

ELEMENT WASHINGTON DC LLC

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MEASUREMENT REPORT FCC Part 15.407 802.11a/ax WIFI 6E

Applicant Name:

SONY Corporation 1-7-1 Konan Minato-ku Tokyo, 108-0075, Japan

Date of Testing: 3/25/2022 – 5/19/2022 Report Release Date: 6/8/2022 Test Site/Location: Element Washington DC LLC. Columbia, MD, USA Test Report Serial No.: 1M2201200003-22-R1.PY7

FCC ID:

APPLICANT:

PY7-57325M

SONY Corporation

Application Type: EUT Type: Frequency Range: Modulation Type: FCC Classification: Test Procedure(s): Certification Portable Handset 5955 – 7115MHz OFDM 15E 6GHz Low Power Indoor Client (6XD) ANSI C63.10-2013, KDB 789033 D02 v02r01, KDB 648474 D03 v01r04, KDB 662911 D01 v02r01, KDB 987594 D02 v01r01, KDB 987594 D04 v01

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013 and KDB 789033 D02 v02r01. Test results reported herein relate only to the item(s) tested.

This revised Test Report (S/N: 1M2201200003-22-R1.PY7) supersedes and replaces the previously issued test report (S/N: 1M2109080099-06.A3L) on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

RJ Ortanez Executive Vice President



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			Conducto	ed Power
UNII Band	Channel Bandwidth (MHz)	Tx Frequency (MHz)	Max. Power (mW)	Max. Power (dBm)
5		5955 - 6415	14.588	11.64
6	20	6435 - 6515	14.997	11.76
7	20	6535 - 6875	15.488	11.90
8		6895 - 7115	14.962	11.75
5	40	5965 - 6405	25.942	14.14
6		6445 -6525	25.235	14.02
7		6565 - 6845	25.293	14.03
8		6885 - 7085	26.546	14.24
5		5985 - 6385	27.797	14.44
6	80	6465	25.468	14.06
7	00	6545 - 6865	26.607	14.25
8		6945 - 7025	27.416	14.38
5		6025 - 6345	27.797	14.44
6	160	6505	27.227	14.35
7	100	6665 -6825	24.946	13.97
8		6985	25.882	14.13

EUT Overview

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1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

1.2 Element Test Location

These measurement tests were conducted at the Element Laboratory located at 7185 Oakland Mills Road, Columbia, MD 21046. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

1.3 Test Facility / Accreditations

Measurements were performed at Element located in Columbia, MD 21046, U.S.A.

- Element Washington DC LLC is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- Element Washington DC LLC TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).
- Element Washington DC LLC facility is a registered (2451B) test laboratory with the site description on file with ISED.
- Element Washington DC LLC is a Recognized U.S. Certification Assessment Body (CAB # US0110) for ISED Canada as designated by NIST under the U.S. and Canada Mutual Recognition Agreement.

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **SONY Portable Handset FCC ID: PY7-57325M**. The test data contained in this report pertains only to the emissions due to the EUT's UNII transmitter while operating in the 6GHz band.

Test Device Serial No.: 01GAZ, 034AZ, 048AZ, 08650, 12264, 12249

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900, WCDMA/HSPA, Multi-band LTE, Multi-band 5G NR (FR1 and FR2), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII (5 and 6 GHz), Bluetooth (1x, EDR, LE), NFC

Band 5			Band 6			Band 7	Band 8		
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)		Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	
1	5955	97	6435		117	6535	189	6895	
:	:	:	:		:	:	:	:	
45	6175	105	6475		149	6695	209	6995	
:	:	:	:			:	:	:	
93	6415	113	6515		185	6875	233	7115	

Table 2-1. 802.11a / 802.11ax (20MHz) Frequency / Channel Operations

	Band 5		Band 6		Band 7		Band 8
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
3	5965	99	6445	123	6565	187	6885
:	:	:	:	:	:	:	:
43	6165	107	6485	155	6725	211	7005
:	:	:	:	:	:	:	:
91	6405	115	6525	179	6845	227	7085

Table 2-2. 802.11ax (40MHz BW) Frequency / Channel Operations

	Band 5		Band 6		Band 7		Band 8
Ch.	Frequency (MHz)						
7	5985	103	6465	119	6545	199	6945
:	:			:	:	:	:
39	6145			151	6705	215	7025
:	:			:	:		
87	6385			183	6865		
_							

Table 2-3. 802.11ax (80MHz BW) Frequency / Channel Operations

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	Band 5			Band 6		Band 7		Band 8
Ch.	Frequency (MHz)		Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
15	6025		111	6505	143	6665	207	6985
47	6185	-			175	6825		
79	6345							

Table 2-4. 802.11ax (160MHz BW) Frequency / Channel Operations

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Notes:

6GHz NII operation is possible in 20MHz, and 40MHz, and 80MHz and 160MHz channel bandwidths. The
maximum achievable duty cycles for all modes were determined based on measurements performed on a
spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = peak per the guidance
of Section B)2)b) of ANSI C63.10-2013 and KDB 789033 D02 v02r01. The RBW and VBW were both greater
than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater
than 100. The duty cycles are as follows:

		МІМО
802.11 Mode/Band		Duty
		Cycle [%]
	а	99.1
	ax (HT20)	99.7
6GHz	ax (HT40)	99.7
	ax (HT80)	99.7
	ax (HT160)	99.7

Table 2-5. Measured Duty Cycles

2. The device employs MIMO technology. Below are the possible configurations.

WiFi Configurations		SIS	SO	C	DD	SE	DM
VVIFIC	oningurations	ANT1	ANT2	ANT1	ANT2	ANT1	ANT2
	11a	×	×	✓	✓	×	×
	11ax (20MHz)	×	×	✓	✓	✓	✓
6GHz	11ax (40MHz)	×	×	✓	✓	✓	✓
-	11ax (80MHz)	×	×	✓	✓	✓	✓
	11ax (160MHz)	×	×	✓	✓	✓	✓

Table 2-6. Frequency / Channel Operations

✓ = Support ; ×= NOT Support

SDM = Spatial Diversity Multiplexing – MIMO function

CDD = Cyclic Delay Diversity -2Tx Function

2.3 Antenna Description

Following antenna was used for the testing.

	Ant1	Ant2	Peak
	Peak Gain	Peak Gain	Directional
	[dBi]	[dBi]	Gain [dBi]
5925 – 6425 MHz	-4.4	-7.0	-2.59
6425 – 6525 MHz	-4.4	-11.7	-4.29
6525 – 6875 MHz	-4.0	-11.7	-4.01
6875 – 7125 MHz	-7.1	-11.3	-5.94

Table 2-7. Antenna Peak Gain

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2.4 Test Configuration

The EUT was tested per the guidance of KDB 987594 D02 v01r01 and KDB 789033 D02 v02r01. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing. See Sections 3.2 for AC line conducted emissions test setups, 3.3 for radiated emissions test setups, and 7.2, 7.3, 7.4, 7.5 and 7.6 for antenna port conducted emissions test setups.

This device supports wireless charging capability and, thus, is subject to the test requirements of KDB 648474 D03 v01r04. Additional radiated spurious emission measurements were performed with the EUT lying flat on an authorized wireless charging pad (WCP) EP-N5100 while operating under normal conditions in a simulated call or data transmission configuration. The worst case radiated emissions data is shown in this report.

2.5 Software and Firmware

The test was conducted with firmware version 0.1309 installed on the EUT.

2.6 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

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3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

The measurement procedures described in the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2013) and the guidance provided in KDB 789033 D02 v02r01 were used in the measurement of the EUT.

Deviation from measurement procedure.....None

3.2 AC Line Conducted Emissions

The line-conducted facility is located inside a 10'x16'x9' shielded enclosure. The shielded enclosure is manufactured by ETS Lindgren RF Enclosures. The shielding effectiveness of the shielded room is in accordance with MIL-Std-285 or NSA 65-5. A 1m x 1.5m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz, $50\Omega/50\mu$ H Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. The external power line filter is an ETS Lindgren Model LPRX-4X30 (100dB Attenuation, 14kHz-18GHz) and the two EMI/RFI filters are ETS Lindgren Model LRW-2030-S1 (100dB Minimum Insertion Loss, 14kHz – 10GHz). These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

The EUT is powered from one LISN and the support equipment is powered from the second LISN. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply line(s) will be connected to the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference groundplane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the spectrum analyzer and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The spectrum was scanned from 150kHz to 30MHz with a spectrum analyzer. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 10kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions is used for final measurements on the same test site. The analyzer is set to CISPR quasipeak and average detectors with a 9kHz resolution bandwidth for final measurements.

Line conducted emissions test results are shown in Section 7.9. The EMI Receiver mode of the Agilent MXE was used to perform AC line conducted emissions testing.

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3.3 Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. An 80cm tall test table made of Styrodur is placed on top of the turn table. For measurements above 1GHz, an additional Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33 depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up was placed on top of the 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, mode of operation, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions.

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 414788 D01 v01r01.

3.4 Environmental Conditions

The temperature is controlled within range of 15°C to 35°C. The relative humidity is controlled within range of 10% to 75%. The atmospheric pressure is monitored within the range 86-106kPa (860-1060mbar).

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4.0 ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

- The antennas of the EUT are permanently attached.
- There are no provisions for connection to an external antenna.

Conclusion:

The EUT complies with the requirement of §15.203.

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5.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty (±dB)
Contention Based Protocol Conducted Measurements	0.86
Conducted Bench Top Measurements	1.13
Line Conducted Disturbance	3.09
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

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6.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	WL25-1	Conducted Cable Set (25GHz)	12/19/2021	Annual	12/19/2022	WL25-1
-	WL25-2	Conducted Cable Set (25GHz)	12/19/2021	Annual	12/19/2022	WL25-2
-	WL40-1	Conducted Cable Set (40GHz)	12/19/2021	Annual	12/19/2022	WL40-1
-	ETS-001	EMC Cable and Switch System	12/9/2021	Annual	12/9/2022	ETS-001
-	ETS-002	EMC Cable and Switch System	3/10/2022	Annual	3/10/2023	ETS-002
-	AP1-002	EMC Cable and Switch System	3/9/2022	Annual	3/9/2023	AP1-002
-	AP2-001	EMC Cable and Switch System	1/4/2022	Annual	1/4/2023	AP2-001
-	AP2-002	EMC Cable and Switch System	3/11/2022	Annual	3/11/2023	AP2-002
Agilent	N9038A	MXE EMI Receiver	1/21/2022	Annual	1/21/2023	MY51210133
Agilent	N9020A	MXA Signal Analyzer	3/4/2022	Annual	3/4/2023	US46470561
Agilent	N9030A	PXA Signal Analyzer (44GHz)	7/21/2021	Annual	7/21/2022	MY49430494
Anritsu	ML2495A	Power Meter	3/17/2022	Annual	3/17/2023	1328004
Anritsu	ML2495A	Power Meter	3/17/2022	Annual	3/17/2023	941001
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	4/13/2022	Biennial	4/13/2024	121034
Emco	3115	Horn Antenna (1-18GHz)	6/18/2020	Biennial	6/18/2022	9704-5182
Emco	3116	Horn Antenna (18 - 40GHz)	7/20/2021	Biennial	7/20/2023	9203-2178
ETS-Lindgren	3816/2NM	Line Impedance Stabilization Network	7/9/2020	Biennial	7/9/2022	114451
Pasternack	NMLC-2	Line Conducted Emissions Cable (NM)	12/19/2021	Annual	12/19/2022	NMLC-2
Rohde & Schwarz	FSV40-N	Spectrum Analyzer	1/14/2021	Annual	8/3/2022	83244
Rohde & Schwarz	SMW200A	Vector Signal Generator	N/A		83365	
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	8/3/2021	Annual	8/3/2022	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	5/25/2021	Annual	5/25/2022	100348
Sunol	DRH-118	Horn Antenna (1-18GHz)	2/14/2022	Biennial	2/14/2024	A050307
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	7/27/2020	Biennial	7/27/2022	A051107

Table 6-1. Annual Test Equipment Calibration Schedule

Note:

For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.

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7.0 TEST RESULTS

7.1 Summary

Company Name:	SONY Corporation
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FCC Classification:	15E 6GHz Low Power Indoor Client (6XD)

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1046, 15.407(a)(11)	Maximum Conducted Output Power	N/A		PASS	Section 7.3
2.1049, 15.407(a)(10)	Occupied Bandwidth/ 26dB Bandwidth	99% of the occupied bandwidth of any channel must be contained within each of its respective U-NII sub bands The maximum transmitter channel bandwidth for U-NII devices in the 5.925-7.125 GHz band is 320 megahertz.	CONDUCTED	PASS	Section 7.2
15.407(a)(8)	Maximum Power Spectral Density	< -1dBm/MHz e.i.r.p.		PASS	Section 7.4
15.407(a)(8)	Maximum Radiated Output Power	< 24dBm over the frequency band of operation		PASS	Section 7.3
15.407(b)(7)	In-Band Emissions	EUT must meet the limits detailed in 15.407(b)(6)		PASS	Section 7.5
15.407(b)(6)	Undesirable Emissions	< -27dBm/MHz e.i.r.p. outside of the 5.925 – 7.125GHz band		PASS	Section 7.7
15.407(d)(6)	Contention Based Protocol	EUT must detect AWGN signal with 90% (or better) certainty	RADIATED	PASS	Section 7.6
15.205, 15.209	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209		PASS	Section 7.7, 7.8
15.407(b)(9)	AC Conducted Emissions (150kHz – 30MHz)	< FCC 15.207 limits	LINE CONDUCTED	PASS	Section 7.9

Table 7-1. Summary of Test Results

Notes:

- 1) All channels, modes, and modulations/data rates were investigated among all UNII bands. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.
- 4) For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "UNII Automation," Version 4.7.
- 5) For radiated band edge, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "Chamber Automation," Version 1.3.1.

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7.2 26dB Bandwidth Measurement – 802.11a/ax

2.1049, 15.407(a)(10)

Test Overview and Limit

The bandwidth at 26dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26dB bandwidth.

The 26dB bandwidth is used to determine the conducted power limits.

