



Test report No:  
NIE: 51929RRF.032

## Partial Test report

USA FCC Part 15.247, 15.209

CANADA RSS-247, RSS-Gen

Radio Frequency Devices. Operation within the bands 902 - 928 MHz, 2400-2483.5 MHz, and 5725 - 5850 MHz.

Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices.

General Requirements and Information for the Certification of Radio Apparatus.

|   |  |
|---|--|
| (*) Identification of item tested         | Headunit with radio and Bluetooth  |
| (*) Trademark                             | Panasonic  |
| (*) Model and /or type reference          | MIB3E_MQB_BT   |
| Other identification of the product       | HW version: X40<br>SW version: X820<br>Part number: 575.035.888<br>FCC ID: WUQ-MIB3HBT<br>IC: 216R-MIB3HBT   |
| (*) Features                              | Bluetooth, FM, AM, USB   |
| Applicant                                 | PANASONIC AUTOMOTIVE SYSTEMS EUROPE GMBH<br>Robert Bosch Str. 27-29, 63225, Langen, Germany  |
| Test method requested, standard           | USA FCC Part 15.247 10-1-17 Edition: Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz, and 5725 - 5850 MHz.<br>USA FCC Part 15.209 10-1-17 Edition: Radiated emission limits; general requirements.<br>CANADA RSS-247 Issue 2 (February 2017).<br>CANADA RSS-Gen Issue 5 (April 2018).<br>Section 15.247 Subclause (d) / RSS-247 5.5.: Emission limitations radiated (Transmitter)<br>Guidance for Performing Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid Systems Devices Operating Under Section 15.247 of the FCC Rules. 558074 D01 Meas Guidance v05 dated August 24, 2018.<br>ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices. |
| Approved by (name / position & signature) | Rafael López Martín<br>EMC Consumer & RF Lab. Manager  |
| Date of issue                             | 2020-05-07   |
| Report template No                        | FDT08_22<br>(*) "Data provided by the client"  |

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## Competences and guarantees

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DEKRA Testing and Certification is an ISED-recognized accredited testing laboratory with appropriate scope of accreditation that include testing performed in this test report

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The results presented in this Test Report apply only to the particular item under test established in this document.

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## General conditions

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1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
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## Uncertainty

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Uncertainty (factor k=2) was calculated according to the DEKRA Testing and Certification internal document PODT000.

## Data provided by the client

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The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested").
2. The sample of the model MIB3E\_MQB\_BT is an automotive head unit to be installed in cars with the following features: Bluetooth, FM, AM, USB.

DEKRA Testing and Certification S.A.U. declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

## Usage of samples

Samples undergoing test have been selected by: The client.

- Sample S/01 is composed of the following elements:

| Control Nº | Description          | Model        | Serial Nº                       | Date of reception |
|------------|----------------------|--------------|---------------------------------|-------------------|
| 51929B/636 | Automotive Head Unit | MIB3E_MQB_BT | PM6-<br>00124.10.19413F04<br>24 | 2019/12/27        |
| 51929B/538 | Harness              | --           | --                              | 2019/06/05        |

Sample M/01 has undergone the following test(s): All RADIATED tests indicated in Appendix A.

