RADIO TEST REPORT

Test Report No. 14781152S-E-R3

Customer	**Canon Inc.**
Description of EUT	**Wireless Module**
Model Number of EUT	**ES205**
FCC ID	**AZD248**
Test Regulation	**FCC Part 15 Subpart E**
Test Result	**Complied**
Issue Date	**July 5, 2024**
Remarks	**WLAN (6 GHz band) part Except for CBP test**

Representative Test Engineer	Approved By
Yosuke Murakami Engineer	Toyokazu Imamura Engineer

CERTIFICATE 1266.03

☐ The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan, Inc.

☒ There is no testing item of "Non-accreditation".

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REVISION HISTORY

Original Test Report No.: 14781152S-E

This report is a revised version of 14781152S-E-R2. 14781152S-E-R2 is replaced with this report.

Revision	Test Report No.	Date	Revised Contents
- (Original)	14781152S-E	June 7, 2024	-
1	14781152S-E-R1	June 13, 2024	Section 2 Added rating: DC 1.8 V
2	14781152S-E-R2	June 26, 2024	Section 2 Correction of test date: From: July 28, 2022 to May 11, 2024 To: July 28, 2023 to May 11, 2024
			Section 2.2 Addition of the value and explanation of the Directional Gain.
			Section 3 Modification of FCC Part 15.31 (e) From: The RF Module has its own regulator. The RF Module is constantly provided voltage through the regulator regardless of input voltage. Therefore, this EUT complies with the requirement. To: The module is constantly provided the stable voltage (DC 3.3 V / 1.8 V) from the host device regardless of input voltage. Therefore, this EUT complies with the requirement.
			P15 and 16 Modification of cable length for No.1, No.2: 0.01 => 0.02
			P21 to 23 Correction of Limit2(AV) line.
			Appendix 1 Maximum Conducted Output Power Correction of value (11ax-20(OFDMA), 242-tone RU (SDM)) 6435 MHz, 6475 MHz and 6515 MHz
			Appendix 1 Maximum Conducted Output Power Correction of Atten. loss value (11ax-80(OFDMA),242-tone RU(SDM), pre-correction) Correct Atten. Loss to 0 dB
			Appendix 1 In-Band Emissions Correction of data (11x-80(OFDMA), 484-tone RU)
			Appendix 2 Addition to test equipment. Used for the test of June 21, 2024
3	14781152S-E-R3	July 5, 2024	Cover page Corrected FCC ID: AZD 248 to AZD248
			Section 2.1 Updated end of the Teste date: From May 11, 2024 to June 11, 2024
			Section 2.2 Adjusted table for the antenna gain

Reference: Abbreviations (Including words undescribed in this report)

A2LA	The American Association for Laboratory Accreditation	ICES	Interference-Causing Equipment Standard
AC	Alternating Current	IEC	International Electrotechnical Commission
AFH	Adaptive Frequency Hopping	IEEE	Institute of Electrical and Electronics Engineers
AM	Amplitude Modulation	IF	Intermediate Frequency
Amp, AMP	Amplifier	ILAC	International Laboratory Accreditation Conference
ANSI	American National Standards Institute	ISED	Innovation, Science and Economic Development Canada
Ant, ANT	Antenna	ISO	International Organization for Standardization
AP	Access Point	JAB	Japan Accreditation Board
ASK	Amplitude Shift Keying	LAN	Local Area Network
Atten., ATT	Attenuator	LIMS	Laboratory Information Management System
AV	Average	MCS	Modulation and Coding Scheme
BPSK	Binary Phase-Shift Keying	MRA	Mutual Recognition Arrangement
BR	Bluetooth Basic Rate	N/A	Not Applicable
BT	Bluetooth	NIST	National Institute of Standards and Technology
BT LE	Bluetooth Low Energy	NS	No signal detect.
BW	BandWidth	NSA	Normalized Site Attenuation
Cal Int	Calibration Interval	NVLAP	National Voluntary Laboratory Accreditation Program
CCK	Complementary Code Keying	OBW	Occupied Band Width
Ch., CH	Channel	OFDM	Orthogonal Frequency Division Multiplexing
CISPR	Comite International Special des Perturbations Radioelectriques	P/M	Power meter
CW	Continuous Wave	PCB	Printed Circuit Board
DBPSK	Differential BPSK	PER	Packet Error Rate
DC	Direct Current	PHY	Physical Layer
D-factor	Distance factor	PK	Peak
DFS	Dynamic Frequency Selection	PN	Pseudo random Noise
DQPSK	Differential QPSK	PRBS	Pseudo-Random Bit Sequence
DSSS	Direct Sequence Spread Spectrum	PSD	Power Spectral Density
EDR	Enhanced Data Rate	QAM	Quadrature Amplitude Modulation
EIRP, e.i.r.p.	Equivalent Isotropically Radiated Power	QP	Quasi-Peak
EMC	ElectroMagnetic Compatibility	QPSK	Quadri-Phase Shift Keying
EMI	ElectroMagnetic Interference	RBW	Resolution Band Width
EN	European Norm	RDS	Radio Data System
ERP, e.r.p.	Effective Radiated Power	RE	Radio Equipment
EU	European Union	RF	Radio Frequency
EUT	Equipment Under Test	RMS	Root Mean Square
Fac.	Factor	RSS	Radio Standards Specifications
FCC	Federal Communications Commission	Rx	Receiving
FHSS	Frequency Hopping Spread Spectrum	SA, S/A	Spectrum Analyzer
FM	Frequency Modulation	SG	Signal Generator
Freq.	Frequency	SVSWR	Site-Voltage Standing Wave Ratio
FSK	Frequency Shift Keying	TR	Test Receiver
GFSK	Gaussian Frequency-Shift Keying	Tx	Transmitting
GNSS	Global Navigation Satellite System	VBW	Video BandWidth
GPS	Global Positioning System	Vert.	Vertical
Hori.	Horizontal	WLAN	Wireless LAN

CONTENTS PAGE

SECTION 1: Customer Information

Company Name	Canon Inc.
Address	30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo 146-8501 Japan
Telephone Number	+81-3-5482-4941
Contact Person	Yasuhito Yukita

The information provided from the customer is as follows;
- Customer, Description of EUT, Model Number of EUT, FCC ID on the cover and other relevant pages
- Operating/Test Mode(s) (Mode(s)) on all the relevant pages
- SECTION 1: Customer Information
- SECTION 2: Equipment Under Test (EUT) other than the Receipt Date and Test Date
- SECTION 4: Operation of EUT during testing

SECTION 2: Equipment Under Test (EUT)

2.1 Identification of EUT

Description	Wireless Module
Model Number	ES205
Serial Number	Refer to SECTION 4.2
Condition	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification	No Modification by the test lab
Receipt Date	May 8, 2023
Test Date	July 28, 2023 to June 21, 2024

2.2 Product Description

General Specification

Rating	DC 3.3 V / DC 1.8 V
Operating temperature	-40 deg. C to +85 deg. C

Radio Specification

This report contains data provided by the customer which can impact the validity of results. UL Japan, Inc. is only responsible for the validity of results after the integration of the data provided by the customer. The data provided by the customer is marked “a)” in the table below.

Bluetooth (BR/EDR/BTLE)

Equipment Type	Transceiver
Frequency of Operation	2402 MHz to 2480 MHz
Type of Modulation	FHSS, GFSK / π/4-DQPSK, 8DPSK / GFSK
Antenna Type	Monopole Antenna
Antenna Gain a)	2.67 dBi

WLAN (IEEE802.11b/11g/11n-20/11ax-20)

Equipment Type	Transceiver	
Frequency of Operation	2412 MHz to 2462 MHz	
Type of Modulation	DSSS, OFDM	
	OFDMA: (20 MHz band): 26/52/106/242-tone RU	
Antenna Type	Monopole Antenna	
Antenna Gain a)	Antenna Gain	Directinal Gain *1)
	2.67 dBi	5.69 dBi

WLAN (IEEE802.11a/11n-20/11ac-20/11ax-20/11n-40/11ac-40/11ax-40/11ac-80/11ax-80)

Equipment Type	Transceiver	
Frequency of Operation	20 MHz Band:	5180 MHz to 5240 MHz 5260 MHz to 5320 MHz 5500 MHz to 5700 MHz 5745 MHz to 5825 MHz 5955 MHz to 6415 MHz 6435 MHz to 6515 MHz 6535 MHz to 6875 MHz (*6875 MHz:straddle ch) 6895 MHz to 7095 MHz
	40 MHz Band	5190 MHz to 5230 MHz 5270 MHz to 5310 MHz 5510 MHz to 5670 MHz 5755 MHz to 5795 MHz 5965 MHz to 6405 MHz 6445 MHz to 6525 MHz (*6525 MHz:straddle ch) 6565 MHz to 6885 MHz (*6885 MHz:straddle ch) 6925 MHz to 7085 MHz
	80 MHz band	5210 MHz 5290 MHz 5530 MHz to 5610 MHz 5775 MHz 5985 MHz to 6385 MHz 6465 MHz to 6545 MHz (*6545 MHz:straddle ch) 6625 MHz to 6865 MHz (*6865 MHz:straddle ch) 6945 MHz to 7025 MHz
Type of Modulation	OFDM	
	OFDMA (IEEE802.11ax only)	(20 MHz band): 26/52/106/242-tone RU
		(40 MHz band): 26/52/106/242/484-tone RU
		(80 MHz band): 26/52/106/242/484/996-tone RU
Antenna Type	Monopole Antenna	

Antenna Gain a)	Antenna Gain	Directinal Gain *1)	Band
	5.14 dBi	8.16 dBi	(WLAN UNII-1 and UNII-2A band)
	3.53 dBi	6.55 dBi	(WLAN UNII-2C band)
	3.05 dBi	6.07 dBi	(WLAN UNII-3 band)
	1.61 dBi	4.63 dBi	(WLAN UNII-5 and UNII-6 band)
	0.60 dBi	3.62 dBi	(WLAN UNII-7 and UNII-8 band)

*1) Directional Gain = Antenna Gain + Arry Gain
Arry Gain = 10 * log (Number of transmit Antennas / Number of spatial streams)
Number of transmit Antennas = 2, Number of spatial streams = 1
*2) The value of the Directional Gain was applied to only 1SS of Maximum Power Spectral Density.

SECTION 3: Test specification, Procedures & Results

3.1 Test Specification

Test Specification	FCC Part 15 Subpart E The latest version on the first day of the testing period
Title	FCC 47 CFR Part 15 Radio Frequency Device Subpart E Unlicensed National Information Infrastructure Devices Section 15.407 General technical requirements

3.2 Procedures and Results

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
Conducted Emission	**FCC:** ANSI C63.10-2013 **ISED:** RSS-Gen 8.8	**FCC:** 15.407 (b) (9) / 15.207 **ISED:** RSS-Gen 8.8	27.0 dB, 0.15000 MHz/ 0.19851 MHz QP, N Mode: Tx 11ax-40, 6445 MHz with DH5 Hopping	Complied	-
26 dB Emission Bandwidth	**FCC:** KDB Publication Number 987594 **ISED:** -	**FCC:** 15.407 (a) (10) **ISED:** -	See data	Complied	Conducted
Maximum Conducted Output Power	**FCC:** KDB Publication Number 987594 **ISED:** -	**FCC:** 15.407 (a) (8) **ISED:** RSS-248 4.5.3		Complied	Conducted
Maximum Power Spectral Density	**FCC:** KDB Publication Number 987594 **ISED:** -	**FCC:** 15.407 (a) (8) **ISED:** RSS-248 4.5.3		Complied	Conducted
Spurious Emission Restricted Band Edge	**FCC:** ANSI C63.10-2013 KDB Publication Number 987594 **ISED:** -	**FCC:** 15.407 (b), 15.205 and 15.209 **ISED:** RSS-248 4.6.2	12.0 dB 7125.000 MHz, AV, Vertical Mode: Tx 11ax-20 (OFDMA) 106-tone RU, 7095 MHz	Complied	Conducted (< 30 MHz) / Radiated (> 30 MHz) *1)
In-Band Emissions	**FCC:** KDB Publication Number 987594 **ISED:** -	**FCC:** 15.407 (b) (7) **ISED:** RSS-248 4.6.2	See data	Complied	Conducted

Note: UL Japan, Inc.'s EMI Work Procedures: Work Instructions-ULID-003591 and Work Instructions-ULID-003593.
* In case any questions arise about test procedure, ANSI C63.10: 2013 is also referred.

*1) Radiated test was selected over 30 MHz based on FCC 15.407 (b) and KDB 789033 D02 G.3.b).

FCC Part 15.31 (e)
The module is constantly provided the stable voltage (DC 3.3 V / 1.8 V) from the host device regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement
The EUT has a unique coupling/antenna connector (MHF-4L (IPEX)). Therefore the equipment complies with the requirement of 15.203.

3.3 Addition to Standard

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
99 % Occupied Band Width	**ISED:** RSS-Gen 6.7	**ISED:** RSS-248 4.4	N/A	-	Conducted

Other than above, no addition, exclusion nor deviation has been made from the standard.

3.4 Uncertainty

Measurement uncertainty is not taken into account when stating conformity with a specified requirement.
Note: When margins obtained from test results are less than the measurement uncertainty, the test results may exceed the limit.

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor *k*=2.

Item	Frequency range	Uncertainty (+/-)
Conducted Emission (AC Mains) LISN	150 kHz to 30 MHz	3.2 dB
Radiated Emission (Measurement distance: 3 m)	9 kHz to 30 MHz	3.3 dB
	30 MHz to 200 MHz	4.9 dB
	200 MHz to 1 GHz	6.2 dB
	1 GHz to 6 GHz	4.7 dB
	6 GHz to 18 GHz	5.3 dB
	18 GHz to 40 GHz	5.5 dB
Radiated Emission (Measurement distance: 1 m)	1 GHz to 18 GHz	5.6 dB
	18 GHz to 40 GHz	5.8 dB

Antenna terminal test	Uncertainty (+/-)
Power Measurement above 1 GHz (Average Detector) SPM-06	1.1 dB
Power Measurement above 1 GHz (Peak Detector) SPM-06	1.8 dB
Power Measurement above 1 GHz (Average Detector) SPM-07	1.0 dB
Power Measurement above 1 GHz (Peak Detector) SPM-07	1.2 dB
Power Measurement above 1 GHz (Average Detector) SPM-13	0.81 dB
Power Measurement above 1 GHz (Peak Detector) SPM-13	1.1 dB
Spurious Emission (Conducted) below 1 GHz	0.91 dB
Conducted Emissions Power Density Measurement 1 GHz to 3 GHz	1.3 dB
Conducted Emissions Power Density Measurement 3 GHz to 18 GHz	2.5 dB
Spurious Emission (Conducted) 18 GHz to 26.5 GHz	2.8 dB
Spurious Emission (Conducted) 26.5 GHz to 40 GHz	2.6 dB
Bandwidth Measurement	0.012 %
Duty Cycle and Time Measurement	0.27 %
Temperature_SCH-01	0.96 deg.C.
Humidity_SCH-01	4.0 %
Temperature_SCH-02	2.2 deg.C.
Voltage	0.74 %

3.5 Test Location

UL Japan, Inc. Shonan EMC Lab.
1-22-3, Megumigaoka, Hiratsuka-shi, Kanagawa-ken 259-1220 Japan
Telephone: +81-463-50-6400
A2LA Certificate Number: 1266.03
(FCC test firm registration number: 626366, ISED lab company number: 2973D / CAB identifier: JP0001)

Test room	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Semi-anechoic chamber (SAC1)	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.2 Semi-anechoic chamber (SAC2)	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.3 Semi-anechoic chamber (SAC3)	12.7 x 7.7 x 5.35	12.7 x 7.7	5 m
No.4 Semi-anechoic chamber (SAC4)	8.1 x 5.1 x 3.55	8.1 x 5.1	-
Wireless anechoic chamber 1 (WAC1)	9.5 x 6.0 x 5.4	9.5 x 6.0	3 m
Wireless anechoic chamber 2 (WAC2)	9.5 x 6.0 x 5.4	9.5 x 6.0	3 m
No.1 Shielded room	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.2 Shielded room	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.3 Shielded room	6.3 x 4.7 x 2.7	6.3 x 4.7	-
No.4 Shielded room	4.4 x 4.7 x 2.7	4.4 x 4.7	-
No.5 Shielded room	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.6 Shielded room	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.8 Shielded room	3.45 x 5.5 x 2.4	3.45 x 5.5	-
No.1 Measurement room	2.55 x 4.1 x 2.5	-	-
No.2 Measurement room	4.5 x 3.5 x 2.5	-	-
Wireless shielded room 1	3.0 x 4.5 x 2.7	3.0 x 4.5	-
Wireless shielded room 2	3.0 x 4.5 x 2.7	3.0 x 4.5	-

3.6 Test Data, Test Instruments, and Test Set Up

Refer to APPENDIX.

SECTION 4: Operation of EUT during testing

4.1 Operating Mode(s)

Mode	Remarks*
IEEE 802.11a MIMO 20 MHz BW (11a)	6 Mbps, PN9
IEEE 802.11ax MIMO 20 MHz BW (11ax-20)	MCS 10 (1SS), PN9 *1) MCS 7 (2SS), PN9
IEEE 802.11ax MIMO 40 MHz BW (11ax-40)	MCS 10 (1SS), PN9 *2) MCS 7 (2SS), PN9
IEEE 802.11ax MIMO 80 MHz BW (11ax-80)	MCS 6 (1SS), PN9 MCS 7 (2SS), PN9
The worst condition was determined based on the test result of Maximum Peak Output Power. (SS: Spatial Stream, For data sheet 1SS: CDD, 2SS: SDM)	
*Power of the EUT was set by the software as follows; Power Setting: OFDM:(U-NII 5 & 6) 11a: -1 11ax-20: 3 dBm (2SS), 0 dBm (1SS) 11ax-40: 7 dBm (2SS), 3 dBm (1SS) 11ax-80: 7 dBm (2SS), 3 dBm (1SS) OFDM:(U-NII 7 & 8) 11a: 0 dBm 11ax-20: 5 dBm (2SS), 1 dBm (1SS) 11ax-40: 7 dBm (2SS), 3 dBm (1SS) 11ax-80: 8 dBm (2SS), 4 dBm (1SS) OFDMA: See table (Power Setting for OFDMA) OFDMA(Pre-collection): -11 dBm Software: 18.53 (For WLAN) 001.002.087.0186 (For Bluetooth) (Date: 2023.05 25, Storage location: Driven by connected PC) *This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.	
Test operating mode was determined as follows according to “Section 1 of 6 802.11 a/b/g/n testing - Managing Complex Regulatory Approvals - ” of TCB Council Workshop October 2009 and also was judged the necessity of 802.11ac/ax mode by the pre-test.	

*1) 26 tone to 242 tone was measured MCS 7, since there are no settings for MCS 10 and 11.
*2) 26 tone to 484 tone was measured MCS 9, since there are no settings for MCS 10 and 11.