Test Procedure Used

ANSI C63.10-2013 – Section 12.4 KDB 789033 D02 v02r01 – Section C KDB 987594 D02 v01r01

Test Settings

- The signal analyzers' automatic bandwidth measurement capability was used to perform the 26dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 26. The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = approximately 1% of the emission bandwidth
- 3. VBW \geq 3 x RBW
- 4. Detector = Peak
- 5. Trace mode = max hold

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-1. Test Instrument & Measurement Setup

Test Notes

None.

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MIMO Antenna-1 26 dB Bandwidth Measurements - (UNII Band 5)

Keysight Spectrum Ana RI ENSE:IN 02:25:28 PM Mar 29, 2022 ALIGN AUTO Trace/Detector Center Freq: 5.955000000 GHz Trig: Free Run Avg|Ho Radio Std: None Avg|Hold: 100/100 #IFGain:Low #Atten: 36 dB Radio Device: BTS Ref 20.00 dBm 0 dB/div .og **Clear Write** Average Max Hold Center 5.955 GHz Res BW 470 kHz Span 50 MHz VBW 5 MHz Sweep 1 ms **Min Hold Occupied Bandwidth Total Power** 15.0 dBm 16.621 MHz Detector Peak Transmit Freq Error -60.072 kHz % of OBW Power 99.00 % Auto Man x dB Bandwidth 19.58 MHz x dB -26.00 dB STATUS

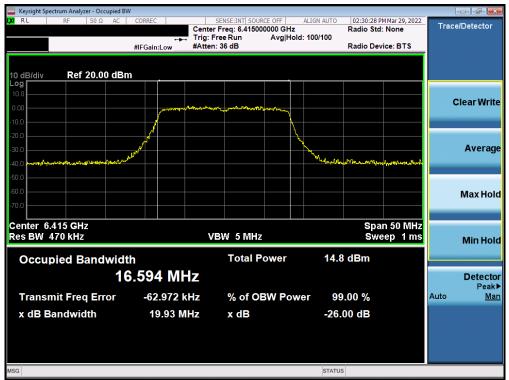




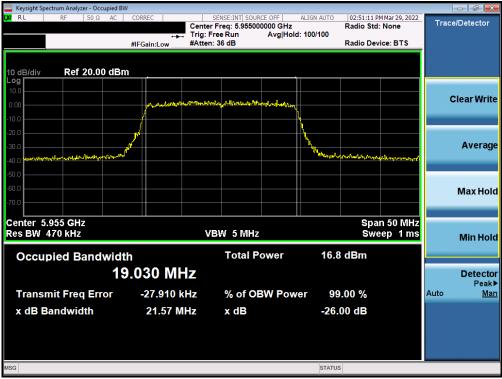
Plot 7-2. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11a (UNII Band 5) - Ch. 45)

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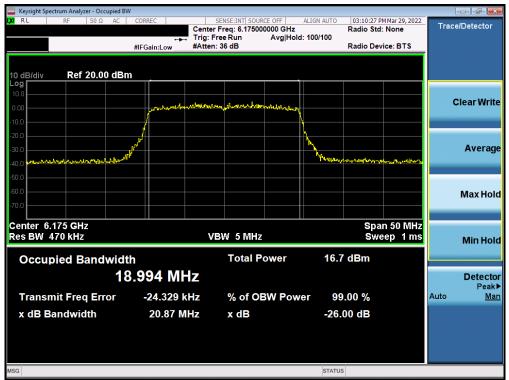




Plot 7-4. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11ax (UNII Band 5) - Ch. 1)

FCC ID: PY7-57325M		Approved by: Quality Manager	
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Plot 7-5. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11ax (UNII Band 5) - Ch. 45)



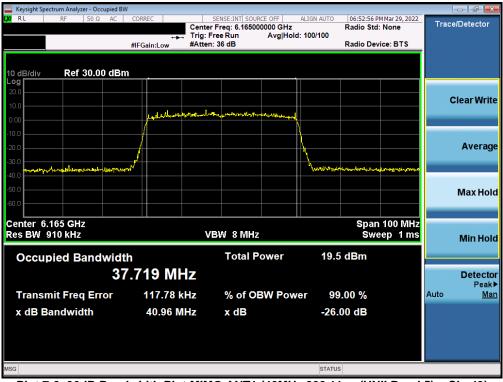
Plot 7-6. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11ax (UNII Band 5) - Ch. 93)

FCC ID: PY7-57325M		Approved by: Quality Manager	
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Plot 7-7. 26dB Bandwidth Plot MIMO ANT1 (40MHz 802.11ax (UNII Band 5) - Ch. 3)



Plot 7-8. 26dB Bandwidth Plot MIMO ANT1 (40MHz 802.11ax (UNII Band 5) - Ch. 43)

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Plot 7-9. 26dB Bandwidth Plot MIMO ANT1 (40MHz 802.11ax (UNII Band 5) - Ch. 91)



Plot 7-10. 26dB Bandwidth Plot MIMO ANT1 (80MHz 802.11ax (UNII Band 5) - Ch. 7)

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Plot 7-11. 26dB Bandwidth Plot MIMO ANT1 (80MHz 802.11ax (UNII Band 5) - Ch. 39)



Plot 7-12. 26dB Bandwidth Plot MIMO ANT1 (80MHz 802.11ax (UNII Band 5) – Ch. 87)

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🔤 Keysight Spectrum Analyzer - Occu	upied BW								
<mark>LX/</mark> RL RF 50 Ω	AC CORREC		NSE:INT SOUR		ALIGN AUTO	06:15:15 P	M Mar 29, 2022	Trac	e/Detector
	÷	🕂 Trig: Free	e Run	Avg Hold	J: 100/100				
	#IFGain:Low	#Atten: 3	6 dB			Radio Dev	ice: BTS		
10 dB/div Ref 20.00	dBm								
10.0									
0.00	But menter and	mushilling	and a second second	www.waterdayloweday	4			(Clear Write
-10.0									
-20.0									
-30.0 Harris and a state of the Association of the	al any strategy				Human	and the second	adadan barth with		Average
-40.0	<u>سی کنت ا</u>				عصتكا				
-50.0									
-60.0									
-70.0									Max Hold
-70.0									
Center 6.025 GHz							400 MHz		
Res BW 3 MHz		VBI	W 50 MH	Z		Swe	eep 1 ms		Min Hold
Occupied Bandy	width		Total P	ower	20.1	dBm			
Occupica Bailar									-
	156.37 M	FIZ							Detector Peak▶
Transmit Freq Erro	or 547.58	kHz	% of OF	BW Powe	er 99	.00 %		Auto	Man
x dB Bandwidth	165.9	MHz	x dB		-26	00 dB			
		111/2	A UB						
100					STATUS				
MSG					STATUS	,			

Plot 7-13. 26dB Bandwidth Plot MIMO ANT1 (160MHz 802.11ax (UNII Band 5) – Ch. 15)



Plot 7-14. 26dB Bandwidth Plot MIMO ANT1 (160MHz 802.11ax (UNII Band 5) - Ch. 47)

FCC ID: PY7-57325M		Approved by: Quality Manager	
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🔤 Keysight Spectrum Analyzer - Occ	upied BW				
(X) RL RF 50 Ω	AC CORREC	SENSE:INT SOU		06:16:41 PM Mar 29, Radio Std: None	2022 Trace/Detector
	++	Trig: Free Run	Avg Hold: 100/100		
	#IFGain:Low	#Atten: 36 dB		Radio Device: BT	s
10 dB/div Ref 20.00	0 dBm				
Log 10.0					
	mannen	and the second produced and the second secon	- and the second		Clear Write
0.00					
-10.0					
-20.0			<u> </u>		• • • • • •
-30.0 Hamer to the production of the production	seger plant of the left		Longed of Parate	يوموالياليون اليمانين مورساريا الموالي	Average
-40.0					
-50.0					
-60.0					Max Hold
-70.0					
Center 6.345 GHz Res BW 3 MHz		VBW 50 MH		Span 400 M	W0.0
Res BW 3 MHZ		APAA 20 ML	12	Sweep 1	ms Min Hold
Occupied Band	width	Total F	ower 20.3	3 dBm	
					Detector
	156.29 M	HZ			Detector Peak►
Transmit Freq Err	or 523.80	kHz % of O	BW Power 99	0.00 %	Auto <u>Man</u>
x dB Bandwidth	166.5 I	MHz xdB	-26.	00 dB	
MSG			STATUS		
MSG			STATUS	5	

Plot 7-15. 26dB Bandwidth Plot MIMO ANT1 (160MHz 802.11ax (UNII Band 5) – Ch. 79)

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MIMO Antenna-1 26 dB Bandwidth Measurements - (UNII Band 6)

Keysight Spectrum Analyzer - Occupied BW - **1** 02:31:11 PM Mar 29, 2022 Trace/Detector Radio Std: None Radio Device: BTS #IFGain:Low Ref 20.00 dBm 10 dB/div **Clear Write** Average Max Hold Center 6.435 GHz Res BW 470 kHz Span 50 MHz Sweep 1 ms VBW 5 MHz **Min Hold Total Power** 14.6 dBm **Occupied Bandwidth** 16.600 MHz Detector Peak▶ <u>Man</u> **Transmit Freq Error** -70.503 kHz % of OBW Power 99.00 % Auto 19.85 MHz x dB Bandwidth x dB -26.00 dB STATUS

Plot 7-16. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11a (UNII Band 6) – Ch. 97)

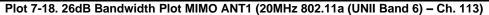
Keysight Spectrum Analyzer - Occupied	BW				
RL RF 50Ω AC		SENSE:INT SOURCE OFF Center Freq: 6.475000000 GHz Trig: Free Run Avg Hold #Atten: 36 dB	Radio S : 100/100	r PM Mar 29, 2022 td: None evice: BTS	Trace/Detector
10 dB/div Ref 20.00 dB	m				
0.00 -10.0 -20.0					Clear Write
-30.0 -40.0 artilional active (1).44.4 Active in the second second second second second second second second second s	worklich and the second s		Margan and a south of the	an Indial Magnadary,	Average
-60.0 -70.0 Center 6.475 GHz					Max Hold
Res BW 470 kHz	lth	VBW 5 MHz Total Power		an 50 MHz veep 1 ms	Min Hold
	6.648 MH				Detecto Peak
Transmit Freq Error x dB Bandwidth	-91.175 kH 20.04 MH		er 99.00 % -26.00 dB		Auto <u>Ma</u> i
ISG			STATUS		

FCC ID: PY7-57325M		MEASUREMENT REPORT (CERTIFICATION)			
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Keysight Spectrum Analyzer - Occupied BV					
XIRL RF 50Ω AC	Center	SENSE:INT SOURCE OFF Freq: 6.515000000 GH2 Free Run Avg Ho 1: 36 dB		02:37:13 PM Mar 29, 2 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dBn	1 <u>, </u>				
0.00					ClearWrit
20.0			k hy hy		Avera
40.0 hardballanniker, sowanneskar, and sol			Manager Marine	ๅฅ๛๙๙๚๛๙๛๛๚๛ _๚ ๚๛ _๚ ฅ๛๛๛๚๛๚๚๚๚๚	
					Max Hol
Center 6.515 GHz Res BW 470 kHz		BW 5 MHz		Span 50 M Sweep 1	
Occupied Bandwidt		Total Power	15.1	dBm	
16	6.590 MHz				Detect
Transmit Freq Error	-62.123 kHz	% of OBW Po	wer 99	.00 %	Peak Auto <u>Ma</u>
x dB Bandwidth	19.81 MHz	x dB	-26.	00 dB	
sg			STATU	3	

Plot 7-17. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11a (UNII Band 6) - Ch. 105)





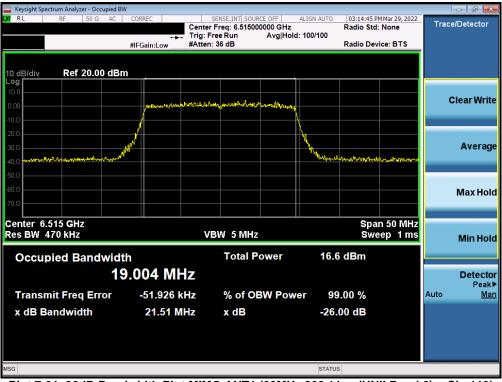
Plot 7-19. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11ax (UNII Band 6) - Ch. 97)

FCC ID: PY7-57325M		MEASUREMENT REPORT (CERTIFICATION)			
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Plot 7-20. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11ax (UNII Band 6) - Ch. 105)



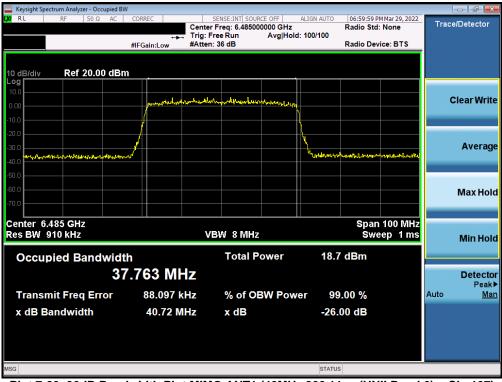
Plot 7-21. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11ax (UNII Band 6) - Ch. 113)

FCC ID: PY7-57325M		MEASUREMENT REPORT (CERTIFICATION)			
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Keysight Spectrum Analyzer - Occupied BW							
🗱 RL RF 50Ω AC COF		NSE:INT SOURCE OFF		06:59:02 PM adio Std:	Mar 29, 2022	Trace	e/Detector
	🛶 Trig: Fre	e Run Avg∣Holo	d: 100/100				
#IF0	Gain:Low #Atten: 3	6 dB	R	adio Devi	ce: BTS		
10 dB/div Ref 20.00 dBm Log							
10.0							
0.00	Brookformpate Athen Willel	and and the property of the states				C	Clear Write
-10.0	[
-20.0	·						
-30.0			l,				Average
-40.0 - ALLAND CONTRACTOR - ALLAND CONTRACTOR			tonput	when me	\# &~ } \% ^ ******		-
-50.0							
-60.0							Maxilald
-70.0							Max Hold
10.0							
Center 6.445 GHz					100 MHz		
Res BW 910 kHz	VE	W 8 MHz		Swe	ep 1 ms		Min Hold
Occupied Bandwidth		Total Power	19.0 d	lBm			
	52 MHz						Detector
37.7	SZ IVITIZ						Detector Peak▶
Transmit Freq Error	57.076 kHz	% of OBW Pow	ver 99.0	0 %		Auto	Man
x dB Bandwidth	40.90 MHz	x dB	-26.00) dB			
			20100				
MSG			STATUS				

