



**Partial
FCC PART 15C
TEST REPORT
No. I15Z42269-SRD03**

for

Huawei Technologies Co., Ltd.

LTE/WCDMA/GSM Smart Phone

Model Name: H1511

With

Hardware Version: HL1 NINAMH

Software Version: User release M MDA

FCC ID: QISH1511

Issued Date: Sep 10th, 2015



Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

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REPORT HISTORY

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CONTENTS

1. TEST LABORATORY	5
1.1. TESTING LOCATION	5
1.2. TESTING ENVIRONMENT	5
1.3. PROJECT DATA	5
1.4. SIGNATURE	5
2. CLIENT INFORMATION.....	6
2.1. APPLICANT INFORMATION	6
2.2. MANUFACTURER INFORMATION	6
3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)	7
3.1. ABOUT EUT	7
3.2. INTERNAL IDENTIFICATION OF EUT	7
3.3. INTERNAL IDENTIFICATION OF AE.....	7
4. REFERENCE DOCUMENTS	8
4.1. DOCUMENTS SUPPLIED BY APPLICANT	8
4.2. REFERENCE DOCUMENTS FOR TESTING.....	8
5. TEST RESULTS	9
5.1. SUMMARY OF TEST RESULTS.....	9
5.2. STATEMENTS.....	9
5.3. TERMS USED IN THE RESULT TABLE	9
5.4. LABORATORY ENVIRONMENT.....	10
6. TEST FACILITIES UTILIZED	11
ANNEX A: EUT PHOTOGRAPH	12
ANNEX B: MEASUREMENT RESULTS FOR RECEIVER	15
B.0 ANTENNA REQUIREMENT	15
B.1 RADIATED EMISSION.....	16
ANNEX C: TEST FIGURE LIST	24
FIG.1 RADIATED SPURIOUS EMISSION (GFSK, Ch0, 1 GHz-18GHz).....	24
FIG.2 RADIATED SPURIOUS EMISSION (GFSK, Ch39, 9 kHz-30MHz).....	24
FIG.3 RADIATED SPURIOUS EMISSION (GFSK, Ch39, 30MHz-1 GHz)	25
FIG.4 RADIATED SPURIOUS EMISSION (GFSK, Ch39, 1 GHz-18GHz).....	25
FIG.5 RADIATED SPURIOUS EMISSION (GFSK, Ch39, 18 GHz-26.5GHz).....	26
FIG.6 RADIATED SPURIOUS EMISSION (GFSK, Ch78, 1 GHz-18 GHz).....	26
FIG.7 RADIATED EMISSION POWER (GFSK, Ch0, 2380GHz~2450GHz)	27
FIG.8 RADIATED EMISSION POWER (GFSK, Ch78, 2450GHz~2500GHz)	27
FIG.9 RADIATED SPURIOUS EMISSION ($\pi/4$ DQPSK, Ch0, 1 GHz-18GHz).....	28
FIG.10 RADIATED SPURIOUS EMISSION ($\pi/4$ DQPSK, Ch39, 30MHz-1 GHz).....	28



FIG.11 RADIATED SPURIOUS EMISSION ($\pi/4$ DQPSK, CH39, 1 GHz-18GHz)..... 29

FIG.12 RADIATED SPURIOUS EMISSION ($\pi/4$ DQPSK, CH39, 18 GHz-26.5GHz)..... 29

FIG.13 RADIATED SPURIOUS EMISSION ($\pi/4$ DQPSK, CH78, 1 GHz-18 GHz)..... 30

FIG.14 RADIATED EMISSION POWER ($\pi/4$ DQPSK, CH0, 2380GHz~2450GHz)..... 30

FIG.15 RADIATED EMISSION POWER ($\pi/4$ DQPSK, CH78, 2450GHz~2500GHz) 31

FIG.16 RADIATED SPURIOUS EMISSION (8DPSK, CH0, 1 GHz-18GHz)..... 31

FIG.17 RADIATED SPURIOUS EMISSION (8DPSK, CH39, 9kHz-30 MHz)..... 32

FIG.18 RADIATED SPURIOUS EMISSION (8DPSK, CH39, 30MHz-1 GHz) 32

FIG.19 RADIATED SPURIOUS EMISSION (8DPSK, CH39, 1 GHz-18GHz)..... 33

FIG.20 RADIATED SPURIOUS EMISSION (8DPSK, CH39, 18 GHz-26.5GHz)..... 33

FIG.21 RADIATED SPURIOUS EMISSION (8DPSK, CH78, 1 GHz-18 GHz) 34

FIG.22 RADIATED EMISSION POWER (8DPSK, CH0, 2380GHz~2450GHz) 34

FIG.23 RADIATED EMISSION POWER (8DPSK, CH78, 2450GHz~2500GHz) 35

ANNEX D: PERSONS INVOLVED IN THIS TESTING 36

ANNEX E: ACCREDITATION CERTIFICATE..... 37

1. Test Laboratory

1.1. Testing Location

Location 1:CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,
P. R. China100191

Location 2:CTTL(Shouxiang)

Address: No. 51 Shouxiang Science Building, Xueyuan Road,
Haidian District, Beijing, P. R. China100191

1.2. Testing Environment

Normal Temperature: 15-35°C
Extreme Temperature: -20/+55°C
Relative Humidity: 20-75%

1.3. Project data

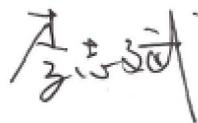
Testing Start Date: 2015-08-26
Testing End Date: 2015-09-10

1.4. Signature



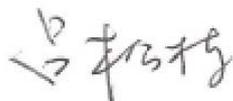
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2. Client Information

2.1. Applicant Information

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2.2. Manufacturer Information

Company Name: Huawei Technologies Co., Ltd.
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Postal Code: /
Country: China
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3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	LTE/WCDMA/GSM Smart Phone
Model Name	H1511
Market Name	/
Frequency Band	2402MHz~2480MHz
Type of Modulation	GFSK/ π /4 DQPSK/8DPSK
Number of Channels	79
FCC ID	QISH1511

*Note: Photographs of EUT are shown in ANNEX A of this test report.

3.2. Internal Identification of EUT

EUT ID*	IMEI	HW Version	SW Version
EUT1	/	HL1 NINAMH	User release M MDA

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE

AE ID*	Description	Type	SN
AE1	Charger	HW-050300E00	/
AE2	Charger	HW-050300E00	/
AE3	Charger	HW-050300U00	/
AE4	Charger	HW-050300A00	/

*AE ID: is used to identify the test sample in the lab internally.



4. Reference Documents

4.1. Documents supplied by applicant

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part15	FCC CFR 47, Part 15, Subpart C: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902–928MHz, 2400–2483.5 MHz, and 5725–5850 MHz.	Oct,2014
ANSI C63.10	American National Standard for Testing Unlicensed Wireless Devices	June,2013

5. Test Results

5.1. Summary of Test Results

No	Test cases	Sub-clause of Part15C	Verdict
0	Antenna Requirement	15.203	P
1	Radiated Spurious Emission	15.247,15.205,15.209	P

See **ANNEX B** and **ANNEX C** for details.

