# TEST REPORT

EMCLabs

100, Jangjateo-ro, Hobeop-myeon,
Icheon-si, Gyeonggi-do, 17396, Korea
Tel: 031-637-8898 / Fax: 0505-116-8895

1. Client
   - Name........................ : IDRO Co.,Ltd
   - Address...................... : 11, Jiphyeondong-ro, Sejong-si, Republic of Korea

2. Use of Report ................. : FCC Approval

3. Sample Description
   - Product Name : Handheld UHF RFID Reader
   - Model Name : IDRO900H-BT

4. Date of Receipt............... : 2024-11-15

5. Date of Test ................... : 2024-12-05 ~ 2024-12-27

6. Test Method ................... : FCC Part 15 Subpart C 15.247

7. Test Results ................... : Refer to the test results

※ The results shown in this test report are the results of testing the samples provided.
※ This test report is prepared according to the requirements of ISO / IEC 17025.

| | | |
|---|---|---|
| Affirmation | Tested by<br>Joonyoung, Jeon (Sign) | Technical Manager<br>Jong-Myoung, Shin (Sign) |

Jan 07, 2025

EMC Labs Co., Ltd. (stamp)



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# Contents





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# Version

| TEST REPORT NO. | DATE | DESCRIPTION |
|---|---|---|
| KR0140-RF2501-003 | Jan 07, 2025 | Initial Issue |
| | | |
| | | |



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# 1. Applicant & Manufacturer & Test Laboratory Information

## 1.1 Applicant Information

| | |
|---|---|
| Applicant | IDRO Co.,Ltd |
| Applicant Address | 11, Jiphyeondong-ro, Sejong-si, Republic of Korea |
| Contact Person | Khyung-Joo, Min |
| Telephone No. | +82-44-866-9560 |
| Fax No. | +82-44-866-9559 |
| E-mail | kjmin@idro.co.kr |

## 1.2. Manufacturer Information

| | |
|---|---|
| Manufacturer | IDRO Co.,Ltd |
| Manufacturer Address | 11, Jiphyeondong-ro, Sejong-si, Republic of Korea |

## 1.3 Test Laboratory Information

| | |
|---|---|
| Laboratory | EMC Labs Co., Ltd. |
| Laboratory Address | 100, Jangjateo-ro, Hobeop-myeon, Icheon-si, Gyeonggi-do, Republic of Korea |
| Contact Person | Jong-Myoung, Shin |
| Telephone No. | +82-31-637-8895 |
| Fax No. | +82-505-116-8895 |
| FCC Designation No. | KR0140 |
| FCC Registration No. | 580000 |
| IC Site Registration No. | 28751 |



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# 2. Equipment under Test(EUT) Information

## 2.1 General Information

| | |
|---|---|
| Product Name | Handheld UHF RFID Reader |
| Model Name | IDRO900H-BT |
| FCC ID | XVY-IDRO900H-BT |
| Rated Voltage | DC 3.63 V |

## 2.2 Additional Information

| | |
|---|---|
| Operating Frequency | 2 402 MHz ~ 2 480 MHz |
| Number of channel | 79 |
| Modulation Type | BDR Mode(GFSK), EDR Mode(Pi/4 DQPSK, 8DPSK) |
| Antenna Type | PCB Pattern Antenna |
| Antenna Gain | 1.33 dBi |
| Firmware Version | 1.0 |
| Hardware Version | 1.0 |
| Test software | CyBluetool 1.0 |

## 2.3 Test Frequency

| Test mode | Test Frequency (MHz) | | |
|---|---|---|---|
| | Low Frequency | Middle Frequency | High Frequency |
| GFSK | 2 402 | 2 441 | 2 480 |
| Pi/4 DQPSK | 2 402 | 2 441 | 2 480 |
| 8DPSK | 2 402 | 2 441 | 2 480 |

## 2.4 Worst-Case

| | |
|---|---|
| BDR | GFSK (DH5) |
| EDR | 8DPSK (3-DH5) |

Note: The power measurement has been conducted to determine the worst-case mode from all possible Combinations between available modulations, data rates.

## 2.5 Mode of operation during the test

- The EUT continuous transmission mode during the test with set at Low Channel, Middle Channel, and High Channel. To get a maximum radiated emission levels from the EUT, the EUT was moved throughout the XY, YZ, XZ planes.