Plot 7-22. 26dB Bandwidth Plot MIMO ANT1 (40MHz 802.11ax (UNII Band 6) – Ch. 99)



Plot 7-23. 26dB Bandwidth Plot MIMO ANT1 (40MHz 802.11ax (UNII Band 6) - Ch. 107)

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🔤 Keysight Spectrum Analyzer - Occup						-	
LX/ RL RF 50 Ω	AC CORREC	SENSE:INT SOURCE		07:03:02 PM N Radio Std: N		Trace	/Detector
		Trig: Free Run /	Avg Hold: 100/100				
	#IFGain:Low	#Atten: 36 dB		Radio Devic	e: BTS		
10 dB/div Ref 20.00	dBm						
Log 10.0							
0.00	permetertino	wannether where and a server	marthening			С	lear Write
-10.0							
-20.0							
-30.0							Average
to have to mary and a state of the	and sugar black		Lynnaph	-	neretranante		Average
-40.0							
-50.0							
-60.0							Max Hold
-70.0						_	
Center 6.525 GHz				Span 1	00 MHz		
Res BW 910 kHz		VBW 8 MHz			p 1 ms		Min Hold
							Minitiona
Occupied Bandw		Total Pov	ver 19.4	dBm			
	37.783 MH	Z					Detector
Turne with Free of Free	60 244 ki			00.0/		Auto	Peak▶ Man
Transmit Freq Erro				.00 %		Auto	IVIan
x dB Bandwidth	40.84 MI	lz xdB	-26.0	00 dB			
MSG			STATUS				

Plot 7-24. 26dB Bandwidth Plot MIMO ANT1 (40MHz 802.11ax (UNII Band 6) – Ch. 115)



Plot 7-25. 26dB Bandwidth Plot MIMO ANT1 (80MHz 802.11ax (UNII Band 6) - Ch. 103)

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🔤 Keysight Spectrum Analyzer - Οccι	upied BW								- 0 -
L <mark>X/</mark> RL RF 50 Ω	AC CORREC		ense:INT SOUR Freg: 6.50500		ALIGN AUTO	06:17:52 P	M Mar 29, 2022	Trac	e/Detector
		Trig: Fr	ee Run	Avg Hold	: 100/100				
	#IFGain:L	.ow #Atten:	36 dB			Radio Dev	ice: BTS		
10 dB/div Ref 20.00	dBm								
Log 10.0									
	Anto	واللهامه والمعالية ويوريسي	4 minstartin	-Alla internet				(Clear Write
0.00									
-10.0									
-20.0					H.				
-30.0 million the survey of the second	personal and a second second				Wagnerger	remoder whe	the matter particular and		Average
-40.0									
-50.0									
-60.0									Max Hold
-70.0									muxmoru
Center 6.505 GHz) (5		_			400 MHz		
Res BW 3 MHz		VE	W 50 MH	Z		Swe	ep 1 ms		Min Hold
Occupied Band	width		Total P	ower	20.2	dBm			
		B.41.1_							
	156.18	WHZ							Detector Peak▶
Transmit Freq Erro	or 252	.91 kHz	% of OE	BW Pow	er 99	.00 %		Auto	<u>Man</u>
x dB Bandwidth	16	7.1 MHz	x dB		-26.0	00 dB			
MSG					STATUS				
Mog					STATUS	1			

Plot 7-26. 26dB Bandwidth Plot MIMO ANT1 (160MHz 802.11ax (UNII Band 6) – Ch. 111)

FCC ID: PY7-57325M		MEASUREMENT REPORT (CERTIFICATION)							
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MIMO Antenna-1 26 dB Bandwidth Measurements - (UNII Band 7)

Keysight Spectrum Analyzer - Occupied BW - A 02:39:16 PM Mar 29, 2022 Trace/Detector Radio Std: None Radio Device: BTS #IFGain:Low Ref 20.00 dBm 10 dB/div **Clear Write** Average ተትሌሌላ Max Hold Center 6.535 GHz Res BW 470 kHz Span 50 MHz Sweep 1 ms VBW 5 MHz **Min Hold Total Power** 15.4 dBm **Occupied Bandwidth** 16.639 MHz Detector Peak▶ <u>Man</u> **Transmit Freq Error** -85.989 kHz % of OBW Power 99.00 % Auto x dB Bandwidth 19.83 MHz x dB -26.00 dB STATUS

Plot 7-27. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11a (UNII Band 7) – Ch. 117)

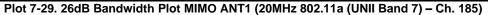
🔤 Keysight Spectrum Analyzer - Occupied B	N				
RL RF 50Ω AC	Trig:	SENSE:INT SOURCE OFF er Freq: 6.695000000 GHz Free Run Avg Hold en: 36 dB	Radio Sto		Trace/Detector
10 dB/div Ref 20.00 dB/	n				ClearWrite
-10.0					Average
-40.0 3400 100 100 100 100 100 100 100 100 100 			- Man - Mar - Robert	na palanen an Proposa an I	Max Hold
-70.0 Center 6.695 GHz Res BW 470 kHz		VBW 5 MHz		an 50 MHz eep 1 ms	Min Hol
Occupied Bandwid	th 6.639 MHz	Total Power	14.8 dBm		Detecto
Transmit Freq Error x dB Bandwidth	-90.752 kHz 20.12 MHz	% of OBW Pow x dB	er 99.00 % -26.00 dB		Auto <u>Mar</u>
asa			STATUS		

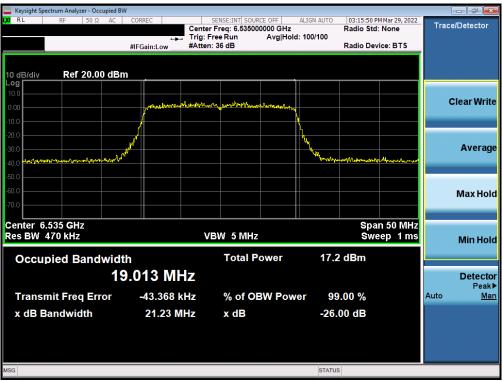
FCC ID: PY7-57325M		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dama 00 of 000		
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Keysight Spectrum Analyzer - Occupied BM			IL COLIT			
X RL RF 50Ω AC	Center Trig: F	SENSE:INT SOURCE OFF r Freq: 6.875000000 GHz Free Run Avg Hol n: 36 dB	ALIGN AUTO	02:41:42 PM Mar Radio Std: Nor Radio Device:	ne	Trace/Detector
10 dB/div Ref 20.00 dBn	۱ <u>. </u>					
10.0		and the second second				Clear Writ
20.0 30.0 40.0 20.00000000000000000000000000000000			M Manunal My	Some market	with all paper	Averaç
50.0						Max Ho
Center 6.875 GHz Res BW 470 kHz	V	BW 5 MHz		Span 5 Sweep	0 MHz 1 ms	Min Ho
Occupied Bandwidt		Total Power	15.0	dBm		
16	622 MHz					Detect Peal
Transmit Freq Error	-90.892 kHz	% of OBW Pow	ver 99	.00 %	A	uto <u>M</u> i
x dB Bandwidth	19.75 MHz	x dB	-26.	00 dB		
SG			STATUS			

Plot 7-28. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11a (UNII Band 7) - Ch. 149)





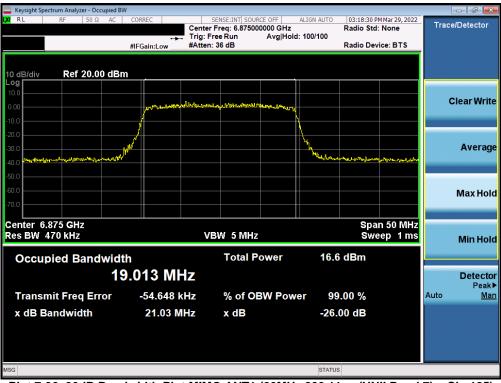
Plot 7-30. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11ax (UNII Band 7) - Ch. 117)

FCC ID: PY7-57325M		Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 21 of 220
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Plot 7-31. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11ax (UNII Band 7) - Ch. 149)



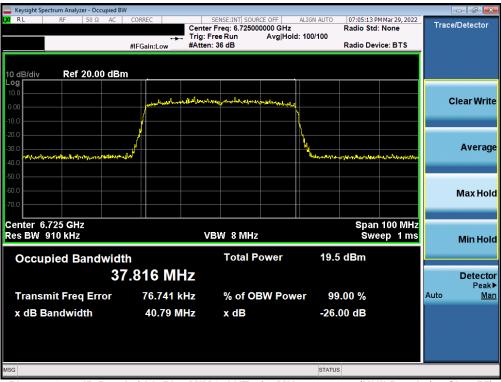
Plot 7-32. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11ax (UNII Band 7) - Ch. 185)

FCC ID: PY7-57325M	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 22 of 226
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Plot 7-33. 26dB Bandwidth Plot MIMO ANT1 (40MHz 802.11ax (UNII Band 7) - Ch. 123)



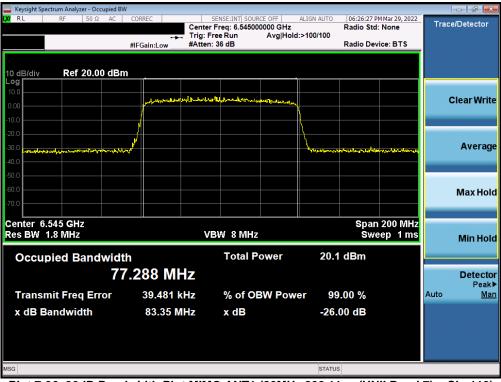
Plot 7-34. 26dB Bandwidth Plot MIMO ANT1 (40MHz 802.11ax (UNII Band 7) - Ch. 155)

FCC ID: PY7-57325M		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dage 22 of 226		
1M2201200003-22-R1.PY7	3/25/2022 - 5/19/2022	Portable Handset	Page 33 of 236		
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🔤 Keysight Spectrum Analyzer - Occupied						
LXI RL RF 50Ω AC		SENSE:INT SOURCE		07:06:03 PM Mar 2 Radio Std: Non		Trace/Detector
		rig: Free Run	Avg Hold: 100/100		-	
	#IFGain:Low #	Atten: 36 dB		Radio Device: E	BTS	
10 dB/div Ref 20.00 dl	Bm					
Log 10.0						
0.00	and produced in the second	het you and a second start way we have a	www.up			Clear Write
-10.0	/					
-20.0						
	e la					Average
-30.0	wint		a should be all	relymenterpersidence	Applan	Average
-40.0						
-50.0						
-60.0						Max Hold
-70.0						
Center 6.845 GHz				Span 100	MHz	
Res BW 910 kHz		VBW 8 MHz		Sweep		Min Hold
			40.5			
Occupied Bandwi		Total Pov	wer 18.5	dBm		
	37.806 MHz	2				Detector
Transmit Frag Error	31.893 kH	% of OBV		.00 %		Peak▶ Auto Man
Transmit Freq Error					í l	
x dB Bandwidth	40.80 MH	z xdB	-26.0	00 dB		
MSG			STATUS			

Plot 7-35. 26dB Bandwidth Plot MIMO ANT1 (40MHz 802.11ax (UNII Band 7) – Ch. 179)



Plot 7-36. 26dB Bandwidth Plot MIMO ANT1 (80MHz 802.11ax (UNII Band 7) - Ch. 119)

FCC ID: PY7-57325M		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dama 04 at 000		
1M2201200003-22-R1.PY7	3/25/2022 - 5/19/2022	Portable Handset	Page 34 of 236		
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Keysight Spectrum Analyzer - Occupied B\							
LX/ RL RF 50Ω AC	CORREC	SENSE:INT SOUR		UTO 06:27:09 PM Radio Std:	Mar 29, 2022	Trace/De	tector
	+ + -	Trig: Free Run	Avg Hold:>100/1	100			
	#IFGain:Low	#Atten: 36 dB		Radio Devi	ice: BTS		
10 dB/div Ref 30.00 dBr	n						
20.0							
10.0						Clea	ar Write
0.00	and the state of t	persenses an entry of the second	www.elawary				
-10.0							
-20.0						A	verage
20.0	1						
-30.0 asymptotic and an and a second	10M			nelleturgentettermetter	~1~4~~~		
-50.0							
						м	ax Hold
-60.0							
Center 6.705 GHz					200 MHz		
Res BW 1.8 MHz		VBW 8 MHz		Swe	ep 1 ms	м	in Hold
Occupied Departurial		Total P	ower	20.0 dBm			
Occupied Bandwidt			Ower	20.0 UBIII			
71	7.330 MH	Z				D	etector Peak▶
Transmit Freq Error	136.75 k	Hz % of OE	3W Power	99.00 %		Auto	Peak ► <u>Man</u>
x dB Bandwidth	83.29 M	Hz x dB		-26.00 dB			
	00120 11						
MSG				STATUS			
Mod				SIAIUS			

Plot 7-37. 26dB Bandwidth Plot MIMO ANT1 (80MHz 802.11ax (UNII Band 7) – Ch. 151)



Plot 7-38. 26dB Bandwidth Plot MIMO ANT1 (80MHz 802.11ax (UNII Band 7) - Ch. 183)

