



FCC 47 CFR PART 15 SUBPART C AND ANSI C63.10: 2013

TEST REPORT

For

DJ MIXER

Model: DJM-S7

Brand: Pioneer DJ

Issued for

AlphaTheta Corporation

6F, Yokohama i-Mark place, 4-4-5 Minatomirai, Nishi-ku Yokohama,Kanagawa, 220-0012, Japan

Issued by

Compliance Certification Services Inc. Tainan Lab. No.8, Jiucengling, Xinhua Dist., Tainan City, Taiwan Issued Date: November 10, 2020

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REVISION HISTORY

| Rev. | Issue Date | Revisions | Effect Page | Revised By |
|------|-------------------|-------------------------------|----------------|------------|
| 00 | October 29, 2020 | Initial Issue | ALL | Polly Wang |
| 01 | November 10, 2020 | See the following note rev.01 | P.5 | Polly Wang |
| | | | | |
| | | | | |

Note:

Rev.00Issue Date:October 29, 2020Original report.Rev.01Issue Date:November 10, 2020

Revised the typo.



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1. TEST REPORT CERTIFICATION

| Applicant | licant : AlphaTheta Corporation 6F, Yokohama i-Mark place, 4-4-5 Mi Yokohama,Kanagawa, 220-0012, Jap | |
|----------------------|--|---|
| Manufacturer | : | AlphaTheta Corporation 6F, Yokohama i-Mark place, 4-4-5 Minatomirai, Nishi-ku Yokohama,Kanagawa, 220-0012, Japan |
| Equipment Under Test | : | DJ MIXER |
| Model Number | : | DJM-S7 |
| Brand Name | : | Pioneer DJ |
| Date of Test | : | August 03, 2020 ~ September 10, 2020 |

| APPLICABLE STANDARD | | | | |
|--|-------------------------|--|--|--|
| STANDARD TEST RESULT | | | | |
| FCC Part 15 Subpart C AND ANSI C63.10: 2013 | No non-compliance noted | | | |

Statements of Conformity

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

Approved by:

Eric Huang Section Manager



2. TEST RESULT SUMMARY

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| FCC Standard Section | Report Section | Test Item | Result |
|----------------------|----------------|-------------------------------|--------|
| 15.247(a) | 9.1 | 6dB BANDWIDTH | Pass |
| 15.247(b) | 9.2 | MAXIMUM PEAK OUTPUT POWER | Pass |
| - | 9.3 | DUTY CYCLE | - |
| 15.247(e) | 9.4 | POWER SPECTRAL DENSITY | Pass |
| 15.247(d) | 9.5 | CONDUCTED SPURIOUS EMISSION | Pass |
| 15.209(a) | 9.6 | RADIATED EMISSIONS | Pass |
| 15.207(a) | 9.7 | POWERLINE CONDUCTED EMISSIONS | Pass |
| 15.203 | 10 | ANTENNA REQUIREMENT | Pass |



3. EUT DESCRIPTION

3.1 DESCRIPTION OF EUT & POWER

| Product Name | DJ MIXER | | |
|---------------------------|--|--|--|
| | | | |
| Model Number | DJM-S7 | | |
| Brand Name | Pioneer DJ | | |
| Received Date | July 07, 2020 | | |
| Reported Date | September 29, 2020 | | |
| Operating Frequency Range | GFSK(4.0) Mode:2402MHz~2480MHz | | |
| Transmit Power | GFSK(4.0) Mode:5.35dBm (3.428mW) | | |
| Channel Spacing | GFSK(4.0) Mode:2 MHz | | |
| Channel Number | GFSK(4.0) Mode:79 Channels | | |
| Transmit Data Rate | GFSK(4.0) Mode:3 Mbps | | |
| Type of Modulation | GFSK、π/4DQPSK、8DPSK | | |
| Antenna Type | Manufacturer: Sunitec Type: PCB Antenna Model: EJ058 Gain: -5.0 dBi | | |
| Power Source | AC 100-240V, 50/60Hz | | |
| Firmware Version | V1.0 | | |
| Hardware Version | V1.0 | | |
| Software Version | V1.0 | | |

REMARK: 1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.

 This submittal(s) (test report) is intended for FCC ID: <u>2AM73-DJMS7</u> filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.

3. For more details, please refer to the user manual.



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4. DESCRIPTION OF TEST MODES

The EUT is a DJ MIXER.

The RF Chip is manufactured by QUALCOMM

The antenna peak gain -5.0 dBi (highest gain) were chosen for full testing.

GFSK(4.0) mode

The EUT had been tested under operating condition.

There are three channels have been tested as following:

| Channel | Frequency (MHz) |
|---------|-----------------|
| Low | 2402 |
| Middle | 2442 |
| High | 2480 |

GFSK(4.0) mode: 1Mbps long data rates (worst case) were chosen for full testing.



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5. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10 and FCC CFR 47 15.207, 15.209 and 15.247 and KdB 558074.

6. FACILITIES AND ACCREDITATIONS

6.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

No.8, Jiucengling, Xinhua Dist., Tainan City 712, Taiwan (R.O.C.)

The sites are constructed in conformance with the requirements of ANSI C63.7:1992, ANSI C63.10: 2013 and CISPR Publication 22.

6.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with preselectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6.3 LABORATORY ACCREDITATIONS LISTINGS

The test facilities used to perform radiated and conducted emissions tests are accredited by Taiwan Accreditation Foundation for the specific scope of accreditation under Lab Code: 1109 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by TAF or any agency of the Government. In addition, the test facilities are listed with Federal Communications Commission (registration no: TW1109).



6.4 TABLE OF ACCREDITATIONS AND LISTINGS

Our laboratories are accredited and approved by the following accreditation body according to ISO/IEC 17025.

Taiwan TAF

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

| Canada | Industry Canada (ISED#: 2324H) |
|---------|--------------------------------|
| Germany | TUV NORD |
| Taiwan | BSMI |
| USA | FCC |
| Japan | VCCI |

Copies of granted accreditation certificates are available for downloading from our web site, <u>http://www.ccsrf.com</u>



6.5 MEASUREMENT EQUIPMENT USED

For §9.7

| Chamber 966 Room (Radiation Test) | | | | | | |
|-------------------------------------|-------------------|--------------------|------------------|-----------------|------------|--|
| Name of Equipment | Model | Serial Number | Calibration Date | Calibration Due | | |
| Active Loop Antenna | ETS-LINDREN | 6502 | 8905-2356 | 08/02/2019 | 08/01/2021 | |
| Bi-Log Antenna With 6dB Att | Sunol & MCL | JB1 & BW-N6W5 | A070506-2 & 0505 | 08/26/2019 | 08/25/2020 | |
| Cable | Suhner | SUCOFLEX104 PEA | 20520/4264&06 | | 01/29/2021 | |
| Double Ridged Guide Horn Antenna | ETS-LINDGREN | 3116 | 00078900 | 03/26/2020 | 03/25/2021 | |
| EMI Test Receiver | R&S | ESCI 7 | 100856 | 06/30/2020 | 06/29/2021 | |
| EXA Spectrum Analyzer | KEYSIGHT | N9010A | MY54430216 | 07/20/2020 | 07/19/2021 | |
| Horn Antenna | Com-Power | AH-118 | 071032 | 04/29/2020 | 04/28/2021 | |
| Pre-Amplifier | EMCI | EMC012645 | 980098 | 01/30/2020 | 01/29/2021 | |
| Pre-Amplifier | HP | 8447F | 2443A01683 | 01/22/2020 | 01/21/2021 | |
| Pre-Amplifier | Com-Power | PAM-840A | 461378 | 07/20/2020 | 07/19/2021 | |
| Type N coaxial cable | Suhner | CHA9513 | 6 | 01/21/2020 | 01/20/2021 | |
| Notch Filter | MICRO-TRONIC S | BRM50702-01 | 018 | N.C.R | N.C.R | |

For §9.1~9.6

| Chamber 966 Room (Conducted Test) | | | | | | |
|-----------------------------------|----------|---------------|------------------|-----------------|------------|--|
| Name of Manufacturer Model | | Serial Number | Calibration Date | Calibration Due | | |
| EXA Spectrum Analyzer | KEYSIGHT | N9010A | MY54430216 | 07/20/2020 | 07/19/2021 | |
| Power Meter | Anritsu | ML2487A | 6K00003888 | 11/20/2019 | 05/19/2021 | |
| Power Sensor | Anritsu | MA2491A | 033265 | 11/20/2019 | 05/19/2021 | |
| SMA Cable + 10dB Attenuator | CCS | SMA+10dB ATT | SMA/10dB | 01/30/2020 | 01/29/2021 | |

For §9.8

| Conducted Emission room #1 | | | | | | |
|--|-------------|----------------------|--------------|------------|-----------------|--|
| Name of Equipment Manufacturer Model Serial Number Calibration Date Calibration | | | | | Calibration Due | |
| BNC Coaxial Cable | CCS | BNC50 | 11 | 01/22/2020 | 01/21/2021 | |
| EMI Test Receiver | R&S | ESCS 30 | 100348 | 02/20/2020 | 02/19/2021 | |
| LISN | SCHWARZBECK | NNLK8130 | 8130124 | 01/17/2020 | 01/16/2021 | |
| LISN | FCC | FCC-LISN-50-32- 2 | 08009 | 06/30/2020 | 06/29/2021 | |
| Pulse Limiter | R&S | ESH3-Z2 | 100116 | 01/22/2020 | 01/21/2021 | |
| Test S/W | | | e3(6.101222) | | | |

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7. CALIBRATION AND UNCERTAINTY