Power Setting for OFDMA (U-NII 5 & 6)

	20 MHz BW	40 MHz BW	80 MHz BW
26-tone RU	-7 dBm (2SS) -10 dBm (1SS)	-8 dBm (2SS) -11 dBm (1SS)	-10 dBm (2SS) -12 dBm (1SS)
52-tone RU	-4 dBm (2SS) -7 dBm (1SS)	-5 dBm (2SS) -8 dBm (1SS)	-7 dBm (2SS) -10 dBm (1SS)
106-tone RU	-1 dBm (2SS) -4 dBm (1SS)	-2 dBm (2SS) -5 dBm (1SS)	-4 dBm (2SS) -7 dBm (1SS)
242-tone RU	3 dBm (2SS) -1 dBm (1SS)	2 dBm (2SS) -1 dBm (1SS)	-1 dBm (2SS) -4 dBm (1SS)
484-tone RU	-	5 dBm (2SS) 2 dBm (1SS)	1 dBm (2SS) -2 dBm (1SS)
996-tone RU	-	-	4 dBm (2SS) 1 dBm (1SS)

Power Setting for OFDMA (U-NII 7 & 8)

	20 MHz BW	40 MHz BW	80 MHz BW
26-tone RU	-6 dBm (2SS) -9 dBm (1SS)	-7 dBm (2SS) -10 dBm (1SS)	-9 dBm (2SS) -12 dBm (1SS)
52-tone RU	-3 dBm (2SS) -6 dBm (1SS)	-4 dBm (2SS) -7 dBm (1SS)	-6 dBm (2SS) -9 dBm (1SS)
106-tone RU	0 dBm (2SS) -3 dBm (1SS)	-2 dBm (2SS) -4 dBm (1SS)	-3 dBm (2SS) -6 dBm (1SS)
242-tone RU	4 dBm (2SS) 0 dBm (1SS)	2 dBm (2SS) -1 dBm (1SS)	0 dBm (2SS) -3 dBm (1SS)
484-tone RU	-	5 dBm (2SS) 2 dBm (1SS)	2 dBm (2SS) -1 dBm (1SS)
996-tone RU	-	-	5 dBm (2SS) 2 dBm (1SS)

*The Details of Operation Mode(s)

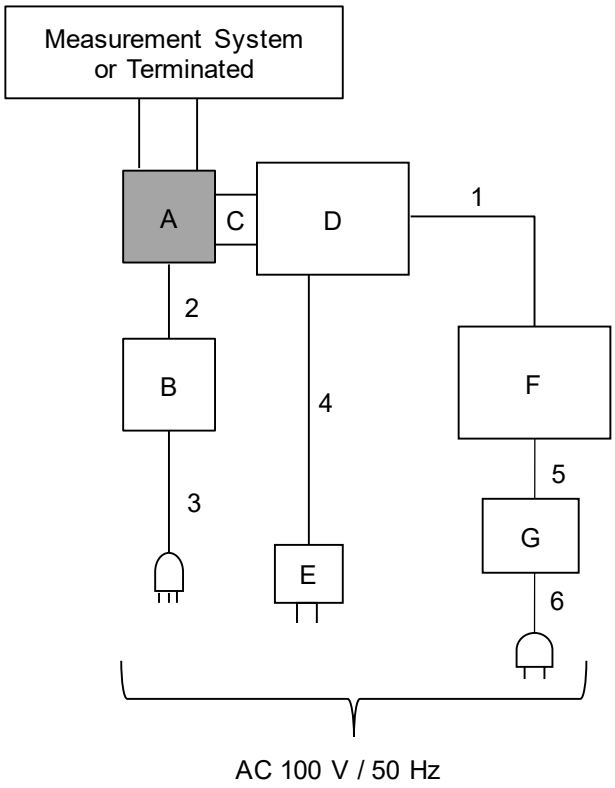
Test Item	Operating Mode *1)	Tested Antenna	Tested Frequency			
			U-NII-5	U-NII-6	U-NII-7	U-NII-8
Conducted emission, Radiated Spurious Emission (Below 1 GHz)	Tx 11ax-40 (OFDM) *1) Tx 11ax-40 (OFDM) with DH5 Hopping Tx 11ax-40 (OFDM) with 2M-PHY BT LE 2440 MHz	ANT 0+1	-	6445 MHz	-	-
26 dB Emission Bandwidth, 99 % Occupied Bandwidth, In-Band Emissions	Tx 11a Tx 11ax-20 (OFDM) Tx 11ax-20 (OFDMA)	ANT 1 *2)	5955 MHz 6195 MHz 6415 MHz	6435 MHz 6475 MHz 6515 MHz	6535 MHz 6695 MHz 6855 MHz 6875 MHz*	6895 MHz 6995 MHz 7095 MHz
	Tx 11ax-40 (OFDM) Tx 11ax-40 (OFDMA)		5965 MHz 6205 MHz 6405 MHz	6445 MHz 6485 MHz 6525 MHz*	6565 MHz 6685 MHz 6845 MHz 6885 MHz*	6925 MHz 7005 MHz 7085 MHz
	Tx 11ax-80 (OFDM) Tx 11ax-80 (OFDMA)		5985 MHz 6225 MHz 6385 MHz	6465 MHz 6545 MHz*	6625 MHz 6705 MHz 6865 MHz*	6945 MHz 7025 MHz
Maximum Conducted Output Power, Maximum Power Spectral Density	Tx 11a Tx 11ax-20 (OFDM) Tx 11ax-20 (OFDMA)	ANT 0+1	5955 MHz 6195 MHz 6415 MHz	6435 MHz 6475 MHz 6515 MHz	6535 MHz 6695 MHz 6855 MHz 6875 MHz*	6895 MHz 6995 MHz 7095 MHz
	Tx 11ax-40 (OFDM) Tx 11ax-40 (OFDMA)		5965 MHz 6205 MHz 6405 MHz	6445 MHz 6485 MHz 6525 MHz*	6565 MHz 6685 MHz 6845 MHz 6885 MHz*	6925 MHz 7005 MHz 7085 MHz
	Tx 11ax-80 (OFDM) Tx 11ax-80 (OFDMA)		5985 MHz 6225 MHz 6385 MHz	6465 MHz 6545 MHz*	6625 MHz 6705 MHz 6865 MHz*	6945 MHz 7025 MHz
Radiated Spurious Emission (Above 1 GHz)	Tx 11ax-20 (OFDM)	ANT 0+1	5955 MHz 6195 MHz 6415 MHz	6435 MHz 6475 MHz 6515 MHz	6535 MHz 6695 MHz 6855 MHz 6875 MHz*	6895 MHz 6995 MHz 7095 MHz
	Tx 11ax-20 (OFDMA) *3) Tx 11ax-20 (OFDM) with DH5 Hopping Tx 11ax-20 (OFDMA) with DH5 Hopping Tx 11ax-20 (OFDM) with 2M-PHY BT LE 2440 MHz Tx 11ax-20 (OFDMA) with 2M-PHY BT LE 2440 MHz		5955 MHz	-	-	7095 MHz
	Tx 11ax-40 (OFDM)		5965 MHz 6205 MHz 6405 MHz	6445 MHz 6485 MHz 6525 MHz*	6565 MHz 6685 MHz 6845 MHz 6885 MHz*	6925 MHz 7005 MHz 7085 MHz
	Tx 11ax-40 (OFDMA) *3) Tx 11ax-40 (OFDM) with DH5 Hopping Tx 11ax-40 (OFDMA) with DH5 Hopping Tx 11ax-40 (OFDM) with 2M-PHY BT LE 2440 MHz Tx 11ax-40 (OFDMA) with 2M-PHY BT LE 2440 MHz		5965 MHz	-	-	7085 MHz
	Tx 11ax-80 (OFDM)		5985 MHz 6225 MHz 6385 MHz	6465 MHz 6545 MHz*	6625 MHz 6705 MHz 6865 MHz*	6945 MHz 7025 MHz
	Tx 11ax-80 (OFDMA) *3) Tx 11ax-80 (OFDM) with DH5 Hopping Tx 11ax-80 (OFDMA) with DH5 Hopping Tx 11ax-80 (OFDM) with 2M-PHY BT LE 2440 MHz Tx 11ax-80 (OFDMA) with 2M-PHY BT LE 2440 MHz		5985 MHz	-	-	7025 MHz
Conducted Spurious Emission	Tx 11ax-40 (OFDM) *2)	ANT 1 *2)	-	6445 MHz	-	-

*Straddle channel

*1) The mode was tested as a representative because it had the highest power at antenna terminal test.
*2) After the comparison between ANT 0 and ANT 1, the test was performed with the antenna that had higher power as a representative.
*3) OFDMA configuration tests were conducted only at the band edge since preliminary testing indicated that the other spurious emission was lower than OFDM.

4.2 Configuration and Peripherals

<For Antenna Terminal Conducted Tests>



Description of EUT and Support Equipment

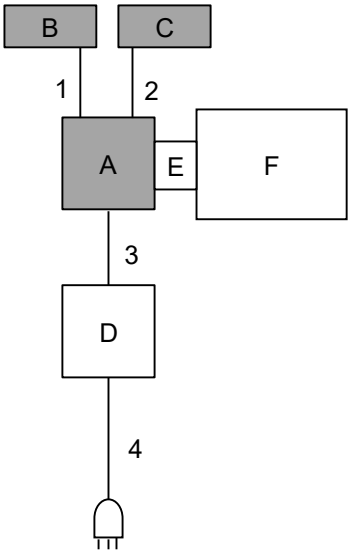
No.	Item	Model number	Serial Number	Manufacturer	Remarks
A	Wireless module	ES205	B2	Canon Inc.	EUT *1)
B	Power Supply (DC)	PW16-5ADP	19100034	GW Instek	-
C	Interface board	WJIG2021_2	A17	Canon Inc.	-
D	Raspberry Pi board	600-90768-01 REV2.0	2-4	Infineon Technologies AG	-
E	AC Adapter	QFWB-30-12-US01	07	Qualtek	-
F	Laptop PC	HP 250 G9/CT	JPH318LWC6	HP	-
G	AC Adapter	TPN-LA15	-	Lite-On Technorogy Corp.	-

*1) with Jig board

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	LAN	1.1	Unshielded	Unshielded	-
2	DC	0.9	Unshielded	Unshielded	-
3	AC	2.0	Unshielded	Unshielded	-
4	DC	1.5	Unshielded	Unshielded	-
5	DC	1.7	Unshielded	Unshielded	-
6	AC	0.9	Unshielded	Unshielded	-

<For Radiated Emission tests and Conducted Emission tests>



AC 100 V / 50 Hz
AC 120 V / 60 Hz *1)

*1) Only Conducted emission tests

* Cabling and setup(s) were taken into consideration and test data was taken under worse case conditions.

Description of EUT and Support Equipment

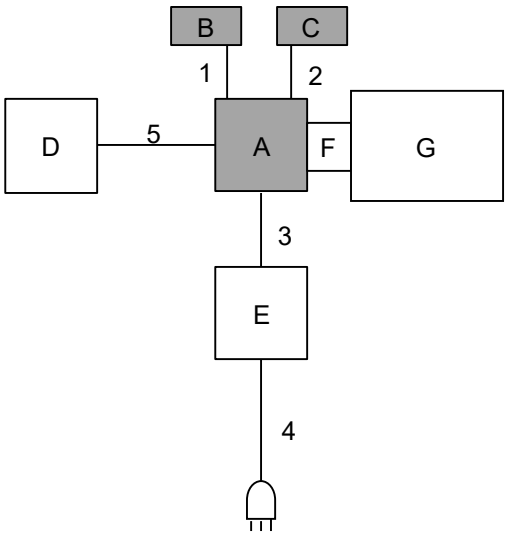
No.	Item	Model number	Serial Number	Manufacturer	Remarks
A	Wireless module	ES205	B4	Canon Inc.	EUT *2)
B	Antenna	19AA-10-tmp	1	Canon Inc.	EUT (Ant0)
C	Antenna	19AA-10-tmp	2	Canon Inc.	EUT (Ant1)
D	Power Supply (DC)	PAN35-10A	DE001677	Kikusui Electronics Corp.	-
E	Interface board	WJIG2021_2	A15	Canon Inc.	-
F	Raspberry Pi board	600-90768-01 REV2.0	2-2	Infineon Technologies AG	-

*2) with Jig board

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Antenna	0.02	Shielded	Shielded	-
2	Antenna	0.02	Shielded	Shielded	-
3	DC	0.9 + 1.0	Unshielded	Unshielded	-
4	AC	2.0	Unshielded	Unshielded	-

< For Radiated Emission tests and Conducted Emission tests (Simultaneous transmission of BT LE and WLAN)>



AC 100 V / 50 Hz
AC 120 V / 60 Hz *1)

*1) Only Conducted emission tests

* Cabling and setup(s) were taken into consideration and test data was taken under worse case conditions.

Description of EUT and Support Equipment

No.	Item	Model number	Serial Number	Manufacturer	Remarks
A	Wireless module	ES205	B4	Canon Inc.	EUT *2)
B	Antenna	19AA-10-tmp	1	Canon Inc.	EUT (Ant0)
C	Antenna	19AA-10-tmp	2	Canon Inc.	EUT (Ant1)
D	UART-USB converter board	-	BP006	Canon Inc.	-
E	Power Supply (DC)	PAN35-10A	DE001677	Kikusui Electronics Corp.	-
F	Interface board	WJIG2021_2	A15	Canon Inc.	-
G	Raspberry Pi board	600-90768-01 REV2.0	2-2	Infineon Technologies AG	-

*2) with Jig board

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Antenna	0.02	Shielded	Shielded	-
2	Antenna	0.02	Shielded	Shielded	-
3	DC	0.9 + 1.0	Unshielded	Unshielded	-
4	AC	0.9	Unshielded	Unshielded	-
5	UART	0.1	Unshielded	Unshielded	-

SECTION 5: Conducted Emission

Test Procedure and Conditions

EUT was placed on a urethane platform of nominal size, 1.0 m by 2.0 m, raised 0.8 m above the conducting ground plane.
The rear of tabletop was located 40 cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80 cm from any other grounded conducting surface. EUT was located 80 cm from a Line Impedance Stabilization Network (LISN) / Artificial mains Network (AMN) and excess AC cable was bundled in center.

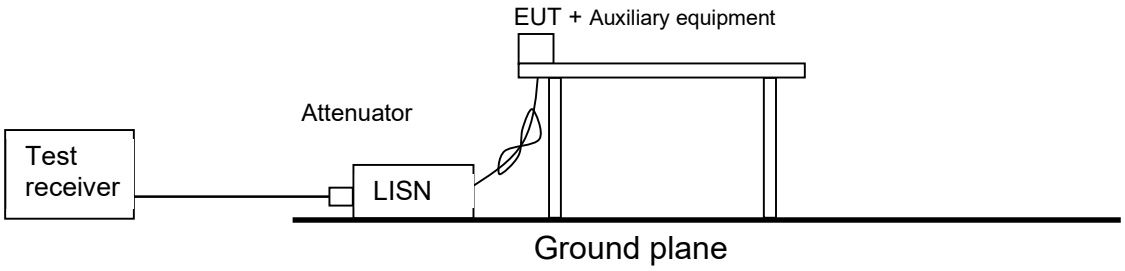
For the tests on EUT with other peripherals (as a whole system)
I/O cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30 cm to 40 cm long and were hanged at a 40 cm height to the ground plane.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT via Auxiliary equipment in a Shielded rom.
The EUT via Auxiliary equipment was connected to a LISN (AMN).
An overview sweep with peak detection has been performed.

The test results and limit are rounded off to one decimal place, so some differences might be observed.

Detector : QP and CISPR Average
Measurement Range : 0.15 MHz to 30 MHz
Test Data : APPENDIX
Test Result : Pass

Figure 1: Test Setup



SECTION 6: Radiated Spurious Emission and Band Edge Compliance

Test Procedure

< Below 1 GHz >
EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 m, raised 0.8 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

< Above 1 GHz >
EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 m, raised 1.5 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with absorbent materials lined on a ground plane. Test antenna was aimed at the EUT for receiving the maximum signal and always kept within the illumination area of the 3 dB beamwidth of the antenna.

The height of the measuring antenna varied between 1 m and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.
The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.
The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).
The test was made with the detector (RBW/VBW) in the following table.
When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

< Below 1 GHz >

The result also satisfied with the general limits specified in section 15.209 (a).

< Above 1 GHz >

Inside of restricted bands (Section 15.205):

Apply to limit in the Section 15.209 (a).

Outside of the restricted bands:

Apply to limit 68.2 dBuV/m, 3 m (-27 dBm e.i.r.p.*) in the Section 15.407 (b) (6).

Restricted band edge:

Apply to limit in the Section 15.209 (a).
Since this limit is severer than the limit of the inside of restricted bands.

*Electric field strength to e.i.r.p. conversion:

$$E = \frac{1000000\ \sqrt{30\,P}}{3}\ \text{(uV/m)}$$:*P* is the e.i.r.p. (Watts)

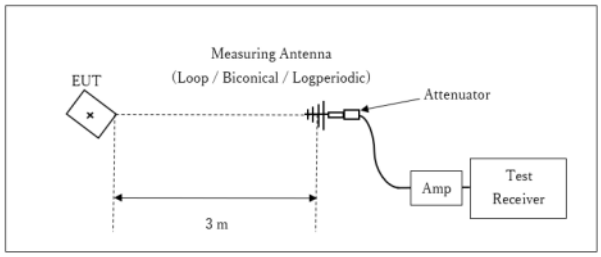
Test Antennas are used as below;

Frequency	30 MHz to 200 MHz	200 MHz to 1 GHz	Above 1 GHz
Antenna Type	Biconical	Logperiodic	Horn

Frequency	Below 1 GHz	Above 1 GHz	
Instrument Used	Test Receiver	Spectrum Analyzer	
Detector	QP	Peak	Average
IF Bandwidth	BW: 120 kHz	RBW: 1 MHz VBW: 3 MHz	Method AD RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (RMS) Trace: ≥ 100 traces If duty cycle was less than 98%, a duty factor was added to the results.

Figure 2: Test Setup

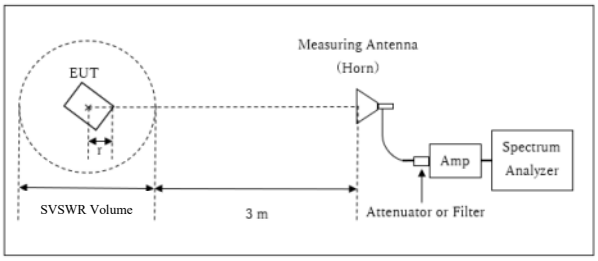
Below 1 GHz



× : Center of turn table

Test Distance: 3 m

1 GHz to 10 GHz

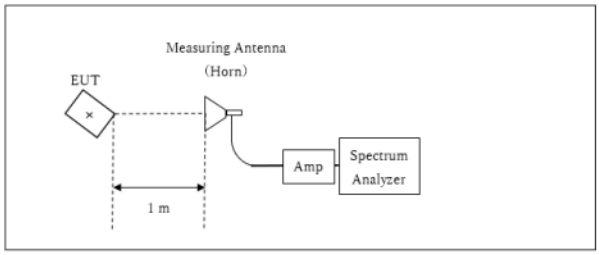


r : Radius of an outer periphery of EUT
× : Center of turn table

Distance Factor: 20 x log (3.995 m / 3.0 m) = 2.49 dB
* Test Distance: (3 + SVSWR Volume /2) - r = 3.995 m

SVSWR Volume : 2.0 m
(SVSWR Volume has been calibrated based on CISPR 16-1-4.)
r = 0.005 m

10 GHz to 40 GHz



× : Center of turn table

Distance Factor: 20 x log (1.0 m / 3.0 m) = -9.54 dB
*Test Distance: 1 m

- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

EUT

	Below 1 GHz	1 to10 GHz	10 to18 GHz	18 to 26.5 GHz	26.5 to 40 GHz
Horizontal	X	X	X	X	Y
Vertical	X	Y	X	X	X

Antenna

	Below 1 GHz	1 to10 GHz	10 to18 GHz	18 to 26.5 GHz	26.5 to 40 GHz
Horizontal	X	X	X	X	X
Vertical	X	Y	X	X	Z

The test results and limit are rounded off to one decimal place, so some differences might be observed.

Measurement Range : 30 MHz to 40 GHz
Test Data : APPENDIX
Test Result : Pass

SECTION 7: Antenna Terminal Conducted Tests

Test Procedure

The tests were made with below setting connected to the antenna port.

Test	Span	RBW	VBW	Sweep time	Detector	Trace	Instrument used and Test method
26 dB Bandwidth	Enough to capture the emission	Close to 1 % of EBW	>RBW	Auto	Peak	Max Hold	Spectrum Analyzer
99 % Occupied Bandwidth *1)	Enough width to display emission skirts	1 % to 5 % of OBW	≥3 RBW	Auto	Peak	Max Hold	Spectrum Analyzer
6 dB Bandwidth	Enough to capture the emission	100 kHz	300 kHz	Auto	Peak	Max Hold	Spectrum Analyzer
Maximum Conducted Output Power	-	-	-	Auto	Average	-	Power Meter (Sensor: 160 MHz BW) (Method PM-G)
Maximum Power Spectral Density	Encompass the entire EBW	1 MHz	≥3 RBW	Auto	RMS Power Averaging (>100 times)	Clear Write	Spectrum Analyzer
Conducted Spurious Emission*2) *3)	9 kHz to 150 kHz	200 Hz	620 Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150 kHz to 30 MHz	10 kHz	30 kHz				
In-Band Emissions	Enough to capture the emission	same RBW used for 26 dB Bandwidth measurement	≥3 RBW	Auto	RMS Power Averaging (≥100 traces)	Clear Write	Spectrum Analyzer

*1) Peak hold was applied as Worst-case measurement.
*2) In the frequency range below 30 MHz, RBW was narrowed to separate the noise contents.
Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart.
(9 kHz to 150 kHz: RBW = 200 Hz, 150 kHz to 30 MHz: RBW = 10 kHz)
*3) The limits in CFR 47, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-Gen section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377 Ohmes. For example, the measurement at frequency 9 kHz resulted in a level of 45.5 dBuV/m, which is equivalent to 45.5 – 51.5 = -6.0 dBuA/m, which has the same margin, 3 dB, to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limit.

The test results and limit are rounded off to two decimals place, so some differences might be observed.
The equipment and cables were not used for factor 0 dB of the data sheets.

