

Prüfbericht-Nr.: Test report no.:	CN21WVI2 003	Auftrags-Nr.: Order no.:	168339184	Seite 1 von 31 Page 1 of 31
Kunden-Referenz-Nr.: Client reference no.:	N/A	Auftragsdatum: Order date:	2021-10-15	
Auftraggeber: Client:	SZ DJI TECHNOLOGY CO., LTD 14th Floor, West Wing, Skyworth Semiconductor Design Building No.18 Gaoxin South 4th Ave Nanshan District, Shenzhen, P.R. China			
Prüfgegenstand: Test item:	DJI RC Plus			
Bezeichnung / Typ-Nr.: Identification / Type no.:	RM700, RM700B			
Auftrags-Inhalt: Order content:	Test Report			
Prüfgrundlage: Test specification:	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			
Wareneingangsdatum: Date of sample receipt:	2021-10-28	Please refer to photo documents		
Prüfmuster-Nr.: Test sample no.:	A003151089-003-004			
Prüfzeitraum: Testing period:	2021-11-09 to 2022-01-06			
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:	Tim Zhang X <i>Tim Zhang</i>		genehmigt von: authorized by:	Hardy Suo X <i>Hardy Suo</i>
Datum: Date:	2022-01-18		Ausstellungsdatum: Issue date:	2022-01-18
Stellung / Position:	Sachverständige(r) / Expert		Stellung / Position:	Sachverständige(r) / Expert
Sonstiges / Other:	FCC ID: SS3-RM7002110 This report is for 5.2GHz Wi-Fi, 5.8GHz SDR and 5.8GHz Wi-Fi. Applicant & Manufacturer: SZ DJI TECHNOLOGY CO., LTD , 14th Floor, West Wing, Skyworth Semiconductor Design Building No.18 Gaoxin South 4th Ave Nanshan District, Shenzhen, P.R. China			
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
* 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 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 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. 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.				

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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

5.1.8 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 5.2/5.8GHz Wi-Fi

Appendix B: Test Results of 5.8GHz SDR

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

Radio Spectrum Testing for 5.2G/5.8G Wi-Fi					
Equip. No.	Description	Manufacturer	Model	Serial No.	Calibrated until (DD.MM.YYYY)
9039436	EXA Signal Analyzer, Multi-touch	Keysight	N9010B	MY60241175	28.09.2022
9039437	MXG X-Series RF Vector Signal Generator	Keysight	N5182B	MY61250137	28.09.2022
9039438	EXG X-Series Microwave Analog Signal Generator	Keysight	N5173B	MY61250141	28.09.2022
9039439	DC Power Supply	Keysight	E3642A	MY61276100	28.09.2022
9039440	Wireless Connectivity Tester	R&S	CMW270	102505	28.09.2022
9039441	Power Control Unit	Tonscend	JS0806-4ADC	N/A	28.09.2022
9039442	Automation Control Unit	Tonscend	JS0806-2	21C8060396	28.09.2022
9039443	Test Software	Tonscend	JS1120-3	N/A	N/A
9039444	Control PC	Lenovo	TianYi510S-071MB	YLX23JMF	N/A
Radio Spectrum Testing for 5.8GHz SDR					
Equip. No.	Description	Manufacturer	Model	Serial No.	Calibrated until (DD.MM.YYYY)
G1825794	Wireless Connectivity Tester	R&S	CMW270	101375	09.08.2022
G1825795	Signal Analyzer	R&S	FSV 40	101441	09.08.2022
G1825796	Vector Signal Generator	R&S	SMBV100A	263301	09.08.2022
G1825797	Signal Generator	R&S	SMB100A	115186	09.08.2022
G1825798	OSP	R&S	OSP 150	101017	02.12.2022
G1825799	Control PC	DELL	OptiPlex 7050	FTJZ9P2	N/A
G1825800	Test Software	R&S	WMS32 (V11.00.00)	N/A	N/A

