Report No.: DDT-RE23032819-2E01

Issued Date: Jul. 07, 2023

FCC CERTIFICATION TEST REPORT

FOR

Applicant	:	Lorenz High Definition LLC
Address	:	230 Rt 206 STE 401, Flanders, New Jersey, United States
Equipment under Test	:	Range Extender
Model No.	:	ZAC38
Trade Mark	:	ZOOZ™
FCC ID	:	2AZ2V-032823-ZAC38
Manufacturer	:	Shenzhen ZVIDAR Technologies CO,.Ltd.
Address	:	Room 468, Building F1, TCL Technologies Park, 1001, Zhongshanyuan Road, Shuguang Community, Xili Street Office, Nanshan District, Shenzhen City

Issued By: Dongguan Dongdian Testing Service Co., Ltd.

Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808

Tel.: +86-0769-38826678, **E-mail:** ddt@dgddt.com, http://www.dgddt.com

REPORT

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Test Report Declare

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Test Standard Used:

FCC Rules and Regulations Part 15 Subpart C.

Test procedure used:

ANSI C63.10:2013.

We Declare:

The equipment described above is tested by Dongguan Dongdian Testing Service Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Dongguan Dongdian Testing Service Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC standards.

Report No:	DDT-RE23032819-2E01		
Date of Receipt:	Mar. 31, 2023	**Date of Test:**	Mar. 31, 2023 ~ Jul. 07, 2023

Prepared By: ***Approved By:***

Johnny Wang

Johnny Wang/Engineer ***Damon Hu/EMC Manager***

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan Dongdian Testing Service Co., Ltd.

Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Jul. 07, 2023	

1. Summary of Test Results

The EUT have been tested according to the applicable standards as referenced below.		
Description of Test Item	**Standard**	**Results**
20 dB Bandwidth	FCC Part 15: 15.215 ANSI C63.10:2013	Pass
Radiated Emission	FCC Part 15: 15.205 FCC Part 15: 15.209 FCC Part 15: 15.249 ANSI C63.10:2013	Pass
Power Line Conducted Emission	FCC Part 15: 15.207 ANSI C63.10:2013	Pass
Antenna requirement	FCC Part 15: 15.203	Pass

2. General Test Information

2.1. Description of EUT

EUT* Name	:	Range Extender
Model Number	:	ZAC38
EUT function description	:	Please reference user manual of this device
Power supply	:	AC 120V
Operation frequency	:	908.40 - 916.00 MHz
Modulation	:	FSK
Antenna Gain	:	-2.62 dBi
Sample Number	:	S23032819-01 for conductive S23032819-02 for radiation

Note: EUT is the abbreviation of equipment under test.

Data rate (kbps)	Frequency (MHz)
40	908.40
9.6	908.42
100	916.00

2.2. Accessories of EUT

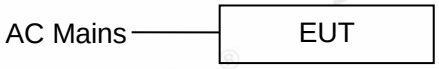
Description of Accessories	Manufacturer	Model number	Serial No.	Other
N/A	N/A	N/A	N/A	N/A

2.3. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	Serial No.	Other
Laptop	HP	NPVSDA3	N/A	N/A

2.4. Block diagram of EUT configuration for test

Tx Mode:



Test software: Uart Assistant.exe
The test software was used to control EUT work in Continuous Tx mode, and select test channel, wireless mode as below table.

Tested mode, channel, information			
Mode	Setting Tx Power	Data rate (kbps)	Frequency (MHz)
FSK Tx mode	80	40	908.40
	80	100	908.42
	80	100	916.00

2.5. Test environment conditions

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

Temperature range:	21-25 ℃
Humidity range:	40-75%
Pressure range:	86-106 kPa

2.6. Deviations of test standard

No deviation.

2.7. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd.

Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808.

Tel.: +86-0769-38826678, http://www.dgddt.com, Email: ddt@dgddt.com.

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, R-20155, G-20118

2.8. Measurement uncertainty

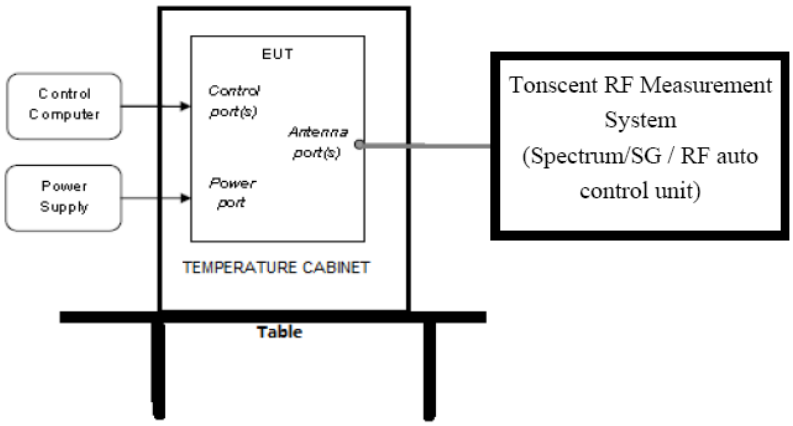
Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum Analyzer)	0.86 dB (10 MHz ≤ f < 3.6 GHz);
	1.38 dB (3.6 GHz ≤ f < 8 GHz)
Peak Output Power (Conducted) (Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB (10 MHz ≤ f < 3.6 GHz);
	1.38 dB (3.6 GHz ≤ f < 8 GHz)
Frequencies Stability	6.7×10^{-8} (Antenna couple method)
	5.5×10^{-8} (Conducted method)
Conducted Spurious Emissions	0.86 dB (10 MHz ≤ f < 3.6 GHz);
	1.40 dB (3.6 GHz ≤ f < 8 GHz)
	1.66 dB (8 GHz ≤ f < 26.5 GHz)
Uncertainty for Radio Frequency (RBW < 20 kHz)	3×10^{-8}
Temperature	0.4 ℃
Humidity	2 %
Uncertainty for Radiation Emission Test (9 kHz – 30 MHz)	3.44 dB
Uncertainty for Radiation Emission Test (30 MHz - 1 GHz)	4.70 dB (Antenna Polarize: V)
	4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission Test (1 GHz - 40 GHz)	4.10 dB (1 - 6 GHz)
	4.40 dB (6 GHz - 18 GHz)
	3.54 dB (18 GHz - 26 GHz)
	4.30 dB (26 GHz - 40 GHz)
Uncertainty for Power Line Conduction Emission Test	3.32 dB (150 kHz - 30 MHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

3. Equipment Used During Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒RF Connected Test (Tonscend RF Measurement System 2#)					
Spectrum analyzer	R&S	FSU26	201124	Sep. 28, 2022	1 Year
Signal &Spectrum analyzer	R&S	FSV40	101407	Jul. 21, 2022	1 Year
Test Software	JS Tonscend	JS1120-3	Ver.3.2.22	N/A	1 Year
☒Radiation 3#chamber					
EMI Test Receiver	R&S	ESU26	100472	May 19, 2022 Apr. 23, 2023	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	May 17, 2022 Apr. 23, 2023	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Sep. 29, 2022	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	01429	Jul. 22, 2022	1 Year
Double Ridged Horn Antenna	Schwarzbeck	BBHA9120 D	02468	Sep. 29, 2022	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	May 06, 2022 Apr. 26, 2023	1 Year
Pre-amplifier	COM-POWER	PAM-118A	18040084	Aug.17, 2022	1 Year
RE Cable	N/A	W23.02 CP1-X2 + W23.09 AP1-X8+ JCT26S-NJ-NJ-1.5M+ JCT26S-NJ-NJ-1.5M	4.5M+8M+1.5M+1.5M	Aug.17, 2022	1 Year
RF Cable	Yuhu Technology	JCTB810-NJ-NJ-9M	21123964	May. 19, 2022 Apr. 23, 2023	1 Year
RF Cable	Yuhu Technology	ZT26S-SMAJ-SMAJ-1M	21073466	Aug.17, 2022	1 Year
Micro-Tronics filters	REBES	BRM50702	G555	N/A	N/A
Micro-Tronics filters	REBES	BRM50716	G392	N/A	N/A
High Pass filter	XB	XBLBQ-GTA67	210820-2-3	N/A	N/A
Test software	Tonscend	JS32-RE	V 5.0.0.1	N/A	N/A
☒Power Line Conducted Emissions Test 1#					
Test Receiver	R&S	ESCI	100551	Aug. 26, 2022	1 Year
LISN 1	R&S	ENV216	101109	Aug. 26, 2022	1 Year
LISN 2	R&S	ESH2-Z5	100309	Aug. 26, 2022	1 Year
Pulse Limiter	R&S	ESH3-Z2	101242	Aug. 26, 2022	1 Year
CE Cable 1	HUBSER	N/A	W10.01	Aug. 26, 2022	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A
Test Receiver	R&S	ESCI	100551	Aug. 26, 2022	1 Year

4. 20 dB Bandwidth

4.1. Block diagram of test setup



4.2. Limits

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

4.3. Test procedure

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

(2) Set the spectrum analyzer as follows:

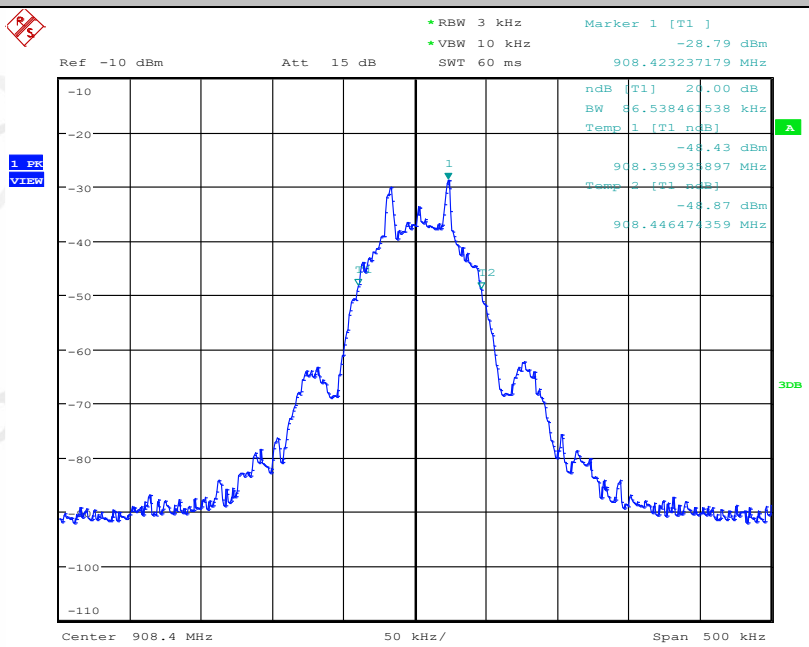
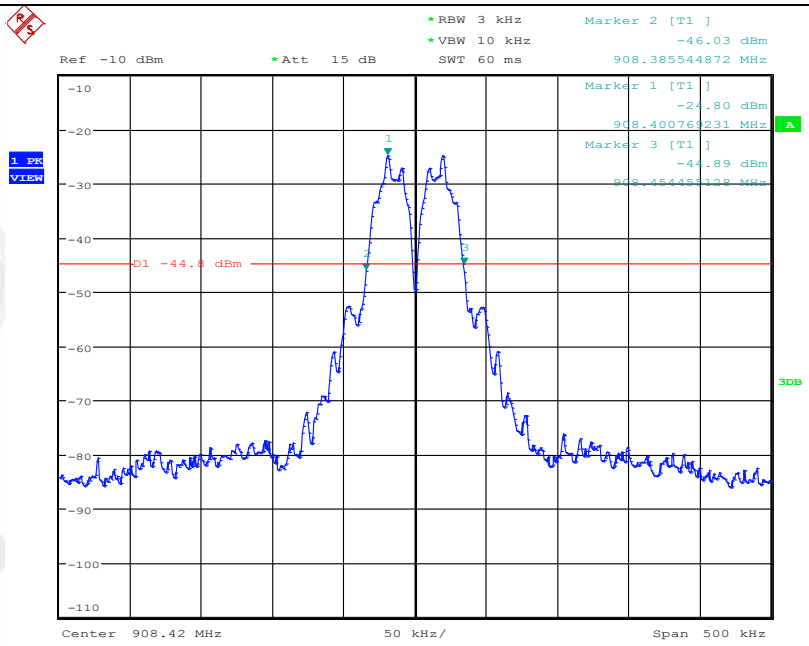
RBW:	1% to 5% of the OBW
VBW:	approximately three times RBW
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold

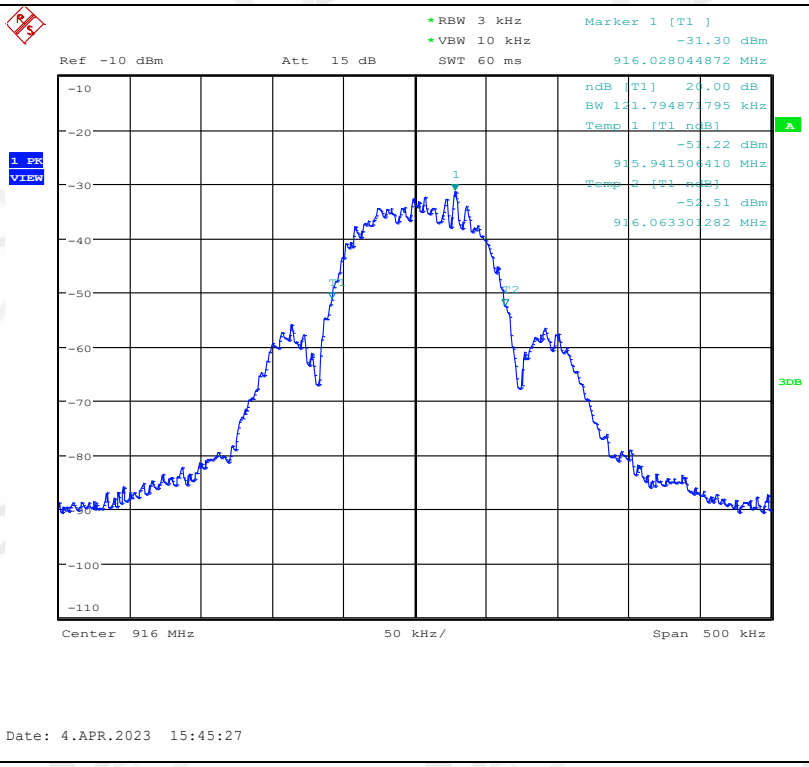
(3) Allow the trace to stabilize, measure the 20 dB bandwidth of signal.

