

Kenxen Digitech Limited

TEST REPORT

SCOPE OF WORK

FCC TESTING–TW03

REPORT NUMBER

190104020SZN-001

ISSUE DATE

16 January 2019

[REVISED DATE]

[-----]

PAGES

52

DOCUMENT CONTROL NUMBER

FCC ID 247_b

© 2017 INTERTEK

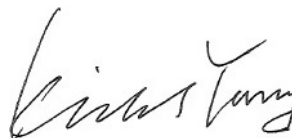


Intertek Report No.: 190104020SZN-001

Kenxen Digitech LimitedApplication
For
Certification**FCC ID: 2AL8TTW03****Dash Camera****Model: TW03****Brand Name: Kenxen, WAYLENS****2.4GHz Transceiver**

Report No.: 190104020SZN-001

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator, mention 47 CFR [10-1-17]

Prepared and Checked by:**Leo Li
Engineer****Approved by:****Kidd Yang
Technical Supervisor
Date: 16 January 2019**

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

Intertek Testing Services Shenzhen Ltd. Longhua Branch

101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, ShenZhen.

Tel: (86 755) 8601 6288 Fax: (86 755) 8601 6751

LIST OF EXHIBITS

INTRODUCTION

<i>EXHIBIT 1:</i>	Summary of Tests
<i>EXHIBIT 2:</i>	General Description
<i>EXHIBIT 3:</i>	System Test Configuration
<i>EXHIBIT 4:</i>	Measurement Results
<i>EXHIBIT 5:</i>	Equipment Photographs
<i>EXHIBIT 6:</i>	Product Labeling
<i>EXHIBIT 7:</i>	Technical Specifications
<i>EXHIBIT 8:</i>	Instruction Manual
<i>EXHIBIT 9:</i>	Confidentiality Request
<i>EXHIBIT 10:</i>	Miscellaneous Information
<i>EXHIBIT 11:</i>	Test Equipment List

MEASUREMENT/TECHNICAL REPORT

Kenxen Digitech Limited

Model: TW03

FCC ID: 2AL8TTW03

This report concerns (check one) Original Grant ☒ Class II Change ☐

Equipment Type: DTS - Part 15 Digital Transmission Systems (Bluetooth BLE transmitter portion)

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes ☐ No ☒

If yes, defer until :
date

Company Name agrees to notify the Commission by:
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes ☐ No ☒

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [10-1-17] Edition] provision.

Report prepared by:

Leo Li
Intertek Testing Services Shenzhen Ltd. Longhua Branch
101, 201, Building B, No. 308 Wuhe Avenue,
Zhangkengjing Community, GuanHu Subdistrict,
LongHua District, ShenZhen.
Tel: (86 755) 8614 0743 Fax: (86 755) 8601 6751

Table of Contents

1.0	Summary of Test results	7
2.0	General Description	9
2.1	Product Description	9
2.2	Related Submittal(s) Grants	9
2.3	Test Methodology.....	10
2.4	Test Facility	10
3.0	System Test Configuration.....	12
3.1	Justification	12
3.2	EUT Exercising Software	12
3.3	Special Accessories	13
3.4	Measurement Uncertainty	13
3.5	Equipment Modification.....	13
3.6	Support Equipment List and Description	13
4.0	Measurement Results	15
4.1	Maximum Conducted Output Power at Antenna Terminals.....	15
4.2	Minimum 6 dB RF Bandwidth	16
4.3	Maximum Power Density Reading	18
4.4	Out of Band Conducted Emissions.....	20
4.5	Out of Band Radiated Emissions.....	26
4.6	Transmitter Radiated Emissions in Restricted Bands	27
4.7	Field Strength Calculation	28
4.8	Radiated Spurious Emission	29
4.9	Conducted Emission at Mains Termina	34
4.10	Radiated Emissions from Digital Section of Transceiver.....	37
4.11	Transmitter Duty Cycle Calculation and Measurements	38
5.0	Equipment Photographs	40
6.0	Product Labelling.....	42
7.0	Technical Specifications	44
8.0	Instruction Manual	46
9.0	Confidentiality Request	48
10.0	Discussion of Pulse Desensitization	50
11.0	Test Equipment List.....	52

List of attached file

Exhibit type	File Description	Filename
Test Report	Test Report	report.pdf
Test Setup Photo	Radiated Emission	radiated photos.pdf
Test Setup Photo	Conducted Emission	conducted photos.pdf
External Photo	External Photo	external photos.pdf
Internal Photo	Internal Photo	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
Operation Description	Technical Description	descri.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Cover Letter	Confidentiality Letter	request.pdf
Cover Letter	Letter of Agency	agency.pdf

EXHIBIT 1

SUMMARY OF TEST RESULTS

1.0 Summary of Test results

Dash Camera

Model: TW03

FCC ID: 2AL8TTW03

TEST ITEM	REFERENCE	RESULTS
Max. Output power	15.247(b)(3)	Pass
6 dB Bandwidth	15.247(a)(2)	Pass
Max. Power Density	15.247(e)	Pass
Out of Band Antenna Conducted Emission	15.247(d)	Pass
Radiated Emission in Restricted Bands	15.247(d)	Pass
AC Conducted Emission	15.207	Pass
Antenna Requirement	15.203	Pass (See Notes)

Notes: The EUT uses an Integral Antenna which in accordance to Section 15.203 is considered sufficient to comply with the provisions of this section.

EXHIBIT 2

GENERAL DESCRIPTION

2.0 General Description

2.1 Product Description

The Equipment Under Test (EUT) is a Dash Camera with Bluetooth function operating at 2402-2480MHz. The EUT can be powered by DC 5.0V, 1.5A through Micro USB port. For more detailed features description, please refer to the user's manual.

Antenna Type: Integral antenna

Modulation Type: GFSK

Antenna Gain: 1.7dBi Max

Bluetooth Version: 4.2 BLE

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

2.2 Related Submittal(s) Grants

This is an application for certification of DTS- Part 15 Digital Transmission Systems (Bluetooth 4.2 BLE transmitter portion).

For the 2.4GHz WiFi function was tested and demonstrated in report 190104020SZN-002.

For the 5GHz WiFi function was tested and demonstrated in report 190104020SZN-003.

For other functions were reported in the SDOC report: 190104020SZN-004.

2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10: 2013 and KDB 558074 D01 v05r01. Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the “**Justification Section**” of this Application. All other measurements were made in accordance with the procedures in part 2 of CFR 47.

2.4 Test Facility

The Semi-Anechoic chamber and shield room used to collect the radiated data and conducted data are **Intertek Testing Services Shenzhen Ltd. Longhua Branch** and located at 101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, ShenZhen. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number: CN1188).

