

TEST REPORT

FCC ID: 2BC96NI-9010

Product : Peekababy
Model Name : NI-9010, NI-9011, NI-9012, NI-9013, NI-9014,
NI-9015, NI-9016, NI-9017, NI-9018, NI-9019
Brand : Netvue
Report No. : NCT240391449XE1-2

Prepared for

NETVUE INC.

1055 East Colorado Boulevard 5th Floor Pasadena, CA, 91106

Prepared by

Shenzhen NCT Testing Technology Co., Ltd.

**A101&2F B2, Fuqiao 6th Area, Xintian Community, Fuhai Street, Baoan District,
Shenzhen, People's Republic of China**

TEL: 400-8868-419

FAX: 86-755-27790922

1 TEST RESULT CERTIFICATION

Applicant's name : NETVUE INC.

Address : 1055 East Colorado Boulevard 5th Floor Pasadena, CA, 91106

Manufacture's name : NETVUE INC.

Address : 1055 East Colorado Boulevard 5th Floor Pasadena, CA, 91106

Product name : Peekababy

Model name : NI-9010, NI-9011, NI-9012, NI-9013, NI-9014,
NI-9015, NI-9016, NI-9017, NI-9018, NI-9019

Standards : FCC CFR47 Part 15 Section 15.247

Test procedure : ANSI C63.10:2020

Date of test : Oct. 28, 2024 - Jul. 08, 2025

Date of Issue : Jul. 08, 2025

This device described above has been tested by NCT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of NCT, this document may be altered or revised by NCT, personal only, and shall be noted in the revision of the document.

Test Engineer:

Keven Wu / Engineer

Technical Manager:

Henry Wang / Manager



Contents

Page

1 TEST RESULT CERTIFICATION	2
2 TEST SUMMARY	5
3 GENERAL INFORMATION	6
3.1 GENERAL DESCRIPTION OF E.U.T.	6
3.2 CHANNEL LIST	7
3.3 TEST SITE	8
3.4 TEST SETUP CONFIGURATION	8
3.5 TEST MODE	9
4 EQUIPMENT DURING TEST	10
4.1 EQUIPMENTS LIST	10
4.2 MEASUREMENT UNCERTAINTY	12
4.3 DESCRIPTION OF SUPPORT UNITS	12
5 CONDUCTED EMISSION	13
5.1 E.U.T. OPERATION	13
5.2 EUT SETUP	13
5.3 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	14
5.4 MEASUREMENT PROCEDURE	14
5.5 CONDUCTED EMISSION LIMIT	14
5.6 MEASUREMENT DESCRIPTION	14
5.7 CONDUCTED EMISSION TEST RESULT	14
6 RADIATED SPURIOUS EMISSIONS	17
6.1 EUT OPERATION	17
6.2 TEST SETUP	18
6.3 SPECTRUM ANALYZER SETUP	19
6.4 TEST PROCEDURE	20
6.5 SUMMARY OF TEST RESULTS	21
7 CONDUCT BAND EDGE AND SPURIOUS EMISSIONS MEASUREMENT	28
7.1 TEST PROCEDURE	28
7.2 TEST RESULT	28

BAND EDGE	29
8 6DB&99% BANDWIDTH MEASUREMENT	33
8.1 TEST PROCEDURE	33
8.2 TEST RESULT	33
9 MAXIMUM OUTPUT POWER	38
9.1 TEST PROCEDURE	38
9.2 TEST SETUP	38
9.3 TEST RESULT	39
10 POWER SPECTRAL DENSITY	40
10.1 TEST PROCEDURE	40
10.2 TEST RESULT	40
11 DUTY CYCLE	43
11.1 TEST PROCEDURE	43
11.2 TEST SETUP	44
11.3 TEST RESULT	44
12 ANTENNA APPLICATION	47
12.1 ANTENNA REQUIREMENT	47
12.2 RESULT	47
13 TEST SETUP AND EUT PHOTOS	48

2 Test Summary

Test Items	Test Requirement	Result
Conduct Emission	FCC part 15.207	PASS
Radiated Spurious Emissions	FCC part 15.205/15.209	PASS
Conducted Spurious Emission	FCC part 15. 247(d)	PASS
Band edge	FCC part 15.247(d)	PASS
6dB&99% Bandwidth	FCC part 15.247 (a)(2)	PASS
Maximum Peak Output Power	FCC part 15.247 (b)(3)	PASS
Power Spectral Density	FCC part 15.247 (e)	PASS
Antenna Requirement	FCC part 15.203/15.247 (c)	PASS

Remark:

"N/A" denotes test is not applicable in this Test Report.

3 General Information

3.1 General Description of E.U.T.

Product Name	:	Peekababy
Model Name	:	NI-9010
Sample ID	:	20241028A-001
Sample(s) Status:	:	Engineer sample
Series Model	:	NI-9011, NI-9012, NI-9013, NI-9014, NI-9015, NI-9016, NI-9017, NI-9018, NI-9019
Model Different.:	:	All the same except the model number.
Specification	:	802.11ah
Operation Frequency	:	905-925MHz for 802.11ah;
Number of Channel	:	11 channels for 802.11ah
Type of Modulation	:	OFDM with BPSK/QPSK/16QAM/64QAM for 802.11ah;
Antenna installation	:	FPCB Antenna
Antenna Gain	:	0.61 dBi
Power supply	:	DC 5V From adapter input AC 120V/60Hz
Hardware Version	:	G625-C01-V1
Software Version	:	1.6.2
Remark: the Antenna gain is provided by customer from Antenna spec. and the laboratory will not be responsible for the accumulated calculation results which covers the information provided by the applicant.		

3.2 Channel List

The EUT has been tested under its typical operating condition.

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Test of channel included the lowest and middle and highest frequency to perform the test, then record on this report.

Those data rates (802.11ah: 100Kbps were used for all test.

Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Frequency and Channel list for 802.11ah:

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	905MHz	4	911MHz	7	917MHz	10	923MHz
2	907MHz	5	913MHz	8	919MHz	11	925MHz
3	909MHz	6	915MHz	9	921MHz		

Test Frequency and Channel for 802.11 ah:

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	905	6	915	11	925

3.3 Test Site

Site Description

EMC Lab. : Accredited by CNAS, 2022-09-27

The certificate is valid until 2028.01.07

The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006 (identical to ISO/IEC 17025:2017)

