

FCC Test Report

Report No.: AGC02728201102FE03

| FCC ID | : AUSCR3037B |
|---------------------|--|
| APPLICATION PURPOSE | : Original Equipment |
| PRODUCT DESIGNATION | : Multifunctional FM Radio Speaker |
| BRAND NAME | : CROSLEY |
| MODEL NAME | : CR3037B, CR3037B-WS, CR3037B-XX, CS-2026 |
| APPLICANT | : Modern Marketing Concepts, Inc. |
| DATE OF ISSUE | : Dec. 24, 2020 |
| STANDARD(S) | : FCC Part 15.247 |
| REPORT VERSION | : V1.0 |

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REPORT REVISE RECORD

| Report Version | Revise Time | Issued Date | Valid Version | Notes |
|----------------|-------------|---------------|---------------|-----------------|
| V1.0 | . / | Dec. 24, 2020 | Valid | Initial Release |

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1. VERIFICATION OF CONFORMITY

| Applicant | Modern Marketing Concepts, Inc. | |
|--------------------------|--|--|
| Address | 1220 East Oak St, Louisville KY, United States. 40204 | |
| Manufacturer | SHENZHEN GXTSONIC TECHNOLOGY CO., LTD | |
| Address | 1F,Building 3,Tianxin Shuichan Industrial Park, Gushu Village, Xixiang Town, Bao`an District, Shenzhen, CHINA | |
| Factory | SHENZHEN GXTSONIC TECHNOLOGY CO., LTD | |
| Address | 1F,Building 3,Tianxin Shuichan Industrial Park, Gushu Village, Xixiang Town, Bao`an District, Shenzhen, CHINA | |
| Product Designation | Multifunctional FM Radio Speaker | |
| Brand Name | CROSLEY | |
| Test Model | CR3037B | |
| Series Model | CR3037B-WS, CR3037B-XX, CS-2026 | |
| Difference Description | Above models are identical in schematic and structure. XX represent the color code, they can be replaced by letters from A to Z or blank, Therefore the test performed on the model CR3037B. | |
| Date of test | Nov. 24, 2020 to Dec. 24, 2020 | |
| Deviation | No any deviation from the test method | |
| Condition of Test Sample | Normal | |
| Test Result | Pass | |
| Report Template | AGCRT-US-BR/RF | |

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC PART 15.247.

Prepared By

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Thea Huang Project Engineer

Dec. 24, 2020

Max Zhan

Reviewed By

Max Zhang Reviewer

Dec. 24, 2020

Approved By

Forrest Lei Authorized Officer

Dec. 24, 2020

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2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as "Multifunctional FM Radio Speaker". It is designed by way of utilizing the GFSK, π /4-DQPSK and 8DPSK technology to achieve the system operation.

A major technical description of EUT is described as following

| Operation Frequency | 2.402 GHz to 2.480 GHz |
|---------------------|--|
| RF Output Power | -2.741dBm (Max) |
| Bluetooth Version | V 2.1+EDR |
| Modulation | BR ⊠GFSK, EDR ⊠π /4-DQPSK, ⊠8DPSK BLE □GFSK 1Mbps □GFSK 2Mbps |
| Number of channels | 79 |
| Hardware Version | 1.0 |
| Software Version | 1.0 |
| Antenna Designation | PCB Antenna (Comply with requirements of the FCC part 15.203) |
| Antenna Gain | 0dBi |
| Power Supply | AC 120V/60Hz |

Note: The EUT doesn't support BLE.

2.2. TABLE OF CARRIER FREQUENCYS

| Frequency Band | Channel Number | Frequency |
|----------------|----------------|-----------|
| | 0 | 2402 MHz |
| | -C 1 | 2403 MHz |
| | | |
| ~ C _ C | 38 | 2440 MHz |
| 2402~2480MHz | 39 | 2441 MHz |
| | 40 | 2442 MHz |
| | | |
| | 77 | 2479 MHz |
| | 78 | 2480 MHz |

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2.3. RECEIVER INPUT BANDWIDTH

The input bandwidth of the receiver is 1.3MHz, in every connection one Bluetooth device is the master and the other one is slave. The master determines the hopping sequence. The slave follows this sequence. Both devices shift between RX and TX time slot according to the clock of the master. Additionally, the type of connection (e.g. single of multi slot packet) is set up at the beginning of the connection. The master adapts its hopping frequency and its TX/RX timing according to the packet type of the connection. Also, the slave of the connection will use these settings. Repeating of a packet has no influence on the hopping sequence. The hopping sequence generated by the master of the connection will be followed in any case. That means, a repeated packet will not be send on the same frequency, it is send on the next frequency of the hopping sequence.

2.4. EXAMPLE OF A HOPPING SEQUENCY IN DATA MODE

Example of a hopping sequence in data mode: 40, 21, 44, 23, 04, 15, 66, 56, 19, 78, 07, 28, 69, 55, 36, 45, 05, 13, 43, 74, 57, 35, 67, 76, 02, 34, 54, 63, 42, 11, 30, 06, 64, 25, 75, 48, 17, 33, 58, 01, 29, 14, 51, 72, 03, 31, 50, 61, 77, 18, 10, 47, 12, 68, 08, 49, 20, 00, 73, 09, 16, 60, 71, 41, 24, 53, 38, 26, 46, 37, 65, 32, 70, 52, 27, 59, 22, 62, 39

2.5. EQUALLY AVERAGE USE OF FREQUENCIES AND BEHAVIOUR

The generation of the hopping sequence in connection mode depends essentially on two input values:

1. LAP/UAP of the master of the connection.

2. Internal master clock.

The LAP (lower address part) are the 24 LSB's of the 48 BD_ADDRESS. The BD_ADDRESS is an unambiguous number of every Bluetooth unit. The UAP (upper address part) are the 24MSB's of the 48BD_ADDRESS

The internal clock of a Bluetooth unit is derived from a free running clock which is never adjusted and is never turned off. For behavior action with other units only offset is used. It has no relation to the time of the day. Its resolution is at least half the RX/TX slot length of 312.5us. The clock has a cycle of about one day(23h30). In most case it is implemented as 28 bits counter. For the deriving of the hopping sequence the entire. LAP (24 bits),4LSB's(4bits) (Input 1) and the 27MSB's of the clock (Input 2) are used. With this input values different mathematical procedures (permutations, additions, XOR-operations) are performed to generate the Sequence. This will be done at the beginning of every new transmission.

Regarding short transmissions the Bluetooth system has the following behavior:

The first connection between the two devices is established, a hopping sequence was generated. For Transmitting the wanted data the complete hopping sequence was not used. The connection ended.

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The second connection will be established. A new hopping sequence is generated. Due to the fact the Bluetooth clock has a different value, because the period between the two transmission is longer (and it Cannot be shorter) than the minimum resolution of the clock(312.5us). The hopping sequence will always differ from the first one.

2.6. RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for FCC ID: AUSCR3037B filing to comply with the FCC PART 15.247 requirements.

2.7. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013). Radiated testing was performed at an antenna to EUT distance 3 meters.

2.8. SPECIAL ACCESSORIES

Refer to section 5.2.

2.9. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

2.10. ANTENNA REQUIREMENT

This intentional radiator is designed with a permanently attached antenna of an antenna to ensure that no antenna other than that furnished by the responsible party shall be used with the device. For more information of the antenna, please refer to the APPENDIX B: PHOTOGRAPHS OF EUT.