## Test sample description

| Ports.....:                                   | Port name and description       | Cable                               |                          |                          |                                   |                          |
|---|---------------------------------|-------------------------------------|--------------------------|--------------------------|-----------------------------------|--------------------------|
|   |                                 | Specified max length [m]            | Attached during test     | Shielded                 | Coupled to patient <sup>(3)</sup> |                          |
|   |                                 |                                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>          | <input type="checkbox"/> |
| Supplementary information to the ports.....:  |                                 |                                     |                          |                          |                                   |                          |
| Rated power supply .....                      | Voltage and Frequency           | Reference poles                     |                          |                          |                                   |                          |
|   |                                 | <input type="checkbox"/>            | L1                       | L2                       | L3                                | N                        |
|   | DC: 12 Vdc                      | <input checked="" type="checkbox"/> |                          |                          |                                   |                          |
| Rated Power .....                             |                                 |                                     |                          |                          |                                   |                          |
| Clock frequencies .....                       |                                 |                                     |                          |                          |                                   |                          |
| Other parameters.....:                        |                                 |                                     |                          |                          |                                   |                          |
| Software version .....                        | X820                            |                                     |                          |                          |                                   |                          |
| Hardware version.....:                        | X40<br>Part number: 575.035.888 |                                     |                          |                          |                                   |                          |
| Dimensions in cm (W x H x D) ....:            |                                 |                                     |                          |                          |                                   |                          |
|   | <input type="checkbox"/>        | Other: Installed in cars            |                          |                          |                                   |                          |
| Modules/parts .....                           | Module/parts of test item       |                                     |                          | Type                     | Manufacturer                      |                          |
|   | -                               |                                     |                          |                          |                                   |                          |
| Accessories (not part of the test item) ..... | Description                     |                                     |                          | Type                     | Manufacturer                      |                          |
|   | -                               |                                     |                          |                          |                                   |                          |
| Documents as provided by the applicant.....:  | Description                     |                                     |                          | File name                | Issue date                        |                          |
|   | -                               |                                     |                          |                          |                                   |                          |

<sup>(3)</sup> Only for Medical Equipment

## Identification of the client

PANASONIC AUTOMOTIVE SYSTEMS EUROPE GMBH  
Robert Bosch Str. 27-29, 63225, Langen, Germany

## Testing period and place

|               |  |
|---------------|--|
| Test Location | DEKRA Testing and Certification S.A.U. |
| Date (start)  | 2020-01-09                             |
| Date (finish) | 2020-01-09                             |

## Document history

| Report number | Date       | Description   |
|---------------|------------|---------------|
| 51929RRF.032  | 2020-05-07 | First release |

## Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

|                   |                              |
|-------------------|------------------------------|
| Temperature       | Min. = 15 °C<br>Max. = 35 °C |
| Relative humidity | Min. = 20 %<br>Max. = 75 %   |

In the semianechoic chamber, the following limits were not exceeded during the test.

|                   |                                     |
|-------------------|-------------------------------------|
| Temperature       | Min. = 15 °C<br>Max. = 35 °C        |
| Relative humidity | Min. = 20 %<br>Max. = 75 %          |
| Air pressure      | Min. = 860 mbar<br>Max. = 1060 mbar |

## Remarks and comments

The tests have been performed by the technical personnel: Jaime Barranquero and Miguel Ángel Torres.

Used instrumentation:

|     | <u>Radiated Measurements</u>   | Last Calibration | Due Calibration |
|-----|--|------------------|-----------------|
| 1.  | Semianechoic Absorber Lined Chamber ETS<br>LINDGREN FACT 3 200 STP         | N.A.             | N.A.            |
| 2.  | Spectrum Analyzer ROHDE AND SCHWARZ FSW50                                  | 2018/02          | 2020/02         |
| 3.  | EMI Test Receiver ROHDE AND SCHWARZ ESR7                                   | 2018/10          | 2020/10         |
| 4.  | Pre-Amplifier G>40dB 10MHz-6GHz, BONN<br>ELEKTRONIK, BLNA 0160-01N         | 2019/02          | 2020/02         |
| 5.  | Biconical/Log Antenna 30 MHz - 6 GHz ETS<br>LINDGREN 3142E                 | 2017/04          | 2020/04         |
| 6.  | RF Pre-amplifier, 40 dB ,1-18 GHz BONN<br>ELEKTRONIK BLMA 0118-1M          | 2019/04          | 2020/04         |
| 7.  | Broadband Horn antenna 1-18 GHz SCHWARZBECK<br>MESS-ELEKTRONIK BBHA 9120 D | 2018/01          | 2021/01         |
| 8.  | DC Power Supply Keysight Technologies U8002A                               | ---              | ---             |
| 9.  | Digital multimeter FLUKE 179   | 2019/06          | 2020/06         |
| 10. | RF pre-amplifier 18-40 GHz NARDA JS44-18004000-<br>33-8P                   | 2019/02          | 2020/02         |
| 11. | Broadband Horn antenna 18-40 GHz<br>SCHWARZBECK BBHA 9170                  | 2018/07          | 2021/07         |

