

Shenzhen Huatongwei International Inspection Co., Ltd.

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TEST REPORT

Report Reference No.....: TRE1512011203 R/C......: 47400

FCC ID.....: YPVITALCOMLUX

Applicant's name.....: ITALCOM GROUP

Manufacturer...... UTCOM TECHNOLOGY CO.,LIMITED

District, Shenzhen, Guangdong, China

Test item description: Smartphone

Trade Mark NYX

Model/Type reference...... LUX

Listed Model(s) -

Standard: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Date of receipt of test sample...... Dec.21, 2015

Date of testing...... Dec. 22, 2015 ~ Jan. 08, 2016

Date of issue...... Jan. 09, 2016

Result...... PASS

Compiled by

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Approved by

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Testing Laboratory Name: Shenzhen Huatongwei International Inspection Co., Ltd

Gongming, Shenzhen, China

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1. TEST STANDARDS ANDTEST DESCRIPTION

1.1. Test Standards

The tests were performed according to following standards:

<u>FCC Rules Part 15.247</u>: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devicese

1.2. Test Description

ReportSection	Test Item	Section in CFR 47	Result
4.1	Antenna Requirement	15.203/15.247 (c)	Pass
4.2	AC Power Line Conducted Emission	15.207	Pass
4.3	Conducted Peak Output Power	15.247 (b)(1)	Pass
4.4	20dB Occupied Bandwidth	15.247 (a)(1)	Pass
4.5	Carrier Frequencies Separation	15.247 (a)(1)	Pass
4.6	Hopping Channel Number	15.247 (a)(1)	Pass
4.7	Dwell Time	15.247 (a)(1)	Pass
4.8	Pseudorandom Frequency Hopping Sequence	15.247(b)(4)&TCB Exclusion List (7 July 2002)	Pass
4.9	Restricted band	15.247(d)/15.205	Pass
4.10/4.11	Radiated Emission	15.247(d)/15.209	Pass

Remark: The measurement uncertainty is not included in the test result.

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2. **SUMMARY**

2.1. Client Information

Applicant:	ITALCOM GROUP	
Address:	1728 Coral Way, Coral Gables, Miami, Florida, United States	
Manufacturer:	UTCOM TECHNOLOGY CO.,LIMITED	
Address:	C1105-1107,Tiley Central Plaza,No.3 Haide Road,Nanshan District,Shenzhen,Guangdong,China	

2.2. Product Description

Name of EUT	Smartphone	
Trade Mark:	NYX	
Model No.:	LUX	
Listed Model(s):	-	
IMEI1:	351645070001182	
Power supply:	DC 3.7V From internal battery	
Adapter information:	Input:AC 100-240V 50/60Hz 0.15A Output: 5Vd.c., 500mA	
Bluetooth		
Version:	Supported BT4.0+EDR	
Modulation:	GFSK, π/4DQPSK, 8DPSK	
Operation frequency:	2402MHz~2480MHz	
Channel number:	el number: 79	
Channel separation:	separation: 1MHz	
Antenna type:	Internal Antenna	
Antenna gain:	1.0 dBi	

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2.3. Operation state

♦ Test frequency list

According to section 15.31(m), regards to the operating frequency range over 10 MHz, must select three channel which were tested. the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, please see the above gray bottom.

Channel	Frequency (MHz)
0	2402
1	2403
:	::
39	2441
:	ii ii
77	2479
78	2480

♦ Test mode

For RF test items:

the engineering test program was provided and enabled to make EUT continuous transmit/receive.

For AC power line conducted emissions:

the EUT was set to connect with the Bluetooth under large package sizes transmission.

2.4. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- supplied by the manufacturer
- O supplied by the lab

0	Power Cable	Length (m):	1
		Shield :	1
		Detachable :	1
0	Multimeter	Manufacturer :	1
		Model No. :	1

2.5. Modifications

No modifications were implemented to meet testing criteria.