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3. MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ±U, where expended uncertainty U is based on a standard

uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

- Uncertainty of Conducted Emission, Uc = ±3.2 dB
- Uncertainty of Radiated Emission below 1GHz, Uc = ±3.9 dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.8 dB
- Uncertainty of total RF power, conducted, $Uc = \pm 0.8$ dB
- Uncertainty of spurious emissions, conducted, Uc = ±2.7dB
- Uncertainty of Occupied Channel Bandwidth: Uc = ±2 %
- Uncertainty of Dwell Time: $Uc = \pm 2\%$
- Uncertainty of Frequency: $Uc = \pm 2 \%$

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4. DESCRIPTION OF TEST MODES

| NO. | TEST MODE DESCRIPTION | | |
|-----|--------------------------|--|--|
| 1 | Low channel GFSK | | |
| 2 | Middle channel GFSK | | |
| 3 | High channel GFSK | | |
| 4 | Low channel π/4-DQPSK | | |
| 5 | Middle channel π/4-DQPSK | | |
| 6 | High channel π/4-DQPSK | | |
| 7 | Low channel 8DPSK | | |
| 8 | Middle channel 8DPSK | | |
| 9 | High channel 8DPSK | | |
| 10 | Hopping mode GFSK | | |
| 11 | Hopping mode π/4-DQPSK | | |
| 12 | Hopping mode 8DPSK | | |

Note:

1. Only the result of the worst case was recorded in the report, if no other cases.

2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.

3. For Conducted Test method, a temporary antenna connector is provided by the manufacture.

Software Setting

| AppoTech RF Control Kit V3.62 | | | × |
|--|------------------------------------|--------------------------|--|
| IC Model CW6639 - | Send | | on (1) check FIX_RX_24xx (2) check channel to set channel number (1) uncheck FIX RX 24xx |
| COM port: COM5 - Baud Rate: 921600 | | LIX IX MODE | (2) check channel to set channel number (3) check power to set TX signal amplitude (4) Modulation Enable OFF |
| -RF Trim □ Fix_RX_24xx □ SingleTone | OK Hopping: OFF | TX Modulation mode | (1) uncheck FIX_RX_24xx (2) check channel to set channel number (3) check power to set TX signal amplitude (4) Modulation Enable ON (5) select Packet Type |
| | odulation: ON 💌 et Type: 3DH5 💌 | Hopping mode | (1)uncheck FIX_RX_24xx (2)uncheck channel to enable Hopping ON and TX Modulation OFF |
| Test scenario 3 Transmitter tes | t-1010 pattern 💌 | 语言 | (3)check power (4)select Packet Type |

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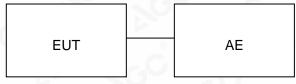
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5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Radiated Emission Configure:



Conducted Emission Configure:

| EUT | AE |
|-----|----|
| | |

5.2. EQUIPMENT USED IN TESTED SYSTEM

| ltem | Equipment | Model No. | ID or Specification | Remark |
|------|-------------------------------------|--------------------|---------------------|--------|
| 1 | Multifunctional FM Radio Speaker | CR3037B | AUSCR3037B | EUT |
| 2 | Adapter | BSY012U100100U N/A | | AE |
| 3 | Charger line | N/A | N/A | AE |
| 4 | Control Box | N/A | USB-TTL | AE |

5.3. SUMMARY OF TEST RESULTS

| FCC RULES | DESCRIPTION OF TEST | RESULT |
|--------------------|-----------------------------|-----------|
| 15.247 (b)(1) | Peak Output Power | Compliant |
| 15.247 (a)(1) | 20 dB Bandwidth | Compliant |
| 15.247 (d) | Conducted Spurious Emission | Compliant |
| 15.209 | Radiated Emission | Compliant |
| 15.247 (a)(1)(iii) | Number of Hopping Frequency | Compliant |
| 15.247 (a)(1)(iii) | Time of Occupancy | Compliant |
| 15.247 (a)(1) | Frequency Separation | Compliant |
| 15.207 | Conducted Emission | Compliant |

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6. TEST FACILITY

| Test Site | Attestation of Global Compliance (Shenzhen) Co., Ltd |
|--------------------------------------|---|
| Location | 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China |
| Designation Number | CN1259 |
| FCC Test Firm Registration Number | 975832 |
| A2LA Cert. No. | 5054.02 |
| Description | Attestation of Global Compliance (Shenzhen) Co., Ltd is accredited by A2LA |

TEST EQUIPMENT OF CONDUCTED EMISSION TEST

| Equipment Manufacturer | | Model S/N | | Cal. Date | Cal. Due | | |
|------------------------|----------|------------------|-------------------------|--------------|--------------|--------------|--------------|
| TEST RECEIVER R&S | | ESPI | 101206 | May 15, 2020 | May 14, 2021 | | |
| LISN | LISN R&S | | LISN R&S ESH2-Z5 100086 | | 100086 | Jul. 03,2020 | Jul. 02,2021 |
| Test software R&S | | ES-K1(Ver.V1.71) | N/A | N/A | N/A | | |

TEST EQUIPMENT OF RADIATED EMISSION TEST

| Equipment | Manufacturer | Model | S/N | Cal. Date | Cal. Due | |
|--|--------------------------|----------------------|---------------------|---------------|---------------|--|
| TEST RECEIVER | R&S | ESCI | 10096 | May 15, 2020 | May 14, 2021 | |
| EXA Signal Analyzer | Aglient | Aglient N9010A | | Dec. 12, 2019 | Dec. 11, 2020 | |
| EXA Signal Aglient | | N9010A | MY53470504 | Dec. 07, 2020 | Dec.06, 2021 | |
| 2.4GHz Filter EM Electronics | | 2400-2500MHz | N/A Mar. 23, 2020 | | Mar. 22, 2022 | |
| Attenuator ZHINAN | | E-002 | N/A N/A | | N/A | |
| Horn antenna | Horn antenna SCHWARZBECK | | #768 | Sep. 09, 2019 | Sep. 08, 2021 | |
| Active loop antenna (9K-30MHz) | antenna ZHINAN | | 18051 | May 22, 2020 | May 21, 2022 | |
| Double-Ridged Waveguide Horn | ETS LINDGREN | 3117 | 00034609 | May 17, 2019 | May 16, 2021 | |
| Broadband Preamplifier ETS LINDGREN | | 3117PA | 00225134 Sep. 03,20 | | Sep. 02,2022 | |
| ANTENNA | SCHWARZBECK | VULB9168 | 494 | Jan. 09, 2019 | Jan. 08, 2021 | |
| Test software | Tonscend | JS32-RE (Ver.2.5) | N/A | N/A | N/A | |

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7. PEAK OUTPUT POWER

7.1. MEASUREMENT PROCEDURE

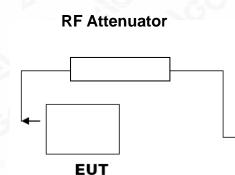
For peak power test:

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
- 3. RBW > 20 dB bandwidth of the emission being measured.
- 4. VBW \geq RBW.
- 5. Sweep: Auto.
- 6. Detector function: Peak.
- 7. Trace: Max hold.

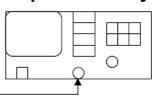
Allow trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power, after any corrections for external attenuators and cables.

