

TEST REPORT

Report Reference No.: CHTW24050028

Report verification:



Project No.: SHT2402046704W

FCC ID: K6630703X30

Applicant's name: YAESU MUSEN CO., LTD.

Address: Omori Bellport D building 3F, 6-26-3 Minamioi, Shinagawa-ku,
Tokyo 140-0013 Japan

Product name: Class-H DSC GPS Transceiver

Trade Mark: -

Model No.: HX891BT

Listed Model(s): -

Standard: FCC CFR Title 47 Part 80

Date of receipt of test sample: Mar.27, 2024

Date of testing: Mar.28, 2024 - May.07, 2024

Date of issue: May.16, 2024

Result: PASS

Compiled by

(position+printed name+signature) ..: File administrators Caspar Chen



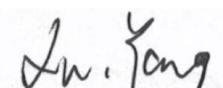
Supervised by

(position+printed name+signature) ..: Project Engineer Caspar Chen



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 Standards

The tests were performed according to following standards:

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

[FCC Rules Part 80](#): Stations In The Maritime Services.

[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 version information

Revision No.	Date of issue	Description
N/A	2024-05-16	Original

2. TEST DESCRIPTION

Section	Test item	Standards requirement	Result	Test Engineer
5.1	Conducted Carrier Output Power	FCC Part 80.215, FCC Part 2.1046	Pass	Xiangyu Wei
5.2	99% Occupied Bandwidth&26dB bandwidth	FCC Part 80.205, FCC Part 2.1049	Pass	Xiangyu Wei
5.3	Emission Mask	FCC Part 80.211(f), FCC Part 2.1049	Pass	Xiangyu Wei
5.4	Modulation Limit	FCC Part 80.213, FCC Part 2.1047(b)	Pass	Xiangyu Wei
5.5	Audio Frequency Response	FCC Part 2.1047(a)	Pass	Xiangyu Wei
5.6	Audio Low Pass Filter Response	FCC Part 80.213, Part 2.1047(a)	Pass	Xiangyu Wei
5.7	Frequency Stability V.S. Temperature	FCC Part 80.209, Part 2.1055	Pass	Xiangyu Wei
5.8	Frequency Stability V.S. Voltage	FCC Part 80.209, Part 2.1055	Pass	Xiangyu Wei
5.9	Transmit Conducted Spurious Emission	FCC Part 80. 211(f)(3), FCC Part 2.1051	Pass	Xiangyu Wei
5.10	Transmitter Radiated Spurious Emission	FCC Part 80. 211(f)(3), FCC Part 2.1053	Pass	Yifan Wang

Note:

The measurement uncertainty is not included in the test result.

3. SUMMARY

3.1. Client information

Applicant:	YAESU MUSEN CO., LTD.
Address:	Omori Bellport D building 3F, 6-26-3 Minamioi, Shinagawa-ku, Tokyo 140-0013 Japan
Manufacturer:	YAESU MUSEN CO., LTD.
Address:	Omori Bellport D building 3F, 6-26-3 Minamioi, Shinagawa-ku, Tokyo 140-0013 Japan

3.2. Product description

Main unit information:	
Name of EUT:	Class-H DSC GPS Transceiver
Trade mark:	-
Mode No.:	HX891BT
Listed Model(s):	-
Power supply:	DC 7.4V from battery
Hardware Version:	207980B
Software Version:	V1.00
Accessory unit information:	
Battery information:	7.4Vdc, 1800mAh 14Wh
Adapter information:	Model: SAD-25 Input: AC100-240V, 50/60Hz, 0.4A Output: 10.5Vdc, 1.0A 10.5W
Charger information:	Model: SBH-32 INPUT:10.5~16V,1A OUTPUT: 10.5~16V,1A

3.3. Radio Specification Description ^{*1}

Device type:	☒ Portable ☐ Mobile
Operation Frequency Range:	TX:156.050MHz to 157.425MHz RX:156.050MHz to 162.000MHz
Support type:	Analog
Modulation type:	FM
Channel Separation:	25kHz
Emission Designator ^{*2} :	16K0G3E
Rated power class:	☒ High Power: 6W ☒ Low Power: 1W
Antenna Type:	1/4λ Helical whip
Antenna Gain:	-1.5dBi

Note:

- (1) ^{*1} This information is provided by this applicant.
- (2) ^{*2} According to FCC Part 2.202 requirements, the Necessary Bandwidth is calculated as follows:
- For PM Voice Modulation
Channel Spacing = 25 KHz, D = 5 KHz max, K = 1, M = 3 KHz
 $B_n = 2M + 2DK = 2*3 + 2*5*1 = \mathbf{16\ KHz}$
Emission designation: 16K0G3E

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 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

Mode	Modulation	Operation Frequency Range	Test Frequency (MHz)	
Analog	FM	Tx: 156.050MHz to 157.425MHz Rx: 156.050MHz to 162.000MHz	CH _L	Tx: 156.050(CH1001) Rx: 156.050(CH1001)
			CH _M	Tx: 156.800(CH16) Rx: 156.800(CH16)
			CH _H	Tx: 157.425(CH88) Rx: 162.000(CH28)

4.2. EUT operation mode

Test mode	Transmitting	Power level	
		High	Low
TX-AWH	√	√	
TX-AWL	√		√

√: 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.

Test item	Modulation Type	Test mode (Worse case mode)
Conducted Output Power	UM	TX-AWH, TX-AWL
99% Occupied Bandwidth & 26dB bandwidth	AM6, DM	TX-AWH, TX-AWL
Emission Mask	AM5, DM	TX-AWH, TX-AWL
Modulation Limit	AM6	TX-AWH
Audio Frequency Response	AM2	TX-AWH
Audio Frequency Response	AM2	TX-AWH

Frequency Stability VS Temperature	UM	TX-AWH, TX-AWL
Frequency Stability VS Voltage	UM	TX-AWH, TX-AWL
Transmit Conducted Spurious Emission	AM5, DM	TX-AWH
Transmit Radiated Spurious Emission	AM5, DM	TX-AWH

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?			
✓ No			
Item	Equipment	Trade Name	Model No.
1			
2			

4.4. Environmental conditions

Type	Requirement	Actual
Temperature:	15~35°C	25°C
Relative Humidity:	25~75%	50%
Air Pressure:	860~1060mbar	1000mbar
Test voltage:	Normal voltage:	DC 7.40V
	Extreme lower voltage:	DC 6.66V
	Extreme upper voltage:	DC 9.62V

4.5. Measurement uncertainty

Test Item	Measurement Uncertainty
Frequency stability	25 Hz
Carrier output power (ERP)	2.20 dB
Occupied Bandwidth	35 Hz
Modulation Limiting	0.42 %
FM deviation	25 Hz
Audio level	0.62 dB
Radiated Spurious Emission 30~1000MHz	4.65 dB
Radiated Spurious Emission 1~18GHz	5.16 dB

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

4.6. Equipments Used during the Test

● 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	2023/05/15	2024/05/14
●	Attenuator	Eastsheep	HTWE0387	NCP-20-3-100W	/	2023/05/15	2024/05/14
●	Attenuator	Eastsheep	HTWE0388	NCP-10-3-100W	/	2023/05/15	2024/05/14
●	High Pass Filter	RFSYS	HTWE0390-05	RFSYS-GTA10	200615-1-04	2023/05/15	2024/05/14
●	Filter-UHF	Microwave	HTWE0310	N26460M1	498703 DC1808	2023/05/15	2024/05/14
●	Filter-VHF	Microwave	HTWE0312	N25155M2	498704 DC1808	2023/05/15	2024/05/14
●	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	2023/4/17	2026/4/16
●	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	2023/2/14	2026/2/13
●	Pre-Amplifier	CD	HTWE0071	PAP-0102	12004	2023/5/25	2024/5/24
●	Broadband Pre-amplifier	SCHWARZBECK	HTWE0201	BBV 9718	9718-248	2023/5/25	2024/5/24
●	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	2023/05/15	2024/05/14
○	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 80.215(c)

(c) Coast station frequencies above 27500kHz. The maximum power must not exceed the values listed below. Maximum authorized power at the input terminals of the station antenna

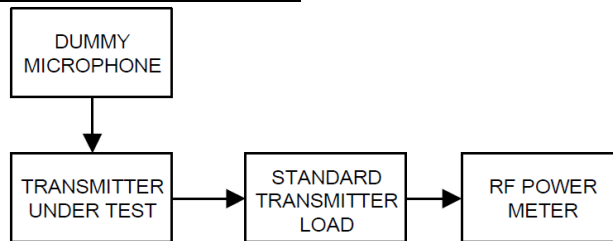
(1) Coast stations:

156-162MHz-50W

(2) Marine utility stations:

156-162MHz—10W

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
- (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

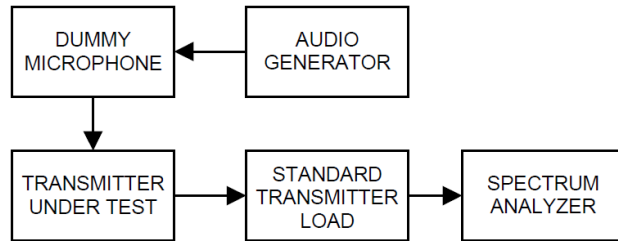
5.2. 99% Occupied Bandwidth & 26dB Bandwidth

LIMIT

FCC Part 80.205

(a) An emission designator shows the necessary bandwidth for each class of emission of a station except that in ship earth stations it shows the occupied or necessary bandwidth, whichever is greater. The following table gives the class of emission and corresponding emission designator and authorized bandwidth:

Class of emission	Emission designator	Authorized bandwidth (kHz)
A1A	160HA1A	0.4
A1B ¹	160HA1B	0.4
A1D ¹²	16K0A1D	20.0
A2A	2K66A2A	2.8
A2B ¹	2K66A2B	2.8
A2D ¹²	16K0A2D	20.0
A3E	6K00A3E	8.0
A3N ²	2K66A3N	2.8
A3X ³	3K20A3X	25.0
F1B ⁴	280HF1B	0.3
F1B ⁵	300HF1B	0.5
F1B ⁶	16K0F1B	20.0
F1C	2K80F1C	3.0
F1D ¹²	16K0F1D	20.0
F2B ⁶	16K0F2B	20.0
F2C ⁷	16K0F2C	20.0
F2D ¹²	16K0F2D	20.0
F3C	2K80F3C	3.0
F3C ⁷	16K0F3C	20.0
F3E ⁸	16K0F3E	20.0
F3N ⁹	20M0F3N	20,000.0
G1D ¹²	16K0G1D	20.0
G2D ¹²	16K0G2D	20.0
G3D ¹⁰	16K0G3D	20.0
G3E ⁸	16K0G3E	20.0
G3N ^{3 13}	16K0G3N	20.0
H2A	1K40H2A	2.8
H2B ¹	1K40H2B	2.8
H3E ¹¹	2K80H3E	3.0
H3N	2K66H3N	2.8
J2A	160HJ2A	0.4
J2B ⁴	280HJ2B	0.3
J2B ⁵	300HJ2B	0.5
J2B	2K80J2B	3.0
J2C	2K80J2C	3.0
J2D ¹⁴	2K80J2D	3.0
J3C	2K80J3C	3.0
J3E ¹¹	2K80J3E	3.0
J3N	160HJ3N	0.4
NON	NON	0.4
PON	(¹²)	(¹²)
R3E ¹¹	2K80R3E	3.0

TEST CONFIGURATION**TEST PROCEDURE**

- (1) Connect the equipment as illustrated
- (2) Spectrum set as follow:
Centre frequency = the nominal EUT channel center frequency,
The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (typically a span of $1.5 \times \text{OBW}$ is sufficient)
RBW = 1% to 5% of the anticipated OBW, VBW $\geq 3 \times \text{RBW}$, 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

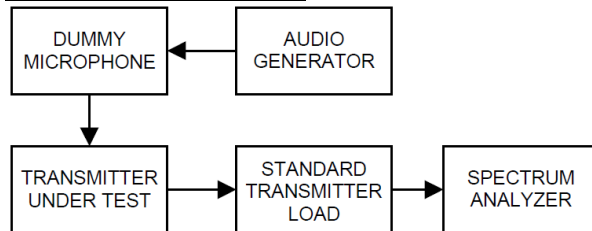
5.3. Emission Mask

LIMIT

FCC Part 80.211

- (f) The mean power when using emissions other than those in paragraphs (a), (b), (c) and (d) of this section:
- (1) On any frequency removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: At least 25 dB;
 - (2) On any frequency removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: At least 35 dB; and
 - (3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 plus $10\log_{10}$ (mean power in watts) dB.

TEST CONFIGURATION



TEST PROCEDURE

- 1) Connect the equipment as illustrated.
- 2) Spectrum set as follow:
Centre frequency= fundamental frequency, span=120kHz, RBW=300Hz, 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 3.4
- 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

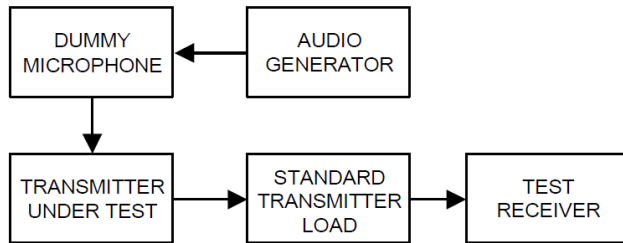
5.4. Modulation Limit

LIMIT

FCC Part 2.1047(b), FCC Part 80.213(d)

Ship and coast station transmitters operating in the 156-162 MHz and 216-220 bands must be capable of proper operation with a frequency deviation that does not exceed ± 5 kHz when using any emission authorized by §80.207.