The Certificate Registration Number is L8251

Designation Number: CN1347

Test Firm Registration Number: 894804

Accredited by A2LA, June 14, 2023

The Certificate Registration Number is 6837.01

Accredited by Industry Canada, November 09, 2018

The Conformity Assessment Body Identifier is CN0150

Company Number: 30806

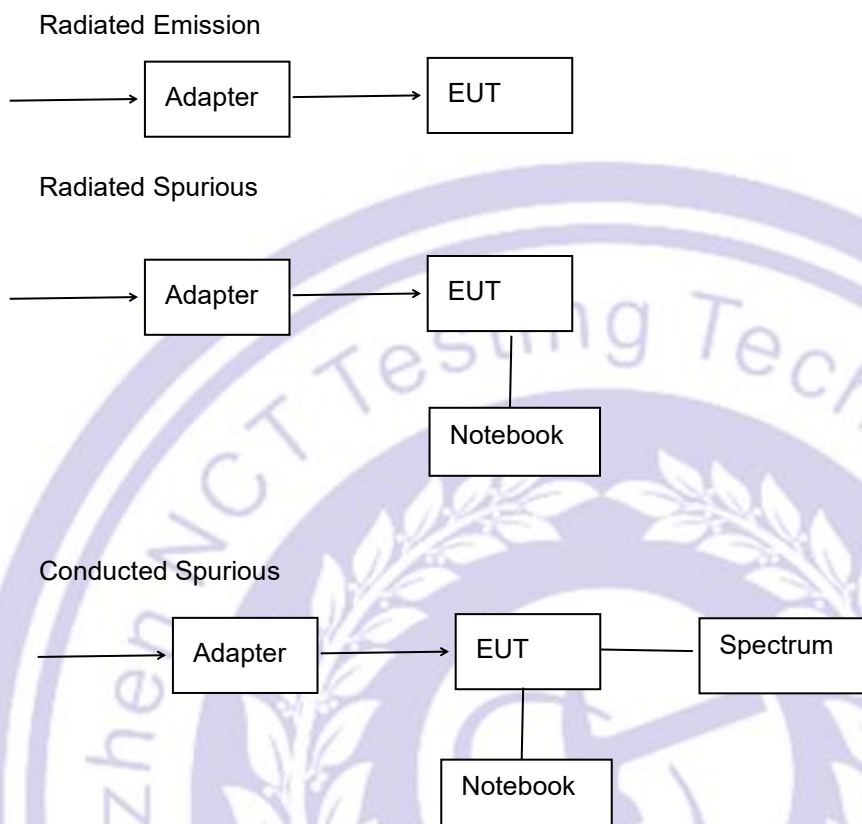
Name of Firm : Shenzhen NCT Testing Technology Co., Ltd.

Site Location : A101&2F B2, Fuqiao 6th Area, Xintian Community, Fuhai Street, Baoan District, Shenzhen, People's Republic of China

3.4 Test Setup Configuration

Conducted Emission





3.5 Test Mode

Transmitting mode	Keep the EUT in continuously transmitting mode.
Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

Test Software	IPOP
Power level setup	< 20 dBm

4 Equipment During Test

4.1 Equipments List

Radiated emission & Radio Frequency Test Equipment

Name	Model No.	Serial No.	Manufacturer	Date of Cal.	Due Date
966 Shielded Room	966 Room	/	EMToni	2025/1/17	2028/1/16
EMI Test Receiver	ESCI	101178	Rohde & Schwarz	2025/6/10	2026/6/09
Spectrum Analyze (10Hz-26.5GHz)	N9020A	MY50510202	Agilent	2025/6/10	2026/6/09
Amplifi (30MHz-1GHz)	BBV 9743 B	00374	SCHNWARZBECK	2025/6/10	2026/6/09
Bilog Antenna (30MHz-1GHz)	VULB9162	00473	SCHNWARZBECK	2025/3/08	2026/3/07
Horn antenna (1GHz-18GHz)	BBHA 9120 D	02622	SCHNWARZBECK	2025/3/10	2026/3/09
Pream plifier (1GHz-18GHz)	BBV 9718D	00042	SCHNWARZBECK	2025/6/10	2026/6/09
Spectrum Analyze (1GHz-40GHz)	FSV 40	100952	Rohde & Schwarz	2025/6/10	2026/6/09
Pream plifier (15GHz-40GHz)	BBV 9721	0056	SCHNWARZBECK	2025/3/10	2026/3/09
Broadband Antenna (15GHz-40GHz)	SAS-574	588	A.H.System	2025/3/10	2026/3/09
Loop Antenna (9KHz-30MHz)	FMZB1519B	014	SCHNWARZBECK	2025/6/13	2026/6/12
Capacitive voltage probe	CVP 9222 C	00109	SCHNWARZBECK	2025/6/10	2026/6/09
MXG Signal Analyzer	N9020A	MY50510202	Agilent	2025/6/10	2026/6/09
MXG Vector Signal Generator	N5182A	MY50140020	Agilent	2025/6/10	2026/6/09
MXG Analog Signal Generator	N5181A	MY47420919	Agilent	2025/6/10	2026/6/09
Power Sensor	TR1029-2	512364	Techoy	2025/6/10	2026/6/09
RF Swith	TR1029-1	512364	Techoy	2025/6/10	2026/6/09

Cable	DA800-4000MM	NA	DA	2025/6/10	2026/6/09
Cable	DA800-11000MM	NA	DA	2025/6/10	2026/6/09

Conducted emission Test Equipment

Name	Model No.	Serial No.	Manufacturer	Date of Cal.	Due Date
944 Shielded Room	944 Room	/	EMToni	2025/1/17	2028/1/16
EMI Test Receiver	ESPI	101604	Rohde & Schwarz	2025/6/10	2026/6/09
LISN	ENV 216	102796	Rohde & Schwarz	2025/6/10	2026/6/09
LISN	VN1-13S	004023	CRANAGE	2025/6/10	2026/6/09
Cable	RG223-1500MM	NA	RG	2025/6/10	2026/6/09

Other

Item	Name	Manufacturer	Model	Software version
1	EMC Conduction Test System	FALA	EZ-EMC	Ver.EMC-CON 3A1.1+
2	EMC radiation test system	FALA	EZ-EMC	Ver.FA-03A2 RE+
3	RF test system	TACHOY	RFTest	V1.0.0
4	RF communication test system	TACHOY	RFTest	V1.0.0

4.2 Measurement Uncertainty

Parameter	Uncertainty
RF output power, conducted	±1.0dB
Power Spectral Density, conducted	±2.2dB
Radio Frequency	± 1 x 10 ⁻⁶
Bandwidth	± 1.5 x 10 ⁻⁶
Time	±2%
Duty Cycle	±2%
Temperature	±1° C
Humidity	±5%
DC and low frequency voltages	±3%
Conducted Emissions (150kHz~30MHz)	±3.64dB
Radiated Emission(9KHz~30MHz)	±4.51dB
Radiated Emission(30MHz~1GHz)	±5.03dB
Radiated Emission(1GHz~25GHz)	±4.74dB
Radiated Emission(25GHz~40GHz)	±3.38dB

4.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Peekababy	Netvue	NI-9010	N/A	EUT
E-2	Adapter	OMIX	X2904	A03650000001245	Auxiliary

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

5 Conducted Emission

Test Requirement:	: FCC CFR 47 Part 15 Section 15.207, RSS-Gen§8.8, RSS-247§ 3.1
Test Method	: ANSI C63.10: 2020
Test Result	: PASS
Frequency Range	: 150kHz to 30MHz
Class/Severity	: Class B

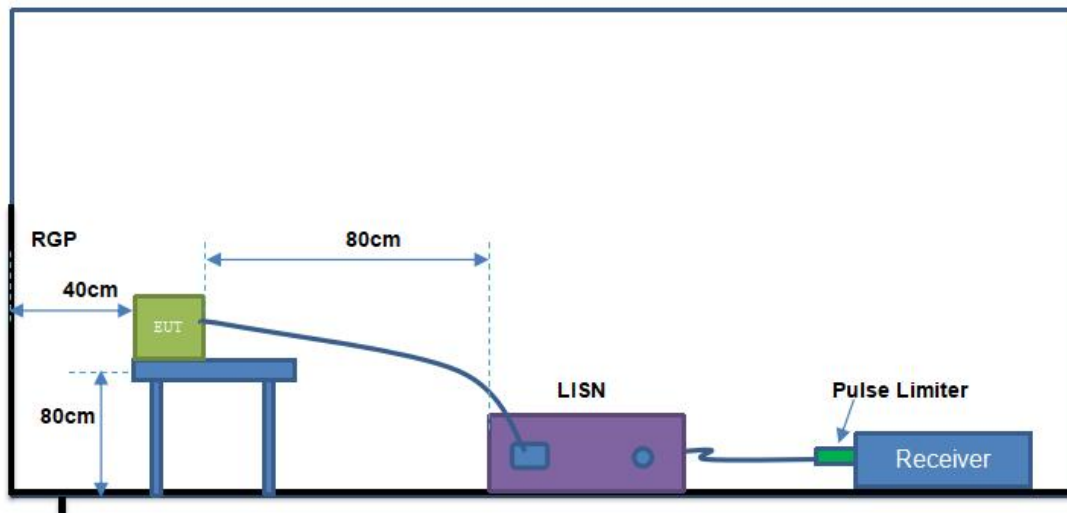
5.1 E.U.T. Operation

Operating Environment :

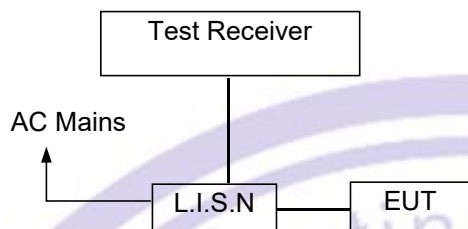
Temperature	: 24.5 °C
Humidity	: 51.3 % RH
Atmospheric Pressure	: 101.11kPa

5.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10:2020.



