



# **TEST REPORT**

Applicant Name : Address :

Report Number : FCC ID: Fanvil Technology Co., LTD. 10/F Block A, Dualshine Global Science Innovation, Honglang North 2nd Road, Bao'an District, Shenzhen, 518101, China SZNS220815-37077E-RF-00A 2APPZ-W611W

Test Standard (s)

FCC PART 15.247

# **Sample Description**

Product Type:Portable Wi-Fi PhoneModel No.:W611WMultiple Model(s) No.:N/ATrade Mark:LINKVILDate Received:2022/08/15Report Date:2022/09/28

Test Result:

Pass\*

\* In the configuration tested, the EUT complied with the standards above.

# Prepared and Checked By:

Andy. YUL

Andy Yu EMC Engineer Approved By:

Candy . Li

Candy Li EMC Engineer

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "\* ".

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# **GENERAL INFORMATION**

Product Description for Equipment under Test (EU'
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Frequency Range	Bluetooth: 2402~2480MHz
Maximum conducted Peak output power	Bluetooth: 8.71dBm
Modulation Technique	Bluetooth: GFSK, π/4-DQPSK, 8DPSK
Antenna Specification*	1.8 dBi (provided by the applicant)
Voltage Range	DC 3.8V from battery or DC 5V from adapter
Sample serial number	SZNS220815-37077E-RF-S1for Conducted and Radiated Emissions SZNS220815-37077E-RF-S2 for RF Conducted Test (Assigned by ATC)
Sample/EUT Status	Good condition
Adapter 1 information	Model: AS1201A-0502000USL Input: AC100-240V,50/60Hz,0.35A MAX Output: DC5V,2000mA
Adapter 2 information	Model: GQ12-050200-AU Input: AC100-240V,50/60Hz,0.4A Max Output: DC5V,2.0A

### Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commission rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

# **Test Methodology**

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed at Shenzhen Accurate Technology Co., Ltd. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement	Uncertainty
-------------	-------------

Parameter		Uncertainty	
Occupied Cha	nnel Bandwidth	5%	
RF output po	wer, conducted	0.73dB	
Unwanted Emi	ssion, conducted	1.6dB	
AC Line Cond	ducted emission	2.72dB	
	30MHz - 1GHz	4.28dB	
Emissions, Radiated	1GHz - 18GHz	4.98dB	
Radiated	18GHz - 26.5GHz	5.06dB	
Temperature		1 °C	
Humidity		6%	
Supply	voltages	0.4%	

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

### **Test Facility**

The test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 708358, the FCC Designation No.: CN1189. Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 429 7.01.

Listed by Innovation, Science and Economic Development Canada (ISEDC), the Registration Number is 5077A.

# SYSTEM TEST CONFIGURATION

### **Description of Test Configuration**

The system was configured for testing in an engineering mode.

### **EUT Exercise Software**

"Tera Term"\* exercise software was used and the power level is 9\*, which provided by manufacturer.

#### **Special Accessories**

No special accessory.

# **Equipment Modifications**

No modification was made to the EUT tested.

### **Support Equipment List and Details**

Manufacturer	Description	Model	Serial Number
Unknown	Earphone	Unknown	Unknown

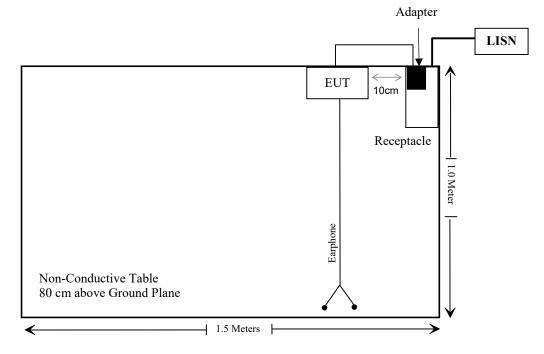
# External I/O Cable

Cable Description	Length (m)	From Port	То
Un-shielding Un-Detachable DC Cable	1.5	EUT	Adapter

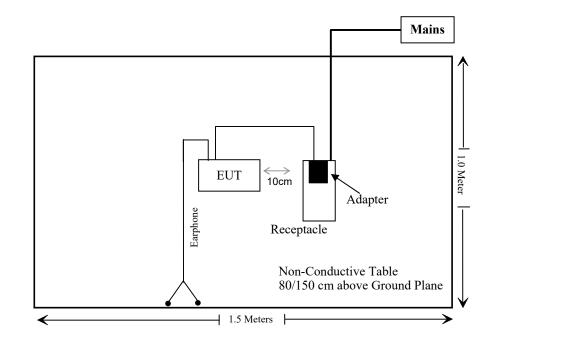
# **Block Diagram of Test Setup**

Direct charging:

For conducted emission:



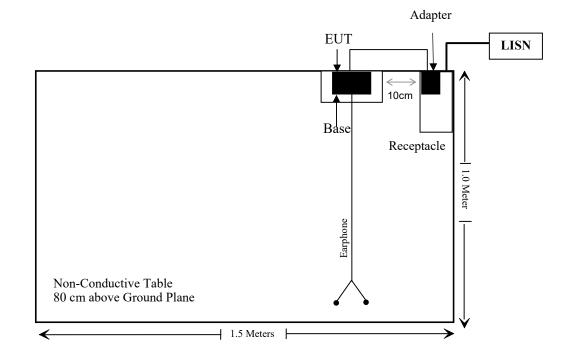
For Radiated Emissions:



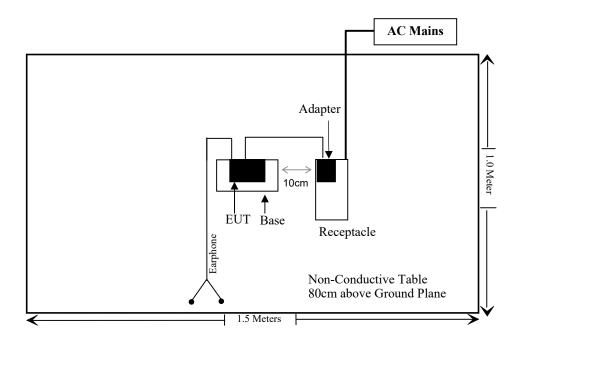
Version 11: 2021-11-09

#### Desktop(base) charging:

For conducted emission:



For Radiated Emissions:



# SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307 &§2.1093	RF Exposure	Compliant
§15.203	Antenna Requirement	Compliant
§15.207(a)	AC Line Conducted Emissions	Compliant
§15.205, §15.209 & §15.247(d)	Radiated Emissions	Compliant
§15.247(a)(1)	20 dB Emission Bandwidth & 99% Occupied Bandwidth	Compliant
§15.247(a)(1)	Channel Separation Test	Compliant
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Compliant
§15.247(a)(1)(iii)	Quantity of hopping channel Test	Compliant
§15.247(b)(1)	Peak Output Power Measurement	Compliant
§15.247(d)	Band edges	Compliant

# **TEST EQUIPMENT LIST**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date	
	Conducted emission test					
Rohde& Schwarz	EMI Test Receiver	ESCI	100784	2021/12/13	2022/12/12	
Rohde & Schwarz	L.I.S.N.	ENV216	101314	2021/12/13	2022/12/12	
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2021/12/13	2022/12/12	
Unknown	RF Coaxial Cable	No.17	N0350	2021/12/14	2022/12/13	
Conducted Emission	Test Software: e3 19821	b (V9)				
		Radiated emiss	ion test			
Rohde& Schwarz	Test Receiver	ESR	102725	2021/12/13	2022/12/12	
Rohde&Schwarz	Spectrum Analyzer	FSV40	101949	2021/12/13	2022/12/12	
SONOMA INSTRUMENT	Amplifier	310 N	186131	2021/11/09	2022/11/08	
A.H. Systems, inc.	Preamplifier	PAM-0118P	135	2021/11/09	2022/11/08	
Quinstar	Amplifier	QLW- 18405536-J0	15964001002	2021/11/11	2022/11/10	
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2021/07/06	2024/07/05	
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04	
Schwarzbeck	HORN ANTENNA	BBHA9170	9170-359	2020/01/05	2023/01/04	
Radiated Emission Test Software: e3 19821b (V9)						
Unknown	RF Coaxial Cable	No.10	N050	2021/12/14	2022/12/13	
Unknown	RF Coaxial Cable	No.11	N1000	2021/12/14	2022/12/13	
Unknown	RF Coaxial Cable	No.12	N040	2021/12/14	2022/12/13	
Unknown	RF Coaxial Cable	No.13	N300	2021/12/14	2022/12/13	
Unknown	RF Coaxial Cable	No.14	N800	2021/12/14	2022/12/13	
Unknown	RF Coaxial Cable	No.15	N600	2021/12/14	2022/12/13	
Unknown	RF Coaxial Cable	No.16	N650	2021/12/14	2022/12/13	
Wainwright	High Pass Filter	WHKX3.6/18 G-10SS	5	2021/12/14	2022/12/13	

Report No.: SZNS220815-37077E-RF-00A

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF conducted test					
Rohde&Schwarz	Spectrum Analyzer	FSV-40	101590	2022/01/19	2023/01/18
Tonscend	RF Control Unit	JS0806-2	19G8060182	2021/10/26	2022/10/25
Unknown	RF Cable	Unknown	1	Each time	/

\* **Statement of Traceability:** Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

# §1.1307 & §2.1093 – RF EXPOSURE

# Applicable Standard

FCC§1.1307 and §2.1093.

### **Measurement Result**

Please refer to SAR test report: SZNS220815-37077E-SA

# FCC §15.203 – ANTENNA REQUIREMENT

#### **Applicable Standard**

According to FCC § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### **Antenna Connector Construction**

The EUT has one internal antenna, which was permanently attached, and the maximum antenna gain is 1.8dBi, fulfill the requirement of this section. Please refer to the EUT photos.

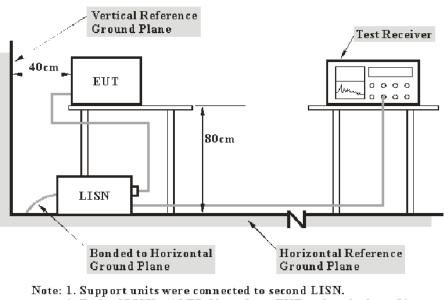
Result: Compliant.

# FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

### **Applicable Standard**

FCC §15.207(a)

### **EUT Setup**



Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The measurement procedure of EUT setup is according with ANSI C63.10-2013. The related limit was specified in FCC Part 15.207.

The spacing between the peripherals was 10 cm.

# **EMI Test Receiver Setup**

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

#### **Test Procedure**

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak and average detection mode.

### Transd Factor & Margin Calculation

The Transd factor is calculated by adding LISN VDF (Voltage Division Factor) and Cable Loss. The basic equation is as follows:

Transd Factor = LISN VDF + Cable Loss

The "**Over limit**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over limit of -7 dB means the emission is 7 dB below the limit. The equation for calculation is as follows:

Over Limit = Level – Limit Level = Read Level + Factor

#### **Test Data**

#### **Environmental Conditions**

Temperature:	24~25 ℃
<b>Relative Humidity:</b>	41~42 %
ATM Pressure:	101.0 kPa

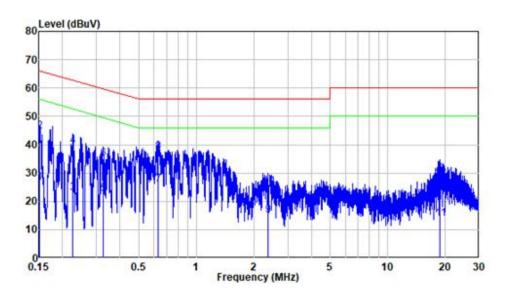
The testing was performed by Jason from 2022-08-23 to 2022-09-28.