FCC ID: PY7-57325M	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dama 05 at 000
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🔤 Keysight Spectrum Analyzer - Occup	pied BW								
L <mark>X/</mark> R L RF 50 Ω	AC CORREC		NSE:INT SOUR		ALIGN AUTO	06:21:16 PM Radio Std:	M Mar 29, 2022	Trac	e/Detector
		🛶 Trig: Free	e Run	Avg Hold	: 100/100				
	#IFGain:Lov	w #Atten: 36	6 dB			Radio Devi	ice: BTS		
10 dB/div Ref 20.00	dBm								
Log 10.0	وي المحمد								
0.00		and a start and a start and a start and a start	Monaberry	pur transmit y harding				(Clear Write
-10.0									
-20.0									
-30.0 -30.0	annend				1	فليعضل معدسا	محمر المامدين		Average
-40.0	كال يتقنيقا								,
-40.0									
-60.0									Max Hold
-70.0									-
Center 6.665 GHz						Span	400 MHz		
Res BW 3 MHz		VBV	N 50 MH:	z			ep 1ms		Min Hold
Occurried Dendu			Total D	- Wor	10.2	dBm			
Occupied Bandw			Total Po	ower	19.2	abm			
	156.32	MHz							Detector
Transmit Freq Erro	or 278.7	73 kHz	% of OE	3W Powe	er 99	.00 %		Auto	Peak▶ <u>Man</u>
x dB Bandwidth		.8 MHz	x dB		-26 (00 dB			
A ub banawiaan	105		X UB		-2010				
MSG					STATUS				

Plot 7-39. 26dB Bandwidth Plot MIMO ANT1 (160MHz 802.11ax (UNII Band 7) - Ch. 143)



Plot 7-40. 26dB Bandwidth Plot MIMO ANT1 (160MHz 802.11ax (UNII Band 7) - Ch. 175)

FCC ID: PY7-57325M	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 36 of 236
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MIMO Antenna-1 26 dB Bandwidth Measurements - (UNII Band 8)

Keysight Spectrum Analyzer - Occupied BW - A SENSE:INT SOURCE OFF ALIGN AUTO Center Freq: 6.89500000 GHz Trig: Freq: Run Avg|Hold: 100/100 #Atten: 36 dB 02:42:42 PM Mar 29, 2022 Trace/Detector Radio Std: None Radio Device: BTS #IFGain:Low Ref 20.00 dBm 10 dB/div **Clear Write** Average Ц. Jan 1 Max Hold Center 6.895 GHz Res BW 470 kHz Span 50 MHz Sweep 1 ms VBW 5 MHz **Min Hold Total Power** 15.1 dBm **Occupied Bandwidth** 16.650 MHz Detector Peak▶ <u>Man</u> **Transmit Freq Error** -92.247 kHz % of OBW Power 99.00 % Auto 19.99 MHz x dB Bandwidth x dB -26.00 dB STATUS

Plot 7-41. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11a (UNII Band 8) – Ch. 189)

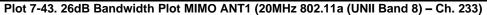
Keysight Spectrum Analyzer - Occupied					- 6
RL RF 50Ω AC	Trig:	sense:INT SOURCE OFF er Freq: 6.995000000 GHz Free Run Avg Hold en: 36 dB	Radio Sto 1: 100/100	PM Mar 29, 2022 d: None vice: BTS	Trace/Detector
10 dB/div Ref 20.00 dB	m				<u> Olean Writ</u>
0.00					ClearWrit
0.0 0.0 0.0 0.0	KWLOW CONTRACTOR		And the second	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Averaç
enter 6.995 GHz				an 50 MHz	Max Ho
Res BW 470 kHz Occupied Bandwid	lth	VBW 5 MHz Total Power	Sw 15.2 dBm	eep 1 ms	Min Ho
	6.581 MHz		00.00.00		Detect Peal
Transmit Freq Error x dB Bandwidth	-73.196 kHz 19.74 MHz	% of OBW Powe x dB	er 99.00 % -26.00 dB	,	Auto <u>M</u> a
G			STATUS		

FCC ID: PY7-57325M		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dama 07 of 000		
1M2201200003-22-R1.PY7	3/25/2022 - 5/19/2022	Portable Handset	Page 37 of 236		
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Keysight Spectrum Analyzer - Occupied BW		•					
XIRL RF 50Ω AC	Center	SENSE:INT SOURCE OFF Freq: 7.115000000 GH Free Run Avg H I: 36 dB		02:48:48 PM Radio Std: Radio Devi		Trace/D	etector
10 dB/div Ref 20.00 dBn	1 <u>.</u>						
10.0		May marker (1)- granner				Cle	ar Writ
20.0 30.0 40.0 unidheantanachanachan	avera de la companya		the sourcessour	uullinus hayanad	Magariil, (Majalates		Averag
50.0 60.0 70.0						N	lax Ho
Center 7.115 GHz Res BW 470 kHz	v	BW 5 MHz		Spar Swe	n 50 MHz ep 1 ms	N	/lin Ho
Occupied Bandwidt	հ 6.681 MHz	Total Power	10.3	3 dBm			Detecto Peak
Transmit Freq Error	-100.22 kHz	% of OBW Po	wer 99	0.00 %		Auto	Peak <u>Ma</u>
x dB Bandwidth	20.04 MHz	x dB	-26.	00 dB			
SG			STATU	5			

Plot 7-42. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11a (UNII Band 8) - Ch. 209)





Plot 7-44. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11ax (UNII Band 8) - Ch. 189)

FCC ID: PY7-57325M		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dage 20 of 220		
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Plot 7-45. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11ax (UNII Band 8) - Ch. 209)



Plot 7-46. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11ax (UNII Band 8) - Ch. 233)

FCC ID: PY7-57325M		Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 20 of 226
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🔤 Keysight Spectrum Analyzer - Occupi	ed BW				- 5
LX/ RL RF 50Ω A	AC CORREC C	SENSE:INT SOURCE OFF	ALIGN AUTO 07:06:43 P Radio Std	M Mar 29, 2022	Trace/Detector
	🛶 Tri	g:FreeRun Avg Hold	d: 100/100		
	#IFGain:Low #A	tten: 36 dB	Radio Dev	ice: BTS	
10 dB/div Ref 20.00 c	dBm				
Log 10.0					
0.00	have a strather	where the president and the second second			Clear Write
	1				
-10.0			h		
-20.0			1.		
-30.0	and the second		mannen	philippine	Average
-40.0					
-50.0					
-60.0					Max Hold
-70.0					
				400 0411-	
Center 6.885 GHz Res BW 910 kHz		VBW 8 MHz		100 MHz ep 1 ms	
					Min Hold
Occupied Bandw	idth	Total Power	19.6 dBm		
	37.736 MHz				Detector
	57.750 WH 12				Peak►
Transmit Freq Error	77.182 kHz	% of OBW Pow	er 99.00 %		Auto <u>Man</u>
x dB Bandwidth	41.12 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-47. 26dB Bandwidth Plot MIMO ANT1 (40MHz 802.11ax (UNII Band 8) – Ch. 187)



Plot 7-48. 26dB Bandwidth Plot MIMO ANT1 (40MHz 802.11ax (UNII Band 8) - Ch. 211)

FCC ID: PY7-57325M		Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 40 - 6 000
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Keysight Spectrum Analyzer - Occupied	BW					(- 🗗 🗙
LX/ RL RF 50Ω AC		SENSE:INT SOURCE OF Center Freg: 7.085000000		07:08:21 PM Radio Std:	1 Mar 29, 2022	Trace	e/Detector
		Trig: Free Run Av	/g Hold: 100/100				
	#IFGain:Low #	#Atten: 36 dB		Radio Devi	ce: BTS		
10 dB/div Ref 20.00 dE	Bm						
Log 10.0	و و الک						
0.00	and the second second	Contherner but met of restarted	Michael			C	Clear Write
-10.0							
-20.0			h in the second s				
							Average
-30.0	mart		Mapunakan	www.m.	งและรางไขสุดสามาระเป็น		Average
-40.0							
-50.0							
-60.0							Max Hold
-70.0							_
Center 7.085 GHz				Span	100 MHz		
Res BW 910 kHz		VBW 8 MHz			ep 1 ms		Min Hold
							Millinoid
Occupied Bandwid	dth	Total Powe	er 19.3	dBm			
3	37.794 MHz	Z					Detector
			-	00.0/		A	Peak▶
Transmit Freq Error	64.803 kH	z % of OBW	Power 99.	00 %		Auto	Man
x dB Bandwidth	40.87 MH	z xdB	-26.0	0 dB			
MSG			STATUS				

Plot 7-49. 26dB Bandwidth Plot MIMO ANT1 (40MHz 802.11ax (UNII Band 8) – Ch. 227)



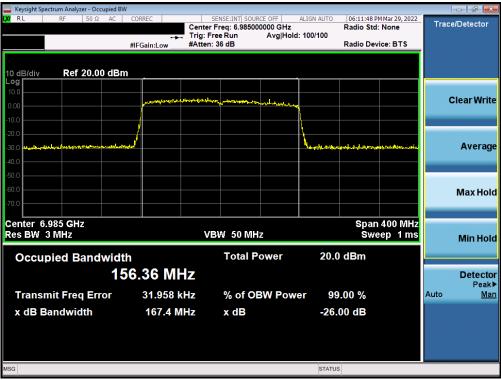
Plot 7-50. 26dB Bandwidth Plot MIMO ANT1 (80MHz 802.11ax (UNII Band 8) - Ch. 199)

FCC ID: PY7-57325M		Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 41 of 226
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🔤 Keysight Spectrum Analyzer - Occup									
<mark>LX/</mark> RL RF 50Ω	AC CORREC		NSE:INT SOUR		ALIGN AUTO	06:41:08 PM Radio Std:	M Mar 29, 2022	Trac	e/Detector
	÷.	, Trig: Free	e Run		d: 100/100				
	#IFGain:Low	#Atten: 36	∂ dB			Radio Devi	ice: BTS		
10 dB/div Ref 20.00	dBm								
Log 10.0									
0.00	بىلىپىدەلىسىل	a server been all	and manual and	And New Johnson				(Clear Write
-10.0									
-20.0									
									Average
-30.0 millionshiphinghalana amraintaila	mather the				Mound	ويعونه ويعارفهم والمرد	www.www.		Average
-40.0									
-50.0									
-60.0									Max Hold
-70.0								_	
Center 7.025 GHz						Span	200 MHz		
Res BW 1.8 MHz		VBV	W 8 MHz				ep 1 ms		Min Hold
									WIITTIOIG
Occupied Bandw	vidth		Total P	ower	19.5	5 dBm			
	77.264 MH	z							Detector
									Peak▶
Transmit Freq Erro	or 12.565 k	(Hz	% of OF	BW Pow	er 99	.00 %		Auto	<u>Man</u>
x dB Bandwidth	83.77 M	IHz	x dB		-26.	00 dB			
MSG					STATUS	3			

Plot 7-51. 26dB Bandwidth Plot MIMO ANT1 (80MHz 802.11ax (UNII Band 8) – Ch. 215)



Plot 7-52. 26dB Bandwidth Plot MIMO ANT1 (160MHz 802.11ax (UNII Band 8) - Ch. 207)

FCC ID: PY7-57325M		Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 40 at 000
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MIMO Antenna-2 26 dB Bandwidth Measurements - (UNII Band 5)

Keysight Spectrum Analyzer - Occupied BW
 SENSE:INT SOURCE OFF
 ALIGN AUTO

 Center Freq: 5.955000000 GHz
 Trig: Freq: Number of the second seco 03:24:42 PM Mar 29, 2022 Trace/Detector Radio Std: None Radio Device: BTS #IFGain:Low Ref 20.00 dBm 10 dB/div **Clear Write** Average Max Hold Center 5.955 GHz Res BW 470 kHz Span 50 MHz Sweep 1 ms VBW 5 MHz **Min Hold** Total Power 15.1 dBm **Occupied Bandwidth** 16.575 MHz Detector Peak▶ <u>Man</u> **Transmit Freq Error** -37.117 kHz % of OBW Power 99.00 % Auto x dB Bandwidth 19.73 MHz x dB -26.00 dB STATUS

Plot 7-53. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11a (UNII Band 5) – Ch. 1)

🔤 Keysight Spectrum Analyzer - Occupied BV					- 5
LXURL RF 50ΩAC		SENSE:INT SOURCE OFF r Freq: 6.175000000 GHz Free Run Avg Hol		03:39:09 PM Mar 29, 2022 adio Std: None	Trace/Detector
		n: 36 dB		adio Device: BTS	
10 dB/div Ref 20.00 dBr	n				
Log 10.0					
0.00	and a hand a h	and and a state of the second state of the sec			Clear Write
-10.0					
-20.0			<u>h</u>		
-30.0					Averag
-40.0 -marker way and the second s			U Marildy th general provide	Mary and a south a south and the south	
-50.0					
-60.0					Max Hol
-70.0					
Center 6.175 GHz				Span 50 MHz	
Res BW 470 kHz	V	/BW 5 MHz		Sweep 1 ms	Min Hol
Occupied Bandwidt	'n	Total Power	15.9 d	Bm	
).015 MHz				Detecto
					Peak
Transmit Freq Error	-29.621 kHz	% of OBW Pow	ver 99.0	0 %	Auto <u>Ma</u>
x dB Bandwidth	21.45 MHz	x dB	-26.00	dB	
ISG			STATUS		

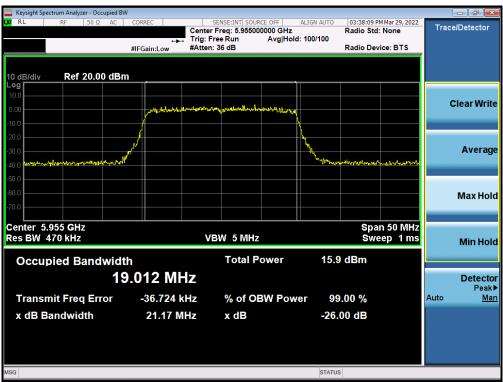
FCC ID: PY7-57325M		Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dage 42 ef 226	
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Plot 7-54. 26dB Ban	1	•	002.11			
μα RL RF 50Ω AC	Center	SENSE:INT SOURCE OFF Freq: 6.415000000 GHz Free Run Avg Ho I: 36 dB	ld: 100/100	03:40:25 PM Mar 29, 2022 Radio Std: None Radio Device: BTS	Trace	/Detector
10 dB/div Ref 20.00 dBm	۱ ۱		1			
0.00		ลีสา _{สสา} สรารขณะสามสำคัญสูญ	4		с	lear Write
-10.0 -20.0 -30.0	and the second s		h h	hhan han flynd yn ar yn dyf yr		Average
-50.0 -60.0 -70.0						Max Hold
Center 6.415 GHz Res BW 470 kHz	v	BW 5 MHz		Span 50 MHz Sweep 1 ms		Min Hold
Occupied Bandwidt		Total Power	16.7 (dBm		
18	8.966 MHz					Detector Peak
Transmit Freq Error	-39.187 kHz	% of OBW Pov	ver 99.(00 %	Auto	Mar
x dB Bandwidth	21.48 MHz	x dB	-26.00	0 dB		
MSG			STATUS			

