FCC TEST REPORT

FOR

Tiny Labs Inc.

Keysy Keyfob

Test Model: KF-001

Prepared for	:	Tiny Labs Inc.
Address	:	635 C Street #400, San Diego, CA 92101, USA

Prepared by	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	:	1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China
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Web	:	www.LCS-cert.com
Mail	:	webmaster@LCS-cert.com

Date of receipt of test sample	:	June 30, 2017
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	June 30, 2017~July 12, 2017
Date of Report	:	July 12, 2017

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FCC TEST REPORT
FCC CFR 47 PART 15 C (15.209): 2016

Report Reference No. ..... :	**LCS170630055AE**
Date of Issue ..... :	July 12, 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, China
Testing Location/ Procedure..... :	Full application of Harmonised standards ■
	Partial application of Harmonised standards □
	Other standard testing method □
Applicant's Name..... :	**Tiny Labs Inc.**
Address ..... :	635 C Street #400, San Diego, CA 92101, USA
Test Specification	
Standard..... :	FCC CFR 47 PART 15 C (15.209): 2016
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. ..... :	**Keysy Keyfob**
Trade Mark..... :	KEYSY
Test Model ..... :	KF-001
Ratings ..... :	DC 3.0V by CR2032A*1 battery
Result ..... :	**Positive**

Compiled by:	**Supervised by:**	**Approved by:**
Aking Jin	Dick Su	Gavin Liang
Aking Jin/ File administrators	Dick Su/ Technique principal	Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. : LCS170630055AE	July 12, 2017 Date of issue

Test Model.....	: KF-001
EUT.....	: Keysy Keyfob
Applicant.....	**: Tiny Labs Inc.**
Address.....	: 635 C Street #400, San Diego, CA 92101, USA
Telephone.....	: /
Fax.....	: /
Manufacturer.....	**: Tiny Labs Inc.**
Address.....	: 635 C Street #400, San Diego, CA 92101, USA
Telephone.....	: /
Fax.....	: /
Factory.....	: **Tiny Labs Inc.**
Address.....	: 635 C Street #400, San Diego, CA 92101, USA
Telephone.....	: /
Fax.....	: /

Test Result	**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
000	July 12, 2017	Initial Issue	Gavin Liang

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1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT	:	Keysy Keyfob
Test Model	:	KF-001
Hardware Version	:	v2.1
Software Version	:	v0.5.5
Power Supply	:	DC 3.0V by CR2032A*1 battery
Operating Frequency	:	125KHz
Channel Number	:	1
Modulation Type	:	OOK
Antenna Description	:	Coil Antenna, 0dBi (Max.)

1.2 Support equipment List

Manufacturer	Description	Model	Serial Number	Certificate
--	--	--	--	--

1.3 External I/O

I/O Port Description	Quantity	Cable
--	--	--

1.4 Description of Test Facility

CNAS Registration Number. is L4595.
FCC Registration Number. is 899208.
Industry Canada Registration Number. is 9642A-1.
VCCI Registration Number. is C-4260 and R-3804.
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

1.5 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.

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1.6 Measurement Uncertainty

Test Item		Frequency Range	Uncertainty	Note
Radiation Uncertainty	:	9KHz~30MHz	±3.10dB	(1)
		30MHz~200MHz	±2.96dB	(1)
		200MHz~1000MHz	±3.10dB	(1)
		1GHz~26.5GHz	±3.80dB	(1)
		26.5GHz~40GHz	±3.90dB	(1)
Conduction Uncertainty	:	150kHz~30MHz	±1.63dB	(1)
Power disturbance	:	30MHz~300MHz	±1.60dB	(1)

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.7 Description Of Test Modes

The EUT was set to transmit at 100% duty cycle for testing and the worst case was record.

All the modulation types were tested and only the worst case (OOK) was recorded in this report.

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10: 2013 and FCC CFR PART 15C 15.209.

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.209 under the FCC Rules Part 15 Subpart C.

2.3 General Test Procedures

2.3.1 Conducted Emissions (N/A)

According to the requirements in Section 6.2 of ANSI C63.10: 2013, AC power-line conducted emissions shall be measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

2.3.2 Radiated Emissions

The EUT is placed on a turn table and the turntable shall rotate KF-001 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 6.3 of ANSI C63.10: 2013

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3. SYSTEM TEST CONFIGURATION

3.1 Justification

N/A.

3.2 EUT Exercise Software

N/A.

3.3 Special Accessories

N/A.

