

<b>Prüfbericht-Nr.:</b> <i>Test report no.:</i>	<b>CN244E0L 003</b>	<b>Auftrags-Nr.:</b> <i>Order no.:</i>	<b>168449632</b>	Seite 1 von 22 Page 1 of 22
<b>Kunden-Referenz-Nr.:</b> <i>Client reference no.:</i>	N/A	<b>Auftragsdatum:</b> <i>Order date:</i>	2023-10-26	
<b>Auftraggeber:</b> <i>Client:</i>	<b>SZ DJI Osmo Technology Co.,Ltd.</b> 4F, Jingkou Community Comprehensive Service Building, No. 83 Bishui Road North, Guangming Street, Guangming District, Shenzhen, China			
<b>Prüfgegenstand:</b> <i>Test item:</i>	DJI SDR Transmission			
<b>Bezeichnung / Typ-Nr.:</b> <i>Identification / Type no.:</i>	TX5 (Trademark: DJI)			
<b>Auftrags-Inhalt:</b> <i>Order content:</i>	Test Report			
<b>Prüfgrundlage:</b> <i>Test specification:</i>	CFR47 FCC Part15: Subpart E Section 15.407			
<b>Wareneingangsdatum:</b> <i>Date of sample receipt:</i>	2023-12-05	Please refer to Photo Document		
<b>Prüfmuster-Nr.:</b> <i>Test sample no.:</i>	A003612445-001~047			
<b>Prüfzeitraum:</b> <i>Testing period:</i>	2023-12-14 - 2024-02-05			
<b>Ort der Prüfung:</b> <i>Place of testing:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
<b>Prüflaboratorium:</b> <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
<b>Prüfergebnis*:</b> <i>Test result*:</i>	Pass			
<b>geprüft von:</b> <i>tested by:</i>	<u>x Bell Hu</u>	<b>genehmigt von:</b> <i>authorized by:</i>	<u>x Jonathan Li</u>	
<b>Datum:</b> <i>Date:</i>	2024-05-21	Signed by: Bell Hu	Signed by: Jonathan Li	
<b>Stellung / Position:</b>	Sachverständige(r)/Expert	<b>Stellung / Position:</b>	Sachverständige(r)/Expert	
<b>Sonstiges / Other:</b>	FCC ID: 2ANDR-TX53209 This report is for 5.2GHz Wi-Fi.			
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>		
<small>* Legende: P(ass) = entspricht o.g. Prüfgrundlage(n) F(all) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet</small> <small>* Legend: P(ass) = passed a.m. test specification(s) F(all) = failed a.m. test specification(s) N/A = not applicable N/T = not tested</small>				
<b>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.</b> <i>This test report only relates to the above mentioned 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>				

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Anmerkungen  
Remarks

1	<p>Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben.</p> <p>Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.</p> <p><i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfills the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i></p>
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3	<p>Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben.</p> <p>Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.</p> <p><i>Test clauses with remark of * are subcontracted to qualified subcontractors and descripted under the respective test clause in the report. Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i></p>
4	<p>Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.</p> <p><i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i></p>

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## **Test Summary**

**5.1.1 ANTENNA REQUIREMENT**  
*RESULT: Pass*

**5.1.2 MAXIMUM OUTPUT POWER**  
*RESULT: Pass*

**5.1.3 CONDUCTED 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 RADIATED SPURIOUS EMISSION**  
*RESULT: Pass*

**5.1.7 CONDUCTED EMISSION ON AC MAINS**  
*RESULT: Pass*

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## 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 5.2GHz Wi-Fi

Appendix B: 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, 518110, Shenzhen, P. R. China.

