

TEST REPORT

| | | | |
|--------------------------------|--|----------------------|---|
| Report No. | CHTW24070050 | Report verification: |  |
| Project No. | SHT2406041801W | | |
| FCC ID | 2BGNNSDM660V | | |
| Applicant's name | SATEL RADIO TELECOMUNICACAO LTDA | | |
| Address | AV.FRANCISCO MATARAZZO, 1752, SALAS 516, AGUA BRANCA, SAO PAULO/SP, BRAZIL | | |
| Product name | Digital Mobile Radio | | |
| Trade Mark | - | | |
| Model No. | DM660 VHF | | |
| Listed Model(s) | - | | |
| Standard | FCC CFR Title 47 Part 90 | | |
| Date of receipt of test sample | Jun.13, 2024 | | |
| Date of testing | Jun.14, 2024- Jul.09, 2024 | | |
| Date of issue | Jul.17, 2024 | | |
| Result | PASS | | |

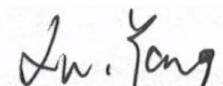
Compiled by
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Supervised by
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Approved by
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Testing Laboratory Name : Shenzhen Huatongwei International Inspection Co., Ltd.

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The test report merely correspond to the test sample.

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1 **TEST STANDARDS AND REPORT VERSION**

1.1. **Test standard**

The tests were performed according to following standards:

[FCC Rules Part 90](#): Private land mobile radio services.

[FCC Rules Part 2](#): Frequency allocations and radio treaty matters; General rules and regulations

[ANSI C63.26-2015](#): American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

[ANSI/TIA-603-E-2016](#): Land Mobile FM or PM Communications Equipment and Performance Standards

[ANSI C63.4-2014](#): American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

1.2. **Report revised information**

| Revised No. | Date of issued | Description |
|-------------|----------------|-------------|
| N/A | 2024-07-17 | Original |
| | | |
| | | |
| | | |
| | | |

2 TEST DESCRIPTION

| Section | Test Item | Section | Result | Test Engineer |
|---------|---|----------------------------------|--------|---------------|
| 5.1 | Conducted carrier output power | Part 90.205 Part 2.1046(a) | Pass | Xiangyu Wei |
| 5.2 | 99% occupied bandwidth & 26dB bandwidth | Part 90.209 & 210 Part 2.1049 | Pass | Xiangyu Wei |
| 5.3 | Emission mask | Part 90.209 & 210 Part 2.1049 | Pass | Xiangyu Wei |
| 5.4 | Modulation limit | Part 2.1047(b) | Pass | Xiangyu Wei |
| 5.5 | Audio frequency response | Part 2.1047(a) | Pass | Xiangyu Wei |
| 5.6 | Frequency stability VS temperature | Part 90.213 Part 2.1055 | Pass | Xiangyu Wei |
| 5.7 | Frequency stability VS voltage | Part 90.213 Part 2.1055 | Pass | Xiangyu Wei |
| 5.8 | Transient frequency behavior | Part 90.214 | Pass | Xiangyu Wei |
| 5.9 | Transmit conducted spurious emission | Part 90.210 Part 2.1051 | Pass | Xiangyu Wei |
| 5.10 | Transmit radiated spurious emission | Part 90.210 Part 2.1053 | Pass | Yifan Wang |

Note:

The measurement uncertainty is not included in the test result.

3 SUMMARY

3.1 Client information

| | |
|---------------|--|
| Applicant: | SATELRADIO TELECOMUNICACAO LTDA |
| Address: | AV.FRANCISCO MATARAZZO, 1752, SALAS 516, AGUA BRANCA, SAO PAULO/SP, BRAZIL |
| Manufacturer: | SATELRADIO TELECOMUNICACAO LTDA |
| Address: | AV.FRANCISCO MATARAZZO, 1752, SALAS 516, AGUA BRANCA, SAO PAULO/SP, BRAZIL |

3.2 Product description

| Main unit information: | |
|------------------------|----------------------|
| Product name: | Digital Mobile Radio |
| Trade mark: | - |
| Model No.: | DM660 VHF |
| Listed model(s): | - |
| Power supply: | DC 13.6V |
| Hardware version: | V2.00.10 |
| Software version: | DM660MB_B |

3.3 Radio Specification Description ^{*1}

| | | |
|---|---|---|
| Device type: | <input type="checkbox"/> Portable | <input checked="" type="checkbox"/> Mobile |
| Support Frequency Range: | 136MHz to 174MHz | |
| Support type: | <input checked="" type="checkbox"/> Analog | <input checked="" type="checkbox"/> Digital |
| Support digital protocol: ^{*3} | DMR | |
| Support data rate for DMR: | 9.6kbps | |
| Modulation type: | Analog: FM | |
| | Digital: 4FSK | |
| Channel Separation: | Analogue: | <input checked="" type="checkbox"/> 12.5kHz |
| | Digital: | <input checked="" type="checkbox"/> 12.5kHz |
| Emission Designator: ^{*4} | Analogue: | 11K0F3E |
| | Digital: | 7K10FXE, 7K10FXD |
| Rated power class: | <input checked="" type="checkbox"/> High Power: 50W | <input checked="" type="checkbox"/> Low Power: 5W |

Note:

- (1) ^{*1} This information is provided by this applicant.
- (2) ^{*3} The DMR standard specifies two-slot Time Division Multiplexing Technology to split the 12.5 kHz channel into two virtual 6.25kHz communication paths. This equates to an efficiency of one voice channel per 6.25 kHz of bandwidth even though it operates in channels of 12.5 kHz
- (3) ^{*4} According to FCC Part 2.202 requirements, the Necessary Bandwidth is calculated as follows:
- For FM Voice Modulation
Channel Spacing = 12.5 KHz, D = 2.5 KHz max, K = 1, M = 3 KHz
 $B_n = 2M + 2DK = 2*3 + 2*2.5*1 = 11 \text{ KHz}$
Emission designation: 11K0F3E
 - For FM Data Modulation
Channel Spacing = 12.5 KHz, R = 9600 bps, D = 2160 Hz, S = 4, K = 0.518
 $B_n = (R/\log_2 S) + 2DK = 7037 \approx 7.1 \text{ KHz}$
Emission designation: 7K10FXE, 7K10FXD

3.4 Testing laboratory information

| | | |
|----------------------|---|----------------------|
| Laboratory Name | Shenzhen Huatongwei International Inspection Co., Ltd. | |
| Laboratory Location | Building 7, Baiwang Idea Factory, No.1051, Songbai Road, Yangguang Community, Xili Subdistrict, Nanshan District, Shenzhen, Guangdong, China | |
| Connect information: | Tel: 86-755-26715499 E-mail: cs@szhtw.com.cn http://www.szhtw.com.cn | |
| Qualifications | Type | Accreditation Number |
| | FCC Test Firm Registration Number | 762235 |
| | FCC Designation Number | CN1181 |

4 TEST CONFIGURATION

4.1 Test frequency list

According to ANSI C63.26 section 5.1.2.1:

Measurements of transmitters shall be performed and, if required, reported for each frequency band in which the EUT can be operated with the device transmitting at the number of frequencies in each band specified in Table 2.

| Frequency range over which EUT operates | Number of frequencies | Location in frequency range of operation |
|---|-----------------------|--|
| 1 MHz or less | 1 | Middle |
| 1 MHz to 10 MHz | 2 | 1 near top and 1 near bottom |
| More than 10 MHz | 3 | 1 near top, 1 near middle, and 1 near bottom |

So test frequency as follow:

| Frequency Bands (MHz) | Test Channel | Test Frequency (MHz) |
|-----------------------|-----------------|----------------------|
| 136 ~174 | CH _L | 136.0125 |
| | CH _M | 155.0000 |
| | CH _H | 173.9875 |

4.2 Operation mode

| Test Mode | Transmitting | Digital | Analog | Power Level | |
|-----------|--------------|---------|---------|-------------|-----|
| | | 12.5kHz | 12.5kHz | High | Low |
| TX-DNH | √ | √ | | √ | |
| TX-DNL | √ | √ | | | √ |
| TX-ANH | √ | | √ | √ | |
| TX-ANL | √ | | √ | | √ |

Note: √: is operation mode.

| Modulation Type | Description |
|-----------------|---|
| UM | Un-modulation |
| AM2 | Apply a 1000 Hz tone and adjust the audio frequency generator to produce 20% of the rated system deviation. |
| AM6 | Apply a 1000 Hz modulating signal to the transmitter from the audio frequency generator, and adjust the level to obtain 60% of full rated system deviation, then increase the level from the audio generator by 20 dB |
| AM5 | Modulate the transmitter with a 2500 Hz sine wave at an input level 16 dB greater than that necessary to produce 50% of rated system deviation. |
| DM | A 511 bit binary pseudo-random bit sequence based on ITU-T Rec. O.153 |

Pre-scan above all test mode, found below test mode which it was worse case mode, so only show the test data for worse case mode on the test report.

| Section | Test Item | Modulation Type | Test mode (Worse case mode) |
|---------|---|-----------------|---------------------------------|
| 5.1 | Conducted carrier output power | UM | TX-DNH, TX-DNL, TX-ANH, TX-ANL, |
| 5.2 | 99% occupied bandwidth & 26dB bandwidth | AM6, DM | TX-DNH, TX-DNL, TX-ANH, TX-ANL, |
| 5.3 | Emission mask | AM5, DM | TX-DNH, TX-DNL, TX-ANH, TX-ANL, |
| 5.4 | Modulation limit | AM6 | TX-ANH |
| 5.5 | Audio frequency response | AM2 | TX-ANH |
| 5.6 | Frequency stability VS temperature | UM | TX-DNH, TX-DNL, TX-ANH, TX-ANL |
| 5.7 | Frequency stability VS voltage | UM | TX-DNH, TX-DNL, TX-ANH, TX-ANL |
| 5.8 | Transient frequency behavior | UM | TX-DNH, TX-ANH |
| 5.9 | Transmit conducted spurious emission | AM5, DM | TX-DNH, TX-ANH |
| 5.10 | Transmit radiated spurious emission | AM5, DM | TX-DNH, TX-ANH |

4.3 Support unit used in test configuration and system

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The following peripheral devices and interface cables were connected during the measurement:

| Whether support unit is used? | | | |
|--|-----------|------------|-----------|
| <input checked="" type="checkbox"/> No | | | |
| Item | Equipment | Trade Name | Model No. |
| 1 | | | |
| 2 | | | |

4.4 Testing environmental condition

| Type | Requirement | Actual |
|--------------------|------------------------|----------|
| Temperature: | 15~35°C | 25°C |
| Relative Humidity: | 25~75% | 50% |
| Air Pressure: | 860~1060mbar | 1000mbar |
| Test voltage: | Normal voltage: | DC 13.6V |
| | Extreme lower voltage: | DC 10.8V |
| | Extreme upper voltage: | DC 15.6V |

4.5 Measurement uncertainty

| No. | Test Items | Measurement Uncertainty |
|-----|---|--|
| 1 | Conducted Carrier Output Power | 0.63 |
| 2 | 99% Occupied Bandwidth & 26dB bandwidth | 0.002% |
| 3 | Emission Mask | 0.92dB |
| 4 | Frequency Stability | 0.06ppm |
| 5 | Transmit Conducted Spurious Emission | 1.68dB |
| 6 | Transmit Radiated Spurious Emission | 4.54dB for 30MHz-1GHz 5.10dB for above 1GHz |

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=1.96$.

4.6 Equipment used during the testing

| ● RF Conducted test item | | | | | | | |
|--------------------------|---------------------------------------|--------------|---------------|---------------|------------------|---------------------------|---------------------------|
| Used | Test Equipment | Manufacturer | Equipment No. | Model No. | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
| ● | Spectrum Analyzer | Agilent | HTWE0286 | N9020A | MY50510187 | 2023/08/22 | 2024/08/21 |
| ● | Signal & Spectrum Analyzer | R&S | HTWE0262 | FSW26 | 103440 | 2023/08/22 | 2024/08/21 |
| ● | RF Communication Test Set | HP | HTWE0038 | 8920A | 3813A10206 | 2023/08/22 | 2024/08/21 |
| ● | Digital intercom communication tester | Aeroflex | HTWE0255 | 3920B | 1001682041 | 2023/08/22 | 2024/08/21 |
| ● | RF Control Unit | Tonscend | HTWE0294 | JS0806-2 | N/A | 2023/08/22 | 2024/08/21 |
| ● | Filter-VHF | Microwave | HTWE0309 | N26460M1 | 498702 | 2023/08/22 | 2024/08/21 |
| ● | Filter-UHF | Microwave | HTWE0311 | N25155M2 | 498704 | 2023/08/22 | 2024/08/21 |
| ● | Attenuator | JFW | HTWE0292 | 50FH-030-100 | N/A | 2024/03/26 | 2025/03/25 |
| ● | Attenuator | Eastsheep | HTWE0387 | NCP-20-3-100W | / | 2024/03/26 | 2025/03/25 |
| ● | Attenuator | Eastsheep | HTWE0388 | NCP-10-3-100W | / | 2024/03/26 | 2025/03/25 |
| ● | High Pass Filter | RFSYS | HTWE0390-05 | RFSYS-GTA10 | 200615-1-04 | 2024/03/26 | 2025/03/25 |
| ● | Filter-UHF | Microwave | HTWE0310 | N26460M1 | 498703 DC1808 | 2024/01/23 | 2025/01/22 |
| ● | Filter-VHF | Microwave | HTWE0312 | N25155M2 | 498704 DC1808 | 2024/01/23 | 2025/01/22 |
| ● | Test software | HTW | N/A | Radio ATE | N/A | N/A | N/A |

| ● Auxiliary Equipment | | | | | | | |
|-----------------------|-----------------|--------------|---------------|-----------|------------|---------------------------|---------------------------|
| Used | Test Equipment | Manufacturer | Equipment No. | Model No. | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
| ● | Climate chamber | ESPEC | HTWS0715 | GPL-2 | N/A | 2023/08/21 | 2024/08/20 |
| ● | DC Power Supply | Gwinstek | HTWE0274 | SPS-2415 | GER835793 | N/A | N/A |

● Radiated Spurious Emission

| Used | Test Equipment | Manufacturer | Equipment No. | Model No. | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
|------|-------------------------|--------------------|---------------|------------|------------|---------------------------|---------------------------|
| ● | Semi-Anechoic Chamber | Albatross projects | HTWE0122 | SAC-3m-01 | C11121 | 2023/04/17 | 2026/04/16 |
| ● | Spectrum Analyzer | R&S | HTWE0098 | FSP40 | 100597 | 2023/08/22 | 2024/08/21 |
| ● | Spectrum Analyzer | R&S | HTWE0385 | N9020A | MY54486658 | 2023/08/22 | 2024/08/21 |
| ● | Ultra-Broadband Antenna | SCHWARZBECK | HTWE0123 | VULB9163 | 538 | 2024/04/08 | 2027/04/07 |
| ● | Horn Antenna | SCHWARZBECK | HTWE0126 | BBHA 9120D | 1011 | 2023/02/14 | 2026/02/13 |
| ● | Pre-Amplifier | CD | HTWE0071 | PAP-0102 | 12004 | 2024/6/6 | 2025/6/5 |
| ● | Broadband Pre-amplifier | SCHWARZBECK | HTWE0551 | SCU18F | 100855 | 2024/6/6 | 2025/6/5 |
| ● | Test Software | Audix | N/A | E3 | N/A | N/A | N/A |

● Auxiliary Equipment

| Used | Test Equipment | Manufacturer | Equipment No. | Model No. | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
|------|------------------|--------------|---------------|------------------|------------|---------------------------|---------------------------|
| ● | High pass filter | Wainwright | HTWE0297 | WHKX3.0/18G-10SS | 38 | 2024/03/26 | 2025/03/25 |
| ○ | Band Stop filter | - | HTWE0039 | N/A | N/A | 2024/01/23 | 2025/01/22 |

5 TEST CONDITIONS AND RESULTS

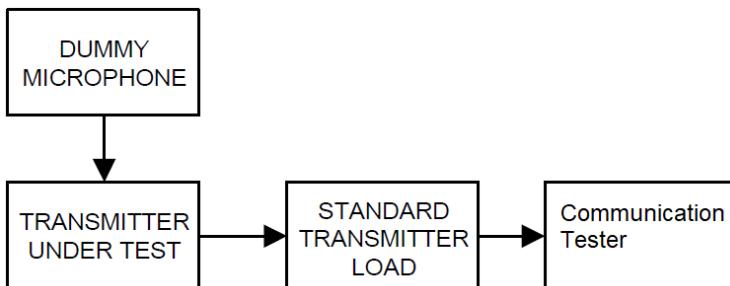
5.1 Conducted carrier output power

LIMIT

FCC Part 90.205, FCC Part 2.1046

Applicants for licenses must request and use no more power than the actual power necessary for satisfactory operation.

TEST CONFIGURATION



TEST PROCEDURE

- (1) Connect the equipment as illustrated
- (2) Correct for all losses in the RF path
- (3) Measure the transmitter output power with RMS detector
- (4) If the power output is adjustable, measurements shall be made for the highest and lowest power levels.

TEST MODE

Refer to the section 4.2

TEST RESULT

Passed Not Applicable

TEST DATA

Refer to the appendix report on section 8

5.2 99% occupied bandwidth & 26dB bandwidth

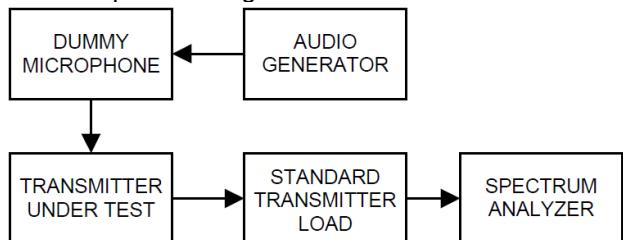
LIMIT

FCC Part 90.209, FCC Part 2.1049

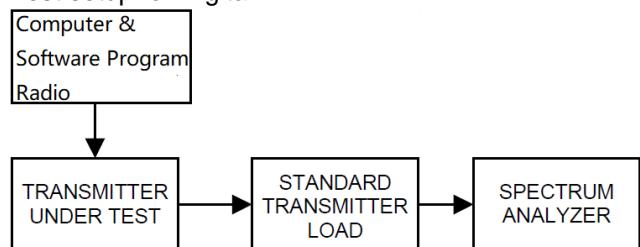
| Frequency band (MHz) | Channel spacing (kHz) | Authorized bandwidth (kHz) |
|---------------------------------------|-----------------------|----------------------------|
| Below 25 ² | | |
| 25-50 | 20 | 20 |
| 72-76 | 20 | 20 |
| 150-174 | 17.5 | 1 ³ 20/11.25/6 |
| 216-220 ⁵ | 6.25 | 20/11.25/6 |
| 220-222 | 5 | 4 |
| 406-512 ² | 16.25 | 1 ³ 620/11.25/6 |
| 806-809/851-854 | 12.5 | 20 |
| 809-824/854-869 | 25 | 620 |
| 896-901/935-940 | 12.5 | 13.6 |
| 902-928 ⁴ | | |
| 929-930 | 25 | 20 |
| 1427-1432 ⁵ | 12.5 | 12.5 |
| ³ 2450-2483.5 ² | | |
| Above 2500 ² | | |

TEST CONFIGURATION

Test setup for Analog:



Test setup for Digital:



TEST PROCEDURE

- (1) Connect the equipment as illustrated
- (2) Spectrum set as follow:
 - Centre frequency = the nominal EUT channel center frequency,
 - Span shall be set wide enough to capture all modulation products including the emission skirts (typically a span of $1.5 \times$ OBW is sufficient)
 - RBW = 1% to 5% of the anticipated OBW, $VBW \geq 3 \times RBW$, Sweep = auto,
 - Detector function = peak, Trace = max hold
- (3) Set 99% Occupied Bandwidth and 26dB Bandwidth
- (4) Measure and record the results in the test report.