7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

PEAK POWER TEST SETUP



Spectrum Analyzer



RF Cable

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7.3. LIMITS AND MEASUREMENT RESULT

| FOR GFSK MOUDULATION | | | | | | |
|----------------------|---------------------|----------------------------|--------------|--|--|--|
| Frequency (GHz) | Peak Power (dBm) | Applicable Limits (dBm) | Pass or Fail | | | |
| 2.402 | -4.402 | 21 | Pass | | | |
| 2.441 | -4.806 | 21 | Pass | | | |
| 2.480 | -5.133 | 21 | Pass | | | |

CH0



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| PEAK OUTPUT POWER MEASUREMENT RESULT FOR Π/4-DQPSK MODULATION | | | | | | | |
|---|--------|----|------|--|--|--|--|
| Frequency (GHz)Peak Power (dBm)Applicable Limits (dBm)Pass or Fail | | | | | | | |
| 2.402 | -3.232 | 21 | Pass | | | | |
| 2.441 | -3.547 | 21 | Pass | | | | |
| 2.480 | -3.845 | 21 | Pass | | | | |



CH0

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| PEAK OUTPUT POWER MEASUREMENT RESULT FOR 8-DPSK MODULATION | | | | | | | | |
|---|--------|----|------|--|--|--|--|--|
| Frequency (GHz)Peak Power (dBm)Applicable Limits (dBm)Pass or Fail | | | | | | | | |
| 2.402 | -2.741 | 21 | Pass | | | | | |
| 2.441 | -3.083 | 21 | Pass | | | | | |
| 2.480 | -3.516 | 21 | Pass | | | | | |





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CH39

CH78



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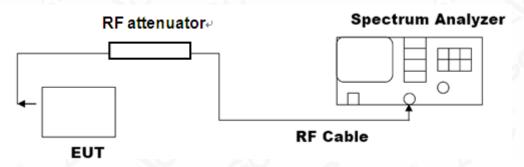


8. 20DB BANDWIDTH

8.1. MEASUREMENT PROCEDURE

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hoping channel The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW; Sweep = auto; Detector function = peak
- 4. Set SPA Trace 1 Max hold, then View.

8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the stand resting / nspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15day and the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.



8.3. LIMITS AND MEASUREMENT RESULTS

| MEASUREMENT RESULT FOR GFSK MOUDULATION | | | | | | |
|---|--------------------|----------|------|--|--|--|
| Annliachta Limita | Measurement Result | | | | | |
| Applicable Limits | Test Data | Criteria | | | | |
| | Low Channel | 1.032 | PASS | | | |
| N/A | Middle Channel | 1.032 | PASS | | | |
| | High Channel | 1.034 | PASS | | | |

02:29:48 PM Dec 22, 2020 Radio Std: None Frequency Center Freq: 2.402000000 GHz Trig: Free Run Avg|Hold: 100/100 2.402000000 GHz Trig: Free Run #Atten: 30 dB Radio Device: BTS Ref 20.00 dBm **Center Freq** 2.402000000 GHz Center 2.402 GHz #Res BW 30 kHz Span 3 MHz Sweep 3.2 ms **CF** Step #VBW 100 kHz 300.000 kH <u>Auto</u> Ma Occupied Bandwidth **Total Power** -0.47 dBm 963.17 kHz Freq Offset 0 Hz 8.989 kHz **Transmit Freq Error OBW Power** 99.00 % x dB Bandwidth 1.032 MHz x dB -20.00 dB

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

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TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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| MEASUREMENT RESULT FOR II /4-DQPSK MODULATION | | | | | | |
|---|----------------|--------------------|------|--|--|--|
| Applicable Limite | | Measurement Result | | | | |
| Applicable Limits | Test Data | Test Data (MHz) | | | | |
| N/A | Low Channel | 1.074 | PASS | | | |
| | Middle Channel | 1.067 | PASS | | | |
| | High Channel | 1.069 | PASS | | | |

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



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TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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| MEASUREMENT RESULT FOR 8-DPSK MODULATION | | | | | | | |
|--|----------------|-----------------|------|--|--|--|--|
| Measurement Result | | | | | | | |
| Applicable Limits | Test Data | Test Data (MHz) | | | | | |
| | Low Channel | 1.068 | PASS | | | | |
| N/A | Middle Channel | 1.109 | PASS | | | | |
| | High Channel | 1.103 | PASS | | | | |

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



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TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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9. CONDUCTED SPURIOUS EMISSION

9.1. MEASUREMENT PROCEDURE

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. Set the EUT Work on the top, the Middle and the bottom operation frequency individually.
- Set the Span = wide enough to capture the peak level of the in-band emission and all spurious emissions from the lowest frequency generated in the EUT up through the 10th harmonic.
 RBW = 100 kHz; VBW= 300 kHz; Sweep = auto; Detector function = peak.
- 4. Set SPA Trace 1 Max hold, then View.

9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 8.2

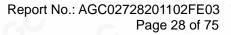
9.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6

9.4. LIMITS AND MEASUREMENT RESULT

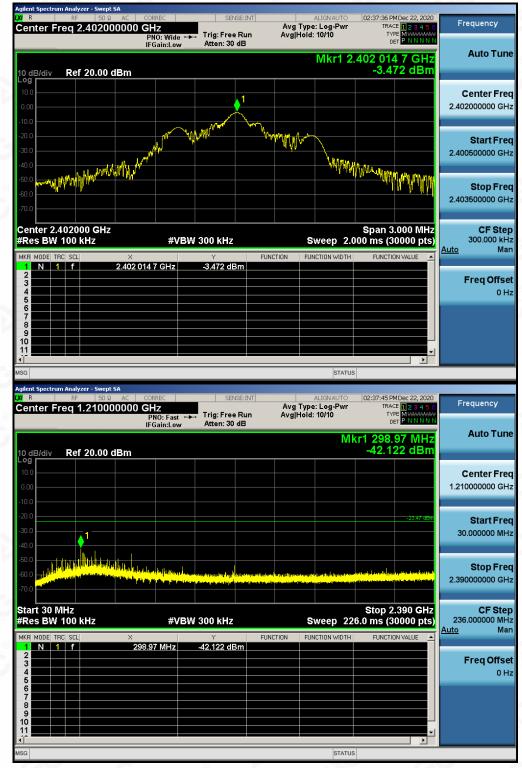
| LIMITS AND MEASUREMENT RESULT | | | | | | | | |
|---|--|----------|--|--|--|--|--|--|
| Annlinghta Limita | Measurement Result | | | | | | | |
| Applicable Limits | Test Data | Criteria | | | | | | |
| In any 100 kHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency | At least -20dBc than the limit Specified on the BOTTOM Channel | PASS | | | | | | |
| power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power. In addition, radiation 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)) | At least -20dBc than the limit Specified on the TOP Channel | PASS | | | | | | |

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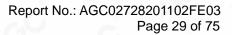




TEST RESULT FOR ENTIRE FREQUENCY RANGE TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 8DPSK MODULATION IN LOW CHANNEL



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| Agilent Spectrum Ana | | | | | | | | |
|---|--------------|---------------------------|--------------------------------|----------|---|--------------------|----------------|---|
| | 13.74175000 | | SENSE:IN | Avg 1 | ALIGNAUTO ype: Log-Pwr | TRACI | Dec 22, 2020 | Frequency |
| | | PNO: Fast ↔ IFGain:Low | Trig: Free Rui Atten: 30 dB | n Avg H | old: 10/10 | TYP DE | | Auto Tune |
| | ef 20.00 dBm | | | | Mk | r1 4.804 -46.08 | 3 GHz 6 dBm | Auto Tune |
| Log 10.0 0.00 | | | | | | | | Center Freq 13.741750000 GHz |
| -20.0 -30.0 -40.0 | 1 | | | | | | -23:47 dBm | Start Freq 2.483500000 GHz |
| -50.0 -60.0 <mark></mark> | | | | | and her being a state of the state of the | | | Stop Freq 25.00000000 GHz |
| Start 2.48 GH #Res BW 100 MKR MODE TRC SO | D kHz | #VBW | 300 kHz -46.086 dBm | FUNCTION | Sweep 2 | 2.152 s (30 | | CF Step 2.251650000 GHz <u>Auto</u> Man |
| 1 N 1 f 2 | 4. | 804 3 GHz | -46.086 dBm | | | | | Freq Offset 0 Hz |
| MSG | | | | | STATUS | 5 | | |