EUT operation mode: Transmitting (the worst case is 8DPSK Mode, Low channel)

Report No.: SZNS220815-37077E-RF-00A

#### For adapter AS1201A-0502000USL:

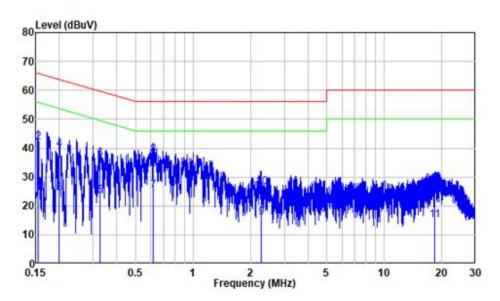
# AC 120V/60 Hz, Line



Site	:	Shielding Room
Conditio	n:	Line
Job No.	:	SZNS220815-37077E-RF
Mode	:	Charging + BT Transmitting
Power	:	AC 120V 60Hz
Note	:	Desktop Charging

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
2	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.152	9.80	16.80	26.60	55.91	-29.31	Average
2	0.152	9.80	34.90	44.70	65.91	-21.21	QP
з	0.227	9.80	13.11	22.91	52.57	-29.66	Average
4	0.227	9.80	29.68	39.48	62.57	-23.09	QP
5	0.327	9.80	12.78	22.58	49.54	-26.96	Average
6	0.327	9.80	25.27	35.07	59.54	-24.47	QP
7	0.635	9.81	16.18	25.99	46.00	-20.01	Average
8	0.635	9.81	27.52	37.33	56.00	-18.67	QP
9	2.358	9.82	5.35	15.17	46.00	-30.83	Average
10	2.358	9.82	15.17	24.99	56.00	-31.01	QP
11	18.783	9.99	3.78	13.77	50.00	-36.23	Average
12	18.783	9.99	18.16	28.15	60.00	-31.85	QP

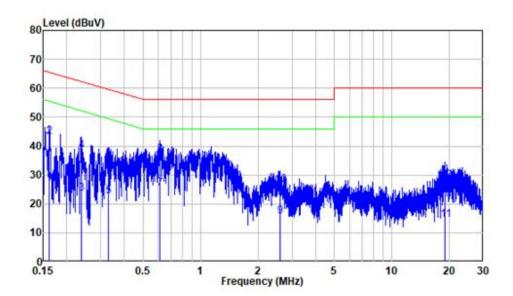
# AC 120V/60 Hz, Neutral



Site	:	Shielding Room
Conditio	n:	Neutral
Job No.	:	SZNS220815-37077E-RF
Mode	:	Charging + BT Transmitting
Power	:	AC 120V 60Hz
Note	:	Desktop Charging

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark	
-	MHz	dB	dBuV	dBuV	dBuV	dB	-	_
1	0.154	9.80	14.59	24.39	55.76	-31.37	Average	
2	0.154	9.80	32.12	41.92	65.76	-23.84	QP	
3	0.200	9.80	14.65	24.45	53.62	-29.17	Average	
4	0.200	9.80	29.84	39.64	63.62	-23.98	QP	
5	0.327	9.80	13.88	23.68	49.52	-25.84	Average	
6	0.327	9.80	26.45	36.25	59.52	-23.27	QP	
7	0.619	9.81	15.66	25.47	46.00	-20.53	Average	
8	0.619	9.81	27.80	37.61	56.00	-18.39	QP	
9	2.264	9.82	6.17	15.99	46.00	-30.01	Average	
10	2.264	9.82	16.81	26.63	56.00	-29.37	QP	
11	18.256	10.08	4.98	15.06	50.00	-34.94	Average	
12	18.256	10.08	17.26	27.34	60.00	-32.66	QP	

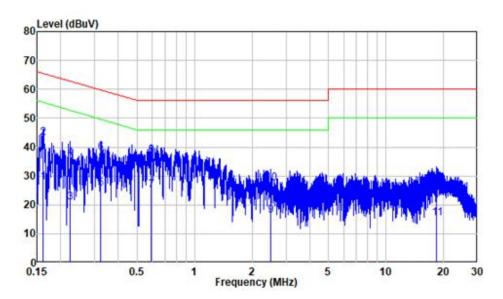
# AC 120V/60 Hz, Line



Site	:	Shielding Room				
Conditio	n:	Line				
Job No.	:	SZNS220815-37077E-RF				
Mode	:	Charging + BT Transmitting				
Power	:	AC 120V 60Hz				
Note		Direct Charging				

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
1	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.162	9.80	17.37	27.17	55.37	-28.20	Average
2	0.162	9.80	33.43	43.23	65.37	-22.14	QP
3	0.237	9.80	13.63	23.43	52.20	-28.77	Average
4	0.237	9.80	28.48	38.28	62.20	-23.92	QP
5	0.329	9.80	12.84	22.64	49.46	-26.82	Average
6	0.329	9.80	25.88	35.68	59.46	-23.78	QP
7	0.613	9.81	15.44	25.25	46.00	-20.75	Average
8	0.613	9.81	27.43	37.24	56.00	-18.76	QP
9	2.612	9.83	5.89	15.72	46.00	-30.28	Average
10	2.612	9.83	16.63	26.46	56.00	-29.54	QP
11	18.971	9.99	4.37	14.36	50.00	-35.64	Average
12	18.971	9.99	18.13	28.12	60.00	-31.88	QP

# AC 120V/60 Hz, Neutral

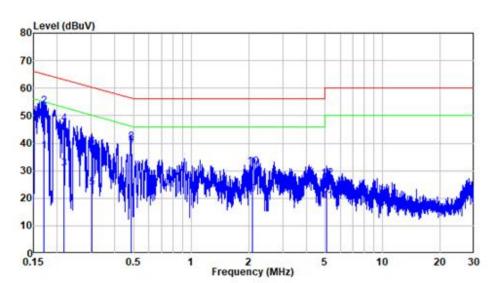


Site	:	Shielding Room
Condition	:	Neutral
Job No.	:	SZNS220815-37077E-RF
Mode	;	Charging + BT Transmitting
Power	:	AC 120V 60Hz
Note	;	Direct Charging
Mode Power	:	Charging + BT Transmitting AC 120V 60Hz

Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
MHz	dB	dBuV	dBuV	dBuV	dB	
0.162	9.80	18.04	27.84	55.35	-27.51	Average
0.162	9.80	33.40	43.20	65.35	-22.15	QP
0.224	9.80	11.08	20.88	52.67	-31.79	Average
0.224	9.80	26.56	36.36	62.67	-26.31	QP
0.324	9.80	15.96	25.76	49.60	-23.84	Average
0.324	9.80	28.25	38.05	59.60	-21.55	QP
0.595	9.81	15.20	25.01	46.00	-20.99	Average
0.595	9.81	27.36	37.17	56.00	-18.83	QP
2.503	9.82	6.42	16.24	46.00	-29.76	Average
2.503	9.82	17.75	27.57	56.00	-28.43	QP
18.414	10.08	5.22	15.30	50.00	-34.70	Average
18.414	10.08	17.47	27.55	60.00	-32.45	QP
	MHz 0.162 0.224 0.224 0.324 0.324 0.595 0.595 2.503 2.503 18.414	MHz         dB           0.162         9.80           0.162         9.80           0.224         9.80           0.224         9.80           0.324         9.80           0.324         9.80           0.595         9.81           0.595         9.81           2.503         9.82           18.414         10.08	Freq Factor         Level           MHz         dB         dBuV           0.162         9.80         18.04           0.162         9.80         33.40           0.224         9.80         11.08           0.224         9.80         26.56           0.324         9.80         15.96           0.324         9.80         28.25           0.595         9.81         15.20           0.595         9.81         27.36           2.503         9.82         6.42           2.503         9.82         17.75           18.414         10.08         5.22	Freq Factor         Level         Level           MHz         dB         dBuV         dBuV           0.162         9.80         18.04         27.84           0.162         9.80         33.40         43.20           0.224         9.80         11.08         20.88           0.224         9.80         26.56         36.36           0.324         9.80         15.96         25.76           0.324         9.80         28.25         38.05           0.595         9.81         15.20         25.01           0.595         9.81         27.36         37.17           2.503         9.82         6.42         16.24           2.503         9.82         17.75         27.57           18.414         10.08         5.22         15.30	Freq Factor         Level         Level         Line           MHz         dB         dBuV         dBuV         dBuV         dBuV           0.162         9.80         18.04         27.84         55.35           0.162         9.80         33.40         43.20         65.35           0.224         9.80         11.08         20.88         52.67           0.224         9.80         26.56         36.36         62.67           0.324         9.80         15.96         25.76         49.60           0.324         9.80         28.25         38.05         59.60           0.595         9.81         15.20         25.01         46.00           0.595         9.81         27.36         37.17         56.00           2.503         9.82         6.42         16.24         46.00           2.503         9.82         17.75         27.57         56.00           18.414         10.08         5.22         15.30         50.00	Freq Factor         Level         Level         Line         Limit           MHz         dB         dBuV         dBuV

# For adapter GQ12-050200-AU:

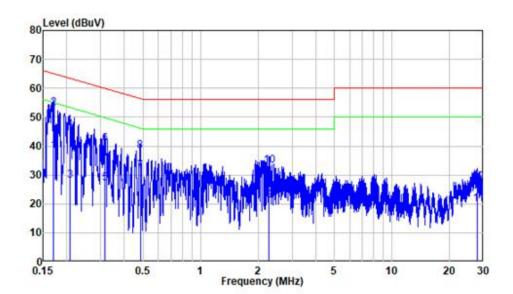
### AC 120V/60 Hz, Line



Site	:	Shielding Room
Conditio	n:	Line
Job No.	33	SZNS220815-37077E-RF
Mode	:	BT
Power	:	AC 120V 60Hz
Note	$\sim$	Desktop Charging

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
5	MHz	dB	dBuV	dBuV	dBuV	dB	1
1	0.171	9.80	27.26	37.06	54.93	-17.87	Average
2	0.171	9.80	43.50	53.30	64.93	-11.63	QP
3	0.218	9.80	21.07	30.87	52.91	-22.04	Average
4	0.218	9.80	37.32	47.12	62.91	-15.79	QP
4 5 6	0.302	9.80	14.13	23.93	50.19	-26.26	Average
6	0.302	9.80	28.80	38.60	60.19	-21.59	QP
7	0.484	9.80	27.82	37.62	46.27	-8.65	Average
8	0.484	9.80	30.59	40.39	56.27	-15.88	QP
9	2.099	9.82	11.76	21.58	46.00	-24.42	Average
10	2.099	9.82	21.70	31.52	56.00	-24.48	QP
11	5.119	9.85	9.30	19.15	50.00	-30.85	Average
12	5.119	9.85	17.29	27.14	60.00	-32.86	QP

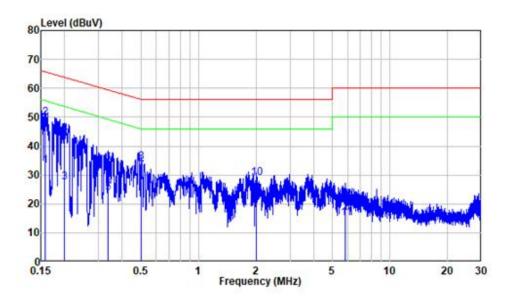
# AC 120V/60 Hz, Neutral



Site	:	Shielding Room				
Conditio	n:	Neutral				
Job No.	:	SZNS220815-37077E-RF				
Mode	:	BT				
Power	:	AC 120V 60Hz				
Note	:	Desktop Charging				

