

RF Test Report

Applicant : Rajant Corporation
Product Type : Radio Module
Trade Name : VIZMONET
Model Number : RJ-2002
Applicable Standard : FCC 47 CFR PART 90Y
ANSI C63.26 2015
Received Date : Jul. 22, 2021
Test Period (1) : Sep. 28, 2021 ~ Feb. 07, 2022
Test Period (2) : Nov. 18, 2022 ~ Nov. 19, 2022
Issued Date : Nov. 23, 2022

Issued by

Eurofins E&E Wireless Taiwan Co., Ltd.
No. 140-1, Changan Street, Bade District,
Taoyuan City 33465, Taiwan (R.O.C.)
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Taiwan Accreditation Foundation accreditation number: 1330

Frequency Range : 9 kHz to 40 GHz

Test Firm MRA designation number: TW0010

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 Eurofins E&E Wireless Taiwan Co., Ltd.
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

Version	Issued Date	Revisions	Revised By
00	May 06, 2022	Initial Issue	Nina Lin
01	Nov. 23, 2022	Update chapter 1.1 (P.5) Update chapter 1.6 (P.18) Update chapter 3 (P.36~89)	Nina Lin

Verification of Compliance

Applicant : Rajant Corporation

Product Type : Radio Module

Trade Name : VIZMONET

Model Number : RJ-2002

FCC ID : VJA-RJ2002

Applicable Standard : FCC 47 CFR PART 90Y
ANSI C63.26 2015

Test Result : Complied

Performing Lab. : Eurofins E&E Wireless Taiwan Co., Ltd.
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Eurofins E&E Wireless Taiwan Co., Ltd. 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 Eurofins E&E Wireless Taiwan Co., Ltd. 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

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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-2002			
FCC ID	VJA-RJ2002			
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 °C			
EUT Power Rating	DC 24 V			

Test Mode	Max. RF Output Power (dBm)	26 dB RF Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)
Mode 1	24.87	9.433	4.716
Mode 2	24.84	18.780	9.585
Mode 3	25.10	36.250	19.874
Mode 4	24.36	9.184	4.698
Mode 5	24.94	19.070	9.609
Mode 6	24.47	37.870	19.710
Mode 7	25.96	9.756	4.891
Mode 8	26.06	19.020	9.795
Mode 9	25.96	35.120	19.163
Mode 10	25.87	9.047	4.595
Mode 11	27.12	18.920	9.785
Mode 12	25.55	38.460	19.668

1.2. Testing Location

Lab Name: Eurofins E&E Wireless Taiwan Co., Ltd.

Site Address: ☒ No. 140-1, Changan Street, Bade District, Taoyuan City 334025, Taiwan (R.O.C.)

Site Address: ☐ No. 2, Wuquan 5th Rd. Wugu Dist., New Taipei City, Taiwan (R.O.C.)

1.3. Mode of Operation

Eurofins 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.

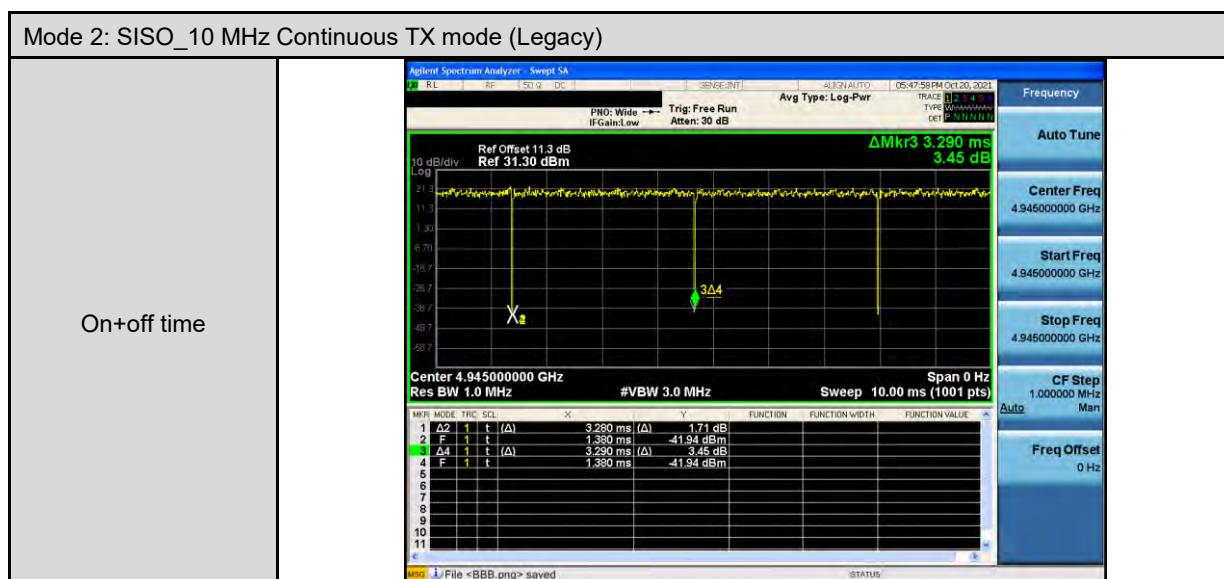
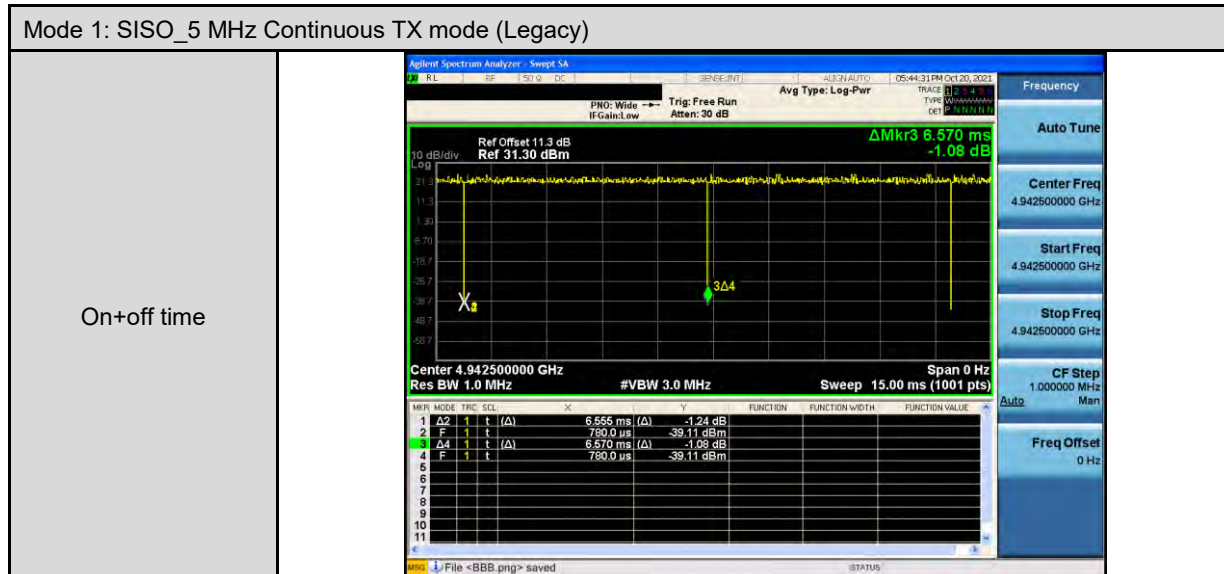
Test Mode	ANT-0	ANT-1	ANT-0+1
Mode 1	V	V	---
Mode 2	V	V	---
Mode 3	V	V	---
Mode 4	V	V	---
Mode 5	V	V	---
Mode 6	V	V	---
Mode 7	V	V	V
Mode 8	V	V	V
Mode 9	V	V	V
Mode 10	V	V	V
Mode 11	V	V	V
Mode 12	V	V	V

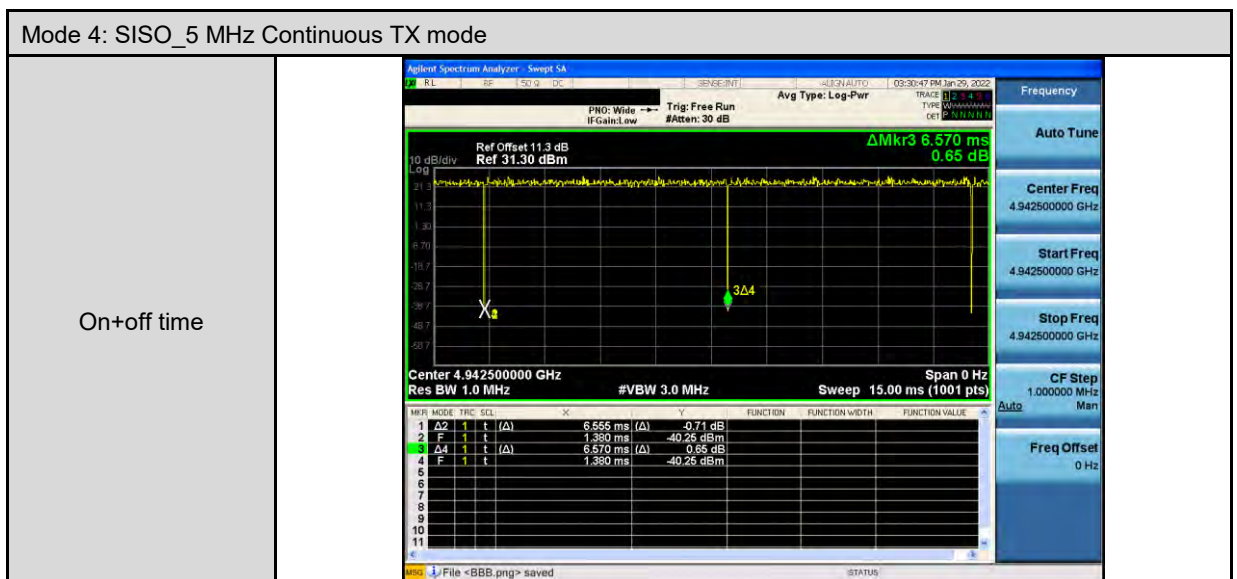
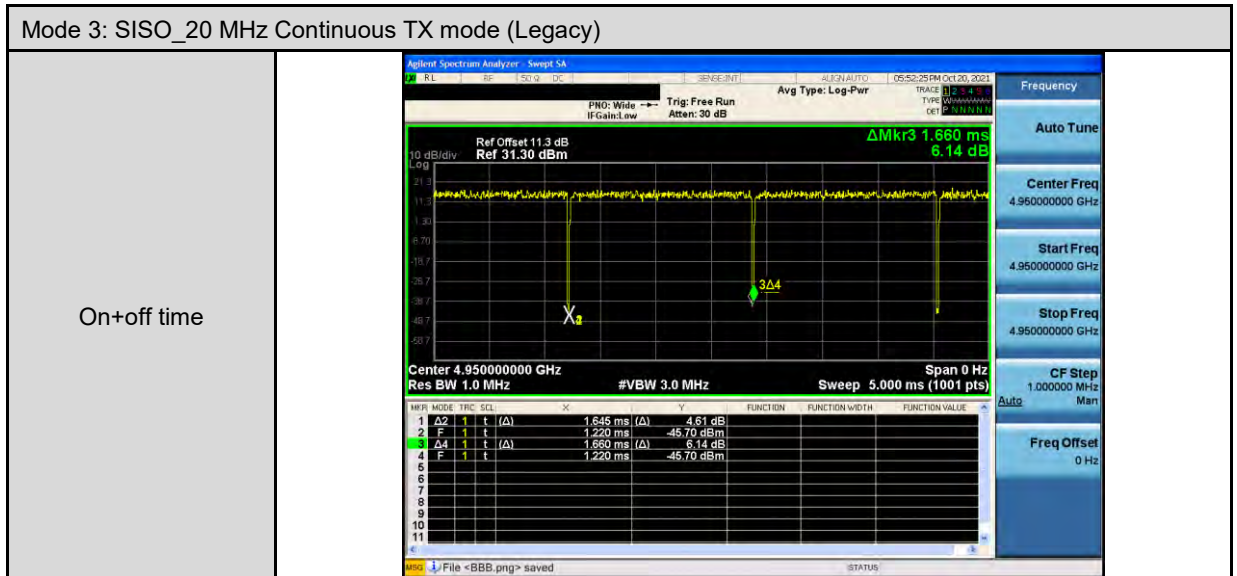
Test Mode	Antenna Delivery	Data Rate (Mbps)	Test Frequency (MHz)
Mode 1	1TX (Diversity)	6	4942.5, 4967.5, 4987.5
Mode 2	1TX (Diversity)	6	4945, 4965, 4985
Mode 3	1TX (Diversity)	6	4950, 4965, 4980
Mode 4	1TX (Diversity)	MCS0	4942.5, 4967.5, 4987.5
Mode 5	1TX (Diversity)	MCS0	4945, 4965, 4985
Mode 6	1TX (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	6.555	6.570	0.998	0.010	0.010
Mode 2	4945.0	3.280	3.290	0.997	0.013	0.010
Mode 3	4950.0	1.645	1.660	0.991	0.039	0.010
Mode 4	4942.5	6.555	6.570	0.998	0.010	0.010
Mode 5	4945.0	3.280	3.290	0.997	0.013	0.010
Mode 6	4950.0	1.535	1.560	0.984	0.070	0.010
Mode 7	4942.5	1.645	1.660	0.991	0.039	0.010
Mode 8	4945.0	3.280	3.290	0.997	0.013	0.010
Mode 9	4950.0	1.640	1.665	0.985	0.066	0.010
Mode 10	4942.5	6.555	6.570	0.998	0.010	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