Test Data : APPENDIX
Test Result : Pass

APPENDIX 1: Test Data

Conducted Emission

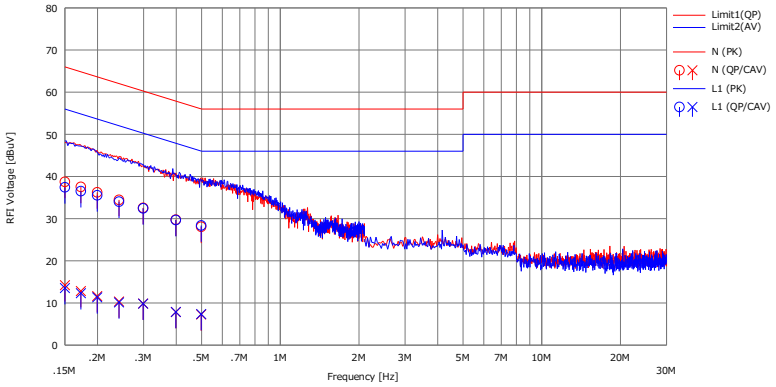
DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2024/01/30

Mode : Tx 11ax-40 (OFDM), 6445 MHz
Order No : 14781152
Temp./Humi. : 22 deg.C. / 27 %RH

Limit : FCC_Part 15 Subpart C(15.207)

Engineer : Makoto Hosaka



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		(QP)	(CAV)		(QP)	(CAV)	(QP)	(AV)	(QP)	(AV)		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	26.30	1.80	12.42	38.72	14.22	66.00	56.00	27.2	41.7	N	
2	0.17265	25.10	0.40	12.42	37.52	12.82	64.83	54.83	27.3	42.0	N	
3	0.19943	23.80	-0.80	12.42	36.22	11.62	63.63	53.63	27.4	42.0	N	
4	0.24164	22.00	-2.10	12.44	34.44	10.34	62.04	52.04	27.6	41.7	N	
5	0.29892	20.10	-2.60	12.45	32.55	9.85	60.27	50.27	27.7	40.4	N	
6	0.39850	17.30	-4.60	12.45	29.75	7.85	57.88	47.88	28.1	40.0	N	
7	0.49831	15.60	-5.20	12.46	28.06	7.26	56.03	46.03	27.9	38.7	N	
8	0.15000	25.00	1.10	12.43	37.43	13.53	66.00	56.00	28.5	42.4	L1	
9	0.17265	24.10	-0.10	12.42	36.52	12.32	64.83	54.83	28.3	42.5	L1	
10	0.19943	23.10	-1.10	12.43	35.53	11.33	63.63	53.63	28.1	42.3	L1	
11	0.24164	21.60	-2.30	12.42	34.02	10.12	62.04	52.04	28.0	41.9	L1	
12	0.29892	20.00	-2.60	12.44	32.44	9.84	60.27	50.27	27.8	40.4	L1	
13	0.39850	17.20	-4.60	12.46	29.66	7.86	57.88	47.88	28.2	40.0	L1	
14	0.49831	15.90	-5.10	12.47	28.37	7.37	56.03	46.03	27.6	38.6	L1	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(LISN(AMN)+Cable+ATT)[dB]
LISN(AMN): 145542

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2024/01/29

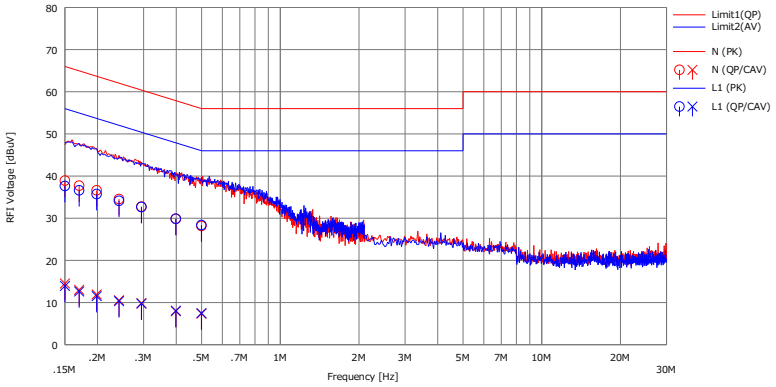
Mode : Refer to Remarks

Power : DC 3.3 V (AC 120 V / 60 Hz)
Temp./Humi. : 20 deg.C. / 27 %RH

Remarks : Tx 11ax-40, 6445 MHz with DH5 Hopping

Limit : FCC_Part 15 Subpart C(15.207)

Engineer : Yusuke Tanikawara



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		〈QP〉	〈CAV〉		〈QP〉	〈CAV〉	〈QP〉	〈AV〉	〈QP〉	〈AV〉		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	26.50	2.10	12.42	38.92	14.52	66.00	56.00	27.0	41.4	N	
2	0.17016	25.30	0.60	12.42	37.72	13.02	64.95	54.95	27.2	41.9	N	
3	0.19851	24.20	-0.50	12.42	36.62	11.92	63.67	53.67	27.0	41.7	N	
4	0.24166	22.10	-1.90	12.44	34.54	10.54	62.04	52.04	27.5	41.5	N	
5	0.29438	20.30	-2.60	12.45	32.75	9.85	60.40	50.40	27.6	40.5	N	
6	0.39869	17.40	-4.50	12.45	29.85	7.95	57.88	47.88	28.0	39.9	N	
7	0.49931	15.70	-5.10	12.46	28.16	7.36	56.01	46.01	27.8	38.6	N	
8	0.15000	25.20	1.50	12.43	37.63	13.93	66.00	56.00	28.3	42.0	L1	
9	0.17016	24.20	0.20	12.42	36.62	12.62	64.95	54.95	28.3	42.3	L1	
10	0.19851	23.30	-0.90	12.43	35.73	11.53	63.67	53.67	27.9	42.1	L1	
11	0.24166	21.70	-2.10	12.42	34.12	10.32	62.04	52.04	27.9	41.7	L1	
12	0.29438	20.20	-2.70	12.44	32.64	9.74	60.40	50.40	27.7	40.6	L1	
13	0.39869	17.40	-4.40	12.46	29.86	8.06	57.88	47.88	28.0	39.8	L1	
14	0.49931	15.90	-5.00	12.47	28.37	7.47	56.01	46.01	27.6	38.5	L1	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(LISN(AMN)+Cable+ATT)[dB]
LISN(AMN): 145542

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2024/01/30

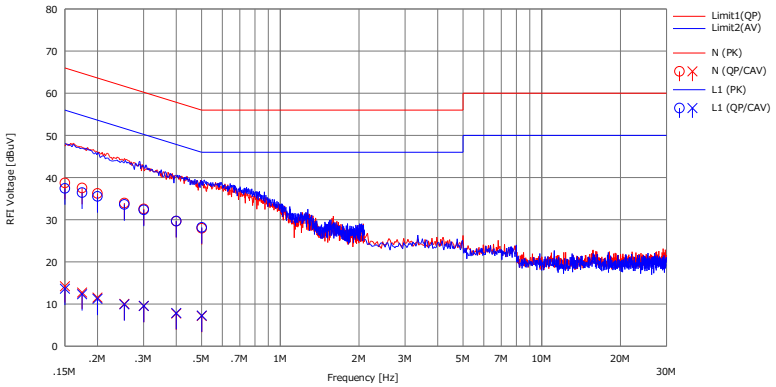
Mode : Refer to Remarks

Power : DC 3.3 V (AC 120 V / 60 Hz)
Temp./Humi. : 22 deg.C. / 27 %RH

Remarks : Tx 11ax-40 (OFDM), 6445 MHz with 2M-PHY BT LE 2440 MHz

Limit : FCC_Part 15 Subpart C(15.207)

Engineer : Makoto Hosaka



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		(QP)	(CAV)		(QP)	(CAV)	(QP)	(AV)	(QP)	(AV)		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	26.30	1.80	12.42	38.72	14.22	66.00	56.00	27.2	41.7	N	
2	0.17452	25.10	0.30	12.42	37.52	12.72	64.74	54.74	27.2	42.0	N	
3	0.19992	23.80	-0.90	12.42	36.22	11.52	63.61	53.61	27.3	42.0	N	
4	0.25318	21.50	-2.40	12.44	33.94	10.04	61.65	51.65	27.7	41.6	N	
5	0.30050	20.10	-2.90	12.45	32.55	9.55	60.23	50.23	27.6	40.6	N	
6	0.40015	17.20	-4.70	12.45	29.65	7.75	57.85	47.85	28.2	40.1	N	
7	0.50066	15.50	-5.30	12.46	27.96	7.16	56.00	46.00	28.0	38.8	N	
8	0.15000	25.00	1.20	12.43	37.43	13.63	66.00	56.00	28.5	42.3	L1	
9	0.17452	24.00	-0.10	12.42	36.42	12.32	64.74	54.74	28.3	42.4	L1	
10	0.19992	23.10	-1.20	12.43	35.53	11.23	63.61	53.61	28.0	42.3	L1	
11	0.25318	21.20	-2.50	12.42	33.62	9.92	61.65	51.65	28.0	41.7	L1	
12	0.30050	19.90	-2.90	12.44	32.34	9.54	60.23	50.23	27.8	40.6	L1	
13	0.40015	17.20	-4.60	12.46	29.66	7.86	57.85	47.85	28.1	39.9	L1	
14	0.50066	15.70	-5.20	12.47	28.17	7.27	56.00	46.00	27.8	38.7	L1	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(LISN(AMN)+Cable+ATT)[dB]
LISN(AMN): 145542

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	January 12, 2024
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yuta Shiba
Mode	Tx 11a

11a

Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
5955	21.037	***16917.5***
6195	20.830	16874.5
6415	21.163	16906.2
6435	21.089	***16956.7***
6475	21.094	16869.7
6515	21.096	16873.3
6535	21.147	16876.9
6695	21.172	***16912.6***
6855	21.070	16909.7
6875	21.137	16909.7
6895	20.899	16912.3
6995	21.113	***16950.1***
7095	21.017	16862.2

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	January 9, 2024
Temperature / Humidity	22 deg. C / 49 % RH
Engineer	Yuta Shiba
Mode	Tx 11ax-20 (OFDM)

11ax-20(OFDM)

Tested Frequency [MHz]	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
5955	21.263	19123.6
6195	21.320	19125.7
6415	21.514	***19145.3***
6435	21.540	***19160.5***
6475	21.383	19086.5
6515	21.804	19132.4
6535	21.278	19120.4
6695	21.537	19086.9
6855	21.577	19158.2
6875	21.185	***19180.8***
6895	21.509	***19141.5***
6995	21.727	19103.6
7095	21.259	19137.2

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	January 10, 2024
Temperature / Humidity	20 deg. C / 48 % RH
Engineer	Yosuke Murakami
Mode	Tx 11ax-20 (OFDMA) 26-tone RU

11ax-20(OFDMA)

RU Type	Tested Frequency [MHz]	RU Index	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
26-tone RU	5955	0	19.810	18518.7
		4	18.121	16989.4
		8	19.629	18562.6
	6195	0	19.711	18517.7
		4	18.038	17004.4
		8	19.628	***18566.6***
	6415	0	19.654	18531.6
		4	18.062	17004.5
		8	19.636	18555.5
	6435	0	19.735	18531.0
		4	18.058	16999.0
		8	19.592	18585.0
	6475	0	19.651	18508.1
		4	18.053	16991.0
		8	19.682	***18614.3***
	6515	0	19.799	18506.1
		4	18.086	16981.9
		8	19.638	18571.6
	6535	0	19.731	18535.2
		4	18.029	16956.6
		8	19.670	18540.0
	6695	0	19.776	18547.1
		4	18.085	16965.4
		8	19.640	18552.8
	6855	0	19.697	18519.2
		4	18.043	16992.3
		8	19.608	***18569.2***
	6875	0	19.769	18541.2
		4	18.062	17005.3
		8	19.630	18562.4
	6895	0	19.778	18517.4
		4	18.025	17015.3
		8	19.614	18565.7
	6995	0	19.729	18550.1
		4	18.076	17002.3
		8	19.648	***18587.4***
	7095	0	19.746	18521.4
		4	18.054	17004.6
		8	19.640	18555.7

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	January 10, 2024
Temperature / Humidity	20 deg. C / 48 % RH
Engineer	Yosuke Murakami
Mode	Tx 11ax-20 (OFDMA) 52-tone RU

11ax-20(OFDMA)

RU Type	Tested Frequency [MHz]	RU Index	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
52-tone RU	5955	37	19.942	18369.0
		38	18.248	16997.8
		40	20.067	***18422.3***
	6195	37	19.981	18404.0
		38	18.282	17009.7
		40	19.943	18378.5
	6415	37	20.031	18412.0
		38	18.488	17023.8
		40	19.925	18417.1
	6435	37	19.993	18395.4
		38	18.588	17015.3
		40	20.001	18407.1
	6475	37	19.941	18377.1
		38	18.265	17007.7
		40	20.005	***18424.8***
	6515	37	19.991	18384.0
		38	18.299	17021.3
		40	19.994	18415.4
	6535	37	19.833	18385.6
		38	18.475	17115.3
		40	19.855	18349.9
	6695	37	20.014	18370.5
		38	18.454	17121.1
		40	19.943	18250.5
	6855	37	19.837	18398.2
		38	18.431	17085.2
		40	19.848	***18413.0***
	6875	37	19.906	18356.3
		38	18.292	17090.1
		40	19.977	18336.2
	6895	37	19.900	18360.8
		38	18.349	17074.3
		40	19.742	18344.0
	6995	37	20.002	***18376.0***
		38	18.452	17046.2
		40	19.868	18313.3
	7095	37	20.014	18350.7
		38	18.262	17119.5
		40	19.845	18345.0

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	January 10, 2024
Temperature / Humidity	24 deg. C / 32 % RH
Engineer	Yuta Shiba
Mode	Tx 11ax-20 (OFDMA) 106-tone RU

11ax-20(OFDMA)

RU Type	Tested Frequency [MHz]	RU Index	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
106-tone RU	5955	53	20.250	18211.1
		54	19.837	18226.6
	6195	53	19.984	***18340.5***
		54	19.868	18201.9
	6415	53	20.028	18215.8
		54	19.952	18272.7
	6435	53	20.639	***18310.6***
		54	19.976	18212.1
	6475	53	20.336	18297.8
		54	20.022	18219.9
	6515	53	20.680	18272.2
		54	19.863	18199.5
	6535	53	20.487	18306.6
		54	19.880	18217.6
	6695	53	20.427	18316.3
		54	19.884	18259.2
	6855	53	20.405	18249.3
		54	19.792	18255.4
	6875	53	20.292	***18358.5***
		54	19.929	18278.8
	6895	53	20.315	18261.3
		54	19.897	18258.6
	6995	53	19.948	***18366.6***
		54	19.848	18219.1
	7095	53	20.299	18257.8
		54	19.922	18275.6

26 dB Emission Bandwidth and 99 % Occupied Bandwidth

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	January 11, 2024
Temperature / Humidity	24 deg. C / 32 % RH
Engineer	Yuta Shiba
Mode	Tx 11ax-20 (OFDMA) 242-tone RU

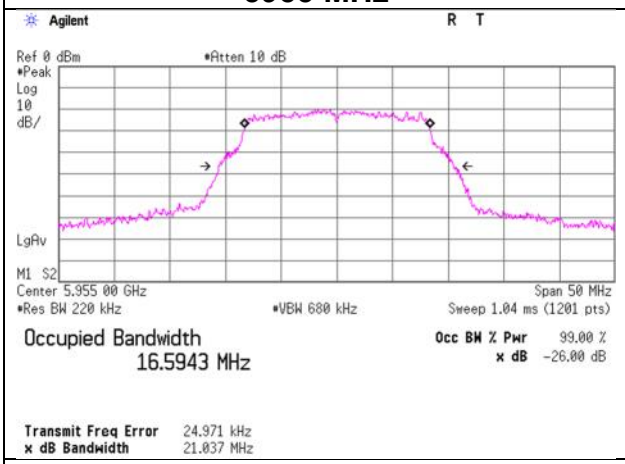
11ax-20(OFDMA)

RU Type	Tested Frequency [MHz]	RU Index	26 dB Emission Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]
242-tone RU	5955	61	21.530	***19169.2***
	6195	61	21.238	19154.1
	6415	61	21.344	19131.1
	6435	61	21.600	19129.7
	6475	61	21.587	***19194.6***
	6515	61	21.589	19145.8
	6535	61	21.527	19153.1
	6695	61	21.521	19085.6
	6855	61	21.495	19134.8
	6875	61	21.493	***19209.6***
	6895	61	21.377	19182.7
	6995	61	21.669	***19193.9***
	7095	61	21.523	19110.6

