**EN 62311:2008**

**AS REFERENCED BY TEST PLAN 11647276-TP1V4**

**RF EXPOSURE ANALYSIS**

**FOR**

**MILLIMETER WAVE RADAR SENSOR DEVELOPMENT BOARDS**

**MODEL SERIES: 1243/1443 and 1642**

**REPORT NUMBER: 11647276-E3V4**

**ISSUE DATE: MAY 12, 2017**

*Prepared for*
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**12500 TI BLVD.**
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NVLAP LAB CODE 200065-0

## Revision History

| Rev. | Issue Date | Revisions | Revised By |
|---|---|---|---|
| V1 | 4/17/2017 | As Issued | M. Heckrotte |
| V2 | 4/25/2017 | Revised Test Plan reference to 11647276-TP1V2 | M. Heckrotte |
| V3 | 5/9/2017 | Revised Test Plan reference to 11647276-TP1V3, Revised RF Exposure calculations in accordance with 11647276-TP1V3 | M. Heckrotte |
| V4 | 5/12/2017 | Revised Test Plan reference to 11647276-TP1V4 | M. Heckrotte |


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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** TEXAS INSTRUMENTS
12500 TI BLVD.
DALLAS, TEXAS 75243 USA

**EUT DESCRIPTION:** MILLIMETER WAVE RADAR SENSOR DEVELOPMENT BOARDS

**MODEL SERIES:** 1243, 1443 and 1642

| APPLICABLE STANDARDS | |
|---|---|
| **STANDARD** | **TEST RESULTS** |
| EN 62311:2008 as referenced by Test Plan 11647276-TP1V4 | Complies |

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

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## 2. METHODOLOGY

All calculations were made in accordance with EN 62311:2008 as referenced by Test Plan 11647276-TP1V4.

## 3. REFERENCES

EIRP measurements were made as documented in UL test reports 11647276-E1V4 and 11647276-E2V4.

## 4. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.htm.

# 5. EN 62311 REQUIREMENTS - LIMITATION OF EXPOSURE

## 5.1. LIMITS

The following Reference levels for electric, magnetic, and /or electromagnetic fields as applicable, are excerpted from Table 2 as given in Council Recommendation 1999/519/EC:

| Frequency Range | Equivalent plane wave power density (W/m2) |
|---|---|
| 2 – 300 GHz | 10 |

## 5.2. ASSESSMENT METHOD

EN 62311 Clause 7.2 (1) and (2)

Fields at the typical user position are compared to the relevant Reference Levels. Calculations of Power Density are made using the far field equations given in EN 62311 Annex A.2.

The RF Exposure calculations in this report are based on a single band operating configuration where the device is not transmitting simultaneously with any other co-located radio.

## 5.3. RESULTS

The minimum separation distance is 4.3 cm.

| Mode | Center Frequency (GHz) | EIRP (dBm) | EIRP (W) | Separation Distance (m) | Power Density (W/m^2) | Power Density Limit (W/m^2) |
|---|---|---|---|---|---|---|
| 300 MHz | 76.65 | 23.72 | 0.236 | 0.043 | 10.00 | 10 |
| 1300 MHz | 77.76 | 20.98 | 0.125 | 0.032 | 10.00 | 10 |
| 4 GHz | 79.00 | 17.30 | 0.054 | 0.021 | 10.00 | 10 |

Average Power is used for the 300 MHz mode.
Peak Power is used for the 1300 MHz and 4 GHz modes.

# 6. CONCLUSIONS

The EUT complies with the RF Exposure Limits given in Council Recommendation 1999/519/EC for any separation distance greater than or equal to 5 cm under all modes of operation.

# END OF REPORT