## Testing verdicts

|                 |     |
|-----------------|-----|
| Not applicable: | N/A |
| Pass:           | P   |
| Fail:           | F   |
| Not measured:   | N/M |

## Summary

### 1. Bluetooth EDR.

| FCC PART 15 PARAGRAPH / RSS-247          |   |        |     |
|--|---|--------|-----|
| Requirement – Test case                  | Verdict   | Remark |     |
| FCC 15.247 (a) (1) / RSS-247 5.1 (b)     | 20 dB Bandwidth and Carrier frequency separation          | N/M    | (1) |
| FCC 15.247 (a)(1)(iii) / RSS-247 5.1 (d) | Number of hopping channels                                | N/M    | (1) |
| FCC 15.247 (a)(1)(iii) / RSS-247 5.1 (d) | Time of occupancy (Dwell Time)                            | N/M    | (1) |
| FCC 15.247 (b) / RSS-247 5.4 (b)         | Maximum peak output power and antenna gain                | N/M    | (1) |
| FCC 15.247 (d) / RSS-247 5.5.            | Band-edge compliance of conducted emissions (Transmitter) | N/M    | (1) |
| FCC 15.247 (d) / RSS-247 5.5             | Emission limitations conducted (Transmitter)              | N/M    | (1) |
| FCC 15.247 (d) / RSS-247 5.5             | Emission limitations radiated (Transmitter)               | P      |     |

Supplementary information and remarks:

(1): Test not requested by the client.

## **Appendix A: Test results.**

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## TEST CONDITIONS

### POWER SUPPLY (V):

V nonimal: 12 Vdc

Type of Power Supply: Battery.

### ANTENNA:

Type of Antenna: Integral.

Maximum Declared Antenna Gain: +1.3 dBi

### TEST FREQUENCIES:

Low Channel: 2402 MHz

Middle Channel: 2441 MHz

High Channel: 2480 MHz

The sample was used to configure the EUT to continuously transmit at a specified output power in all channels.

### RADIATED MEASUREMENTS:

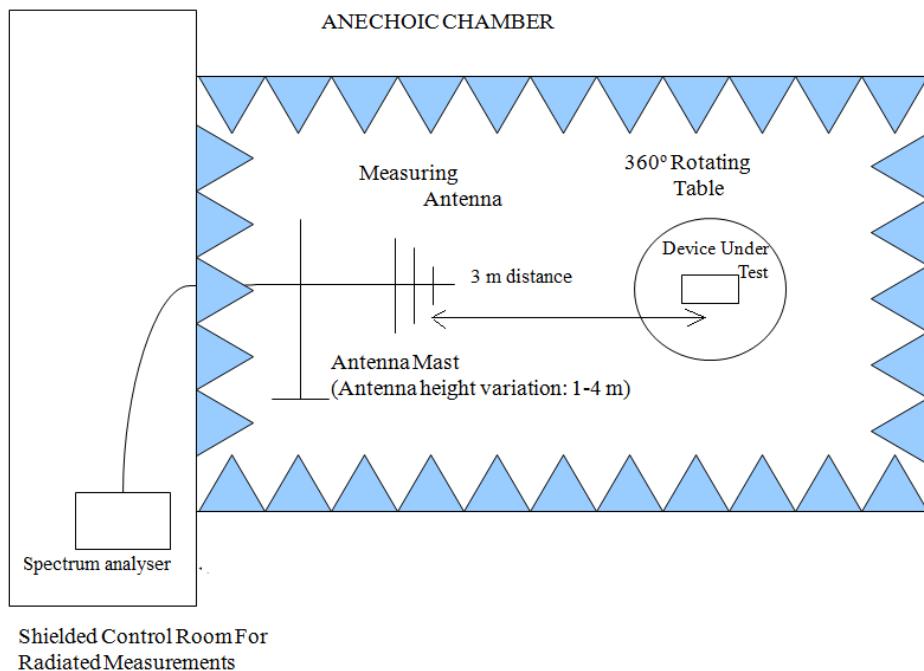
All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at a distance of 3 m for the frequency range 30 MHz-1000 MHz (30 MHz-1000 MHz Bilog antenna) and at a distance of 1m for the frequency range 1 GHz-25 GHz (1 GHz-18 GHz Double ridge horn antenna and 18 GHz-40 GHz horn antenna).