## 2.6 Modifications of EUT

- None



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# 3. Test Summary

| Applied | FCC Rule | IC Rule | Test Items | Test Condition | Result |
|---|---|---|---|---|---|
| ☒ | 15.203 | - | Antenna Requirement | Conducted | C |
| ☐ | 15.247(a) | - | 20 dB Bandwidth | | NT Note2 |
| ☐ | - | RSS GEN (6.7) | Occupied Bandwidth (99%) | | NT Note2 |
| ☐ | 15.247(a) | RSS-247 (5.1) | Number of Hopping Frequencies | | NT Note2 |
| ☐ | 15.247(a) | RSS-247 (5.1) | Time of Occupancy (Dwell Time) | | NT Note2 |
| ☐ | 15.247(a) | RSS-247 (5.1) | Carrier Frequencies Separation | | NT Note2 |
| ☐ | 15.247(b) | RSS-247 (5.4) | Peak Output Power | | NT Note2 |
| ☐ | 15.247(d) | RSS-247 (5.5) | Conducted Spurious Emission | | NT Note2 |
| ☒ | 15.247(d)<br>15.205 &<br>15.209 | RSS-247 (5.5)<br>RSS-GEN<br>(8.9 & 8.10) | Radiated Spurious Emission | Radiated | C |
| ☒ | 15.207 | RSS-GEN (8.8) | Conducted Emissions | AC Line Conducted | C |

*Note 1*: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable
*Note 2*: This test item was tested on the certified RF Module.
[Certified RF Module Information]
- FCC ID: 2APDI-BCM-DC100-XS (Test Report No.: KES-RF1-22T0189-R1)

The sample was tested according to the following specification: ANSI C63.10:2013.
Compliance was determined by specification limits of the applicable standard according to customer requirements.



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## 4. Used equipment on test

| | Description | Manufacturer | Model Name | Serial Name | Next Cal. |
|---|---|---|---|---|---|
| □ | TEMP & HUMID CHAMBER | JFM | JFMA-001 | 20200929-01 | 2025.11.06 |
| □ | CONTROLLER | AMWON TECHNOLOGY | TEMI2500 | S7800VK191 0707 | 2025.11.06 |
| □ | PSA SERIES SPECTRUM ANALYZER | AGILENT | E4440A | MY45304057 | 2025.11.07 |
| ■ | MXG ANALOG SIGNAL GENERATOR | AGILENT | N5183A | MY50141890 | 2025.11.07 |
| □ | SYSTEM DC POWER SUPPLY | AGILENT | 6674A | MY53000118 | 2025.11.07 |
| □ | VECTOR SIGNAL GENERATOR | ROHDE & SCHWARZ | SMBV100A | 257524 | 2025.11.07 |
| □ | DIRECTIONAL COUPLER | AGILENT | 773D | 2839A01855 | 2025.11.07 |
| □ | ATTENUATOR | AGILENT | 8493C | 73193 | 2025.11.07 |
| □ | TERMINATION | HEWLETT PACKARD | 909D | 07492 | 2025.11.07 |
| □ | POWER DIVIDER | HEWLETT PACKARD | 11636A | 06916 | 2025.11.07 |
| □ | SLIDE-AC | DAEKWANG TECH | SV-1023 | NONE | 2025.11.07 |
| ■ | DIGITAL MULTIMETER | HUMANTECHSTORE | 15B+ | 50561541WS | 2025.11.07 |
| ■ | ATTENUATOR | ACE RF COMM | ATT SMA 20W 20dB 8GHz | A-0820.SM20.2 | 2025.04.04 |
| ■ | DC POWER SUPPLY | AGILENT | E3634A | MY40012120 | 2025.02.22 |
| □ | USB Peak Power Sensor | Anritsu | MA24408A | 12321 | 2025.11.08 |
| □ | High Pass Filter | WT Microwave INC. | WT-A3314-HS | WT22111804-1 | 2025.11.07 |
| ■ | High Pass Filter | WT Microwave INC. | WT-A1935-HS | WT22111804-2 | 2025.12.06 |
| □ | SPECTRUM ANALYZER | ROHDE & SCHWARZ | FSU26 | 200444 | 2025.02.22 |
| □ | ATTENUATOR | Mini-Circuits | BW-K3-2W44+ | 2318-1 | 2025.06.28 |
| □ | ATTENUATOR | Mini-Circuits | BW-K3-2W44+ | 2318-2 | 2025.06.28 |
| □ | Balanced Temperature and Humidity Control System | ESPEC CORP. | SH-241 | 92004650 | 2025.06.13 |
| ■ | ACTIVE LOOP ANTENNA | TESEQ | HLA 6121 | 55685 | 2026.12.20 |
| ■ | Biconilog ANT | Schwarzbeck | VULB 9160 | 3260 | 2026.04.01 |
| □ | Biconilog ANT | Schwarzbeck | VULB9168 | 902 | 2026.08.28 |
| ■ | Horn ANT | Schwarzbeck | BBHA9120D | 974 | 2025.11.29 |
| □ | Horn ANT | Schwarzbeck | BBHA9120D | 1497 | 2026.01.03 |
| ■ | Amplifier | TESTEK | TK-PA18H | 200104-L | 2025.03.14 |
| ■ | Horn ANT | Schwarzbeck | BBHA9170 | 01188 | 2025.03.19 |
| □ | Horn ANT | Schwarzbeck | BBHA9170 | 01189 | 2025.03.19 |
| ■ | AMPLIFIER | TESTEK | TK-PA1840H | 220105-L | 2025.03.14 |
| ■ | EMI TEST RECEIVER | ROHDE & SCHWARZ | ESW44 | 101952 | 2025.03.14 |
| ■ | Test Receiver | ROHDE & SCHWARZ | ESR7 | 101616 | 2025.06.27 |
| ■ | TWO LINE V-NETWORK | ROHDE & SCHWARZ | ENV216 | 102596 | 2025.08.20 |
| ■ | PULSE LIMITER | lignex1 | EPL-30 | NONE | 2026.01.04 |