5.3 Test SET-UP (Block Diagram of Configuration)



5.4 Measurement Procedure

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

5.5 Conducted Emission Limit

Conducted Emission

Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note:

1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

5.6 Measurement Description

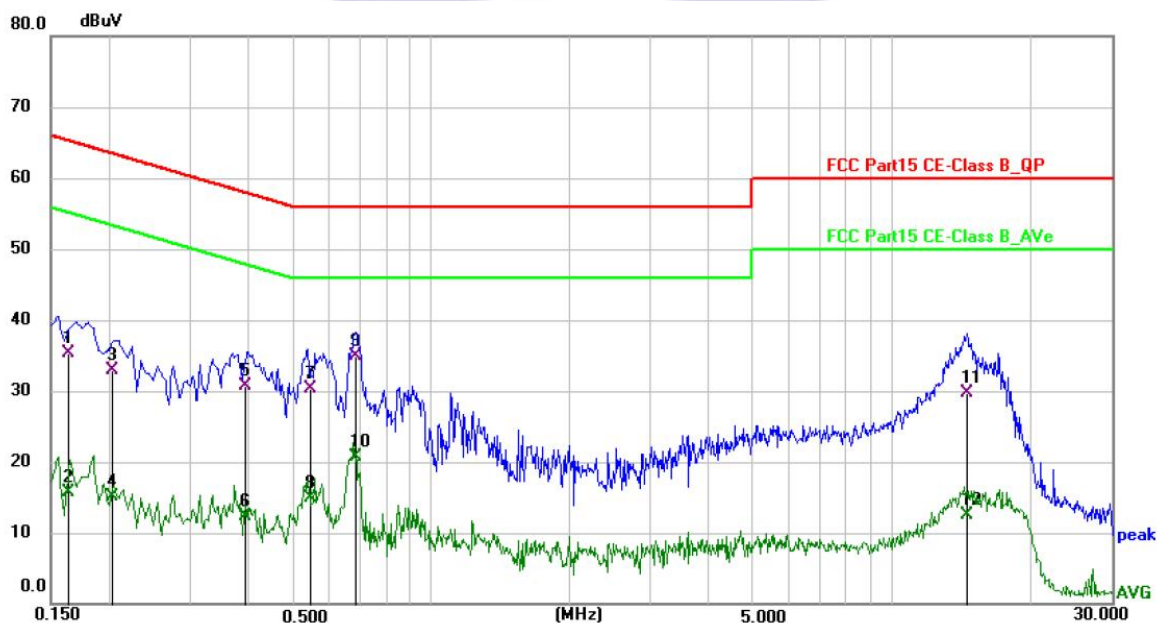
The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

5.7 Conducted Emission Test Result

Pass.

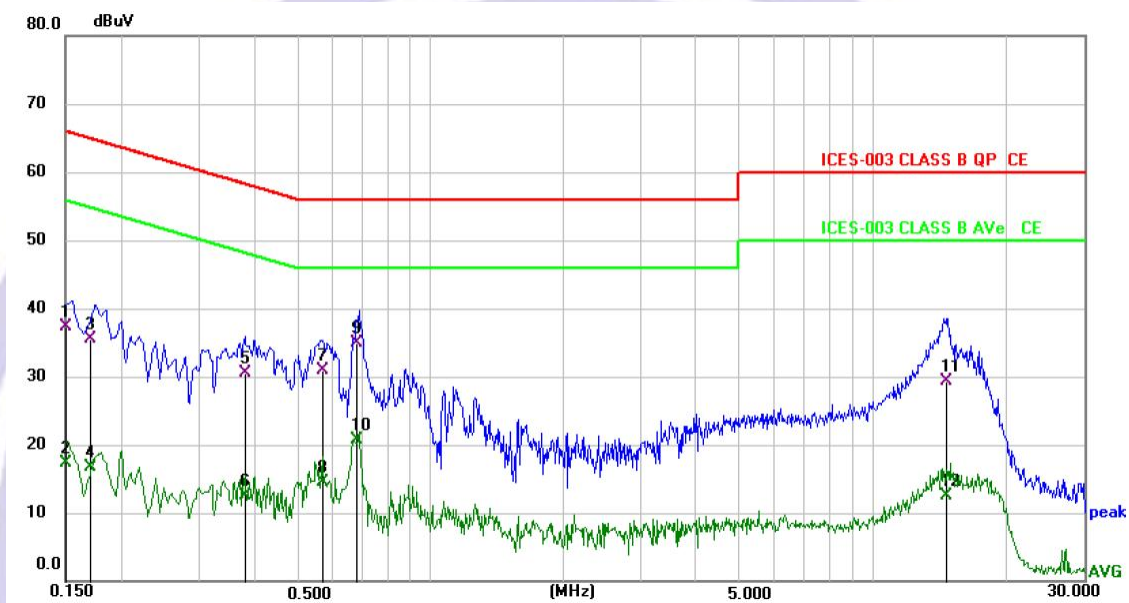
Please refer to the following pages.

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	L
Test Voltage :	AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1648	25.70	9.67	35.37	65.22	-29.85	QP	P
2	0.1648	5.95	9.67	15.62	55.22	-39.60	AVG	P
3	0.2046	23.31	9.67	32.98	63.42	-30.44	QP	P
4	0.2046	5.46	9.67	15.13	53.42	-38.29	AVG	P
5	0.3967	20.98	9.67	30.65	57.92	-27.27	QP	P
6	0.3967	2.65	9.67	12.32	47.92	-35.60	AVG	P
7	0.5458	20.72	9.67	30.39	56.00	-25.61	QP	P
8	0.5458	5.22	9.67	14.89	46.00	-31.11	AVG	P
9 *	0.6851	25.20	9.67	34.87	56.00	-21.13	QP	P
10	0.6851	10.98	9.67	20.65	46.00	-25.35	AVG	P
11	14.5738	19.80	9.91	29.71	60.00	-30.29	QP	P
12	14.5738	2.56	9.91	12.47	50.00	-37.53	AVG	P

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	N
Test Voltage :	AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1502	27.69	9.67	37.36	65.99	-28.63	QP	P
2	0.1502	7.66	9.67	17.33	55.99	-38.66	AVG	P
3	0.1709	25.88	9.67	35.55	64.92	-29.37	QP	P
4	0.1709	6.94	9.67	16.61	54.92	-38.31	AVG	P
5	0.3815	20.89	9.67	30.56	58.25	-27.69	QP	P
6	0.3815	2.82	9.67	12.49	48.25	-35.76	AVG	P
7	0.5735	21.21	9.67	30.88	56.00	-25.12	QP	P
8	0.5735	4.81	9.67	14.48	46.00	-31.52	AVG	P
9 *	0.6842	25.15	9.67	34.82	56.00	-21.18	QP	P
10	0.6842	11.12	9.67	20.79	46.00	-25.21	AVG	P
11	14.7321	19.33	9.91	29.24	60.00	-30.76	QP	P
12	14.7321	2.51	9.91	12.42	50.00	-37.58	AVG	P

Notes: 1. An initial pre-scan was performed on the line and neutral lines with peak detector.