Plot 7-54. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11a (UNII Band 5) - Ch. 45)

Plot 7-55. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11a (UNII Band 5) – Ch. 93)



Plot 7-56. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11ax (UNII Band 5) - Ch. 1)

FCC ID: PY7-57325M		Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 44 of 220
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Plot 7-57. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11ax (UNII Band 5) - Ch. 45)



Plot 7-58. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11ax (UNII Band 5) - Ch. 93)

FCC ID: PY7-57325M		Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 45 of 226
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🔤 Keysight Spectrum Analyzer - Occup	pied BW						- 0 ×
LX/ RL RF 50 Ω	AC CORREC	SENSE:INT SOUR		03:55:25 Pt Radio Std:	M Mar 29, 2022	Trace	/Detector
	- -	Trig: Free Run	Avg Hold: 100/100				
	#IFGain:Low	#Atten: 36 dB		Radio Dev	ice: BTS		
10 dB/div Ref 20.00	dBm						
Log 10.0	بصصيا عطم						
0.00	and an all and a second	ymaile all all all all all all and a second	making			C	lear Write
-10.0							
-20.0							
-30.0							Average
-30.0 -40.0	and the second se		Wounday	and a state of the	Normanna		Average
-50.0	وهو المعظ						
-60.0	وهو الصلح						Max Hold
-70.0	وهو الصلح						_
Center 5.965 GHz				Span	100 MHz		
Res BW 910 kHz		VBW 8 MHz			ep 1ms		Min Hold
		Total B	10	e-10-			
Occupied Bandy		Total P	ower 19.	6 dBm			
	37.743 MH	Z					Detector
Transmit Freq Erro	or -59.923 k	Hz % of O	3W Power 9	9.00 %		Auto	Peak▶ Man
						Auto	man
x dB Bandwidth	41.06 M	Hz x dB	-26	.00 dB			
MSG			STATU	JS			

Plot 7-59. 26dB Bandwidth Plot MIMO ANT2 (40MHz 802.11ax (UNII Band 5) - Ch. 3)



Plot 7-60. 26dB Bandwidth Plot MIMO ANT2 (40MHz 802.11ax (UNII Band 5) - Ch. 43)

FCC ID: PY7-57325M		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dage 46 ef 226		
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Plot 7-61. 26dB Bandwidth Plot MIMO ANT2 (40MHz 802.11ax (UNII Band 5) – Ch. 91)



Plot 7-62. 26dB Bandwidth Plot MIMO ANT2 (80MHz 802.11ax (UNII Band 5) - Ch. 7)

FCC ID: PY7-57325M		Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 47 of 226
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🔤 Keysight Spectrum Analyzer - Occupi	ied BW									
LX/RL RF 50Ω/	AC CORREC	C		ISE:INT SOUR		ALIGN AUTO	05:47:23 PM Radio Std:	1 Mar 29, 2022	Trac	e/Detector
			Trig: Free	Run	Avg Hold	1: 100/100				
	#IFGair	n:Low	#Atten: 3	6 dB			Radio Devi	ice: BTS		
10 dB/div Ref 20.00 d	dBm									
Log 10.0										
0.00	N	hand	anter frank	and and ground a	Jan whether weeking					Clear Write
-10.0										
-20.0						ì				
-30.0						N,				Average
werten states and states	a all had an all had					lan laterta	erennelletengerijk	uhil-testatestheorytest		Average
-40.0										
-50.0										
-60.0										Max Hold
-70.0									_	
Center 6.145 GHz							Span	200 MHz		
Res BW 1.8 MHz			VBV	V 8 MHz				ep 1 ms		Min Hold
				Tetel D		40.2	dDee			
Occupied Bandw				Total P	ower	19.2	dBm			
	77.32	6 M⊦	Z							Detector
Transmit Freq Erro	- 17	79.90 k	U -7	% of OE		or 00	.00 %		Auto	Peak▶ Man
									Auto	Man
x dB Bandwidth	8	3.27 M	Hz	x dB		-26.0)0 dB			
MSG						STATUS				

Plot 7-63. 26dB Bandwidth Plot MIMO ANT2 (80MHz 802.11ax (UNII Band 5) - Ch. 39)



Plot 7-64. 26dB Bandwidth Plot MIMO ANT2 (80MHz 802.11ax (UNII Band 5) – Ch. 87)

FCC ID: PY7-57325M		Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 49 of 226
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🔤 Keysight Spectrum Analyzer - Occuj									
<mark>LX/</mark> RL RF 50 Ω	AC CORREC		NSE:INT SOUR		ALIGN AUTO	06:00:45 PM Radio Std:	M Mar 29, 2022	Trac	e/Detector
	-	📕 Trig: Free	e Run	Avg Hold	1: 100/100				
	#IFGain:Low	#Atten: 3	6 dB			Radio Devi	rice: BTS		
10 dB/div Ref 20.00	dBm								
Log									
0.00	- Andrewson -	and the stand an	worken works	apartly and mark				(Clear Write
-10.0		وي ال							
-20.0									
									Average
-30.0 					Constant of the	al an	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		Average
-40.0									
-50.0									
-60.0									Max Hold
-70.0									_
Center 6.025 GHz						Span	400 MHz		
Res BW 3 MHz		VB	W 50 MH	z			eep 1 ms		Min Hold
					10.1				
Occupied Bandy			Total P	ower	19.6	i dBm			
	155.89 M	Hz							Detector
Transmit From Free	622.45		W -5 O			00.0/		Auto	Peak►
Transmit Freq Erro				BW Powe		0.00 %		Auto	<u>Man</u>
x dB Bandwidth	166.5	MHz	x dB		-26.	00 dB			
MSG					STATUS	\$			

Plot 7-65. 26dB Bandwidth Plot MIMO ANT2 (160MHz 802.11ax (UNII Band 5) – Ch. 15)



Plot 7-66. 26dB Bandwidth Plot MIMO ANT2 (160MHz 802.11ax (UNII Band 5) - Ch. 47)

FCC ID: PY7-57325M		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dage 40 of 226		
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🤤 Keysight Spectrum Analyzer - Occupier	d BW						- # ×
LX/ RL RF 50 Ω AC		SENSE:INT SOUR		06:02:49 PM Radio Std:	Mar 29, 2022	Trace	e/Detector
	- -	Trig: Free Run	Avg Hold: 100/100				
	#IFGain:Low	#Atten: 36 dB		Radio Devi	ce: BTS		
10 dB/div Ref 20.00 d	Bm		i				
Log 10.0							
0.00	رو المعادي معادي المحمد الم	1 martine personal and and	where has been			C	Clear Write
-10.0							
-20.0							
-30.0 - an manufacture of the second second				and burn at such as	the statistic matter		Average
-40.0				A STATE OF STATE OF STATE			Arenage
-50.0							
-60.0							Max Hold
-70.0							
Center 6.345 GHz				Span	400 MHz		
Res BW 3 MHz		VBW 50 MH:	z		ep 1 ms		Min Hold
		T-4-1 D	20				
Occupied Bandwi		Total Po	ower 20.	3 dBm			
	156.07 MH	2					Detector
Transmit Frog Error	554 50 kH	w of OF	Bower 0	0.00 0/		Auto	Peak▶ Man
Transmit Freq Error				9.00 %		Auto	IVIAII
x dB Bandwidth	165.5 MH	lz xdB	-26	.00 dB			
MSG			STATU	IS			

Plot 7-67. 26dB Bandwidth Plot MIMO ANT2 (160MHz 802.11ax (UNII Band 5) – Ch. 79)

FCC ID: PY7-57325M		MEASUREMENT REPORT (CERTIFICATION)		
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MIMO Antenna-2 26 dB Bandwidth Measurements - (UNII Band 6)

Keysight Spectrum Analyzer - Occupied BW - AP SENSE:INT SOURCE OFF ALIGN AUTO Center Freq: 6.435000000 GHz Trig: Freq: Run Avg|Hold: 100/100 #Atten: 36 dB 03:27:52 PM Mar 29, 2022 Trace/Detector Radio Std: None Radio Device: BTS #IFGain:Low Ref 20.00 dBm 10 dB/div **Clear Write** Average Max Hold Center 6.435 GHz Res BW 470 kHz Span 50 MHz Sweep 1 ms VBW 5 MHz **Min Hold Total Power** 15.8 dBm **Occupied Bandwidth** 16.532 MHz Detector Peak▶ <u>Man</u> **Transmit Freq Error** -33.470 kHz % of OBW Power 99.00 % Auto x dB Bandwidth 19.77 MHz x dB -26.00 dB STATUS

Plot 7-68. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11a (UNII Band 6) – Ch. 97)

🔤 Keysight Spectrum Analyzer - Occupied					
LXU RL RF 50Ω AC	(SENSE:INT SOURCE OFF Center Freq: 6.475000000 GHz Trig: Free Run Avg Hc #Atten: 36 dB	old: 100/100	03:28:41 PM Mar 29, 2022 Radio Std: None Radio Device: BTS	Trace/Detector
	#IFGain:Low #	#Atten: 36 dB		Radio Device: BTS	
10 dB/div Ref 20.00 dl	3m				
10.0					Clear Write
0.00	manah	the second second second			Cicul Millio
-10.0					
-30.0			he has a second		Average
-40.0 patrogalin un nortelin den seller	AWAR		mound with	erelations in the second s	
-50.0					
-70.0					Max Hold
Center 6.475 GHz				Span 50 MHz	
Res BW 470 kHz		VBW 5 MHz		Sweep 1 ms	Min Hold
Occupied Bandwi	dth	Total Power	15.9	dBm	
1	6.515 MHz	Z			Detector
Transmit Freq Error	-32.439 kH	z % of OBW Po	wer 99.	00 %	Peakl Auto <u>Mar</u>
x dB Bandwidth	19.54 MH	z xdB	-26.0	0 dB	
MSG			STATUS		

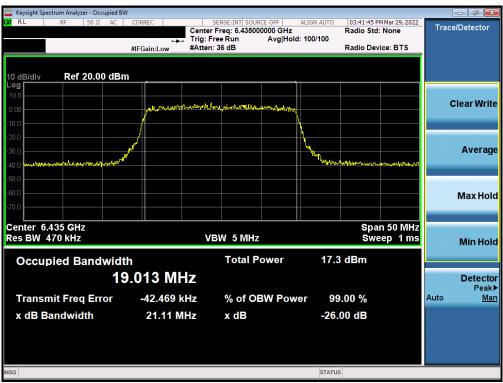
FCC ID: PY7-57325M		MEASUREMENT REPORT (CERTIFICATION)		
Test Report S/N:	Test Dates:	EUT Type:	Dama 54 -4 000	
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🔤 Keysight Spectrum Analyzer - Occupied BW		MO ANTZ (2010				<u> </u>	
X RL RF 50Ω AC		SENSE:INT SOURCE OFF		03:29:37 PM Ma Radio Std: No		Trace/I	Detector
	#IFGain:Low #Atte	FreeRun Avg H n:36 dB	510. 100/100	Radio Device:	BTS		
10 dB/div Ref 20.00 dBm Log							
10.0						~	ear Write
0.00		way to and a server the way				CI	earwrite
-10.0			γ				
-20.0	where the second		Nr.				Averag
-30.0	<i>///</i>		And Anther ant	North March March	holen		Averay
-50.0							
-60.0						,	Max Hol
-70.0							Max Hon
Center 6.515 GHz				Snan 5	50 MHz		
Res BW 470 kHz	١	/BW 5 MHz			0 1 ms		Min Hol
Occupied Bandwidt	b	Total Power	15	8 dBm			
Occupied Bandwidt		Total Tower	10.	o ubiii			
16	.538 MHz						Detecto Peak
Transmit Freq Error	-39.007 kHz	% of OBW Po	wer 99	9.00 %		Auto	Ma
x dB Bandwidth	19.38 MHz	x dB	-26	.00 dB			
ISG			STATU	s			

Plot 7-69. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11a (UNII Band 6) - Ch. 105)





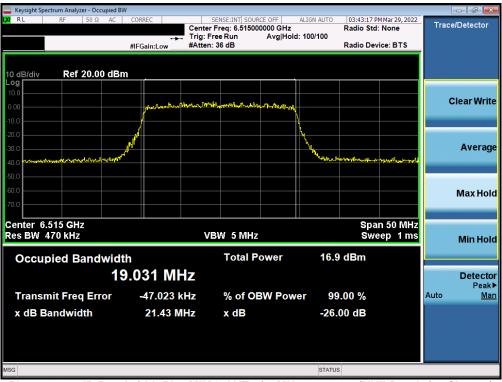
Plot 7-71. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11ax (UNII Band 6) - Ch. 97)

FCC ID: PY7-57325M		Approved by: Quality Manager	
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Plot 7-72. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11ax (UNII Band 6) - Ch. 105)



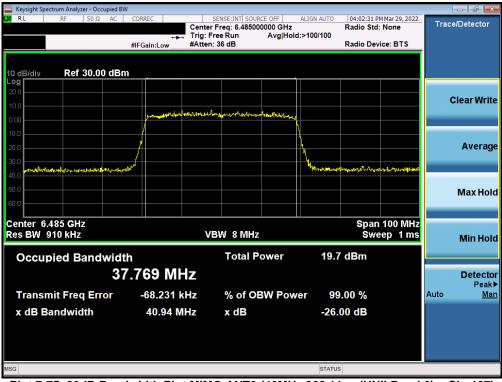
Plot 7-73. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11ax (UNII Band 6) - Ch. 113)

FCC ID: PY7-57325M		MEASUREMENT REPORT (CERTIFICATION)		
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Plot 7-74. 26dB Bandwidth Plot MIMO ANT2 (40MHz 802.11ax (UNII Band 6) - Ch. 99)



