

To Whom It May Concern,

We, Hytera Communications Corporation Ltd. , hereby declare that we have a product named as Digital Portable Radio (Model number: PD710Ex VHF) was tested by BACL, meanwhile, for our marketing purpose, we would like to list a series models (PD712Ex VHF, PD715Ex VHF, PD716Ex VHF, PD718Ex VHF, HD715Ex VHF) on reports and certificate, all the models are identical schematics.

No other changes are made to them.

We confirm that all information above is true, and we'll be responsible for all the consequences. Please contact me if you have any question.

Signature: 

Lei Xiong

General Director

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