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 3.4 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

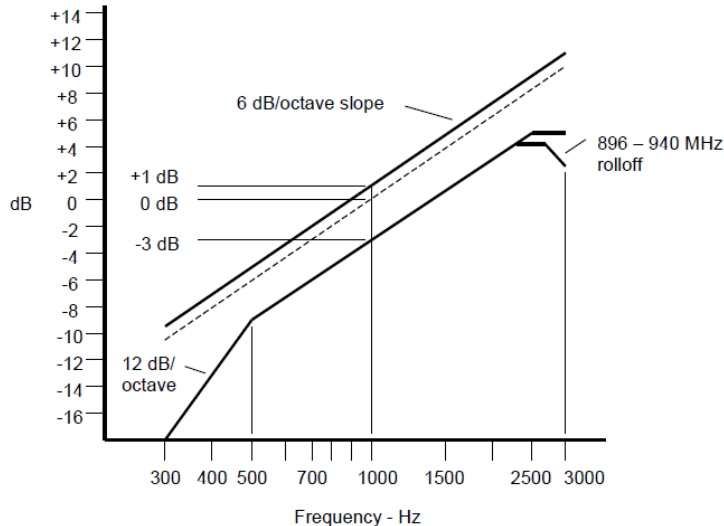
Refer to the appendix report on section 8

5.5. Audio Frequency Response

LIMIT

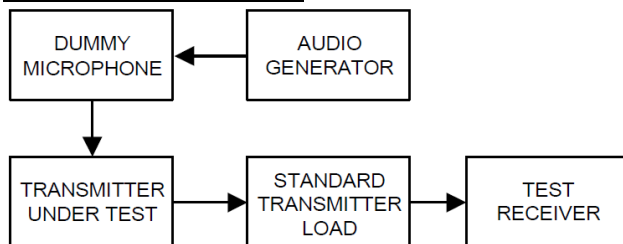
FCC Part 2.1047(a):

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 3.4
- 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:
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

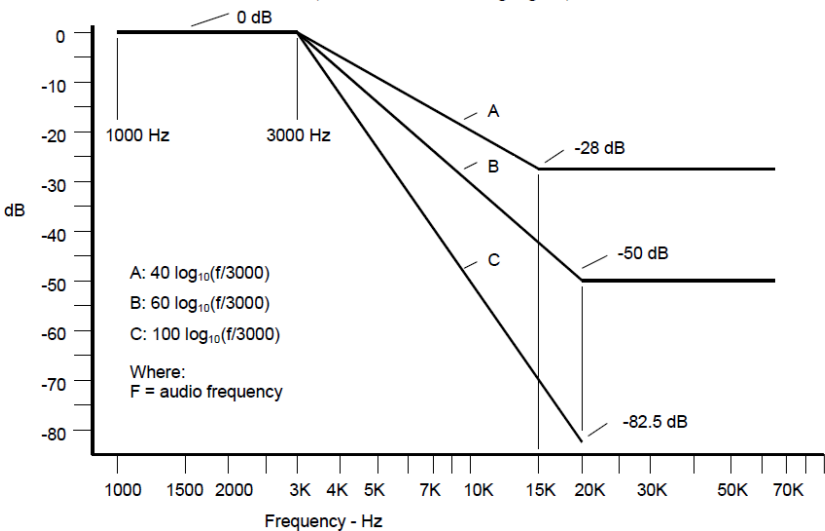
Refer to the appendix report on section 8

5.6. Audio Low Pass Filter Response

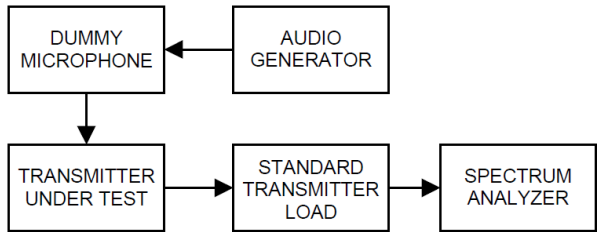
LIMIT

FCC Part 2.1047(b),FCC Part 80.213(e)

Coast station transmitters operated in the 156-162 MHz band must be equipped with an audio low-pass filter. The filter must be installed between the modulation limiter and the modulated radio frequency stage. At frequencies between 3 kHz and 20 kHz it must have an attenuation greater than at 1 kHz by at least $60\log_{10}(f/3)$ dB where “f” is the audio frequency in kilohertz. At frequencies above 20 kHz the attenuation must be at least 50 dB greater than at 1 kHz.



TEST CONFIGURATION



TEST PROCEDURE

- 1) Configure the EUT as shown in figure .
- 2) Apply a 1000 Hz tone from the audio signal generator and adjust the level per manufacturer’s specifications. Record the dB level of the 1000 Hz tone as LEV_{REF} .
- 3) Set the audio signal generator to the desired test frequency between 3000 Hz and the upper low pass filter limit. Record the dB level at the test frequency as LEV_{FREQ} .
- 4) Calculate the audio frequency response at the test frequency as:
low pass filter response = $LEV_{FREQ} - LEV_{REF}$

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 Temperature

LIMIT

FCC Part 80.209(a):

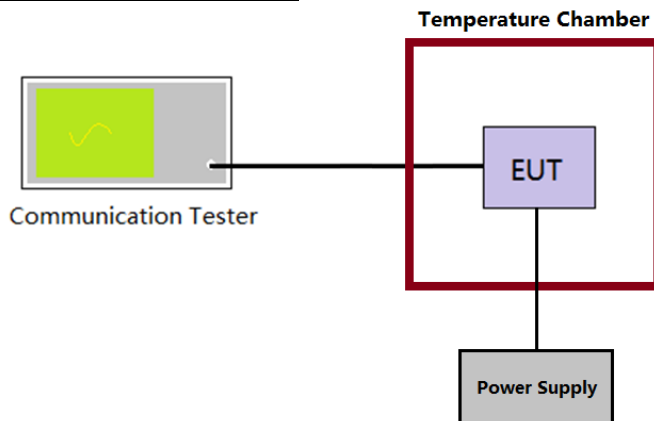
The frequency tolerance requirements applicable to transmitters in the maritime services are shown in the following table. Tolerances are given as parts in 10^6 unless shown in Hz.

Frequency bands and categories of stations	Tolerances ¹
(5) Band 156-162 MHz:	
(i) Coast stations:	
For carriers licensed to operate with a carrier power:	
Below 3 watts	10.
3 to 100 watts	5. ⁷
(ii) Ship stations	10. ⁴
(iii) Survival craft stations operating on 121.500 MHz	50.
(iv) EPIRBs:	
Operating on 121.500 and 243.000 MHz	50.
Operating on 156.750 and 156.800 MHz. ⁶	10.
(6) Band 216-220 MHz:	
(i) Coast stations:	
For all emissions	5.
(ii) Ship stations:	
For all emissions	5.
(7) Band 400-466 MHz:	
(i) EPIRBs operating on 406-406.1 MHz	5.
(ii) On-board stations	5.
(iii) Radiolocation and telecommand stations.	5.
(8) Band 1626.5-1646.5 MHz:	
(i) Ship earth stations	5.

⁴For transmitters in the radiolocation and associated telecommand service operating on 154.584 MHz, 159.480 MHz, 160.725 MHz and 160.785 MHz the frequency tolerance is 15 parts in 10^6 .

⁷For transmitters operated at private coast stations with antenna heights less than 6 meters (20 feet) above ground and output power of 25 watts or less the frequency tolerance is 10 parts in 10^6 .

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:

$$\text{ppm error} = (\text{MCF}_{\text{MHz}} / \text{ACF}_{\text{MHz}} - 1) \times 10^6$$
 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

5.8. Frequency stability VS Voltage

LIMIT

FCC Part 80.209(a):

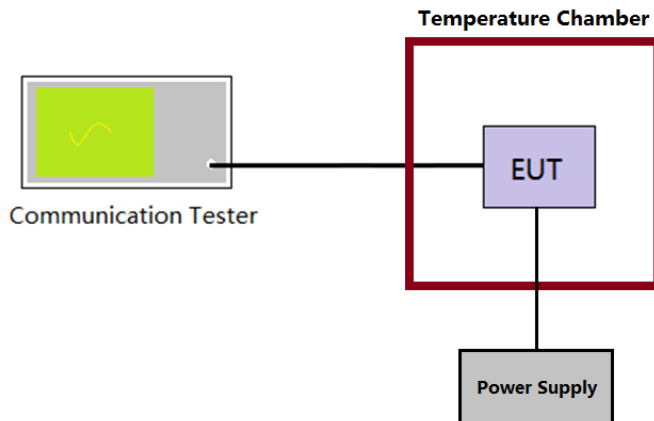
The frequency tolerance requirements applicable to transmitters in the maritime services are shown in the following table. Tolerances are given as parts in 10^6 unless shown in Hz.

Frequency bands and categories of stations	Tolerances ¹
(5) Band 156-162 MHz:	
(i) Coast stations:	
For carriers licensed to operate with a carrier power:	
Below 3 watts	10.
3 to 100 watts	5.7
(ii) Ship stations	10. ⁴
(iii) Survival craft stations operating on 121.500 MHz	50.
(iv) EPIRBs:	
Operating on 121.500 and 243.000 MHz	50.
Operating on 156.750 and 156.800 MHz. ⁶	10.
(6) Band 216-220 MHz:	
(i) Coast stations:	
For all emissions	5.
(ii) Ship stations:	
For all emissions	5.
(7) Band 400-466 MHz:	
(i) EPIRBs operating on 406-406.1 MHz	5.
(ii) On-board stations	5.
(iii) Radiolocation and telecommand stations.	5.
(8) Band 1626.5-1646.5 MHz:	
(i) Ship earth stations	5.

⁴For transmitters in the radiolocation and associated telecommand service operating on 154.584 MHz, 159.480 MHz, 160.725 MHz and 160.785 MHz the frequency tolerance is 15 parts in 10^6 .

⁷For transmitters operated at private coast stations with antenna heights less than 6 meters (20 feet) above ground and output power of 25 watts or less the frequency tolerance is 10 parts in 10^6 .

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:

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

5.9. Transmit Conducted Spurious Emission

LIMIT

FCC Part 80.211(f)(3)

On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 plus $10\log_{10}$ (mean power in watts) dB.

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

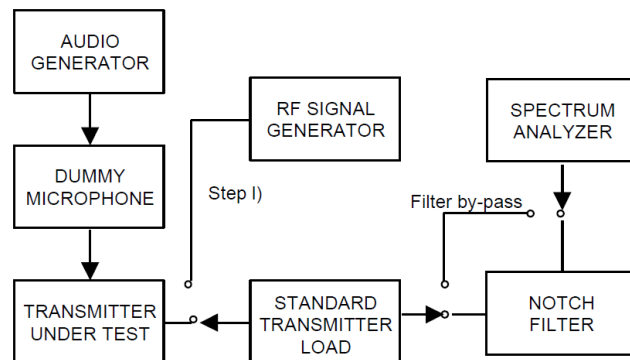
Calculation: Limit (dBm) = EL-43-10log10 (TP)

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

In this application, the EL is P(dBm)

Limit (dBm) = P(dBm)-43-10 log (Pwatts) = -13dBm

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 3.4
- 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 80.211(f)(3)

On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 plus $10\log_{10}$ (mean power in watts) dB.

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

Calculation: Limit (dBm) = EL - 43 - $10\log_{10}$ (TP)

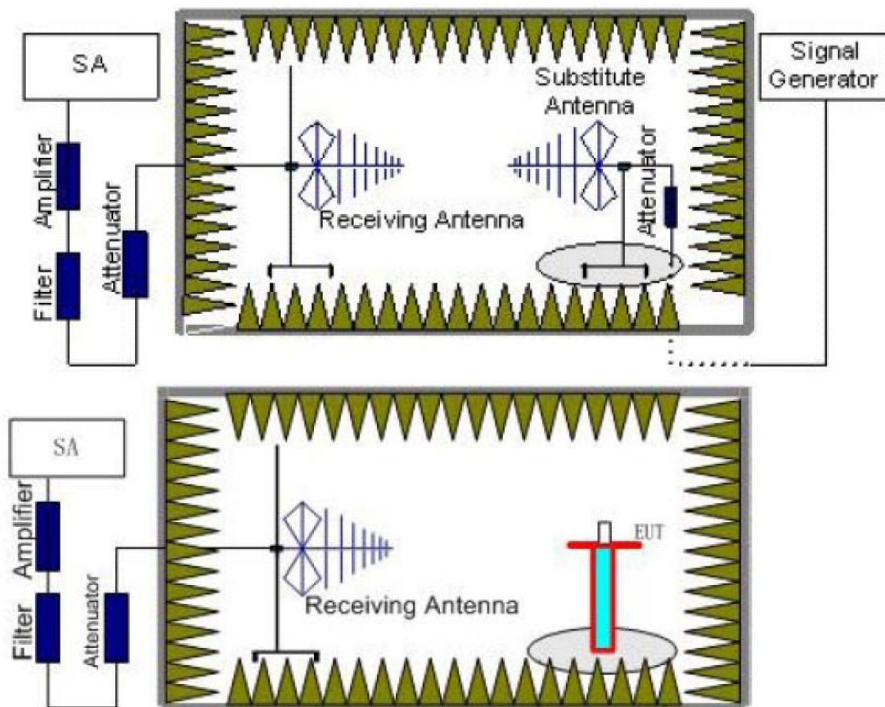
EL is the emission level of the Output Power expressed in dBm,

In this application, the EL is P (dBm)

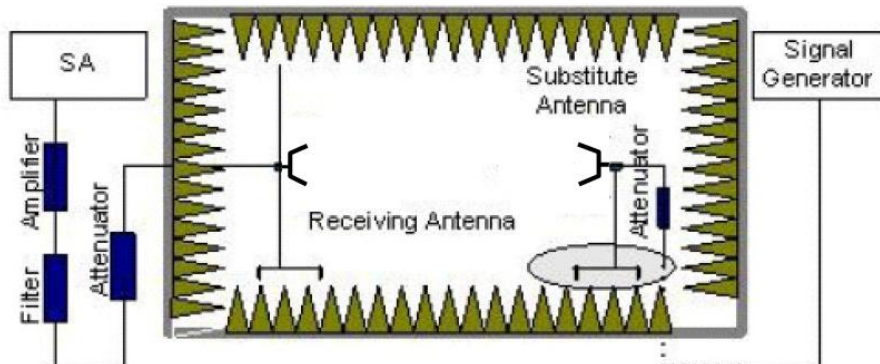
Limit (dBm) = P (dBm) - 43 - $10\log_{10}$ (Pwatts) = -13dBm

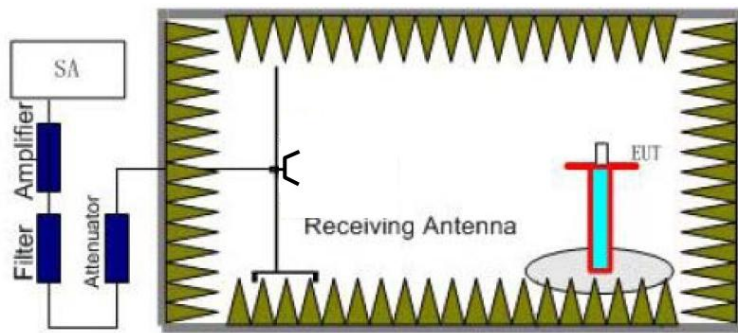
TEST CONFIGURATION

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=Peck, 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:

$$P_e = P_s(\text{dBm}) - \text{cable loss (dB)} + \text{antenna gain (dBd)}$$
 where
 P_e = equivalent emission power in dBm
 P_s = 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:

gain (dBd) = gain (dBi) – 2.15 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