FCC Accreditation Designation No.: 694916

ISED wireless device testing laboratory: 25069

### 2.2 List of Test and Measurement Instruments

**Table 1: List of Test and Measurement Equipment**

<b>Radio Spectrum Testing (SRD-Tonscend)</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial No.</b>	<b>Cal. Date</b>	<b>Cal. until</b>
EXA Signal Analyzer, Multi-touch	Keysight	N9010B	MY60241175	2023-09-22	2024-09-21
MXG X-Series RF Vector Signal Generator	Keysight	N5182B	MY61250137	2023-09-22	2024-09-21
EXG X-Series Microwave Analog Signal Generator	Keysight	N5173B	MY61250141	2023-09-22	2024-09-21
DC power supply	Keysight	E3642A	MY61276100	2023-09-22	2024-09-21
Power Control Unit	Tonscend	JS0806-4ADC	N/A	2023-09-22	2024-09-21
Automation Control Unit	Tonscend	JS0806-2	21C8060396	2023-09-22	2024-09-21
Test Software	Tonscend	JS1120-3	N/A	N/A	N/A
Control PC	Lenovo	TianYi510S-071MB	YLX23JMF	N/A	N/A
Shielding Room 8#	Albatross	SR8	APC17151-SR8	2021-06-22	2024-06-22
<b>Unwanted Emission Testing (TS9975)</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial No.</b>	<b>Cal. Date</b>	<b>Cal. until</b>
EMI Test Receiver	R&S	ESR 7	102021	2023-07-26	2024-07-25
Signal Analyzer	R&S	FSV 40	101439	2023-07-26	2024-07-25
System Controller Interface	R&S	SCI-100	S10010038	N/A	N/A
Filterbank	R&S	Wlan	100759	2023-07-26	2024-07-25
OSP	R&S	OSP 120	102040	N/A	N/A
Pre-amplifier	R&S	SCU08F1	08320031	2023-07-26	2024-07-25
Amplifier	R&S	SCU-18F	180070	2023-07-26	2024-07-25
Amplifier	R&S	SCU40A	100475	2023-07-26	2024-07-25
Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	193	2022-08-07	2024-08-06

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Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218717	2022-08-07	2024-08-06
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19067	2022-08-28	2024-08-27
Active Loop Antenna	Schwarzbeck	FMZB 1513	302	2022-08-07	2024-08-06
Test software	R&S	EMC32 (V10.60.10)	N/A	N/A	N/A
Control PC	Dell	OptiPlex 7050	36NV9P2	N/A	N/A
3m Semi-Anechoic Chamber	Albatross	SAC-3m	APC17151-SAC	2021-06-22	2024-06-22

Conducted Emission				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
EMI Test Receiver	R&S	ESR3	102428	2024-07-30
Artificial Mains Network	R&S	ENV216	102333	2024-07-31
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 basis 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.

**Table 2: Measurement Uncertainty**

Parameter	Uncertainty (k=2)
RF output power, conducted	± 0.99 dB
Occupied Channel Bandwidth	± 2.08 %
RF power density, conducted	± 0.99 dB
Unwanted Emissions, conducted	± 0.89 dB
All emissions, radiated	±4.17 dB
Conducted Emission, (9kHz to 150kHz)/(150kHz to 30MHz)	± 3.70 dB / ± 3.30 dB

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## 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) 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 Product is DJI SDR Transmission which supports 2.4GHz SRD, 5GHz SRD, 2.4GHz Wi-Fi and 5GHz Wi-Fi functions.

