RF Test Report

Applicant	:	Rajant Corporation
Product Type	:	Radio Module
Trade Name	:	VIZMONET
Model Number	:	RJ-1705
Applicable Standard	:	FCC 47 CFR PART 90Y ANSI C63.26 2015
Received Date	:	Sep. 24, 2021
Test Period	:	Sep. 28, 2021 ~ Feb. 07, 2022
Issued Date	:	May 06, 2022

Issued by

A Test Lab Techno Corp.
No. 140-1, Changan Street, Bade District,
Taoyuan City 33465, Taiwan (R.O.C.)
Tel：+886-3-2710188 / Fax：+886-3-2710190

Taiwan Accreditation Foundation accreditation number: 1330
Frequency Range : 9 kHz to 40 GHz
Test Firm MRA designation number: TW0010

Note:

Note:

1.The test results are valid only for samples provided by customers and under the test conditions described in this report.
2.This report shall not be reproduced except in full, without the written approval of A Test Lab Technology Corporation.
3.The relevant information is provided by customers in this test report. According to the correctness, appropriateness or completeness of the information provided by the customer, if there is any doubt or error in the information which affects the validity of the test results, the laboratory does not take the responsibility.

Revision History

Rev.	Issued Date	Revisions	Revised By
00	May 06, 2022	Initial Issue	Nina Lin

Verification of Compliance

Applicant	:	Rajant Corporation
Product Type	:	Radio Module
Trade Name	:	VIZMONET
Model Number	:	RJ-1705
FCC ID	:	VJA-RJ1705
Applicable Standard	:	FCC 47 CFR PART 90Y ANSI C63.26 2015
Test Result	:	Complied
Performing Lab.	:	A Test Lab Techno Corp. No. 140-1, Changan Street, Bade District, Taoyuan City 33465, Taiwan (R.O.C.) Tel：+886-3-2710188 / Fax：+886-3-2710190 Taiwan Accreditation Foundation accreditation number: 1330 http://www.atl-lab.com.tw/e-index.htm

A Test Lab Techno Corp. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by A Test Lab Techno Corp. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Approved By : Kai Yu Yang

(Kai Yu Yang)

TABLE OF CONTENTS

1 General Information

1.1. EUT Description

Applicant	Rajant Corporation 200 Chesterfield Parkway, Malvern, Pennsylvania 19355-3258, United States www.rajant.com			
Product Type	Radio Module			
Trade Name	VIZMONET			
Model Number	RJ-1705			
FCC ID	VJA-RJ1705			
Operate frequency	MHz	Frequency (MHz)	Number of channels	Modulation
	5	4942.5 ~ 4987.5	10	BPSK/QPSK/ 16QAM/64QAM
	10	4945 ~ 4985	9	
	20	4950 ~ 4980	7	
Antenna information	Antenna	Model	Type	Max. Gain (dBi)
	ANT-0/ANT-1	KMA-4800-6-NM	External type(Omni-directional)	6
Operate Temp. Range	-40 ~ +85 ℃			
EUT Power Rating	DC 3.3 V			

Test Mode	Max. RF Output Power (dBm)	26 dB RF Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)
Mode 1	24.25	9.431	4.527
Mode 2	23.37	19.110	9.428
Mode 3	23.37	35.830	18.891
Mode 4	24.04	9.589	4.688
Mode 5	23.56	17.590	9.387
Mode 6	23.34	36.180	18.908
Mode 7	26.26	9.488	4.955
Mode 8	26.16	19.120	9.889
Mode 9	25.90	35.840	18.760
Mode 10	26.12	9.097	4.653
Mode 11	25.80	18.540	9.410
Mode 12	25.87	38.960	19.064

1.2. Mode of Operation

ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: SISO_5 MHz Continuous TX mode (Legacy)
Mode 2: SISO_10 MHz Continuous TX mode (Legacy)
Mode 3: SISO_20 MHz Continuous TX mode (Legacy)
Mode 4: SISO_5 MHz Continuous TX mode
Mode 5: SISO_10 MHz Continuous TX mode
Mode 6: SISO_20 MHz Continuous TX mode
Mode 7: MIMO_5 MHz Continuous TX mode (Legacy)
Mode 8: MIMO_10 MHz Continuous TX mode (Legacy)
Mode 9: MIMO_20 MHz Continuous TX mode (Legacy)
Mode 10: MIMO_5 MHz Continuous TX mode
Mode 11: MIMO_10 MHz Continuous TX mode
Mode 12: MIMO_20 MHz Continuous TX mode

Note 1: Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.
Note 2: ANT-0 is the worst case in Mode 1~6.

By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that “X axis” position was the worst, then the final test was executed the worst condition and test data were recorded in this report.

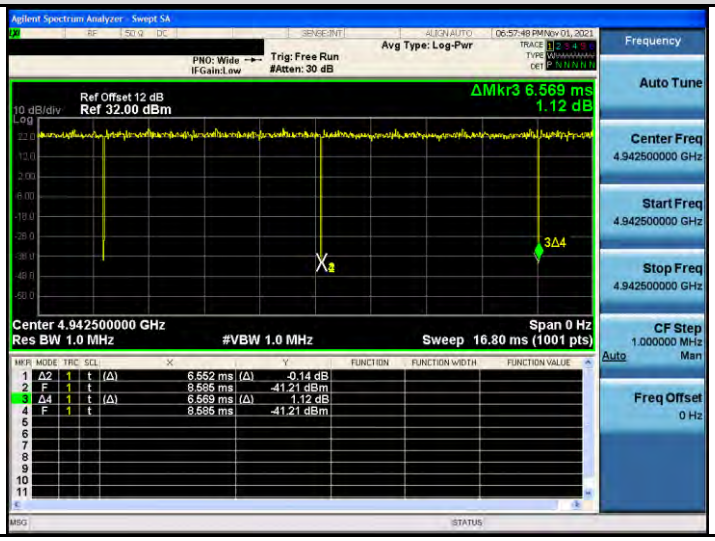
Test Mode	ANT-0	ANT-1	ANT-0+1
Mode 1	V	V	---
Mode 2	V	V	---
Mode 3	V	V	---
Mode 4	V	V	---
Mode 5	V	V	---
Mode 6	V	V	---
Mode 7	V	V	V
Mode 8	V	V	V
Mode 9	V	V	V
Mode 10	V	V	V
Mode 11	V	V	V
Mode 12	V	V	V

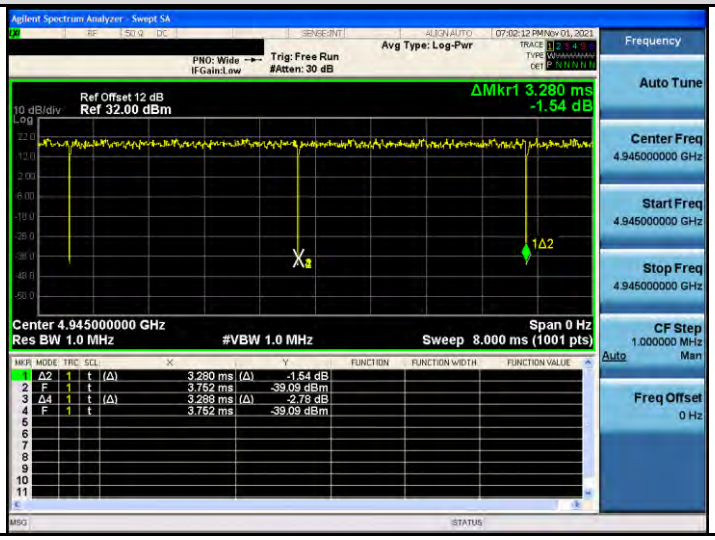
Test Mode	Antenna Delivery	Data Rate (Mbps)	Test Frequency (MHz)
Mode 1	1TX (Diversity)	6	4942.5, 4967.5, 4987.5
Mode 2	1TX (Diversity)	6	4945, 4965, 4985
Mode 3	1TX (Diversity)	6	4950, 4965, 4980
Mode 4	1TX (Diversity)	MCS0	4942.5, 4967.5, 4987.5
Mode 5	1TX (Diversity)	MCS0	4945, 4965, 4985
Mode 6	1TX (Diversity)	MCS0	4950, 4965, 4980
Mode 7	2TX (MIMO)	6	4942.5, 4967.5, 4987.5
Mode 8	2TX (MIMO)	6	4945, 4965, 4985
Mode 9	2TX (MIMO)	6	4950, 4965, 4980
Mode 10	2TX (MIMO)	MCS8	4942.5, 4967.5, 4987.5
Mode 11	2TX (MIMO)	MCS8	4945, 4965, 4985
Mode 12	2TX (MIMO)	MCS8	4950, 4965, 4980

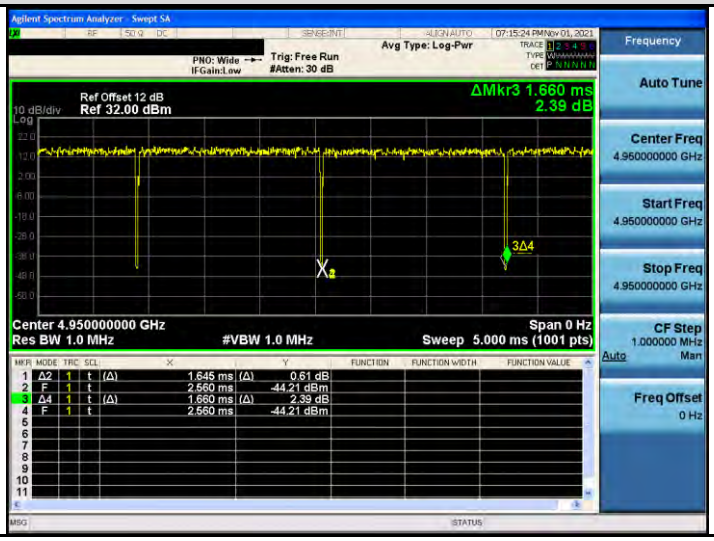
Duty cycle

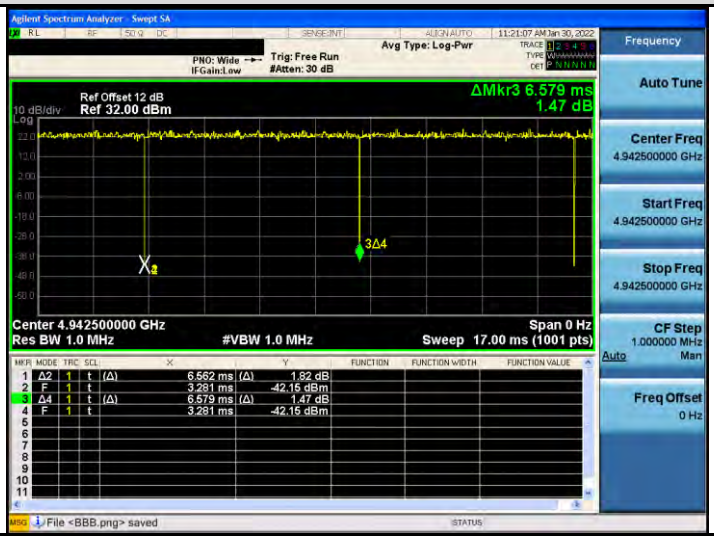
Test Mode	Frequency (MHz)	on time (ms)	on+off time (ms)	Duty cycle	Duty Factor (dB)	1/T Minimum VBW (kHz)
Mode 1	4942.5	6.552	6.569	0.997	0.011	0.010
Mode 2	4945.0	3.280	3.288	0.998	0.011	0.010
Mode 3	4950.0	1.645	1.660	0.991	0.039	0.010
Mode 4	4942.5	6.562	6.579	0.997	0.011	0.010
Mode 5	4945.0	3.280	3.290	0.997	0.013	0.010
Mode 6	4950.0	1.540	1.565	0.984	0.070	0.010
Mode 7	4942.5	6.552	6.569	0.997	0.011	0.010
Mode 8	4945.0	3.280	3.288	0.998	0.011	0.010
Mode 9	4950.0	1.640	1.660	0.988	0.053	0.010
Mode 10	4942.5	6.560	6.576	0.998	0.011	0.010
Mode 11	4945.0	3.280	3.290	0.997	0.013	0.010
Mode 12	4950.0	1.535	1.560	0.984	0.070	0.010

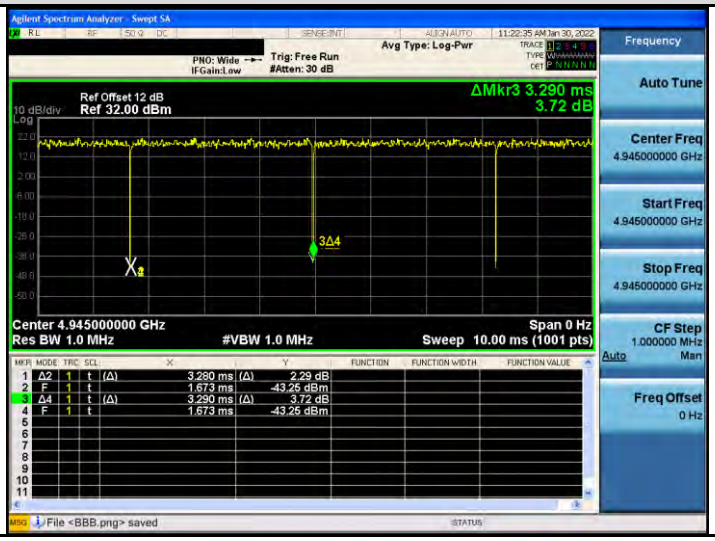
Duty Cycle Graphs

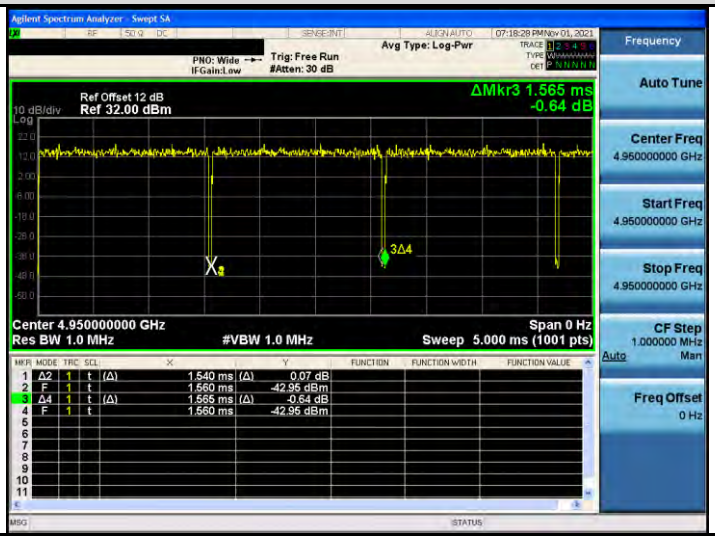
Mode 1: SISO_5 MHz Continuous TX mode (Legacy)	
On+off time	