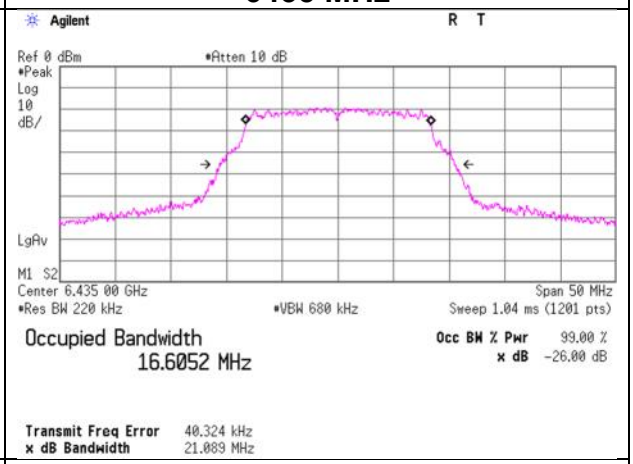
26 dB Emission Bandwidth

11a

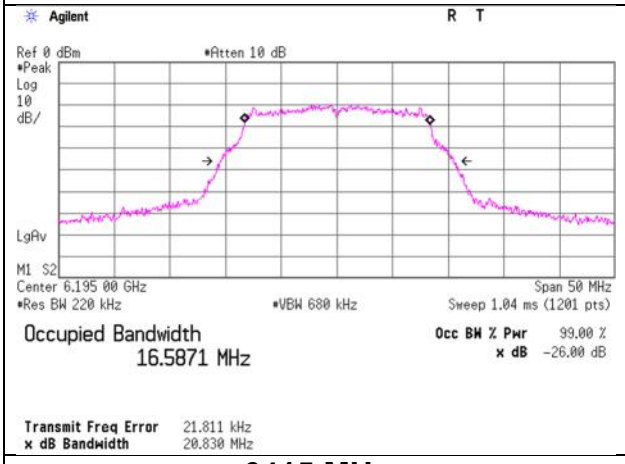
5955 MHz



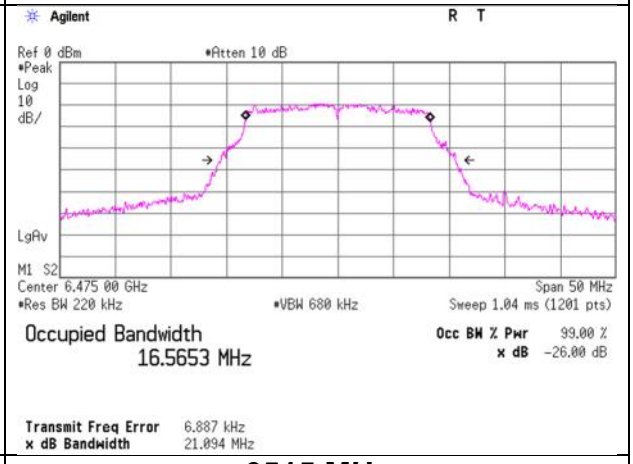
6435 MHz



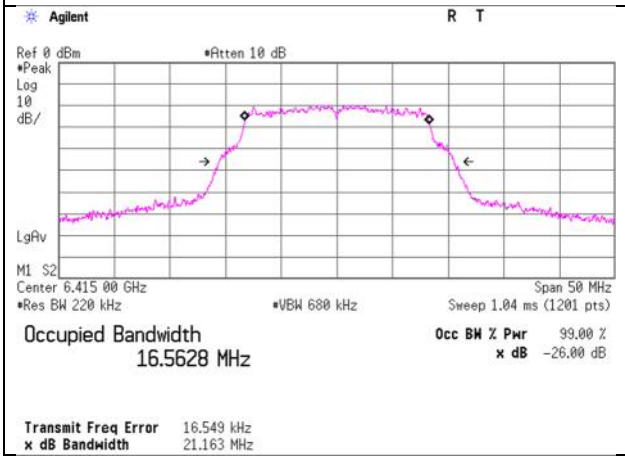
6195 MHz



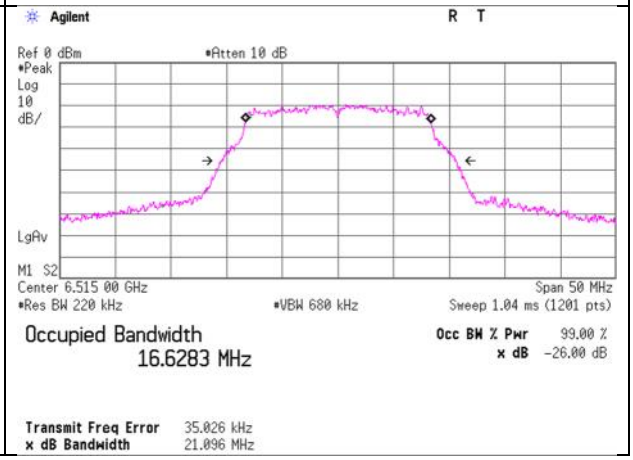
6475 MHz



6415 MHz



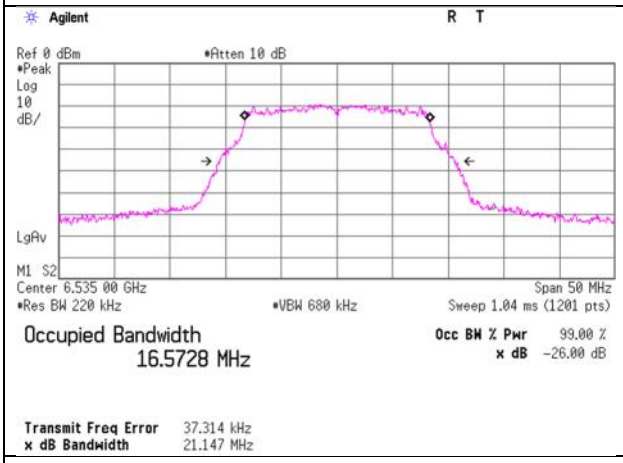
6515 MHz



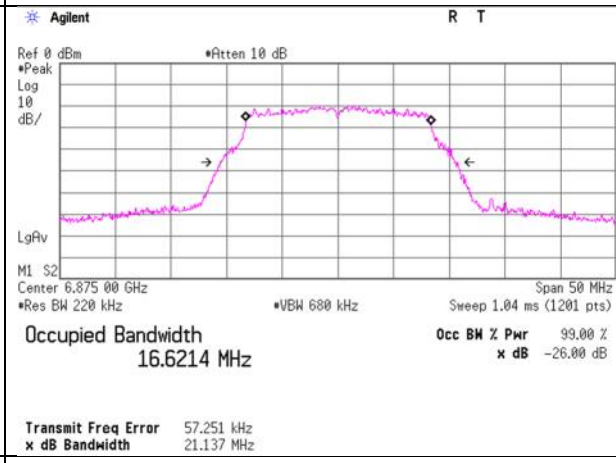
26 dB Emission Bandwidth

11a

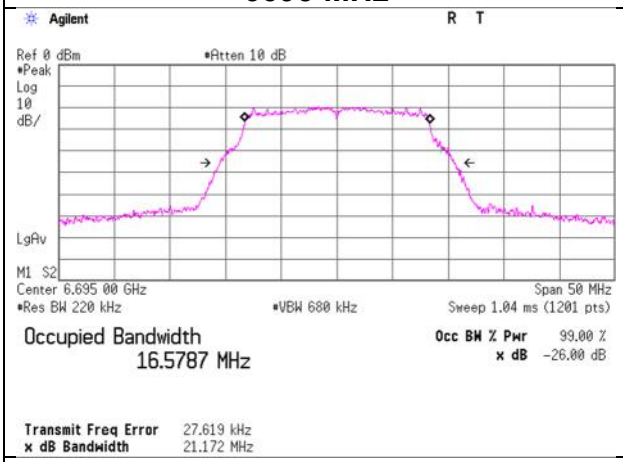
6535 MHz



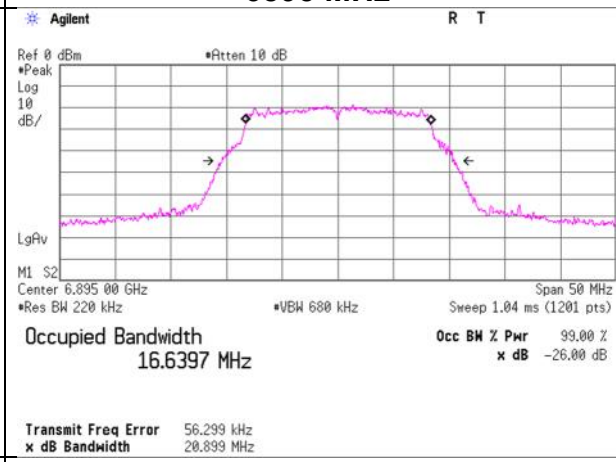
6875 MHz



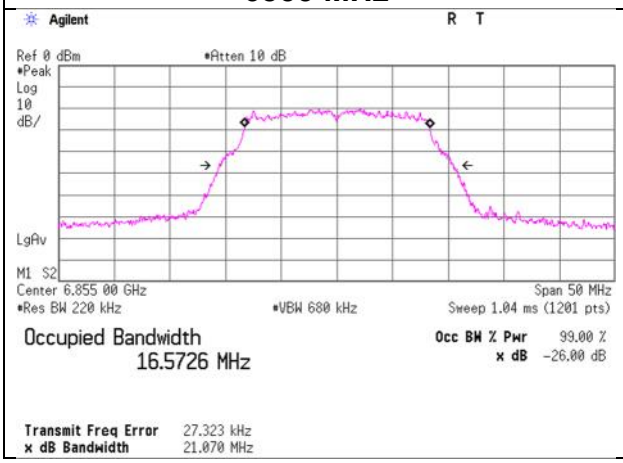
6695 MHz



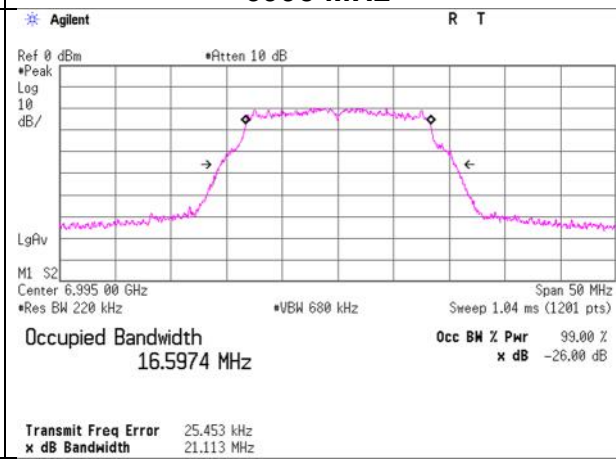
6895 MHz



6855 MHz



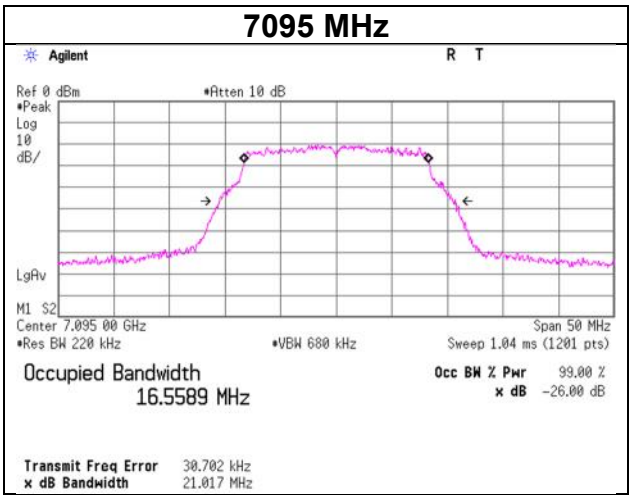
6995 MHz



26 dB Emission Bandwidth

11a

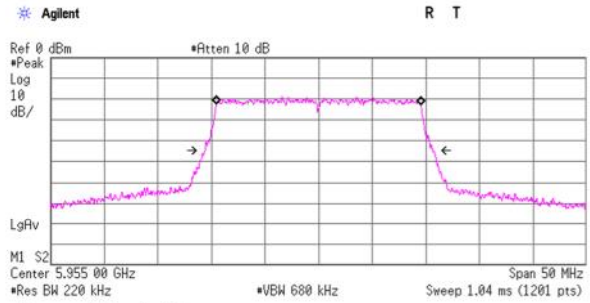
7095 MHz



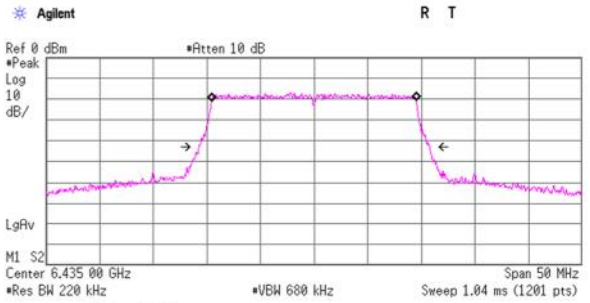
26 dB Emission Bandwidth

11ax-20(OFDM)

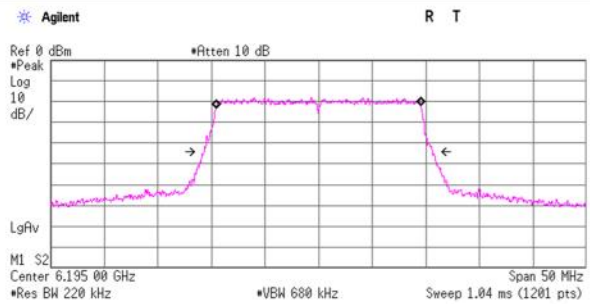
5955 MHz



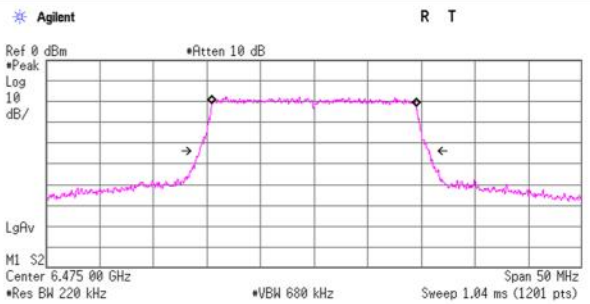
6435 MHz



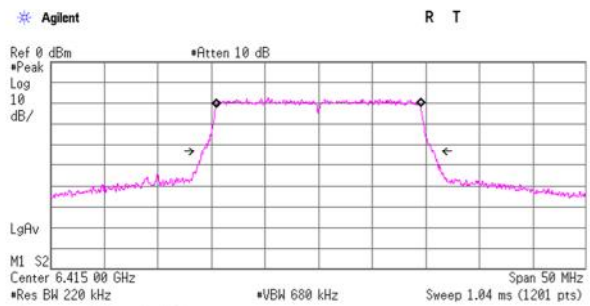
6195 MHz



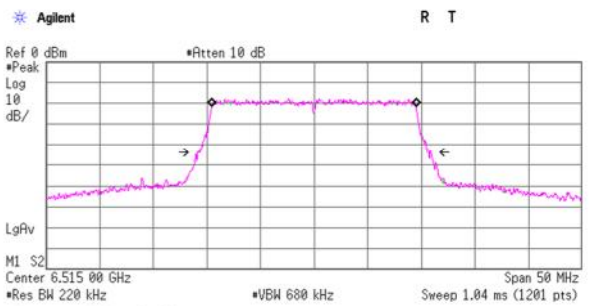
6475 MHz



6415 MHz



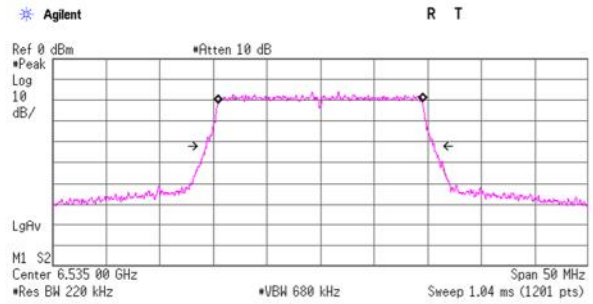
6515 MHz



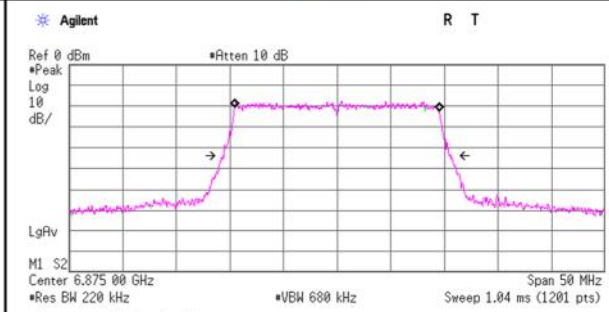
26 dB Emission Bandwidth

11ax-20(OFDM)

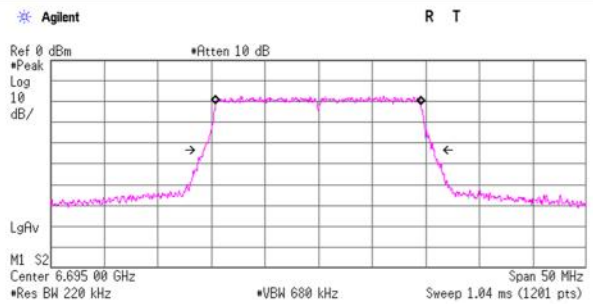
6535 MHz



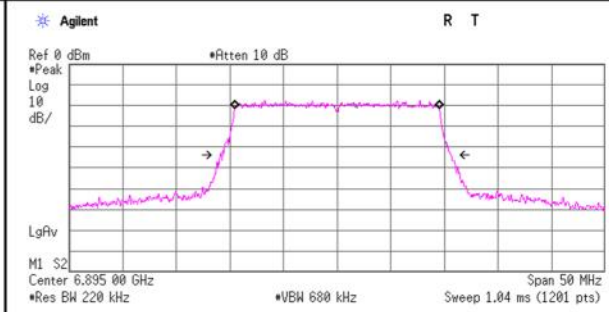
6875 MHz



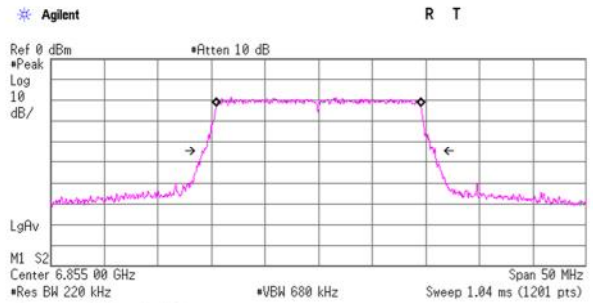
6695 MHz



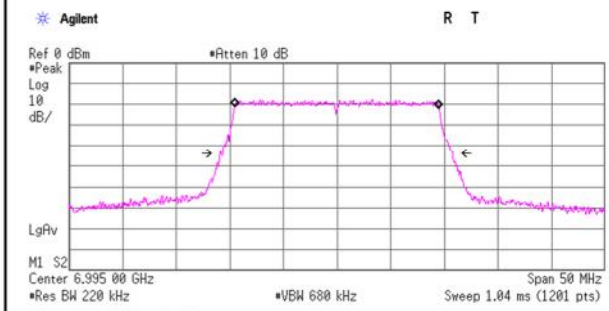
6895 MHz



6855 MHz



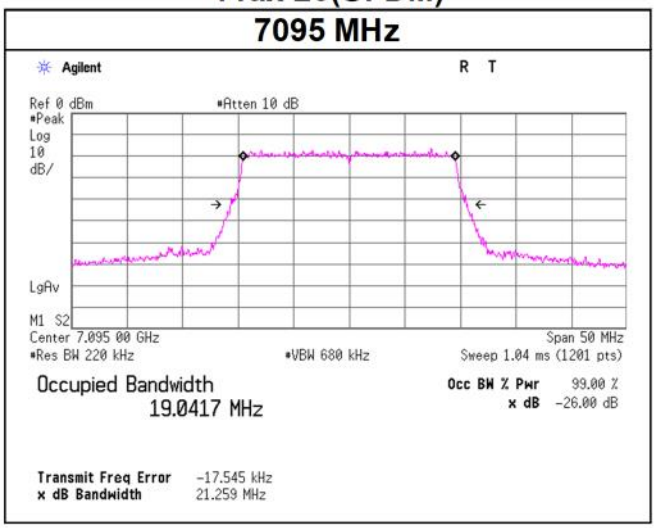
6995 MHz



26 dB Emission Bandwidth

11ax-20(OFDM)

7095 MHz

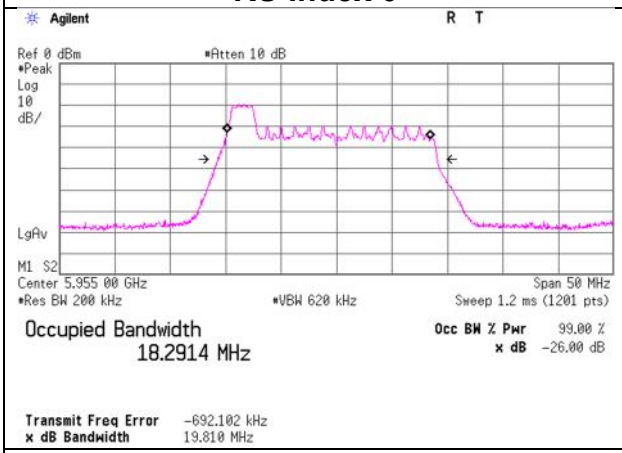


26 dB Emission Bandwidth

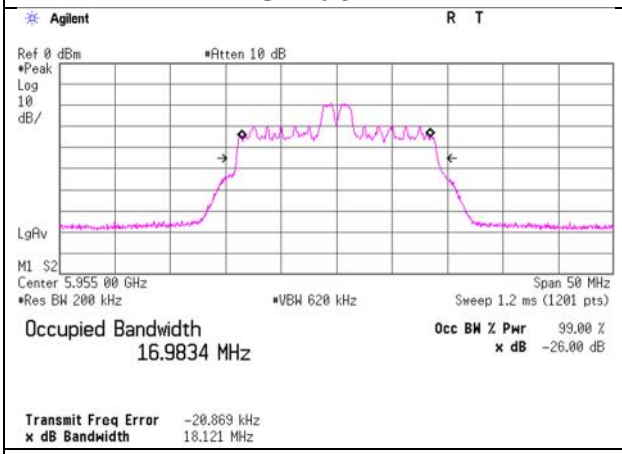
11ax-20 (OFDMA)

26-tone RU 5955 MHz

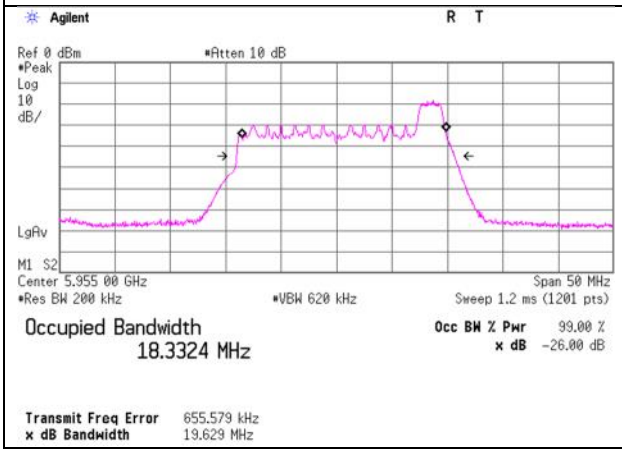
RU Index 0



RU Index 4

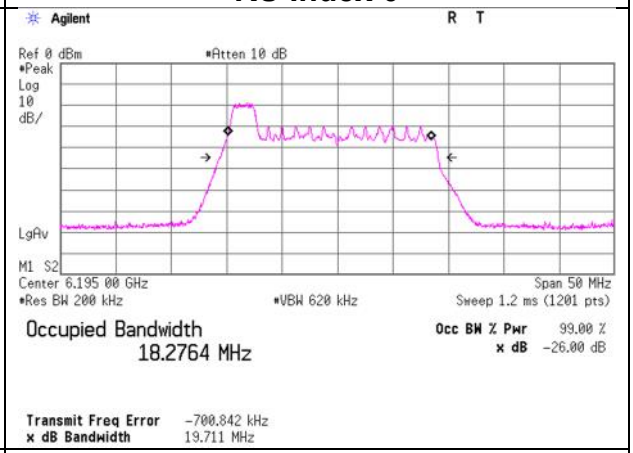


RU Index 8

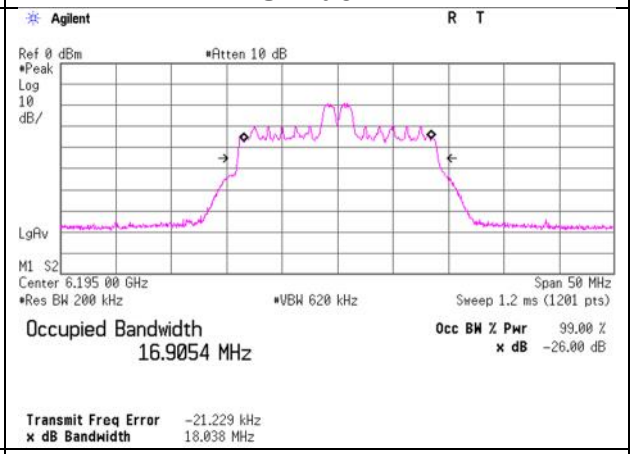


26-tone RU 6195 MHz

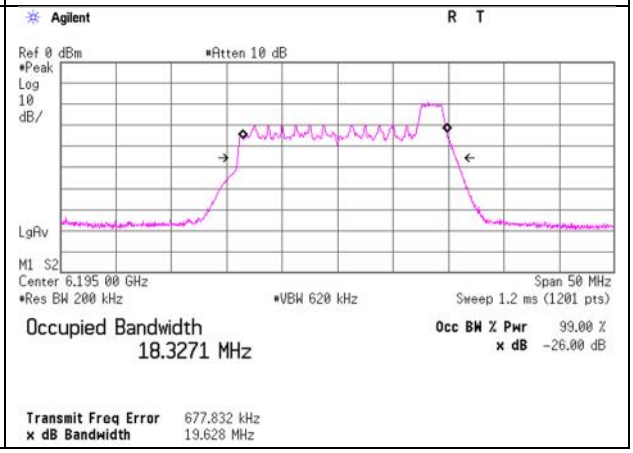
RU Index 0



RU Index 4



RU Index 8

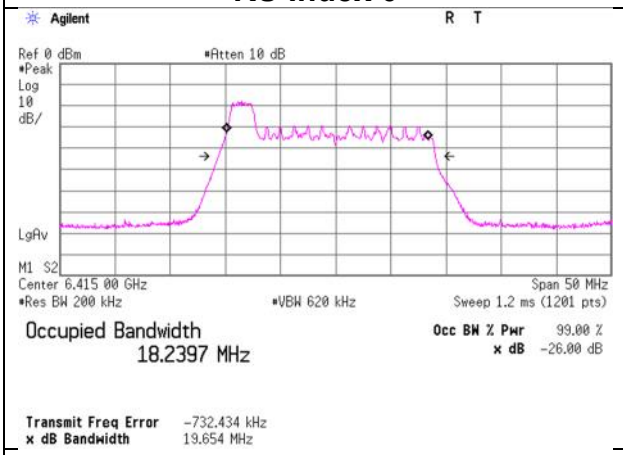


26 dB Emission Bandwidth

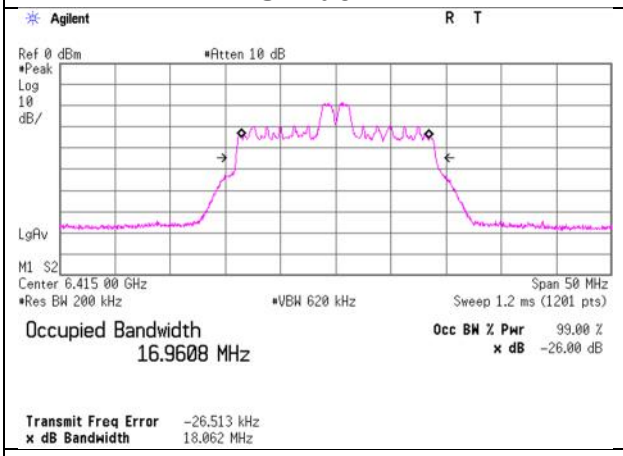
11ax-20 (OFDMA)