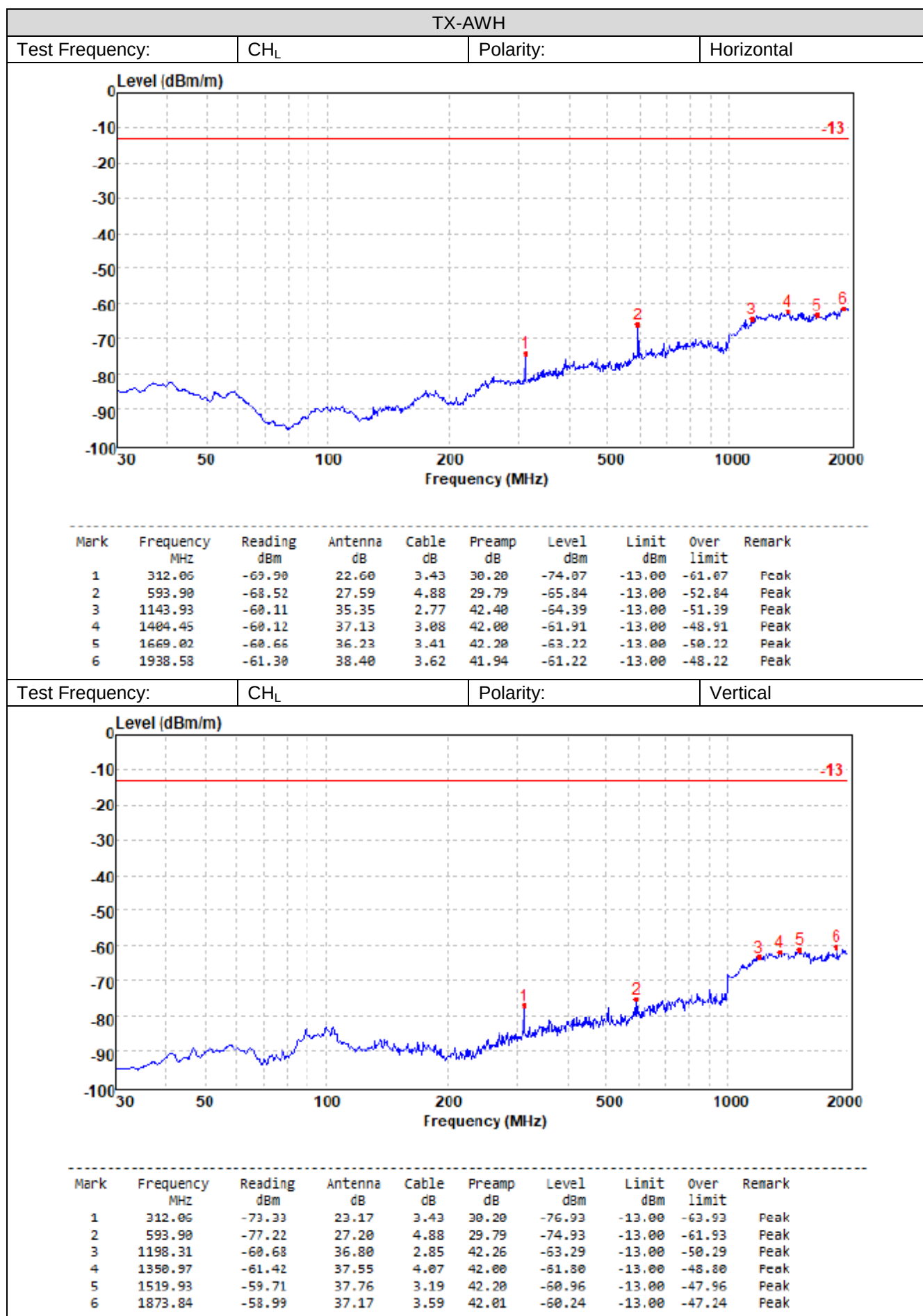
Refer to the section 4.2

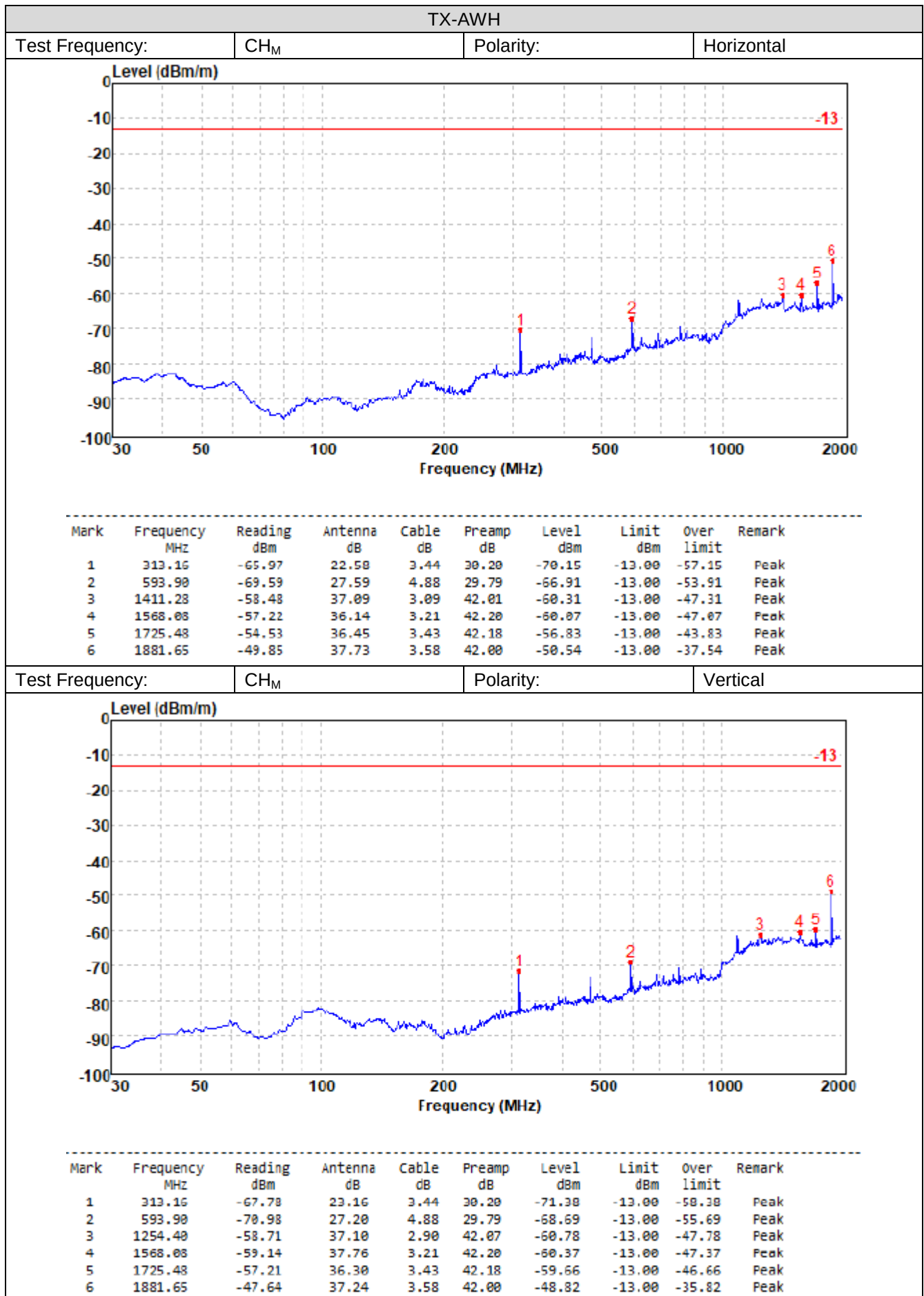
TEST RESULT

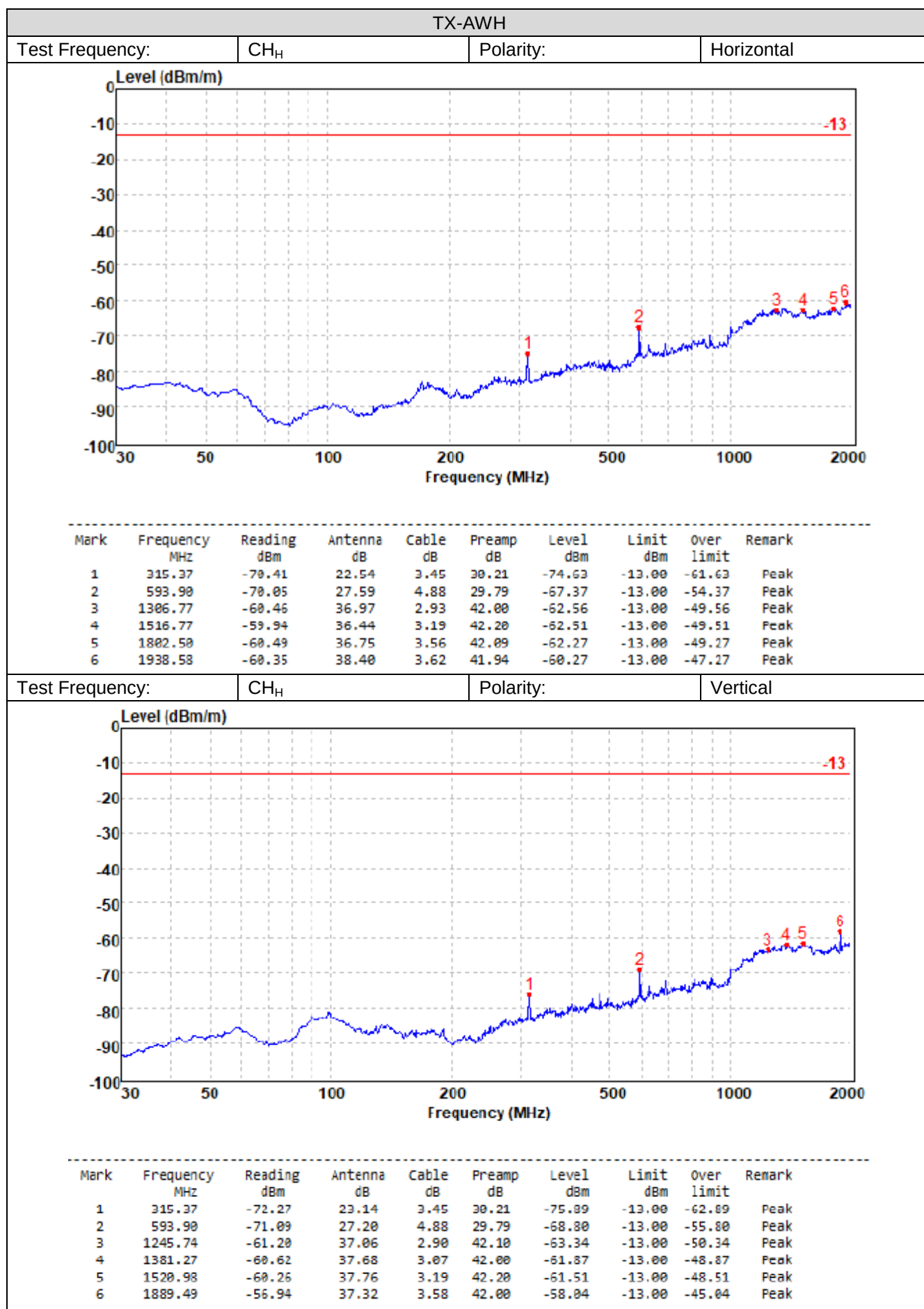
☒ **Passed** ☐ **Not Applicable**

TEST DATA

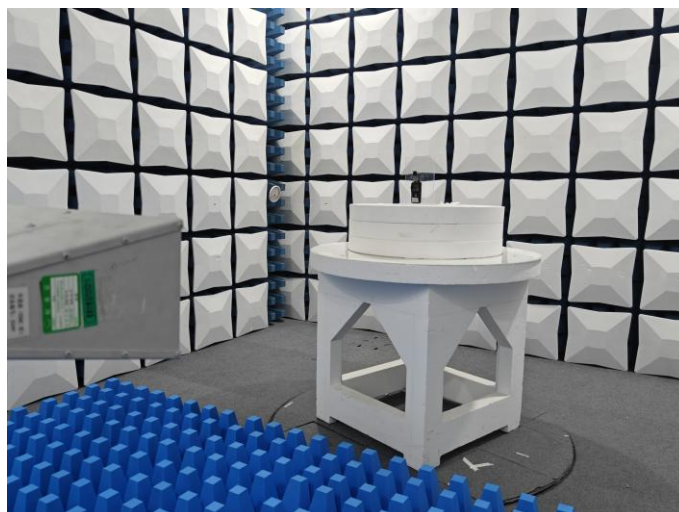
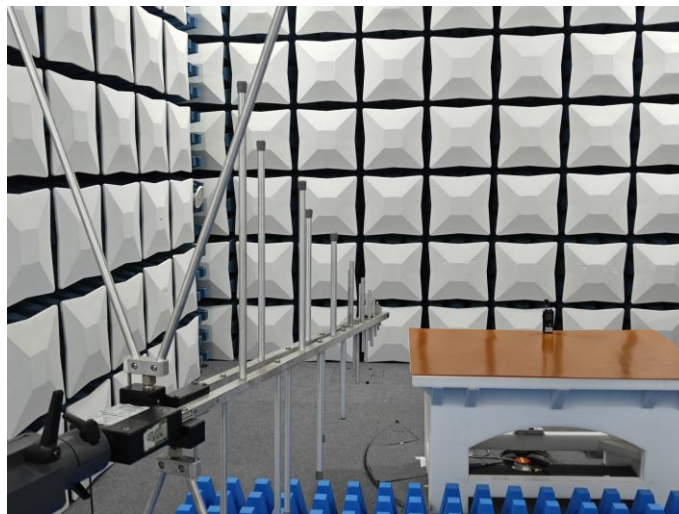
Refer to the below test data







