FCC PART 15.247

TEST REPORT

For

Lierda Science & Technology Group Co.,Ltd.

Lierda Building,425 Dengyun Rd，hangzhou，china

FCC ID: N8NLSD4WF-CC3200

Report Type:	**Product Type:**
C II PC	WIFI Module

Test Engineer:	Allen. tian
Report Number:	RKS160407001-00I
Report Date:	2016-05-17
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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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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Issue
1	RKS141211001-00A	Original Report	2014-12-04
2	RKS160407001-00I	C Ⅱ PC Report	2016-05-17

Note:

This is an amended report application based on RKS141211001-00A , the details as below

1. Changing the model No. from “LSD4WF-3221I5SS ” to “LSD4WF-3221I6SS”.

2. Antenna types have changed，LSD4WF-3221I5SS is the PCB antenna, LSD4WF-3221I6SS is an external antenna.

3. Reducing a capacitance (C12), the role of power filter, an increase of two resistors (R3, R10), serves to reduce the SPIFlash peripheral circuit power, no effect on the RF circuit.

The difference was explained in the attached declaration letter.

Based on the above difference, So to re-evaluated the “Spurious Emissions”, “AC line conducted emissions” and “RF exposure”, other test data and photos were copied from the original report RKS141211001-00A that issued on 2014-12-04.

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

According to § 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 user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.
And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has one integral antenna arrangement for wifi, which was permanently attached and the antenna gain is 0.2 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliance.

FCC§15.247 (i), §1.1310& §2.1091 –MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.247(i)and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f^2)	30
30-300	27.5	0.073	0.2	30
300-1500	/		f/1500	30
1500-100,000	/		1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:
Predication of MPE limit at a given distance
$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

Mode	Frequency (MHz)	Antenna Gain		Target Power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
802.11b	2412	0.2	1.047	17.66	58.34	20	0.012	1.0
802.11g	2437	0.2	1.047	15.56	35.97	20	0.007	1.0
802.11n HT20	2437	0.2	1.047	14.34	27.16	20	0.006	1.0

Result: The device meet FCC MPE at 20 cm distance

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207

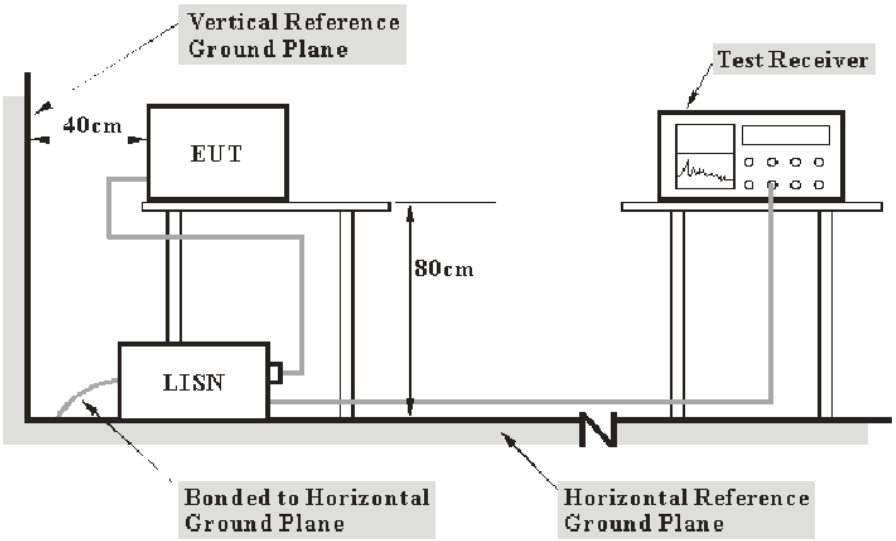
Measurement Uncertainty

Input quantities to be considered for conducted disturbance measurements maybe receiver reading, attenuation of the connection between LISN and receiver, LISN voltage division factor, LISN VDF frequency interpolation and receiver related input quantities, etc.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of conducted disturbance test at Bay Area Compliance Laboratories Corp. (Kunshan) is shown as below. And the uncertainty will not be taken into consideration for the test data recorded in the report.