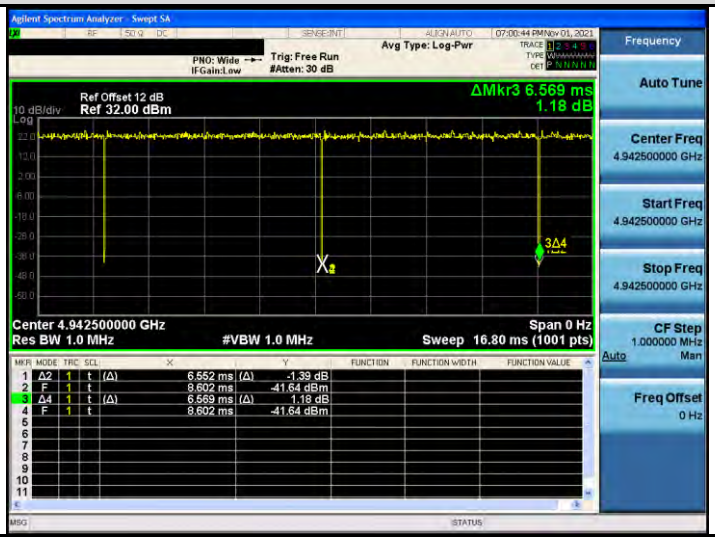
Mode 2: SISO_10 MHz Continuous TX mode (Legacy)	
On+off time	

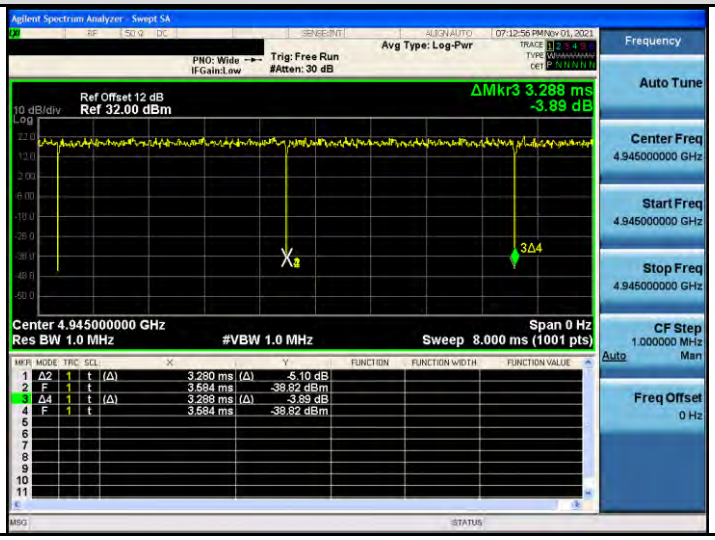
Mode 3: SISO_20 MHz Continuous TX mode (Legacy)		
On+off time		

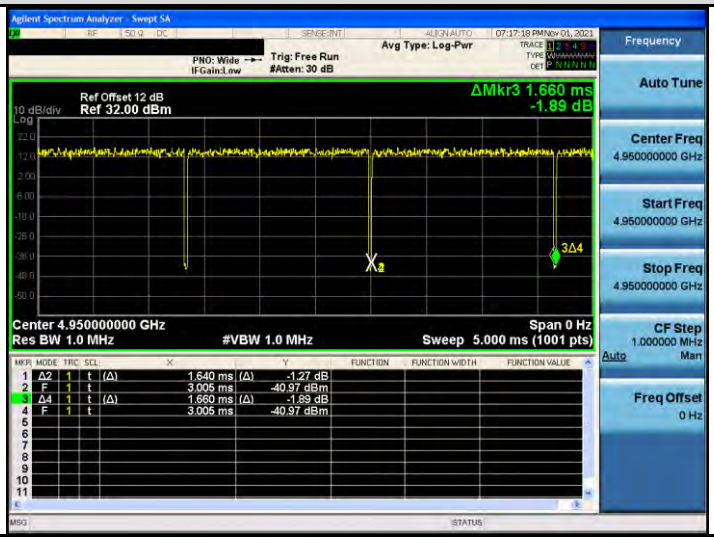
Mode 4: SISO_5 MHz Continuous TX mode		
On+off time		

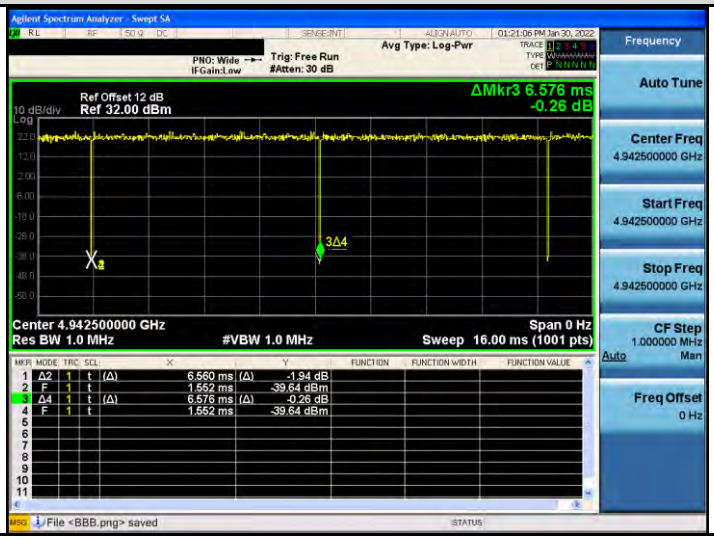
Mode 5: SISO_10 MHz Continuous TX mode		
On+off time		

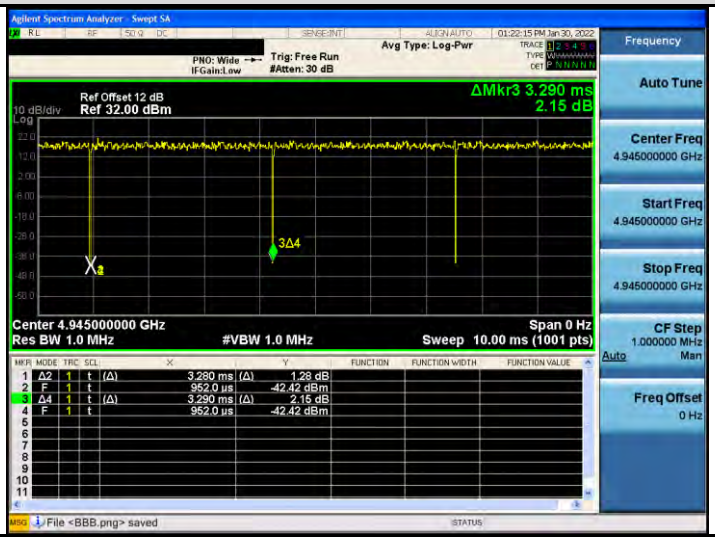
Mode 6: SISO_20 MHz Continuous TX mode		
On+off time		

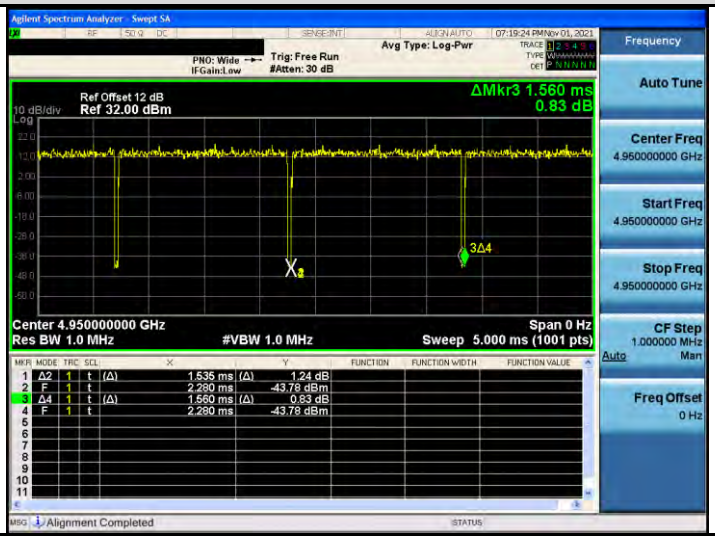
Mode 7: MIMO_5 MHz Continuous TX mode (Legacy)		
On+off time		

Mode 8: MIMO_10 MHz Continuous TX mode (Legacy)		
On+off time		

Mode 9: MIMO_20 MHz Continuous TX mode (Legacy)		
On+off time		

Mode 10: MIMO_5 MHz Continuous TX mode		
On+off time		

Mode 11: MIMO_10 MHz Continuous TX mode		
On+off time		

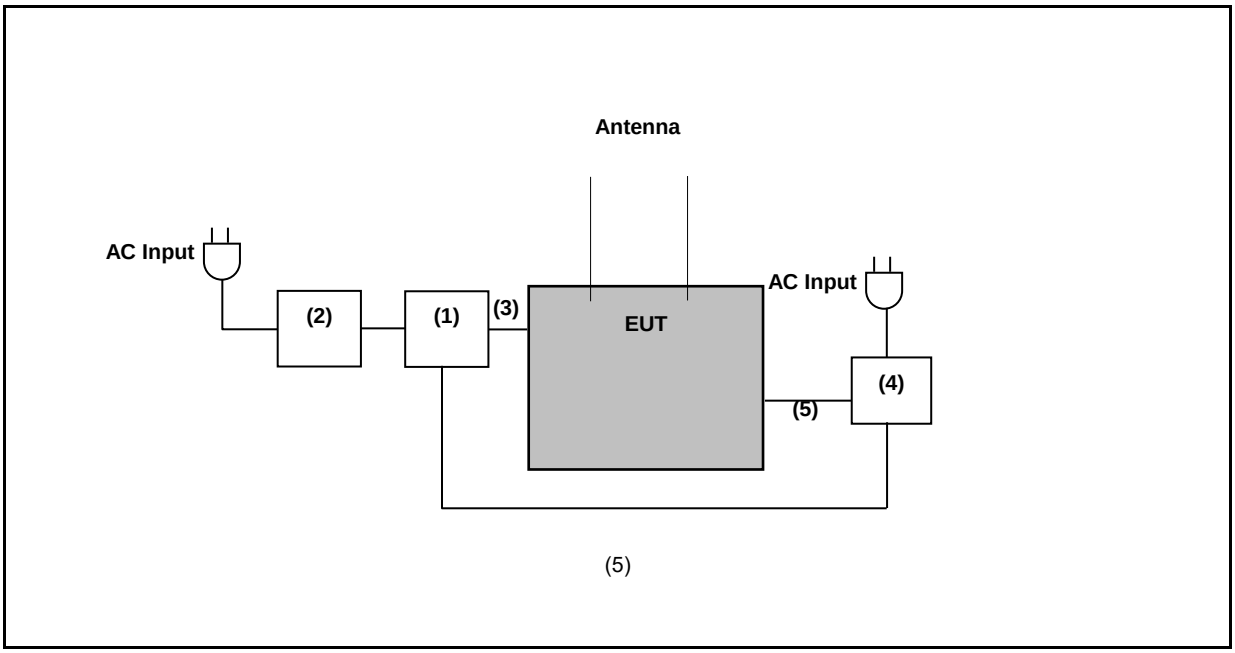
Mode 12: MIMO_20 MHz Continuous TX mode		
On+off time		

1.3. EUT Test Step

1	Setup the EUT shown on “Configuration of Test System Details”.
2.	Turn on the power of all equipment.
3.	Turn on TX function.
4.	EUT run test program.

1.4. Configuration of Test System Details

Radiation Emission



Product		Manufacturer	Model Number	Serial Number	Power Cord
(1)	Notebook	ASUS	P1448U	---	---
(2)	AC Adapter	ASUS	PA-1650-78	---	---
(3)	Fixture	FTDI	TTL-232R-3.3V	---	---
(4)	PoE	Tycon Systems	TP-POE-24G	---	---
(5)	LAN Cable	BELDEN	900000433	---	---
(6)	LAN Cable	HUAWEI	UL2464	---	---

1.5. Test Instruments

For Conducted
Test Period: Oct. 20, 2021 ~ Jan. 29, 2022
Testing Engineer: Louis Shen

Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☐	Power Sensor	Anritsu	MA2411B	1126022	Sep. 01, 2020 Sep. 03, 2021	1 year
☐	Power Meter	Anritsu	ML2495A	1135009	Sep. 01, 2020 Sep. 03, 2021	1 year
☒	Power Sensor	Agilent	N1921A	MY45241957	Dec. 09, 2020 Dec. 06, 2021	1 year
☒	Power Meter	Agilent	N1911A	MY45101619	Dec. 09, 2020 Dec. 06, 2021	1 year
☐	Spectrum Analyzer (10 Hz~26.5 GHz)	Keysight	N9010B	MY59071418	Mar. 17, 2021	1 year
☐	Spectrum Analyzer (9 kHz~26.5 GHz)	Agilent	N9010A	MY48030518	Jul. 23, 2021	1 year
☐	Spectrum Analyzer (20 Hz~26.5 GHz)	Agilent	N9020A	US47520902	Sep. 09, 2021	1 year
☒	Spectrum Analyzer (3 Hz~50 GHz)	Agilent	N9030A	MY53120541	Jan. 08, 2021 Jan. 05, 2022	1 year
☐	Temperature & Humidity Chamber	TAICHY	MHU-225LA	980729	Mar. 30, 2021	1 year
☐	Signal Generator	Keysight	N5182B	MY53052569	Apr. 20, 2021	1 year
☐	Signal Generator	Keysight	N5182BX07	MY59360221	Apr. 20, 2021	1 year
☐	Bluetooth Tester	R&S	CBT	100350	Mar. 17, 2021	2 years
☐	Wireless Connectivity Tester	R&S	CMW270	102208	Jun. 02, 2021	1 year
☐	Power Supply	KEITHLEY	2303	4045290	Feb. 01, 2021 Jan. 19, 2022	1 year
☐	RF Communication Test Set	HP	8920A	3344A03297	Aug. 10, 2021	1 year

Note: N.C.R. = No Calibration Request.