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G1825801	Power Meter	R&S	NRP2	107105	02.12.2022
G1829620	Power Sensor	R&S	NRP-Z81	105677	09.08.2022
G1826483	Humid & Temp Programmable Tester	BOST	NTH090-60	19040801	02.04.2022
G1826431	Shielding Room 8#	Albatross	SR8	APC1715 1-SR8	22.06.2024
Equip. No.	Description	Manufacturer	Model	Serial No.	Calibrated until (DD.MM.YYYY)
G1826021	EMI Test Receiver	R&S	ESR 7	102021	10.08.2022
G1826023	Signal Analyzer	R&S	FSV 40	101439	09.08.2022
G1826024	System Controller Interface	R&S	SCI-100	S1001003 8	N/A
G1826025	Filterbank	R&S	Wlan	100759	09.08.2022
G1826026	OSP	R&S	OSP 120	102040	N/A
G1826028	Pre-amplifier	R&S	SCU08F1	08320031	09.08.2022
G1826029	Amplifier	R&S	SCU-18F	180070	09.08.2022
G1826030	Amplifier	R&S	SCU40A	100475	09.08.2022
G1826031	Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	193	08.08.2022
G1826032	Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218717	08.08.2022
G1826033	Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19067	08.08.2022
G1826034	Active Loop Antenna	Schwarzbeck	FMZB 1513	302	13.09.2022
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	APC1715 1-SAC	22.06.2024

Conducted Emission

Equipment	Manufacturer	Model No.	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

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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 (**E**quipment **U**nder **T**est) is a DJI RC Plus. It supports Bluetooth, 2.4GHz SDR, 2.4GHz Wi-Fi, 5.2/5.8GHz Wi-Fi, 5.8GHz SDR and GNSS functions.

According to the declaration of the applicant, the electrical circuit design and PCB layout are identical, only the model no. is different for market strategy.

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 RC Plus
Type Designation	RM700, RM700B
Operating Voltage	AC 100-240V, 50/60Hz input via AC/DC adapter or Li-ion Battery operated (DC 7.2V@6500mAh)
Extreme Temperature Range	-20 °C ~ 50 °C
Radiofrequency operating mode	1) Bluetooth: operating within 2400-2483.5MHz, supports Bluetooth Classic and BT 5.1@BLE, 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 W-Fi: operating with 5150-5250MHz, supports 20MHz/40MHz/80MHz Bandwidth and IEEE 802.11 a/n20/n40/ac20/ac40/ac80/ax20/ax40/ax80 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
Technical Specification of 5.2GHz Wi-Fi	
Operating Frequency	5180-5240MHz, 802.11a/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	6/9/12/18/24/36/48/54 Mbps for 802.11a MCS0 ~ MCS15 for 802.11 n20/n40/ac20/ac40/ac80 MCS0 ~ MCS11 for 802.11 ax20/ax40/ax80
Multi-RU	No, full RU
Channel Number	4 channels for 802.11a/n20/ac20/ax20 2 channels for 802.11n40/ac40/ax40 1 channels for 802.11ac80/ax80

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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	4dBi for ANT0 3dBi for ANT1
The type of wideband data transmission equipment	DTS
Technical Specification of 5.8GHz SDR	
Operating Frequency	5728.5-5844.5MHz for 1.4MHz Bandwidth 5730.12-5846.12MHz 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	59 channels for 1.4MHz Bandwidth 59 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	Two Integral Antennas, and Two External Antennas
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	3.5dBi for ANT0 3.5dBi for ANT1 2.5dBi for ANT2 3.5dBi 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

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	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	4.5dBi for ANT0 3.5dBi for ANT1
The type of wideband data transmission equipment	DTS

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				

Table 5: RF Channel and Frequency of 5.8GHz SDR

5.8GHz 1.4MHzBandwidth (5728.5MHz-5844.5MHz)					
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	
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5.8GHz 1.4MHz Bandwidth (CA Mode) (5730.12MHz-5846.12MHz)					
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		

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

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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

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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 6: 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, 5.2GHz Wi-Fi wireless transmitting mode
 - 1) Low Channel
 - 2) Middle Channel
 - 3) High Channel
- B. On, 5.8GHz SDR wireless transmitting mode
 - 1) Low Channel
 - 2) Middle Channel
 - 3) High Channel
- C. On, 5.8GHz Wi-Fi wireless transmitting mode
 - 1) Low Channel
 - 2) Middle Channel
 - 3) High Channel
- D. On, Normal Operation
- E. 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 RM700 in this report.

4.3 Special Accessories and Auxiliary Equipment

Table 7: 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)