5.2. Statements

CTTL has evaluated the test cases requested by the applicant/matrix manufacturer as listed in section 5.1 of this report, for the EUT specified in section 3, according to the standards or reference documents listed in section 4.2

5.3. Terms used in the result table

Terms used in Verdict column

P	Pass
NA	Not Available
F	Fail

Abbreviations

AC	Alternating Current
AFH	Adaptive Frequency Hopping
BW	Band Width
E.I.R.P.	equivalent isotropical radiated power
ISM	Industrial, Scientific and Medical
R&TTE	Radio and Telecommunications Terminal Equipment
RF	Radio Frequency
Tx	Transmitter

5.4. Laboratory Environment

Semi-anechoic chamber (23 metersx17 metersx10 meters) did not exceed following limits:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 M
Ground system resistance	< 4
Normalised site attenuation (NSA)	< ± 4 dB, 3m/10m distance, from 30 to 1000 MHz
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

Shielded room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 M
Ground system resistance	< 4

6. Test Facilities Utilized

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1	Semi-anechoic chamber	/	CT000332-1 074	Frankonia German	/	/
2	Vector Signal Analyzer	FSV	101047	Rohde & Schwarz	2016-07-03	1 year
3	Test Receiver	ESCI 7	100948	Rohde & Schwarz	2016-07-16	1 year
4	Loop Antenna	HFH2-Z2	829324/007	Rohde & Schwarz	2017-12-16	3 years
5	EMI Antenna	VULB9163	9163-234	Schwarzbeck	2016-09-15	3 years
6	EMI Antenna	3115	6914	ECMO	2017-12-15	3 years
7	EMI Antenna	3116	2661	ETS-Lindgren	2017-06-17	3 years
8	Bluetooth Tester	CBT	100153	Rohde & Schwarz	2016-09-18	1 year



ANNEX B: MEASUREMENT RESULTS FOR RECEIVER

B.0 Antenna requirement

Measurement Limit:

Standard	Requirement
FCC CRF Part 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 an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, § 15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

Conclusion: The Directional gains of antenna used for transmitting is 1.0 dBi.

The RF transmitter uses an integrate antenna without connector.

B.1 Radiated Emission

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247, 15.205, 15.209	20dB below peak output power

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

Limit in restricted band:

Frequency of emission (MHz)	Field strength(μ V/m)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Condition

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	120kHz/300kHz	5
1000-4000	1MHz/3MHz	15
4000-18000	1MHz/3MHz	40
18000-26500	1MHz/3MHz	20

Note: According to the performance evaluation, the radiated emission margin of EUT is over 20dB in the band from 9kHz to 30MHz. Therefore, the measurement starts from 30MHz to tenth harmonic.

The measurement results include the horizontal polarization and vertical polarization measurements.

Measurement Results:

GFSK mode

Mode	Channel	Frequency Range	Test Results	Conclusion
GFSK	0	1 GHz ~ 18 GHz	Fig.1	P
	39	9 kHz ~30 MHz	Fig.2	P
		30 MHz ~1 GHz	Fig.3	P
		1 GHz ~ 18 GHz	Fig.4	P
		18 GHz~ 26.5 GHz	Fig.5	P
	78	1 GHz ~ 18 GHz	Fig.6	P
	Power(CH0)	2.38 GHz ~ 2.45 GHz	Fig.7	P
	Power(CH78)	2.45 GHz ~ 2.5 GHz	Fig.8	P
$\pi/4$ DQPSK	0	1 GHz ~ 18 GHz	Fig.9	P
	39	30 MHz ~1 GHz	Fig.10	P
		1 GHz ~ 18 GHz	Fig.11	P
		18 GHz~ 26.5 GHz	Fig.12	P
	78	1 GHz ~ 18 GHz	Fig.13	P
	Power(CH0)	2.38 GHz ~ 2.45 GHz	Fig.14	P
	Power(CH78)	2.45 GHz ~ 2.5 GHz	Fig.15	P
8DPSK	0	1 GHz ~ 18 GHz	Fig.16	P
	39	9 kHz ~30 MHz	Fig.17	P
		30 MHz ~1 GHz	Fig.18	P
		1 GHz ~ 18 GHz	Fig.19	P
		18 GHz~ 26.5 GHz	Fig.20	P
	78	1 GHz ~ 18 GHz	Fig.21	P
	Power(CH0)	2.38 GHz ~ 2.45 GHz	Fig.22	P
	Power(CH78)	2.45 GHz ~ 2.5 GHz	Fig.23	P

GFSK CH0 (1-18GHz)

Frequency (MHz)	MaxPeak-ClearWrite (dB μ V/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
14538.000000	56.0	H	11.8	18.0	74.0	
15148.000000	56.9	H	12.1	17.1	74.0	
15678.000000	58.5	V	12.8	15.5	74.0	
16174.000000	58.8	V	13.3	15.2	74.0	
16774.000000	59.0	H	14.0	15.0	74.0	
17803.000000	59.8	H	14.4	14.2	74.0	



Frequency (MHz)	Average-ClearWrite (dBμV/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
14543.000000	44.4	H	11.8	9.6	54.0	
15162.000000	45.0	V	12.1	9.0	54.0	
15692.000000	46.8	V	12.8	7.2	54.0	
16220.000000	47.1	H	13.3	6.9	54.0	
16741.000000	47.5	H	14.0	6.5	54.0	
17277.000000	47.1	H	14.1	6.9	54.0	

GFSK CH39 (1-18GHz)

Frequency (MHz)	MaxPeak-ClearWrite (dBμV/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
14167.000000	56.3	V	11.3	17.7	74.0	
15158.000000	56.8	V	12.1	17.2	74.0	
15782.000000	58.1	H	13.0	15.9	74.0	
16215.000000	58.7	V	13.3	15.3	74.0	
16769.000000	59.3	H	14.0	14.7	74.0	
17376.000000	59.4	V	14.3	14.6	74.0	

Frequency (MHz)	Average-ClearWrite (dBμV/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
14546.000000	44.0	V	11.8	10.0	54.0	
15141.000000	44.8	V	12.1	9.2	54.0	
15729.000000	46.5	V	12.9	7.5	54.0	
16196.000000	46.9	V	13.3	7.1	54.0	
16797.000000	47.6	V	14.0	6.4	54.0	
17363.000000	47.1	V	14.3	6.9	54.0	



GFSK CH78 (1-18GHz)

Frequency (MHz)	MaxPeak-ClearWrite (dB μ V/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
14219.000000	55.5	H	11.3	18.5	74.0	
15182.000000	56.9	H	12.1	17.1	74.0	
15649.000000	58.2	H	12.7	15.8	74.0	
16222.000000	57.7	V	13.3	16.3	74.0	
16815.000000	59.3	H	14.0	14.7	74.0	
17440.000000	58.5	H	14.3	15.5	74.0	

Frequency (MHz)	Average-ClearWrite (dB μ V/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
14527.000000	43.8	H	11.7	10.2	54.0	
15142.000000	44.5	H	12.1	9.5	54.0	
15757.000000	46.2	H	12.9	7.8	54.0	
16240.000000	46.1	H	13.3	7.9	54.0	
16783.000000	46.7	H	14.0	7.3	54.0	
17373.000000	46.4	V	14.3	7.6	54.0	

$\pi/4$ DQPSK CH0 (1-18GHz)

Frequency (MHz)	MaxPeak-ClearWrite (dB μ V/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
14457.000000	56.0	V	11.6	18.0	74.0	
15128.000000	57.3	V	12.1	16.7	74.0	
15693.000000	59.0	H	12.8	15.0	74.0	
16405.000000	57.8	H	13.7	16.2	74.0	
16734.000000	59.0	H	13.9	15.0	74.0	
17341.000000	58.9	H	14.2	15.1	74.0	

Frequency (MHz)	Average-ClearWrite (dB μ V/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
14529.000000	44.0	H	11.7	10.0	54.0	
15147.000000	44.6	H	12.1	9.4	54.0	
15776.000000	46.2	H	12.9	7.8	54.0	
16231.000000	46.4	H	13.3	7.6	54.0	
16803.000000	46.8	V	14.0	7.2	54.0	
17364.000000	46.5	H	14.3	7.5	54.0	