6. TEST SETUP PHOTOS



7. EXTERNAL AND INTERNAL PHOTOS

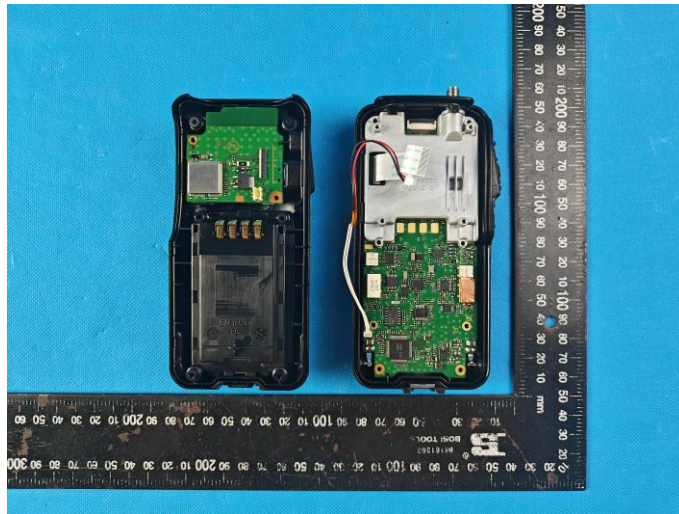
7.1. External Photos

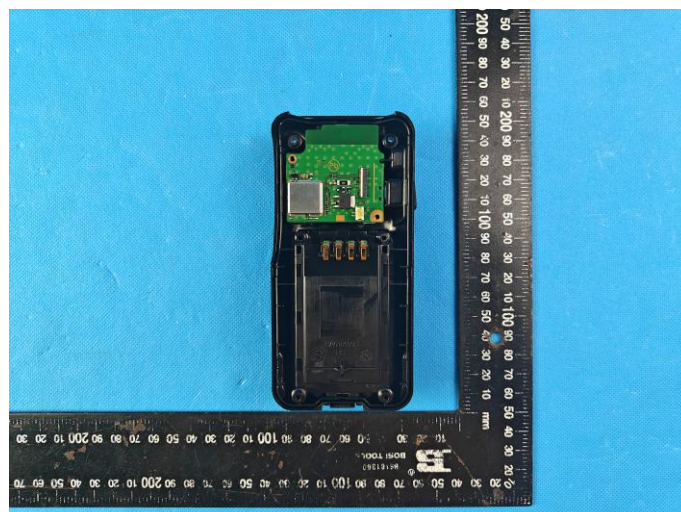
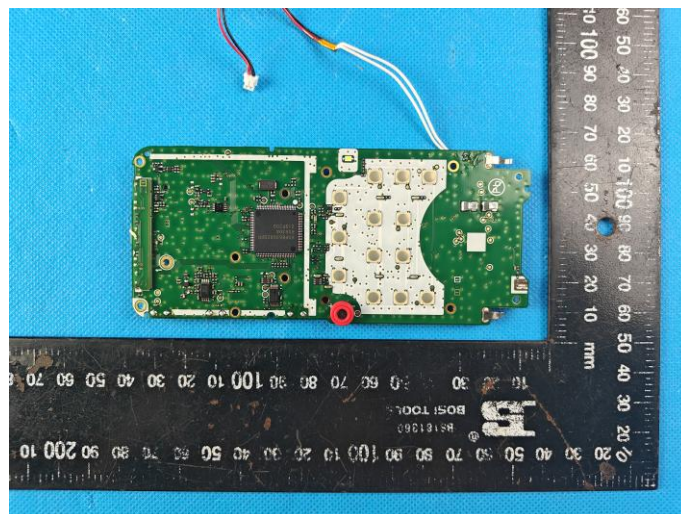


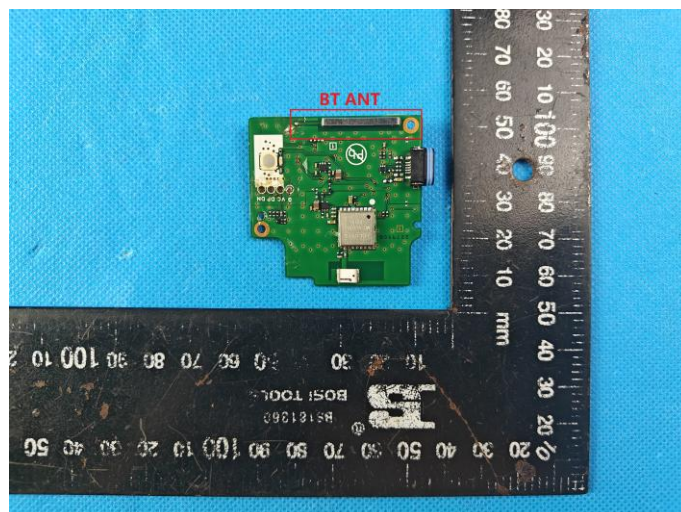
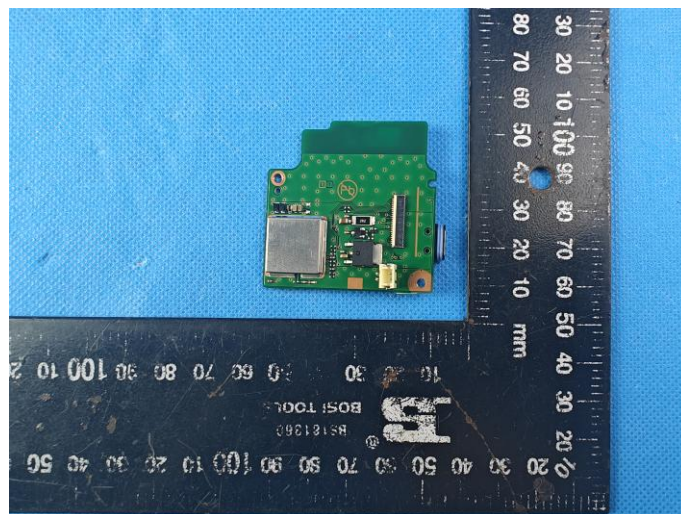
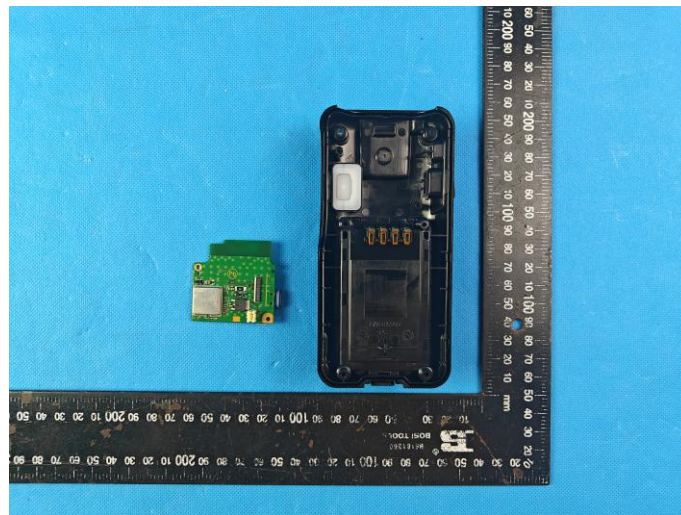


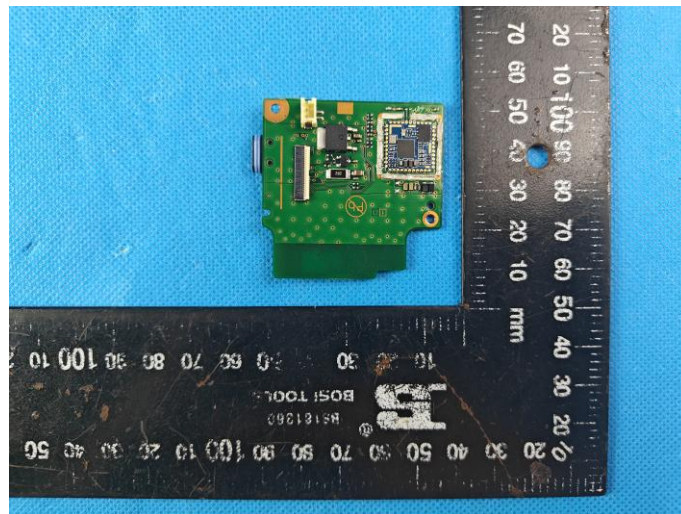
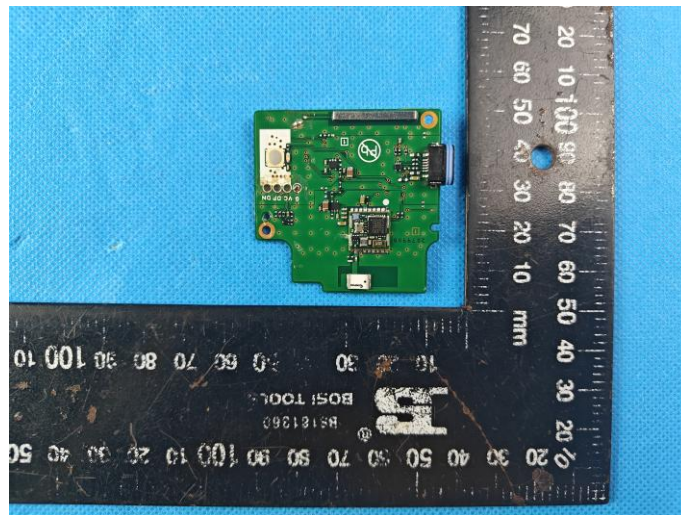


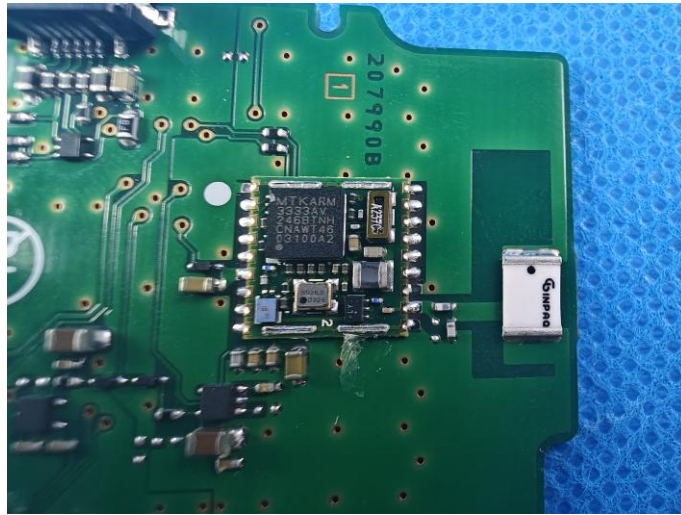
7.2. Internal Photos











8. APPENDIX REPORT

Project No.	SHT2402046703W		
Test sample No.	YP HT24020467001	Model No.	HX891BT
Start test date	2024/4/12	Finish date	2024/4/16
Temperature	24.8°C	Humidity	51%
Test Engineer	Xiangyu Wei	Auditor	Xiaodong Zhu

Appendix clause	Test Item	Test Result (PASS/FAIL)
A	Maximum Transmitter Power	PASS
B	Occupied Bandwidth	PASS
C	Emission Mask	PASS
D	Modulation Limit	PASS
E	Aduio Frequency Response	PASS
F	Audio Low Pass Filter Response	PASS
G	Frequency Stability Test & Temperature	PASS
H	Frequency Stability Test & Voltage	PASS
I	Spurious Emission On Antenna Port	PASS

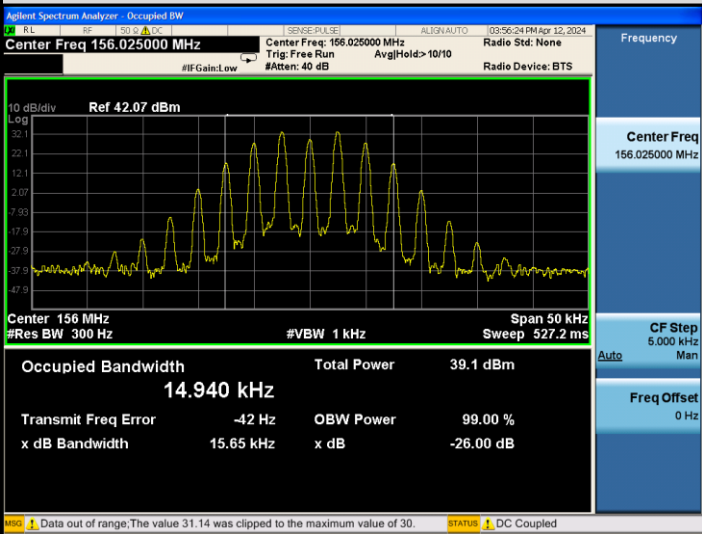
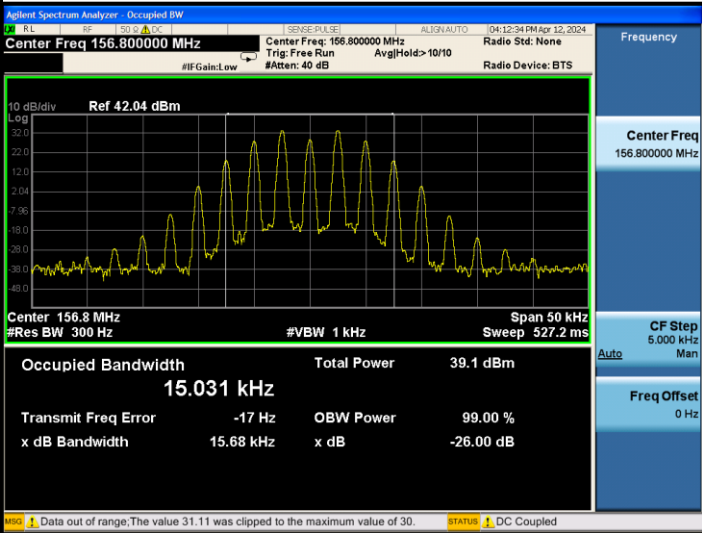
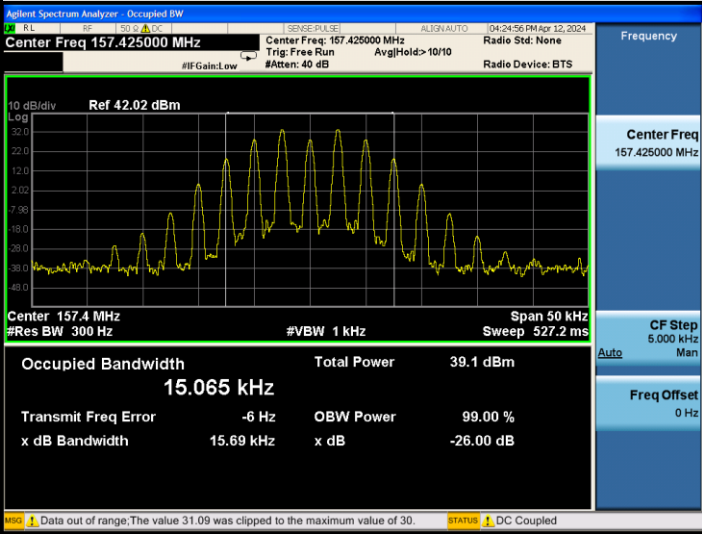
Appendix A:Maximum Transmitter Power