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3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Laboratory: Shenzhen Huatongwei International Inspection Co., Ltd.

Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

Phone: 86-755-26748019 Fax: 86-755-26748089

3.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories

(identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: February 28, 2015. Valid time is until February 27, 2018.

A2LA-Lab Cert. No. 3902.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for tec hnical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is until December 31, 2016.

FCC-Registration No.: 317478

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FC C is maintained in our files. Registration 317478, Renewal date Jul. 18, 2014, valid time is until Jul. 18, 2017.

IC-Registration No.: 5377A&5377B

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377A on Dec. 31, 2013, valid time is until Dec. 31, 2016.

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377B on Dec.03, 2014, valid time is until Dec.03, 2017.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Aust ralian C-Tick mark as a result of our A2LA accreditation.

VCCI

The 3m Semi-

anechoic chamber (12.2m×7.95m×6.7m) of Shenzhen Huatongwei International Inspection Co., Ltd.

has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2484. Date of Registration: Dec. 20, 2012. Valid time is until Dec. 29, 2015.

Radiated disturbance above 1GHz measurement of Shenzhen Huatongwei International Inspection Co., Ltd. h as been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-292. Date of Registration: Dec. 24, 2013. Valid time is until Dec. 23, 2016.

Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: Dec. 20, 2012. Valid time is until Dec. 19, 2015.

Telecommunication Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-1837. Date of Registration: May 07, 2013. Valid time is until May 06, 2016.

DNV

Shenzhen Huatongwei International Inspection Co., Ltd. has been found to comply with the requirements of D NV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Di rectives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025 (2005), in accordance with the requirements of the D

NV Laboratory Quality Manual towards subcontractors. Valid time is until Aug. 24, 2016.

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3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35°C
lative Humidity:	30~60 %
Air Pressure:	950~1050mba

3.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01"Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1"and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongweilaboratory is reported:

Test Items	MeasurementUncertainty	Notes
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Conducted spurious emission 9KHz-40 GHz	1.60 dB	(1)
Radiated spurious emission 9KHz-40 GHz	2.20 dB	(1)
Conducted Emission 9KHz-30MHz	3.39 dB	(1)
Radiated Emission30~1000MHz	4.24 dB	(1)
Radiated Emissio 1~18GHz	5.16 dB	(1)
Radiated Emissio 18-40GHz	5.54 dB	(1)
Occupied Bandwidth		(1)

⁽¹⁾ This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

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3.5. Equipments Used during the Test

Cond	Conducted Emission (AC Main)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal	
1	Artificial Mains	Rohde&Schwarz	ESH2-Z5	100028	2015/11/02	
2	EMI Test Receiver	Rohde&Schwarz	ESCI3	100038	2015/11/02	
3	Pulse Limiter	Rohde&Schwarz	ESHSZ2	100044	2015/11/02	
4	EMI Test Software	Rohde&Schwarz	ES-K1 V1.71	N/A	N/A	

Radia	Radiated Emission				
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal
1	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	538	2015/11/02
2	EMI TEST RECEIVER	Rohde&Schwarz	ESI 26	100009	2015/11/02
3	EMI TEST Software	Audix	E3	N/A	N/A
4	TURNTABLE	ETS	2088	2149	N/A
5	ANTENNA MAST	ETS	2075	2346	N/A
6	EMI TEST Software	Rohde&Schwarz	ESK1	N/A	N/A
7	HORNANTENNA	ShwarzBeck	9120D	1011	2015/11/02
8	Amplifer	Sonoma	310N	E009-13	2015/11/02
9	JS amplifer	Rohde&Schwarz	JS4-00101800- 28-5A	F201504	2015/11/02
10	High pass filter	Compliance Direction systems	BSU-6	34202	2015/11/02
11	HORNANTENNA	ShwarzBeck	9120D	1012	2015/11/02
12	Amplifer	Compliance Direction systems	PAP1-4060	120	2015/11/02
13	Loop Antenna	Rohde&Schwarz	HFH2-Z2	100020	2015/11/02
14	TURNTABLE	MATURO	TT2.0		N/A
15	ANTENNA MAST	MATURO	TAM-4.0-P		N/A
16	Horn Antenna	SCHWARZBECK	BBHA9170	25841	2015/11/02
17	ULTRA-BROADBAND ANTENNA	Rohde&Schwarz	HL562	100015	2015/11/02