For Radiated Emissions
Test Period: Sep. 28, 2021 ~ Feb. 07, 2022
Testing Engineer: Hung.Chou, Eva Lee

Radiation test sites		Semi Anechoic Room				
Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☐	Spectrum Analyzer (10 Hz~44 GHz)	Keysight	N9010A	MY52221312	Jan. 15, 2021 Jan. 13, 2022	1 year
☐	Spectrum Analyzer (3 Hz~50 GHz)	Agilent	N9030A	MY53120541	Jan. 08, 2022 Jan. 05, 2022	1 year
☒	Spectrum Analyzer (2 Hz~50 GHz)	Keysight	N9030B	MY57143537	Apr. 19, 2021	1 year
☒	Amplifier (100 kHz~1.3 GHz)	Agilent	8447D	2944A11119	Jan. 19, 2021 Jan. 14, 2022	1 year
☐	Amplifier (100 kHz~1.3 GHz)	Agilent	8447D	2944A10961	Jul. 06, 2021	1 year
☐	Broadband Amplifier (100 kHz~1 GHz)	Titan	T0910E00014330A1F	001	Jul. 23, 2021	1 year
☐	Amplifier (1 GHz~26.5 GHz)	Agilent	8449B	3008A02237	Oct. 21, 2020 Oct. 21, 2021	1 year
☒	Broadband Amplifier (1 GHz~26.5 GHz)	Titan	T0912E01263025A1F	002	Jul. 26, 2021	1 year
☒	Preamplifier (26.5 GHz~40 GHz)	EMCI	EMC2654045	980028	Aug. 19, 2021	1 year
☐	Loop Antenna (9 kHz~30 MHz)	COM-POWER CORPORATION	AL-130	121014	Apr. 07, 2021	1 year
☒	Trilog Broadband Antenna (30 kHz~1 GHz)	Schwarzbeck Mess-Elektronik	VULB9168	01146	Jul. 19, 2021	1 year
☐	Trilog Broadband Antenna (30 kHz~1 GHz)	Schwarzbeck Mess-Elektronik	VULB9168	416	Nov. 11, 2020 Nov. 17, 2021	1 year
☒	Broadband Horn Antenna (1 GHz~18 GHz)	Schwarzbeck Mess-Elektronik	9120D	02207	Jul. 09, 2021	1 year
☐	Broadband Horn Antenna (1 GHz~18 GHz)	Schwarzbeck Mess-Elektronik	9120D	9120D-550	Aug. 24, 2021	1 year
☒	Broadband Horn Antenna (18 GHz~40 GHz)	Schwarzbeck Mess-Elektronik	9170	9170-320	Aug. 24, 2021	1 year
☐	Horn Antenna (18 GHz~40 GHz)	ETS	3116	00086467	Dec. 03, 2020 Dec. 03, 2021	1 year
☐	RF Cable	EMCI	EMC104-N-N-6000	TE01-1	Feb. 19, 2021	1 year
☐	Microwave Cable	EMCI	EMC104-SM-SM-13000	170814	Feb. 19, 2021	1 year
☐	Microwave Cable	EMCI	EMC102-KM-KM-14000	151001	Feb. 19, 2021	1 year

Note: N.C.R. = No Calibration Request.

For Radiated Emissions
Test Period: Sep. 28, 2021 ~ Feb. 07, 2022
Testing Engineer: Hung.Chou, Eva Lee

Radiation test sites		Semi Anechoic Room				
Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☒	Coaxial Cable	Titan	T0710AT327A10A 100	J11005	Aug. 06, 2021	1 year
☒	Coaxial Cable	Titan	T0710AT327A10A 900	J11004	Aug. 06, 2021	1 year
☒	Coaxial Cable	Titan	CFD400NL-LW	001	Aug. 06, 2021	1 year
☐	Bluetooth Tester	R&S	CBT	100350	Mar. 17, 2021	2 years
☐	Wireless Connectivity Tester	R&S	CMW270	102208	Jun. 02, 2021	1 year
☐	Power Supply	KEITHLEY	2303	4045290	Feb. 01, 2021 Jan. 19, 2022	1 year
☒	Software	EZ EMC	1.1.4.4	N/A	N.C.R.	---

Note: N.C.R. = No Calibration Request.

1.6. Test Site Environment

Items	Required (IEC 60068-1)	Actual
Temperature (°C)	15-35	20-30
Humidity (%RH)	25-75	45-75

Test Setting Condition		
L.V.	Low Voltage	DC 9 V
N.V.	Normal Voltage	DC 24 V
H.V.	High Voltage	DC 30 V
L.T.	Low Temperature	-40 ℃
N.T.	Normal Temperature	+25 ℃
H.T.	High Temperature	+85 ℃

1.7. Measurement Uncertainty

Parameter	Uncertainty
Conducted Output Average Power	1.1 dB
Effective Radiated Power / Equivalent Isotropic Radiated Power	6.3 dB
Frequency Stability	1.2×10^{-7} x fc (Hz)
Emission Bandwidth & Occupied Bandwidth	4.5 %
Peak to Average Ratio	1.1 dB
Channel Mask	1.1 dB
Conducted Spurious Emission	1.1 dB

1.8. Summary of Test Result

FCC Rule	Description	Result	Remark
§2.1046 §90.1215	Conducted Output Power	Pass	---
§90.1215	Power Spectral Density	Pass	---
§2.1049 §90.209	Emission Bandwidth & Occupied Bandwidth	Reference	---
§90.1215	Peak Excursion	Pass	---
§2.1051 §90.210	Emission Mask	Pass	---
§2.1051 §90.210	Conducted Spurious Emission	Pass	---
§2.1053 §90.210	Field Strength of Spurious Radiation	Pass	---
§2.1055 §90.213	Frequency Stability for Temperature & Voltage	Pass	---

Decision Rule

■ Uncertainty is not included.

□ Uncertainty is included.

2 Measurement Procedure

2.1. Conducted Output Power Test

■ **Limit**

Channel bandwidth (MHz)	Low power maximum conducted output power (dBm) (Note 1)	High power maximum conducted output power (dBm) (Note 2)
1	7	20
5	14	27
10	17	30
15	18.8	31.8
20	20	33

Note 1: If transmitting antennas of directional gain greater than 9 dBi are used, both the maximum conducted output power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi.

Note 2: If transmitting antennas of directional gain greater than 9 dBi are used, both the maximum conducted output power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi. However, high power point-to-point and point-to-multipoint operations (both fixed and temporary-fixed rapid deployment) may employ transmitting antennas with directional gain up to 26 dBi without any corresponding reduction in the maximum conducted output power or spectral density. Corresponding reduction in the maximum conducted output power and peak power spectral density should be the amount in decibels that the directional gain of the antenna exceeds 26 dBi.

According FCC KDB 662911 D01 v02r01 – for power measurements,

■ **Directional Gain Calculated For Maximum Conducted Output Power**

Bandwidth (MHz)	Directional Gain (dBi)	
	SISO	MIMO
5	6	9.01
10	6	9.01
20	6	9.01

SISO mode:

Directional = Max. Gain：6 dBi < 9 dBi

MIMO mode:

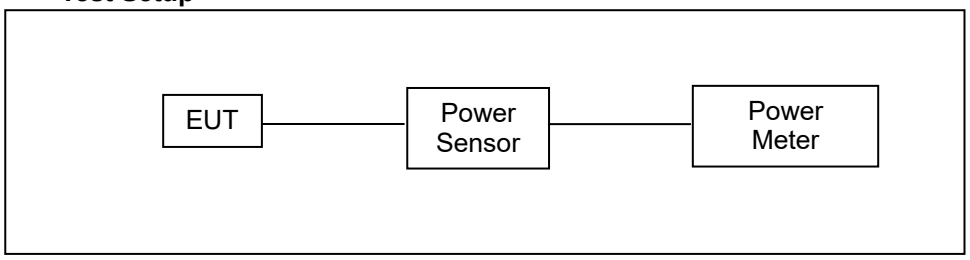
Directional Gain = G_{ANT} + 10*log(NANT) = 9.01 dBi > 9dBi

＊ power limit shall be reduced = 27 – 0.01 = 26.99 dBm (5 MHz)

＊ power limit shall be reduced = 30 – 0.01 = 29.99 dBm (10 MHz)

＊ power limit shall be reduced = 33 – 0.01 = 32.99 dBm (20 MHz)

■ **Test Setup**



■ **Test Procedure**

a. The EUT was set up for the maximum power with Test Mode.

b. The test is performed in accordance with ANSI C63.26:2015 section 5.2.4.2 (a), Guidelines for Compliance Testing of licensed Devices.

2.2. Power Spectral Density Test

■ **Limit**

Power spectral density (dBm/MHz) (Note 1)	
Low power Device (Note 1)	High power (Note 2)
8	21

Note 1: If transmitting antennas of directional gain greater than 9 dBi are used, both the maximum conducted output power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi.

Note 2: If transmitting antennas of directional gain greater than 9 dBi are used, both the maximum conducted output power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi. However, high power point-to-point and point-to-multipoint operations (both fixed and temporary-fixed rapid deployment) may employ transmitting antennas with directional gain up to 26 dBi without any corresponding reduction in the maximum conducted output power or spectral density. Corresponding reduction in the maximum conducted output power and peak power spectral density should be the amount in decibels that the directional gain of the antenna exceeds 26 dBi.

According FCC KDB 662911 D01 v02r01 – for power measurements,

■ **Directional Gain Calculated For Power Spectral Density**

Bandwidth (MHz)	Directional Gain (dBi)	
	SISO	MIMO
5	6	9.01
10	6	9.01
20	6	9.01

SISO mode:

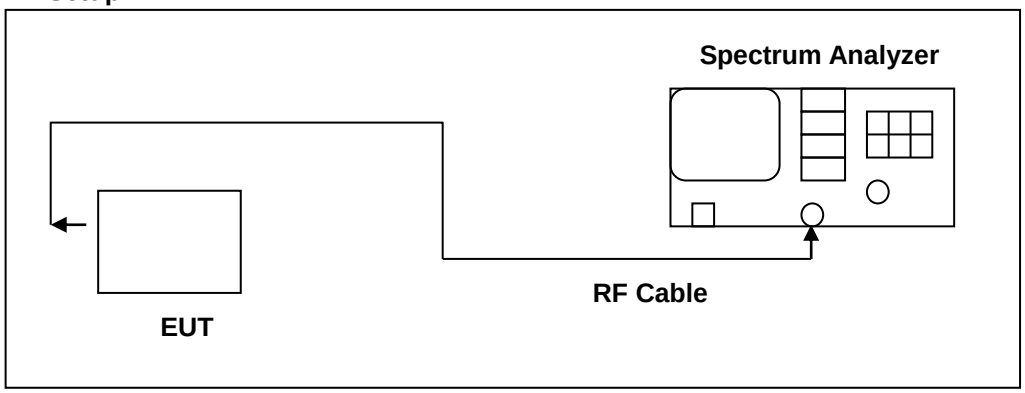
Directional = Max. Gain：6 dBi < 9 dBi

MIMO mode:

Directional Gain = G_{ANT} + 10*log(NANT) = 9.01 dBi > 9dBi

＊ power limit shall be reduced = 21 – 0.01 = 20.99 dBm/MHz (5 MHz / 10 MHz / 20 MHz)

■ **Setup**



■ **Test Procedure**

1. The EUT was set up for the maximum power with Test Mode.
2. The test is performed in accordance with ANSI C63.26:2015 section 5.2.4.5, Guidelines for Compliance Testing of licensed Devices.

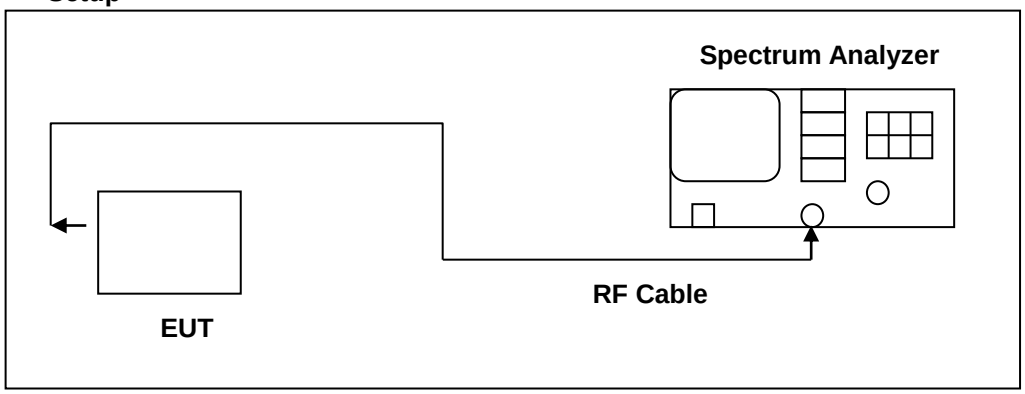
2.3. Emission Bandwidth & Occupied Bandwidth Test

■ Limit

The Occupied Bandwidth Limit:

N/A.

■ Setup



■ Test Procedure

1. The EUT was set up for the maximum power with Test Mode.
2. The test is performed in accordance with ANSI C63.26:2015 section 5.4.3 & 5.4.4, Guidelines for Compliance Testing of licensed Devices.

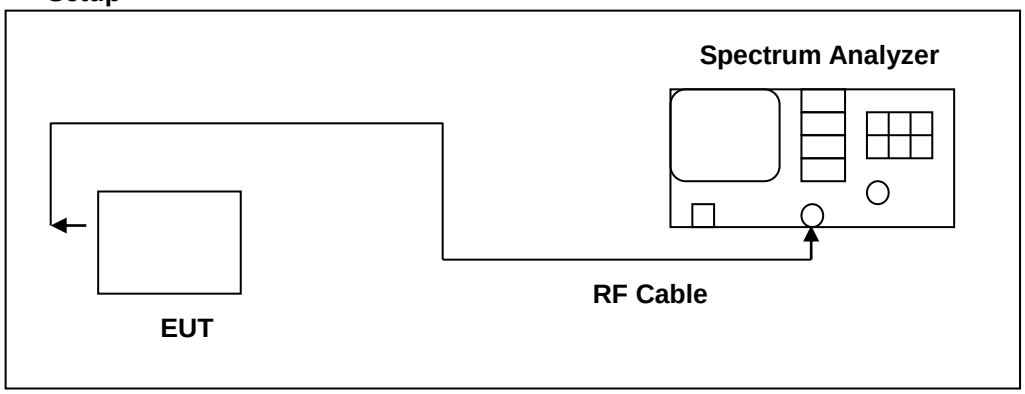
2.4. Peak Excursion Test

■ Limit

The Peak Excursion Limit:

≤ 13 dB.