Operation Mode	Modulation Type	Test Channel	Measured Power(dBm)	Measured Power(W)	Limit(W)	Result
TX-AWH	FM	CH _L	37.56	5.70	6	PASS
TX-AWH	FM	CH _M	37.59	5.74	6	PASS
TX-AWH	FM	CH _H	37.53	5.66	6	PASS
TX-AWL	FM	CH _L	29.63	0.92	1	PASS
TX-AWL	FM	CH _M	29.62	0.92	1	PASS
TX-AWL	FM	CH _H	29.59	0.91	1	PASS

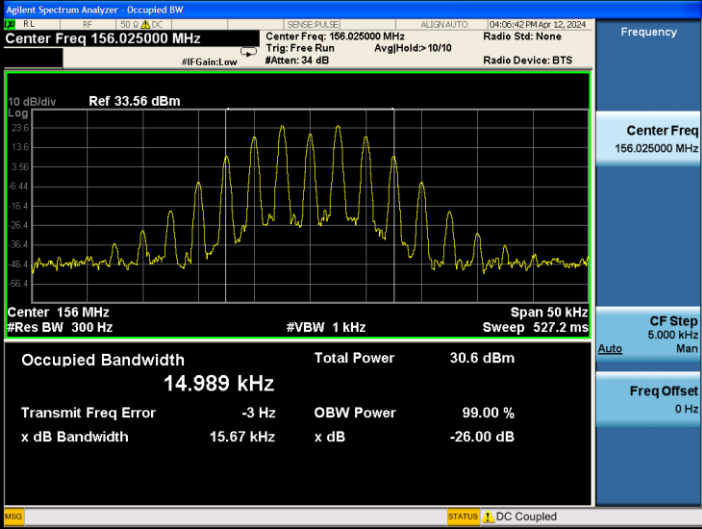
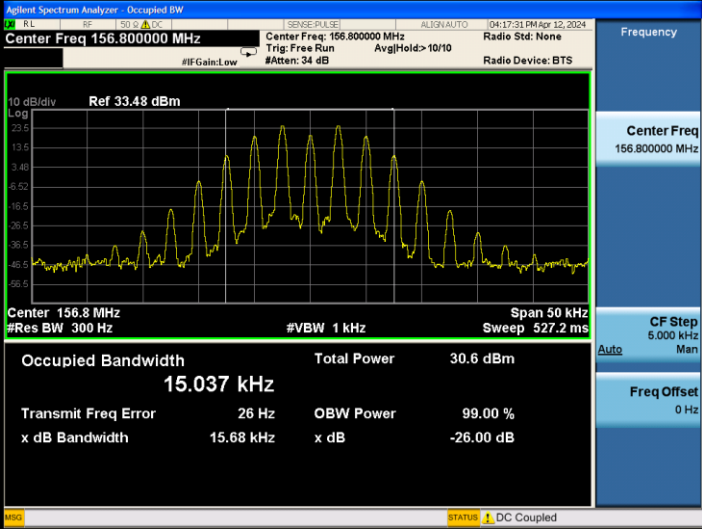
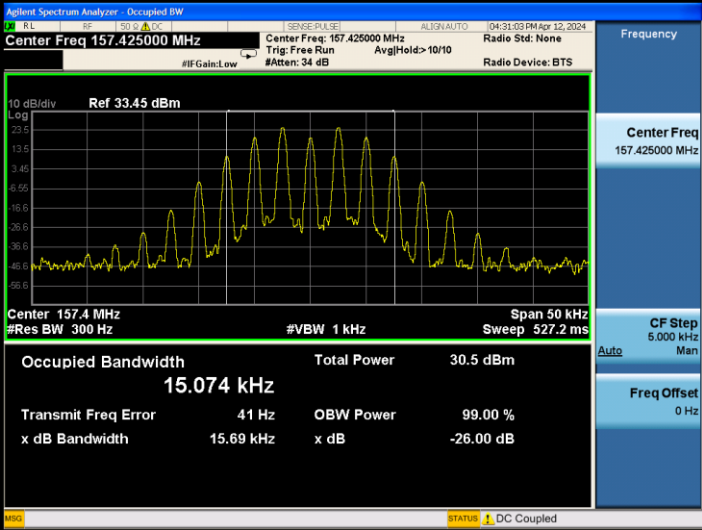
Appendix B:Occupied Bandwidth

Operation Mode	Modulation Type	Test Channel	Occupied Bandwidth		99% Limit(kHz)	Result
			99%(kHz)	26dB(kHz)		
TX-AWH	FM	CH _L	14.94	15.65	≤20	PASS
TX-AWH	FM	CH _M	14.99	15.67	≤20	PASS
TX-AWH	FM	CH _H	15.03	15.68	≤20	PASS
TX-AWL	FM	CH _L	15.04	15.68	≤20	PASS
TX-AWL	FM	CH _M	15.07	15.69	≤20	PASS
TX-AWL	FM	CH _H	15.07	15.69	≤20	PASS

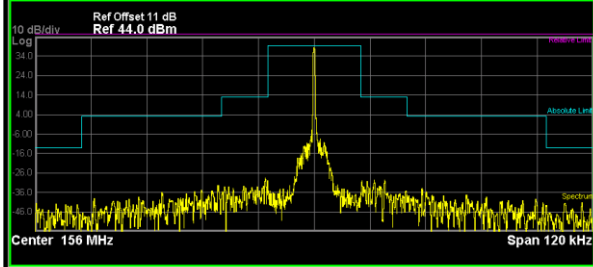
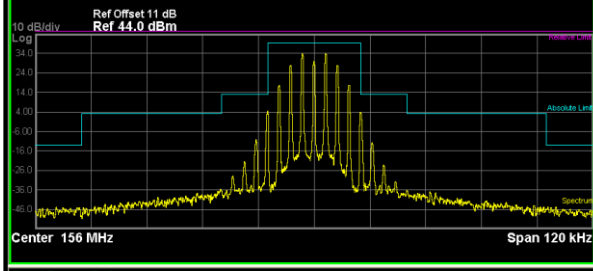
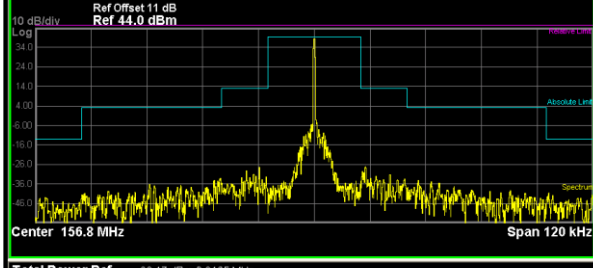
Appendix B:Occupied Bandwidth

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-AWH	FM	CH _L	 Agilent Spectrum Analyzer - Occupied BW Center Freq 156.025000 MHz Ref 42.07 dBm Occupied Bandwidth 14.940 kHz Total Power 39.1 dBm Transmit Freq Error -42 Hz x dB Bandwidth 15.65 kHz x dB -26.00 dB
TX-AWH	FM	CH _M	 Agilent Spectrum Analyzer - Occupied BW Center Freq 156.800000 MHz Ref 42.04 dBm Occupied Bandwidth 15.031 kHz Total Power 39.1 dBm Transmit Freq Error -17 Hz x dB Bandwidth 15.68 kHz x dB -26.00 dB
TX-AWH	FM	CH _H	 Agilent Spectrum Analyzer - Occupied BW Center Freq 157.425000 MHz Ref 42.02 dBm Occupied Bandwidth 15.065 kHz Total Power 39.1 dBm Transmit Freq Error -6 Hz x dB Bandwidth 15.69 kHz x dB -26.00 dB

Appendix B:Occupied Bandwidth

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-AWL	FM	CH _L	 Agilent Spectrum Analyzer - Occupied BW Center Freq 156.025000 MHz Center Freq: 156.025000 MHz Trig: Free Run #Att: 34 dB Ref 33.56 dBm 10 dB/div Log Center 156 MHz #Res BW 300 Hz #VBW 1 kHz Span 50 kHz Sweep 527.2 ms Occupied Bandwidth 14.989 kHz Total Power 30.6 dBm Transmit Freq Error -3 Hz OBW Power 99.00 % x dB Bandwidth 15.67 kHz x dB -26.00 dB Frequency Center Freq 156.025000 MHz CF Step 5.000 kHz Freq Offset 0 Hz STATUS DC Coupled
TX-AWL	FM	CH _M	 Agilent Spectrum Analyzer - Occupied BW Center Freq 156.800000 MHz Center Freq: 156.800000 MHz Trig: Free Run #Att: 34 dB Ref 33.48 dBm 10 dB/div Log Center 156.8 MHz #Res BW 300 Hz #VBW 1 kHz Span 50 kHz Sweep 527.2 ms Occupied Bandwidth 15.037 kHz Total Power 30.6 dBm Transmit Freq Error 26 Hz OBW Power 99.00 % x dB Bandwidth 15.68 kHz x dB -26.00 dB Frequency Center Freq 156.800000 MHz CF Step 5.000 kHz Freq Offset 0 Hz STATUS DC Coupled
TX-AWL	FM	CH _H	 Agilent Spectrum Analyzer - Occupied BW Center Freq 157.425000 MHz Center Freq: 157.425000 MHz Trig: Free Run #Att: 34 dB Ref 33.45 dBm 10 dB/div Log Center 157.4 MHz #Res BW 300 Hz #VBW 1 kHz Span 50 kHz Sweep 527.2 ms Occupied Bandwidth 15.074 kHz Total Power 30.5 dBm Transmit Freq Error 41 Hz OBW Power 99.00 % x dB Bandwidth 15.69 kHz x dB -26.00 dB Frequency Center Freq 157.425000 MHz CF Step 5.000 kHz Freq Offset 0 Hz STATUS DC Coupled

