

<b>Prüfbericht-Nr.:</b> <i>Test report no.:</i>	<b>CN219FL7 003</b>	<b>Auftrags-Nr.:</b> <i>Order no.:</i>	168334440	Seite 1 von 30 Page 1 of 30	
<b>Kunden-Referenz-Nr.:</b> <i>Client reference no.:</i>	<b>N/A</b>	<b>Auftragsdatum:</b> <i>Order date:</i>	2021-11-18		
<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, P. R. China				
<b>Prüfgegenstand:</b> <i>Test item:</i>	DJI Video Transmitter				
<b>Bezeichnung / Typ-Nr.:</b> <i>Identification / Type no.:</i>	TX3				
<b>Auftrags-Inhalt:</b> <i>Order content:</i>	Test Report				
<b>Prüfgrundlage:</b> <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			
<b>Wareneingangsdatum:</b> <i>Date of sample receipt:</i>	2021-10-28	Please refer to photo documents			
<b>Prüfmuster-Nr.:</b> <i>Test sample no.:</i>	A003167437-009, 010, 011				
<b>Prüfzeitraum:</b> <i>Testing period:</i>	2021-11-09 to 2022-01-15				
<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</u> <i>Hardy</i> <i>Suo</i>		<b>genehmigt von:</b> <i>authorized by:</i>	<u>X</u> <i>Lin Lin</i>	
<b>Datum:</b> <i>Date:</i>	2022-02-16		<b>Ausstellungsdatum:</b> <i>Issue date:</i>	2022-02-16	
<b>Stellung / Position:</b>	Sachverständige(r) / Expert		<b>Stellung / Position:</b>	Sachverständige(r) / Expert	
<b>Sonstiges / Other:</b>	FCC ID: 2ANDR-TX32021028 IC: 23060-TX32021028, HVIN: TX3 This report is for 5.2GHz SDR, 5.3GHz SDR, 5.6GHz SDR and 5.8GHz SDR.  <b>Applicant &amp; Manufacturer: SZ DJI Osmo Technology Co., Ltd.</b> , 4F, Jingkou Community Comprehensive Service Building, No. 83 Bishui Road North, Guangming Street, Guangming District, Shenzhen, P. R. China				
<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>				
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut	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	3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = sufficient N/A = not applicable	5 = poor N/T = not tested
<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 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

### 5.1.8 DYNAMIC FREQUENCY SELECTION (DFS)

RESULT: Pass

## TABLE OF CONTENTS

<b>1.</b>	<b>GENERAL REMARKS .....</b>	<b>4</b>
<b>1.1</b>	<b>COMPLEMENTARY MATERIALS .....</b>	<b>4</b>
<b>2.</b>	<b>TEST SITES .....</b>	<b>5</b>
<b>2.1</b>	<b>TEST FACILITIES .....</b>	<b>5</b>
<b>2.2</b>	<b>LIST OF TEST AND MEASUREMENT INSTRUMENTS.....</b>	<b>5</b>
<b>2.3</b>	<b>TRACEABILITY .....</b>	<b>6</b>
<b>2.4</b>	<b>CALIBRATION .....</b>	<b>6</b>
<b>2.5</b>	<b>UNCERTAINTY OF MEASUREMENT.....</b>	<b>6</b>
<b>2.6</b>	<b>LOCATION OF ORIGINAL DATA.....</b>	<b>6</b>
<b>2.7</b>	<b>STATUS OF FACILITY USED FOR TESTING.....</b>	<b>7</b>
<b>3.</b>	<b>GENERAL PRODUCT INFORMATION .....</b>	<b>8</b>
<b>3.1</b>	<b>PRODUCT FUNCTION AND INTENDED USE.....</b>	<b>8</b>
<b>3.2</b>	<b>RATINGS AND SYSTEM DETAILS .....</b>	<b>8</b>
<b>3.3</b>	<b>INDEPENDENT OPERATION MODES .....</b>	<b>16</b>
<b>3.4</b>	<b>NOISE GENERATING AND NOISE SUPPRESSING PARTS .....</b>	<b>16</b>
<b>3.5</b>	<b>SUBMITTED DOCUMENTS .....</b>	<b>16</b>
<b>4.</b>	<b>TEST SET-UP AND OPERATION MODES .....</b>	<b>17</b>
<b>4.1</b>	<b>PRINCIPLE OF CONFIGURATION SELECTION.....</b>	<b>17</b>
<b>4.2</b>	<b>TEST OPERATION .....</b>	<b>17</b>
<b>4.3</b>	<b>SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT .....</b>	<b>17</b>
<b>4.4</b>	<b>COUNTERMEASURES TO ACHIEVE ERM COMPLIANCE .....</b>	<b>17</b>
<b>4.5</b>	<b>TEST SETUP DIAGRAM .....</b>	<b>18</b>
<b>5.</b>	<b>TEST RESULTS .....</b>	<b>20</b>
<b>5.1</b>	<b>RADIO TEST REQUIREMENT &amp; TEST SUITES (5GHZ BANDS) .....</b>	<b>20</b>
<b>5.1.1</b>	<i>Antenna Requirement .....</i>	<i>20</i>
<b>5.1.2</b>	<i>Maximum output power.....</i>	<i>21</i>
<b>5.1.3</b>	<i>Power Spectral Density.....</i>	<i>24</i>
<b>5.1.4</b>	<i>Frequency Stability.....</i>	<i>25</i>
<b>5.1.5</b>	<i>26dB Bandwidth and 99% Bandwidth.....</i>	<i>26</i>
<b>5.1.6</b>	<i>6dB Bandwidth .....</i>	<i>27</i>
<b>5.1.7</b>	<i>Radiated Spurious Emission.....</i>	<i>28</i>
<b>5.1.8</b>	<i>Dynamic Frequency Selection (DFS).....</i>	<i>29</i>
<b>6.</b>	<b>LIST OF TABLES .....</b>	<b>30</b>