$\pi/4$ DQPSK CH39 (1-18GHz)

Frequency (MHz)	MaxPeak-ClearWrite (dB μ V/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
14522.000000	56.6	V	11.7	17.4	74.0	
15126.000000	56.7	V	12.1	17.3	74.0	
15727.000000	58.7	H	12.9	15.3	74.0	
16203.000000	58.5	V	13.3	15.5	74.0	
16727.000000	59.4	V	13.9	14.6	74.0	
17406.000000	59.3	V	14.3	14.7	74.0	

Frequency (MHz)	Average-ClearWrite (dB μ V/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
14553.000000	44.1	H	11.8	9.9	54.0	
15153.000000	44.8	H	12.1	9.2	54.0	
15741.000000	46.4	H	12.9	7.6	54.0	
16205.000000	46.8	H	13.3	7.2	54.0	
16787.000000	47.4	H	14.0	6.6	54.0	
17287.000000	47.1	H	14.1	6.9	54.0	

$\pi/4$ DQPSK CH78 (1-18GHz)

Frequency (MHz)	MaxPeak-ClearWrite (dB μ V/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
14129.000000	55.1	H	11.2	18.9	74.0	
15157.000000	57.3	V	12.1	16.7	74.0	
15825.000000	57.9	H	13.0	16.1	74.0	
16258.000000	58.5	H	13.3	15.5	74.0	
16829.000000	58.7	H	14.0	15.3	74.0	
17585.000000	58.3	H	14.3	15.7	74.0	

Frequency (MHz)	Average-ClearWrite (dB μ V/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
14495.000000	43.7	H	11.7	10.3	54.0	
15139.000000	44.6	H	12.1	9.4	54.0	
15789.000000	46.0	V	13.0	8.0	54.0	
16225.000000	46.1	H	13.3	7.9	54.0	
16779.000000	46.6	H	14.0	7.4	54.0	
17338.000000	46.4	H	14.2	7.6	54.0	

8DPSK CH0 (1-18GHz)

Frequency (MHz)	MaxPeak-ClearWrite (dB μ V/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
14110.000000	54.7	V	11.2	19.3	74.0	
15135.000000	55.7	V	12.1	18.3	74.0	
15774.000000	57.2	V	12.9	16.8	74.0	
16213.000000	56.7	V	13.3	17.3	74.0	
16713.000000	57.1	V	13.9	16.9	74.0	
17302.000000	56.8	V	14.1	17.2	74.0	



Frequency (MHz)	Average-ClearWrite (dBμV/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
14175.000000	42.7	H	11.3	11.3	54.0	
15136.000000	43.6	V	12.1	10.4	54.0	
15746.000000	45.3	V	12.9	8.7	54.0	
16202.000000	44.9	H	13.3	9.1	54.0	
16785.000000	45.4	V	14.0	8.6	54.0	
17348.000000	45.0	V	14.2	9.0	54.0	

8DPSK CH39 (1-18GHz)

Frequency (MHz)	MaxPeak-ClearWrite (dBμV/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
14232.000000	55.8	V	11.3	18.2	74.0	
15157.000000	56.7	H	12.1	17.3	74.0	
15736.000000	58.2	V	12.9	15.8	74.0	
16257.000000	58.8	H	13.3	15.2	74.0	
16666.000000	58.8	H	13.9	15.2	74.0	
17276.000000	58.9	H	14.1	15.1	74.0	

Frequency (MHz)	Average-ClearWrite (dBμV/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
14539.000000	43.9	H	11.8	10.1	54.0	
15153.000000	44.7	H	12.1	9.3	54.0	
15685.000000	46.2	H	12.8	7.8	54.0	
16194.000000	46.3	H	13.3	7.7	54.0	
16771.000000	46.7	H	14.0	7.3	54.0	
17384.000000	46.6	H	14.3	7.4	54.0	

8DPSK CH78 (1-18GHz)

Frequency (MHz)	MaxPeak-ClearWrite (dB μ V/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
14546.000000	56.6	H	11.8	17.4	74.0	
15135.000000	57.0	V	12.1	17.0	74.0	
15717.000000	58.9	H	12.9	15.1	74.0	
16181.000000	59.0	H	13.3	15.0	74.0	
16786.000000	59.4	H	14.0	14.6	74.0	
17819.000000	59.6	H	14.4	14.4	74.0	

Frequency (MHz)	Average-ClearWrite (dB μ V/m)	Polarization	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
14537.000000	44.2	V	11.8	9.8	54.0	
15158.000000	45.0	H	12.1	9.0	54.0	
15678.000000	46.6	H	12.8	7.4	54.0	
16210.000000	47.0	H	13.3	7.0	54.0	
16788.000000	47.5	H	14.0	6.5	54.0	
17289.000000	47.1	V	14.1	6.9	54.0	

See ANNEX C for test graphs.

Conclusion: Pass

ANNEX C: TEST FIGURE LIST

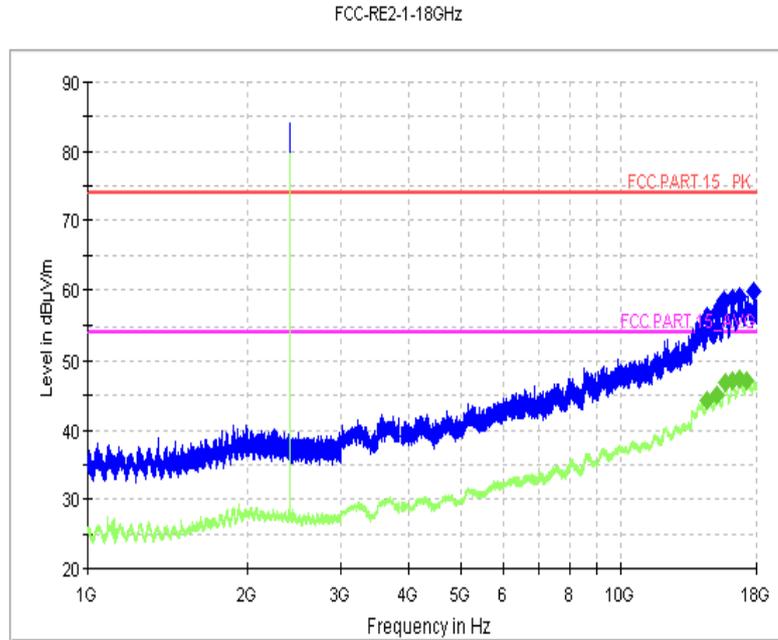


Fig.1 Radiated Spurious Emission (GFSK, Ch0, 1 GHz-18GHz)

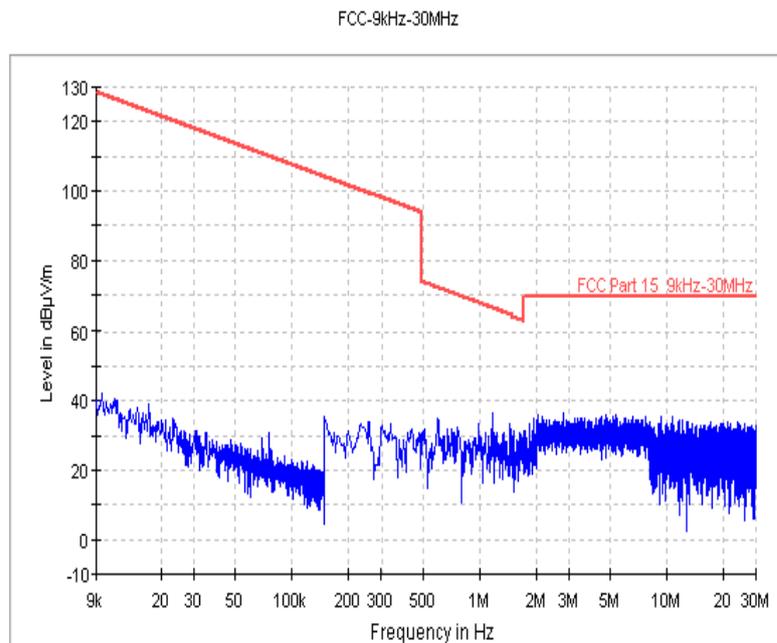


Fig.2 Radiated Spurious Emission (GFSK, Ch39, 9 kHz-30MHz)

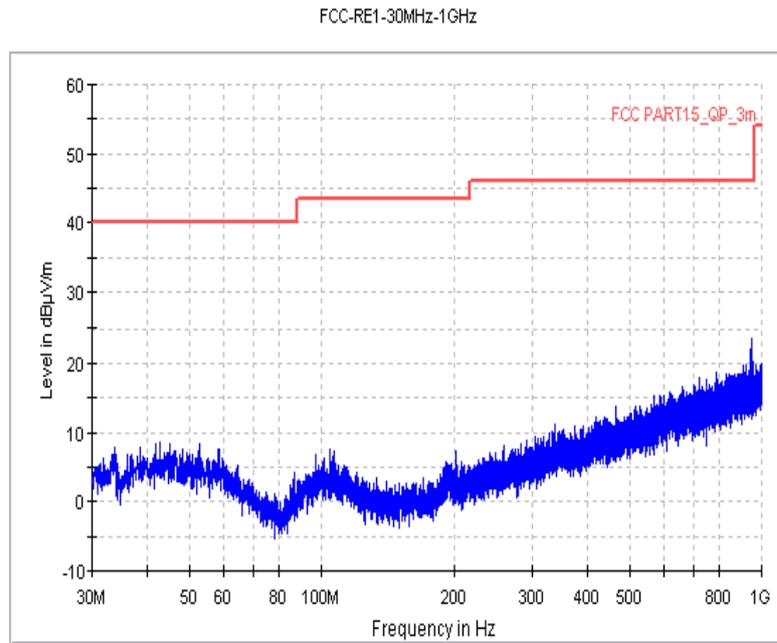


Fig.3 Radiated Spurious Emission (GFSK, Ch39, 30MHz-1 GHz)

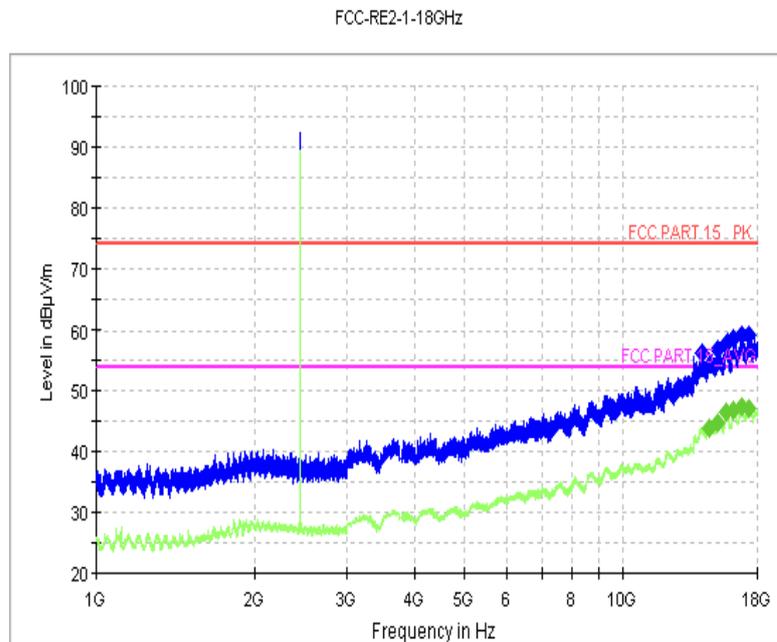


Fig.4 Radiated Spurious Emission (GFSK, Ch39, 1 GHz-18GHz)

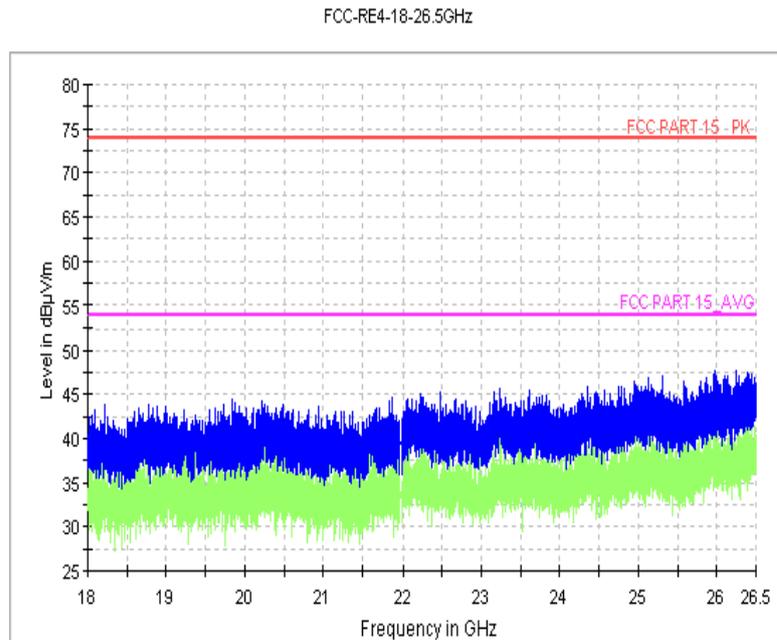


Fig.5 Radiated Spurious Emission (GFSK, Ch39, 18 GHz-26.5GHz)

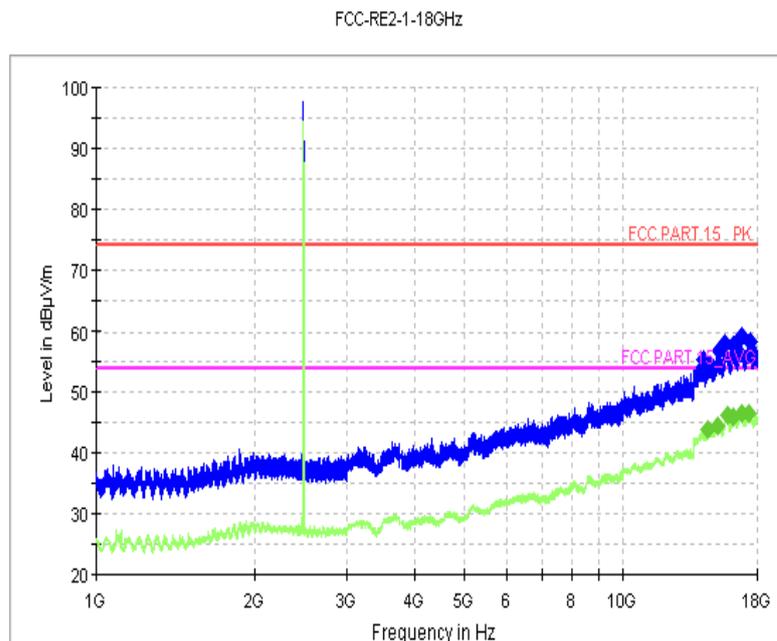


Fig.6 Radiated Spurious Emission (GFSK, Ch78, 1 GHz-18 GHz)

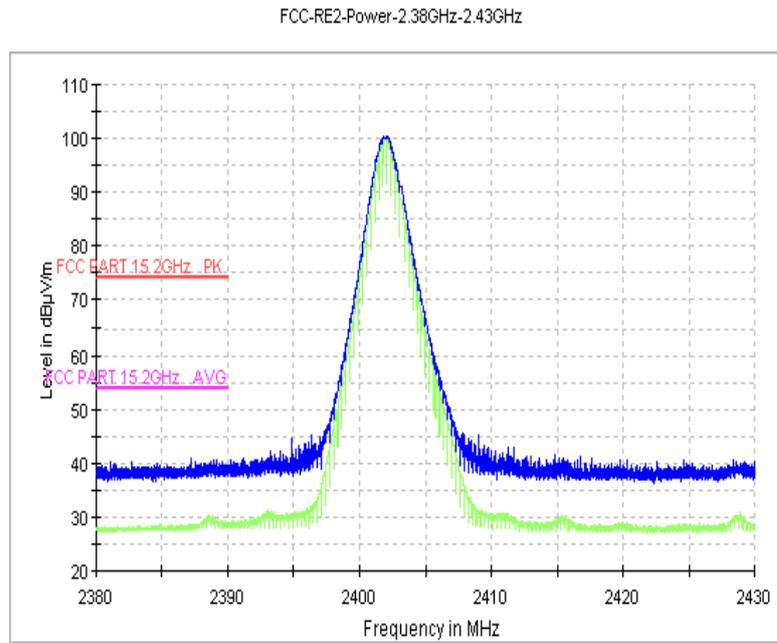


Fig.7 Radiated Emission Power (GFSK, Ch0, 2380GHz~2450GHz)

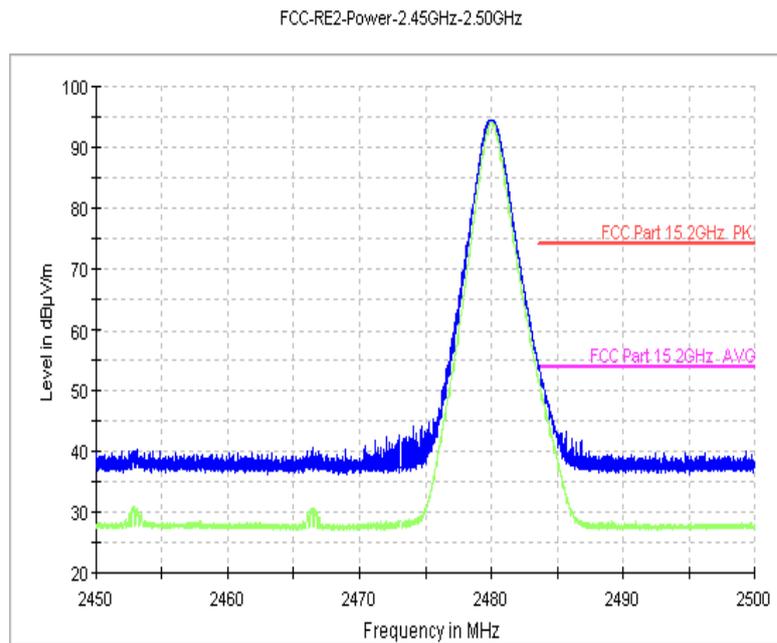


Fig.8 Radiated Emission Power (GFSK, Ch78, 2450GHz~2500GHz)

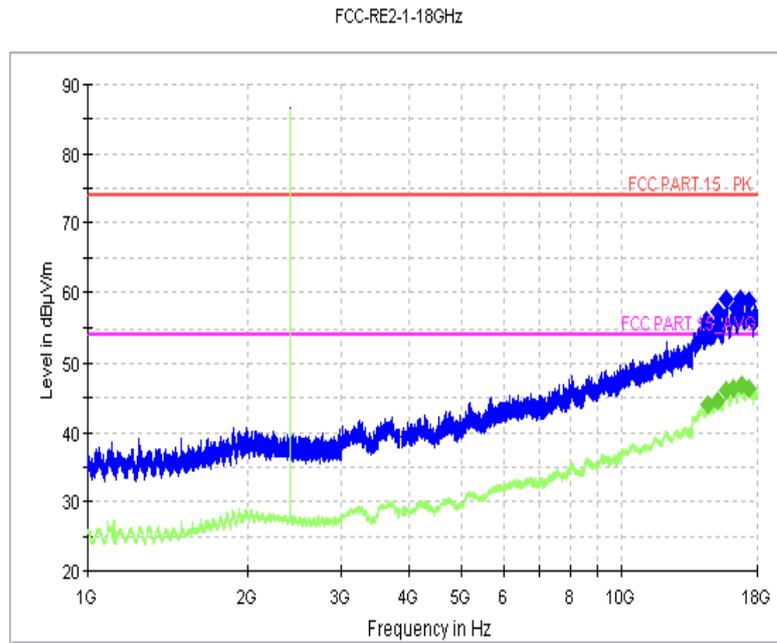


Fig.9 Radiated Spurious Emission ($\pi/4$ DQPSK, Ch0, 1 GHz-18GHz)

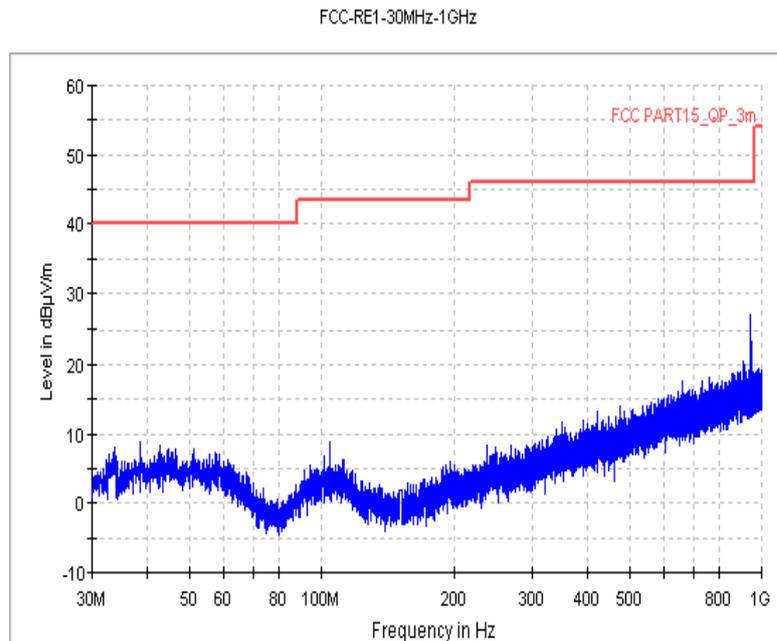


Fig.10 Radiated Spurious Emission ($\pi/4$ DQPSK, Ch39, 30MHz-1 GHz)

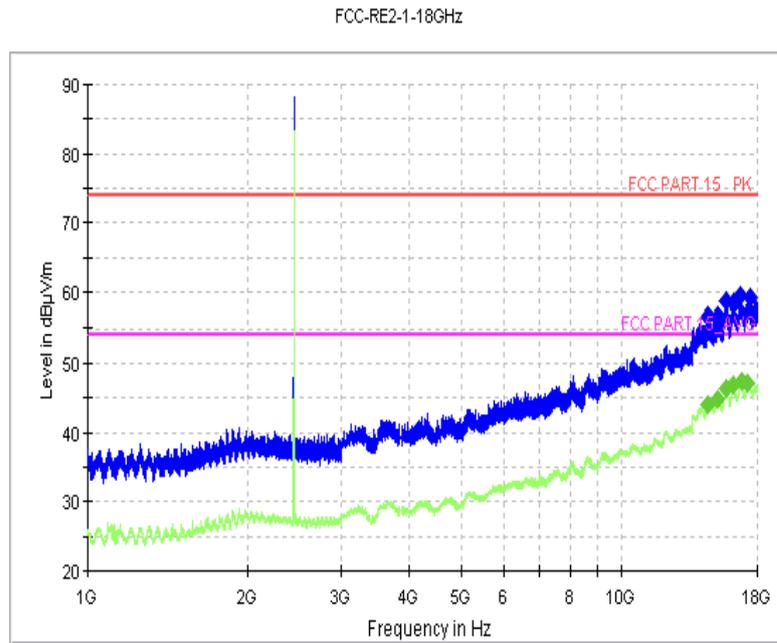


Fig.11 Radiated Spurious Emission ($\pi/4$ DQPSK, Ch39, 1 GHz-18GHz)

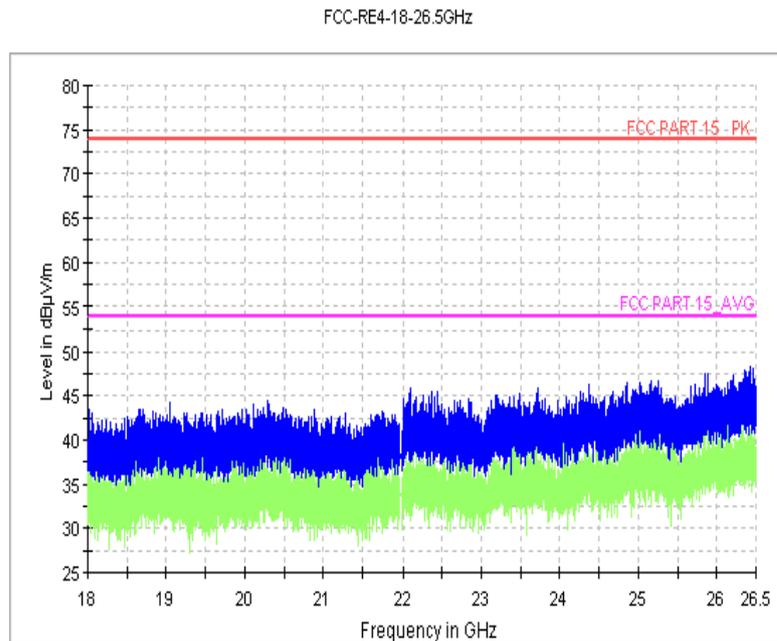


Fig.12 Radiated Spurious Emission ($\pi/4$ DQPSK, Ch39, 18 GHz-26.5GHz)

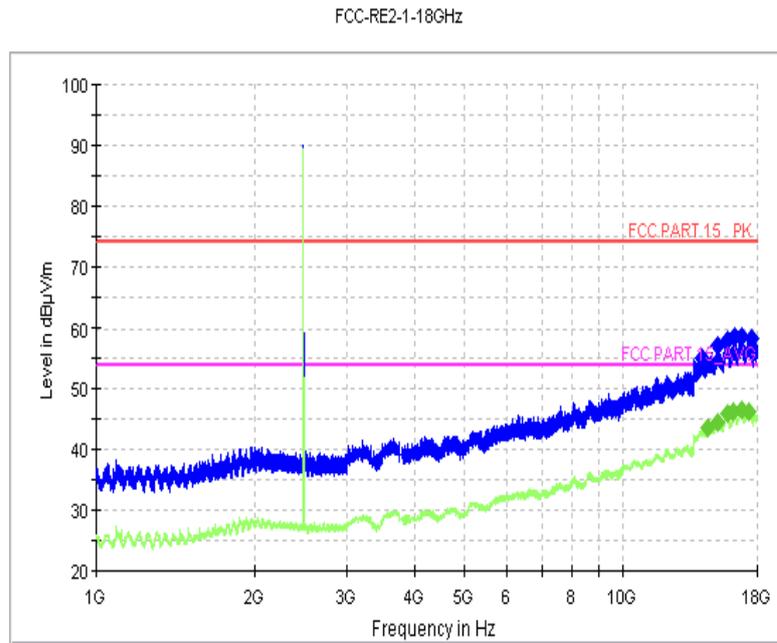


Fig.13 Radiated Spurious Emission ($\pi/4$ DQPSK, Ch78, 1 GHz-18 GHz)

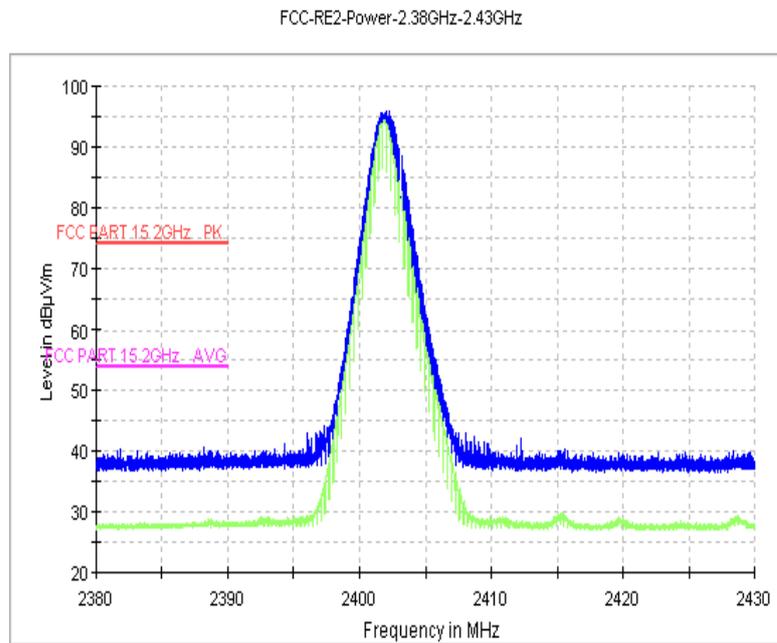


Fig.14 Radiated Emission Power ($\pi/4$ DQPSK, Ch0, 2380GHz~2450GHz)

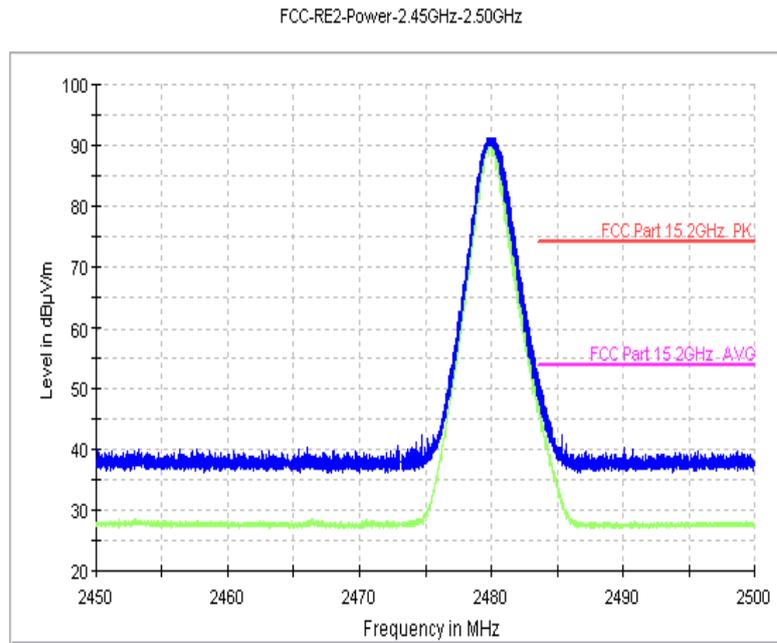


Fig.15 Radiated Emission Power ($\pi/4$ DQPSK, Ch78, 2450GHz~2500GHz)

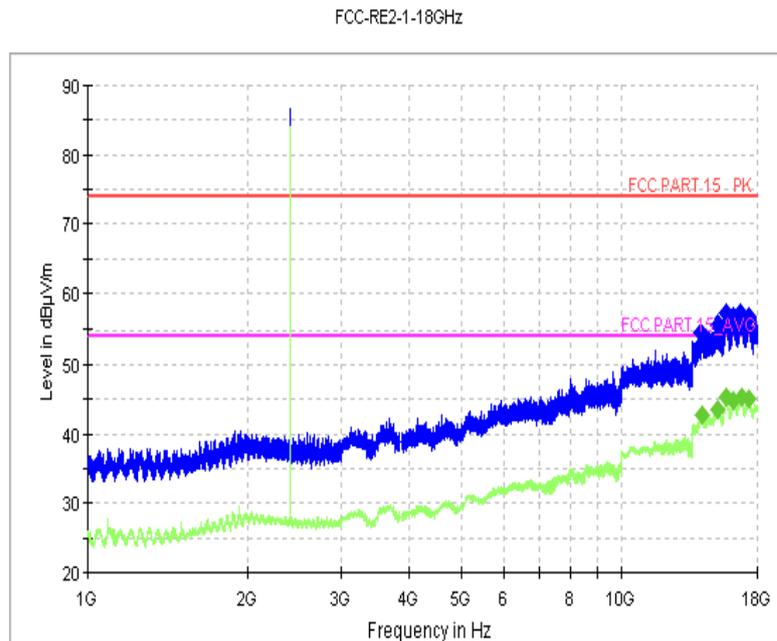


Fig.16 Radiated Spurious Emission (8DPSK, Ch0, 1 GHz-18GHz)

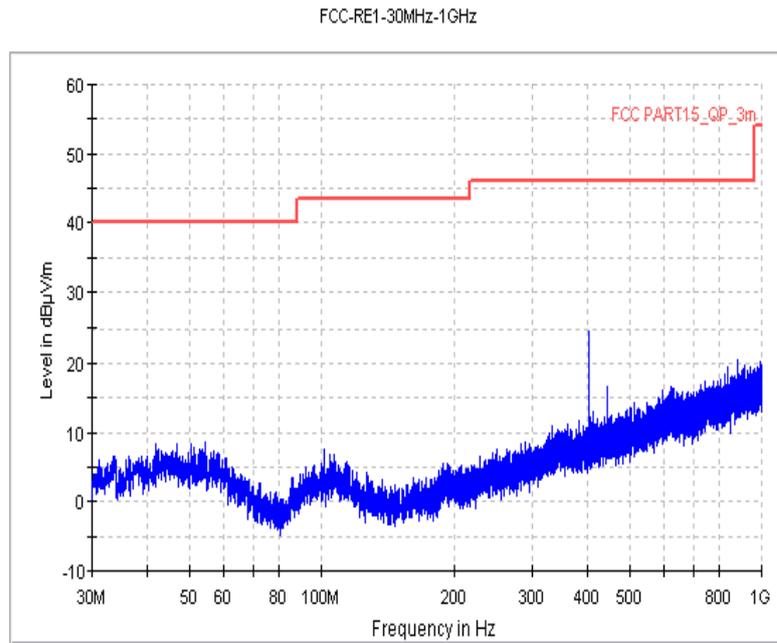


Fig.17 Radiated Spurious Emission (8DPSK, Ch39, 9kHz-30 MHz)

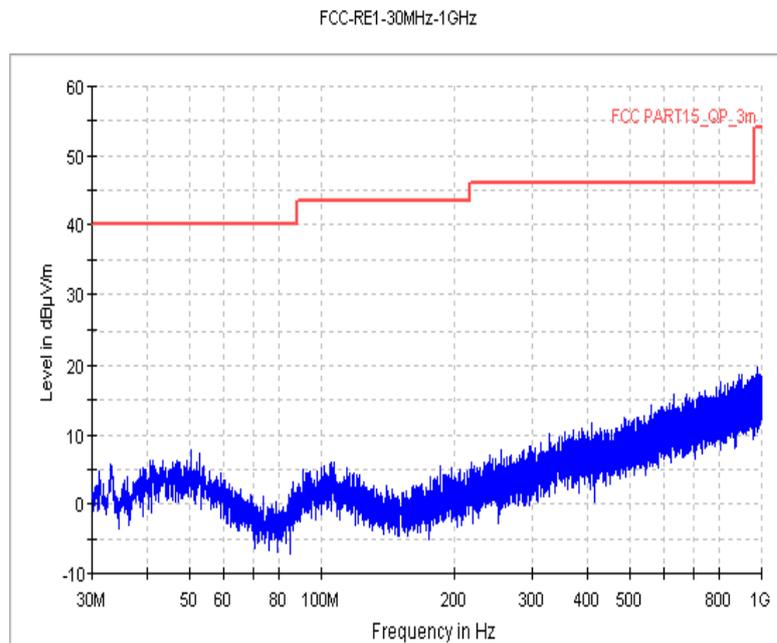


Fig.18 Radiated Spurious Emission (8DPSK, Ch39, 30MHz-1 GHz)

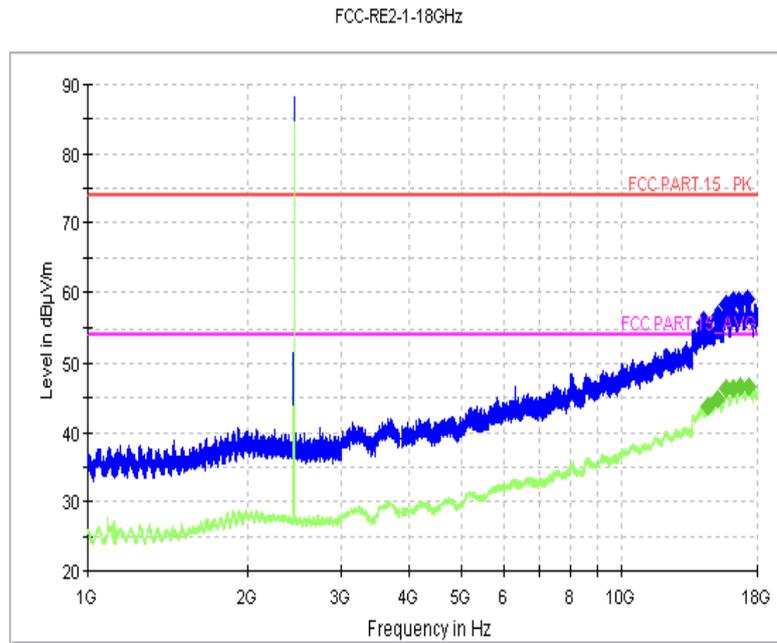


Fig.19 Radiated Spurious Emission (8DPSK, Ch39, 1 GHz-18GHz)