EXHIBIT 3

SYSTEM TEST CONFIGURATION

3.0 System Test Configuration

3.1 Justification

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables were manipulated to produce worst case emissions. The EUT was powered by DC 5.0V, 1.5A through Micro USB port with AC adapter during the test, only the worst data was reported in this report.

For maximizing emissions, the EUT was rotated through 360°, the EUT was placed on the styrene turntable with 0.8m up to 1GHz and 1.5 m above 1GHz. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

The rear of unit was flushed with the rear of the table.

Radiated emission measurement were performed the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

3.2 EUT Exercising Software

The EUT exercise program (provided by client) used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The worst case configuration is used in all specified testing.

The parameters of test software setting:

During the test, Channel and power controlling software provided by the applicant was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the application and is going to be fixed on the firmware of the end product.

3.3 Special Accessories

N/A.

3.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

Uncertainty and Compliance – Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

3.5 Equipment Modification

Any modifications installed previous to testing by Kenxen Digitech Limited will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Longhua Branch.

3.6 Support Equipment List and Description

This product was tested in the following configuration:

Refer List:

Description	Manufacturer	Model No.
Adapter	provided by Intertek	XIAOMI, MDY-08-EI
USB cable	provided by Intertek	Unshielded, 0.5m

EXHIBIT 4

MEASUREMENT RESULTS

Applicant: Kenxen Digitech Limited

Date of Test: January 14, 2019

Model: TW03

4.0 Measurement Results

4.1 Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b)(3):

The antenna power of the EUT was connected to the input of a broadband peak RF power meter. The power meter have a video bandwidth that is greater than DTS bandwidth and utilize a fast-responding diode detector. Power was read directly at the EUT antenna terminals with cable loss added.

For antennas with gains of 1.7dBi <6dBi, So maximum allowed Transmitter output is 30dBm (1000mW).

Frequency (MHz)	Output in dBm (Peak reading)	Output in mWatt
Low Channel: 2402	4.03	2.53
Middle Channel: 2440	3.76	2.38
High Channel: 2480	3.93	2.47

Cable loss: 1.0 dB External Attenuation: 0 dB

Cable loss, external attenuation has been included in OFFSET function

EUT max. output level = 4.03dBm

EUT max. radiated output level = 4.03dBm + 1.7dBi = 5.73dBm

For RF Exposure, the information is saved with filename: RF exposure.pdf.

Applicant: Kenxen Digitech Limited

Date of Test: January 14, 2019

Model: TW03

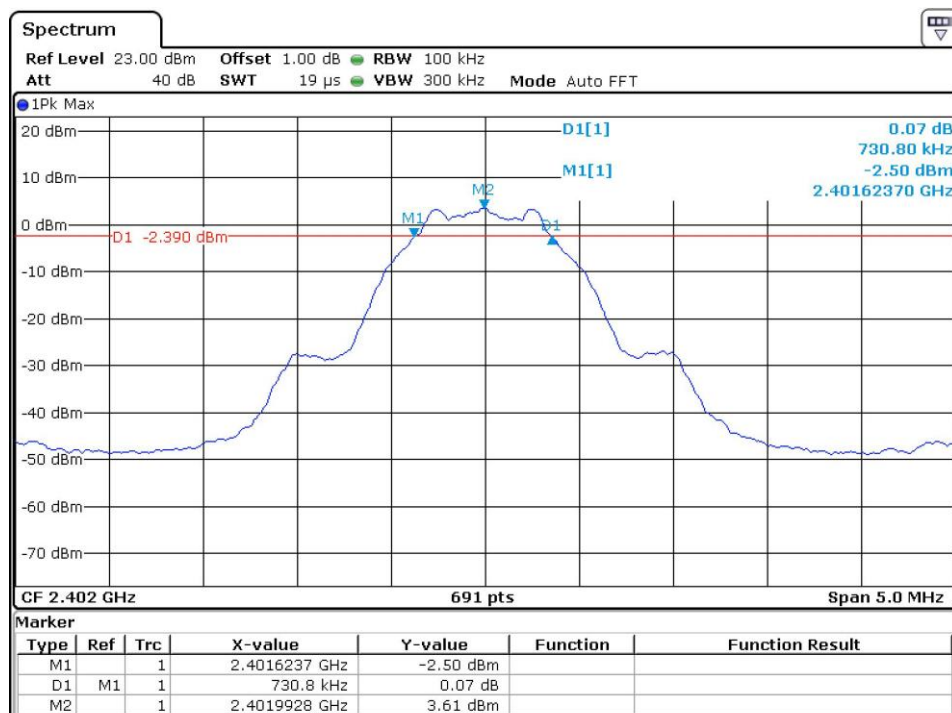
4.2 Minimum 6 dB RF Bandwidth, FCC Rule 15.247(a) (2):

