

FCC 47 CFR PART 15 SUBPART B

TEST REPORT

Desay Infor Technology Co., Ltd

Smart Bracelet

Model No.: DS-D6

Additional Model No.: Please refer to page 7

Prepared for : Desay Infor Technology Co., Ltd
Address : Desay No.3 Industrial Zone Chengjiang Town, Huizhou, China

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.
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Date of receipt of test sample : April 24, 2017
Number of tested samples : 1
Serial number : Prototype
Date of Test : April 24, 2017 ~ May 15, 2017
Date of Report : May 15, 2017

**FCC TEST REPORT
FCC 47 CFR PART 15 SUBPART B****Report Reference No. : LCS170424085AE**

Date Of Issue : May 15, 2017

Testing Laboratory Name : Shenzhen LCS Compliance Testing Laboratory Ltd.Address : 1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue,
Bao'an District, Shenzhen, Guangdong, ChinaTesting Location/ Procedure : Full application of Harmonised standards ■
Partial application of Harmonised standards □
Other standard testing method □**Applicant's Name..... : Desay Infor Technology Co., Ltd**

Address : Desay No.3 Industrial Zone Chengjiang Town, Huizhou, China

Test Specification

Standard : FCC 47 CFR Part 15 Subpart B, ANSI C63.4 -2014

Test Report Form No. : LCSEMC-1.0

TRF Originator : Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF : Dated 2011-03

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Test Item Description. : Smart Bracelet

Model/ Type Reference : DS-D6

Trade Mark : DESAY, Lenovo

Ratings : DC 3.7V by battery (90mAh)
Recharge Voltage: 5V⁺, 100mA**Result : Positive****Compiled by:**

Linda He/ File administrator

Supervised by:

Glin Lu/ Technique principal

Approved by:

Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. : LCS170424085AEMay 15, 2017

Date of issue

Type / Model..... : DS-D6

EUT..... : Smart Bracelet

Applicant..... : Desay Infor Technology Co., LtdAddress..... : Desay No.3 Industrial Zone Chengjiang Town, Huizhou,
China

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China

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Factory..... : Desay Infor Technology Co., LtdAddress..... : Desay No.3 Industrial Zone Chengjiang Town, Huizhou,
China

Telephone..... : /

Fax..... : /

Test Result according to the standards on page 5: **Positive**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
00	May 15, 2017	Initial Issue	Gavin Liang

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1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	FCC 47 CFR Part 15 Subpart B	Class B	PASS
Radiated disturbance	FCC 47 CFR Part 15 Subpart B	Class B	PASS
Conducted disturbance at Antenna terminals	FCC 47 CFR Part 15 Subpart B	-----	N/A
N/A is an abbreviation for Not Applicable.			

1.2. Description of Test Modes

The EUT has been tested under operating condition.

This test was performed with EUT in X, Y, Z position and the worst case was found when EUT in X position.

AC conducted emission pre-test at both at AC 120V/60Hz and AC 240V/50Hz modes, recorded worst case;

AC conducted emission pre-test at both at power adapter and power from PC modes, recorded worst case;

There was 3 test Modes. TM1 to TM3 were shown below:

TM1: Operate in BT LE mode.

TM2: Exchange data with PC.

TM3: Idle mode

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT	: Smart Bracelet
Trade Mark	: DESAY, Lenovo
Model Number	: DS-D6, DS-D6 Plus, DS-B521 Plus, DS-D8, C5 Plus, B525, HW01, HW01 Plus, DS-D6XX(XX=0-9)
Model Declaration	: PCB board, structure and internal of these model(s) are the same, So no additional models were tested, excluding the model DS-D8. The product model (DS-D8) are identical in the same PCB layout, interior structure and electrical circuits with the model DS-D6, The main difference is that the heart rate test is not the same.
Test Model	: DS-D6
Power Supply	: DC 3.7V by battery (90mAh) Recharge Voltage: 5V $\overline{\text{---}}$, 100mA

2.2. Description of Test Facility

Site Description EMC Lab.	: CNAS Registration Number. is L4595. FCC Registration Number. is 899208. Industry Canada Registration Number. is 9642A-1. ESMD Registration Number. is ARCB0108. UL Registration Number. is 100571-492. TUV SUD Registration Number. is SCN1081. TUV RH Registration Number. is UA 50296516-001
------------------------------	--

2.3. 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 CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS 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.

