

Prüfbericht-Nr.: <i>Test report no.:</i>	CN23PXI2 002	Auftrags-Nr.: <i>Order no.:</i>	168400062	Seite 1 von 28 Page 1 of 28	
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2022-11-23		
Auftraggeber: <i>Client:</i>	SZ DJI TECHNOLOGY CO., LTD. Lobby of T2, DJI Sky City, No. 53 Xianyuan Road, Xili Community, Xili Street, Nanshan District, Shenzhen, China				
Prüfgegenstand: <i>Test item:</i>	DJI Mavic 3 Pro, DJI Mavic 3 Pro Cine				
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	L2S, L2E				
Auftrags-Inhalt: <i>Order content:</i>	Test Report				
Prüfgrundlage: <i>Test specification:</i>	CFR47 FCC Part 15: Subpart E Section 15.407 CFR47 FCC Part 15: Subpart C Section 15.207 CFR47 FCC Part 15: Subpart C Section 15.209 RSS-247 Issue 2 February 2017 RSS-Gen Issue 5 March 2019				
Wareneingangsdatum: <i>Date of sample receipt:</i>	2022-12-06	Please refer to photo documents			
Prüfmuster-Nr.: <i>Test sample no.:</i>	A003384103-003 A003384103-004				
Prüfzeitraum: <i>Testing period:</i>	2022-12-06 to 2023-01-13				
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.				
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.				
Prüfergebnis*: <i>Test result*:</i>	Pass				
geprüft von: <i>tested by:</i>	 Hardy Suo		genehmigt von: <i>authorized by:</i>	 Lin Lin	
Datum: <i>Date:</i>	2023-02-03		Ausstellungsdatum: <i>Issue date:</i>	2023-02-03	
Stellung / Position:	Sachverständige(r) / Expert		Stellung / Position:	Sachverständige(r) / Expert	
Sonstiges / Other:	FCC ID: SS3-L2ES2212, IC: 11805A-L2ES2212, HVIN: L2S, L2E This report is for 5.8GHz SDR and 5.8GHz Wi-Fi. Applicant & Manufacturer: SZ DJI TECHNOLOGY CO., LTD., Lobby of T2, DJI Sky City, No. 53 Xianyuan Road, Xili Community, Xili Street, Nanshan District, Shenzhen, China				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>				
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	4 = ausreichend N/A = nicht anwendbar	5 = mangelhaft N/T = nicht getestet
* Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = sufficient N/A = not applicable	5 = poor N/T = not tested
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>					

v05

TEST SUMMARY

- 5.1.1 Antenna Requirement
RESULT: Pass
- 5.1.2 Maximum output power
RESULT: Pass
- 5.1.3 Power Spectral Density
RESULT: Pass
- 5.1.4 Frequency Stability
RESULT: Pass
- 5.1.5 26dB Bandwidth and 99% Bandwidth
RESULT: Pass
- 5.1.6 6dB Bandwidth
RESULT: Pass
- 5.1.7 Radiated Spurious Emission
RESULT: Pass

TABLE OF CONTENTS

TEST SUMMARY	2
TABLE OF CONTENTS	3
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 Uncertainty of Measurement.....	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.....	13
3.4 Noise Generating and Noise Suppressing Parts	14
3.5 Submitted Documents.....	14
4. TEST SET-UP AND OPERATION MODES	15
4.1 Principle of Configuration Selection	15
4.2 Test Operation	15
4.3 Special Accessories and Auxiliary Equipment	15
4.4 Countermeasures to Achieve ERM Compliance.....	15
4.5 Test Setup Diagram	16
5. TEST RESULTS	18
5.1 Radio Test Requirement & Test Suites (5GHz Bands).....	18
5.1.1 Antenna Requirement.....	18
5.1.2 Maximum output power	19
5.1.3 Power Spectral Density	23
5.1.4 Frequency Stability	24
5.1.5 26dB Bandwidth and 99% Bandwidth	25
5.1.6 6dB Bandwidth.....	26
5.1.7 Radiated Spurious Emission.....	27
6. LIST OF TABLES	28

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: Test Results of 5.8GHz SDR

Appendix B: Test Results of 5.8GHz Wi-Fi

Appendix C: Photographs of the Test Set-up

2. Test Sites

2.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

No. 362 Huanguan Road Middle, Longhua District, Shenzhen 518110, People's Republic of China

FCC Accreditation Designation No.: CN1260
 ISED Wireless Device Testing Laboratory: 25069