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# 5. Antenna Requirement

According to §15.203 An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

According to §15.247(b)(4) e conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

## 5.1 Result

Complies
(The transmitter has a PCB Pattern Antenna. The directional peak gain of the antenna is 1.33 dBi.)



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# 6. TX Radiated Spurious Emission and Conducted Spurious Emission

## 6.1 Test Setup

Refer to the APPENDIX I.

## 6.2 Limit

According to §15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph(b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in section §15.209(a) is not required. In addition, radiated emission which in the restricted band, as define in section §15.205(a), must also comply the radiated emission limits specified in section §15.209(a) (see section §15.205(c))

According to § 15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional
radiator shall not exceed the field strength levels specified in the following table

| Frequency (MHz) | Limit (uV/m) | Measurement Distance (meter) |
|---|---|---|
| 0.009 ~ 0.490 | 2400/F (kHz) | 300 |
| 0.490 ~ 1705 | 24000/F (kHz) | 30 |
| 1705 ~ 30.0 | 30 | 30 |
| 30 ~ 88 | 100 ** | 3 |
| 88 ~ 216 | 150 ** | 3 |
| 216 ~ 960 | 200 ** | 3 |
| Above 960 | 500 | 3 |

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54 – 72 MHz, 76 – 88 MHz, 174 – 216 MHz or 470 – 806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.



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According to § 15.205(a) and (b), only spurious emissions are permitted in any of
The frequency bands listed below:

| MHz | MHz | MHz | GHz |
|---|---|---|---|
| 0.009 ~ 0.110 | 16.42 ~ 16.423 | 399.90 ~ 410 | 4.5 ~ 5.15 |
| 0.495 ~ 0.505 | 16.69475 ~ 16.69525 | 608 ~ 614 | 5.35 ~ 5.46 |
| 2.1735 ~ 2.1905 | 16.80425 ~ 16.80475 | 960 ~ 1240 | 7.25 ~ 7.75 |
| 4.125 ~ 4.128 | 25.5 ~ 25.67 | 1300 ~ 1427 | 8.025 ~ 8.5 |
| 4.17725 ~ 4.17775 | 37.5 ~ 38. | 1435 ~ 1626.5 | 9.0 ~ 9.2 |
| 4.20725 ~ 4.20775 | 25 73 ~ 74.6 | 1645.5 ~ 1646.5 | 9.3 ~ 9.5 |
| 4.17725 ~ 4.17775 | 74.8 ~ 75.2 | 1660 ~ 1710 | 10.6 ~ 12.7 |
| 6.215 ~ 6.218 | 108 ~ 121.94 | 1718.8 ~ 1722.2 | 13.25 ~ 13.4 |
| 6.26775 ~ 6.26825 | 149.9 ~ 150.05 | 2200 ~ 2300 | 14.47 ~ 14.5 |
| 6.31175 ~ 6.31225 | 156.52475 ~ 156.52525 | 2310 ~ 2390 | 15.35 ~ 16.2 |
| 8.291 ~ 8.294 | 156.7 ~ 156.9 | 2483.5 ~ 2500 | 17.7 ~ 21.4 |
| 8.362 ~ 8.366 | 162.0125 ~ 167.17 | 2690 ~ 2900 | 22.01 ~ 23.12 |
| 8.37625 ~ 8.38675 | 3345.8 ~ 3358 | 3260 ~ 3267 | 23.6 ~ 24.0 |
| 8.41425 ~ 8.41475 | 3600 ~ 4400 | 3332 ~ 3339 | 31.2 ~ 31.8 |
| 12.51975 ~ 12.52025 | 3345.8 ~ 3358 | 240 ~ 285 | 36.43 ~ 36.5 |
| 12.57675 ~ 12.57725 | 3600 ~ 4400 | 322 ~ 335.4 | Above 38.6 |
| 13.36 ~ 13.41 | | | |

The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.



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## 6.3 Test Procedure for Radiated Spurious Emission

1. The EUT is placed on a non-conductive table. For emission measurements at or below 1 GHz, the table height is 80 cm. For emission measurements above 1 GHz, the table height is 1.5 m. The table was rotated 360 degrees to determine the position of the highest radiation.