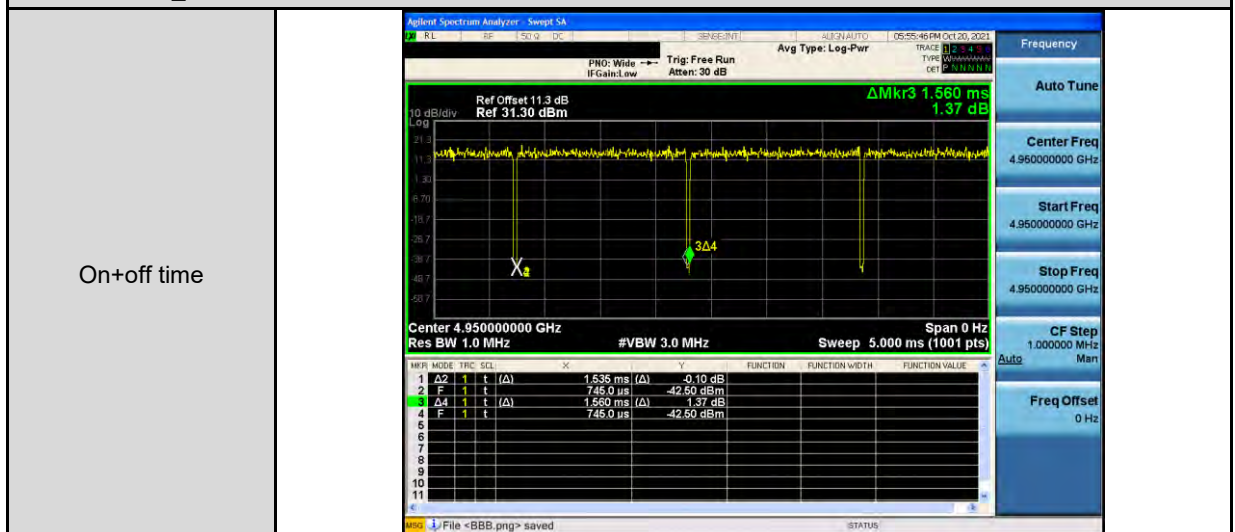


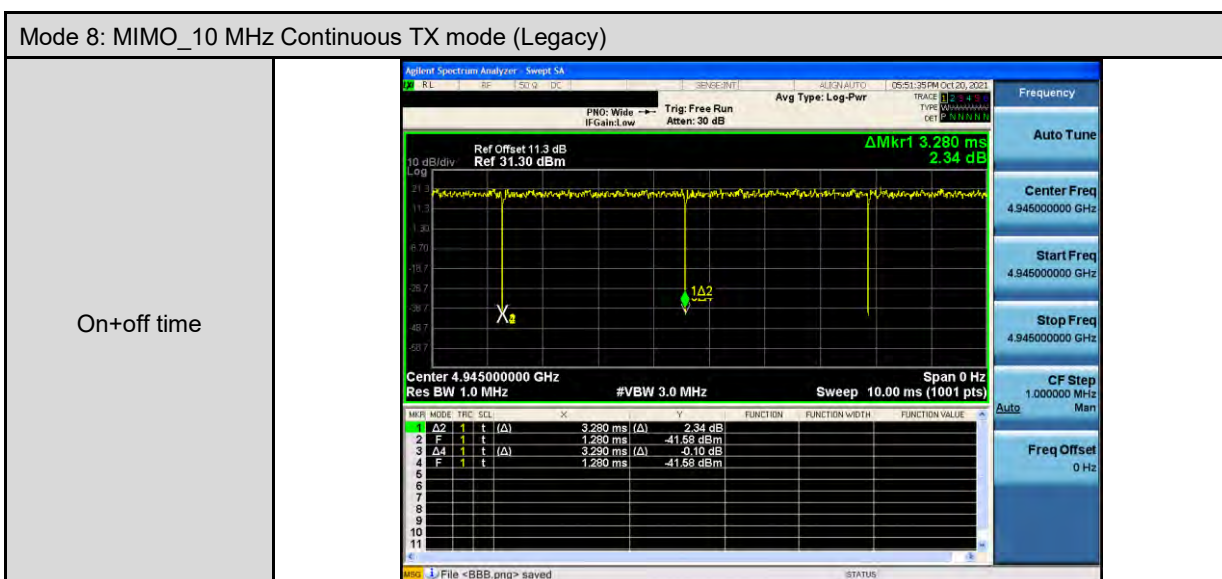
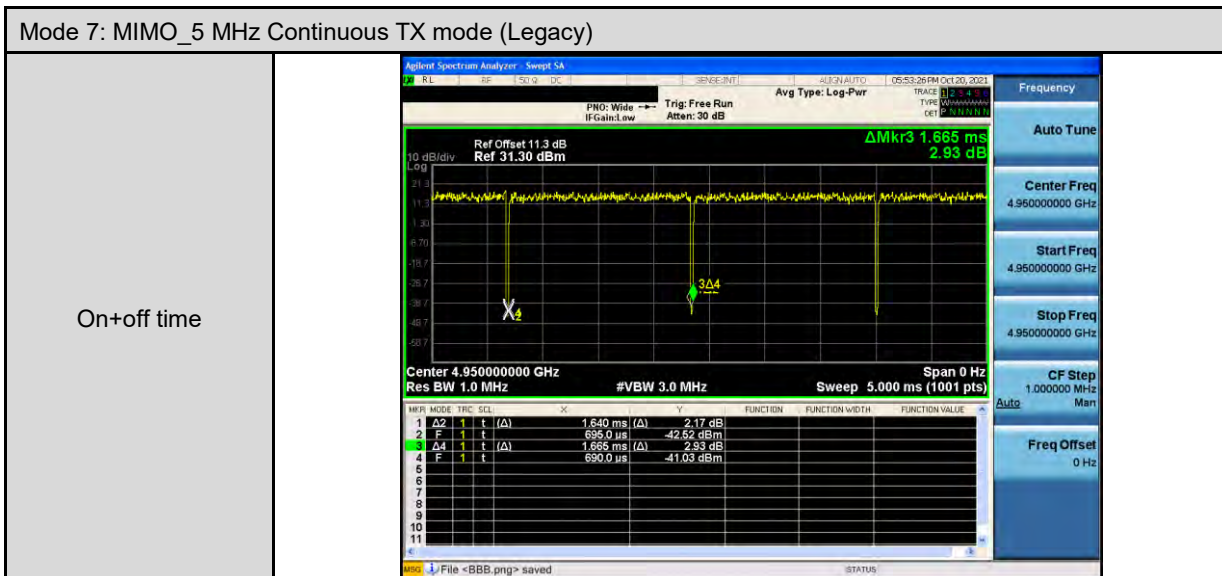


Mode 5: SISO_10 MHz Continuous TX mode



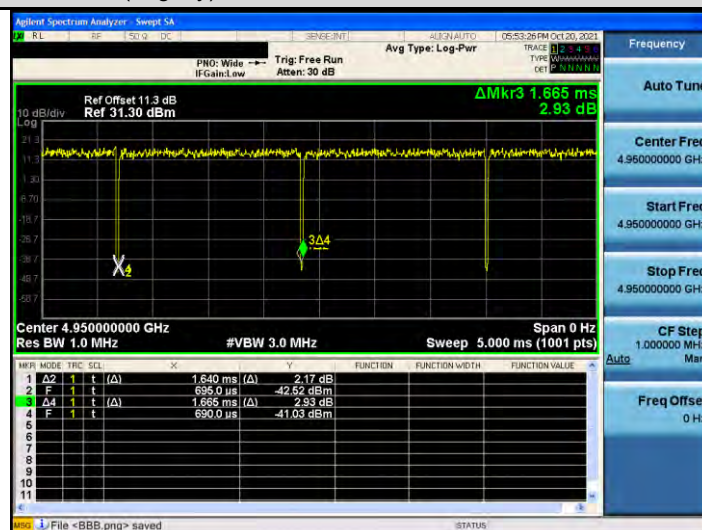
Mode 6: SISO_20 MHz Continuous TX mode





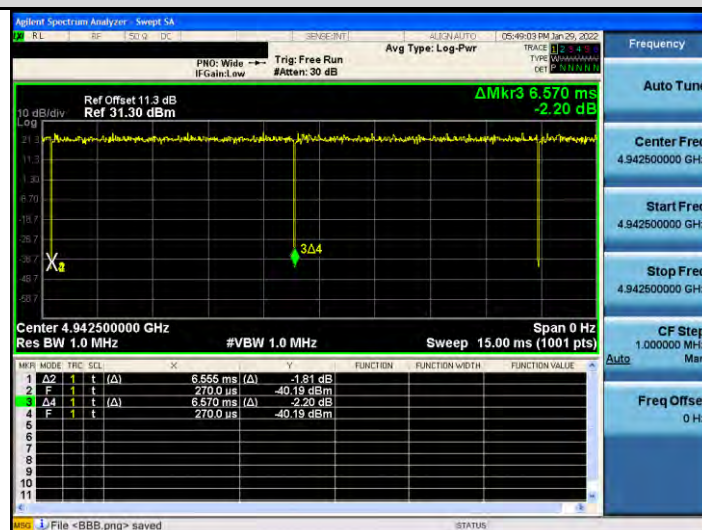
Mode 9: MIMO_20 MHz Continuous TX mode (Legacy)