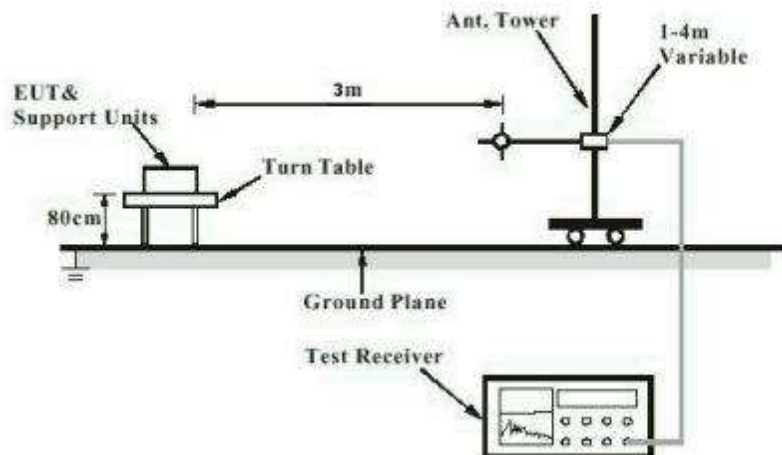


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

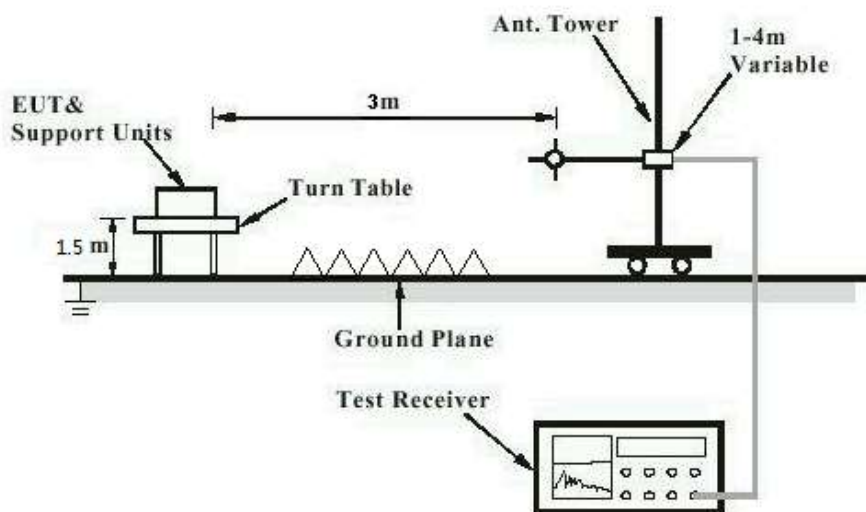
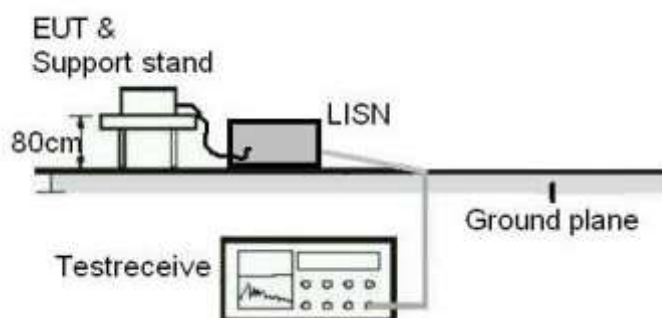


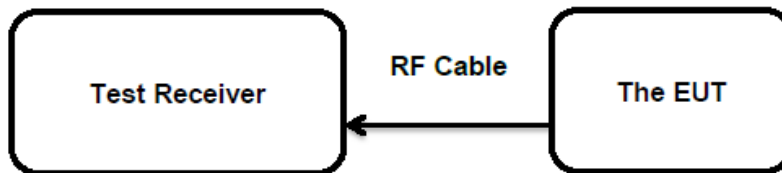
Diagram of Measurement Configuration for Mains Conduction Measurement



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Diagram of Measurement Configuration for Conducted Transmitter Measurement



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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 3.5dBi for 5,2GHz Wi-Fi, 3.5dBi for 5.8GHz SDR, 4.0dBi 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.

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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 <250mW (24dBm) (5150-5250MHz) *<250mW (24dBm) (5250-5350MHz, 5470-5725MHz)
Limits	:	*250 mW (24dBm) or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz, where is lesser. <1W (30dBm) (5725-5850MHz)
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2021-11-09 to 2022-01-06
Input voltage	:	Full Battery
Operation mode	:	A, B, C
Test channel	:	Low / Middle / High
Ambient temperature	:	25 °C
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