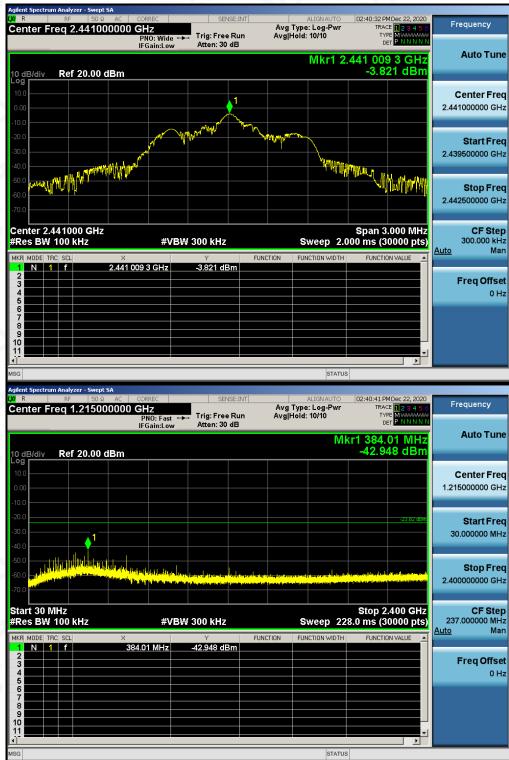
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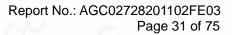
 Tel: +86-755 2523 4088
 E-mail: agc@agc-cert.com





TEST PLOT OF OUT OF BAND EMISSIONS OF 8DPSK MODULATION IN MIDDLE CHANNEL

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| | m Analyzer - Swep | t SA | | | | | | | | |
|-------------------|-------------------|-------------------------|---------------------|-------------------------|--------|----------|-------------------------|---|-----------------------|-------------------------------|
| (X/R Center Er | RF 50 Ω | 2 AC CORRE 750000 GH | | SENS | BE:INT | Avg Tvp | ALIGNAUTO e: Log-Pwr | | MDec 22, 2020 | Frequency |
| Contor II | 09 10.741 | PNO | :Fast ↔►→ in:Low | Trig: Free Atten: 30 | | Avg Hold | : 10/10 | TY | ET P N N N N N | |
| | | 1.04 | | | | | Mk | r1 4.88 | 2 3 GHz | Auto Tune |
| 10 dB/div | Ref 20.00 | dBm | | | | | | | 40 dBm | |
| Log 10.0 | | | | | | | | | | Center Freq |
| 0.00 | | | | | | | | | | 13.741750000 GHz |
| -10.0 | | | | | | | | | | |
| -20.0 | | | | | | | | | -23.82 dBm | Otort From |
| -30.0 | | | | | | | | | | Start Freq 2.483500000 GHz |
| -40.0 | 1 | | | | | | | | | 2.400000000000 |
| -50.0 | | | | | | | adan, and in all the | and the second se | | |
| -60.0 starb task | | and the state of the | All the set | a dirette da | | | | Mar Chanter | | Stop Freq 25.00000000 GHz |
| -70.0 | | | | | | | | | | 25.00000000 GHZ |
| Start 2.48 | | | | | | | | 0 4+++ 2 | 5.00.011- | OF Oton |
| #Res BW | | | #VBW | 300 kHz | | | Sweep 2 | 5:0p 2 2.152 s (3 | 5.00 GHz 0000 pts) | CF Step 2.251650000 GHz |
| MKR MODE TF | | × | | Y | ELINO | TION FU | NCTION WIDTH | | IN VALUE | <u>Auto</u> Man |
| 1 N 1 | | 4.882 3 (| GHz | -47.240 dB | m | | | | | |
| 2 3 | | | | | | | | | | Freq Offset |
| 4 5 | | | | | _ | | | | | 0 Hz |
| 6 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| | | | | | | | | | ▼ | |
| MSG | | | | | | | STATUS | 3 | | |

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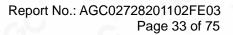
 Tel: +86-755 2523 4088
 E-mail: agc@agc-cert.com





TEST PLOT OF OUT OF BAND EMISSIONS OF 8DPSK MODULATION IN HIGH CHANNEL

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| Agilent Spectrum Analyzer - Swept SA | | | | | | | | | | | | | | |
|--------------------------------------|-------------------------------------|-------|--------------|--------|-----------------|-------------|-----------|---------|--------|-------|---------------|------------|-----------------------------|-----------------|
| <mark>IXI</mark> R Cent | or Er | RF | | Ω AC C | | | SEN | NSE:INT | Ava | | ALIGN AUTO | | MDec 22, 2020 | Frequency |
| Cent | GLIII | eq | 15.750 | | PNO: Fast | | rig: Free | | | Hold: | | TYI | PE MWWWWW ET P N N N N N | |
| | IFGaintow Auen. 30 dB | | | | | | | | | | | | | Auto Tune |
| | Mkr1 23.761 0 GHz | | | | | | | | | | | | | Actoratio |
| 10 dE | 10 dB/div Ref 20.00 dBm -48.452 dBm | | | | | | | | | | | | | |
| 10.0 | | | | | | | | | | | | | | Center Freq |
| 0.00 | | | | | | | | | | | | | | 13.75000000 GHz |
| | | | | | هد | | | | | | | | | 13.75000000 GHz |
| -10.0 | | | | | | | | | | | | | | |
| -20.0 | | | | | کے ک | | | | | | | | -24.59 dBm | Start Freq |
| -30.0 | | | | | | | | | | | | | | 2.50000000 GHz |
| -40.0 | | | | | | | | | | | | | 1_ | |
| -50.0 | | | | | | | | | | | | | and some the second second | |
| -60.0 | and succession | الريس | and a stream | | A Andrew | and the set | | | | | والفريد واربا | | | Stop Freq |
| -70.0 | Alexandra and a | 1 | | | <u>المرا</u> لا | | | | | | | | | 25.00000000 GHz |
| -7010 | | | | | | | | | | | | | | |
| Star | t 2.50 | GH | z | | | | | | | | | Stop 2 | 5.00 GHz | CF Step |
| #Res BW 100 kHz #VB | | | | | | BW 30 | 0 kHz | | | | Sweep 2 | 2.152 s (3 | 0000 pts) | 2.25000000 GHz |
| MKR M | 10DE TR | C SCI | - | × | | _ | Y | FU | NCTION | FUN | ICTION WIDTH | FUNCTIO | ON VALUE | <u>Auto</u> Man |
| | N 1 | f | | 23.76 | 61 0 GHz | -48 | 3.452 dE | 3m | | | | | | |
| 23 | | | | | I | | | | | | | | | Freq Offset |
| 4 | | | | | | | | | | | | | | 0 Hz |
| 6 | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| MSG | | | | | | | | | | | STATUS | 3 | | |

Note: The 8DPSK modulation is the worst case and only those data recorded in the report.