TEST MODE

Refer to the section 4.2

TEST RESULT

Passed Not Applicable

TEST DATA

Refer to the appendix report on section 8

5.3 Emission mask

LIMIT

FCC Part 90.210, FCC Part 2.1049

| Frequency band (MHz) | Mask for equipment with audio low pass filter | Mask for equipment without audio low pass filter |
|---|---|--|
| Below 25 ¹ | A or B | A or C |
| 25-50 | B | C |
| 72-76 | B | C |
| 150-174 ² | B, D, or E | C, D or E |
| 150 paging only | B | C |
| 220-222 | F | F |
| 421-512 ² ⁵ | B, D, or E | C, D, or E |
| 450 paging only | B | G |
| 806-809/851-854 ⁶ | B | H |
| 809-824/854-869 ³ ⁵ | B | G |
| 896-901/935-940 | I | J |
| 902-928 | K | K |
| 929-930 | B | G |
| 4940-4990 MHz | L or M | L or M |
| 5850-5925 ⁴ | | |
| All other bands | B | C |

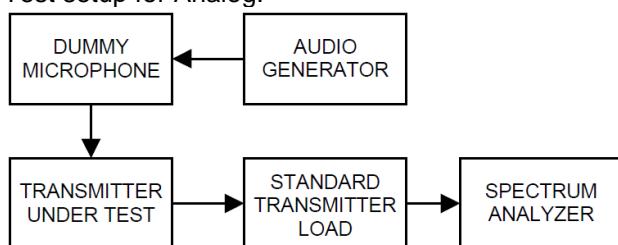
Emission Mask D — 12.5 kHz channel bandwidth equipment

For transmitters designed to operate with a 12.5 kHz channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

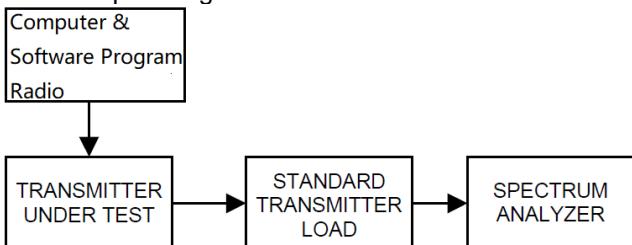
- (1) On any frequency from the centre of the authorized bandwidth f_0 to 5.625 kHz removed from f_0 : 0dB
- (2) On any frequency removed from the centre of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5.625 kHz but no more than 12.5 kHz: At least $7.27(f_d - 2.88)$ dB.
- (3) On any frequency removed from the centre of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz: At least $50 + 10 \log (P)$ dB or 70 dB, whichever is the lesser attenuation.

TEST CONFIGURATION

Test setup for Analog:



Test setup for Digital:



TEST PROCEDURE

- 1) Connect the equipment as illustrated.
- 2) Spectrum set as follow:
Centre frequency = fundamental frequency, span=120kHz for 12.5kHz channel spacing,
RBW=100Hz, VBW=1000Hz, Sweep = auto,
Detector function = peak, Trace = max hold
- 3) Key the transmitter, and set the level of the unmodulated carrier to a full scale reference line. This is the 0dB reference for the measurement.
- 4) Apply Input Modulation Signal to EUT according to Section 4.2
- 5) Measure and record the results in the test report.

TEST MODE

Refer to the section 4.2

TEST RESULT

Passed Not Applicable

TEST DATA

Refer to the appendix report on section 8

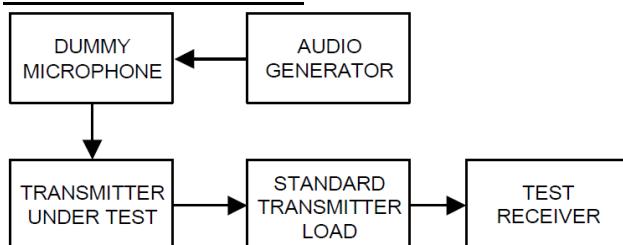
5.4 Modulation limit

LIMIT

FCC Part 2.1047(b)

2.5kHz for 12.5 KHz Channel Spacing System.

TEST CONFIGURATION



TEST PROCEDURE

- 1) Connect the equipment as illustrated.
- 2) Adjust the transmitter per the manufacturer's procedure for full rated system deviation.
- 3) Set the test receiver to measure peak positive deviation. Set the audio bandwidth for ≤ 0.25 Hz to $\geq 15,000$ Hz. Turn the de-emphasis function off.
- 4) Apply Input Modulation Signal to EUT according to Section 4.2 and vary the input level from -20 to $+20$ dB.
- 5) Measure both the instantaneous and steady-state deviation at and after the time of increasing the audio input level
- 6) Repeat step 4-5 with input frequency changing to 300Hz, 1004Hz, 1500Hz and 2500Hz in sequence.

TEST MODE

Refer to the section 4.2

TEST RESULT

Passed Not Applicable

TEST DATA

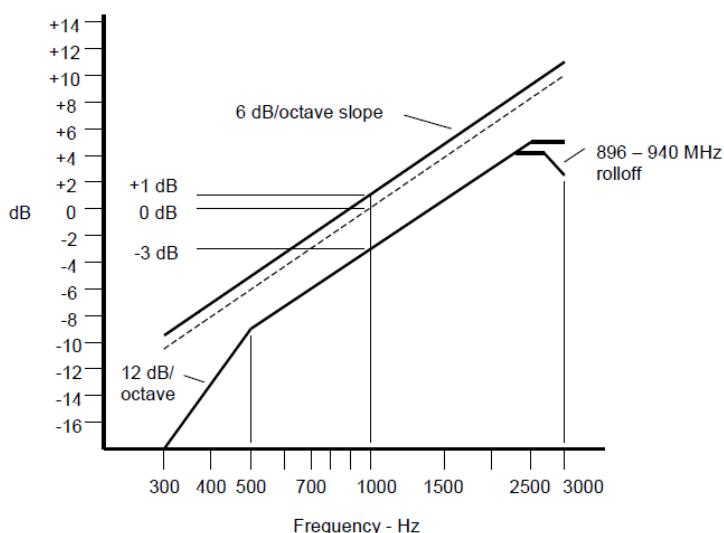
Refer to the appendix report on section 8

5.5 Audio frequency response

LIMIT

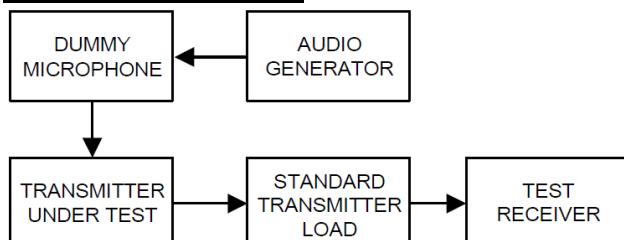
FCC Part2.1047(a):

Voice modulated communication equipment. A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz shall be submitted. For equipment required to have an audio low-pass filter, a curve showing the frequency response of the filter or of all circuitry installed between the modulation limiter and the modulated stage shall be submitted.



An additional 6 dB per octave attenuation is allowed from 2500 Hz to 3000 Hz in equipment operating in the 25 MHz to 869 MHz range.

TEST CONFIGURATION



TEST PROCEDURE

- 1) Connect the equipment as illustrated.
- 2) Set the test receiver to measure peak positive deviation. Set the audio bandwidth for 50 Hz to 15,000 Hz. Turn the de-emphasis function off.
- 3) Set the DMM to measure rms voltage.
- 4) Adjust the transmitter per the manufacturer's procedure for full rated system deviation.
- 5) Apply Input Modulation Signal to EUT according to Section 4.2
- 6) Set the test receiver to measure rms deviation and record the deviation reading.
- 7) Record the DMM reading as V_{REF} .
- 8) Set the audio frequency generator to the desired test frequency between 300 Hz and 3000 Hz.
- 9) Vary the audio frequency generator output level until the deviation reading that was recorded in step 6) is obtained.
- 10) Record the DMM reading as V_{FREQ}
- 11) Calculate the audio frequency response at the present frequency as:

$$\text{audio frequency response} = 20 \log_{10} (V_{FREQ}/V_{REF})$$
- 12) Repeat steps 8) through 11) for all the desired test frequencies

TEST MODE

Refer to the section 4.2

TEST RESULT

Passed Not Applicable

TEST DATA

Refer to the appendix report on section 8

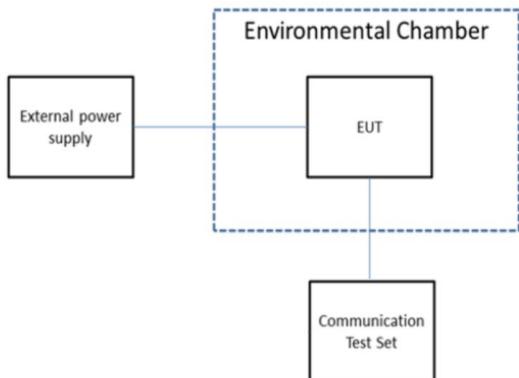
5.6 Frequency stability VS temperature

LIMIT

FCC Part 90.213, FCC Part 2.1055

| Frequency range (MHz) | Fixed and base stations | Mobile stations | | 2 watts or less output power |
|--------------------------|-------------------------|---------------------------|--------------------------------|------------------------------|
| | | Over 2 watts output power | 2.5 watts or less output power | |
| Below 25 | 1 2 3 100 | 100 | 200 | |
| 25-50 | 20 | 20 | 50 | |
| 72-76 | 5 | | 50 | |
| 150-174 | 5 11 5 | 65 | 4650 | |
| 216-220 | 1.0 | | 1.0 | |
| 220-222 ¹² | 0.1 | 1.5 | 1.5 | |
| 421-512 | 7 11 14 2.5 | 85 | 85 | |
| 806-809 | 14 1.0 | 1.5 | 1.5 | |
| 809-824 | 14 1.5 | 2.5 | 2.5 | |
| 851-854 | 1.0 | 1.5 | 1.5 | |
| 854-869 | 1.5 | 2.5 | 2.5 | |
| 896-901 | 14 0.1 | 1.5 | 1.5 | |
| 902-928 | 2.5 | 2.5 | 2.5 | |
| 902-928 ¹³ | 2.5 | 2.5 | 2.5 | |
| 929-930 | 1.5 | | | |
| 935-940 | 0.1 | 1.5 | 1.5 | |
| 1427-1435 | 9300 | 300 | 300 | |
| Above 2450 ¹⁰ | | | | |

TEST CONFIGURATION



TEST PROCEDURE

- 1) The EUT output port was connected to communication tester.
- 2) The EUT was placed inside the temperature chamber.
- 3) Turn EUT off and set the chamber temperature to -30°C . After the temperature stabilized for approximately 30 minutes recorded the frequency as MCF_{MHz} .
- 4) Calculate the ppm frequency error by the following:

$$\text{ppm error} = (MCF_{\text{MHz}}/ACF_{\text{MHz}} - 1) * 10^6$$

where

MCF_{MHz} is the Measured Carrier Frequency in MHz

ACF_{MHz} is the Assigned Carrier Frequency in MHz
- 5) Repeat step 3 measure with 10°C increased per stage until the highest temperature of $+50^{\circ}\text{C}$ reached.

TEST MODE

Refer to the section 4.2

TEST RESULT

Passed Not Applicable

TEST DATA

Refer to the appendix report on section 8

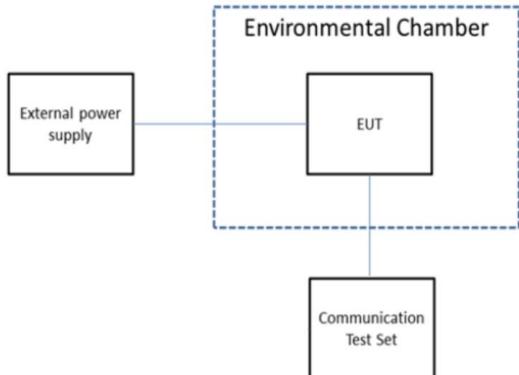
5.7 Frequency stability VS voltage

LIMIT

FCC Part 90.213, FCC Part 2.1055

| Frequency range (MHz) | Fixed and base stations | Mobile stations | | 2 watts or less output power |
|--------------------------|-------------------------|---------------------------|--------------------------------|------------------------------|
| | | Over 2 watts output power | 2.5 watts or less output power | |
| Below 25 | 1 2 3 100 | 100 | 200 | |
| 25-50 | 20 | 20 | 50 | |
| 72-76 | 5 | | 50 | |
| 150-174 | 5 11 5 | 65 | 4650 | |
| 216-220 | 1.0 | | 1.0 | |
| 220-222 ¹² | 0.1 | 1.5 | 1.5 | |
| 421-512 | 7 11 14 2.5 | 85 | 85 | |
| 806-809 | 14 1.0 | 1.5 | 1.5 | |
| 809-824 | 14 1.5 | 2.5 | 2.5 | |
| 851-854 | 1.0 | 1.5 | 1.5 | |
| 854-869 | 1.5 | 2.5 | 2.5 | |
| 896-901 | 14 0.1 | 1.5 | 1.5 | |
| 902-928 | 2.5 | 2.5 | 2.5 | |
| 902-928 ¹³ | 2.5 | 2.5 | 2.5 | |
| 929-930 | 1.5 | | | |
| 935-940 | 0.1 | 1.5 | 1.5 | |
| 1427-1435 | 9300 | 300 | 300 | |
| Above 2450 ¹⁰ | | | | |

TEST CONFIGURATION



TEST PROCEDURE

- 1) The EUT output port was connected to communication tester.
- 2) The EUT was placed inside the temperature chamber at 25°C
- 3) Record the carrier frequency of the transmitter as MCF_{MHz}
- 4) Calculate the ppm frequency error by the following:

$$\text{ppm error} = (MCF_{MHz}/ACF_{MHz} - 1) * 10^6$$

where

MCF_{MHz} is the Measured Carrier Frequency in MHz

ACF_{MHz} is the Assigned Carrier Frequency in MHz
- 5) Repeat step 3 measure with varied $\pm 15\%$ of the nominal value measured at the input to the EUT

TEST MODE

Refer to the section 4.2

TEST RESULT

Passed Not Applicable

TEST DATA

Refer to the appendix report on section 8

5.8 Transmitter frequency behavior

LIMIT

FCC part 90.214

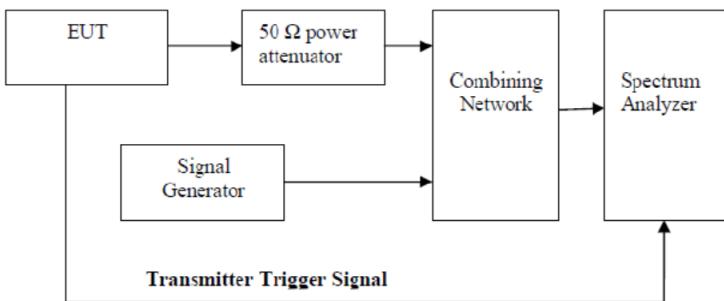
Transmitters designed to operate in the 150-174 MHz and 421-512 MHz frequency bands must maintain transient frequencies within the maximum frequency difference limits during the time intervals indicated:

| Time intervals ^{1 2} | Maximum frequency difference ³ | All equipment | |
|---|---|----------------|----------------|
| | | 150 to 174 MHz | 421 to 512 MHz |
| Transient Frequency Behavior for Equipment Designed to Operate on 25 kHz Channels | | | |
| t_1 ⁴ | ± 25.0 kHz | 5.0 ms | 10.0 ms |
| t_2 | ± 12.5 kHz | 20.0 ms | 25.0 ms |
| t_3 ⁴ | ± 25.0 kHz | 5.0 ms | 10.0 ms |
| Transient Frequency Behavior for Equipment Designed to Operate on 12.5 kHz Channels | | | |
| t_1 ⁴ | ± 12.5 kHz | 5.0 ms | 10.0 ms |
| t_2 | ± 6.25 kHz | 20.0 ms | 25.0 ms |
| t_3 ⁴ | ± 12.5 kHz | 5.0 ms | 10.0 ms |
| Transient Frequency Behavior for Equipment Designed to Operate on 6.25 kHz Channels | | | |
| t_1 ⁴ | ± 6.25 kHz | 5.0 ms | 10.0 ms |
| t_2 | ± 3.125 kHz | 20.0 ms | 25.0 ms |
| t_3 ⁴ | ± 6.25 kHz | 5.0 ms | 10.0 ms |

Note:

1. On is the instant when a 1 kHz test signal is completely suppressed, including any capture time due to phasing.
- 1) t_1 is the time period immediately following ton.
- 2) t_2 is the time period immediately following t_1 .
- 3) t_3 is the time period from the instant when the transmitter is turned off until toff.
- 4) t_{off} is the instant when the 1 kHz test signal starts to rise.
2. During the time from the end of t_2 to the beginning of t_3 , the frequency difference must not exceed the limits specified in §90.213.
3. Difference between the actual transmitter frequency and the assigned transmitter frequency.
4. If the transmitter carrier output power rating is 6 watts or less, the frequency difference during this time period may exceed the maximum frequency difference for this time period.