4.4. Test result

Mode	Freq (MHz)	20 dB bandwidth Result (MHz)	Limit (MHz)	Conclusion
FSK	908.40	0.087	/	Pass
	908.42	0.069	/	Pass
	916.00	0.122	/	Pass

4.5. Original test data

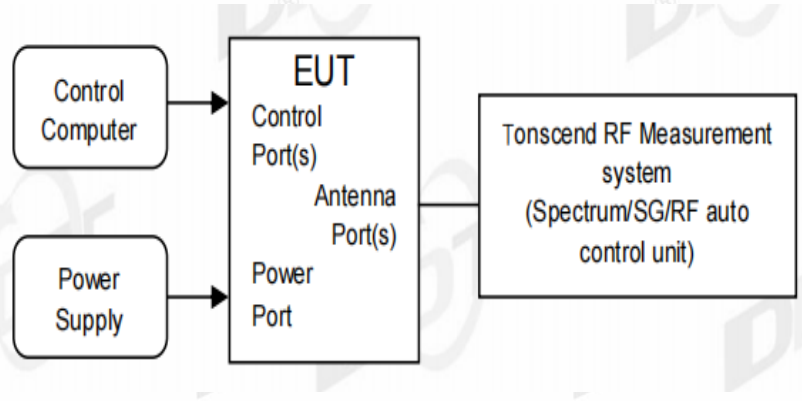
Bandwidth	
908.40 MHz	 Date: 4.APR.2023 15:42:23
908.42.00 MHz	 Date: 4.APR.2023 16:09:34

916.00 MHz	

RBW 3 kHz
VBW 10 kHz
SWT 60 ms
Marker 1 [T1]
-31.30 dBm
916.028044872 MHz
ndB [T1] 20.00 dB
BW 121.794871795 kHz
Temp 1 [T1 ndB]
-51.22 dBm
915.941506410 MHz
Temp 2 [T1 ndB]
-52.51 dBm
916.063301282 MHz
Ref -10 dBm
Att 15 dB
1 PK VIEW
A
3DB
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
Center 916 MHz
50 kHz/
Span 500 kHz
Date: 4.APR.2023 15:45:27

5. Duty cycle

5.1. Block diagram of test setup



5.2. Limit

Just for Report and determining the average value of pulsed emissions.

5.3. Test procedure

(1) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, The cable loss and attenuator loss have been put into spectrum analyzer as amplitude offset.

set the Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the middle hopping channel.

Resolution BW: 1 MHz.

Video BW: 1 MHz.

Span: Zero span.

Detector: Peak.

Trace Mode: Max Hold.

Sweep: Video Trigger

Sweep time: 100 ms

(2) When the trace is complete, measure the sending time of 1 burst and the duty cycle of 1 burst cycle.

(3) Calculate dwell time follow below formula:

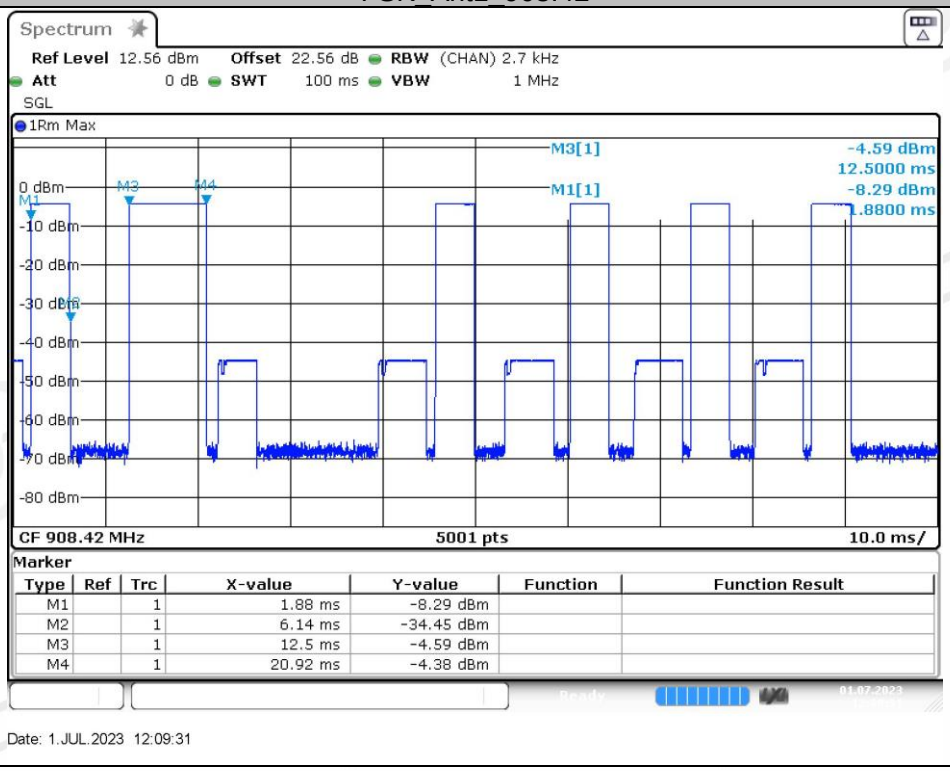
Duty cycle= Pulse's on time / Burst cycle

5.4. Test result

Test Mode	Antenna	Frequency [MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor [dB]
FSK	Ant1	908.42	29.72	100	29.72	-10.54

Note 1: Different frequencies have the same duty cycle.
Note 2: On time=(6.14-1.88)*5+(20.92-12.50)=29.72