For radiated emissions in the range 1 GHz-25 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

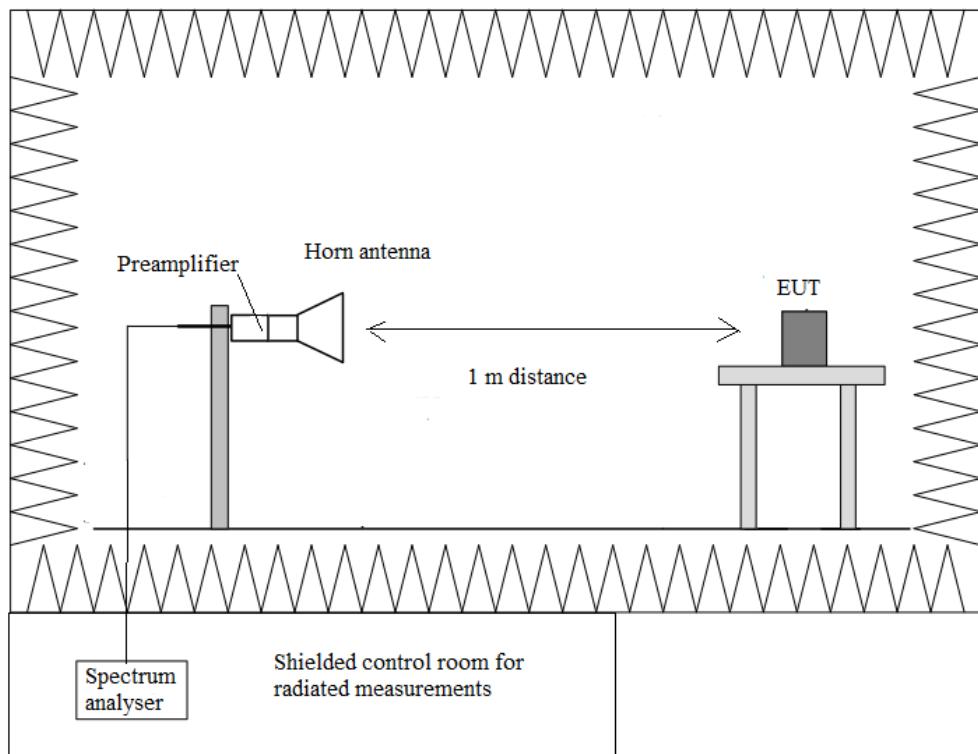
The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

Radiated measurements setup  $f < 1$  GHz



Radiated measurements setup  $f > 1$  GHz



## 15.247 (d) / RSS-247 5.5. Emission limitations radiated (Transmitter)

### SPECIFICATION:

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c) / RSS-Gen):

| Frequency Range (MHz) | Field strength ( $\mu$ V/m) | Field strength (dB $\mu$ V/m) | Measurement distance (m) |
|-----------------------|-----------------------------|-------------------------------|--------------------------|
| 0.009-0.490           | 2400/F(kHz)                 | -                             | 300                      |
| 0.490-1.705           | 24000/F(kHz)                | -                             | 30                       |
| 1.705 - 30.0          | 30                          | -                             | 30                       |
| 30 - 88               | 100                         | 40                            | 3                        |
| 88 - 216              | 150                         | 43.5                          | 3                        |
| 216 - 960             | 200                         | 46                            | 3                        |
| 960 - 25000           | 500                         | 54                            | 3                        |

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

RSS-247. Attenuation below the general field strength limits specified in RSS-Gen is not required.

### RESULTS:

The situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

All tests were performed in a semi-anechoic chamber at a distance of 3 m for the frequency range 30 MHz-1000 MHz and at distance of 1m for the frequency range 1 GHz-25 GHz.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

### Frequency range 30 MHz - 1 GHz:

The spurious frequencies do not depend on the operating channel.