TEST CONFIGURATION



TEST PROCEDURE

- Connect test equipment as shown in above figure
- Verify RF attenuator power rating for EUT providing adequate protection to the combining network and measurement equipment.
- Tune spectrum analyzer center frequency to EUT frequency and span to at least 100 kHz. Set amplitude according to EUT RF power.
- Switch transmitter on and adjust settings in accordance with step c); switch transmitter to the off position.
- Set analyzer to FM mode; re-tune analyzer to EUT frequency and span according to step c), while in FM demodulation mode.
- An RF test signal of the same frequency as the EUT from the signal generator shall be modulated by a frequency of 1 kHz with a deviation equal to plus or minus the value of the channel spacing (separation). The RF signal strength shall be adjusted allowing the analyzer to demodulate the signal in FM mode.
- Adjust analyzer x axis to capture at least 100 ms of demodulated signal.
- Adjust analyzer y axis for the correct deviation amplitude.
- The analyzer display should show a continuous 1 kHz signal and the channel spacing deviation amplitude.

- j) Change analyzer settings to single sweep and external trigger. For newer analyzers, the channel bandwidth might have to be adjusted for the correct sample rate and sweep speed.
- k) Turn on EUT and adjust analyzer to display desired signal by adjusting trigger settings and considerations in step j). Turn off EUT.
- l) Repeat step k) until optimum set-up is achieved.
- m) Start measurement by turning on EUT. Observe measurements results in analyzer display, EUT_{ON} starts at the moment the 1 kHz signal is suppressed (t2). See Figure 11 for transient frequency behavior with switch on.
- n) Record values observed in step m) as frequency difference versus time.
- o) Turn off EUT. EUT_{OFF} is considered at the start of the 1 kHz signal defined as t3. See Figure 12 for transient frequency behavior with switch off.
- p) Record the values observed in step o) as frequency difference versus time.

TEST MODE

Refer to the section 4.2

TEST RESULT

Passed Not Applicable

TEST DATA

Refer to the appendix report on section 8

5.9 Transmit conducted spurious emission

LIMIT

FCC Part 90.210, FCC Part 2.1051

Emission Mask D—12.5 kHz channel bandwidth equipment. For transmitters designed to operate with a 12.5 kHz channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 12.5 kHz: At least $50 + 10 \log (P)$ dB or 70 dB, whichever is the lesser attenuation.

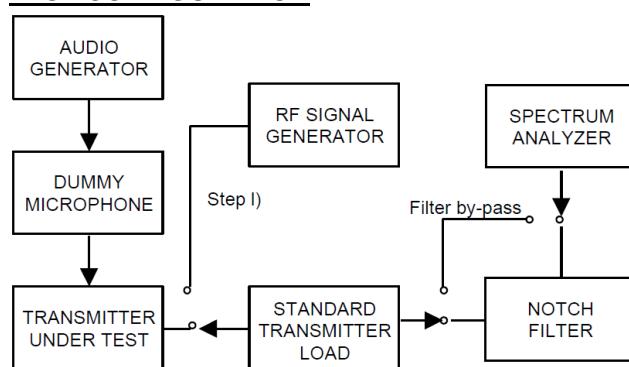
In general, the worse case attenuation requirement shown above was applied.

Calculation: Limit (dBm) = EL-50-10log (P)

EL is the emission level of the Output Power expressed in dBm,

Limit (dBm) = P(dBm)-50-10 log (Pwatts) = -20dBm

TEST CONFIGURATION



TEST PROCEDURE

1. Connect the equipment as illustrated, with the notch filter by-passed.
2. Apply Input Modulation Signal to EUT according to Section 4.2
3. Adjust the spectrum analyzer for the following settings:
Below 1GHz: RBW=100kHz, VBW=300kHz
Above 1GHz: RBW=1MHz, VBW=3MHz
Detector=Peak, Sweep time=Auto, Trace=Max hold
4. Scan frequency range up to 10th harmonic.
5. Record the frequencies and levels of spurious emissions

TEST MODE

Refer to the section 4.2

TEST RESULT

Passed Not Applicable

TEST DATA

Refer to the appendix report on section 8

5.10 Transmitter radiated spurious emission

LIMIT

FCC Part 90.210, FCC Part 2.1051

Emission Mask D—12.5 kHz channel bandwidth equipment. For transmitters designed to operate with a 12.5 kHz channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 12.5 kHz: At least $50 + 10 \log (P)$ dB or 70 dB, whichever is the lesser attenuation.

In general, the worse case attenuation requirement shown above was applied.

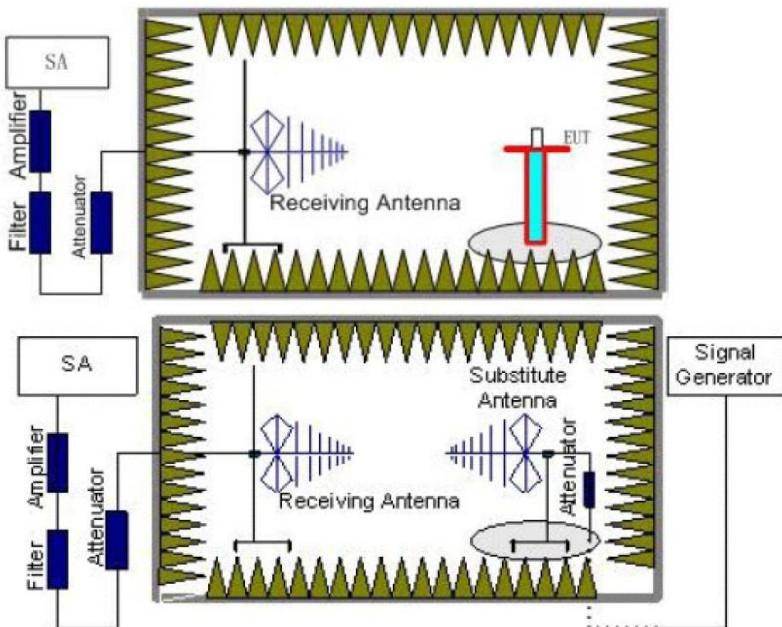
Calculation: Limit (dBm) = $EL - 50 - 10 \log (P)$

EL is the emission level of the Output Power expressed in dBm,

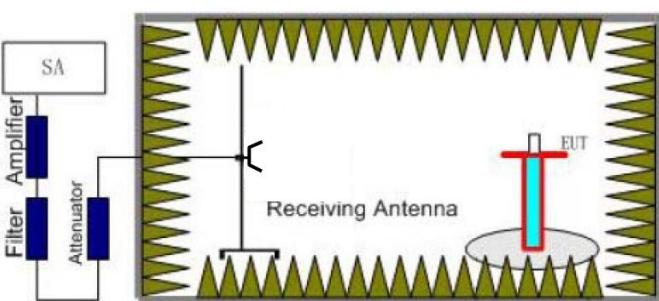
Limit (dBm) = $P(dBm) - 50 - 10 \log (Pwatts) = -20dBm$

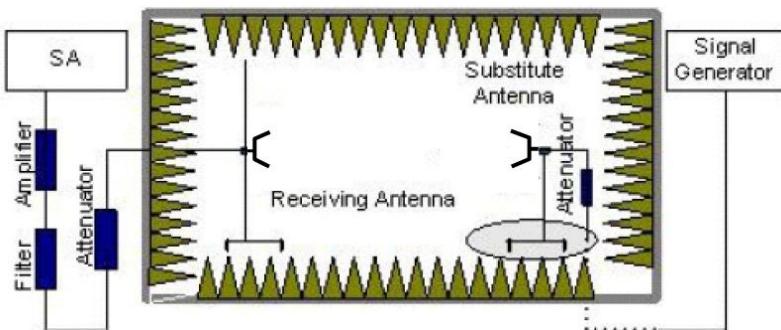
TEST CONFIGURATION

Below 1GHz:



Above 1GHz:





TEST PROCEDURE

1. Place the EUT in the center of the turntable.
 - a) For radiated emissions measurements performed at frequencies less than or equal to 1 GHz, the EUT shall be placed on a RF-transparent table at a nominal height of 80 cm above the reference ground plane
 - b) For radiated measurements performed at frequencies above 1 GHz, the EUT shall be placed on an RF transparent table at a nominal height of 1.5 m above the ground plane.
2. Unless the EUT uses an integral antenna, the EUT shall be terminated with a non-radiating transmitter load. In cases where the EUT uses an adjustable antenna, the antenna shall be adjusted through typical positions and lengths to maximize emissions levels.
3. The EUT shall be tested while operating on the frequency per manufacturer specification. Set the transmitter to operate in continuous transmit mode.
4. Receiver or Spectrum set as follow:

Below 1GHz, RBW=100kHz, VBW=300kHz, Detector=Peak, Sweep time=Auto
 Above 1GHz, RBW=1MHz, VBW=3MHz, Detector=Peak, Sweep time=Auto
5. Each emission under consideration shall be evaluated:
 - a) Raise and lower the measurement antenna from 1 m to 4 m, as necessary to enable detection of the maximum emission amplitude relative to measurement antenna height.
 - b) Rotate the EUT through 360° to determine the maximum emission level relative to the axial position.
 - c) Return the turntable to the azimuth where the highest emission amplitude level was observed.
 - d) Vary the measurement antenna height again through 1 m to 4 m again to find the height associated with the maximum emission amplitude.
 - e) Record the measured emission amplitude level and frequency
6. Repeat step 5 for each emission frequency with the measurement antenna oriented in both the horizontal and vertical polarizations to determine the orientation that gives the maximum emissions amplitude.
7. Set-up the substitution measurement with the reference point of the substitution antenna located as near as possible to where the center of the EUT radiating element was located during the initial EUT measurement.
8. Maintain the previous measurement instrument settings and test set-up, with the exception that the EUT is removed and replaced by the substitution antenna.
9. Connect a signal generator to the substitution antenna; locate the signal generator so as to minimize any potential influences on the measurement results. Set the signal generator to the frequency where emissions are detected, and set an output power level such that the radiated signal can be detected by the measurement instrument, with sufficient dynamic range relative to the noise floor.
10. For each emission that was detected and measured in the initial test
 - a) Vary the measurement antenna height between 1 m to 4 m to maximize the received (measured) signal amplitude.
 - b) Adjust the signal generator output power level until the amplitude detected by the measurement instrument equals the amplitude level of the emission previously measured directly in step 5 and step 6.
 - c) Record the output power level of the signal generator when equivalence is achieved in step b).
11. Repeat step 8 through step 10 with the measurement antenna oriented in the opposite polarization.
12. Calculate the emission power in dBm referenced to a half-wave dipole using the following equation:

$$Pe = Ps(dBm) - \text{cable loss (dB)} + \text{antenna gain (dBd)}$$

where

Pe = equivalent emission power in dBm
 Ps = source (signal generator) power in dBm

NOTE—dBd refers to the measured antenna gain in decibels relative to a half-wave dipole.
13. Correct the antenna gain of the substitution antenna if necessary to reference the emission power to a half-wave dipole. When using measurement antennas with the gain specified in dBi, the equivalent dipole-referenced gain can be determined from:

$$\text{gain (dBd)} = \text{gain (dBi)} - 2.15 \text{ dB}$$

If necessary, the antenna gain can be calculated from calibrated antenna factor information

14. Provide the complete measurement results as a part of the test report.

TEST MODE

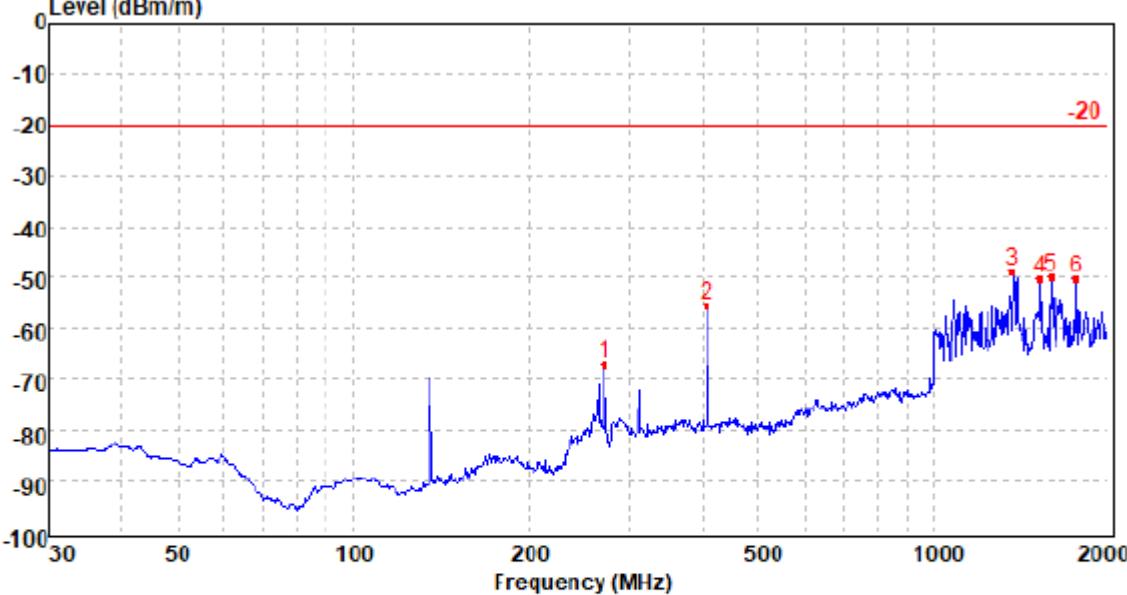
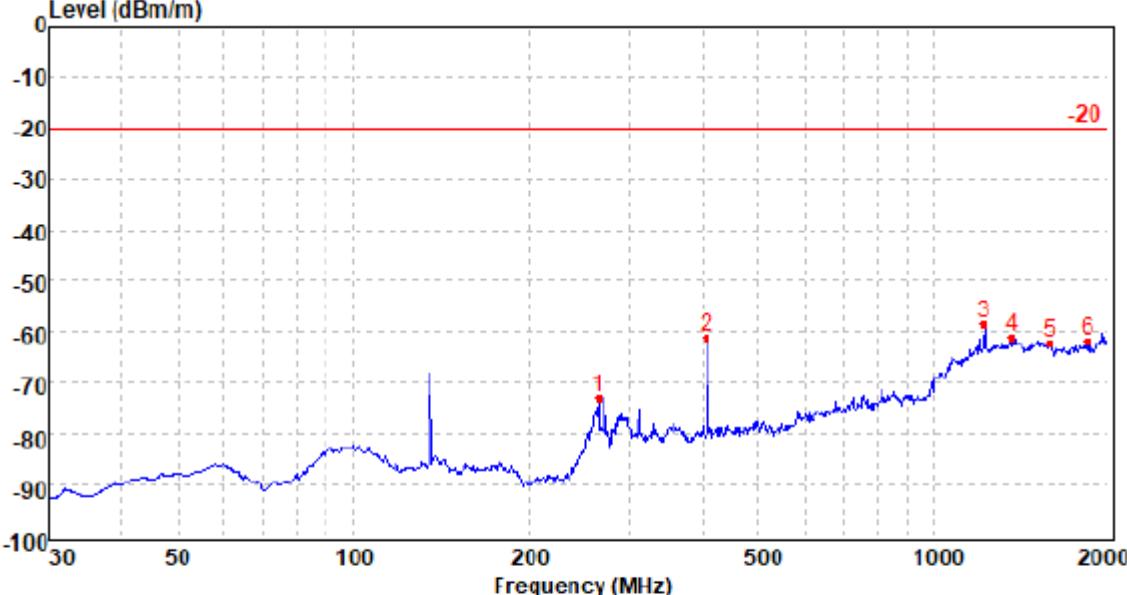
Refer to the section 4.2

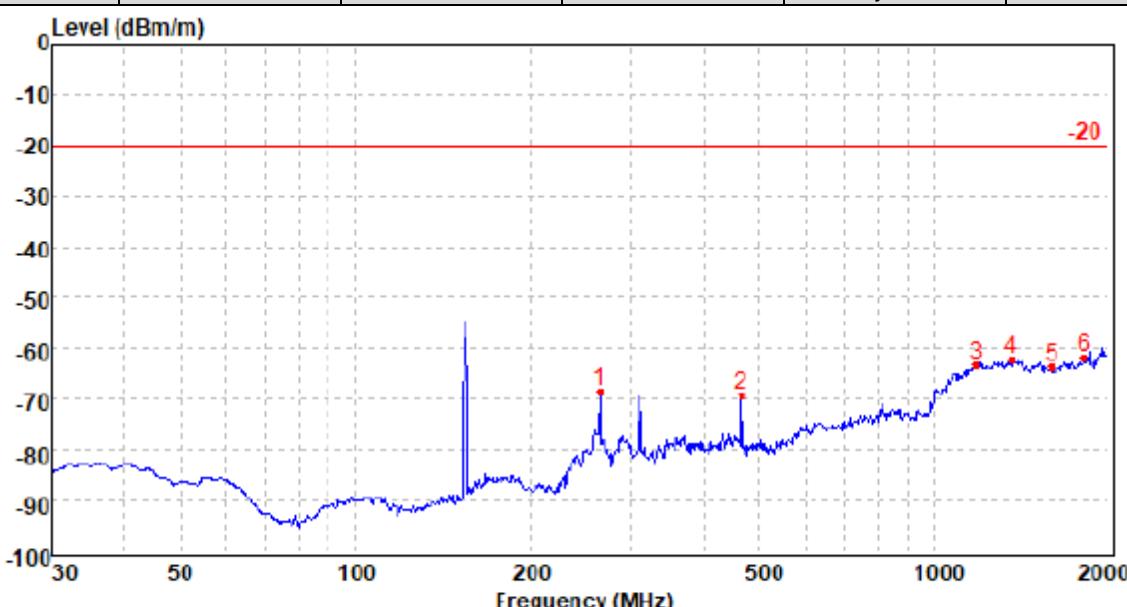
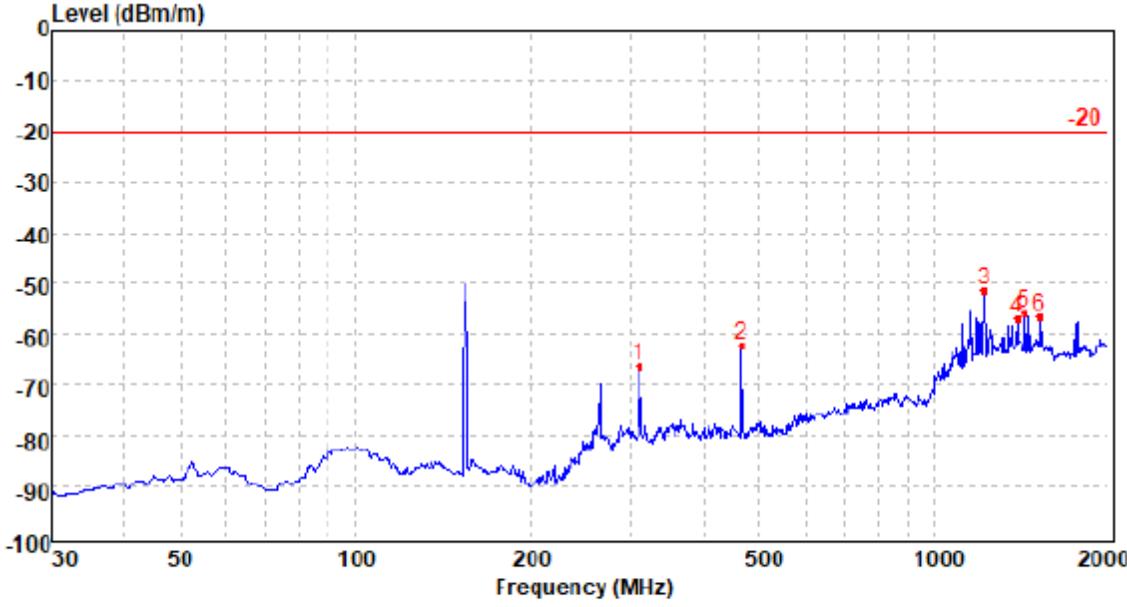
TEST RESULT