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark	
7	MHz	dB	dBuV	dBuV	dBuV	dB		-
1	0.170	9.80	28.41	38.21	54.96	-16.75	Average	
2	0.170	9.80	43.39	53.19	64.96	-11.77	QP	
3	0.207	9.80	18.21	28.01	53.33	-25.32	Average	
4	0.207	9.80	35.78	45.58	63.33	-17.75	QP	
5	0.316	9.80	17.38	27.18	49.82	-22.64	Average	
6	0.316	9.80	30.93	40.73	59.82	-19.09	QP	
7	0.483	9.80	21.48	31.28	46.28	-15.00	Average	
8	0.483	9.80	28.58	38.38	56.28	-17.90	QP	
9	2.268	9.82	11.42	21.24	46.00	-24.76	Average	
10	2.268	9.82	23.50	33.32	56.00	-22.68	QP	
11	28.003	10.18	9.75	19.93	50.00	-30.07	Average	
12	28.003	10.18	17.26	27.44	60.00	-32.56	QP	

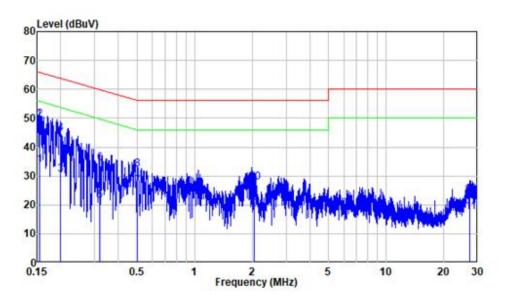
# AC 120V/60 Hz, Line



Site	:	Shielding Room
Condition	n:	Line
Job No.	:	SZNS220815-37077E-RF
Mode	:	BT
Power	:	AC 120V 60Hz
Note	:	Direct Charging

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	-
1	0.158	9.80	23.29	33.09	55.59	-22.50	Average
2	0.158	9.80	40.16	49.96	65.59	-15.63	QP
3	0.200	9.80	17.79	27.59	53.62	-26.03	Average
4	0.200	9.80	34.25	44.05	63.62	-19.57	QP
5	0.337	9.80	13.91	23.71	49.27	-25.56	Average
6	0.337	9.80	24.23	34.03	59.27	-25.24	QP
7	0.501	9.80	21.54	31.34	46.00	-14.66	Average
8	0.501	9.80	24.64	34.44	56.00	-21.56	QP
9	2.008	9.82	12.70	22.52	46.00	-23.48	Average
10	2.008	9.82	19.12	28.94	56.00	-27.06	QP
11	5.863	9.86	5.30	15.16	50.00	-34.84	Average
12	5.863	9.86	11.50	21.36	60.00	-38.64	QP

# AC 120V/60 Hz, Neutral



Site	:	Shielding Room
Conditio	n:	Neutral
Job No.	:	SZNS220815-37077E-RF
Mode	:	BT
Power	:	AC 120V 60Hz
Note	:	Direct Charging

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.155	9.80	24.00	33.80	55.75	-21.95	Average
2	0.155	9.80	39.66	49.46	65.75	-16.29	QP
3	0.200	9.80	20.60	30.40	53.62	-23.22	Average
4	0.200	9.80	34.89	44.69	63.62	-18.93	QP
5	0.320	9.80	11.67	21.47	49.70	-28.23	Average
6	0.320	9.80	24.65	34.45	59.70	-25.25	QP
7	0.503	9.80	16.72	26.52	46.00	-19.48	Average
8	0.503	9.80	22.37	32.17	56.00	-23.83	QP
9	2.055	9.82	8.55	18.37	46.00	-27.63	Average
10	2.055	9.82	17.82	27.64	56.00	-28.36	QP
11	27.362	10.17	7.29	17.46	50.00	-32.54	Average
12	27.362	10.17	13.51	23.68	60.00	-36.32	QP

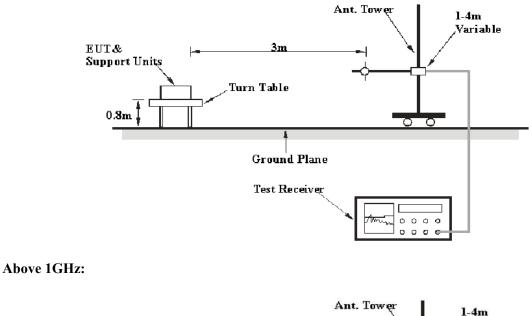
# FCC §15.205, §15.209 & §15.247(d) – RADIATED EMISSIONS

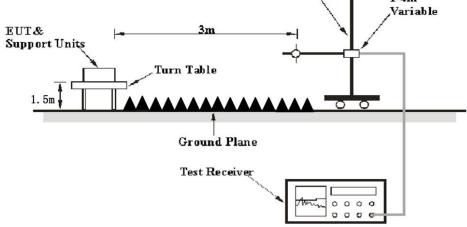
### Applicable Standard

FCC §15.205; §15.209; §15.247(d)

# **EUT Setup**

Below 1 GHz:





The radiated emission tests were performed in the 3 meters, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209 and FCC 15.247 limits.

#### EMI Test Receiver & Spectrum Analyzer Setup

The EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz - 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 CIIz	1 MHz	3 MHz	/	РК
Above 1 GHz	1 MHz	10 Hz	/	Average

#### **Test Procedure**

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All final data was recorded in Quasi-peak detection mode for frequency range of 30 MHz -1 GHz and peak and Average detection modes for frequencies above 1 GHz.

#### Factor & Margin Calculation

The Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain. The basic equation is as follows:

Factor = Antenna Factor + Cable Loss - Amplifier Gain

The "**Over Limit/Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over Limit/margin of -7dB means the emission is 7dB below the limit. The equation for calculation is as follows:

Over Limit/Margin = Level / Corrected Amplitude – Limit Level / Corrected Amplitude = Read Level + Factor

#### **Test Data**

**Environmental Conditions** 

Temperature:	25~25.6 °C
<b>Relative Humidity:</b>	50~62 %
ATM Pressure:	101.0 kPa

*The testing was performed by Level from 2022-08-22 to 2022-09-27 for below 1GHz ,by Jeff Jiang and Bruce Lin on 2022-09-16 for above 1GHz.* 

EUT operation mode: Transmitting

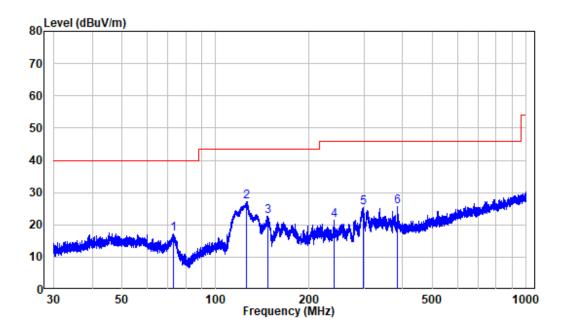
Note 1: Pre-scan in the X,Y and Z axes of orientation, the worst case of orientation was recorded

*Note 2: Pre-scan GFSK, \pi/4-DQPSK, 8DPSK mode, the worst case is 8DPSK* 

#### 30MHz-1GHz: (worst case is 8DPSK Mode, Low channel)

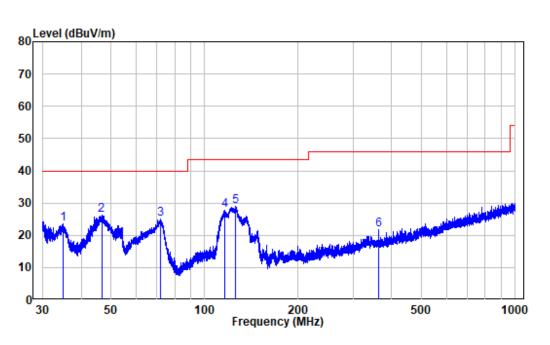
#### For adapter AS1201A-0502000USL:

Horizontal:



Site :	chamber
Condition:	3m HORIZONTAL
Job No. :	SZNS220815-37077E-RF
Test Mode:	Charging+BT Transmitting
Note :	Direct Charging

	Freq	Factor			Limit Line		Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	73.327	-15.91	33.03	17.12	40.00	-22.88	Peak
2	126.052	-14.41	41.66	27.25	43.50	-16.25	Peak
3	147.145	-15.44	38.21	22.77	43.50	-20.73	Peak
4	239.987	-10.91	32.47	21.56	46.00	-24.44	Peak
5	299.841	-9.23	34.56	25.33	46.00	-20.67	Peak
6	384.100	-7.08	32.60	25.52	46.00	-20.48	Peak

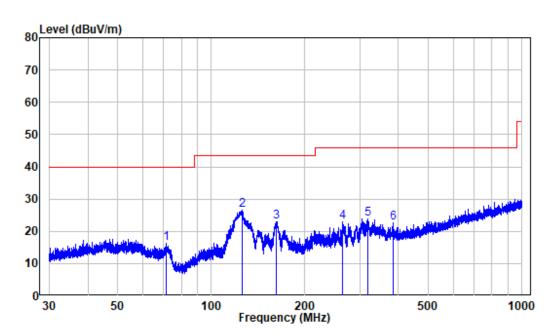


Vertical

Condition: 3m VERTICAL	
Job No. : SZNS220815-37077E-RF	
Test Mode: Charging+BT Transmitting	g
Note : Direct Charging	

	Freq	Factor			Limit Line		Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	35.005	-11.54	35.14	23.60	40.00	-16.40	Peak
2	46.544	-10.00	36.30	26.30	40.00	-13.70	Peak
3	71.990	-15.62	40.53	24.91	40.00	-15.09	Peak
4	115.827	-12.77	40.40	27.63	43.50	-15.87	Peak
5	125.501	-14.36	43.29	28.93	43.50	-14.57	Peak
6	362.031	-7.62	29.49	21.87	46.00	-24.13	Peak

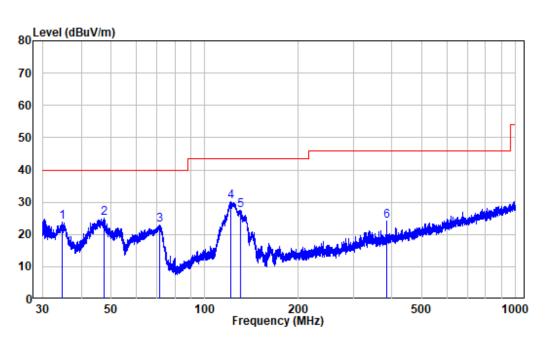
Report No.: SZNS220815-37077E-RF-00A



Horizontal:

Site :	chamber
Condition:	3m HORIZONTAL
Job No. :	SZNS220815-37077E-RF
Test Mode:	Charging+BT Transmitting
Note :	Desktop Charging

	Freq	Factor			Limit Line		Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	71.706	-15.50	31.69	16.19	40.00	-23.81	Peak
	125.391	-14.35	41.02	26.67	43.50	-16.83	Peak
3	162.255	-14.29	37.26	22.97	43.50	-20.53	Peak
4	265.210	-10.44	33.26	22.82	46.00	-23.18	Peak
5	317.840	-8.57	32.38	23.81	46.00	-22.19	Peak
6	384.100	-7.08	29.82	22.74	46.00	-23.26	Peak



Vertical

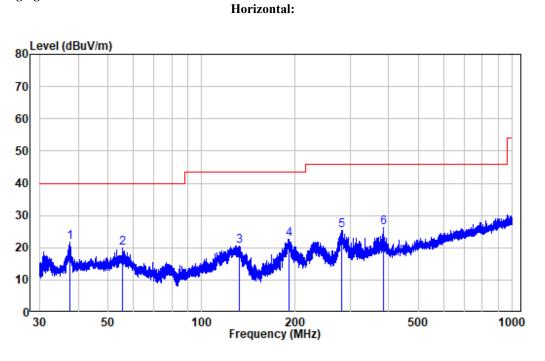
Site :	chamber
Condition:	3m VERTICAL
Job No. :	SZNS220815-37077E-RF
Test Mode:	Charging+BT Transmitting
Note :	Desktop Charging