■ Setup



■ Test Procedure

1. The EUT was set up for the maximum power with Test Mode.
2. The test is performed in accordance with ANSI C63.26:2015 section 5.2.3.4, Guidelines for Compliance Testing of licensed Devices.

2.5. Channel Mask Test

■ Limit

The Emission Mask Limit:

§90.210(l) Emission Mask L.

For low power transmitters (20 dBm or less) operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:

(1) On any frequency removed from the assigned frequency between 0-45 % of the authorized bandwidth (BW): 0 dB.

(2) On any frequency removed from the assigned frequency between 45-50 % of the authorized bandwidth: 219 log (% of (BW)/45) dB.

(3) On any frequency removed from the assigned frequency between 50-55 % of the authorized bandwidth: 10 + 242 log (% of (BW)/50) dB.

(4) On any frequency removed from the assigned frequency between 55-100 % of the authorized bandwidth: 20 + 31 log (% of (BW)/55) dB attenuation.

(5) On any frequency removed from the assigned frequency between 100-150 % of the authorized bandwidth: 28 + 68 log (% of (BW)/100) dB attenuation.

(6) On any frequency removed from the assigned frequency above 150 % of the authorized bandwidth: 40 dB.

§90.210(m)Emission Mask M.

For high power transmitters (greater that 20 dBm) operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:

(1) On any frequency removed from the assigned frequency between 0-45 % of the authorized bandwidth (BW): 0 dB.

(2) On any frequency removed from the assigned frequency between 45-50 % of the authorized bandwidth: 568 log (% of (BW)/45) dB.

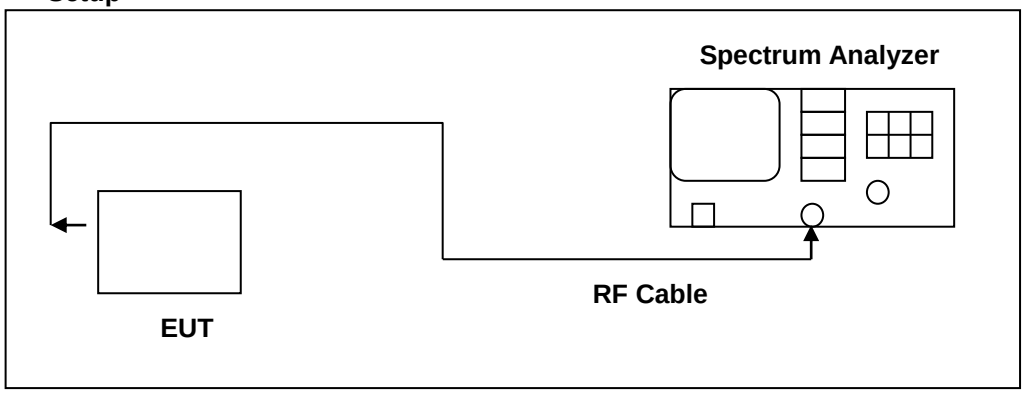
(3) On any frequency removed from the assigned frequency between 50-55 % of the authorized bandwidth: 26 + 145 log (% of BW/50) dB.

(4) On any frequency removed from the assigned frequency between 55-100 % of the authorized bandwidth: 32 + 31 log (% of (BW)/55) dB.

(5) On any frequency removed from the assigned frequency between 100-150 % of the authorized bandwidth: 40 + 57 log (% of (BW)/100) dB.

(6) On any frequency removed from the assigned frequency between above 150 % of the authorized bandwidth: 50 dB or 55 + 10 log (P) dB, whichever is the lesser attenuation.

■ **Setup**



■ **Test Procedure**

1. The EUT was set up for the maximum power with Test Mode.
2. The following settings were used for the following measurements:

   Emission mask frequency within 150 % of the authorized bandwidth

   RBW: at least 1 % of the occupied bandwidth

   VBW: 30 kHz

   Detector: RMS

   Sweep type: Average

2.6. Conducted Spurious Emission Test

■ Limit

The Conducted Spurious Emission Limit:

§90.210(l) Emission Mask L.

For low power transmitters (20 dBm or less) operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:

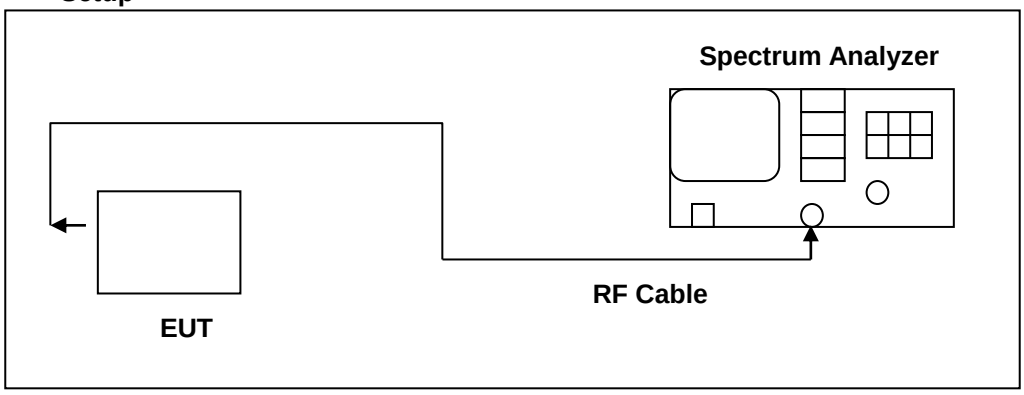
On any frequency removed from the assigned frequency above 150 % of the authorized bandwidth: 40 dB.

§90.210(m) Emission Mask M.

For high power transmitters (greater that 20 dBm) operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:

On any frequency removed from the assigned frequency between above 150 % of the authorized bandwidth: 50 dB or 55 + 10 log (P) dB, whichever is the lesser attenuation.

■ Setup



■ Test Procedure

1. The EUT was set up for the maximum power with Test Mode.
2. The following settings were used for the following measurements:

   Emission mask frequency without 150 % of the authorized bandwidth

   RBW: 1MHz at least 1 % of the occupied bandwidth

   VBW: 30 kHz

   Detector: RMS

   Sweep type: Average

2.7. Field Strength of Spurious Radiation Test

■ Limit

§90.210(l) Emission Mask L.

For low power transmitters (20 dBm or less) operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:

On any frequency removed from the assigned frequency above 150 % of the authorized bandwidth: 40 dB.

§90.210(m) Emission Mask M.

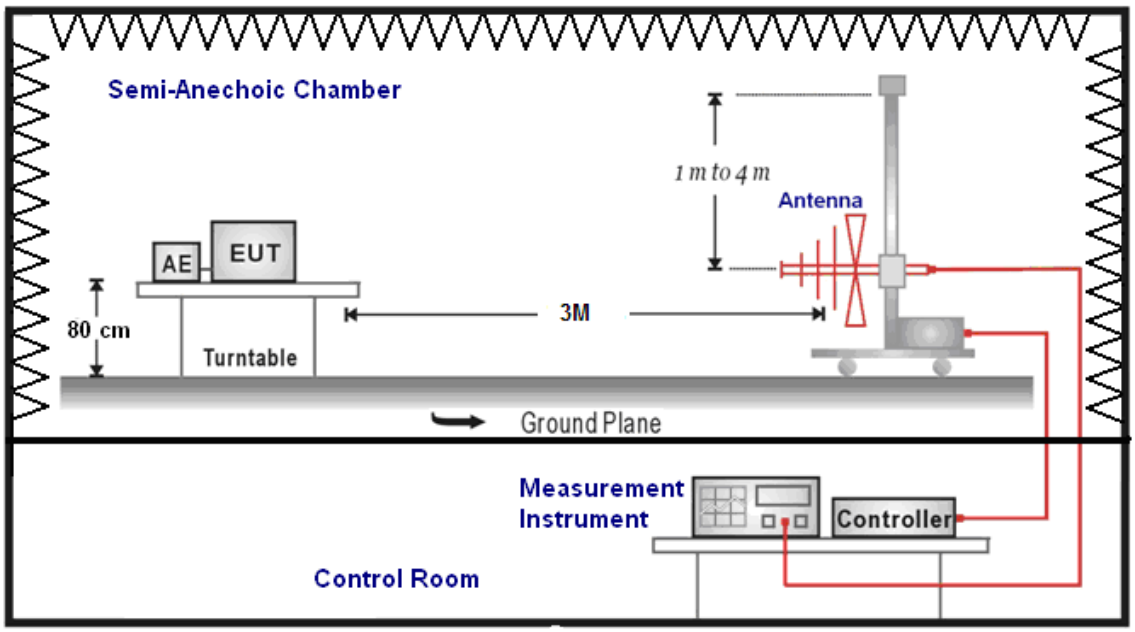
For high power transmitters (greater that 20 dBm) operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:

On any frequency removed from the assigned frequency between above 150 % of the authorized bandwidth: 50 dB or 55 + 10 log (P) dB, whichever is the lesser attenuation.

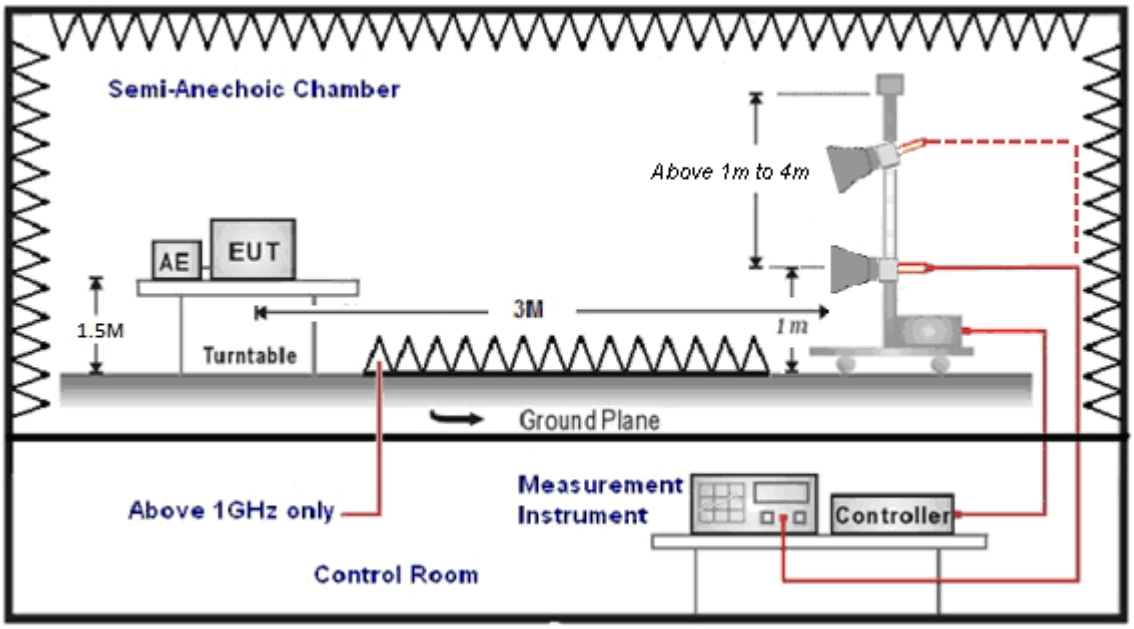
It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

■ Setup

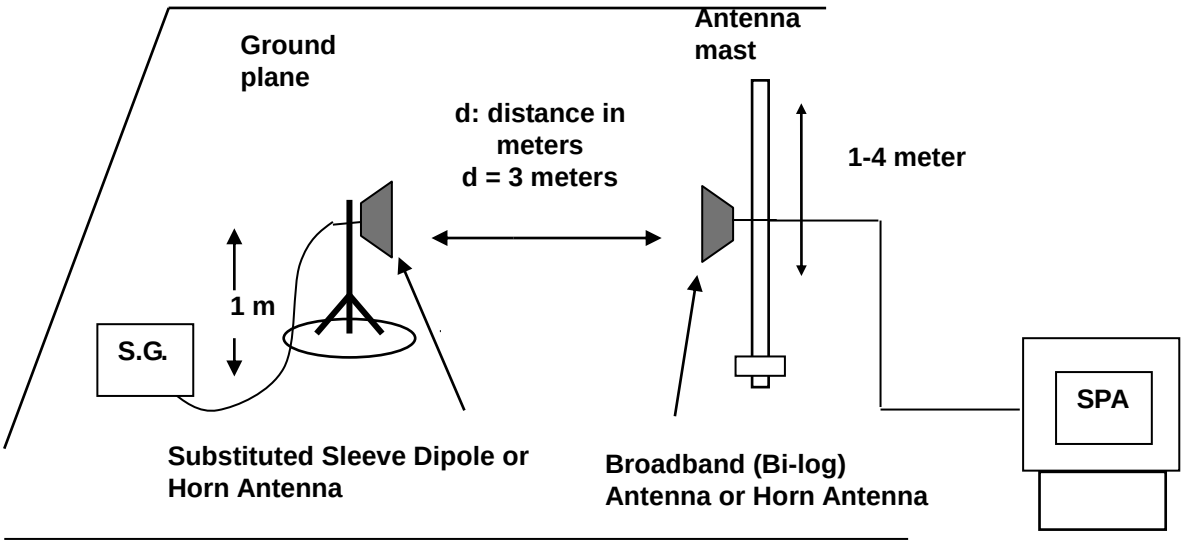
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP



■ Test Procedure

a. The EUT was set up for the maximum power with Test mode. The power was measured with Spectrum Analyzer (RBW: 1 MHz, VBW: 30 kHz, Detector: Average mode). All measurements were done at 3 channels (low, middle and high operational frequency range).

b. E.I.R.P power measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (above 1 GHz for 1.5 m) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.

c. The substitution antenna (Note:1 & 2) is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step a. Record the power level of S.G.