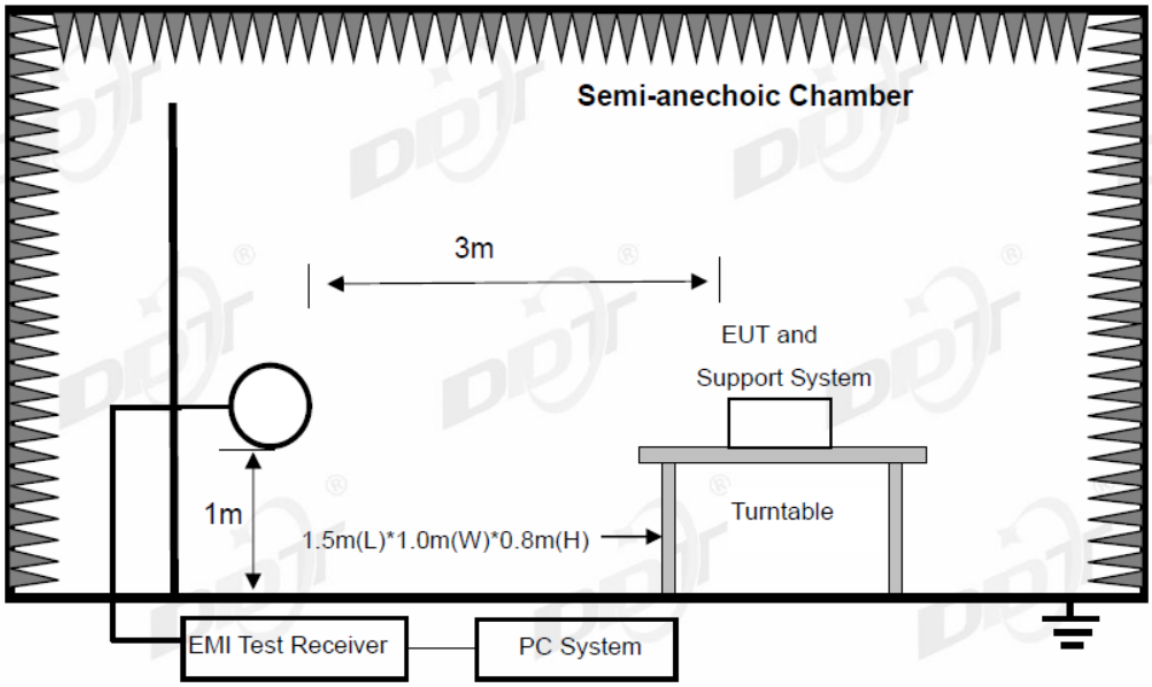
FSK_Ant1_908.42



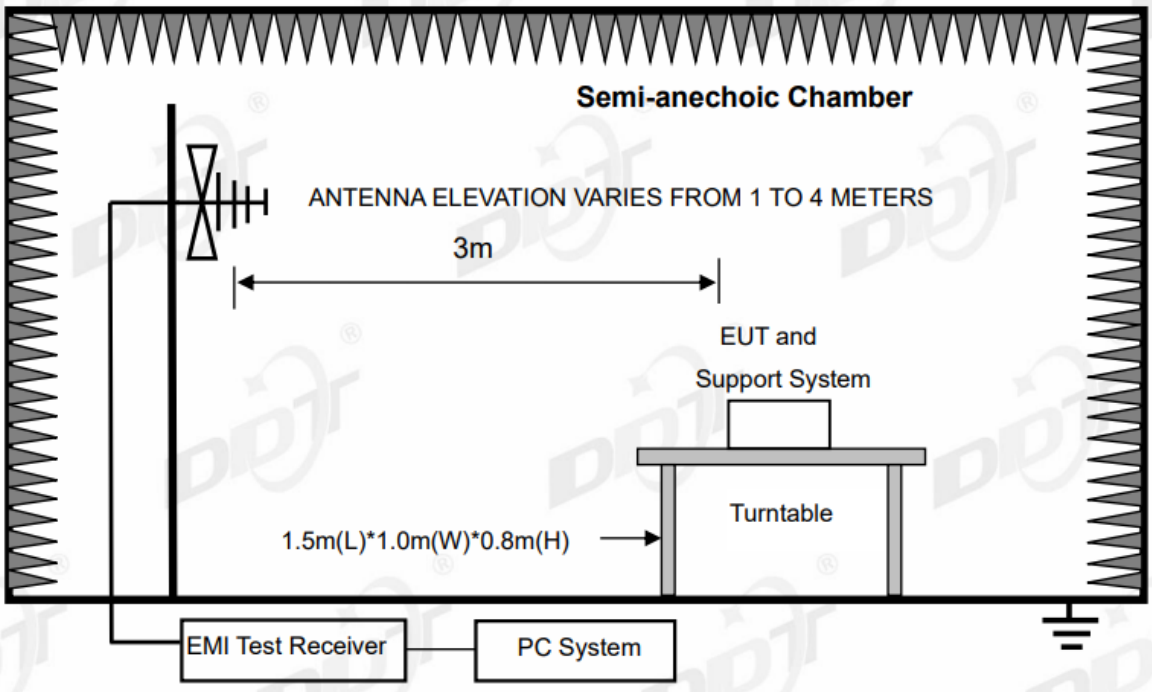
6. Radiated Emission

6.1. Block diagram of test setup

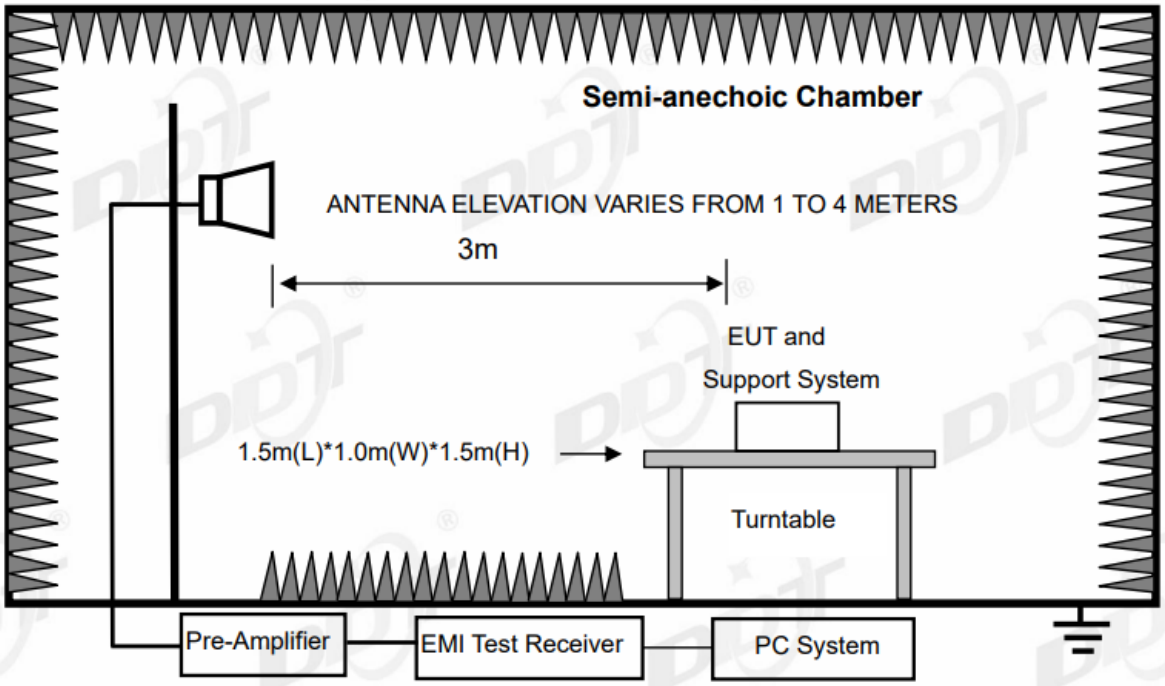
In 3 m Anechoic Chamber, test setup diagram for 9 kHz - 30 MHz:



In 3 m Anechoic Chamber, test setup diagram for 30 MHz - 1 GHz:



In 3 m Anechoic Chamber, test setup diagram for frequency above 1 GHz:



Note: For harmonic emissions test an appropriate high pass filter was inserted in the input port of AMP.

6.2. Limit

(1) FCC 15.205 Restricted frequency band

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.1772&4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.2072&4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

[1]Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2]Above 38.6

(2) FCC 15.209 Limit.

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
0.009 ~ 0.490	300	2400/F(kHz)	67.6-20log(F)
0.490 ~ 1.705	30	24000/F(kHz)	87.6-20log(F)
1.705 ~ 30.0	30	30	29.54
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000 MHz	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	
Field Strength of Fundamental emission for 902 MHz - 928 MHz	3	94.0 dB(μV)/m (QP)	
Field Strength of Harmonics	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Remark:

(1) Emission level dBμV = 20 log Emission level μV/m

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

(4) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz, radiated emission limits in these three bands are based on measurements employing an average detector.

6.3. Test procedure

(1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber for below 1 G and 150 cm above the ground plane inside a semi-anechoic chamber for above 1 G.

(2) Setup EUT and assistant system according clause 2.4

(3) Test antenna was located 3 m from the EUT on an adjustable mast. Below pre-scan procedure was first performed in order to find prominent radiated emissions.

(a) Change work frequency or channel of device if practicable.

(b) Change modulation type of device if practicable.

(c) Change power supply range from 85% to 115% of the rated supply voltage

(d) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions

(4) Spectrum frequency from 9 kHz to 10 GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 9 kHz to 30 MHz, so below

final test was performed with frequency range from 30 MHz to 10 GHz.

(5) For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed according to ANSI C63.10:2013 on Radiated Emission test.

(6) For emissions from 30 MHz to 1 GHz, Quasi-Peak values were measured with EMI Receiver and the bandwidth of Receiver is 120 kHz.

(7) For emissions above 1 GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1 MHz, VBW is set at 3 MHz for Peak measure; according ANSI C63.10:2013 clause 4.1.4.2 procedure for average measure.

(8) For fundamental frequency test, set spectrum analyzer's RBW = 100 kHz, VBW = 300 kHz. Peak detector for pre-test, then read the QP Level in spectrum analyzer and record.

6.4. Test result

Pass. (See below detailed test result)

All the emissions except fundamental emission from 9 kHz to 10 GHz were comply with 15.209 limit.

Note1: According exploratory test, the emission levels are 20 dB below the limit detected from 9 kHz to 30 MHz, so the final test was performed with frequency range from 30 MHz to 10 GHz and recorded in below.

Note2: For emissions above 1 GHz. If peak results comply with AV limit, AV Result is deemed to comply with AV limit.

Field Strength of the Fundamental Signal

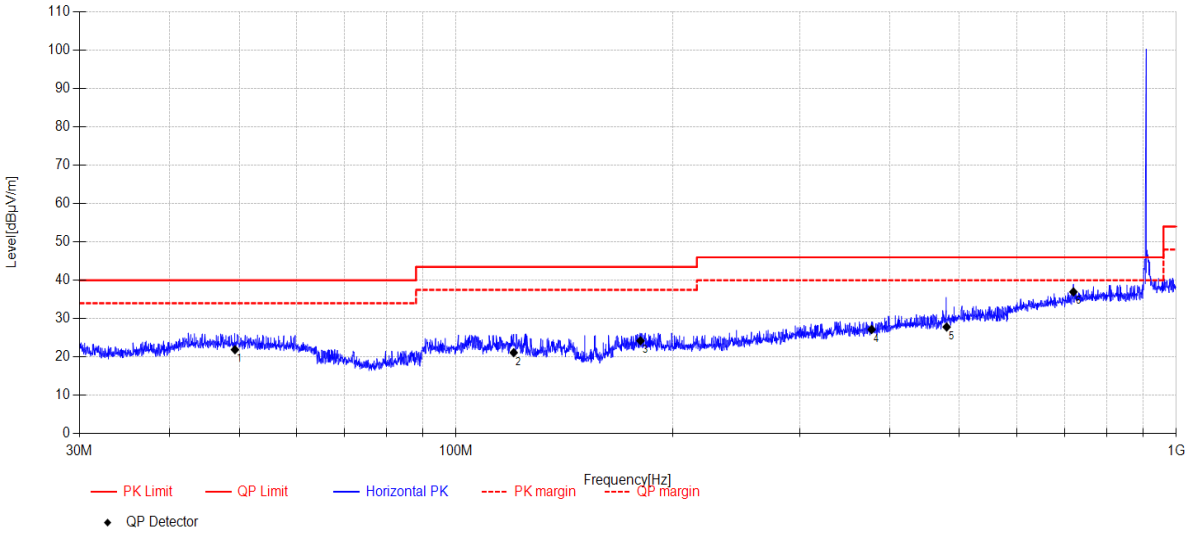
Freq. (MHz)	Read level (dBμV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Result Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
908.40	69.40	8.37	22.47	100.24	114.00	13.76	PK	Horizontal
908.40	/	8.37	22.47	89.70	94.00	4.30	AV	Horizontal
908.40	66.83	8.37	22.47	97.67	114.00	16.33	PK	Vertical
908.40	/	8.37	22.47	87.13	94.00	6.87	AV	Vertical
908.42	69.15	8.37	22.47	99.99	114.00	14.01	PK	Horizontal
908.42	/	8.37	22.47	89.45	94.00	4.55	AV	Horizontal
908.42	66.50	8.37	22.47	97.34	114.00	16.66	PK	Vertical
908.42	/	8.37	22.47	86.80	94.00	7.20	AV	Vertical
916.00	70.32	8.40	22.50	101.22	114.00	12.78	PK	Horizontal
916.00	/	8.40	22.50	90.68	94.00	3.32	AV	Horizontal
916.00	67.27	8.40	22.50	98.17	114.00	15.83	PK	Vertical
916.00	/	8.40	22.50	87.63	94.00	6.37	AV	Vertical
Result: Pass								

Note:
1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. The duty cycle of test signal is 29.72%, and the duty cycle factor is -10.54.

Radiated Emission test (below 1 GHz)

TR-4-E-009 Radiated Emission Test Result

Test Date:	2023-07-03	**Tested By**:	Bairong
EUT:	Range Extender	**Model Number**:	ZAC38
Test Mode:	TX Mode	**Power Supply**:	AC 120V/60Hz
Condition:	Temp:20.4°C;Humi:63.5%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2023 report data\Q23032819-2E ZAC38\FCC BELOW 1G\20230703-193429_H		
Memo:	908.4MHz POWER80		

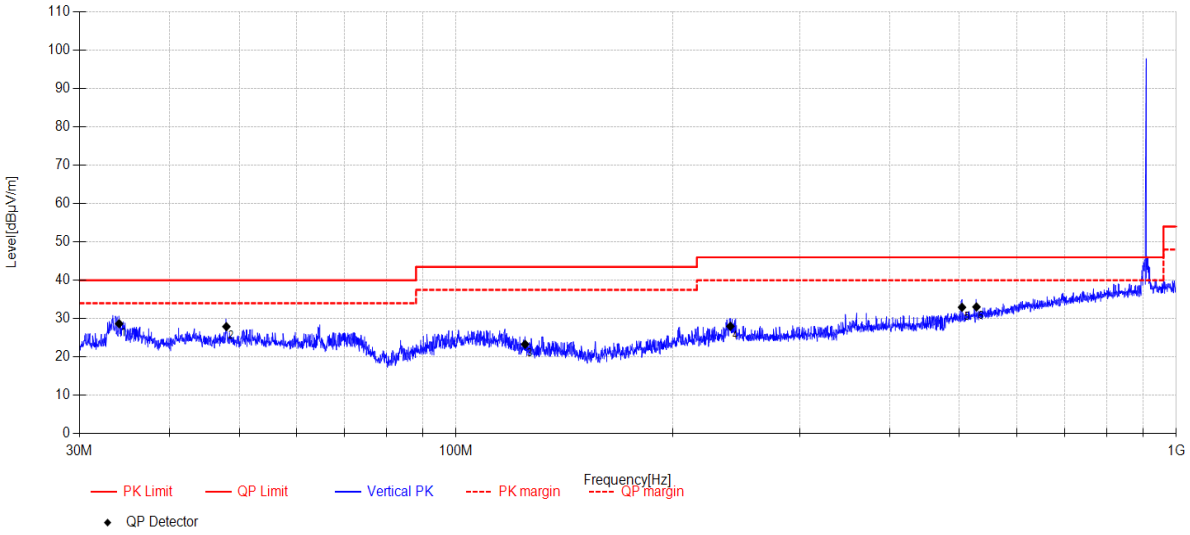


Final Data List										
NO.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Antenna Factor [dB]**	**Cable Loss [dB]**	**AMP [dB]**	**Result [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	49.32	4.02	13.17	4.72	0.00	21.91	40.00	18.09	QP	Horizontal
2	120.24	7.29	8.68	5.17	0.00	21.14	43.50	22.36	QP	Horizontal
3	180.33	9.44	9.23	5.57	0.00	24.24	43.50	19.26	QP	Horizontal
4	377.60	5.59	15.00	6.58	0.00	27.17	46.00	18.83	QP	Horizontal
5	479.92	4.34	16.60	6.88	0.00	27.82	46.00	18.18	QP	Horizontal
6	719.75	8.87	20.30	7.80	0.00	36.97	46.00	9.03	QP	Horizontal

Note:
1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2023-07-03	**Tested By**:	Bairong
EUT:	Range Extender	**Model Number**:	ZAC38
Test Mode:	TX Mode	**Power Supply**:	AC 120V/60Hz
Condition:	Temp:20.4°C;Humi:63.5%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2023 report data\Q23032819-2E ZAC38\FCC BELOW 1G\20230703-193519_V		
Memo:	908.4MHz POWER80		