2. During performing radiated emission below 1 GHz, the EUT was set 3 meters away from the interference receiving antenna, which was mounted on the top of a variable-height antenna tower. During performing radiated emission above 1 GHz, the EUT was set 3.75 meter away from the interference-receiving antenna.

3. For measurements above 1 GHz absorbers are placed on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1 GHz, the absorbers are removed.

4. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

5. For each suspected emission, the EUT was arranged to its worst case and then
   The antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
   (The EUT was pre-tested with three axes (X, Y, Z) and the final test was performed at the worst case.)

6. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

7. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.



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Measurement Instrument Setting

1. Frequency Range: Below 1 GHz
   RBW = 100 or 120 kHz, VBW = 3 x RBW, Detector = Peak or Quasi Peak

2. Frequency Range: Above 1 GHz
   Peak Measurement
   RBW = 1 MHz, VBW = 3 MHz, Detector = Peak, Sweep time = Auto,
   Trace mode = Max Hold until the trace stabilizes

   Average Measurement
   RBW = 1MHz, VBW ≥ 1/T, Detector = Peak, Sweep Time = Auto,
   Trace Mode = Max Hold until the trace stabilizes

## 6.4 Test Procedure for Conducted Spurious Emission

1. The transmitter output was connected to the spectrum analyzer.

2. The reference level of the fundamental frequency was measured with the spectrum analyzer using
   RBW = 100 kHz, VBW = 300 kHz.

3. The conducted spurious emission was tested each ranges were set as below.
   Frequency range: 30 MHz ~ 26.5 GHz
   RBW = 100 kHz, VBW = 300 kHz, Sweep Time = Auto, Detector = Peak,
   Trace = Max Hold

   LIMIT LINE = 20 dB below of the reference level of above measurement procedure Step 2. (RBW = 100 kHz, VBW = 300 kHz)



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## 6.5 Test Result

### 9 kHz ~ 25 GHz Data (Modulation: GFSK)

- Low frequency

| Frequency | Reading | | Pol. | T.F (dB) | DCCF (dB) | Limits | | Result | | Margin | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (dBuV/m) | | | | | (dBuV/m) | | (dBuV/m) | | (dB) | |
| (MHz) | AV / Peak | | | | | AV / Peak | | AV / Peak | | AV / Peak | |
| 2 377.81 | N/A | 41.62 | V | 9.51 | -24.75 | 54.0 | 74.0 | 26.4 | 51.1 | 27.6 | 22.9 |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

- Middle frequency

| Frequency | Reading | | Pol. | T.F (dB) | DCCF (dB) | Limits | | Result | | Margin | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (dBuV/m) | | | | | (dBuV/m) | | (dBuV/m) | | (dB) | |
| (MHz) | AV / Peak | | | | | AV / Peak | | AV / Peak | | AV / Peak | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

- High frequency

| Frequency | Reading | | Pol. | T.F (dB) | DCCF (dB) | Limits | | Result | | Margin | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (dBuV/m) | | | | | (dBuV/m) | | (dBuV/m) | | (dB) | |
| (MHz) | AV / Peak | | | | | AV / Peak | | AV / Peak | | AV / Peak | |
| 2 483.51 | N/A | 37.21 | V | 9.25 | -24.75 | 54.0 | 74.0 | 21.7 | 46.5 | 32.3 | 27.5 |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Note 1: The radiated emissions were inverstigated 9 kHz to 25 GHz. And no other spurious and harmonic emissions were found above listed frequencies.
Note 2: DCCF(Duty Cycle Correction Factor)
- Time to cycle through all channels = Δt = T [ms] X 20 minimum hopping channels, where T = pulse width = 2.893 ms
- 100 ms / Δt [ms] = H -> Round up to next highest integer, to account for worst case, H' = 100 / ( 2.893 X 20 ) = 1.73 ≒ 2
- The Worst Case Dwell Time = T [ms] x H' = 2.893 ms X 2 = 5.79 ms
- DCCF = 20 x log(The Worst Case Dwell Time / 100 ms) dB = 20 x log( 5.79 / 100 ) = -24.75 dB

Note 3: Sample Calculation.
Margin = Limit - Result / Peak Result = Peak Reading + TF / Average Result = Peak Reading + TF + DCCF
TF = Ant factor + Cable Loss + Filter Loss - Amp Gain + Distance Factor
Distance Factor = 20log(applied distance/required distance) = 20log(3.75m/3m) = 1.94



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## 9 kHz ~ 25 GHz Data (Modulation: 8DPSK)

- Low frequency

| Frequency | Reading | | Pol. | T.F (dB) | DCCF (dB) | Limits | | Result | | Margin | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (dBuV/m) | | | | | (dBuV/m) | | (dBuV/m) | | (dB) | |
| (MHz) | AV / Peak | | | | | AV / Peak | | AV / Peak | | AV / Peak | |
| 2 377.89 | N/A | 39.93 | V | 9.51 | -24.73 | 54.0 | 74.0 | 24.7 | 49.4 | 29.3 | 24.6 |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