7.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

7.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER | UNCERTAINTY |
|---|-------------|
| Radiated Emission, 30 to 200 MHz Test Site : CB966 | ±3.1dB |
| Radiated Emission, 200 to 1000 MHz Test Site : CB966 | ±2.7dB |
| Radiated Emission, 1 to 6 GHz | ± 2.7dB |
| Radiated Emission, 6 to 18 GHz | ± 2.7dB |
| Radiated Emission, 18 to 26.5 GHz | ± 2.7dB |
| Radiated Emission, 26 to 40 GHz | ± 3.7dB |
| Power Line Conducted Emission | ± 2.0dB |

This measurement uncertainty is confidence of approximately 95%, k=2

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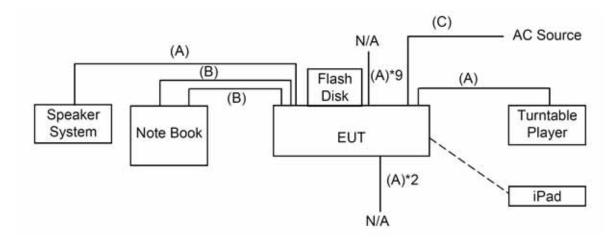
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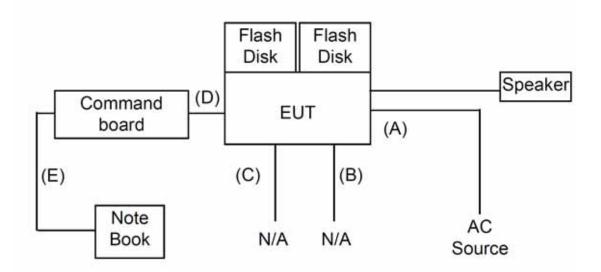
8. SETUP OF EQUIPMENT UNDER TEST

8.1 SETUP CONFIGURATION OF EUT

EMI



RF





8.2 SUPPORT EQUIPMENT

For EMI test

| No. | Product | Manufacturer | Model No. | Certify No. | Signal cable |
|-----|------------------|--------------|------------------|----------------|--------------------------|
| 1 | iPad | Apple | A1219 | DOC | N/A |
| 2 | Flash Disk | Transcend | Jet Flash790 | DOC | N/A |
| 3 | Turntable Player | HANPIN | DP-300F | DOC | Audio cable, shd, 1.6m |
| 4 | MIXER | HANPIN | HP-MUI | N/A | N/A |
| 5 | Speaker System | T.C.SATR | TCS2285 | DOC | Audio cable, unshd, 1.4m |
| 6 | Note Book | TOSHIBA | PORTEGE R30-A | DOC | Power cable, unshd, 1.8m |

| No. | Signal cable description | | |
|-----|--------------------------|-------------------------|--|
| А | Audio | Shielded, 1.0m 13 pcs. | |
| В | USB | Shielded, 1.6m 3 pcs. | |
| С | AC cable | Unshielded, 1.6m 1 pcs. | |

For RF test

| No. | Product | Manufacturer | Model No. | Certify No. | Signal cable |
|-----|----------------|--------------|--------------|----------------|--------------------------|
| 1 | Note Book | Acer | AS 3830TG | DOC | Power cable, unshd, 1.6m |
| 2 | Flask Disk | Transcend | Jet Flash790 | DOC | N/A |
| 3 | Speaker System | T.C.SATR | TCS2285 | DOC | Audio cable, unshd, 1.4m |

| No. | Signal cable description | | |
|-----|--------------------------|-----------------------------------|--|
| А | Power | Unshielded, 1.8m 1 pcs. | |
| В | Audio | Unshielded, 1.0m 12 pcs. | |
| С | USB | Shielded, 1.5m 2 pcs. | |
| D | Command | Unshielded, 0.5m 1 pcs. | |
| Е | USB | Shielded, 1.2m 1 pcs with 1 core. | |

Note:

- 1) All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- 2) Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
- 3) shd. = shielded; unshd. = unshielded

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8.3 EUT OPERATING CONDITION

RF Setup

- 1. Set up all computers like the setup diagram.
- 2. The "CSR BlueSuite 2.6.4", "Blue Test 3" software was used for testing.
- 3. Choose Transport "SPI" and Port "USB SPI (1001914)".

TX Mode:

GFSK(DH1):

CFG PKT > Packet Type : 4 , Packet Type : 27

TXDATA1 > LO Freq : 2402 (2402,2441,2480) , Power : 255,50 (255,45)

GFSK(DH3):

CFG PKT > Packet Type : 11 , Packet Type : 183

TXDATA1 > LO Freq : 2402 (2402,2441,2480) , Power : 255,50 (255,45)

GFSK(DH5):

CFG PKT > Packet Type : 15 , Packet Type : 339 TXDATA1 > LO Freq : 2402 (2402,2441,2480) , Power : 255,50 (255,45)

8-DPSK(3DH1):

CFG PKT > Packet Type : 24 , Packet Type : 83 TXDATA1 > LO Freq : 2402 (2402,2441,2480) , Power : 255,50

8-DPSK(3DH3):

CFG PKT > Packet Type : 27 , Packet Type : 552 TXDATA1 > LO Freq : 2402 (2402,2441,2480) , Power : 255,50

8-DPSK(3DH5):

CFG PKT > Packet Type : 31 , Packet Type : 1021 TXDATA1 > LO Freq : 2402 (2402,2441,2480) , Power : 255,50

DSSS:

BLE TEST TX > Channel :0 (0,20,39) Length : 37 Bit pattern : 0

RX Mode:

GFSK , 8-DPSK: RXDATA1 DSSS: BLE TEST RX

4. All of the function are under run.

5 .Start test.



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9. APPLICABLE LIMITS AND TEST RESULTS

9.1 6dB BANDWIDTH

<u>LIMIT</u>

§ 15.207(a) (2) For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz

TEST SETUP



TEST PROCEDURE

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) \geq 3 RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.

g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



TEST RESULTS

No non-compliance noted.

| Model Name | DJM-S7 | Test By | Ted Huang |
|-----------------|-------------|-----------|------------|
| Temp & Humidity | 27.5°C, 59% | Test Date | 2020/08/04 |

GFSK(4.0) mode

| Channel | Channel Frequency (MHz) | 6dB Bandwidth (kHz) | Minimum Limit (kHz) | Pass / Fail |
|---------|-------------------------------|------------------------|------------------------|-------------|
| Low | 2402 | 702 | 500 | PASS |
| Middle | 2442 | 699 | 500 | PASS |
| High | 2480 | 698 | 500 | PASS |

NOTE : 1. At finial test to get the worst-case emission at1Mbps long.

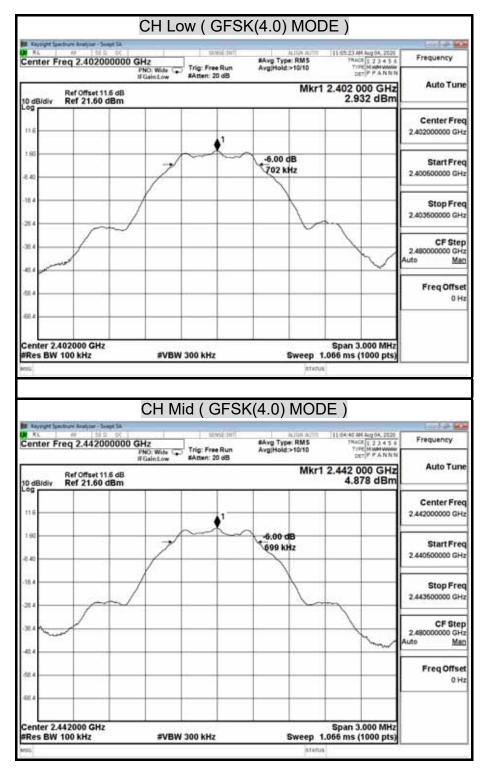
2. The cable assembly insertion loss of 11.1dB (including 10 dB pad and 1.1 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.

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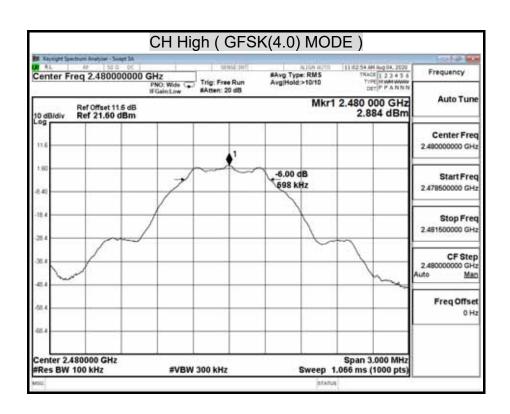
6dB BANDWIDTH (GFSK(4.0) MODE)





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9.2 MAXIMUM PEAK OUTPUT POWER

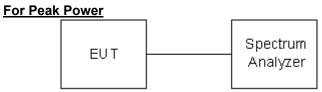
<u>LIMIT</u>

§ 15.247(b) The maximum peak output power of the intentional radiator shall not exceed the following :

§ 15.247(b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands : 1 watt.

§ 15.247(b) (4) Except as shown in paragraphs (c) of this section , if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (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.

TEST SETUP



For Average Power





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TEST PROCEDURE

The tests were performed in accordance with KdB 558074 9.1.1

9.2.1 Measurement Procedure PK2:

- a) Set the RBW \geq DTS bandwidth.
- b) Set VBW \geq 3 RBW.
- c) Set span \ge 3 x RBW
- d) Sweep time = auto couple.
- e) Detector = peak.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use peak marker function to determine the peak amplitude level.

Average Power

Connect the EUT to power meter, set the center frequency of the power meter to the channel center frequency.