d. E.I.R.P. = Output power level of S.G - TX cable loss + Antenna gain of substitution horn

e. E.R.P. = E.I.R.P.- 2.15 dB

f. Measurement range 30 MHz - 10 th Harmonic

Note: 1. Below 1 GHz Substituted Method Test：Sleeve dipole antenna to Bi-Log Antenna

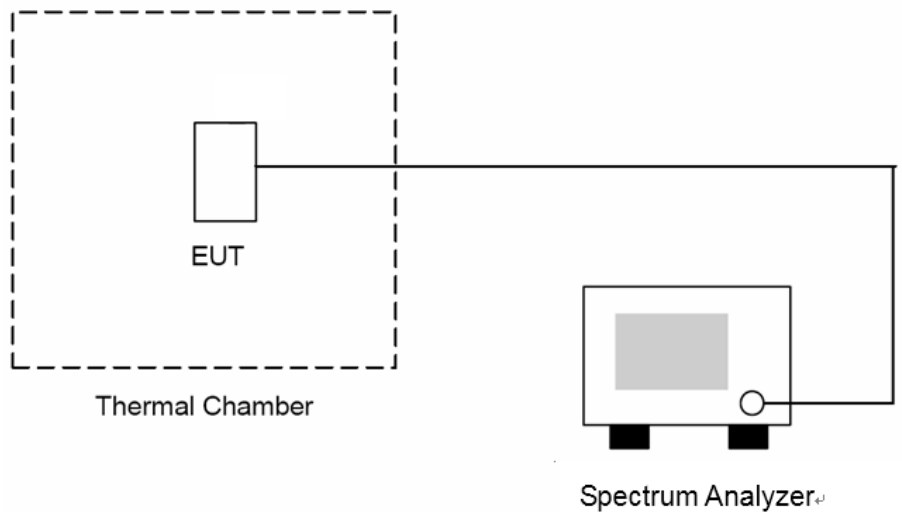
2. Above 1 GHz Substituted Method Test：Horn antenna to Horn Antenna

2.8. Frequency Stability (Temperature & Voltage Variation) Test

■ Limit

The applicant shall ensure frequency stability by showing that the occupied bandwidth is maintained within the band of operation when tested at the temperature and supply voltage variations.

■ Setup



■ Test Procedure

1. The EUT and test equipment were set up as shown on the following section.
2. With all power removed, the temperature was decreased to -30 ℃ and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was note within one minute.
3. With power OFF, the temperature was raised in 10 ℃ steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.
4. The EUT was placed in a temperature chamber at 25±5 ℃ and connected as the following section.
5. The power supply voltage to the EUT was varied from BEP to 115 % of the nominal value measured at the input to the EUT.
6. The temperature tests were performed for the worst case.
7. Test data was recorded.

3 Test Results

3.1. Conducted Output Power

Test Mode	Frequency (MHz)	RF Power setting in Test Software		Test Software Version
		ANT-0	ANT-1	
Mode 1	4942.5	24	24	Tera Term
	4967.5	23	23	
	4987.5	24	24	
Mode 2	4945.0	23	23	
	4965.0	23	23	
	4985.0	23	23	
Mode 3	4950.0	23	23	
	4965.0	23	23	
	4980.0	23	23	
Mode 4	4942.5	24	24	
	4967.5	23	23	
	4987.5	22	22	
Mode 5	4945.0	23	23	
	4965.0	22	22	
	4985.0	22	22	
Mode 6	4950.0	23	23	
	4965.0	23	23	
	4980.0	23	23	

Test Mode	Frequency (MHz)	RF Power setting in Test Software		Test Software Version
		ANT-0	ANT-1	
Mode 7	4942.5	23	23	Tera Term
	4967.5	22	22	
	4987.5	22	22	
Mode 8	4945.0	23	23	
	4965.0	22	22	
	4985.0	22	22	
Mode 9	4950.0	22	22	
	4965.0	22	22	
	4980.0	22	22	
Mode 10	4942.5	22	22	
	4967.5	21	21	
	4987.5	21	21	
Mode 11	4945.0	21	21	
	4965.0	21	21	
	4985.0	21	21	
Mode 12	4950.0	22	22	
	4965.0	22	22	
	4980.0	21	21	

Test Mode	Mode 1: SISO_5 MHz Continuous TX mode (Legacy)						
Frequency (MHz)	Modulation	Data Rate	ANT-0		ANT-1		Limit (dBm)
			Max. Output Power				
			(dBm)	(W)	(dBm)	(W)	
4942.5	BPSK	6 M	23.48	0.223	23.36	0.217	≤ 27.00
4967.5			23.37	0.217	22.77	0.189	≤ 27.00
4987.5			**24.25**	**0.266**	23.79	0.239	≤ 27.00
4942.5	QPSK	12 M	23.14	0.206	23.15	0.207	≤ 27.00
4967.5			23.09	0.204	22.56	0.180	≤ 27.00
4987.5			24.05	0.254	23.61	0.230	≤ 27.00
4942.5		18 M	23.23	0.210	23.05	0.202	≤ 27.00
4967.5			23.09	0.204	22.56	0.180	≤ 27.00
4987.5			24.05	0.254	23.52	0.225	≤ 27.00
4942.5	16QAM	24 M	23.25	0.211	23.14	0.206	≤ 27.00
4967.5			23.14	0.206	22.57	0.181	≤ 27.00
4987.5			23.98	0.250	23.43	0.220	≤ 27.00
4942.5		36 M	23.26	0.212	22.95	0.197	≤ 27.00
4967.5			23.22	0.210	22.44	0.175	≤ 27.00
4987.5			24.07	0.255	23.43	0.220	≤ 27.00
4942.5	64QAM	48 M	23.12	0.205	22.90	0.195	≤ 27.00
4967.5			23.17	0.207	22.32	0.171	≤ 27.00
4987.5			23.88	0.244	23.42	0.220	≤ 27.00
4942.5		54 M	23.32	0.215	23.02	0.200	≤ 27.00
4967.5			23.21	0.209	22.38	0.173	≤ 27.00
4987.5			24.01	0.252	23.53	0.225	≤ 27.00

Note 1: The conducted power testing result was used average detector.

Note 2: The relevant measured result has the offset with cable loss already.

Test Mode		Mode 2: SISO_10 MHz Continuous TX mode (Legacy)					
Frequency (MHz)	Modulation	Data Rate	ANT-0		ANT-1		Limit (dBm)
			Max. Output Power				
			(dBm)	(W)	(dBm)	(W)	
4945.0	BPSK	6 M	22.97	0.198	22.85	0.193	≤ 30.00
4965.0			23.32	0.215	23.21	0.209	≤ 30.00
4985.0			**23.37**	**0.217**	23.03	0.201	≤ 30.00
4945.0	QPSK	12 M	22.61	0.182	22.81	0.191	≤ 30.00
4965.0			22.98	0.199	23.00	0.200	≤ 30.00
4985.0			23.06	0.202	22.90	0.195	≤ 30.00
4945.0		18 M	22.57	0.181	22.84	0.192	≤ 30.00
4965.0			22.95	0.197	22.98	0.199	≤ 30.00
4985.0			23.04	0.201	22.83	0.192	≤ 30.00
4945.0	16QAM	24 M	22.55	0.180	22.73	0.187	≤ 30.00
4965.0			22.90	0.195	23.15	0.207	≤ 30.00
4985.0			23.00	0.200	22.95	0.197	≤ 30.00
4945.0		36 M	22.61	0.182	22.61	0.182	≤ 30.00
4965.0			22.97	0.198	23.01	0.200	≤ 30.00
4985.0			23.10	0.204	22.90	0.195	≤ 30.00
4945.0	64QAM	48 M	22.68	0.185	22.61	0.182	≤ 30.00
4965.0			22.94	0.197	23.04	0.201	≤ 30.00
4985.0			23.07	0.203	22.92	0.196	≤ 30.00
4945.0		54 M	22.80	0.191	22.75	0.188	≤ 30.00
4965.0			23.12	0.205	23.15	0.207	≤ 30.00
4985.0			23.17	0.207	22.87	0.194	≤ 30.00

Note 1: The conducted power testing result was used average detector.

Note 2: The relevant measured result has the offset with cable loss already.

Test Mode		Mode 3: SISO_20 MHz Continuous TX mode (Legacy)					
Frequency (MHz)	Modulation	Data Rate	ANT-0		ANT-1		Limit (dBm)
			Max. Output Power				
			(dBm)	(W)	(dBm)	(W)	
4950.0	BPSK	6 M	23.29	0.213	22.70	0.186	≤ 33.00
4965.0			**23.37**	**0.217**	23.12	0.205	≤ 33.00
4980.0			23.28	0.213	22.98	0.199	≤ 33.00
4950.0	QPSK	12 M	23.03	0.201	22.41	0.174	≤ 33.00
4965.0			22.95	0.197	22.93	0.196	≤ 33.00
4980.0			22.89	0.195	22.61	0.182	≤ 33.00
4950.0		18 M	22.97	0.198	22.50	0.178	≤ 33.00
4965.0			22.98	0.199	22.92	0.196	≤ 33.00
4980.0			23.02	0.200	22.57	0.181	≤ 33.00
4950.0	16QAM	24 M	23.01	0.200	22.32	0.171	≤ 33.00
4965.0			22.96	0.198	22.79	0.190	≤ 33.00
4980.0			22.99	0.199	22.75	0.188	≤ 33.00
4950.0		36 M	22.95	0.197	22.46	0.176	≤ 33.00
4965.0			23.11	0.205	22.86	0.193	≤ 33.00
4980.0			23.08	0.203	22.90	0.195	≤ 33.00
4950.0	64QAM	48 M	22.99	0.199	22.61	0.182	≤ 33.00
4965.0			23.06	0.202	22.84	0.192	≤ 33.00
4980.0			23.03	0.201	22.77	0.189	≤ 33.00
4950.0		54 M	22.90	0.195	22.49	0.177	≤ 33.00
4965.0			22.95	0.197	23.05	0.202	≤ 33.00
4980.0			23.03	0.201	22.67	0.185	≤ 33.00

Note 1: The conducted power testing result was used average detector.

Note 2: The relevant measured result has the offset with cable loss already.

Test Mode		Mode 4: SISO_5 MHz Continuous TX mode					
Frequency (MHz)	Modulation	Data Rate	ANT-0		ANT-1		Limit (dBm)
			Max. Output Power				
			(dBm)	(W)	(dBm)	(W)	
4942.5	BPSK	MSC0	**24.04**	**0.254**	23.90	0.245	≤ 27.00
4967.5			23.88	0.244	23.55	0.226	≤ 27.00
4987.5			23.05	0.202	22.92	0.196	≤ 27.00
4942.5	QPSK	MSC1	23.92	0.247	23.72	0.236	≤ 27.00
4967.5			23.73	0.236	23.42	0.220	≤ 27.00
4987.5			22.85	0.193	22.74	0.188	≤ 27.00
4942.5		MSC2	23.72	0.236	23.57	0.228	≤ 27.00
4967.5			23.55	0.226	23.24	0.211	≤ 27.00
4987.5			22.72	0.187	22.61	0.182	≤ 27.00
4942.5	16QAM	MSC3	23.65	0.232	23.51	0.224	≤ 27.00
4967.5			23.48	0.223	23.20	0.209	≤ 27.00
4987.5			22.64	0.184	22.56	0.180	≤ 27.00
4942.5		MSC4	23.61	0.230	23.49	0.223	≤ 27.00
4967.5			23.46	0.222	23.18	0.208	≤ 27.00
4987.5			22.61	0.182	22.48	0.177	≤ 27.00
4942.5	64QAM	MSC5	23.64	0.231	23.44	0.221	≤ 27.00
4967.5			23.46	0.222	23.18	0.208	≤ 27.00
4987.5			22.64	0.184	22.49	0.177	≤ 27.00
4942.5		MSC7	23.65	0.232	23.53	0.225	≤ 27.00
4967.5			23.44	0.221	23.14	0.206	≤ 27.00
4987.5			22.61	0.182	22.46	0.176	≤ 27.00

Note 1: The conducted power testing result was used average detector.

Note 2: The relevant measured result has the offset with cable loss already.

Test Mode	Mode 5: SISO_10 MHz Continuous TX mode						
Frequency (MHz)	Modulation	Data Rate	ANT-0		ANT-1		Limit (dBm)
			Max. Output Power				
			(dBm)	(W)	(dBm)	(W)	
4945.0	BPSK	MSC0	**23.56**	**0.227**	23.43	0.220	≤ 30.00
4965.0			23.10	0.204	22.82	0.191	≤ 30.00
4985.0			22.94	0.197	22.86	0.193	≤ 30.00
4945.0	QPSK	MSC1	23.41	0.219	23.22	0.210	≤ 30.00
4965.0			22.90	0.195	22.66	0.185	≤ 30.00
4985.0			22.75	0.188	22.73	0.187	≤ 30.00
4945.0		MSC2	23.28	0.213	23.13	0.206	≤ 30.00
4965.0			22.80	0.191	22.52	0.179	≤ 30.00
4985.0			22.66	0.185	22.58	0.181	≤ 30.00
4945.0	16QAM	MSC3	23.16	0.207	23.01	0.200	≤ 30.00
4965.0			22.70	0.186	22.44	0.175	≤ 30.00
4985.0			22.51	0.178	22.42	0.175	≤ 30.00
4945.0		MSC4	23.13	0.206	22.98	0.199	≤ 30.00
4965.0			22.63	0.183	22.37	0.173	≤ 30.00
4985.0			22.48	0.177	22.42	0.175	≤ 30.00
4945.0	64QAM	MSC5	23.14	0.206	22.97	0.198	≤ 30.00
4965.0			22.73	0.187	22.38	0.173	≤ 30.00
4985.0			22.49	0.177	22.46	0.176	≤ 30.00
4945.0		MSC7	23.15	0.207	22.98	0.199	≤ 30.00
4965.0			22.71	0.187	22.44	0.175	≤ 30.00
4985.0			22.56	0.180	22.41	0.174	≤ 30.00

Note 1: The conducted power testing result was used average detector.

Note 2: The relevant measured result has the offset with cable loss already.