## **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 5.2G, 5.3G, 5.6G SDR

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, 518110, Shenzhen, P. R. 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

<b>Radio Spectrum Testing (TS8997-R&amp;S)</b>					
<b>Equip. No.</b>	<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial No.</b>	<b>Calibrated until (DD.MM.YYYY)</b>
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
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	APC17151-SR8	22.06.2024
<b>Radio Spectrum Testing (SRD-Tonscend)</b>					
<b>Equip. No.</b>	<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial No.</b>	<b>Calibrated until (DD.MM.YYYY)</b>
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	Y LX23JMF	N/A
<b>Unwanted Emission Testing (TS9975)</b>					
<b>Equip. No.</b>	<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial No.</b>	<b>Calibrated until (DD.MM.YYYY)</b>
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	R&S	SCI-100	S10010038	N/A

	Interface				
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	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)	$\pm 2.5$ dB
Radiated Emission of Transmitter, valid up to 26.5 GHz	$\pm 6$ dB
Radiated Emission of Receiver, valid up to 26.5 GHz	$\pm 6$ dB
Conducted Emission, (9kHz to 150kHz)/(150kHz to 30MHz)	$\pm 3.70$ dB / $\pm 3.30$ dB
Radiated Emission (3m SAC), 30MHz to 1000MHz	$\pm 4.52$ dB
Radiated Emission (3m SAC), above 1000MHz	$\pm 4.37$ dB
Temperature	$\pm 1$ °C
Humidity	$\pm 5$ %
Voltage (DC)	$\pm 1$ %
Voltage (AC, <10kHz)	$\pm 2$ %

## 2.6 Location of Original Data

**Prüfbericht - Nr.: CN219FL7 003***Test Report No.***Seite 7 von 30***Page 7 of 30*

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 Video Transmitter. It supports 2.4GHz SDR, 5.2/5.3/5.6/5.8GHz SDR functions.