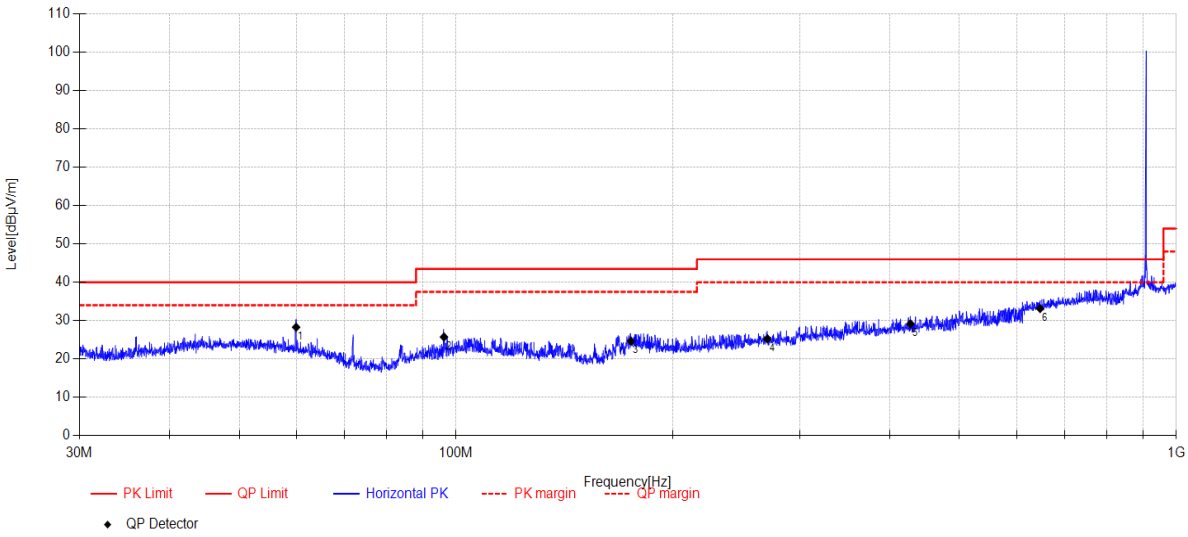
Final Data List

NO.	Freq. [MHz]	Reading [dBµV/m]	Antenna Factor [dB]	Cable Loss [dB]	AMP [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	34.06	13.55	10.62	4.52	0.00	28.69	40.00	11.31	QP	Vertical
2	47.99	10.03	13.20	4.70	0.00	27.93	40.00	12.07	QP	Vertical
3	124.71	9.89	8.23	5.19	0.00	23.31	43.50	20.19	QP	Vertical
4	240.39	10.09	12.02	5.90	0.00	28.01	46.00	17.99	QP	Vertical
5	504.07	8.93	17.08	6.95	0.00	32.96	46.00	13.04	QP	Vertical
6	527.94	8.61	17.40	7.04	0.00	33.05	46.00	12.95	QP	Vertical

Note:
1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2023-07-03	**Tested By**:	Bairong
EUT:	Range Extender	**Model Number**:	ZAC38
Test Mode:	TX Mode	**Power Supply**:	AC 120V/60Hz
Condition:	Temp:20.4°C;Humi:63.5%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2023 report data\Q23032819-2E ZAC38\FCC BELOW 1G\20230703-192343_H		
Memo:	908.42MHz POWER80		

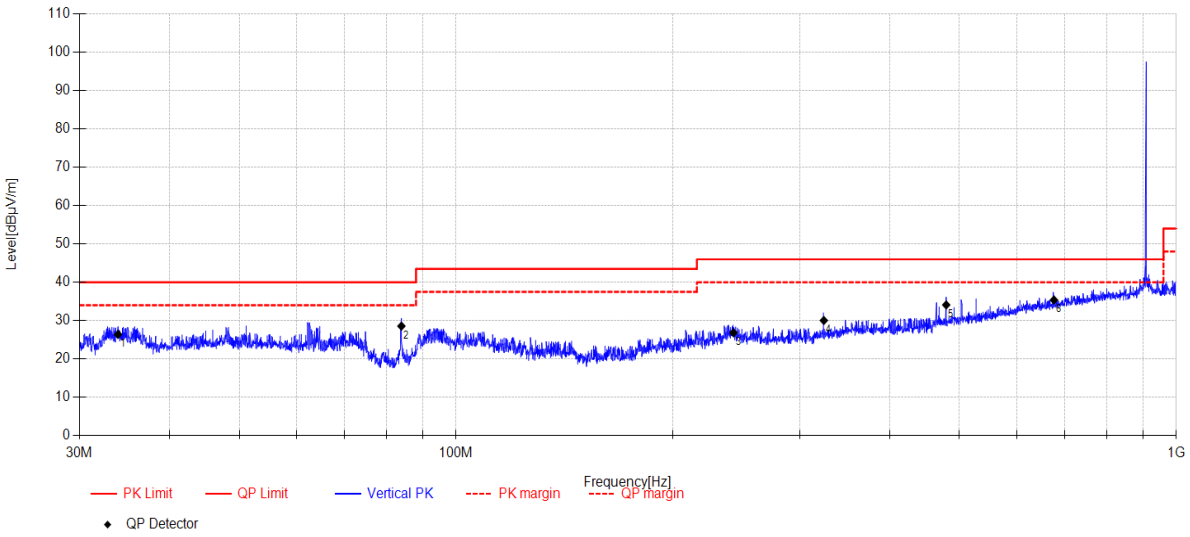


Final Data List										
NO.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Antenna Factor [dB]**	**Cable Loss [dB]**	**AMP [dB]**	**Result [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	59.98	11.64	11.90	4.76	0.00	28.30	40.00	11.70	QP	Horizontal
2	96.21	10.21	10.52	5.02	0.00	25.75	43.50	17.75	QP	Horizontal
3	174.98	10.24	8.90	5.52	0.00	24.66	43.50	18.84	QP	Horizontal
4	270.64	6.52	12.71	6.03	0.00	25.26	46.00	20.74	QP	Horizontal
5	427.49	6.6	15.80	6.76	0.00	29.16	46.00	16.84	QP	Horizontal
6	646.99	6.43	19.20	7.53	0.00	33.16	46.00	12.84	QP	Horizontal

Note:
1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2023-07-03	**Tested By**:	Bairong
EUT:	Range Extender	**Model Number**:	ZAC38
Test Mode:	TX Mode	**Power Supply**:	AC 120V/60Hz
Condition:	Temp:20.4°C;Humi:63.5%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2023 report data\Q23032819-2E ZAC38\FCC BELOW 1G\20230703-192433_V		
Memo:	908.42MHz POWER80		

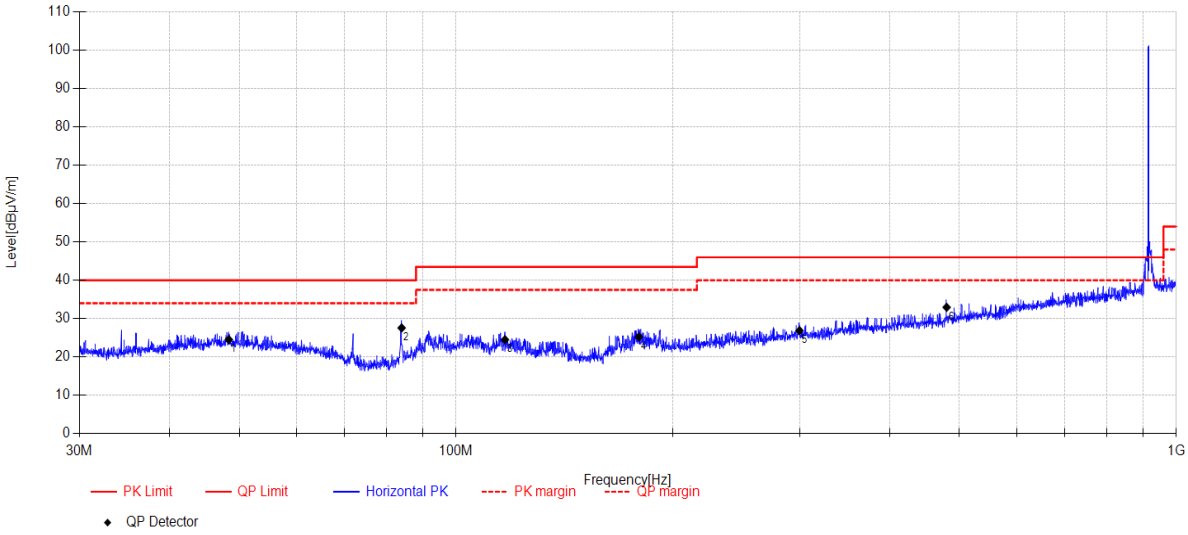


Final Data List										
NO.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Antenna Factor [dB]**	**Cable Loss [dB]**	**AMP [dB]**	**Result [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	33.94	11.31	10.59	4.52	0.00	26.42	40.00	13.58	QP	Vertical
2	83.97	16.12	7.59	4.87	0.00	28.58	40.00	11.42	QP	Vertical
3	242.76	8.82	12.11	5.91	0.00	26.84	46.00	19.16	QP	Vertical
4	324.07	9.81	13.96	6.28	0.00	30.05	46.00	15.95	QP	Vertical
5	479.25	10.63	16.59	6.88	0.00	34.10	46.00	11.90	QP	Vertical
6	676.21	8.02	19.70	7.66	0.00	35.38	46.00	10.62	QP	Vertical

Note:
1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2023-07-03	**Tested By**:	Bairong
EUT:	Range Extender	**Model Number**:	ZAC38
Test Mode:	TX Mode	**Power Supply**:	AC 120V/60Hz
Condition:	Temp:20.4°C;Humi:63.5%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2023 report data\Q23032819-2E ZAC38\FCC BELOW 1G\20230703-193758_H		
Memo:	916MHz POWER80		



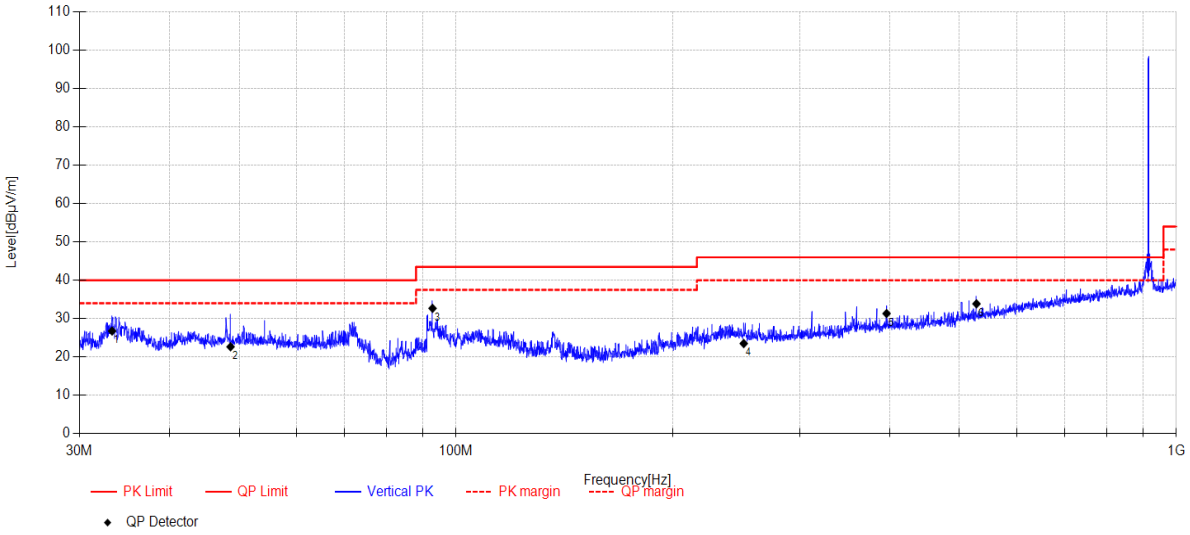
Final Data List

NO.	Freq. [MHz]	Reading [dBµV/m]	Antenna Factor [dB]	Cable Loss [dB]	AMP [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	48.36	6.64	13.20	4.71	0.00	24.55	40.00	15.45	QP	Horizontal
2	84.03	15.09	7.62	4.87	0.00	27.58	40.00	12.42	QP	Horizontal
3	116.92	10.05	9.32	5.15	0.00	24.52	43.50	18.98	QP	Horizontal
4	179.45	10.51	9.20	5.56	0.00	25.27	43.50	18.23	QP	Horizontal
5	299.81	7.43	13.29	6.15	0.00	26.87	46.00	19.13	QP	Horizontal
6	479.92	9.48	16.60	6.88	0.00	32.96	46.00	13.04	QP	Horizontal

Note:
1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2023-07-03	**Tested By**:	Bairong
EUT:	Range Extender	**Model Number**:	ZAC38
Test Mode:	TX Mode	**Power Supply**:	AC 120V/60Hz
Condition:	Temp:20.4°C;Humi:63.5%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2023 report data\Q23032819-2E ZAC38\FCC BELOW 1G\20230703-193849_V		
Memo:	916MHz POWER80		