Appendix C:Emission Mask

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT																																																																						
TX-AWH	FM	CH _L	Agilent Spectrum Analyzer - Spectrum Emission Mask RL RF 50.0 AC SENSE:PULSE ALIGN:AUTO 03:58:12 PM Apr 12, 2024 Center Freq 156.025000 MHz Center Freq: 156.025000 MHz Radio Std: None PASS IF Gain: Low Trig: Free Run #Atten: 40 dB Radio Device: BTS Ref Offset 11 dB Ref 44.0 dBm  Center 156 MHz Span 120 kHz Total Power Ref 38.19 dBm 0.0125 MHz <table><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>dBm</th><th>Upper ΔLim(dB)</th><th>Freq (Hz)</th></tr></thead><tbody><tr><td>0.0 Hz</td><td>10.00 kHz</td><td>300.0 Hz</td><td>38.44</td><td>(-1.15)</td><td>-59.88</td><td>38.44</td><td>(-1.15)</td><td>59.88</td><td></td></tr><tr><td>10.00 kHz</td><td>20.00 kHz</td><td>300.0 Hz</td><td>-28.69</td><td>(-41.79)</td><td>-10.54 k</td><td>-29.54</td><td>(-42.64)</td><td>12.94 k</td><td></td></tr><tr><td>20.00 kHz</td><td>50.00 kHz</td><td>300.0 Hz</td><td>-32.30</td><td>(-35.40)</td><td>-20.55 k</td><td>-33.95</td><td>(-37.04)</td><td>23.25 k</td><td></td></tr><tr><td>50.00 kHz</td><td>60.00 kHz</td><td>300.0 Hz</td><td>-41.58</td><td>(-28.58)</td><td>-59.70 k</td><td>-41.05</td><td>(-28.05)</td><td>57.60 k</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><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><td></td></tr></tbody></table> File <MASK B.state> recalled (STATUS) Frequency Center Freq 156.025000 MHz CF Step 12.000 kHz Auto Freq Offset 0 Hz	Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Freq (Hz)	Peak	dBm	Upper ΔLim(dB)	Freq (Hz)	0.0 Hz	10.00 kHz	300.0 Hz	38.44	(-1.15)	-59.88	38.44	(-1.15)	59.88		10.00 kHz	20.00 kHz	300.0 Hz	-28.69	(-41.79)	-10.54 k	-29.54	(-42.64)	12.94 k		20.00 kHz	50.00 kHz	300.0 Hz	-32.30	(-35.40)	-20.55 k	-33.95	(-37.04)	23.25 k		50.00 kHz	60.00 kHz	300.0 Hz	-41.58	(-28.58)	-59.70 k	-41.05	(-28.05)	57.60 k		8.000 MHz	12.50 MHz	1.000 MHz	—	(—)	—	—	(—)	—		12.50 MHz	15.00 MHz	1.000 MHz	—	(—)	—	—	(—)	—	
Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Freq (Hz)	Peak	dBm	Upper ΔLim(dB)	Freq (Hz)																																																																
0.0 Hz	10.00 kHz	300.0 Hz	38.44	(-1.15)	-59.88	38.44	(-1.15)	59.88																																																																	
10.00 kHz	20.00 kHz	300.0 Hz	-28.69	(-41.79)	-10.54 k	-29.54	(-42.64)	12.94 k																																																																	
20.00 kHz	50.00 kHz	300.0 Hz	-32.30	(-35.40)	-20.55 k	-33.95	(-37.04)	23.25 k																																																																	
50.00 kHz	60.00 kHz	300.0 Hz	-41.58	(-28.58)	-59.70 k	-41.05	(-28.05)	57.60 k																																																																	
8.000 MHz	12.50 MHz	1.000 MHz	—	(—)	—	—	(—)	—																																																																	
12.50 MHz	15.00 MHz	1.000 MHz	—	(—)	—	—	(—)	—																																																																	
TX-AWH	FM	CH _L	Agilent Spectrum Analyzer - Spectrum Emission Mask RL RF 50.0 AC SENSE:PULSE ALIGN:AUTO 03:59:01 PM Apr 12, 2024 Center Freq 156.025000 MHz Center Freq: 156.025000 MHz Radio Std: None PASS IF Gain: Low Trig: Free Run Avg: 100.00% of 10 #Atten: 40 dB Radio Device: BTS Ref Offset 11 dB Ref 44.0 dBm  Center 156 MHz Span 120 kHz Total Power Ref 37.97 dBm 0.0125 MHz <table><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>dBm</th><th>Upper ΔLim(dB)</th><th>Freq (Hz)</th></tr></thead><tbody><tr><td>0.0 Hz</td><td>10.00 kHz</td><td>300.0 Hz</td><td>33.70</td><td>(-5.89)</td><td>-2.455 k</td><td>33.74</td><td>(-5.85)</td><td>2.515 k</td><td></td></tr><tr><td>10.00 kHz</td><td>20.00 kHz</td><td>300.0 Hz</td><td>4.271</td><td>(-8.82)</td><td>-10.06 k</td><td>3.656</td><td>(-9.44)</td><td>10.00 k</td><td></td></tr><tr><td>20.00 kHz</td><td>50.00 kHz</td><td>300.0 Hz</td><td>-35.54</td><td>(-38.64)</td><td>-20.07 k</td><td>-36.23</td><td>(-39.32)</td><td>20.01 k</td><td></td></tr><tr><td>50.00 kHz</td><td>60.00 kHz</td><td>300.0 Hz</td><td>-44.71</td><td>(-31.71)</td><td>-55.44 k</td><td>-44.57</td><td>(-31.57)</td><td>50.23 k</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><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><td></td></tr></tbody></table> File <MASK B.state> recalled (STATUS) Frequency Center Freq 156.025000 MHz CF Step 12.000 kHz Auto Freq Offset 0 Hz	Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Freq (Hz)	Peak	dBm	Upper ΔLim(dB)	Freq (Hz)	0.0 Hz	10.00 kHz	300.0 Hz	33.70	(-5.89)	-2.455 k	33.74	(-5.85)	2.515 k		10.00 kHz	20.00 kHz	300.0 Hz	4.271	(-8.82)	-10.06 k	3.656	(-9.44)	10.00 k		20.00 kHz	50.00 kHz	300.0 Hz	-35.54	(-38.64)	-20.07 k	-36.23	(-39.32)	20.01 k		50.00 kHz	60.00 kHz	300.0 Hz	-44.71	(-31.71)	-55.44 k	-44.57	(-31.57)	50.23 k		8.000 MHz	12.50 MHz	1.000 MHz	—	(—)	—	—	(—)	—		12.50 MHz	15.00 MHz	1.000 MHz	—	(—)	—	—	(—)	—	
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TX-AWH	FM	CH _M	Agilent Spectrum Analyzer - Spectrum Emission Mask RL RF 50.0 AC SENSE:PULSE ALIGN:AUTO 04:13:12 PM Apr 12, 2024 Center Freq 156.800000 MHz Center Freq: 156.800000 MHz Radio Std: None PASS IF Gain: Low Trig: Free Run #Atten: 40 dB Radio Device: BTS Ref Offset 11 dB Ref 44.0 dBm  Center 156.8 MHz Span 120 kHz Total Power Ref 38.17 dBm 0.0125 MHz <table><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>dBm</th><th>Upper ΔLim(dB)</th><th>Freq (Hz)</th></tr></thead><tbody><tr><td>0.0 Hz</td><td>10.00 kHz</td><td>300.0 Hz</td><td>38.37</td><td>(-1.21)</td><td>-59.88</td><td>38.41</td><td>(-1.18)</td><td>59.88</td><td></td></tr><tr><td>10.00 kHz</td><td>20.00 kHz</td><td>300.0 Hz</td><td>-27.52</td><td>(-40.61)</td><td>-11.86 k</td><td>-27.27</td><td>(-40.36)</td><td>11.02 k</td><td></td></tr><tr><td>20.00 kHz</td><td>50.00 kHz</td><td>300.0 Hz</td><td>-33.14</td><td>(-36.22)</td><td>-20.19 k</td><td>-34.28</td><td>(-37.36)</td><td>22.47 k</td><td></td></tr><tr><td>50.00 kHz</td><td>60.00 kHz</td><td>300.0 Hz</td><td>-42.10</td><td>(-29.10)</td><td>-50.00 k</td><td>-40.66</td><td>(-27.66)</td><td>50.47 k</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><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><td></td></tr></tbody></table> File <MASK B.state> recalled (STATUS) Frequency Center Freq 156.800000 MHz CF Step 12.000 kHz Auto Freq Offset 0 Hz	Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Freq (Hz)	Peak	dBm	Upper ΔLim(dB)	Freq (Hz)	0.0 Hz	10.00 kHz	300.0 Hz	38.37	(-1.21)	-59.88	38.41	(-1.18)	59.88		10.00 kHz	20.00 kHz	300.0 Hz	-27.52	(-40.61)	-11.86 k	-27.27	(-40.36)	11.02 k		20.00 kHz	50.00 kHz	300.0 Hz	-33.14	(-36.22)	-20.19 k	-34.28	(-37.36)	22.47 k		50.00 kHz	60.00 kHz	300.0 Hz	-42.10	(-29.10)	-50.00 k	-40.66	(-27.66)	50.47 k		8.000 MHz	12.50 MHz	1.000 MHz	—	(—)	—	—	(—)	—		12.50 MHz	15.00 MHz	1.000 MHz	—	(—)	—	—	(—)	—	
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Appendix C:Emission Mask

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT																																																																																																																																																																																																																										
TX-AWH	FM	CH _M	Agilent Spectrum Analyzer - Spectrum Emission Mask RLRF150QACSENSE:PULSEALIGN: AUTO 04:14:01 PM Apr 12, 2024 Center Freq 156.800000 MHz Center Freq: 156.800000 MHz Radio Std: None Trig: Free Run Avg: 100.00% of 10 Radio Device: BTS PASS IF Gain: Low #Atten: 40 dB Ref Offset 11 dB Ref 44.0 dBm 10 dB/Div Log 34.0 24.0 14.0 4.00 -6.00 -16.0 -26.0 -36.0 -46.0 Center 156.8 MHz Span 120 kHz Total Power Ref 38.04 dBm 0.0125 MHz <table><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>dBm</th><th>Upper ΔLim(dB)</th><th>Freq (Hz)</th></tr><tr><td>0.0 Hz</td><td>10.00 kHz</td><td>300.0 Hz</td><td>33.70</td><td>(-5.89)</td><td>-2.455 k</td><td>33.70</td><td>(-5.88)</td><td>2.455 k</td><td></td></tr><tr><td>10.00 kHz</td><td>20.00 kHz</td><td>300.0 Hz</td><td>4.971</td><td>(-8.11)</td><td>-10.00 k</td><td>4.819</td><td>(-8.27)</td><td>10.00 k</td><td></td></tr><tr><td>20.00 kHz</td><td>50.00 kHz</td><td>300.0 Hz</td><td>-34.23</td><td>(-37.31)</td><td>-20.01 k</td><td>-35.50</td><td>(-38.59)</td><td>20.00 k</td><td></td></tr><tr><td>50.00 kHz</td><td>60.00 kHz</td><td>300.0 Hz</td><td>-44.55</td><td>(-31.55)</td><td>-59.34 k</td><td>-44.51</td><td>(-31.51)</td><td>52.81 k</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><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><td></td></tr></table> File <Temp.png> saved (STATUS) Frequency Center Freq 156.800000 MHz CF Step 12.000 kHz Auto Man Freq Offset 0 Hz <tr><td>TX-AWH</td><td>FM</td><td>CH_H</td><td> Agilent Spectrum Analyzer - Spectrum Emission Mask RLRF150QACSENSE:PULSEALIGN: AUTO 04:25:44 PM Apr 12, 2024 Center Freq 157.425000 MHz Center Freq: 157.425000 MHz Radio Std: None Trig: Free Run Avg: 100.00% of 10 Radio Device: BTS PASS IF Gain: Low #Atten: 40 dB Ref Offset 11 dB Ref 44.0 dBm 10 dB/Div Log 34.0 24.0 14.0 4.00 -6.00 -16.0 -26.0 -36.0 -46.0 Center 157.4 MHz Span 120 kHz Total Power Ref 38.15 dBm 0.0125 MHz <table><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>dBm</th><th>Upper ΔLim(dB)</th><th>Freq (Hz)</th></tr><tr><td>0.0 Hz</td><td>10.00 kHz</td><td>300.0 Hz</td><td>38.40</td><td>(-1.16)</td><td>59.88</td><td>38.42</td><td>(-1.14)</td><td>59.88</td><td></td></tr><tr><td>10.00 kHz</td><td>20.00 kHz</td><td>300.0 Hz</td><td>-31.59</td><td>(-44.65)</td><td>-12.04 k</td><td>-29.26</td><td>(-42.32)</td><td>13.66 k</td><td></td></tr><tr><td>20.00 kHz</td><td>50.00 kHz</td><td>300.0 Hz</td><td>-33.95</td><td>(-37.00)</td><td>-24.81 k</td><td>-33.15</td><td>(-36.21)</td><td>25.05 k</td><td></td></tr><tr><td>50.00 kHz</td><td>60.00 kHz</td><td>300.0 Hz</td><td>-40.74</td><td>(-27.74)</td><td>-54.00 k</td><td>-42.35</td><td>(-29.35)</td><td>58.26 k</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><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><td></td></tr></table> File <MASK B.state> recalled (STATUS) Frequency Center Freq 157.425000 MHz CF Step 12.000 kHz Auto Man Freq Offset 0 Hz <tr><td>TX-AWH</td><td>FM</td><td>CH_H</td><td> Agilent Spectrum Analyzer - Spectrum Emission Mask RLRF150QACSENSE:PULSEALIGN: AUTO 04:26:33 PM Apr 12, 2024 Center Freq 157.425000 MHz Center Freq: 157.425000 MHz Radio Std: None Trig: Free Run Avg: 100.00% of 10 Radio Device: BTS PASS IF Gain: Low #Atten: 40 dB Ref Offset 11 dB Ref 44.0 dBm 10 dB/Div Log 34.0 24.0 14.0 4.00 -6.00 -16.0 -26.0 -36.0 -46.0 Center 157.4 MHz Span 120 kHz Total Power Ref 38.01 dBm 0.0125 MHz <table><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>dBm</th><th>Upper ΔLim(dB)</th><th>Freq (Hz)</th></tr><tr><td>0.0 Hz</td><td>10.00 kHz</td><td>300.0 Hz</td><td>33.68</td><td>(-5.88)</td><td>-2.515 k</td><td>33.68</td><td>(-5.88)</td><td>2.575 k</td><td></td></tr><tr><td>10.00 kHz</td><td>20.00 kHz</td><td>300.0 Hz</td><td>5.437</td><td>(-7.62)</td><td>-10.00 k</td><td>5.375</td><td>(-7.68)</td><td>10.00 k</td><td></td></tr><tr><td>20.00 kHz</td><td>50.00 kHz</td><td>300.0 Hz</td><td>-34.67</td><td>(-37.72)</td><td>-20.01 k</td><td>-35.81</td><td>(-38.87)</td><td>20.07 k</td><td></td></tr><tr><td>50.00 kHz</td><td>60.00 kHz</td><td>300.0 Hz</td><td>-45.23</td><td>(-32.23)</td><td>-50.29 k</td><td>-44.28</td><td>(-31.28)</td><td>52.33 k</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><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><td></td></tr></table> File <Temp.png> saved (STATUS) Frequency Center Freq 157.425000 MHz CF Step 12.000 kHz Auto Man Freq Offset 0 Hz </td></tr></td></tr>	Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Freq (Hz)	< Peak >	dBm	Upper ΔLim(dB)	Freq (Hz)	0.0 Hz	10.00 kHz	300.0 Hz	33.70	(-5.89)	-2.455 k	33.70	(-5.88)	2.455 k		10.00 kHz	20.00 kHz	300.0 Hz	4.971	(-8.11)	-10.00 k	4.819	(-8.27)	10.00 k		20.00 kHz	50.00 kHz	300.0 Hz	-34.23	(-37.31)	-20.01 k	-35.50	(-38.59)	20.00 k		50.00 kHz	60.00 kHz	300.0 Hz	-44.55	(-31.55)	-59.34 k	-44.51	(-31.51)	52.81 k		8.000 MHz	12.50 MHz	1.000 MHz	—	(—)	—	—	(—)	—		12.50 MHz	15.00 MHz	1.000 MHz	—	(—)	—	—	(—)	—		TX-AWH	FM	CH _H	Agilent Spectrum Analyzer - Spectrum Emission Mask RLRF150QACSENSE:PULSEALIGN: AUTO 04:25:44 PM Apr 12, 2024 Center Freq 157.425000 MHz Center Freq: 157.425000 MHz Radio Std: None Trig: Free Run Avg: 100.00% of 10 Radio Device: BTS PASS IF Gain: Low #Atten: 40 dB Ref Offset 11 dB Ref 44.0 dBm 10 dB/Div Log 34.0 24.0 14.0 4.00 -6.00 -16.0 -26.0 -36.0 -46.0 Center 157.4 MHz Span 120 kHz Total Power Ref 38.15 dBm 0.0125 MHz <table><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>dBm</th><th>Upper ΔLim(dB)</th><th>Freq (Hz)</th></tr><tr><td>0.0 Hz</td><td>10.00 kHz</td><td>300.0 Hz</td><td>38.40</td><td>(-1.16)</td><td>59.88</td><td>38.42</td><td>(-1.14)</td><td>59.88</td><td></td></tr><tr><td>10.00 kHz</td><td>20.00 kHz</td><td>300.0 Hz</td><td>-31.59</td><td>(-44.65)</td><td>-12.04 k</td><td>-29.26</td><td>(-42.32)</td><td>13.66 k</td><td></td></tr><tr><td>20.00 kHz</td><td>50.00 kHz</td><td>300.0 Hz</td><td>-33.95</td><td>(-37.00)</td><td>-24.81 k</td><td>-33.15</td><td>(-36.21)</td><td>25.05 k</td><td></td></tr><tr><td>50.00 kHz</td><td>60.00 kHz</td><td>300.0 Hz</td><td>-40.74</td><td>(-27.74)</td><td>-54.00 k</td><td>-42.35</td><td>(-29.35)</td><td>58.26 k</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><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><td></td></tr></table> File <MASK B.state> recalled (STATUS) Frequency Center Freq 157.425000 MHz CF Step 12.000 kHz Auto Man Freq Offset 0 Hz <tr><td>TX-AWH</td><td>FM</td><td>CH_H</td><td> Agilent Spectrum Analyzer - 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TX-AWH	FM	CH _H	Agilent Spectrum Analyzer - Spectrum Emission Mask RLRF150QACSENSE:PULSEALIGN: AUTO 04:26:33 PM Apr 12, 2024 Center Freq 157.425000 MHz Center Freq: 157.425000 MHz Radio Std: None Trig: Free Run Avg: 100.00% of 10 Radio Device: BTS PASS IF Gain: Low #Atten: 40 dB Ref Offset 11 dB Ref 44.0 dBm 10 dB/Div Log 34.0 24.0 14.0 4.00 -6.00 -16.0 -26.0 -36.0 -46.0 Center 157.4 MHz Span 120 kHz Total Power Ref 38.01 dBm 0.0125 MHz <table><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>dBm</th><th>Upper ΔLim(dB)</th><th>Freq (Hz)</th></tr><tr><td>0.0 Hz</td><td>10.00 kHz</td><td>300.0 Hz</td><td>33.68</td><td>(-5.88)</td><td>-2.515 k</td><td>33.68</td><td>(-5.88)</td><td>2.575 k</td><td></td></tr><tr><td>10.00 kHz</td><td>20.00 kHz</td><td>300.0 Hz</td><td>5.437</td><td>(-7.62)</td><td>-10.00 k</td><td>5.375</td><td>(-7.68)</td><td>10.00 k</td><td></td></tr><tr><td>20.00 kHz</td><td>50.00 kHz</td><td>300.0 Hz</td><td>-34.67</td><td>(-37.72)</td><td>-20.01 k</td><td>-35.81</td><td>(-38.87)</td><td>20.07 k</td><td></td></tr><tr><td>50.00 kHz</td><td>60.00 kHz</td><td>300.0 Hz</td><td>-45.23</td><td>(-32.23)</td><td>-50.29 k</td><td>-44.28</td><td>(-31.28)</td><td>52.33 k</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><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><td></td></tr></table> File <Temp.png> saved (STATUS) Frequency Center Freq 157.425000 MHz CF Step 12.000 kHz Auto Man Freq Offset 0 Hz	Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Freq (Hz)	< Peak >	dBm	Upper ΔLim(dB)	Freq (Hz)	0.0 Hz	10.00 kHz	300.0 Hz	33.68	(-5.88)	-2.515 k	33.68	(-5.88)	2.575 k		10.00 kHz	20.00 kHz	300.0 Hz	5.437	(-7.62)	-10.00 k	5.375	(-7.68)	10.00 k		20.00 kHz	50.00 kHz	300.0 Hz	-34.67	(-37.72)	-20.01 k	-35.81	(-38.87)	20.07 k		50.00 kHz	60.00 kHz	300.0 Hz	-45.23	(-32.23)	-50.29 k	-44.28	(-31.28)	52.33 k		8.000 MHz	12.50 MHz	1.000 MHz	—	(—)	—	—	(—)	—		12.50 MHz	15.00 MHz	1.000 MHz	—	(—)	—	—	(—)	—																																																																																																																																																					
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Appendix C:Emission Mask