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

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 Video Transmitter
Type Designation:	TX3
Trademark:	DJI
Operating Temperature Range:	-10 °C ~ 45 °C
Operating Voltage:	Rechargeable Battery operated (DC 7.6V@4920mAh) or External DC Power Supply (DC 6V to DC 18V)
Testing Voltage:	External battery or External DC Power Supply
Radiofrequency operating mode	1) 2.4GHz SDR: operating within 2400-2483.5MHz, supports 1.4MHz/3MHz/10MHz/20MHz/40MHz Bandwidth 2) 5.2GHz SDR: operating within 5150-5250MHz, supports 20MHz/40MHz Bandwidth 3) 5.3GHz SDR: operating within 5250-5350MHz, supports 20MHz/40MHz Bandwidth 4) 5.6GHz SDR: operating within 5470-5725MHz, supports 20MHz/40MHz Bandwidth 5) 5.8GHz SDR: operating within 5725-5850MHz, supports 1.4MHz/3MHz/10MHz/20MHz/40MHz Bandwidth
<b>Technical Specification of 5.2/5.3/5.6GHz SDR</b>	
Operating Frequency	5180-5240MHz for 5.2GHz SDR 20MHz Bandwidth 5190-5230MHz for 5.2GHz SDR 40MHz Bandwidth 5260-5320MHz for 5.3GHz SDR 20MHz Bandwidth 5270-5310MHz for 5.3GHz SDR 40MHz Bandwidth 5500-5700MHz for 5.6GHz SDR 20MHz Bandwidth 5510-5670MHz for 5.6GHz SDR 40MHz Bandwidth  <b>Remark: 5.2GHz SDR (5150-5250MHz) operating radio-frequency band is not supported for market in Canada.</b>
Type of Modulation	OFDM(BPSK/QPSK/16QAM/64QAM)
Channel Number	4 channels for 5.2GHz SDR 20MHz Bandwidth 2 channels for 5.2GHz SDR 40MHz Bandwidth 4 channels for 5.3GHz SDR 20MHz Bandwidth



	2 channels for 5.3GHz SDR 40MHz Bandwidth 8 channels for 5.6GHz SDR 20MHz Bandwidth 3 channels for 5.6GHz SDR 40MHz Bandwidth
Channel Separation	20MHz, 40MHz
Antenna Type	External Antennas
Antenna Number	2Tx4Rx for MIMO mode (ANT0+ANT1, or ANT0+ANT3, or ANT2+ANT1, or ANT2+ANT3) *MIMO only
Antenna Gain	5.2GHz SDR: 2.0dBi for ANT0 2.0dBi for ANT1 2.0dBi for ANT2 2.0dBi for ATN3  5.3/5.6GHz SDR: 2.5dBi for ANT0 2.5dBi for ANT1 2.5dBi for ANT2 2.5dBi for ATN3
Type of Product	Client Device without Radar Detection
TX Power Control (TPC)	Supported
The type of wideband data transmission equipment	DTS
<b>Technical Specification of 5.8GHz SDR</b>	
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	External Antenna
Antenna Number	2Tx4Rx for MIMO mode (ANT0+ANT1, or ANT0+ANT3, or ANT2+ANT1,

	or ANT2+ANT3) *MIMO only
Antenna Gain	3.0dBi for ANT0 3.0dBi for ANT1 3.0dBi for ANT2 3.0dBi for ANT3
The type of wideband data transmission equipment	DTS

**Table 4: RF Channel and Frequency of 5.2/5.3/5.6GHz SDR**

<b>5.2GHz SDR 20MHz Bandwidth (5180MHz-5240MHz)</b>	
Channel	Frequency
	(MHz)
1	5180
2	5200
3	5220
4	5240

<b>5.2GHz SDR 40MHz Bandwidth (5190MHz-5230MHz)</b>	
Channel	Frequency
	(MHz)
1	5190
2	5230

<b>5.3GHz SDR 20MHz Bandwidth (5260MHz-5320MHz)</b>	
Channel	Frequency
	(MHz)
1	5260
2	5280
3	5300
4	5320

<b>5.3GHz SDR 40MHz Bandwidth (5270MHz-5310MHz)</b>	
Channel	Frequency
	(MHz)
1	5270
2	5310

<b>5.6GHz SDR 20MHz Bandwidth (5500MHz-5700MHz)</b>	
Channel	Frequency
	(MHz)
1	5500
2	5520
3	5540
4	5560

5	5580
9	5660
10	5680
11	5700
<b>5.6GHz SDR 40MHz Bandwidth (5510MHz-5670MHz)</b>	
Channel	Frequency (MHz)
1	5510
2	5550
5	5670

**Table 5: RF Channel and Frequency of 5.8GHz SDR**

<b>5.8GHz 1.4MHzBandwidth (5728.5MHz-5846.5MHz)</b>					
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		

### 3.3 Independent Operation Modes

The basic operation modes are:

- A. On, 5.2/5.3/5.6GHz SDR 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, 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 TX3 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)

