



TEST REPORT

APPLICANT	: Homerunpet Inc
PRODUCT NAME	: Wireless Pet Water Fountain
MODEL NAME	: BF10
BRAND NAME	: N/A
FCC ID	: 2BCHK-BF10
STANDARD(S)	: 47 CFR Part 15 Subpart C
RECEIPT DATE	: 2024-03-12
TEST DATE	: 2024-03-15 to 2024-03-27
ISSUE DATE	: 2024-03-28

Edited by:

Zeng Xiaoying (Rapporteur)

Approved by:

Shen Junsheng (Supervisor)

NOTE: This document is issued by Shenzhen Morlab Communications Technology Co., Ltd., the test report shall not be reproduced except in full without prior written permission of the company. The test results apply only to the particular sample(s) tested and to the specific tests carried out which is available on request for validation and information confirmed at our website.



Shenzhen Morlab Communications Technology Co., Ltd. FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China

 Tel: 86-755-36698555
 Fax: 86-755-36698525

 Http://www.morlab.cn
 E-mail: service@morlab.cr





DIRECTORY

1. Technical Information 3	5
1.1. Applicant and Manufacturer Information	3
1.2. Equipment Under Test (EUT) Description 3	3
1.3. Test Standards and Results	3
1.4. Environmental Conditions 5	5
2. 47 CFR Part 15C Requirements 6	5
2.1. Antenna Requirement ······ 6	5
2.2. Occupied Bandwidth ······· 6	5
2.3. Conducted Emission 9)
2.4. Field Strength of Fundamental13	3
2.5. Radiated Emission and Field Strength of Harmonic16	5
2.6. Restricted Bands26	5
Annex A Test Uncertainty32	2
Annex B Testing Laboratory Information	3

Change History			
Version	Reason for change		
1.0	2024-03-28	First edition	





Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Homerunpet Inc	
Applicant Address:	Homerunpet Inc. 18th St. Cheyenne, WY 82001	
Manufacturer:	Shenzhen Qianhai Homerun Smart Technology Co., Ltd	
Manufacturer Address:	Room 201,Building A,No.1 Qianwan 1st Road,Qianhai Shenzhen-Hong Kong Cooperation Zone,Shenzhen, Guangdong Province, China	

1.2. Equipment Under Test (EUT) Description

Product Name:	Wireless Pet Water Fountain
Sample No.:	(N/A, marked #1 by test site)
Hardware Version:	N/A
Software Version:	N/A
Operating Frequency Range:	10.525GHz

Note 1: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

Note 2: There are two radar modules in the product, and the two modules can transmit at the same time, the test data showed in this report is the worst condition that two modules transmit at the same time.

1.3. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart C for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 15	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Test Date	Test Engineer	Result	Method Determination /Remark
1	15.203	Antenna	N/A	N/A	PASS	No deviation



Shenzhen Morlab Communications Technology Co., Ltd. FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China



		Requirement				
2	15.215	Occupied	Mar. 21. 2024	Wang	PASS	No deviation
	2.1049	Bandwidth		Deyong		
3	15 207	Conducted	Mar 17 2024	Wang	DASS	No deviation
5	10.207	Emission		Deyong	1,400	
1	15 245(b)	Field Strength of	Mar 21 2024	Wang	PASS	No deviation
4	15.245(b)	Fundamental	Wai. 21, 2024	Deyong	FAGO	
		Radiated Emission		Mang	PASS	No deviation
5	15.245(b)	and Field Strength	Mar. 24, 2024	Vally		
		of Harmonic		Deyong		
	15.245(b)(3	Restricted Bands				
6)		Mar 07 0004	Wang		No doviation
	15.205,		Mar. 27, 2024	Deyong	PASS	no deviation
	15.209					

Note 1: The tests were performed according to the method of measurements prescribed in ANSIC63.10-2020.

Note 2: Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.

Note 3: When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.

Note 4: EUT is equipped with two RF modules. We have tested the modes of the two RF modules operating separately and simultaneously. The mode of simultaneous operation is worse case, and this mode is reported





1.4. Environmental Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15-35
Relative Humidity (%):	30-60
Atmospheric Pressure (kPa):	86-106



Shenzhen Morlab Communications Technology Co., Ltd. FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China Tel: 86-755-36698555 Fax: 86-755-36698525 E-mail: service@morlab.cn Http://www.morlab.cn





2. 47 CFR Part 15C Requirements

2.1. Antenna Requirement

2.1.1. 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.