Port	Expanded Measurement uncertainty
AC Mains	3.26 dB (k=2, 95% level of confidence)
CAT 3	3.70 dB (k=2, 95% level of confidence)
CAT 5	3.86 dB (k=2, 95% level of confidence)
CAT 6	4.64 dB (k=2, 95% level of confidence)

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	934115/007	2015-11-12	2016-11-11
Rohde & Schwarz	LISN	ESH3-Z5	862770/011	2015-11-12	2016-11-11
Rohde & Schwarz	LISN	ESH3-Z5	892239/018	2015-06-23	2016-06-22
Rohde & Schwarz	Pulse limiter	ESH3-Z2	879940/0058	2015-06-19	20160-06-18
HP	Current probe	8710-1744	636	2015-06-19	2016-06-18
FCC	ISN	FCC-TLISN-T8-02	20376	2015-06-23	2016-06-22
MICRO-COAX	Coaxial line	UFB-293B-1-0480-50X50	97F0173	2015-10-01	2016-10-01
Rohde & Schwarz	CE Test software	EMC 32	V 09.10.0	--	--

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

Corrected Factor & Margin Calculation

The Corrected factor is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

Correction Factor = LISN VDF + Cable Loss

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207, the worst margin reading as below:

8.87 dB at **0.425000MHz** in the **Neutral** conducted mode

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL, $U_{(Lm)}$ is less than U_{cispr}, if L_m is less than L_{lim}, it implies that the EUT complies with the limit.