On+off time

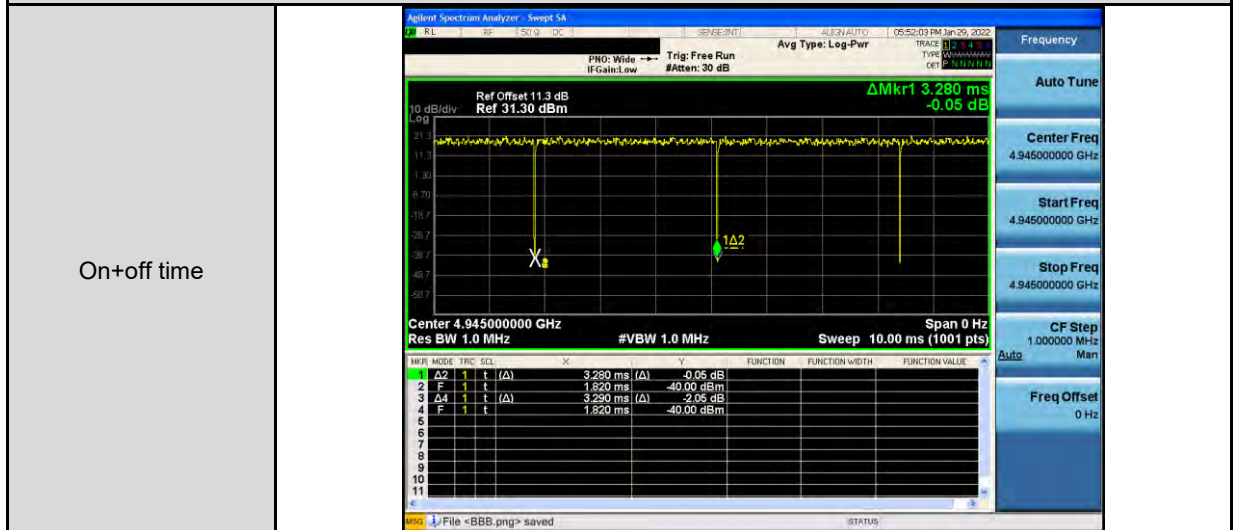


Mode 10: MIMO_5 MHz Continuous TX mode

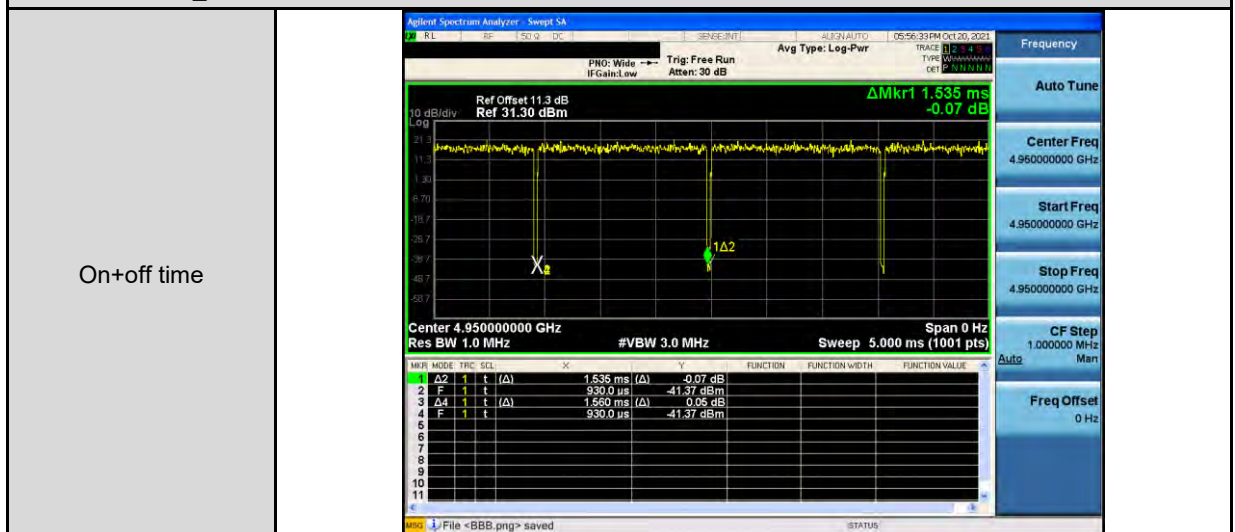
On+off time



Mode 11: MIMO_10 MHz Continuous TX mode



Mode 12: MIMO_20 MHz Continuous TX mode

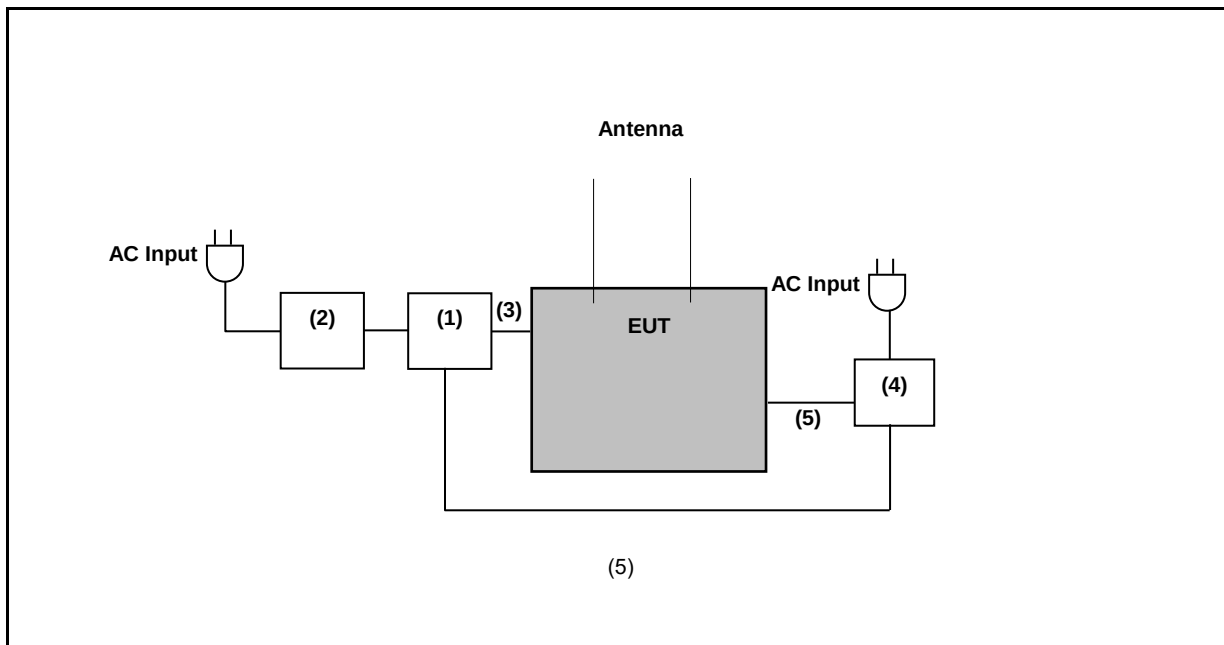


1.4. EUT Test Step

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.

1.5. 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	---	---

1.6. Test Instruments

For Conducted(1)

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 Conducted(2)

Test Period: Nov. 18 ~ Nov. 19, 2022

Testing Engineer: Brian Lin

Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☒	Power Sensor	Agilent	N1921A	MY45241957	Dec. 06, 2021	1 year
☒	Power Meter	Agilent	N1911A	MY45101619	Dec. 06, 2021	1 year
☒	Spectrum Analyzer (10 Hz~26.5 GHz)	Keysight	N9010B	MY59071418	Mar. 16, 2022	1 year
☐	Spectrum Analyzer (9 kHz~26.5 GHz)	Agilent	N9010A	MY48030518	Jul. 21, 2022	1 year
☐	Spectrum Analyzer (20 Hz~26.5 GHz)	Agilent	N9020A	US47520902	Sep. 01, 2022	1 year
☐	Spectrum Analyzer (3 Hz~50 GHz)	Agilent	N9030A	MY53120541	Jan. 05, 2022	1 year
☐	Temperature & Humidity Chamber	TAICHY	MHU-225LA	980729	Mar. 28, 2022	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.

1.7. 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 °C
N.T.	Normal Temperature	+25 °C
H.T.	High Temperature	+85 °C

1.8. Measurement Uncertainty

Parameter	Uncertainty
Conducted Output Average Power	1.1 dB
Effective Radiated Power / Equivalent Isotropic Radiated Power	6.3 dB
Frequency Stability	$1.2 \times 10^{-7} \times f_c$ (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

1.9. 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:

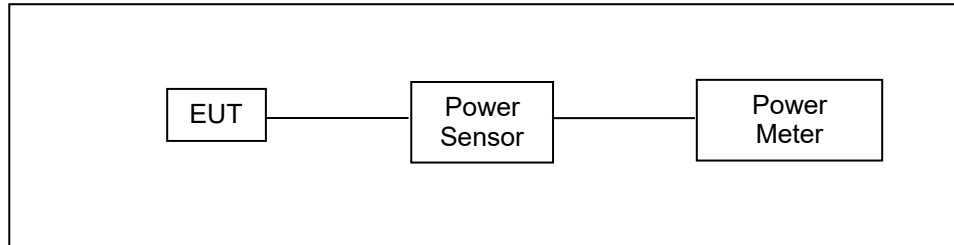
Directional = Max. Gain : 6 dBi < 9 dBi

MIMO mode:

Directional Gain = $G_{ANT} + 10 \cdot \log(N_{ANT}) = 9.01 \text{ dBi} > 9 \text{ dBi}$

- * power limit shall be reduced = $27 - 0.01 = 26.99 \text{ dBm}$ (5 MHz)
- * power limit shall be reduced = $30 - 0.01 = 29.99 \text{ dBm}$ (10 MHz)
- * power limit shall be reduced = $33 - 0.01 = 32.99 \text{ dBm}$ (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:

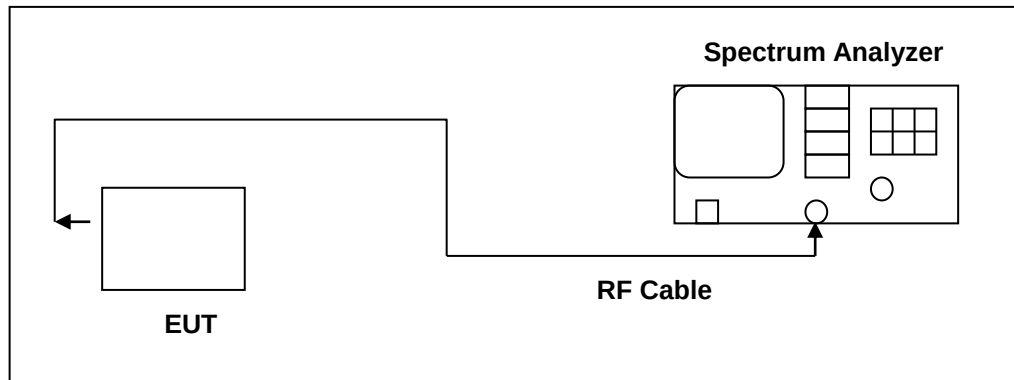
Directional = Max. Gain : 6 dBi < 9 dBi

MIMO mode:

Directional Gain = $G_{ANT} + 10 \cdot \log(N_{ANT}) = 9.01 \text{ dBi} > 9 \text{ dBi}$

* power limit shall be reduced = $21 - 0.01 = 20.99 \text{ dBm/MHz}$ (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.

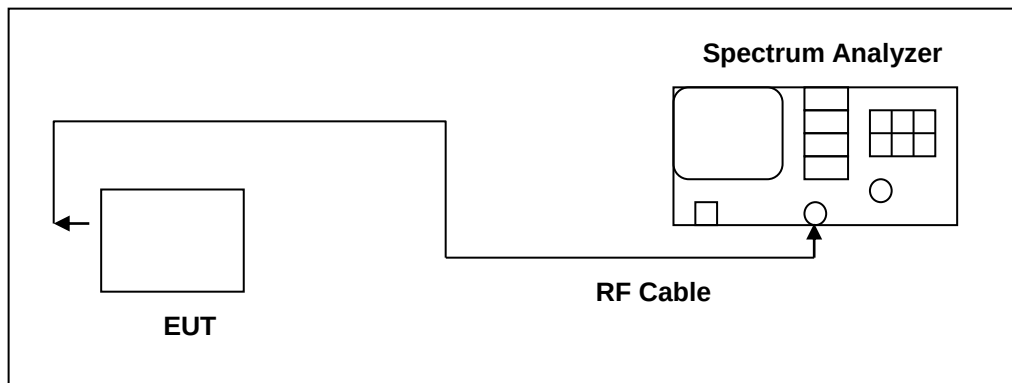
2.3. Emission Bandwidth & Occupied Bandwidth Test

■ Limit

The Occupied Bandwidth Limit:

N/A.

■ Setup



■ Test Procedure

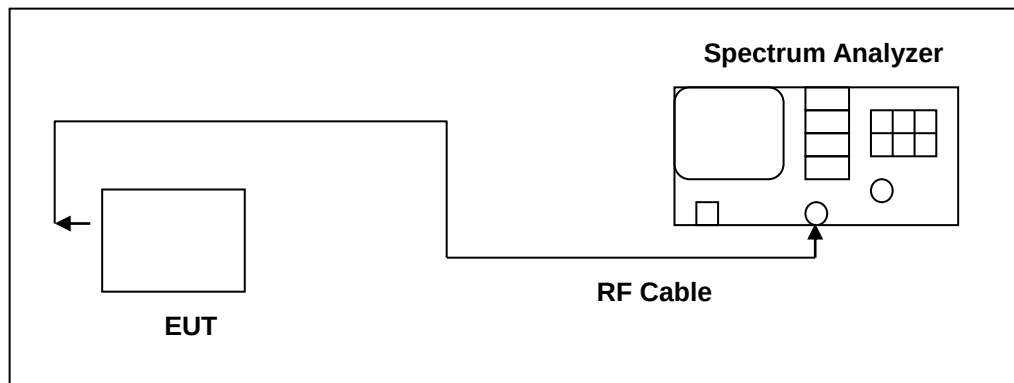
1. The EUT was set up for the maximum power with Test Mode.
2. The test is performed in accordance with ANSI C63.26:2015 section 5.4.3 & 5.4.4, Guidelines for Compliance Testing of licensed Devices.

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:

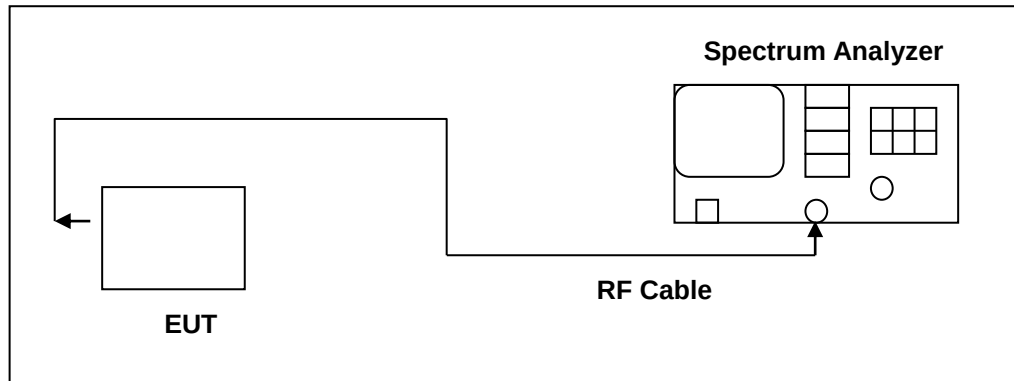
- (1) On any frequency removed from the assigned frequency between 0-45 % of the authorized bandwidth (BW): 0 dB.
- (2) On any frequency removed from the assigned frequency between 45-50 % of the authorized bandwidth: $219 \log (\% \text{ of } (BW)/45)$ dB.
- (3) On any frequency removed from the assigned frequency between 50-55 % of the authorized bandwidth: $10 + 242 \log (\% \text{ of } (BW)/50)$ dB.
- (4) On any frequency removed from the assigned frequency between 55-100 % of the authorized bandwidth: $20 + 31 \log (\% \text{ of } (BW)/55)$ dB attenuation.
- (5) On any frequency removed from the assigned frequency between 100-150 % of the authorized bandwidth: $28 + 68 \log (\% \text{ of } (BW)/100)$ 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 than 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: $568 \log (\% \text{ of } (BW)/45)$ dB.
- (3) On any frequency removed from the assigned frequency between 50-55 % of the authorized bandwidth: $26 + 145 \log (\% \text{ of } (BW)/50)$ dB.
- (4) On any frequency removed from the assigned frequency between 55-100 % of the authorized bandwidth: $32 + 31 \log (\% \text{ of } (BW)/55)$ dB.
- (5) On any frequency removed from the assigned frequency between 100-150 % of the authorized bandwidth: $40 + 57 \log (\% \text{ of } (BW)/100)$ 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:

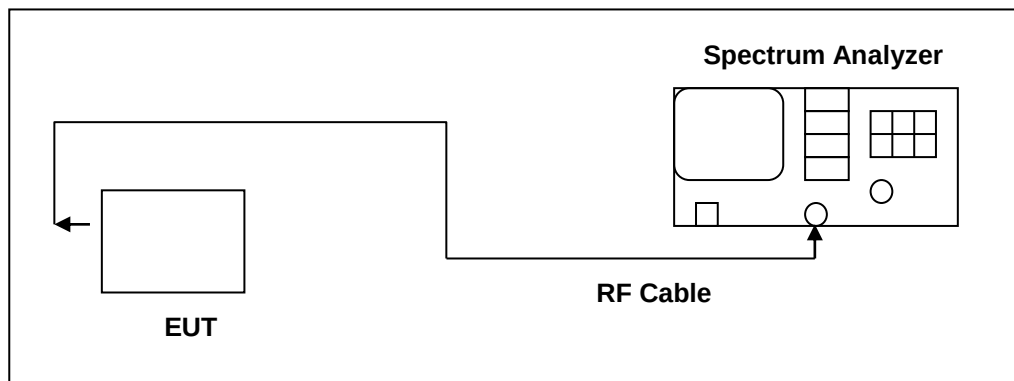
On any frequency removed from the assigned frequency above 150 % of the authorized bandwidth: 40 dB.