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Equip. No.	Description	Manufacturer	Model	Serial No.	Calibrated until (DD.MM.YYYY)
9039436	EXA Signal Analyzer, Multi-touch	Keysight	N9010B	MY60241175	10.10.2023
9039437	MXG X-Series RF Vector Signal Generator	Keysight	N5182B	MY61250137	10.10.2023
9039438	EXG X-Series Microwave Analog Signal Generator	Keysight	N5173B	MY61250141	10.10.2023
9039439	DC Power Supply	Keysight	E3642A	MY61276100	10.10.2023
9039440	Wireless Connectivity Tester	R&S	CMW270	102505	10.10.2023
9039441	Power Control Unit	Tonscend	JS0806-4ADC	N/A	10.10.2023
9039442	Automation Control Unit	Tonscend	JS0806-2	21C8060396	10.10.2023
9039443	Test Software	Tonscend	JS1120-3	N/A	N/A
9039444	Control PC	Lenovo	TianYi510S-071MB	YLX23JMF	N/A
Equip. No.	Description	Manufacturer	Model	Serial No.	Calibrated until (DD.MM.YYYY)
G1826021	EMI Test Receiver	R&S	ESR 7	102021	02.08.2023
G1826023	Signal Analyzer	R&S	FSV 40	101439	01.08.2023
G1826024	System Controller Interface	R&S	SCI-100	S10010038	N/A
G1826025	Filterbank	R&S	Wlan	100759	01.08.2023
G1826026	OSP	R&S	OSP 120	102040	N/A
G1826028	Pre-amplifier	R&S	SCU08F1	08320031	02.08.2023
G1826029	Amplifier	R&S	SCU-18F	180070	02.08.2023
G1826030	Amplifier	R&S	SCU40A	100475	02.08.2023
G1826031	Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	193	06.08.2024
G1826032	Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218717	06.08.2024
G1826033	Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19067	27.08.2024
G1826034	Active Loop Antenna	Schwarzbeck	FMZB 1513	302	06.08.2024
G1826036	Test software	R&S	EMC32 (V10.60.10)	N/A	N/A
G1826037	Control PC	Dell	OptiPlex 7050	36NV9P2	N/A
G1826433	3m Semi-Anechoic Chamber	Albatross	SAC-3m	APC17151-SAC	22.06.2024

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 basis using in house standards or comparisons.

2.5 Uncertainty of Measurement

The value of the measurement uncertainty of each parameter is listed as below:

Table 2: Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-7}$
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
Radiated Emission (3m SAC), 30MHz to 1000MHz	± 4.52 dB
Radiated Emission (3m SAC), above 1000MHz	± 4.37 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 & C 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, Shenzhen 518110, People's Republic of 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 (Equipment Under Test)** is an aircraft (DJI Mavic 3 Pro with model L2S, DJI Mavic 3 Pro Cine with model L2E). It supports Bluetooth BLE, 2.4GHz SDR, 2.4GHz Wi-Fi, 5.2GHz SDR, 5.8GHz SDR, 5.8GHz Wi-Fi, GPS/BDS/Galileo and ADS-B functions.

*remark: SDR means specific defined radio, and cannot changes radio specification via software / firmware by end-users.

According to the declaration of the applicant, the electrical circuit design and PCB layout are identical, the different is that L2E has an additional SSD than L2S.

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

For details refer to user manual and circuit diagram.

3.2 Ratings and System Details

Table 3: Technical Specification

General Information of EUT	Value
Kind of Equipment	DJI Mavic 3 Pro, DJI Mavic 3 Pro Cine
Type Designation	L2S (product name: DJI Mavic 3 Pro) L2E (product name: DJI Mavic 3 Pro Cine)
Operating Voltage	DC 15.4V (Re-charged Battery, 15.4 V, 5000mAh, 77Wh)
Extreme Temperature Range	-10°C to +40°C
Radiofrequency operating mode	<ol style="list-style-type: none"> 1) Bluetooth: operating within 2400-2483.5MHz, supports BT 5.1 @BLE only, 1Mbps&2Mbps 2) 2.4GHz SDR: operating within 2400-2483.5MHz, supports 1.4MHz/3MHz/10MHz/20MHz/40MHz Bandwidth 3) 2.4GHz Wi-Fi: operating within 2400-2483.5MHz, supports 20MHz/40MHz Bandwidth and IEEE 802.11 b/g/n20/n40/ax20/ax40 4) 5.2GHz SDR: operating within 5150-5250MHz, supports 10MHz/20MHz/40MHz Bandwidth (not applicable for Canada market) 5) 5.8GHz SDR: operating within 5725-5850MHz, supports 1.4MHz/3MHz/10MHz/20MHz/40MHz Bandwidth 6) 5.8GHz Wi-Fi: operating within 5725-5850MHz, supports 20MHz/40MHz/80MHz Bandwidth and IEEE 802.11 a/n20/n40/ac20/ac40/ac80/ax20/ax40/ax80 7) GPS & BDS & Galileo (receiver): operating within 1559-1610MHz 8) ADS-B (receiver): operating at 978MHz (1MHz Bandwidth) and 1090MHz (2MHz Bandwidth)
Technical Specification of 5.8GHz SDR	
Operating Frequency	5728.5-5846.5MHz for 1.4MHz Bandwidth 5730.12-5848.12MHz for 1.4MHz Bandwidth (CA mode) 5727.5-5844.5MHz for 3MHz Bandwidth 5730.2-5847.2MHz for 3MHz Bandwidth (CA mode) 5730.5-5844.5MHz for 10MHz Bandwidth

