



RF Exposure Evaluation Report

| | |
|----------------------------|--|
| APPLICANT | RFE BROADCAST S.R.L. |
| ADDRESS | VIA MAREVITANO N. 26 FALERNA (CZ) 88042 ITALY |
| FCC ID | 2ARJIDS3000 |
| IC | 24642-DS3000 |
| MODEL NUMBER | DS1000, DS2000, DS3000 |
| PRODUCT DESCRIPTION | FM BROADCAST TRANSMITTER |
| FINAL TEST DATE | 1/14/2019 |
| PREPARED BY | Franklin Rose |
| TEST RESULTS | <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL |

| Report Number | Report Version | Description | Issue Date |
|---------------------------|----------------|----------------------|------------|
| 2272UT18 MPETestReport | Rev1 | Initial Issue | 12/4/2019 |
| | Rev2 | Updated power output | 06/29/2020 |

**THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE
WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.**



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GENERAL REMARKS

Summary

The device under test does:

- Fulfill the general approval requirements as identified in this test report and was selected by the customer.
- Not fulfill the general approval requirements as identified in this test report

Attestations

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

I attest that the necessary measurements were made at:

Timco Engineering Inc.
849 NW State Road 45
Newberry, FL 32669
Designation #: US1070

Prepared by:




| | |
|-----------------------|--|
| Name and Title | Franklin Rose, Project Director / EMC Specialist |
| Date | 06/29/2020 |

GENERAL INFORMATION

| | | | |
|--------------------------------|--|--|---|
| EUT Description | FM BROADCAST TRANSMITTER | | |
| Model Number | DS1000, DS2000, DS3000 | | |
| EUT Power Source | <input checked="" type="checkbox"/> 110–120Vac, 50–60Hz | <input type="checkbox"/> DC Power (13.8 VDC) | <input type="checkbox"/> Battery Operated |
| Test Item | <input type="checkbox"/> Engineering Prototype | <input checked="" type="checkbox"/> Pre-Production | <input type="checkbox"/> Production |
| Type of Equipment | <input checked="" type="checkbox"/> Fixed | <input type="checkbox"/> Mobile | <input type="checkbox"/> Portable |
| Antenna Connector | External, N Type | | |
| Test Conditions | The temperature was 26°C Relative humidity of 50%. | | |
| Modification to the EUT | No Modification to EUT. | | |
| Applicable Standards | FCC CFR 47 Part 2.1091 | | |
| Test Facility | Timco Engineering Inc. at 849 NW State Road 45 Newberry, FL 32669 USA. Designation #: US1070 | | |

ANTENNA INFORMATION

| Antenna is Provided | Type | Max Gain (dBi) |
|----------------------------|-------------|-----------------------|
| No | n/a | 0.0 |

RF POWER OUTPUT

| Model | Stable over Input Voltage Variation (+/- %) | Output Power (W) | Min Power 90% (W) | Max Power 105% (W) |
|--------------|--|-------------------------|--------------------------|---------------------------|
| DS1000 | 5% | 1000 | 900 | 1050 |
| DS2000 | 5% | 2000 | 1800 | 2100 |
| DS3000 | 5% | 3000 | 2700 | 3150 |

FCC MPE Distance

| <i>Uncontrolled Public RF Exposure/MPE Guideline</i> | |
|--|------------------------|
| Separation Distance (cm) | 1119 cm |
| Power Density (mW/cm ²) | 0.2 mW/cm ² |
| <i>Controlled Occupational RF Exposure/MPE Guideline</i> | |
| Separation Distance (cm) | 500 cm |
| Power Density (mW/cm ²) | 1 mW/cm ² |