§90.210(m) Emission Mask M.

For high power transmitters (greater than 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.

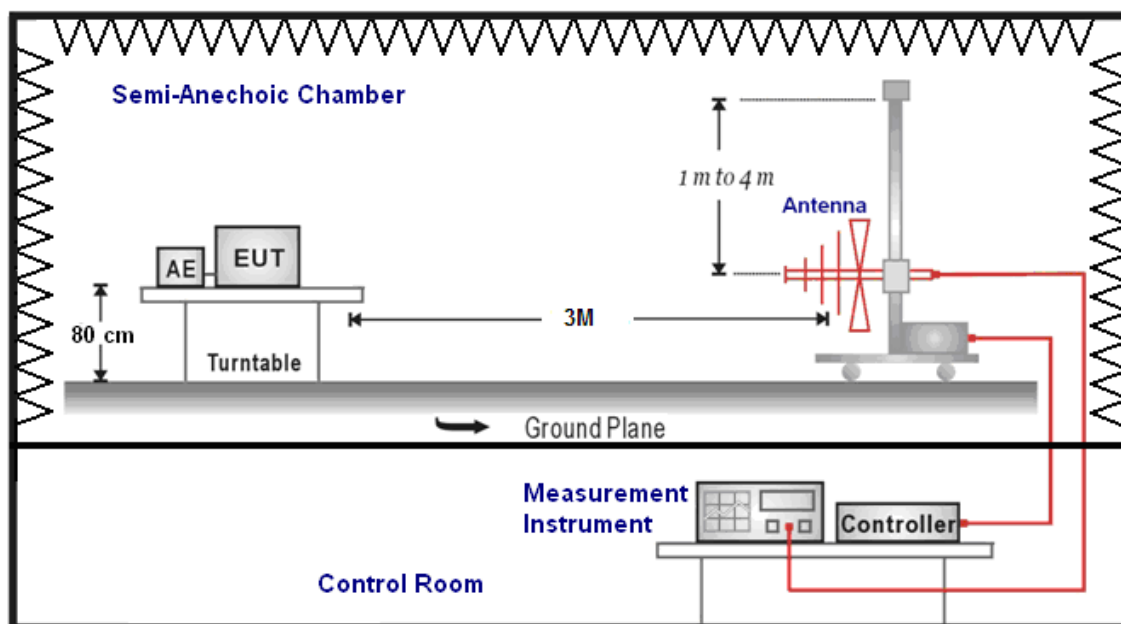
For high power transmitters (greater than 20 dBm) operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:

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.

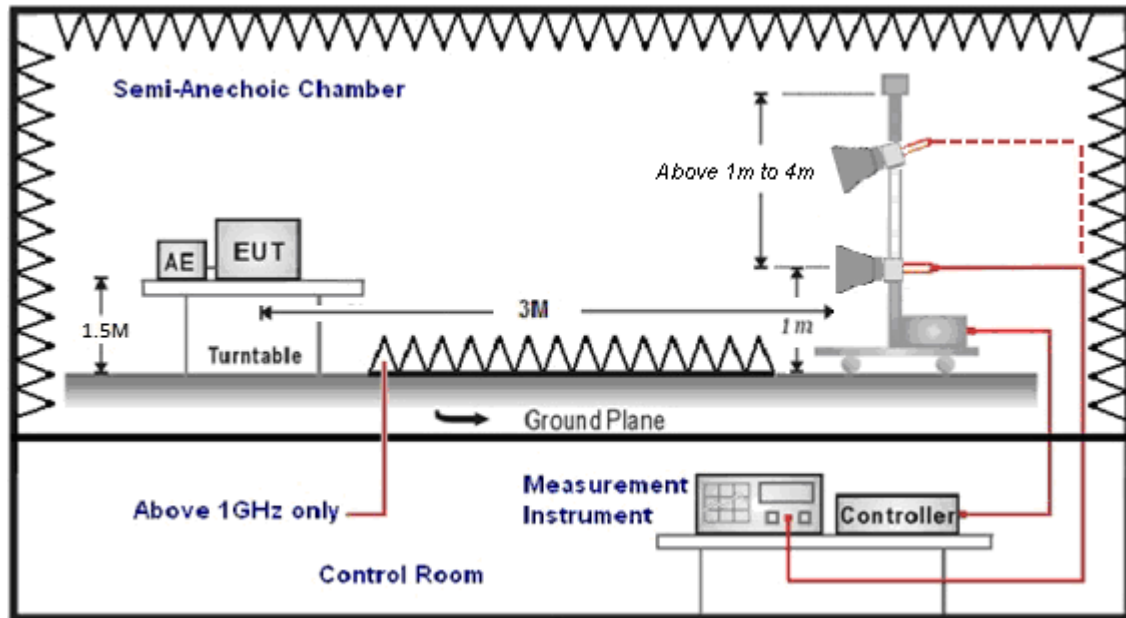
It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

■ Setup

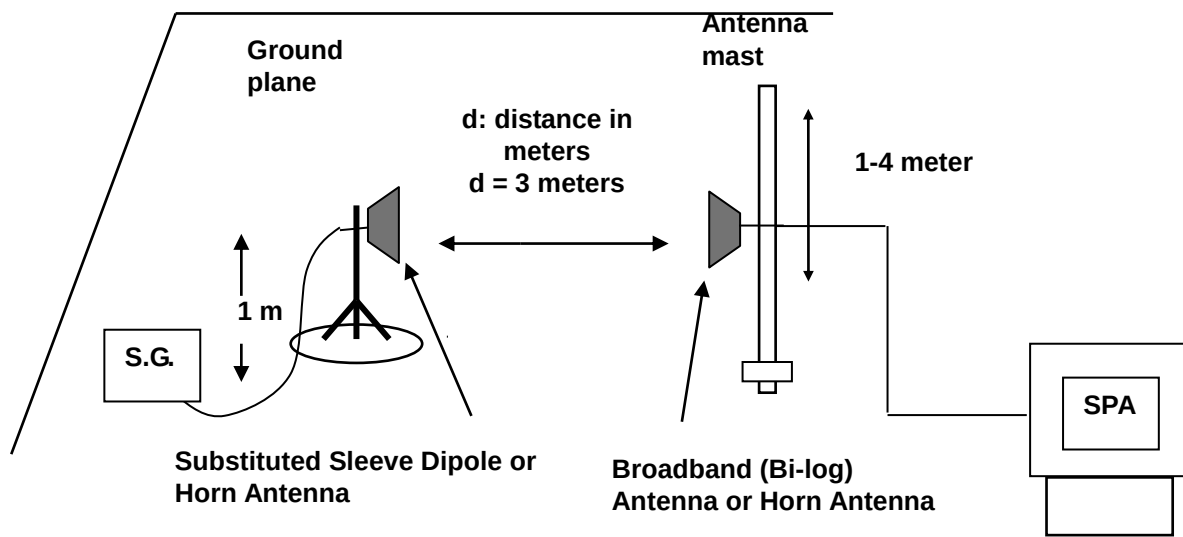
Below 1 GHz



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. $E.I.R.P. = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$
- e. $E.R.P. = E.I.R.P. - 2.15 \text{ dB}$
- f. Measurement range 30 MHz - 10 th Harmonic

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

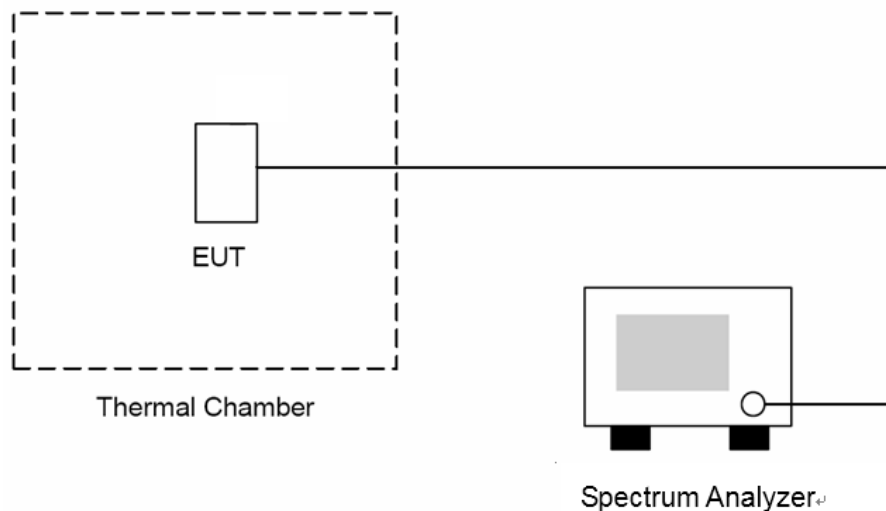
2. Above 1 GHz Substituted Method Test : Horn antenna to Horn Antenna

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 $-30\text{ }^{\circ}\text{C}$ 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 $10\text{ }^{\circ}\text{C}$ 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 $25 \pm 5\text{ }^{\circ}\text{C}$ 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	27	27	Tera Term
	4967.5	27	27	
	4987.5	25	25	
Mode 2	4945.0	27	27	
	4965.0	26	26	
	4985.0	27	27	
Mode 3	4950.0	27	27	
	4965.0	27	27	
	4980.0	26	26	
Mode 4	4942.5	26	26	
	4967.5	27	27	
	4987.5	27	27	
Mode 5	4945.0	27	27	
	4965.0	27	27	
	4985.0	27	27	
Mode 6	4950.0	27	27	
	4965.0	26	26	
	4980.0	26	26	

Test Mode	Frequency (MHz)	RF Power setting in Test Software		Test Software Version
		ANT-0	ANT-1	
Mode 7	4942.5	27	27	Tera Term
	4967.5	26	26	
	4987.5	27	27	
Mode 8	4945.0	26	26	
	4965.0	26	26	
	4985.0	26	26	
Mode 9	4950.0	25	25	
	4965.0	25	25	
	4980.0	25	25	
Mode 10	4942.5	26	26	
	4967.5	25	25	
	4987.5	26	26	
Mode 11	4945.0	25	25	
	4965.0	25	25	
	4985.0	26	26	
Mode 12	4950.0	24	24	
	4965.0	24	24	
	4980.0	25	25	