	5735.5-5839.5MHz for 20MHz Bandwidth 5745.5-5829.5MHz for 40MHz Bandwidth
Type of Modulation	OFDM (QPSK, 16QAM, 64QAM)
Channel Number	60 channels for 1.4MHz Bandwidth 60 channels for 1.4MHz Bandwidth (CA mode) 40 channels for 3MHz Bandwidth 40 channels for 3MHz Bandwidth (CA mode) 115 channels for 10MHz Bandwidth 105 channels for 20MHz Bandwidth 85 channels for 40MHz Bandwidth
Channel Separation	2MHz for 1.4MHz Bandwidth 2MHz for 1.4MHz Bandwidth (CA mode) 3MHz for 3MHz Bandwidth 3MHz for 3MHz Bandwidth (CA mode) 1MHz for 10MHz Bandwidth 1MHz for 20MHz Bandwidth 1MHz for 40MHz Bandwidth
Antenna Type	Integral Antenna
Antenna Number	1Tx4Rx for SISO mode (ANT0 or ANT1 or ANT2 or ANT3) 2Tx4Rx for MIMO mode (ANT0+ANT1, or ANT0+ANT3, or ANT2+ANT1, or ANT2+ANT3)
Antenna Gain	3dBi for ANT0 2.5dBi for ANT1 2.5dBi for ANT2 3dBi for ANT3
The type of wideband data transmission equipment	DTS
Technical Specification of 5.8GHz Wi-Fi	
Operating Frequency	5745–5825MHz for 802.11 a/n20/n40/ac20/ac40/ac80/ax20/ax40/ax80
Type of Modulation	OFDM(BPSK/QPSK/16QAM/64QAM) OFDMA(BPSK/QPSK/16QAM/64QAM/256QAM/1024QAM)
Data Rate	1) 6/9/12/18/24/36/48/54 Mbps for 802.11a 2) MCS0 ~ MCS15 for 802.11 20/n40/ac20/ac40/ac80 3) MCS0 ~ MCS11 for 802.11 ax20/ax40/ax80
Multi-RU	No, full RU
Channel Number	5 channels for 802.11a/n20/ac20/ax20 2 channels for 802.11n40/ac40/ax40 1 channels for 802.11ac80/ax80
Channel Separation	20MHz, 40MHz, 80MHz
Antenna Type	Integral Antenna
Antenna Number	1Tx1Rx for SISO mode (ANT0 or ANT1) 2Tx2Rx for MIMO mode (ANT0+ANT1)
Antenna Gain	2dBi for ANT0 2dBi for ANT1
The type of wideband data transmission equipment	DTS

Table 4: RF Channel and Frequency of 5.8GHz SDR

5.8GHz 1.4MHz Bandwidth (5728.5MHz-5846.5MHz)					
RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
1	5728.5	21	5768.5	41	5808.5
2	5730.5	22	5770.5	42	5810.5
3	5732.5	23	5772.5	43	5812.5
4	5734.5	24	5774.5	44	5814.5
5	5736.5	25	5776.5	45	5816.5
6	5738.5	26	5778.5	46	5818.5
7	5740.5	27	5780.5	47	5820.5
8	5742.5	28	5782.5	48	5822.5
9	5744.5	29	5784.5	49	5824.5
10	5746.5	30	5786.5	50	5826.5
11	5748.5	31	5788.5	51	5828.5
12	5750.5	32	5790.5	52	5830.5
13	5752.5	33	5792.5	53	5832.5
14	5754.5	34	5794.5	54	5834.5
15	5756.5	35	5796.5	55	5836.5
16	5758.5	36	5798.5	56	5838.5
17	5760.5	37	5800.5	57	5840.5
18	5762.5	38	5802.5	58	5842.5
19	5764.5	39	5804.5	59	5844.5
20	5766.5	40	5806.5	60	5846.5

