Prüfbericht-Nr.: *Test report no.:*	**CN21U179 001**	**Auftrags-Nr.:** *Order no.:*	168328768	**Seite 1 von 20** *Page 1 of 20*
Kunden-Referenz-Nr.: *Client reference no.:*	**N/A**	**Auftragsdatum:** *Order date:*	2021-09-10	
Auftraggeber: *Client:*	**SZ DJI Osmo Technology Co., Ltd.** 4F, Jingkou Community Comprehensive Service Building, No. 83 Bishui Road North, Guangming Street, Guangming District, Shenzhen, P. R. China			
Prüfgegenstand: *Test item:*	DJI MIC Receiver			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	ASR01			
Auftrags-Inhalt: *Order content:*	Test Report			
Prüfgrundlage: *Test specification:*	CFR47 FCC Part 15: Subpart C Section 15.247		RSS-247 Issue 2 February 2017 RSS-Gen Issue 5 March 2019	

Wareneingangsdatum: *Date of sample receipt:*	2021-09-22	Please refer to Photo Document
Prüfmuster-Nr.: *Test sample no:*	A003126947-004~005 A003126947-021~23	
Prüfzeitraum: *Testing period:*	2021-09-23 to 2021-10-09	
Ort der Prüfung: *Place of testing:*	TÜV Rheinland (Shenzhen) Co., Ltd.	
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Shenzhen) Co., Ltd.	
Prüfergebnis*: *Test result*:*	Pass	

geprüft von: *tested by:*	X Hardy Suo	**genehmigt von:** *authorized by:*	X Lin Lin
Datum: *Date:*	2021-10-15	**Ausstellungsdatum:** *Issue date:*	2021-10-15
Stellung */ Position:*	Sachverständige(r)/Expert	**Stellung** */ Position:*	Sachverständige(r)/Expert

Sonstiges */ Other:*

FCC ID: 2ANDR-ASR01
IC: 23060-ASR01
HVIN: ASR01
Applicant & Manufacturer: SZ DJI Osmo Technology Co., Ltd., 4F, Jingkou Community Comprehensive Service Building, No. 83 Bishui Road North, Guangming Street, Guangming District, Shenzhen, P. R. China
Factory: SZ DJI Ronin Technology Co., Ltd., Floor 4-5, Block 13, Area 7, Baiwangxin Industrial Park, Songbai Road, Nanshan District, Shenzhen City, Guangdong Province, China

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt
Condition of the test item at delivery: Test item complete and undamaged

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
** Legend:*	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Test Summary

5.1.1 ANTENNA REQUIREMENT
RESULT: Pass

5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER
RESULT: Pass

5.1.3 CONDUCTED POWER SPECTRAL DENSITY
RESULT: Pass

5.1.4 6DB BANDWIDTH
RESULT: Pass

5.1.5 99% BANDWIDTH
RESULT: Pass

5.1.6 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHZ BANDWIDTH
RESULT: Pass

5.1.7 RADIATED SPURIOUS EMISSION
RESULT: Pass

5.1.8 CONDUCTED EMISSION ON AC MAINS
RESULT: Pass

Contents

1 GENERAL REMARKS 4
1.1 COMPLEMENTARY MATERIALS 4
2 TEST SITES 5
2.1 TEST FACILITIES 5
2.2 LIST OF TEST AND MEASUREMENT INSTRUMENTS 5
2.3 TRACEABILITY 6
2.4 CALIBRATION 6
2.5 MEASUREMENT UNCERTAINTY 6
2.6 LOCATION OF ORIGINAL DATA 6
2.7 STATUS OF FACILITY USED FOR TESTING 6
3 GENERAL PRODUCT INFORMATION 7
3.1 PRODUCT FUNCTION AND INTENDED USE 7
3.2 RATINGS AND SYSTEM DETAILS 7
3.3 INDEPENDENT OPERATION MODES 8
3.4 NOISE GENERATING AND NOISE SUPPRESSING PARTS 8
3.5 SUBMITTED DOCUMENTS 8
4 TEST SET-UP AND OPERATION MODES 9
4.1 PRINCIPLE OF CONFIGURATION SELECTION 9
4.2 TEST OPERATION AND TEST SOFTWARE 9
4.3 SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT 9
4.4 COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE 9
4.5 TEST SETUP DIAGRAM 10
5 TEST RESULTS 12
5.1 TRANSMITTER REQUIREMENT & TEST SUITES 12
5.1.1 Antenna Requirement 12
5.1.2 Maximum Peak Conducted Output Power 13
5.1.3 Conducted Power Spectral Density 14
5.1.4 6dB Bandwidth 15
5.1.5 99% Bandwidth 16
5.1.6 Conducted Spurious Emissions Measured in 100 kHz Bandwidth 17
5.1.7 Radiated Spurious Emission 18
5.1.8 Conducted Emission on AC Mains 19
6 PHOTOGRAPHS OF THE TEST SET-UP 20
7 LIST OF TABLES 20

1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Photographs of the Test Set-up

Appendix B: Test Results.

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.
No. 362 Huanguan Road Middle, Longhua District, 518110, Shenzhen, P. R. China.

FCC Registration No.: 694916
ISED wireless device testing laboratory: 25069

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Radio Spectrum Testing (TS8997)				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Cal. until**
Signal Analyzer	R&S	FSV 40	101441	2022-08-09
OSP	R&S	OSP 150	101017	2021-12-10
Control PC	DELL	OptiPlex 7050	FTJZ9P2	N/A
Test Software	R&S	WMS32 (V11.00.00)	N/A	N/A
Power Meter	R&S	NRP2	107105	2021-12-10
Wideband Power Sensor	R&S	NRP-Z81	105677	2022-08-09
Shielding Room 8#	Albatross	SR8	APC17151-SR8	2024-06-22
Unwanted Emission Testing (TS9975)				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Cal. until**
EMI Test Receiver	R&S	ESR 7	102021	2022-08-10
Signal Analyzer	R&S	FSV 40	101439	2022-08-09
System Controller Interface	R&S	SCI-100	S10010038	N/A
Filterbank	R&S	Wlan	100759	2022-08-09
OSP	R&S	OSP 120	102040	N/A
Pre-amplifier	R&S	SCU08F1	08320031	2022-08-09
Amplifier	R&S	SCU-18F	180070	2022-08-09
Amplifier	R&S	SCU40A	100475	2022-08-09
Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	193	2022-08-08
Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218717	2022-08-08
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19067	2022-08-08
Active Loop Antenna	Schwarzbeck	FMZB 1513	302	2022-09-13
Test software	R&S	EMC32 (V10.60.10)	N/A	N/A
Control PC	Dell	OptiPlex 7050	36NV9P2	N/A
3m Semi-Anechoic Chamber	Albatross	SAC-3m	APC17151-SAC	2024-06-22

Conducted Emission				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Cal. until**
EMI Test Receiver	R&S	ESR3	102428	2022-08-10
Artificial Mains Network	R&S	ENV216	102333	2022-08-10
EMC32 test software	R&S	EMC32(Ver.10.50.00)	N/A	N/A

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basics using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table.

Parameter	Uncertainty
Radio Frequency	±1 x 10-7
RF Power (conducted)	±2.5 dB
Radiated Emission of Transmitter, valid up to 26.5 GHz	±6 dB
Radiated Emission of Receiver, valid up to 26.5 GHz	±6 dB
Conducted Emission, (9kHz to 150kHz)/(150kHz to 30MHz)	± 3.70 dB / ± 3.30 dB
Temperature	±1 °C
Humidity	±5 %
Voltage (DC)	±1 %
Voltage (AC, <10kHz)	±2 %

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) Co., Ltd. file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at No. 362 Huanguan Road Middle, Longhua District, 518110, Shenzhen, P. R. China. is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUT is a DJI MIC Receiver, which support 2.4GHz DTS wireless technology.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

General Information of EUT	**Value**
Kind of Equipment:	DJI MIC Receiver
Type Designation:	ASR01
FCC ID:	2ANDR-ASR01
IC:	23060-ASR01
HVIN:	ASR01
Operating Voltage:	Charging by DJI MIC Charging Case, or Charging by Type-C, or Battery operated (3.85Vdc)
Testing Voltage:	Fully charged battery AC 120V, 60Hz
Technical Specification of DTS	
Frequency Range:	2400 - 2483.5MHz
Type of Modulation:	GFSK
Channel Number:	36 channels
Data Rate:	1 Mbps, 2Mbps
Channel Separation:	2 MHz
Antenna Type:	Integral Antenna (LAP Antenna)
Antenna Number:	2 (ANT0 or ANT1), operating in a legacy mode where only one antenna is used. The tested device (Model No. ASR01) only supports SISO and does not support MIMO.
Antenna Gain:	2.5 dBi

Table 3: RF Channel and Frequency of 2.4GHz DTS

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
2	**2406**	11	2424	20	2442	29	2460
3	2408	12	2426	21	2444	30	2462
4	2410	13	2428	22	2446	31	2464
5	2412	14	2430	23	2448	32	2466
6	2414	15	2432	24	2450	33	2468
7	2416	16	2434	25	2452	34	2470
8	2418	17	2436	26	2454	35	2472
9	2420	18	2438	27	2456	36	2474
10	2422	**19**	**2440**	28	2458	**37**	**2476**

Test frequencies are lowest channel: 2406 MHz, middle channel: 2440 MHz and highest channel: 2476 MHz for 2.4GHz DTS

3.3 Independent Operation Modes

The basic operation modes are:

A. On, 2.4GHz transmitting mode
   1) Low Channel
   2) Middle Channel
   3) High Channel

B. On, Normal operation with charging by Type-C (AC/DC adapter)

C. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- User Manual
- Operation Description

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All tests were performed according to the procedures in ANSI C63.10: 2013.

4.3 Special Accessories and Auxiliary Equipment

Table 4: Auxiliary Equipment Used during Test

Description	Manufacturer	Model	S/N	Rating
Laptop	Lenovo	T480	PF-16A6N8	N/A
Mobile	HUAWEI	STK-AL00	7PRNW20721000279	N/A
AC/DC adapter	XIAOMI	MDY-08-ET	N/A	Input: 100-240Vac, 50/60Hz Output: 5V,1.0A
DJI MIC Transmitter	DJI	AST01	N/A	DC 3.85V
Headphone	N/A	N/A	N/A	N/A

4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

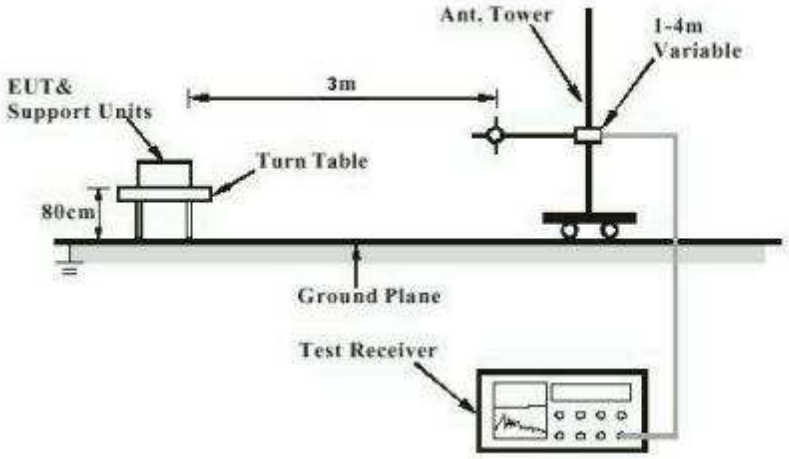


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

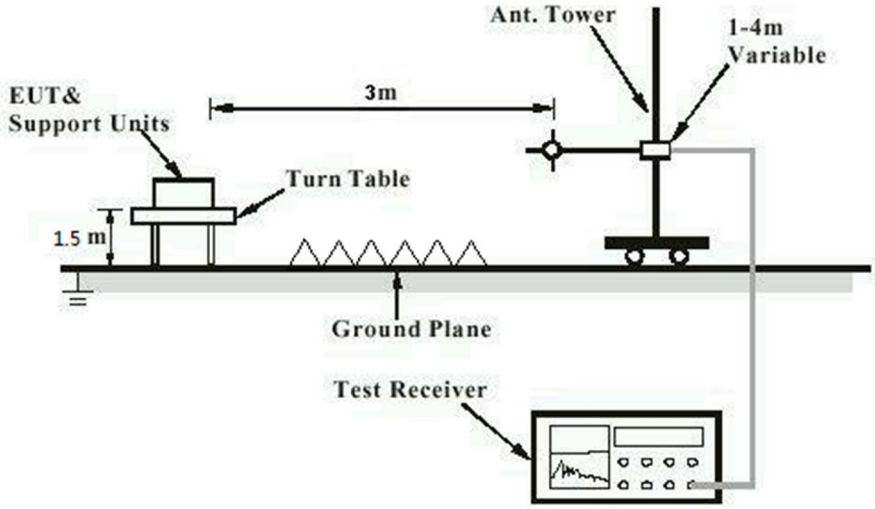


Diagram of Measurement Configuration for Mains Conduction Measurement

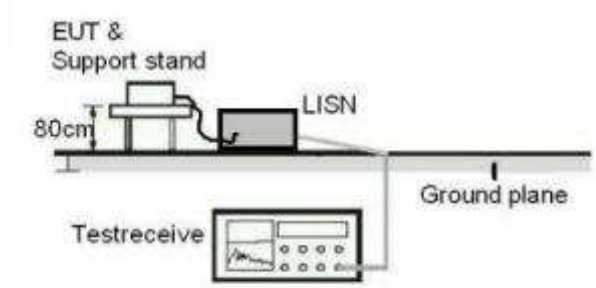
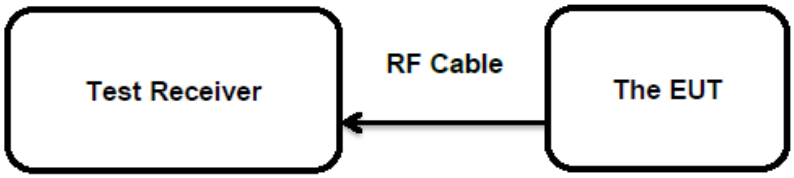


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT: **Pass**

Test Specification

Test standard : FCC Part 15.247(b)(4) and Part 15.203
RSS-Gen Clause 6.8

According to the manufacturer declared, the EUT has an Integral antenna, the directional gain of antenna is 2.5 dBi, permanent attachment and no consideration of replacement.

Therefore, the EUT is considered sufficient to comply with the provision.

5.1.2 Maximum Peak Conducted Output Power

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(b)(3) RSS-247 Clause 5.4(d)
Basic standard	:	ANSI C63.10: 2013
Limits	:	1.0 Watts
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2021-09-29 to 2021-09-30
Input voltage	:	Fully charged battery
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	26.8 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Table 5: Test Result of Maximum Peak Conducted Output Power, SISO mode (Ant 0)

Test Mode	Data Rate	Test Channel (MHz)	Measured Peak Power		EIPR (dBm)	Limit (W)
			(dBm)	(W)		
2.4GHz DTS	1 Mbps	2406	16.79	0.0478	19.29	< 1.0
		2440	16.84	0.0483	19.34	
		2474	16.68	0.0483	19.18	
		2476	13.19	0.0466	15.69	
	2 Mbps	2406	16.75	0.0208	19.25	
		2440	16.79	0.0473	19.29	
		2474	16.59	0.0473	19.09	
		2476	13.88	0.0478	16.38	
Maximum Measured Value			16.84	0.0483	19.34	

Table 6: Test Result of Maximum Peak Conducted Output Power, SISO mode (Ant 1)

Test Mode	Data Rate	Test Channel (MHz)	Measured Peak Power		EIPR (dBm)	Limit (W)
			(dBm)	(W)		
2.4GHz DTS	1 Mbps	2406	16.67	0.0465	19.17	< 1.0
		2440	17.11	0.0514	19.61	
		2474	16.83	0.0465	19.33	
		2476	12.03	0.0482	14.53	
	2 Mbps	2406	16.51	0.0160	19.01	
		2440	16.92	0.0448	19.42	
		2474	16.38	0.0465	18.88	
		2476	12.60	0.0492	15.1	
Maximum Measured Value			17.11	0.0514	19.61	

Note:
1) The cable loss is taken into account in results.
2) e.i.r.p.=$P_{(Peak\ power)}$+ G, which is far below the 4 W

5.1.3 Conducted Power Spectral Density

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(e) RSS-247 Clause 5.2(b)
Basic standard	:	ANSI C63.10: 2013
Limits	:	< 8 dBm / 3kHz
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2021-09-30
Input voltage	:	Fully charged battery
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	26.8 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

5.1.4 6dB Bandwidth

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(a)(2) RSS-247 Clause 5.2(a)
Basic standard	:	ANSI C63.10: 2013
Limits	:	> 500 KHz
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2021-09-29 to 2021-09-30
Input voltage	:	Fully charged battery
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	26.8 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

5.1.5 99% Bandwidth

RESULT: **Pass**

Test Specification

Test standard	:	RSS-Gen Clause 6.7
Basic standard	:	ANSI C63.10: 2013
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2021-09-29 to 2021-09-30
Input voltage	:	Fully charged battery
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	26.8 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

5.1.6 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(d) RSS-247 Clause 5.5
Basic standard	:	ANSI C63.10: 2013
Limits	:	20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power); In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a)
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2021-09-30
Input voltage	:	Fully charged battery
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	26.8 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to test plots, and compliance is achieved as well.

For the measurement records, refer to the appendix B.

5.1.7 Radiated Spurious Emission

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(d) & FCC Part 15.205 RSS-247 Clause 3.3
Basic standard	:	ANSI C63.10: 2013
Limits	:	Refer to 15.209(a) of FCC part 15.247(d) RSS-Gen Section 8.9 & 8.10
Kind of test site	:	3m Semi-anechoic Chamber

Test Setup

Date of testing	:	2021-09-24
Input voltage	:	Fully charged battery
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	Refer to test result
Relative humidity	:	Refer to test result
Atmospheric pressure	:	101 kPa

Remark:
Testing carried out within frequency range 9kHz to the tenth harmonics. Only the worst-case spurious emissions configuration of the each mode were reported.

For the measurement records, refer to the appendix B.

5.1.8 Conducted Emission on AC Mains

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.207(a) RSS-Gen Clause 8.8
Basic standard	:	ANSI C63.10: 2013
Frequency range	:	0.15 – 30MHz
Classification	:	Class B
Limits	:	FCC Part 15.207(a) RSS-Gen Table 4
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2021-09-24
Input voltage	:	AC 120V, 60Hz
Operation mode	:	B
Earthing	:	Not connected
Ambient temperature	:	22 ℃
Relative humidity	:	64 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

6 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the appendix A.

7 List of Tables

Table 1: List of Test and Measurement Equipment 5
Table 2: Technical Specification of EUT 7
Table 3: RF Channel and Frequency of 2.4GHz DTS 8
Table 4: Auxiliary Equipment Used during Test 9
Table 5: Test Result of Maximum Peak Conducted Output Power, SISO mode (Ant 0) 13
Table 6: Test Result of Maximum Peak Conducted Output Power, SISO mode (Ant 1) 13