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TEST RESULTS

No non-compliance noted.

| Model Name | DJM-S7 | Test By | Ted Huang |
|-----------------|-------------|-----------|------------|
| Temp & Humidity | 27.5°C, 59% | Test Date | 2020/08/04 |

GFSK(4.0) mode

| Channel | Channel Frequency (MHz) | Peak Power (dBm) | Peak Power Limit (dBm) | Pass / Fail |
|---------|-------------------------------|---------------------|---------------------------|----------------|
| Low | 2402 | 3.24 | 30.00 | PASS |
| Middle | 2442 | 5.35 | 30.00 | PASS |
| High | 2480 | 3.38 | 30.00 | PASS |

NOTE : 1. At finial test to get the worst-case emission at 1Mbps long.

2. The cable assembly insertion loss of 11.1dB (including 10 dB pad and 1.1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.



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Average Power Data

| Model Name | DJM-S7 | Test By | Ted Huang |
|-----------------|-------------|-----------|------------|
| Temp & Humidity | 27.5°C, 59% | Test Date | 2020/08/04 |

GFSK(4.0) mode

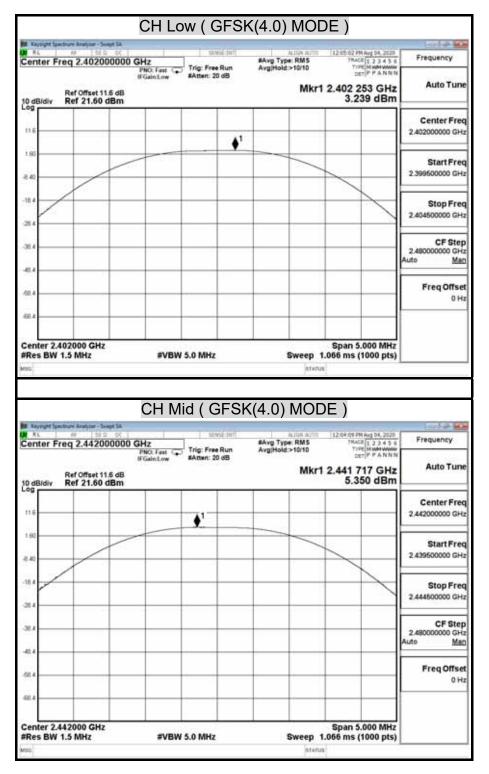
| Channel | Channel Frequency (MHz) | Average Power (dBm) |
|---------|-------------------------------|------------------------|
| Low | 2402 | 2.81 |
| Middle | 2442 | 4.92 |
| High | 2480 | 2.96 |



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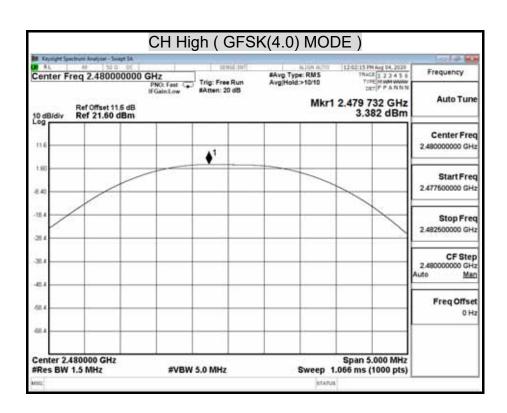
MAXIMUM PEAK OUTPUT POWER (GFSK(4.0) MODE)





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9.3 DUTY CYCLE

<u>LIMIT</u>

Nil (No dedicated limit specified in the Rules)

TEST SETUP



TEST PROCEDURE

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3. The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set RBW \geq OBW if possible; otherwise, set RBW to the largest available value. Set VBW \geq RBW. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span measuring duty cycle shall not be used if T \leq 16.7 microseconds.)

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TEST RESULTS

No non-compliance noted.

| Model Name | DJM-S7 | Test By | Ted Huang |
|-----------------|-------------|-----------|------------|
| Temp & Humidity | 27.5°C, 59% | Test Date | 2020/08/04 |

GFSK(4.0) Mode

| | us | Times | Ton | Total Ton time(ms) |
|------|---------|-------|-----|--------------------|
| Ton1 | 400.000 | 1 | 400 | |
| Ton2 | | 0 | 0 | |
| Ton3 | | | 0 | 0.4 |
| Тр | | | | 0.628 |

| Ton | 0.4 |
|--------------|-------|
| Tp(Ton+Toff) | 0.628 |
| Duty Cycle | 0.637 |
| Duty Factor | 1.959 |



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TEST PLOT

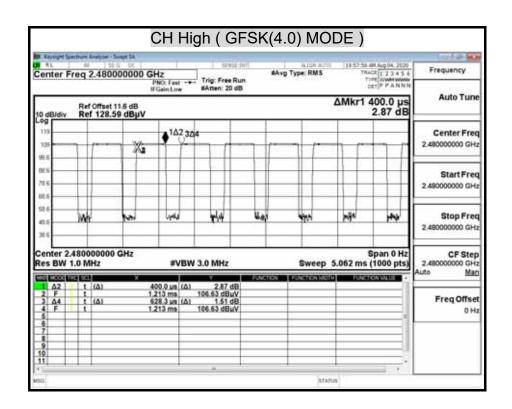
Duty Cycle

| | CH | Low (GFS | SK(4.0) | MODI | E) | |
|--|---|---------------------------------|--------------|-----------------|--|--|
| AL 0 10 11 enter Freq 2.4020 | 000000 GHz PNC Fas | Trig: Free Run | sAvg Type | RMS | 18:54 50 AM Aug DA TRACE 1 2 3 TIPE Week DET P P A | 45.6 Prequency |
| Ref Offset 1 0 dBidiv Ref 128.5 | | w #Atten: 20 dB | | Δ | Mkr1 400.0 4.39 | us Auto Tune |
| -09 119 109 98.5 | 1∆2 3∆4 | | - | | - | Center Free 2.402000000 GH |
| 90.6 | | | | | | Start Free 2.402000000 GH |
| 536 43.5 70 ¥\$4 30.6 | eug) | -ten Han | Ph. | HW | 40M | Stop Free 2.40200000 GH |
| Center 2.402000000 Res BW 1.0 MHz | | /BW 3.0 MHz | s | weep 5.0 | Span 0 62 ms (1000 | |
| | 400.0 | (Δ) 4.39 dB | MARKAN MARKA | TION MOTH | IUNCION WILL | Auto Mar |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 400.0 µs 762.3 µs 628.3 µs 762.2 µs | 105.48 dBuV (Δ) 1.98 dB | | | | Freq Offset 0 Hz |
| 7 8 9 10 | | | | | | |
| 11 | | | 1 | STATUS | 20 | * |
| | | | | | | |
| | CH | Mid (GFS | K(4.0) I | MODE | Ξ) | |
| Keynight Spectrum Analyser - S R.L. 89 53 | a oc | Mid (GFS | | JISA W/TID | 18:56:38 AH Aug 04. | The Francisco |
| | 1000000 GHz PNO: Fast | Sava der | | JISA W/TID | 18:56:31 AH Aug DA | 2020 Frequency |
| Center Freq 2.4420 Ref Offset 1 0 dB/div Ref 128.5 | IN CONTRACTOR INCOMPANY IF Gain Loo II.6 dB | Sava der | | RMS | 18:56:38 AH Aug 04. | Prequency A 3 6 Frequency A 3 6 Frequency A 3 6 Auto Tune |
| Ref Offset 1 0 dBidiv Ref 128.5 | 000000 GHz INO: Fas IFGain.Lo 11.5 dB 9 dBµV 102 304 | Sava der | | RMS | 12:56:30 AM Aug 04, THACE 1 2 3 TOPE OF P A DET P P A | Prequency A 3 6 Frequency A 3 6 Frequency A 3 6 Auto Tune |
| Ref Offset 1 0 dBidiv Ref 128.5 | 000000 GHz INO: Fas IFGain.Lo 11.5 dB 9 dBµV 102 304 | Sava der | | RMS | 12:56:30 AM Aug 04, THACE 1 2 3 TOPE OF P A DET P P A | 2000 4 3 3 N IN N Frequency Jas Auto Tune Jas Auto Tune Center Freq 2.442000000 GHz Start Freq Start Freq |
| %L #9 50 Center Freq 2.4420 Ref Offset 1 100 00 dB/div Ref 0ffset 1 100 100 100 100 100 100 | 000000 GHz INO: Fas IFGain.Lo 11.5 dB 9 dBµV 102 304 | Sava der | | RMS | 12:56:30 AM Aug 04, THACE 1 2 3 TOPE OF P A DET P P A | Auto Tune |
| % # % | 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 | Trig: Free Run Matten: 20 dB | aAvg Type: | IDE W.M. RMS | Mkr1 400.0 6.57 | 2000 A 3.6 NHH Frequency Jase Auto Tune JB Auto Tune Center Frequency 2.44200000 GH Start Frequency Start Frequency Start Frequency 2.44200000 GH Start Frequency CF Step DHz CF Step Auto CF Step Auto Mato |
| NL # ISE Center Freq 2.4420 Ref Offset 1 0 dB/div Ref Offset 1 0 dB/div Ref Offset 1 0 dB/div Ref 128.5 0 g | 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 | /BW 3.0 MHz | aAvg Type: | IDE W.M. RMS | Mkr1 400.0 6.57 | Prequency Auto Tune UB Auto Tune Center Freq 2.442000000 GH Start Freq 2.44200000 GH Stop Freq 2.44200000 GH CF Step Auto Mar Freq Offse |
| N. III IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII | 000000 GHz PNO: Fee IFGainLo 115 dB 9 dBµV 112 304 115 dB 9 dBµV 112 304 115 dB 9 dBµV 112 304 115 dB 9 dBµV 102 304 102 304 102 304 102 304 102 500 105 | | aAvg Type: | IDE W.M. RMS | Mkr1 400.0 6.57 | 2000 Frequency 4 3 4 Auto Tune 4 3 4 Auto Tune 4 3 4 Center Frequency 4 3 4 Center Frequency 2 442000000 GH: Start Frequency 2 442000000 GH: Start Frequency 2 442000000 GH: CF Step PHz CF Step Auto CF Step Auto Mate |



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9.4 POWER SPECTRAL DENSITY

<u>LIMIT</u>

§ 15.247(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST SETUP



TEST PROCEDURE

The tests were performed in accordance with 558074 D01 15.247 Meas Guidance v05

10.2 Method PKPSD (peak PSD):

- 1. Set analyzer center frequency to DTS channel center frequency.
- 2. Set the span to 1.5 times the DTS bandwidth.
- 3. Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- 4. Set the VBW \geq 3 RBW.
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the maximum amplitude level within the RBW.
- 10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.