Maxin	Maximum Peak Output Power / Power Spectral Density / 6dB Bandwidth / Band Edge Compliance of RF					
Emiss	Emission / Spurious RF Conducted Emission					
Item	Item Test Equipment Manufacturer Model No. Serial No. Last Cal					
1	Spectrum Analyzer	Rohde&Schwarz	FSP	1164.4391.40	2015/11/02	

The Cal.Interval was one year

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4. TEST CONDITIONS AND RESULTS

4.1. Antenna requirement

Requirement

FCC CFR Title 47 Part 15 Subpart C Section 15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of anantenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i):

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

Test Result:

The antenna is integralantenna, the best case gain of the antenna is1.0dBi



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4.2. Conducted Emission (AC Main)

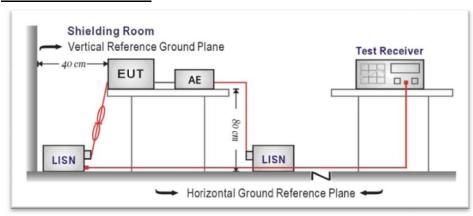
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207

Fraguency range (MHz)	Limit (dBuV)		
Frequency range (MHz)	Quasi-peak	Average	
0.15-0.5	66 to 56*	56 to 46*	
0.5-5	56	46	
5-30	60	50	

^{*} Decreases with the logarithm of the frequency.

TEST CONFIGURATION



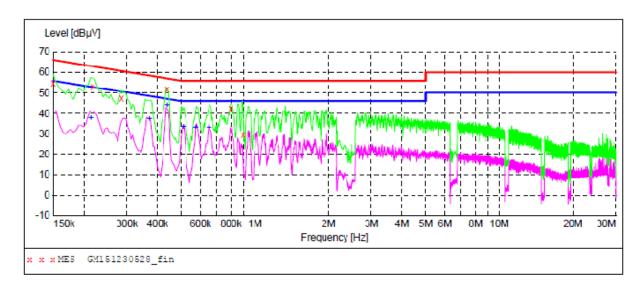
TEST PROCEDURE

- The EUT was setup and tested according to ANSI C63.10:2013 for compliance to FCC 47CFR 15.247 requirements.
- 2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
- 3. The EUT and simulators are connected to the main power through a line impedancestabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for themeasuring equipment.
- 4. The peripheral devices are also connected to the main power through aLISN. (Please refer to the block diagram of the test setup and photographs)
- 5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor,was individually connected through a LISN to the input power source.
- 6. The excess length of the power cord between the EUT and the LISN receptacle were foldedback and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
- 7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHzusing a receiver bandwidth of 9 kHz.

TEST RESULTS

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Test mode:AC 120V BT Polarization L



MEASUREMENT RESULT: "GM151230528_fin"