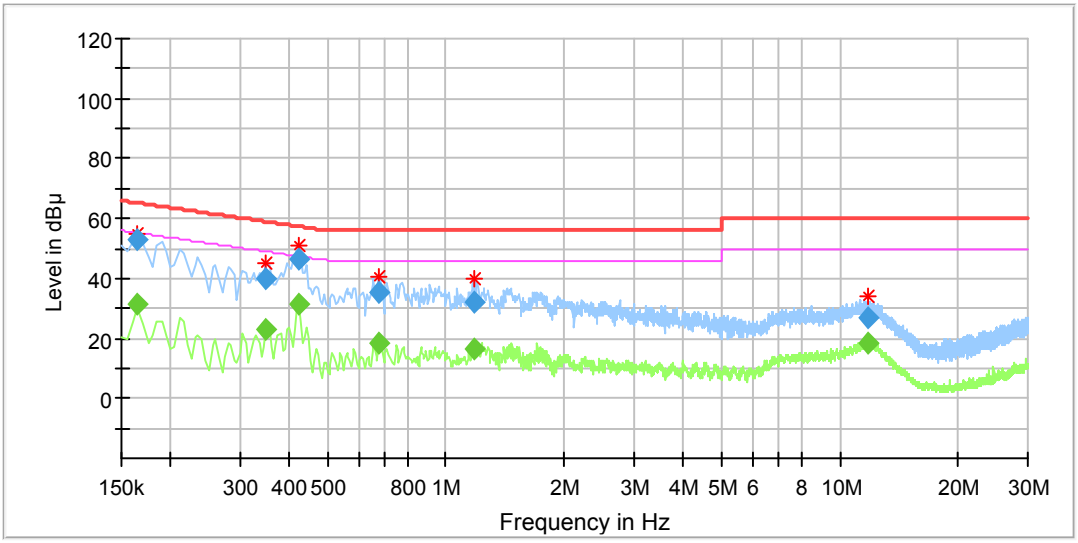
Test Data

Environmental Conditions

Temperature:	23 ℃
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

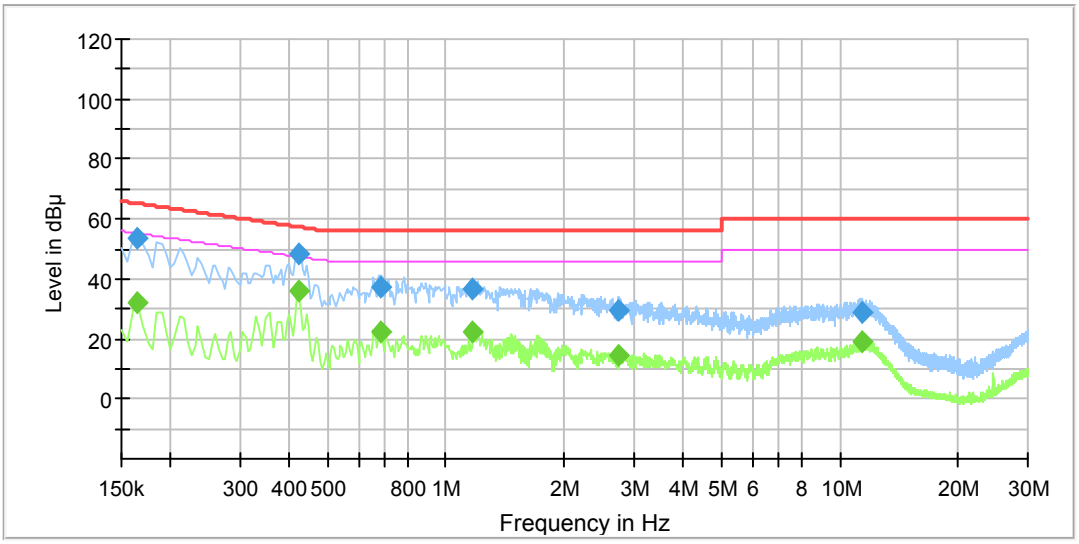
The testing was performed by Matt Yao on 2016-06-13.

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude		Limit (dB µ V)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
	QuasiPeak (dB µ V)	Average (dB µ V)					
0.165000	---	31.47	55.21	23.74	9.000	L1	11.0
0.165000	53.19	---	65.21	12.02	9.000	L1	11.0
0.350000	---	22.93	48.96	26.03	9.000	L1	11.0
0.350000	40.05	---	58.96	18.91	9.000	L1	11.0
0.425000	---	31.45	47.35	15.90	9.000	L1	11.0
0.425000	46.41	---	57.35	10.94	9.000	L1	11.0
0.675000	---	18.67	46.00	27.33	9.000	L1	11.1
0.675000	35.52	---	56.00	20.48	9.000	L1	11.1
1.175000	---	16.26	46.00	29.74	9.000	L1	11.1
1.175000	32.24	---	56.00	23.76	9.000	L1	11.1
11.750000	---	18.24	50.00	31.76	9.000	L1	11.3
11.750000	26.79	---	60.00	33.21	9.000	L1	11.3

AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude		Limit (dB µ V)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
	QuasiPeak (dB µ V)	Average (dB µ V)					
0.165000	---	31.94	55.21	23.27	9.000	N	11.0
0.165000	53.31	---	65.21	11.90	9.000	N	11.0
0.425000	---	35.72	47.35	11.63	9.000	N	11.0
0.425000	48.48	---	57.35	8.87	9.000	N	11.0
0.685000	---	22.59	46.00	23.41	9.000	N	11.1
0.685000	37.56	---	56.00	18.44	9.000	N	11.1
1.170000	---	22.38	46.00	23.62	9.000	N	11.1
1.170000	36.52	---	56.00	19.48	9.000	N	11.1
2.735000	---	14.73	46.00	31.27	9.000	N	11.3
2.735000	29.74	---	56.00	26.26	9.000	N	11.3
11.435000	---	18.99	50.00	31.01	9.000	N	11.4
11.435000	28.96	---	60.00	31.04	9.000	N	11.4

Note:
1) Corr.=LISN VDF (Voltage Division Factor) + Cable Loss
2) Corrected Amplitude = Reading + Corr.
3) Margin = Limit –Corrected Amplitude

FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

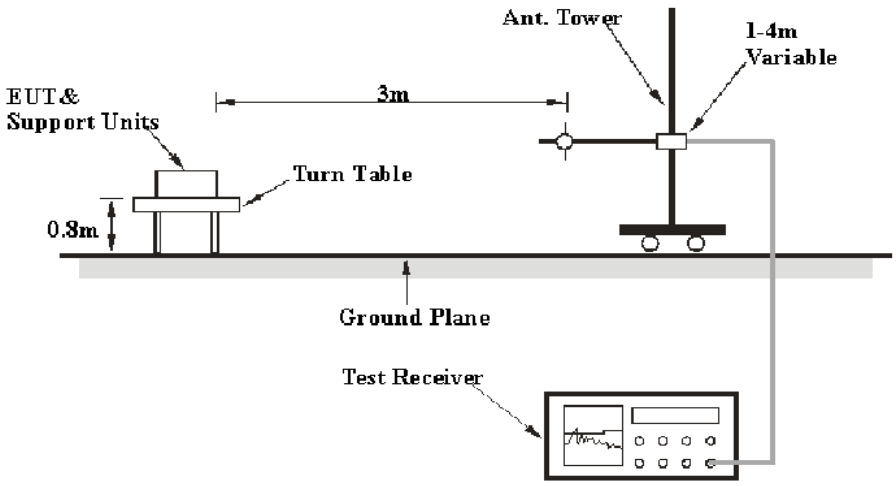
Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

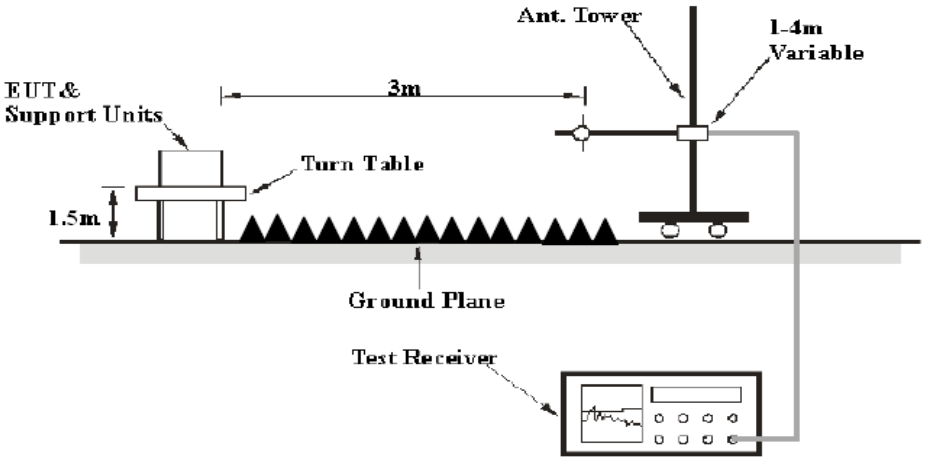
Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Kunshan) is 5.91 dB for 30MHz-1GHz and 4.92 dB for above 1GHz, 1.95dB for conducted measurement at antenna port. And the uncertainty will not be taken into consideration for the test data recorded in the report

EUT Setup

Below 1 GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.247 limits.

The adapter was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1 GHz, peak and Average detection modes for frequencies above 1 GHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sonoma Instrunent	Amplifier	330	171377	2015-09-16	2016-09-16
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2015-11-12	2016-11-11
Sunol Sciences	Broadband Antenna	JB3	A090314-2	2015-11-07	2016-11-06
ETS	Horn Antenna	3115	6229	2015-11-07	2016-11-06
EMCO	Horn Antenna	3116	9510-2384	2015-11-07	2016-11-06
Rohde & Schwarz	Signal Analyzer	FSIQ26	100048	2015-11-12	2016-11-11
Mini	Pre-amplifier	ZVA-183-S+	857001418	2015-09-16	2016-09-16
DUCOMMUN	Pre-amplifier	ALN-22093530-01	990147	2015-09-16	2016-09-16
champrotek	Chamber	Chamber A	1#	2015-09-17	2016-09-17
R&S	Auto test Software	EMC32	V 09.10.0	-	-
BACL	RF cable	KS-LAB-012	KS-LAB-012	2015-06-16	2016-12-15

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

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Subpart C, section 15.205, 15.209 and 15.247.

0.97 dB at **648.040650 MHz** in the **Vertical** polarization

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL, $U_{(Lm)}$ is less than U_{cispr}, if L_m is less than L_{lim}, it implies that the EUT complies with the limit.

Test Data

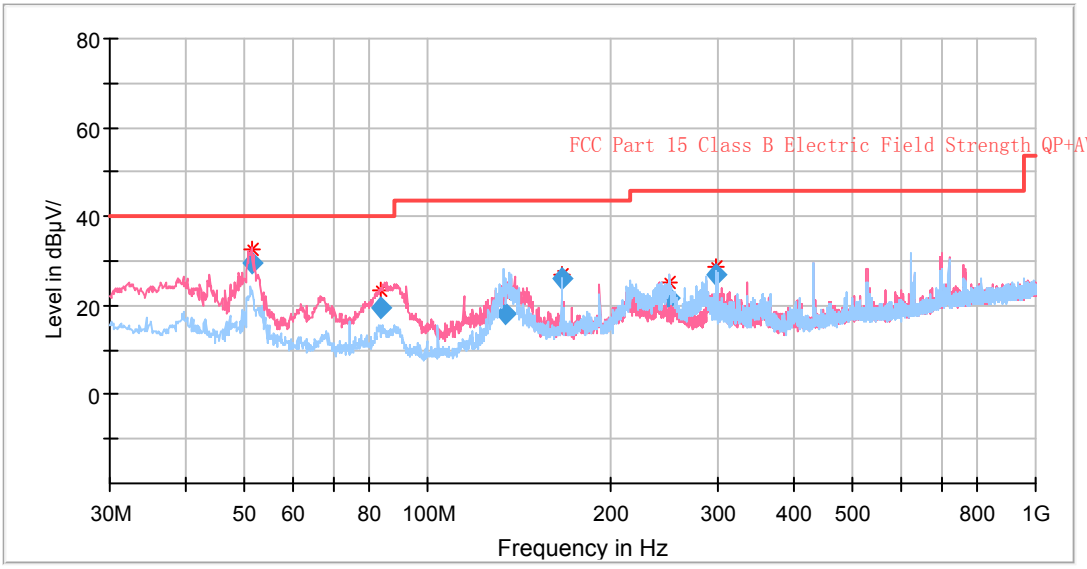
Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	40 %
ATM Pressure:	101.0 kPa

The testing was performed by Allen Tian on 2016-04-25

30MHz ~ 1GHz

The worst case was performed under 802.11b mode



Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBµV/m)	FCC Part 15.247/205/209	
	Reading (dBµV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dB µ V/m)	Margin (dB)
51.486850	45.96	QP	103.0	100.0	V	-16.5	29.46	40.00	10.54
83.913750	36.67	QP	118.0	100.0	V	-17.1	19.57	40.00	20.43
134.133500	30.81	QP	167.0	200.0	H	-12.7	18.11	43.50	25.39
166.502950	38.02	QP	172.0	200.0	H	-12.1	25.92	43.50	17.58
249.765800	33.42	QP	130.0	100.0	H	-11.8	21.62	46.00	24.38
298.739800	37.03	QP	159.0	100.0	H	-10.2	26.83	46.00	19.17

1 GHz-25 GHz

802.11b Mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dB μ V/m)	Margin (dB)
Low Channel (2412 MHz)									
2412	95.35	PK	139.0	200.0	V	3.00	98.35	/	/
2412	89.30	Ave	139.0	200.0	V	3.00	92.30	/	/
2412	96.44	PK	201.0	150.0	H	3.00	99.44	/	/
2412	91.41	Ave	201.0	150.0	H	3.00	94.41	/	/
2352	41.13	PK	282.0	150.0	V	4.80	45.93	74.00	28.07
2352	30.31	Ave	282.0	150.0	V	4.80	35.11	54.00	18.89
2390	37.43	PK	279.0	150.0	V	4.90	42.33	74.00	31.67
2390	25.54	Ave	279.0	150.0	V	4.90	30.44	54.00	23.56
4030	20.90	Ave	145.0	150.0	H	10.1	31.00	54.00	23.00
4030	34.36	PK	145.0	150.0	H	10.1	44.46	74.00	29.54
4824	21.58	Ave	8.0	150.0	H	13.80	35.38	54.00	18.62
4824	32.90	PK	8.0	150.0	H	13.80	46.70	74.00	27.30
7236	20.38	Ave	201.0	150.0	H	18.80	39.18	54.00	14.82
7236	33.87	PK	201.0	150.0	H	18.80	52.67	74.00	21.33

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Middle Channel (2437 MHz)									
2437	96.42	PK	252.00	150.0	V	3.00	99.42	/	/
2437	90.33	Ave	252.00	150.0	V	3.00	93.33	/	/
2437	93.75	PK	156.00	200.0	H	3.00	96.75	/	/
2437	88.25	Ave	156.00	200.0	H	3.00	91.25	/	/
1172	34.10	PK	259.0	150.0	H	3.60	37.70	74.00	36.30
1172	20.43	Ave	259.0	150.0	H	3.60	24.03	54.00	29.97
2263	37.56	Ave	40.0	150.0	V	4.70	42.26	54.00	11.74
2263	48.56	PK	40.0	150.0	V	4.70	53.26	74.00	20.74
4874	19.24	Ave	194.0	150.0	H	13.90	33.14	54.00	20.86
4874	32.21	PK	194.0	150.0	H	13.90	46.11	74.00	27.89
4058	44.11	PK	14.0	150.0	V	10.20	54.31	74.00	19.69
4058	38.34	Ave	14.0	150.0	V	10.20	48.54	54.00	5.46
7311	20.42	Ave	296.0	150.00	H	18.90	39.32	54.00	16.68
7311	33.61	PK	296.0	150.00	H	18.90	52.51	74.00	21.49

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
High Channel (2462 MHz)									
2462	94.65	PK	170.0	200.0	V	3.00	97.65	/	/
2462	89.61	Ave	170.0	200.0	V	3.00	92.61	/	/
2462	95.59	PK	210.0	100.0	H	3.00	98.59	/	/
2462	88.88	Ave	210.0	100.0	H	3.00	91.88	/	/
2484	41.91	PK	334.0	150.0	V	5.00	46.91	74.00	27.09
2484	31.08	Ave	334.0	150.0	V	5.00	36.08	54.00	17.92
2491	42.70	PK	311.0	150.0	V	5.00	47.70	74.00	26.30
2491	30.96	Ave	311.0	150.0	V	5.00	35.96	54.00	18.04
4924	33.74	PK	211.0	150.0	H	14.00	47.74	74.00	26.26
4924	22.49	Ave	211.0	150.0	H	14.00	36.49	54.00	17.51
6625	21.67	Ave	338.0	150.0	V	17.70	39.37	54.00	14.63
6625	35.14	PK	338.0	150.0	V	17.70	52.84	74.00	21.16
7386	18.29	Ave	74.0	150.0	H	19.80	38.09	54.00	15.91
7386	32.24	PK	74.0	150.0	H	19.80	52.04	74.00	52.04

802.11g Mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Low Channel (2412 MHz)									
2412	94.68	PK	130.0	200.0	V	3.00	97.68	/	/
2412	88.45	Ave	130.0	200.0	V	3.00	91.45	/	/
2412	93.77	PK	80.0	200.0	H	3.00	96.77	/	/
2412	88.26	Ave	80.0	200.0	H	3.00	91.26	/	/
2379	39.07	PK	291.0	150.0	V	4.90	43.97	74.00	30.03
2379	25.03	Ave	291.0	150.0	V	4.90	29.93	54.00	24.07
2390	47.86	PK	288.0	150.0	V	4.90	52.76	74.00	21.24
2390	29.22	Ave	288.0	150.0	V	4.90	34.12	54.00	19.88
3216	34.92	PK	184.0	150.0	V	7.40	42.32	74.00	31.68
3216	22.05	Ave	184.0	150.0	V	7.40	29.45	54.00	24.55
4824	17.20	Ave	163.0	150.0	V	13.80	31.00	54.00	23.00
4824	31.19	PK	163.0	150.0	V	13.80	44.99	74.00	29.01
7236	20.62	Ave	30.0	150.0	H	18.80	39.42	54.00	14.58
7236	33.98	PK	30.0	150.0	H	18.80	52.78	74.00	21.22