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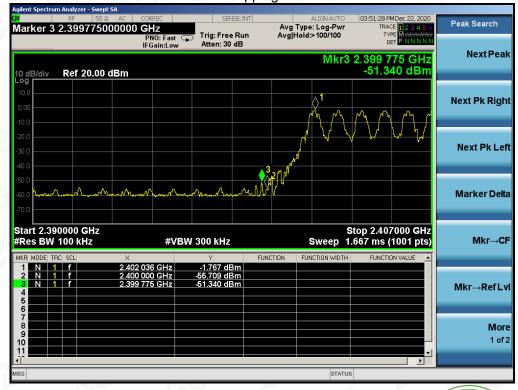
TEST RESULT FOR BAND EDGE

GFSK MODULATION IN LOW CHANNEL

Hopping off

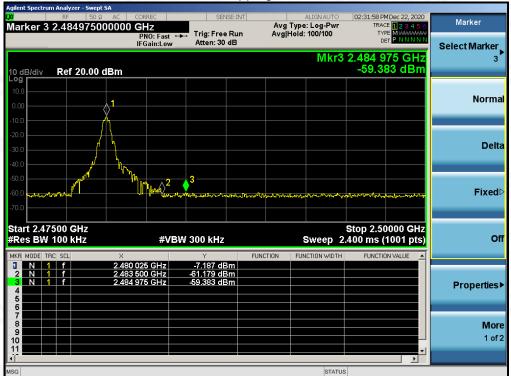


Hopping on



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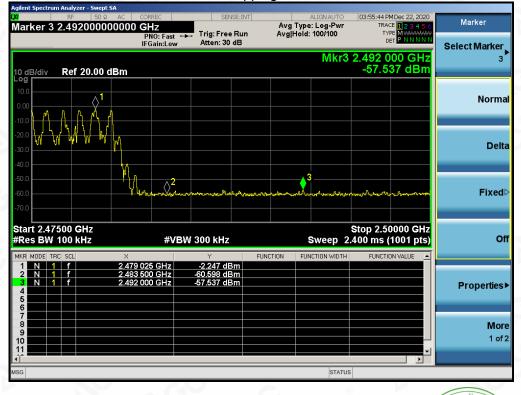




GFSK MODULATION IN HIGH CHANNEL

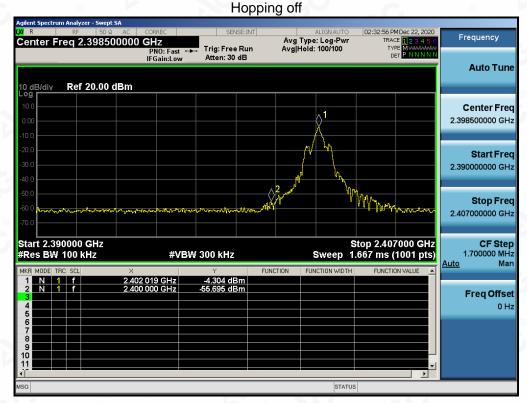
Hopping off

Hopping on



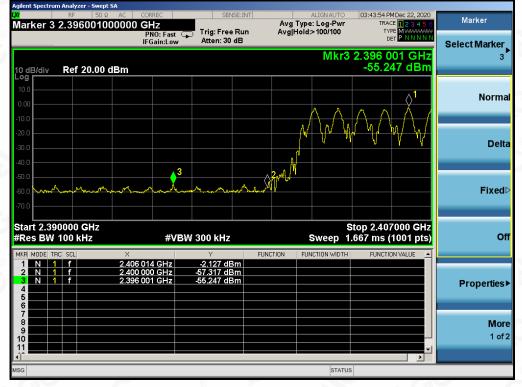
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π /4-DQPSK MODULATION IN LOW CHANNEL

Hopping on



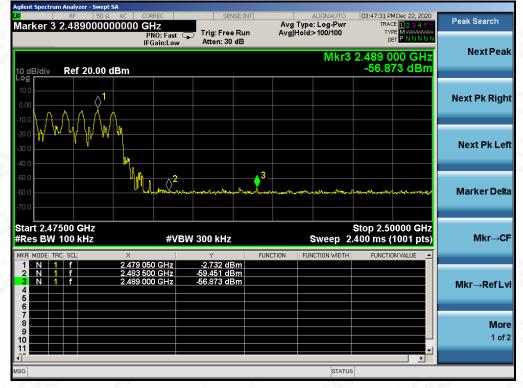
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π /4-DQPSK MODULATION IN HIGH CHANNEL Hopping off

Hopping on



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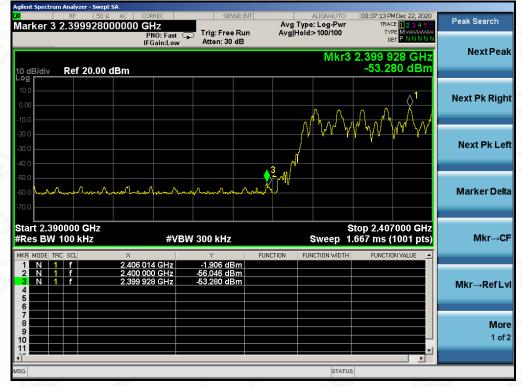




8-DPSK MODULATION IN LOW CHANNEL

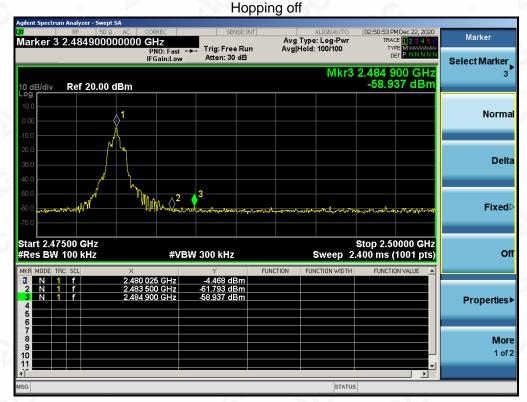
Hopping off

Hopping on



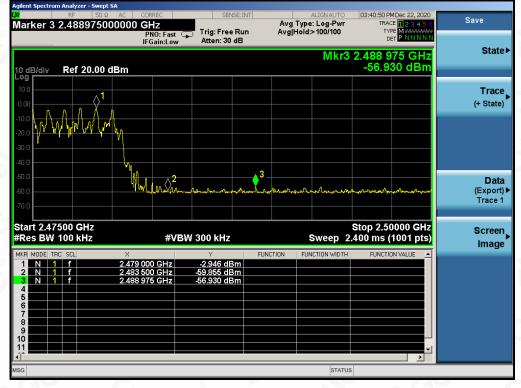
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8-DPSK MODULATION IN HIGH CHANNEL

Hopping on



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10. RADIATED EMISSION

10.1. MEASUREMENT PROCEDURE

- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.

