

## RF Exposure Report

**Report No.:** SA160706E06

**FCC ID:** ZMYDSL2401HNAT1CC

**Test Model:** DSL-2401HNA-T1CC

**Received Date:** July 06, 2016

**Test Date:** July 28 to 29, 2016

**Issued Date:** Sep. 20, 2016

**Applicant:** MitraStar Technology Corporation

**Address:** No. 6, Innovation Rd II, Hsinchu Science Park, Hsinchu 30076, Taiwan

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Hsin Chu Laboratory

**Lab Address:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan R.O.C.

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### Release Control Record

Issue No.	Description	Date Issued
SA160706E06	Original release.	Sep. 20, 2016

## 1 Certificate of Conformity

**Product:** VDSL IAD

**Brand:** MitraStar

**Test Model:** DSL-2401HNA-T1CC

**Sample Status:** ENGINEERING SAMPLE

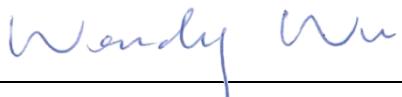
**Applicant:** MitraStar Technology Corporation

**Test Date:** July 28 to 29, 2016

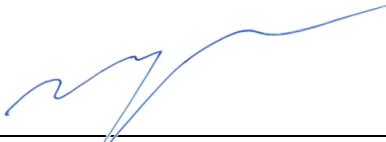
**Standards:** FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**Prepared by :**  , **Date:** Sep. 20, 2016

Wendy Wu / Specialist

**Approved by :**  , **Date:** Sep. 20, 2016

May Chen / Manager

## 2 RF Exposure

### 2.1 Limits For Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

### 2.2 MPE Calculation Formula

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

where

Pd = power density in mW/cm<sup>2</sup>

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

### 2.3 Classification

The antenna of this product, under normal use condition, is at least 22cm away from the body of the user.

So, this device is classified as **Mobile Device**.

### 2.4 Antenna Gain

2.4GHz band								
Antenna Set.	Chain No.	Brand	Model	Antenna Gain(dBi)	Frequency range (GHz ~ GHz)	Antenna Type	Connector Type	Cable Length (mm)
1	Chain 0	Whayu	65-031-240136B	2.7	2.4~2.4835	PCB	NA	202
	Chain 1		65-031-240141B	3	2.4~2.4835		NA	75
5GHz band								
Antenna No.	Chain No.	Brand	Model	Antenna Gain(dBi)	Frequency range (GHz ~ GHz)	Antenna Type	Connector Type	Cable Length (mm)
1	Chain 0	Whayu	65-031-240137B	3.4	5.15~5.85	PCB	i-pex(MHF)	90
	Chain 1		65-031-240138B	3.3	5.15~5.85		i-pex(MHF)	115
	Chain 2		65-031-240139B	3.4	5.15~5.85		i-pex(MHF)	181
	Chain 3		65-031-240140B	3.4	5.15~5.85		i-pex(MHF)	200

## 2.5 Calculation Result of Maximum Conducted Power

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2412-2462	532.235	5.86	22	0.33732	1
5180-5240	348.899	9.4	22	0.49962	1
5745-5825	413.705	9.4	22	0.59243	1

NOTE:

2.4GHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 5.86\text{dBi}$

5GHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2 / 4] = 9.4\text{dBi}$

### Conclusion:

The formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + .....etc. < 1

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz + WLAN 5GHz = 0.33732 / 1 + 0.59243 / 1 = 0.92975

**Therefore the maximum calculations of above situations are less than the “1” limit.**

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