2.4.Measurement Uncertainty

Test Item	Frequency Range	Expanded uncertainty (U _{lab})	Expanded uncertainty (U _{cispr})
Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.68 dB	N/A
Radiated Emission	Level accuracy (30MHz to 1000MHz)	± 3.48 dB	± 5.2 dB
Radiated Emission	Level accuracy (above 1000MHz)	± 3.90 dB	N/A
Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.68 dB	N/A

- (1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.
- (2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

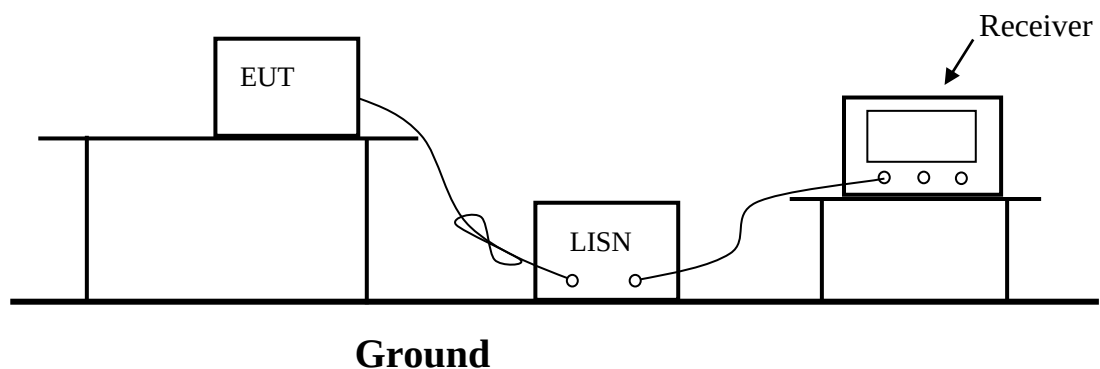
3. POWER LINE CONDUCTED EMISSION MEASUREMENT

3.1. Test Equipment

The following test equipments are used during the power line conducted measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESR 7	101181	2016-06-18
2	10dB Attenuator	SCHWARZBECK	MTS-IMP136	261115-001-0032	2016-06-18
3	Artificial Mains	ROHDE & SCHWARZ	ENV216	101288	2016-06-18
4	EMI Test Software	AUDIX	E3	N/A	N/A
5	ISN	SCHWARZBECK	NTFM 8158	NTFM 81580120	2016-06-18

3.2. Block Diagram of Test Setup



3.3. Test Standard

Power Line Conducted Emission Limits (Class B)

Frequency (MHz)			Limit (dBμV)	
			Quasi-peak Level	Average Level
0.15	~	0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *
0.50	~	5.00	56.0	46.0
5.00	~	30.00	60.0	50.0

NOTE1-The lower limit shall apply at the transition frequencies.

NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

3.4. EUT Configuration on Test

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

3.5.Operating Condition of EUT

3.5.1.Setup the EUT as shown on Section 3.2

3.5.2.Turn on the power of all equipments.

3.5.3.Let the EUT work in measuring mode (ON) and measure it.

3.6.Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC/ANSI C63.4-2014 on Conducted Emission Measurement.

The bandwidth of the test receiver is set at 9kHz.