	Freq	Factor			Limit Line		Remark
-	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	34.684	-11.64	35.35	23.71	40.00	-16.29	Peak
2	47.533	-10.00	35.20	25.20	40.00	-14.80	Peak
3	71.361	-15.35	38.15	22.80	40.00	-17.20	Peak
4	121.495	-13.83	43.99	30.16	43.50	-13.34	Peak
5	129.866	-14.89	42.48	27.59	43.50	-15.91	Peak
6	384.100	-7.08	31.11	24.03	46.00	-21.97	Peak

Report No.: SZNS220815-37077E-RF-00A

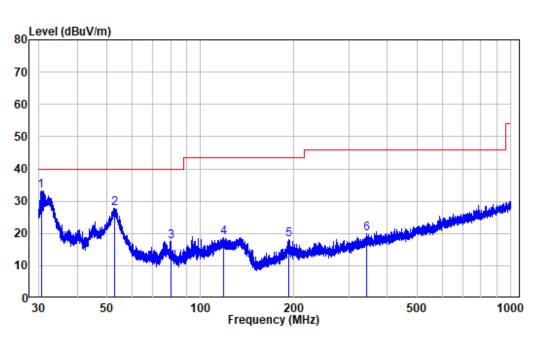
#### For adapter GQ12-050200-AU:

Direct charging:



Site : chamber Condition: 3m HORIZONTAL Job No. : SZNS220815-37077E-RF Test Mode: BT

	Freq	Factor			Limit Line		Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	37.515	-10.90	32.71	21.81	40.00	-18.19	Peak
2	55.536	-10.23	30.18	19.95	40.00	-20.05	Peak
3	132.105	-14.98	35.61	20.63	43.50	-22.87	Peak
4	190.572	-11.48	34.20	22.72	43.50	-20.78	Peak
5	282.985	-9.50	34.88	25.38	46.00	-20.62	Peak
6	384.100	-7.08	33.31	26.23	46.00	-19.77	Peak





Site : chamber Condition: 3m VERTICAL Job No. : SZNS220815-37077E-RF Test Mode: BT

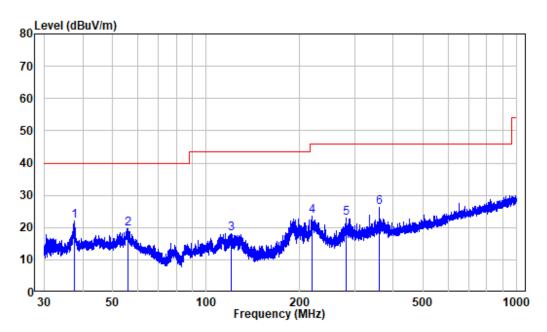
	Freq	Factor			Limit Line		Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	30.611	-12.33	45.64	33.31	40.00	-6.69	Peak
2	52.992	-10.17	38.04	27.87	40.00	-12.13	Peak
3	80.010	-16.79	34.22	17.43	40.00	-22.57	Peak
4	118.498	-13.25	32.06	18.81	43.50	-24.69	Peak
5	192.419	-11.26	29.30	18.04	43.50	-25.46	Peak
6	342.579	-7.32	27.24	19.92	46.00	-26.08	Peak

Version 11: 2021-11-09

Report No.: SZNS220815-37077E-RF-00A

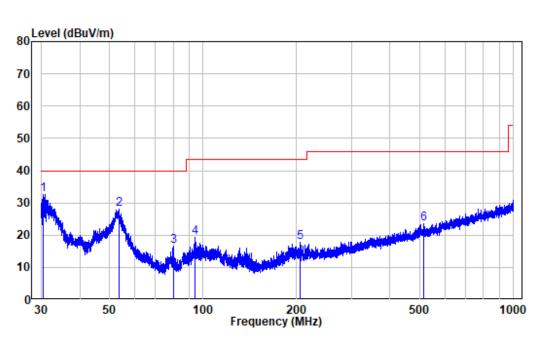
# Desktop charging:

Horizontal:



Site :	chamber
Condition:	3m HORIZONTAL
Job No. :	SZNS220815-37077E-RF
Test Mode:	BT
Note :	Charger base

	Freq	Factor			Limit Line		Remark
-	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	37.531	-10.90	32.88	21.98	40.00	-18.02	Peak
_	55.829	-10.21	29.93	19.72	40.00	-20.28	Peak
3	120.013	-13.53	31.66	18.13	43.50	-25.37	Peak
4	218.596	-11.49	34.95	23.46	46.00	-22.54	Peak
5	282.489	-9.51	32.49	22.98	46.00	-23.02	Peak
6	359.974	-7.68	34.05	26.37	46.00	-19.63	Peak



Vertical

Site : chamber Condition: 3m VERTICAL Job No. : SZNS220815-37077E-RF Test Mode: BT Note : Charger base

	Freq	Factor			Limit Line		Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	30.544	-12.34	44.85	32.51	40.00	-7.49	Peak
	53.458	-10.25	38.26	28.01	40.00	-11.99	Peak
3	80.010	-16.79	33.31	16.52	40.00	-23.48	Peak
4	94.428	-12.60	31.97	19.37	43.50	-24.13	Peak
5	204.596	-11.80	29.47	17.67	43.50	-25.83	Peak
6	515.212	-4.28	27.69	23.41	46.00	-22.59	Peak

-	Receiver			Rx Ar	itenna	Corrected	Corrected		
Frequency (MHz)	Reading (dBµV)	PK/QP/AV	Turntable Degree	Height (m)	Polar (H/V)	Factor (dB/m)	Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
			Low Ch	annel (2	2402 MI	Hz)			
2310	67.64	PK	245	2.2	Н	-7.24	60.40	74	-13.60
2310	42.85	AV	245	2.2	Н	-7.24	35.61	54	-18.39
2310	67.70	PK	70	1.9	V	-7.24	60.46	74	-13.54
2310	42.91	AV	70	1.9	V	-7.24	35.67	54	-18.33
2390	68.57	PK	18	1	Н	-7.22	61.35	74	-12.65
2390	43.78	AV	18	1	Н	-7.22	36.56	54	-17.44
2390	68.06	PK	120	1.3	V	-7.22	60.84	74	-13.16
2390	43.27	AV	120	1.3	V	-7.22	36.05	54	-17.95
4804	55.10	РК	224	1.9	Н	-3.51	51.59	74	-22.41
4804	53.73	PK	310	1.9	V	-3.51	50.22	74	-23.78
			Middle C	hannel	(2441 M	ſHz)			
4882	54.71	PK	302	2.2	Н	-3.37	51.34	74	-22.66
4882	54.19	PK	42	2.2	V	-3.37	50.82	74	-23.18
			High Ch	annel (2	2480 MI	Hz)			
2483.5	69.37	PK	115	2.2	Н	-7.20	62.17	74	-11.83
2483.5	44.58	AV	115	2.2	Н	-7.20	37.38	54	-16.62
2483.5	68.66	PK	303	1.8	V	-7.20	61.46	74	-12.54
2483.5	43.87	AV	303	1.8	V	-7.20	36.67	54	-17.33
2500	68.86	PK	4	2.4	Н	-7.18	61.68	74	-12.32
2500	44.07	AV	4	2.4	Н	-7.18	36.89	54	-17.11
2500	68.80	PK	75	2	V	-7.18	61.62	74	-12.38
2500	44.01	AV	75	2	V	-7.18	36.83	54	-17.17
4960	54.49	PK	315	1.7	Н	-3.01	51.48	74	-22.52
4960	53.76	РК	147	1.7	V	-3.01	50.75	74	-23.25

**Above 1GHz:** (worst case is direct charging+adapter GQ12-050200-AU)

#### Note:

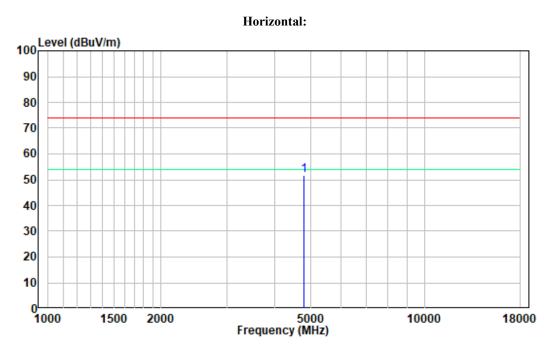
 $Corrected \ Factor = Antenna \ factor \ (RX) + Cable \ Loss - Amplifier \ Factor$ Corrected Amplitude = Corrected Factor + Reading Margin = Corrected. Amplitude - Limit

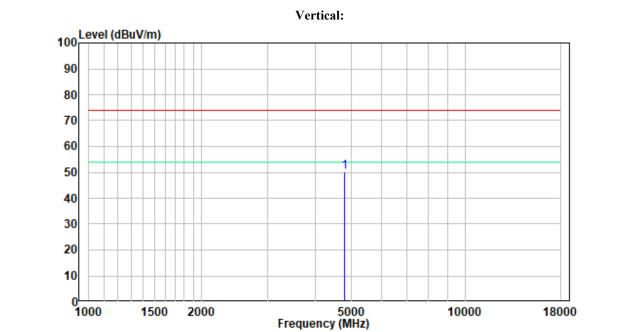
The other spurious emission which is in the noise floor level was not recorded.

The test result of peak was less than the limit of average, so just peak value were recorded.

### 1-18GHz

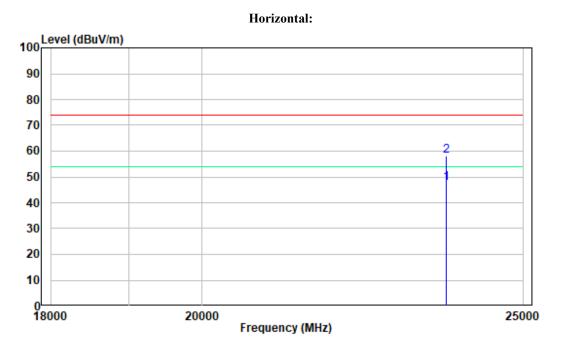
**Pre-scan for Low Channel** 

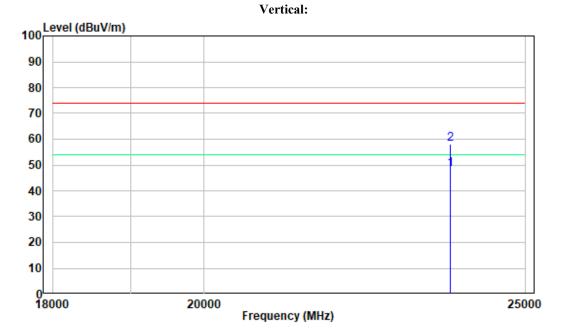




### 18-25GHz

**Pre-scan for Low Channel** 





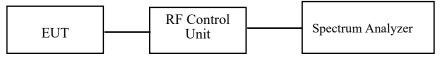
# FCC §15.247(a) (1)-CHANNEL SEPARATION TEST

# **Applicable Standard**

Frequency hopping systems shall have hoping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

# **Test Procedure**

- 1. Set the EUT in transmitting mode, maxhold the channel.
- 2. Set the adjacent channel of the EUT and maxhold another trace.
- 3. Measure the channel separation.



# **Test Data**

## **Environmental Conditions**

Temperature:	25 °C	
<b>Relative Humidity:</b>	55 %	
ATM Pressure:	101.0 kPa	

The testing was performed by Roger Ling on 2022-09-16

EUT operation mode: Transmitting

# FCC §15.247(a) (1) – 20 dB EMISSION BANDWIDTH & 99% OCCUPIED BANDWIDTH

# **Applicable Standard**

Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

# **Test Procedure**

The following conditions shall be observed for measuring the occupied bandwidth and 20 dB bandwidth:

• The transmitter shall be operated at its maximum carrier power measured under normal test conditions.

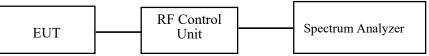
• The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.