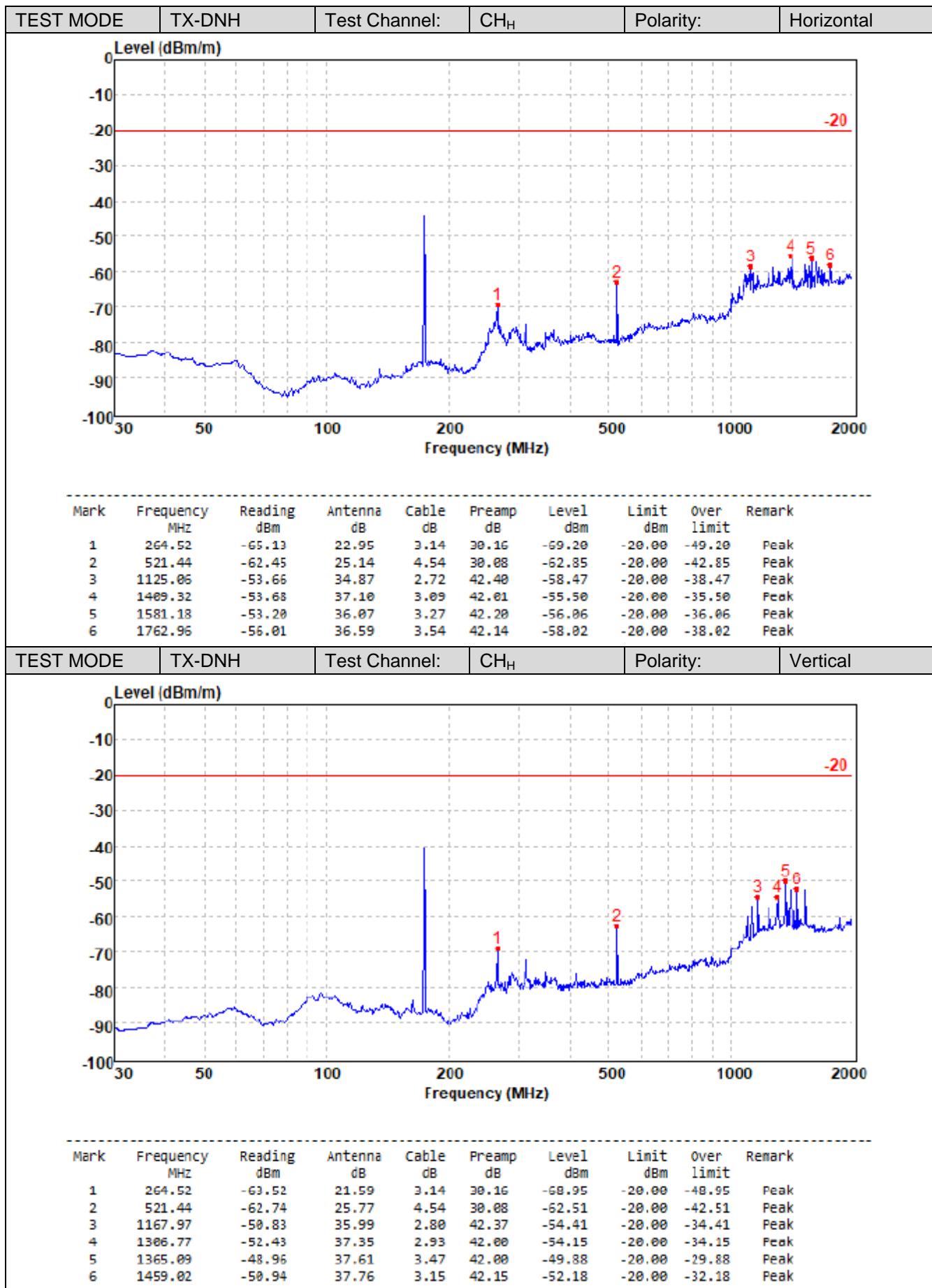
Passed Not Applicable

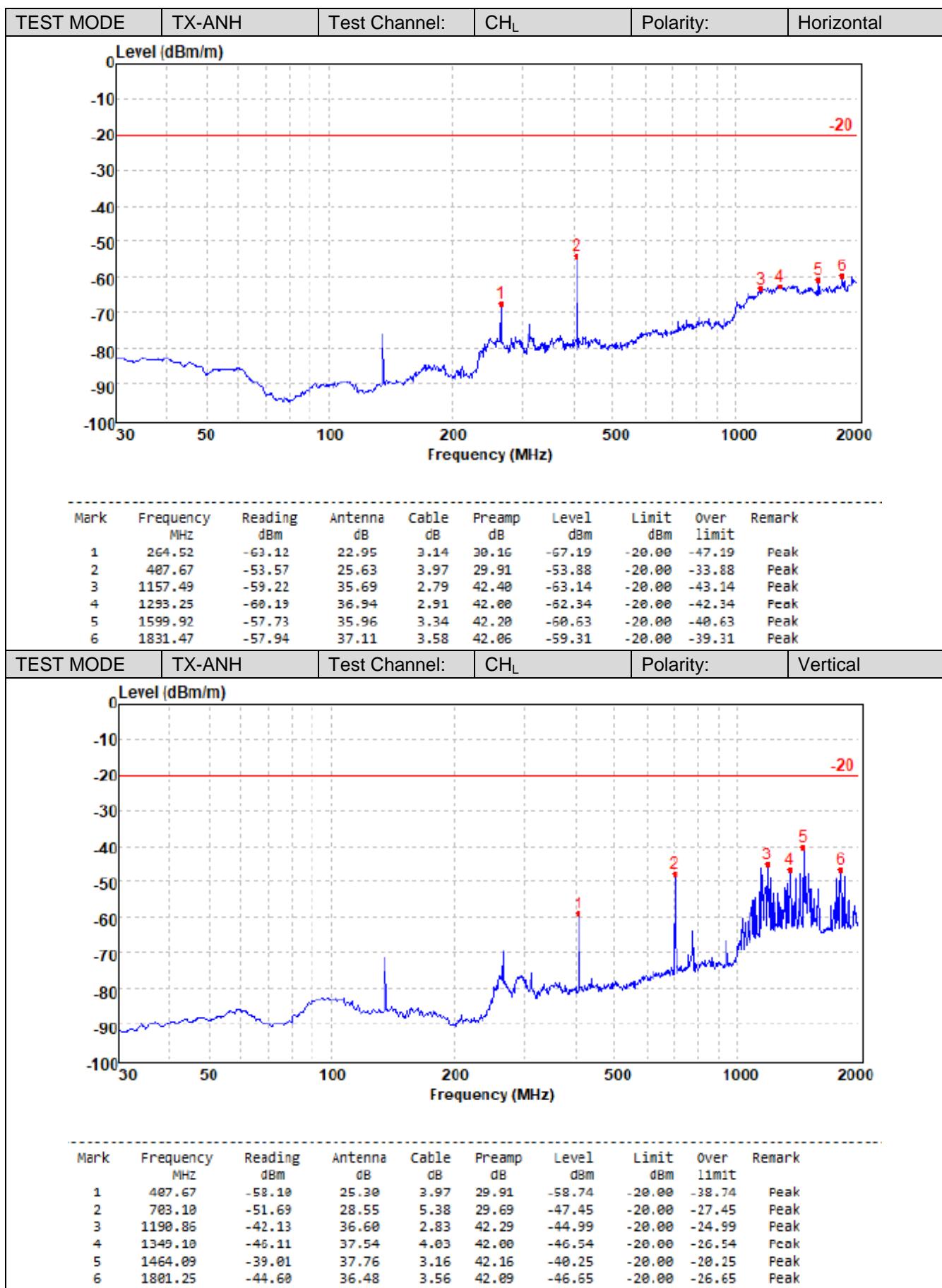
TEST DATA

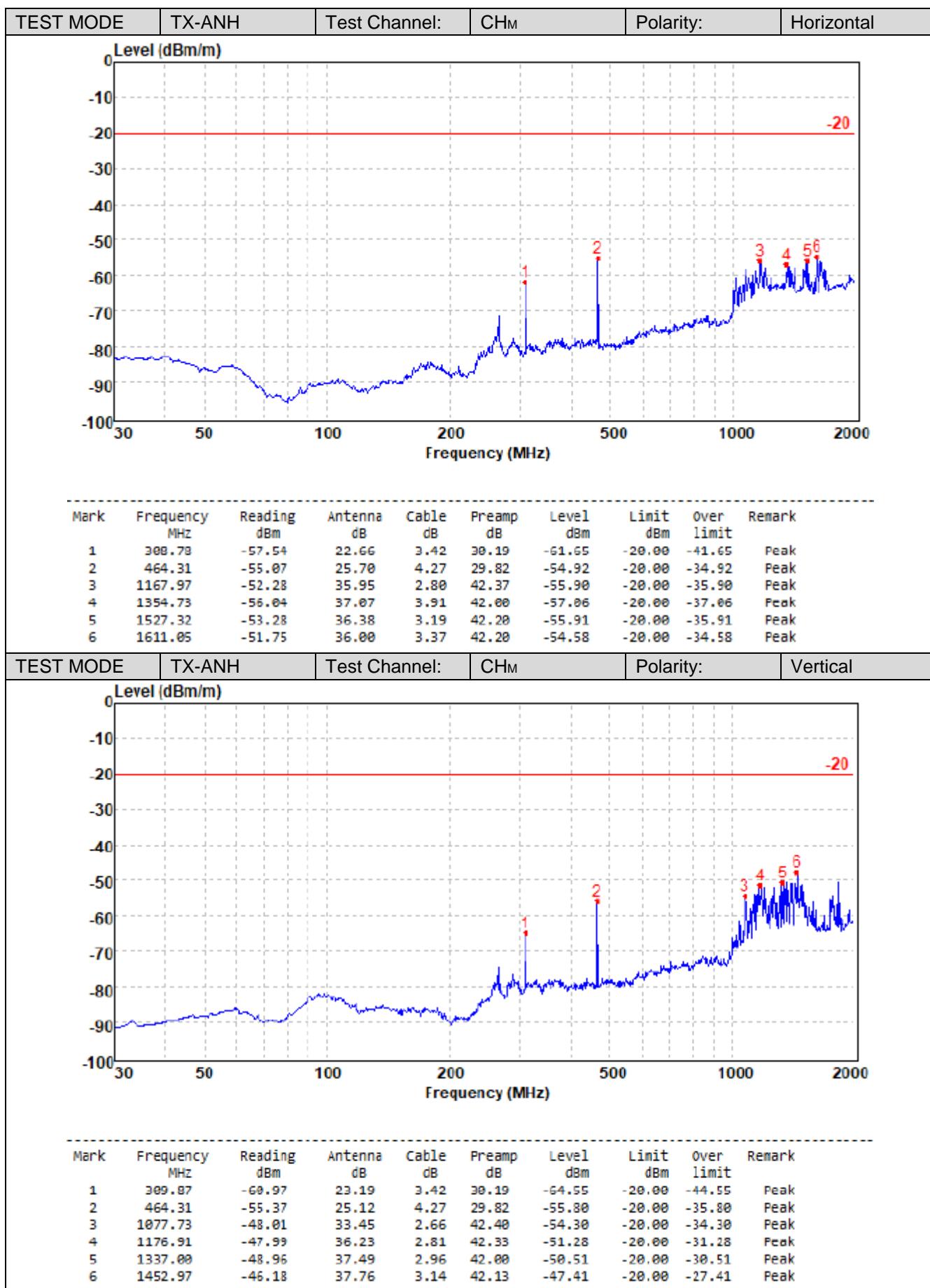
Refer to the below test data

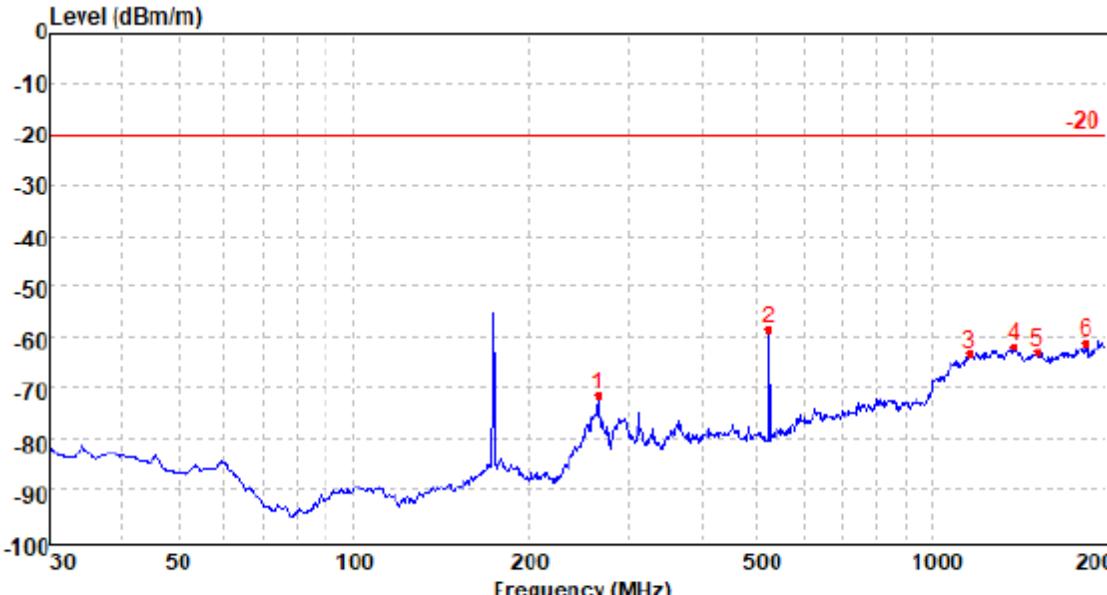
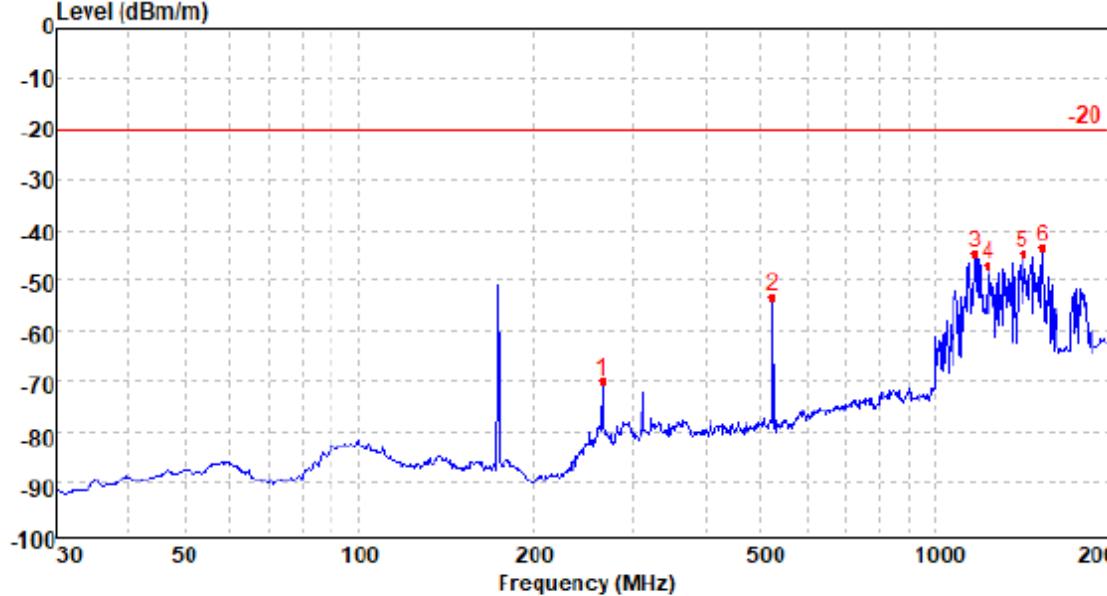
| TEST MODE | TX-DNH | Test Channel: | CH _L | Polarity: | Horizontal | | | | |
|--|------------------|----------------|-----------------|-------------|--------------|--------------|--------------|---------------|--------|
| Level (dBm/m) | | | | | | | | | |
| | | | | | | | | | |
|  | | | | | | | | | |
| Mark | Frequency MHz | Reading dBm | Antenna dB | Cable dB | Preamp dB | Level dBm | Limit dBm | Over limit | Remark |
| 1 | 272.07 | -62.79 | 22.80 | 3.19 | 30.10 | -66.90 | -20.00 | -46.90 | Peak |
| 2 | 407.67 | -54.99 | 25.63 | 3.97 | 29.91 | -55.30 | -20.00 | -35.30 | Peak |
| 3 | 1367.94 | -47.20 | 37.10 | 3.35 | 42.00 | -48.75 | -20.00 | -28.75 | Peak |
| 4 | 1527.32 | -47.44 | 36.38 | 3.19 | 42.20 | -50.07 | -20.00 | -30.07 | Peak |
| 5 | 1592.18 | -46.98 | 36.00 | 3.31 | 42.20 | -49.87 | -20.00 | -29.87 | Peak |
| 6 | 1762.96 | -48.27 | 36.59 | 3.54 | 42.14 | -50.28 | -20.00 | -30.28 | Peak |
| TEST MODE | TX-DNH | Test Channel: | CH _L | Polarity: | Vertical | | | | |
| Level (dBm/m) | | | | | | | | | |
| | | | | | | | | | |
|  | | | | | | | | | |
| Mark | Frequency MHz | Reading dBm | Antenna dB | Cable dB | Preamp dB | Level dBm | Limit dBm | Over limit | Remark |
| 1 | 264.52 | -67.25 | 21.59 | 3.14 | 30.16 | -72.68 | -20.00 | -52.68 | Peak |
| 2 | 407.67 | -60.22 | 25.30 | 3.97 | 29.91 | -60.86 | -20.00 | -40.86 | Peak |
| 3 | 1221.79 | -56.05 | 36.95 | 2.91 | 42.18 | -58.37 | -20.00 | -38.37 | Peak |
| 4 | 1365.09 | -60.14 | 37.61 | 3.47 | 42.00 | -61.06 | -20.00 | -41.06 | Peak |
| 5 | 1587.77 | -61.10 | 37.76 | 3.29 | 42.20 | -62.25 | -20.00 | -42.25 | Peak |
| 6 | 1848.05 | -60.25 | 36.93 | 3.59 | 42.04 | -61.77 | -20.00 | -41.77 | Peak |

