

FCC PART 90

TEST REPORT

For

Hytera Communications Co., Ltd.

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

FCC ID: YAMPD41XU1

Report Type: Class II Permissive Change	Product Type: Digital Mobile Radio
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Report Number: RSZ150401005-00AA1	
Report Date: 2015-04-14	
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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.

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Hytera Communications Co., Ltd.*'s product, model number: *PD410 U(1)*(FCC ID: *YAMPD41XU1*) or the "EUT" in this report was a *Digital Mobile Radio*, the handset unit was measured approximately: 12.0 cm (L) x 5.8 cm (W) x 3.0 cm (H), rated with input voltage: DC 7.4V battery; charger unit was measured approximately: 7.7 cm (L) x 7.6 cm (W) x 7.2 cm (H), rated with input voltage: DC 12.0V from adapter.

Adapter Information:

Model: HKA01212010-2F

Input: 100~240V, 50~60Hz, 0.5A

Output: 12.0V, 1.0A

Note: This series products model: PD410 U(1), PD412 U(1), PD415 U(1), PD416 U(1) and PD418 U(1) are identical schematics, the difference among them is just the model number due to marketing purpose, and model PD410 U(1) 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: 1503302 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2015-04-01.*

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. Changing the style of coversheet

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

Related Submittal(s)/Grant(s)

No related submittal(s)

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.

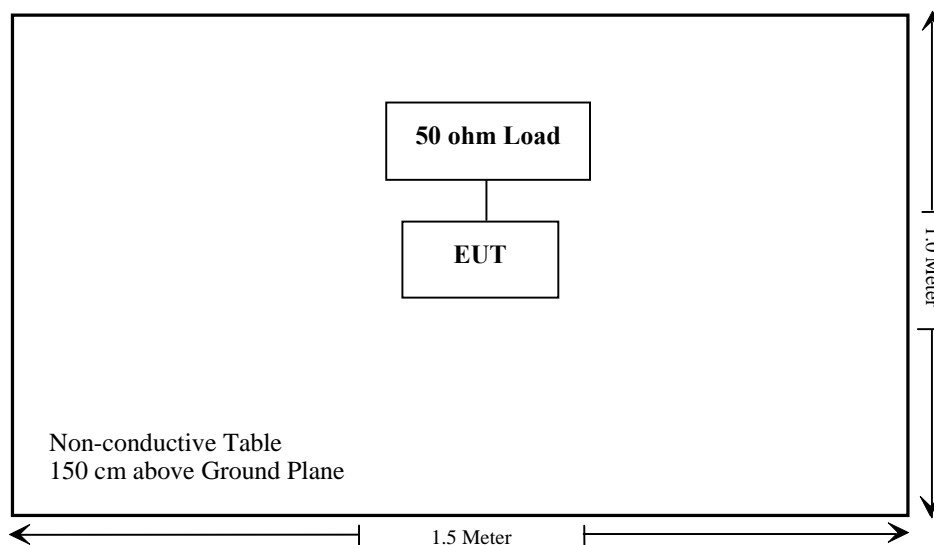
Equipment Modifications

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)(1), §2.1093	RF Exposure	Compliance
§2.1046; §90.205	RF Output Power	Compliance*
§2.1047; §90.207	Modulation Characteristic	Compliance*
§2.1049; §90.209; §90.210	Occupied Bandwidth & Emission Mask	Compliance*
§2.1051; §90.210	Spurious Emission at Antenna Terminal	Compliance*
§2.1053; §90.210	Spurious Radiated Emissions	Compliance
§2.1055; §90.213	Frequency Stability	Compliance*
§90.214	Transient Frequency Behavior	Compliance*

Compliance*: Please referred to FCC ID: YAMPD41XU1 granted on 2015-03-11, report No.: RSZ150120005-00A, which was tested by Candy Li, Bay Area Compliance Laboratories Corp. (Shenzhen).