• The detector of the spectrum analyzer shall be set to "Sample". However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or "Max Hold") may be necessary to determine the occupied / 20 dB bandwidth if the device is not transmitting continuously.

• The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / 20 dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

For the 99% emission bandwidth, the trace data points are recovered and directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99% emission bandwidth).



# **Test Data**

# **Environmental Conditions**

Temperature:	25 °C	
<b>Relative Humidity:</b>	55 %	
ATM Pressure:	101.0 kPa	

The testing was performed by Roger Ling on 2022-09-16

EUT operation mode: Transmitting

# FCC §15.247(a) (1) (iii)-QUANTITY OF HOPPING CHANNEL TEST

# **Applicable Standard**

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

# **Test Procedure**

- 1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
- 2. Set the EUT in hopping mode from first channel to last.
- 3. By using the max-hold function record the quantity of the channel.

EUT	RF Control Unit		Spectrum Analyzer
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# **Test Data**

## **Environmental Conditions**

Temperature:	25 °C	
Relative Humidity:	55 %	
ATM Pressure:	101.0 kPa	

The testing was performed by Roger Ling on 2022-09-16

EUT operation mode: Transmitting

# FCC §15.247(a) (1) (iii) - TIME OF OCCUPANCY (DWELL TIME)

# **Applicable Standard**

Frequency hopping systems in the 2400-2483.5 MHz shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

# **Test Procedure**

- 1. The EUT was worked in channel hopping.
- 2. Set the RBW to: 1MHz.
- 3. Set the VBW  $\geq 3 \times RBW$ .
- 4. Set the span to 0Hz.
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. Recorded the time of single pulses



## **Test Data**

## **Environmental Conditions**

Temperature:	25 °C	
Relative Humidity:	55 %	
ATM Pressure:	101.0 kPa	

The testing was performed by Roger Ling on 2022-09-16

EUT operation mode: Transmitting

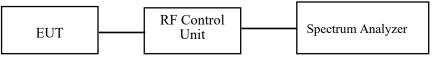
# FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT

# **Applicable Standard**

According to §15.247(b) (1), for frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. And for all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.

# **Test Procedure**

- 1. Place the EUT on a bench and set in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.
- 3. Add a correction factor to the display.



# **Test Data**

## **Environmental Conditions**

Temperature:	25 °C	
<b>Relative Humidity:</b>	55 %	
ATM Pressure:	101.0 kPa	

The testing was performed by Roger Ling on 2022-09-16

EUT operation mode: Transmitting

# FCC §15.247(d) - BAND EDGES TESTING

# **Applicable Standard**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in \$15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in \$15.205(a), must also comply with the radiated emission limits specified in \$15.209(a) (see \$15.205(c)).

# **Test Procedure**

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to a
  EMI test receiver, then turn on the EUT and make it operate in transmitting mode. Then set it to Low
  Channel and High Channel within its operating range, and make sure the instrument is operated in its
  linear range.
- 3. Set RBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
- 4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- 5. Repeat above procedures until all measured frequencies were complete.



# **Test Data**

## **Environmental Conditions**

Temperature:	25 °C	
<b>Relative Humidity:</b>	55 %	
ATM Pressure:	101.0 kPa	

The testing was performed by Roger Ling on 2022-09-16

EUT operation mode: Transmitting

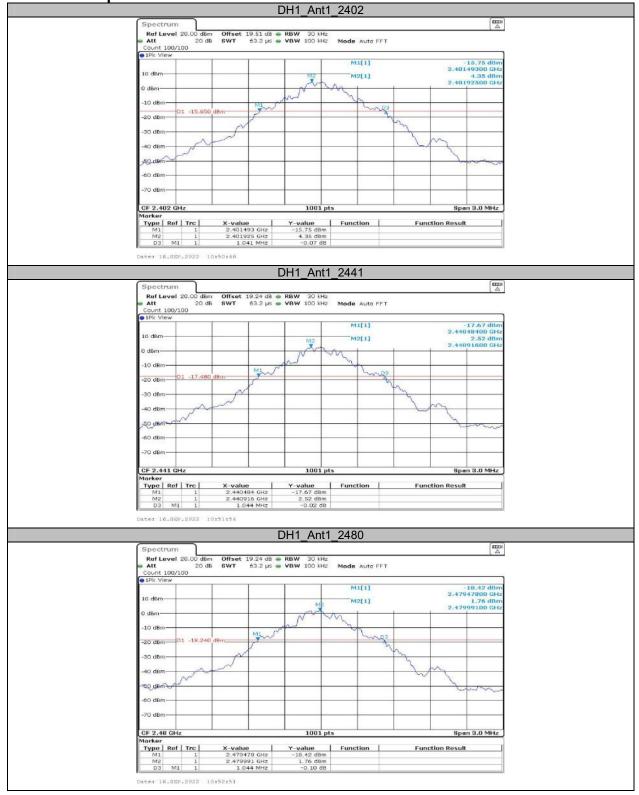
# APPENDIX

# Appendix A: 20dB Emission Bandwidth

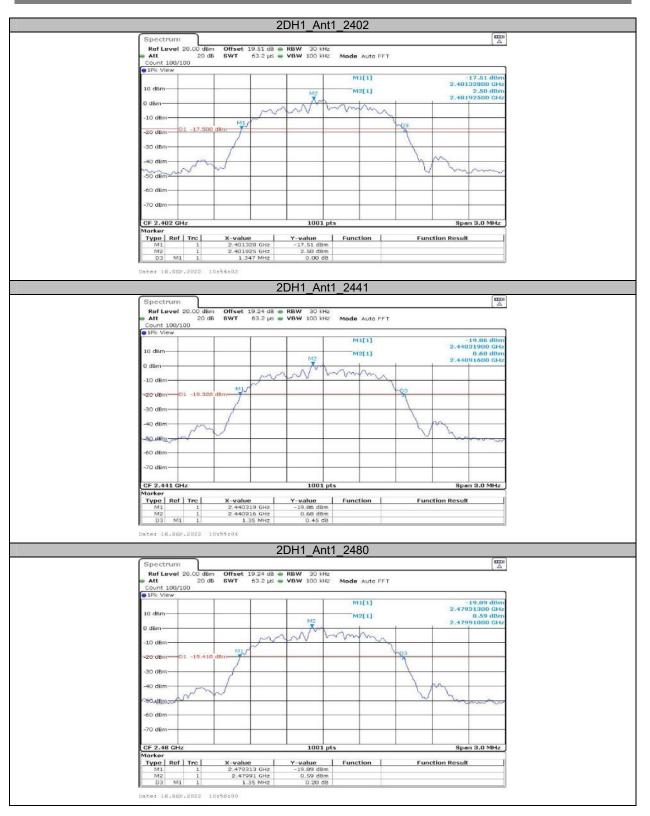
# Test Result

Test Mode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
		2402	1.04	2401.49	2402.53		
DH1	Ant1	2441	1.04	2440.48	2441.53		
		2480	1.04	2479.48	2480.52		
		2402	1.35	2401.33	2402.68		
2DH1	Ant1	2441	1.35	2440.32	2441.67		
		2480	1.35	2479.31	2480.66		
		2402	1.29	2401.37	2402.66		
3DH1	Ant1	2441	1.29	2440.36	2441.66		
		2480	1.30	2479.36	2480.65		

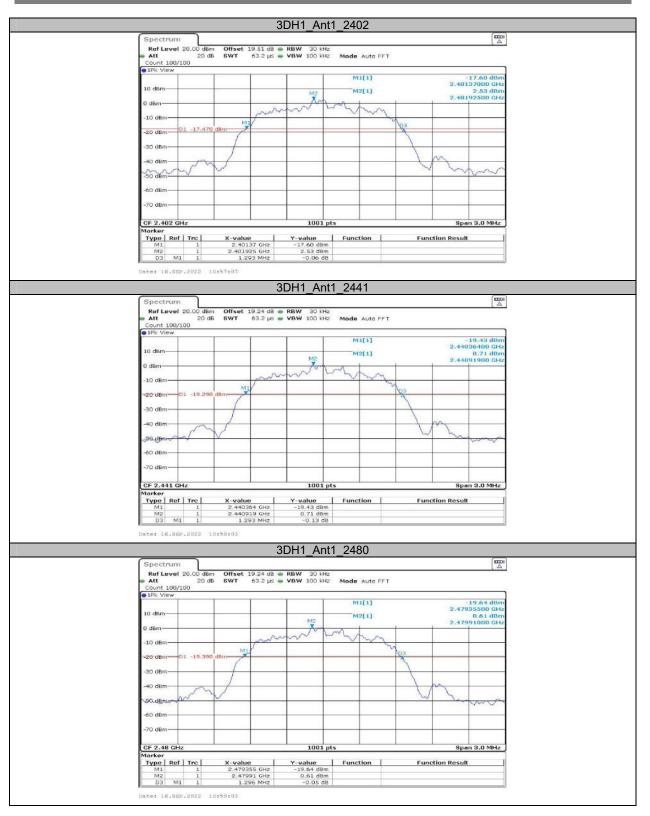
# **Test Graphs**



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#### Report No.: SZNS220815-37077E-RF-00A

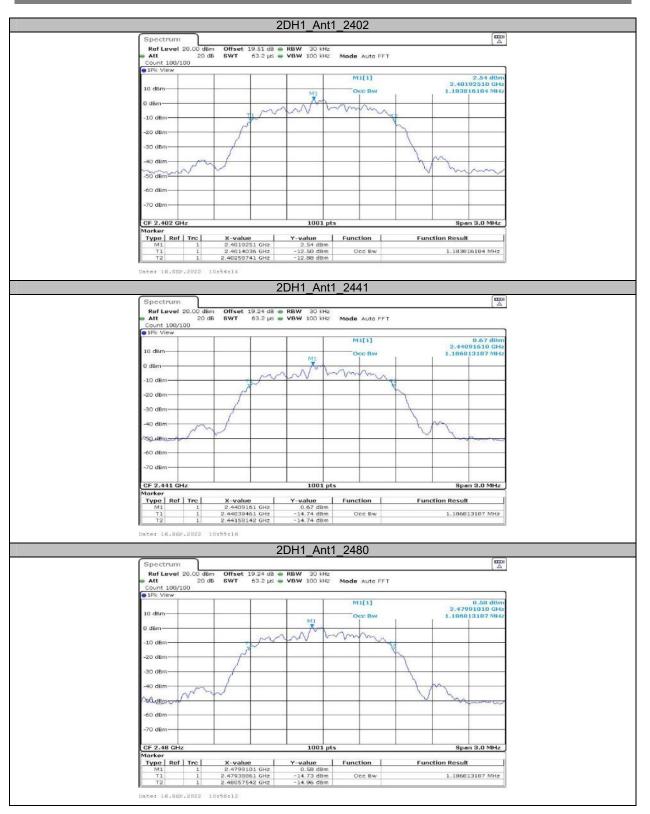
# Appendix B: Occupied Channel Bandwidth Test Result

Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
		2402	0.929	2401.538	2402.468		
DH1	Ant1	2441	0.929	2440.532	2441.462		
		2480	0.929	2479.526	2480.456		
		2402	1.184	2401.404	2402.587		
2DH1	Ant1	2441	1.187	2440.395	2441.581		
		2480	1.187	2479.389	2480.575		
		2402	1.172	2401.428	2402.599		
3DH1 An	Ant1	2441	1.169	2440.422	2441.590		
		2480	1.172	2479.413	2480.584		