| TEST MODE | TX-DNH | Test Channel: | CH _M | Polarity: | Horizontal | | | | |
|--|------------------|----------------|-----------------|-------------|--------------|--------------|--------------|---------------|--------|
|  | | | | | | | | | |
| Mark | Frequency MHz | Reading dBm | Antenna dB | Cable dB | Preamp dB | Level dBm | Limit dBm | Over limit | Remark |
| 1 | 264.52 | -64.30 | 22.95 | 3.14 | 30.16 | -68.37 | -20.00 | -48.37 | Peak |
| 2 | 464.31 | -69.42 | 25.70 | 4.27 | 29.82 | -69.27 | -20.00 | -49.27 | Peak |
| 3 | 1184.27 | -59.90 | 36.35 | 2.82 | 42.31 | -63.04 | -20.00 | -43.04 | Peak |
| 4 | 1362.26 | -60.87 | 37.08 | 3.59 | 42.00 | -62.20 | -20.00 | -42.20 | Peak |
| 5 | 1602.14 | -60.55 | 35.97 | 3.35 | 42.20 | -63.43 | -20.00 | -43.43 | Peak |
| 6 | 1820.08 | -60.07 | 36.97 | 3.57 | 42.07 | -61.60 | -20.00 | -41.60 | Peak |
| TEST MODE | TX-DNH | Test Channel: | CH _M | Polarity: | Vertical | | | | |
|  | | | | | | | | | |
| Mark | Frequency MHz | Reading dBm | Antenna dB | Cable dB | Preamp dB | Level dBm | Limit dBm | Over limit | Remark |
| 1 | 309.07 | -62.50 | 23.19 | 3.42 | 30.19 | -66.00 | -20.00 | -46.00 | Peak |
| 2 | 464.31 | -61.62 | 25.12 | 4.27 | 29.82 | -62.05 | -20.00 | -42.05 | Peak |
| 3 | 1218.41 | -48.76 | 36.93 | 2.90 | 42.19 | -51.12 | -20.00 | -31.12 | Peak |
| 4 | 1390.88 | -55.51 | 37.72 | 3.07 | 42.00 | -56.72 | -20.00 | -36.72 | Peak |
| 5 | 1436.94 | -54.39 | 37.76 | 3.12 | 42.09 | -55.60 | -20.00 | -35.60 | Peak |
| 6 | 1524.15 | -55.19 | 37.76 | 3.19 | 42.20 | -56.44 | -20.00 | -36.44 | Peak |

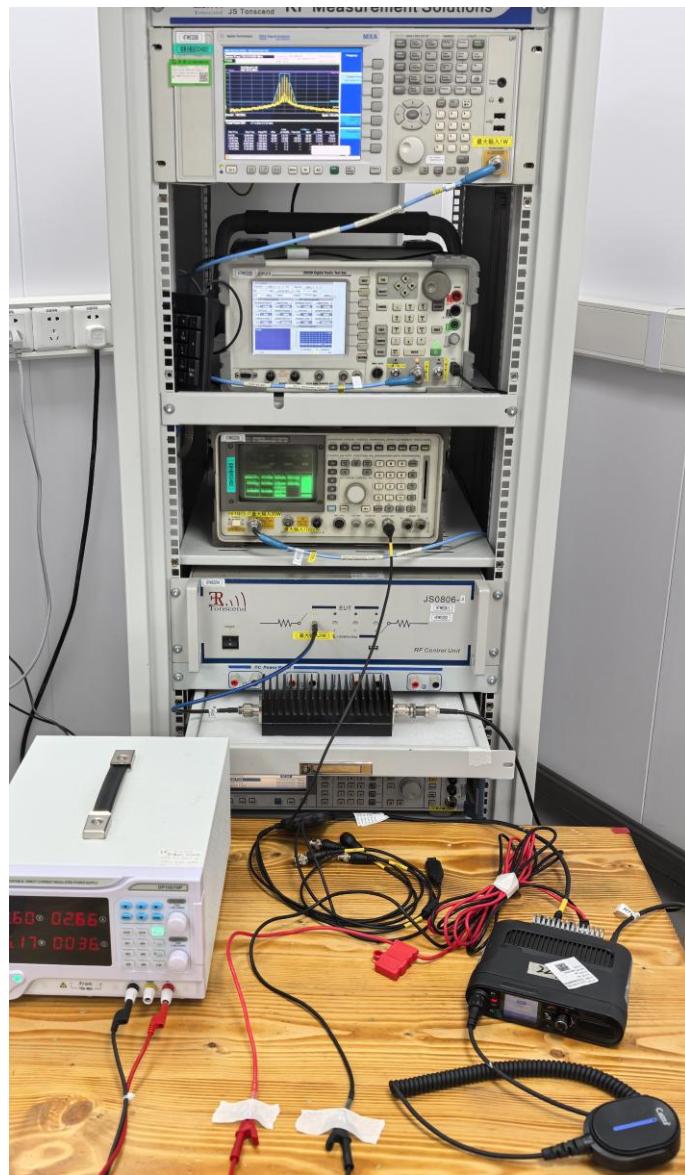






| TEST MODE | TX-ANH | Test Channel: | CH _H | Polarity: | Horizontal | | | | |
|--|---------------|---------------|-----------------|-----------|------------|-----------|-----------|------------|--------|
|  | | | | | | | | | |
| Mark | Frequency MHz | Reading dBm | Antenna dB | Cable dB | Preamp dB | Level dBm | Limit dBm | Over limit | Remark |
| 1 | 264.52 | -67.41 | 22.95 | 3.14 | 30.16 | -71.48 | -20.00 | -51.48 | Peak |
| 2 | 521.44 | -58.02 | 25.14 | 4.54 | 30.08 | -58.42 | -20.00 | -38.42 | Peak |
| 3 | 1162.31 | -59.52 | 35.81 | 2.79 | 42.39 | -63.31 | -20.00 | -43.31 | Peak |
| 4 | 1387.03 | -59.94 | 37.13 | 3.07 | 42.00 | -61.74 | -20.00 | -41.74 | Peak |
| 5 | 1528.98 | -60.27 | 36.42 | 3.19 | 42.28 | -62.86 | -20.00 | -42.86 | Peak |
| 6 | 1848.05 | -59.89 | 37.32 | 3.59 | 42.04 | -61.02 | -20.00 | -41.02 | Peak |
| TEST MODE | TX-ANH | Test Channel: | CH _H | Polarity: | Vertical | | | | |
|  | | | | | | | | | |
| Mark | Frequency MHz | Reading dBm | Antenna dB | Cable dB | Preamp dB | Level dBm | Limit dBm | Over limit | Remark |
| 1 | 264.52 | -64.57 | 21.59 | 3.14 | 30.16 | -70.00 | -20.00 | -50.00 | Peak |
| 2 | 521.44 | -53.43 | 25.77 | 4.54 | 30.08 | -53.20 | -20.00 | -33.20 | Peak |
| 3 | 1174.46 | -41.33 | 36.16 | 2.81 | 42.34 | -44.70 | -20.00 | -24.70 | Peak |
| 4 | 1240.57 | -44.69 | 37.04 | 2.91 | 42.12 | -46.86 | -20.00 | -26.86 | Peak |
| 5 | 1422.08 | -43.29 | 37.76 | 3.10 | 42.04 | -44.47 | -20.00 | -24.47 | Peak |
| 6 | 1541.14 | -42.43 | 37.76 | 3.19 | 42.20 | -43.68 | -20.00 | -23.68 | Peak |

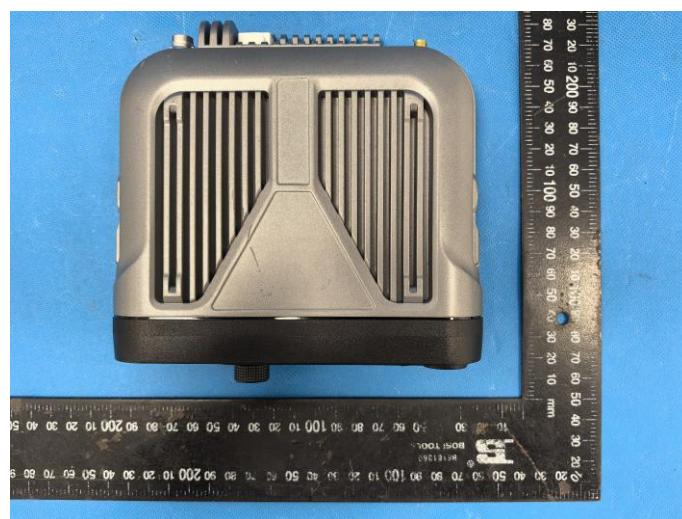
6 TEST SETUP PHOTOS





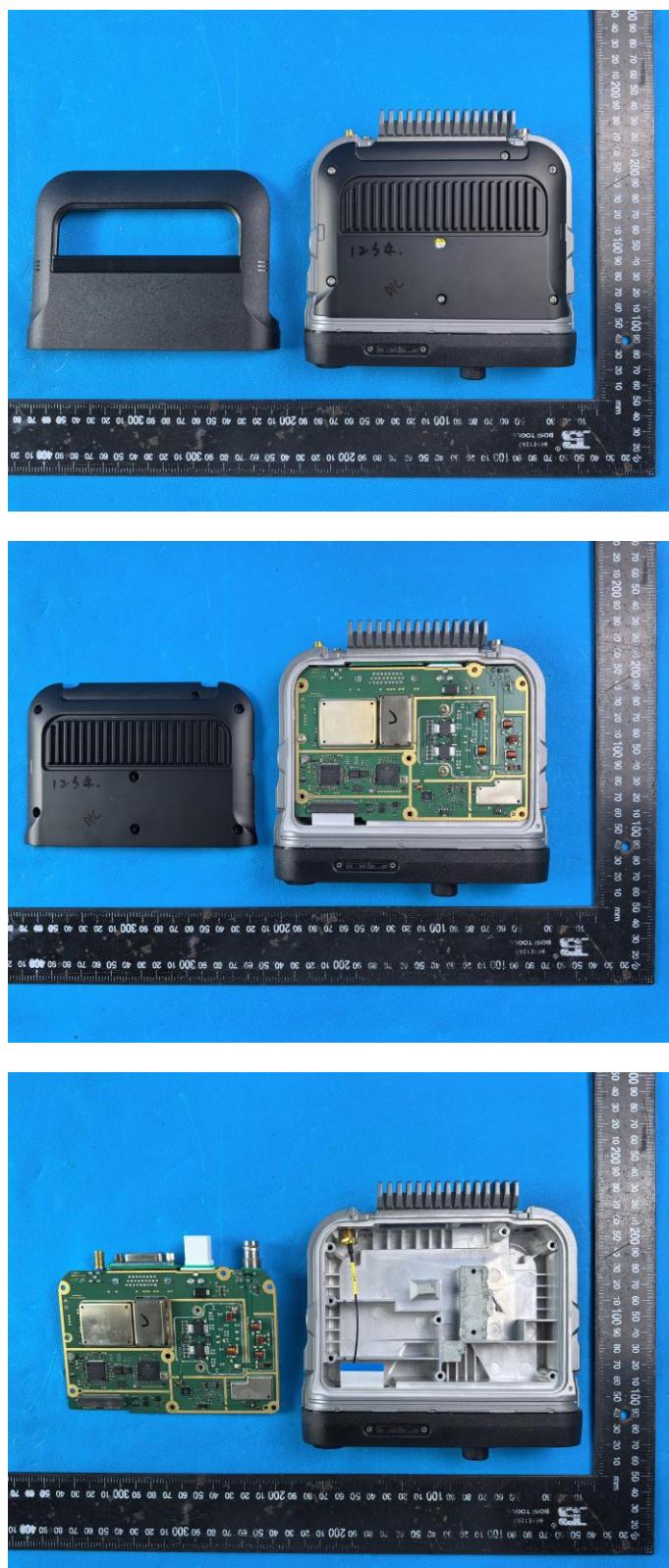
7 EXTERNAL AND INTERNAL PHOTOS

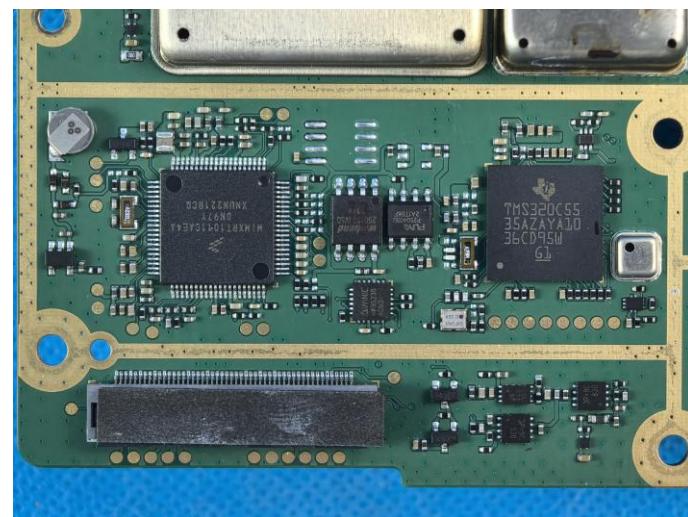
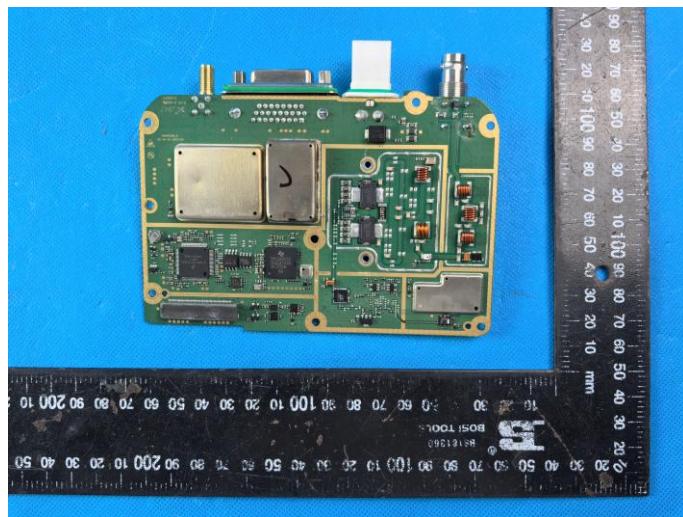
7.1 External photos

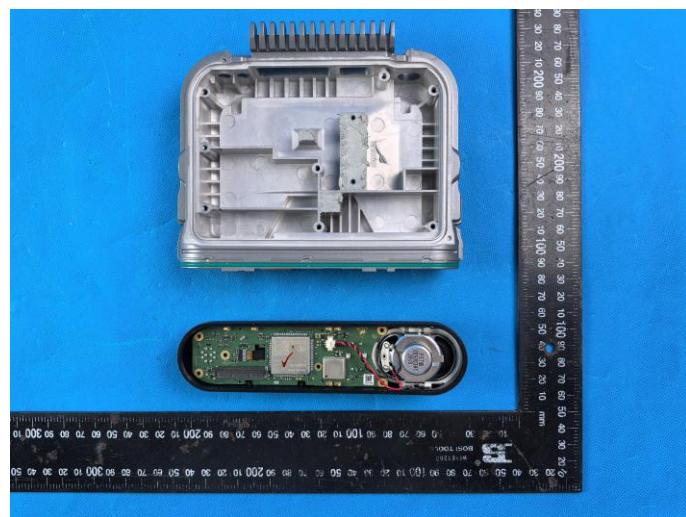
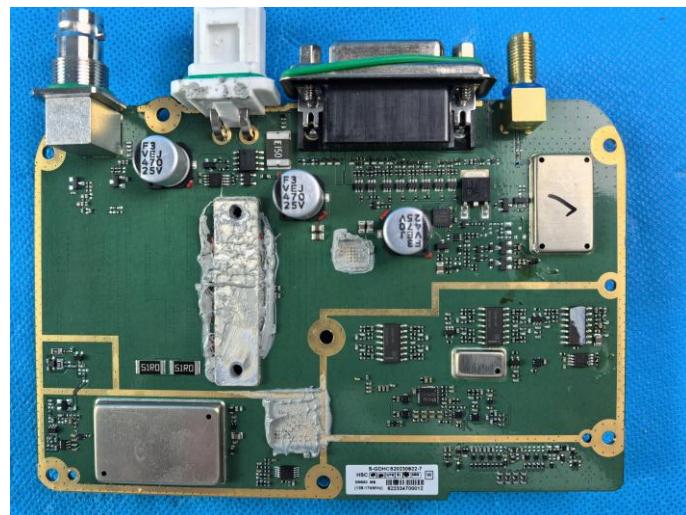
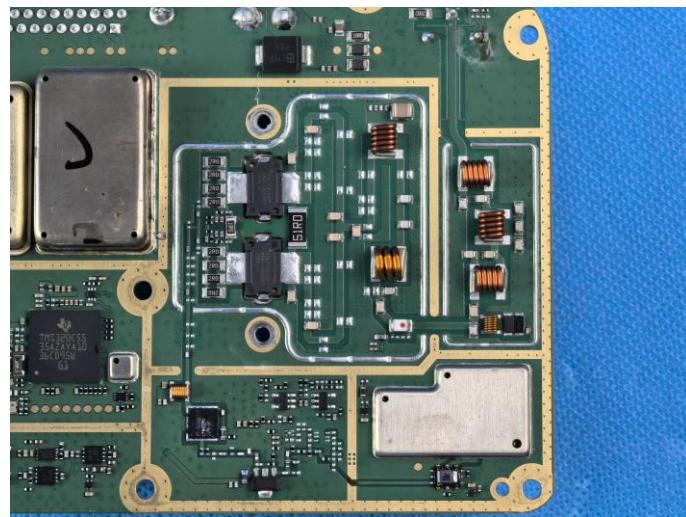