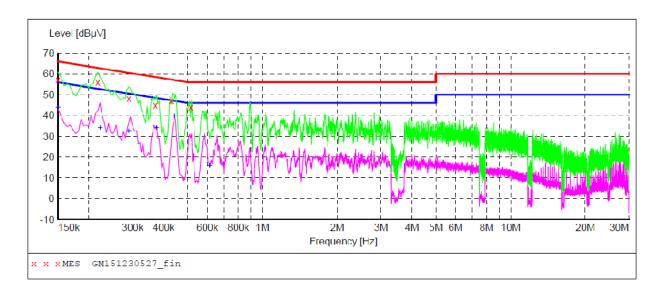
12/30/2	2015 1:5	8PM						
Fre	quency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.	150000	54.60	10.2	66	11.4	QP	T ₁ 1	GND
0.3	217500	53.20	10.2	63	9.7	QP	L1	GND
0.3	285000	47.20	10.2	61	13.5	QP	ь1	GND
0.4	438000	51.70	10.2	57	5.4	QP	L1	GND
0.	798000	42.30	10.2	56	13.7	QP	L1	GND
0.4	897000	29.50	10.2	5.6	26.5	QP	T.1	GND

MEASUREMENT RESULT: "GM151230528_fin2"

1	12/30/2015 1	:58PM						
	Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
	0.213000	37.90	10.2	53	15.2	AV	L1	GND
	0.370500	37.20	10.2	49	11.3	AV	L1	GND
	0.438000	43.00	10.2	47	3.3	AV	L1	GND
	0.510000	33.50	10.2	46	12.5	AV	L1	GND
	0.573000	33.20	10.2	46	12.8	AV	L1	GND
	0.649500	33.40	10.2	46	12.6	AV	L1	GND

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Test mode: AC 120V BT Polarization N



MEASUREMENT RESULT: "GM151230527_fin"

10	2/30/2015 1:	55 PM						
	Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
	0.150000	57.10	10.2	66	8.9	QP	N	GND
	0.217500	55.90	10.2	63	7.0	QP	N	GND
	0.289500	48.20	10.2	61	12.3	QP	N	GND
	0.370500	44.90	10.2	59	13.6	QP	N	GND
	0.429000	47.00	10.2	57	10.3	QP	N	GND
	0.514500	44.00	10.2	56	12.0	QP	N	GND

MEASUREMENT RESULT: "GM151230527 fin2"

12/30/2015 1:55PM							
Frequency	Level	Transd	Limit	Margin	Detector	Line	$_{\mathrm{PE}}$
MHz	dΒμV	dВ	dΒμV	dВ			
0.150000	13.70	10.2	56	12.3	ΛV	N	GND
0.222000	33.90	10.2	53	18.8	AV	N	GND
0.289500	32.50	10.2	51	18.0	AV	N	GND
0.375000	34.00	10.2	18	14.4	ΛV	N	GND
0.442500	39.70	10.2	47	7.3	AV	N	GND
0.613500	15.70	10.2	46	30.3	AV	N	GND

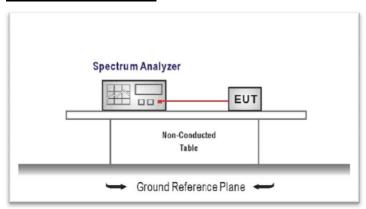
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4.3. Conducted Peak Output Power

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (b)(3): 30dBm

TEST CONFIGURATION



TEST PROCEDURE

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum.