2.1.2. Result: Compliant

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

2.2. Occupied Bandwidth

2.2.1. Requirement

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured.

2.2.2. Test Description

Test Setup:







2.2.3. Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

RBW = 1% to 5% of the 99% bandwidth. VBW \geq 3 xRBW Detector = Peak Trace mode = max hold Sweep = auto couple Allow the trace to stabilize

Note :

We tested Occupied Bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer.

2.2.4. Test Result

A.Test Verdict:

Channel	Frequency (MHz)	20 dB Bandwidth (kHz)	Result
1	10525	405.0	PASS

B.Test Plot:





Agilent Spectrum Analyzer - Occupied	BW	OTHER WIT			
KF SUS2 AC	Ce	nter Freq: 10.525156	000 GHz	Radio Std: None	Frequency
	#IFGain:Low #At	g:rree Run / ten:10 dB		Radio Device: BTS	_
10 dB/div Ref -20.00 dl	Bm				
-30.0					Center Freq 10.525156000 GHz
-50.0					
-70.0					
-90.0			m m m m m m m m m m m m m m m m m m m		
-110					CE Ster
Center 10.53 GHz #Res BW 100 kHz		#VBW 300 kH:	z	Span 3 MH Sweep 1 m	300.000 kHz Auto Man
Occupied Bandwic	Ith 3 22.68 kH z	Total Pov	ver -42.3	3 dBm	Freq Offset 0 Hz
Transmit Freq Error	-58.965 kHz	OBW Pov	ver 9	9.00 %	
x dB Bandwidth	405.0 kHz	x dB	-20	.00 dB	
MSG			STATU	IS	



Shenzhen Morlab Communications Technology Co., Ltd. FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China

Tel: 86-755-36698555 Http://www.morlab.cn E-mail: service@morlab.cn

Fax: 86-755-36698525



2.3. Conducted Emission

2.3.1. Requirement

According to FCC section 15.207, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μ H/ 50Ω line impedance stabilization network (LISN).

Frequency Dange (MHz)	Conducted Limit (dBµV)		
	Quai-peak	Average	
0.15 - 0.50	66 to 56	56 to 46	
0.50 - 5	56	46	
5 - 30	60	50	

Note:

1) The lower limit shall apply at the band edges.

2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

2.3.2. Test Description

Test Setup:



The Table-top EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.10: 2020.

MORLAB



2.3.3. Test Procedure

Use the following reciver settings:

Span = wide enough to fully capture the emission being measured RBW = 9 kHz VBW = 30 kHz Sweep = auto Detector function = Quasi peak and Average Trace = max hold

2.3.4. Test Result

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the Average and Quasi peak limits, and that have narrow margins from the Average and Quasi peak limits will be re-measured with Average and Quasi peak detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.

Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

A.Test Setup:

Test Mode: <u>EUT+10.525GHz TX</u> Test voltage: <u>AC 120V/60Hz</u> The measurement results are obtained as below: E [dB μ V] =U_R[dB μ V] + L_{Cable loss} [dB] + A_{Factor} [dB] U_R: Receiver Reading A_{Factor}: Voltage division factor of LISN





B.Test Plot:



(L Phase)

No.	Fre.	Emission Level (dBµV)		Limit (dBµV)	Power-line	Verdict
	(MHz)	Quai-peak	Average	Quai-peak	Average		
1	0.1634	43.08	26.42	65.29	55.29		PASS
2	0.1905	42.96	26.13	64.01	54.01		PASS
3	0.2221	41.38	25.51	62.74	52.74	Lino	PASS
4	0.3978	34.66	23.57	57.90	47.90	Line	PASS
5	0.5371	33.54	23.03	56.00	46.00		PASS
6	0.8707	33.45	22.55	56.00	46.00		PASS



Http://www.morlab.cn





(N Phase)

No.	Fre.	Emission L	evel (dBµV)	Limit (dBµV)		Power-line	Verdict
	(MHz)	Quai-peak	Average	Quai-peak	Average		
1	0.1726	48.46	26.67	64.84	54.84		PASS
2	0.2038	45.15	25.75	63.45	53.45		PASS
3	0.2579	42.11	24.68	61.50	51.50	Noutral	PASS
4	0.3299	38.95	23.74	59.45	49.45	Neuliai	PASS
5	0.4202	36.30	22.81	57.44	47.44		PASS
6	0.5732	33.66	21.91	56.00	46.00		PASS