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Table 8: Test Result of Maximum Conducted Output Power, 5.2GHz 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 Power		Limit (W)
			(dBm)	(W)	
802.11a	1 Mbps	36	16.10	0.0407	< 1.0
		40	16.64	0.0461	
		48	15.81	0.0381	
802.11n (HT20)	MCS0	36	15.80	0.0380	
		40	16.06	0.0404	
		48	15.96	0.0394	
802.11n (HT40)	MCS0	38	16.39	0.0436	
		46	16.30	0.0427	
802.11ac (HT20)	MCS0	36	15.73	0.0374	
		40	16.01	0.0399	
		48	15.96	0.0394	
802.11ac (HT40)	MCS0	38	16.45	0.0442	
		46	16.49	0.0446	
802.11ac (HT80)	MCS0	42	16.31	0.0428	
802.11ax (HT20)	MCS0	36	16.17	0.0414	
		40	16.07	0.0405	
		48	15.89	0.0388	
802.11ax (HT40)	MCS0	38	15.89	0.0388	
		46	16.09	0.0406	
802.11ax (HT80)	MCS0	42	16.08	0.0406	

Max. e.i.r.p.=16.64dBm+4dBi=21.14dBm, which is less than 36dBm=4W.

Worst case for MIMO mode

Test Mode	Data Rate	Test Channel	Measured Power		Limit (W)
			(dBm)	(W)	
802.11a	1 Mbps				< 1.0
802.11n (HT20)	MCS0	36	18.71	0.0743	
		40	18.69	0.0740	
		48	18.68	0.0738	
802.11n (HT40)	MCS0	38	18.69	0.0740	
		46	18.68	0.0738	
802.11ac (HT20)	MCS0	36	18.65	0.0733	
		40	18.66	0.0735	
		48	18.62	0.0728	
802.11ac (HT40)	MCS0	38	18.71	0.0743	
		46	18.66	0.0735	
802.11ac (HT80)	MCS0	42	18.65	0.0733	
802.11ax (HT20)	MCS0	36	17.34	0.0542	
		40	18.66	0.0735	
		48	18.68	0.0738	
802.11ax (HT40)	MCS0	38	18.68	0.0738	
		46	18.69	0.0740	

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802.11ax (HT80)	MCS0	42	18.71	0.0743	
Max. e.i.r.p.=18.71dBm+3.5dBi=22.21dBm, which is less than 36dBm=4W.					

Table 9: 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	13.60	0.0268	< 1.0
	5788.5	14.28	0.0279	
	5846.5	14.46	0.0283	
1.4MHz BW CA	5730.12	14.52	0.0281	
	5790.12	14.48	0.0235	
	5848.12	13.71	0.1622	
3MHz BW	5727.5	22.10	0.0272	
	5787.5	14.34	0.1028	
	5844.5	20.12	0.1862	
3MHz BW CA	5730.2	22.70	0.1862	
	5790.2	22.70	0.1778	
	5847.2	22.50	0.0182	
10MHz BW	5730.5	12.60	0.0219	
	5787.5	13.40	0.0229	
	5844.5	13.60	0.0155	
20MHz BW	5735.5	11.90	0.0166	
	5787.5	12.20	0.0174	
	5839.5	12.40	0.0182	
40MHz BW	5745.5	12.60	0.0162	
	5787.5	12.10	0.0166	
	5829.5	12.20	0.0268	
Max. e.i.r.p.=22.7dBm+3.5dBi=26.2dBm, 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	16.97	0.0498	< 1.0
	5788.5	17.25	0.0531	
	5846.5	17.20	0.0525	
1.4MHz BW CA	5730.12	17.24	0.0530	
	5790.12	17.38	0.0547	
	5848.12	16.35	0.0432	
3MHz BW	5727.5	24.70	0.2951	
	5787.5	17.40	0.0550	
	5844.5	22.90	0.1950	
3MHz BW CA	5730.2	25.40	0.3467	
	5790.2	25.90	0.3890	
	5847.2	25.50	0.3548	
10MHz BW	5730.5	14.90	0.0309	
	5787.5	15.80	0.0380	
	5844.5	16.00	0.0398	
20MHz BW	5735.5	14.50	0.0282	
	5787.5	15.20	0.0331	

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	5839.5	15.00	0.0316	
40MHz BW	5745.5	14.90	0.0309	
	5787.5	15.00	0.0316	
	5829.5	14.80	0.0302	
Max. e.i.r.p.=25.90dBm+3.5dBi=29.4dBm, which is less than 36dBm=4W.				