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	24.44	0.278	23.54	0.226	≤ 27.00
4967.5			24.87	0.307	23.99	0.251	≤ 27.00
4987.5			24.16	0.261	22.92	0.196	≤ 27.00
4942.5	QPSK	12 M	24.16	0.261	23.36	0.217	≤ 27.00
4967.5			24.82	0.303	23.90	0.245	≤ 27.00
4987.5			24.09	0.256	22.88	0.194	≤ 27.00
4942.5		18 M	24.18	0.262	23.37	0.217	≤ 27.00
4967.5			24.79	0.301	23.88	0.244	≤ 27.00
4987.5			24.02	0.252	22.89	0.195	≤ 27.00
4942.5	16QAM	24 M	24.08	0.256	23.38	0.218	≤ 27.00
4967.5			24.78	0.301	23.91	0.246	≤ 27.00
4987.5			24.10	0.257	22.85	0.193	≤ 27.00
4942.5		36 M	24.32	0.270	23.38	0.218	≤ 27.00
4967.5			24.74	0.298	23.90	0.245	≤ 27.00
4987.5			24.08	0.256	22.89	0.195	≤ 27.00
4942.5	64QAM	48 M	24.13	0.259	23.20	0.209	≤ 27.00
4967.5			24.77	0.300	23.88	0.244	≤ 27.00
4987.5			24.08	0.256	22.79	0.190	≤ 27.00
4942.5		54 M	24.26	0.267	23.20	0.209	≤ 27.00
4967.5			24.80	0.302	23.93	0.247	≤ 27.00
4987.5			24.11	0.258	22.87	0.194	≤ 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	24.35	0.272	24.34	0.272	≤ 30.00
4965.0			23.97	0.249	23.72	0.236	≤ 30.00
4985.0			24.84	0.305	24.27	0.267	≤ 30.00
4945.0	QPSK	12 M	24.09	0.256	24.03	0.253	≤ 30.00
4965.0			23.88	0.244	23.63	0.231	≤ 30.00
4985.0			24.80	0.302	24.16	0.261	≤ 30.00
4945.0		18 M	24.04	0.254	23.87	0.244	≤ 30.00
4965.0			23.90	0.245	23.59	0.229	≤ 30.00
4985.0			24.74	0.298	24.11	0.258	≤ 30.00
4945.0	16QAM	24 M	24.06	0.255	24.06	0.255	≤ 30.00
4965.0			23.89	0.245	23.63	0.231	≤ 30.00
4985.0			24.76	0.299	24.19	0.262	≤ 30.00
4945.0		36 M	24.05	0.254	24.04	0.254	≤ 30.00
4965.0			23.85	0.243	23.70	0.234	≤ 30.00
4985.0			24.69	0.294	24.17	0.261	≤ 30.00
4945.0	64QAM	48 M	24.21	0.264	24.05	0.254	≤ 30.00
4965.0			23.78	0.239	23.67	0.233	≤ 30.00
4985.0			24.80	0.302	24.21	0.264	≤ 30.00
4945.0		54 M	24.11	0.258	24.26	0.267	≤ 30.00
4965.0			23.85	0.243	23.57	0.228	≤ 30.00
4985.0			24.71	0.296	24.13	0.259	≤ 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	24.55	0.285	24.03	0.253	≤ 33.00
4965.0			24.70	0.295	24.42	0.277	≤ 33.00
4980.0			24.25	0.266	24.07	0.255	≤ 33.00
4950.0	QPSK	12 M	25.03	0.318	24.74	0.298	≤ 33.00
4965.0			24.63	0.290	24.27	0.267	≤ 33.00
4980.0			24.20	0.263	24.00	0.251	≤ 33.00
4950.0		18 M	24.04	0.254	23.96	0.249	≤ 33.00
4965.0			24.59	0.288	24.36	0.273	≤ 33.00
4980.0			24.16	0.261	23.99	0.251	≤ 33.00
4950.0	16QAM	24 M	24.18	0.262	23.87	0.244	≤ 33.00
4965.0			24.59	0.288	24.19	0.262	≤ 33.00
4980.0			24.20	0.263	23.96	0.249	≤ 33.00
4950.0		36 M	25.10	0.324	24.68	0.294	≤ 33.00
4965.0			24.58	0.287	24.40	0.275	≤ 33.00
4980.0			24.17	0.261	23.91	0.246	≤ 33.00
4950.0	64QAM	48 M	24.22	0.264	24.08	0.256	≤ 33.00
4965.0			24.57	0.286	24.35	0.272	≤ 33.00
4980.0			24.09	0.256	24.00	0.251	≤ 33.00
4950.0		54 M	24.22	0.264	24.17	0.261	≤ 33.00
4965.0			24.63	0.290	24.30	0.269	≤ 33.00
4980.0			24.11	0.258	23.88	0.244	≤ 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	24.36	0.273	21.54	0.143	≤ 27.00	
4967.5			23.93	0.247	22.74	0.188	≤ 27.00	
4987.5			24.35	0.272	23.27	0.212	≤ 27.00	
4942.5	QPSK	MSC1	24.16	0.261	21.37	0.137	≤ 27.00	
4967.5			23.72	0.236	22.57	0.181	≤ 27.00	
4987.5			24.27	0.267	23.20	0.209	≤ 27.00	
4942.5		MSC2	24.05	0.254	21.20	0.132	≤ 27.00	
4967.5			23.63	0.231	22.46	0.176	≤ 27.00	
4987.5			24.30	0.269	23.19	0.208	≤ 27.00	
4942.5		16QAM	MSC3	23.94	0.248	21.11	0.129	≤ 27.00
4967.5				23.53	0.225	22.37	0.173	≤ 27.00
4987.5				24.20	0.263	23.19	0.208	≤ 27.00
4942.5	MSC4		23.96	0.249	21.10	0.129	≤ 27.00	
4967.5			23.56	0.227	22.28	0.169	≤ 27.00	
4987.5			24.09	0.256	23.22	0.210	≤ 27.00	
4942.5	64QAM	MSC5	23.91	0.246	21.14	0.130	≤ 27.00	
4967.5			23.48	0.223	22.29	0.169	≤ 27.00	
4987.5			24.17	0.261	23.18	0.208	≤ 27.00	
4942.5		MSC7	23.96	0.249	21.12	0.129	≤ 27.00	
4967.5			23.54	0.226	22.28	0.169	≤ 27.00	
4987.5			24.11	0.258	23.17	0.207	≤ 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	24.94	0.312	22.69	0.186	≤ 30.00	
4965.0			23.80	0.240	23.48	0.223	≤ 30.00	
4985.0			24.31	0.270	23.87	0.244	≤ 30.00	
4945.0	QPSK	MSC1	24.74	0.298	22.53	0.179	≤ 30.00	
4965.0			23.65	0.232	23.29	0.213	≤ 30.00	
4985.0			24.18	0.262	23.79	0.239	≤ 30.00	
4945.0		MSC2	24.65	0.292	22.41	0.174	≤ 30.00	
4965.0			23.50	0.224	23.17	0.207	≤ 30.00	
4985.0			24.20	0.263	23.72	0.236	≤ 30.00	
4945.0		16QAM	MSC3	24.57	0.286	22.28	0.169	≤ 30.00
4965.0				23.41	0.219	23.10	0.204	≤ 30.00
4985.0				24.07	0.255	23.69	0.234	≤ 30.00
4945.0	MSC4		24.56	0.286	22.26	0.168	≤ 30.00	
4965.0			23.41	0.219	23.01	0.200	≤ 30.00	
4985.0			24.12	0.258	23.59	0.229	≤ 30.00	
4945.0	64QAM	MSC5	24.49	0.281	22.24	0.167	≤ 30.00	
4965.0			23.38	0.218	23.02	0.200	≤ 30.00	
4985.0			24.06	0.255	23.57	0.228	≤ 30.00	
4945.0		MSC7	24.51	0.282	22.28	0.169	≤ 30.00	
4965.0			23.40	0.219	23.09	0.204	≤ 30.00	
4985.0			24.01	0.252	23.57	0.228	≤ 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	24.47	0.280	24.04	0.254	≤ 33.00	
4965.0			24.09	0.256	23.81	0.240	≤ 33.00	
4980.0			24.39	0.275	24.29	0.269	≤ 33.00	
4950.0	QPSK	MSC1	24.17	0.261	23.88	0.244	≤ 33.00	
4965.0			24.00	0.251	23.74	0.237	≤ 33.00	
4980.0			24.31	0.270	24.19	0.262	≤ 33.00	
4950.0		MSC2	24.00	0.251	23.71	0.235	≤ 33.00	
4965.0			23.98	0.250	23.71	0.235	≤ 33.00	
4980.0			24.26	0.267	24.18	0.262	≤ 33.00	
4950.0		16QAM	MSC3	24.13	0.259	23.79	0.239	≤ 33.00
4965.0				23.96	0.249	23.71	0.235	≤ 33.00
4980.0				24.30	0.269	24.11	0.258	≤ 33.00
4950.0	MSC4		24.28	0.268	23.79	0.239	≤ 33.00	
4965.0			23.89	0.245	23.71	0.235	≤ 33.00	
4980.0			24.17	0.261	24.18	0.262	≤ 33.00	
4950.0	64QAM	MSC5	24.33	0.271	23.69	0.234	≤ 33.00	
4965.0			23.97	0.249	23.69	0.234	≤ 33.00	
4980.0			24.11	0.258	24.13	0.259	≤ 33.00	
4950.0		MSC7	24.19	0.262	23.66	0.232	≤ 33.00	
4965.0			24.01	0.252	23.67	0.233	≤ 33.00	
4980.0			24.30	0.269	24.05	0.254	≤ 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	22.71	0.187	22.42	0.175	25.58	0.361	≤ 26.99	
4967.5			23.18	0.208	22.71	0.187	25.96	0.394	≤ 26.99	
4987.5			23.86	0.243	21.77	0.150	25.95	0.394	≤ 26.99	
4942.5	QPSK	12 M	22.57	0.181	22.25	0.168	25.42	0.348	≤ 26.99	
4967.5			23.02	0.200	22.64	0.184	25.84	0.384	≤ 26.99	
4987.5			23.79	0.239	21.68	0.147	25.87	0.386	≤ 26.99	
4942.5		18 M	22.46	0.176	22.11	0.163	25.30	0.339	≤ 26.99	
4967.5			23.08	0.203	22.58	0.181	25.85	0.385	≤ 26.99	
4987.5			23.72	0.236	21.63	0.146	25.81	0.381	≤ 26.99	
4942.5		16QAM	24 M	22.53	0.179	22.04	0.160	25.30	0.339	≤ 26.99
4967.5				23.10	0.204	22.58	0.181	25.86	0.385	≤ 26.99
4987.5				23.79	0.239	21.66	0.147	25.86	0.385	≤ 26.99
4942.5	36 M		22.53	0.179	22.13	0.163	25.34	0.342	≤ 26.99	
4967.5			23.07	0.203	22.66	0.185	25.88	0.387	≤ 26.99	
4987.5			23.72	0.236	21.70	0.148	25.84	0.384	≤ 26.99	
4942.5	64QAM	48 M	22.65	0.184	22.31	0.170	25.49	0.354	≤ 26.99	
4967.5			23.05	0.202	22.65	0.184	25.86	0.385	≤ 26.99	
4987.5			23.76	0.238	21.57	0.144	25.81	0.381	≤ 26.99	
4942.5		54 M	22.66	0.185	22.10	0.162	25.40	0.347	≤ 26.99	
4967.5			23.02	0.200	22.63	0.183	25.84	0.384	≤ 26.99	
4987.5			23.72	0.236	21.65	0.146	25.82	0.382	≤ 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	22.43	0.175	22.30	0.170	25.38	0.345	≤ 29.99
4965.0			23.40	0.219	22.28	0.169	25.89	0.388	≤ 29.99
4985.0			23.49	0.223	22.57	0.181	26.06	0.404	≤ 29.99
4945.0	QPSK	12 M	22.31	0.170	22.28	0.169	25.31	0.340	≤ 29.99
4965.0			23.30	0.214	22.23	0.167	25.81	0.381	≤ 29.99
4985.0			23.45	0.221	22.44	0.175	25.98	0.396	≤ 29.99
4945.0		18 M	22.39	0.173	22.29	0.169	25.35	0.343	≤ 29.99
4965.0			23.39	0.218	22.20	0.166	25.85	0.385	≤ 29.99
4985.0			23.36	0.217	22.54	0.179	25.98	0.396	≤ 29.99
4945.0	16QAM	24 M	22.42	0.175	22.23	0.167	25.34	0.342	≤ 29.99
4965.0			23.31	0.214	22.18	0.165	25.79	0.379	≤ 29.99
4985.0			23.36	0.217	22.51	0.178	25.97	0.395	≤ 29.99
4945.0		36 M	22.39	0.173	22.21	0.166	25.31	0.340	≤ 29.99
4965.0			23.32	0.215	22.27	0.169	25.84	0.384	≤ 29.99
4985.0			23.38	0.218	22.43	0.175	25.94	0.393	≤ 29.99
4945.0	64QAM	48 M	22.38	0.173	22.28	0.169	25.34	0.342	≤ 29.99
4965.0			23.27	0.212	22.22	0.167	25.79	0.379	≤ 29.99
4985.0			23.36	0.217	22.50	0.178	25.96	0.394	≤ 29.99
4945.0		54 M	22.42	0.175	22.20	0.166	25.32	0.340	≤ 29.99
4965.0			23.36	0.217	22.23	0.167	25.84	0.384	≤ 29.99
4985.0			23.44	0.221	22.52	0.179	26.01	0.399	≤ 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	22.39	0.173	21.53	0.142	24.99	0.316	≤ 32.99
4965.0			22.90	0.195	22.42	0.175	25.68	0.370	≤ 32.99
4980.0			23.22	0.210	22.67	0.185	25.96	0.394	≤ 32.99
4950.0	QPSK	12 M	22.27	0.169	21.42	0.139	24.88	0.308	≤ 32.99
4965.0			22.77	0.189	22.34	0.171	25.57	0.361	≤ 32.99
4980.0			23.14	0.206	22.64	0.184	25.91	0.390	≤ 32.99
4950.0		18 M	22.35	0.172	21.41	0.138	24.92	0.310	≤ 32.99
4965.0			22.77	0.189	22.33	0.171	25.57	0.361	≤ 32.99
4980.0			23.15	0.207	22.66	0.185	25.92	0.391	≤ 32.99
4950.0	16QAM	24 M	22.32	0.171	21.46	0.140	24.92	0.310	≤ 32.99
4965.0			22.82	0.191	22.35	0.172	25.60	0.363	≤ 32.99
4980.0			23.17	0.207	22.57	0.181	25.89	0.388	≤ 32.99
4950.0		36 M	22.31	0.170	21.50	0.141	24.93	0.311	≤ 32.99
4965.0			22.78	0.190	22.35	0.172	25.58	0.361	≤ 32.99
4980.0			23.18	0.208	22.62	0.183	25.92	0.391	≤ 32.99
4950.0	64QAM	48 M	22.25	0.168	21.49	0.141	24.90	0.309	≤ 32.99
4965.0			22.78	0.190	22.38	0.173	25.59	0.362	≤ 32.99
4980.0			23.11	0.205	22.60	0.182	25.87	0.386	≤ 32.99
4950.0		54 M	22.33	0.171	21.47	0.140	24.93	0.311	≤ 32.99
4965.0			22.87	0.194	22.29	0.169	25.60	0.363	≤ 32.99
4980.0			23.15	0.207	22.60	0.182	25.89	0.388	≤ 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	24.18	0.262	20.94	0.124	25.87	0.386	≤ 26.99	
4967.5			22.59	0.182	21.03	0.127	24.89	0.308	≤ 26.99	
4987.5			23.46	0.222	21.41	0.138	25.57	0.361	≤ 26.99	
4942.5	QPSK	MSC9	24.02	0.252	20.81	0.121	25.72	0.373	≤ 26.99	
4967.5			22.48	0.177	20.96	0.125	24.80	0.302	≤ 26.99	
4987.5			23.34	0.216	21.33	0.136	25.46	0.352	≤ 26.99	
4942.5		MSC10	23.85	0.243	20.61	0.115	25.54	0.358	≤ 26.99	
4967.5			22.58	0.181	20.99	0.126	24.87	0.307	≤ 26.99	
4987.5			23.33	0.215	21.30	0.135	25.44	0.350	≤ 26.99	
4942.5		16QAM	MSC11	23.83	0.242	20.51	0.112	25.49	0.354	≤ 26.99
4967.5				22.52	0.179	20.95	0.124	24.82	0.303	≤ 26.99
4987.5				23.40	0.219	21.33	0.136	25.50	0.355	≤ 26.99
4942.5	MSC12		23.74	0.237	20.56	0.114	25.45	0.351	≤ 26.99	
4967.5			22.54	0.179	20.99	0.126	24.84	0.305	≤ 26.99	
4987.5			23.40	0.219	21.36	0.137	25.51	0.356	≤ 26.99	
4942.5	64QAM	MSC13	23.73	0.236	20.54	0.113	25.43	0.349	≤ 26.99	
4967.5			22.51	0.178	20.96	0.125	24.81	0.303	≤ 26.99	
4987.5			23.44	0.221	21.34	0.136	25.53	0.357	≤ 26.99	
4942.5		MSC15	23.80	0.240	20.49	0.112	25.46	0.352	≤ 26.99	
4967.5			22.57	0.181	20.99	0.126	24.86	0.306	≤ 26.99	
4987.5			23.32	0.215	21.37	0.137	25.46	0.352	≤ 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	23.81	0.240	21.19	0.132	25.70	0.372	≤ 29.99	
4965.0			24.38	0.274	23.83	0.242	27.12	0.515	≤ 29.99	
4985.0			23.40	0.219	21.53	0.142	25.58	0.361	≤ 29.99	
4945.0	QPSK	MSC9	23.71	0.235	21.18	0.131	25.64	0.366	≤ 29.99	
4965.0			24.35	0.272	23.74	0.237	27.07	0.509	≤ 29.99	
4985.0			23.28	0.213	21.49	0.141	25.49	0.354	≤ 29.99	
4945.0		MSC10	23.77	0.238	21.15	0.130	25.66	0.368	≤ 29.99	
4965.0			24.32	0.270	23.77	0.238	27.06	0.508	≤ 29.99	
4985.0			23.32	0.215	21.50	0.141	25.51	0.356	≤ 29.99	
4945.0		16QAM	MSC11	23.76	0.238	21.14	0.130	25.65	0.367	≤ 29.99
4965.0				24.28	0.268	23.74	0.237	27.03	0.505	≤ 29.99
4985.0				23.39	0.218	21.42	0.139	25.53	0.357	≤ 29.99
4945.0	MSC12		23.69	0.234	21.10	0.129	25.60	0.363	≤ 29.99	
4965.0			24.34	0.272	23.75	0.237	27.07	0.509	≤ 29.99	
4985.0			23.27	0.212	21.51	0.142	25.49	0.354	≤ 29.99	
4945.0	64QAM		MSC13	23.71	0.235	21.13	0.130	25.62	0.365	≤ 29.99
4965.0				24.29	0.269	23.71	0.235	27.02	0.504	≤ 29.99
4985.0				23.32	0.215	21.42	0.139	25.48	0.353	≤ 29.99
4945.0		MSC15	23.72	0.236	21.15	0.130	25.63	0.366	≤ 29.99	
4965.0			24.35	0.272	23.74	0.237	27.07	0.509	≤ 29.99	
4985.0			23.38	0.218	21.44	0.139	25.53	0.357	≤ 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	23.66	0.232	21.02	0.126	25.55	0.359	≤ 32.99
4965.0			21.58	0.144	21.29	0.135	24.45	0.279	≤ 32.99
4980.0			22.81	0.191	22.17	0.165	25.51	0.356	≤ 32.99
4950.0	QPSK	MSC9	23.65	0.232	20.89	0.123	25.50	0.355	≤ 32.99
4965.0			21.54	0.143	21.27	0.134	24.42	0.277	≤ 32.99
4980.0			22.69	0.186	22.04	0.160	25.39	0.346	≤ 32.99
4950.0		MSC10	23.65	0.232	20.92	0.124	25.51	0.356	≤ 32.99
4965.0			21.46	0.140	21.27	0.134	24.38	0.274	≤ 32.99
4980.0			22.75	0.188	22.11	0.163	25.45	0.351	≤ 32.99
4950.0	16QAM	MSC11	23.57	0.228	20.99	0.126	25.48	0.353	≤ 32.99
4965.0			21.52	0.142	21.24	0.133	24.39	0.275	≤ 32.99
4980.0			22.71	0.187	22.07	0.161	25.41	0.348	≤ 32.99
4950.0		MSC12	23.64	0.231	20.97	0.125	25.52	0.356	≤ 32.99
4965.0			21.55	0.143	21.25	0.133	24.41	0.276	≤ 32.99
4980.0			22.78	0.190	22.13	0.163	25.48	0.353	≤ 32.99
4950.0	64QAM	MSC13	23.60	0.229	20.93	0.124	25.48	0.353	≤ 32.99
4965.0			21.55	0.143	21.19	0.132	24.38	0.274	≤ 32.99
4980.0			22.76	0.189	22.08	0.161	25.44	0.350	≤ 32.99
4950.0		MSC15	23.60	0.229	20.90	0.123	25.47	0.352	≤ 32.99
4965.0			21.55	0.143	21.19	0.132	24.38	0.274	≤ 32.99
4980.0			22.67	0.185	22.06	0.161	25.39	0.346	≤ 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 (dBm/MHz)
		Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	
Mode 1	4942.5	18.283	0.010	18.293	≤ 21.00
	4967.5	19.100	0.010	19.110	≤ 21.00
	4987.5	18.703	0.010	18.713	≤ 21.00
Mode 2	4945.0	15.633	0.013	15.646	≤ 21.00
	4965.0	15.643	0.013	15.656	≤ 21.00
	4985.0	16.647	0.013	16.660	≤ 21.00
Mode 3	4950.0	13.040	0.039	13.079	≤ 21.00
	4965.0	13.307	0.039	13.346	≤ 21.00
	4980.0	13.214	0.039	13.253	≤ 21.00
Mode 4	4942.5	17.913	0.010	17.923	≤ 21.00
	4967.5	18.363	0.010	18.373	≤ 21.00
	4987.5	19.281	0.010	19.291	≤ 21.00
Mode 5	4945.0	16.115	0.013	16.128	≤ 21.00
	4965.0	16.068	0.013	16.081	≤ 21.00
	4985.0	16.293	0.013	16.306	≤ 21.00
Mode 6	4950.0	12.635	0.070	12.705	≤ 21.00
	4965.0	12.420	0.070	12.490	≤ 21.00
	4980.0	12.756	0.070	12.826	≤ 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 (dBm/MHz)
		Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Measurement (dBm/MHz)	
Mode 7	4942.5	15.861	0.039	15.900	16.231	0.039	16.270	19.100	≤ 20.99
	4967.5	16.608	0.039	16.647	15.796	0.039	15.835	19.271	≤ 20.99
	4987.5	17.633	0.039	17.672	16.520	0.039	16.559	20.162	≤ 20.99
Mode 8	4945.0	12.721	0.013	12.734	12.595	0.013	12.608	15.682	≤ 20.99
	4965.0	13.866	0.013	13.879	13.122	0.013	13.135	16.533	≤ 20.99
	4985.0	14.318	0.013	14.331	13.529	0.013	13.542	16.965	≤ 20.99
Mode 9	4950.0	9.808	0.066	9.874	9.244	0.066	9.310	12.611	≤ 20.99
	4965.0	10.339	0.066	10.405	9.683	0.066	9.749	13.099	≤ 20.99
	4980.0	10.741	0.066	10.807	10.174	0.066	10.240	13.543	≤ 20.99
Mode 10	4942.5	15.176	0.010	15.186	14.161	0.010	14.171	17.718	≤ 20.99
	4967.5	15.971	0.010	15.981	15.283	0.010	15.293	18.661	≤ 20.99
	4987.5	16.847	0.010	16.857	16.358	0.010	16.368	19.630	≤ 20.99
Mode 11	4945.0	12.611	0.013	12.624	12.036	0.013	12.049	15.357	≤ 20.99
	4965.0	13.092	0.013	13.105	12.611	0.013	12.624	15.882	≤ 20.99
	4985.0	14.011	0.013	14.024	13.511	0.013	13.524	16.792	≤ 20.99
Mode 12	4950.0	8.829	0.070	8.899	8.569	0.070	8.639	11.781	≤ 20.99
	4965.0	9.236	0.070	9.306	8.861	0.070	8.931	12.133	≤ 20.99
	4980.0	10.221	0.070	10.291	10.040	0.070	10.110	13.212	≤ 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