2.4. Field Strength of Fundamental

2.4.1. Requirement

According to FCC section 15.245(b), the field strength of fundamental and harmonics from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental	Field strength of fundamental	Field strength of fundamental		
frequency(MHz)	(millivolts/meter)	(dBuV/m)		
10525	2500	148		

Note:

- 1) Limitation expressed in dBuV/m is calculated by 20log Emission Level(1000*mV/m).
- 2) Field strength limits are specified at a distance of 3 meters.
- 3) The emission limits shown above are based on measurement instrumentation employing an average detector. The provisions in Section 15.35 for limiting peak emissions apply.

2.4.2. Test Description

Test Setup:



The EUT is placed on a non-conducting table 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3meters. The EUT is configured in accordance with



Shenzhen Morlab Communications Technology Co., Ltd. FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China Tel: 86-755-36698555 Fax: 86-755-36698525 Http://www.morlab.cn



ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video band width is set to 3MHz for peak measurements and as applicable for average measurements.

The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions. For measurements above 1 GHz, keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.

2.4.3. Test Procedure

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured RBW = 1 MHz VBW = 3 MHz Sweep = auto Detector function = Peak or Average Trace = max hold

2.4.4. Test Result

The measurement results are obtained as below:

 $E [dB\mu V/m] = U_R[dB \mu V] + A_T[dB] + A_{Factor} [dB/m]; A_T = L_{Cable loss} [dB] - G_{preamp} [dB]$

A_T: Total correction Factor except Antenna

U_R: Receiver Reading

G_{preamp}: Preamplifier Gain

A_{Factor}: Antenna Factor at 3m

During the test, the total correction Factor AT and AFactor were built in test software.

Note: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis(X and Y) test condition was recorded in this test report

A.Test Verdict:

Field Strength of Fundamental





	Receiver			Final				
Frequency	Reading	A_ (d₽)	A _{Factor}	Emission	Limit	ΔΝΤ	Detect	Vordiot
(GHz)	U _R	AT (UD)	(dB@3m)	Е	(dBµV/m)	ANT	or	verdict
	(dBuV)			(dBµV/m)				
10.525	85.96	6.75	22.20	114.91	148	Н	Peak	PASS
	84.69	6.75	22.20	113.64	148	V	Peak	PASS



Shenzhen Morlab Communications Technology Co., Ltd. FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China

Tel: 86-755-36698555 Http://www.morlab.cn

Fax: 86-755-36698525



2.5. Radiated Emission and Field Strength of Harmonic

2.5.1. Requirement

Regardless of the limits shown in the above table, harmonic emissions in the restricted bands below 17.7 GHz, as specified in § 15.205, shall not exceed the field strength limits shown in § 15.209. Harmonic emissions in the restricted bands at and above 17.7 GHz shall not exceed the following field strength limits:

Field strength of harmonic (millivolts/meter)	Field strength of harmonic (dBuV/m)
7.5	77.50

Note:

- 1) Limitation expressed in dBuV/m is calculated by 20log Emission Level(1000*mV/m).
- 2) Field strength limits are specified at a distance of 3 meters.
- 3) The emission limits shown above are based on measurement instrumentation employing an average detector. The provisions in Section 15.35 for limiting peak emissions apply.

According to section 15.245(b)(3), Emission Radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in Section 15.209:

Frequency	Field Strength	Measurement	Field Strength Limitation at 3m Measurement Distance			
(MHZ)	(µv/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* 2400/F(KHz)	20log 2400/F(KHz) + 40		
1.705 - 30.0	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		

Note:

- 1) In the emission table above, the tighter limit applies at the band edges.
- 2) Limitation expressed in dBuV/m is calculated by 20log Emission Level(uV/m).
- 3) If measurement is made at other distance, then F.S Limitation is adjusted by using the formula of $L_{d1} = L_{d2} * (d2/d1)$.
- 4) Field strength limits are specified at a distance of 3 meters.
- 5) The provisions in Section 15.35 for limiting peak emissions apply.