2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.

3. Measurement Level = Reading level + Correct Factor

6 Radiated Spurious Emissions

Test Requirement : FCC CFR47 Part 15 Section 15.209 & 15.247
RSS-Gen §8.9, RSS-Gen §8.10
Test Method : ANSI C63.10:2020
Test Result : PASS
Measurement Distance : 3m
Limit : See the follow table

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	20log ^{(2400/F(kHz))} + 80
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	20log ^{(24000/F(kHz))} + 40
1.705 ~ 30	30	30	100 * 30	20log ⁽³⁰⁾ + 40
30 ~ 88	100	3	100	20log ⁽¹⁰⁰⁾
88 ~ 216	150	3	150	20log ⁽¹⁵⁰⁾
216 ~ 960	200	3	200	20log ⁽²⁰⁰⁾
Above 960	500	3	500	20log ⁽⁵⁰⁰⁾

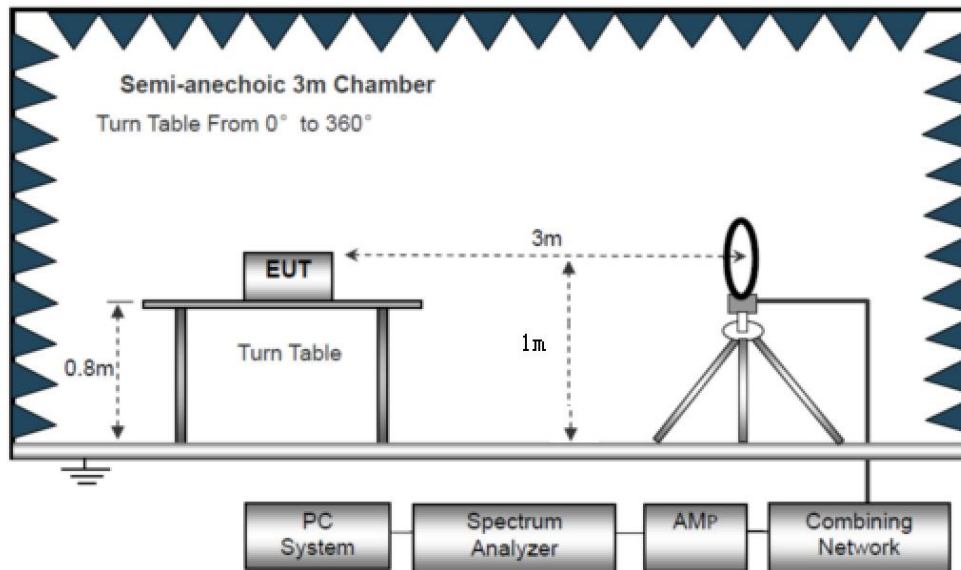
6.1 EUT Operation

Operating Environment :
Temperature: : 26°C
Humidity: : 54 % RH
Atmospheric Pressure: : 101.11kPa
Test Voltage : AC 120V/60Hz

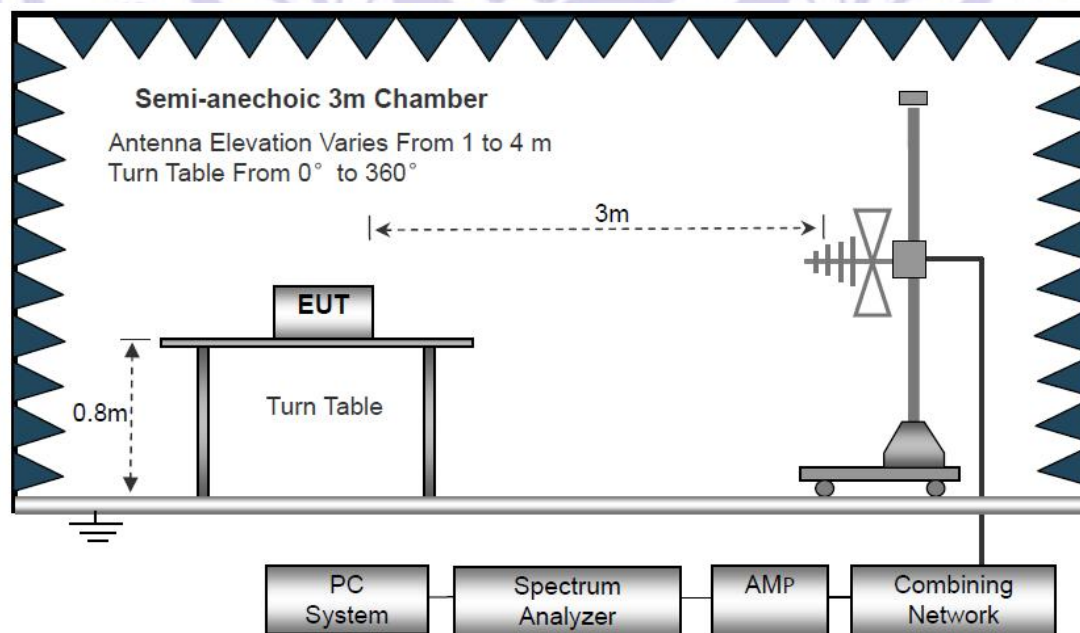
6.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

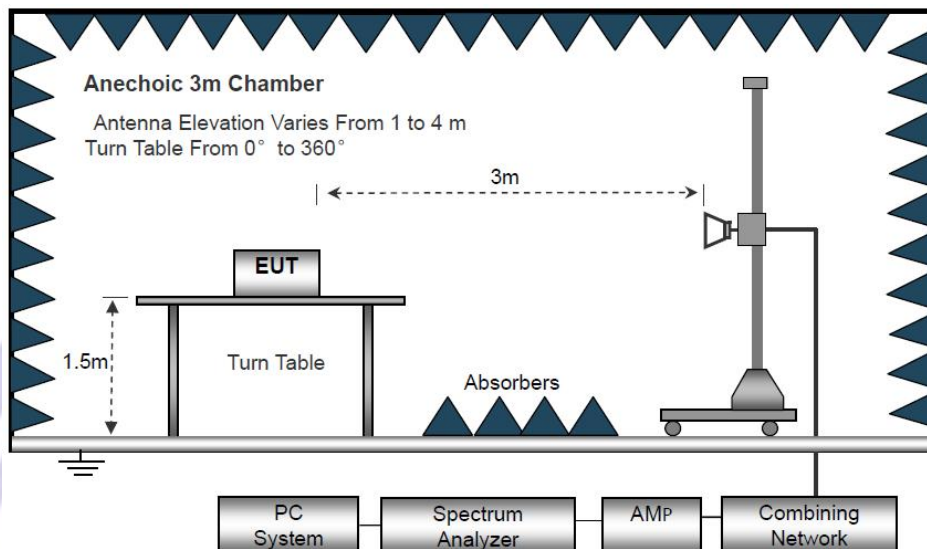
The test setup for emission measurement below 30MHz



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz



6.3 Spectrum Analyzer Setup

Below 30MHz			
IF Bandwidth	:	10kHz	
Resolution Bandwidth	:	10kHz	
Video Bandwidth	:	10kHz	
30MHz ~ 1GHz			
Detector	:	PK	QP
Resolution Bandwidth	:	100kHz	120kHz
Video Bandwidth	:	300kHz	300kHz
Above 1GHz			
Detector	:	PK	AV
Resolution Bandwidth	:	1MHz	1MHz
Video Bandwidth	:	3MHz	10Hz

6.4 Test Procedure

1. Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane, And above 1000MHz, The EUT was placed on a styrofoam table which is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.
8. The test above 1GHz must be use the fully anechoic room, and the test below 1GHz use the half anechoic room

6.5 Summary of Test Results

Test Frequency: 9KHz-30MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)
--	--	--	--	>20

Note:

The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor = $40\log(\text{Specific distance} / \text{test distance})$ (dB);
Limit line = Specific limits (dBuV) + distance extrapolation factor.