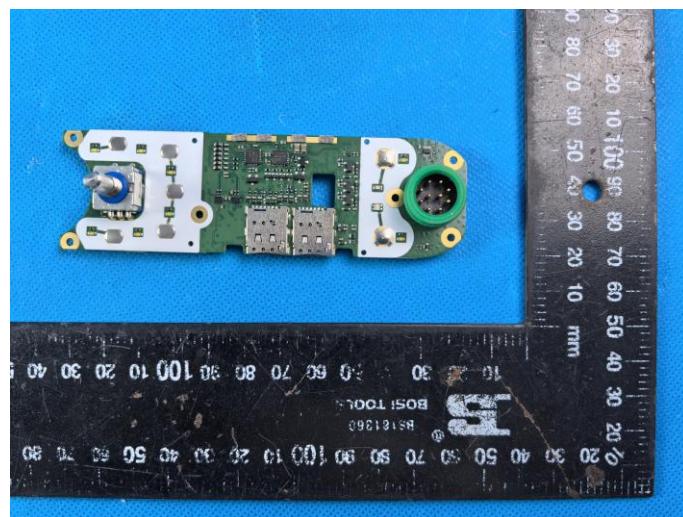
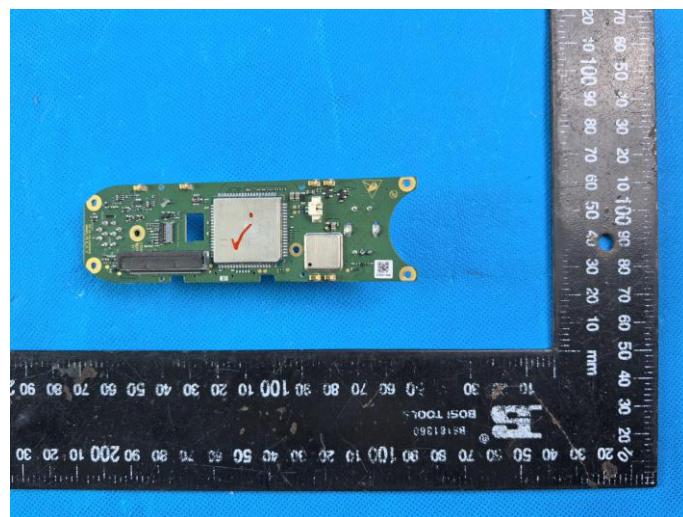
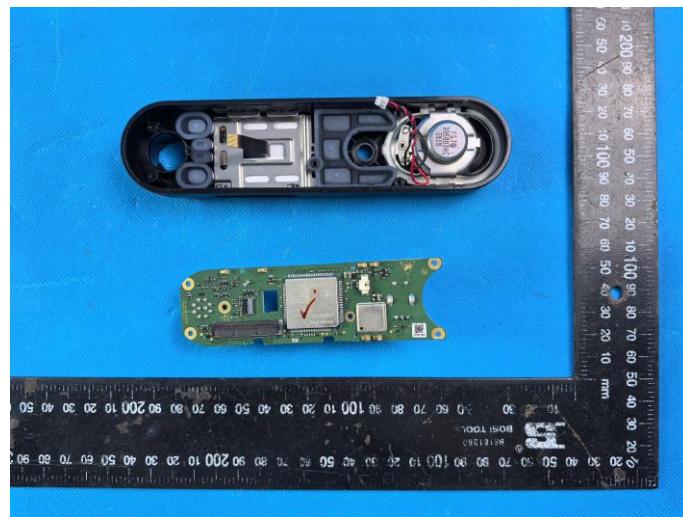


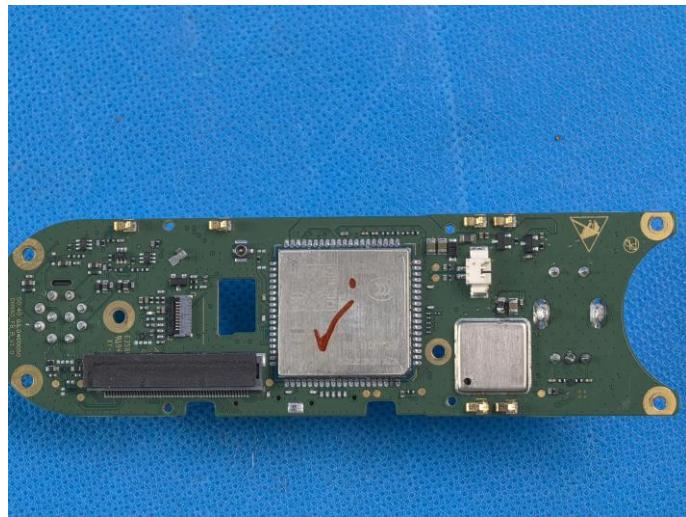
7.2 Internal photos











8 APPENDIX REPORT

| | | | |
|-----------------|------------------|-------------|----------------------|
| Project No. | SHT2406041801W | | |
| Test sample No. | YPH T24050867001 | Model No. | DM660 VHF |
| Start test date | 2024/6/18 | Finish date | 2024/6/19 |
| Temperature | 24.4 °C | Humidity | 50% |
| Test Engineer | Xiangyu Wei | Auditor | <i>Xiaodong Zhao</i> |

| Appendix clause | Test Item | Test date (M/D) | Test Result (PASS/FAIL) |
|-----------------|--|-----------------|-------------------------|
| A | Maximum Transmitter Power | 6/18 | PASS |
| B | Occupied Bandwidth | 6/19 | PASS |
| C | Emission Mask | 6/18 | PASS |
| D | Modulation Limit | 6/19 | PASS |
| E | Audio Frequency Response | 6/19 | PASS |
| F | Frequency Stability Test & Temperature | 6/19 | PASS |
| G | Frequency Stability Test & Voltage | 6/19 | PASS |
| H | Transmitter Frequency Behavior | 6/19 | PASS |
| I | Spurious Emission On Antenna Port | 6/19 | PASS |

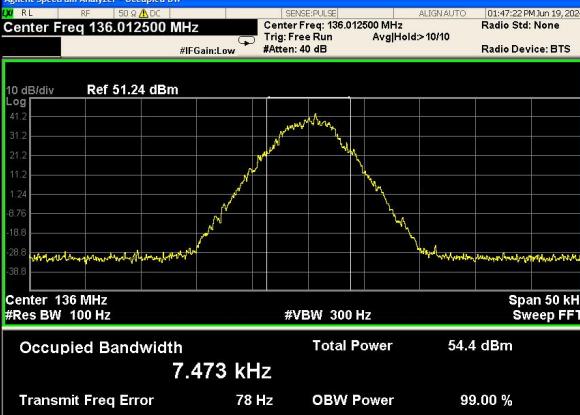
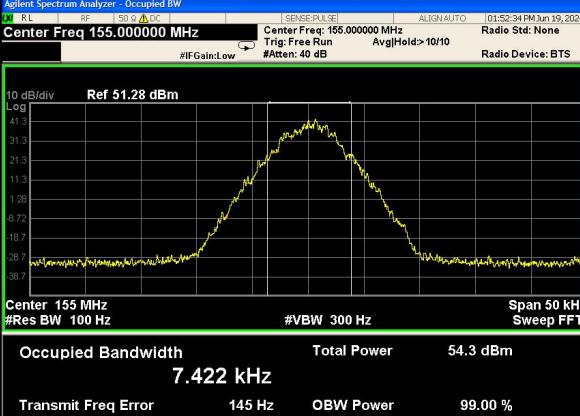
Appendix A:Maximum Transmitter Power

| Operation Mode | Modulation Type | Test Channel | Measured Power (dBm) | Measured Power(W) | Rated Power(W) | Percentage (%) | Limit (%) | Result |
|----------------|-----------------|-----------------|----------------------|-------------------|----------------|----------------|-----------|--------|
| TX-DNH | 4FSK | CH _L | 47.67 | 58.48 | 50.00 | 16.96 | ±20 | PASS |
| TX-DNH | 4FSK | CH _M | 47.75 | 59.57 | 50.00 | 19.14 | ±20 | PASS |
| TX-DNH | 4FSK | CH _H | 47.68 | 58.61 | 50.00 | 17.22 | ±20 | PASS |
| TX-DNL | 4FSK | CH _L | 37.70 | 5.89 | 5.00 | 17.80 | ±20 | PASS |
| TX-DNL | 4FSK | CH _M | 37.63 | 5.79 | 5.00 | 15.80 | ±20 | PASS |
| TX-DNL | 4FSK | CH _H | 37.69 | 5.87 | 5.00 | 17.40 | ±20 | PASS |
| TX-ANH | FM | CH _L | 47.47 | 55.85 | 50.00 | 11.70 | ±20 | PASS |
| TX-ANH | FM | CH _M | 47.47 | 55.85 | 50.00 | 11.70 | ±20 | PASS |
| TX-ANH | FM | CH _H | 47.29 | 53.58 | 50.00 | 7.16 | ±20 | PASS |
| TX-ANL | FM | CH _L | 37.34 | 5.42 | 5.00 | 8.40 | ±20 | PASS |
| TX-ANL | FM | CH _M | 37.30 | 5.37 | 5.00 | 7.40 | ±20 | PASS |
| TX-ANL | FM | CH _H | 37.02 | 5.04 | 5.00 | 0.80 | ±20 | PASS |

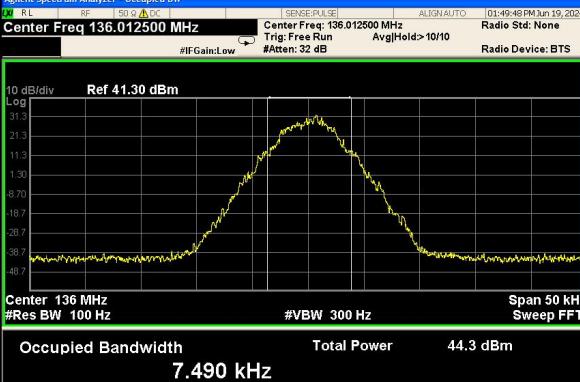
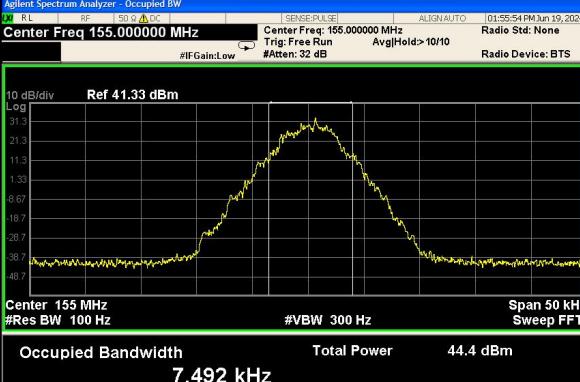
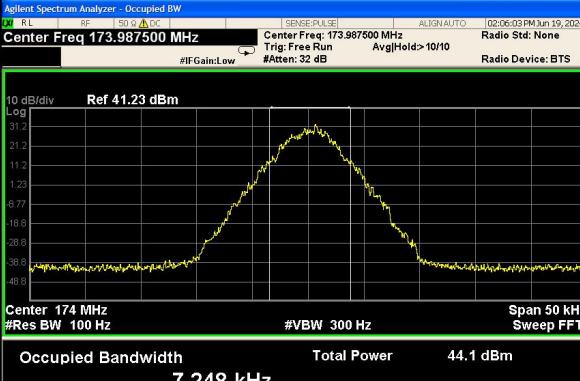
Appendix B:Occupied Bandwidth

| Operation Mode | Modulation Type | Test Channel | Occupied Bandwidth | | 99% Limit(kHz) | Result |
|----------------|-----------------|-----------------|--------------------|-----------|----------------|--------|
| | | | 99%(kHz) | 26dB(kHz) | | |
| TX-DNH | 4FSK | CH _L | 7.47 | 9.27 | ≤11.25 | PASS |
| TX-DNH | 4FSK | CH _M | 7.42 | 9.49 | ≤11.25 | PASS |
| TX-DNH | 4FSK | CH _H | 7.43 | 9.61 | ≤11.25 | PASS |
| TX-DNL | 4FSK | CH _L | 7.49 | 9.43 | ≤11.25 | PASS |
| TX-DNL | 4FSK | CH _M | 7.49 | 9.44 | ≤11.25 | PASS |
| TX-DNL | 4FSK | CH _H | 7.25 | 9.28 | ≤11.25 | PASS |
| TX-ANH | FM | CH _L | 9.97 | 10.16 | ≤11.25 | PASS |
| TX-ANH | FM | CH _M | 9.97 | 10.15 | ≤11.25 | PASS |
| TX-ANH | FM | CH _H | 9.97 | 10.16 | ≤11.25 | PASS |
| TX-ANL | FM | CH _L | 9.97 | 10.16 | ≤11.25 | PASS |
| TX-ANL | FM | CH _M | 9.97 | 10.16 | ≤11.25 | PASS |
| TX-ANL | FM | CH _H | 9.97 | 10.17 | ≤11.25 | PASS |

Appendix B: Occupied Bandwidth

| Operation Mode | Modulation Type | Test Channel | TEST PLOT RESULT |
|----------------|-----------------|-----------------|--|
| TX-DNH | 4FSK | CH _L | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 136.012500 MHz</p> <p>Ref 51.24 dBm</p> <p>Occupied Bandwidth 7.473 kHz</p> <p>Total Power 54.4 dBm</p> <p>Transmit Freq Error 78 Hz</p> <p>x dB Bandwidth 9.270 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB 9.270 kHz</p> <p>-26.00 dB</p>  <p>Span 50 kHz Sweep FFT</p> <p>CF Step 5.000 kHz Man</p> <p>Freq Offset 0 Hz</p> <p>Center Freq 136.012500 MHz</p> <p>CF Step 5.000 kHz Man</p> <p>Freq Offset 0 Hz</p> <p>MSG: Data out of range; The value 30.33 was clipped to the maximum value of 30. STATUS: DC Coupled</p> |
| TX-DNH | 4FSK | CH _M | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 155.000000 MHz</p> <p>Ref 51.28 dBm</p> <p>Occupied Bandwidth 7.422 kHz</p> <p>Total Power 54.3 dBm</p> <p>Transmit Freq Error 145 Hz</p> <p>x dB Bandwidth 9.491 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB 9.491 kHz</p> <p>-26.00 dB</p>  <p>Span 50 kHz Sweep FFT</p> <p>CF Step 5.000 kHz Man</p> <p>Freq Offset 0 Hz</p> <p>Center Freq 155.000000 MHz</p> <p>CF Step 5.000 kHz Man</p> <p>Freq Offset 0 Hz</p> <p>MSG: Data out of range; The value 30.35 was clipped to the maximum value of 30. STATUS: DC Coupled</p> |
| TX-DNH | 4FSK | CH _H | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 173.987500 MHz</p> <p>Ref 51.16 dBm</p> <p>Occupied Bandwidth 7.426 kHz</p> <p>Total Power 54.0 dBm</p> <p>Transmit Freq Error 98 Hz</p> <p>x dB Bandwidth 9.611 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB 9.611 kHz</p> <p>-26.00 dB</p>  <p>Span 50 kHz Sweep FFT</p> <p>CF Step 5.000 kHz Man</p> <p>Freq Offset 0 Hz</p> <p>Center Freq 173.987500 MHz</p> <p>CF Step 5.000 kHz Man</p> <p>Freq Offset 0 Hz</p> <p>MSG: Data out of range; The value 30.2 was clipped to the maximum value of 30. STATUS: DC Coupled</p> |

Appendix B: Occupied Bandwidth

| Operation Mode | Modulation Type | Test Channel | TEST PLOT RESULT |
|----------------|-----------------|-----------------|--|
| TX-DNL | 4FSK | CH _L | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 136.012500 MHz</p> <p>Center Freq: 136.012500 MHz</p> <p>Trig: Free Run</p> <p>Avg Hold> 10/10</p> <p>#IFGain:Low</p> <p>#Atten: 32 dB</p> <p>Radio Device: BTS</p> <p>Align: AUTO</p> <p>01:40:48 PM Jun 19, 2024</p>  <p>Frequency</p> <p>Center Freq 136.012500 MHz</p> <p>CF Step 5.000 kHz</p> <p>Auto</p> <p>Freq Offset 0 Hz</p> <p>MSG STATUS: DC Coupled</p> |
| TX-DNL | 4FSK | CH _M | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 155.000000 MHz</p> <p>Center Freq: 155.000000 MHz</p> <p>Trig: Free Run</p> <p>Avg Hold> 10/10</p> <p>#IFGain:Low</p> <p>#Atten: 32 dB</p> <p>Radio Device: BTS</p> <p>Align: AUTO</p> <p>01:55:54 PM Jun 19, 2024</p>  <p>Frequency</p> <p>Center Freq 155.000000 MHz</p> <p>CF Step 5.000 kHz</p> <p>Auto</p> <p>Freq Offset 0 Hz</p> <p>MSG STATUS: DC Coupled</p> |
| TX-DNL | 4FSK | CH _H | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 173.987500 MHz</p> <p>Center Freq: 173.987500 MHz</p> <p>Trig: Free Run</p> <p>Avg Hold> 10/10</p> <p>#IFGain:Low</p> <p>#Atten: 32 dB</p> <p>Radio Device: BTS</p> <p>Align: AUTO</p> <p>02:06:03 PM Jun 19, 2024</p>  <p>Frequency</p> <p>Center Freq 173.987500 MHz</p> <p>CF Step 5.000 kHz</p> <p>Auto</p> <p>Freq Offset 0 Hz</p> <p>MSG STATUS: DC Coupled</p> |