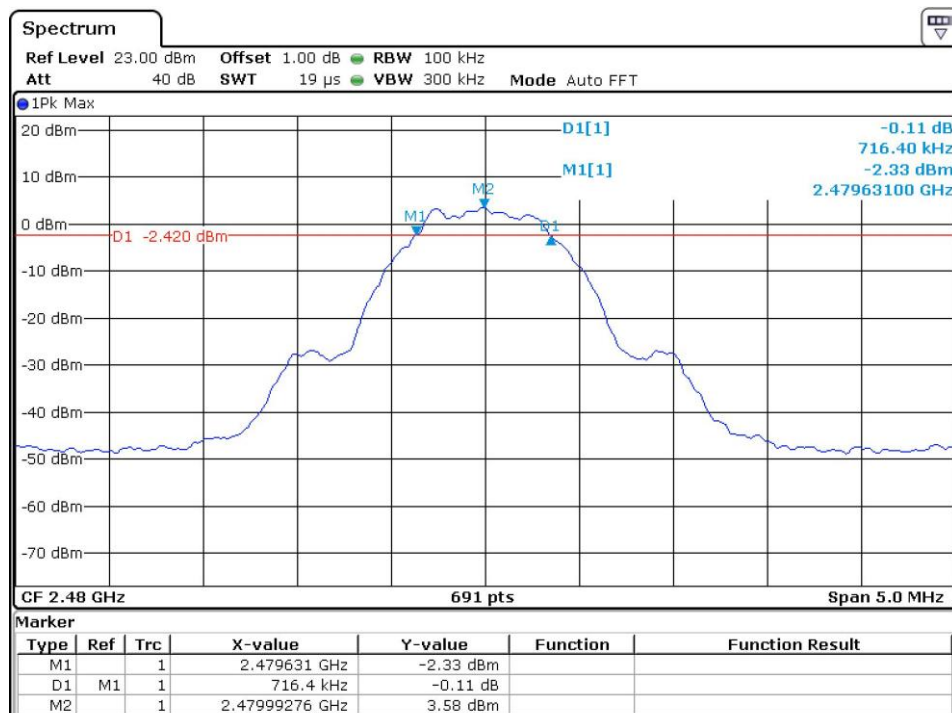
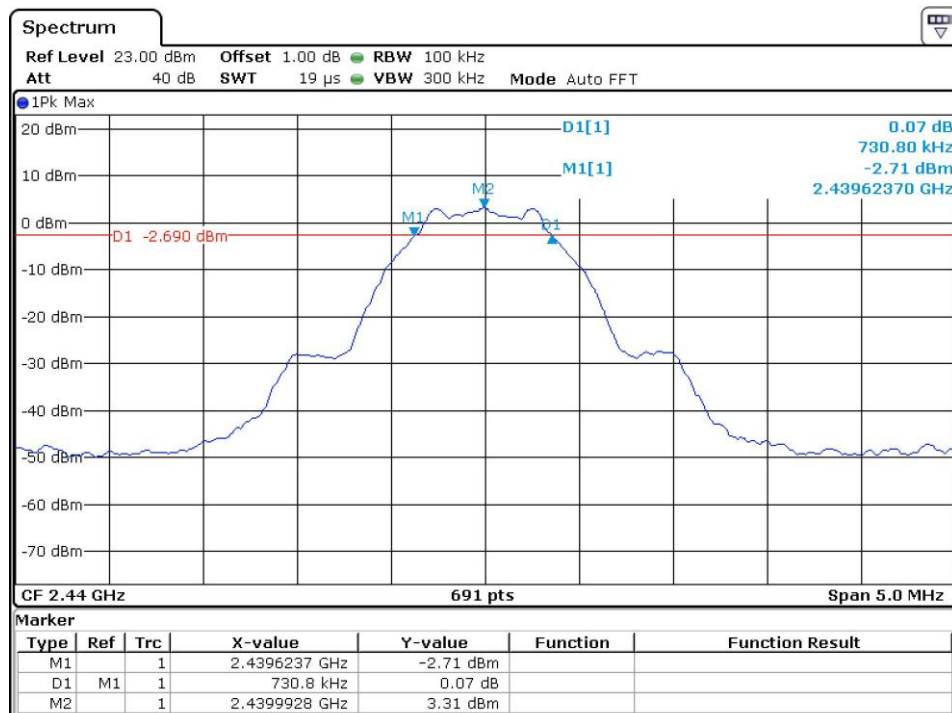
The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100 KHz according to FCC KDB 558074 D01 v05r01. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 6 dB lower than PEAK level. The 6dB bandwidth was determined from where the channel output spectrum intersected the display line.

Limit: The 6 dB Bandwidth is at least 500 kHz.

Frequency (MHz)	6 dB Bandwidth (KHz)
2402	730.8
2440	730.8
2480	716.4

The test plots are attached as below.





Applicant: Kenxen Digitech Limited
Date of Test: January 14, 2019

Model: TW03

4.3 Maximum Power Density Reading, FCC Rule 15.247(e):

The Measurement Procedure PKPSD was set according to the FCC KDB 558074 D01 v05r01.

Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

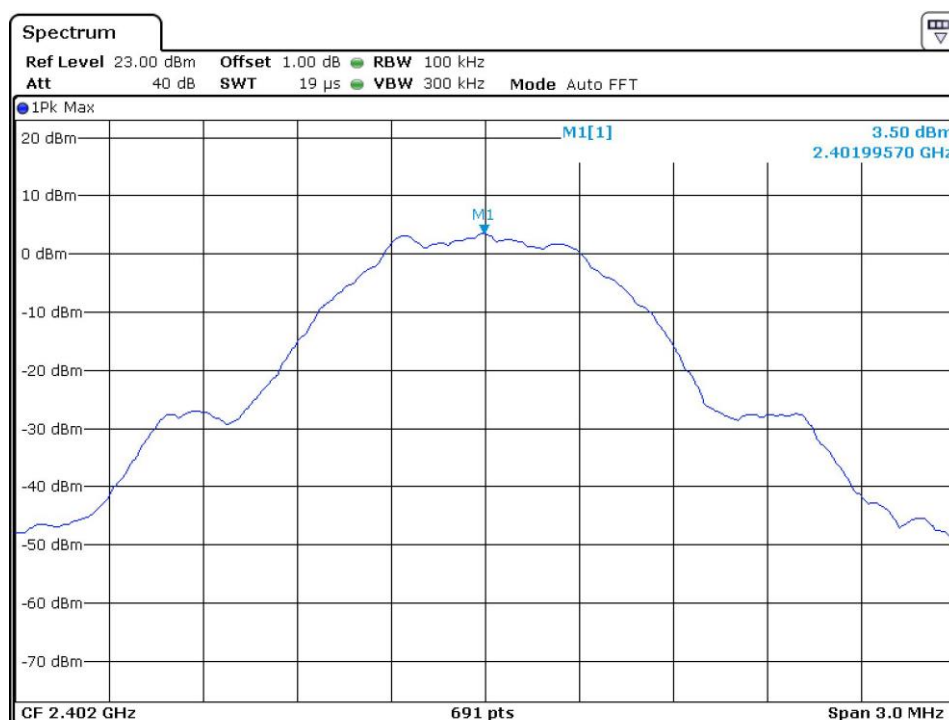
For antennas with gains of 1.7dBi <6dBi, So the limit of Power Density is 8dBm/3 kHz.

Frequency (MHz)	Power Density with RBW 100KHz
2402	3.50
2440	3.15
2480	3.32

Cable loss: 1.0 dB External Attenuation: 0 dB

Cable loss, external attenuation has been included in OFFSET function

The test plots are attached as below.





Applicant: Kenxen Digitech Limited

Date of Test: January 14, 2019

Model: TW03

4.4 Out of Band Conducted Emissions, FCC Rule 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. The Measurement Procedure was set according to the FCC KDB 558074 D01 v05r01.

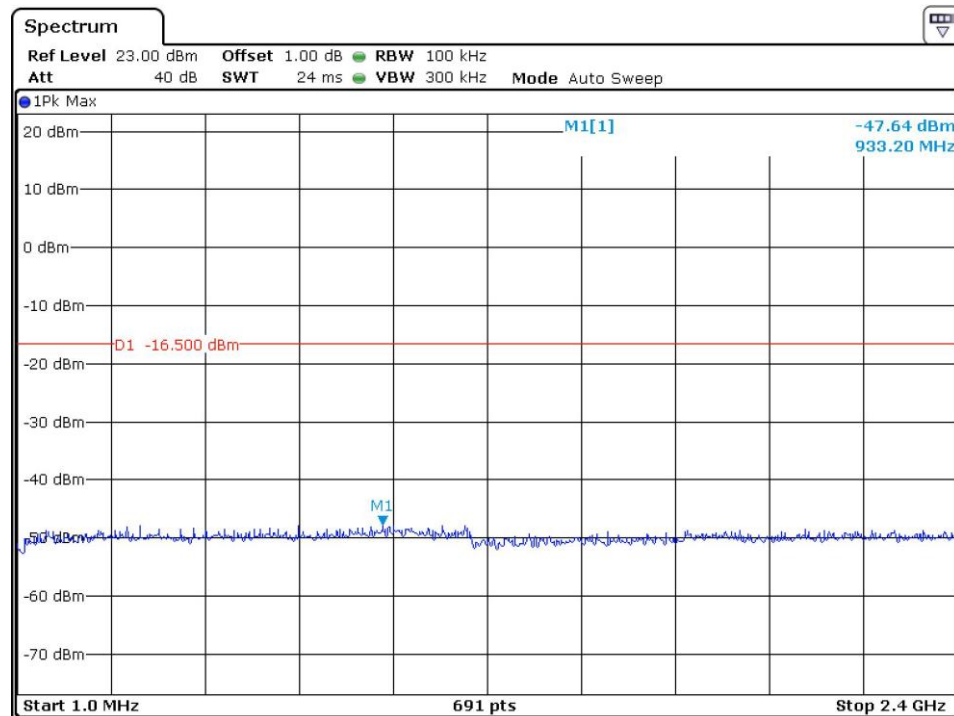
All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the passband.

Refer to the attached test plots for out of band conducted emissions data.

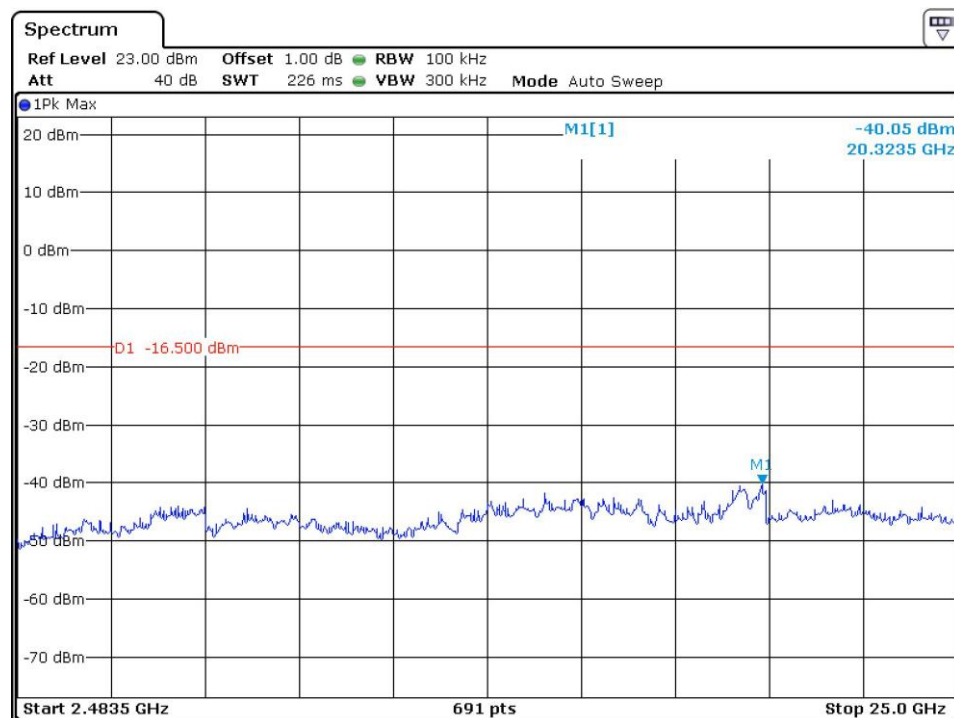
The test plots showed all spurious emission up to the tenth harmonic were measured and they were found to be at least 20 dB below the highest level of the desired power in the passband.

The test plots are attached as below.

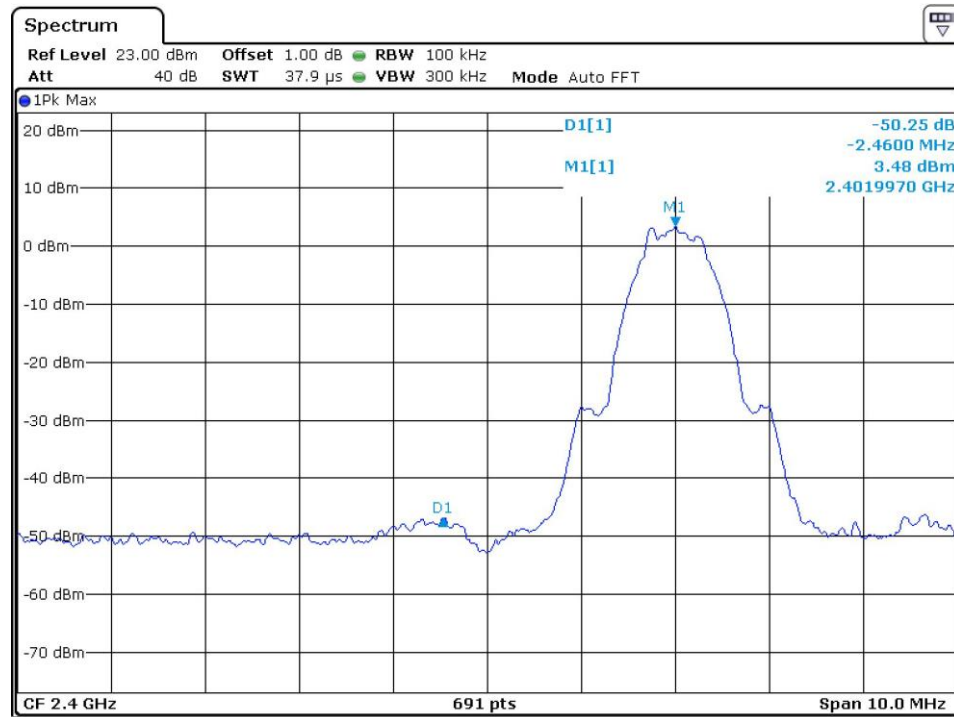
Channel 0 (2402MHz) Reference Level: 3.50dBm



Date: 14.JAN.2019 10:25:54

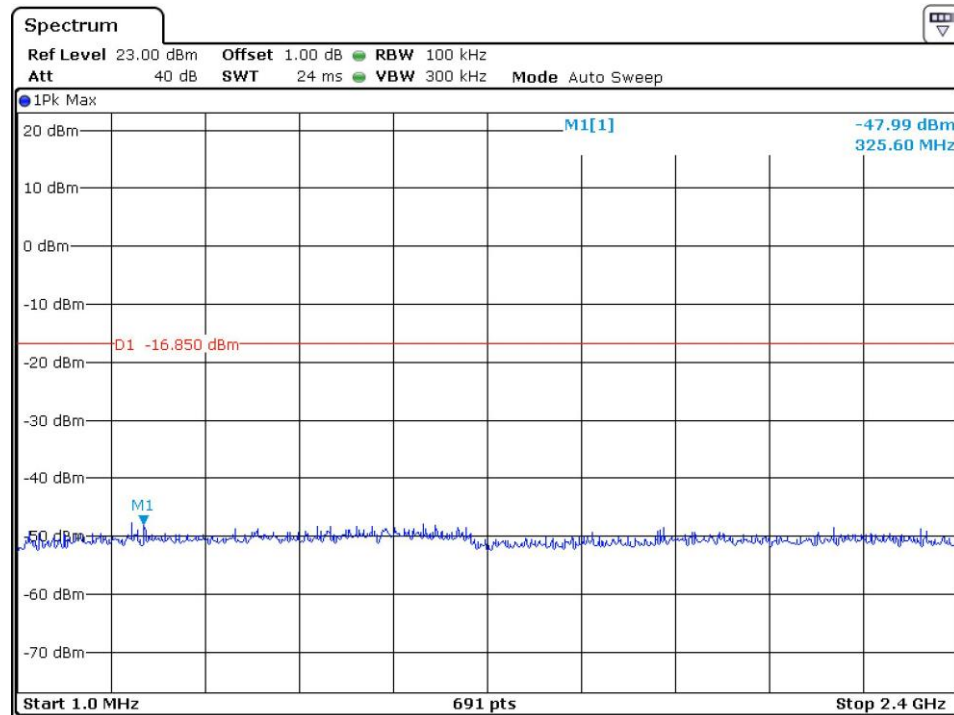


Date: 14.JAN.2019 10:26:14

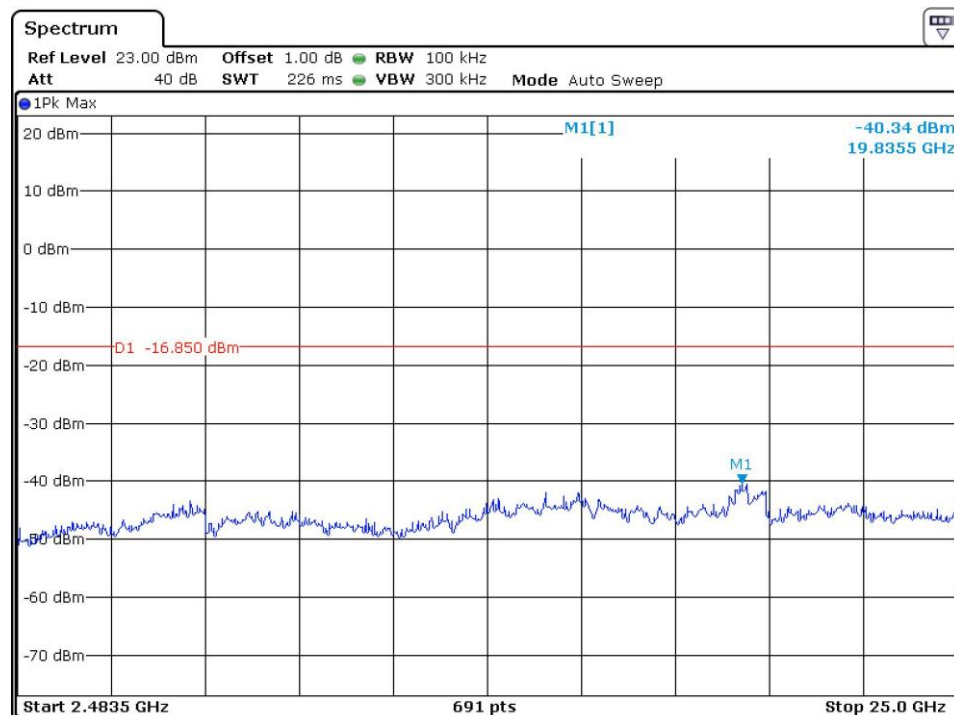


Date: 14.JAN.2019 10:31:58

Channel 19 (2440MHz) Reference Level: 3.15dBm

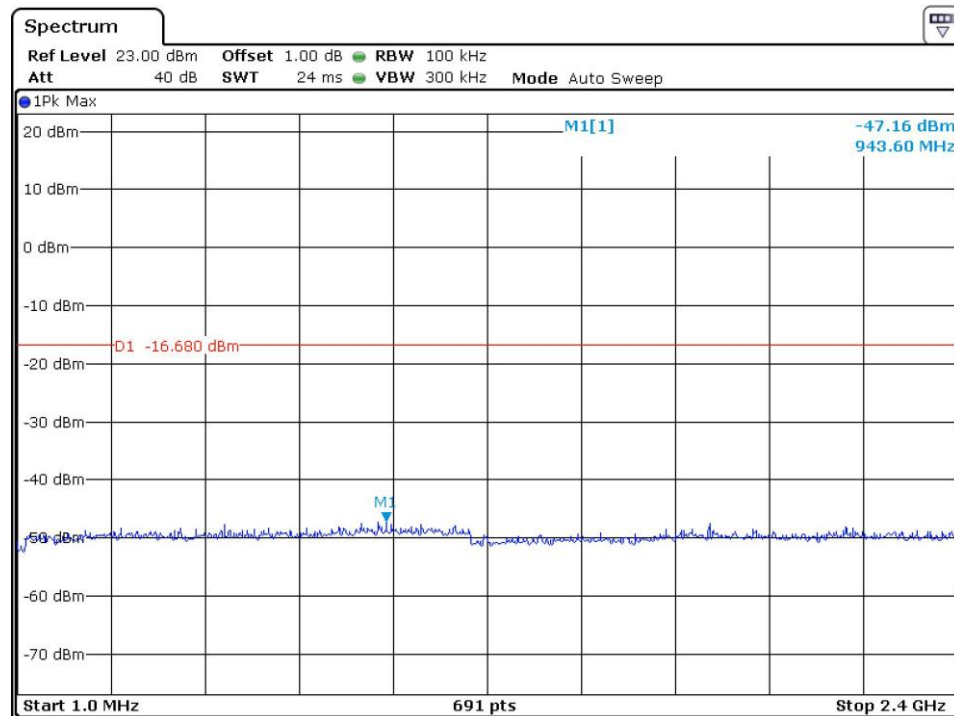


Date: 14.JAN.2019 10:30:38

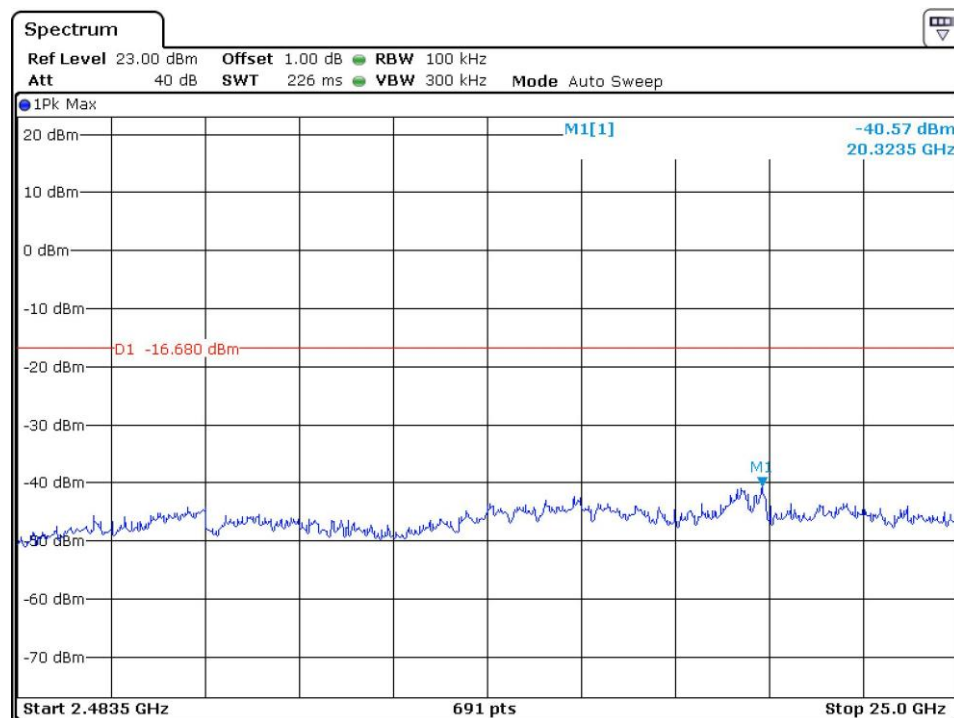


Date: 14.JAN.2019 10:30:20

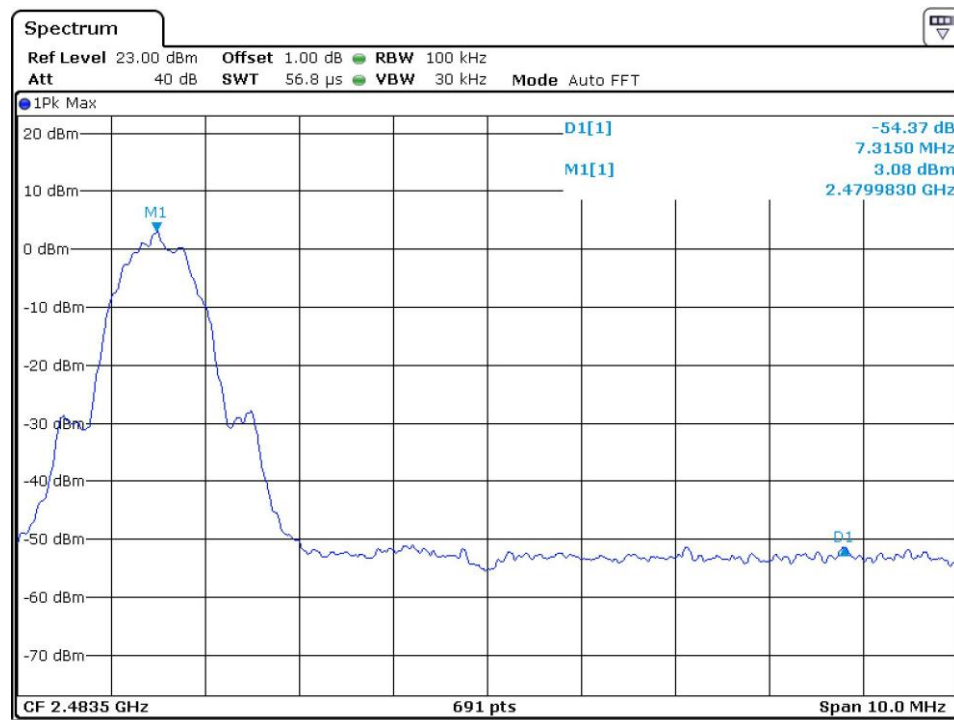
Channel 39 (2480MHz) Reference Level: 3.32dBm



Date: 14.JAN.2019 10:28:41



Date: 14.JAN.2019 10:28:59



Date: 14.JAN.2019 10:34:16

Applicant: Kenxen Digitech Limited

Date of Test: January 14, 2019

Model: TW03

4.5 Out of Band Radiated Emissions (for emissions in 4.4 above that are less than 20dB below carrier), FCC Rule 15.247(d):

For out of band emissions that are close to or that exceed the 20dB attenuation requirement described in the specification, radiated measurements were performed at a 3m separation distance to determine whether these emissions complied with the general radiated emission requirement.

- ☒ Not required, since all emissions are more than 20dB below fundamental
- ☐ See attached data sheet

Applicant: Kenxen Digitech Limited

Date of Test: January 14, 2019

Model: TW03

4.6 Transmitter Radiated Emissions in Restricted Bands, FCC Rule 15.35(b) (c):

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included. All measurements were performed with peak detection unless otherwise specified. Simultaneous transmission was considered during the test.

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Applicant: Kenxen Digitech Limited

Date of Test: January 14, 2019

Model: TW03

4.7 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

$$FS = RA + AF + CF - AG + PD$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB
- PD = Pulse Desensitization in dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$$FS = RA + AF + CF - AG + PD$$

Example

Assume a receiver reading of 62.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB. The net field strength for comparison to the appropriate emission limit is 42 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$\begin{aligned} RA &= 62.0 \text{ dB}\mu\text{V} \\ AF &= 7.4 \text{ dB} \\ CF &= 1.6 \text{ dB} \\ AG &= 29.0 \text{ dB} \\ PD &= 0 \text{ dB} \\ FS &= 62 + 7.4 + 1.6 - 29 + 0 = 42 \text{ dB}\mu\text{V/m} \end{aligned}$$

$$\text{Level in mV/m} = \text{Common Antilogarithm} [(42 \text{ dB}\mu\text{V/m})/20] = 125.9 \mu\text{V/m}$$

Applicant: Kenxen Digitech Limited

Date of Test: January 14, 2019

Model: TW03

4.8 Radiated Spurious Emission

Worst Case Radiated Spurious Emission
at 296.750MHz
is passed by 7.0dB margin.

For the electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.pdf.

TEST PERSONNEL:*Sign on file*Leo Li, Engineer*Typed/Printed Name*January 14, 2019*Date*

Applicant: Kenxen Digitech Limited

Date of Test: January 14, 2019

Worst Case Operating Mode:

Model: TW03

BT Transmitting

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	95.475	35.7	20.0	8.6	24.3	43.5	-19.2
Horizontal	296.750	45.1	20.0	13.9	39.0	46.0	-7.0
Horizontal	698.815	28.6	20.0	23.2	31.8	46.0	-14.2
Vertical	43.930	35.6	20.0	10.5	26.1	40.0	-13.9
Vertical	403.539	34.2	20.0	17.3	31.5	46.0	-14.5
Vertical	552.137	30.9	20.0	20.0	30.9	46.0	-15.1

- NOTES:
1. Quasi-Peak detector is used for frequency below 1GHz.
 2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. All emissions are below the QP limit.

Applicant: Kenxen Digitech Limited

Date of Test: January 14, 2019

Worst Case Operating Mode:

Model: TW03

Transmitting (2402MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4804.000	54.0	36.3	33.4	51.1	74.0	-22.9
Horizontal	*2388.390	65.6	36.4	27.5	56.7	74.0	-17.3

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4804.000	45.8	36.3	33.4	42.9	54.0	-11.1
Horizontal	*2388.390	53.6	36.4	27.5	44.7	54.0	-9.3

- NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and c RBW=1MHz/VBW=10Hz for average value.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Applicant: Kenxen Digitech Limited

Date of Test: January 14, 2019

Worst Case Operating Mode:

Model: TW03

Transmitting (2440MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4880.000	54.9	36.3	33.5	52.1	74.0	-21.9
Horizontal	*7320.000	55.8	36.3	37.7	57.2	74.0	-16.8

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4880.000	44.3	36.3	33.5	41.5	54.0	-12.5
Horizontal	*7320.000	42.5	36.3	37.7	43.9	54.0	-10.1

- NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Applicant: Kenxen Digitech Limited

Date of Test: January 14, 2019

Worst Case Operating Mode:

Model: TW03

Transmitting (2480MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4960.000	57.0	36.3	33.5	54.2	74.0	-19.8
Horizontal	*7440.000	55.4	36.3	37.8	56.9	74.0	-17.1

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4960.000	46.1	36.3	33.5	43.3	54.0	-10.7
Horizontal	*7440.000	43.7	36.3	37.8	45.2	54.0	-8.8

- NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

4.9 Conducted Emission at Mains Terminal

4.9.1 Conducted Emissions Configuration Photograph

For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

4.9.2 Conducted Emissions

Worst Case Live-Conducted Configuration

At

0.594 MHz

Judgement: Passed by 20.1 dB margin

TEST PERSONNEL:

Sign on file

Leo Li, Engineer

Typed/Printed Name

January 14, 2019

Date

Applicant: Kenxen Digitech Limited

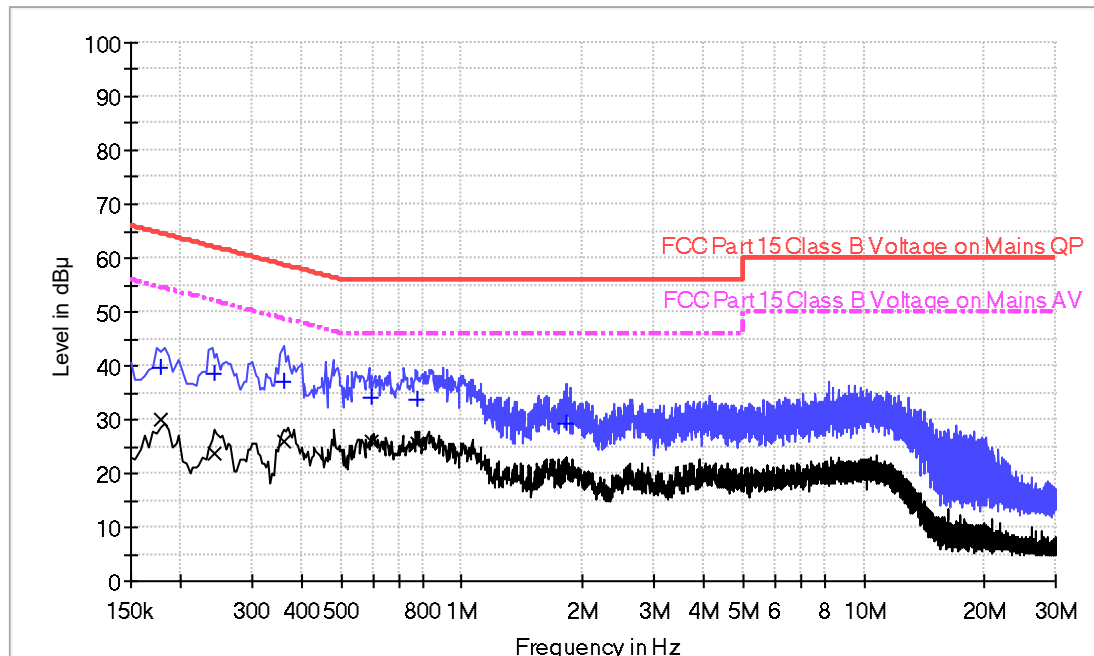
Date of Test: January 14, 2019

Worst Case Operating Mode:

Model: TW03

BT Transmitting

Conducted Emission Test - FCC



Result Table QP

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.178000	39.8	L1	9.6	24.8	64.6
0.242000	38.4	L1	9.6	23.6	62.0
0.362000	37.1	L1	9.6	21.6	58.7
0.594000	34.2	L1	9.7	21.8	56.0
0.774000	33.7	L1	9.7	22.3	56.0
1.818000	29.2	L1	9.7	26.8	56.0

Result Table AV

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.178000	30.0	L1	9.6	24.6	54.6
0.242000	23.6	L1	9.6	28.4	52.0
0.362000	25.9	L1	9.6	22.8	48.7
0.594000	25.9	L1	9.7	20.1	46.0
0.774000	25.5	L1	9.7	20.5	46.0
1.818000	20.4	L1	9.7	25.6	46.0

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)