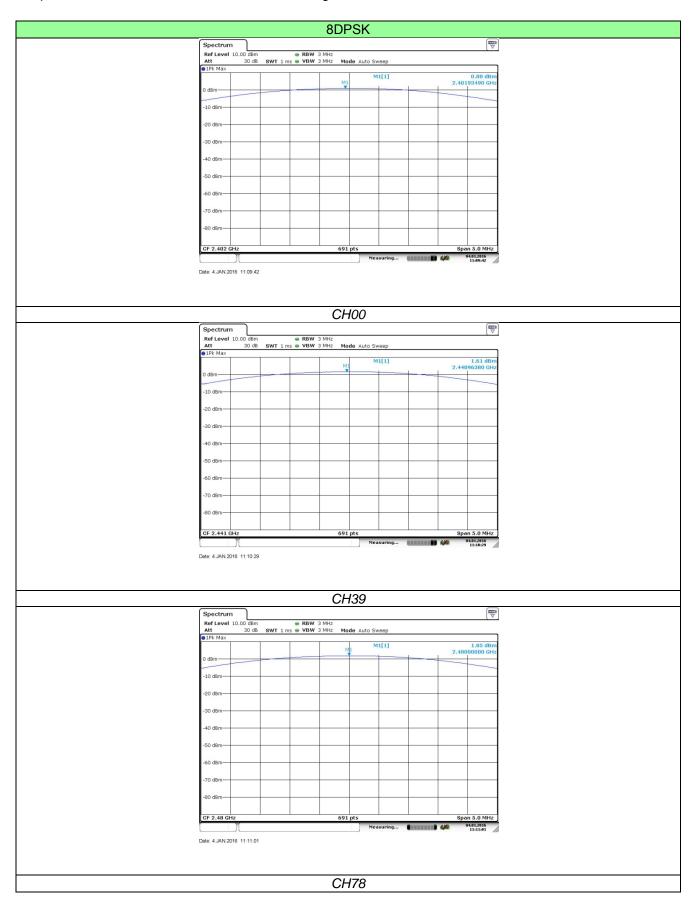
TEST RESULTS

Modulation type	Channel	Output power (dBm)	Limit (dBm)	Result
	00	1.36		
GFSK	39	2.07	30.00	Pass
	78	2.10		
	00	0.79		
π/4DQPSK	39	1.44	21.00	Pass
	78	1.84		1
	00	0.88		
8DPSK	39	1.61	21.00	Pass
	78	1.85		

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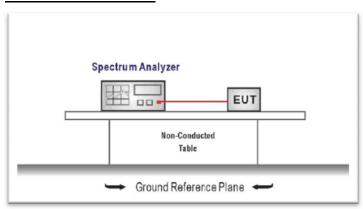
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4.4. 20dB Emission Bandwidth