26-tone RU 6415 MHz

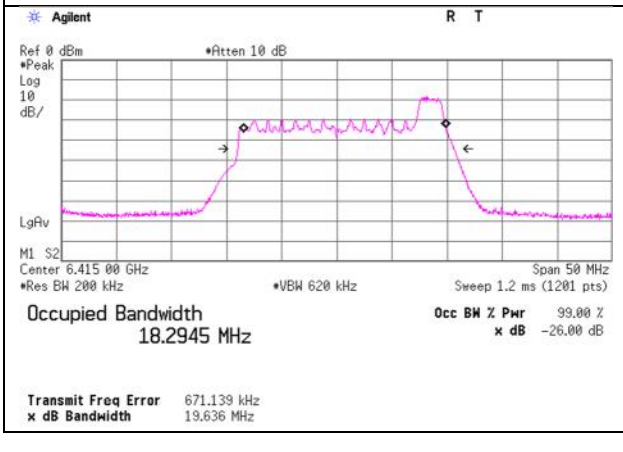
RU Index 0



RU Index 4

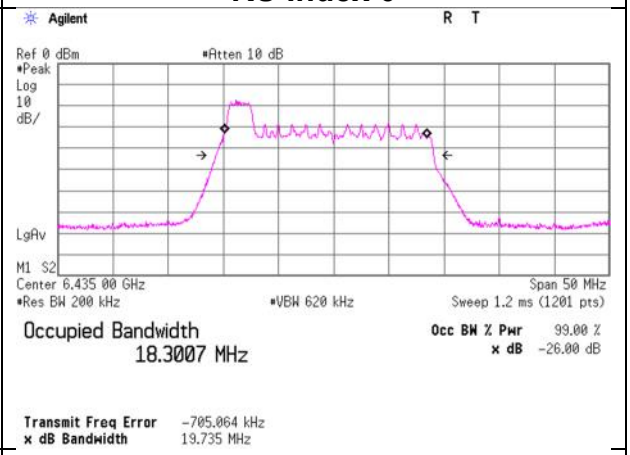


RU Index 8

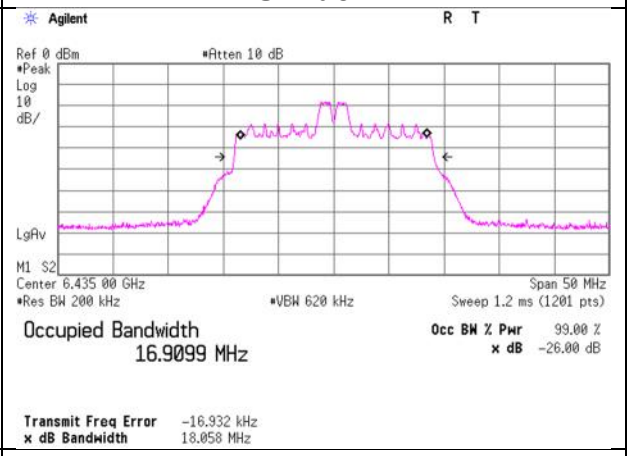


26-tone RU 6435 MHz

RU Index 0



RU Index 4



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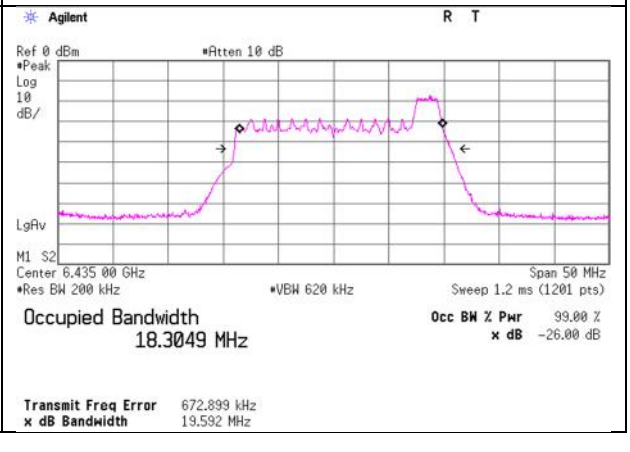
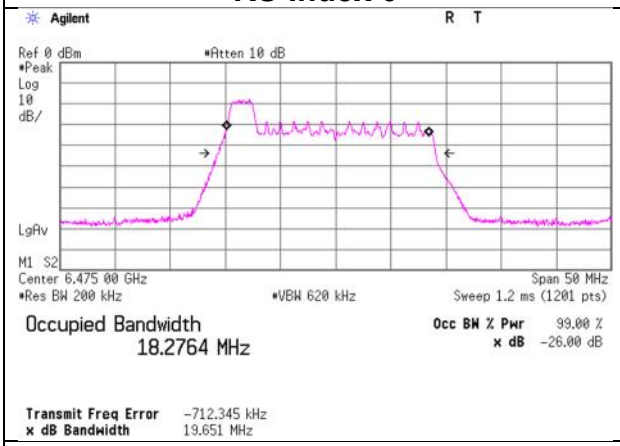


26 dB Emission Bandwidth

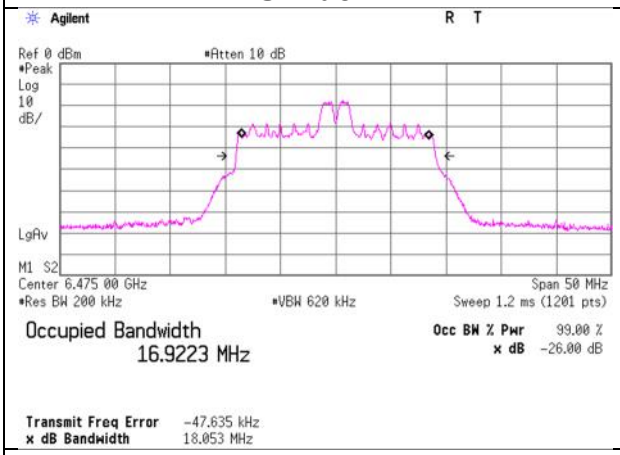
11ax-20 (OFDMA)

26-tone RU 6475 MHz

RU Index 0



RU Index 4



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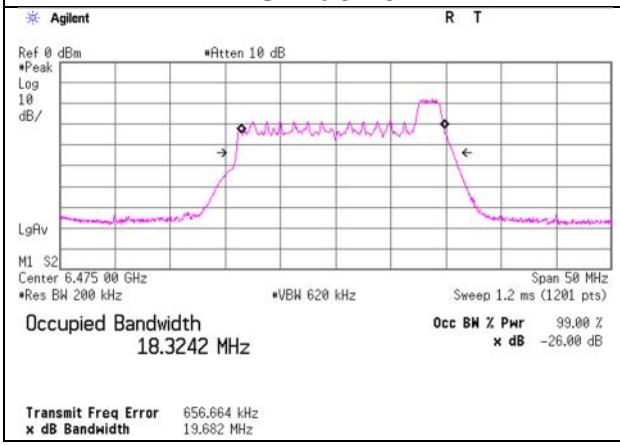
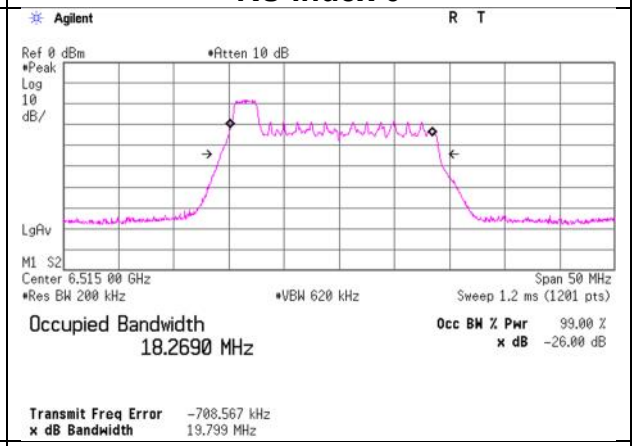
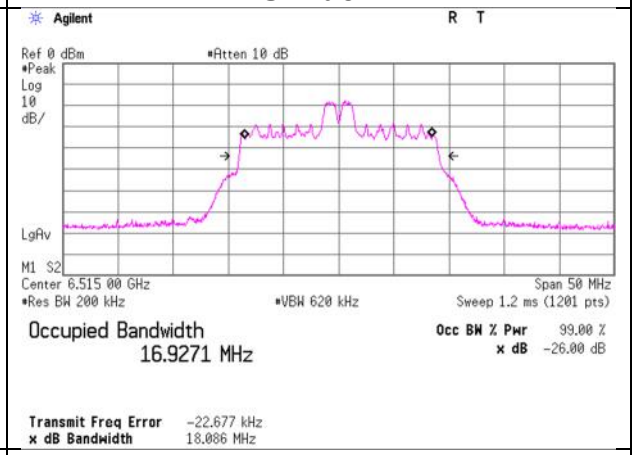


26-tone RU 6515 MHz

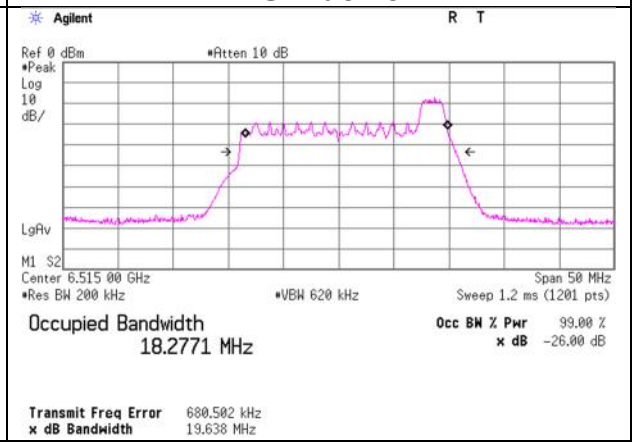
RU Index 0



RU Index 4

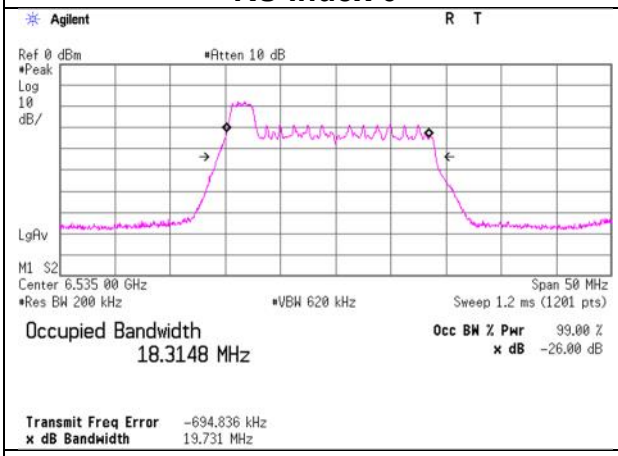
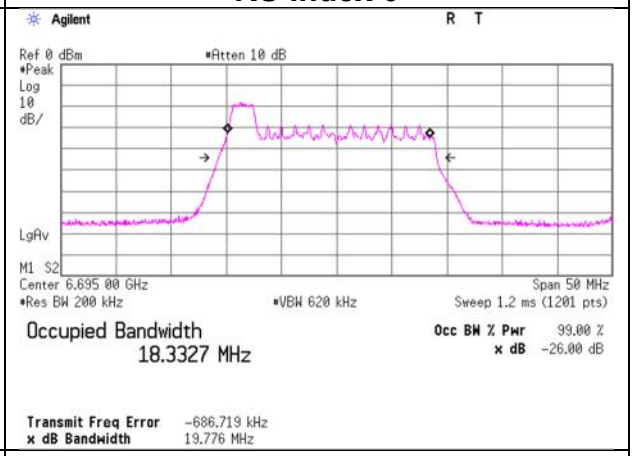
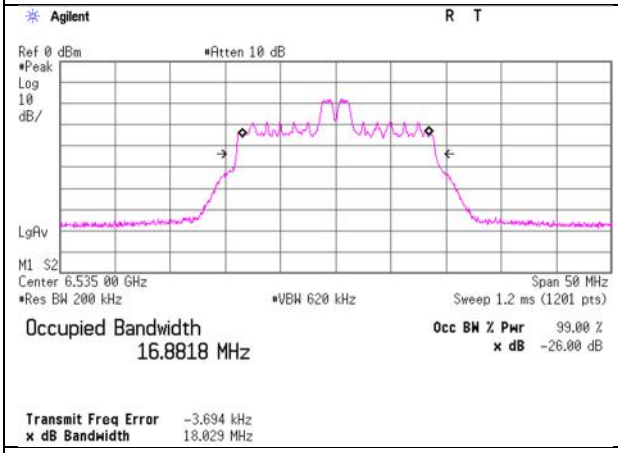
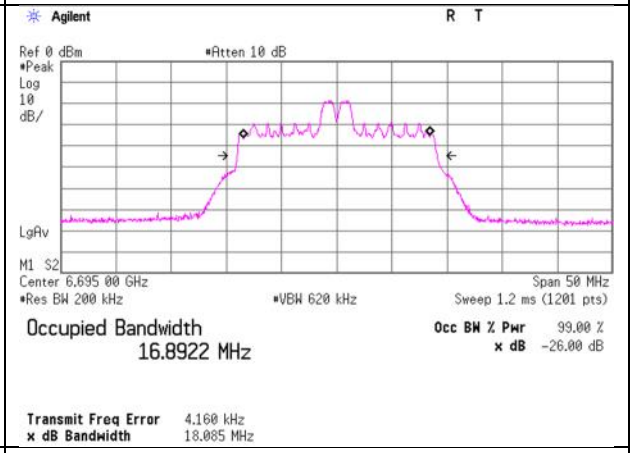
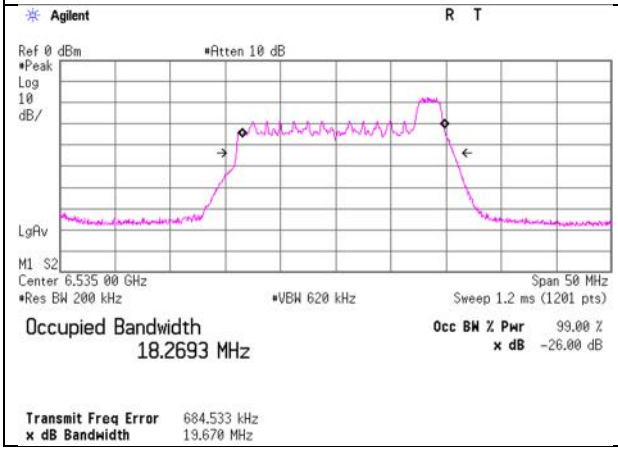
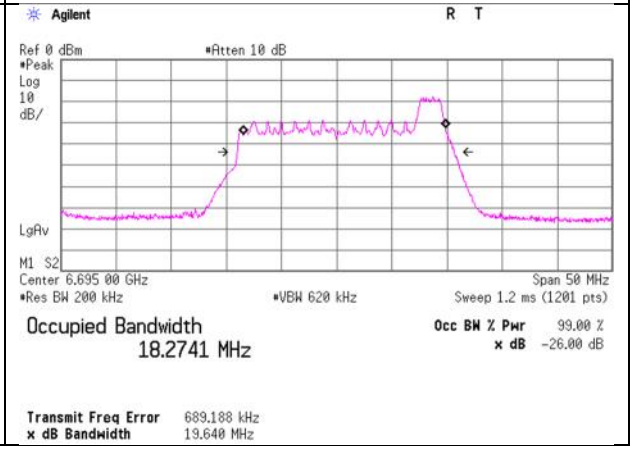