- Middle frequency

| Frequency | Reading | | Pol. | T.F (dB) | DCCF (dB) | Limits | | Result | | Margin | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (dBuV/m) | | | | | (dBuV/m) | | (dBuV/m) | | (dB) | |
| (MHz) | AV / Peak | | | | | AV / Peak | | AV / Peak | | AV / Peak | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

- High frequency

| Frequency | Reading | | Pol. | T.F (dB) | DCCF (dB) | Limits | | Result | | Margin | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (dBuV/m) | | | | | (dBuV/m) | | (dBuV/m) | | (dB) | |
| (MHz) | AV / Peak | | | | | AV / Peak | | AV / Peak | | AV / Peak | |
| 2 483.97 | N/A | 44.71 | V | 9.25 | -24.73 | 54.0 | 74.0 | 29.2 | 54.0 | 24.8 | 20.0 |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Note 1: The radiated emissions were inverstigated 9 kHz to 25 GHz.
Note 2: DCCF(Duty Cycle Correction Factor)
- Time to cycle through all channels = Δt = T [ms] X 20 minimum hopping channels, where T = pulse width = 2.900 ms
- 100 ms / Δt [ms] = H -> Round up to next highest integer, to account for worst case, H' = 100 / ( 2.900 X 20 ) = 1.72 ≒ 2
- The Worst Case Dwell Time = T [ms] x H' = 2.900 ms X 2 = 5.80ms
- DCCF = 20 x log(The Worst Case Dwell Time / 100 ms) dB = 20 x log( 5.80 / 100 ) = -24.73 dB

Note 3: Sample Calculation.
Margin = Limit - Result / Peak Result = Peak Reading + TF / Average Result = Peak Reading + TF + DCCF
TF = Ant factor + Cable Loss + Filter Loss - Amp Gain + Distance Factor
Distance Factor = 20log(applied distance/required distance) = 20log(3.75m/3m) = 1.94



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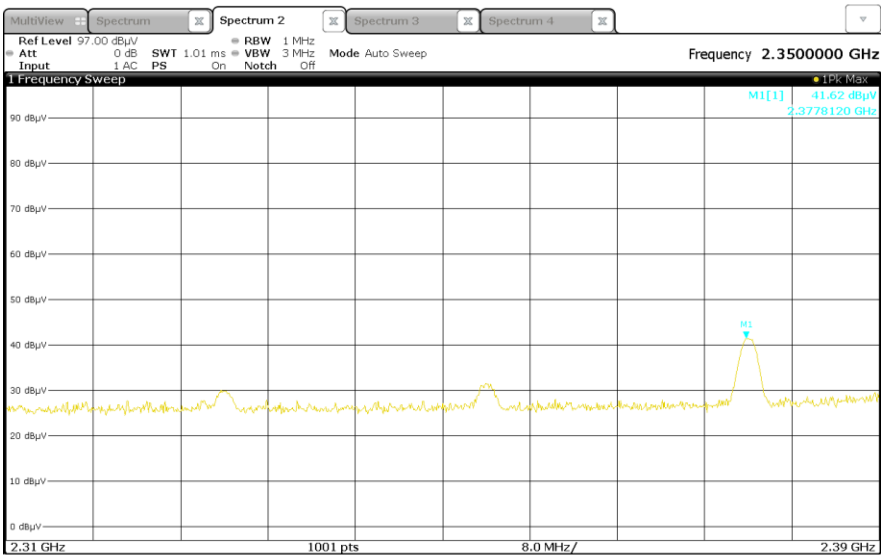
## 6.6 Test Plot for Radiated Spurious Emission

- GFSK _ Low frequency

| | Restricted Band – Peak |
|---|---|



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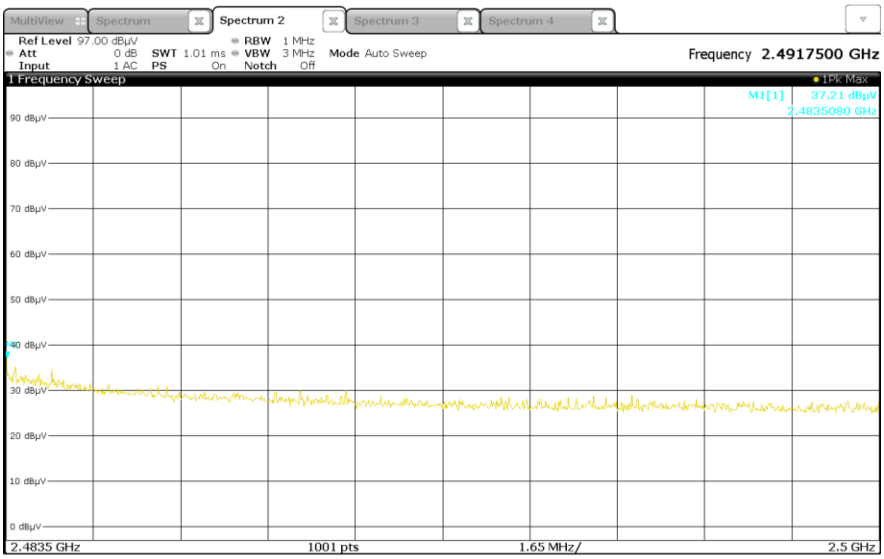
- GFSK _ High frequency