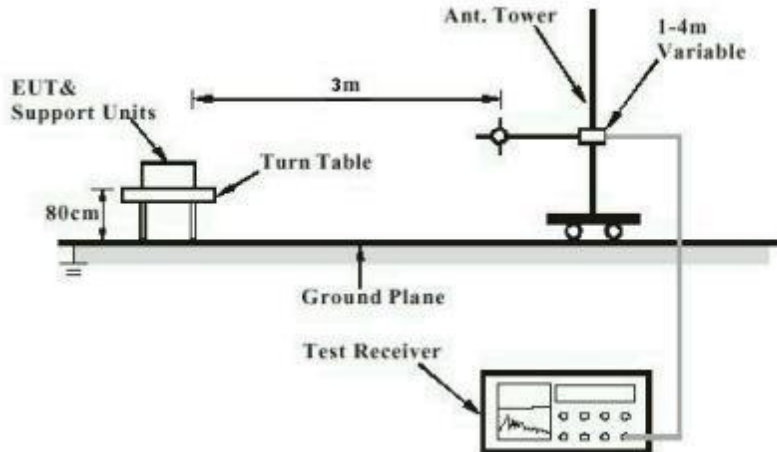


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

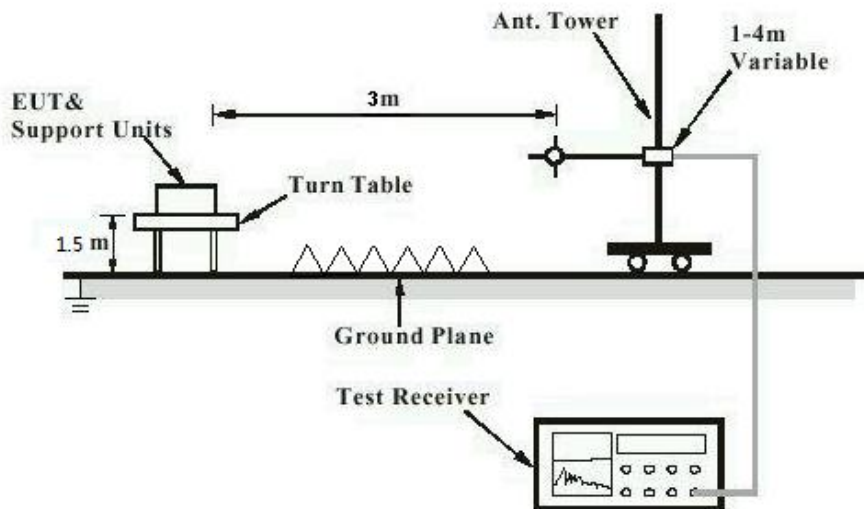


Diagram of Measurement Configuration for Conducted Transmitter Measurement

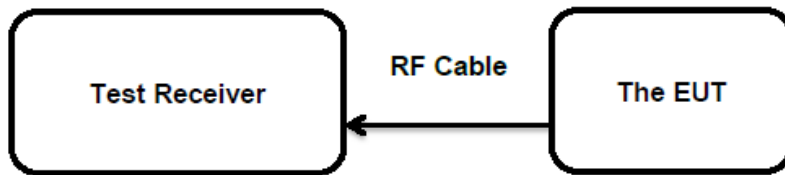
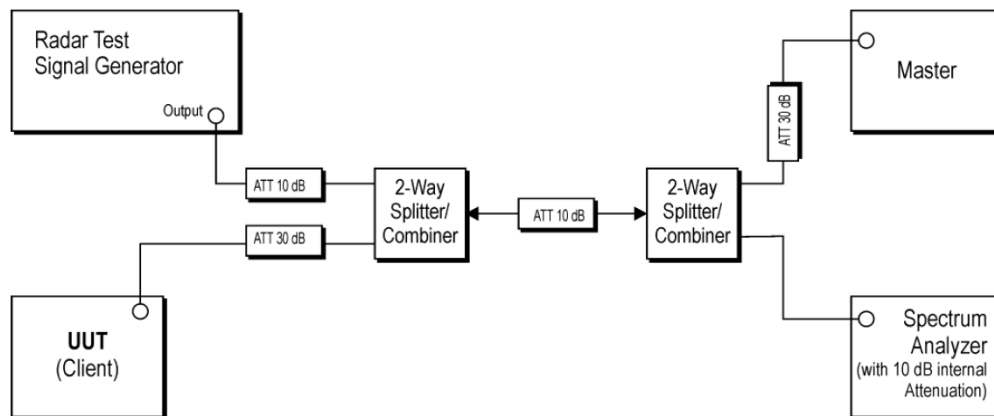