Final Data List

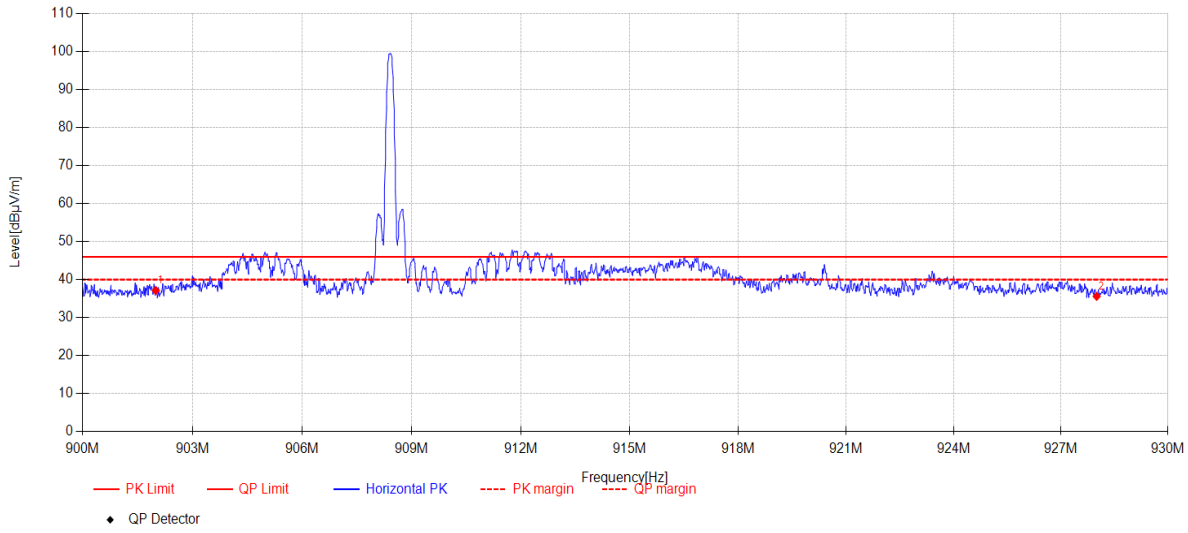
NO.	Freq. [MHz]	Reading [dBµV/m]	Antenna Factor [dB]	Cable Loss [dB]	AMP [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	33.30	11.81	10.46	4.51	0.00	26.78	40.00	13.22	QP	Vertical
2	48.63	4.76	13.20	4.71	0.00	22.67	40.00	17.33	QP	Vertical
3	92.77	17.76	9.95	4.98	0.00	32.69	43.50	10.81	QP	Vertical
4	250.90	5.26	12.32	5.94	0.00	23.52	46.00	22.48	QP	Vertical
5	396.04	9.34	15.32	6.68	0.00	31.34	46.00	14.66	QP	Vertical
6	527.94	9.43	17.40	7.04	0.00	33.87	46.00	12.13	QP	Vertical

Note:
1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2023-07-07	**Tested By**:	Bairong
EUT:	Range Extender	**Model Number**:	ZAC38
Test Mode:	TX Mode	**Power Supply**:	AC 120V/60Hz
Condition:	Temp:20.4°C;Humi:63.5%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2023 report data\Q23032819-2E ZAC38\FCC BELOW 1G\53		
Memo:	908.4MHz POWER80		

Test Graph



Suspected Data List										
NO.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Cable loss [dB]**	**Antenna Factor [dB]**	**AMP [dB]**	**Level [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	902.00	6.40	8.35	22.40	0.00	37.15	46.00	8.85	PK	Horizontal
2	928.00	4.66	8.44	22.50	0.00	35.60	46.00	10.40	PK	Horizontal

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date: 2023-07-07 **Tested By**: Bairong

EUT: Range Extender **Model Number**: ZAC38

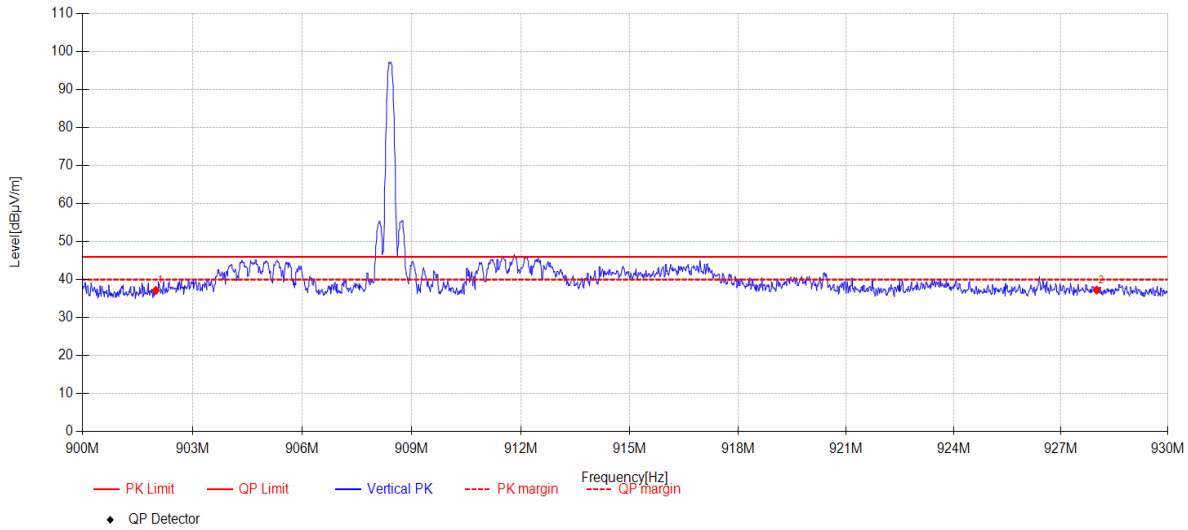
Test Mode: TX Mode **Power Supply**: AC 120V/60Hz

Condition: Temp:20.4°C;Humi:63.5% **Test Site**: DDT 3# Chamber

File Path: d:\ts\2023 report data\Q23032819-2E ZAC38\FCC BELOW 1G\54

Memo: 908.4MHz POWER80

Test Graph



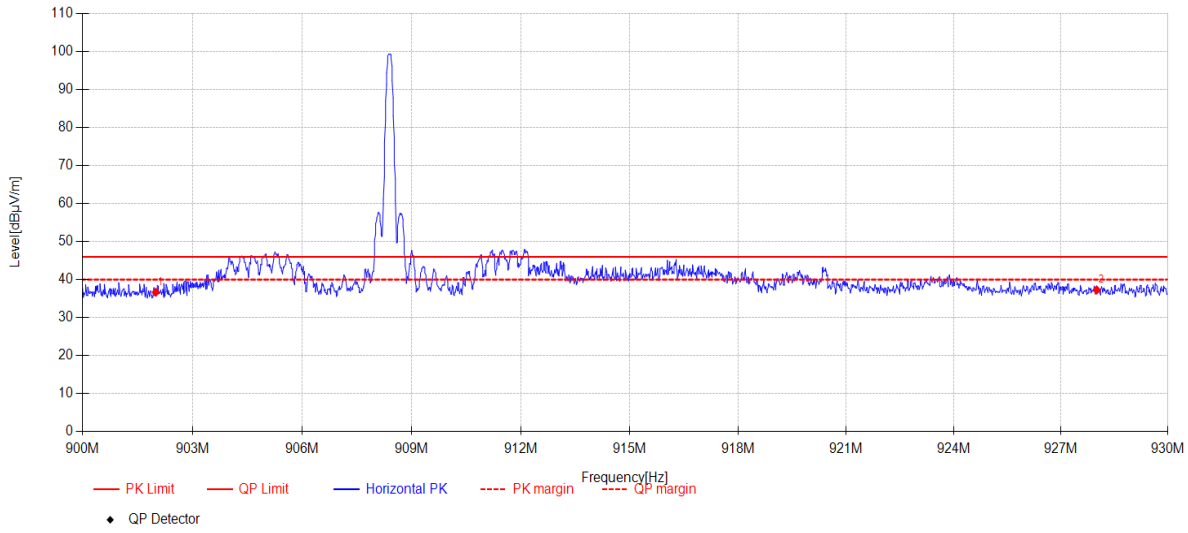
Suspected Data List										
NO.	Freq. [MHz]	Reading [dBµV/m]	Cable loss [dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	902.00	6.41	8.35	22.40	0.00	37.16	46.00	8.84	PK	Vertical
2	928.00	6.33	8.44	22.50	0.00	37.27	46.00	8.73	PK	Vertical

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2023-07-07	**Tested By**:	Bairong
EUT:	Range Extender	**Model Number**:	ZAC38
Test Mode:	TX Mode	**Power Supply**:	AC 120V/60Hz
Condition:	Temp:20.4°C;Humi:63.5%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2023 report data\Q23032819-2E ZAC38\FCC BELOW 1G\55		
Memo:	908.42MHz POWER80		

Test Graph



Suspected Data List										
NO.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Cable loss [dB]**	**Antenna Factor [dB]**	**AMP [dB]**	**Level [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	902.00	5.93	8.35	22.40	0.00	36.68	46.00	9.32	PK	Horizontal
2	928.00	6.36	8.44	22.50	0.00	37.30	46.00	8.70	PK	Horizontal

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date: 2023-07-07 **Tested By**: Bairong

EUT: Range Extender **Model Number**: ZAC38

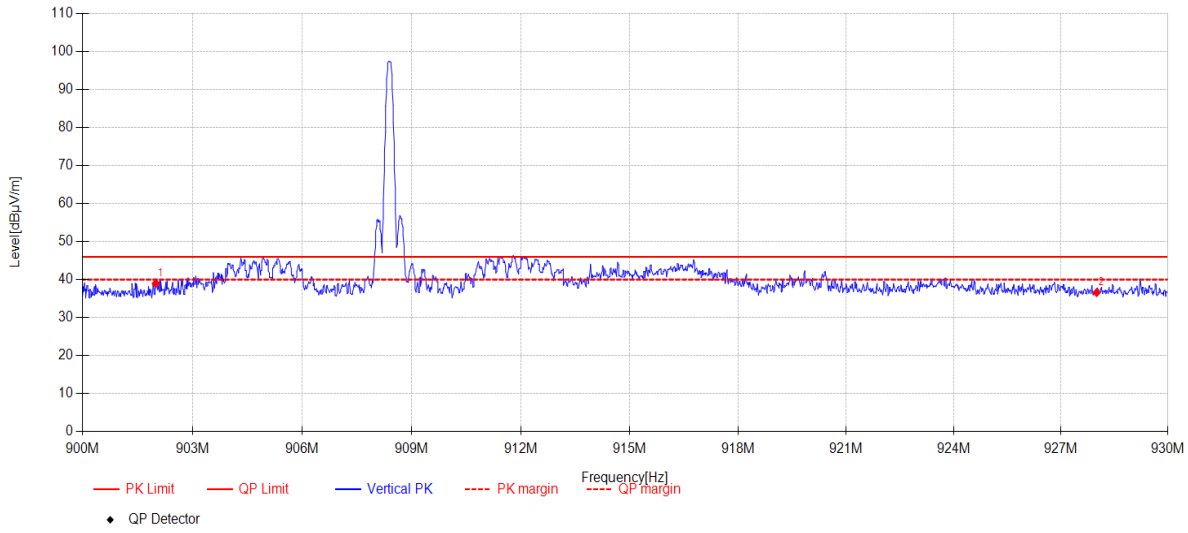
Test Mode: TX Mode **Power Supply**: AC 120V/60Hz

Condition: Temp:20.4°C;Humi:63.5% **Test Site**: DDT 3# Chamber

File Path: d:\ts\2023 report data\Q23032819-2E ZAC38\FCC BELOW 1G\56

Memo: 908.42MHz POWER80

Test Graph



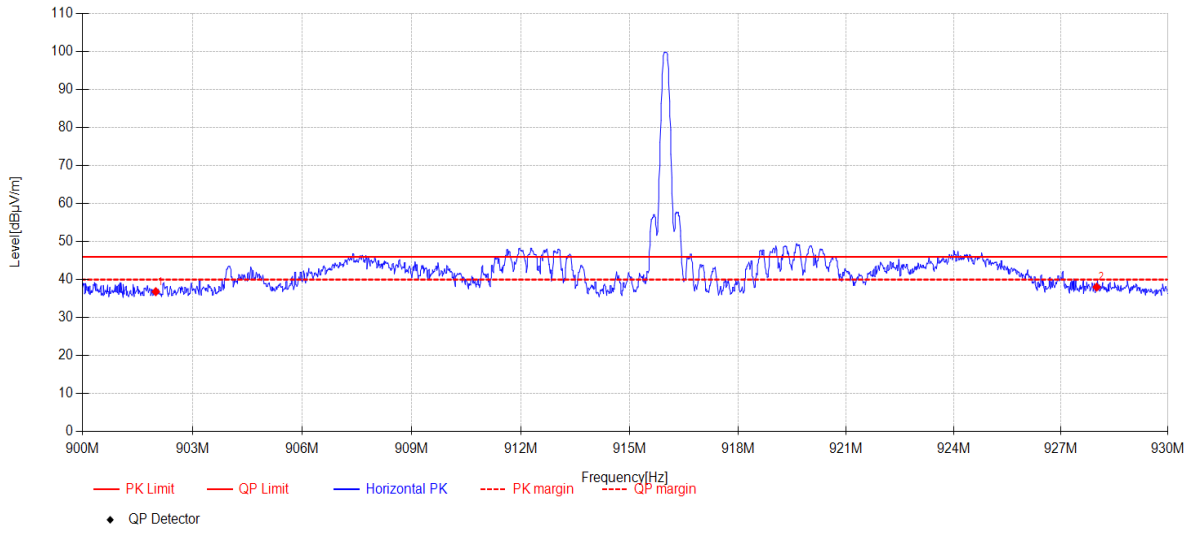
Suspected Data List										
NO.	Freq. [MHz]	Reading [dBµV/m]	Cable loss [dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	902.00	8.24	8.35	22.40	0.00	38.99	46.00	7.01	PK	Vertical
2	928.00	5.66	8.44	22.50	0.00	36.60	46.00	9.40	PK	Vertical