| | Restricted Band – Peak |
|---|---|



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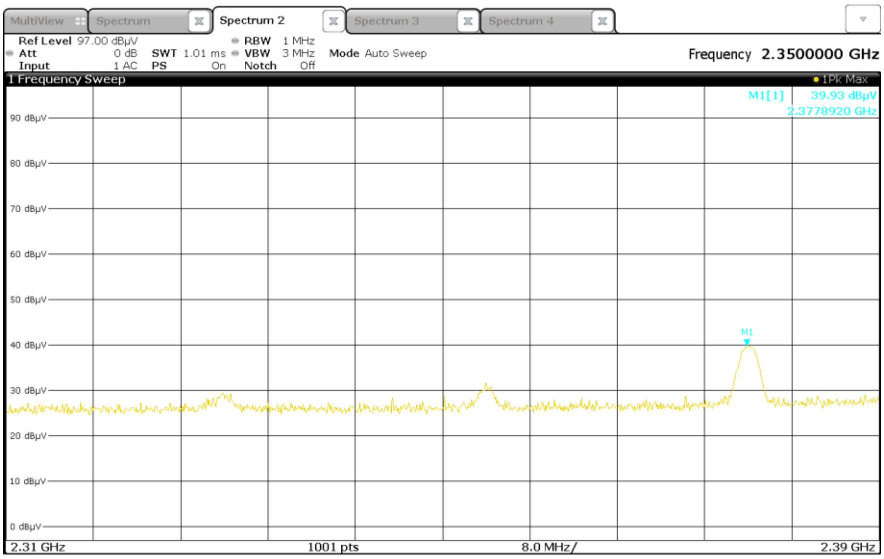
- 8DPSK _ Low frequency

| | Restricted Band – Peak |
|---|---|



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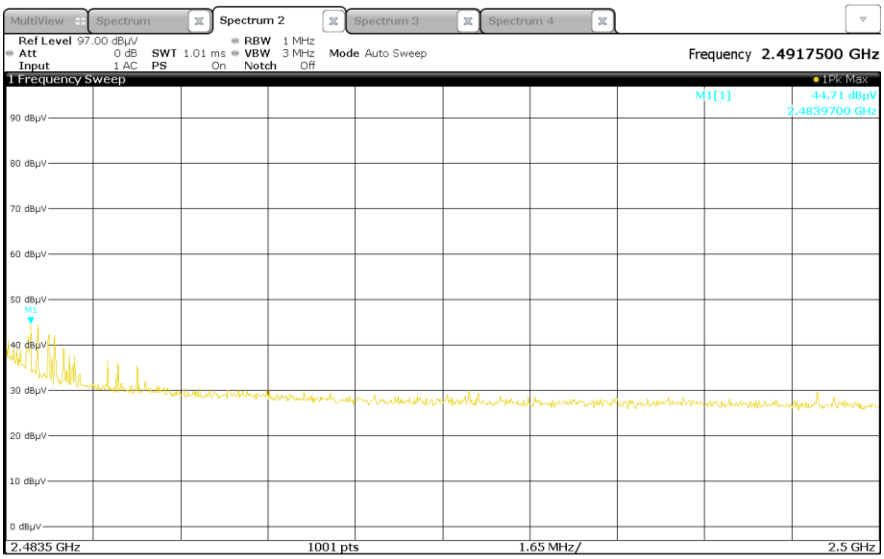
- 8DPSK _ High frequency

| | Restricted Band – Peak |
|---|---|



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# 7. Conducted Emission

## 7.1 Test Setup

See test photographs for the actual connections between EUT and support equipment.

## 7.2 Limit

According to §15.207(a) for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 uH/50 ohm line impedance stabilization network (LISN).
Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequency ranges.

| Frequency Range (MHz) | Conducted Limit (dBuV) | |
|---|---|---|
| | Quasi-Peak | Average |
| 0.15 ~ 0.5 | 66 to 56 * | 56 to 46 * |
| 0.5 ~ 5 | 56 | 46 |
| 5 ~ 30 | 60 | 50 |

* Decreases with the logarithm of the frequency

## 7.3 Test Procedure

Conducted emissions from the EUT were measured according to the ANSI C63.10.

1. The test procedure is performed in a 6.5 m × 3.5 m × 3.5 m (L × W × H) shielded room. The EUT along with its peripherals were placed on a 1.0 m (W) × 1.5 m (L) and 0.8 m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane.
2. The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room.
3. All peripherals were connected to the second LISN and the chassis ground also bounded to the horizontal ground plane of shielded room.
4. The excess power cable between the EUT and the LISN was bundled. The power cables of peripherals were unbundled. All connecting cables of EUT and peripherals were moved to find the maximum emission.