5.8GHz 1.4MHz Bandwidth (CA Mode) (5730.12MHz-5848.12MHz)					
RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
1	5730.12	21	5770.12	41	5810.12
2	5732.12	22	5772.12	42	5812.12
3	5734.12	23	5774.12	43	5814.12
4	5736.12	24	5776.12	44	5816.12
5	5738.12	25	5778.12	45	5818.12
6	5740.12	26	5780.12	46	5820.12
7	5742.12	27	5782.12	47	5822.12
8	5744.12	28	5784.12	48	5824.12
9	5746.12	29	5786.12	49	5826.12
10	5748.12	30	5788.12	50	5828.12
11	5750.12	31	5790.12	51	5830.12
12	5752.12	32	5792.12	52	5832.12
13	5754.12	33	5794.12	53	5834.12
14	5756.12	34	5796.12	54	5836.12
15	5758.12	35	5798.12	55	5838.12

16	5760.12	36	5800.12	56	5840.12
17	5762.12	37	5802.12	57	5842.12
18	5764.12	38	5804.12	58	5844.12
19	5766.12	39	5806.12	59	5846.12
20	5768.12	40	5808.12	60	5848.12

5.8GHz 3MHz Bandwidth (5727.5MHz-5844.5MHz)					
RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
1	5727.5	15	5769.5	29	5811.5
2	5730.5	16	5772.5	30	5814.5
3	5733.5	17	5775.5	31	5817.5
4	5736.5	18	5778.5	32	5820.5
5	5739.5	19	5781.5	33	5823.5
6	5742.5	20	5784.5	34	5826.5
7	5745.5	21	5787.5	35	5829.5
8	5748.5	22	5790.5	36	5832.5
9	5751.5	23	5793.5	37	5835.5
10	5754.5	24	5796.5	38	5838.5
11	5757.5	25	5799.5	39	5841.5
12	5760.5	26	5802.5	40	5844.5
13	5763.5	27	5805.5		
14	5766.5	28	5808.5		

5.8GHz 3MHz Bandwidth (CA Mode) (5730.2MHz-5847.2MHz)					
RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
1	5730.2	15	5772.2	29	5814.2
2	5733.2	16	5775.2	30	5817.2
3	5736.2	17	5778.2	31	5820.2
4	5739.2	18	5781.2	32	5823.2
5	5742.2	19	5784.2	33	5826.2
6	5745.2	20	5787.2	34	5829.2
7	5748.2	21	5790.2	35	5832.2
8	5751.2	22	5793.2	36	5835.2
9	5754.2	23	5796.2	37	5838.2
10	5757.2	24	5799.2	38	5841.2
11	5760.2	25	5802.2	39	5844.2
12	5763.2	26	5805.2	40	5847.2
13	5766.2	27	5808.2		
14	5769.2	28	5811.2		

5.8GHz 10MHzBandwidth (5730.5MHz-5844.5MHz)					
RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
1	5730.5	40	5769.5	79	5808.5
2	5731.5	41	5770.5	80	5809.5
3	5732.5	42	5771.5	81	5810.5
4	5733.5	43	5772.5	82	5811.5
5	5734.5	44	5773.5	83	5812.5
6	5735.5	45	5774.5	84	5813.5
7	5736.5	46	5775.5	85	5814.5
8	5737.5	47	5776.5	86	5815.5
9	5738.5	48	5777.5	87	5816.5
10	5739.5	49	5778.5	88	5817.5
11	5740.5	50	5779.5	89	5818.5
12	5741.5	51	5780.5	90	5819.5
13	5742.5	52	5781.5	91	5820.5
14	5743.5	53	5782.5	92	5821.5
15	5744.5	54	5783.5	93	5822.5
16	5745.5	55	5784.5	94	5823.5
17	5746.5	56	5785.5	95	5824.5
18	5747.5	57	5786.5	96	5825.5
19	5748.5	58	5787.5	97	5826.5
20	5749.5	59	5788.5	98	5827.5
21	5750.5	60	5789.5	99	5828.5
22	5751.5	61	5790.5	100	5829.5
23	5752.5	62	5791.5	101	5830.5
24	5753.5	63	5792.5	102	5831.5
25	5754.5	64	5793.5	103	5832.5
26	5755.5	65	5794.5	104	5833.5
27	5756.5	66	5795.5	105	5834.5
28	5757.5	67	5796.5	106	5835.5
29	5758.5	68	5797.5	107	5836.5
30	5759.5	69	5798.5	108	5837.5
31	5760.5	70	5799.5	109	5838.5
32	5761.5	71	5800.5	110	5839.5
33	5762.5	72	5801.5	111	5840.5
34	5763.5	73	5802.5	112	5841.5
35	5764.5	74	5803.5	113	5842.5
36	5765.5	75	5804.5	114	5843.5
37	5766.5	76	5805.5	115	5844.5
38	5767.5	77	5806.5		
39	5768.5	78	5807.5		