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2023-07-07	**Tested By**:	Bairong
EUT:	Range Extender	**Model Number**:	ZAC38
Test Mode:	TX Mode	**Power Supply**:	AC 120V/60Hz
Condition:	Temp:20.4°C;Humi:63.5%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2023 report data\Q23032819-2E ZAC38\FCC BELOW 1G\57		
Memo:	916MHz POWER80		

Test Graph



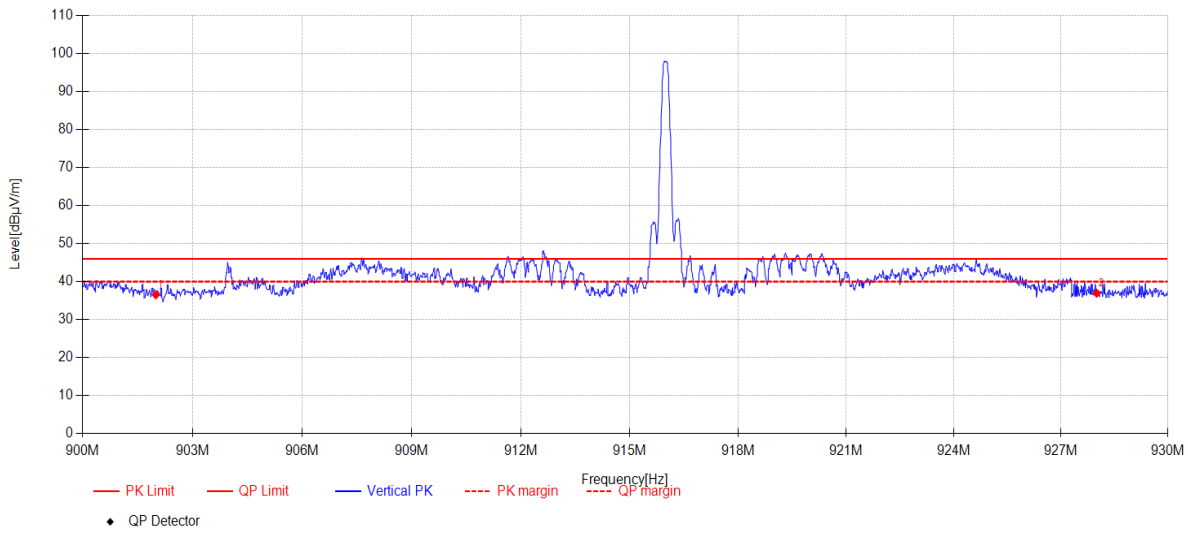
Suspected Data List										
NO.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Cable loss [dB]**	**Antenna Factor [dB]**	**AMP [dB]**	**Level [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	902.00	6.08	8.35	22.40	0.00	36.83	46.00	9.17	PK	Horizontal
2	928.00	7.09	8.44	22.50	0.00	38.03	46.00	3.08	PK	Horizontal

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2023-07-07	**Tested By**:	Bairong
EUT:	Range Extender	**Model Number**:	ZAC38
Test Mode:	TX Mode	**Power Supply**:	AC 120V/60Hz
Condition:	Temp:20.4°C;Humi:63.5%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2023 report data\Q23032819-2E ZAC38\FCC BELOW 1G\58		
Memo:	916MHz POWER80		

Test Graph



Suspected Data List										
NO.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Cable loss [dB]**	**Antenna Factor [dB]**	**AMP [dB]**	**Level [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	902.00	5.77	8.35	22.40	0.00	36.52	46.00	9.48	PK	Vertical
2	928.00	6.00	8.44	22.50	0.00	36.94	46.00	9.06	PK	Vertical

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

Radiated Emission test (above 1 GHz)

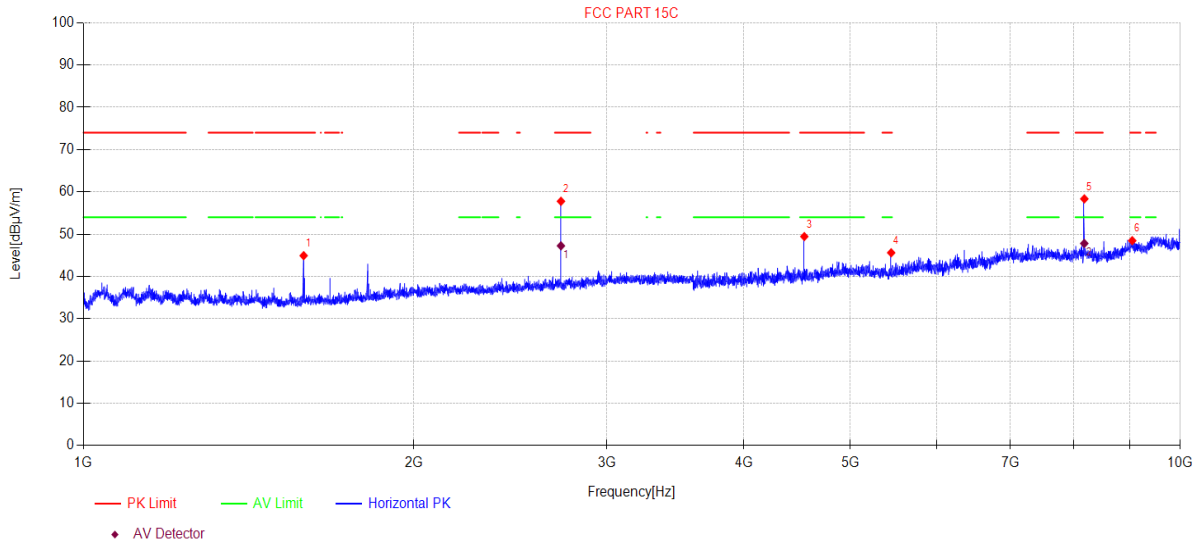
TR-4-E-009 Radiated Emission Test Result

Test Date:	2023-07-03	**Tested By**:	Bairong
EUT:	Range Extender	**Model Number**:	ZAC38
Test Mode:	TX Mode	**Power Supply**:	AC 120V/60Hz
Condition:	Temp:20.4°C;Humi:63.5%	**Test Site**:	DDT 3# Chamber

File Path: d:\ts\2023 report data\Q23032819-2E ZAC38\FCC ABOVE 1G\35

Memo: 908.4MHz POWER80

Test Graph



Suspected Data List

NO.	Freq. [MHz]	Reading [dBµV/m]	Cable loss [dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	1587.74	55.45	3.15	25.40	-39.08	44.92	74.00	29.08	PK	Horizontal
2	2724.94	65.81	4.12	28.35	-40.50	57.78	74.00	16.22	PK	Horizontal
3	4541.87	53.71	5.29	31.68	-41.24	49.44	74.00	24.56	PK	Horizontal
4	5450.37	47.88	5.74	32.90	-40.92	45.60	74.00	28.40	PK	Horizontal
5	8175.40	55.17	6.84	37.05	-40.72	58.34	74.00	15.66	PK	Horizontal
6	9040.75	42.19	7.52	38.20	-39.45	48.46	74.00	25.54	PK	Horizontal

Final Data List

NO.	Freq. [MHz]	Reading [dBµV/m]	Cable loss[dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit[dBµV/m]	Margin[dB]	Detector	Polarity
1	2724.94	55.27	4.12	28.35	-40.50	47.24	54.00	6.76	AV	Horizontal
2	8175.40	44.63	6.84	37.05	-40.72	47.80	54.00	6.20	AV	Horizontal

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date: 2023-07-03 **Tested By**: Bairong

EUT: Range Extender **Model Number**: ZAC38

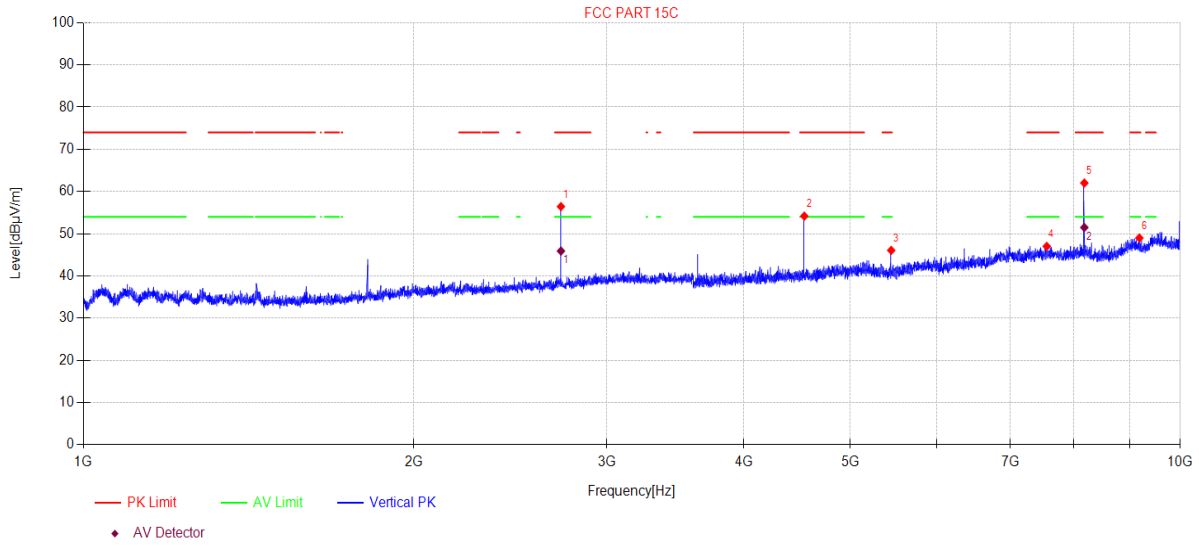
Test Mode: TX Mode **Power Supply**: AC 120V/60Hz

Condition: Temp:20.4°C;Humi:63.5% **Test Site**: DDT 3# Chamber

File Path: d:\ts\2023 report data\Q23032819-2E ZAC38\FCC ABOVE 1G\36

Memo: 908.4MHz POWER80

Test Graph



Suspected Data List										
NO.	Freq. [MHz]	Reading [dBµV/m]	Cable loss [dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	2724.94	64.47	4.12	28.35	-40.50	56.44	74.00	17.56	PK	Vertical
2	4541.87	58.45	5.29	31.68	-41.24	54.18	74.00	19.82	PK	Vertical
3	5450.37	48.34	5.74	32.90	-40.92	46.06	74.00	27.94	PK	Vertical
4	7554.61	44.95	6.66	36.40	-41.00	47.01	74.00	26.99	PK	Vertical
5	8175.40	58.85	6.84	37.05	-40.72	62.02	74.00	11.98	PK	Vertical
6	9177.06	42.67	7.63	38.30	-39.61	48.99	74.00	25.01	PK	Vertical