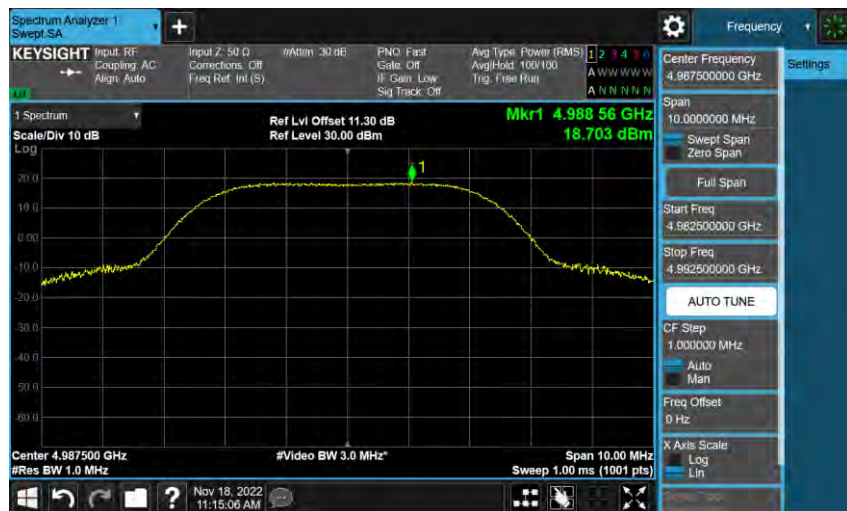
4942.5 MHz



4967.5 MHz



4987.5 MHz



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

4945 MHz	 Center 4.94500 GHz #Res BW 1.0 MHz #Video BW 3.0 MHz Span 20.00 MHz Sweep 1.00 ms (1001 pts)
4965 MHz	 Center 4.96500 GHz #Res BW 1.0 MHz #Video BW 3.0 MHz Span 20.00 MHz Sweep 1.00 ms (1001 pts)
4985 MHz	 Center 4.98500 GHz #Res BW 1.0 MHz #Video BW 3.0 MHz Span 20.00 MHz Sweep 1.00 ms (1001 pts)