2. Margin (dB) = Limit (dBμV) – Level (dBμV)

Applicant: Kenxen Digitech Limited

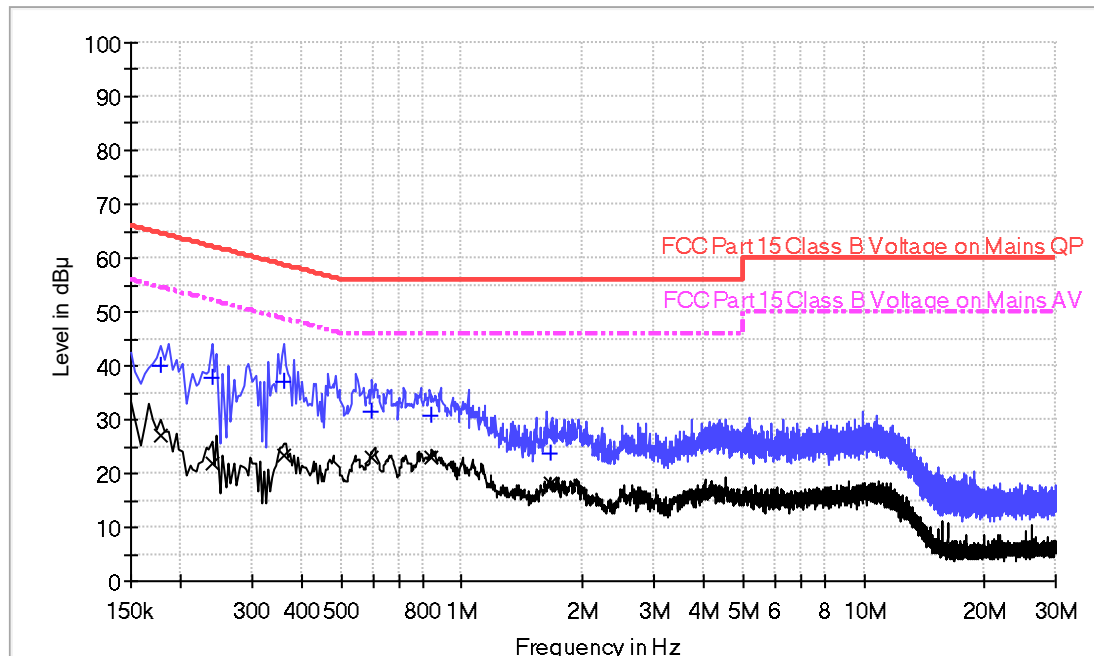
Date of Test: January 14, 2019

Worst Case Operating Mode:

Model: TW03

BT Transmitting

Conducted Emission Test - FCC



Result Table QP

Frequency (MHz)	QuasiPeak (dB μV)	Line	Corr. (dB)	Margin (dB)	Limit (dB μV)
0.178000	39.9	N	9.6	24.7	64.6
0.238000	37.8	N	9.6	24.4	62.2
0.362000	36.9	N	9.6	21.8	58.7
0.594000	31.4	N	9.7	24.6	56.0
0.842000	30.8	N	9.7	25.2	56.0
1.654000	23.7	N	9.7	32.3	56.0

Result Table AV

Frequency (MHz)	Average (dB μV)	Line	Corr. (dB)	Margin (dB)	Limit (dB μV)
0.178000	26.9	N	9.6	27.7	54.6
0.238000	21.8	N	9.6	30.4	52.2
0.362000	23.4	N	9.6	25.3	48.7
0.594000	22.9	N	9.7	23.1	46.0
0.842000	23.1	N	9.7	22.9	46.0
1.654000	18.1	N	9.7	27.9	46.0

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Limit (dBμV) – Level (dBμV)

Applicant: Kenxen Digitech Limited

Date of Test: January 14, 2019

Model: TW03

4.10 Radiated Emissions from Digital Section of Transceiver, FCC Ref: 15.109

☐ Not required - No digital part

☐ Test results are attached

☒ Included in the separated report.

Applicant: Kenxen Digitech Limited

Date of Test: January 14, 2019

Model: TW03

4.11 Transmitter Duty Cycle Calculation and Measurements, FCC Rule 15.35(b), (c)

The EUT antenna output port was connected to the input of the spectrum analyzer. The analyzer center frequency was set to EUT RF channel carrier. The SWEP function on the analyzer was set to ZERO SPAN. The Transmitter ON time was determined from the resultant time-amplitude display:

	See attached spectrum analyzer chart (s) for Transmitter timing
	See Transmitter timing diagram provided by manufacturer
x	Not applicable, duty cycle was not used.

EXHIBIT 5

EQUIPMENT PHOTOGRAPHS

5.0 Equipment Photographs

For electronic filing, the photographs are saved with filename: external photos.pdf & internal photos.pdf.

EXHIBIT 6

PRODUCT LABELLING

6.0 Product Labeling

For electronic filing, the FCC ID label artwork and location is saved with filename: label.pdf.

EXHIBIT 7

TECHNICAL SPECIFICATIONS

7.0 Technical Specifications

For electronic filing, the block diagram and circuit diagram are saved with filename: block.pdf and circuit.pdf respectively.

EXHIBIT 8

INSTRUCTION MANUAL

8.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

EXHIBIT 9

CONFIDENTIALITY REQUEST

9.0 Confidentiality Request

For electronic filing, the confidentiality request of the tested EUT is saved with filename: request.pdf.

EXHIBIT 10

MISCELLANEOUS INFORMATION

10.0 Discussion of Pulse Desensitization

The determination of pulse desensitivity was made in accordance with Hewlett Packard Application Note 150-2, *Spectrum Analysis ... Pulsed RF*.

Pulse desensitivity is not applicable for this device since the transmitter transmits the RF signal continuously.

EXHIBIT 11

TEST EQUIPMENT LIST

11.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ182-02	RF Power Meter	Anritsu	ML2496A	1302005	5-Jun-2018	5-Jun-2019
SZ182-02-01	Power Sensor	Anritsu	MA2411B	1207429	5-Jun-2018	5-Jun-2019
SZ061-06	Active Loop Antenna	Electro-Metrics	EM-6876	217	11-May-2018	11-May-2019
SZ067-04	Notch Filter	Micro-Tronics	BRM5070 2-02	--	5-Jun-2018	5-Jun-2019
SZ061-03	Biconilog Antenna	ETS	3142C	00078828	16-Oct-2018	16-Oct-2019
SZ061-08	Horn Antenna	ETS	3115	00092346	14-Sep-2018	14-Sep-2019
SZ061-07	Pyramidal Horn Antenna	ETS	3160-09	00083067	17-Mar-2018	17-Mar-2019
SZ056-03	Spectrum Analyzer	R&S	FSP30	101148	05-Jun-2018	05-Jun-2019
SZ185-01	EMI Receiver	R & S	ESCI	100547	24-Jan-2018	24-Jan-2019
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	24-Jan-2018	24-Jan-2019
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	16-Jan-2017	16-Jan-2019
SZ062-02	RF Cable	RADIAL	RG 213U	--	24-Jul-2018	24-Jan-2019
SZ062-05	RF Cable	RADIAL	0.04-26.5GHz	--	31-Aug-2018	28-Feb-2019
SZ062-12	RF Cable	RADIAL	0.04-26.5GHz	--	31-Aug-2018	28-Feb-2019
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	26-Oct-2018	26-Oct-2019
SZ187-01	Two-Line V-Network	R&S	ENV216	100072	26-Oct-2018	26-Oct-2019
SZ187-02	Two-Line V-Network	R&S	ENV216	100073	04-Jul-2018	04-Jul-2019
SZ188-03	Shielding Room	ETS	RFD-100	4100	16-Jan-2017	16-Jan-2019
SZ062-16	RF Cable	HUBER+SUHNER	CBL2-BN-1m	110127-2231000	29-Oct-2018	29-Oct-2019

***** End of Report *****