Spurious frequencies detected at less than 20 dB below the limit:

| Spurious frequency (MHz) | Emission Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Polarization | Detector   | Measurement Uncertainty (dB) |
|--------------------------|-------------------------------|----------------------|--------------|------------|------------------------------|
| 437.416                  | 26.4                          | 46                   | V            | Quasi peak | <± 3.81                      |
| 796.025                  | 32.8                          | 46                   | H            | Quasi peak | <± 3.81                      |

<< SEE GRAPHICS IN THE ATTACHED FILE: 51929RRF032 \_Graphics.7z >>

### Frequency range 1 GHz-25 GHz

The results in the next tables show the maximum measured levels in the 1-25 GHz range including the restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz (see next plots).

Spurious signals with peak levels above the average limit (54 dB $\mu$ V/m at 3 m) are measured with average detector for checking compliance with the average limit.

- **GFSK modulation:**

- LOW CHANNEL. Spurious frequencies detected at less than 20 dB below the limit:

| Spurious frequency (GHz) | Detector | Emission Level (dB $\mu$ V/m) | Polarization | Measurement Uncertainty (dB) |
|--------------------------|----------|-------------------------------|--------------|------------------------------|
| 1.36073                  | Peak     | 49.25                         | V            | <± 2.78                      |
| 1.422008                 | Peak     | 51.53                         | V            | <± 2.78                      |
| 2.029367                 | Peak     | 44.57                         | V            | <± 2.78                      |
| 2.363567                 | Peak     | 55.51                         | V            | <± 2.78                      |
|                          | Average  | 37.71                         |              | <± 2.78                      |
| 2.3735                   | Peak     | 59.32                         | V            | <± 2.78                      |
|                          | Average  | 39.82                         |              | <± 2.78                      |
| 1.3197                   | Peak     | 47.7                          | H            | <± 2.78                      |
| 1.370967                 | Peak     | 51.1                          | H            | <± 2.78                      |
| 2.394033                 | Peak     | 61.94                         | H            | <± 2.78                      |
|                          | Average  | 40.57                         |              | <± 2.78                      |
| 2.3634736                | Peak     | 53.93                         | V            | <± 2.78                      |
| 2.3741533                | Peak     | 58.83                         | V            | <± 2.78                      |
|                          | Average  | 40.26                         |              | <± 2.78                      |
| 2.387956                 | Peak     | 58.94                         | V            | <± 2.78                      |
|                          | Average  | 39.5                          |              | <± 2.78                      |
| 3.54203                  | Peak     | 50.92                         | V            | <± 4.72                      |
| 3.9695                   | Peak     | 51.08                         | V            | <± 4.72                      |
| 5.58603                  | Peak     | 46.35                         | V            | <± 4.72                      |
| 7.18157                  | Peak     | 48.81                         | V            | <± 4.72                      |

- MIDDLE CHANNEL. Spurious frequencies detected at less than 20 dB below the limit:

| Spurious frequency (GHz) | Detector | Emission Level (dB $\mu$ V/m) | Polarization | Measurement Uncertainty (dB) |
|--------------------------|----------|-------------------------------|--------------|------------------------------|
| 1.401833                 | Peak     | 49.36                         | V            | <± 2.78                      |
| 2.370567                 | Peak     | 58.42                         | V            | <± 2.78                      |
|                          | Average  | 50.54                         |              | <± 2.78                      |
| 2.393833                 | Peak     | 64.04                         | V            | <± 2.78                      |
|                          | Average  | 44.3                          |              | <± 2.78                      |
| 2.415367                 | Peak     | 58.02                         | H            | <± 2.78                      |
|                          | Average  | 38.47                         |              | <± 2.78                      |
| 2.3633453                | Peak     | 54.79                         | V            | <± 2.78                      |
|                          | Average  | 37.1                          |              | <± 2.78                      |
| 2.3737827                | Peak     | 59.56                         | V            | <± 2.78                      |
|                          | Average  | 40.7                          |              | <± 2.78                      |
| 2.3894947                | Peak     | 57.84                         | V            | <± 2.78                      |
|                          | Average  | 40.93                         |              | <± 2.78                      |
| 3.54203                  | Peak     | 50.71                         | V            | <± 4.72                      |
| 3.99003                  | Peak     | 51.81                         | V            | <± 4.72                      |
| 5.58603                  | Peak     | 45.69                         | V            | <± 4.72                      |
| 7.1825                   | Peak     | 46.83                         | V            | <± 4.72                      |