Table 10: 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

Worst case for 802.11a/b/g					
Test Mode	Data Rate	Test Channel	Measured Average Power		Limit (W)
			(dBm)	(W)	
802.11a	1 Mbps	149	14.46	0.0279	< 1.0
		157	14.87	0.0307	
		165	14.68	0.0294	
802.11n (HT20)	MCS0	149	14.37	0.0274	
		157	14.68	0.0294	
		165	14.66	0.0292	
802.11n (HT40)	MCS0	151	14.85	0.0305	
		159	14.76	0.0299	
802.11ac (HT20)	MCS0	149	14.96	0.0313	
		157	14.27	0.0267	
		165	14.68	0.0294	
802.11ac (HT40)	MCS0	151	14.59	0.0288	
		159	14.96	0.0313	
802.11ac (HT80)	MCS0	155	14.83	0.0304	
802.11ax (HT20)	MCS0	149	14.96	0.0313	
		157	14.72	0.0296	
		165	14.56	0.0286	
802.11ax (HT40)	MCS0	151	14.81	0.0303	
		159	14.70	0.0295	
802.11ax (HT80)	MCS0	155	14.92	0.0310	
Max. e.i.r.p.=14.96dBm+4.5dBi=19.46dBm, 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	17.32	0.0540	
		157	17.68	0.0586	
		165	17.55	0.0569	
802.11n (HT40)	MCS0	151	17.30	0.0537	
		159	17.36	0.0545	
802.11ac (HT20)	MCS0	149	17.68	0.0586	
		157	17.50	0.0562	
		165	17.65	0.0582	
802.11ac (HT40)	MCS0	151	17.58	0.0573	
		159	17.82	0.0605	

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802.11ac (HT80)	MCS0	155	17.34	0.0542	
802.11ax (HT20)	MCS0	149	17.90	0.0617	
		157	17.69	0.0587	
		165	17.48	0.0560	
802.11ax (HT40)	MCS0	151	17.76	0.0597	
		159	17.59	0.0574	
802.11ax (HT80)	MCS0	155	17.80	0.0603	
Max. e.i.r.p.=17.90dBm+4dBi=21.90dBm, which is less than 36dBm=4W.					

Note:

- 1) The cable loss is taken into account in results.
- 2) Antenna gain(G) of 5.2GHz Wi-Fi: 3.5dBi (uncorrelated antenna gain)
Antenna gain(G) of 5.8GHz SDR: 3.5dBi (uncorrelated antenna gain)
Antenna gain(G) of 5.8GHz Wi-Fi: 4dBi (uncorrelated antenna gain)
e.i.r.p.= $P_{\text{(Peak power)}} + G$, which is far below the 4 W

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

Test standard	:	FCC Part 15.407 (a)
Basic standard	:	ANSI C63.10:2013 FCC:
Limits	:	<11dBm/MHz (5150-5250MHz 5250-5350MHz, 5470- 5725MHz) <30dBm/500KHz (5725-5850MHz)
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2021-11-09 to 2022-01-06
Input voltage	:	Full Battery
Operation mode	:	A, B, C
Test channel	:	Low / Middle / High
Ambient temperature	:	25 °C
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

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

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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	:	2021-11-09 to 2022-01-06
Input voltage	:	Full Battery
Operation mode	:	A, B, C
Test channel	:	Low / Middle / High
Ambient temperature	:	25 °C
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

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

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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	:	2021-11-09 to 2022-01-06
Input voltage	:	Full Battery
Operation mode	:	A, B, C
Test channel	:	Low / Middle / High
Ambient temperature	:	25 °C
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

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

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

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

Test Setup

Date of testing	:	2021-11-09 to 2022-01-06
Input voltage	:	Full Battery
Operation mode	:	A, B, C
Test channel	:	Low / Middle / High
Ambient temperature	:	25 °C
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Refer to attached Appendix A, B, C 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

Basic standard : ANSI C63.10:2013

- 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.
- For transmitters operating in the 5.25-5.35 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.
- For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

- Limits :
- Emissions outside the band 5470-5600 MHz and 5650-5725 MHz shall not exceed -27 dBm/MHz e.i.r.p.
 - 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

Kind of test site : 3m Semi-Anechoic Chamber (below 1GHz)
3m Anechoic Chamber (above 1GHz)

Test Setup

Date of testing : 2021-11-09 to 2022-01-06

Input voltage : Full Battery

Operation mode : A, B, C

Test channel : Low / Middle / High

Ambient temperature : 23 °C

Relative humidity : 48 %

Atmospheric pressure : 101 kPa

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

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5.1.8 Conducted Emission on AC Mains**RESULT:****Pass****Test Specification**

Test standard	:	FCC Part 15.207
	:	RSS-GEN clause 8.8
Basic standard	:	ANSI C63.10:2013
Frequency range	:	0.15 - 30MHz
Limits	:	FCC Part 15.207
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2021-11-09 to 2022-01-06
Input voltage	:	AC 120V, 60Hz
Operation mode	:	A, B, C
Earthing	:	Not connected
Ambient temperature	:	25 °C
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

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

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