2.5.2. Test Description

A.Test Setup:

1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to1GHz





Shenzhen Morlab Communications Technology Co., Ltd. FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China
 Tel: 86-755-36698555
 Fax: 86-755-36698525

 Http://www.morlab.cn
 E-mail: service@morlab.cn



3) For radiated emissions from 1GHz to 40GHz



4) For radiated emissions above 40GHz



The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement



Shenzhen Morlab Communications Technology Co., Ltd. FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China

Tel: 86-755-36698555 Fax: 86-755-36698525 Http://www.morlab.cn



below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

2.5.3. Test Procedure

For measurements below 30MHz, the emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9kHz-90 kHz, 110kHz-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.For measurements below 150kHz the resolution bandwidth is set to 200Hz for peak detection measurements or quasi-peak detection measurements. For measurements above 150kHz the resolution bandwidth is set to 9kHz for peak detection measurements or quasi-peak detection is used unless otherwise noted as quasi-peak.

For measurements below 1GHz the resolution bandwidth is set to 100kHz for peak detection measurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video band width is set to 3MHz for peak measurements and as applicable for average measurements.

The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions. For measurements above 1 GHz, keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.

2.5.4. Test Result

According to ANSI C63.10, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak (or average) limit, it is unnecessary to perform an quasi-peak measurement (or average).

The measurement results are obtained as below:

$$\begin{split} & \mathsf{E}\left[d\mathsf{B}\mu\mathsf{V}/m\right] = & \mathsf{U}_{\mathsf{R}}[d\mathsf{B}\;\mu\;\mathsf{V}] + \mathsf{A}_{\mathsf{T}}[d\mathsf{B}] \; + \; \mathsf{A}_{\mathsf{Factor}}\left[d\mathsf{B}/m\right]; \; \mathsf{A}_{\mathsf{T}} = & \mathsf{L}_{\mathsf{Cable\;loss}}\left[d\mathsf{B}\right] - & \mathsf{G}_{\mathsf{preamp}}\left[d\mathsf{B}\right] \\ & \mathsf{L}_{\mathsf{Cable\;loss}}\left[d\mathsf{B}\right] = & \mathsf{L}_{\mathsf{Mixer}}[d\mathsf{B}] + & \mathsf{L}_{\mathsf{IF}}[d\mathsf{B}] \\ & \mathsf{A}_{\mathsf{T}}: \; \mathsf{Total\; correction\; Factor\; except\; Antenna} \\ & \mathsf{U}_{\mathsf{R}}: \; \mathsf{Receiver\; Reading} \end{split}$$

MORLAB



G_{preamp}: Preamplifier Gain

A_{Factor}: Antenna Factor at 3m

When testing above 40GHz:

L_{mixer}[dB]: Conversion Loss of Mixer.

 L_{IF} [dB]: Cable loss of the RF cable that connects the IF output of the mixer to the IF input of the spectrum.

During the test, the total correction Factor A_T and A_{Factor} were built in test software.

Note 1: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Note 2: The low frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



Plot for 10525MHz

(Plot: 9KHz to 30MHz)



Shenzhen Morlab Communications Technology Co., Ltd. FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China
 Tel: 86-755-36698555
 Fax: 86-755-36698525

 Http://www.morlab.cn
 E-mail: service@morlab.cn





(Antenna Vertical&Horizontal, 30MHz to 1GHz)







(Antenna Vertical&Horizontal, 1GHz to 18GHz)

★ Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental.







(Antenna Vertical&Horizontal, 18GHz to 26GHz)

- ★ Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental.
- ★ No obvious harmonic signal was found in the test data, and the emission level at the harmonic frequency met the requirements of section 2.5.1 of this document.



Shenzhen Morlab Communications Technology Co., Ltd. FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China





(Antenna Vertical&Horizontal, 26GHz to 40GHz)

- ★ Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental.
- ★ No obvious harmonic signal was found in the test data, and the emission level at the harmonic frequency met the requirements of section 2.5.1 of this document.







(Antenna Vertical&Horizontal, 40GHz to 60GHz)

- ★ Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental.
- ★ No obvious harmonic signal was found in the test data, and the emission level at the harmonic frequency met the requirements of section 2.5.1 of this document.