Plot 7-75. 26dB Bandwidth Plot MIMO ANT2 (40MHz 802.11ax (UNII Band 6) - Ch. 107)

FCC ID: PY7-57325M		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dage 54 of 226		
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Keysight Spectrum Analyzer - Occupie									
<mark>LX/</mark> RL RF 50Ω A	AC CORREC		NSE:INT SOUR		ALIGN AUTO	04:03:38 PM Radio Std:	Mar 29, 2022	Trac	e/Detector
		📕 Trig: Free	e Run		d: 100/100				
	#IFGain:Low	#Atten: 3	6 dB			Radio Devi	ice: BTS		
10 dB/div Ref 20.00 d	lBm								
Log									
0.00	And the arts	walkelle	water burgering	man					Clear Write
	l l l l l l l l l l l l l l l l l l l				l				
-10.0	ſ								
-20.0					h i				_
-30.0	animate				Murdenhown	minut minut	n de Martin Bellinker		Average
-40.0									
-50.0									
-60.0									Max Hold
-70.0									
Center 6.525 GHz		1/01	N 8 MHz				100 MHz		
Res BW 910 kHz		VDV				Swe	ep 1 ms		Min Hold
Occupied Bandwi	idth		Total P	ower	19.3	dBm			
	37.779 N	IHZ							Detector Peak▶
Transmit Freq Error	-75.04	7 kHz	% of O	3W Pow	ver 99	.00 %		Auto	Man
x dB Bandwidth	40.85	MHz	x dB		-26.0	00 dB			
	40.00	11112	A GD		2010				
MSG					STATUS				

Plot 7-76. 26dB Bandwidth Plot MIMO ANT2 (40MHz 802.11ax (UNII Band 6) – Ch. 115)



Plot 7-77. 26dB Bandwidth Plot MIMO ANT2 (80MHz 802.11ax (UNII Band 6) - Ch. 103)

FCC ID: PY7-57325M	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage FE of 220
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🔤 Keysight Spectrum Analyzer - Occupi	ied BW						
L <mark>X/</mark> RL RF 50Ω /	AC CORREC	SENSE:INT SOU Center Freg: 6.5050		IGN AUTO 06:07:42 Radio St	PM Mar 29, 2022	Trace/D	etector
		Trig: Free Run	Avg Hold: 10	00/100			
	#IFGain:Low	#Atten: 36 dB		Radio De	vice: BTS		
10 dB/div Ref 20.00 d	dBm						
Log							
10.0	month	parment	amperial heres			Cle	ar Write
0.00							
-10.0							
-20.0							
-30.0 terretrytogenergytogene	umer!		N. N	- serificity provident to be a factor of the	date the second se		Average
-40.0							
-50.0							
-60.0						N	lax Hold
-70.0							
Center 6.505 GHz			_		n 400 MHz		
ResBW 3MHz		VBW 50 MH	Z	Sw	eep 1ms	M	Ain Hold
Occupied Bandw	idth	Total F	ower	20.0 dBm			
				20.0 0011			
	156.11 MF	IZ					Detector
Transmit Freq Erro	r 245.31 k	Hz % of O	BW Power	99.00 %		Auto	Peak▶ <u>Man</u>
x dB Bandwidth	167.4 M	Hz xdB		-26.00 dB			
				20100 42			
MSG				STATUS			

Plot 7-78. 26dB Bandwidth Plot MIMO ANT2 (160MHz 802.11ax (UNII Band 6) - Ch. 111)

FCC ID: PY7-57325M		MEASUREMENT REPORT (CERTIFICATION)		
Test Report S/N:	Test Dates:	EUT Type:	Dage EC of 220	
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MIMO Antenna-2 26 dB Bandwidth Measurements - (UNII Band 7)

Keysight Spectrum Analyzer - Occupied BW 03:32:00 PM Mar 29, 2022 Trace/Detector Radio Std: None Radio Device: BTS #IFGain:Low Ref 20.00 dBm 10 dB/div **Clear Write** Average بالرويدال Max Hold Center 6.535 GHz Res BW 470 kHz Span 50 MHz Sweep 1 ms VBW 5 MHz **Min Hold Total Power** 16.1 dBm **Occupied Bandwidth** 16.556 MHz Detector Peak▶ <u>Man</u> **Transmit Freq Error** -34.772 kHz % of OBW Power 99.00 % Auto x dB Bandwidth 19.51 MHz x dB -26.00 dB STATUS

Plot 7-79. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11a (UNII Band 7) – Ch. 117)

Keysight Spectrum Analyzer - Occupied E	3W				
XV RL RF 50Ω AC	CORREC	SENSE:INT SOURCE OFF ter Freg: 6.695000000 GHz		3:32:52 PM Mar 29, 2022 dio Std: None	Trace/Detector
		:FreeRun Avg Ho en:36dB	ld: 100/100	dio Device: BTS	
	#IFGain:Low #Att		Ka	dio Device. D13	
10 dB/div Ref 20.00 dB	m				
Log					
10.0					Clear Write
0.00		and the second second			
-10.0					
-20.0	المحمر		N .		Averag
-30.0			Mary mary mary mary mary	When we to deal the second of	Averay
-50.0					
-60.0					
-70.0					Max Hole
Center 6.695 GHz Res BW 470 kHz		VBW 5 MHz		Span 50 MHz	
Res BW 470 KHZ				Sweep 1 ms	Min Hol
Occupied Bandwid	th	Total Power	16.0 dE	3m	
1	6.524 MHz				Detecto
				a (Peak
Transmit Freq Error	-50.826 kHz	% of OBW Pov			Auto <u>Ma</u>
x dB Bandwidth	19.39 MHz	x dB	-26.00	dB	
ISG			STATUS		

FCC ID: PY7-57325M	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dana 57 at 000
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Keysight Spectrum Analyzer - Occupied BW							. 🗗 🔜
X/RL RF 50Ω AC	CORREC	SENSE:INT SOURCE OFF	ALIGN AUTO	03:34:30 PM N Radio Std: N		Trace/[Detector
		FreeRun Avg H n:36 dB	old: 100/100	Radio Devic	BTS		
	#IFGain:Low #Atter	1. 30 dB		Radio Devic	e. DT3		
10 dB/div Ref 20.00 dBn							
10.0						01	ear Writ
0.00	- Annon	mannen				CI	ear write
-10.0							
-20.0			- You				
-30.0	All and a second s		Not the state				Averag
-40.0 unutility many provident of the second			- Markey	mon monoral com	malminat		
-50.0							
-60.0						P	/ax Hole
-70.0							
Center 6.875 GHz				Snan	50 MHz		
Res BW 470 kHz	v	BW 5MHz			p 1 ms		Min Hole
Occupied Bandwidt		Total Power	16.	0 dBm			
16	6.562 MHz						Detecto
Transmit Freg Error	-41.860 kHz	% of OBW Po	wor 00	9.00 %		Auto	Peak Mai
-						Auto	Inter
x dB Bandwidth	19.49 MHz	x dB	-26	.00 dB			
ISG			STATU	S			

Plot 7-80. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11a (UNII Band 7) - Ch. 149)





Plot 7-82. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11ax (UNII Band 7) - Ch. 117)

FCC ID: PY7-57325M	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Plot 7-83. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11ax (UNII Band 7) - Ch. 149)



Plot 7-84. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11ax (UNII Band 7) - Ch. 185)

FCC ID: PY7-57325M	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 50 of 226
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🔤 Keysight Spectrum Analyzer - Occupie	ad BW						X
<mark>LX/</mark> RL RF 50Ω A		SENSE:INT SOURCE OFF	ALIGN AUTO	04:04:27 PM Radio Std:	Mar 29, 2022	Trace	e/Detector
		Trig: Free Run Avg l	Hold: 100/100				
	#IFGain:Low #	#Atten: 36 dB	F	Radio Devid	e: BTS		
10 dB/div Ref 20.00 d	IBm						
Log 10.0							
0.00	medanistation	Manuly when a hand and the hand	un l			C	lear Write
			N I			_	
-10.0							
-20.0							
-30.0	Jonghan		henricour	uturnen	ala marine		Average
-40.0							
-50.0							
-60.0							Max Hold
-70.0							
Center 6.565 GHz				Snon			
Res BW 910 kHz		VBW 8 MHz			100 MHz ep 1 ms		
ICS DW STORIE				Gine			Min Hold
Occupied Bandwi	idth	Total Power	19.7 c	dBm			
	37.738 MHz	7					Detector
	57.75 0 MITZ						Peak►
Transmit Freq Error	-37.643 kH	z % of OBW P	ower 99.0	00 %		Auto	<u>Man</u>
x dB Bandwidth	40.80 MH	z xdB	-26.00) dB			
MSG			STATUS				

Plot 7-85. 26dB Bandwidth Plot MIMO ANT2 (40MHz 802.11ax (UNII Band 7) – Ch. 123)



Plot 7-86. 26dB Bandwidth Plot MIMO ANT2 (40MHz 802.11ax (UNII Band 7) - Ch. 155)

FCC ID: PY7-57325M	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dama 60 at 000
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Plot 7-87. 26dB Bandwidth Plot MIMO ANT2 (40MHz 802.11ax (UNII Band 7) - Ch. 179)



Plot 7-88. 26dB Bandwidth Plot MIMO ANT2 (80MHz 802.11ax (UNII Band 7) - Ch. 119)

FCC ID: PY7-57325M	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dama 01 at 000
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Keysight Spectrum Analyzer - Occupied						
L <mark>XI</mark> RL RF 50ΩAC	CORREC	SENSE:INT SOU Center Freg: 6.7050		AUTO 05:52:33 PM Radio Std:	Mar 29, 2022	Trace/Detector
	÷	, Trig: Free Run	Avg Hold: 100/1	100		
	#IFGain:Low	#Atten: 36 dB		Radio Devi	ce: BTS	
10 dB/div Ref 20.00 dE	3m					
Log						
0.00	ليهمان سيلمرس	mendulmaphynia	mall hand wanty			Clear Write
-10.0			N N			
-20.0						
20.0	/		6			Average
and a start of the second s	the set		T.n.	and when and the star when	and the second	Average
-40.0						
-50.0						
-60.0						Max Hold
-70.0						
Center 6.705 GHz				Span	200 MHz	
Res BW 1.8 MHz		VBW 8 MH:	Z		ep 1 ms	Min Hold
						Minitiona
Occupied Bandwid	dth	Total F	Power	20.2 dBm		
7	7.320 M	Hz				Detector
				~~ ~~ ~		Peak►
Transmit Freq Error	-40.703	kHz % of O	BW Power	99.00 %		Auto <u>Man</u>
x dB Bandwidth	83.55 N	MHz xdB		-26.00 dB		
MSG				STATUS		

Plot 7-89. 26dB Bandwidth Plot MIMO ANT2 (80MHz 802.11ax (UNII Band 7) – Ch. 151)



Plot 7-90. 26dB Bandwidth Plot MIMO ANT2 (80MHz 802.11ax (UNII Band 7) - Ch. 183)

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Keysight Spectrum Analyzer - Occupied I	BW						- • •
LX/RL RF 50Ω AC		SENSE:INT SOUR		06:08:41 PM Radio Std:	1 Mar 29, 2022	Trace/L	Detector
		Trig: Free Run	Avg Hold: 100/100				
	#IFGain:Low	#Atten: 36 dB		Radio Devi	ce: BTS		
10 dB/div Ref 20.00 dB	8m						
Log							
0.00	manneder	mart water and a strate to a strate of the s	and the state of the			Cle	ear Write
-10.0							
-20.0							
-30.0 alout and manufal and a standard and a	Angele allow		Liter rolfingel	and the second secon	All and a strate of the second		Average
-40.0							
-50.0							
-60.0						P	Max Hold
-70.0							
Center 6.665 GHz				Enan	400 8/147		
Res BW 3 MHz		VBW 50 MH;			400 MHz ep 1 ms		
Kes BW S WHE					cp me		Min Hold
Occupied Bandwid	lth	Total P	ower 20.) dBm			_
	56.37 MHz	,					Detector
	30.37 Willia						Peak ►
Transmit Freq Error	245.41 kH	z % of OE	3W Power 99	9.00 %		Auto	<u>Man</u>
x dB Bandwidth	165.9 MH	z x dB	-26	00 dB			
MSG			STATU	S			

Plot 7-91. 26dB Bandwidth Plot MIMO ANT2 (160MHz 802.11ax (UNII Band 7) - Ch. 143)



Plot 7-92. 26dB Bandwidth Plot MIMO ANT2 (160MHz 802.11ax (UNII Band 7) - Ch. 175)

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MIMO Antenna-2 26 dB Bandwidth Measurements - (UNII Band 8)

Keysight Spectrum Analyzer - Occupied BW - A SENSE:INT SOURCE OFF ALIGN AUTO Center Freq: 6.89500000 GHz Trig: Freq: Run Avg|Hold: 100/100 #Atten: 36 dB 03:35:17 PM Mar 29, 2022 Trace/Detector Radio Std: None Radio Device: BTS #IFGain:Low Ref 20.00 dBm 10 dB/div **Clear Write** Average Max Hold Center 6.895 GHz Res BW 470 kHz Span 50 MHz Sweep 1 ms VBW 5 MHz **Min Hold Total Power** 15.9 dBm **Occupied Bandwidth** 16.561 MHz Detector Peak▶ <u>Man</u> **Transmit Freq Error** -51.659 kHz % of OBW Power 99.00 % Auto 19.40 MHz x dB Bandwidth x dB -26.00 dB STATUS

Plot 7-93. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11a (UNII Band 8) – Ch. 189)

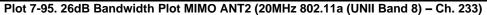
🔤 Keysight Spectrum Analyzer - Occupied I					
LX/RL RF 50Ω AC		SENSE:INT SOURCE OFF	Radio	05 PM Mar 29, 2022 Std: None	Trace/Detector
		g:FreeRun Avg Ho ten:36 dB	ld: 100/100 Radio I	Device: BTS	
10 dB/div Ref 20.00 dB	m				
10.0					Clear Write
0.00	A starting and the starting	manyananananan			Clear write
-10.0		<u> </u>	• • • • • • • • • • • • • • • • • • •		
-20.0	(marked and a second se		N ₁		Average
-40.0 Withment man hand them	hu N.		2 martin when a far and a second	water and the second	
-50.0					
-60.0					Max Hold
-70.0					
Center 6.995 GHz				pan 50 MHz	
Res BW 470 kHz		VBW 5 MHz	\$	weep 1ms	Min Hold
Occupied Bandwid	th	Total Power	15.9 dBm		
1	6.533 MHz				Detector
Transmit Freg Error	-52.570 kHz	% of OBW Pov	ver 99.00 %		Peak Auto <u>Mar</u>
x dB Bandwidth	19.61 MHz	x dB	-26.00 dB		
			20100 42		
ISG			STATUS		