Test Mode	Mode 6: SISO_20 MHz Continuous TX mode						
Frequency (MHz)	Modulation	Data Rate	ANT-0		ANT-1		Limit (dBm)
			Max. Output Power				
			(dBm)	(W)	(dBm)	(W)	
4950.0	BPSK	MSC0	23.28	0.213	22.60	0.182	≤ 33.00
4965.0			**23.34**	**0.216**	23.05	0.202	≤ 33.00
4980.0			23.24	0.211	22.92	0.196	≤ 33.00
4950.0	QPSK	MSC1	22.94	0.197	22.39	0.173	≤ 33.00
4965.0			23.16	0.207	22.73	0.187	≤ 33.00
4980.0			22.92	0.196	22.63	0.183	≤ 33.00
4950.0		MSC2	22.92	0.196	22.41	0.174	≤ 33.00
4965.0			23.11	0.205	22.89	0.195	≤ 33.00
4980.0			22.97	0.198	22.58	0.181	≤ 33.00
4950.0	16QAM	MSC3	23.04	0.201	22.34	0.171	≤ 33.00
4965.0			23.12	0.205	22.90	0.195	≤ 33.00
4980.0			23.05	0.202	22.55	0.180	≤ 33.00
4950.0		MSC4	23.09	0.204	22.41	0.174	≤ 33.00
4965.0			23.08	0.203	22.90	0.195	≤ 33.00
4980.0			23.01	0.200	22.64	0.184	≤ 33.00
4950.0	64QAM	MSC5	23.21	0.209	22.38	0.173	≤ 33.00
4965.0			23.23	0.210	22.95	0.197	≤ 33.00
4980.0			23.02	0.200	22.83	0.192	≤ 33.00
4950.0		MSC7	23.18	0.208	22.51	0.178	≤ 33.00
4965.0			23.13	0.206	22.87	0.194	≤ 33.00
4980.0			23.21	0.209	22.73	0.187	≤ 33.00

Note 1: The conducted power testing result was used average detector.

Note 2: The relevant measured result has the offset with cable loss already.

Test Mode		Mode 7: MIMO_5 MHz Continuous TX mode (Legacy)							
Frequency (MHz)	Modulation	Data Rate	ANT-0		ANT-1		ANT-0+1		Limit (dBm)
			Max. Output Power						
			(dBm)	(W)	(dBm)	(W)	(dBm)	(W)	
4942.5	BPSK	6 M	23.36	0.217	23.06	0.202	26.22	0.419	≤ 26.99
4967.5			23.29	0.213	22.70	0.186	26.02	0.400	≤ 26.99
4987.5			23.39	0.218	23.11	0.205	**26.26**	**0.423**	≤ 26.99
4942.5	QPSK	12 M	23.18	0.208	22.72	0.187	25.97	0.395	≤ 26.99
4967.5			22.97	0.198	22.41	0.174	25.71	0.372	≤ 26.99
4987.5			23.30	0.214	23.07	0.203	26.20	0.417	≤ 26.99
4942.5		18 M	23.06	0.202	22.94	0.197	26.01	0.399	≤ 26.99
4967.5			23.05	0.202	22.56	0.180	25.82	0.382	≤ 26.99
4987.5			23.11	0.205	22.94	0.197	26.04	0.402	≤ 26.99
4942.5	16QAM	24 M	23.08	0.203	22.78	0.190	25.94	0.393	≤ 26.99
4967.5			23.13	0.206	22.36	0.172	25.77	0.378	≤ 26.99
4987.5			23.21	0.209	23.04	0.201	26.14	0.411	≤ 26.99
4942.5		36 M	23.01	0.200	22.75	0.188	25.89	0.388	≤ 26.99
4967.5			22.91	0.195	22.53	0.179	25.73	0.374	≤ 26.99
4987.5			23.02	0.200	22.94	0.197	25.99	0.397	≤ 26.99
4942.5	64QAM	48 M	22.90	0.195	22.82	0.191	25.87	0.386	≤ 26.99
4967.5			22.83	0.192	22.40	0.174	25.63	0.366	≤ 26.99
4987.5			23.13	0.206	23.00	0.200	26.08	0.406	≤ 26.99
4942.5		54 M	23.10	0.204	22.88	0.194	26.00	0.398	≤ 26.99
4967.5			22.93	0.196	22.49	0.177	25.73	0.374	≤ 26.99
4987.5			23.18	0.208	22.87	0.194	26.04	0.402	≤ 26.99

Note 1: The conducted power testing result was used average detector.

Note 2: The relevant measured result has the offset with cable loss already.

Test Mode	Mode 8: MIMO_10 MHz Continuous TX mode (Legacy)								
Frequency (MHz)	Modulation	Data Rate	ANT-0		ANT-1		ANT-0+1		Limit (dBm)
			Max. Output Power						
			(dBm)	(W)	(dBm)	(W)	(dBm)	(W)	
4945.0	BPSK	6 M	23.10	0.204	22.74	0.188	25.93	0.392	≤ 29.99
4965.0			23.13	0.206	22.93	0.196	26.04	0.402	≤ 29.99
4985.0			23.24	0.211	23.05	0.202	**26.16**	**0.413**	≤ 29.99
4945.0	QPSK	12 M	22.91	0.195	22.40	0.174	25.67	0.369	≤ 29.99
4965.0			22.94	0.197	22.59	0.182	25.78	0.378	≤ 29.99
4985.0			23.02	0.200	22.79	0.190	25.92	0.391	≤ 29.99
4945.0		18 M	22.80	0.191	22.48	0.177	25.65	0.367	≤ 29.99
4965.0			23.00	0.200	22.56	0.180	25.80	0.380	≤ 29.99
4985.0			23.11	0.205	22.78	0.190	25.96	0.394	≤ 29.99
4945.0	16QAM	24 M	22.90	0.195	22.52	0.179	25.72	0.373	≤ 29.99
4965.0			22.87	0.194	22.72	0.187	25.81	0.381	≤ 29.99
4985.0			23.13	0.206	22.83	0.192	25.99	0.397	≤ 29.99
4945.0		36 M	22.85	0.193	22.60	0.182	25.74	0.375	≤ 29.99
4965.0			22.94	0.197	22.71	0.187	25.84	0.384	≤ 29.99
4985.0			22.92	0.196	22.92	0.196	25.93	0.392	≤ 29.99
4945.0	64QAM	48 M	22.84	0.192	22.48	0.177	25.67	0.369	≤ 29.99
4965.0			22.94	0.197	22.73	0.187	25.85	0.385	≤ 29.99
4985.0			22.83	0.192	23.01	0.200	25.93	0.392	≤ 29.99
4945.0		54 M	22.87	0.194	22.68	0.185	25.79	0.379	≤ 29.99
4965.0			22.87	0.194	22.69	0.186	25.79	0.379	≤ 29.99
4985.0			23.04	0.201	22.85	0.193	25.96	0.394	≤ 29.99

Note 1: The conducted power testing result was used average detector.

Note 2: The relevant measured result has the offset with cable loss already.

Test Mode		Mode 9: MIMO_20 MHz Continuous TX mode (Legacy)							
Frequency (MHz)	Modulation	Data Rate	ANT-0		ANT-1		ANT-0+1		Limit (dBm)
			Max. Output Power						
			(dBm)	(W)	(dBm)	(W)	(dBm)	(W)	
4950.0	BPSK	6 M	22.98	0.199	22.28	0.169	25.65	0.367	≤ 32.99
4965.0			23.11	0.205	22.65	0.184	**25.90**	**0.389**	≤ 32.99
4980.0			23.19	0.208	22.54	0.179	25.89	0.388	≤ 32.99
4950.0	QPSK	12 M	22.70	0.186	21.99	0.158	25.37	0.344	≤ 32.99
4965.0			22.70	0.186	22.42	0.175	25.57	0.361	≤ 32.99
4980.0			22.86	0.193	22.39	0.173	25.64	0.366	≤ 32.99
4950.0		18 M	22.68	0.185	22.07	0.161	25.40	0.347	≤ 32.99
4965.0			22.74	0.188	22.39	0.173	25.58	0.361	≤ 32.99
4980.0			22.89	0.195	22.30	0.170	25.62	0.365	≤ 32.99
4950.0	16QAM	24 M	22.54	0.179	22.17	0.165	25.37	0.344	≤ 32.99
4965.0			22.79	0.190	22.51	0.178	25.66	0.368	≤ 32.99
4980.0			22.95	0.197	22.35	0.172	25.67	0.369	≤ 32.99
4950.0		36 M	22.78	0.190	21.90	0.155	25.37	0.344	≤ 32.99
4965.0			22.72	0.187	22.47	0.177	25.61	0.364	≤ 32.99
4980.0			22.84	0.192	22.17	0.165	25.53	0.357	≤ 32.99
4950.0	64QAM	48 M	22.71	0.187	21.95	0.157	25.36	0.344	≤ 32.99
4965.0			22.78	0.190	22.42	0.175	25.61	0.364	≤ 32.99
4980.0			22.88	0.194	22.21	0.166	25.57	0.361	≤ 32.99
4950.0		54 M	22.69	0.186	21.95	0.157	25.35	0.343	≤ 32.99
4965.0			22.75	0.188	22.35	0.172	25.56	0.360	≤ 32.99
4980.0			22.99	0.199	22.26	0.168	25.65	0.367	≤ 32.99

Note 1: The conducted power testing result was used average detector.

Note 2: The relevant measured result has the offset with cable loss already.

Test Mode		Mode 10: MIMO_5 MHz Continuous TX mode							
Frequency (MHz)	Modulation	Data Rate	ANT-0		ANT-1		ANT-0+1		Limit (dBm)
			Max. Output Power						
			(dBm)	(W)	(dBm)	(W)	(dBm)	(W)	
4942.5	BPSK	MSC8	23.23	0.210	22.98	0.199	**26.12**	**0.409**	≤ 26.99
4967.5			23.10	0.204	22.35	0.172	25.75	0.376	≤ 26.99
4987.5			22.81	0.191	22.40	0.174	25.62	0.365	≤ 26.99
4942.5	QPSK	MSC9	23.04	0.201	22.76	0.189	25.91	0.390	≤ 26.99
4967.5			22.92	0.196	22.17	0.165	25.57	0.361	≤ 26.99
4987.5			22.64	0.184	22.21	0.166	25.44	0.350	≤ 26.99
4942.5		MSC10	22.91	0.195	22.68	0.185	25.81	0.381	≤ 26.99
4967.5			22.73	0.187	22.06	0.161	25.42	0.348	≤ 26.99
4987.5			22.46	0.176	22.13	0.163	25.31	0.340	≤ 26.99
4942.5	16QAM	MSC11	22.86	0.193	22.54	0.179	25.71	0.372	≤ 26.99
4967.5			22.71	0.187	21.99	0.158	25.38	0.345	≤ 26.99
4987.5			22.42	0.175	22.03	0.160	25.24	0.334	≤ 26.99
4942.5		MSC12	22.77	0.189	22.53	0.179	25.66	0.368	≤ 26.99
4967.5			22.73	0.187	21.92	0.156	25.35	0.343	≤ 26.99
4987.5			22.35	0.172	22.00	0.158	25.19	0.330	≤ 26.99
4942.5	64QAM	MSC13	22.79	0.190	22.58	0.181	25.70	0.372	≤ 26.99
4967.5			22.71	0.187	21.88	0.154	25.33	0.341	≤ 26.99
4987.5			22.36	0.172	21.98	0.158	25.18	0.330	≤ 26.99
4942.5		MSC15	22.81	0.191	22.53	0.179	25.68	0.370	≤ 26.99
4967.5			22.72	0.187	21.95	0.157	25.36	0.344	≤ 26.99
4987.5			22.36	0.172	21.96	0.157	25.17	0.329	≤ 26.99

Note 1: The conducted power testing result was used average detector.

Note 2: The relevant measured result has the offset with cable loss already.

Test Mode		Mode 11: MIMO_10 MHz Continuous TX mode							
Frequency (MHz)	Modulation	Data Rate	ANT-0		ANT-1		ANT-0+1		Limit (dBm)
			Max. Output Power						
			(dBm)	(W)	(dBm)	(W)	(dBm)	(W)	
4945.0	BPSK	MSC8	22.72	0.187	22.42	0.175	25.58	0.361	≤ 29.99
4965.0			22.94	0.197	22.64	0.184	**25.80**	**0.380**	≤ 29.99
4985.0			22.80	0.191	22.35	0.172	25.59	0.362	≤ 29.99
4945.0	QPSK	MSC9	22.53	0.179	22.27	0.169	25.41	0.348	≤ 29.99
4965.0			22.81	0.191	22.48	0.177	25.66	0.368	≤ 29.99
4985.0			22.62	0.183	22.16	0.164	25.41	0.348	≤ 29.99
4945.0		MSC10	22.43	0.175	22.06	0.161	25.26	0.336	≤ 29.99
4965.0			22.60	0.182	22.32	0.171	25.47	0.352	≤ 29.99
4985.0			22.46	0.176	21.99	0.158	25.24	0.334	≤ 29.99
4945.0	16QAM	MSC11	22.33	0.171	22.00	0.158	25.18	0.330	≤ 29.99
4965.0			22.51	0.178	22.22	0.167	25.38	0.345	≤ 29.99
4985.0			22.37	0.173	21.94	0.156	25.17	0.329	≤ 29.99
4945.0		MSC12	22.27	0.169	22.00	0.158	25.15	0.327	≤ 29.99
4965.0			22.49	0.177	22.24	0.167	25.38	0.345	≤ 29.99
4985.0			22.39	0.173	21.90	0.155	25.16	0.328	≤ 29.99
4945.0	64QAM	MSC13	22.31	0.170	22.00	0.158	25.17	0.329	≤ 29.99
4965.0			22.51	0.178	22.20	0.166	25.37	0.344	≤ 29.99
4985.0			22.38	0.173	21.92	0.156	25.17	0.329	≤ 29.99
4945.0		MSC15	22.35	0.172	21.96	0.157	25.17	0.329	≤ 29.99
4965.0			22.53	0.179	22.22	0.167	25.39	0.346	≤ 29.99
4985.0			22.43	0.175	21.89	0.155	25.18	0.330	≤ 29.99

Note 1: The conducted power testing result was used average detector.

Note 2: The relevant measured result has the offset with cable loss already.