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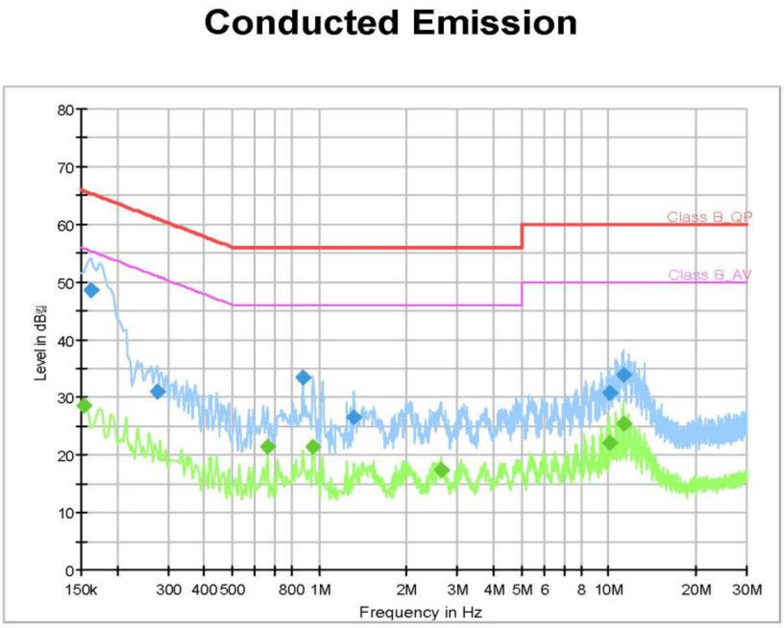
## 7.4 Test Result

- AC Line Conducted Emission (Graph)

IDRO900H-BT_BT_L1




**Final_Result**

| Frequency (MHz) | QuasiPeak (dBµV) | CAverage (dBµV) | Limit (dBµV) | Margin (dB) | Bandwidth (kHz) | Line | Corr. (dB) |
|---|---|---|---|---|---|---|---|
| 0.154 | --- | 28.51 | 55.78 | 27.27 | 9 | L1 | 19.6 |
| 0.162 | 48.51 | --- | 65.36 | 16.85 | 9 | L1 | 19.7 |
| 0.274 | 30.90 | --- | 61.00 | 30.10 | 9 | L1 | 19.6 |
| 0.660 | --- | 21.39 | 46.00 | 24.61 | 9 | L1 | 19.8 |
| 0.880 | 33.38 | --- | 56.00 | 22.62 | 9 | L1 | 19.8 |
| 0.950 | --- | 21.29 | 46.00 | 24.71 | 9 | L1 | 19.8 |
| 1.320 | 26.59 | --- | 56.00 | 29.41 | 9 | L1 | 19.7 |
| 2.630 | --- | 17.33 | 46.00 | 28.67 | 9 | L1 | 19.7 |
| 10.020 | 30.82 | --- | 60.00 | 29.18 | 9 | L1 | 19.9 |
| 10.020 | --- | 22.01 | 50.00 | 27.99 | 9 | L1 | 19.9 |
| 11.250 | --- | 25.36 | 50.00 | 24.64 | 9 | L1 | 20.0 |
| 11.250 | 33.93 | --- | 60.00 | 26.07 | 9 | L1 | 20.0 |



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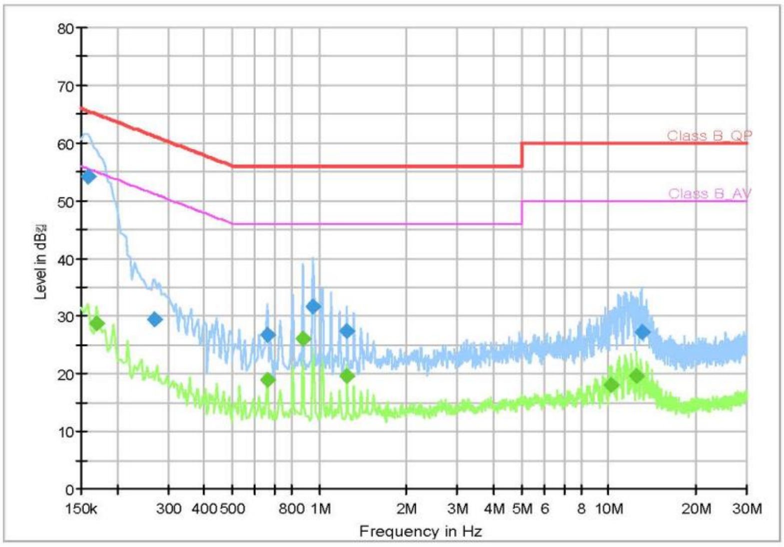
IDRO900H-BT_BT_N