3.4 Block Diagram/Schematics

Please refer to the report.

3.5 Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

3.6 Test Setup

Please refer to the test setup photo.

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4. SUMMARY OF TEST RESULT

FCC Rules	Test Items	Result
15.207	Power-line Conducted Emissions	N/A
15.205 & 15.209	Radiated Emissions	PASS
15.215	20dB Bandwidth	PASS
15.203	Antenna Requirement	PASS

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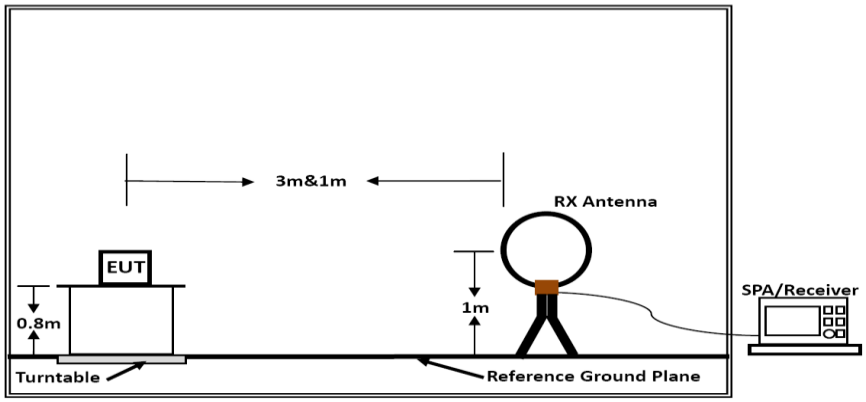
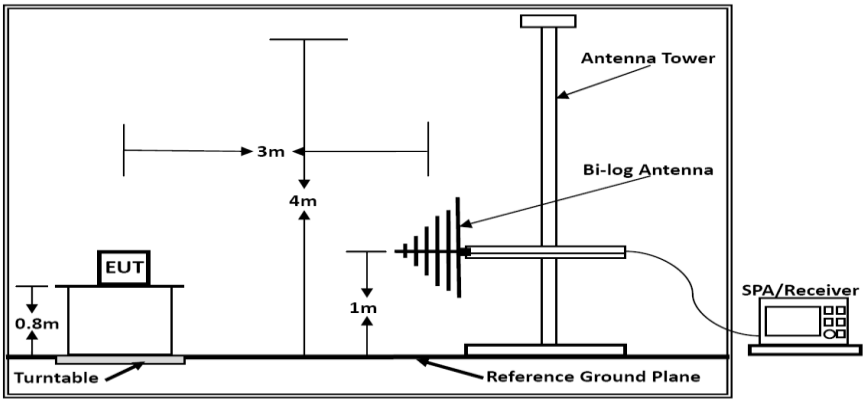
5. RADIATED MEASUREMENT

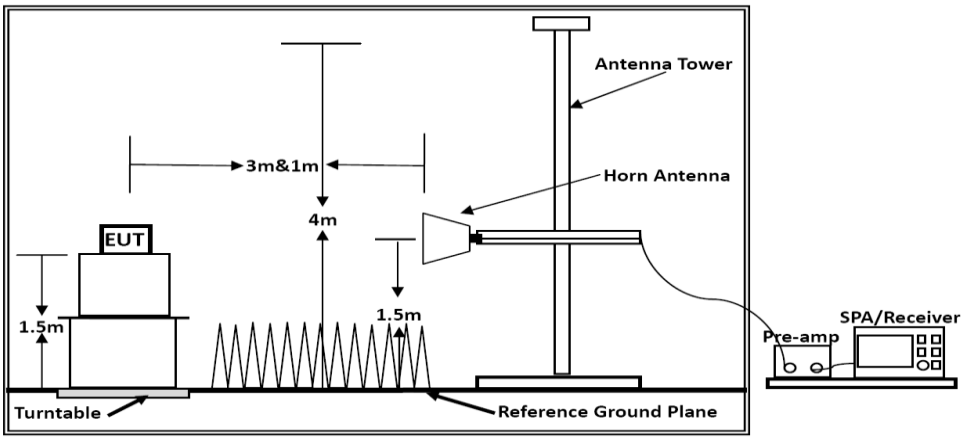
5.1 Block Diagram of Test Setup



Below 30MHz



Below 1GHz



Above 1GHz

Above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade form 3m to 1m.