MEASUREMENT UNCERTAINTY

Test Items	Measurement uncertainty
RF Output Power	$\pm 1.95\text{dB}$
Modulation Limiting	$\pm 0.2\text{kHz}$
Audio Frequency Response	$\pm 1.95\text{dB}$
Audio Frequency Low Pass Filter Response	$\pm 1.95\text{dB}$
Occupied Bandwidth	$\pm 0.2\text{kHz}$
Spurious Emission at Antenna Terminal	$\pm 1.95\text{dB}$
Spurious Radiated Emissions	$\pm 4.92\text{dB}$
Frequency Stability	$\pm 0.1\text{ppm}$
Emission Mask	$\pm 1.95\text{dB}$
Transient Frequency Behavior	$\pm 0.2\text{kHz}$

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: RSZ150401005-20A1.

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	837405/023	2014-08-22	2015-08-22
Sunol Sciences	Horn Antenna	DRH-118	A052304	2014-12-01	2015-11-30
HP	Synthesized Sweeper	8341B	2624A00116	2014-06-03	2015-06-03
Mini-Circuits	Amplifier	ZVA-183-S+	5969001149	2014-04-23	2015-04-23
A.H. System	Horn Antenna	SAS-200/571	135	2015-02-11	2018-02-10
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 Log₁₀ (power out in Watts) for EUT with a 12.5 kHz channel bandwidth.

Test Data**Environmental Conditions**

Temperature:	25 °C
Relative Humidity:	45 %
ATM Pressure:	101.0 kPa

The testing was performed by David Lee on 2015-04-09.

Test Mode: Transmitting

Frequency (MHz)	Receiver Reading (dBμV)	Turn Table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC 90	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
Analog Modulation, Frequency: 435.0125 MHz, Channel spacing:12.5 kHz										
870.03	39.32	112	1.9	H	-57.7	0.70	0	-58.40	-20	38.40
870.03	39.01	166	1.4	V	-58.0	0.70	0	-58.70	-20	38.70
2175.06	41.83	213	1.1	H	-56.6	1.20	8.00	-49.80	-20	29.80
2175.06	43.74	117	1.6	V	-53.5	1.20	8.00	-46.70	-20	26.70
2610.08	48.93	187	1.2	H	-45.6	1.70	9.20	-38.10	-20	18.10
2610.08	41.57	266	1.6	V	-53.4	1.70	9.20	-45.90	-20	25.90
3045.09	52.04	118	2.3	H	-39.9	1.70	9.60	-32.00	-20	12.00
3045.09	46.02	133	2.1	V	-46.3	1.70	9.60	-38.40	-20	18.40

Frequency (MHz)	Receiver Reading (dBμV)	Turn Table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC 90	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
Digital Modulation, Frequency: 435.0125MHz										
870.03	38.72	70	1.2	H	-58.3	0.70	0	-59.00	-20	39.00
870.03	40.14	52	2.1	V	-56.9	0.70	0	-57.60	-20	37.60
2175.06	39.41	53	1.2	H	-59.0	1.20	8.00	-52.20	-20	32.20
2175.06	37.90	54	1.3	V	-59.3	1.20	8.00	-52.50	-20	32.50
2610.08	49.89	252	2.2	H	-44.6	1.70	9.20	-37.10	-20	17.10
2610.08	45.41	284	1.2	V	-49.6	1.70	9.20	-42.10	-20	22.10
3045.09	50.61	291	1.8	H	-41.3	1.70	9.60	-33.40	-20	13.40
3045.09	50.02	186	1.2	V	-42.3	1.70	9.60	-34.40	-20	14.40

Note:

Absolute Level = SG Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

PRODUCT SIMILARITY DECLARATION LETTER



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2015-01-29

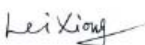
Product Similarity Declaration

To Whom It May Concern,

We, Hytera Communications Corporation Ltd. , hereby declare that we have a product named as Digital Mobile Radio (Model number: PD410 U(1) was tested by BACL, meanwhile, for our marketing purpose, we would like to list a series models (PD412 U(1), PD415 U(1), PD416 U(1), PD418 U(1)) 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 *****