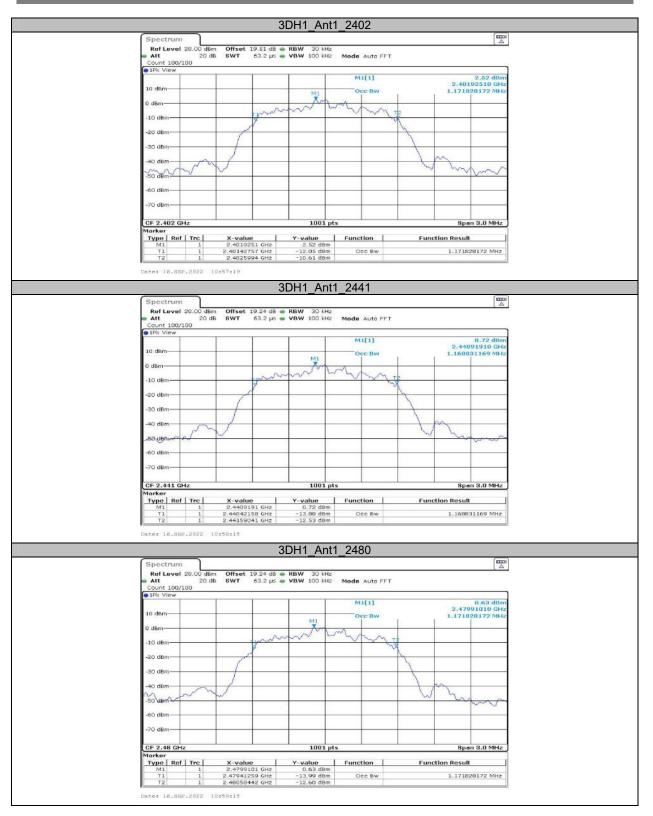
# **Test Graphs**



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# Appendix C: Maximum conducted output power Test Result Peak

Test Mode	Antenna	Frequency[MHz]	Conducted Peak Powert[dBm]	Conducted Limit[dBm]	Verdict
		2402	7.93	≤20.97	PASS
DH1	Ant1	2441	6.29	≤20.97	PASS
		2480	5.71	≤20.97	PASS
		2402	8.30	≤20.97	PASS
2DH1	Ant1	2441	6.69	≤20.97	PASS
		2480	6.82	≤20.97	PASS
		2402	8.71	≤20.97	PASS
3DH1	Ant1	2441	7.13	≤20.97	PASS
		2480	7.24	≤20.97	PASS

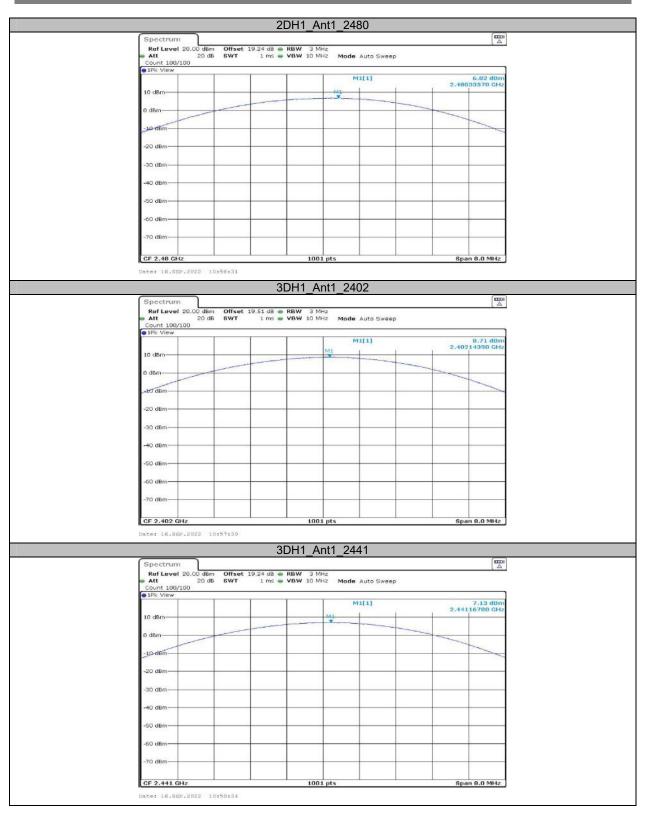
# **Test Graphs**



Report No.: SZNS220815-37077E-RF-00A



Report No.: SZNS220815-37077E-RF-00A



# Report No.: SZNS220815-37077E-RF-00A

Spectrum		
Ref Level 20.00 dBm Offset 19.24 dB @	BBW 3 MH-	
🖷 Att 20 dB SWT 1 ms 🖷	VBW 10 MHz Mode Auto Sweep	
Count 100/100		
• 1Pk View		
	M1[1]	7.24 dBm 2.48007990 GHz
10 dBm	41	
0 dBm		
-10-dBm		
-20 dBm-		
-30 dBm		
-30 dBm		
-40 dBm		
duni		
-50 dBm		
-60 dBm-		
-70 dBm		
2 MIN (1997)		
CF 2.48 GHz	1001 pts	Span 8.0 MHz

# Appendix D: Carrier frequency separation Test Result

Test Mode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH1	Ant1	Нор	1.003	≥0.693	PASS
2DH1	Ant1	Нор	1.009	≥0.900	PASS
3DH1	Ant1	Нор	1.003	≥0.867	PASS

# **Test Graphs**



# Report No.: SZNS220815-37077E-RF-00A

# Appendix E: Time of occupancy Test Result

Test Mode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Нор	0.38	320	0.121	≤0.4	PASS
DH3	Ant1	Нор	1.63	150	0.244	≤0.4	PASS
DH5	Ant1	Нор	2.87	110	0.315	≤0.4	PASS
2DH1	Ant1	Нор	0.39	330	0.127	≤0.4	PASS
2DH3	Ant1	Нор	1.63	140	0.228	≤0.4	PASS
2DH5	Ant1	Нор	2.87	120	0.344	≤0.4	PASS
3DH1	Ant1	Нор	0.38	320	0.123	≤0.4	PASS
3DH3	Ant1	Нор	1.63	150	0.244	≤0.4	PASS
3DH5	Antl	Нор	2.87	120	0.345	≤0.4	PASS

Note 1: A period time=0.4\*79=31.6(S), Result=BurstWidth\*Totalhops

Note 2: Totalhops=Hopping Number in 3.16s\*10

Note 3: Hopping Number in 3.16s=Total of highest signals in 3.16s(Second high signals were other channel)

# Test Graphs

		DH1_Ant1_	_нор			
ſ	Spectrum					
		24 dB 👄 RBW 1 MHz .0 ms 👄 VBW 3 MHz				
	SGL Count 1/1 TRG:VID	o ms 🖝 YBW 3 MH2				
	1Pk Clow		M1[1]		-2.36 dBm	
I					-1.23 µs	
	10 dBm		D2[1]		7.98 dB 378.80 µs	
	TRG 3.900 dBm					
	-10 dBm					
	-20 dem-					
	-30 dBm					
	40 dBm		·			
	HO dBm	apatentia data ang basa	and the south of the	unaccollellin addates it	dill and purchaster	
	o de Mind Will hall the Million Million	LE LA LA MARTINE MARTINE A MARTINE	initial activity and inter-	เป็นส่วนสุดที่ยายการใช้ เกล่าได้		
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	-60 dBm					
	-70 dBm			2	-	
I						
	CF 2.441 GHz	8000 pts	-		1.0 ms/	
De	te: 16.5EP.2022 11:01:42					
6						
	COASTRING				CCCC00	
	Spectrum Ref Level 20.00 d8m Offset 19.2	24 dB 👄 RBW 500 kHz				
	Ref Level 20.00 dBm Offset 19.2 Att 20 dB • SWT	24 dB <b>⊜ RBW</b> 500 kHz 3.2 s <b>⊜ VBW</b> 3 MHz				
-	Ref Level 20.00 dBm Offset 19.2					
	Ref Level         20.00 dBm         Offset         19.2           Att         20 dB         SWT         3           SGL Count         1/1         TRG:VID					
	Ref Level         20.00 dBm         Offset         19.2           Att         20 dB         SWT         3           SGL Count         1/1         TRG:VID					
	Ref Level         20.00 dBm         Offset         19.2           Att         20 dB         SWT         5           SGL Count         1/1         TRG:VID         5           1PIPk Clnw         10 dBm         10 dBm         10 dBm					
	Ref Level         20.00         dBm         Offset         19.2           Att         20 dB         SWT         SGL Count 1/1         TRG:VID           SIPIC Cinw         10 dBm         10 dBm					
	Ref Level         20.00 dBm         Offset         19.2           Att         20 dB         SWT         5           SGL Count         1/1         TRG:VID         5           1PIPk Clnw         10 dBm         10 dBm         10 dBm					
	Ref Lovel 20.00 dBm         Offset 19.2           Att         20.6 a SWT           SGL Count 1/1         TRG:VID           BIPK CINK         TRG:VID           10 dBm         10 dBm           0 dBm         10 dBm					
	Ref Lovel 20.00 dBm         Offset 19.2           Att         20.6 a SWT           SGL Count 1/1         TRG:VID           BIPK CINK         TRG:VID           10 dBm         10 dBm           0 dBm         10 dBm					
	Ref Level 20.00 dBm         Offset 19.2           Att         20 dB         SWT           SGL Count 1/1         TRG:VID           BIPK CInv         TRG:VID           0 dBm         10 dBm           0 dBm         10 dBm           20 dBm         10 dBm					
	Ref Level 20.00 dBm         Offset 19.2           Att         20 dB         SWT           SGL Count 1/1         TRG:VID           BTPK CInw         10 dBm           10 dBm         TRG <sup>*</sup> 3,900 dBm           10 dBm         10 dBm					
	Ref Level 20.00 dBm         Offset 19.2           Att         20 dB         SWT           SGL Count 1/1         TRG:VID           BIPK CInv         TRG:VID           0 dBm         10 dBm           0 dBm         10 dBm           20 dBm         10 dBm					
- - - - -	Ref Level 20.00 dBm         Offset 19.2           Att         20 dB         SWT           SGL Count 1/1         TRG:VID           1PFk CInv         10 dBm           10 dBm         10 dBm           20 dBm         10 dBm           10 dBm         10 dBm	3.2 s • VBW 3 MHz				
- - - - - -	Ref Lovel 20.00 dBm         Offset 19.2           Att         20.68         SWT           SGL Count 1/1         TRG:VID           1D/DEC CIN         TRG:VID           0 dBm         10           10 dBm         10           20 dB         3.990 dBm           30 dBm         10	3.2 s • VBW 3 MHz				
	Ref Level 20.00 dBm         Offset 19.2           Att         20 dB         SWT           SGL Count 1/1         TRG:VID           1PFk CInv         10 dBm           10 dBm         10 dBm           20 dBm         10 dBm           10 dBm         10 dBm	3.2 s • VBW 3 MHz				
	Ref Level 20.00 dbm         Offset 19.2           Att         20.8         9WT           Sol. Count 1/1         TRG-VID           BTP: CIN*         TRG-VID           0 dBm         0           0 dBm         0           0 dBm         0           0 dBm         0           10 dBm         0 <td>3.2 s • VBW 3 MHz</td> <td></td> <td></td> <td></td> <td></td>	3.2 s • VBW 3 MHz				
	Ref Level 20.00 dBm         Offset 19.2           Att         20 dB         SWT           SGL Count 1/1         TRG-VID           IPER CINK         TRG-VID           ID dBm         10 dBm           0 dBm         TRG           10 dBm         10 dBm           0 dBm         10 dBm           10 dBm         10 dBm           50 dBm         10 dBm           50 dBm         10 dBm           50 dBm         10 dBm	3.2 s • VBW 3 MHz				
	Ref Level 20.00 dbm         Offset 19.2           Att         20.8         9WT           Sol. Count 1/1         TRG-VID           BTP: CIN*         TRG-VID           0 dBm         0           0 dBm         0           0 dBm         0           0 dBm         0           10 dBm         0 <td>3.2 s • VBW 3 MHz</td> <td></td> <td></td> <td></td> <td></td>	3.2 s • VBW 3 MHz				