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

### 3.2 Ratings and System Details

**Table 3: Technical Specification of EUT**

General Information of EUT	Value
Kind of Equipment	DJI SDR Transmission
Type Designation	TX5
Trademark	DJI
FCC ID	2ANDR-TX53209
Operating Voltage	7.4 V DC by battery or powered by AC/DC adapter (120V AC/60Hz)
Testing Voltage	DC 7.4V by battery or AC 120V, 60Hz
Radiofrequency operating mode	1) 2.4GHz SRD: operating within 2400-2483.5MHz, supports 1.4MHz/3MHz/10MHz/20MHz/40MHz Bandwidth 2) 2.4GHz Wi-Fi: operating within 2400-2483.5MHz, supports 20MHz/40MHz Bandwidth and IEEE 802.11 b/g/n20/n40/ax20/ax40 3) 5.2GHz Wi-Fi: operating within 5150-5250MHz, supports 20MHz/40MHz/80MHz Bandwidth and IEEE 802.11 a/n20/n40/ac20/ac40/ac80/ax20/ax40/ax80 4) 5.6GHz SRD: operating within 5470-5725MHz, supports 20MHz/40MHzBandwidth (Transmitting only) 5) 5.8GHz SRD: operating within 5725-5850MHz, supports 1.4MHz/3MHz/10MHz/20MHz/40MHz Bandwidth
Technical Specification of 5.2GHz Wi-Fi	
Operating Frequency	5180–5240MHz (802.11 a/n20/n40/ac20/ac40/ac80/ ax20/ax40/ax80)
Type of Modulation	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Data Rate	6/9/12/18/24/36/48/54 Mbps for 802.11a 6/9/12/18/24/36/48/54 Mbps for 802.11n MCS0~MCS7 for 802.11n MCS0~MCS9 for 802.11ac MCS0~MCS11 for 802.11ax
Channel Number	4 channels for 802.11a/n20/ac20/ax20 2 channels for 802.11n40/ac40/ax40 1 channel for 802.11ac80/ax80
Channel Separation	20MHz, 40MHz, 80MHz
Antenna Type	Integral Antenna
Antenna Number	2, SISO only for 802.11a.

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	MIMO only for 802.11n/ax (Antennas 0&3).
Beamforming	Not supported
Antenna Gain	Ant0: 3.53dBi, Ant3: 3.83dBi (as provided by client)

**Table 4: RF Channel and Frequency of 5.2GHz Wi-Fi**

U-NII-1					
20MHz Bandwidth		40MHz Bandwidth		80MHz Bandwidth	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	38	5190	42	5210
40	5200	46	5230		
44	5220				
48	5240				

### 3.3 Independent Operation Modes

The basic operation modes are:

- A. On, 5.2GHz Wi-Fi wireless transmitting mode
  - 1) Low Channel
  - 2) Middle Channel
  - 3) High Channel
- B. On, Normal operation + Charging
- C. Off

### 3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

### 3.5 Submitted Documents

- Application Form
- ID Label and Location Info
- 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 testing were performed according to the procedures in ANSI C63.10: 2013.

According to clause 3.1, all tests were performed on model TX5 in this report.

### 4.3 Special Accessories and Auxiliary Equipment

Table 5: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	Remark
Portable Laptop	Lenovo	ThinkPad T480	SN: 10Q67059
Signal Cable	DJI	/	Type C to Type C, 0.3m
Signal Cable	DJI	/	BNC to BNC, 0.5m
DJI Transmission Air	DJI	RX5	SN: 7GZDLA40010264
Earphone	DJI	/	/
Smartphone	HUAWEI	/	/
Laptop	Lenovo	T480	SN: PF-16A6N8
AC/DC Adapter	/	PD-30CN	Input: 100-240V, 50/60Hz, 0.8A Max Output: 3.3-11V, 2.72A or 5V/3A or 9V/3A or 12V/2.5A or 15V/2A