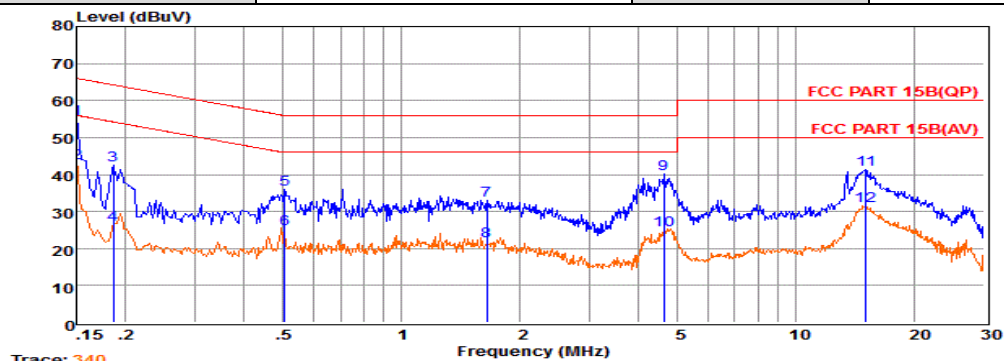
The frequency range from 150kHz to 30MHz is investigated

3.7.Test Results

PASS.

The test result please refer to the next page.

Model No.	DS-D6	Test Mode	ON
Environmental Conditions	24.2°C, 44.7% RH	Test Engineer	Demi Lin
Pol	Line		



Trace: 340

Pol:

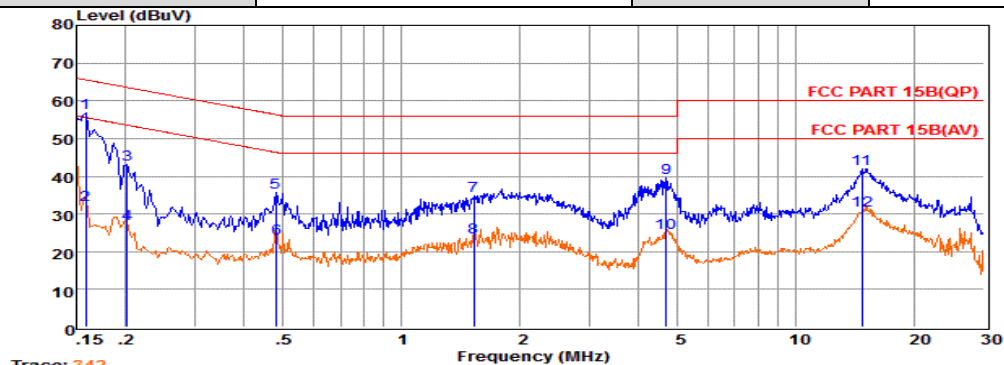
LINE

	Freq	Reading	LISNFac	CabLos	Aux2Fac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB	dB	dB	dBuV	dBuV	dB
1	0.15	35.55	9.57	0.02	10.00	55.14	66.00	-10.86	QP
2	0.15	23.54	9.57	0.02	10.00	43.13	55.99	-12.86	Average
3	0.19	22.99	9.62	0.02	10.00	42.63	64.20	-21.57	QP
4	0.19	6.88	9.62	0.02	10.00	26.52	54.19	-27.67	Average
5	0.50	16.32	9.62	0.04	10.00	35.98	56.00	-20.02	QP
6	0.50	5.49	9.62	0.04	10.00	25.15	46.00	-20.85	Average
7	1.64	13.26	9.64	0.05	10.00	32.95	56.00	-23.05	QP
8	1.65	2.37	9.64	0.05	10.00	22.06	46.00	-23.94	Average
9	4.62	20.32	9.65	0.06	10.00	40.03	56.00	-15.97	QP
10	4.62	5.19	9.65	0.06	10.00	24.90	46.00	-21.10	Average
11	15.07	21.57	9.71	0.10	10.00	41.38	60.00	-18.62	QP
12	15.07	11.63	9.71	0.10	10.00	31.44	50.00	-18.56	Average

Remarks: 1. Measured = Reading +Cable Loss +Aux2 Fac.