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Middle Channel (2437 MHz)									
2437	95.44	PK	180.0	200.00	V	3.00	98.44	/	/
2437	89.31	Ave	180.0	200.00	V	3.00	92.31	/	/
2437	94.84	PK	90.0	200.00	H	3.00	97.84	/	/
2437	89.74	Ave	90.0	200.00	H	3.00	92.74	/	/
1589	43.17	PK	16.0	150.0	V	2.8	45.97	74.00	28.03
1589	22.42	Ave	16.0	150.0	V	2.8	25.22	54.00	28.78
1659	20.46	Ave	91.0	150.0	V	3.1	23.56-	54.00	30.44
1659	36.90	PK	91.0	150.0	V	3.1	40.00	74.00	34.00
4874	27.52	PK	25.0	150.0	V	13.90	41.42	74.00	32.58
4874	14.39	Ave	25.0	150.0	V	13.90	28.29	54.00	25.71
5629	32.18	PK	254.0	150.0	H	15.1	47.28	74.00	26.72
5629	18.49	Ave	254.0	150.0	H	15.1	33.59	54.00	20.41
7311	34.56	PK	258.0	150.0	H	18.90	53.46	74.00	20.54
7311	20.42	Ave	258.0	150.0	H	18.90	39.32	54.00	14.68

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
High Channel (2462 MHz)									
2462	95.36	PK	166.0	200.0	V	3.00	98.36	/	/
2462	91.41	Ave	166.0	200.0	V	3.00	94.41	/	/
2462	93.78	PK	80.0	150.0	H	3.00	96.78	/	/
2462	88.46	Ave	80.0	150.0	H	3.00	91.46	/	/
2483.6	51.12	PK	337.0	150.0	V	5.00	56.12	74.00	17.88
2483.6	34.85	Ave	337.0	150.0	V	5.00	39.85	54.00	14.15
2545	88.19	PK	335.0	150.0	V	5.20	53.39	74.00	20.61
2545	36.76	Ave	335.0	150.0	V	5.20	41.96	54.00	12.04
4100	46.08	PK	33.0	150.0	H	10.40	56.48	74.00	17.52
4100	35.13	Ave	33.0	150.0	H	10.40	45.53	54.00	8.47
4924	17.77	Ave	15.0	150.0	V	14.00	31.77	54.00	22.23
4924	31.60	PK	15.0	150.0	V	14.00	45.60	74.00	28.40
7386	18.58	Ave	331.0	150.0	V	19.80	38.38	54.00	15.62
7386	31.77	PK	331.0	150.0	V	19.80	51.57	74.00	22.43

802.11n-HT20 Mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Low Channel (2412 MHz)									
2412	94.23	PK	150.00	200.00	V	3.00	97.23	/	/
2412	88.59	Ave	150.00	200.00	V	3.00	91.59	/	/
2412	93.81	PK	90.00	200.00	H	3.00	96.81	/	/
2412	87.35	Ave	90.00	200.00	H	3.00	90.35	/	/
2339	40.61	PK	292.00	150.00	V	4.80	45.41	74.0	28.59
2339	27.12	Ave	292.00	150.00	V	4.80	31.92	54.0	22.08
2390	44.47	PK	287.00	150.00	V	4.90	49.37	74.0	24.63
2390	26.67	Ave	287.00	150.00	V	4.90	31.57	54.0	22.43
4824	38.66	PK	199.00	200.00	H	13.80	52.46	74.0	21.54
4824	22.65	Ave	199.00	200.00	H	13.80	36.45	54.0	17.55
6639	21.72	Ave	52.00	150.00	H	17.70	39.42	54.0	14.58
6639	35.14	PK	52.00	150.00	H	17.70	52.84	74.0	21.16
7236	19.76	Ave	26.00	150.00	H	18.80	38.56	54.0	15.44
7236	32.75	PK	26.00	150.00	H	18.80	51.55	74.0	22.45