2.6. Restricted Bands

2.6.1. Requirement

According to section 15.245(b)(3), Emission Radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in Section 15.209:

Fraguanay	Field Strongth	Magguramont	Field Strength Limitation at 3m Measurement			
		Distance (m)	Distance			
	(μν/Π)	Distance (III)	(uV/m)	(dBuV/m)		
0.000 0.400	2400/E(kHz)	300	10000*	2010a 2400/E/KHz) + 80		
0.009 - 0.490	2400/F(KHZ)	300	2400/F(KHz)	2000 2400 F(RH2) + 00		
0.490 - 1.705	24000/F(kHz)	30	100* 2400/F(KHz)	20log 2400/F(KHz) + 40		
1.705 - 30.0	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		

Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions.

Note:

- 1) In the emission table above, the tighter limit applies at the band edges.
- 2) Limitation expressed in dBuV/m is calculated by 20log Emission Level(uV/m).
- 1) If measurement is made at other distance, then F.S Limitation is adjusted by using the formula of $L_{d1} = L_{d2} * (d2/d1)$.
- 2) Field strength limits are specified at a distance of 3 meters.
- 3) The provisions in Section 15.35 for limiting peak emissions apply.

2.6.2. Test Description

A.Test Setup:







The EUT is placed on a non-conducting table 1.5 m above the ground plane for measurement above 1GHz.The antenna to EUT distance is 3meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

2.6.3. Test Procedure

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video band width is set to 3MHz for peak measurements and as applicable for average measurements.

The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions. For measurements above 1 GHz, keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.

2.6.4. Test Result

According to ANSI C63.10, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the average detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the average limit, it is unnecessary to perform an average measurement.

The measurement results are obtained as below:



Shenzhen Morlab Communications Technology Co., Ltd. FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China

 Tel: 86-755-36698555
 Fax: 86-755-36698525

 Http://www.morlab.cn
 E-mail: service@morlab.cn



 $\begin{array}{l} \mathsf{E}\left[d\mathsf{B}\mu\mathsf{V}/m\right]=\!\mathsf{U}_{\mathsf{R}}\!\left[d\mathsf{B}\;\mu\;\mathsf{V}\right]+\mathsf{A}_{\mathsf{T}}\!\left[d\mathsf{B}\right]\;+\mathsf{A}_{\mathsf{Factor}}\left[d\mathsf{B}/m\right]\!;\;\mathsf{A}_{\mathsf{T}}=\!\mathsf{L}_{\mathsf{Cable\ loss}}\left[d\mathsf{B}\right]\!\!\cdot\!\!\mathsf{G}_{\mathsf{preamp}}\left[d\mathsf{B}\right] \\ \mathsf{A}_{\mathsf{T}}:\;\mathsf{Total\ correction\ Factor\ except\ Antenna} \\ \mathsf{U}_{\mathsf{R}}:\;\mathsf{Receiver\ Reading} \\ \mathsf{G}_{\mathsf{preamp}}:\;\mathsf{Preamplifier\ Gain} \\ \mathsf{A}_{\mathsf{Factor}}:\;\mathsf{Antenna\ Factor\ at\ 3m} \end{array}$

During the test, the total correction Factor A_T and A_{Factor} were built in test software.

Note 1: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.



Frequency (MHz)	MaxPea k (dBµV/ m)	CAvera ge (dBµV/ m)	Limit (dBµV/ m)	Margin (dB)	Meas. Time (ms)	Bandwid th (kHz)	Height (cm)	Pol	Azimu th (deg)	Corr. (dB/m)
4531.75	48.85		74.00	25.15	200.0	1000.000	116.0	V	-40.0	12.7
4531.75		35.83	54.00	18.17	200.0	1000.000	116.0	V	-34.0	12.7
13537.50	56.23		74.00	17.77	200.0	1000.000	364.0	Н	-34.0	26.3
13537.50		42.82	54.00	11.18	200.0	1000.000	364.0	Н	-34.0	26.3
17930.00		46.64	54.00	7.36	200.0	1000.000	364.0	Н	-34.0	32.1
17930.00	59.94		74.00	14.06	200.0	1000.000	230.0	V	-157.0	32.1

(Antenna Vertical&Horizontal, 1GHz to 18GHz)

★ Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental.







(Antenna Vertical&Horizontal, 18GHz to 26GHz)

- ★ Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental.
- ★ No obvious harmonic signal was found in the test data, and the emission level at the harmonic frequency met the requirements of section 2.5.1 of this document.







(Antenna Vertical&Horizontal, 26GHz to 40GHz)

- ★ Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental.
- ★ No obvious harmonic signal was found in the test data, and the emission level at the harmonic frequency met the requirements of section 2.5.1 of this document.