Diagram of Measurement Configuration for Dynamic Frequency Selection (DFS)



## 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

The EUT has two integral antennas, the maximum uncorrelated antenna gain is 2dBi for 5.2GHz SDR, 2.5dBi for 5.3/5.6GHz SDR and 3dBi for 5.8GHz SDR, and the antenna connector is designed with 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  
 FCC:  
 <250mW (24dBm) (5150-5250MHz)  
 \*<250mW (24dBm) (5250-5350MHz, 5470-5725MHz)  
 \*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)

Limits : IC:  
 \* Max e.i.r.p.<200mW (23dBm) (5150-5250MHz)  
 \*200 mW (23dBm) or 10 dBm + 10 logB, where B is the 99% emission  
 bandwidth in MHz, where is lesser.  
 \*Max conducted output power < 250mW (24dBm) (5250-  
 5350MHz)  
 \*250 mW (24dBm) or 11 dBm + 10 logB, where B is the 99% emission  
 bandwidth in MHz, where is lesser.  
 \*Max e.i.r.p.<1W (30dBm) (5250-5350MHz)  
 \*1 W (30dBm) or 17 dBm + 10 log B, where B is the 99% emission  
 bandwidth in MHz, where is lesser.  
 Max conducted output power <1W (30dBm) (5725-  
 5850MHz)

Kind of test site : Shielded Room

**Test Setup**

Date of testing : 2021-11-09 to 2022-01-15  
 Input voltage : Full battery  
 Operation mode : A, B  
 Test channel : Low / Middle / High  
 Ambient temperature : 25 °C  
 Relative humidity : 56 %  
 Atmospheric pressure : 101 kPa

Note: Per RSS-247 section 6.2.3, transmission on channels which overlap 5600-5650MHz is prohibited.  
 This product is not support 5600-5650MHz radio-frequency operating band.

**Prüfbericht - Nr.: CN219FL7 003**
*Test Report No.*
**Seite 22 von 30**
*Page 22 of 30*
**Table 7: Test Result of Maximum Output Power for 5.2GHz SDR**

Test Mode	Test Channel (MHz)	Maximum Mean Power		Limit (W)
		(dBm)	(W)	
20MHz BW	5180	21.48	0.1406	< 0.250
	5200	21.56	0.1432	
	5240	<b>21.61</b>	<b>0.1449</b>	
40MHz BW	5190	20.92	0.1236	
	5230	21.45	0.1396	

**Remark: 5.2GHz SDR (5150-5250MHz) operating radio-frequency band is not supported for market in Canada.**

Note:

- 1) The cable loss is taken into account in results.
- 2) Antenna gain(G) of 5.2GHz SDR: 2dBi (uncorrelated antenna gain)

**Table 8: Test Result of Maximum Output Power for 5.3GHz SDR**

Test Mode	Test Channel (MHz)	Maximum Mean Power		Limit (W)
		(dBm)	(W)	
20MHz BW	5260	22.12	0.1629	< 0.250
	5280	22.37	0.1726	
	5320	<b>22.54</b>	<b>0.1795</b>	
40MHz BW	5270	22.26	0.1683	
	5310	22.01	0.1589	

Max. e.i.r.p.=22.54dBm+2.5dBi=25.04dBm, which is less than 30dBm=1W.  
 Max. e.i.r.p.=22.54dBm+2.5dBi=25.04dBm, which is less than 27dBm=500mW,  
 hence the TPC requirement is not applicable.

Note:

- 1) The cable loss is taken into account in results.
- 2) Antenna gain(G) of 5.3GHz SDR: 2.5dBi (uncorrelated antenna gain)  
 e.i.r.p.=P<sub>(conducted power)</sub>+ G, which is far below the 1 W

**Table 9: Test Result of Maximum Output Power for 5.6GHz SDR**

Test Mode	Test Channel (MHz)	Maximum Mean Power		Limit (W)
		(dBm)	(W)	
20MHz BW	5500	22.53	0.1791	< 0.250
	5580	22.15	0.1641	
	5700	21.41	0.1384	
40MHz BW	5510	22.22	0.1667	
	5550	22.10	0.1622	
	5670	<b>22.76</b>	<b>0.1888</b>	

Max. e.i.r.p.=22.76dBm+2.5dBi=25.26dBm, which is less than 30dBm=1W.  
 Max. e.i.r.p.=22.76dBm+2.5dBi=25.26dBm, which is less than 27dBm=500mW,  
 hence the TPC requirement is not applicable.