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-AWL	FM	CH _L	Agilent Spectrum Analyzer - Spectrum Emission Mask RLRF50 QACSENSE PULSEALIGN AUTO 04:07:38 PM Apr 12, 2024 Center Freq 156.025000 MHz Center Freq: 156.025000 MHz Radio Std: None PASS IF Gain: Low Trig: Free Run #Atten: 40 dB Radio Device: BTS Ref Offset 11 dB Ref 35.0 dBm 10 dB/div Log

Appendix C:Emission Mask

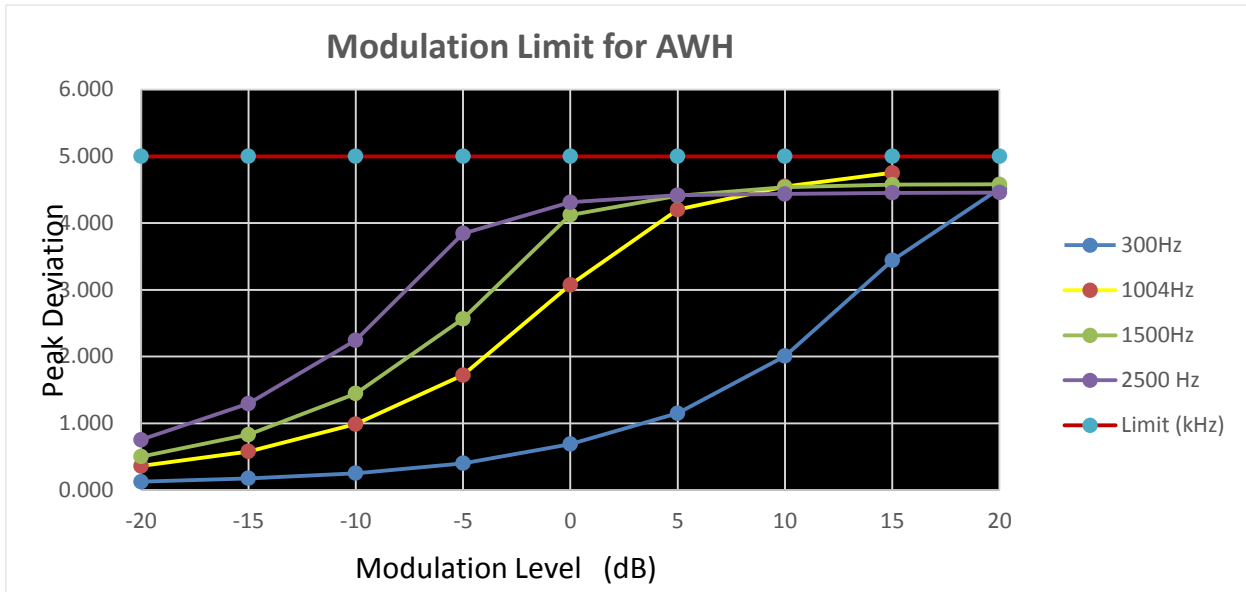
Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT																																																																						
TX-AWL	FM	CH _M	Agilent Spectrum Analyzer - Spectrum Emission Mask RLRF50.0ACSENSE:PULSEALIGN: AUTO04:19:56 PM Apr 12, 2024 Center Freq 156.800000 MHzCenter Freq: 156.800000 MHzRadio Std: None PASSIF Gain: LowTrig: Free RunAve: 100.00% of 10Radio Device: BTS Ref Offset 11 dB Ref 35.0 dBm 10 dB/div Log 25.0 15.0 5.00 -5.00 -15.0 -25.0 -35.0 -45.0 -55.0 Relative Lim Absolute Lim Spectrum Center 156.8 MHzSpan 120 kHz Total Power Ref 29.45 dBm 0.0125 MHz <table><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>dBm</th><th>Upper ΔLim(dB)</th><th>Freq (Hz)</th></tr></thead><tbody><tr><td>0.0 Hz</td><td>10.00 kHz</td><td>300.0 Hz</td><td>25.11</td><td>(-5.92)</td><td>-2.455 k</td><td>25.11</td><td>(-5.92)</td><td>2.575 k</td><td>25.11</td></tr><tr><td>10.00 kHz</td><td>20.00 kHz</td><td>300.0 Hz</td><td>-3.542</td><td>(-8.08)</td><td>-10.00 k</td><td>-3.560</td><td>(-8.10)</td><td>10.00 k</td><td>-3.542</td></tr><tr><td>20.00 kHz</td><td>50.00 kHz</td><td>300.0 Hz</td><td>-44.57</td><td>(-39.11)</td><td>-20.00 k</td><td>-43.43</td><td>(-37.97)</td><td>20.01 k</td><td>-44.57</td></tr><tr><td>50.00 kHz</td><td>60.00 kHz</td><td>300.0 Hz</td><td>-51.88</td><td>(-38.88)</td><td>-52.81 k</td><td>-52.69</td><td>(-39.69)</td><td>50.53 k</td><td>-51.88</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><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><td>—</td></tr></tbody></table> File <Temp.png> savedSTATUS Frequency Center Freq 156.800000 MHz CF Step 12.000 kHz Man Auto Freq Offset 0 Hz	Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Freq (Hz)	< Peak >	dBm	Upper ΔLim(dB)	Freq (Hz)	0.0 Hz	10.00 kHz	300.0 Hz	25.11	(-5.92)	-2.455 k	25.11	(-5.92)	2.575 k	25.11	10.00 kHz	20.00 kHz	300.0 Hz	-3.542	(-8.08)	-10.00 k	-3.560	(-8.10)	10.00 k	-3.542	20.00 kHz	50.00 kHz	300.0 Hz	-44.57	(-39.11)	-20.00 k	-43.43	(-37.97)	20.01 k	-44.57	50.00 kHz	60.00 kHz	300.0 Hz	-51.88	(-38.88)	-52.81 k	-52.69	(-39.69)	50.53 k	-51.88	8.000 MHz	12.50 MHz	1.000 MHz	—	(—)	—	—	(—)	—	—	12.50 MHz	15.00 MHz	1.000 MHz	—	(—)	—	—	(—)	—	—
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TX-AWL	FM	CH _H	Agilent Spectrum Analyzer - Spectrum Emission Mask RLRF50.0ACSENSE:PULSEALIGN: AUTO04:31:48 PM Apr 12, 2024 Center Freq 157.425000 MHzCenter Freq: 157.425000 MHzRadio Std: None PASSIF Gain: LowTrig: Free RunAve: 100.00% of 10Radio Device: BTS Ref Offset 11 dB Ref 35.0 dBm 10 dB/div Log 25.0 15.0 5.00 -5.00 -15.0 -25.0 -35.0 -45.0 -55.0 Relative Lim Absolute Lim Spectrum Center 157.4 MHzSpan 120 kHz Total Power Ref 29.58 dBm 0.0125 MHz <table><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>dBm</th><th>Upper ΔLim(dB)</th><th>Freq (Hz)</th></tr></thead><tbody><tr><td>0.0 Hz</td><td>10.00 kHz</td><td>300.0 Hz</td><td>29.77</td><td>(-1.24)</td><td>0.0</td><td>29.83</td><td>(-1.18)</td><td>119.8</td><td>29.77</td></tr><tr><td>10.00 kHz</td><td>20.00 kHz</td><td>300.0 Hz</td><td>-36.92</td><td>(-41.42)</td><td>-12.64 k</td><td>-37.65</td><td>(-42.16)</td><td>11.38 k</td><td>-36.92</td></tr><tr><td>20.00 kHz</td><td>50.00 kHz</td><td>300.0 Hz</td><td>-42.44</td><td>(-36.94)</td><td>-21.21 k</td><td>-40.70</td><td>(-35.21)</td><td>20.25 k</td><td>-42.44</td></tr><tr><td>50.00 kHz</td><td>60.00 kHz</td><td>300.0 Hz</td><td>-49.21</td><td>(-36.21)</td><td>-52.21 k</td><td>-48.78</td><td>(-35.78)</td><td>55.98 k</td><td>-49.21</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><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><td>—</td></tr></tbody></table> File <MASK B.state> recalledSTATUS Frequency Center Freq 157.425000 MHz CF Step 12.000 kHz Man Auto Freq Offset 0 Hz	Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Freq (Hz)	< Peak >	dBm	Upper ΔLim(dB)	Freq (Hz)	0.0 Hz	10.00 kHz	300.0 Hz	29.77	(-1.24)	0.0	29.83	(-1.18)	119.8	29.77	10.00 kHz	20.00 kHz	300.0 Hz	-36.92	(-41.42)	-12.64 k	-37.65	(-42.16)	11.38 k	-36.92	20.00 kHz	50.00 kHz	300.0 Hz	-42.44	(-36.94)	-21.21 k	-40.70	(-35.21)	20.25 k	-42.44	50.00 kHz	60.00 kHz	300.0 Hz	-49.21	(-36.21)	-52.21 k	-48.78	(-35.78)	55.98 k	-49.21	8.000 MHz	12.50 MHz	1.000 MHz	—	(—)	—	—	(—)	—	—	12.50 MHz	15.00 MHz	1.000 MHz	—	(—)	—	—	(—)	—	—
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Appendix D:Modulation Limit

Operation Mode	Modulation Type	Test Channel	Modulation Level (dB)	Peak frequency deviation (kHz)				Limit (kHz)	Result
				300Hz	1004Hz	1500Hz	2500 Hz		
TX-AWH	FM	CH _M	-20	0.124	0.360	0.502	0.754	5	PASS
TX-AWH	FM	CH _M	-15	0.176	0.578	0.829	1.294	5	PASS
TX-AWH	FM	CH _M	-10	0.251	0.989	1.446	2.245	5	PASS
TX-AWH	FM	CH _M	-5	0.401	1.721	2.566	3.843	5	PASS
TX-AWH	FM	CH _M	0	0.688	3.074	4.123	4.312	5	PASS
TX-AWH	FM	CH _M	5	1.151	4.200	4.409	4.416	5	PASS
TX-AWH	FM	CH _M	10	2.007	4.549	4.537	4.436	5	PASS
TX-AWH	FM	CH _M	15	3.442	4.752	4.574	4.453	5	PASS
TX-AWH	FM	CH _M	20	4.515	4.813	4.580	4.457	5	PASS