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



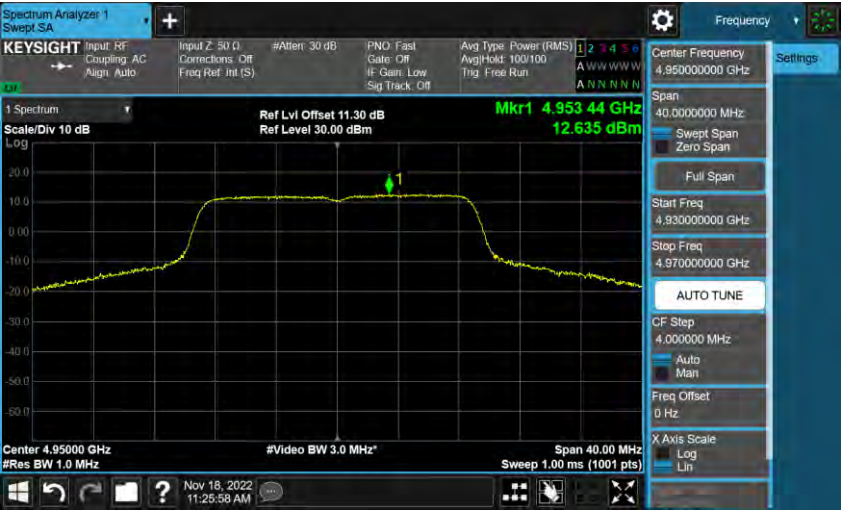
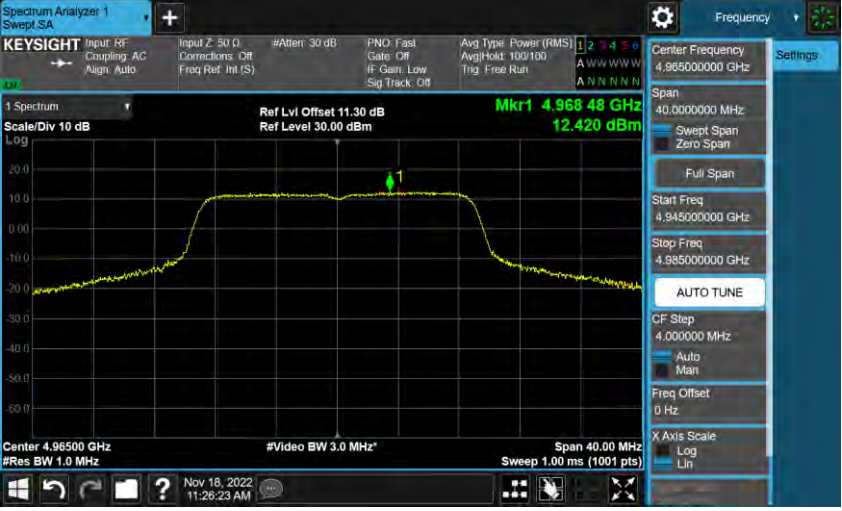
4987.5 MHz



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

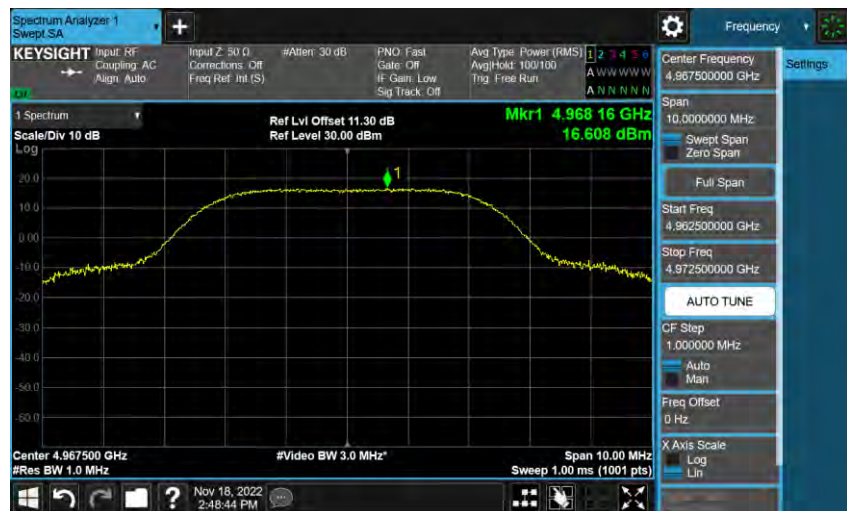
4950 MHz	 Center 4.95000 GHz #Res BW 1.0 MHz #Video BW 3.0 MHz Span 40.00 MHz Sweep 1.00 ms (1001 pts)
4965 MHz	 Center 4.96500 GHz #Res BW 1.0 MHz #Video BW 3.0 MHz Span 40.00 MHz Sweep 1.00 ms (1001 pts)
4980 MHz	 Center 4.98000 GHz #Res BW 1.0 MHz #Video BW 3.0 MHz Span 40.00 MHz Sweep 1.00 ms (1001 pts)

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

4942.5 MHz



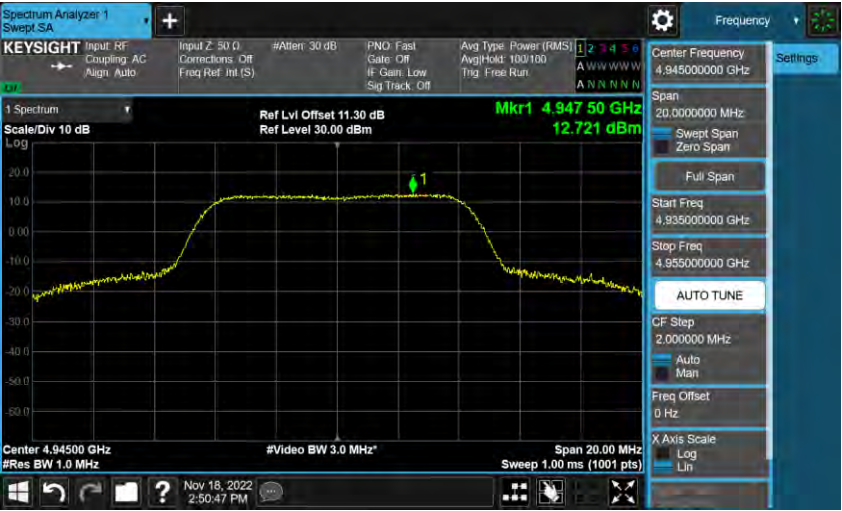
4967.5 MHz



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

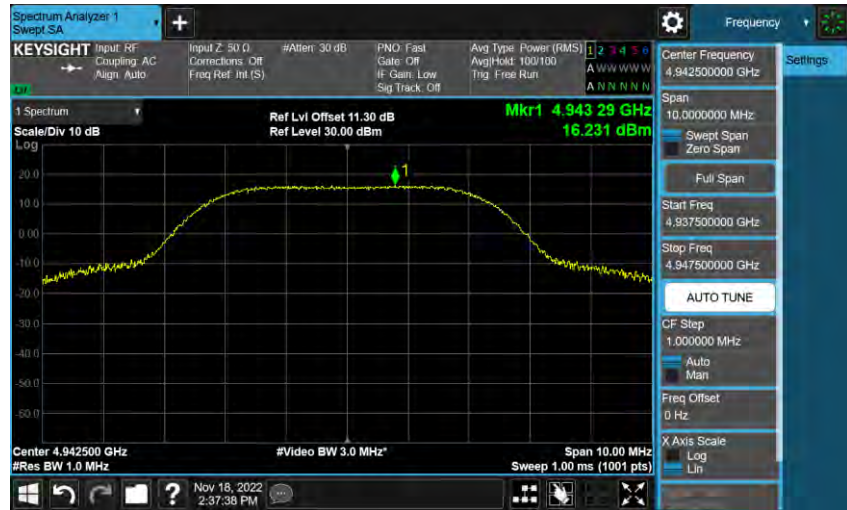
4945 MHz	 Center 4.94500 GHz #Res BW 1.0 MHz #Video BW 3.0 MHz Span 20.00 MHz Sweep 1.00 ms (1001 pts)
4965 MHz	 Center 4.96500 GHz #Res BW 1.0 MHz #Video BW 3.0 MHz Span 20.00 MHz Sweep 1.00 ms (1001 pts)
4985 MHz	 Center 4.98500 GHz #Res BW 1.0 MHz #Video BW 3.0 MHz Span 20.00 MHz Sweep 1.00 ms (1001 pts)

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



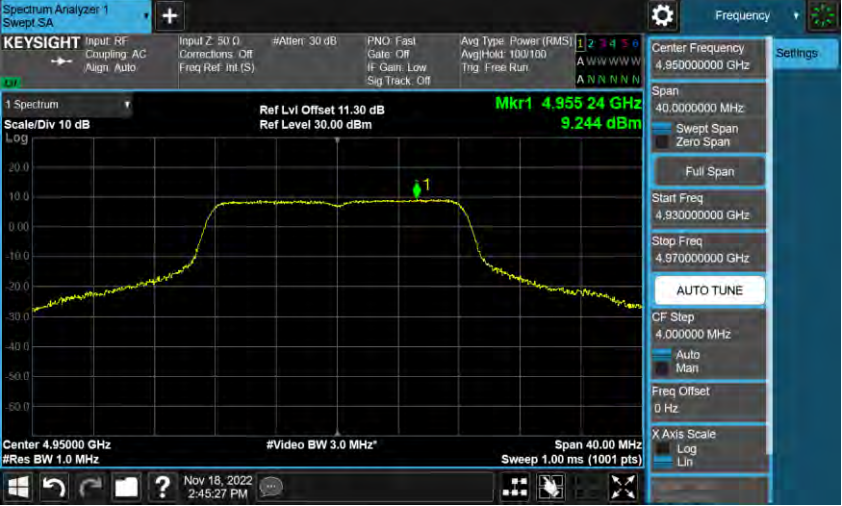
4987.5 MHz



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

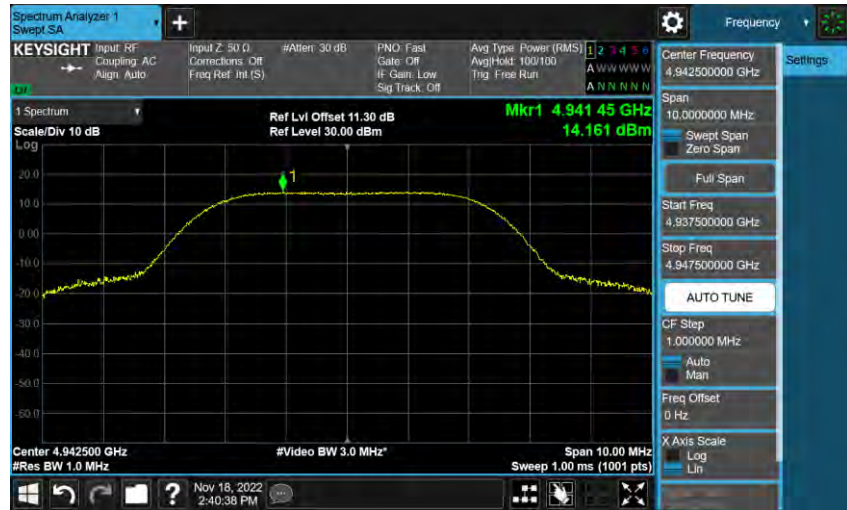
4945 MHz	
4965 MHz	
4985 MHz	

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



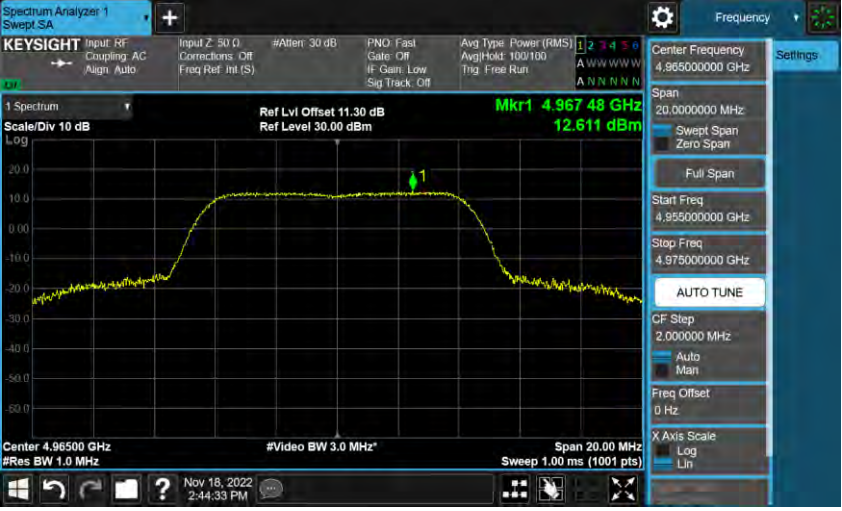
4967.5 MHz



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	9.267	4.607
	4967.5	9.046	4.716
	4987.5	9.433	4.339
Mode 2	4945.0	18.060	9.362
	4965.0	16.950	8.867
	4985.0	18.780	9.585
Mode 3	4950.0	36.250	19.874
	4965.0	35.310	19.796
	4980.0	35.460	18.688
Mode 4	4942.5	7.136	4.281
	4967.5	9.184	4.698
	4987.5	8.716	4.484
Mode 5	4945.0	19.070	9.530
	4965.0	18.170	9.609
	4985.0	18.710	9.394
Mode 6	4950.0	37.870	19.710
	4965.0	37.660	19.319
	4980.0	37.510	19.523

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	9.463	9.307	4.611	4.753
	4967.5	8.775	8.148	4.368	4.243
	4987.5	9.756	9.294	4.891	4.387
Mode 8	4945.0	19.020	15.600	9.244	8.506
	4965.0	18.470	17.230	9.795	8.520
	4985.0	18.600	13.550	9.115	8.552
Mode 9	4950.0	35.120	31.070	19.163	17.348
	4965.0	35.020	34.280	19.009	17.367
	4980.0	34.750	28.360	18.527	17.475
Mode 10	4942.5	8.937	6.999	4.595	4.274
	4967.5	9.047	6.181	4.346	4.255
	4987.5	8.976	8.587	4.476	4.266
Mode 11	4945.0	18.900	14.690	9.245	8.487
	4965.0	17.490	14.330	9.014	8.539
	4985.0	18.920	15.250	9.785	8.546
Mode 12	4950.0	37.480	32.490	19.668	18.397
	4965.0	30.330	25.970	18.469	18.354
	4980.0	38.460	29.090	19.435	18.453