Report No.: SZNS220815-37077E-RF-00A

		DH3_An			(m)	
Ref Level 20.00 dBm	Offset 19.24 dB	RBW 1 MH				
👄 Att 20 dB	🖶 SWT 10 ms	S VBW 3 MH				
SGL Count 1/1 Pk Clow	TRG: VID		1011 - 2012		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	
			M1[1]		1.10 dBm -1.23 µs	
10 dBm D2			D2[1]		4.34 dB 1.62645 ms	
0 dBm	Bm				1.02015 ms	
o ubii						
-10 dBm-		-	S			
-20 dBm		_				
-30 dBm						
-40 dBm-		1.1.1.1	1.1.1.1.1.1.1.1			
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-60 dBm-	111	1 11 1 1		4.4.		
-70 dBm-						
CF 2.441 GHz		8000	nts		1.0 ms/	
Date: 16.5EP.2022 11		8000	pts		1.0 (1137 )	
	102100					
Ref Level 20.00 dBm	Offset 19.24 dB					
👄 Att 20 dB		👄 VBW 3 M	HZ			
SGL Count 1/1	TRG: VID	S ARM 3 M	HZ		ī	
👄 Att 20 dB		- VBW 3 M	H2			
SGL Count 1/1		- VBW 3 M	HZ			
Att 20 dB     SGL Count 1/1     PIR Clnw     10 dBm     Tric 3.800 d	TRG: VID					
SGL Count 1/1	TRG: VID					
Att 20 dB     SGL Count 1/1     PIR Clnw     10 dBm     Tric 3.800 d	TRG: VID					
Att 20 db     SGL Count 1/1     O dbm     TRG 3.800 d     O dbm     -10 dbm	TRG: VID					
Att 20 db SGL Count 1/1 SGL Count 1/1 10 dbm 10 dbm Tris 3.800 d	TRG: VID					
Att 20 db     SGL Count 1/1     O dbm     TRG 3.800 d     O dbm     -10 dbm	TRG: VID					
Att 20 dB     GeL Count 1/1     O dBm     Trk6 3.000 d     O dBm     -10 dBm     -20 dBm     -31 dBm	TRG: VID					
Att 20 db     SGL Count 1/1     O dbm     Tros 3.800 d     O dbm     -10 dbm     -2n dbm	TRG: VID					
Att 20 dB     GeL Count 1/1     O dBm     Trk6 3.000 d     O dBm     -10 dBm     -20 dBm     -31 dBm	TRG: VID					
Att 20 db     SGL Count 1/1     O dbm     Tris 3,800 d     O dbm     -10 dbm     -21 dbm     -31 dbm     -31 dbm     -32 dbm     -32 dbm     -32 dbm     -32 dbm     -33 dbm     -33 dbm     -30 dbm	TRG: VID					
Att 20 db     SGL Count 1/1     O dbm     TRÓ 3.800 d     O dbm     -10 dbm     -2g dbm     -31 dbm     Hull(st., 10, 10, 10, 10, 10, 10, 10, 10, 10, 10	TRG: VID					
Att 20 db     SGL Count 1/1     O dbm     Tris 3,800 d     O dbm     -10 dbm     -21 dbm     -31 dbm     -31 dbm     -32 dbm     -32 dbm     -32 dbm     -32 dbm     -33 dbm     -33 dbm     -30 dbm	TRG: VID					
Att 20 db     SGL Count 1/1      ID dBm     Trig 3.800 d      dBm     -10 dBm     -21 dBm     -31 dBm     -31 dBm     -50 dBm     -60 dBm	TRG: VID					

Report No.: SZNS220815-37077E-RF-00A

	DH	5_Ant1_Ho	ρ	0
Spectrum				
RefLevel 20.00 dBm Off Att 20 dB e SW	/T 10 ms 👄 VB'	W 3 MHz		
SGL Count 1/1 TF	IG:VID	and an and the state of the sta		1
a h set h		M	1[1]	-2.38 dBm
10 dBm		D	2[1]	-1.23 µs 7.73 dB
TRG 3,800 dBm	02			2.86661 ms
ù dam-				
-10 dBm-				
-10 000				
~20 d8m				
do dom				
-30 dBm				
-40 dBm	I al loc as date	le it e la la catal de la catal	drama, a disatt to	dial distance in the last
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	RALL PARTICIPATION	PAN IN BRANDARS		Control of Control of the Later on St
-60 dBm			The second se	
-70 dBm-				
CF 2.441 GHz		8000 pts		1.0 ms/
OF ZITTL UNZ		ooou prs		1.0 ms/
the second state of the second state of the second state of the	16 ·			
Date: 18.5EP.2022 11:04:2	0			_
Spectrum				
Spectrum Ref Level 20,00 dBm Off	fset 19.24 dB 😑 RB1			
Spectrum Ref Level 20.00 dBm Off Att 20 dB SW SGL Count 1/1 TF	fset 19.24 dB 😑 RB1			
Spectrum Ref Level 20.00 dBm Off Att 20 dB SW	fset 19.24 dB ⊕ RB1 /T 3.2 s ● VB1			
Spectrum Ref Level 20.00 dBm Off Att 20 dB SW SGL Count 1/1 TF @1Pk Cinv	fset 19.24 dB ⊕ RB1 /T 3.2 s ● VB1			
Spectrum Ref Level 20,00 dBm Off Att 20 dB SW SGL Count 1/1 TF P1Pk Cinw 10 dBm	fset 19.24 dB ⊕ RB1 /T 3.2 s ● VB1			
Spectrum Ref Level 20.00 dBm Off Att 20 dB SW SGL Count 1/1 TF IPk Cinw	fset 19.24 dB ⊕ RB1 /T 3.2 s ● VB1			
Spectrum           Ref Level 20.00 dBm         Off           Att         20 dB         SW           SGL Count 1/1         TF         TPk Cinx           10 dBm         TRS 3.800 dBm         0 dBm	fset 19.24 dB ⊕ RB1 /T 3.2 s ● VB1			
Spectrum           Ref Level 20.00 dBm         Off           Att         20 dB         5W           SGL Count 1/1         TF           1Pk Claw         10 dBm           10 dBm         Trig. 3.800 dBm	fset 19.24 dB ⊕ RB1 /T 3.2 s ● VB1			
Spectrum           Ref Level 20.00 dBm         Off           Att         20 dB         SW           SGL Count 1/1         TF         TRk Cinw           10 dBm         TRS 3.800 dBm         0 dBm	fset 19.24 dB ⊕ RB1 /T 3.2 s ● VB1			
Spectrum           Ref Level 20.00 dBm         Off           Att         20 dB         SW           SGL Count 1/1         TF         TPk Cinx           10 dBm         TRS 3.800 dBm         0 dBm	fset 19.24 dB ⊕ RB1 /T 3.2 s ● VB1			
Spectrum           Ref Level 20.00 dBm         Off           Att         20 dB         SW           SGL Count 1/1         TF         TPk Cinx           10 dBm         TRS 3.800 dBm         0 dBm	fset 19.24 dB ⊕ RB1 /T 3.2 s ● VB1			
Spectrum           Ref Level 20.00 dBm         Off           Att         20 dB         SW           SGL Count 1/1         TF         TPk Cinx           10 dBm         TRS 3.800 dBm         0 dBm	fset 19.24 dB ⊕ RB1 /T 3.2 s ● VB1			
Spectrum         Off           Ref Level 20.00 dBm         Off           Att         20 dB         SW           SGL Count 1/1         TF           110 dBm         TRG 3,000 dBm           0 dBm         TRG 3,000 dBm           -10 dBm         TRG 3,000 dBm           -20 dBm         10 dBm	Seet 10,24 dB RB TT 3.2 S VB US:VID	w 3 MHZ		
Spectrum           Ref Level 20.00 dBm         Off           Att         20 dB         SW           SGL Count 1/1         TF         TPk Cinx           10 dBm         TRS 3.800 dBm         0 dBm	Seet 10,24 dB RB TT 3.2 S VB US:VID			
Spectrum           Ref Level 20,00 dBm         Off           Att         20 dB         5W           SGL Count 1/1         TF         5H           10 dBm         10 dBm         10 dBm           10 dBm         10 dBm         10 dBm           -10 dBm         -10 dBm         -10 dBm           -10 dBm         -10 dBm         -10 dBm           -20 dBm         -10 dBm         -10 dBm           -20 dBm         -10 dBm         -10 dBm           -20 dBm         -10 dBm         -10 dBm	Seet 10,24 dB RB TT 3.2 S VB US:VID	w 3 MHZ		
Spectrum           Ref Level 20,00 dBm         Off           Att         20 db         SW           SSL Count //I         TF           10 dBm         TR0 3,800 dBm           0 dBm         TR0 3,800 dBm           -10 dBm         TR0 3,800 dBm           -30 dBm         TR0 3,800 dBm	Seet 10,24 dB RB TT 3.2 S VB US:VID	w 3 MHZ		
Spectrum           Ref Level 20,00 dBm         Off           Att         20 dB         5W           SGL Count 1/1         TF         5H           10 dBm         10 dBm         10 dBm           10 dBm         10 dBm         10 dBm           -10 dBm         -10 dBm         -10 dBm           -10 dBm         -10 dBm         -10 dBm           -20 dBm         -10 dBm         -10 dBm           -20 dBm         -10 dBm         -10 dBm           -20 dBm         -20 dBm         -20 dBm	Seet 10,24 dB RB TT 3.2 S VB US:VID	w 3 MHZ		
Spectrum           Ref Level 20,00 dBm         Off           Att         20 dB         SW           SGL Count 1/1         Tr           10 dBm         10 dBm           0 dBm         10 dBm           -10 dBm         -10 dBm           -30 dBm         -40 dBm           -40 dBm         -40 dBm           -50 dBm         -60 dBm	Seet 10,24 dB RB TT 3.2 S VB US:VID	w 3 MHZ		

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	2	2DH1_Ant1_H	Чор	
Spectrum				
Ref Level 20.00 d Att 20		BW 1 MHz VBW 3 MHz		
SGL Count 1/1	TRG: VID	F ADM 2 MUS		
• 1Pk Clow		1 1	Mart 11	-3.64 dBm
			M1[1]	-142.49 µs
10 dBm			_D2[1]	7.85 dB 385.05 µs
10 dBm	.0 dBm			
<b>U</b> DIN				
-10 dBm-		0 S		
-20 dBm				
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100000000000000000000000000000000000000				
-70 dBm				
CF 2.441 GHz		8000 pts		1.0 ms/
	n and and and a	addu pts		1.0 ms/
Date: 16.SEP.2022	11:06:20			
Spectrum				
Ref Level 20.00 d Att 20		RBW 500 kHz		
SGL Count 1/1	TRG: VID	P TOT S THE		
1Pk Clrw		1	1 1	
10 dBm-	1 - Nor 1000			
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	JU UBIN			
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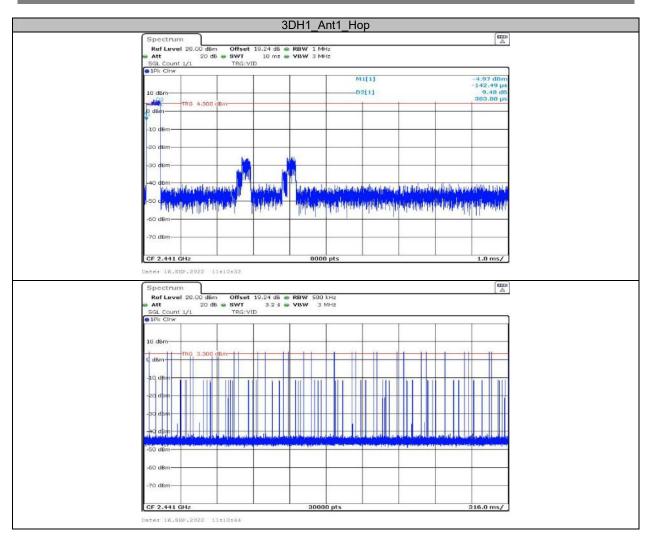
Report No.: SZNS220815-37077E-RF-00A