Note:

- 1) The cable loss is taken into account in results.
- 2) Antenna gain(G) of 5.6GHz SDR: 2.5dBi (uncorrelated antenna gain)  
 e.i.r.p.=P<sub>(conducted power)</sub>+ G, which is far below the 1 W

**Table 10: Test Result of Maximum Output Power for 5.8GHz SDR**

Test Mode	Test Channel (MHz)	Maximum Mean Power		Limit (W)
		(dBm)	(W)	
1.4MHz BW	5728.5	16.05	0.0403	< 1.0
	5786.5	16.33	0.0430	
	5846.5	16.61	0.0458	
1.4MHz BW CA	5730.12	16.12	0.0409	
	5788.12	16.36	0.0433	
	5848.12	16.57	0.0454	
3MHz BW	5727.5	16.26	0.0423	
	5784.5	16.16	0.0413	
	5844.5	16.34	0.0431	
3MHz BW CA	5730.2	16.11	0.0408	
	5787.2	16.20	0.0417	
	5847.2	16.57	0.0454	
10MHz BW	5730.5	25.46	0.3516	
	5787.5	25.74	0.3750	
	5844.5	<b>25.92</b>	<b>0.3908</b>	
20MHz BW	5735.5	25.60	0.3631	
	5787.5	25.66	0.3681	
	5839.5	25.87	0.3864	
40MHz BW	5745.5	21.95	0.1567	
	5787.5	21.73	0.1489	
	5829.5	22.26	0.1683	

Max. e.i.r.p.=25.92dBm+3dBi=28.92Bm, which is less than 36dBm=4W.

**Note:**

- 1) The cable loss is taken into account in results.
- 2) Antenna gain(G) of 5.8GHz SDR: 3dBi (uncorrelated antenna gain)  
e.i.r.p.= $P_{(\text{conducted power})} + G$ , which is far below the 4 W

**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
	:	FCC:
	:	<11dBm/MHz (5150-5250MHz 5250-5350MHz, 5470-5725MHz)
	:	<30dBm/500KHz (5725-5850MHz)
Limits	:	IC:
	:	e.i.r.p. spectral density <10dBm/MHz (5150-5250MHz)
	:	<11dBm/1MHz (5250-5350MHz)
	:	<30dBm/500KHz (5725-5850MHz)
Kind of test site	:	Shielded Room

**Test Setup**

Date of testing	:	2021-11-09 to 2022-01-15
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	:	2021-11-09 to 2022-01-15
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.

**Prüfbericht - Nr.: CN219FL7 003**  
Test Report No.Seite 26 von 30  
Page 26 of 30**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	:	2021-11-09 to 2022-01-15
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	:	2021-11-09 to 2022-01-15
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

- 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 and RSS-GEN

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

**Test Setup**

Date of testing : 2021-11-09 to 2022-01-15

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.

**5.1.8 Dynamic Frequency Selection (DFS)****RESULT:****Pass****Test Specification**

Test standard	:	FCC Part 15.407(h) RSS-247 clause 6.3 5250-5350MHz, 5470-5725MHz Channel Move Time: Within 10 seconds.
Limits	:	Channel Closing Transmission Time: 200ms+aggregate of 60ms over remaining 10s period; Non-Occupancy Period: at least 30 minutes.
Kind of test site	:	Shielded Room

**Test Setup**

Date of testing	:	2022-01-15
Input voltage	:	Full battery
Operation mode	:	A
Test channel	:	5310MHz, 5510MHz
Ambient temperature	:	23 °C
Relative humidity	:	48 %
Atmospheric pressure	:	101 kPa

Refer to attached Appendix A 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 .....	8
Table 4: RF Channel and Frequency of 5.2/5.3/5.6GHz SDR .....	10
Table 5: RF Channel and Frequency of 5.8GHz SDR .....	11
Table 6: List of Accessories and Auxiliary Equipment .....	17
Table 7: Test Result of Maximum Output Power for 5.2GHz SDR .....	22
Table 8: Test Result of Maximum Output Power for 5.3GHz SDR .....	22
Table 9: Test Result of Maximum Output Power for 5.6GHz SDR .....	22
Table 10: Test Result of Maximum Output Power for 5.8GHz SDR .....	23