

EMF TEST REPORT

Test Report No. : OT-24O-RWD-039

Reception No. : 2408002763

Applicant : MCNEX CO.,LTD

Address : MCNEX Tower, 13-39, Songdogwahak-ro 16 beon-gi, Yeonsu-gu, Incheon, South Korea

Manufacturer : MCNEX CO.,LTD

Address : MCNEX Tower, 13-39, Songdogwahak-ro 16 beon-gi, Yeonsu-gu, Incheon, South Korea

Type of Equipment : 2CH Dashcam

FCC ID : 2ABC6-M8

Model Name : M8

Multiple Model Name : MD-8000, MD-8100, MD-8200, FTX-DC4000, MD-8400

Serial number : N/A

Total page of Report : 8 pages (including this page)

Date of Incoming : August 29, 2024

Date of issue : October 24, 2024

SUMMARY

The equipment complies with the regulation; *FCC CFR 47 PART 1.1310*

This test report only contains the result of a single test of the sample supplied for the examination.

It is not a generally valid assessment of the features of the respective products of the mass-production.

This report is not correlated with the "KS Q ISO/IEC 17025 and KOLAS accreditation" of Korean Laboratory Accreditation Scheme.



Tested by
Yun-Bok, Wi / Prj. Engineer
ONETECH Corp.

Reviewed by
Tae-Ho, Kim / Chief Engineer
ONETECH Corp.

Approved by
Jae-Ho, Lee / Chief Engineer
ONETECH Corp.

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Revision History

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-24O-RWD-039	October 24, 2024	Initial Release	All

1. VERIFICATION OF COMPLIANCE

Applicant : MCNEX CO.,LTD

Address : MCNEX Tower, 13-39, Songdogwahak-ro 16 beon-gi, Yeonsu-gu, Incheon, South Korea

Contact Person : SEUNG JUN RO / Senior Research Engineer

Telephone No. : +82-10-9274-1055

FCC ID : 2ABC6-M8

Model Name : M8

Brand Name : Momento, FTX / Firstech, LLC

Serial Number : N/A

Date : October 24, 2024

E.U.T. DESCRIPTION	2CH Dashcam
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	KDB 447498 D01 General RF Exposure Guidance v06
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Certification
Modifications on the Equipment to Achieve Compliance	None

- . The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

2. GENERAL INFORMATION

2.1 Product Description

The MCNEX CO.,LTD, Model M8 (referred to as the EUT in this report) is a 2CH Dashcam. The product specification described herein was obtained from product data sheet or user's manual.

DEVICE TYPE	2CH Dashcam	
Temperature Range	-20 °C ~ 60 °C	
OPERATING FREQUENCY	WLAN 2.4 GHz	2 412 MHz ~ 2 462 MHz (802.11b/g/n(HT20))
		2 422 MHz ~ 2 452 MHz (802.11n(HT40))
	5 150 MHz ~	5 180 MHz ~ 5 240 MHz (802.11a/n(HT20))
	5 250 MHz Band	5 190 MHz ~ 5 230 MHz (802.11n(HT40))
	5 725 MHz ~	5 745 MHz ~ 5 825 MHz (802.11a/n(HT20))
	5 850 MHz Band	5 755 MHz ~ 5 795 MHz (802.11n(HT40))
MODULATION TYPE	WLAN 2.4 GHz	802.11b: DSSS Modulation(DBPSK/DQPSK/CCK) 802.11g/n(HT20)/n(HT40): OFDM Modulation(BPSK/QPSK/16QAM/64QAM)
	WLAN 5 GHz	802.11a/n(HT20)/n(HT40): OFDM Modulation(BPSK/QPSK/16QAM/64QAM)
RF OUTPUT POWER	WLAN 2.4 GHz	21.05dBm(802.11b) 14.43 dBm(802.11g) 13.38 dBm(802.11n_HT20) 11.13 dBm(802.11n_HT40)

RF OUTPUT POWER	5 150 MHz ~	9.02 dBm(802.11a)
	5 250 MHz Band	8.46 dBm(802.11n_HT20)
	(UNII 1)	6.79 dBm(802.11n_HT40)
	5 725 MHz ~	10.44 dBm(802.11a)
	5 850 MHz Band	10.59 dBm(802.11n_HT20)
	(UNII 3)	10.63 dBm(802.11n_HT40)
ANTENNA TYPE	Chip Antenna	
ANTENNA GAIN	WLAN 2.4 GHz	2.23 dBi
	5 150 MHz ~	2.79 dBi
	5 250 MHz Band	
	5 725 MHz ~	2.79 dBi
	5 850 MHz Band	
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)		24MHz, 26MHz, 27MHz
ELECTRICAL RATING		DC 12 V / DC 24 V

2.2 Alternative type(s)/model(s); also covered by this test report.

-. The following lists consist of the added model and their differences.