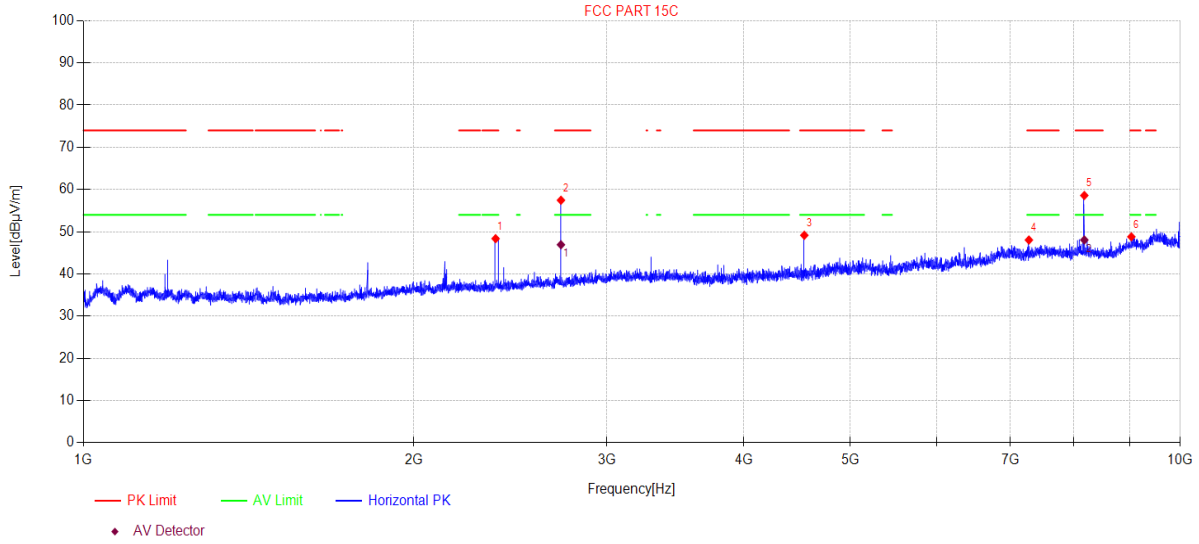
Final Data List										
NO.	Freq. [MHz]	Reading [dBµV/m]	Cable loss[dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit[dBµV/m]	Margin[dB]	Detector	Polarity
1	2724.94	53.93	4.12	28.35	-40.50	45.90	54.00	8.10	AV	Vertical
2	8175.40	48.31	6.84	37.05	-40.72	51.48	54.00	2.52	AV	Vertical

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2023-07-03	**Tested By**:	Bairong
EUT:	Range Extender	**Model Number**:	ZAC38
Test Mode:	TX Mode	**Power Supply**:	AC 120V/60Hz
Condition:	Temp:20.4°C;Humi:63.5%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2023 report data\Q23032819-2E ZAC38\FCC ABOVE 1G\37		
Memo:	908.42MHz POWER80		

Test Graph



Suspected Data List

NO.	Freq. [MHz]	Reading [dBµV/m]	Cable loss [dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	2375.54	57.16	3.86	27.45	-40.11	48.36	74.00	25.64	PK	Horizontal
2	2724.94	65.49	4.12	28.35	-40.50	57.46	74.00	16.54	PK	Horizontal
3	4541.87	53.43	5.29	31.68	-41.24	49.16	74.00	24.84	PK	Horizontal
4	7278.03	45.91	6.63	36.50	-41.00	48.04	74.00	25.96	PK	Horizontal
5	8175.40	55.42	6.84	37.05	-40.72	58.59	74.00	15.41	PK	Horizontal
6	9024.11	42.53	7.51	38.20	-39.43	48.81	74.00	25.19	PK	Horizontal

Final Data List

NO.	Freq. [MHz]	Reading [dBµV/m]	Cable loss[dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit[dBµV/m]	Margin[dB]	Detector	Polarity
1	2724.94	54.95	4.12	28.35	-40.50	46.92	54.00	7.08	AV	Horizontal
2	8175.40	44.88	6.84	37.05	-40.72	48.05	54.00	5.95	AV	Horizontal

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date: 2023-07-03 **Tested By**: Bairong

EUT: Range Extender **Model Number**: ZAC38

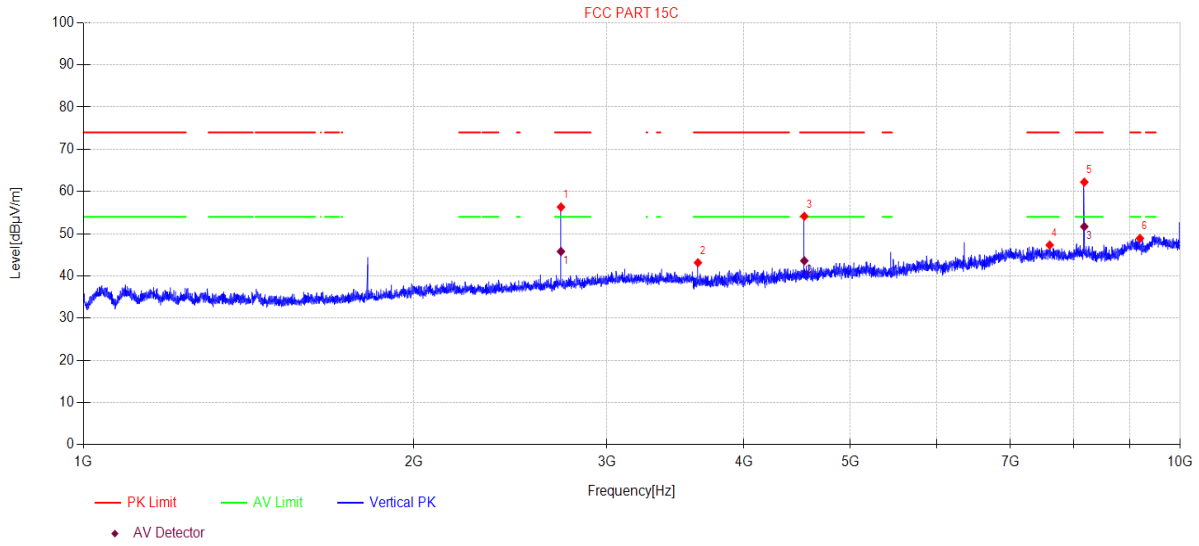
Test Mode: TX Mode **Power Supply**: AC 120V/60Hz

Condition: Temp:20.4°C;Humi:63.5% **Test Site**: DDT 3# Chamber

File Path: d:\ts\2023 report data\Q23032819-2E ZAC38\FCC ABOVE 1G\38

Memo: 908.42MHz POWER80

Test Graph



Suspected Data List

NO.	Freq. [MHz]	Reading [dBµV/m]	Cable loss [dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	2724.94	64.36	4.12	28.35	-40.50	56.33	74.00	17.67	PK	Vertical
2	3632.82	49.77	4.78	29.77	-41.18	43.14	74.00	30.86	PK	Vertical
3	4541.87	58.40	5.29	31.68	-41.24	54.13	74.00	19.87	PK	Vertical
4	7601.72	45.25	6.66	36.40	-41.00	47.31	74.00	26.69	PK	Vertical
5	8175.40	59.05	6.84	37.05	-40.72	62.22	74.00	11.78	PK	Vertical
6	9187.63	42.60	7.64	38.30	-39.63	48.91	74.00	25.09	PK	Vertical

Final Data List

NO.	Freq. [MHz]	Reading [dBµV/m]	Cable loss[dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit[dBµV/m]	Margin[dB]	Detector	Polarity
1	2724.94	53.82	4.12	28.35	-40.50	45.79	54.00	8.21	AV	Vertical
2	4541.87	47.86	5.29	31.68	-41.24	43.59	54.00	10.41	AV	Vertical
3	8175.40	48.51	6.84	37.05	-40.72	51.68	54.00	2.32	AV	Vertical

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date: 2023-07-03 **Tested By**: Bairong

EUT: Range Extender **Model Number**: ZAC38

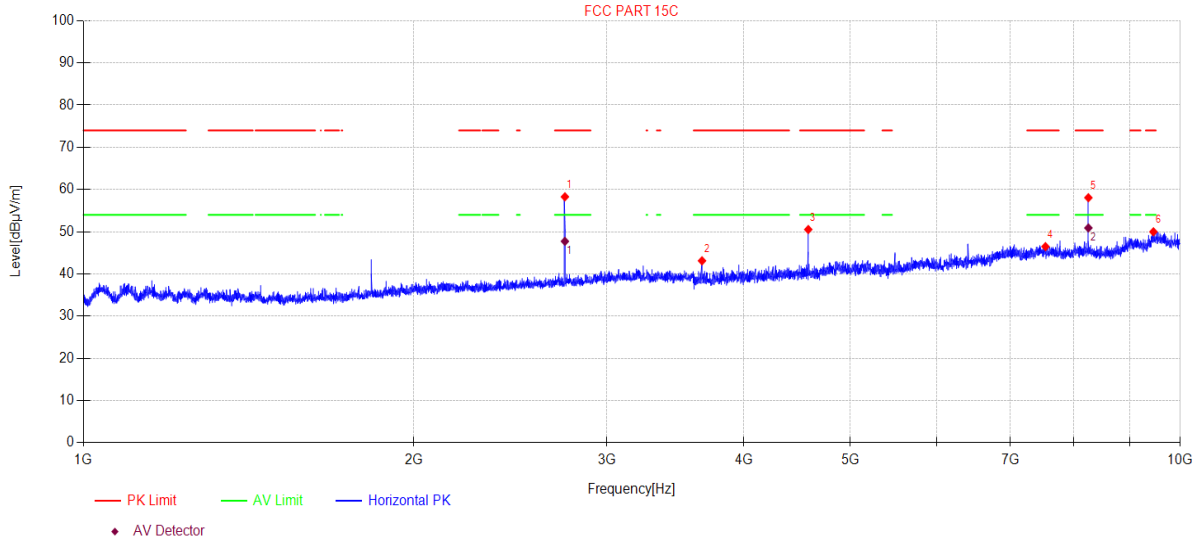
Test Mode: TX Mode **Power Supply**: AC 120V/60Hz

Condition: Temp:20.4°C;Humi:63.5% **Test Site**: DDT 3# Chamber

File Path: d:\ts\2023 report data\Q23032819-2E ZAC38\FCC ABOVE 1G\33

Memo: 916MHz POWER80

Test Graph



Suspected Data List

NO.	Freq. [MHz]	Reading [dBµV/m]	Cable loss [dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	2747.62	66.25	4.14	28.40	-40.52	58.27	74.00	15.73	PK	Horizontal
2	3663.90	49.66	4.80	29.86	-41.20	43.12	74.00	30.88	PK	Horizontal
3	4579.67	54.75	5.31	31.70	-41.23	50.53	74.00	23.47	PK	Horizontal
4	7535.50	44.42	6.65	36.40	-41.00	46.47	74.00	27.53	PK	Horizontal
5	8245.34	54.68	6.89	37.10	-40.61	58.06	74.00	15.94	PK	Horizontal
6	9451.54	43.68	7.85	38.40	-39.94	49.99	74.00	24.01	PK	Horizontal

Final Data List

NO.	Freq. [MHz]	Reading [dBµV/m]	Cable loss[dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit[dBµV/m]	Margin[dB]	Detector	Polarity
1	2747.62	55.71	4.14	28.40	-40.52	47.73	54.00	6.27	AV	Horizontal
2	8245.34	47.52	6.89	37.10	-40.61	50.90	54.00	3.10	AV	Horizontal

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date: 2023-07-03 **Tested By**: Bairong

EUT: Range Extender **Model Number**: ZAC38

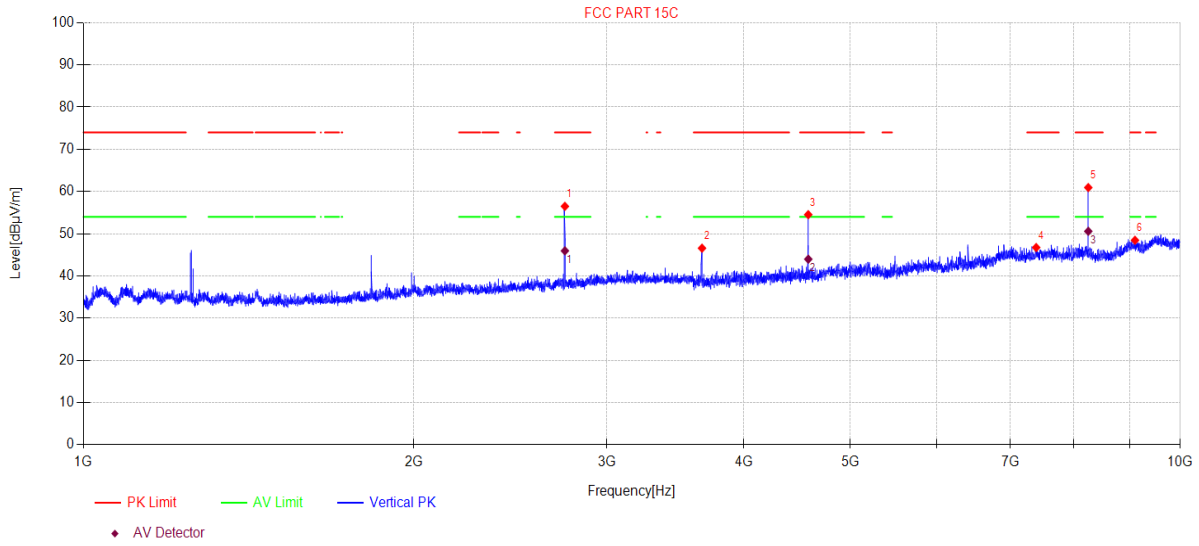
Test Mode: TX Mode **Power Supply**: AC 120V/60Hz