Test Mode		Mode 12: MIMO_20 MHz Continuous TX mode							
Frequency (MHz)	Modulation	Data Rate	ANT-0		ANT-1		ANT-0+1		Limit (dBm)
			Max. Output Power						
			(dBm)	(W)	(dBm)	(W)	(dBm)	(W)	
4950.0	BPSK	MSC8	22.91	0.195	22.22	0.167	25.59	0.362	≤ 32.99
4965.0			23.02	0.200	22.69	0.186	**25.87**	**0.386**	≤ 32.99
4980.0			22.18	0.165	21.92	0.156	25.06	0.321	≤ 32.99
4950.0	QPSK	MSC9	22.79	0.190	21.98	0.158	25.41	0.348	≤ 32.99
4965.0			22.82	0.191	22.38	0.173	25.62	0.365	≤ 32.99
4980.0			22.02	0.159	21.63	0.146	24.84	0.305	≤ 32.99
4950.0		MSC10	22.62	0.183	21.86	0.153	25.27	0.337	≤ 32.99
4965.0			22.76	0.189	22.34	0.171	25.57	0.361	≤ 32.99
4980.0			22.12	0.163	21.55	0.143	24.85	0.305	≤ 32.99
4950.0	16QAM	MSC11	22.80	0.191	22.03	0.160	25.44	0.350	≤ 32.99
4965.0			22.83	0.192	22.53	0.179	25.69	0.371	≤ 32.99
4980.0			22.09	0.162	21.67	0.147	24.90	0.309	≤ 32.99
4950.0		MSC12	22.75	0.188	22.15	0.164	25.47	0.352	≤ 32.99
4965.0			22.81	0.191	22.47	0.177	25.65	0.367	≤ 32.99
4980.0			21.90	0.155	21.63	0.146	24.78	0.301	≤ 32.99
4950.0	64QAM	MSC13	22.78	0.190	21.92	0.156	25.38	0.345	≤ 32.99
4965.0			22.83	0.192	22.46	0.176	25.66	0.368	≤ 32.99
4980.0			21.87	0.154	21.86	0.153	24.88	0.308	≤ 32.99
4950.0		MSC15	22.68	0.185	21.97	0.157	25.35	0.343	≤ 32.99
4965.0			22.71	0.187	22.59	0.182	25.66	0.368	≤ 32.99
4980.0			21.98	0.158	21.87	0.154	24.94	0.312	≤ 32.99

Note 1: The conducted power testing result was used average detector.

Note 2: The relevant measured result has the offset with cable loss already.

3.2. Power Spectral Density

Test Mode	Frequency (MHz)	ANT-0			Limit
		Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	(dBm/MHz)
Mode 1	4942.5	18.418	0.011	18.429	≤ 21.00
	4967.5	18.553	0.011	18.564	≤ 21.00
	4987.5	19.334	0.011	19.345	≤ 21.00
Mode 2	4945.0	15.521	0.011	15.532	≤ 21.00
	4965.0	15.965	0.011	15.976	≤ 21.00
	4985.0	16.095	0.011	16.106	≤ 21.00
Mode 3	4950.0	13.029	0.039	13.068	≤ 21.00
	4965.0	13.322	0.039	13.361	≤ 21.00
	4980.0	13.337	0.039	13.376	≤ 21.00
Mode 4	4942.5	18.445	0.011	18.456	≤ 21.00
	4967.5	18.600	0.011	18.611	≤ 21.00
	4987.5	18.015	0.011	18.026	≤ 21.00
Mode 5	4945.0	15.547	0.013	15.560	≤ 21.00
	4965.0	15.393	0.013	15.406	≤ 21.00
	4985.0	15.474	0.013	15.487	≤ 21.00
Mode 6	4950.0	12.435	0.070	12.505	≤ 21.00
	4965.0	12.890	0.070	12.960	≤ 21.00
	4980.0	12.674	0.070	12.744	≤ 21.00

Note: Method SA-2, Power density = measured result + 10 log(1/duty cycle) = measured result + duty factor.

Test Mode	Frequency (MHz)	ANT-0			ANT-1			ANT-0+1	Limit
		Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Measurement (dBm/MHz)	(dBm/MHz)
Mode 7	4942.5	17.918	0.011	17.929	17.781	0.011	17.792	20.872	≤ 20.99
	4967.5	17.902	0.011	17.913	17.711	0.011	17.722	20.829	≤ 20.99
	4987.5	18.045	0.011	18.056	17.719	0.011	17.730	20.907	≤ 20.99
Mode 8	4945.0	15.836	0.011	15.847	15.461	0.011	15.472	18.673	≤ 20.99
	4965.0	15.865	0.011	15.876	15.574	0.011	15.585	18.743	≤ 20.99
	4985.0	16.132	0.011	16.143	15.843	0.011	15.854	19.011	≤ 20.99
Mode 9	4950.0	12.272	0.053	12.325	11.754	0.053	11.807	15.084	≤ 20.99
	4965.0	12.792	0.053	12.845	12.412	0.053	12.465	15.669	≤ 20.99
	4980.0	12.960	0.053	13.013	12.721	0.053	12.774	15.905	≤ 20.99
Mode 10	4942.5	17.585	0.011	17.596	17.222	0.011	17.233	20.428	≤ 20.99
	4967.5	17.738	0.011	17.749	17.054	0.011	17.065	20.430	≤ 20.99
	4987.5	17.761	0.011	17.772	17.159	0.011	17.170	20.491	≤ 20.99
Mode 11	4945.0	14.723	0.013	14.736	14.544	0.013	14.557	17.658	≤ 20.99
	4965.0	15.328	0.013	15.341	14.993	0.013	15.006	18.187	≤ 20.99
	4985.0	15.047	0.013	15.060	14.990	0.013	15.003	18.042	≤ 20.99
Mode 12	4950.0	12.358	0.070	12.428	11.765	0.070	11.835	15.152	≤ 20.99
	4965.0	12.570	0.070	12.640	12.081	0.070	12.151	15.413	≤ 20.99
	4980.0	11.767	0.070	11.837	11.638	0.070	11.708	14.783	≤ 20.99

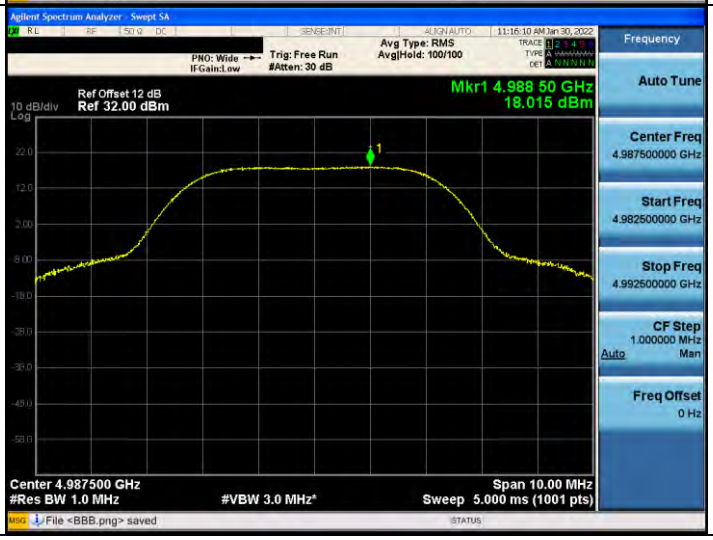
Note: Method SA-2, Power density = measured result + 10 log(1/duty cycle) = measured result + duty factor.

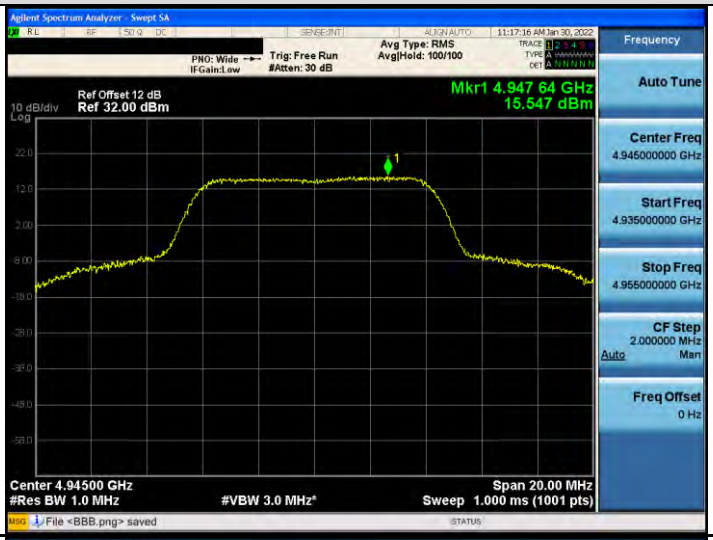
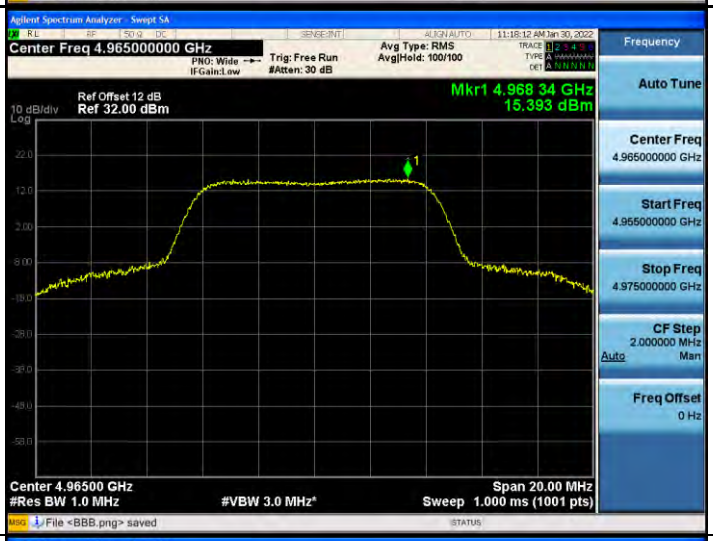
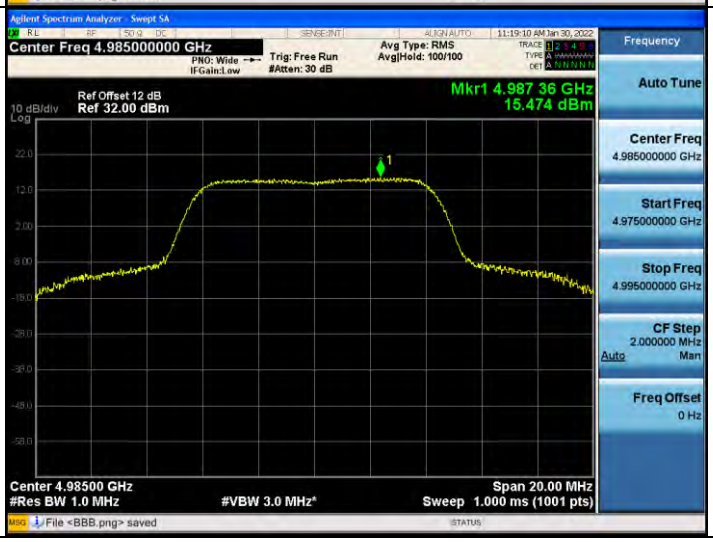
■ **Test Graphs**

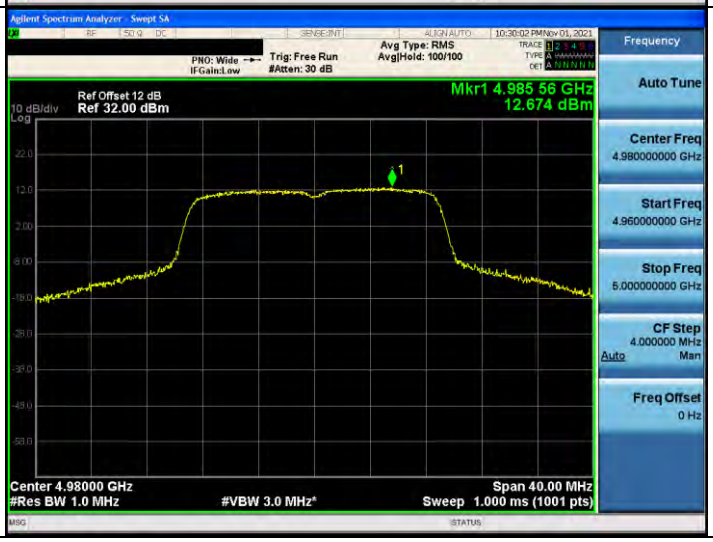
Mode 1: SISO_5 MHz Continuous TX mode (Legacy) _ANT-0			
4942.5 MHz			
4967.5 MHz			
4987.5 MHz			

Mode 2: SISO_10 MHz Continuous TX mode (Legacy) _ANT-0			
4945 MHz			
4965 MHz			
4985 MHz			

Mode 3: SISO_20 MHz Continuous TX mode (Legacy) _ANT-0			
4950 MHz			
4965 MHz			
4980 MHz			

Mode 4: SISO_5 MHz Continuous TX mode_ANT-0			
4942.5 MHz			
4967.5 MHz			
4987.5 MHz			

Mode 5: SISO_10 MHz Continuous TX mode_ANT-0		
4945 MHz		
4965 MHz		
4985 MHz		

Mode 6: SISO_20 MHz Continuous TX mode_ANT-0			
4950 MHz			
4965 MHz			
4980 MHz			

Mode 7: MIMO_5 MHz Continuous TX mode (Legacy) _ANT-0		
4942.5 MHz		
4967.5 MHz		
4987.5 MHz		

Mode 8: MIMO_10 MHz Continuous TX mode (Legacy) _ANT-0		
4945 MHz		
4965 MHz		
4985 MHz		

Mode 9: MIMO_20 MHz Continuous TX mode (Legacy) _ANT-0			
4950 MHz			
4965 MHz			
4980 MHz			

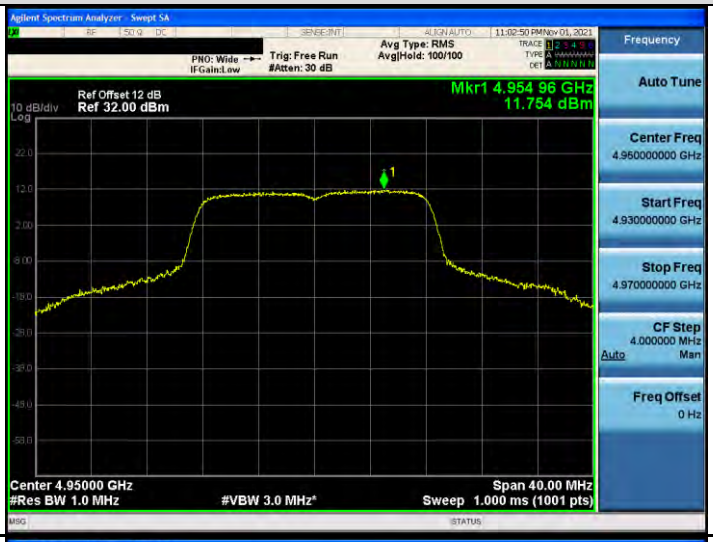
Mode 10: MIMO_5 MHz Continuous TX mode_ANT-0			
4942.5 MHz			
4967.5 MHz			
4987.5 MHz			