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	 Center Frequency: 4.950000 GHz Span: 80.000 MHz CF Step: 8.000000 MHz Auto Man Freq Offset: 0 Hz Occupied Bandwidth: 19.874 MHz Total Power: 31.1 dBm Transmit Freq Error: 662.78 kHz % of OBW Power: 99.00 % x dB Bandwidth: 36.25 MHz x dB: -26.00 dB Nov 18, 2022 10:50:42 AM
4965 MHz	 Center Frequency: 4.965000 GHz Span: 80.000 MHz CF Step: 8.000000 MHz Auto Man Freq Offset: 0 Hz Occupied Bandwidth: 19.796 MHz Total Power: 31.2 dBm Transmit Freq Error: 652.32 kHz % of OBW Power: 99.00 % x dB Bandwidth: 35.31 MHz x dB: -26.00 dB Nov 18, 2022 10:52:51 AM
4980 MHz	 Center Frequency: 4.980000 GHz Span: 80.000 MHz CF Step: 8.000000 MHz Auto Man Freq Offset: 0 Hz Occupied Bandwidth: 18.688 MHz Total Power: 31.2 dBm Transmit Freq Error: 279.00 kHz % of OBW Power: 99.00 % x dB Bandwidth: 35.46 MHz x dB: -26.00 dB Nov 18, 2022 10:54:53 AM

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	 Center Frequency: 4.94500000 GHz Span: 40.000 MHz CF Step: 4.000000 MHz Freq Offset: 0 Hz Occupied Bandwidth: 9.5299 MHz Total Power: 31.5 dBm Transmit Freq Error: 248.20 kHz % of OBW Power: 99.00 % x dB Bandwidth: 19.07 MHz x dB: -26.00 dB
4965 MHz	 Center Frequency: 4.96500000 GHz Span: 40.000 MHz CF Step: 4.000000 MHz Freq Offset: 0 Hz Occupied Bandwidth: 9.6094 MHz Total Power: 32.0 dBm Transmit Freq Error: 270.48 kHz % of OBW Power: 99.00 % x dB Bandwidth: 18.17 MHz x dB: -26.00 dB
4985 MHz	 Center Frequency: 4.98500000 GHz Span: 40.000 MHz CF Step: 4.000000 MHz Freq Offset: 0 Hz Occupied Bandwidth: 9.3936 MHz Total Power: 32.1 dBm Transmit Freq Error: 253.01 kHz % of OBW Power: 99.00 % x dB Bandwidth: 18.71 MHz x dB: -26.00 dB

Mode 6: SISO_20 MHz Continuous TX mode_ANT-0

4950 MHz	 Center Frequency: 4.950000 GHz Span: 80.000 MHz CF Step: 8.000000 MHz Auto Man Freq Offset: 0 Hz Occupied Bandwidth: 19.710 MHz Total Power: 30.4 dBm Transmit Freq Error: 453.36 kHz % of OBW Power: 99.00 % x dB Bandwidth: 37.87 MHz x dB: -26.00 dB Nov 18, 2022 11:02:33 AM
4965 MHz	 Center Frequency: 4.965000 GHz Span: 80.000 MHz CF Step: 8.000000 MHz Auto Man Freq Offset: 0 Hz Occupied Bandwidth: 19.319 MHz Total Power: 30.5 dBm Transmit Freq Error: 314.97 kHz % of OBW Power: 99.00 % x dB Bandwidth: 37.66 MHz x dB: -26.00 dB Nov 18, 2022 11:04:19 AM
4980 MHz	 Center Frequency: 4.980000 GHz Span: 80.000 MHz CF Step: 8.000000 MHz Auto Man Freq Offset: 0 Hz Occupied Bandwidth: 19.523 MHz Total Power: 30.7 dBm Transmit Freq Error: 334.29 kHz % of OBW Power: 99.00 % x dB Bandwidth: 37.51 MHz x dB: -26.00 dB Nov 18, 2022 11:06:03 AM

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	 Center Frequency: 4.945000 GHz Span: 40.000 MHz CF Step: 4.000000 MHz Freq Offset: 0 Hz Occupied Bandwidth: 9.2436 MHz Total Power: 30.7 dBm Transmit Freq Error: 243.23 kHz % of OBW Power: 99.00 % x dB Bandwidth: 19.02 MHz x dB: -26.00 dB
4965 MHz	 Center Frequency: 4.965000 GHz Span: 40.000 MHz CF Step: 4.000000 MHz Freq Offset: 0 Hz Occupied Bandwidth: 9.7945 MHz Total Power: 31.7 dBm Transmit Freq Error: 287.67 kHz % of OBW Power: 99.00 % x dB Bandwidth: 18.47 MHz x dB: -26.00 dB
4985 MHz	 Center Frequency: 4.985000 GHz Span: 40.000 MHz CF Step: 4.000000 MHz Freq Offset: 0 Hz Occupied Bandwidth: 9.1147 MHz Total Power: 31.0 dBm Transmit Freq Error: 91.948 kHz % of OBW Power: 99.00 % x dB Bandwidth: 18.60 MHz x dB: -26.00 dB

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



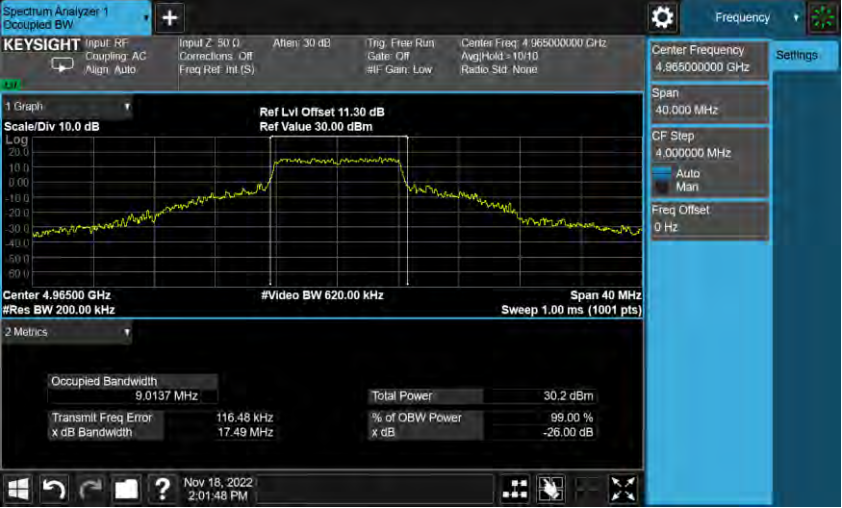
4967.5 MHz



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

Center 4.95000 GHz
#Res BW 390.00 kHz
#Video BW 1.2000 MHz
Span 80 MHz
Sweep 1.00 ms (1001 pts)

Occupied Bandwidth	19.668 MHz	Total Power	29.0 dBm
Transmit Freq Error	321.34 kHz	% of OBW Power	99.00 %
x dB Bandwidth	37.48 MHz	x dB	-26.00 dB

4965 MHz

Center 4.96500 GHz
#Res BW 390.00 kHz
#Video BW 1.2000 MHz
Span 80 MHz
Sweep 1.00 ms (1001 pts)

Occupied Bandwidth	18.469 MHz	Total Power	28.5 dBm
Transmit Freq Error	105.45 kHz	% of OBW Power	99.00 %
x dB Bandwidth	30.33 MHz	x dB	-26.00 dB

4980 MHz

Center 4.98000 GHz
#Res BW 390.00 kHz
#Video BW 1.2000 MHz
Span 80 MHz
Sweep 1.00 ms (1001 pts)

Occupied Bandwidth	19.435 MHz	Total Power	30.0 dBm
Transmit Freq Error	288.57 kHz	% of OBW Power	99.00 %
x dB Bandwidth	38.46 MHz	x dB	-26.00 dB

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

Spectrum Analyzer 1
Occupied BW

KEYSIGHT Input RF Coupling AC Align Auto Input Z 50 Ω Corrections Off Freq Ref Int (S) Attenu 30 dB Trig Free Run Gate Off #F Gain Low Center Freq 4.94500000 GHz Avg/Hold > 10/10 Radio Std None

1 Graph
Scale/Div 10.0 dB
Log
Ref Lvl Offset 11.30 dB
Ref Value 30.00 dBm

Center 4.94500 GHz
#Res BW 200.00 kHz
#Video BW 620.00 kHz
Span 40 MHz
Sweep 1.00 ms (1001 pts)

2 Metrics

Occupied Bandwidth	8.4871 MHz	Total Power	29.0 dBm
Transmit Freq Error	29.601 kHz	% of OBW Power	99.00 %
x dB Bandwidth	14.69 MHz	x dB	-26.00 dB

Nov 18, 2022 2:28:03 PM

4965 MHz

Spectrum Analyzer 1
Occupied BW

KEYSIGHT Input RF Coupling AC Align Auto Input Z 50 Ω Corrections Off Freq Ref Int (S) Attenu 30 dB Trig Free Run Gate Off #F Gain Low Center Freq 4.96500000 GHz Avg/Hold > 10/10 Radio Std None

1 Graph
Scale/Div 10.0 dB
Log
Ref Lvl Offset 11.30 dB
Ref Value 30.00 dBm

Center 4.96500 GHz
#Res BW 200.00 kHz
#Video BW 620.00 kHz
Span 40 MHz
Sweep 1.00 ms (1001 pts)

2 Metrics

Occupied Bandwidth	8.5393 MHz	Total Power	30.2 dBm
Transmit Freq Error	40.362 kHz	% of OBW Power	99.00 %
x dB Bandwidth	14.33 MHz	x dB	-26.00 dB

Nov 18, 2022 2:28:25 PM

4985 MHz

Spectrum Analyzer 1
Occupied BW

KEYSIGHT Input RF Coupling AC Align Auto Input Z 50 Ω Corrections Off Freq Ref Int (S) Attenu 30 dB Trig Free Run Gate Off #F Gain Low Center Freq 4.98500000 GHz Avg/Hold > 10/10 Radio Std None

1 Graph
Scale/Div 10.0 dB
Log
Ref Lvl Offset 11.30 dB
Ref Value 30.00 dBm

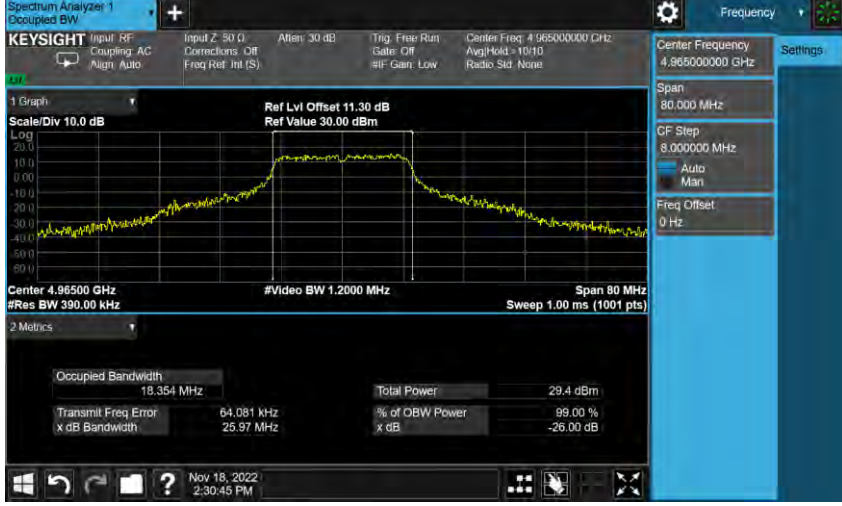
Center 4.98500 GHz
#Res BW 200.00 kHz
#Video BW 620.00 kHz
Span 40 MHz
Sweep 1.00 ms (1001 pts)

2 Metrics

Occupied Bandwidth	8.5460 MHz	Total Power	30.9 dBm
Transmit Freq Error	33.394 kHz	% of OBW Power	99.00 %
x dB Bandwidth	15.25 MHz	x dB	-26.00 dB

Nov 18, 2022 2:28:45 PM

Mode 12: MIMO_20 MHz Continuous TX mode_ANT-1

4950 MHz	 Center Frequency: 4.95000000 GHz Span: 80.000 MHz CF Step: 8.000000 MHz Freq Offset: 0 Hz Occupied Bandwidth: 18.397 MHz Total Power: 29.1 dBm Transmit Freq Error: 91.488 kHz x dB Bandwidth: 32.49 MHz % of OBW Power: 99.00 % x dB: -26.00 dB
4965 MHz	 Center Frequency: 4.96500000 GHz Span: 80.000 MHz CF Step: 8.000000 MHz Freq Offset: 0 Hz Occupied Bandwidth: 18.354 MHz Total Power: 29.4 dBm Transmit Freq Error: 64.081 kHz x dB Bandwidth: 25.97 MHz % of OBW Power: 99.00 % x dB: -26.00 dB
4980 MHz	 Center Frequency: 4.98000000 GHz Span: 80.000 MHz CF Step: 8.000000 MHz Freq Offset: 0 Hz Occupied Bandwidth: 18.453 MHz Total Power: 30.3 dBm Transmit Freq Error: 81.127 kHz x dB Bandwidth: 29.09 MHz % of OBW Power: 99.00 % x dB: -26.00 dB