Distance extrapolation factor = 20 log (specific distanc [3m] / test distance [1.5m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

5.2 Radiated Emission Limit

15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
\1\ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293.	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	KF-0010-4400	(\2\)
13.36-13.41			

\1\ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

\2\ Above 38.6

According to §15.247 (d): 20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (microvolts/meter)	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

Limit calculation and transfer to 3m distance as showed in the following table:

Frequency (MHz)	Limit (dBuV/m)	Distance (m)
0.009-0.490	20log(2400/F(KHz))+40log(300/3)	3
0.490-1.705	20log(2400/F(KHz))+40log(30/3)	3
1.705-30.0	69.5	3
30-88	40.0	3
88-216	43.5	3
216-960	46.0	3
Above 960	54.0	3

5.3 Test Results

PASS.

The test data please refer to following page:

9KHz ~ 30MHz (TX-125KHz)

Freq. MHz	Reading dBuV	Factor dB/m	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark
0.125	59.89	12.01	71.90	105.67	-33.77	Peak
0.250	39.51	12.00	51.51	99.65	-48.14	Peak
0.375	34.97	11.89	46.86	96.12	-49.26	Peak
0.875	33.26	11.81	45.07	68.76	-23.69	Peak
1.000	33.81	11.77	45.58	67.76	-22.18	Peak
3.61	29.74	11.71	41.45	69.5	-28.05	Peak
11.04	28.73	11.04	39.77	69.5	-29.73	Peak
18.87	22.67	10.54	33.21	69.5	-36.29	Peak
24.31	26.21	9.60	35.81	69.5	-33.69	Peak
28.56	23.75	8.91	32.66	69.5	-36.84	Peak

****Note:*

1). Factor= Antenna Factor + Cable Loss – Amplifier Gain.

2). The EUT was configured as normal. The measurement antenna was positioned with its plane perpendicular to the ground at the specified distances (Antenna Position: Horizontal). Only record the worst test data in this report.

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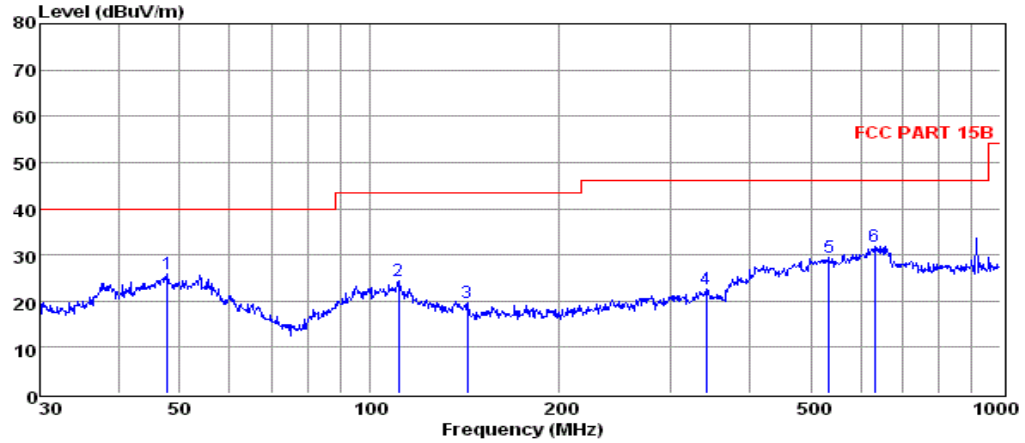
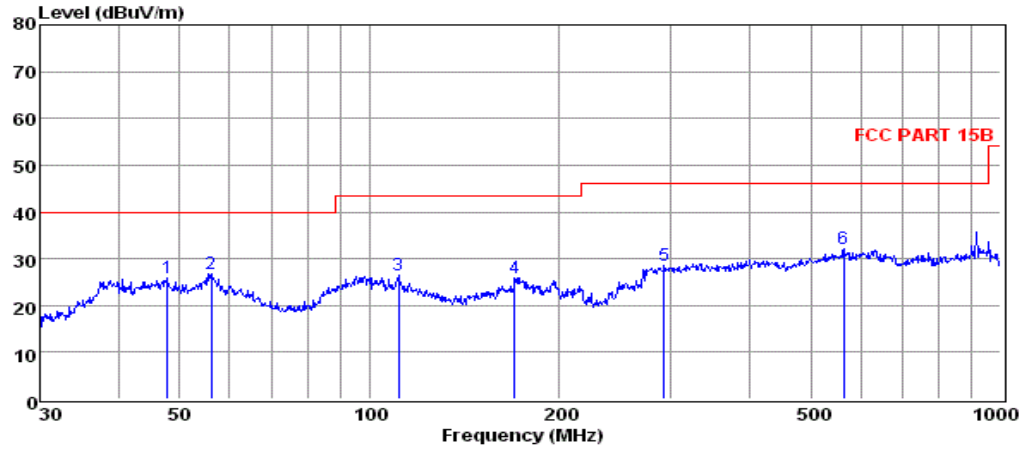
30MHz ~ 1GHz (TX-125KHz)



pol: HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	47.83	12.03	0.35	13.38	25.76	40.00	-14.24	QP
2	110.96	11.68	0.61	12.08	24.37	43.50	-19.13	QP
3	142.82	10.73	0.71	8.21	19.65	43.50	-23.85	QP
4	341.98	7.33	1.12	14.15	22.60	46.00	-23.40	QP
5	535.71	10.76	1.46	17.25	29.47	46.00	-16.53	QP
6	631.69	11.79	1.50	18.56	31.85	46.00	-14.15	QP

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that ate 20db blow the offficial limit are not reported



pol: VERTICAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	47.83	12.03	0.35	13.38	25.76	40.00	-14.24	QP
2	56.00	13.35	0.47	12.95	26.77	40.00	-13.23	QP
3	110.96	13.68	0.61	12.08	26.37	43.50	-17.13	QP
4	169.60	16.26	0.80	8.96	26.02	43.50	-17.48	QP
5	293.08	14.40	1.08	12.93	28.41	46.00	-17.59	QP
6	564.64	12.86	1.47	17.79	32.12	46.00	-13.88	QP

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that ate 20db blow the offficial limit are not reported

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6. BANDWIDTH OF THE OPERATING FREQUENCY

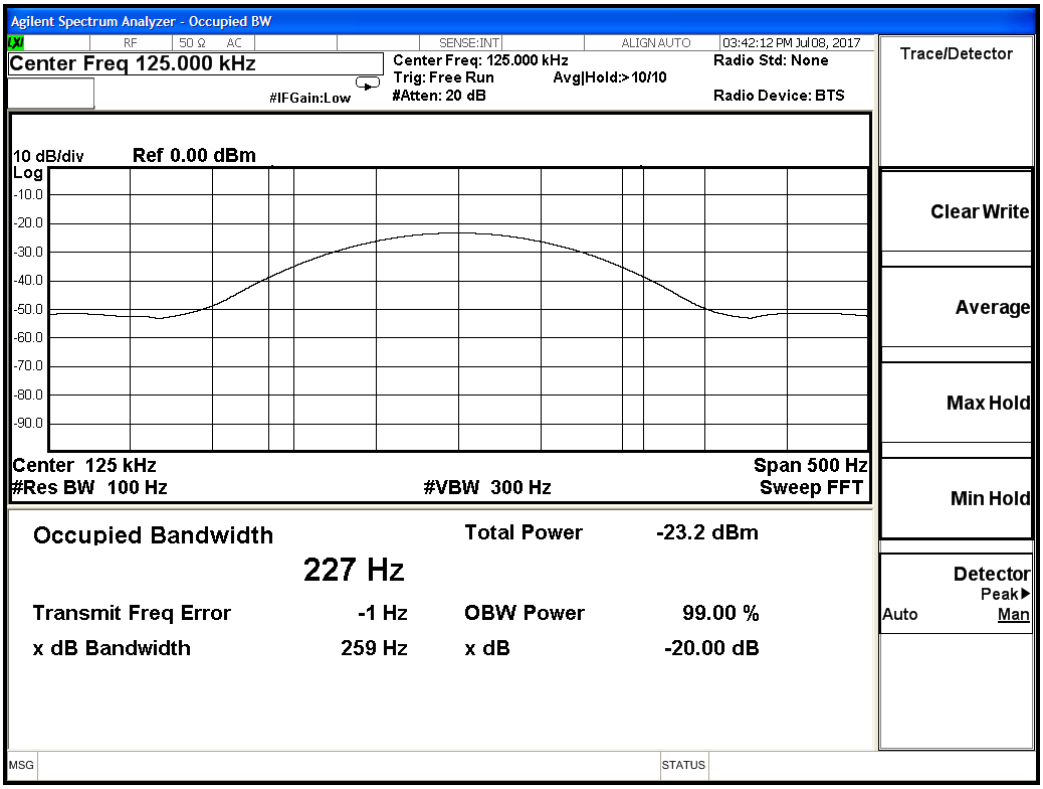
6.1 Standard Applicable

According to its specifications, the EUT must comply with the 20dB Bandwidth measurement of the Section 15.215 under the FCC Rules Part 15 Subpart C.