LIMIT

N/A

TEST CONFIGURATION

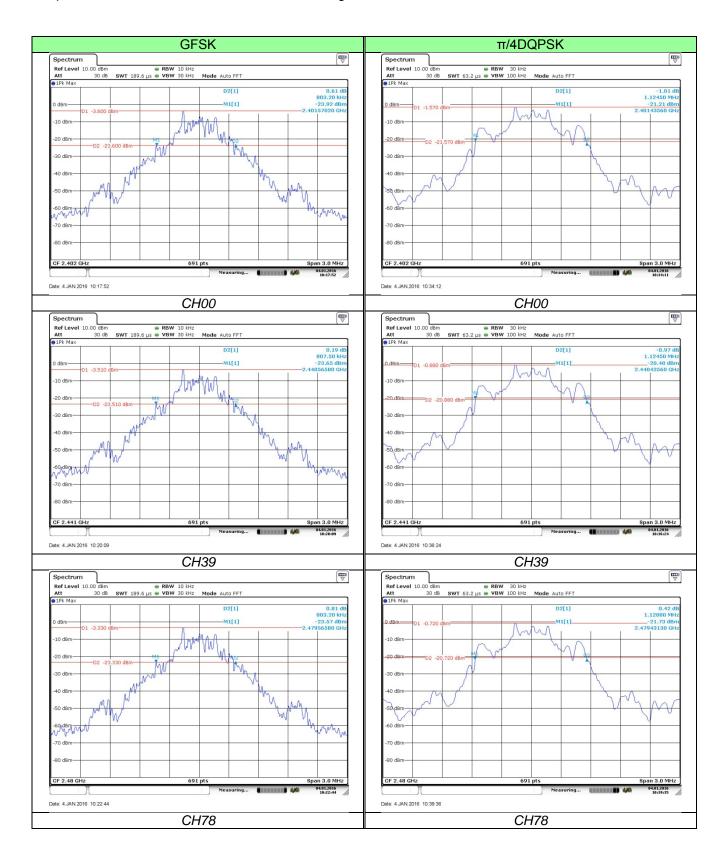


TEST PROCEDURE

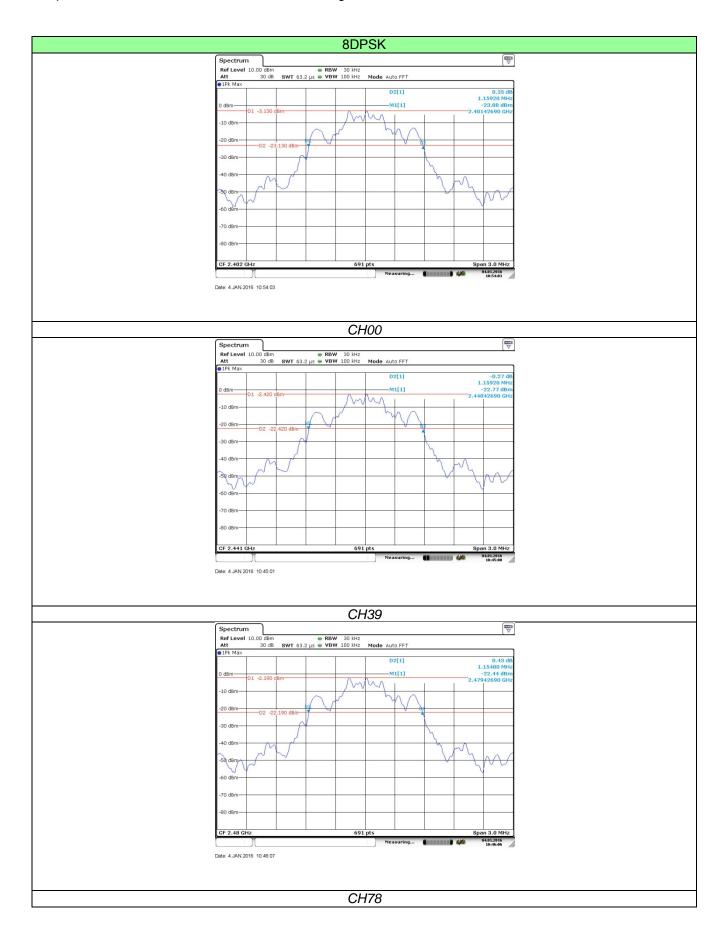
- 1. The transmitter output was connected to the spectrum analyzer through an attenuator.
- 2. The bandwidth of the fundamental frequency was measured by spectrum analyzer withRBW≥1% of the 20 dB bandwidthand VBW≥RBW.
- 3. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

TEST RESULTS

Modulation type	Channel	20dB Bandwidth (MHz)	Limit (MHz)	Result
	00	0.803		
GFSK	39	0.808	1	Pass
	78	0.803		
π/4DQPSK	00	1.125		
	39	1.125	/	Pass
	78	1.129		
	00	1.159		
8DPSK	39	1.159	1	Pass
	78	1.155		



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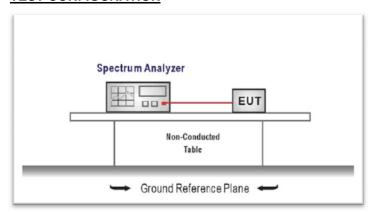
4.5. Carrier Frequencies Separation

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(1):

frequency hopping systems shall have hopping channel carrier frequencies separated by minimum of 25KHz or the 2/3*20dB bandwidth of the hopping channel, whichever is greater.