Appendix D:Modulation Limit

TEST PLOT RESULT

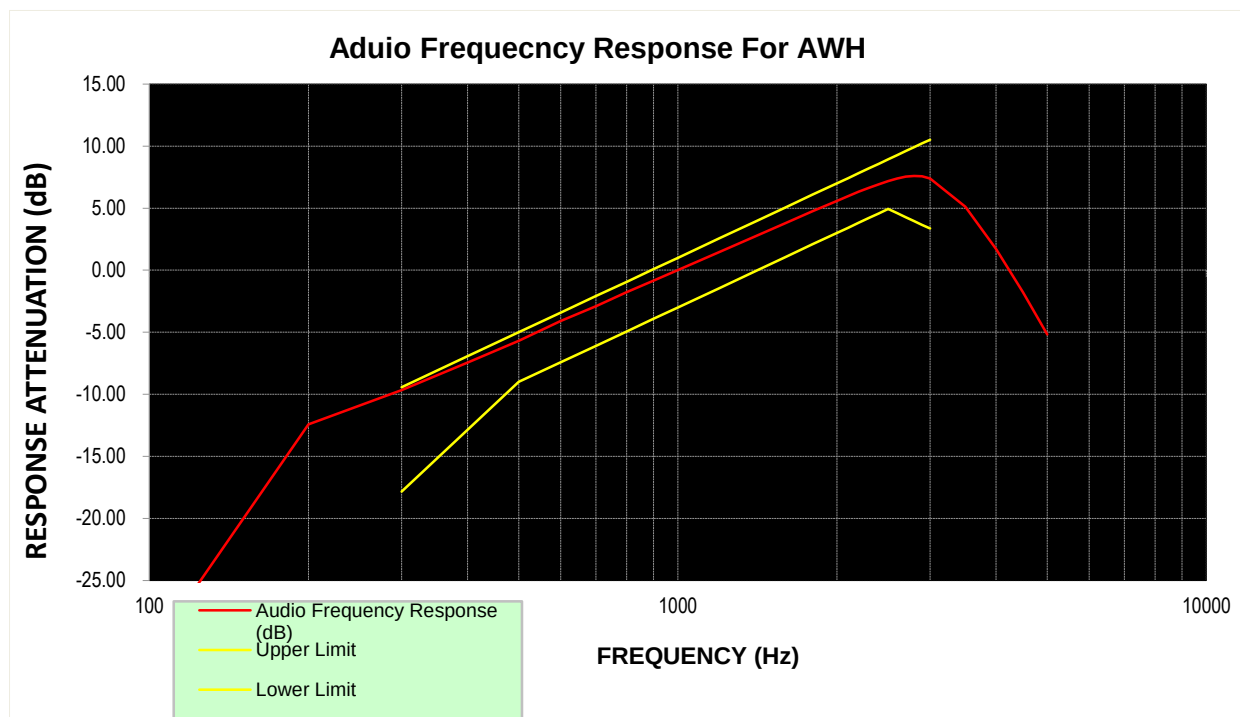


Appendix E:Aduio Frequency Response

Operation Mode	Modulation Type	Test Channel	Frequency (Hz)	Audio Frequency Response (dB)	Lower Limit	Upper Limit	Result
TX-AWH	FM	CH _M	100	-30.96			PASS
TX-AWH	FM	CH _M	200	-12.42			PASS
TX-AWH	FM	CH _M	300	-9.67	-17.84	-9.42	PASS
TX-AWH	FM	CH _M	400	-7.45	-12.86	-6.93	PASS
TX-AWH	FM	CH _M	500	-5.68	-9.00	-5.00	PASS
TX-AWH	FM	CH _M	600	-4.09	-7.42	-3.42	PASS
TX-AWH	FM	CH _M	700	-2.89	-6.09	-2.09	PASS
TX-AWH	FM	CH _M	800	-1.76	-4.93	-0.93	PASS
TX-AWH	FM	CH _M	900	-0.83	-3.91	0.09	PASS
TX-AWH	FM	CH _M	1000	0.01	-3.00	1.00	PASS
TX-AWH	FM	CH _M	1200	1.48	-1.42	2.58	PASS
TX-AWH	FM	CH _M	1400	2.73	-0.09	3.91	PASS
TX-AWH	FM	CH _M	1600	3.82	1.07	5.07	PASS
TX-AWH	FM	CH _M	1800	4.75	2.09	6.09	PASS
TX-AWH	FM	CH _M	2000	5.59	3.00	7.00	PASS
TX-AWH	FM	CH _M	2100	5.97	3.42	7.42	PASS
TX-AWH	FM	CH _M	2200	6.32	3.83	7.83	PASS
TX-AWH	FM	CH _M	2300	6.65	4.21	8.21	PASS
TX-AWH	FM	CH _M	2400	6.92	4.58	8.58	PASS
TX-AWH	FM	CH _M	2500	7.18	4.93	8.93	PASS
TX-AWH	FM	CH _M	2600	7.40	4.59	9.27	PASS
TX-AWH	FM	CH _M	2700	7.54	4.27	9.60	PASS
TX-AWH	FM	CH _M	2800	7.59	3.95	9.91	PASS
TX-AWH	FM	CH _M	2900	7.56	3.65	10.22	PASS
TX-AWH	FM	CH _M	3000	7.40	3.35	10.51	PASS
TX-AWH	FM	CH _M	3500	5.12			PASS
TX-AWH	FM	CH _M	4000	1.72			PASS
TX-AWH	FM	CH _M	4500	-1.77			PASS
TX-AWH	FM	CH _M	5000	-5.17			PASS

Appendix E:Aduio Frequency Response

TEST PLOT RESULT



Appendix F:Audio Low Pass Filter Response

Operation Mode	Modulation Type	Test Channel	Frequency (KHz)	dB relative to 1 KHz	Limit	Result
TX-AWH	FM	CH _M	1	-14.96	0.00	PASS
TX-AWH	FM	CH _M	3	-24.78	0.00	PASS
TX-AWH	FM	CH _M	4	-40.46	-7.50	PASS
TX-AWH	FM	CH _M	5	-52.22	-13.30	PASS
TX-AWH	FM	CH _M	6	-53.56	-18.10	PASS
TX-AWH	FM	CH _M	8	-54.69	-25.60	PASS
TX-AWH	FM	CH _M	10	-55.67	-31.40	PASS
TX-AWH	FM	CH _M	15	-55.79	-41.90	PASS
TX-AWH	FM	CH _M	20	-55.95	-50.00	PASS
TX-AWH	FM	CH _M	30	-56.57	-50.00	PASS
TX-AWH	FM	CH _M	40	-56.59	-50.00	PASS
TX-AWH	FM	CH _M	50	-56.59	-50.00	PASS
TX-AWH	FM	CH _M	60	-56.60	-50.00	PASS
TX-AWH	FM	CH _M	70	-56.59	-50.00	PASS
TX-AWH	FM	CH _M	80	-56.58	-50.00	PASS
TX-AWH	FM	CH _M	90	-56.59	-50.00	PASS
TX-AWH	FM	CH _M	100	-56.60	-50.00	PASS

Appendix F:Audio Low Pass Filter Response

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-AWH	FM	CH _M	dB relative to 1 KHz 10.00 0.00 -10.00 -20.00 -30.00 -40.00 -50.00 -60.00 -70.00 1 10 100 FREQUENCY (kHz) dB relative to 1 KHz

Appendix G:Frequency Stability Test & Temperature

Operation Mode	Modulation Type	Test Conditions		Frequency error (ppm)			Limit (ppm)	Result
		Voltage	Temperature	CH _L	CH _M	CH _H		
TX-AWH	FM	V _N	-20	0.231	0.370	0.446	±10	PASS
TX-AWH	FM	V _N	-10	0.235	0.372	0.447	±10	PASS
TX-AWH	FM	V _N	0	0.233	0.374	0.442	±10	PASS
TX-AWH	FM	V _N	10	0.235	0.373	0.441	±10	PASS
TX-AWH	FM	V _N	20	0.235	0.378	0.445	±10	PASS
TX-AWH	FM	V _N	30	0.236	0.378	0.439	±10	PASS
TX-AWH	FM	V _N	40	0.238	0.379	0.438	±10	PASS
TX-AWH	FM	V _N	50	0.230	0.371	0.435	±10	PASS
TX-AWL	FM	V _N	-20	0.113	0.232	0.301	±10	PASS
TX-AWL	FM	V _N	-10	0.112	0.234	0.303	±10	PASS
TX-AWL	FM	V _N	0	0.111	0.380	0.302	±10	PASS
TX-AWL	FM	V _N	10	0.116	0.239	0.305	±10	PASS
TX-AWL	FM	V _N	20	0.114	0.228	0.304	±10	PASS
TX-AWL	FM	V _N	30	0.118	0.223	0.309	±10	PASS
TX-AWL	FM	V _N	40	0.119	0.226	0.308	±10	PASS
TX-AWL	FM	V _N	50	0.110	0.231	0.307	±10	PASS

Appendix H:Frequency Stability Test & Voltage

Operation Mode	Modulation Type	Test Conditions		Frequency error (ppm)			Limit (ppm)	Result
		Voltage	Temperature	CH _L	CH _M	CH _H		
TX-AWH	FM	V _N	T _N	-0.213	-0.233	-0.243	±10	PASS
TX-AWH	FM	V _L	T _N	-0.215	-0.235	-0.245	±10	PASS
TX-AWH	FM	V _H	T _N	-0.216	-0.232	-0.245	±10	PASS
TX-AWL	FM	V _N	T _N	-0.202	-0.222	-0.232	±10	PASS
TX-AWL	FM	V _L	T _N	-0.217	-0.231	-0.241	±10	PASS
TX-AWL	FM	V _H	T _N	-0.207	-0.227	-0.237	±10	PASS

Appendix I:Spurious Emission On Antenna Port

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT																																				
TX-AWH	FM	CH _L	Agilent Spectrum Analyzer - Swept SA Center Freq 515.000000 MHz Ref Offset 11 dB Ref 0.00 dBm Mkr3 180.35 MHz -58.466 dBm Start 30.0 MHz #Res BW 100 kHz #VBW 300 kHz Stop 1.0000 GHz Sweep 92.73 ms (1001 pts) <table><tr><th>MFR</th><th>MODE</th><th>TRG</th><th>SCL</th><th>F</th><th>dBm</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>156.10 MHz</td><td>-7.013 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>312.22 MHz</td><td>-46.241 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>180.35 MHz</td><td>-58.466 dBm</td><td></td><td></td><td></td></tr></table> Frequency Auto Tune Center Freq 515.000000 MHz Start Freq 30.000000 MHz Stop Freq 1.000000000 GHz CF Step 97.000000 MHz Man Freq Offset 0 Hz	MFR	MODE	TRG	SCL	F	dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	156.10 MHz	-7.013 dBm				2	N	1	f	312.22 MHz	-46.241 dBm				3	N	1	f	180.35 MHz	-58.466 dBm			
MFR	MODE	TRG	SCL	F	dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																															
1	N	1	f	156.10 MHz	-7.013 dBm																																		
2	N	1	f	312.22 MHz	-46.241 dBm																																		
3	N	1	f	180.35 MHz	-58.466 dBm																																		
TX-AWH	FM	CH _L	Agilent Spectrum Analyzer - Swept SA Center Freq 1.280125000 GHz Ref Offset 11 dB Ref 0.00 dBm Mkr1 1.0924 GHz -62.212 dBm Start 1.0000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz Stop 1.5603 GHz Sweep 1.000 ms (1001 pts) <table><tr><th>MFR</th><th>MODE</th><th>TRG</th><th>SCL</th><th>F</th><th>dBm</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>1.0924 GHz</td><td>-62.212 dBm</td><td></td><td></td><td></td></tr></table> Frequency Auto Tune Center Freq 1.280125000 GHz Start Freq 1.000000000 GHz Stop Freq 1.560250000 GHz CF Step 56.025000 MHz Man Freq Offset 0 Hz	MFR	MODE	TRG	SCL	F	dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	1.0924 GHz	-62.212 dBm																					
MFR	MODE	TRG	SCL	F	dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																															
1	N	1	f	1.0924 GHz	-62.212 dBm																																		
TX-AWH	FM	CH _M	Agilent Spectrum Analyzer - Swept SA Center Freq 515.000000 MHz Ref Offset 11 dB Ref 0.00 dBm Mkr3 180.35 MHz -58.218 dBm Start 30.0 MHz #Res BW 100 kHz #VBW 300 kHz Stop 1.0000 GHz Sweep 92.73 ms (1001 pts) <table><tr><th>MFR</th><th>MODE</th><th>TRG</th><th>SCL</th><th>F</th><th>dBm</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>157.07 MHz</td><td>-8.874 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>313.24 MHz</td><td>-45.060 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>180.35 MHz</td><td>-58.218 dBm</td><td></td><td></td><td></td></tr></table> Frequency Auto Tune Center Freq 515.000000 MHz Start Freq 30.000000 MHz Stop Freq 1.000000000 GHz CF Step 97.000000 MHz Man Freq Offset 0 Hz	MFR	MODE	TRG	SCL	F	dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	157.07 MHz	-8.874 dBm				2	N	1	f	313.24 MHz	-45.060 dBm				3	N	1	f	180.35 MHz	-58.218 dBm			
MFR	MODE	TRG	SCL	F	dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																															
1	N	1	f	157.07 MHz	-8.874 dBm																																		
2	N	1	f	313.24 MHz	-45.060 dBm																																		
3	N	1	f	180.35 MHz	-58.218 dBm																																		

Appendix I:Spurious Emission On Antenna Port

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-AWH	FM	CH _M	Agilent Spectrum Analyzer - Swept SA Center Freq 1.28400000 GHz Ref Offset 11 dB Ref 0.00 dBm 10 dB/div Log Start 1.0000 GHz Stop 1.5680 GHz #Res BW 1.0 MHz #VBW 3.0 MHz Sweep 1.000 ms (1001 pts) File <Temp.png> saved STATUS Frequency Auto Tune Center Freq 1.28400000 GHz Start Freq 1.00000000 GHz Stop Freq 1.56800000 GHz CF Step 56.800000 MHz Auto Man Freq Offset 0 Hz Mkr1 1.568 000 GHz -62.235 dBm
TX-AWH	FM	CH _H	Agilent Spectrum Analyzer - Swept SA Center Freq 515.000000 MHz Ref Offset 11 dB Ref 0.00 dBm 10 dB/div Log Start 30.0 MHz Stop 1.0000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 92.73 ms (1001 pts) File <Temp.png> saved STATUS Frequency Auto Tune Center Freq 515.000000 MHz Start Freq 30.000000 MHz Stop Freq 1.00000000 GHz CF Step 97.000000 MHz Auto Man Freq Offset 0 Hz Mkr3 181.32 MHz -67.932 dBm
TX-AWH	FM	CH _H	Agilent Spectrum Analyzer - Swept SA Center Freq 1.287125000 GHz Ref Offset 11 dB Ref 0.00 dBm 10 dB/div Log Start 1.0000 GHz Stop 1.5743 GHz #Res BW 1.0 MHz #VBW 3.0 MHz Sweep 1.000 ms (1001 pts) File <Temp.png> saved STATUS Frequency Auto Tune Center Freq 1.287125000 GHz Start Freq 1.00000000 GHz Stop Freq 1.574250000 GHz CF Step 57.425000 MHz Auto Man Freq Offset 0 Hz Mkr1 1.574 3 GHz -61.758 dBm

----End of Report----