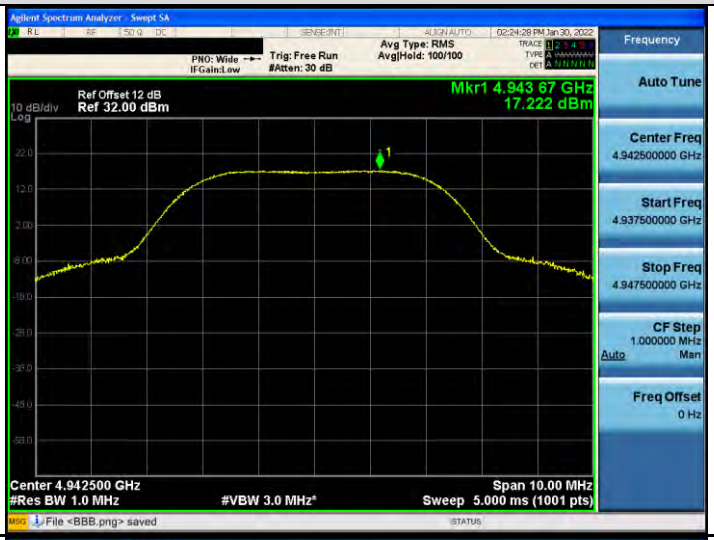
Mode 11: MIMO_10 MHz Continuous TX mode_ANT-0			
4945 MHz			
4965 MHz			
4985 MHz			

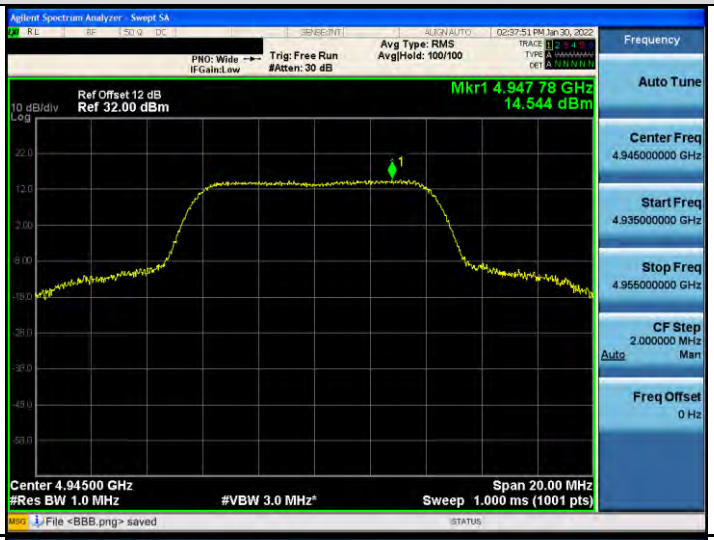
Mode 12: MIMO_20 MHz Continuous TX mode_ANT-0		
4950 MHz		
4965 MHz		
4980 MHz		

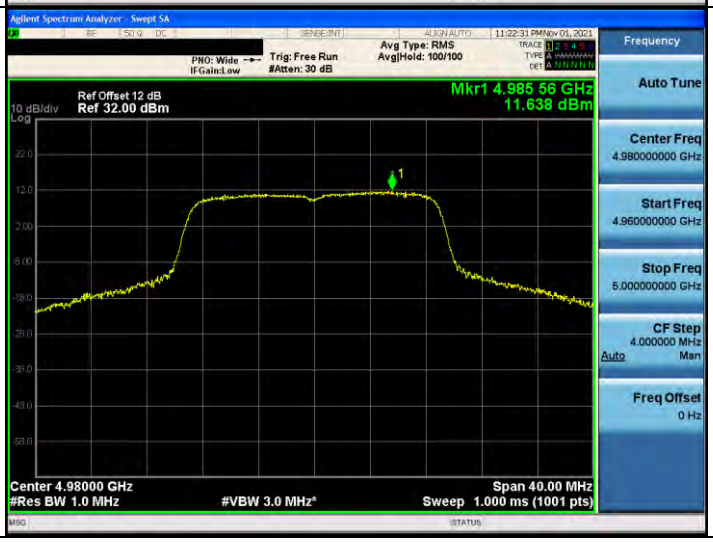
Mode 7: MIMO_5 MHz Continuous TX mode (Legacy) _ANT-1		
4942.5 MHz		
4967.5 MHz		
4987.5 MHz		

Mode 8: MIMO_10 MHz Continuous TX mode (Legacy) _ANT-1		
4945 MHz		
4965 MHz		
4985 MHz		

Mode 9: MIMO_20 MHz Continuous TX mode (Legacy) _ANT-1			
4950 MHz			
4965 MHz			
4980 MHz			

Mode 10: MIMO_5 MHz Continuous TX mode_ANT-1		
4942.5 MHz		
4967.5 MHz		
4987.5 MHz		

Mode 11: MIMO_10 MHz Continuous TX mode_ANT-1		
4945 MHz		
4965 MHz		
4985 MHz		

Mode 12: MIMO_20 MHz Continuous TX mode_ANT-1			
4950 MHz			
4965 MHz			
4980 MHz			

3.3. Emission Bandwidth & Occupied Bandwidth

Test Mode	Frequency (MHz)	26 dB RF Bandwidth	99 % Occupied Bandwidth
		ANT-0 (MHz)	ANT-0 (MHz)
Mode 1	4942.5	8.483	4.352
	4967.5	9.431	4.527
	4987.5	9.045	4.308
Mode 2	4945.0	18.810	9.428
	4965.0	19.110	8.728
	4985.0	18.590	8.670
Mode 3	4950.0	35.830	18.869
	4965.0	34.070	18.891
	4980.0	33.910	18.629
Mode 4	4942.5	8.582	4.618
	4967.5	9.589	4.688
	4987.5	7.589	4.602
Mode 5	4945.0	17.590	9.311
	4965.0	16.740	9.387
	4985.0	16.560	8.993
Mode 6	4950.0	36.180	18.908
	4965.0	33.450	18.384
	4980.0	33.670	18.603

Test Mode	Frequency (MHz)	26 dB RF Bandwidth		99 % Occupied Bandwidth	
		ANT-0 (MHz)	ANT-1 (MHz)	ANT-0 (MHz)	ANT-1 (MHz)
Mode 7	4942.5	9.488	9.236	4.667	4.955
	4967.5	9.454	8.531	4.828	4.430
	4987.5	8.978	8.587	4.689	4.468
Mode 8	4945.0	19.120	17.100	9.475	9.889
	4965.0	19.060	18.410	9.424	9.238
	4985.0	16.460	18.590	8.755	8.930
Mode 9	4950.0	34.040	31.520	18.623	17.833
	4965.0	35.840	33.210	18.519	18.760
	4980.0	32.590	32.390	18.524	18.334
Mode 10	4942.5	8.959	8.918	4.653	4.377
	4967.5	9.097	8.578	4.493	4.307
	4987.5	8.266	8.092	4.417	4.281
Mode 11	4945.0	16.520	18.540	8.975	8.711
	4965.0	18.510	17.280	9.410	8.939
	4985.0	17.610	17.590	8.764	8.666
Mode 12	4950.0	36.630	36.250	18.773	18.977
	4965.0	38.430	38.960	18.960	19.064
	4980.0	35.830	31.200	18.451	18.200

■ **Test Graphs**

Mode 1: SISO_5 MHz Continuous TX mode (Legacy) _ANT-0			
4942.5 MHz			
4967.5 MHz			
4987.5 MHz			

Mode 2: SISO_10 MHz Continuous TX mode (Legacy) _ANT-0		
4945 MHz		
4965 MHz		
4985 MHz		

Mode 3: SISO_20 MHz Continuous TX mode (Legacy) _ANT-0			
4950 MHz			
4965 MHz			
4980 MHz			

Mode 4: SISO_5 MHz Continuous TX mode_ANT-0			
4942.5 MHz			
4967.5 MHz			
4987.5 MHz			

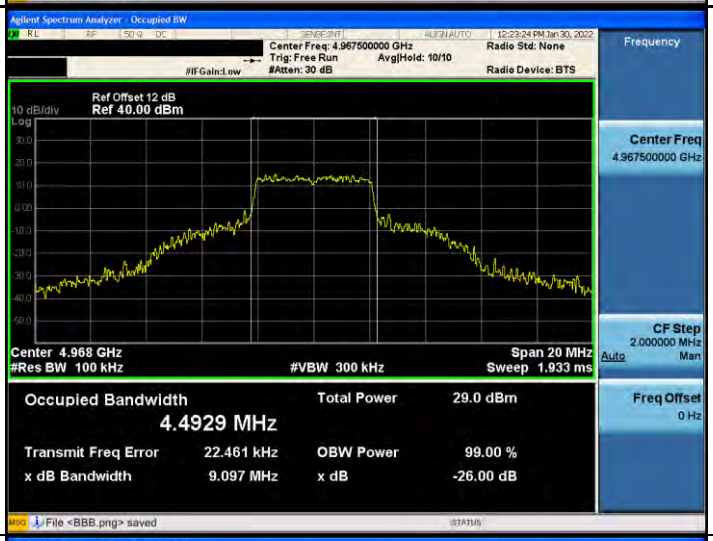
Mode 5: SISO_10 MHz Continuous TX mode_ANT-0		
4945 MHz		
4965 MHz		
4985 MHz		

Mode 6: SISO_20 MHz Continuous TX mode_ANT-0			
4950 MHz			
4965 MHz			
4980 MHz			

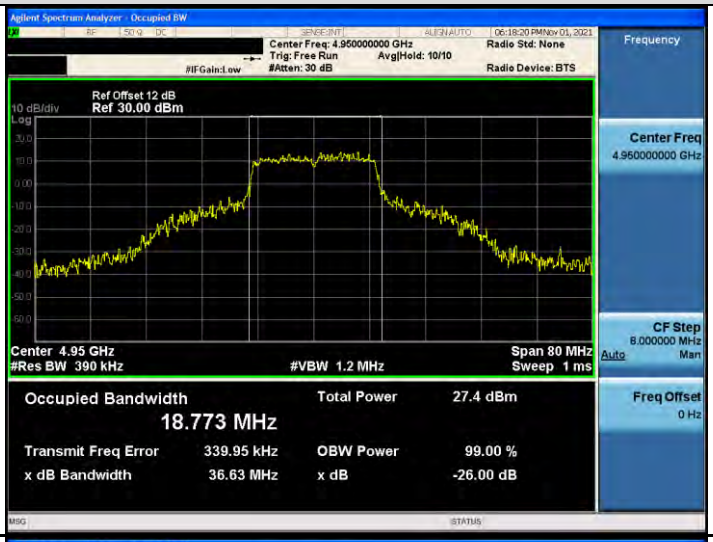
Mode 7: MIMO_5 MHz Continuous TX mode (Legacy) _ANT-0			
4942.5 MHz			
4967.5 MHz			
4987.5 MHz			

Mode 8: MIMO_10 MHz Continuous TX mode (Legacy) _ANT-0			
4945 MHz			
4965 MHz			
4985 MHz			

Mode 9: MIMO_20 MHz Continuous TX mode (Legacy) _ANT-0			
4950 MHz			
4965 MHz			
4980 MHz			

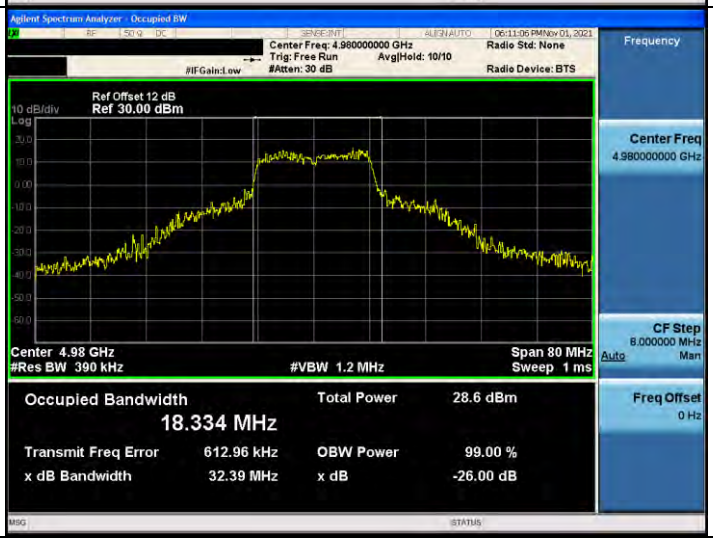
Mode 10: MIMO_5 MHz Continuous TX mode_ANT-0			
4942.5 MHz			
4967.5 MHz			
4987.5 MHz			

Mode 11: MIMO_10 MHz Continuous TX mode_ANT-0		
4945 MHz		
4965 MHz		
4985 MHz		

Mode 12: MIMO_20 MHz Continuous TX mode_ANT-0			
4950 MHz			
4965 MHz			
4980 MHz			

Mode 7: MIMO_5 MHz Continuous TX mode (Legacy) _ANT-1			
4942.5 MHz			
4967.5 MHz			
4987.5 MHz			

Mode 8: MIMO_10 MHz Continuous TX mode (Legacy) _ANT-1			
4945 MHz			
4965 MHz			
4985 MHz			

Mode 9: MIMO_20 MHz Continuous TX mode (Legacy) _ANT-1			
4950 MHz			
4965 MHz			
4980 MHz			

Mode 10: MIMO_5 MHz Continuous TX mode_ANT-1		
4942.5 MHz		
4967.5 MHz		
4987.5 MHz		

Mode 11: MIMO_10 MHz Continuous TX mode_ANT-1			
4945 MHz			
4965 MHz			
4985 MHz			

Mode 12: MIMO_20 MHz Continuous TX mode_ANT-1		
4950 MHz		
4965 MHz		
4980 MHz