Test Frequency: 30MHz ~ 1GHz

All the modulation modes were tested the data of the worst mode (TX 802.11b Low Channel) are recorded in the following pages and the others modulation methods do not exceed the limits.

Please refer to the following test plots:

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	70.8315	48.84	-18.26	30.58	40.00	-9.42	QP
2	80.6440	48.54	-19.97	28.57	40.00	-11.43	QP
3	140.8350	48.93	-19.42	29.51	43.50	-13.99	QP
4	153.2000	51.08	-19.09	31.99	43.50	-11.51	QP
5	162.0413	52.59	-18.62	33.97	43.50	-9.53	QP
6	181.2834	47.50	-17.39	30.11	43.50	-13.39	QP

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	44.1200	42.74	-14.45	28.29	40.00	-11.71	QP
2	55.6092	40.05	-14.67	25.38	40.00	-14.62	QP
3	67.9128	50.04	-17.46	32.58	40.00	-7.42	QP
4	128.5630	49.50	-18.72	30.78	43.50	-12.72	QP
5	163.1817	45.09	-18.63	26.46	43.50	-17.04	QP
6	197.8925	41.70	-16.52	25.18	43.50	-18.32	QP

Remark: Emission Level = Reading + Cable Loss + ANT Factor

Test Frequency: From 1GHz to 10GHz

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Test Voltage:	AC 120V/60Hz

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre- amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/ m)	Margin (dB)	Detect or Type
Low Channel:905MHz									
V	1810	59.81	28.86	3.79	24.17	58.91	74.00	-15.09	PK
V	1810	37.52	28.86	3.79	24.17	36.62	54.00	-17.38	AV
V	2715	52.52	29.01	4.68	24.26	52.45	74.00	-21.55	PK
V	2715	37.54	29.01	4.68	24.26	37.47	54.00	-16.53	AV
V	3620	52.73	29.64	5.01	24.38	52.48	74.00	-21.52	PK
V	3620	34.22	29.64	5.01	24.38	33.97	54.00	-20.03	AV
V	4525	56.45	30.08	5.33	24.57	56.27	74.00	-17.73	PK
V	4525	36.95	30.08	5.33	24.57	36.77	54.00	-17.23	AV
H	1810	55.18	28.86	3.79	24.17	54.28	74.00	-19.72	PK
H	1810	35.53	28.86	3.79	24.17	34.63	54.00	-19.37	AV
H	2715	53.77	29.01	4.68	24.26	53.70	74.00	-20.30	PK
H	2715	32.82	29.01	4.68	24.26	32.75	54.00	-21.25	AV
H	3620	57.65	29.64	5.01	24.38	57.40	74.00	-16.60	PK
H	3620	34.84	29.64	5.01	24.38	34.59	54.00	-19.41	AV
H	4525	55.50	30.08	5.33	24.57	55.32	74.00	-18.68	PK
H	4525	36.95	30.08	5.33	24.57	36.77	54.00	-17.23	AV

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Test Voltage:	AC 120V/60Hz

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detect or Type
Middle Channel:915MHz									
V	1830	58.71	28.86	3.79	24.17	57.81	74.00	-16.19	PK
V	1830	34.96	28.86	3.79	24.17	34.06	54.00	-19.94	AV
V	2745	50.94	29.01	4.68	24.26	50.87	74.00	-23.13	PK
V	2745	34.03	29.01	4.68	24.26	33.96	54.00	-20.04	AV
V	3660	56.10	29.64	5.01	24.38	55.85	74.00	-18.15	PK
V	3660	37.08	29.64	5.01	24.38	36.83	54.00	-17.17	AV
V	4575	55.55	30.08	5.33	24.57	55.37	74.00	-18.63	PK
V	4575	33.99	30.08	5.33	24.57	33.81	54.00	-20.19	AV
H	1830	52.39	28.86	3.79	24.17	51.49	74.00	-22.51	PK
H	1830	36.73	28.86	3.79	24.17	35.83	54.00	-18.17	AV
H	2745	55.99	29.01	4.68	24.26	55.92	74.00	-18.08	PK
H	2745	34.48	29.01	4.68	24.26	34.41	54.00	-19.59	AV
H	3660	55.70	29.64	5.01	24.38	55.45	74.00	-18.55	PK
H	3660	37.67	29.64	5.01	24.38	37.42	54.00	-16.58	AV
H	4575	58.31	30.08	5.33	24.57	58.13	74.00	-15.87	PK
H	4575	41.03	30.08	5.33	24.57	40.85	54.00	-13.15	AV

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Test Voltage:	AC 120V/60Hz

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detect or Type
High Channel:925MHz									
V	1850	55.73	28.86	3.79	24.17	54.83	74.00	-19.17	PK
V	1850	36.53	28.86	3.79	24.17	35.63	54.00	-18.37	AV
V	2775	56.50	29.01	4.68	24.26	56.43	74.00	-17.57	PK
V	2775	34.58	29.01	4.68	24.26	34.51	54.00	-19.49	AV
V	3700	52.93	29.64	5.01	24.38	52.68	74.00	-21.32	PK
V	3700	38.08	29.64	5.01	24.38	37.83	54.00	-16.17	AV
V	4625	55.99	30.08	5.33	24.57	55.81	74.00	-18.19	PK
V	4625	37.54	30.08	5.33	24.57	37.36	54.00	-16.64	AV
H	1850	53.72	28.86	3.79	24.17	52.82	74.00	-21.18	PK
H	1850	38.41	28.86	3.79	24.17	37.51	54.00	-16.49	AV
H	2775	54.65	29.01	4.68	24.26	54.58	74.00	-19.42	PK
H	2775	34.54	29.01	4.68	24.26	34.47	54.00	-19.53	AV
H	3700	57.62	29.64	5.01	24.38	57.37	74.00	-16.63	PK
H	3700	37.87	29.64	5.01	24.38	37.62	54.00	-16.38	AV
H	4625	57.29	30.08	5.33	24.57	57.11	74.00	-16.89	PK
H	4625	32.92	30.08	5.33	24.57	32.74	54.00	-21.26	AV

Note:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss - Pre-amplifier,

Margin= Emission Level - Limit

2. If peak below the average limit, the average emission was no test.

3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Test Voltage:	AC 120V/60Hz

	Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type	Result
802.11ah	Low Channel 905MHz										
	H	899.08	31.32	22.59	2.37	19.75	30.85	46.00	-15.15	QP	PASS
	H	902.00	37.19	22.59	2.37	19.75	36.72	46.00	-9.28	QP	PASS
	V	900.90	29.06	22.59	2.37	19.75	28.59	46.00	-17.41	QP	PASS
	V	902.00	37.75	22.59	2.37	19.75	37.28	46.00	-8.72	QP	PASS
	High Channel 925MHz										
	H	928.00	34.37	22.59	2.37	19.75	33.90	46.00	-12.10	QP	PASS
	H	932.38	32.00	22.59	2.37	19.75	31.53	46.00	-14.47	QP	PASS
	V	928.00	27.69	22.59	2.37	19.75	27.22	46.00	-18.78	QP	PASS
	V	929.58	26.58	22.59	2.37	19.75	26.11	46.00	-19.89	QP	PASS
Remark: 1. Emission Level = Meter Reading + Antenna Factor + Cable Loss - Pre-amplifier, Margin= Emission Level - Limit											