(Antenna Vertical&Horizontal, 40GHz to 60GHz)

- ★ Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental.
- ★ No obvious harmonic signal was found in the test data, and the emission level at the harmonic frequency met the requirements of section 2.5.1 of this document.





Annex A Test Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.:

Test Case	Parameter	Uncertainty	
Occupied Bandwidth	Power	5. dB	
	Frequency	100.0 kHz	
Conducted Emission	Power	3.4 dB	
Field Strength of Fundamental	Power	2.2 dB	
Radiated Emission and Field	Power	5.5 dB	
Strength of Harmonic			
Restricted Bands	Power	2.2 dB	
	Frequency	11.2 kHz	

The measurement uncertainties for all parameters are calculated with an expansion factor (coverage factor)k= 1.96. This means, that the true value is in the corresponding interval with a probability of 95 %.





Annex B Testing Laboratory Information

Laboratory Name:Shenzhen Morlab Communications Technology Co., Ltd.Laboratory Address:FL.3, Building A, FeiYang Science Park, No.8 LongChang
Road, Block 67, BaoAn District, ShenZhen, GuangDong
Province, P. R. ChinaTelephone:+86 755 36698555Facsimile:+86 755 36698525

1. Identification of the Responsible Testing Laboratory

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
	FL.3, Building A, FeiYang Science Park, No.8 LongChang
Address:	Road, Block 67, BaoAn District, ShenZhen, GuangDong
	Province, P. R. China

3. Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2020 and CISPR Publication 22; the FCC designation number is CN1192, the test firm registration number is 226174.





4. Test Equipments Utilized

4.1 Radiated Test Equipments

Equipment Name	Serial No.	Туре	Manufacturer	Cal. Date	Due Date
EMI Receiver / Spectrum Analyzer	101603	ESW44	Rohde & Schwarz GmbH & Co.KG	2023-07-01	2024-06-30
SAC/FAR, 10.58 mx 6.38 mx6.00 m	1	Anechoic Chamber 01	GmbH & Co.KG Frankonia	2023-07-01	2024-06-30
Harmonic Mixer 40 - 60 GHz	100178	FS-Z60	Rohde & Schwarz Messgerateba u GmbH	2023-06-01	2024-05-31
Biconical-log- per antenna (30MHz- 3 GHz) with HL 562E biconicals	830547/003	HL 562 ULTRALOG	Rohde & Schwarz GmbH & Co.KG	2023-09-01	2024-08-31
Broadband Amplifier 100 MHz- 18 GHz	1	AMF- 7D00101800- 30-10P-R	Miteq	2023-06-01	2024-05-31
High Pass Filter	9942012	5HC2700/12 750 -1.5-KK	Trilithic	2023-06-01	2024-05-31
Antenna Mast	1	ASP 1.2/1.8-10 kg	Maturo GmbH	N/A	N/A
FAR,8.80m x 4.60m x 4.05m (lxwx h)	P26971-647- 001-PRB	Anechoic Chamber 03	Albatross Projects	2023-07-01	2024-06-30
Tunable Band Reject Filter	11	WRD1920/19 80-	Wainwright Instruments	2023-06-01	2024-05-31



Shenzhen Morlab Communications Technology Co., Ltd. FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China

Tel: 86-755-36698555

Fax: 86-755-36698525

Http://www.morlab.cn



		5/22-5EESD	GmbH		
Oscilloscope [SA2](Aux)	B021311	TDS 784C	Tektronix	2023-06-01	2024-05-31
Broadband Amplifier 18 GHz- 26 GHz	849785	JS4-1800260 0- 32-5P	Miteq	2023-06-01	2024-05-31
Spectrum Analyzer	103779	FSW 43	Rohde & Schwarz	2023-06-01	2024-05-31
Standard Gain /Pyramidal Horn Antenna 26.5 GHz	00083069	3160-09	EMCO Elektronic GmbH	2023-06-01	2024-05-31
Standard Gain /Pyramidal Horn Antenna (40-60 GHz)	093	SGH-19	Millitech	2023-06-01	2024-05-31
High Pass Filter	09	WHKX 7.0/18G- 8SS	Wainwright Instruments GmbH	2023-06-01	2024-05-31
Turn Table 2 m diameter	420/573/99	DS 420S	HD GmbH	N/A	N/A
High Pass Filter	9942011	4HC1600/12 750 -1.5-KK	Trilithic	2023-06-01	2024-05-31
Notch Filter Ultra Stable	16	WRCD1879. 8- 0.2/40-10EE	Wainwright Instruments GmbH	2023-06-01	2024-05-31
AC Source	6404000130 4	Chroma 6404	Chroma ATE INC.	N/A	N/A
Broadband Amplifier 30 MHz-26 GHz	619368	JS4-0010260 0- 42-5A	Miteq	2023-06-01	2024-05-31
Turn Table	/	TT 1.5 WI	Maturo GmbH	N/A	N/A
Biconical-log- per Antenna (30 MHz-3 GHz)	100609	HL 562 ULTRALOG	Rohde & Schwarz GmbH & Co.KG	2023-06-01	2024-05-31
Standard Gain	00086675	3160-10	EMCO	2023-06-01	2024-05-31