FCC ID: PY7-57325M	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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🔤 Keysight Spectrum Analyzer - Occupied BW	1	MO ANT2 (2010		,		<u>/</u>	
LXI RE 50Ω AC		SENSE:INT SOURCE OFF	ALIGN AUTO	03:36:52 PM Radio Std:		Trace/[Detector
	#IFGain:Low #Atter	FreeRun Avg H n:36 dB	old: 100/100	Radio Devid	BTS		
	#IFGain:Low #Atter	1. 00 00		Radio Devic	Je. DT3		
10 dB/div Ref 20.00 dBm	1						
Log							
0.00						Cle	ear Write
-10.0	and all and a set of the set of t	www.mar affenry					
-20.0		<u>م</u>	<i>۲</i>				
-30.0	- water		N.				Average
-40.0 any Marked Marked Marked Marked Market	~~ ^{/////}		maphonentry	www.mats.low.p.astro	นงใจไหว่างหลือการ		
-50.0							
-60.0						r	Max Hold
-70.0							
Center 7.115 GHz				Span	50 MHz		
Res BW 470 kHz	V	/BW 5 MHz		Swee	ep 1 ms	1	Min Hold
Occupied Bandwidt	h	Total Power	10.	6 dBm			
							Detector
							Peak
Transmit Freq Error	-63.964 kHz	% of OBW Po	wer 99	9.00 %		Auto	Mar
x dB Bandwidth	19.56 MHz	x dB	-26	.00 dB			
ISG			STATU	s			

Plot 7-94. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11a (UNII Band 8) - Ch. 209)





Plot 7-96. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11ax (UNII Band 8) - Ch. 189)

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Plot 7-97. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11ax (UNII Band 8) - Ch. 209)



Plot 7-98. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11ax (UNII Band 8) - Ch. 233)

FCC ID: PY7-57325M	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied E	BW				- 5			
LX/RL RF 50Ω AC	CORREC	SENSE:INT SOURCE OFF	ALIGN AUTO 04:10:17 Radio Sto	PM Mar 29, 2022	Trace/Detector			
	tipe Tr	ig:FreeRun Avg Ho	ld: 100/100					
	#IFGain:Low #A	tten: 36 dB	Radio De	vice: BTS				
Log								
0.00	howwwww	when the law was should we have			Clear Write			
	/		<u> </u>					
-10.0								
-20.0			<u>h</u> .		•			
-30.0	ment in the second s		Martin and marting the	Jane and maint	Average			
-40.0								
-50.0								
-60.0					Max Hold			
-70.0								
Center 6.885 GHz			<u> </u>	- 400 8411-				
Res BW 910 kHz		VBW 8 MHz		n 100 MHz eep 1 ms				
				cep mo	Min Hold			
Occupied Bandwid	lth	Total Power	20.0 dBm					
	7.786 MHz				Detector			
5					Peak►			
Transmit Freq Error	-74.329 kHz	% of OBW Pov	ver 99.00 %		Auto <u>Man</u>			
x dB Bandwidth	41.01 MHz	x dB	-26.00 dB					
MSG			STATUS					

Plot 7-99. 26dB Bandwidth Plot MIMO ANT2 (40MHz 802.11ax (UNII Band 8) – Ch. 187)



Plot 7-100. 26dB Bandwidth Plot MIMO ANT2 (40MHz 802.11ax (UNII Band 8) - Ch. 211)

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Plot 7-101. 26dB Bandwidth Plot MIMO ANT2 (40MHz 802.11ax (UNII Band 8) - Ch. 227)



Plot 7-102. 26dB Bandwidth Plot MIMO ANT2 (80MHz 802.11ax (UNII Band 8) - Ch. 199)

FCC ID: PY7-57325M		Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied					
L <mark>X/</mark> RL RF 50Ω AC	C CORREC	SENSE:INT SOUR		05:59:42 PM Mar 29 Radio Std: None	,2022 Trace/Detector
	·+-	Trig: Free Run	Avg Hold: 100/100		
	#IFGain:Low	#Atten: 36 dB		Radio Device: BT	S
10 dB/div Ref 30.00 d	Bm				
20.0					
10.0					Clear Write
0.00	monteren	hread the set of the second	ale control of the second		
-10.0					
-20.0	Λ.		l l		Average
-30.0					, it cit age
-30.0 -40.0	and a second		Section Steel	an a	u skywyt.
-50.0					Max Hold
-60.0					
Center 7.025 GHz			1	Span 200	MHz
Res BW 1.8 MHz		VBW 8 MHz		Sweep 1	
		Total P	20	7 dBm	
Occupied Bandwi			ower 20.	r abm	
	77.469 MI	z			Detector
Transmit Freq Error	28.703 k	Hz % of OF	3W Power 99	9.00 %	Peak▶ Auto Man
					<u></u>
x dB Bandwidth	83.70 M	lHz x dB	-26.	.00 dB	
MSG			STATU	s	

Plot 7-103. 26dB Bandwidth Plot MIMO ANT2 (80MHz 802.11ax (UNII Band 8) - Ch. 215)



Plot 7-104. 26dB Bandwidth Plot MIMO ANT2 (160MHz 802.11ax (UNII Band 8) - Ch. 207)

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7.3 UNII Output Power Measurement – 802.11a/ax § 2.1046, §15.407(a)(11), §15.407(a)(8)

Test Overview and Limits

A transmitter antenna terminal of the EUT is connected to the input of an RF pulse power sensor. Measurement is made using a broadband average power meter while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies.

Test Procedure Used

ANSI C63.10-2013 – Section 12.3.3.2 Method PM-G KDB 789033 D02 v02r01 – Section E)3)b) Method PM-G ANSI C63.10-2013 – Section 14.2 Measure-and-Sum Technique KDB 662911 v02r01 – Section E)1) Measure-and-Sum Technique

Test Settings

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-2. Test Instrument & Measurement Setup

Test Notes

None.

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(6GHz (20MHz) 802.11a Conducted Power [dBm]								
idth	Freq [MHz]	Channel	ANT1	ANT2	ΜΙΜΟ	Directional Ant. Gain dBi	Max e.i.r.p [dBm]	Max e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
3	5955	1	8.76	7.85	11.34	-2.59	6.17	24.00	-17.8
q	6075	25	8.48	8.77	11.64	-2.59	5.89	24.00	-18.1
2	6175	45	8.88	7.79	11.38	-2.59	6.29	24.00	-17.7
3a	6275	65	8.4	8.76	11.59	-2.59	5.81	24.00	-18.2
ß	6415	93	8.17	8.59	11.40	-2.59	5.58	24.00	-18.4
N	6435	97	7.98	8.52	11.27	-4.29	3.69	24.00	-20.3
	6475	105	7.95	8.71	11.36	-4.29	3.66	24.00	-20.3
Σ	6515	113	8.5	8.58	11.55	-4.29	4.21	24.00	-19.8
0	6535	117	8.81	8.96	11.90	-4.01	4.80	24.00	-19.2
2	6675	145	8.09	8.99	11.57	-4.01	4.08	24.00	-19.9
Ν	6695	149	8.17	8.8	11.51	-4.01	4.16	24.00	-19.8
Ť	6875	185	8.23	8.79	11.53	-4.01	4.22	24.00	-19.8
Ū	6895	189	8.42	8.7	11.57	-5.94	2.48	24.00	-21.5
ŏ	6995	209	8.48	8.99	11.75	-5.94	2.54	24.00	-21.5
	7115	233	3.29	3.3	6.31	-5.94	-2.65	24.00	-26.7

MIMO Maximum Conducted Output Power Measurements

Table 7-2. MIMO 20MHz BW 802.11a (UNII) Maximum Conducted Output Power

~			6GHz	z (20MHz) 802	.11ax Condu	cted Power [d	IBm]		
width	Freq [MHz]	Channel	ANT1	ANT2	ΜΙΜΟ	Directional Ant. Gain dBi	Max e.i.r.p [dBm]	Max e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
3	5955	1	8.73	7.81	11.30	-2.59	8.71	24.00	-15.3
d	6075	25	8.21	8.52	11.38	-2.59	8.79	24.00	-15.2
2	6175	45	8.93	7.86	11.44	-2.59	8.85	24.00	-15.2
a S	6275	65	8.34	8.68	11.52	-2.59	8.93	24.00	-15.1
ß	6415	93	8.09	8.51	11.32	-2.59	8.73	24.00	-15.3
N	6435	97	8.5	8.99	11.76	-4.29	7.47	24.00	-16.5
	6475	105	8.08	8.53	11.32	-4.29	7.03	24.00	-17.0
MO	6515	113	8.41	8.49	11.46	-4.29	7.17	24.00	-16.8
0	6535	117	8.76	8.88	11.83	-4.01	7.82	24.00	-16.2
5	6675	145	8.01	8.94	11.51	-4.01	7.50	24.00	-16.5
N	6695	149	8.09	8.72	11.43	-4.01	7.42	24.00	-16.6
Ť	6875	185	8.14	8.7	11.44	-4.01	7.43	24.00	-16.6
U	6895	189	8.31	8.63	11.48	-5.94	5.54	24.00	-18.5
6	6995	209	8.38	8.95	11.68	-5.94	5.74	24.00	-18.3
	7115	233	3.26	3.22	6.25	-5.94	0.31	24.00	-23.7

Table 7-3. MIMO 20MHz BW 802.11ax (UNII) Maximum Conducted Output Power

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	6GHz (40MHz) 802.11ax Conducted Power [dBm]								
dth)	Freq [MHz]	Channel	ANT1	ANT2	ΜΙΜΟ	Directional Ant. Gain dBi	Max e.i.r.p [dBm]	Max e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Š	5965	3	11.01	10.95	13.99	-2.59	11.40	24.00	-12.6
þ	6085	27	10.95	11.04	14.01	-2.59	11.42	24.00	-12.6
Ĕ	6165	43	11.28	10.42	13.88	-2.59	11.29	24.00	-12.7
a	6285	67	10.5	11.11	13.83	-2.59	11.24	24.00	-12.8
Ш	6405	91	11.1	11.15	14.14	-2.59	11.55	24.00	-12.5
N	6445	99	10.76	11.2	14.00	-4.29	9.71	24.00	-14.3
_ I	6485	107	10.54	11.21	13.90	-4.29	9.61	24.00	-14.4
Σ	6525	115	11.12	10.89	14.02	-4.29	9.73	24.00	-14.3
(40	6565	123	10.85	11.17	14.02	-4.01	10.01	24.00	-14.0
4	6685	147	10.59	11.25	13.94	-4.01	9.93	24.00	-14.1
N	6725	155	10.95	11.09	14.03	-4.01	10.02	24.00	-14.0
Î	6845	179	10.34	11.27	13.84	-4.01	9.83	24.00	-14.2
Ū	6885	187	10.98	11.25	14.13	-5.94	8.19	24.00	-15.8
Ö	7005	211	10.95	11.49	14.24	-5.94	8.30	24.00	-15.7
	7085	227	10.91	10.8	13.87	-5.94	7.93	24.00	-16.1

Table 7-4. MIMO 40MHz BW 802.11ax (UNII) Maximum Conducted Output Power

		6GHz (80MHz) 802.11ax Conducted Power [dBm]								
N	Freq [MHz]	Channel	ANT1	ANT2	МІМО	Directional Ant. Gain dBi	Max e.i.r.p [dBm]	Max e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]	
	5985	7	11.49	10.6	14.08	-2.59	11.49	24.00	-12.5	
Et H	6065	23	11.17	11.15	14.17	-2.59	11.58	24.00	-12.4	
d <u>f</u>	6145	39	11.25	10.27	13.80	-2.59	11.21	24.00	-12.8	
(80 wic	6305	71	11.11	10.86	14.00	-2.59	11.41	24.00	-12.6	
	6385	87	11.4	11.45	14.44	-2.59	11.85	24.00	-12.2	
	6465	103	10.64	11.43	14.06	-4.29	9.77	24.00	-14.2	
a T	6545	119	10.97	11.49	14.25	-4.01	10.24	24.00	-13.8	
Ö ä	6705	151	11.27	11.21	14.25	-4.01	10.24	24.00	-13.8	
0	6785	167	11.32	10.91	14.13	-4.01	10.12	24.00	-13.9	
	6865	183	10.86	11.49	14.20	-4.01	10.19	24.00	-13.8	
	6945	199	11.28	11.45	14.38	-5.94	8.44	24.00	-15.6	
	7025	215	11.03	11.19	14.12	-5.94	8.18	24.00	-15.8	
	Table 7-5 MIMO 80MHz BW 802 11ax (UNII) Maximum Conducted Output Power									

Table 7-5. MIMO 80MHz BW 802.11ax (UNII) Maximum Conducted Output Power

		6GHz (160MHz) 802.11ax Conducted Power [dBm]										
(160MHz dwidth)	Freq [MHz]	Channel	ANT1	ANT2	МІМО	Directional Ant. Gain dBi	Max e.i.r.p [dBm]	Max e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]			
/id	6025	15	11.29	10.62	13.98	-2.59	11.39	24.00	-12.61			
	6185	47	11.37	10.19	13.83	-2.59	11.24	24.00	-12.76			
	6345	79	11.46	11.4	14.44	-2.59	11.85	24.00	-12.15			
O T O	6505	111	11.37	11.3	14.35	-4.29	10.06	24.00	-13.94			
B G	6665	143	10.68	11.23	13.97	-4.01	9.96	24.00	-14.04			
W	6825	175	11.27	10.4	13.87	-4.01	9.86	24.00	-14.14			
	6985	207	11.09	11.15	14.13	-5.94	8.19	24.00	-15.81			

Table 7-6. MIMO 160MHz BW 802.11ax (UNII) Maximum Conducted Output Power

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Sample MIMO Calculation:

At 5955MHz in 802.11ax (20MHz BW) mode, the average conducted output power was measured to be 8.73 dBm for Antenna-1 and 7.81 dBm for Antenna-2.