2. The emission levels that are 20dB below the official limit are not reported.

Model No.	DS-D6	Test Mode	ON
Environmental Conditions	24.2°C, 44.7% RH	Test Engineer	Demi Lin
Pol	Neutral		



Trace: 342

Pol:

NEUTRAL

	Freq	Reading	LISNFac	CabLos	Aux2Fac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB	dB	dB	dBuV	dBuV	dB
1	0.16	37.13	9.68	0.02	10.00	56.83	65.56	-8.73	QP
2	0.16	12.68	9.68	0.02	10.00	32.38	55.55	-23.17	Average
3	0.20	23.40	9.59	0.02	10.00	43.01	63.54	-20.53	QP
4	0.20	7.80	9.59	0.02	10.00	27.41	53.53	-26.12	Average
5	0.48	16.09	9.62	0.04	10.00	35.75	56.32	-20.57	QP
6	0.48	3.76	9.62	0.04	10.00	23.42	46.32	-22.90	Average
7	1.53	15.14	9.63	0.05	10.00	34.82	56.00	-21.18	QP
8	1.53	4.08	9.63	0.05	10.00	23.76	46.00	-22.24	Average
9	4.70	19.87	9.66	0.06	10.00	39.59	56.00	-16.41	QP
10	4.70	5.40	9.66	0.06	10.00	25.12	46.00	-20.88	Average
11	14.67	22.12	9.74	0.10	10.00	41.96	60.00	-18.04	QP
12	14.67	11.20	9.74	0.10	10.00	31.04	50.00	-18.96	Average

Remarks: 1. Measured = Reading +Cable Loss +Aux2 Fac.

2. The emission levels that are 20dB below the official limit are not reported.

Note: only record the worst case.