RU Index 8



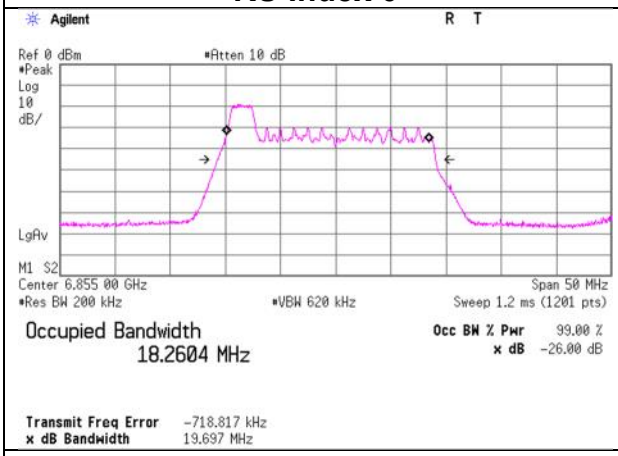
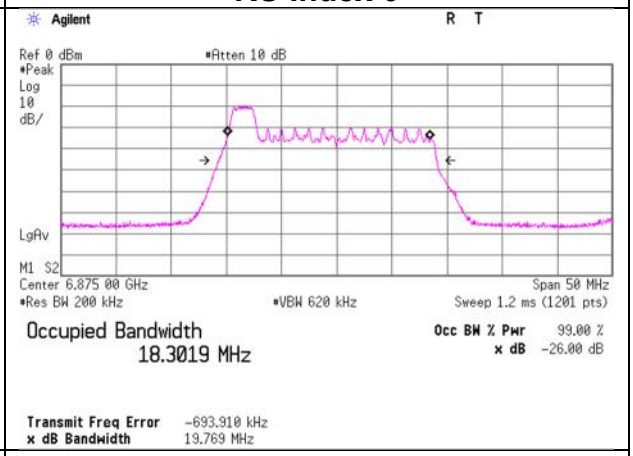
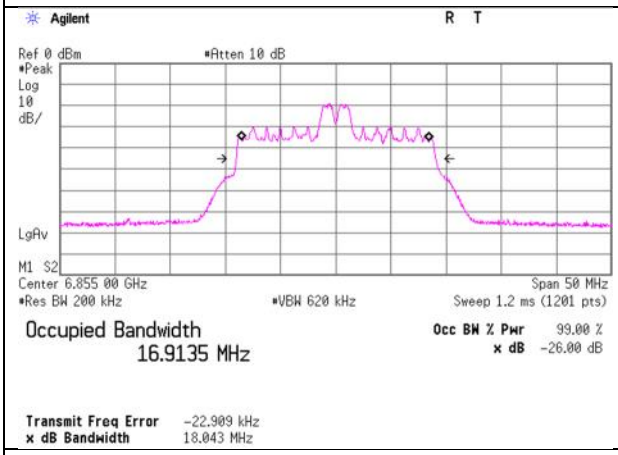
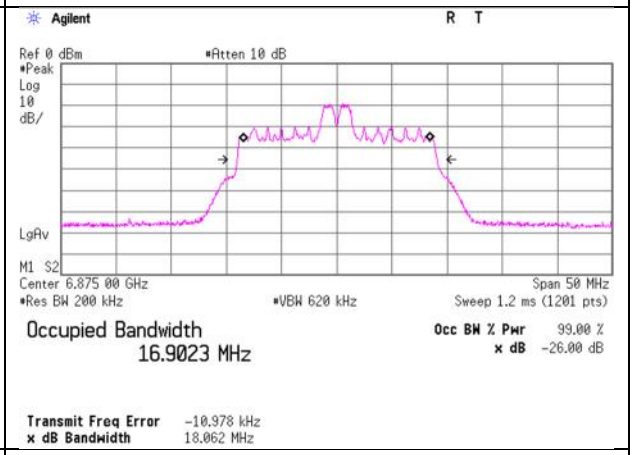
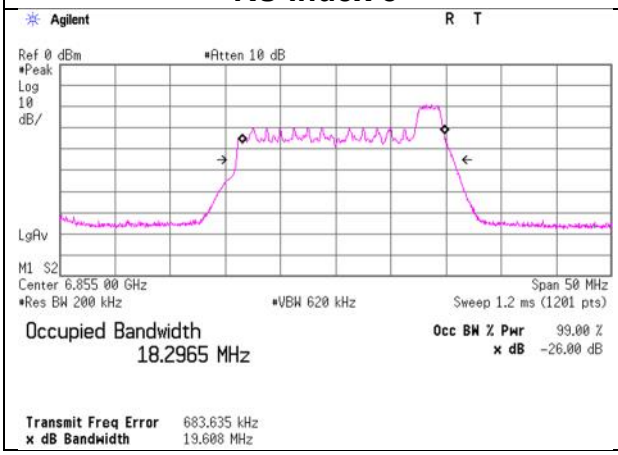
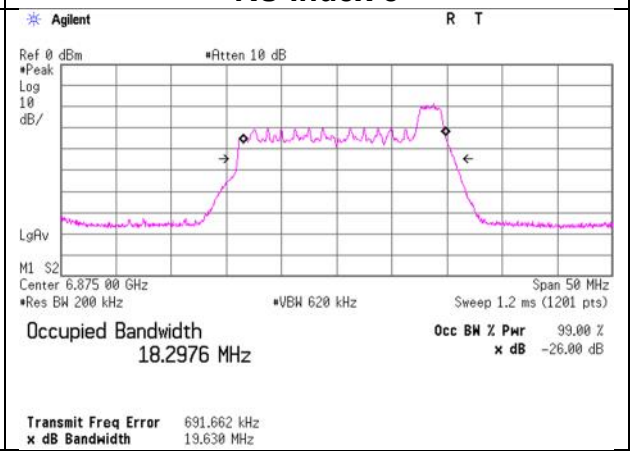
26 dB Emission Bandwidth

11ax-20 (OFDMA)

26-tone RU 6535 MHz	26-tone RU 6695 MHz
RU Index 0	**RU Index 0**
	
RU Index 4	**RU Index 4**
	
RU Index 8	**RU Index 8**
	

26 dB Emission Bandwidth

11ax-20 (OFDMA)

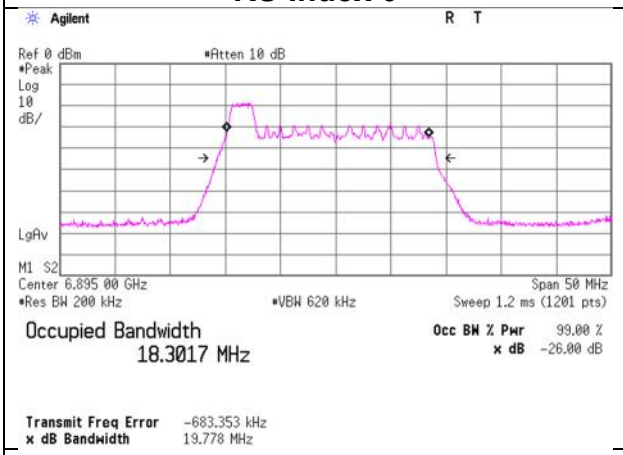
26-tone RU 6855 MHz	26-tone RU 6875 MHz
RU Index 0	**RU Index 0**
	
RU Index 4	**RU Index 4**
	
RU Index 8	**RU Index 8**
	

26 dB Emission Bandwidth

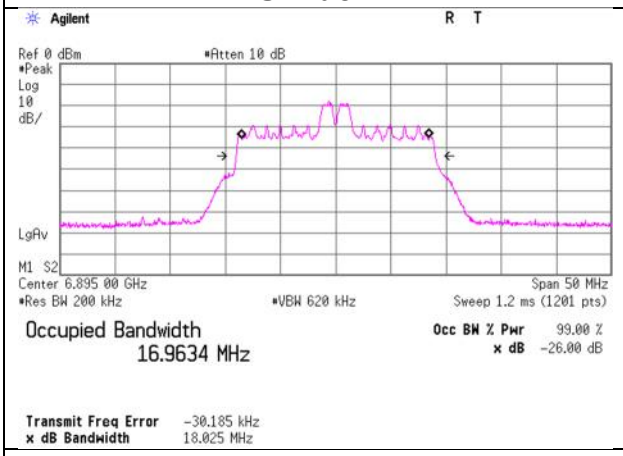
11ax-20 (OFDMA)

26-tone RU 6895 MHz

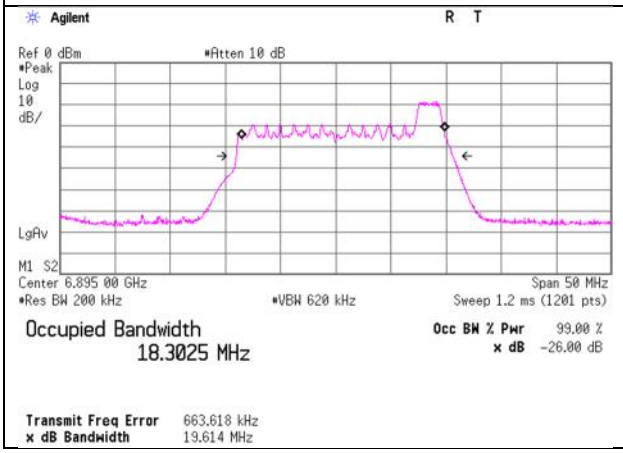
RU Index 0



RU Index 4

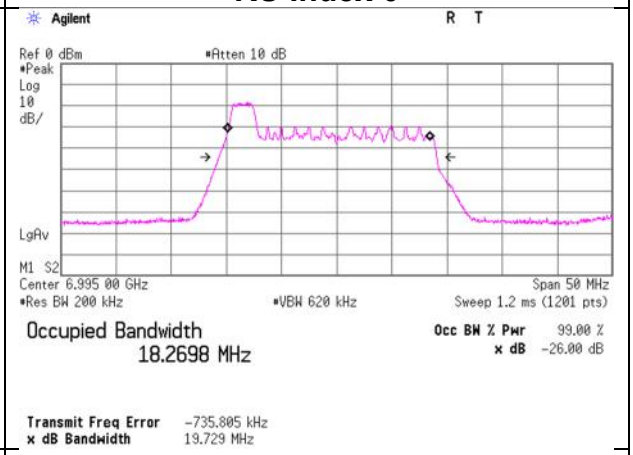


RU Index 8

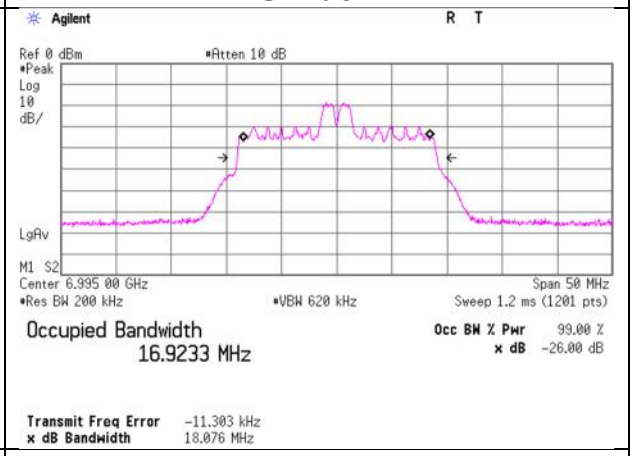


26-tone RU 6995 MHz

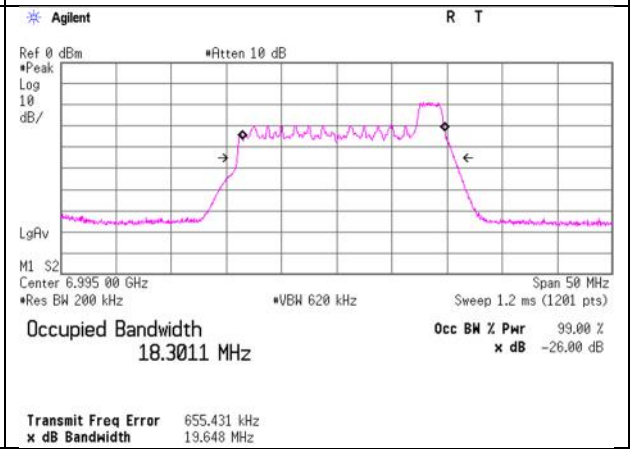
RU Index 0



RU Index 4



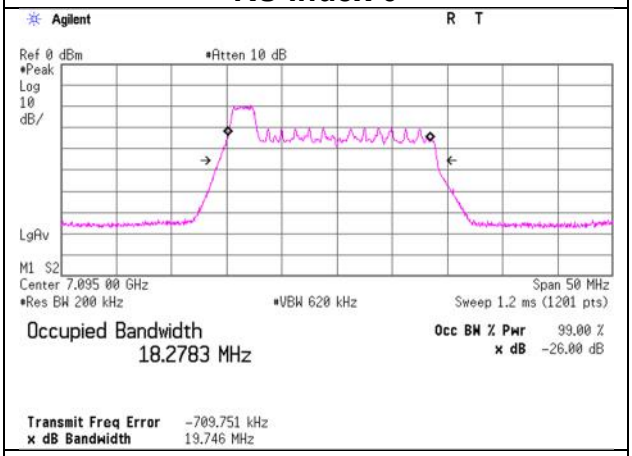
RU Index 8



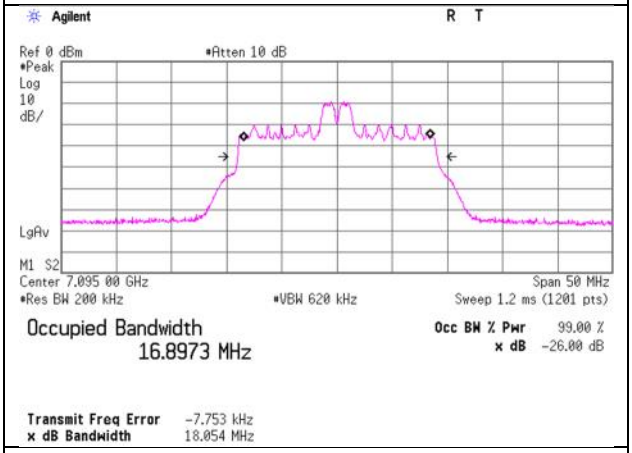
26 dB Emission Bandwidth

11ax-20 (OFDMA)
26-tone RU 7095 MHz

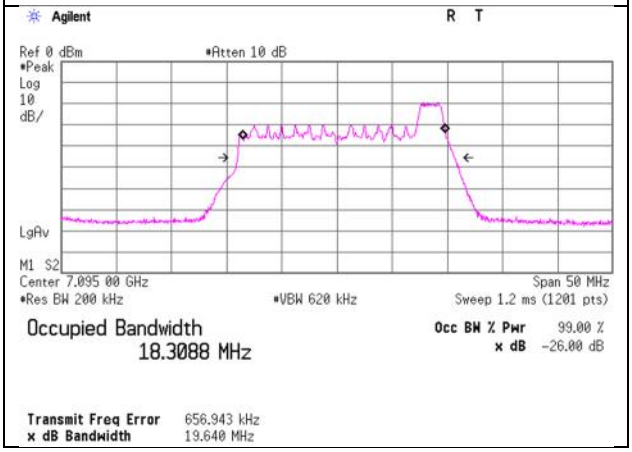
RU Index 0



RU Index 4



RU Index 8

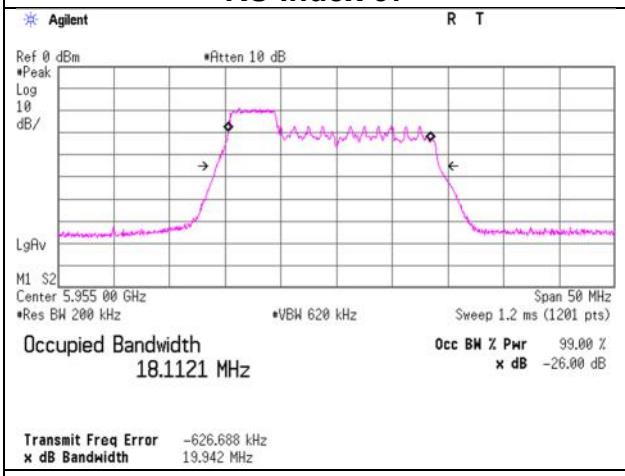


26 dB Emission Bandwidth

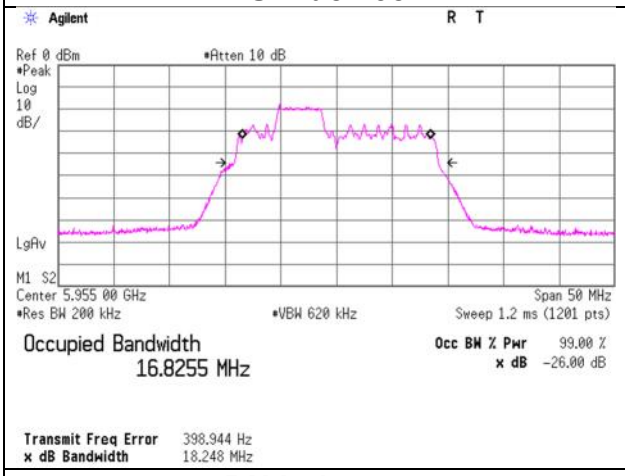
11ax-20 (OFDMA)

52-tone RU 5955 MHz

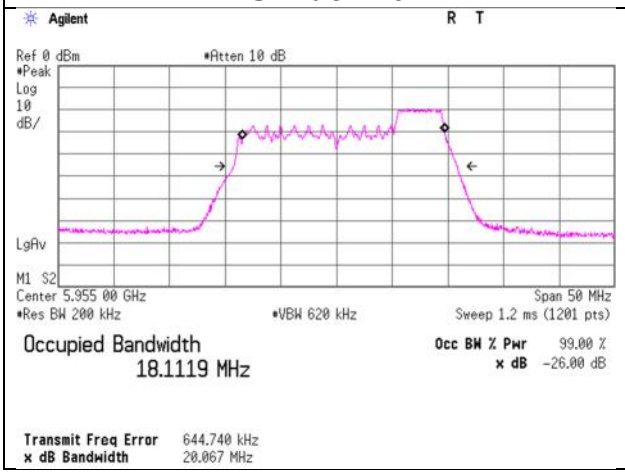
RU Index 37



RU Index 38

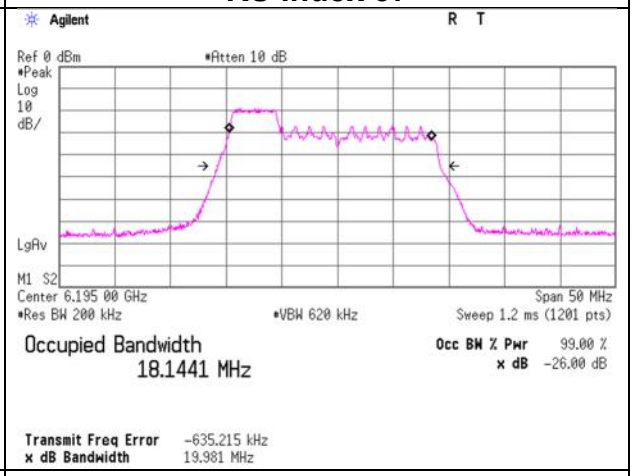


RU Index 40

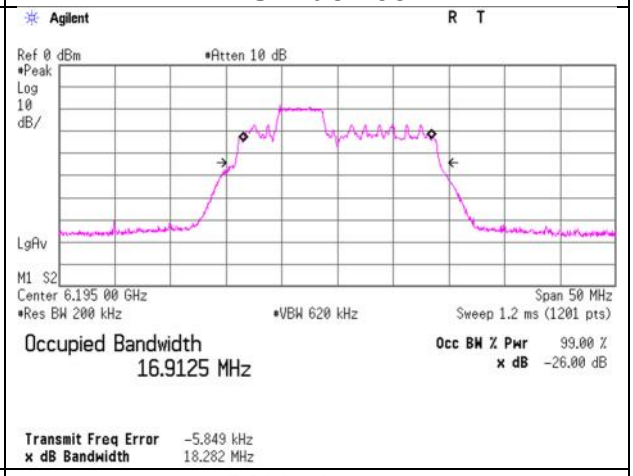


52-tone RU 6195 MHz

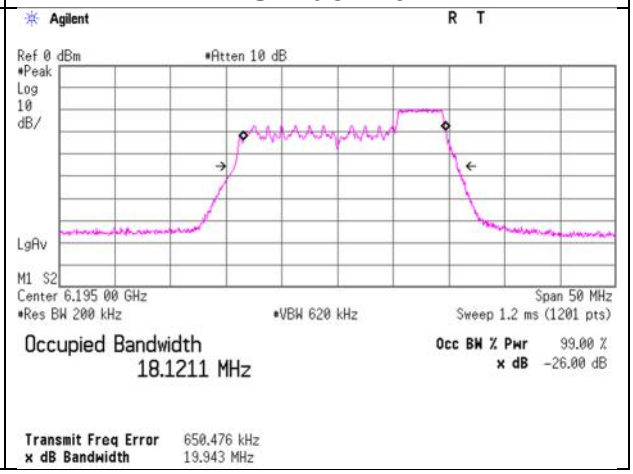
RU Index 37



RU Index 38



RU Index 40

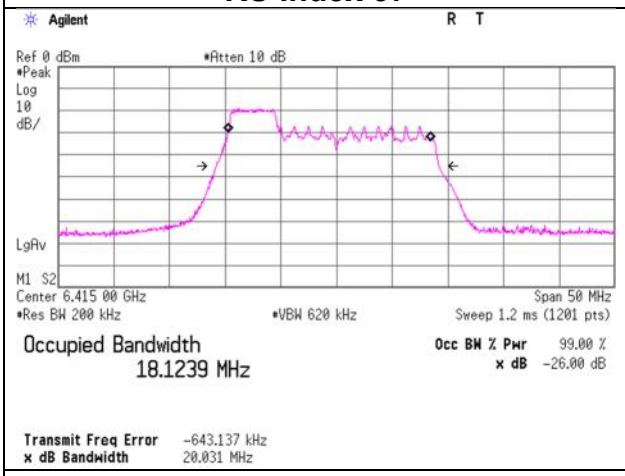


26 dB Emission Bandwidth

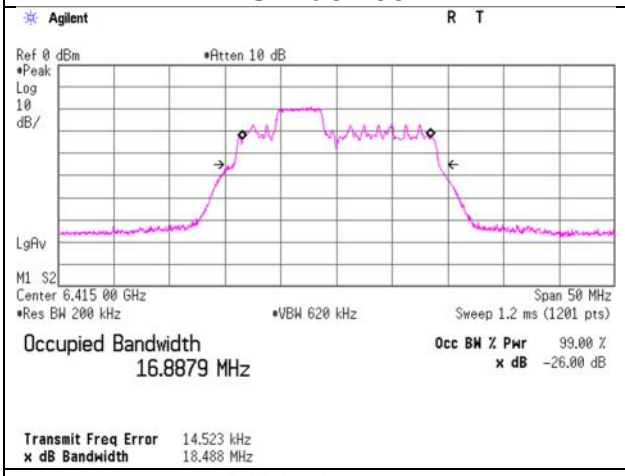
11ax-20 (OFDMA)