5.8GHz 20MHz Bandwidth (5735.5MHz-5839.5MHz)					
RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
1	5735.5	36	5770.5	71	5805.5
2	5736.5	37	5771.5	72	5806.5
3	5737.5	38	5772.5	73	5807.5
4	5738.5	39	5773.5	74	5808.5
5	5739.5	40	5774.5	75	5809.5
6	5740.5	41	5775.5	76	5810.5
7	5741.5	42	5776.5	77	5811.5
8	5742.5	43	5777.5	78	5812.5
9	5743.5	44	5778.5	79	5813.5
10	5744.5	45	5779.5	80	5814.5
11	5745.5	46	5780.5	81	5815.5
12	5746.5	47	5781.5	82	5816.5
13	5747.5	48	5782.5	83	5817.5
14	5748.5	49	5783.5	84	5818.5
15	5749.5	50	5784.5	85	5819.5
16	5750.5	51	5785.5	86	5820.5
17	5751.5	52	5786.5	87	5821.5
18	5752.5	53	5787.5	88	5822.5
19	5753.5	54	5788.5	89	5823.5
20	5754.5	55	5789.5	90	5824.5
21	5755.5	56	5790.5	91	5825.5
22	5756.5	57	5791.5	92	5826.5
23	5757.5	58	5792.5	93	5827.5
24	5758.5	59	5793.5	94	5828.5
25	5759.5	60	5794.5	95	5829.5
26	5760.5	61	5795.5	96	5830.5
27	5761.5	62	5796.5	97	5831.5
28	5762.5	63	5797.5	98	5832.5
29	5763.5	64	5798.5	99	5833.5
30	5764.5	65	5799.5	100	5834.5
31	5765.5	66	5800.5	101	5835.5
32	5766.5	67	5801.5	102	5836.5
33	5767.5	68	5802.5	103	5837.5
34	5768.5	69	5803.5	104	5838.5
35	5769.5	70	5804.5	105	5839.5

5.8GHz 40MHz Bandwidth (5745.5MHz-5829.5MHz)					
RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
1	5745.5	30	5774.5	59	5803.5

2	5746.5	31	5775.5	60	5804.5
3	5747.5	32	5776.5	61	5805.5
4	5748.5	33	5777.5	62	5806.5
5	5749.5	34	5778.5	63	5807.5
6	5750.5	35	5779.5	64	5808.5
7	5751.5	36	5780.5	65	5809.5
8	5752.5	37	5781.5	66	5810.5
9	5753.5	38	5782.5	67	5811.5
10	5754.5	39	5783.5	68	5812.5
11	5755.5	40	5784.5	69	5813.5
12	5756.5	41	5785.5	70	5814.5
13	5757.5	42	5786.5	71	5815.5
14	5758.5	43	5787.5	72	5816.5
15	5759.5	44	5788.5	73	5817.5
16	5760.5	45	5789.5	74	5818.5
17	5761.5	46	5790.5	75	5819.5
18	5762.5	47	5791.5	76	5820.5
19	5763.5	48	5792.5	77	5821.5
20	5764.5	49	5793.5	78	5822.5
21	5765.5	50	5794.5	79	5823.5
22	5766.5	51	5795.5	80	5824.5
23	5767.5	52	5796.5	81	5825.5
24	5768.5	53	5797.5	82	5826.5
25	5769.5	54	5798.5	83	5827.5
26	5770.5	55	5799.5	84	5828.5
27	5771.5	56	5800.5	85	5829.5
28	5772.5	57	5801.5		
29	5773.5	58	5802.5		

Table 5: RF Channel and Frequency of 5.8GHz Wi-Fi

U-NII-3					
20MHz Bandwidth		40MHz Bandwidth		80MHz Bandwidth	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	151	5755	155	5775
153	5765	159	5795		
157	5785				
161	5805				
165	5825				

3.3 Independent Operation Modes

The basic operation modes are:

- A. On, 5.8GHz SDR wireless transmitting mode
 - 1) Low Channel
 - 2) Middle Channel
 - 3) High Channel

- B. On, 5.8GHz Wi-Fi wireless transmitting mode
 - 1) Low Channel
 - 2) Middle Channel
 - 3) High Channel
- C. On, Normal Operation
- D. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.5 Submitted Documents

- Application Form
- Circuit Diagram
- Instruction Manual
- Photo Documents
- Technical Description
- Bill of Material
- Rating Label

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.