### 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)

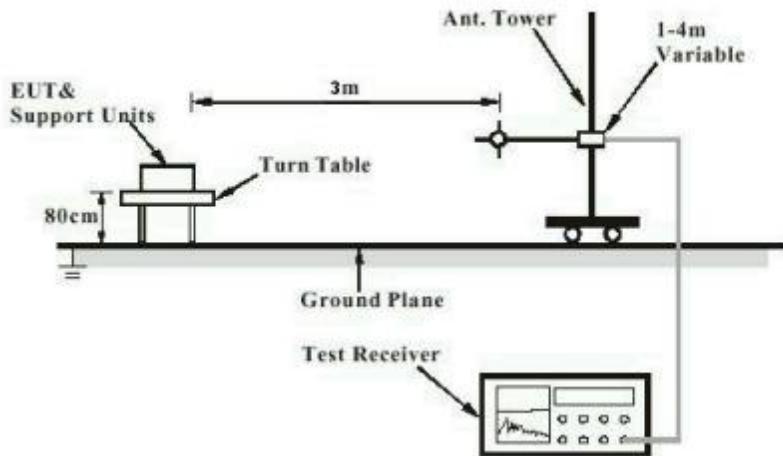
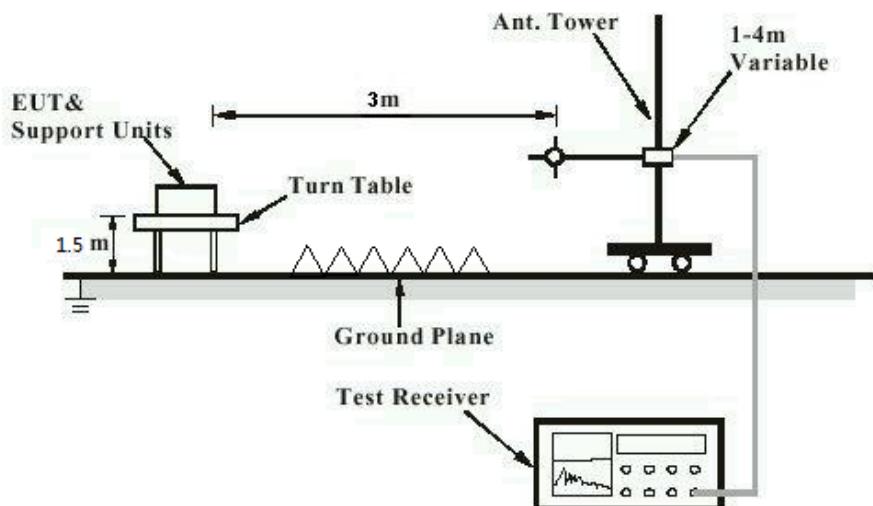


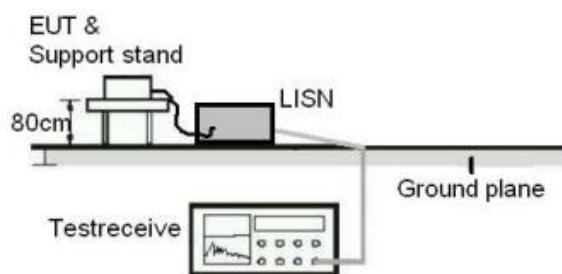
Diagram of Measurement Configuration for Radiation Test (Above 1GHz)



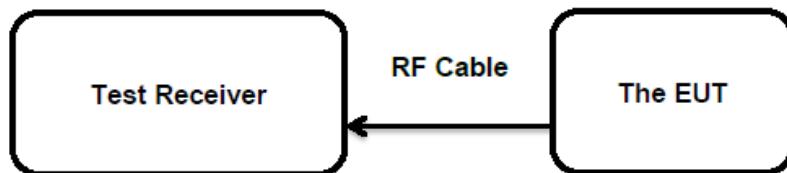
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**Diagram of Measurement Configuration for Mains Conduction Measurement**



**Diagram of Measurement Configuration for Conducted Transmitter Measurement**



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## 5 Test Results

### 5.1 Transmitter Requirement & Test Suites

#### 5.1.1 Antenna Requirement

RESULT: Pass

##### Test Specification

Test standard : FCC Part 15.203  
Limit : the use of antennas with directional gains that do not exceed 6 dBi

The EUT have Integral Antennas, the max. uncorrelated antenna gain antenna is 3.83dBi for 5.2GHz Wi-Fi, permanent attachment and no consideration of replacement..

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

Refer to EUT Photo for further details.

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## 5.1.2 Maximum Output Power

**RESULT:**

**Pass**

### Test Specification

Test standard	:	FCC Part 15.407 (a)
Basic standard	:	ANSI C63.10: 2013
Limits	:	<250mW (24dBm) (5150-5250MHz)
Kind of test site	:	Shielded Room

### Test Setup

Date of testing	:	2024-01-31 to 2024-02-05
Input voltage	:	DC 7.4V by battery
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	25 °C
Relative humidity	:	45 %
Atmospheric pressure	:	101 kPa

For details refer to following test result.