52-tone RU 6415 MHz

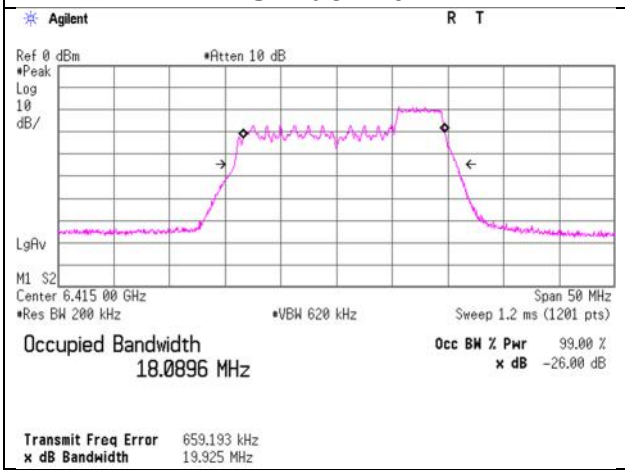
RU Index 37



RU Index 38

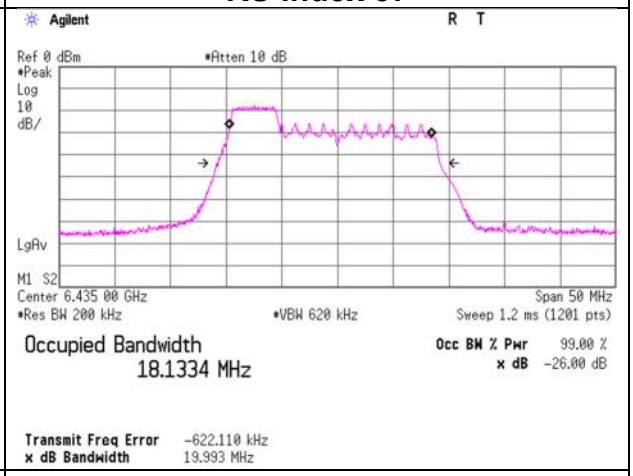


RU Index 40

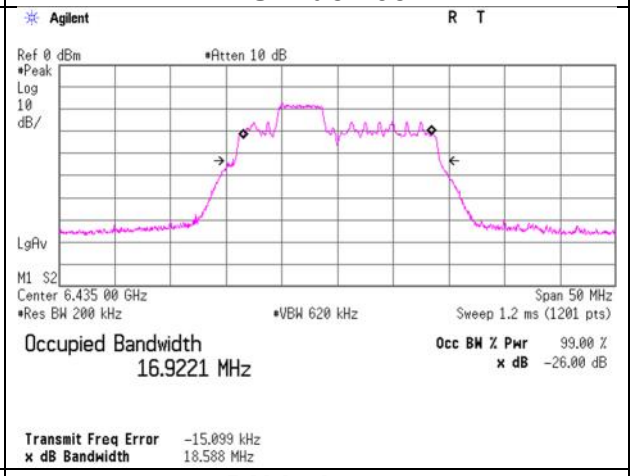


52-tone RU 6435 MHz

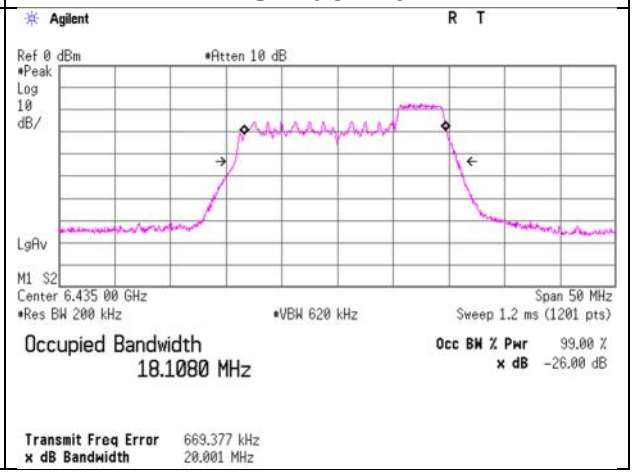
RU Index 37



RU Index 38



RU Index 40

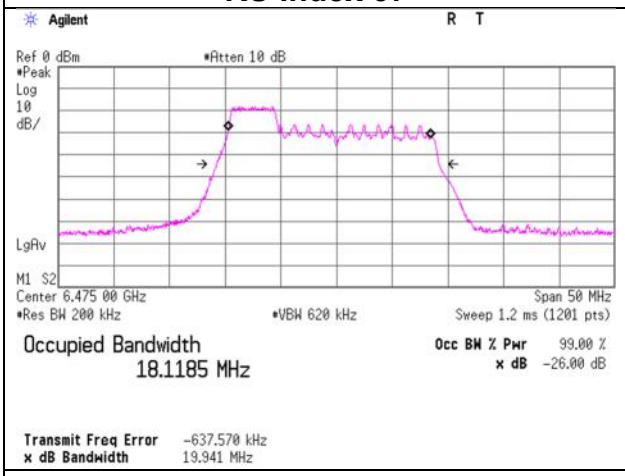


26 dB Emission Bandwidth

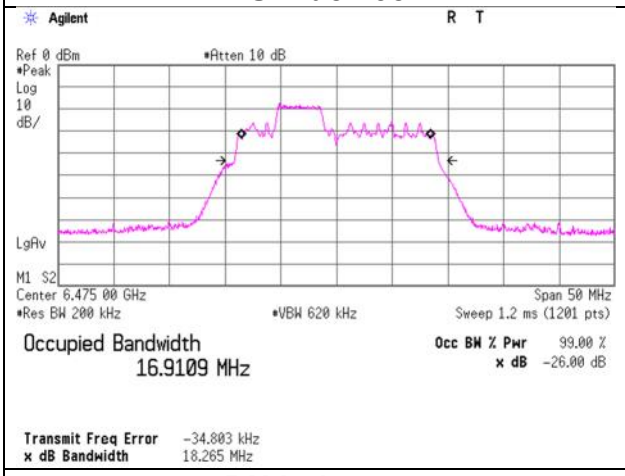
11ax-20 (OFDMA)

52-tone RU 6475 MHz

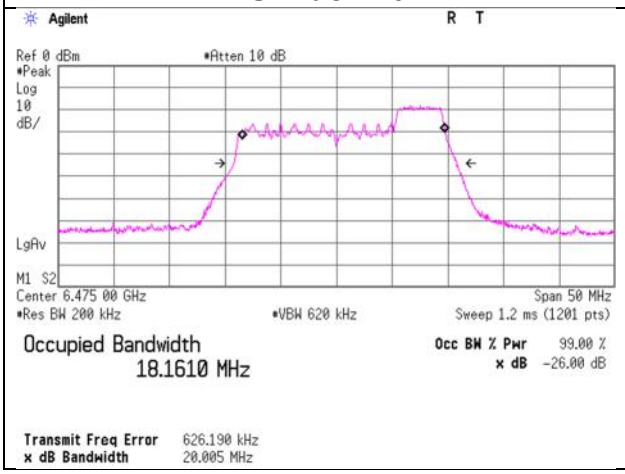
RU Index 37



RU Index 38

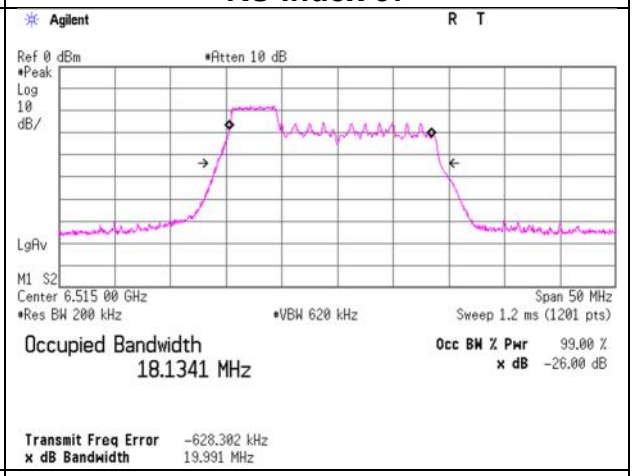


RU Index 40

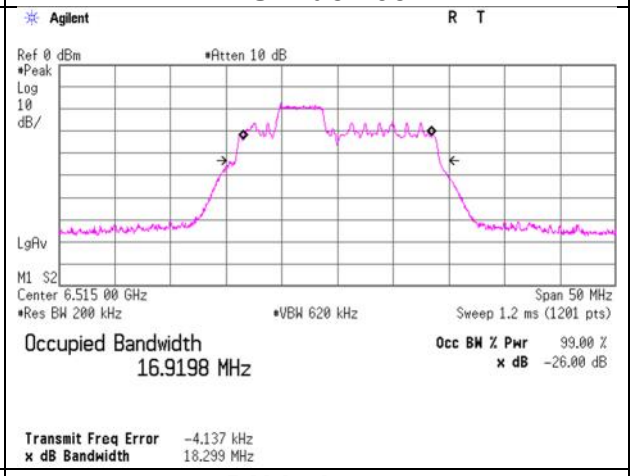


52-tone RU 6515 MHz

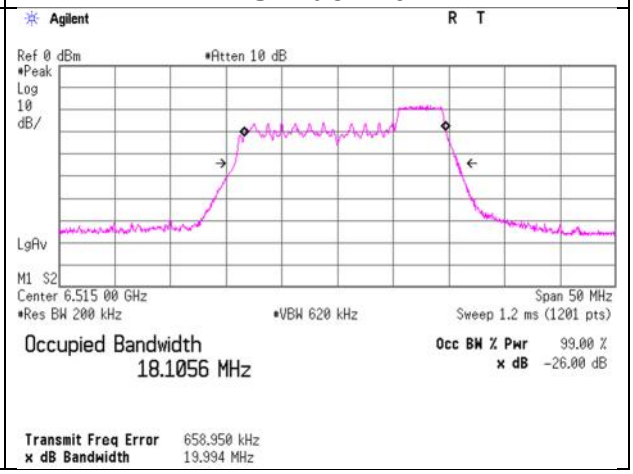
RU Index 37



RU Index 38



RU Index 40

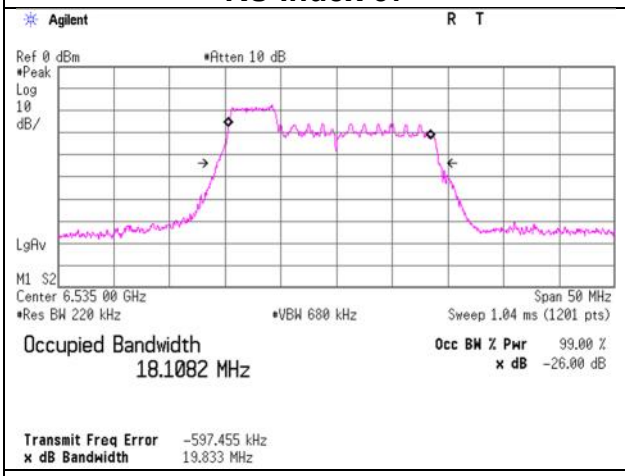


26 dB Emission Bandwidth

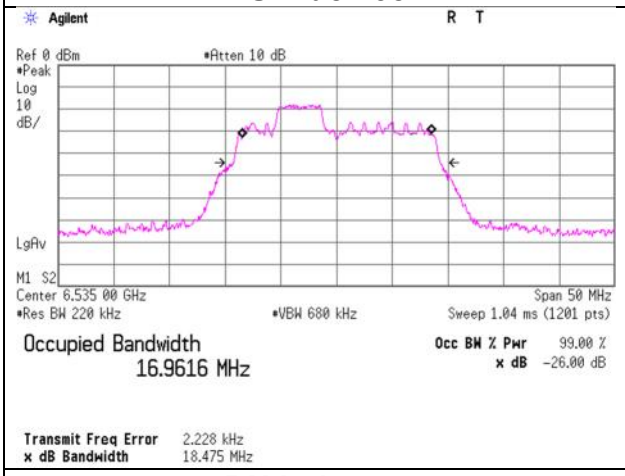
11ax-20 (OFDMA)

52-tone RU 6535 MHz

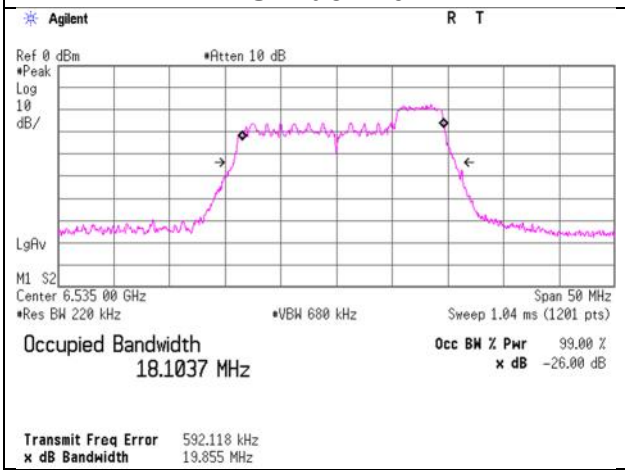
RU Index 37



RU Index 38

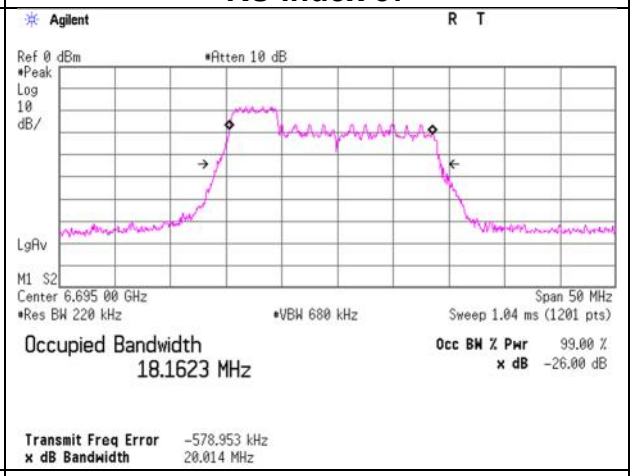


RU Index 40

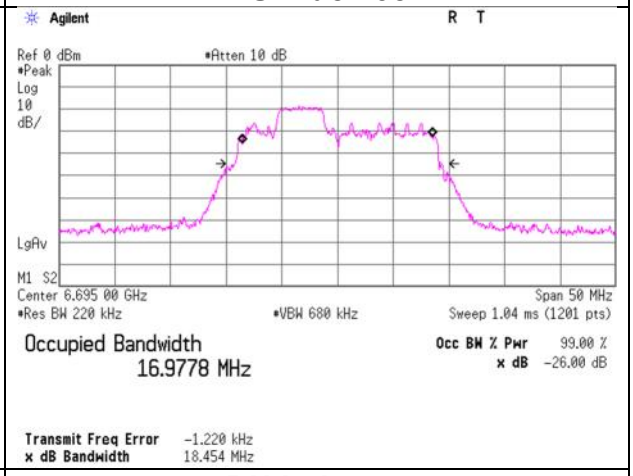


52-tone RU 6695 MHz

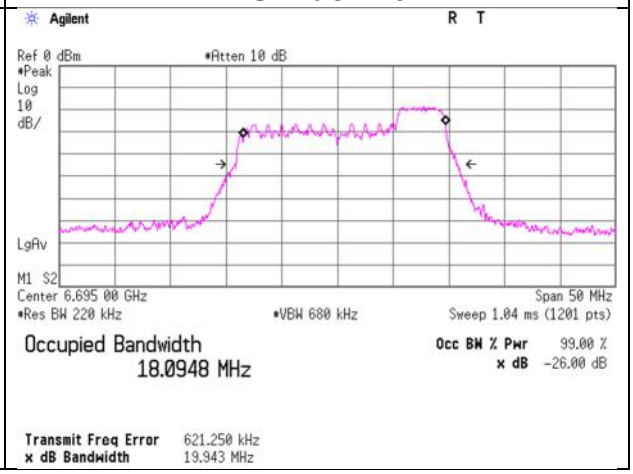
RU Index 37



RU Index 38



RU Index 40

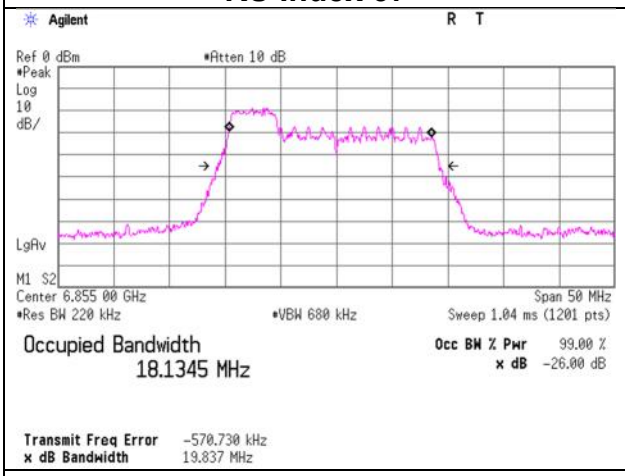


26 dB Emission Bandwidth

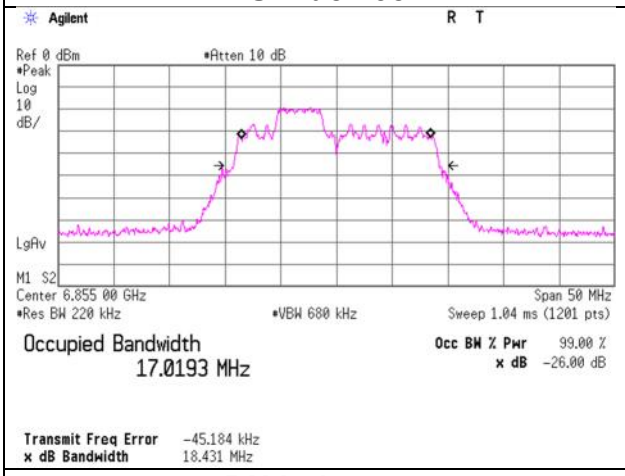
11ax-20 (OFDMA)

52-tone RU 6855 MHz

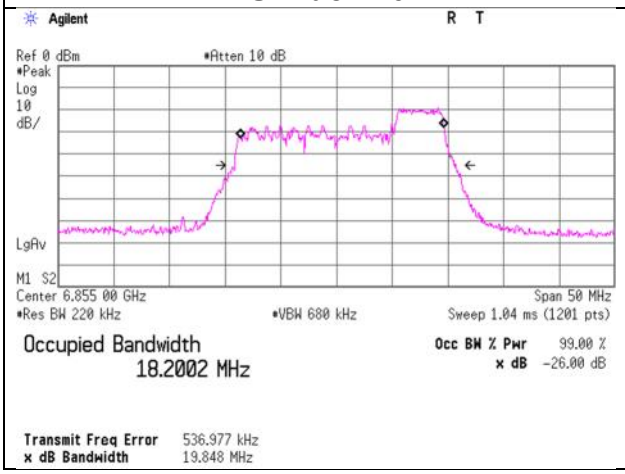
RU Index 37



RU Index 38

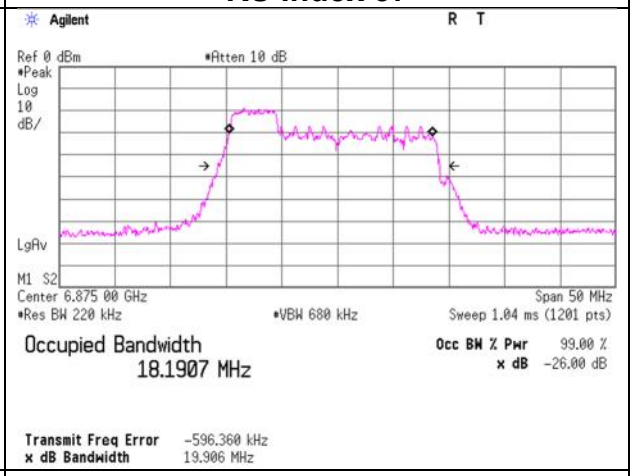


RU Index 40

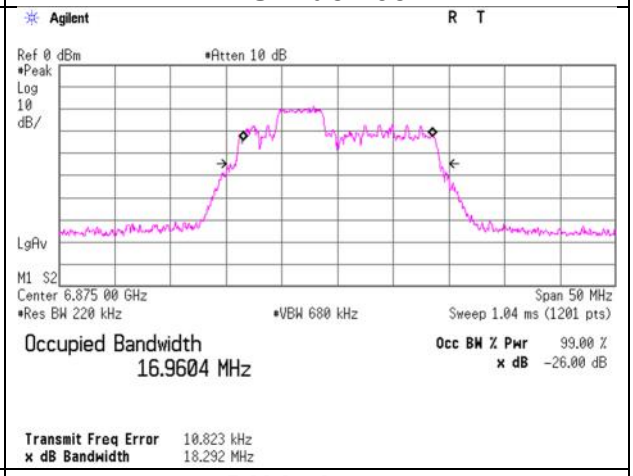


52-tone RU 6875 MHz

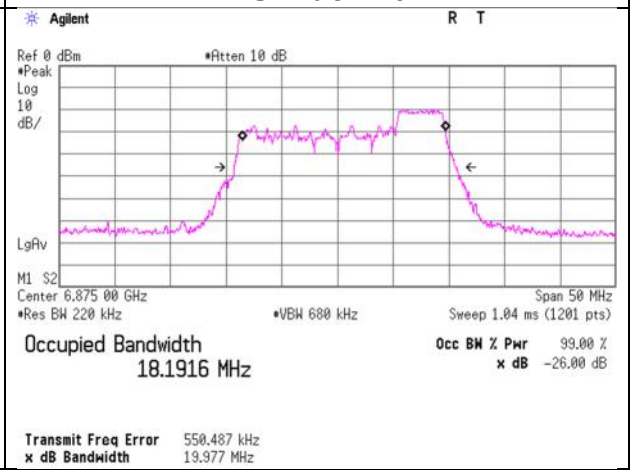
RU Index 37



RU Index 38



RU Index 40

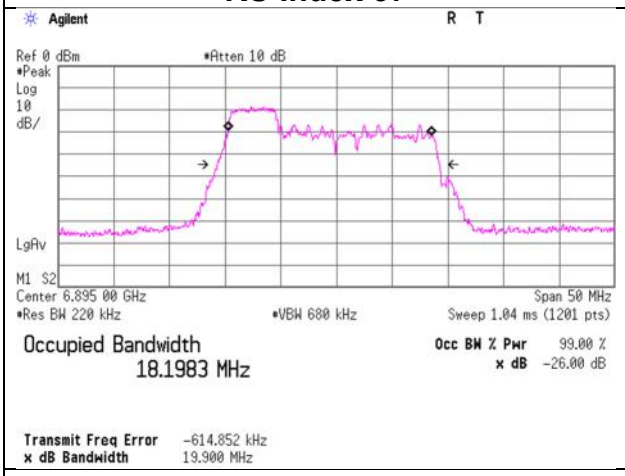


26 dB Emission Bandwidth

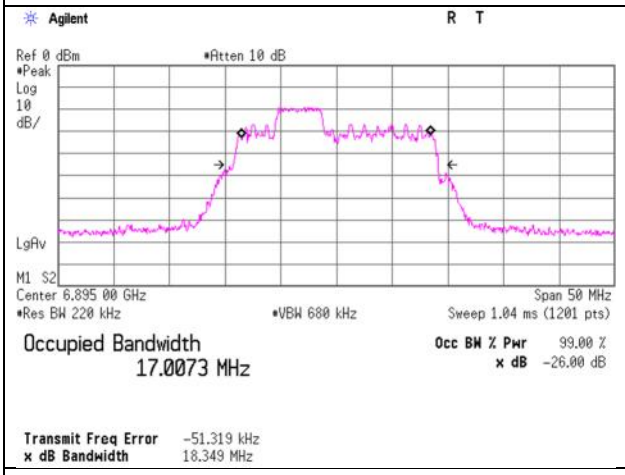
11ax-20 (OFDMA)