6.2 Test Result

EUT	Keysy Keyfob	
RBW	100Hz	
VBW	300Hz	
SPAN	500Hz	
Carrier Freq. (KHz)	20dB Bandwidth (KHz)	Limit (KHz)
125	0.259	None

Please refer to the test plot:



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7. ANTENNA REQUIREMENT

7.1 Standard Applicable

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 use of a standard antenna jack or electrical connector is prohibited.

7.2 Antenna Connected Construction

The antenna used for transmitting is permanently attached and no consideration of replacement. Please see EUT photo for details.

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8. TEST SETUP PHOTOGRAPHS OF EUT

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

9. EXTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for External Photos of the EUT.

10. INTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for Internal Photos of the EUT.

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11. LIST OF MEASURING EQUIPMENT

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Cal Date	Due Date
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	June 17, 2017	June 16, 2018
Signal analyzer	Agilent	E4448A(External mixers to 40GHz)	US44300469	9kHz~40GHz	July 16, 2016	July 15, 2017
LISN	MESS Tec	NNB-2/16Z	99079	9KHz-30MHz	June 17, 2017	June 16, 2018
LISN (Support Unit)	EMCO	3819/2NM	9703-1839	9KHz-30MHz	June 17, 2017	June 16, 2018
RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9KHz-30MHz	June 17, 2017	June 16, 2018
ISN	SCHAFFNER	ISN ST08	21653	9KHz-30MHz	June 17, 2017	June 16, 2018
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30M-1GHz 3m	June 17, 2017	June 16, 2018
Amplifier	SCHAFFNER	COA9231A	18667	9kHz-2GHzz	June 17, 2017	June 16, 2018
Amplifier	Agilent	8449B	3008A02120	1GHz-26.5GHz	July 16, 2016	July 15, 2017
Amplifier	MITEQ	AMF-6F-260400	9121372	26.5GHz-40GHz	July 16, 2016	July 15, 2017
Spectrum Analyzer	Agilent	E4407B	MY41440292	9k-26.5GHz	July 16, 2016	July 15, 2017
MAX Signal Analyzer	Agilent	N9020A	MY50510140	20Hz~26.5GHz	Oct. 27, 2016	Oct. 26, 2017
Loop Antenna	R&S	HFH2-Z2	860004/001	9k-30MHz	June 17, 2017	June 16, 2018
By-log Antenna	SCHWARZBECK	VULB9163	9163-470	30MHz-1GHz	June 09, 2017	June 08, 2018
Horn Antenna	EMCO	3115	6741	1GHz-18GHz	June 09, 2017	June 08, 2018
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15GHz-40GHz	June 09, 2017	June 08, 2018
RF Cable-R03m	Jye Bao	RG142	CB021	30MHz-1GHz	June 17, 2017	June 16, 2018
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1GHz-40GHz	June 17, 2017	June 16, 2018
Spectrum Meter	R&S	FSP 30	100023	9kHz-30GHz	July 16, 2016	July 15, 2017
Power Meter	R&S	NRVS	100444	DC-40GHz	June 17, 2017	June 16, 2018
Power Sensor	R&S	NRV-Z51	100458	DC-30GHz	June 17, 2017	June 16, 2018
Power Sensor	R&S	NRV-Z32	10057	30MHz-6GHz	June 17, 2017	June 16, 2018
AC Power Source	HPC	HPA-500E	HPA-9100024	AC 0~300V	June 17, 2017	June 16, 2018
DC power Soure	GW	GPC-6030D	C671845	DC 1V-60V	June 17, 2017	June 16, 2018
Temp. and Humidigy Chamber	Giant Force	GTH-225-20-S	MAB0103-00	N/A	June 17, 2017	June 16, 2018
RF CABLE-1m	JYE Bao	RG142	CB034-1m	20MHz-7GHz	June 17, 2017	June 16, 2018
RF CABLE-2m	JYE Bao	RG142	CB)35-2m	20MHz-1GHz	June 17, 2017	June 16, 2018
Vector signal Generator	R&S	SMU200A	102098	100kHz~6GHz	June 17, 2017	June 16, 2018
Signal Generator	R&S	SMR40	10016	10MHz~40GHz	July 16, 2016	July 15, 2017
Note: All equipment through GRGT EST calibration						

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