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The following table is the setting of spectrum analyzer and receiver.

| Spectrum Parameter | Setting |
|-----------------------|---|
| Start ~Stop Frequency | 9KHz~150KHz/RB 200Hz for QP |
| Start ~Stop Frequency | 150KHz~30MHz/RB 9KHz for QP |
| Start ~Stop Frequency | 30MHz~1000MHz/RB 120KHz for QP |
| Start ~Stop Frequency | 1GHz~26.5GHz 1MHz/3MHz for Peak, 1MHz/3MHz for Average |

| Receiver Parameter | Setting |
|-----------------------|--------------------------------|
| Start ~Stop Frequency | 9KHz~150KHz/RB 200Hz for QP |
| Start ~Stop Frequency | 150KHz~30MHz/RB 9KHz for QP |
| Start ~Stop Frequency | 30MHz~1000MHz/RB 120KHz for QP |

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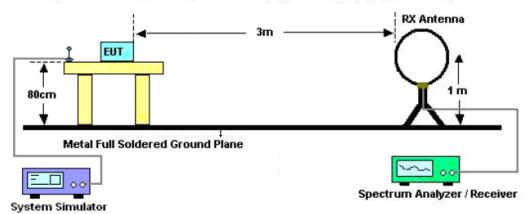
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 Tel: +86-755 2523 4088
 E-mail: agc@agc-cert.com
 Web: http://cn.agc-cert.com/

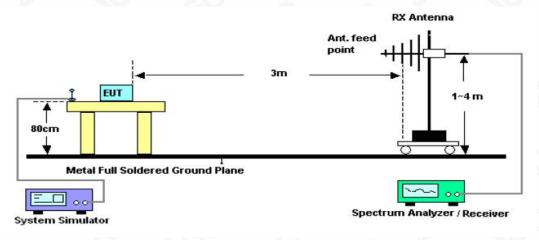


10.2. TEST SETUP

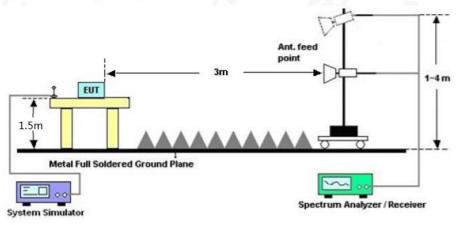
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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10.3. LIMITS AND MEASUREMENT RESULT

15.209 Limit in the below table has to be followed

| Frequencies (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|----------------------|--------------------------------------|----------------------------------|
| 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 | 3 |
| 88~216 | 150 | 3 |
| 216~960 | 200 | 3 |
| Above 960 | 500 | 3 |

Note: All modes were tested for restricted band radiated emission, the test records reported below are the worst result compared to other modes.

10.4. TEST RESULT

RADIATED EMISSION BELOW 30MHz

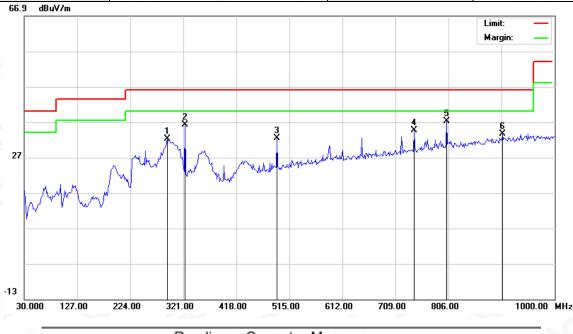
The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

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RADIATED EMISSION BELOW 1GHz

| EUT | Multifunctional FM Radio Speaker | Model Name | CR3037B |
|-------------|-------------------------------------|-------------------|----------------|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 7 | Antenna | Horizontal |



| No. | Mk | . Freq. | Reading Level | Correct Factor | Measure- ment | Limit | Over | |
|-----|----|----------|------------------|-------------------|------------------|--------|--------|----------|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector |
| 1 | | 291.9000 | 11.37 | 20.85 | 32.22 | 46.00 | -13.78 | peak |
| 2 | | 324.2333 | 14.88 | 21.35 | 36.23 | 46.00 | -9.77 | peak |
| 3 | | 492.3667 | 7.75 | 24.68 | 32.43 | 46.00 | -13.57 | peak |
| 4 | | 742.9500 | 5.50 | 29.12 | 34.62 | 46.00 | -11.38 | peak |
| 5 | * | 802.7667 | 6.83 | 30.45 | 37.28 | 46.00 | -8.72 | peak |
| 6 | | 904.6167 | 1.77 | 31.74 | 33.51 | 46.00 | -12.49 | peak |
| | | | | | | | | |

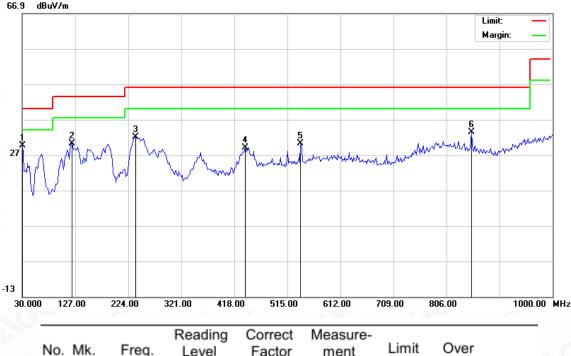
RESULT: PASS

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| EUT Multifunctional FM Radio Speaker Model | | Model Name | CR3037B |
|---|--------|-------------------|----------------|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 7 | Antenna | Vertical |



| No. | Mk. | Freq. | Level | Factor | ment | Limit | Over | |
|-----|-----|----------|-------|--------|--------|--------|--------|----------|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector |
| 1 | * | 30.0000 | 17.35 | 12.17 | 29.52 | 40.00 | -10.48 | peak |
| 2 | | 120.5333 | 12.30 | 18.00 | 30.30 | 43.50 | -13.20 | peak |
| 3 | | 236.9333 | 13.85 | 18.14 | 31.99 | 46.00 | -14.01 | peak |
| 4 | | 437.4000 | 5.28 | 23.73 | 29.01 | 46.00 | -16.99 | peak |
| 5 | | 539.2500 | 4.53 | 25.76 | 30.29 | 46.00 | -15.71 | peak |
| 6 | | 851.2667 | 4.37 | 29.02 | 33.39 | 46.00 | -12.61 | peak |
| | | | | | | | | |

RESULT: PASS

Note: 1. Factor=Antenna Factor + Cable loss, Over= Measurement –Limit.

2. All test modes had been pre-tested. The mode 7 is the worst case and recorded in the report.

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RADIATED EMISSION ABOVE 1GHz

| EUT | Multifunctional FM Radio Speaker | Model Name | CR3037B |
|-------------|-------------------------------------|-------------------|----------------|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 7 | Antenna | Horizontal |

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | |
|-----------|---------------|--------|----------------|----------|--------|------------|
| (MHz) | (dBµV) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | Value Type |
| 4804.000 | 46.58 | 0.08 | 46.66 | 74 | -27.34 | peak |
| 4804.000 | 36.32 | 0.08 | 36.4 | 54 | -17.6 | AVG |
| 7206.000 | 39.64 | 2.21 | 41.85 | 74 | -32.15 | peak |
| 7206.000 | 32.41 | 2.21 | 34.62 | 54 | -19.38 | AVG |
| | . C | 8 | | | | 8 |
| | | | 8 | | -0- | |
| emark: | | | | | | |

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

| EUT | Multifunctional FM Radio Speaker | Model Name | CR3037B |
|-------------|-------------------------------------|-------------------|----------------|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 7 | Antenna | Vertical |

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type |
|--------------|-------------------|-----------|----------------|----------|--------|------------|
| (MHz) | (dBµV) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | value Type |
| 4804.000 | 45.48 | 0.08 | 45.56 | 74 | -28.44 | peak |
| 4804.000 | 35.95 | 0.08 | 36.03 | 54 | -17.97 | AVG |
| 7206.000 | 39.76 | 2.21 | 41.97 | 74 | -32.03 | peak |
| 7206.000 | 31.34 | 2.21 | 33.55 | 54 | -20.45 | AVG |
| <u> </u> | 20 | 0 | | 2 | 0 | |
| emark: | | -C | 0 | | | |
| ator - Antor | ana Factor I Cabl | aloga Dra | omplifior | | | |