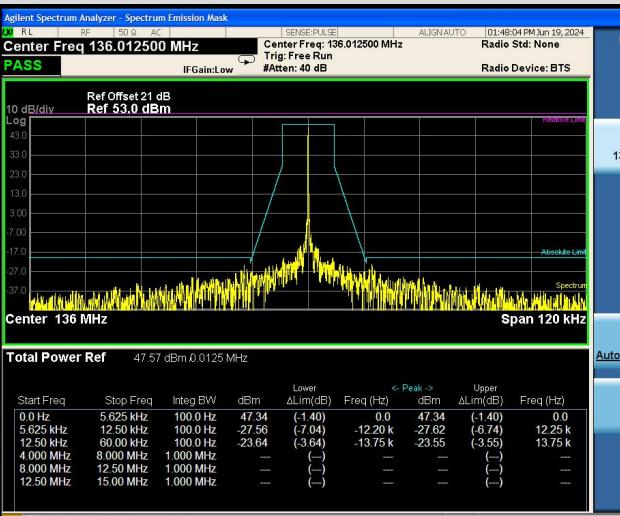
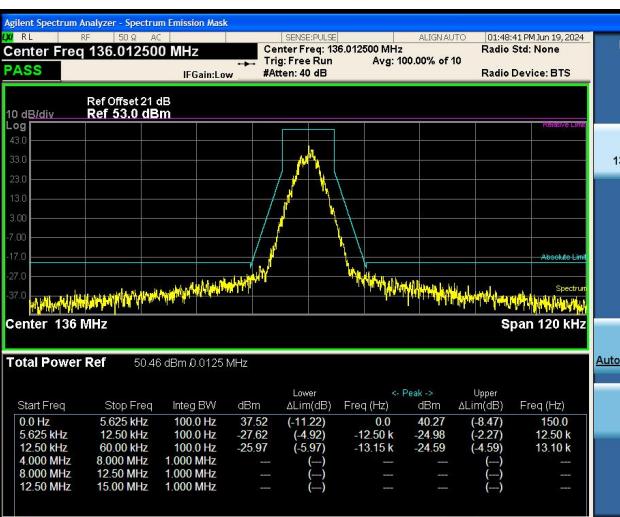
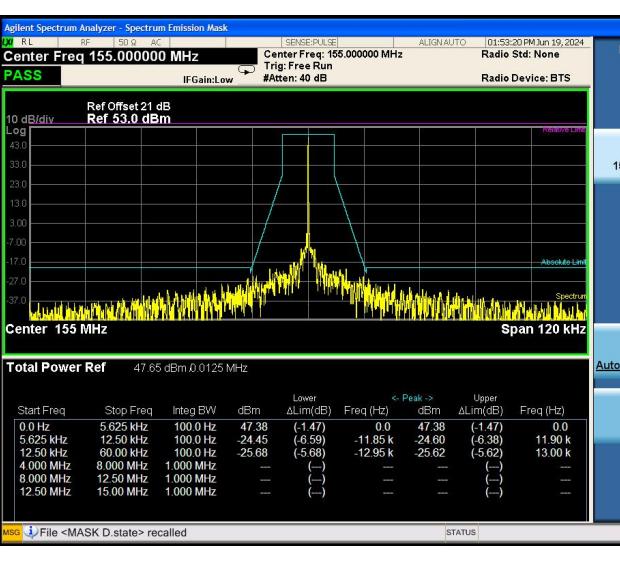
Appendix B: Occupied Bandwidth

| Operation Mode | Modulation Type | Test Channel | TEST PLOT RESULT |
|----------------|-----------------|-----------------|---|
| TX-ANH | FM | CH _L | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 136.012500 MHz</p> <p>Center Freq: 136.012500 MHz</p> <p>Trig: Free Run</p> <p>Avg Hold> 10/10</p> <p>#IFGain:Low</p> <p>#Atten: 40 dB</p> <p>Radio Device: BTS</p> <p>10 dB/div</p> <p>Ref 51.30 dBm</p> <p>Log</p> <p>41.3</p> <p>31.3</p> <p>21.3</p> <p>11.3</p> <p>1.30</p> <p>-8.70</p> <p>-18.7</p> <p>-28.7</p> <p>-38.7</p> <p>Center 136 MHz</p> <p>#Res BW 100 Hz</p> <p>#VBW 300 Hz</p> <p>Span 50 kHz</p> <p>Sweep FFT</p> <p>Occupied Bandwidth</p> <p>9.969 kHz</p> <p>Total Power</p> <p>48.1 dBm</p> <p>Transmit Freq Error</p> <p>23 Hz</p> <p>OBW Power</p> <p>99.00 %</p> <p>x dB Bandwidth</p> <p>10.16 kHz</p> <p>x dB</p> <p>-26.00 dB</p> <p>MSG: Data out of range; The value 30.39 was clipped to the maximum value of 30.</p> <p>STATUS: DC Coupled</p> |
| TX-ANH | FM | CH _M | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 155.000000 MHz</p> <p>Center Freq: 155.000000 MHz</p> <p>Trig: Free Run</p> <p>Avg Hold> 10/10</p> <p>#IFGain:Low</p> <p>#Atten: 40 dB</p> <p>Radio Device: BTS</p> <p>10 dB/div</p> <p>Ref 51.37 dBm</p> <p>Log</p> <p>41.4</p> <p>31.4</p> <p>21.4</p> <p>11.4</p> <p>1.37</p> <p>-8.63</p> <p>-18.6</p> <p>-28.6</p> <p>-38.6</p> <p>Center 155 MHz</p> <p>#Res BW 100 Hz</p> <p>#VBW 300 Hz</p> <p>Span 50 kHz</p> <p>Sweep FFT</p> <p>Occupied Bandwidth</p> <p>9.971 kHz</p> <p>Total Power</p> <p>48.1 dBm</p> <p>Transmit Freq Error</p> <p>25 Hz</p> <p>OBW Power</p> <p>99.00 %</p> <p>x dB Bandwidth</p> <p>10.15 kHz</p> <p>x dB</p> <p>-26.00 dB</p> <p>MSG: Data out of range; The value 30.44 was clipped to the maximum value of 30.</p> <p>STATUS: DC Coupled</p> |
| TX-ANH | FM | CH _H | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 173.987500 MHz</p> <p>Center Freq: 173.987500 MHz</p> <p>Trig: Free Run</p> <p>Avg Hold> 10/10</p> <p>#IFGain:Low</p> <p>#Atten: 40 dB</p> <p>Radio Device: BTS</p> <p>10 dB/div</p> <p>Ref 51.02 dBm</p> <p>Log</p> <p>41.0</p> <p>31.0</p> <p>21.0</p> <p>11.0</p> <p>1.02</p> <p>-9.95</p> <p>-19.0</p> <p>-29.0</p> <p>-39.0</p> <p>Center 174 MHz</p> <p>#Res BW 100 Hz</p> <p>#VBW 300 Hz</p> <p>Span 50 kHz</p> <p>Sweep FFT</p> <p>Occupied Bandwidth</p> <p>9.968 kHz</p> <p>Total Power</p> <p>47.8 dBm</p> <p>Transmit Freq Error</p> <p>26 Hz</p> <p>OBW Power</p> <p>99.00 %</p> <p>x dB Bandwidth</p> <p>10.16 kHz</p> <p>x dB</p> <p>-26.00 dB</p> <p>MSG: Data out of range; The value 30.06 was clipped to the maximum value of 30.</p> <p>STATUS: DC Coupled</p> |

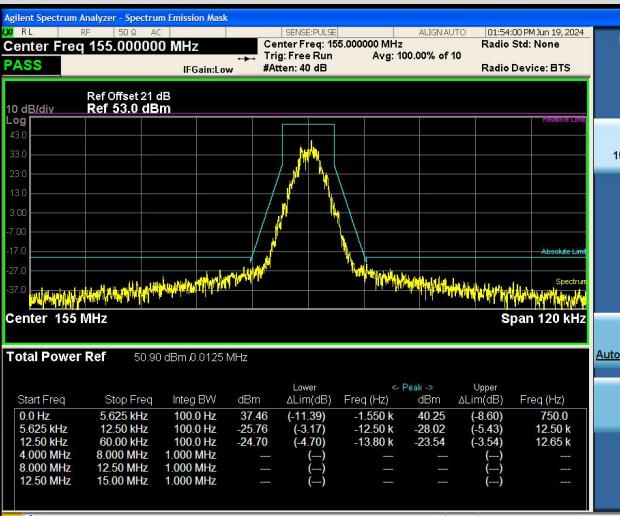
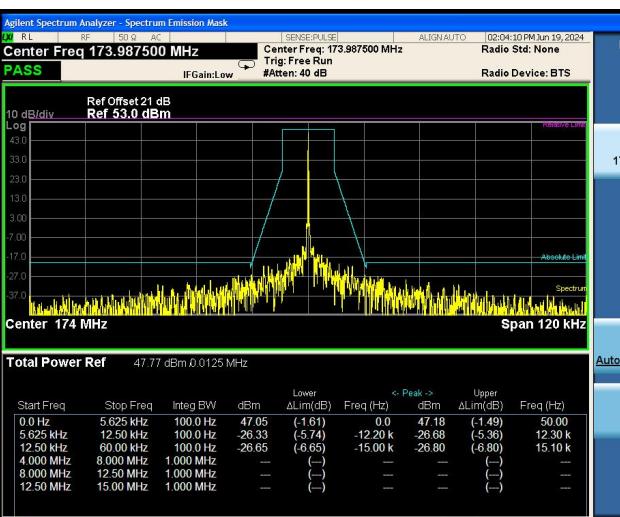
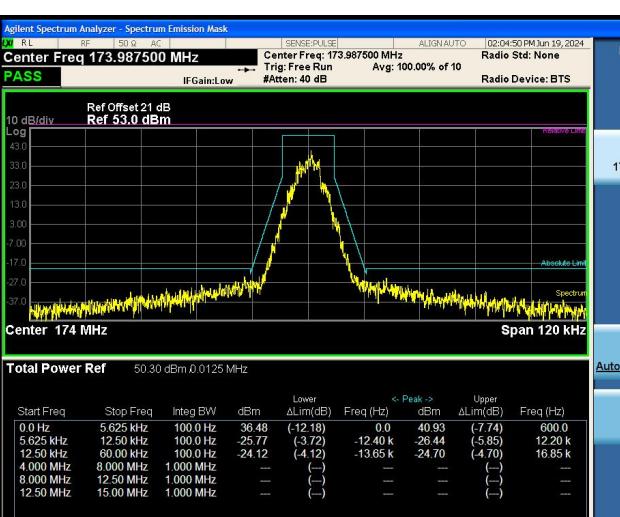
Appendix B: Occupied Bandwidth

| Operation Mode | Modulation Type | Test Channel | TEST PLOT RESULT |
|----------------|-----------------|-----------------|--|
| TX-ANL | FM | CH _L | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 136.012500 MHz</p> <p>Center Freq: 136.012500 MHz</p> <p>Trig: Free Run</p> <p>Avg Hold> 10/10</p> <p>#IFGain:Low</p> <p>#Atten: 32 dB</p> <p>Radio Device: BTS</p> <p>10 dB/div</p> <p>Ref 41.27 dBm</p> <p>Log</p> <p>31.3</p> <p>21.3</p> <p>11.3</p> <p>1.27</p> <p>-8.73</p> <p>-18.7</p> <p>-28.7</p> <p>-38.7</p> <p>-48.7</p> <p>Center 136 MHz</p> <p>#Res BW 100 Hz</p> <p>#VBW 300 Hz</p> <p>Span 50 kHz</p> <p>Sweep FFT</p> <p>Occupied Bandwidth</p> <p>9.970 kHz</p> <p>Total Power</p> <p>38.0 dBm</p> <p>Transmit Freq Error</p> <p>25 Hz</p> <p>OBW Power</p> <p>99.00 %</p> <p>x dB Bandwidth</p> <p>10.16 kHz</p> <p>x dB</p> <p>-26.00 dB</p> <p>MSG</p> <p>STATUS: DC Coupled</p> |
| TX-ANL | FM | CH _M | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 155.000000 MHz</p> <p>Center Freq: 155.000000 MHz</p> <p>Trig: Free Run</p> <p>Avg Hold> 10/10</p> <p>#IFGain:Low</p> <p>#Atten: 32 dB</p> <p>Radio Device: BTS</p> <p>10 dB/div</p> <p>Ref 41.24 dBm</p> <p>Log</p> <p>31.2</p> <p>21.2</p> <p>11.2</p> <p>1.24</p> <p>-8.76</p> <p>-18.8</p> <p>-28.8</p> <p>-38.8</p> <p>-48.8</p> <p>Center 155 MHz</p> <p>#Res BW 100 Hz</p> <p>#VBW 300 Hz</p> <p>Span 50 kHz</p> <p>Sweep FFT</p> <p>Occupied Bandwidth</p> <p>9.968 kHz</p> <p>Total Power</p> <p>38.0 dBm</p> <p>Transmit Freq Error</p> <p>24 Hz</p> <p>OBW Power</p> <p>99.00 %</p> <p>x dB Bandwidth</p> <p>10.16 kHz</p> <p>x dB</p> <p>-26.00 dB</p> <p>MSG</p> <p>STATUS: DC Coupled</p> |
| TX-ANL | FM | CH _H | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 173.987500 MHz</p> <p>Center Freq: 173.987500 MHz</p> <p>Trig: Free Run</p> <p>Avg Hold> 10/10</p> <p>#IFGain:Low</p> <p>#Atten: 32 dB</p> <p>Radio Device: BTS</p> <p>10 dB/div</p> <p>Ref 41.04 dBm</p> <p>Log</p> <p>31.0</p> <p>21.0</p> <p>11.0</p> <p>1.04</p> <p>-8.96</p> <p>-19.0</p> <p>-29.0</p> <p>-39.0</p> <p>-49.0</p> <p>Center 174 MHz</p> <p>#Res BW 100 Hz</p> <p>#VBW 300 Hz</p> <p>Span 50 kHz</p> <p>Sweep FFT</p> <p>Occupied Bandwidth</p> <p>9.969 kHz</p> <p>Total Power</p> <p>37.4 dBm</p> <p>Transmit Freq Error</p> <p>40 Hz</p> <p>OBW Power</p> <p>99.00 %</p> <p>x dB Bandwidth</p> <p>10.17 kHz</p> <p>x dB</p> <p>-26.00 dB</p> <p>MSG</p> <p>STATUS: DC Coupled</p> |