4.2 Test Operation

Test operation refers to test setup in chapter 5. All tests were performed according to the procedures in ANSI C63.10: 2013 and ANSI C63.4: 2014.

According to clause 3.1, all tests were performed on model L2E in this report.

4.3 Special Accessories and Auxiliary Equipment

Table 6: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Laptop	Lenovo	T480	PF-16A6N8	N/A

4.4 Countermeasures to Achieve ERM 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)

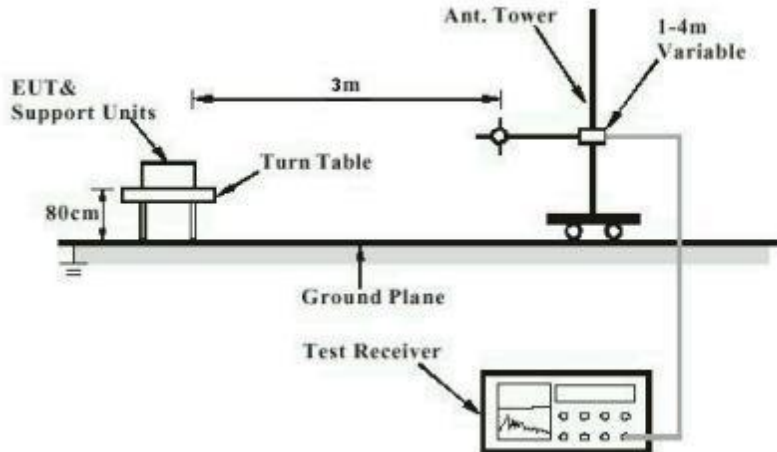


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

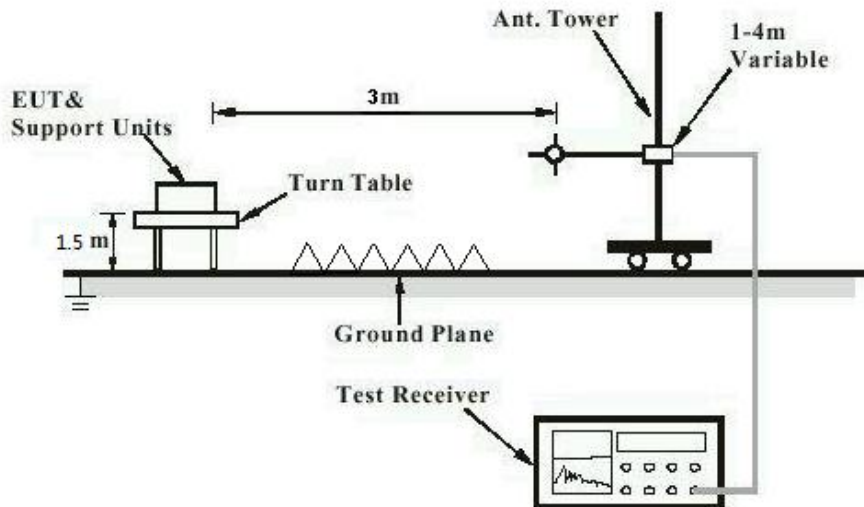
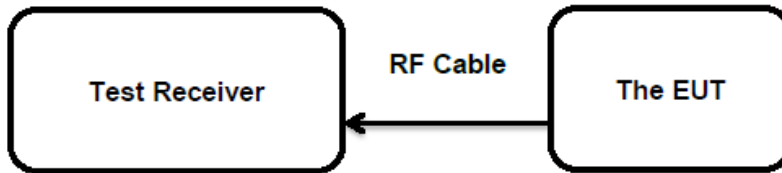


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5. Test Results

5.1 Radio Test Requirement & Test Suites (5GHz Bands)

5.1.1 Antenna Requirement

RESULT:

Pass

Test Specification

Test standard : FCC Part 15.203

According to the manufacturer declared, the EUT has internal antennas, the max. uncorrelated antenna gain antenna is 3dBi for 5.8GHz SDR, 2dBi for 5.8GHz Wi-Fi, permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

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

Refer to EUT Photo for further details.