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No non-compliance noted.

| Model Name | DJM-S7 | Test By | Ted Huang |
|-----------------|-------------|-----------|------------|
| Temp & Humidity | 27.5°C, 59% | Test Date | 2020/08/04 |

GFSK(4.0) mode

| Channel | Frequency (MHz) | PPSD/3kHz (dBm) | Limit (dBm) | Margin (dB) | Result |
|---------|--------------------|--------------------|----------------|----------------|--------|
| Low | 2402 | -12.15 | 8.00 | -20.15 | PASS |
| Middle | 2442 | -10.10 | 8.00 | -18.10 | PASS |
| High | 2480 | -12.15 | 8.00 | -20.15 | PASS |

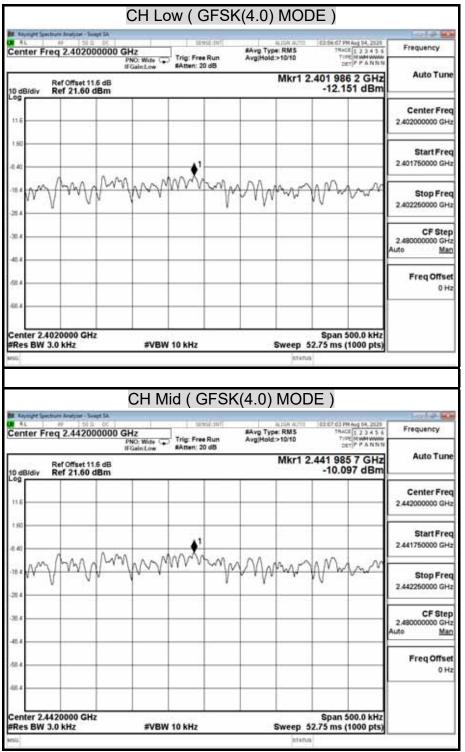
NOTE : 1. At finial test to get the worst-case emission at 1Mbps long.

2. The cable assembly insertion loss of 11.1dB (including 10 dB pad and 1.1 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.



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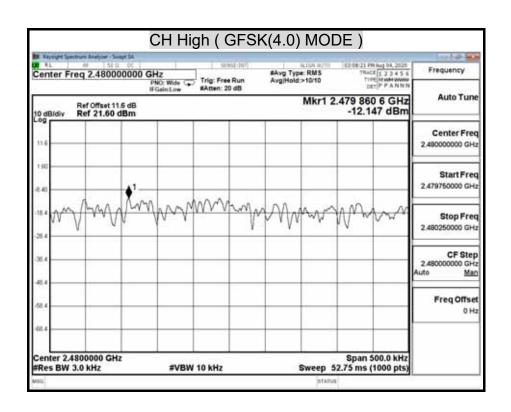
POWER SPECTRAL DENSITY (GFSK(4.0) MODE)





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9.5 CONDUCTED SPURIOUS EMISSION

LIMITS

§ 15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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 and that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, 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)).

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

TEST RESULTS

No non-compliance noted.



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TEST DATA

| Model Name | DJM-S7 | Test By | Ted Huang |
|-----------------|-------------|-----------|------------|
| Temp & Humidity | 27.5°C, 59% | Test Date | 2020/08/04 |

OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

| Frequency | 11:05:23 AM Aug 04, 2020 TRACE 1 2 3 4 5 6 T/PE M MM MMM DET P P A N N N | AURANII II Avg Type: RMS Avg Hold >1010 | Trig: Free Run #Atten: 20 dB | 00 | Freq 2.40200 | RL I |
|--|--|---|---------------------------------|--|--|--|
| Auto Tun | 2.402 000 GHz 2.932 dBm | Mkr1 2.4 | | i dB | Ref Offset 11. Ref 21.60 d | 0 dB/div |
| Center Fre 2.402000000 GH | | | 1 | | | 11.6 |
| Start Fre 2.400500000 GH | | -6.00 dB 202 kHz | | 7 | | 8.40 |
| Stop Fre 2.403500000 GH | | | | | | 26.4 |
| CF Ste 2.48000000 GH Auto <u>Ma</u> | \rightarrow | | | | | 30.4 |
| Freq Offse 0 H | | | | | | 68.4 |
| | Spap 3 000 MHz | | | | 402000 GH2 | enter 2 |
| Frequency | Span 3.000 MHz 066 ms (1000 pts) | Sweep 1.06 | W 300 kHz | eta DC | 402000 GHz (100 kHz (100 kHz | Center 2. Res BW |
| | 066 ms (1000 pts) | Sweep 1.06 | sawai darit | ot Ba CC DO GHZ PNC: Fast IFGainLow | r 100 kHz | Center 2, Res BW |
| Frequency | 0466 ms (1000 pts) | Sweep 1.06 | Trig: Free Run | ot Ba CC DO GHZ PNC: Fast IFGainLow | f 100 kHz mitter Andres - Swa 1 St 0 eq 2.3100000 | Center 2. Res BW so tas tas tas tas tas tas tas tas |
| Frequency Auto Tun Center Fre | 066 ms (1000 pts) 744CE [2 2 4 3 4 744CE [2 2 4 3 4 744CE [2 2 4 3 4 744CE [2 2 4 4 3 744CE [2 2 4 4 4 4 4 3 744CE [| Sweep 1.06 | Trig: Free Run | ot Ba CC DO GHZ PNC: Fast IFGainLow | r 100 kHz | Center 2. Res BW Start Fre 10 dB/div Log 11.6 |
| Frequency Auto Tun Center Fre 2.36000000 GH Start Fre | 066 ms (1000 pts) | Sweep 1.06 | Trig: Free Run | ot Ba CC DO GHZ PNC: Fast IFGainLow | r 100 kHz | Center 2. Res BW ss ss start Fre 10 dB/div 00 dB/div 11.6 1.60 4.0 10.4 10.4 10.4 |
| Frequency Auto Tun Center Fre 2.36000000 GH Start Fre 2.31000000 GH Stop Fre | 0066 ms (1000 pts) | Sweep 1.06 | Trig: Free Run #Atten: 20 dB | #DA DO GHZ PNC: Fast C IFGainLow 5 dB Bm #VB | 1 100 kHz | Center 2. Res BW 10 Start Fre 15 16 16 10 10 4 10 4 10 4 10 4 10 4 10 4 |
| Frequency Auto Tun Center Fre 2.36000000 GH 2.31000000 GH 2.41000000 GH 2.41000000 GH 2.41000000 GH | 066 ms (1000 pts) | Sweep 1.06 | Trig: Free Run #Atten: 20 dB | s da PRO: Fast C IFGaintow 5 dB Bm | 1 100 kHz | Center 2.7 Res BW 10 11 10 10 10 10 10 10 10 10 |



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| and the second second | MITCH AND AND A SAME | CILINET IN STREET | | | | | | rure Analyzer - 5 | | |
|------------------------------------|---|--|-------------------|----------|-----------------------------------|-------------------------|---------|---------------------------|-------------|------------------------------|
| Frequency | 04:09:35 PH Aug 04, 2020 TRACE 1, 2, 3, 4, 5, 6 TUPE M WHY WHY DET P P A N N N | pe: RM5 d:>10/10 | #Avg Ti Avg(Ho | | | NO: Fast | 0 MHz | 30.0000 | | tar |
| Auto Tun | r1 2.402 4 GHz 2.634 dBm | Mk | | 9 68 | #Atten: 2 | GainLow | .6 dB | Ref Offset 1 Ref 21.60 | Udiv | 0 d |
| Center Fre 13.265000000 GH | | | | | | | | ♦ ¹ | | .0g 11.6 1.60 |
| Start Fre 30.000000 MH | -17.17.dbs | | | | | | | | | 8.40 10.4 20.4 |
| Stop Fre 25.50000000 GH | | | | | | | | J ³ | مىلىن | 38 A 40 A 50 A 50 A |
| CF Ste 2.48000000 GF Auto Ma | Stop 26.50 GHz 531 s (40001 pts) | The state of the s | | | N 300 kHz | #VB | | 00 kHz | - | Re |
| Freq Offse 0 H | FUNCTION VALUE + | | CHON P | Bm Bm | 2.634 d -55.049 d -58.739 d | 4 GHz 0 GHz 5 GHz | 2,400 0 | | N N N | 123456 |
| | | | | | | + | | | | 7 8 9 10 11 |
| | | STATUS | | | | | | | | 11 |