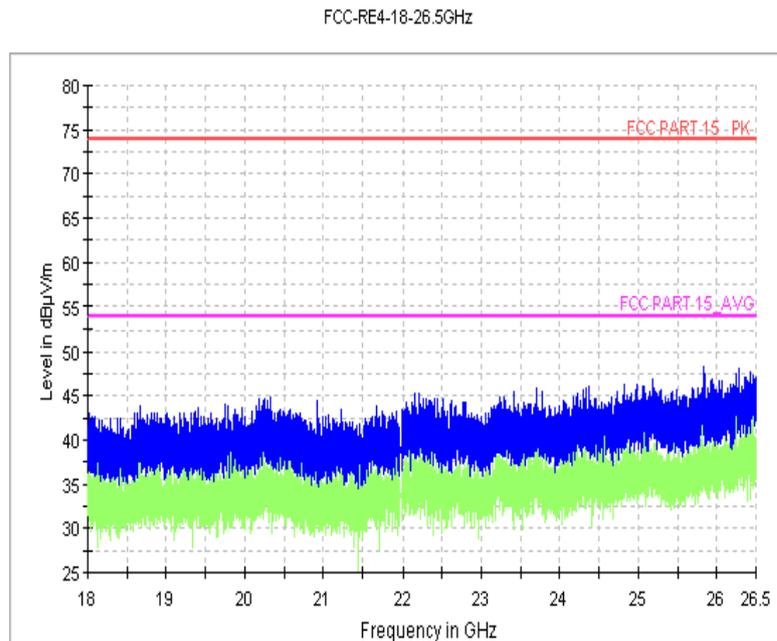


Fig.20 Radiated Spurious Emission (8DPSK, Ch39, 18 GHz-26.5GHz)

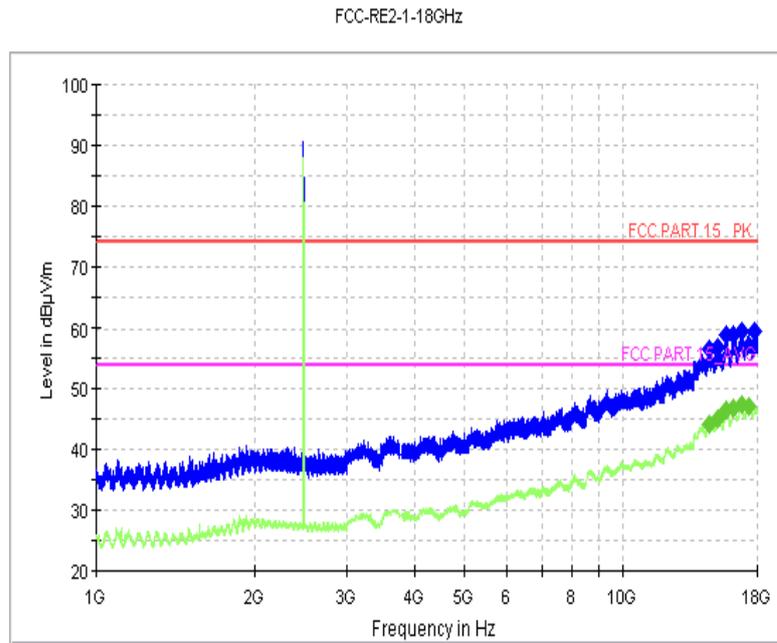


Fig.21 Radiated Spurious Emission (8DPSK, Ch78, 1 GHz-18 GHz)

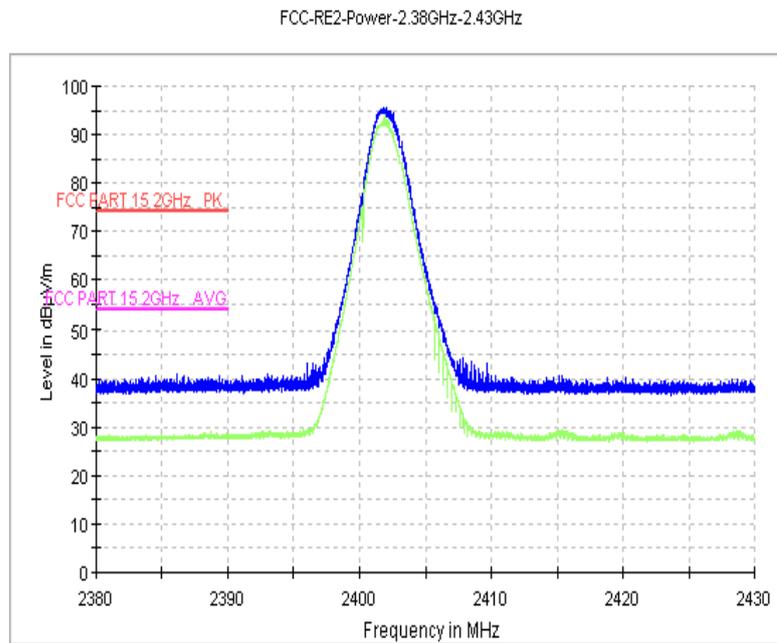


Fig.22 Radiated Emission Power (8DPSK, Ch0, 2380GHz~2450GHz)

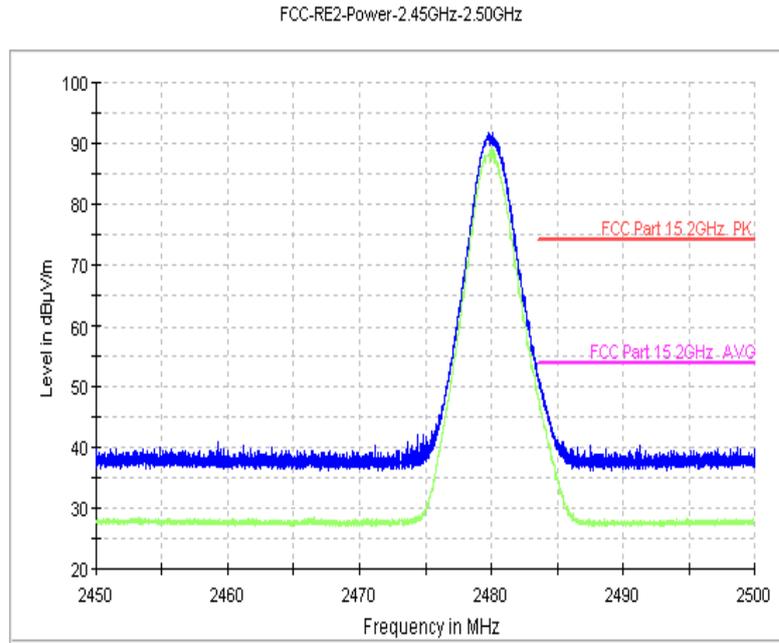


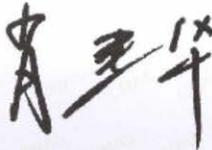
Fig.23 Radiated Emission Power (8DPSK, Ch78, 2450GHz~2500GHz)



ANNEX D: Persons involved in this testing

Test Name	Tester
Transmitter Spurious Emission - Radiated	Xu Zhongfei, Li Zhibin

ANNEX E: Accreditation Certificate

 
China National Accreditation Service for Conformity Assessment
LABORATORY ACCREDITATION CERTIFICATE
(Registration No. CNAS L0570)
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<i>The scope of accreditation is detailed in the attached appendices bearing the same registration number as above. The appendices form an integral part of this certificate.</i>
Date of Issue: 2014-06-20 Date of Expiry: 2017-06-19 Date of Initial Accreditation: 1998-07-03 Date of Update: 2014-06-20

Signed on behalf of China National Accreditation Service for Conformity Assessment
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No.CNAS AL 2 0010037

END OF REPORT