7 Conduct Band Edge And Spurious Emissions Measurement

Test Requirement	:	FCC CFR47 Part 15 Section 15.247, RSS-247 § 5.5
Test Method	:	ANSI C63.10:2020
Test Limit	:	Regulation 15.247 (d), 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)). RSS-247 § 5.5: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

7.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz, Sweep = auto
Detector function = peak, Trace = max hold

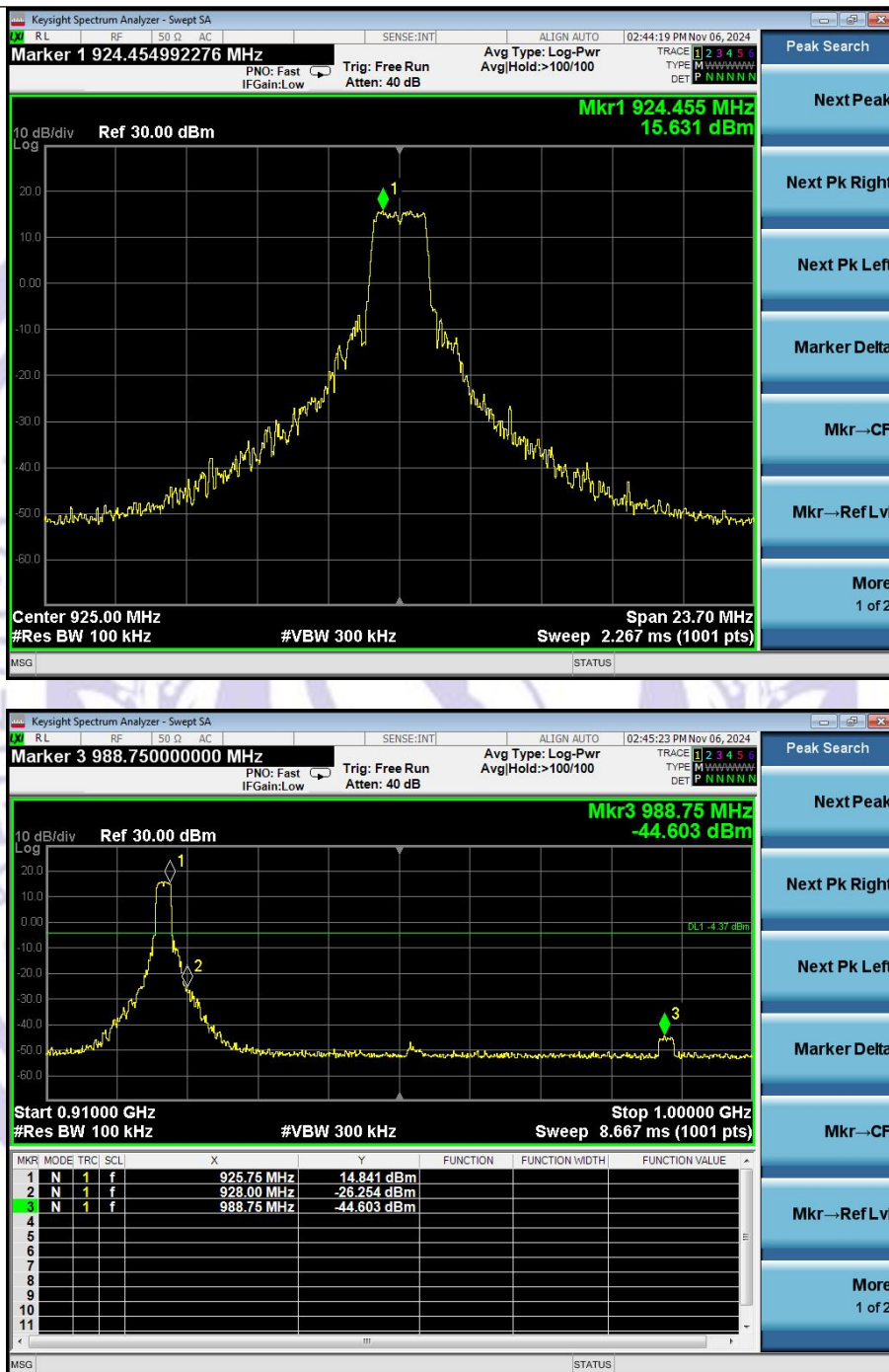
7.2 Test Result

Band Edge

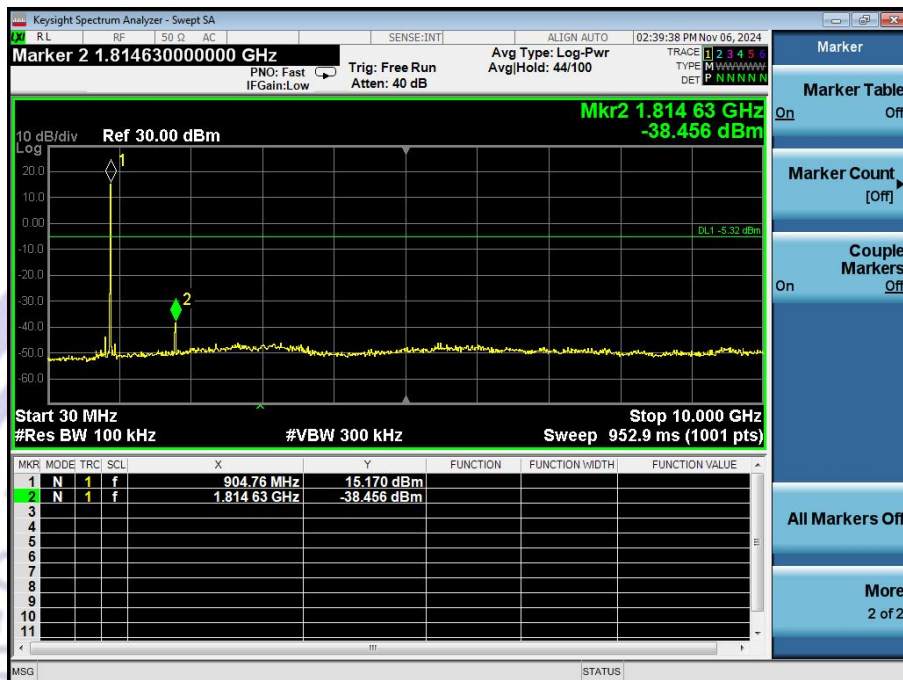
Test plot as follows:



Highest channel



CH01



CH06



CH11



8 6dB&99% Bandwidth Measurement

Test Requirement : FCC CFR47 Part 15 Section 15.247, RSS-GEN §6.7& RSS-247 §5.2

Test Method : ANSI C63.10:2020

Test Limit : Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

8.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz for 6dB bandwidth
3. Set the spectrum analyzer: RBW = 1%-5% OBW, VBW = 3*RBW for 99% bandwidth

8.2 Test Result

	Test CH	-6dB Occupy Bandwidth (MHz)		
		802.11ah	Limit (KHz)	Result
ANT1	Lowest	1.825	>500	Pass
	Middle	1.791		
	Highest	1.802		

	Test CH	99% Occupy Bandwidth (MHz)		
		802.11ah	Limit (KHz)	Result
ANT1	Lowest	1.8049	/	Pass
	Middle	1.8093		
	Highest	1.8011		

-6dB Occupy Bandwidth

CH01



CH06



CH11



99% Occupy Bandwidth

CH01



CH06



CH11



9 Maximum Output Power

Test Requirement : FCC CFR47 Part 15 Section 15.247, RSS-247 § 5.4

Test Method : ANSI C63.10:2020

Test Limit : Regulation 15.247 (b)(3)

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power.

RSS-247 § 5.4

For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1 W. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e).