## Conducted Emission




### Final_Result

| Frequency (MHz) | QuasiPeak (dBµV) | CAverage (dBµV) | Limit (dBµV) | Margin (dB) | Bandwidth (kHz) | Line | Corr. (dB) |
|---|---|---|---|---|---|---|---|
| 0.158 | 54.18 | --- | 65.57 | 11.39 | 9 | N | 19.6 |
| 0.170 | --- | 28.76 | 54.96 | 26.20 | 9 | N | 19.7 |
| 0.270 | 29.44 | --- | 61.12 | 31.68 | 9 | N | 19.5 |
| 0.660 | --- | 19.05 | 46.00 | 26.95 | 9 | N | 19.7 |
| 0.660 | 26.70 | --- | 56.00 | 29.30 | 9 | N | 19.7 |
| 0.880 | --- | 26.10 | 46.00 | 19.90 | 9 | N | 19.7 |
| 0.950 | 31.61 | --- | 56.00 | 24.39 | 9 | N | 19.7 |
| 1.250 | --- | 19.62 | 46.00 | 26.38 | 9 | N | 19.7 |
| 1.250 | 27.42 | --- | 56.00 | 28.58 | 9 | N | 19.7 |
| 10.210 | --- | 18.08 | 50.00 | 31.92 | 9 | N | 19.9 |
| 12.440 | --- | 19.51 | 50.00 | 30.49 | 9 | N | 19.9 |
| 13.060 | 27.14 | --- | 60.00 | 32.86 | 9 | N | 19.9 |



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# APPENDIX I

## TEST SETUP



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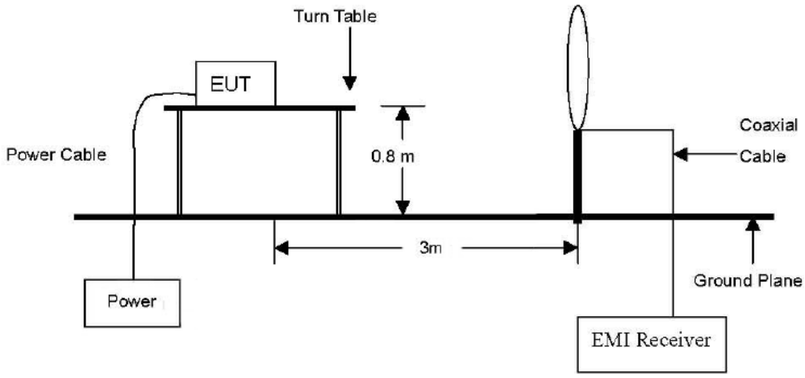
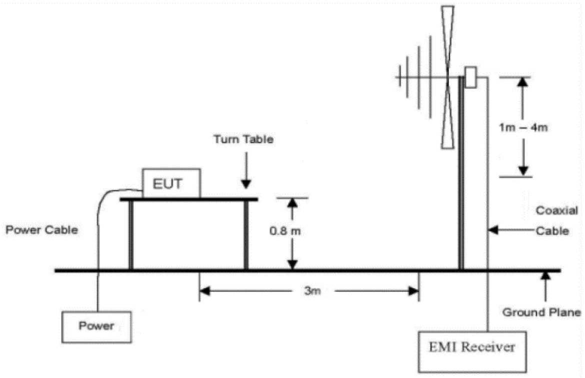
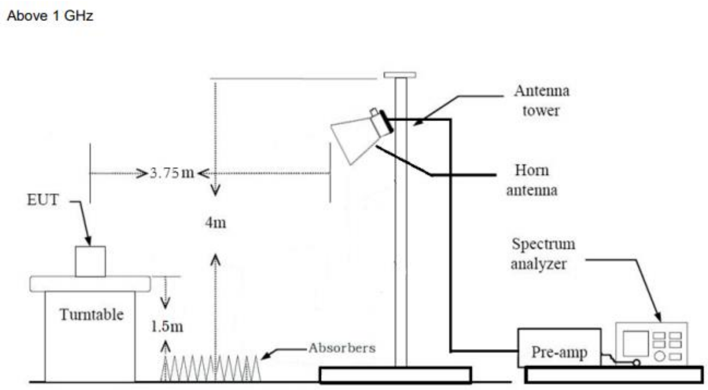
- Radiated Measurement

| | |
|---|---|
| below 30 MHz |  |
| below 1 GHz |  |
| above 1 GHz |  |



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# APPENDIX II

## UNCERTAINTY



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| Measurement Item | Expanded Uncertainty<br>U = *k*Uc (*k*=2) |
|---|---|
| Conducted RF power | 0.34 dB |
| Conducted Spurious Emissions | 0.34 dB |
| Radiated Spurious Emissions | 5.82 dB |
| Conducted Emissions | 2.00 dB |



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