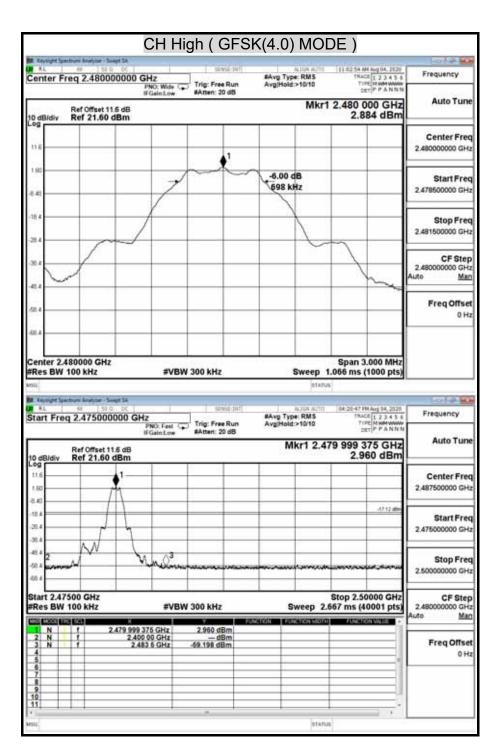
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| Gyoght Spectrum Analyzer - Swept SA | E | 1 Participation of the last | and the second second | And the second second second | |
|--|---|---------------------------------|---|---|---|
| nter Freq 2.4420000 | 00 GHz PNO: Wide G | Trig: Free Run #Atten: 20 dB | #Avg Type: RMS Avg/Hold:>10/10 | 11:04:45 AM Aug 04, 2020 TRACE 1 2 3 4 5 6 TYPE IN WHAT WANT | Frequency |
| Ref Offset 11.6 d Bidiv Ref 21.60 dBn | в | | Mkr1 | 1 2.442 000 GHz 4.878 dBm | Auto Tune |
| é | | •1 | | | Center Free 2.442000000 GH |
| 0 | 7 | \square | -6.00 dB 699 kHz | | Start Free 2.440500000 GH |
| | \square | | | | Stop Free 2.443500000 GH |
| | | | | | CF Step 2.48000000 GH Auto Mar |
| 2 | | | | | Freq Offset 0 Ha |
| | | | | | |
| nter 2.442000 GHz es BW 100 kHz | | V 300 kHz | sfatu NJSA NJTD | 04:16:27 PR Aug 14, 2020 | Frequency |
| es BW 100 kHz AL 100 kHz art Freq 30.000000 M Ref Offset 11.5 d | HZ PNC: Fast G IFGainLow | i sava ant | ALISA AZTO AAvg Type: RMS AvgHold:>1010 | 1.066 ms (1000 pts) | Frequency |
| es BW 100 kHz | HZ PNC: Fast G IFGainLow | Street and | ALISA AZTO AAvg Type: RMS AvgHold:>1010 | 1.066 ms (1000 pts) s (04:14:27 PH Aug 04,2020 TRACE [1 2 2 4 5 6 7:392 [A use House DET] ^P P A N I M | Frequency |
| es BW 100 kHz | HZ PNC: Fast G IFGainLow | Street and | ALISA AZTO AAvg Type: RMS AvgHold:>1010 | 1.066 ms (1000 pts) | Frequency Auto Tune Center Free |
| es BW 100 kHz | HZ PNC: Fast G IFGainLow | Street and | ALISA AZTO AAvg Type: RMS AvgHold:>1010 | 1.066 ms (1000 pts) IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII | Frequency Auto Tune Center Free 13.26500000 GH Start Free |
| es BW 100 kHz | HZ PNO: Fest G IFGaint.ow #VBV | Trig: Free Run #Atten: 20 dB | ALIAN ALIAN ALIAN AvgHold>1010 Mi | 1.066 ms (1000 pts) | Frequency Auto Turn Center Free 13.26500000 GH Start Free 30.00000 MH Stop Free |
| es BW 100 kHz | B n #VBV | Trig: Free Run #Atten: 20 dB | ETATU ALIGN ACTO AvgHoid>1010 MI | 1.066 ms (1000 pts) | Frequency Auto Tum Center Freq 13.265000000 GH Start Freq 30.000000 GH Stop Freq 26.50000000 GH CF Steg 2.45000000 GH |



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04:18:41 PH Aug 04, 2020 TRACE 1 2 3 4 5 6 TIPE N MM WWW DET P P A N N N Start Freq 30.000000 MHz #Avg Type: RMS Avg(Hold:>10/10 Frequency PNO: Fast Trig: Free Run #Atten: 20 dB Auto Tun Mkr1 2.479 8 GHz 2.739 dBm Ref Offset 11.5 dB Ref 21.60 dBm 0 dB/div Center Freq 13,265000000 GHz 1.5 医素 -17.12 d 10 Start Freq 30.000000 MHz 38. 48 Stop Freq 68 25.50000000 GHz Start 30 MHz #Res BW 100 kHz Stop 26.50 GHz Sweep 2.531 s (40001 pts) CF Step 2.48000000 GHz #VBW 300 kHz uto Map 1220 (2000) (100 (200)) N N N 2.479 8 GHz 2.400 00 GHz 2.483 5 GHz 2.739 dBm -55.555 dBm -58.019 dBm 23 1 Freq Offset 0 Hz 11 STATUS



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9.6 RADIATED EMISSIONS

9.6.1 TRANSMITTER RADIATED SUPURIOUS EMSSIONS

§ 15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|----------------------------|--------------------------|-----------------|---------------|
| 0.090 - 0.110 | 16.42 - 16.423 | 399.9 - 410 | 4.5 - 5.15 |
| ¹ 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 - 38.25 | 1435 - 1626.5 | 9.0 - 9.2 |
| 4.20725 - 4.20775 | 73 - 74.6 | 1645.5 - 1646.5 | 9.3 - 9.5 |
| 6.215 - 6.218 | 74.8 - 75.2 | 1660 -1710 | 10.6 -12.7 |
| 6.26775 - 6.26825 | 108 -121.94 | 1718.8 - 1722.2 | 13.25 -13.4 |
| 6.31175 - 6.31225 | 123 - 138 | 2200 - 2300 | 14.47 – 14.5 |
| 8.291 - 8.294 | 149.9 - 150.05 | 2310 - 2390 | 15.35 -16.2 |
| 8.362 - 8.366 | 156.52475 - 156.52525 | 2483.5 - 2500 | 17.7 - 21.4 |
| 8.37625 - 8.38675 | 156.7 - 156.9 | 2655 - 2900 | 22.01 - 23.12 |
| 8.41425 - 8.41475 | 162.0125 - 167.17 | 3260 - 3267 | 23.6 - 24.0 |
| 12.29 - 12.293 | 167.72 - 173.2 | 3332 - 3339 | 31.2 - 31.8 |
| 12.51975 - 12.52025 | 240 - 285 | 3345.8 - 3338 | 36.43 - 36.5 |
| 12.57675 - 12.57725 | 322 -335.4 | 3600 - 4400 | (2) |
| 13.36 - 13.41 | | | |

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

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



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§ 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) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|--------------------|--------------------------------------|----------------------------------|
| 30 - 88 | 100 ** | 3 |
| 88 - 216 | 150 ** | 3 |
| 216 - 960 | 200 ** | 3 |
| Above 960 | 500 | 3 |

** Except as provided in paragraph (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, Sections 15.231 and 15.241.

§ 15.209 (b) In the emission table above, the tighter limit applies at the band edges.

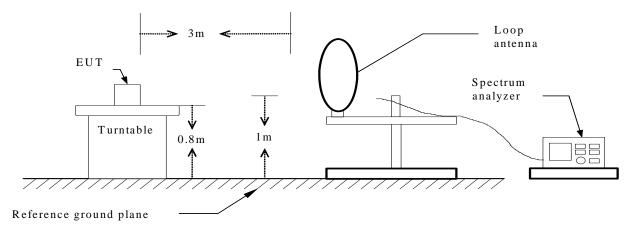


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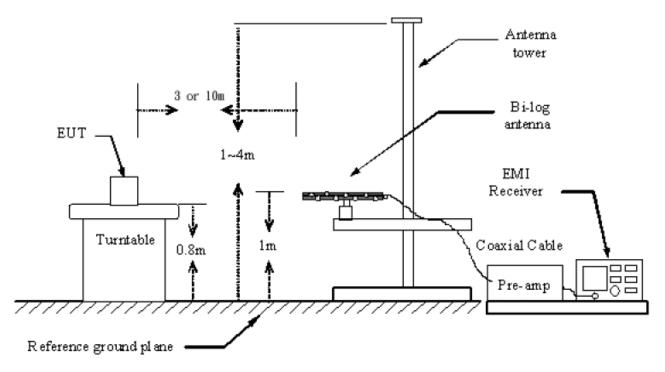
TEST SETUP

The diagram below shows the test setup that is utilized to make the measurements for emission from below 1GHz.

9kHz ~ 30MHz



30MHz ~ 1GHz

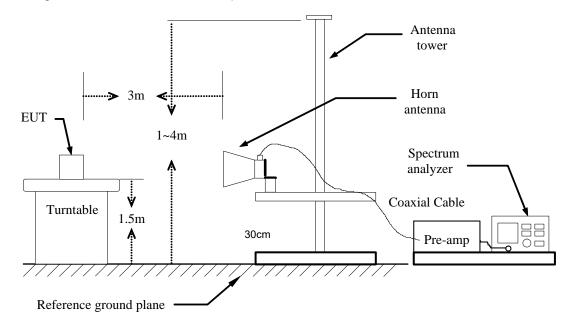




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The diagram below shows the test setup that is utilized to make the measurements for emission above 1GHz.