Condition: Temp:20.4°C;Humi:63.5% **Test Site**: DDT 3# Chamber

File Path: d:\ts\2023 report data\Q23032819-2E ZAC38\FCC ABOVE 1G\34

Memo: 916MHz POWER80

Test Graph



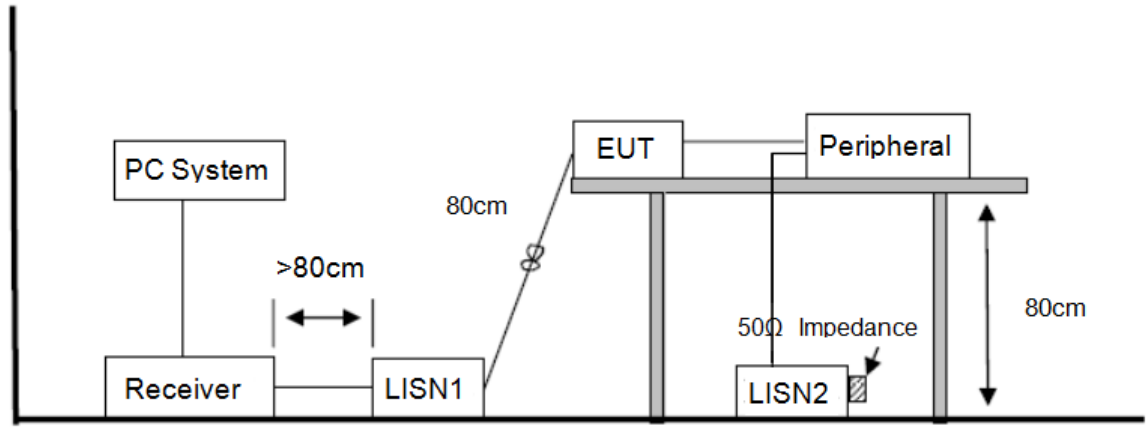
Suspected Data List										
NO.	Freq. [MHz]	Reading [dBµV/m]	Cable loss [dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	2747.62	64.47	4.14	28.40	-40.52	56.49	74.00	17.51	PK	Vertical
2	3663.90	53.12	4.80	29.86	-41.20	46.58	74.00	27.42	PK	Vertical
3	4579.67	58.74	5.31	31.70	-41.23	54.52	74.00	19.48	PK	Vertical
4	7389.47	44.59	6.64	36.50	-41.00	46.73	74.00	27.27	PK	Vertical
5	8243.44	57.56	6.89	37.10	-40.61	60.94	74.00	13.06	PK	Vertical
6	9092.94	42.20	7.56	38.20	-39.51	48.45	74.00	25.55	PK	Vertical

Final Data List										
NO.	Freq. [MHz]	Reading [dBµV/m]	Cable loss[dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit[dBµV/m]	Margin[dB]	Detector	Polarity
1	2747.62	53.93	4.14	28.40	-40.52	45.95	54.00	8.05	AV	Vertical
2	4579.67	48.20	5.31	31.70	-41.23	43.98	54.00	10.02	AV	Vertical
3	8243.44	47.20	6.89	37.10	-40.61	50.58	54.00	3.42	AV	Vertical

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

7. Power Line Conducted Emission

7.1. Block diagram of test setup



7.2. Power line conducted emission limits

Frequency	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150 kHz ~ 500 kHz	66 ~ 56*	56 ~ 46*
500 kHz ~ 5 MHz	56	46
5 MHz ~ 30 MHz	60	50

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

7.3. Test procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.4 and test equipment as described in clause 6.1 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30 MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.4 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 kHz.

7.4. Test result

Pass. (See below detailed test result)

Note1: All emissions not reported below are too low against the prescribed limits.

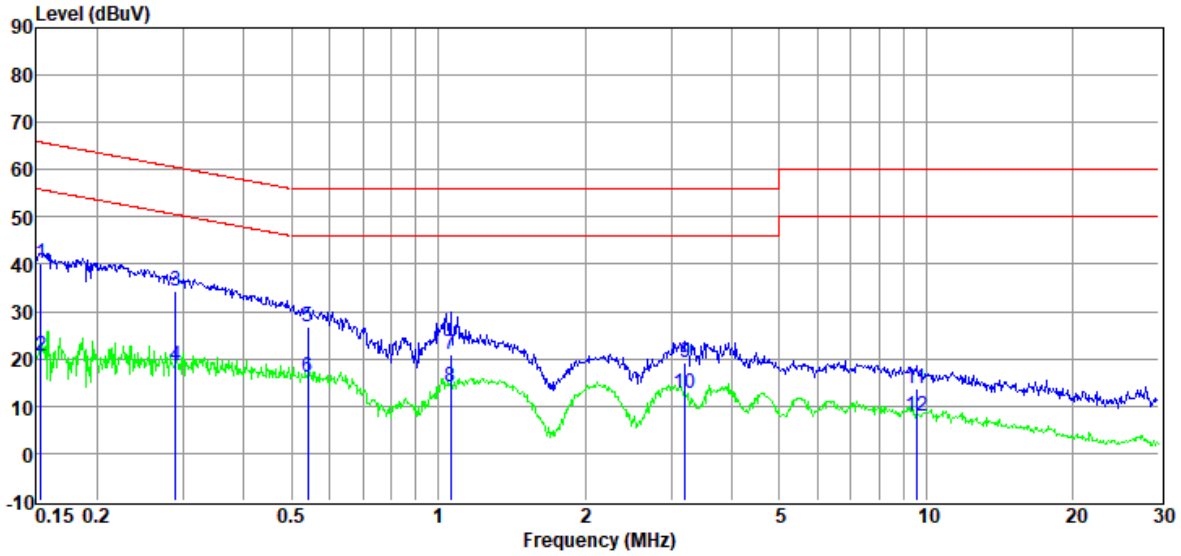
Note2: "-----" means Peak detection; "-----" means Average detection.

Note3: Pre-test AC conducted emission at both voltage AC 120V/60Hz and AC 240V/50Hz, recorded the worst case.

TR-4-E-010 Conducted Emission Test Result

Test Site	:	DDT 1# Shield Room	D:\2023 CE report data\Q23032819-2E ZAC38\FCC CE.EM6		
Test Date	:	2023-04-10	**Tested By**	:	Junchang Du
EUT	:	Range Extender	**Model Number**	:	ZAC38
Power Supply	:	AC 120V/60Hz	**Test Mode**	:	TX mode
Condition	:	TEMP:24.3°C, RH:60.4%, BP:101.0kPa	**LISN**	:	2022 1# ENV216/NEUTRAL
Memo	:				

Data: 2



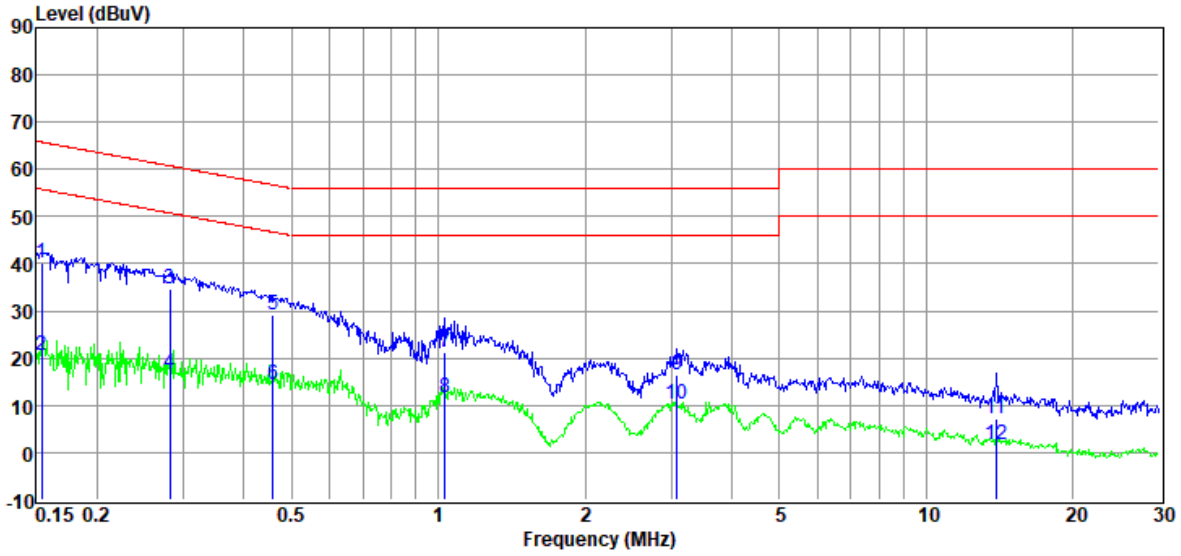
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBµV)	Limit Line (dBµV)	Over Limit (dB)	Detector	Phase
1	0.15	20.43	9.81	0.01	9.94	40.19	65.82	-25.63	QP	NEUTRAL
2	0.15	0.99	9.81	0.01	9.94	20.75	55.82	-35.07	Average	NEUTRAL
3	0.29	14.78	9.78	0.01	9.91	34.48	60.54	-26.06	QP	NEUTRAL
4	0.29	-1.28	9.78	0.01	9.91	18.42	50.54	-32.12	Average	NEUTRAL
5	0.54	7.33	9.65	0.01	9.92	26.91	56.00	-29.09	QP	NEUTRAL
6	0.54	-3.51	9.65	0.01	9.92	16.07	46.00	-29.93	Average	NEUTRAL
7	1.06	1.24	9.70	0.02	9.91	20.87	56.00	-35.13	QP	NEUTRAL
8	1.06	-5.66	9.70	0.02	9.91	13.97	46.00	-32.03	Average	NEUTRAL
9	3.21	-0.60	9.70	0.04	9.91	19.05	56.00	-36.95	QP	NEUTRAL
10	3.21	-7.06	9.70	0.04	9.91	12.59	46.00	-33.41	Average	NEUTRAL
11	9.55	-6.17	9.77	0.09	9.95	13.64	60.00	-46.36	QP	NEUTRAL
12	9.55	-11.89	9.77	0.09	9.95	7.92	50.00	-42.08	Average	NEUTRAL

Note:
1. Result Level = Read Level +LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

TR-4-E-010 Conducted Emission Test Result

Test Site	:	DDT 1# Shield Room	D:\2023 CE report data\Q23032819-2E ZAC38\FCC CE.EM6		
Test Date	:	2023-04-10	**Tested By**	:	Junchang Du
EUT	:	Range Extender	**Model Number**	:	ZAC38
Power Supply	:	AC 120V/60Hz	**Test Mode**	:	TX mode
Condition	:	TEMP:24.3°C, RH:60.4%, BP:101.0kPa	**LISN**	:	2022 1# ENV216/LINE
Memo	:				

Data: 4



Item (Mark)	Freq. (MHz)	Read Level (dBµV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBµV)	Limit Line (dBµV)	Over Limit (dB)	Detector	Phase
1	0.15	20.61	9.62	0.01	9.94	40.18	65.78	-25.60	QP	LINE
2	0.15	0.91	9.62	0.01	9.94	20.48	55.78	-35.30	Average	LINE
3	0.28	14.92	9.76	0.01	9.91	34.60	60.76	-26.16	QP	LINE
4	0.28	-2.74	9.76	0.01	9.91	16.94	50.76	-33.82	Average	LINE
5	0.46	9.68	9.71	0.01	9.92	29.32	56.71	-27.39	QP	LINE
6	0.46	-5.17	9.71	0.01	9.92	14.47	46.71	-32.24	Average	LINE
7	1.03	1.92	9.50	0.02	9.91	21.35	56.00	-34.65	QP	LINE
8	1.03	-7.68	9.50	0.02	9.91	11.75	46.00	-34.25	Average	LINE
9	3.09	-3.01	9.54	0.04	9.91	16.48	56.00	-39.52	QP	LINE
10	3.09	-9.32	9.54	0.04	9.91	10.17	46.00	-35.83	Average	LINE
11	13.92	-12.72	9.74	0.11	9.95	7.08	60.00	-52.92	QP	LINE
12	13.92	-18.04	9.74	0.11	9.95	1.76	50.00	-48.24	Average	LINE

Note:
1. Result Level = Read Level +LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

8. Antenna Requirements

8.1. Limit

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.

8.2. Result

The antenna used for this product and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain is -2.62 dBi.

10. Photos of the EUT

Please refer to appendix I.

END OF REPORT