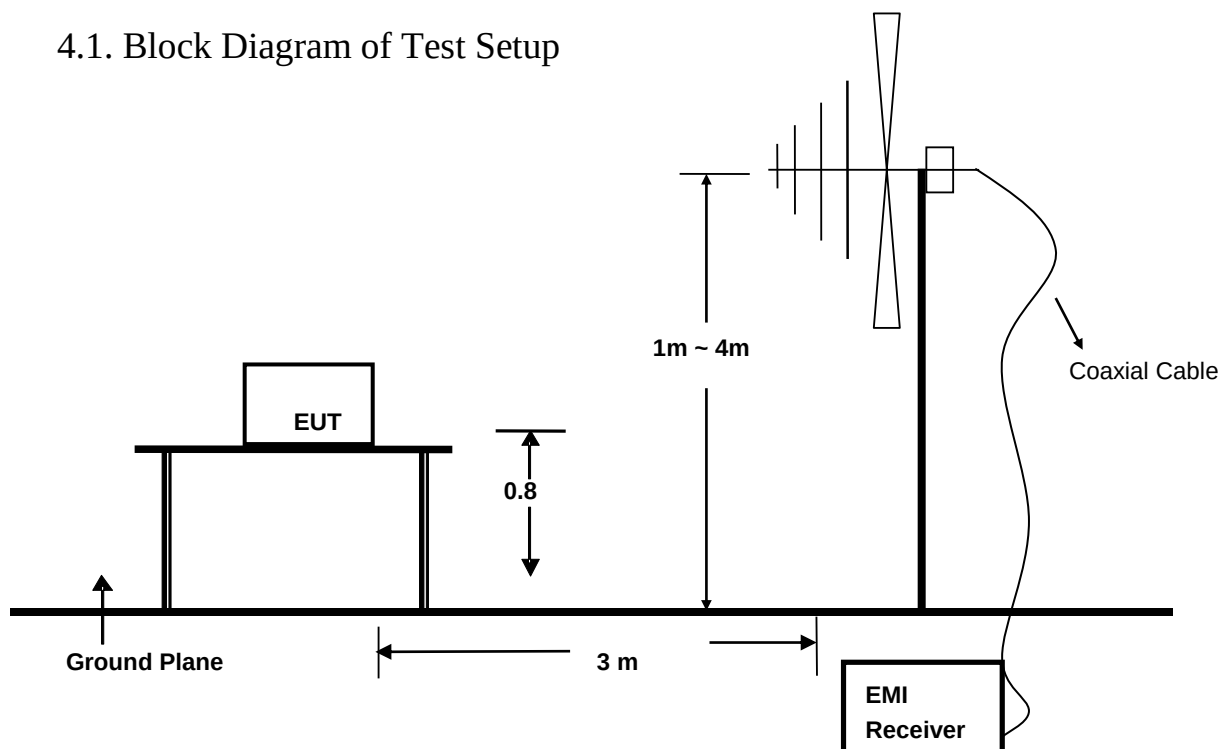
4. RADIATED EMISSION MEASUREMENT

4.1. Test Equipment

The following test equipments are used during the radiated emission measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2016-06-18
2	EMI Test Receiver	ROHDE & SCHWARZ	ESR 7	101181	2016-06-18
3	Log per Antenna	SCHWARZBECK	VULB9163	9163-470	2017-04-18
4	EMI Test Software	AUDIX	E3	N/A	2016-06-18
5	Positioning Controller	MF	MF-7082	/	2016-06-18

4.1. Block Diagram of Test Setup



4.2. Radiated Emission Limit (Class B)

Limits for radiated disturbance Blow 1GHz

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V}/\text{m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46
960 ~ 1000	3	500	54

Remark : (1) Emission level $(\text{dB})\mu\text{V} = 20 \log \text{Emission level } \mu\text{V}/\text{m}$

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

4.3. EUT Configuration on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.4. Operating Condition of EUT

4.4.1. Setup the EUT as shown in Section 4.2.

4.4.2. Let the EUT work in test mode (on) and measure it.

4.5. Test Procedure

EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated by-log antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2014 on radiated emission measurement.

The bandwidth of the EMI test receiver is set at 120kHz, 1000kHz.

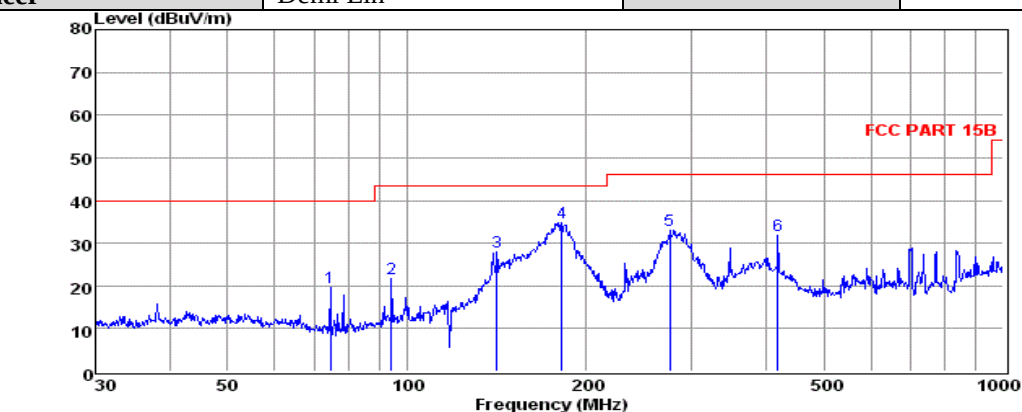
The frequency range from 30MHz to 1000MHz is checked.

4.6. Radiated Emission Noise Measurement Result

PASS.

The scanning waveforms please refer to the next page.

Model No.	DS-D6	Test Mode	ON
Environmental Conditions	24°C, 44.2% RH	Detector Function	Quasi-peak
Pol	Vertical	Distance	3m
Test Engineer	Demi Lin		



pol:

VERTICAL

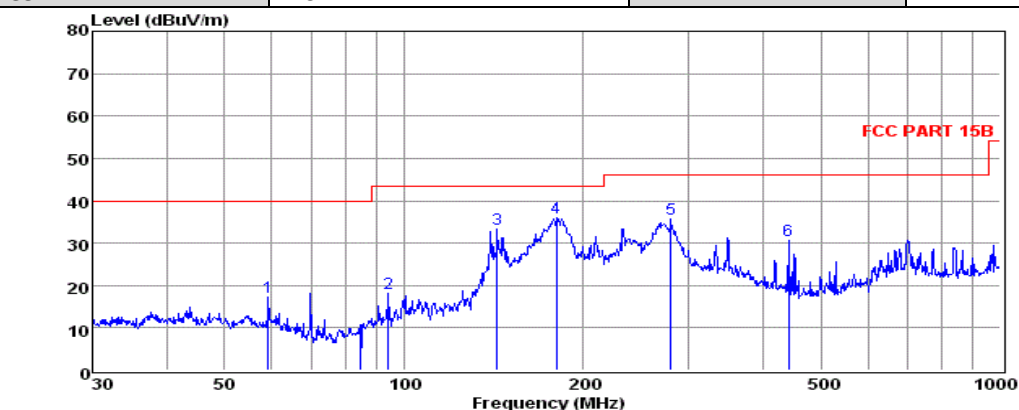
	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	74.40	11.26	0.54	7.90	19.70	40.00	-20.30	QP
2	94.10	8.58	0.58	12.67	21.83	43.50	-21.67	QP
3	141.33	19.00	0.75	8.20	27.95	43.50	-15.55	QP
4	181.92	23.95	0.89	9.85	34.69	43.50	-8.81	QP
5	276.12	19.58	1.00	12.55	33.13	46.00	-12.87	QP
6	419.11	15.14	1.32	15.45	31.91	46.00	-14.09	QP

Note: 1. All readings are Quasi-peak values.

2. Measured= Reading + Antenna Factor + Cable Loss

3. The emission that at 20db blow the official limit are not reported

Model No.	DS-D6	Test Mode	ON
Environmental Conditions	24°C, 44.2% RH	Detector Function	Quasi-peak
Pol	Horizontal	Distance	3m
Test Engineer	Demi Lin		



pol:

HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	59.23	3.93	0.49	12.74	17.16	40.00	-22.84	QP
2	94.10	5.00	0.58	12.67	18.25	43.50	-25.25	QP
3	143.33	24.27	0.71	8.21	33.19	43.50	-10.31	QP
4	180.02	25.39	0.89	9.68	35.96	43.50	-7.54	QP
5	280.02	21.86	1.01	12.67	35.54	46.00	-10.46	QP
6	441.74	13.73	1.25	15.56	30.54	46.00	-15.46	QP

Note: 1. All readings are Quasi-peak values.

2. Measured= Reading + Antenna Factor + Cable Loss

3. The emission that at 20db blow the official limit are not reported

Note: only record the worst case.

Model No.	DS-D6	Test Mode	ON
Environmental Conditions	24°C, 56% RH	Distance	3m
Test Engineer	Demi Lin	Test date:	May 08, 2017

Frequency MHz	Emission Level dB μ V/m		Limits dB μ V/m		Margin dB μ V/m		Polarization
	Peak	AV	Peak	AV	Peak	AV	
1325.16	48.72	37.55	74.00	54.00	-25.28	-16.45	H
1962.31	51.61	39.69	74.00	54.00	-22.39	-14.31	H
2257.34	47.96	39.01	74.00	54.00	-26.04	-14.99	H
3252.23	56.18	45.64	74.00	54.00	-17.82	-8.36	H
4851.50	58.23	42.86	74.00	54.00	-15.77	-11.14	H
5261.24	53.79	42.19	74.00	54.00	-20.21	-11.81	H
1420.58	49.10	36.14	74.00	54.00	-24.90	-17.86	V
1828.80	51.17	39.67	74.00	54.00	-22.83	-14.33	V
2964.23	46.89	39.78	74.00	54.00	-27.11	-14.22	V
3562.33	56.13	45.94	74.00	54.00	-17.87	-8.06	V
4479.62	56.30	46.48	74.00	54.00	-17.70	-7.52	V
5943.38	55.17	42.99	74.00	54.00	-18.83	-11.01	V

Notes:

1. Measuring frequencies from 9 KHz~5th harmonic of working frequency, No emission found between lowest internal used/generated frequency to 30MHz.

5. PHOTOGRAPH

Please refer to separated files for Test Setup Photos of the EUT.

6. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

Please refer to separated files for Test Setup Photos of the EUT.

----- THE END OF TEST REPORT -----