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Middle Channel (2437 MHz)									
2437	95.63	PK	160.00	200.00	V	3.00	98.63	/	/
2437	88.23	Ave	160.00	200.00	V	3.00	91.23	/	/
2437	93.52	PK	100.00	200.00	H	3.00	96.52	/	/
2437	88.56	Ave	100.00	200.00	H	3.00	91.56	/	/
2248	35.03	Ave	157.00	150.00	H	4.70	39.73	54.0	14.27
2248	47.56	PK	157.00	150.00	H	4.70	52.26	74.0	21.74
2430	38.49	Ave	178.00	150.00	H	4.90	43.39	54.0	10.61
2430	48.74	PK	178.00	150.00	H	4.90	53.64	74.0	20.36
4874	29.35	Ave	4.00	200.00	V	13.90	43.25	54.0	10.75
4874	45.45	PK	4.00	200.00	V	13.90	59.35	74.0	14.65
6649	29.51	Ave	339.00	150.00	V	17.30	46.81	54.0	7.19
6649	37.31	PK	339.00	150.00	V	17.30	54.61	74.0	19.39
7311	32.46	PK	203.00	150.00	H	18.90	51.36	74.0	22.64
7311	19.24	Ave	203.00	150.00	H	18.90	38.14	54.0	15.86

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
High Channel (2462 MHz)									
2462	92.11	PK	222.0	200.0	V	3.00	95.11	/	/
2462	86.75	Ave	222.0	200.0	V	3.00	89.75	/	/
2462	92.32	PK	100.0	150.0	H	3.00	95.32	/	/
2462	87.31	Ave	100.0	150.0	H	3.00	90.31	/	/
2483.5	47.22	PK	339.0	150.0	V	5.00	52.22	74.0	21.78
2483.5	30.68	Ave	339.0	150.0	V	5.00	35.68	54.0	18.32
2525	45.7	PK	337.0	150.0	V	5.10	50.80	74.0	23.20
2525	33.23	Ave	337.0	150.0	V	5.10	38.33	54.0	15.67
4924	41.61	PK	159.0	200.0	H	14.00	55.61	74.0	18.39
4924	24.25	Ave	159.0	200.0	H	14.00	38.25	54.0	15.75
6569	34.00	PK	339.0	150.0	V	17.50	51.50	74.0	22.50
6569	20.88	Ave	339.0	150.0	V	17.50	38.38	54.0	15.62
7386	31.45	PK	169.0	150.0	V	19.80	51.25	74.0	22.75
7386	18.43	Ave	169.0	150.0	V	19.80	38.23	54.0	15.77

Note:
1) Correction Factor=Antenna factor (RX) + cable loss – amplifier factor
2) Margin = Limit - Limit – Corrected Amplitude

DECLARATION LETTER

Lierda Science & Technology Group Co.,Ltd
Lierda Building,425 Dengyun Rd，Hangzhou，China
0571-89908723（T） 0571-88256108（F）

DECLARATION

Date:2016-05-12

To:

FEDERAL COMMUNICATIONS COMMISSION

Authorization and Evaluation Division

7435 Oakland Mills Road
Columbia, MD 21046

Dear Sir or Madam:

We,（Lierda Science &Technology Group Co., Ltd） hereby declare that product: Embedded Wi-Fi module, model name: LSD4WF-3221I5SS (FCC ID: N8NLSD4WF-CC3200), which has been tested by BACL. meanwhile, for our marketing purpose, we would like to list a series models(Model Number: LSD4WF-3221I6SS) on reports and certificate.

Description of the difference:

1. Model names are different.
2. Antenna types have changed，LSD4WF-3221I5SS is the built-in antenna, LSD4WF-3221I6SS is an external antenna.
3. Reducing a capacitance (C12), the role of power filter, an increase of two resistors (R3, R10), serves to reduce the SPIFlash peripheral circuit power, no effect on the RF circuit.

Please contact me if there is need for any additional clarification or information.

Best Regards,

Sincerely,

Signature：

Name: Jimmy He