TEST PROCEDURE

- a. The EUT was placed on the top of a rotating table 0.8/1.5 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. White measuring the radiated emission below 1GHz, the EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. White measuring the radiated emission above 1GHz, the EUT was set 3 meters away from the interference-receiving antenna
- c. 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 polarization of the antenna are set to make the measurement.
- d. 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.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. 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.
- g. The tests were performed in accordance with 558074 D01 15.247 Meas Guidance v05



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NOTE :

- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
- 2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection and frequency above 1GHz.
- 3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.
- 4. No emission is found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz)

TEST RESULTS

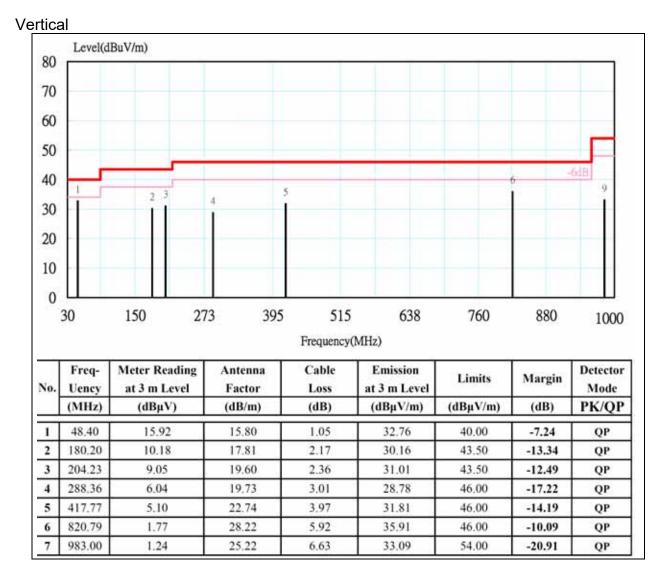
No non-compliance noted.



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Report No.: T200717N01-RP1-2 9.6.2 WORST-CASE RADIATED EMISSION BELOW 1 GHz

| Product Name | DJ MIXER | Test Date | 2020/08/03 |
|---------------------|----------|-----------------|-------------|
| Model Name | DJM-S7 | Test By | Ted Huang |
| Test Mode | ТХ | Temp & Humidity | 26.2°C, 62% |



Remark:

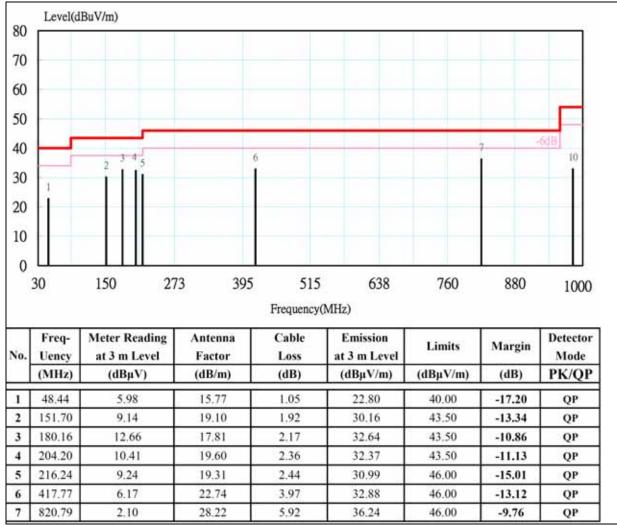
- No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).
- 2. Radiated emissions measured were made with an instrument using peak/quasi-peak detector mode.
- 3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.
- 4. Margin (dB) = Remark result (dBuV/m) Quasi-peak limit (dBuV/m).



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| Product Name | DJ MIXER | Test Date | 2020/08/03 |
|--------------|----------|-----------------|-------------|
| Model Name | DJM-S7 | Test By | Ted Huang |
| Test Mode | ТХ | Temp & Humidity | 26.2°C, 62% |

Horizontal



Remark:

- 1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).
- 2. Radiated emissions measured were made with an instrument using peak/quasi-peak detector mode.
- 3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.
- 4. Margin (dB) = Remark result (dBuV/m) Quasi-peak limit (dBuV/m).



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Report No.: T200717N01-RP1-2 9.6.3 TRANSMITTER RADIATED EMISSION ABOVE 1 GHz

| Product Name | DJ MIXER | Test Date | 2020/08/04 |
|--------------|-----------------------|----------------|-------------|
| Model | DJM-S7 | Test By | Ted Huang |
| Test Mode | GFSK(4.0) TX (CH Low) | TEMP& Humidity | 27.5°C, 59% |

Horizontal

| | TX / GFSK(4.0) mode / CH Low | | | | Measurement Distance at 3m Horizontal polarity | | | | | |
|---|------------------------------|---------|--------|------------|--|--------|----------|----------|--------|---------|
| | Freq. | Reading | AF | Cable Loss | Pre-amp | Filter | Level | Limit | Margin | Mark |
| | (MHz) | (dBµV) | (dB/m) | (dB) | (dB) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | (P/Q/A) |
| * | 1185.66 | 58.32 | 25.05 | 2.17 | 46.30 | 0.42 | 39.66 | 74.00 | -34.34 | Р |
| * | 1185.66 | 52.25 | 25.05 | 2.17 | 46.30 | 0.42 | 33.59 | 54.00 | -20.41 | А |
| * | 4803.92 | 58.47 | 33.23 | 4.30 | 44.77 | 0.22 | 51.46 | 74.00 | -22.54 | Р |
| * | 4803.92 | 49.23 | 33.23 | 4.30 | 44.77 | 0.22 | 42.22 | 54.00 | -11.78 | А |
| | 7206.74 | 56.41 | 38.74 | 5.39 | 44.06 | 0.27 | 56.75 | 74.00 | -17.25 | Р |
| | 7206.74 | 46.62 | 38.74 | 5.39 | 44.06 | 0.27 | 46.96 | 54.00 | -7.04 | А |

| Product Name | DJ MIXER | Test Date | 2020/08/04 |
|--------------|-----------------------|----------------|-------------|
| Model | DJM-S7 | Test By | Ted Huang |
| Test Mode | GFSK(4.0) TX (CH Low) | TEMP& Humidity | 27.5°C, 59% |

Vertical

| | ТХ / С | TX / GFSK(4.0) mode / CH Low | | | | Measurement Distance at 3m Vertical polarity | | | | | |
|---|---------|------------------------------|--------|------------|---------|--|----------|----------|--------|---------|--|
| | Freq. | Reading | AF | Cable Loss | Pre-amp | Filter | Level | Limit | Margin | Mark | |
| | (MHz) | (dBµV) | (dB/m) | (dB) | (dB) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | (P/Q/A) | |
| | 1628.63 | 63.58 | 27.53 | 2.54 | 45.79 | 0.59 | 48.45 | 74.00 | -25.55 | Р | |
| | 1628.63 | 53.62 | 27.53 | 2.54 | 45.79 | 0.59 | 38.49 | 54.00 | -15.51 | А | |
| ۲ | 4804.48 | 59.07 | 33.24 | 4.30 | 44.77 | 0.22 | 52.06 | 74.00 | -21.94 | Р | |
| ł | 4804.48 | 51.34 | 33.24 | 4.30 | 44.77 | 0.22 | 44.33 | 54.00 | -9.67 | А | |
| | 7205.37 | 58.07 | 38.74 | 5.39 | 44.06 | 0.27 | 58.41 | 74.00 | -15.59 | Р | |
| | 7205.37 | 49.01 | 38.74 | 5.39 | 44.06 | 0.27 | 49.35 | 54.00 | -4.65 | А | |

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: 2.4GHz~2.5GHz Filter Insertion Loss

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

- 4. The other emission levels were 20dB below the limit
- 5. The test limit distance is 3M limit.
- 6. *=Restricted bands of operation



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Report No.: T200717N01-RP1-2

| Product Name | DJ MIXER | Test Date | 2020/08/04 |
|--------------|--------------------------|----------------|-------------|
| Model | DJM-S7 | Test By | Ted Huang |
| Test Mode | GFSK(4.0) TX (CH Middle) | TEMP& Humidity | 27.5°C, 59% |

Horizontal

| | TX / G | FSK(4.0) r | node / Cł | H Middle | Measurement Distance at 3m Horizontal polarity | | | | | |
|---|---------|------------|-----------|------------|--|--------|----------|----------|--------|---------|
| | Freq. | Reading | AF | Cable Loss | Pre-amp | Filter | Level | Limit | Margin | Mark |
| | (MHz) | (dBµV) | (dB/m) | (dB) | (dB) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | (P/Q/A) |
| * | 1185.46 | 57.75 | 25.05 | 2.17 | 46.30 | 0.42 | 39.09 | 74.00 | -34.91 | Р |
| * | 1185.46 | 51.53 | 25.05 | 2.17 | 46.30 | 0.42 | 32.87 | 54.00 | -21.13 | А |
| * | 4883.55 | 58.88 | 33.50 | 4.35 | 44.78 | 0.23 | 52.18 | 74.00 | -21.82 | Р |
| * | 4883.55 | 51.07 | 33.50 | 4.35 | 44.78 | 0.23 | 44.37 | 54.00 | -9.63 | А |
| | 7325.33 | 56.39 | 39.17 | 5.44 | 43.94 | 0.27 | 57.33 | 74.00 | -16.67 | Р |
| * | 7325.33 | 47.77 | 39.17 | 5.44 | 43.94 | 0.27 | 48.71 | 54.00 | -5.29 | А |

| Product Name | DJ MIXER | Test Date | 2020/08/04 |
|--------------|--------------------------|---------------------------|-------------|
| Model | DJM-S7 | Test By | Ted Huang |
| Test Mode | GFSK(4.0) TX (CH Middle) | TEMP& Humidity | 27.5°C, 59% |

Vertical

| | TX / G | FSK(4.0) r | node / Cl | H Middle | Mea | Measurement Distance at 3m Vertical polarity | | | | | |
|---|---------|------------|-----------|------------|---------|--|----------|----------|--------|---------|--|
| | Freq. | Reading | AF | Cable Loss | Pre-amp | Filter | Level | Limit | Margin | Mark | |
| | (MHz) | (dBµV) | (dB/m) | (dB) | (dB) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | (P/Q/A) | |
| * | 1624.73 | 64.12 | 27.50 | 2.53 | 45.80 | 0.59 | 48.95 | 74.00 | -25.05 | Р | |
| * | 1624.73 | 53.56 | 27.50 | 2.53 | 45.80 | 0.59 | 38.39 | 54.00 | -15.61 | А | |
| * | 4883.77 | 58.97 | 33.50 | 4.35 | 44.78 | 0.23 | 52.28 | 74.00 | -21.72 | Р | |
| * | 4883.77 | 52.00 | 33.50 | 4.35 | 44.78 | 0.23 | 45.31 | 54.00 | -8.69 | А | |
| * | 7325.28 | 57.69 | 39.17 | 5.44 | 43.94 | 0.27 | 58.63 | 74.00 | -15.37 | Р | |
| * | 7325.28 | 50.26 | 39.17 | 5.44 | 43.94 | 0.27 | 51.20 | 54.00 | -2.80 | А | |

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: 2.4GHz~2.5GHz Filter Insertion Loss

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

- 4. The other emission levels were 20dB below the limit
- 5. The test limit distance is 3M limit.