5.1.2 Maximum output power**RESULT:****Pass****Test Specification**

Test standard	:	FCC Part 15.407 (a)
	:	RSS-247 clause 6.2
Basic standard	:	ANSI C63.10:2013
Limits	:	<1W (30dBm) (5725-5850MHz)
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2022-12-06 to 2023-01-13
Input voltage	:	Full Battery
Operation mode	:	A, B
Test channel	:	Low / Middle / High
Ambient temperature	:	25 °C
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Table 7: Test Result of Maximum Conducted Output Power, 5.8GHz SDR

Worst case for SISO mode

Test Mode	Test Channel (MHz)	Measured Average Power		Limit (W)
		(dBm)	(W)	
1.4MHz BW	5728.5	15.37	0.0344	< 1.0
	5786.5	16.30	0.0427	
	5846.5	15.07	0.0321	
1.4MHz BW CA	5730.12	15.06	0.0321	
	5788.12	15.52	0.0356	
	5848.12	15.34	0.0342	
3MHz BW	5727.5	15.39	0.0346	
	5784.5	16.39	0.0436	
	5844.5	15.27	0.0337	
3MHz BW CA	5730.2	15.11	0.0324	
	5787.2	15.84	0.0384	
	5847.2	15.21	0.0332	
10MHz BW	5730.5	25.30	0.3388	
	5787.5	26.00	0.3981	
	5844.5	24.96	0.3133	
20MHz BW	5735.5	25.27	0.3365	
	5787.5	25.87	0.3864	
	5839.5	24.98	0.3148	
40MHz BW	5745.5	22.60	0.1820	
	5768.5	25.42	0.3483	
	5787.5	26.16	0.4130	
	5800.5	24.83	0.3041	
	5829.5	21.94	0.1563	

Max. e.i.r.p.=26.16dBm+3dBi=29.16dBm, which is less than 36dBm=4W.

Worst case for MIMO mode

Test Mode	Test Channel (MHz)	Measured Average Power		Limit (W)
		(dBm)	(W)	
1.4MHz BW	5728.5	15.16	0.0328	< 1.0
	5786.5	16.37	0.0434	
	5846.5	14.78	0.0301	
1.4MHz BW CA	5730.12	15.13	0.0326	
	5788.12	16.35	0.0432	
	5848.12	14.75	0.0299	
3MHz BW	5727.5	14.61	0.0289	
	5784.5	16.30	0.0427	
	5844.5	14.49	0.0281	
3MHz BW CA	5730.2	15.05	0.0320	
	5787.2	16.28	0.0425	
	5847.2	14.72	0.0296	
10MHz BW	5730.5	24.81	0.3027	
	5787.5	26.97	0.4977	
	5844.5	26.18	0.4150	
20MHz BW	5735.5	26.07	0.4046	
	5787.5	27.09	0.5117	
	5839.5	24.39	0.2748	
40MHz BW	5745.5	22.70	0.1862	
	5768.5	25.63	0.3656	
	5787.5	26.73	0.4710	

	5800.5	25.27	0.3365	
	5829.5	22.98	0.1986	

Max. e.i.r.p.=27.09dBm+3dBi=30.09dBm, which is less than 36dBm=4W.

Table 8: Test Result of Maximum Conducted Output Power, 5.8GHz Wi-Fi 802.11 a/n20/n40/ac20/ac40/ac80/ax20/ax40/ax80

Worst case for SISO mode

Test Mode	Data Rate	Test Channel	Measured Average Power		Limit (W)
			(dBm)	(W)	
802.11a	1 Mbps	149	15.87	0.0386	< 1.0
		157	16.11	0.0408	
		165	16.09	0.0406	
802.11n (HT20)	MCS0	149	16.23	0.0420	
		157	15.94	0.0393	
		165	16.12	0.0409	
802.11n (HT40)	MCS0	151	16.43	0.0440	
		159	16.05	0.0403	
802.11ac (VHT20)	MCS0	149	15.76	0.0377	
		157	15.95	0.0394	
		165	15.74	0.0375	
802.11ac (VHT40)	MCS0	151	16.25	0.0422	
		159	16.47	0.0444	
802.11ac (VHT80)	MCS0	155	16.08	0.0406	
802.11ax (HE20)	MCS0	149	15.73	0.0374	
		157	15.87	0.0386	
		165	15.90	0.0389	
802.11ax (HE40)	MCS0	151	15.48	0.0353	
		159	16.45	0.0442	
802.11ax (HE80)	MCS0	155	15.59	0.0362	

Max. e.i.r.p.=16.47dBm+2dBi=18.47dBm, which is less than 36dBm=4W.