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

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| EUT | Multifunctional FM Radio Speaker | Model Name | CR3037B |
|-------------|-------------------------------------|-------------------|----------------|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 8 | Antenna | Horizontal |

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type |
|-----------|---------------|--------|----------------|----------|--------|------------|
| (MHz) | (dBµV) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | value Type |
| 4882.000 | 47.67 | 0.14 | 47.81 | 74 | -26.19 | peak |
| 4882.000 | 36.48 | 0.14 | 36.62 | 54 | -17.38 | AVG |
| 7323.000 | 40.15 | 2.36 | · 42.51 | 74 | -31.49 | peak |
| 7323.000 | 33.29 | 2.36 | 35.65 | 54 | -18.35 | AVG |
| mark: | | | 1,04 | | 0 | 6 |

Multifunctional FM Radio EUT **Model Name** CR3037B Speaker 25°C **Relative Humidity** Temperature 55.4% 960hPa **Test Voltage** Normal Voltage Pressure **Test Mode** Vertical Mode 8 Antenna

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Tree |
|--------------|-------------------|--------------|----------------|----------|--------|------------|
| (MHz) | (dBµV) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | Value Type |
| 4882.000 | 47.42 | 0.14 | 47.56 | 74 | -26.44 | peak |
| 4882.000 | 39.35 | 0.14 | 39.49 | 54 | -14.51 | AVG |
| 7323.000 | 41.27 | 2.36 | 43.63 | 74 | -30.37 | peak |
| 7323.000 | 33.26 | 2.36 | 35.62 | 54 | -18.38 | AVG |
| | (?) | | G | . Ca | © | |
| | | | | 2 | | 8 |
| emark: | ~ GV | | | | | |
| ctor = Anter | na Factor + Cable | Loss – Pre-a | mplifier. | | | |

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| EUT | Multifunctional FM Radio Speaker | Model Name | CR3037B |
|-------------|-------------------------------------|-------------------|----------------|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 9 | Antenna | Horizontal |

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type |
|--------------|--------------------|-------------|----------------|----------|--------|------------|
| (MHz) | (dBµV) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | value Type |
| 4960.000 | 45.84 | 0.22 | 46.06 | 74 | -27.94 | peak |
| 4960.000 | 36.56 | 0.22 | 36.78 | 54 | -17.22 | AVG |
| 7440.000 | 39.47 | 2.64 | 42.11 | 74 | -31.89 | peak |
| 7440.000 | 30.62 | 2.64 | 33.26 | 54 | -20.74 | AVG |
| | | | 104 | - G | 0 | |
| emark: | | | | | 20 | |
| ctor = Anter | nna Factor + Cable | Loss – Pre- | amplifier. | | | |

| EUT | Multifunctional FM Radio Speaker | Model Name | CR3037B |
|-------------|-------------------------------------|-------------------|----------------|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 9 | Antenna | Vertical |

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type |
|---------------|------------------|----------------|----------------|----------|--------|------------|
| (MHz) | (dBµV) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | value Type |
| 4960.000 | 45.89 | 0.22 | 46.11 | 74 💿 | -27.89 | peak |
| 4960.000 | 35.32 | 0.22 | 35.54 | 54 | -18.46 | AVG |
| 7440.000 | 39.56 | 2.64 | 42.2 | 74 | -31.8 | peak |
| 7440.000 | 30.46 | 2.64 | 33.1 | 54 | -20.9 | AVG |
| ® | | | 0 | | 0 | |
| emark: | | | | | 0 | 6 |
| actor = Anter | nna Factor + Cab | le Loss – Pre- | amplifier. | | | |

RESULT: PASS

Note:

The amplitude of other spurious emissions from 1G to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Level -Limit.

The "Factor" value can be calculated automatically by software of measurement system.

All test modes had been tested. The 8DPSK modulation is the worst case and recorded in the report.

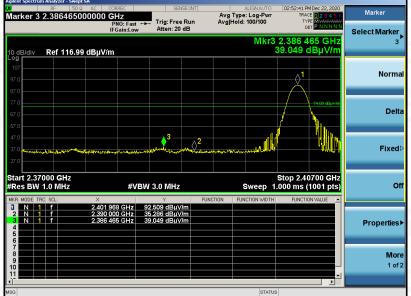
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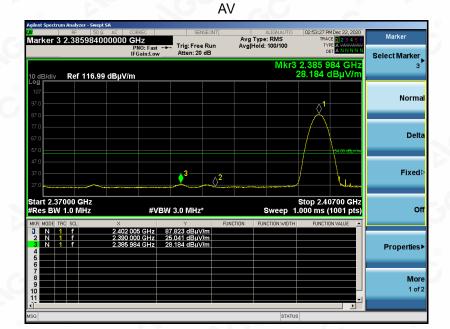


| EUT | Multifunctional FM Radio Speaker | Model Name | CR3037B |
|-------------|-------------------------------------|-------------------|----------------|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 7 | Antenna | Horizontal |

TEST RESULT FOR RESTRICTED BANDS REQUIREMENTS

PK





RESULT: PASS

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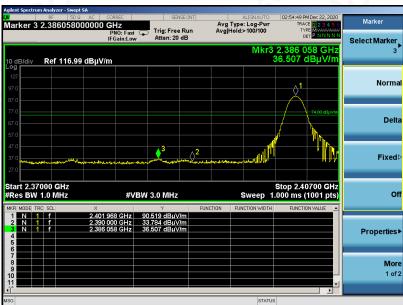
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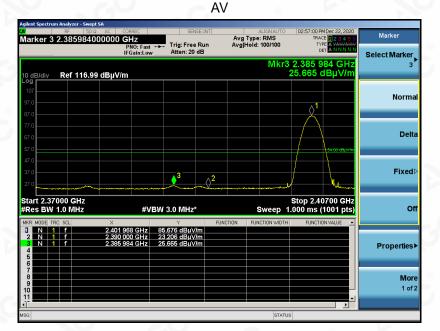
Report No.: AGC02728201102FE03 Page 50 of 75

| EUT | Multifunctional FM Radio Speaker | Model Name | CR3037B |
|-------------|-------------------------------------|-------------------|----------------|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 7 | Antenna | Vertical |

PK



. . .