6. *=Restricted bands of operation



| Page: | 48 / 62 |
|-------|---------|
| Rev.: | 01 |

| Product Name DJ MIXER | | Test Date | 2020/08/04 |
|-----------------------|------------------------|----------------|-------------|
| Model | DJM-S7 | Test By | Ted Huang |
| Test Mode | GFSK(4.0) TX (CH High) | TEMP& Humidity | 27.5°C, 59% |

Horizontal

| | TX / 0 | H High | Measurement Distance at 3m Horizontal polarity | | | | | polarity | | |
|---|---------|---------|--|------------|---------|--------|----------|----------|--------|---------|
| | Freq. | Reading | AF | Cable Loss | Pre-amp | Filter | Level | Limit | Margin | Mark |
| | (MHz) | (dBµV) | (dB/m) | (dB) | (dB) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | (P/Q/A) |
| ¥ | 1185.52 | 57.87 | 25.05 | 2.17 | 46.30 | 0.42 | 39.21 | 74.00 | -34.79 | Р |
| × | 1185.52 | 51.68 | 25.05 | 2.17 | 46.30 | 0.42 | 33.02 | 54.00 | -20.98 | А |
| k | 4959.77 | 58.50 | 33.76 | 4.39 | 44.78 | 0.24 | 52.11 | 74.00 | -21.89 | Р |
| k | 4959.77 | 50.15 | 33.76 | 4.39 | 44.78 | 0.24 | 43.76 | 54.00 | -10.24 | А |
| × | 7439.78 | 56.61 | 39.58 | 5.48 | 43.81 | 0.27 | 58.13 | 74.00 | -15.87 | Р |
| × | 7439.78 | 47.70 | 39.58 | 5.48 | 43.81 | 0.27 | 49.22 | 54.00 | -4.78 | А |

| Product Name DJ MIXER | | Test Date | 2020/08/04 |
|-----------------------|------------------------|----------------|-------------|
| Model | DJM-S7 | Test By | Ted Huang |
| Test Mode | GFSK(4.0) TX (CH High) | TEMP& Humidity | 27.5°C, 59% |

Vertical

| | ТХ / С | GFSK(4.0) | mode / 0 | CH High | Measurement Distance at 3m Vertical polarity | | | | | polarity |
|---|---------|-----------|----------|------------|--|--------|----------|----------|--------|----------|
| | Freq. | Reading | AF | Cable Loss | Pre-amp | Filter | Level | Limit | Margin | Mark |
| | (MHz) | (dBµV) | (dB/m) | (dB) | (dB) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | (P/Q/A) |
| * | 1626.46 | 63.68 | 27.51 | 2.54 | 45.79 | 0.59 | 48.53 | 74.00 | -25.47 | Р |
| * | 1626.46 | 53.35 | 27.51 | 2.54 | 45.79 | 0.59 | 38.20 | 54.00 | -15.80 | А |
| * | 4959.24 | 59.27 | 33.76 | 4.39 | 44.78 | 0.24 | 52.88 | 74.00 | -21.12 | Р |
| * | 4959.24 | 51.83 | 33.76 | 4.39 | 44.78 | 0.24 | 45.44 | 54.00 | -8.56 | А |
| * | 7439.30 | 57.90 | 39.58 | 5.48 | 43.81 | 0.27 | 59.42 | 74.00 | -14.58 | Р |
| * | 7439.30 | 48.54 | 39.58 | 5.48 | 43.81 | 0.27 | 50.06 | 54.00 | -3.94 | А |

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: 2.4GHz~2.5GHz Filter Insertion Loss

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

- 4. The other emission levels were 20dB below the limit
- 5. The test limit distance is 3M limit.

6. *=Restricted bands of operation



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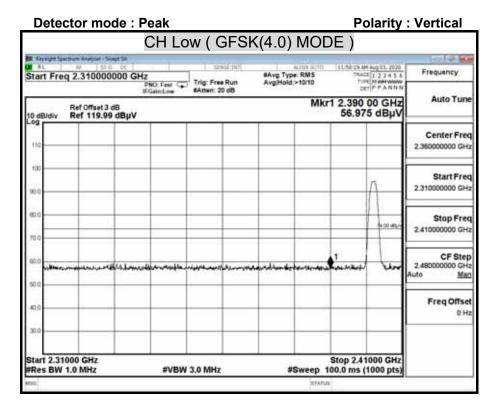
| | | | DE) | MOE | K(4.0) | GFSł | ow ((| CH L | | |
|---|----------------|--------|-----------------------|------------|----------------------|-------------|-----------|--------------|------------------------------------|----------------------|
| 1014 | 83, 2020 | AN ANT | 11-42-53 A | A USA AUTO | | 100 | . 1 4 | | ctrure Analyter - Swept BA | E Keysight Spr |
| Frequency | 23456 PANNN | CE 1 | 5840 710 | e: RMS | #Avg Typ Avg/Hold | ee Run | | PNO: Fast -C | q 2.310000000 GH | |
| Auto Tun | GHz | 00 | 1 2.390 56.94 | Mkr | | 20 00 | entien: 4 | IFGainLow | Ref Offset 3 dB Ref 119.99 dBµV | 0 dB/div |
| Center Fre 2.36000000 GH | | | | | | | | | | 110 |
| Start Fre 2.31000000 GH | | A | | | | | | | | 100 |
| Stop Fre 2.41000000 GH | 4.00 mu/ | | | | | | | | | 80.0 |
| CF Ste 2.48000000 GF Auto <u>Ma</u> | Loche |] | imm | munut | and of these | Rik-Jaluura | hylawoods | man | | 10.0 10.0 50.0 |
| Freq Offse 0 H | | - | | | | | | | | 400 |
| | - | + | | | | - | | | | 20.0 |
| | | | Stop 2.4 00.0 ms (| Sweep 1 | | z | V 3.0 MHz | #VBV | 000 GHz 1.0 MHz | tart 2.31 Res BW |

| Detector mode | | Polarity : Horizontal | | | |
|---|-------------|-----------------------|---|---|-----------------------------------|
| | CH Lo | ow(GFS | K(4.0) MOI | DE) | |
| Keynet Sectors Andrew Sweet IA KL 00 1510 00 Start Freq 2.310000000 G | | Strid: Set | ALIDA AUTO BAvg Type: RMS Avg/Hold:>10/10 | 11:45:56 AH Aug 23, 202 TRACE 1 2:3:4 5 T/FE N MM WWW | 6 Frequency |
| Ref Offset 3 dB | PNO: Fast G | #Atten: 20 dB | 10.000 (10.000) | r1 2.390 00 GH 48.645 dBµ | Auto Tur |
| | | | | | Center Fre 2.36000000 GH |
| 100 90 0 | | | | Α | Start Fre 2.31000000 GH |
| 80.0 | | | | | Stop Fre 2.41000000 GR |
| 000 | | | | 1 sipc.as, | CF Ste 2.48000000 GF Auto M |
| 40.0 | | | | | Freq Offs |
| 30.0 | | | | | |
| Start 2.31000 GHz FRes BW 1.0 MHz | #VBV | 2.7 kHz | Sweep | Stop 2.41000 GH 28.90 ms (1000 pts | |



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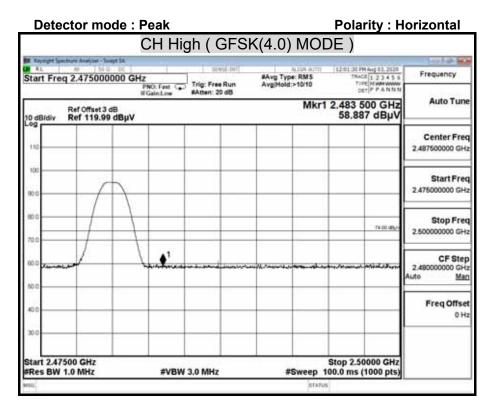


| | | K(4.0) MO[| JE) | |
|-----------|----------------|-----------------------------------|--|--|
| 1.1 | | | Marcal Action of the Articles | |
| PNO: Fast | Trig: Free Run | #Avg Type: RM5 Avg/Hold:>10/10 | TRACE 1 2 3 4 5 TYPE MINHWM | 6 Frequency |
| IFGainLow | #Atten: 20 dB | Mk | r1 2.390 00 GH | Z Auto Tun |
| | | | | Center Fre 2.36000000 GH |
| | | | A | Start Fre 2.31000000 GH |
| | | | | Stop Fre 2.41000000 GH |
| | | | 1 | CF Ste 2.49000000 GH Auto Ma |
| | | | | Freq Offse |
| | | | | |
| #VBW | 2.7 kHz | Sweep 2 | Stop 2.41000 GH 28.90 ms (1000 pts | |
| | PN0: Fest | PNO: Fast C Trig: Free Run | Z Trig: Free Run #Avg Type: RMS Avg[Hold:>10/10 #GainLow #Atten: 20 dB | Z Avg Type RMS Thick Free Run Avg Hold:>10/10 Thick [12:3:4:5 PNC: Feat Trig: Free Run Avg Hold:>10/10 Thick [12:3:4:5 Mkr1 2:390 00 GH 48.715 dBµ |



