

RF Exposure Evaluation Report

Product : MDVR
Trade mark :  VISIONTRACK
Model/Type reference : VT5500-G-LTE
Serial Number : N/A
Report Number : EED32M00128509
FCC ID : 2AWHE-VT5500-G-LTE
Date of Issue : Jul. 06, 2020
Test Standards : 47 CFR Part 1.1307
47 CFR Part 2.1091
KDB447498D01v06
Test result : PASS

Prepared for:

MSG AUTOMOTIVE SOLUTIONS LIMITED
2 Chapman Way, High Brooms Industrial Estate,
Tunbridge Wells, Kent, United Kingdom

Prepared by:

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Jul. 06, 2020

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Check No.: 3336860701



2 Version

Version No.	Date	Description
00	Jul. 06, 2020	Original

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4 General Information

4.1 Client Information

Applicant:	MSG AUTOMOTIVE SOLUTIONS LIMITED
Address of Applicant:	2 Chapman Way, High Brooms Industrial Estate, Tunbridge Wells, Kent, United Kingdom
Manufacturer:	Streamax Technology Co., Ltd
Address of Manufacturer:	21-23/F, Building B1, Zhiyuan, No.1001, Xueyuan Avenue, Nanshan District, Shenzhen, Guangdong, P.R.China
Factory:	Streamax Electronics Co., Ltd
Address of Factory:	5th-6thFloor, West, Chuangxiang 2nd Building, Yanxiang Technology Park, 11# High-tech West Road, Guangming District, Shenzhen, Guangdong Province, P.R. China

4.2 General Description of EUT

Product Name:	MDVR
Model No.(EUT):	VT5500-G-LTE
Trade mark:	
EUT Supports Radios application	LTE Band 2: Tx: 1850-1910MHz, Rx: 1930-1990MHz LTE Band 4: Tx: 1710-1755 MHz, Rx: 2110-2155 MHz LTE Band 5: Tx: 824-849 MHz, Rx: 869-894MHz LTE Band 12: Tx: 699-716 MHz, Rx: 729-746 MHz LTE Band 13: Tx: 777-787 MHz, Rx: 746-756 MHz LTE Band 14:Tx: 788-798 MHz, Rx: 758-768 MHz LTE Band 66:Tx: 1710-1780 MHz, Rx: 2110-2180 MHz LTE Band 71:Tx: 663-698 MHz, Rx: 617-652 MHz

4.3 Product Specification subjective to this standard

Frequency Range:	LTE Band 2: Tx: 1850-1910MHz, Rx: 1930-1990MHz LTE Band 4: Tx: 1710-1755 MHz, Rx: 2110-2155 MHz LTE Band 5: Tx: 824-849 MHz, Rx: 869-894MHz LTE Band 12: Tx: 699-716 MHz, Rx: 729-746 MHz LTE Band 13: Tx: 777-787 MHz, Rx: 746-756 MHz LTE Band 14:Tx: 788-798 MHz, Rx: 758-768 MHz LTE Band 66:Tx: 1710-1780 MHz, Rx: 2110-2180 MHz LTE Band 71:Tx: 663-698 MHz, Rx: 617-652 MHz
Modulation Type:	QPSK, 16QAM
Test Power Grade:	Default
Test Software of EUT:	Default

Antenna Type:	Passive antenna				
Antenna Specification	LTE Band 2:	Antenna Gain :	3.00 dBi	(Numeric gain:	2.00)
	LTE Band 4:	Antenna Gain :	3.00 dBi	(Numeric gain:	2.00)
	LTE Band 5:	Antenna Gain :	3.00 dBi	(Numeric gain:	2.00)
	LTE Band 12:	Antenna Gain :	3.00 dBi	(Numeric gain:	2.00)
	LTE Band 13:	Antenna Gain :	3.00 dBi	(Numeric gain:	2.00)
	LTE Band 14:	Antenna Gain :	3.00 dBi	(Numeric gain:	2.00)
	LTE Band 66:	Antenna Gain :	3.00 dBi	(Numeric gain:	2.00)
	LTE Band 71:	Antenna Gain :	3.00 dBi	(Numeric gain:	2.00)
Maximum tune up power	LTE Band 2:	24.50 dBm	(281.838 mW)		
	LTE Band 4:	24.00 dBm	(251.189 mW)		
	LTE Band 5:	24.50 dBm	(281.838 mW)		
	LTE Band 12:	25.50 dBm	(354.813 mW)		
	LTE Band 13:	24.50 dBm	(281.838 mW)		
	LTE Band 14:	25.00 dBm	(316.228 mW)		
	LTE Band 66:	23.50 dBm	(223.872 mW)		
	LTE Band 71:	24.00 dBm	(251.189 mW)		
Power Supply:	DC9-36V				
Sample Received Date:	May 15, 2020				
Sample tested Date:	May 15, 2020 to Jun. 11, 2020				
The tested sample(s) and the sample information are provided by the client. The certified module ID is FCC ID: XMR201808EC25AF, and report numbers of this certified module are R1806A0301-R1V1/ R1806A0301-R2V1/ R1806A0301-R3V1/ R1806A0301-R4V1/ R1806A0301-M1V3. This certified module will be integrated into this host that is installed in a car to apply for a new FCC ID. Therefore, it is the same mobile condition as the original filling. In this report, this certified module is same as the original filling. We have verified the power and test for new radiated emission/exposure evaluation to demonstrate full compliance.					

4.4 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.

5 RF Exposure Evaluation

5.1 RF Exposure Compliance Requirement

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{377}$

Where E = Field strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{377 d^2}$$

Changing to units of mW and cm, using:

P (mW) = P (W) / 1000 and

d (cm) = d(m) / 100

Yields

$$S = \frac{30 \times (P/1000) \times G}{377 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where d = Distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

5.2 Maximum Permissible Exposure

Substituting the MPE safe distance using $d = 20$ cm into Equation 1:

$$S = 0.000199 \times P \times G$$

Where P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

LTE Band 2:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
18700	1860	281.838	2	20	0.1122	4.493

LTE Band 4:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
19957	1710.7	251.189	2	20	0.1000	4.243

LTE Band 5:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
20643	848.3	281.838	2	20	0.1122	2.627

LTE Band 12:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
23173	715.3	354.813	2	20	0.1412	2.338

LTE Band 13:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
23230	782	281.838	2	20	0.1122	2.485

LTE Band 14:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
23330	793	316.228	2	20	0.1259	2.509

LTE Band 66:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
131987	1711.5	223.872	2	20	0.0891	4.244

LTE Band 71:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
133147	665.5	251.189	2	20	0.1000	2.226

PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No. EED32M00128501 for EUT external and internal photos.

*** End of Report ***

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