RESULT: PASS

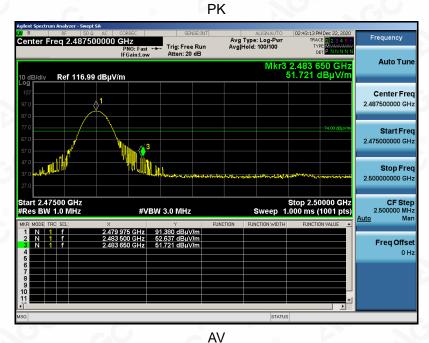
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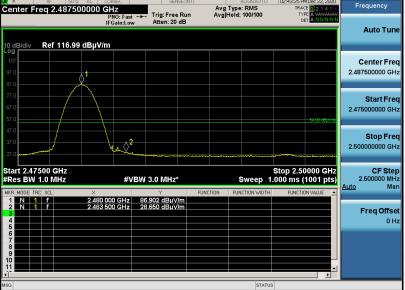


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| EUT | Multifunctional FM Radio Speaker | Model Name | CR3037B |
|-------------|-------------------------------------|-------------------|----------------|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 9 | Antenna | Horizontal |







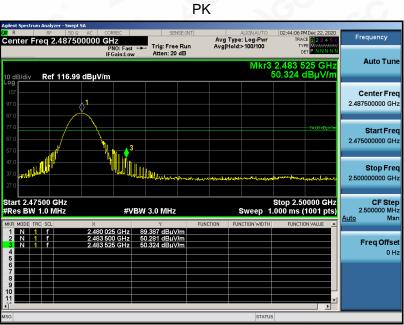
RESULT: PASS

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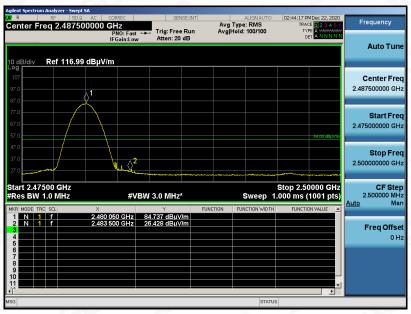


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| EUT | Multifunctional FM Radio Speaker | Model Name | CR3037B |
|-------------|-------------------------------------|-------------------|----------------|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | Mode 9 | Antenna | Vertical |



AV



RESULT: PASS

Note: The factor had been edited in the "Input Correction" of the Spectrum Analyzer. The 8DPSK modulation is the worst case and recorded in the report.

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11. NUMBER OF HOPPING FREQUENCY

11.1. MEASUREMENT PROCEDURE

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

1. Span: The frequency band of operation. Depending on the number of channels the device supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.

2. RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.

3. VBW \geq RBW. Sweep: Auto. Detector function: Peak. Trace: Max hold.

4. Allow the trace to stabilize.

11.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

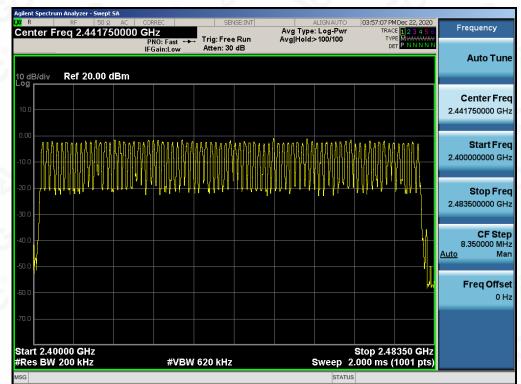
Same as described in section 8.2

11.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6

11.4. LIMITS AND MEASUREMENT RESULT

| TOTAL NO. OF | LIMIT (NO. OF CH) | MEASUREMENT (NO. OF CH) | RESULT | |
|-----------------|-------------------|----------------------------|--------|--|
| HOPPING CHANNEL | >=15 | 79 | PASS | |



TEST PLOT FOR NO. OF TOTAL CHANNELS

Note: The GFSK modulation is the worst case and recorded in the report.

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12. TIME OF OCCUPANCY (DWELL TIME)

12.1. MEASUREMENT PROCEDURE

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

1. Span: Zero span, centered on a hopping channel.

2. RBW shall be \leq channel spacing and where possible RBW should be set >> 1 / T, where T is the expected dwell time per channel.

3. Sweep: As necessary to capture the entire dwell time per hopping channel; where possible use a video trigger and trigger delay so that the transmitted signal starts a little to the right of the start of the plot. The trigger level might need slight adjustment to prevent triggering when the system hops on an adjacent channel; a second plot might be needed with a longer sweep time to show two successive hops on a channel.

4. Detector function: Peak. Trace: Max hold.

5. Use the marker-delta function to determine the transmit time per hop.

6. Repeat the measurement using a longer sweep time to determine the number of hops over the period specified in the requirements. The sweep time shall be equal to, or less than, the period specified in the requirements. Determine the number of hops over the sweep time and calculate the total number of hops in the period specified in the requirements, using the following equation:

(Number of hops in the period specified in the requirements) = (number of hops on spectrum analyzer) × (period specified in the requirements / analyzer sweep time)

7. The average time of occupancy is calculated from the transmit time per hop multiplied by the number of hops in the period specified in the requirements.

12.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 8.2

12.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6

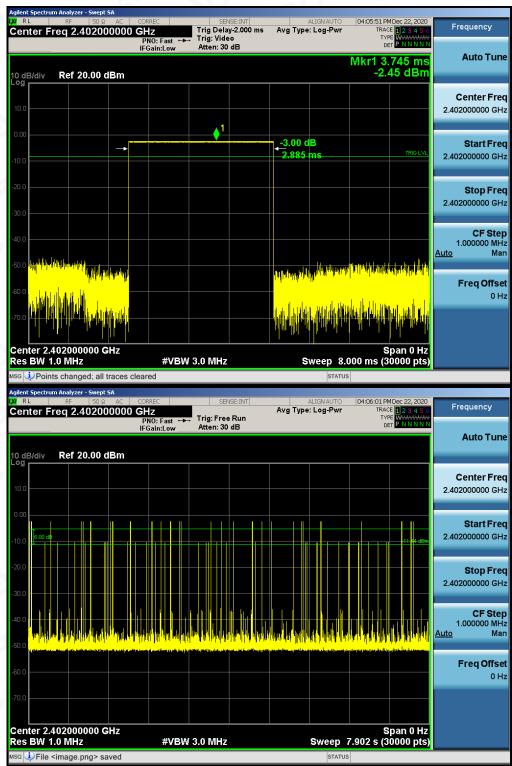
12.4. LIMITS AND MEASUREMENT RESULT

| Channel | Time of Pulse for DH5 (ms) | Number of hops in the period specified in the requirements | Sweep Time (ms) | Limit (ms) |
|---------|----------------------------------|--|--------------------|---------------|
| Low | 2.885 | 28*4 | 323.120 | 400 |
| Middle | 2.886 | 28*4 | 323.232 | 400 |
| High | 2.886 | 26*4 | 300.144 | 400 |

Note: The 8DPSK modulation is the worst case and recorded in the report.

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TEST PLOT OF LOW CHANNEL

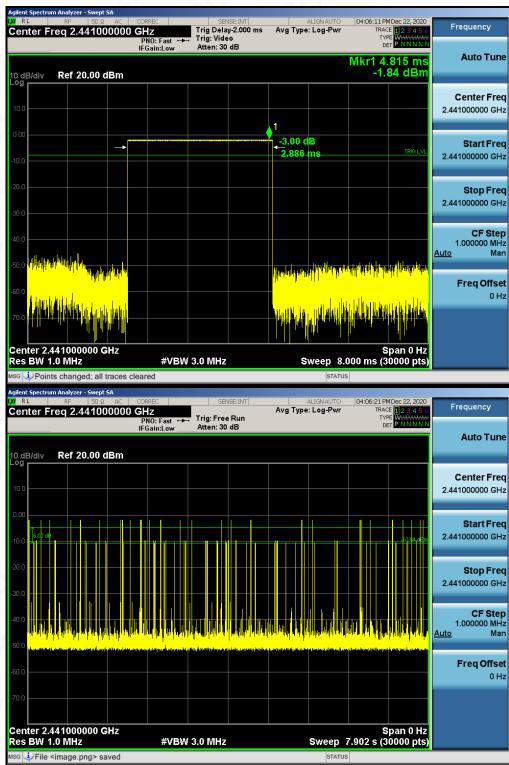
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TEST PLOT OF MIDDLE CHANNEL

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