9.1 Test Procedure

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

9.2 Test Setup



9.3 Test Result

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode		

Frequency	Maximum Output Power(dBm)	Limit(dBm)	Antenna Gain (dBm)	EIRP (dBm)	EIRP Limit(dBm)	Result
905 MHz	18.35	30	0.61	18.96	36	PASS
915 MHz	18.48	30	0.61	19.09	36	PASS
925 MHz	18.82	30	0.61	19.43	36	PASS

10 Power Spectral density

Test Requirement	: FCC CFR47 Part 15 Section 15.247, RSS-247 §5.2
Test Method	: ANSI C63.10:2020
Test Limit	: Regulation 15.247(f) The power spectral density conducted from the intentional radiator to the antenna due to the digital modulation operation of the hybrid system, with the frequency hopping operation turned off, shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

10.1 Test Procedure

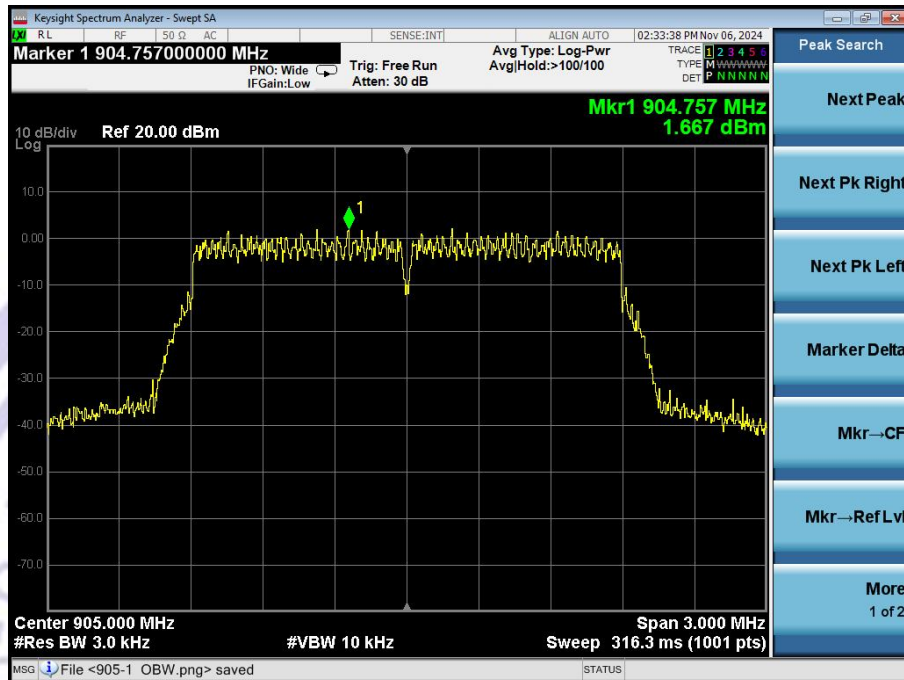
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz, Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

10.2 Test Result

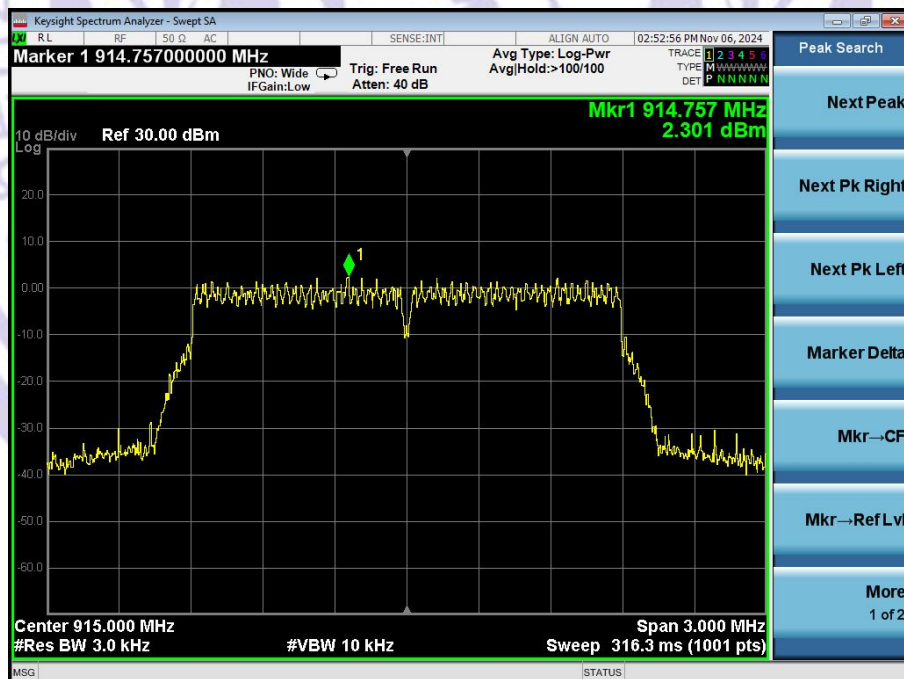
Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode		

Frequency	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
905 MHz	1.667	8	PASS
915 MHz	2.301	8	PASS
925 MHz	2.805	8	PASS

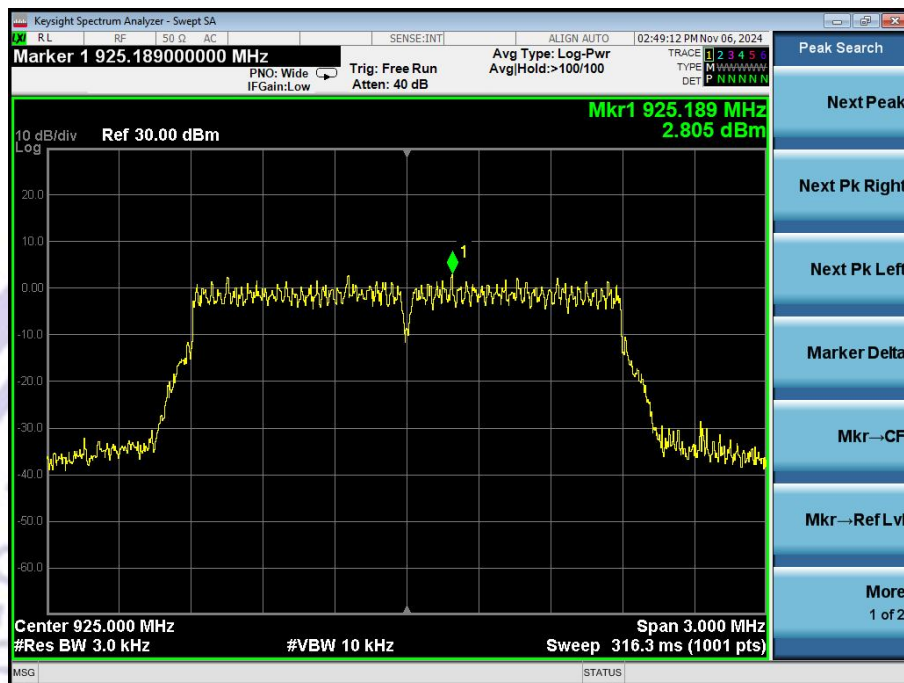
CH01



CH06



CH11



11 Duty Cycle

11.1 Test Procedure

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set $RBW \geq OBW$ if possible; otherwise, set RBW to the largest available value. Set $VBW \geq RBW$. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$ and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if $T \leq 16.7$ microseconds.)

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.

The path loss was compensated to the results for each measurement.

Set to the maximum power setting and enable the EUT transmit continuously.

The EUT was operating in controlled its channel.