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**Table 6: Test Result of Maximum Conducted Output Power, 5.2GHz Wi-Fi**

Worst case: SISO mode (ANT 3)

Test Mode	Data Rate	Test Channel	Measured Average Power		Limit (W)
			(dBm)	(W)	
802.11a	1 Mbps	36	12.66	0.0185	< 0.25
		40	12.83	0.0192	
		48	12.88	0.0194	
<b>Maximum Measured Value</b>			12.88	0.0194	

Worst case: MIMO mode (ANT0+3)

Test Mode	Data Rate	Test Channel	Measured Average Power		Limit (dBm)
			(dBm)	(W)	
802.11n (HT20)	MCS0	36	13.20	0.0209	< 23.98
		40	13.03	0.0201	
		48	13.16	0.0207	
802.11n (HT40)	MCS0	36	18.12	0.0649	< 23.98
		40	18.10	0.0646	
802.11ac (VHT20)	MCS0	48	13.17	0.0207	< 23.98
		38	13.01	0.0200	
		46	13.14	0.0206	
802.11ac (VHT40)	MCS0	38	18.19	0.0659	< 23.98
		46	18.05	0.0638	
802.11ac (VHT80)	MCS0	42	17.87	0.0612	
802.11ax (HE20)	MCS0	48	14.38	0.0274	< 23.98
		38	14.94	0.0312	
		46	14.37	0.0274	
802.11ax (HE40)	MCS0	38	18.29	0.0675	< 23.98
		46	18.22	0.0664	
802.11ax (HE80)	MCS0	42	18.40	0.0692	
<b>Maximum Measured Value</b>			<b>18.40</b>	<b>0.0692</b>	

Note:

- 1) The cable loss is taken into account in results, e.i.r.p.=P<sub>(Peak power)</sub>+ G
- 2) Max Gain 3.83dBi

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### 5.1.3 Conducted Power Spectral Density

**RESULT:**

**Pass**

#### Test Specification

Test standard	:	FCC Part 15.407 (a)
Basic standard	:	ANSI C63.10: 2013
Limits	:	<11dBm/MHz (5150-5250MHz)
Kind of test site	:	Shielded Room

#### Test Setup

Date of testing	:	2024-01-31 to 2024-02-05
Input voltage	:	DC 7.4V by battery
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	25 °C
Relative humidity	:	45 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix A.

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## 5.1.4 Frequency Stability

**RESULT:**

**Pass**

### Test Specification

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

### Test Setup

Date of testing	:	2024-01-31 to 2024-02-05
Input voltage	:	DC 7.4V by battery
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	25 °C
Relative humidity	:	45 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix A.

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## 5.1.5 26dB Bandwidth and 99% Bandwidth

### RESULT:

Pass

#### Test Specification

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

#### Test Setup

Date of testing	:	2024-01-31 to 2024-02-05
Input voltage	:	DC 7.4V by battery
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	25 °C
Relative humidity	:	45 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix A.

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## 5.1.6 Radiated Spurious Emission

RESULT:

Pass

### Test Specification

Test standard	:	FCC Part 15.407(b) & FCC Part 15.205 & FCC Part 15.209
Basic standard	:	ANSI C63.10: 2013
Limits	:	<ul style="list-style-type: none"><li>For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.</li><li>Restricted Bands meet the requirement of 15.209 limit</li></ul>
Kind of test site	:	3m Semi-anechoic Chamber

### Test Setup

Date of testing	:	2024-02-02 to 2024-02-05
Input voltage	:	AC 120V, 60Hz
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 was 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 A.

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## 5.1.7 Conducted Emission on AC Mains

### RESULT:

Pass

#### Test Specification

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

#### Test Setup

Date of testing	:	2023-12-14
Input voltage	:	AC 120V, 60Hz
Operation mode	:	B
Earthing	:	Not connected
Ambient temperature	:	23.3 °C
Relative humidity	:	50.8 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix A.

## 6 Photographs of the Test Set-Up

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

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