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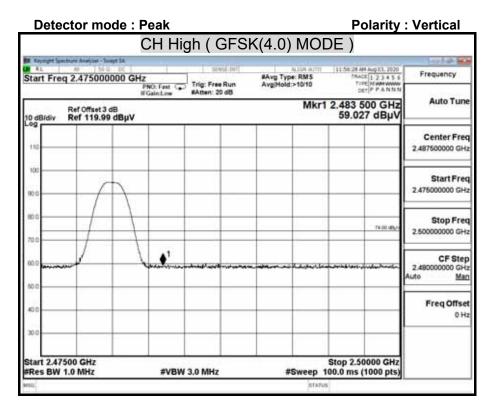
Report No.: T200717N01-RP1-2



| Dete | ctor mod | le : Avera | | Polarity : Horizontal | | | |
|-----------------------|---------------------------------|---------------------------|------------------|-----------------------|---|------------------------------------|--|
| | | CH H | K(4.0) MOI | DE) | | | |
| R Keysight Sp | ectrum Analyzer - Swept | | The second state | Charles and | | | |
| | q 2.4750000 | 00 GHz | Trig: Free Run | #Avg Type: RMS | 12:02:29 PR Aug 83, 2020 TRACE 1 2 3 4 5 6 TYPE MWH WWW | | |
| | | PNO: Fast C IFGain:Low | #Atten: 20 dB | Avg/Hold:>10/10 | DET PPANNS | 0.000 992890 | |
| 10 dBidiv | Ref Offset 3 dB Ref 119.99 d | | | Mkr1 | 2.483 500 GHz 49.269 dBµV | | |
| 110 | | | | | | Center Fre 2,487500000 GH | |
| 100 | | | | | | Start Fre 2.475000000 GH | |
| 85 G | | | | | | Stop Fre 2.50000000 GH | |
| 80.0 | | | | | 54.00 attu/ | CF Ste 2.48000000 GH Auto Ma | |
| 40.0 | | | | | | Freq Offse | |
| 30.0 | | | | | | | |
| Start 2.47 FRes BW | | #VB | W 2.7 kHz | Sweep 7 | Stop 2.50000 GHz .259 ms (1000 pts) | | |
| weis: | | | | STATU | | | |



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| Detec | ctor mod | de : Averaç | je | Polarity : Vertical | | | | |
|------------------------|------------------------------------|----------------------------|---------------|-----------------------------------|--|--|--|--|
| | DE) | | | | | | | |
| E Keysight Spec | trure Analyzer - Swep All 158 Q | | . I since the | A 104 A 101 | 11:57:27 AM Aug 83, 2020 | per la constante de la constan | | |
| | 2.4750000 | 00 GHz | | #Avg Type: RMS Avg/Hold:>10/10 | TRACE 1 2 3 4 5 6 | Frequency | | |
| | | PNO: Fast -G IFGain:Low | #Atten: 20 dB | Avgrout.viens | DET PPANNS | 0.000 0.000 | | |
| 0 dB/div | Ref Offset 3 dE Ref 119.99 d | | | Mkr1 | 2.483 500 GHz 48.814 dBµV | Auto Tun | | |
| 110 | | | | | | Center Fre | | |
| 603 272 | | | | | | 2.487500000 GH | | |
| 100 | | \ | | | | Start Fre 2.47500000 GH | | |
| 800 | 1 | | | | | | | |
| 70.0 | | | | | | Stop Fre 2.50000000 GH | | |
| 0.0 | | | | | | CF Ste | | |
| 50.0 | | | | | SA DO JENN | 2.48000000 GH Auto <u>Ma</u> | | |
| 40.0 | | | | | | Freq Offse | | |
| 30.0 | - | | | | | | | |
| tart 2.475 Res BW 1 | | #VBN | V 2.7 kHz | Sweep 7 | Stop 2.50000 GHz .259 ms (1000 pts) | | | |
| 945 | augus - 157 | | | STATU | | | | |



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9.7 POWERLINE CONDUCTED EMISSIONS

LIMITS

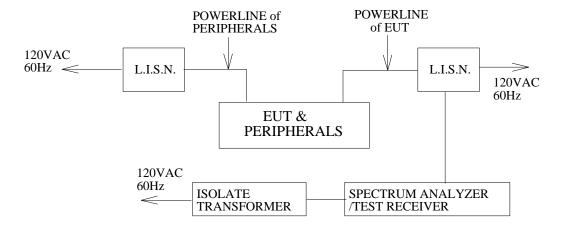
§ 15.207 (a) Except as shown in paragraph (b) and (c) this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

| Frequency of Emission (MHz) | Conducted | limit (dBµv) |
|-----------------------------|------------|--------------|
| | Quasi-peak | Average |
| 0.15 - 0.5 | 66 to 56 | 56 to 46 |
| 0.5 - 5 | 56 | 46 |
| 5 - 30 | 60 | 50 |



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TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80cm above the horizontal ground plane. The EUT IS CONFIGURED IN ACCORDANCE WITH ANSI C63.10.

The resolution bandwidth is set to 9 kHz for both quasi-peak detection and average detection measurements.

Line conducted data is recorded for both NEUTRAL and LINE.



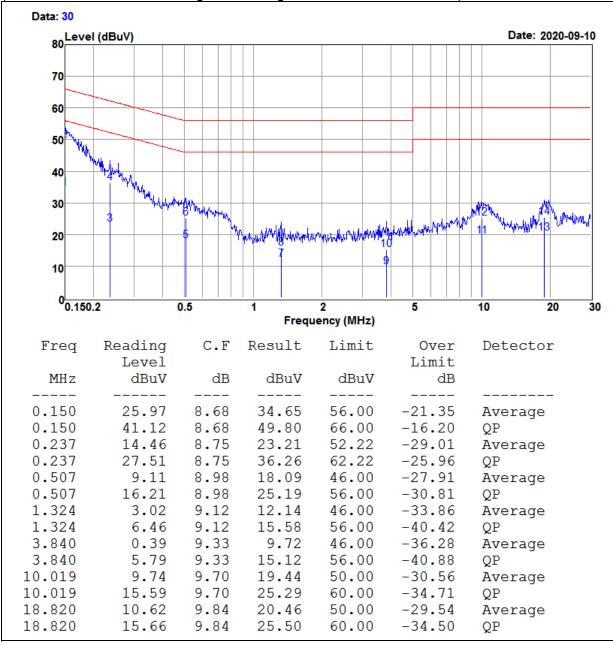
TEST RESULTS

No non-compliance noted.

| Model No. | DJM-S7 | Test Mode | Normal Operation |
|-----------------------------|--------------|-------------------------|------------------|
| Environmental Conditions | 258 62% RH | Resolution Bandwidth | 9 kHz |
| Tested by | Yuming Liang | | |

LINE

(The chart below shows the highest readings taken from the final data.)



REMARKS : 1. Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) 2. Over Limit (dBuV) = Measured Level (dBuV) – Limits (dBuV)

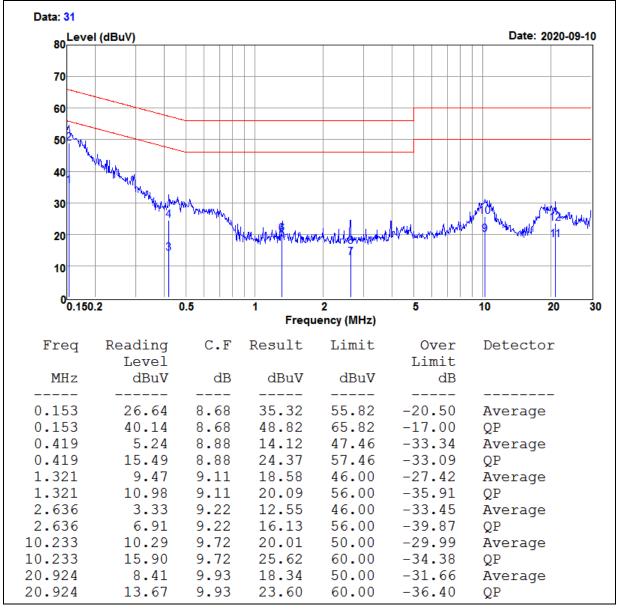


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| Model No. | DJM-S7 | Test Mode | Normal Operation |
|-----------------------------|----------------------|-------------------------|------------------|
| Environmental Conditions | 125 8 62% D L | Resolution Bandwidth | 9 kHz |
| Tested by | Yuming Liang | | |

NEUTRAL

(The chart below shows the highest readings taken from the final data.)



REMARKS : 1. Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) 2. Over Limit (dBuV) = Measured Level (dBuV) – Limits (dBuV)



10. ANTENNA REQUIREMENT

10.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 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. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

10.2 ANTENNA CONNECTED CONSTRUCTION

Manufacturer: Sunitec Type: PCB Antenna Model: EJ058 Gain: -5.0 dBi

=== END of Report ===

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