Model Name	Differences	Tested
M8	V536 processor, DDR3*2, front camera+rear camera(Basic Model)	<input checked="" type="checkbox"/>
MD-8000	V526 processor, DDR3*1, front camera only	<input type="checkbox"/>
MD-8100	V526 processor, DDR3*1, front camera+rear camera	<input type="checkbox"/>
MD-8200	V536 processor, DDR3*2, front camera+rear camera	<input type="checkbox"/>
FTX-DC4000	V536 processor, DDR3*2, front camera only	<input type="checkbox"/>
MD-8400	V536 processor, DDR3*2, front camera+rear camera	<input type="checkbox"/>

Note: 1. Applicant consigns only basic model to test. Therefore this test report just guarantees the units, which have been tested.

2. The Applicant/manufacture is responsible for the compliance of all variants.

3. EUT MODIFICATIONS

-. None

4. MAXIMUM PERMISSIBLE EXPOSURE

4.1 RF Exposure Calculation

According to the FCC rule 1.1310 table 1B, the limit for the maximum permissible RF exposure for an uncontrolled environment are $f/1500$ mW/cm² for the frequency range between 300 MHz and 1 500 MHz and 1.0 mW/cm² for the frequency range between 1 500 MHz and 100 000 MHz.

The electric field generated for a 1 mW/cm² exposure is calculated as follows:

$$E = \sqrt{(30 * P * G) / d}, \text{ and } S = E^2 / Z = E^2 / 377, \text{ because } 1 \text{ mW/cm}^2 = 10 \text{ W/m}^2$$

Where

S = Power density in mW/cm², Z = Impedance of free space, 377 Ω

E = Electric field strength in V/m, G = Numeric antenna gain, and d = distance in meter

Combining equations and rearranging the terms to express the distance as a function of the remaining variable

$$d = \sqrt{(30 * P * G) / (377 * 10 S)}$$

Changing to units of mW and cm, using P (mW) = P (W) / 1 000, d (cm) = 0.01 * d (m)

$$d = 0.282 * \sqrt{(P * G) / S}$$

Where

d = distance in cm, P = Power in mW, G = Numeric antenna gain, and S = Power density in mW/cm²

4.2 EUT Description

Kind of EUT	2CH Dashcam
Device Category	<input type="checkbox"/> Portable (< 20 cm separation) <input checked="" type="checkbox"/> Mobile (> 20 cm separation) <input type="checkbox"/> Others
Exposure Evaluation Applied	<input checked="" type="checkbox"/> MPE <input type="checkbox"/> SAR <input type="checkbox"/> N/A

4.3 Calculated MPE Safe Distance

According to above equation, the following result was obtained.

Operating Freq. Band (MHz)	Operating Mode	Target Power W/tolerance (dBm)	Max tune up power		Antenna Gain		Safe Distance (cm)	Power Density (mW/cm ²) @ 20 cm Separation	Limit (mW/cm ²)
			(dBm)	(mW)	Log	Linear			
2 400 ~ 2 483.5	802.11b	21.05 ± 1.0	22.05	160.32	2.23	1.67	4.62	0.054	1.00
	802.11g	14.43 ± 1.0	15.43	34.91			2.16	0.012	1.00
	802.11n_HT20	13.38 ± 1.0	14.38	27.42			1.91	0.010	1.00
	802.11n_HT40	11.13 ± 1.0	12.13	16.33			1.48	0.006	1.00
5 150 ~ 5 250	802.11a	9.02 ± 1.0	10.02	10.05	2.79	1.90	1.24	0.004	1.00
	802.11n_HT20	8.46 ± 1.0	9.46	8.83			1.16	0.004	1.00
	802.11n_HT40	6.79 ± 1.0	7.79	6.01			0.96	0.003	1.00
5 725 ~ 5 850	802.11a	10.44 ± 1.0	11.44	13.93	2.79	1.90	1.46	0.006	1.00
	802.11n_HT20	10.59 ± 1.0	11.59	14.42			1.48	0.006	1.00
	802.11n_HT40	10.63 ± 1.0	11.63	14.55			1.49	0.006	1.00

According to above table, for WLAN 802.11b safe distance,

$$D = 0.282 * \sqrt{(160.32 * 1.67)/1.00} = 4.62 \text{ cm.}$$

For getting power density at 20 cm separation in above table, following formula was used.

$$S = P * G / (4\pi * R^2) = 160.32 * 1.67 / (4 * \pi * 20^2) = 0.054$$

Where:

S = Power Density,

P = Power input to the external antenna (Output power from the EUT antenna port (dBm) – cable loss (dB)),

G = Gain of Transmit Antenna (linear gain), R = Distance from Transmitting Antenna