Use the following spectrum analyzer settings:

Span = Zero Span

RBW = 8MHz

VBW = 50MHz

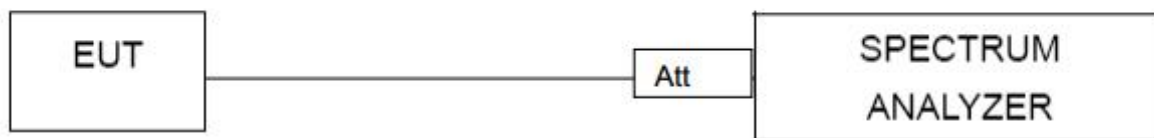
Number of points in Sweep > 100

Detector function = peak

Trace = Clear write Measure T_{total} and T_{on}

Calculate Duty Cycle = T_{on} / T_{total} and Duty Cycle Factor = $10 \cdot \log(1/\text{Duty Cycle})$

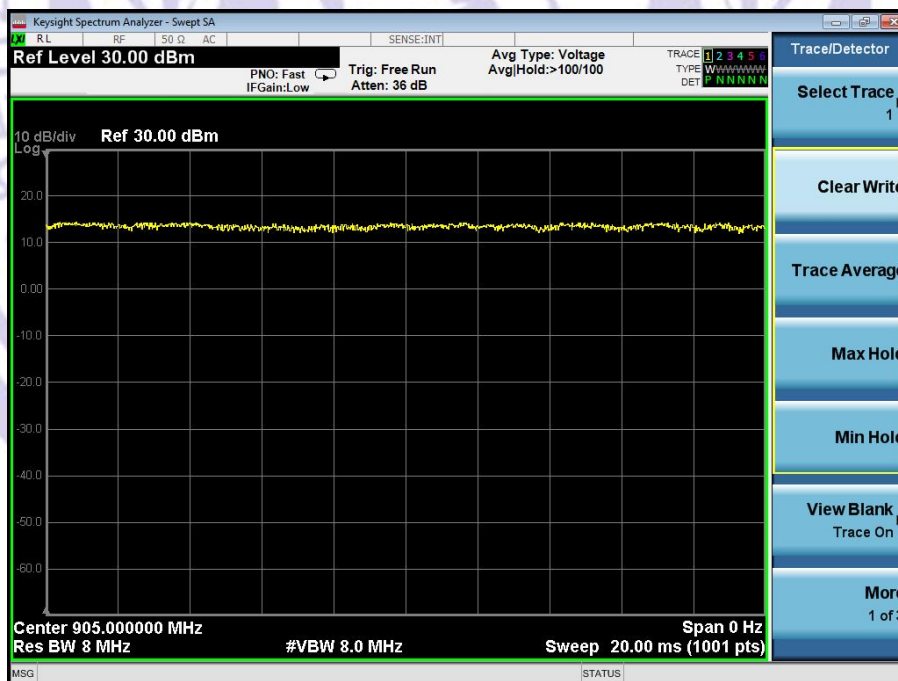
11.2 Test Setup



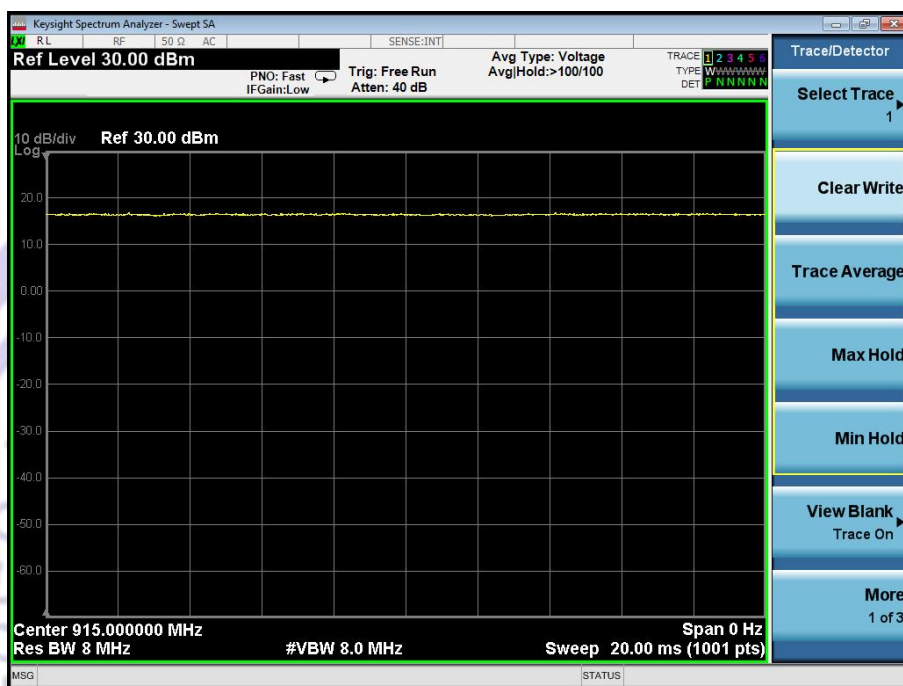
11.3 Test Result

Condition	Antenna	Modulation	Frequency (MHz)	Duty cycle(%)	Duty factor(dB)
NVNT	ANT1	802.11ah	905.00	100	0.00
NVNT	ANT1	802.11ah	915.00	100	0.00
NVNT	ANT1	802.11ah	925.00	100	0.00

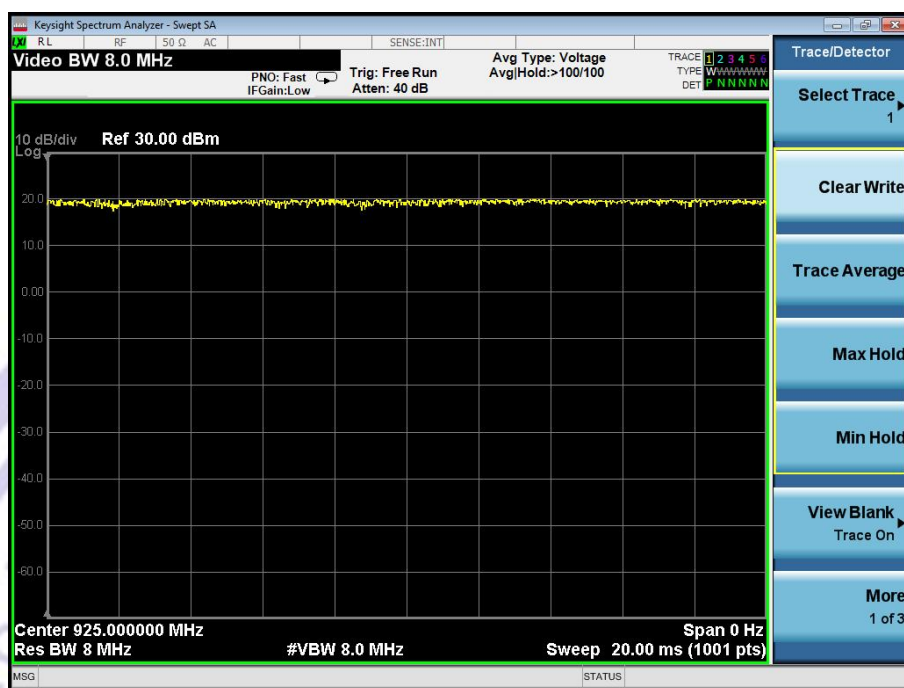
905MHz



915MHz



925MHz



12 Antenna Application

12.1 Antenna Requirement

For intentional device, according to FCC 47 CFR Section 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. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

According to RSS-GEN section 6.8

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

12.2 Result

The EUT'S antenna, permanent attached antenna, is FPCB antenna. The antenna's gain is 0.61 dBi and meets the requirement.

13 Test Setup and EUT Photos

Reference to the attachment for details.

*****THE END REPORT*****