TEST CONFIGURATION



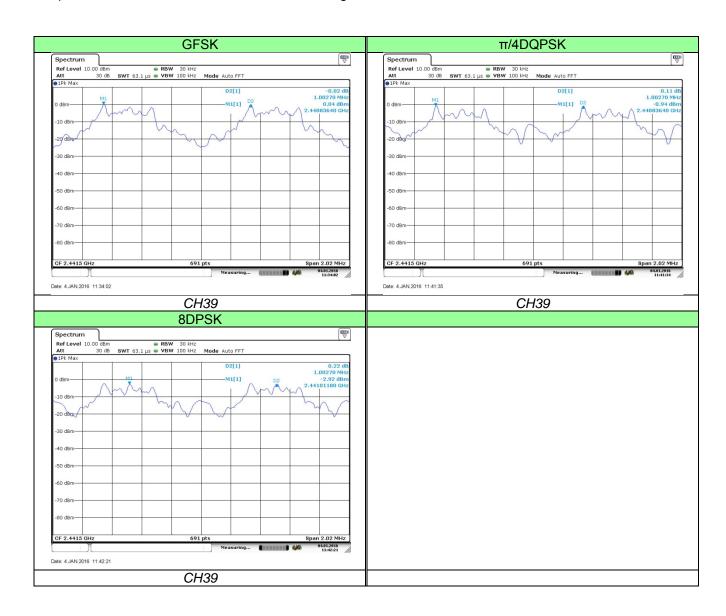
TEST PROCEDURE

- 1. The transmitter output was connected to the spectrum analyzer through an attenuator.
- 2. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW=30 KHz and VBW=100KHz.

TEST RESULTS

Modulation type	Channel	Carrier Frequencies Separation (MHz)	Limit (MHz)	Result
GFSK	39	1.003	0.808	Pass
π/4DQPSK	39	1.003	0.753	Pass
8DPSK	39	1.003	0.773	Pass

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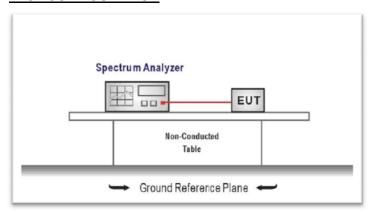
4.6. Hopping Channel Number

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(1):

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

TEST CONFIGURATION



TEST PROCEDURE

- 1. The transmitter output was connected to the spectrum analyzer through an attenuator.
- 2. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW=1MHz and VBW=3MHz.

TEST RESULTS

Modulation type	Channel number	Limit (MHz)	Result
GFSK	79		
π/4DQPSK	79	15	Pass
8DPSK	79		

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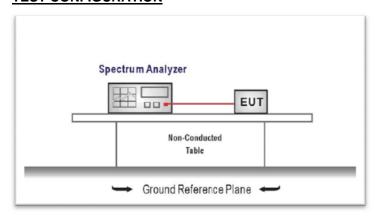
4.7. Dwell Time

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(1):

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a pe-riod of 0.4 seconds multiplied by the number of hopping channels employed.

TEST CONFIGURATION



TEST PROCEDURE

- 1. The transmitter output was connected to the spectrum analyzer through an attenuator.
- Set center frequency of spectrum analyzer=operating frequency with RBW=1MHz and VBW=1MHz,Span=0Hz.

TEST RESULTS

Modulation type	Channel	Dwell time (Second)	Limit (Second)	Result
	DH1	0.128		
GFSK	DH3	0.264	0.40	Pass
	DH5	0.309		
	2-DH1	0.127		
π/4DQPSK	2-DH3	0.265	0.40	Pass
	2-DH5	0.308		
	3-DH1	0.130		
8DPSK	3-DH3	0.229	0.40	Pass
	3-DH5	0.288		

Note:

- 1. We have tested all mode at high, middle and low channel, and recoreded worst case at middle channel.
- 2. Dwell time=Pulse time (ms) × $(1600 \div 2 \div 79)$ ×31.6 Second for DH1, 2-DH1, 3-DH1 Dwell time=Pulse time (ms) × $(1600 \div 4 \div 79)$ ×31.6 Second for DH3, 2-DH3, 3-DH3 Dwell time=Pulse time (ms) × $(1600 \div 6 \div 79)$ ×31.6 Second for DH5, 2-DH5, 3-DH5

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