Appendix C:Emission Mask

| Operation Mode | Modulation Type | Test Channel | TEST PLOT RESULT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|-----------------|-----------------|---|----------------|-----------|----------|----------------|----------------|-----------|----------|----------------|-----------|--------|-----------|----------|-------|----------|-----|-------|---------|-------|-----------|----------|----------|-------|---------|----------|--------|---------|---------|----------|-----------|----------|-------|---------|----------|--------|---------|---------|-----------|-----------|-------------|----|------|----|----|------|----|-----------|----------|-------------|----|------|----|----|------|----|----------|-----------|-------------|----|------|----|----|------|----|---|--|--|
| TX-DNH | 4FSK | CH _L |  <p>Agilent Spectrum Analyzer - Spectrum Emission Mask</p> <p>Center Freq 136.012500 MHz</p> <p>PASS</p> <p>IFGain:Low</p> <p>Trig: Free Run</p> <p>#Atten: 40 dB</p> <p>Radio Device: BTS</p> <p>01:48:04 PM Jun 19, 2024</p> <table border="1"> <thead> <tr> <th>Start Freq</th> <th>Stop Freq</th> <th>Integ BW</th> <th>dBm</th> <th>Lower ΔLim(dB)</th> <th>Freq (Hz)</th> <th>< Peak ></th> <th>Upper ΔLim(dB)</th> <th>Freq (Hz)</th> </tr> </thead> <tbody> <tr> <td>0.0 Hz</td> <td>5.625 kHz</td> <td>100.0 Hz</td> <td>47.34</td> <td>(-1.40)</td> <td>0.0</td> <td>47.34</td> <td>(-1.40)</td> <td>0.0</td> </tr> <tr> <td>5.625 kHz</td> <td>12.5 kHz</td> <td>100.0 Hz</td> <td>27.56</td> <td>(-7.04)</td> <td>-12.20 k</td> <td>-27.62</td> <td>(-8.74)</td> <td>12.25 k</td> </tr> <tr> <td>12.5 kHz</td> <td>60.00 kHz</td> <td>100.0 Hz</td> <td>23.64</td> <td>(-3.64)</td> <td>-13.75 k</td> <td>-23.55</td> <td>(-3.55)</td> <td>13.75 k</td> </tr> <tr> <td>4.000 MHz</td> <td>8.000 MHz</td> <td>1,000.0 MHz</td> <td>--</td> <td>(--)</td> <td>--</td> <td>--</td> <td>(--)</td> <td>--</td> </tr> <tr> <td>8.000 MHz</td> <td>12.5 MHz</td> <td>1,000.0 MHz</td> <td>--</td> <td>(--)</td> <td>--</td> <td>--</td> <td>(--)</td> <td>--</td> </tr> <tr> <td>12.5 MHz</td> <td>15.00 MHz</td> <td>1,000.0 MHz</td> <td>--</td> <td>(--)</td> <td>--</td> <td>--</td> <td>(--)</td> <td>--</td> </tr> </tbody> </table> <p>MSG: File <MASK.D.state> recalled</p> <p>STATUS</p> | Start Freq | Stop Freq | Integ BW | dBm | Lower ΔLim(dB) | Freq (Hz) | < Peak > | Upper ΔLim(dB) | Freq (Hz) | 0.0 Hz | 5.625 kHz | 100.0 Hz | 47.34 | (-1.40) | 0.0 | 47.34 | (-1.40) | 0.0 | 5.625 kHz | 12.5 kHz | 100.0 Hz | 27.56 | (-7.04) | -12.20 k | -27.62 | (-8.74) | 12.25 k | 12.5 kHz | 60.00 kHz | 100.0 Hz | 23.64 | (-3.64) | -13.75 k | -23.55 | (-3.55) | 13.75 k | 4.000 MHz | 8.000 MHz | 1,000.0 MHz | -- | (--) | -- | -- | (--) | -- | 8.000 MHz | 12.5 MHz | 1,000.0 MHz | -- | (--) | -- | -- | (--) | -- | 12.5 MHz | 15.00 MHz | 1,000.0 MHz | -- | (--) | -- | -- | (--) | -- | Frequency Center Freq 136.012500 MHz CF Step 12.000 kHz Man Freq Offset 0 Hz | | |
| Start Freq | Stop Freq | Integ BW | dBm | Lower ΔLim(dB) | Freq (Hz) | < Peak > | Upper ΔLim(dB) | Freq (Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 Hz | 5.625 kHz | 100.0 Hz | 47.34 | (-1.40) | 0.0 | 47.34 | (-1.40) | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.625 kHz | 12.5 kHz | 100.0 Hz | 27.56 | (-7.04) | -12.20 k | -27.62 | (-8.74) | 12.25 k | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.5 kHz | 60.00 kHz | 100.0 Hz | 23.64 | (-3.64) | -13.75 k | -23.55 | (-3.55) | 13.75 k | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.000 MHz | 8.000 MHz | 1,000.0 MHz | -- | (--) | -- | -- | (--) | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.000 MHz | 12.5 MHz | 1,000.0 MHz | -- | (--) | -- | -- | (--) | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.5 MHz | 15.00 MHz | 1,000.0 MHz | -- | (--) | -- | -- | (--) | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TX-DNH | 4FSK | CH _L |  <p>Agilent Spectrum Analyzer - Spectrum Emission Mask</p> <p>Center Freq 136.012500 MHz</p> <p>PASS</p> <p>IFGain:Low</p> <p>Trig: Free Run</p> <p>#Atten: 40 dB</p> <p>Radio Device: BTS</p> <p>01:48:41 PM Jun 19, 2024</p> <table border="1"> <thead> <tr> <th>Start Freq</th> <th>Stop Freq</th> <th>Integ BW</th> <th>dBm</th> <th>Lower ΔLim(dB)</th> <th>Freq (Hz)</th> <th>< Peak ></th> <th>Upper ΔLim(dB)</th> <th>Freq (Hz)</th> </tr> </thead> <tbody> <tr> <td>0.0 Hz</td> <td>5.625 kHz</td> <td>100.0 Hz</td> <td>37.52</td> <td>(-11.22)</td> <td>0.0</td> <td>40.27</td> <td>(-8.47)</td> <td>150.0</td> </tr> <tr> <td>5.625 kHz</td> <td>12.5 kHz</td> <td>100.0 Hz</td> <td>27.62</td> <td>(-4.92)</td> <td>-12.50 k</td> <td>-24.98</td> <td>(-2.27)</td> <td>12.50 k</td> </tr> <tr> <td>12.5 kHz</td> <td>60.00 kHz</td> <td>100.0 Hz</td> <td>25.97</td> <td>(-5.97)</td> <td>-13.15 k</td> <td>-24.59</td> <td>(-4.59)</td> <td>13.10 k</td> </tr> <tr> <td>4.000 MHz</td> <td>8.000 MHz</td> <td>1,000.0 MHz</td> <td>--</td> <td>(--)</td> <td>--</td> <td>--</td> <td>(--)</td> <td>--</td> </tr> <tr> <td>8.000 MHz</td> <td>12.5 MHz</td> <td>1,000.0 MHz</td> <td>--</td> <td>(--)</td> <td>--</td> <td>--</td> <td>(--)</td> <td>--</td> </tr> <tr> <td>12.5 MHz</td> <td>15.00 MHz</td> <td>1,000.0 MHz</td> <td>--</td> <td>(--)</td> <td>--</td> <td>--</td> <td>(--)</td> <td>--</td> </tr> </tbody> </table> <p>MSG: File <Temp.png> saved</p> <p>STATUS</p> | Start Freq | Stop Freq | Integ BW | dBm | Lower ΔLim(dB) | Freq (Hz) | < Peak > | Upper ΔLim(dB) | Freq (Hz) | 0.0 Hz | 5.625 kHz | 100.0 Hz | 37.52 | (-11.22) | 0.0 | 40.27 | (-8.47) | 150.0 | 5.625 kHz | 12.5 kHz | 100.0 Hz | 27.62 | (-4.92) | -12.50 k | -24.98 | (-2.27) | 12.50 k | 12.5 kHz | 60.00 kHz | 100.0 Hz | 25.97 | (-5.97) | -13.15 k | -24.59 | (-4.59) | 13.10 k | 4.000 MHz | 8.000 MHz | 1,000.0 MHz | -- | (--) | -- | -- | (--) | -- | 8.000 MHz | 12.5 MHz | 1,000.0 MHz | -- | (--) | -- | -- | (--) | -- | 12.5 MHz | 15.00 MHz | 1,000.0 MHz | -- | (--) | -- | -- | (--) | -- | Frequency Center Freq 136.012500 MHz CF Step 12.000 kHz Man Freq Offset 0 Hz | | |
| Start Freq | Stop Freq | Integ BW | dBm | Lower ΔLim(dB) | Freq (Hz) | < Peak > | Upper ΔLim(dB) | Freq (Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 Hz | 5.625 kHz | 100.0 Hz | 37.52 | (-11.22) | 0.0 | 40.27 | (-8.47) | 150.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.625 kHz | 12.5 kHz | 100.0 Hz | 27.62 | (-4.92) | -12.50 k | -24.98 | (-2.27) | 12.50 k | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.5 kHz | 60.00 kHz | 100.0 Hz | 25.97 | (-5.97) | -13.15 k | -24.59 | (-4.59) | 13.10 k | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.000 MHz | 8.000 MHz | 1,000.0 MHz | -- | (--) | -- | -- | (--) | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.000 MHz | 12.5 MHz | 1,000.0 MHz | -- | (--) | -- | -- | (--) | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.5 MHz | 15.00 MHz | 1,000.0 MHz | -- | (--) | -- | -- | (--) | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TX-DNH | 4FSK | CH _M |  <p>Agilent Spectrum Analyzer - Spectrum Emission Mask</p> <p>Center Freq 155.000000 MHz</p> <p>PASS</p> <p>IFGain:Low</p> <p>Trig: Free Run</p> <p>#Atten: 40 dB</p> <p>Radio Device: BTS</p> <p>01:53:20 PM Jun 19, 2024</p> <table border="1"> <thead> <tr> <th>Start Freq</th> <th>Stop Freq</th> <th>Integ BW</th> <th>dBm</th> <th>Lower ΔLim(dB)</th> <th>Freq (Hz)</th> <th>< Peak ></th> <th>Upper ΔLim(dB)</th> <th>Freq (Hz)</th> </tr> </thead> <tbody> <tr> <td>0.0 Hz</td> <td>5.625 kHz</td> <td>100.0 Hz</td> <td>47.38</td> <td>(-1.47)</td> <td>0.0</td> <td>47.38</td> <td>(-1.47)</td> <td>0.0</td> </tr> <tr> <td>5.625 kHz</td> <td>12.5 kHz</td> <td>100.0 Hz</td> <td>24.45</td> <td>(-6.59)</td> <td>-11.85 k</td> <td>-24.60</td> <td>(-6.38)</td> <td>11.90 k</td> </tr> <tr> <td>12.5 kHz</td> <td>60.00 kHz</td> <td>100.0 Hz</td> <td>25.68</td> <td>(-5.68)</td> <td>-12.95 k</td> <td>-25.62</td> <td>(-5.62)</td> <td>13.00 k</td> </tr> <tr> <td>4.000 MHz</td> <td>8.000 MHz</td> <td>1,000.0 MHz</td> <td>--</td> <td>(--)</td> <td>--</td> <td>--</td> <td>(--)</td> <td>--</td> </tr> <tr> <td>8.000 MHz</td> <td>12.5 MHz</td> <td>1,000.0 MHz</td> <td>--</td> <td>(--)</td> <td>--</td> <td>--</td> <td>(--)</td> <td>--</td> </tr> <tr> <td>12.5 MHz</td> <td>15.00 MHz</td> <td>1,000.0 MHz</td> <td>--</td> <td>(--)</td> <td>--</td> <td>--</td> <td>(--)</td> <td>--</td> </tr> </tbody> </table> <p>MSG: File <MASK.D.state> recalled</p> <p>STATUS</p> | Start Freq | Stop Freq | Integ BW | dBm | Lower ΔLim(dB) | Freq (Hz) | < Peak > | Upper ΔLim(dB) | Freq (Hz) | 0.0 Hz | 5.625 kHz | 100.0 Hz | 47.38 | (-1.47) | 0.0 | 47.38 | (-1.47) | 0.0 | 5.625 kHz | 12.5 kHz | 100.0 Hz | 24.45 | (-6.59) | -11.85 k | -24.60 | (-6.38) | 11.90 k | 12.5 kHz | 60.00 kHz | 100.0 Hz | 25.68 | (-5.68) | -12.95 k | -25.62 | (-5.62) | 13.00 k | 4.000 MHz | 8.000 MHz | 1,000.0 MHz | -- | (--) | -- | -- | (--) | -- | 8.000 MHz | 12.5 MHz | 1,000.0 MHz | -- | (--) | -- | -- | (--) | -- | 12.5 MHz | 15.00 MHz | 1,000.0 MHz | -- | (--) | -- | -- | (--) | -- | Frequency Center Freq 155.000000 MHz CF Step 12.000 kHz Man Freq Offset 0 Hz | | |
| Start Freq | Stop Freq | Integ BW | dBm | Lower ΔLim(dB) | Freq (Hz) | < Peak > | Upper ΔLim(dB) | Freq (Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 Hz | 5.625 kHz | 100.0 Hz | 47.38 | (-1.47) | 0.0 | 47.38 | (-1.47) | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.625 kHz | 12.5 kHz | 100.0 Hz | 24.45 | (-6.59) | -11.85 k | -24.60 | (-6.38) | 11.90 k | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.5 kHz | 60.00 kHz | 100.0 Hz | 25.68 | (-5.68) | -12.95 k | -25.62 | (-5.62) | 13.00 k | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.000 MHz | 8.000 MHz | 1,000.0 MHz | -- | (--) | -- | -- | (--) | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.000 MHz | 12.5 MHz | 1,000.0 MHz | -- | (--) | -- | -- | (--) | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.5 MHz | 15.00 MHz | 1,000.0 MHz | -- | (--) | -- | -- | (--) | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Appendix C:Emission Mask

| Operation Mode | Modulation Type | Test Channel | TEST PLOT RESULT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|-----------------|-----------------|---|----------------|-----------|----------|----------------|----------------|-----------|----------|----------------|-----------|--------|-----------|----------|-------|----------|---------|-------|---------|-------|-----------|-----------|----------|-------|---------|----------|--------|---------|---------|-----------|-----------|----------|-------|---------|----------|--------|---------|---------|-----------|-----------|-----------|---|-----|---|---|-----|---|-----------|-----------|-----------|---|-----|---|---|-----|---|-----------|-----------|-----------|---|-----|---|---|-----|---|--|--|--|
| TX-DNH | 4FSK | CH _M |  <p>Agilent Spectrum Analyzer - Spectrum Emission Mask</p> <p>Center Freq 155.000000 MHz</p> <p>Center Freq: 155.000000 MHz</p> <p>IFGain:Low</p> <p>Ref Offset 21 dB</p> <p>Ref 53.0 dBm</p> <p>Log</p> <p>43.0</p> <p>33.0</p> <p>23.0</p> <p>13.0</p> <p>3.0</p> <p>-7.0</p> <p>-17.0</p> <p>-27.0</p> <p>-37.0</p> <p>Center 155 MHz</p> <p>Span 120 kHz</p> <p>Total Power Ref 50.90 dBm 0.0125 MHz</p> <table border="1"> <thead> <tr> <th>Start Freq</th> <th>Stop Freq</th> <th>Integ BW</th> <th>dBm</th> <th>Lower ΔLim(dB)</th> <th>Freq (Hz)</th> <th>< Peak ></th> <th>Upper ΔLim(dB)</th> <th>Freq (Hz)</th> </tr> </thead> <tbody> <tr><td>0.0 Hz</td><td>5.625 kHz</td><td>100.0 Hz</td><td>37.46</td><td>(-11.39)</td><td>1.560 k</td><td>40.26</td><td>(8.60)</td><td>750.0</td></tr> <tr><td>5.625 kHz</td><td>12.50 kHz</td><td>100.0 Hz</td><td>25.76</td><td>(-3.17)</td><td>-12.50 k</td><td>28.02</td><td>(-5.43)</td><td>12.50 k</td></tr> <tr><td>12.50 kHz</td><td>60.00 kHz</td><td>100.0 Hz</td><td>24.70</td><td>(-4.70)</td><td>-13.80 k</td><td>-23.54</td><td>(-3.54)</td><td>12.85 k</td></tr> <tr><td>4.000 MHz</td><td>8.000 MHz</td><td>1.000 MHz</td><td>—</td><td>(—)</td><td>—</td><td>—</td><td>(—)</td><td>—</td></tr> <tr><td>8.000 MHz</td><td>12.50 MHz</td><td>1.000 MHz</td><td>—</td><td>(—)</td><td>—</td><td>—</td><td>(—)</td><td>—</td></tr> <tr><td>12.50 MHz</td><td>15.00 MHz</td><td>1.000 MHz</td><td>—</td><td>(—)</td><td>—</td><td>—</td><td>(—)</td><td>—</td></tr> </tbody> </table> <p>MSG: File <Temp.png> saved</p> <p>STATUS</p> | Start Freq | Stop Freq | Integ BW | dBm | Lower ΔLim(dB) | Freq (Hz) | < Peak > | Upper ΔLim(dB) | Freq (Hz) | 0.0 Hz | 5.625 kHz | 100.0 Hz | 37.46 | (-11.39) | 1.560 k | 40.26 | (8.60) | 750.0 | 5.625 kHz | 12.50 kHz | 100.0 Hz | 25.76 | (-3.17) | -12.50 k | 28.02 | (-5.43) | 12.50 k | 12.50 kHz | 60.00 kHz | 100.0 Hz | 24.70 | (-4.70) | -13.80 k | -23.54 | (-3.54) | 12.85 k | 4.000 MHz | 8.000 MHz | 1.000 MHz | — | (—) | — | — | (—) | — | 8.000 MHz | 12.50 MHz | 1.000 MHz | — | (—) | — | — | (—) | — | 12.50 MHz | 15.00 MHz | 1.000 MHz | — | (—) | — | — | (—) | — | <p>Frequency</p> <p>Center Freq 155.000000 MHz</p> <p>CF Step 12.000 kHz Man</p> <p>Freq Offset 0 Hz</p> | | |
| Start Freq | Stop Freq | Integ BW | dBm | Lower ΔLim(dB) | Freq (Hz) | < Peak > | Upper ΔLim(dB) | Freq (Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 Hz | 5.625 kHz | 100.0 Hz | 37.46 | (-11.39) | 1.560 k | 40.26 | (8.60) | 750.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.625 kHz | 12.50 kHz | 100.0 Hz | 25.76 | (-3.17) | -12.50 k | 28.02 | (-5.43) | 12.50 k | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.50 kHz | 60.00 kHz | 100.0 Hz | 24.70 | (-4.70) | -13.80 k | -23.54 | (-3.54) | 12.85 k | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.000 MHz | 8.000 MHz | 1.000 MHz | — | (—) | — | — | (—) | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.000 MHz | 12.50 MHz | 1.000 MHz | — | (—) | — | — | (—) | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.50 MHz | 15.00 MHz | 1.000 MHz | — | (—) | — | — | (—) | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TX-DNH | 4FSK | CH _H |  <p>Agilent Spectrum Analyzer - Spectrum Emission Mask</p> <p>Center Freq 173.987500 MHz</p> <p>Center Freq: 173.987500 MHz</p> <p>IFGain:Low</p> <p>Ref Offset 21 dB</p> <p>Ref 53.0 dBm</p> <p>Log</p> <p>43.0</p> <p>33.0</p> <p>23.0</p> <p>13.0</p> <p>3.0</p> <p>-7.0</p> <p>-17.0</p> <p>-27.0</p> <p>-37.0</p> <p>Center 174 MHz</p> <p>Span 120 kHz</p> <p>Total Power Ref 47.77 dBm 0.0125 MHz</p> <table border="1"> <thead> <tr> <th>Start Freq</th> <th>Stop Freq</th> <th>Integ BW</th> <th>dBm</th> <th>Lower ΔLim(dB)</th> <th>Freq (Hz)</th> <th>< Peak ></th> <th>Upper ΔLim(dB)</th> <th>Freq (Hz)</th> </tr> </thead> <tbody> <tr><td>0.0 Hz</td><td>5.625 kHz</td><td>100.0 Hz</td><td>47.05</td><td>(-1.61)</td><td>0.0</td><td>47.18</td><td>(-1.49)</td><td>50.00</td></tr> <tr><td>5.625 kHz</td><td>12.50 kHz</td><td>100.0 Hz</td><td>26.33</td><td>(-5.74)</td><td>-12.20 k</td><td>-26.68</td><td>(-5.36)</td><td>12.30 k</td></tr> <tr><td>12.50 kHz</td><td>60.00 kHz</td><td>100.0 Hz</td><td>26.65</td><td>(-6.65)</td><td>-15.00 k</td><td>-26.80</td><td>(-6.80)</td><td>15.10 k</td></tr> <tr><td>4.000 MHz</td><td>8.000 MHz</td><td>1.000 MHz</td><td>—</td><td>(—)</td><td>—</td><td>—</td><td>(—)</td><td>—</td></tr> <tr><td>8.000 MHz</td><td>12.50 MHz</td><td>1.000 MHz</td><td>—</td><td>(—)</td><td>—</td><td>—</td><td>(—)</td><td>—</td></tr> <tr><td>12.50 MHz</td><td>15.00 MHz</td><td>1.000 MHz</td><td>—</td><td>(—)</td><td>—</td><td>—</td><td>(—)</td><td>—</td></tr> </tbody> </table> <p>MSG: File <MASK-D.state> recalled</p> <p>STATUS</p> | Start Freq | Stop Freq | Integ BW | dBm | Lower ΔLim(dB) | Freq (Hz) | < Peak > | Upper ΔLim(dB) | Freq (Hz) | 0.0 Hz | 5.625 kHz | 100.0 Hz | 47.05 | (-1.61) | 0.0 | 47.18 | (-1.49) | 50.00 | 5.625 kHz | 12.50 kHz | 100.0 Hz | 26.33 | (-5.74) | -12.20 k | -26.68 | (-5.36) | 12.30 k | 12.50 kHz | 60.00 kHz | 100.0 Hz | 26.65 | (-6.65) | -15.00 k | -26.80 | (-6.80) | 15.10 k | 4.000 MHz | 8.000 MHz | 1.000 MHz | — | (—) | — | — | (—) | — | 8.000 MHz | 12.50 MHz | 1.000 MHz | — | (—) | — | — | (—) | — | 12.50 MHz | 15.00 MHz | 1.000 MHz | — | (—) | — | — | (—) | — | <p>Frequency</p> <p>Center Freq 173.987500 MHz</p> <p>CF Step 12.000 kHz Man</p> <p>Freq Offset 0 Hz</p> | | |
| Start Freq | Stop Freq | Integ BW | dBm | Lower ΔLim(dB) | Freq (Hz) | < Peak > | Upper ΔLim(dB) | Freq (Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 Hz | 5.625 kHz | 100.0 Hz | 47.05 | (-1.61) | 0.0 | 47.18 | (-1.49) | 50.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.625 kHz | 12.50 kHz | 100.0 Hz | 26.33 | (-5.74) | -12.20 k | -26.68 | (-5.36) | 12.30 k | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.50 kHz | 60.00 kHz | 100.0 Hz | 26.65 | (-6.65) | -15.00 k | -26.80 | (-6.80) | 15.10 k | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.000 MHz | 8.000 MHz | 1.000 MHz | — | (—) | — | — | (—) | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.000 MHz | 12.50 MHz | 1.000 MHz | — | (—) | — | — | (—) | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.50 MHz | 15.00 MHz | 1.000 MHz | — | (—) | — | — | (—) | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 0.0 Hz | 5.625 kHz | 100.0 Hz | 36.48 | (-12.18) | 0.0 | 40.93 | (-7.74) | 600.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.625 kHz | 12.50 kHz | 100.0 Hz | 25.77 | (-3.72) | -12.40 k | -26.44 | (-5.85) | 12.20 k | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.50 kHz | 60.00 kHz | 100.0 Hz | 24.12 | (-4.12) | -13.65 k | -24.70 | (-4.70) | 16.85 k | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.000 MHz | 8.000 MHz | 1.000 MHz | — | (—) | — | — | (—) | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.000 MHz | 12.50 MHz | 1.000 MHz | — | (—) | — | — | (—) | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.50 MHz | 15.00 MHz | 1.000 MHz | — | (—) | — | — | (—) | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |