RF Exposure Evaluation Report

Product Name : USRR05MA
Model No. : PX-USR-05MA
FCC ID : HTO-USRR05MA-1

Applicant : Universal Microelectronics Co Ltd
Address : 3, 27th Rd., Taichung Industrial Park, Taichung, Taiwan, R.O.C.

Date of Receipt : Jul. 06, 2021
Date of Declaration : Jun. 29, 2022
Report No. : 2170201R-RFUSMPEV02-A
Report Version : V1.0

Testing Laboratory
3023

Issued Date: Jun. 29, 2022
Report No.: 2170201R-RFUSMPEV02-A

Product Name	USRR05MA	
Applicant	Universal Microelectronics Co Ltd	
Address	3, 27th Rd., Taichung Industrial Park, Taichung, Taiwan, R.O.C.	
Manufacturer	Universal Microelectronics Co Ltd	
Model No.	PX-USR-05MA	
FCC ID.	HTO-USRR05MA-1	
Trade Name	UMEC	
Applicable Standard	KDB 447498 D01 v06	☒ Minimum test separation distance ≥ 20 cm ☐ For low power devices
Test Result	Complied	

Documented By : Jinn Chen
(Senior Adm. Specialist / Jinn Chen)

Tested By : Alan Chen
(Senior Engineer / Alan Chen)

Approved By : Tim Sung
(Manager / Tim Sung)

Revision History

Report No.	Version	Description	Issued Date
2170201R-RFUSMPEV02-A	V1.0	Initial issue of report.	Jun. 29, 2022

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	USRR05MA
Trade Name	UMEC
Model No.	PX-USR-05MA
FCC ID.	HTO-USRR05MA-1
Frequency Range	24.162 ~ 24.238GHz
Channel Number	3
Type of Modulation	FMCW
Antenna Type	Patch Antenna
Channel Control	Auto
Antenna Gain	Refer to the table “Antenna List”

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Universal Microelectronic	PX-USR-05MA	Patch Antenna	10.10 dBi for 24GHz

1.2. Test Facility

USA	:	FCC Registration Number: TW0033
Canada	:	IC Registration Number: 26930
Site Description	:	Accredited by TAF Accredited Number: 3023
Test Laboratory	:	DEKRA Testing and Certification Co., Ltd
Address	:	No. 5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan
Performed Location	:	No. 26, Huaya 1st Rd., Guishan Dist.,Taoyuan City 333411, Taiwan, R.O.C.
Phone number	:	+886-3-275-7255
Fax number	:	+866-3-327-8031
Email address	:	info.tw@dekra.com
Website	:	http://www.dekra.com.tw

2. RF Exposure Evaluation

2.1. Standard Applicable

According to KDB 447498 D01 (7.1), A minimum test separation distance ≥ 20 cm is required between the antenna and radiating structures of the device and nearby persons to apply mobile device exposure limits.

2.2. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: $Pd = (Pout*G)/(4*pi*r^2)$

Where

Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is ≤ 1.0

2.3. Test Result of RF Exposure Evaluation

Product	:	USRR05MA
Test Item	:	RF Exposure

24GHz:

Frequency Band (GHz)	Maximum Peak EIRP power			Power Density at R = 20 cm (mW/cm2)	Limit (mW/cm2)	Pass/Fail
	(dBuV/1m)	(dBm)	(mW)			
24.162	123.93	19.16	82.39	0.021	1	Pass

Note 1: The SAR/MPE measurement is not necessary.

Note 2: The maximum peak EIRP power is refer to report No.: 2170201R-RFUSOTHV06-A from the DEKRA, 123.33(dBuV/m) + 0.6 dB tolerance =123.93(dBuV/m)