- HIGH CHANNEL. Spurious frequencies detected at less than 20 dB below the limit:

| Spurious frequency (GHz) | Detector | Emission Level (dB $\mu$ V/m) | Polarization | Measurement Uncertainty (dB) |
|--------------------------|----------|-------------------------------|--------------|------------------------------|
| 1.3999                   | Peak     | 48.32                         | V            | <± 2.78                      |
| 2.111433                 | Peak     | 45.47                         | V            | <± 2.78                      |
| 2.3737                   | Peak     | 58.28                         | V            | <± 2.78                      |
|                          | Average  | 40.42                         |              | <± 2.78                      |
| 2.3945                   | Peak     | 64.99                         | V            | <± 2.78                      |
|                          | Average  | 44.11                         |              | <± 2.78                      |
| 2.414155                 | Peak     | 57.24                         | H            | <± 2.78                      |
|                          | Average  | 37.97                         |              | <± 2.78                      |
| 2.3633776                | Peak     | 55.24                         | V            | <± 2.78                      |
|                          | Average  | 37.9                          |              | <± 2.78                      |
| 2.3739293                | Peak     | 59.44                         | V            | <± 2.78                      |
|                          | Average  | 40.98                         |              | <± 2.78                      |
| 2.3890627                | Peak     | 57.69                         | V            | <± 2.78                      |
|                          | Average  | 42.48                         |              | <± 2.78                      |
| 3.54203                  | Peak     | 50.8                          | V            | <± 4.72                      |
| 3.99003                  | Peak     | 51.68                         | V            | <± 4.72                      |
| 7.1797                   | Peak     | 47.62                         | V            | <± 4.72                      |
| 5.5865                   | Peak     | 47.18                         | H            | <± 4.72                      |

<< SEE GRAPHICS IN THE ATTACHED FILE: 51929RRF032 \_Graphics.7z >>

Verdict: PASS

- **Pi/4-DQPSK modulation:**

- LOW CHANNEL. Spurious frequencies detected at less than 20 dB below the limit:

| Spurious frequency (GHz) | Detector | Emission Level (dB $\mu$ V/m) | Polarization | Measurement Uncertainty (dB) |
|--------------------------|----------|-------------------------------|--------------|------------------------------|
| 1.3971                   | Peak     | 49.2                          | V            | <± 2.78                      |
| 1.422167                 | Peak     | 49.45                         | V            | <± 2.78                      |
| 2.363633                 | Peak     | 52.31                         | V            | <± 2.78                      |
| 2.373767                 | Peak     | 56.49                         | V            | <± 2.78                      |
|                          | Average  | 45.23                         |              | <± 2.78                      |
| 1.320033                 | Peak     | 50.56                         | H            | <± 2.78                      |
| 1.3609                   | Peak     | 53.63                         | H            | <± 2.78                      |
| 2.37364                  | Peak     | 58.84                         | V            | <± 2.78                      |
|                          | Average  | 43.09                         |              | <± 2.78                      |
| 2.3885987                | Peak     | 58.84                         | V            | <± 2.78                      |
|                          | Average  | 42.33                         |              | <± 2.78                      |
| 3.54203                  | Peak     | 51.13                         | V            | <± 4.72                      |
| 3.9905                   | Peak     | 51.1                          | V            | <± 4.72                      |
| 5.58557                  | Peak     | 48.1                          | V            | <± 4.72                      |
| 7.18157                  | Peak     | 47.32                         | V            | <± 4.72                      |