Shenzhen Morlab Communications Technology Co., Ltd. FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China

Tel: 86-755-36698555

Fax: 86-755-36698525

Http://www.morlab.cn



/Pyramidal Horn Antenna 40 GHz			Elektronic GmbH		
Bore Sight Antenna Mast	1	MA4985-XP- ET	Innco systems GmbH	2023-07-01	2024-06-30
Air Compressor	612582	JUN-AIR Mod. 6- 15	JUN-AIR Deutschland GmbH	N/A	N/A
High Pass Filter	200035008	5HC3500/18 000 -1.2-KK	Trilithic	2023-07-01	2024-06-30
Fibre optic link USB 1.1	018	OLS-1 M	Ingenieurburo Scheiba	N/A	N/A
Broadband Amplifier 30 MHz-18 GHz	896037	JS4-0010180 0- 35-5P	Miteq	2023-07-01	2024-06-30
Antenna Mast (pneumatic polarisation)	620/37	AS 620 P	HD GmbH	N/A	N/A
EUT Tilt Device (Rohacell)	TD1.5-10kg/0 24/3790709	TD1.5-10kg	Maturo GmbH	N/A	N/A
Controller for bore sight mast SAC	CO3000/967/ 39371016/L	Innco Systems	innco systems GmbH	N/A	N/A
Antenna Mast	/	CO3000	Maturo GmbH	N/A	N/A
Broadband Amplifier 25 MHz-18 GHz	2035324	PAS 2.5-10 kg	Miteq	2023-06-01	2024-05-31
Tuneable Notch Filter	20	AFS42- 00101800-25 -S-	Wainwright Instruments GmbH	2023-06-01	2024-05-31
		42			
Antenna Mast 4m	AM4.0/180/1 1920513	42 WRCA800/9 60- 0.2/40-6EEK	Maturo GmbH	N/A	N/A
Antenna Mast 4m Double-ridged horn	AM4.0/180/1 1920513 102444	42 WRCA800/9 60- 0.2/40-6EEK AM 4.0	Maturo GmbH Rohde & Schwarz	N/A 2023-09-01	N/A 2024-08-31



Fax: 86-755-36698525

Http://www.morlab.cn





Chamber	0010		
Votsch 03			

4.2 Conducted Emission Test Equipments

Equipment Name	Serial No.	Туре	Manufacturer	Cal. Date	Due Date
Receiver	MY56400093	N9038A	KEYSIGHT	2024-03-14	2025-03-13
LISN	812744	NSLK 8127	Schwarzbeck	2024-03-14	2025-03-13
Pulse Limiter	VTSD 9561	VTSD	C a huva ma h a a l i	2022 07 25	2024 07 24
(10dB)	F-B #206	9561-F	Schwarzbeck	2023-07-25	2024-07-24
RF Coaxial					
Cable(DC-100MHz	MRE04	BNC	Qualwave	N/A	N/A
)					

5. Test Software Utilized

Model	Version Number	
EMC32 Measurement Software	10.60.10	
INNCO Mast Controller	1.02.62	
MATURO Mast Controller	12.19	
MATURO Turn-Table Controller	30.10	
INNCO Mast Controller	1.02.62	
Conducted Emissions:	10.60.20	
Software		

Ancillary Equipment Utilized

Description	Manufacturer	Model	Serial No.
Adapter	HUAWEI	HL548LBY1324	HW-050250C00

_____ _____ END OF REPORT