Worst case for MIMO mode

Test Mode	Data Rate	Test Channel	Measured Average Power		Limit (W)
			(dBm)	(W)	
802.11a	1 Mbps				< 1.0
802.11n (HT20)	MCS0	149	18.56	0.0718	
		157	18.50	0.0708	
		165	18.40	0.0692	
802.11n (HT40)	MCS0	151	19.10	0.0813	
		159	17.96	0.0625	
802.11ac (VHT20)	MCS0	149	17.79	0.0601	
		157	18.45	0.0700	
		165	18.68	0.0738	
802.11ac V(HT40)	MCS0	151	17.93	0.0621	
		159	18.10	0.0646	
802.11ac (VHT80)	MCS0	155	18.89	0.0774	
802.11ax (HE20)	MCS0	149	18.31	0.0678	
		157	18.41	0.0693	
		165	18.74	0.0748	
802.11ax (HE40)	MCS0	151	18.68	0.0738	
		159	19.21	0.0834	
802.11ax (HE80)	MCS0	155	18.69	0.0740	

Max. e.i.r.p.=19.10dBm+2dBi=21.10dBm, which is less than 36dBm=4W.

Note:

- 1) The cable loss is taken into account in results, $e.i.r.p.=P_{(Peak\ power)}+ G$
- 2) Antenna gain(G) of 5.8GHz SDR: 2.1dBi (uncorrelated antenna gain)
Antenna gain(G) of 5.8GHz Wi-Fi: 2dBi (uncorrelated antenna gain)

5.1.3 Power Spectral Density**RESULT:****Pass****Test Specification**

Test standard	:	FCC Part 15.407 (a)
	:	RSS-247 clause 6.2
Basic standard	:	ANSI C63.10:2013
Limits	:	<30dBm/500KHz (5725-5850MHz)
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	Refer to test data
Input voltage	:	Full Battery
Operation mode	:	A, B
Test channel	:	Low / Middle / High
Ambient temperature	:	25 °C
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Refer to attached Appendix A, B for details of test data.

5.1.4 Frequency Stability**RESULT:****Pass****Test Specification**

Test standard	:	FCC Part 15.407 (g)
	:	RSS-Gen Clause 6.11
Basic standard	:	ANSI C63.10:2013
Limits	:	Within assigned bands
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2022-12-06 to 2023-01-13
Input voltage	:	Full Battery
Operation mode	:	A, B
Test channel	:	Low / Middle / High
Ambient temperature	:	25 °C
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Refer to attached Appendix A, B for details of test data.

5.1.5 26dB Bandwidth and 99% Bandwidth**RESULT:****Pass****Test Specification**

Test standard	:	FCC Part 15.407
	:	RSS-Gen Clause 6.6
Basic standard	:	ANSI C63.10:2013
Limits	:	N/A
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	Refer to test data
Input voltage	:	Full Battery
Operation mode	:	A, B
Test channel	:	Low / Middle / High
Ambient temperature	:	25 °C
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Refer to attached Appendix A, B for details of test data.

5.1.6 6dB Bandwidth**RESULT:****Pass****Test Specification**

Test standard	:	FCC Part 15.407 (e)
	:	RSS-247 clause 6.2.4.1
Basic standard	:	ANSI C63.10:2013
Limits	:	At least 500KHz (5725-5850MHz)
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	Refer to test data
Input voltage	:	Full Battery
Operation mode	:	A, B
Test channel	:	Low / Middle / High
Ambient temperature	:	25 °C
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Refer to attached Appendix A, B for details of test data.

5.1.7 Radiated Spurious Emission**RESULT:****Pass****Test Specification**

Test standard	:	FCC Part 15.407(b) & FCC Part 15.205 & FCC Part 15.209 RSS-247 clause 6.2 & RSS-GEN clause 8.9 and 8.10
Basic standard	:	ANSI C63.10:2013 <ul style="list-style-type: none">• For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.• Restricted Bands meet the requirement of 15.209 limit• Restricted Bands meet the requirement of RSS-GEN
Limits	:	3m Semi-Anechoic Chamber (below 1GHz) 3m Anechoic Chamber (above 1GHz)
Kind of test site	:	

Test Setup

Date of testing	:	2022-12-06 to 2023-01-13
Input voltage	:	Full Battery
Operation mode	:	A, B
Test channel	:	Low / Middle / High
Ambient temperature	:	23 °C
Relative humidity	:	48 %
Atmospheric pressure	:	101 kPa

Refer to attached Appendix A, B for details of test data.

6. List of Tables

Table 1: List of Test and Measurement Equipment	5
Table 2: Measurement Uncertainty	6
Table 3: Technical Specification	7
Table 4: RF Channel and Frequency of 5.8GHz SDR	9
Table 5: RF Channel and Frequency of 5.8GHz Wi-Fi	13
Table 6: List of Accessories and Auxiliary Equipment	15
Table 7: Test Result of Maximum Conducted Output Power, 5.8GHz SDR	20
Table 8: Test Result of Maximum Conducted Output Power, 5.8GHz Wi-Fi 802.11 a/n20/n40/ac20/ac40/ac80/ax20/ax40/ax80	21