(8.73 dBm + 7.81 dBm) = (7.464 mW + 6.039 mW) = 13.503 mW = 11.30 dBm

Sample Directional Gain Calculation:

Per ANSI C63.10-2013 Section 14.4.3, the directional gain is calculated using the following formula, where GN is the gain of the nth antenna and NANT, the total number of antennas used.

Sample e.i.r.p. Calculation:

At 5955MHz in 802.11ax (20MHz BW) mode, the average MIMO conducted power was calculated to be 11.30 dBm with directional gain of -2.80 dBi.

e.i.r.p. (dBm) = Conducted Power (dBm) + Ant gain (dBi)

11.30 dBm + -2.80 dBi = 8.50 dBm

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7.4 Maximum Power Spectral Density – 802.11a/ax §15.407(a)(8)

Test Overview and Limit

The spectrum analyzer was connected to the antenna terminal while the EUT was operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies. Method SA-1, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, was used to measure the power spectral density for 802.11ax. Method SA-2, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01 and KDB 789033 D02 v02r01, was used to D02 v02r01, was used to measure the power spectral density for 802.11ax.

In the 5.925-7.125 GHz bands, the maximum power spectral density must not exceed –1 dBm e.i.r.p. in any 1-megahertz band

Test Procedure Used

ANSI C63.10-2013 – Section 12.3.2.2 KDB 789033 D02 v02r01 – Section F ANSI C63.10-2013 – Section 14.3.2.2 Measure-and-Sum Technique KDB 662911 v02r01 – Section E)2) Measure-and-Sum Technique

Test Settings

- 1. Analyzer was set to the center frequency of the UNII channel under investigation
- 2. Span was set to encompass the entire emission bandwidth of the signal
- 3. RBW = 1MHz
- 4. VBW = 3MHz
- 5. Number of sweep points $\geq 2 \times (\text{span/RBW})$
- 6. Sweep time = auto
- 7. Detector = power averaging (RMS)
- 8. Trigger was set to free run for all modes
- 9. Trace was averaged over 100 sweeps
- 10. The peak search function of the spectrum analyzer was used to find the peak of the spectrum.

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-3. Test Instrument & Measurement Setup

Test Notes

None.

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MIMO Power Spectral Density Measurements

				Antenna-1	Antenna-2			Summed MIMO			Max EIRP	
	Frequency	Channel	802.11	Power Density	Power Density		Antenna-2 Gain	Power Density	Directional Gain	e.i.r.p Density	Density	Margin
	[MHz]	Channel	MODE	[dBm]	[dBm]	[dBi]	[dBi]	[dBm/MHz]	[dBi]	[dBm/MHz]	[dBm/MHz]	[dB]
	5955	1	а	-2.22	-3.05	-4.40	-7.00	0.40	-2.59	-2.20	-1	-1.20
	6175	45	a	-1.98	-3.11	-4.40	-7.00	0.50	-2.59	-2.09	-1	-1.09
	6415	93	a	-2.60	-2.41	-4.40	-7.00	0.51	-2.59	-2.09	-1	-1.09
	5955	1	ax (20MHz)	-2.65	-3.71	-4.40	-7.00	-0.14	-2.59	-2.73	-1	-1.73
	6175	45	ax (20MHz)	-2.71	-3.71	-4.40	-7.00	-0.20	-2.59	-2.79	-1	-1.79
	6415	93	ax (20MHz)	-3.31	-2.84	-4.40	-7.00	-0.06	-2.59	-2.65	-1	-1.65
ы	5965	3	ax (20MHz)	-2.55	-3.46	-4.40	-7.00	0.03	-2.59	-2.57	-1	-1.57
P	6165	43	ax (40MHz)	-3.22	-4.01	-4.40	-7.00	-0.59	-2.59	-3.18	-1	-2.18
Band	6405	91	ax (40MHz)	-3.10	-3.26	-4.40	-7.00	-0.17	-2.59	-2.76	-1	-1.76
	5985	7	ax (80MHz)	-5.97	-6.86	-4.40	-7.00	-3.38	-2.59	-5.97	-1	-4.97
	6145	39	ax (80MHz)	-6.41	-7.13	-4.40	-7.00	-3.75	-2.59	-6.34	-1	-5.34
	6385	87	ax (80MHz)	-6.24	-6.09	-4.40	-7.00	-3.15	-2.59	-5.74	-1	-4.74
	6025	15	ax (300MHz)	-9.03	-9.21	-4.40	-7.00	-6.11	-2.59	-8.70	-1	-7.70
	6185	47	ax (160MHz)	-9.00	-9.62	-4.40	-7.00	-6.29	-2.59	-8.88	-1	-7.88
	6345	79	ax (160MHz)	-8.91	-8.99	-4.40	-7.00	-5.94	-2.59	-8.53	-1	-7.53
	6435	97	a (100/01/12)	-2.83	-2.48	-4.40	-11.70	0.36	-4.29	-3.94	-1	-2.94
	6475	105	a	-3.01	-2.37	-4.40	-11.70	0.33	-4.29	-3.97	-1	-2.97
	6515	103	a	-2.56	-2.43	-4.40	-11.70	0.52	-4.29	-3.78	-1	-2.78
	6435	97	ax (20MHz)	-2.82	-2.43	-4.40	-11.70	0.52	-4.29	-3.78	-1	-2.78
10	6475	105	ax (20MHz)	-3.16	-2.15	-4.40	-11.70	0.24	-4.29	-4.05	-1	-3.05
Band 6	6515	103	ax (20MHz)	-3.15	-2.83	-4.40	-11.70	0.03	-4.29	-4.03	-1	-3.03
Bar	6445	99	ax (20MHz)	-3.79	-3.22	-4.40	-11.70	-0.48	-4.29	-4.78	-1	-3.78
	6485	107	ax (40MHz)	-3.96	-3.40	-4.40	-11.70	-0.66	-4.29	-4.95	-1	-3.95
	6525	107	ax (40MHz)	-3.14	-3.55	-4.40	-11.70	-0.33	-4.29	-4.63	-1	-3.63
	6465	103	ax (40MHz)	-6.62	-6.17	-4.40	-11.70	-3.38	-4.29	-7.67	-1	-6.67
	6505	103	ax (3000112) ax (160MHz)	-8.80	-9.05	-4.40	-11.70	-5.91	-4.29	-10.21	-1	-0.07
	6535	111	ax (100101112) a	-2.15	-2.21	-4.40	-11.70	0.83	-4.01	-3.18	-1	-3.21
	6695	149	a	-2.95	-2.12	-4.00	-11.70	0.50	-4.01	-3.52	-1	-2.52
	6875	149	a	-2.95	-2.31	-4.00	-11.70	0.50	-4.01	-3.52	-1	-2.52
	6535	185	ax (20MHz)	-2.15	-2.57	-4.00	-11.70	0.66	-4.01	-3.36	-1	-2.31
	6695	149	ax (20MHz)	-3.35	-2.62	-4.00	-11.70	0.00	-4.01	-3.97	-1	-2.97
	6875	145	ax (20MHz)	-3.31	-2.84	-4.00	-11.70	-0.06	-4.01	-4.07	-1	-3.07
2	6565	123	ax (200Hz)	-3.68	-3.17	-4.00	-11.70	-0.41	-4.01	-4.42	-1	-3.42
Band 7	6725	125	ax (40MHz)	-3.25	-3.12	-4.00	-11.70	-0.17	-4.01	-4.18	-1	-3.18
ő	6885	179	ax (40MHz)	-3.93	-3.12	-4.00	-11.70	-0.53	-4.01	-4.18	-1	-3.54
	6545	119	ax (401VIHZ) ax (80MHz)	-6.47	-6.01	-4.00	-11.70	-3.22	-4.01	-4.54	-1	-5.54
	6705	119	ax (80MHz)	-5.90	-5.93	-4.00	-11.70	-2.90	-4.01	-6.92	-1	-5.92
	6865	183	ax (80MHz)	-6.33	-5.56	-4.00	-11.70	-2.90	-4.01	-6.92	-1	-5.92
	6665	165	ax (8000Hz) ax (160MHz)	-9.90	-9.10	-4.00	-11.70	-6.47	-4.01	-10.48	-1	-9.48
	6825	143	ax (160MHz)	-8.91	-9.30	-4.00	-11.70	-6.09	-4.01	-10.48	-1	-9.48
	6895	173	ax (100101112) a	-2.48	-2.39	-7.10	-11.30	0.58	-5.94	-5.36	-1	-4.36
	6995	209	a	-2.48	-2.05	-7.10	-11.30	0.75	-5.94	-5.19	-1	-4.19
	7115	203	a	-7.37	-7.59	-7.10	-11.30	-4.47	-5.94	-10.41	-1	-4.19
	6895	189	ax (20MHz)	-3.00	-2.90	-7.10	-11.30	0.06	-5.94	-10.41	-1	-4.88
	6995	209	ax (20MHz)	-2.90	-2.88	-7.10	-11.30	0.12	-5.94	-5.82	-1	-4.82
~	7115	209	ax (20MHz)	-2.90	-2.88	-7.10	-11.30	-5.06	-5.94	-11.00	-1	-4.82
Band 8	6885	187	ax (200Hz)	-3.23	-3.08	-7.10	-11.30	-0.15	-5.94	-6.08	-1	-5.08
-	7005	211	ax (40MHz)	-3.26	-3.26	-7.10	-11.30	-0.25	-5.94	-6.19	-1	-5.19
	7085	211	ax (40MHz)	-3.38	-3.52	-7.10	-11.30	-0.25	-5.94	-6.38	-1	-5.38
	6945	199	ax (40MHz)	-6.01	-6.00	-7.10	-11.30	-3.00	-5.94	-8.93	-1	-7.93
	7025	215	ax (80MHz)	-6.64	-6.50	-7.10	-11.30	-3.56	-5.94	-9.50	-1	-8.50
	6985	213	ax (3000Hz) ax (160MHz)	-9.08	-9.09	-7.10	-11.30	-6.08	-5.94	-12.01	-1	-11.01
	0505			-9.08	-5.05	-7.10	-11.50	-0.08	-5.94	-12.01	-1	-11.01

Table 7-7. MIMO e.i.r.p. Conducted Power Spectral Density Measurements

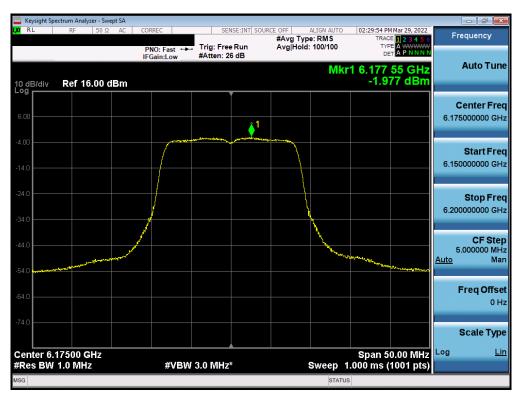
FCC ID: PY7-57325M		MEASUREMENT REPORT (CERTIFICATION)		
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Keysight Spectrum Analyzer - Swept SA ALIGN AUTO #Avg Type: RMS Avg|Hold: 100/100 02:25:39 PM Mar 29, 2022 Frequency TRACE 1 2 3 4 5 TYPE A WWWWW DET A P N N N Trig: Free Run PNO: Fast #Atten: 26 dB IFG Mkr1 5.957 05 GHz -2.224 dBm Auto Tune Ref 16.00 dBm 10 dB/div Center Freq 5.955000000 GHz **∮**¹ Start Freq 5.930000000 GHz Stop Freq 5.98000000 GHz **CF** Step 5.000000 MHz Man Auto **Freq Offset** 0 Hz Scale Type Center 5.95500 GHz #Res BW 1.0 MHz Span 50.00 MHz Log Sweep 1.000 ms (1001 pts) Lin #VBW 3.0 MHz* STATUS

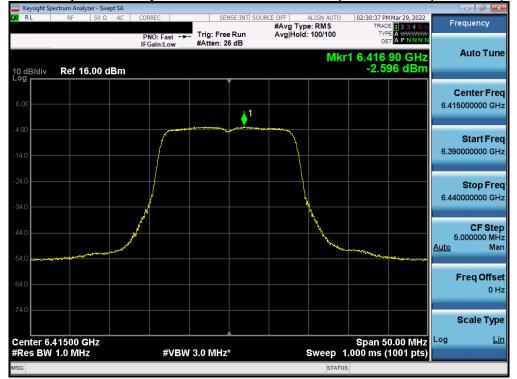
MIMO Antenna-1 Power Spectral Density Measurements - (UNII Band 5)

Plot 7-105. Power Spectral Density Measurement Plot MIMO ANT1 (20MHz 802.11a (UNII Band 5) - Ch. 1)



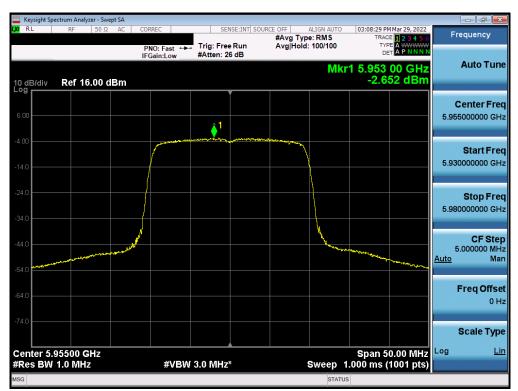
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Plot 7-106. Power Spectral Density Measurement Plot MIMO ANT1 (20MHz 802.11a (UNII Band 5) - Ch. 45)

Plot 7-107. Power Spectral Density Measurement Plot MIMO ANT1 (20MHz 802.11a (UNII Band 5) - Ch. 93)



Plot 7-108. Power Spectral Density Measurement Plot MIMO ANT1 (20MHz 802.11ax (UNII Band 5) - Ch. 1)

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