R F – T E S T R E P O R T

- Human Exposure -

Type / Model Name	:	AMN42012
Product Description	:	Video display unit
Applicant	:	TQ-Systems GmbH
Address	:	Gut Delling, Mühlstraße 2
		82229 SEEFELD, GERMANY
Manufacturer	:	Amimon Ltd.
Address	:	Zarhin St. 26
		4366250 RA'ANANA, ISRAEL

Test Result according to the standards listed in clause 1 test standards:	**POSITIVE**

Test Report No. : 80171238-11 Rev_2	12. January 2024 Date of issue

Deutsche Akkreditierungsstelle
D-PL-12030-01-03
D-PL-12030-01-04

Contents

1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 1, Subpart I - Procedures Implementing the National Environmental Policy Act of 1969	
Part 1, Subpart I, Section 1.1310	Radiofrequency radiation exposure limits
Part 2, Subpart J, Section 2.1091	Radiofrequency radiation exposure evaluation: mobile devices.
KDB 447498 D01	RF Exposure procedures and equipment authorisation policies for mobile and portable devices, April 20, 2021.
RSS-102, Issue 5, February 2, 2021	**Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)**
ANSI C95.1: 2005	IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz

2 EQUIPMENT UNDER TEST

2.1 Information provided by the Client

Please note, we do not take any responsibility for information provided by the client or his representative which may have an influence on the validity of the test results.

2.2 Sampling

The customer is responsible for the choice of sample. Sample configuration, start-up and operation is carried out by the customer or according his/her instructions.

2.3 Photo documentation of the EUT – See ATTACHMENT A

2.4 Equipment type, category

Wireless medium operating in the 5GHz band, fixed equipment.

2.5 Short description of the equipment under test (EUT)

The EUT is a receiving unit which receives signals transmitted from a video source unit, which is connected to a camera to capture video signals thus creating a wireless video link. The EUT is the video display unit that receives the video information transmitted from a companion unit and transfers the image to various types of computer monitors/displays. This enables the user or camera operator to monitor the video transmitted from the remoted camera connected to the companion.
The EUT is integrated into a 4k WHDI Video Receiver WLV.RX with internal antenna.
The EUT uses modulation with 40MHz bandwidth and is carried over the 5GHz band.
It has no TPC function.

Number of tested samples:	1
Serial number:	Prototype
Firmware version:	DracoRx_VER_7_6_9

2.6 Variants of the EUT

There are no variants.

2.7 Operation frequency and channel plan

The operating frequency is 5150 MHz to 5250 MHz, 5250 MHz to 5350 MHz, 5470 MHz to 5725 MHz and 5725 MHz to 5850 MHz.

Channel	Frequency (MHz)
38	5190
46	5230
54	5270
62	5310

102	5510
110	5550
118	5590
126	5630
134	5670
142	5710

150	5750
158	5790
166	5830

Note: For use in Canada channels 118 and 126 are blocked.

2.8 Transmit operating modes

- only the 40MHz BW is supported by the EUT

2.9 Antennas

The following antennas shall be used with the EUT:

Number	Characteristic	Name	Connector	Frequency band	Gain
1	Wide band PCB antenna	X8	U.FI	5 GHz – 7 GHz	1.8 dBi
2	Wide band PCB antenna	X15	U.FI	5 GHz – 7 GHz	1.8 dBi
3	Wide band PCB antenna	X16	U.FI	5 GHz – 7 GHz	1.8 dBi
4	Wide band PCB antenna	X17	U.FI	5 GHz – 7 GHz	1.8 dBi
5	Wide band PCB antenna	X18	U.FI	5 GHz – 7 GHz	1.8 dBi

2.10 Power supply system utilised

Power supply voltage, V_{nom} : 12 V/DC +/-5% (AC-Adapter, 100..240 V/AC, 50Hz..60Hz)

3 TEST RESULT SUMMARY

UNII device using the operating band 5150 MHz - 5850 MHz:

FCC Rule Part	RSS Rule Part	Description	Result
KDB 447498, 7.1	RSS 102, 2.5.2	MPE	passed
KDB 447498, 4.3.1	RSS 102, 2.5.1	SAR exclusion consideration	not applicable
KDB 447498, 7.2	RSS102, 3.2	Co-location, Co-transmission	not applicable

3.1 Revision history of test report

Test report No	Rev.	Issue Date	Changes
80171238-11	0	31 July 2023	Initial test report
80171238-11	1	26 October 2023	5.1 updated EIRP
80171238-11	2	12 January 2024	2.7 Channel plan Canada updated; 5.1 updated EIRP

The test report with the highest revision number replaces the previous test reports.

3.2 Final assessment

The equipment under test fulfils the requirements cited in clause 1 test standards.

Date of receipt of test sample : acc. to storage records

Testing commenced on : 24 October 2023

Testing concluded on : 24 October 2023

Checked by:

Jürgen Pessinger
2024.01.15
07:51:29 +01'00'

Jürgen Pessinger
Radio Team

Tested by:

Sabine Kugler
2024.01.12
12:25:34 +01'00'

Sabine Kugler
Radio Team

4 TEST ENVIRONMENT

4.1 Address of the test laboratory

CSA Group Bayern GmbH
Ohmstrasse 1-4
94342 STRASSKIRCHEN
GERMANY

4.2 Environmental conditions

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

Temperature:	15 - 35 °C
Humidity:	30 - 60 %
Atmospheric pressure:	86 - 106 kPa

4.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. It is noted that the expanded measurement uncertainty corresponds to the measurement results from the standard measurement uncertainty multiplied by the coverage factor k = 2. The true value is located in the corresponding interval with a probability of 95 %. The measurement uncertainty was calculated for all measurements listed in this test report on basis of the ETSI Technical Report TR 100 028 Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1 and Part 2. The results are documented in the quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

4.4 Conformity Decision Rule

The applied conformity decision rule is based on ILAC G8:09/2019 clause 4.2.1 Binary Statement for Simple Acceptance Rule (w = 0).
Details can be found in the procedure CSA_B_V50_29.

5 HUMAN EXPOSURE

5.1 Maximum permissible exposure (MPE)

5.1.1 Description of the test location

Test location: NONE

5.1.2 Applicable standard

According to FCC Part 15, Section 15.407(f):
Systems operating under the provisions of this section shall be operated in a manner that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines.
The test methods used comply with ANSI/IEEE C95.1, "IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz".

This test report shows the compliance with the limits for Maximum Permissible Exposure (MPE) specified in FCC Part 1, Section 1.1310 and the criteria to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in FCC Part 1, Section 1.1307(b).

5.1.3 Description of Determination

The maximum rated output power conducted included the tune up tolerance is used to calculate the EIRP. Through the Friis transmission formula, the known maximum gain of the antenna and the maximum power, can be calculated the MPE in a defined distance away from the product.

Friis transmission formula: $$P_d = \frac{P_{out} * G}{4 * \Pi * r^2}$$

Where:
P_d =power density (mW/cm^2)
P_{out} = output power to antenna (mW)
G = gain of antenna (linear scale)
r = distance between antenna and observation point (cm)

According to FCC Rules 47CFR 2.1093(b) the EUT is not a portable device. The EUT is designed to be used that radiating structures are 20 cm outside of the body of the user. (r = 20 cm)

5.1.4 Determination of MPE according FCC

Frequency	EIRP	Tune-Up	max EIRP	r	S	Limit S_{eq}	Margin	Exposure ratio
(GHz)	(dBm)	(dBi)	(mW)	(cm)	(mW/cm^2)	(mW/cm^2)	(mW/cm^2)	(%)
5.190	18.8	1.0	95.5	20.0	0.019	1.0	-0.981	1.9
5.310	18.5	1.0	89.1	20.0	0.018	1.0	-0.982	1.8
5.510	18.9	1.0	97.7	20.0	0.019	1.0	-0.981	1.9
5.830	17.3	1.0	67.6	20.0	0.013	1.0	-0.987	1.3

Limits for maximum permissible exposure (MPE):

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(B) Limits for General Population / Uncontrolled Exposure				
0.3 – 1.34	614	1.63	100	30
1.34 – 30	824/*f*	2.19/*f*	180/ f^2	30
30 - 300	27.5	0.073	0.2	30
300-1500	---	---	*f*/1500	30
1500-100000	**---**	**---**	**1.0**	**30**

f = Frequency in MHz

5.1.5 Determination of MPE according ISED:

Frequency	EIRP	Tune-up	max EIRP	Limit S_{eq}	Margin	Exposure ratio
(MHz)	(dBm)	(dBi)	(mW)	(W)	(W)	(%)
5.190	18.8	1.0	95.5	5.0	-4.905	1.9
5.310	18.5	1.0	89.1	5.0	-4.911	1.8
5.510	18.9	1.0	97.7	5.0	-4.902	2.0
5.830	17.3	1.0	67.6	5.0	-4.932	1.4

Exemption limits for routine Evaluation – RF exposure evaluation according RSS102, 2.5.2:

At or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1.31 x 10-2 f0.6834 W (adjusted for tune-up tolerance), where f is in MHz;

At or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance)

The requirements are **FULFILLED.**

Remarks: EIRP taken from test report 80171238-10 Rev_2 issued by CSA Group Bayern GmbH.

5.2 Co-location and Co-transmission

Applicable standard:

OET Bulletin 65, Edition 97-01, Section 2: Multiple-transmitter sites and Complex Environments

The FCC's MPE limits vary with frequency. Therefore, in mixed or broadband RF fields where several sources and frequencies are involved, the fraction of the recommended limit (in terms of power density or square of the electric or magnetic field strength) incurred within each frequency interval should be determined, and the sum of all fractional contributions should not exceed 1.0, or 100 % in terms of percentage.

Remarks: Not applicable, EUT has only one transmitter

5.3 SAR test exclusion considerations

Applicable standard:

According to RF exposure guidance:
Systems operating under the provisions of this section shall be operated in a manner that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines.

Remarks: Not applicable, EUT is not portable

5.4 Exemption limits for routine evaluation - SAR evaluation

5.4.1 Applicable standard

According to RSS-102, item 2.5.1:
SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1.

Remarks: Not applicable, EUT is not portable

6 USED TEST EQUIPMENT AND ACCESSORIES

All test instruments used are calibrated and verified regularly. The calibration history is available on request.

Test ID	Model Type	Equipment No.	Next Calib.	Last Calib.	Next Verif.	Last Verif.
-	-	-	-	-	-	-

- End of test report -