FCC MPE Calculations

| <i>EUT Parameters</i> | | |
|--------------------------|--------------|-------------|
| <i>Parameter</i> | <i>Value</i> | <i>Unit</i> |
| <i>EUT Form Factor</i> | Fixed | |
| <i>Lowest Frequency</i> | 88.000 | MHz |
| <i>Highest Frequency</i> | 108.000 | MHz |
| <i>Maximum Power</i> | 3150.000 | W |
| <i>Tune Up Tolerance</i> | 0.000 | +/- W |
| <i>Duty Cycle</i> | 100% | % |
| <i>Antenna Gain</i> | 0.000 | dBi EIRP |
| <i>Coax Loss</i> | 0.000 | dB |
| <i>EIRP</i> | 3150.000 | W |

| <i>Calculations</i> | |
|--|---|
| <i>RF Exposure Field Strength Limits</i> | Public Persons may be exposed up to: |
| Worst-Case RF Field Strength Limit for the General Public (Uncontrolled Environment) | 0.2 mW/cm ² |
| Occupational Persons may be exposed up to: | |
| Worst-Case RF Field Strength Limit for Controlled Use (Controlled Environment) | 1 mW/cm ² |
| <i>Separation Distance</i> | Mandatory distance from radiating element: |
| Calculation Method | Distance from Radiating Element (cm) = $\text{SQRT} (P(\text{mW}) / 4\pi S(\text{mW/cm}^2))$ |
| Uncontrolled Sep. Distance @ 0.2 mW/cm ² | 1119.53 cm |
| Controlled Sep. Distance @ 1 mW/cm ² | 500.67 cm |
| <i>EUT Power Density at 20 cm</i> | |
| Calculation Method | Power Density (mW/cm ²) = $P(\text{mW}) / 4\pi R(\text{cm})^2$ |
| EUT Power Density @ 20 cm | 626.673 mW/cm ² |

ISED MPE Distance

| <i>Uncontrolled Public RF Exposure/MPE Guideline</i> | |
|--|------------------------|
| Separation Distance (cm) | 1393 cm |
| Power Density (W/m ²) | 1.291 W/m ² |
| <i>Controlled Occupational RF Exposure/MPE Guideline</i> | |
| Separation Distance (cm) | 623 cm |
| Power Density (W/m ²) | 6.46 W/m ² |

ISED MPE Calculations

| <i>EUT Parameters</i> | | |
|--------------------------|--------------|-------------|
| <i>Parameter</i> | <i>Value</i> | <i>Unit</i> |
| <i>EUT Form Factor</i> | Fixed | |
| <i>Lowest Frequency</i> | 88.000 | MHz |
| <i>Highest Frequency</i> | 108.000 | MHz |
| <i>Maximum Power</i> | 3150.000 | W |
| <i>Tune Up Tolerance</i> | 0.000 | +/- W |
| <i>Duty Cycle</i> | 100% | % |
| <i>Antenna Gain</i> | 0.000 | dBi EIRP |
| <i>Coax Loss</i> | 0.000 | dB |
| <i>EIRP</i> | 3150.000 | W |

| <i>Calculations</i> | |
|--|---|
| <i>RF Exposure Field Strength Limits</i> | Public Persons may be exposed up to: |
| Worst-Case RF Field Strength Limit for the General Public (Uncontrolled Environment) | 1.291 W/m ² |
| | |
| Occupational Persons may be exposed up to: | |
| Worst-Case RF Field Strength Limit for Controlled Use (Controlled Environment) | 6.46 W/m ² |
| | |
| <i>Separation Distance</i> | Mandatory distance from radiating element: |
| Calculation Method | Distance from Radiating Element (cm) = $\text{SQRT} (P(\text{mW}) / 4\pi S(\text{mW/cm}^2))$ |
| Uncontrolled Sep. Distance @ 1.291 W/m ² | 1393.44 cm |
| Controlled Sep. Distance @ 6.46 W/m ² | 623.16 cm |
| | |
| <i>EUT Power Density at 20 cm</i> | |
| Calculation Method | Power Density (mW/cm ²) = $P(\text{mW}) / 4\pi R(\text{cm})^2$ |
| EUT Power Density @ 20 cm | 6266.73 W/m ² |