	_		2	ZDH3_A	Ant1_Ho	р			
Spectrur									
Ref Leve	el 20.00 dB 20 d	m Offset IB <b>SWT</b>		RBW 1N VBW 3N					
SGL Coun	t 1/1	TRG: VI							
1Pk Clrw	1	-		1		1[1]			0.66 dBm
									142.49 µs
10 dBm					D	2[1]		1	3.32 dB 62895 ms
0 dBm	TRG 3.200	dBm		2		-			
o dom									
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-20 dBm									
-30 dBm				17	-				
			1.570						
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				8					
-70 dBm									
CF 2.441	0.11-				0 pts				1.0 ms/
				000	o pra				1.0 1137
Date: 16.5	HE.2022	1110/139							
Spectrur									E A
Ref Leve	el 20.00 dB	m Offset IB <b>SWT</b>		<ul> <li>RBW 500</li> <li>VBW 3</li> </ul>					
SGL Coun	t 1/1	TRG: VI							
1Pk Clow	1	1			10	1	1	- 1	
1Pk Clow	1								
<ul> <li>1Pk Clow</li> <li>10 dBm</li> </ul>									
10 dBm	TRG 2.700	dBm							1
1Pk Clow		dBm							+
10 dBm		dBm-							
• 1Pk Clow 10 dBm		dBm							
<ul> <li>1Pk Clrw</li> <li>10 dBm</li> <li>0 dBm</li> </ul>		dBm							
1Pk Clow     10 dBm		dBm							
1Pk Cirw     10 dBm		dBm							
1Pk Clow     10 dBm		dBm							
10 dBm     0 dBm     -20 dBm     -30 dBm     -40 dBm									
1Pk Cirw     10 dBm									
10 dBm     0 dBm     -20 dBm     -30 dBm     -40 dBm									
1Pk Cirw     10 dBm     0 dBm     -10 dBm     -20 dBm     -20 dBm     -30 dBm     -50 dBm     -50 dBm									
1Pk Cinw     10 dBm     -10 dBm     -20 dBm     -30 dBm     -30 dBm     -50 dBm									
1Pk Cirw     10 dBm     0 dBm     -10 dBm     -20 dBm     -20 dBm     -30 dBm     -50 dBm     -50 dBm									16.0 ms/

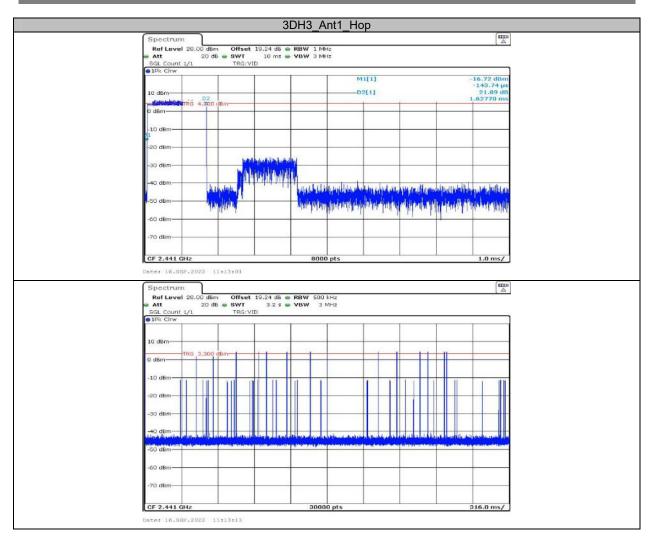
Report No.: SZNS220815-37077E-RF-00A

	20	DH5_Ant1_Ho	р			
Spectrum						]
Ref Level 20.00 dBm Att 20 dB		RBW 1 MHz VBW 3 MHz			5-14-14-14-14-14-14-14-14-14-14-14-14-14-	
SGL Count 1/1	TRG:VID	TOW SPARE				0
1Pk Clow	1 1	M	1[1]		-11.97 dBm	
					-142.49 µs	
10 dBm		D	2[1]		16.36 dB 2.87036 ms	
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and them						
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-60 dBm-						
-70 dBm-						
CF 2.441 GHz		8000 pts			1.0 ms/	1
Date: 16.5EP.2022 11:08	:28					
Spectrum						1
Ref Level 20.00 dBm	Offset 19.24 dB	RBW 500 kHz				
🛥 Att 20 dB 🖷		VBW 3 MHz				
IPk Clrw	18(3) VID					1
10 dBm			-			
TRG 2.800 dBm-	-			-11	1 1	
0 dBm						
-10 dBm						
-20 d8m						
-30 dBm				de la constance de la constancia de la cons		
-40 dBm	and a second	and in which the state of the second	all his int here		I state have seen	
			A first diversity and a second second	test to the second second second		
-JU GBM						
-60 dBm			-			
-70 dBm						
CF 2.441 GHz		30000 pts			316.0 ms/	
						1

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	30113	_Ant1_Hc	р		
Spectrum					
Ref Level 20.00 dBm Offsel	19.24 dB  RBW 10 ms  VBW				
SGL Count 1/1 TRG:\		5 141 12			
• 1Pk Clow	1	1			
		M	1[1]		8.92 dBm 142.49 µs
10 dBm		D	2[1]		13.16 dB
AND AND AND A SOO DEMANDING				2,	87161 ms
0 dBm		-		-	
11 -10 dBm				_	
-10 dBm					
-20 dBm-				_	
-30 dBm		-		-	
-40 dBm	debilitantid a sa diasta on	عاقب فيرقد بالربعانية	والمراجع المراجع والمراجع والمراجع	and Landow Hilds	And Land
-50 dBm	and the other second	and the later by	and the line of the state of th		Part and
-50 dBm	A THE R. L. W. L. W. L. L.	tilden it stedendatet	An Lot La Val and An Da		19 April 10 April 10
-60 dBm-		1 1 1	A STANDAR	1. 6 M	1
-70 dBm		-		-	
CF 2.441 GHz	· · · · ·	3000 pts			1.0 ms/
Date: 16.SEP.2022 11:16:10					
					(111)
Spectrum					
Ref Level 20.00 dBm Offsel	19.24 dB   RBW  3.2 s   VBW				
		2010/201			
SGL Count 1/1 TRG:\					
SGL Count 1/1 TRG:\ 1Pk Clow	1 1			T T	
• 1Pk Cine					
SGL Count 1/1 TRG:\ IPk Cinw I0 dBm					
1Pk Cine     10 dBm     TRG 3:300 dBm			1		1
10 dBm-					
1Pk Clrw     10 dBm     TRG 3.300 dBm     0 dBm					
1Pk Cine     10 dBm     TRG 3:300 dBm					
1Pk Clrw     10 dBm     TRG 3.300 dBm     0 dBm					
1Pk Clrw      10 dBm      TRG 3.300 dBm      0 dBm      10 dB					
1Pk Clrw      10 dBm      TRG 3.300 dBm      0 dBm      10 dB					
1Pic Cinw      10 dBm      TRG 3.300 dBm      0 dBm      -10 dBm      -20 dBm      -30 dBm					
1Pk Clrw      10 d6m      0 d6m      -10 d6m      -20 d6m      -2					
1Pk Cirw      10 d6m      0 d6m      -10 d8m      -10 d8m      -30 d8m      -50 d8m      -60 d8m      -6					
1Pk Cirw      10 d6m      0 d6m      -10 d8m      -10 d8m      -30 d8m      -50 d8m      -60 d8m      -6		0000 pts			6.6 milestructure 16.0 ms/

# Appendix F: Number of hopping channels Test Result

Test Mode	Antenna	Frequency[MHz]	Result[Num]	Limit[Num]	Verdict
DH1	Ant1	Нор	79	≥15	PASS
2DH1	Ant1	Нор	79	≥15	PASS
3DH1	Ant1	Нор	79	≥15	PASS

# **Test Graphs**

Test Graphs	
	DH1_Ant1_Hop
	Spectrum         □□□□           Ref Level 20.00 dBm         Offset 19.51 dB ● RBW 100 kHz
	Att 20 dB SWT 1 ms VBW 300 kHz Mode Auto Sweep Count 1000/1000
	1Pk View
	10 dBm
	o dam
	TU ARA LA A A A A A A A A A A A A A A A A
	-20 dBm
	-30 dBm
	440 dBm
	450 dBm
	-60 dBm
	-70 dBm
	Start 2.4 GHz 691 pts Stop 2.4835 GHz
t.	Date: 16.5EP.2022 11:01:27
	2DH1_Ant1_Hop
) í	Spectrum 🖾
	Ref Level         20.00 dBm         Offset         19.51 dB         RBW         100 kHz           Att         20 dB         SWT         1 ms         VBW 300 kHz         Mode         Auto Sweep
	Count 1000/1000
	10 dBm
	oBlatharternanceranternanceranternanceranternanceranternanceranternanceranternanceranternanceranternancerantern
	-10 d8m
	-20 dBm
	-90 dBm
	440 dBm
	-50 dBm
	-60 dBm
	-70 d6m
	Start 2.4 GHz 691 pts Stop 2.4835 GHz
	Date: 18.5EP.2022 11:06:05
	3DH1_Ant1_Hop
(	Spectrum
	Ref Level 20.00 dBm Offset 19.51 dB  RBW 100 kHz
	Att 20 dB SWT 1 ms VBW 300 kHz Mode Auto Sweep Count 1000/1000
	1Pk View
	10 dBm
	operation was presented and an analyzer of the second present of the second present of the second se
	-10 dBm
	-20 dBm-
	-B0 dBm
	440 dBm
	-50 dBm
	-60 d8m
	-70 dBm-
	Start 2.4 GHz 691 pts Stop 2.4035 GHz
L.	Date: 16.5EP.2022 11:10:17

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# Appendix G: Band edge measurements Test Graphs

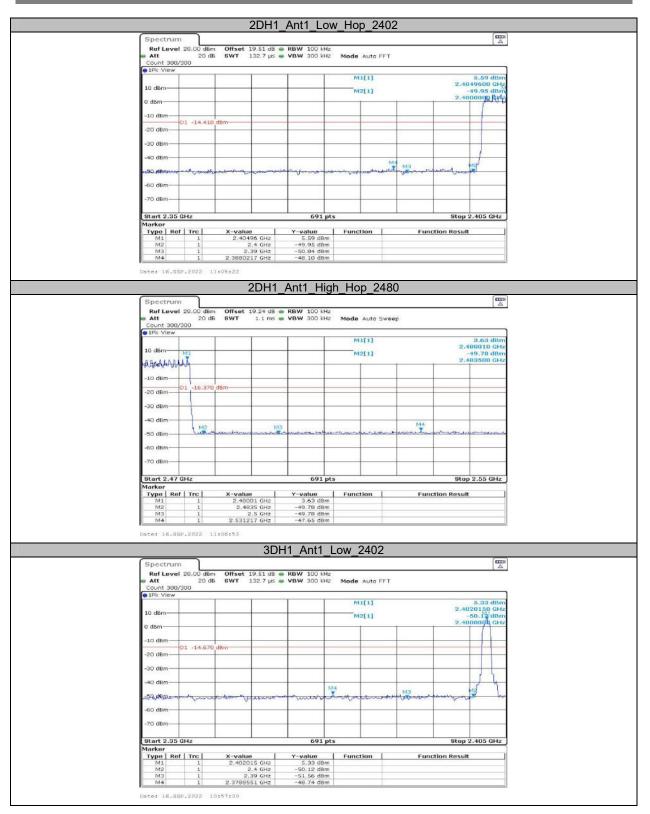


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