

RF Exposure Report

Report No.: SA180206E02

FCC ID: 2ACH3UKAZA2A0

Test Model: UKAZA2A001

Received Date: Feb. 06, 2018

Test Date: Feb. 08, 2018

Issued Date: Feb. 26, 2018

Applicant: ALPS ELECTRIC (NORTH AMERICA), INC.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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Release Control Record

Issue No.	Description	Date Issued
SA180206E02	Original release.	Feb. 26, 2018

1 Certificate of Conformity

Product: Ultra Short Range Radar

Brand: ALPS

Test Model: UKAZA2A001

Sample Status: ENGINEERING SAMPLE

Applicant: ALPS ELECTRIC (NORTH AMERICA), INC.

Test Date: Feb. 08, 2018

Standards: FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

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 :

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Date:

Feb. 26, 2018

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Approved by :

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Date:

Feb. 26, 2018

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 ²)	Average Time (minutes)
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
1500-100,000	...	...	1.0	30

f = Frequency in MHz ; *Plane-wave equivalent power density

2.2 MPE Calculation Formula

$$P_d = (P_{out} * G) / (4 * \pi * r^2)$$

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

2.3 Classification

This device is classified as **Fixed Device**.

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user.

2.4 Antenna Gain

Antenna Type	Connector Type	Frequency range (GHz)
Patch Antenna	none	77 ~ 81

2.5 Calculation Result

Condition 1: single EUT

Frequency range (GHz)	Pout EIRP (dBm) (Peak)	Pout EIRP (mW) (Peak)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
80.048	2.90	1.95	20	0.00039	1

Condition 2: Two EUT can transmit simultaneously among 20cm.

Frequency range (GHz)	Pout EIRP (dBm) (Peak)	Pout EIRP (mW) (Peak)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
80.048	2.90	1.95	20	0.00039	1
80.048	2.90	1.95	20	0.00039	1

Conclusion:

The formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

Condition 1:

FMCW (80.048GHz) = 0.00039

Condition 2:

FMCW (80.048GHz) + FMCW (80.048GHz) = $0.00039 / 1 + 0.00039 / 1 = 0.00078$

Therefore the maximum calculations of above situations are less than the "1" limit.

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