- MIDDLE CHANNEL. Spurious frequencies detected at less than 20 dB below the limit:

| Spurious frequency (GHz) | Detector | Emission Level (dB $\mu$ V/m) | Polarization | Measurement Uncertainty (dB) |
|--------------------------|----------|-------------------------------|--------------|------------------------------|
| 1.402833                 | Peak     | 51.98                         | V            | <± 2.78                      |
| 2.266233                 | Peak     | 47.69                         | V            | <± 2.78                      |
| 2.3633                   | Peak     | 53.95                         | V            | <± 2.78                      |
| 2.373833                 | Peak     | 56.52                         | V            | <± 2.78                      |
|                          | Average  | 39.74                         |              | <± 2.78                      |
| 2.393833                 | Peak     | 63.76                         | V            | <± 2.78                      |
|                          | Average  | 45.22                         |              | <± 2.78                      |
| 1.319967                 | Peak     | 51.09                         | H            | <± 2.78                      |
| 1.360833                 | Peak     | 52.94                         | H            | <± 2.78                      |
| 2.373668                 | Peak     | 59.11                         | V            | <± 2.78                      |
|                          | Average  | 43.7                          |              | <± 2.78                      |
| 2.3898013                | Peak     | 57.61                         | V            | <± 2.78                      |
|                          | Average  | 40.8                          |              | <± 2.78                      |
| 3.54203                  | Peak     | 51.15                         | V            | <± 4.72                      |
| 3.99003                  | Peak     | 53.01                         | V            | <± 4.72                      |
| 5.58603                  | Peak     | 48.76                         | V            | <± 4.72                      |
| 7.1811                   | Peak     | 47.83                         | V            | <± 4.72                      |

- HIGH CHANNEL. Spurious frequencies detected at less than 20 dB below the limit:

| Spurious frequency (GHz) | Detector | Emission Level (dB $\mu$ V/m) | Polarization | Measurement Uncertainty (dB) |
|--------------------------|----------|-------------------------------|--------------|------------------------------|
| 1.402433                 | Peak     | 51.6                          | V            | <± 2.78                      |
| 2.3633                   | Peak     | 54.61                         | V            | <± 2.78                      |
|                          | Average  | 42.53                         |              | <± 2.78                      |
| 2.373633                 | Peak     | 57.29                         | V            | <± 2.78                      |
|                          | Average  | 46.97                         |              | <± 2.78                      |
| 2.3937                   | Peak     | 63.41                         | V            | <± 2.78                      |
|                          | Average  | 43.9                          |              | <± 2.78                      |
| 2.4131                   | Peak     | 59.76                         | V            | <± 2.78                      |
|                          | Average  | 40.05                         |              | <± 2.78                      |
| 1.3611                   | Peak     | 51.87                         | H            | <± 2.78                      |
| 2.3736573                | Peak     | 60.4                          | V            | <± 2.78                      |
|                          | Average  | 47.43                         |              | <± 2.78                      |
| 2.389241                 | Peak     | 57.26                         | V            | <± 2.78                      |
|                          | Average  | 46.93                         |              | <± 2.78                      |
| 3.54203                  | Peak     | 50.75                         | V            | <± 4.72                      |
| 3.9905                   | Peak     | 53.45                         | V            | <± 4.72                      |
| 5.5851                   | Peak     | 48.57                         | V            | <± 4.72                      |
| 7.1811                   | Peak     | 48.96                         | V            | <± 4.72                      |

<< SEE GRAPHICS IN THE ATTACHED FILE: 51929RRF032 \_Graphics.7z >>

Verdict: PASS

- 8DPSK modulation:

- LOW CHANNEL. Spurious frequencies detected at less than 20 dB below the limit:

| Spurious frequency (GHz) | Detector | Emission Level (dB $\mu$ V/m) | Polarization | Measurement Uncertainty (dB) |
|--------------------------|----------|-------------------------------|--------------|------------------------------|
| 1.396767                 | Peak     | 48.62                         | V            | <± 2.78                      |
| 2.309567                 | Peak     | 48.95                         | V            | <± 2.78                      |
| 2.393433                 | Peak     | 63.53                         | V            | <± 2.78                      |
|                          | Average  | 43.32                         |              | <± 2.78                      |
| 2.414167                 | Peak     | 57.5                          | V            | <± 2.78                      |
|                          | Average  | 37.32                         |              | <± 2.78                      |
| 1.319323                 | Peak     | 49.63                         | H            | <± 2.78                      |
| 1.350256                 | Peak     | 48.63                         | H            | <± 2.78                      |
| 2.363476                 | Peak     | 54.59                         | V            | <± 2.78                      |
|                          | Average  | 37.83                         |              | <± 2.78                      |
| 2.3741427                | Peak     | 59.42                         | V            | <± 2.78                      |
|                          | Average  | 39.38                         |              | <± 2.78                      |
| 2.3895853                | Peak     | 57.4                          | V            | <± 2.78                      |
|                          | Average  | 37.79                         |              | <± 2.78                      |
| 3.54203                  | Peak     | 50.7                          | V            | <± 4.72                      |
| 3.96997                  | Peak     | 52                            | V            | <± 4.72                      |
| 7.18203                  | Peak     | 47.82                         | V            | <± 4.72                      |
| 5.5865                   | Peak     | 45.51                         | H            | <± 4.72                      |

- MIDDLE CHANNEL. Spurious frequencies detected at less than 20 dB below the limit:

| Spurious frequency (GHz) | Detector | Emission Level (dB $\mu$ V/m) | Polarization | Measurement Uncertainty (dB) |
|--------------------------|----------|-------------------------------|--------------|------------------------------|
| 1.397033                 | Peak     | 49.58                         | V            | <± 2.78                      |
| 2.3635                   | Peak     | 53.48                         | V            | <± 2.78                      |
| 2.3739                   | Peak     | 56.92                         | V            | <± 2.78                      |
|                          | Average  | 38.16                         |              | <± 2.78                      |
| 1.349732                 | Peak     | 47.41                         | H            | <± 2.78                      |
| 2.03539                  | Peak     | 44.4                          | H            | <± 2.78                      |
| 2.393967                 | Peak     | 59.72                         | H            | <± 2.78                      |
|                          | Average  | 41.74                         |              | <± 2.78                      |
| 2.424767                 | Peak     | 52.42                         | H            | <± 2.78                      |
| 2.3632653                | Peak     | 55.66                         | V            | <± 2.78                      |
|                          | Average  | 37.6                          |              | <± 2.78                      |
| 2.3735587                | Peak     | 59.01                         | V            | <± 2.78                      |
|                          | Average  | 39.84                         |              | <± 2.78                      |
| 2.3845613                | Peak     | 58.13                         | V            | <± 2.78                      |
|                          | Average  | 35.12                         |              | <± 2.78                      |
| 3.54203                  | Peak     | 50.86                         | V            | <± 4.72                      |
| 3.9695                   | Peak     | 51.25                         | V            | <± 4.72                      |
| 7.18157                  | Peak     | 48.77                         | V            | <± 4.72                      |
| 5.5865                   | Peak     | 47.16                         | H            | <± 4.72                      |

- HIGH CHANNEL. Spurious frequencies detected at less than 20 dB below the limit:

| Spurious frequency (GHz) | Detector | Emission Level (dB $\mu$ V/m) | Polarization | Measurement Uncertainty (dB) |
|--------------------------|----------|-------------------------------|--------------|------------------------------|
| 2.3635                   | Peak     | 53.67                         | V            | <± 2.78                      |
| 2.373833                 | Peak     | 57.6                          | V            | <± 2.78                      |
|                          | Average  | 38.13                         |              | <± 2.78                      |
| 1.350124                 | Peak     | 49.58                         | H            | <± 2.78                      |
| 1.402096                 | Peak     | 48.78                         | H            | <± 2.78                      |
| 2.3633317                | Peak     | 55.14                         | V            | <± 2.78                      |
|                          | Average  | 35.85                         |              | <± 2.78                      |
| 2.3736493                | Peak     | 60.97                         | V            | <± 2.78                      |
|                          | Average  | 38.88                         |              | <± 2.78                      |
| 2.389964                 | Peak     | 58.83                         | V            | <± 2.78                      |
|                          | Average  | 38.03                         |              | <± 2.78                      |
| 3.54203                  | Peak     | 50.86                         | V            | <± 4.72                      |
| 3.9695                   | Peak     | 52.26                         | V            | <± 4.72                      |
| 7.18157                  | Peak     | 47.56                         | V            | <± 4.72                      |
| 5.58557                  | Peak     | 48.24                         | H            | <± 4.72                      |

<< SEE GRAPHICS IN THE ATTACHED FILE: 51929RRF032 \_Graphics.7z >>

Verdict: PASS