52-tone RU 6895 MHz

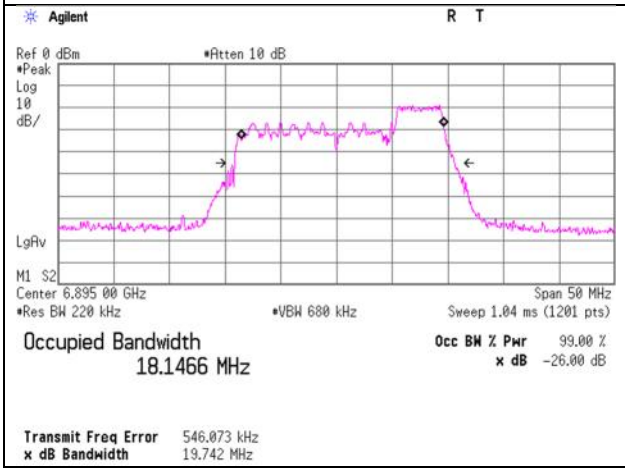
RU Index 37



RU Index 38

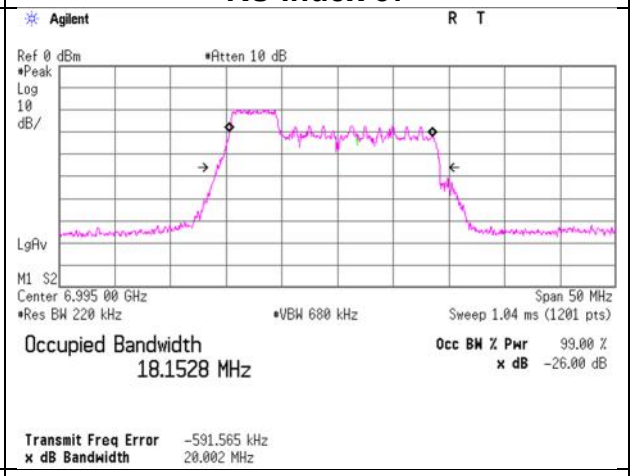


RU Index 40

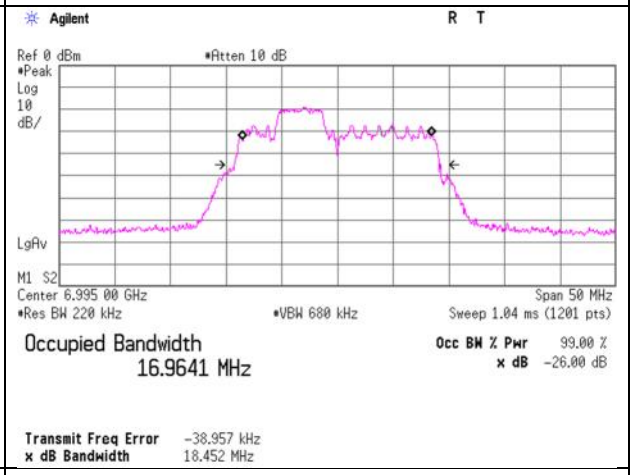


52-tone RU 6995 MHz

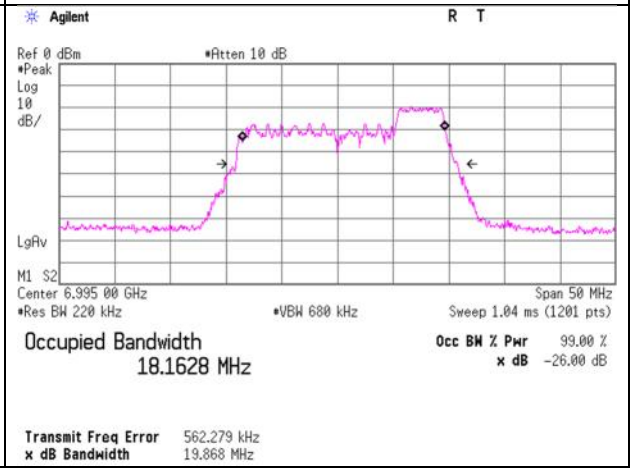
RU Index 37



RU Index 38



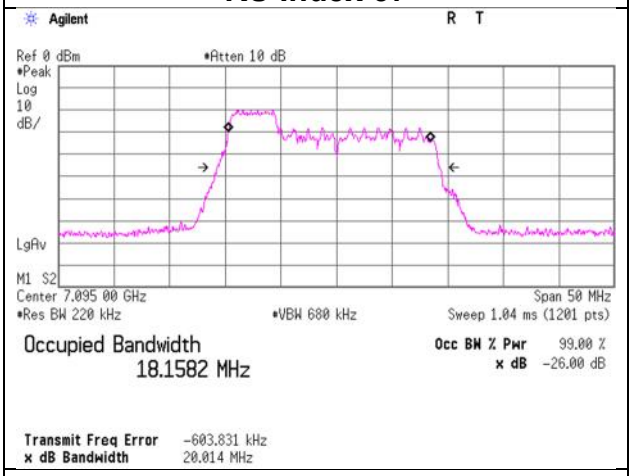
RU Index 40



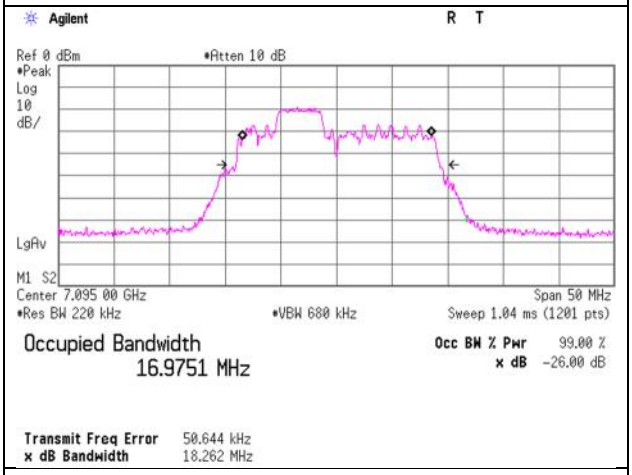
26 dB Emission Bandwidth

11ax-20 (OFDMA)
52-tone RU 7095 MHz

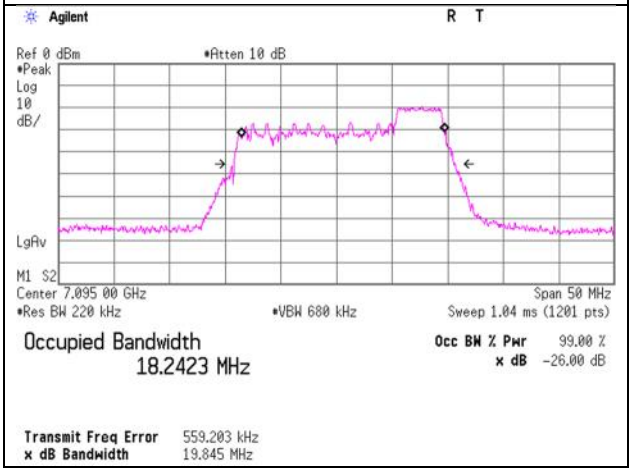
RU Index 37



RU Index 38



RU Index 40

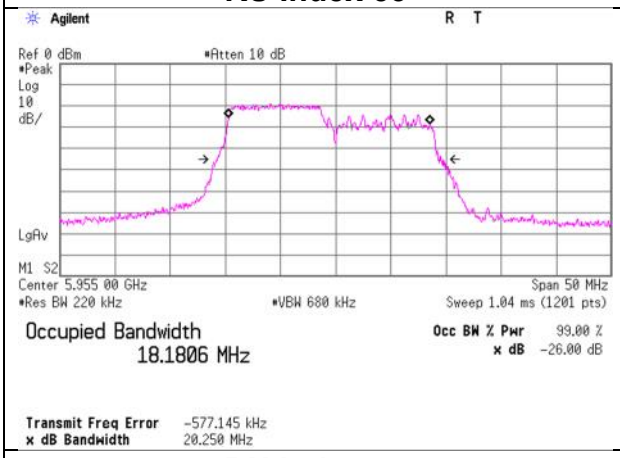


26 dB Emission Bandwidth

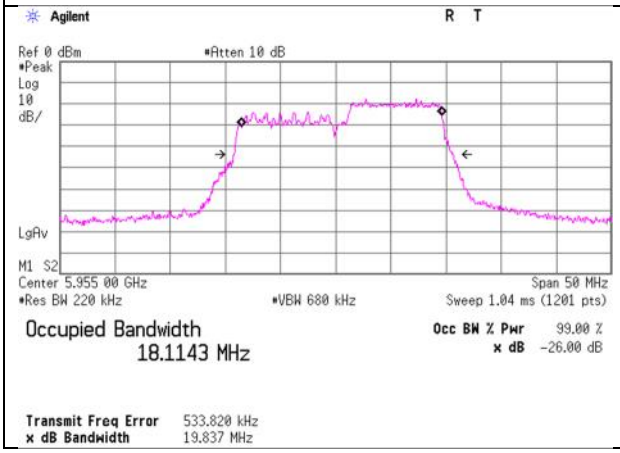
11ax-20 (OFDMA)

106-tone RU 5955 MHz

RU Index 53

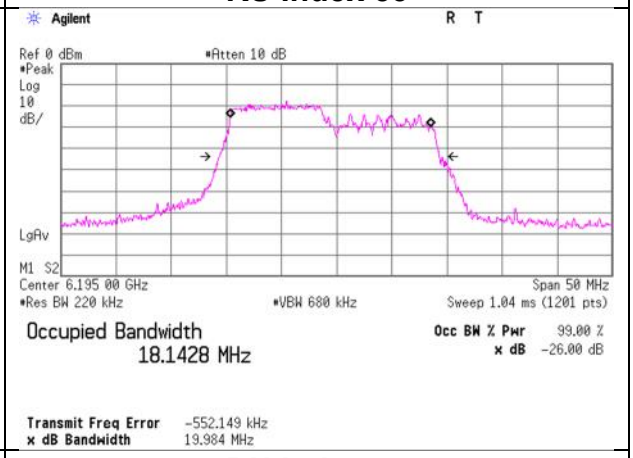


RU Index 54

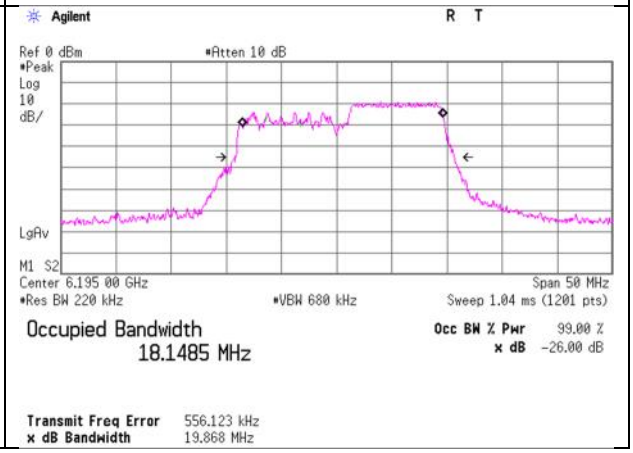


106-tone RU 6195 MHz

RU Index 53



RU Index 54

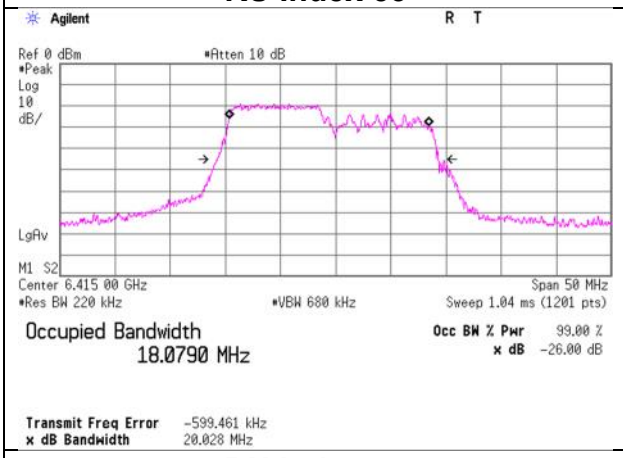


26 dB Emission Bandwidth

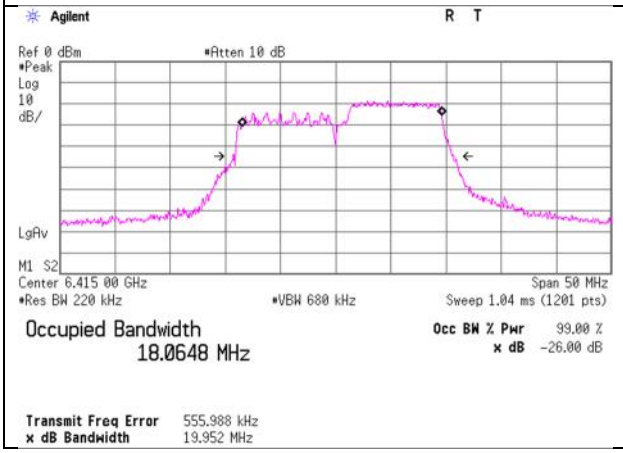
11ax-20 (OFDMA)

106-tone RU 6415 MHz

RU Index 53

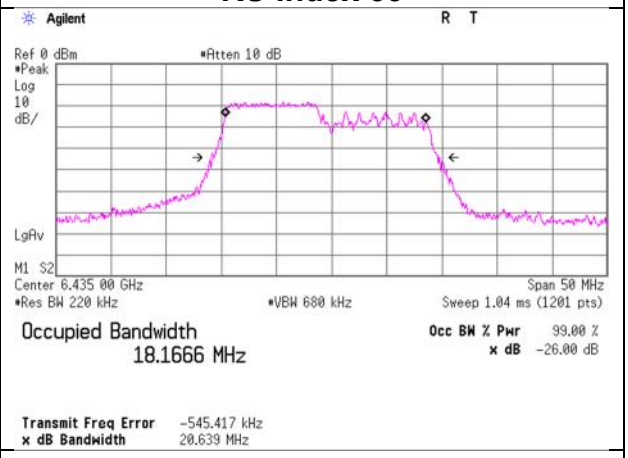


RU Index 54

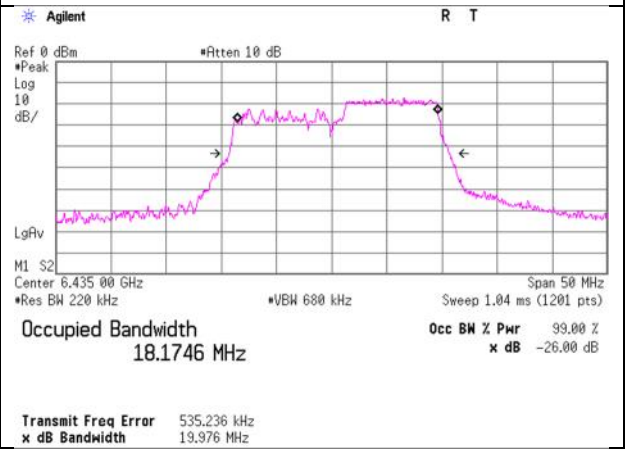


106-tone RU 6435 MHz

RU Index 53



RU Index 54

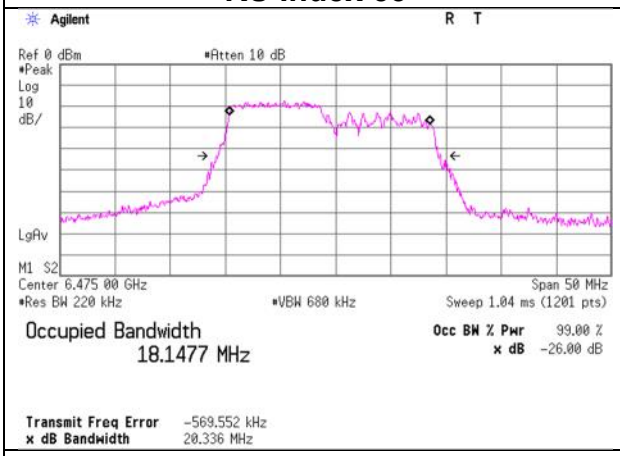


26 dB Emission Bandwidth

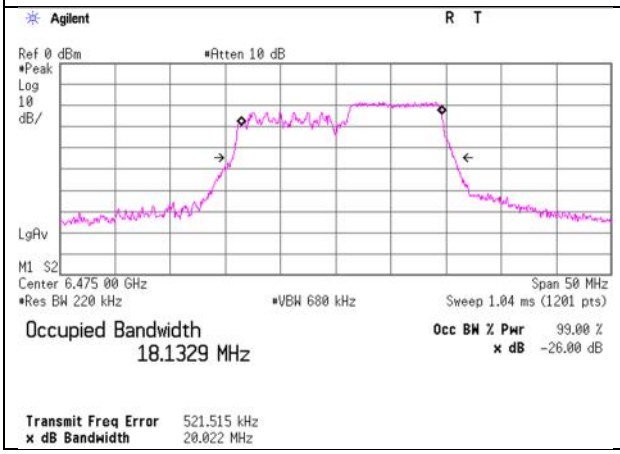
11ax-20 (OFDMA)

106-tone RU 6475 MHz

RU Index 53

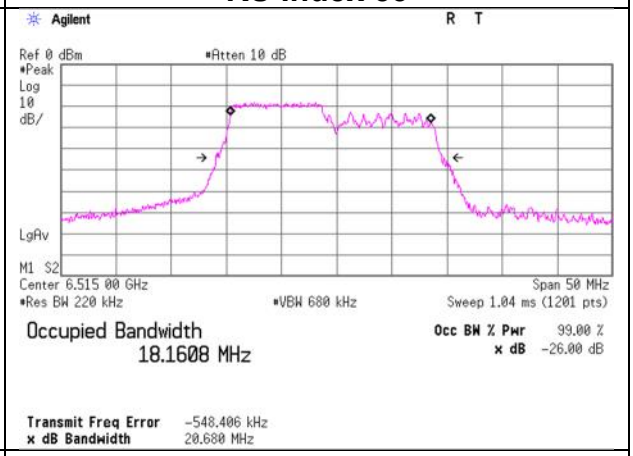


RU Index 54

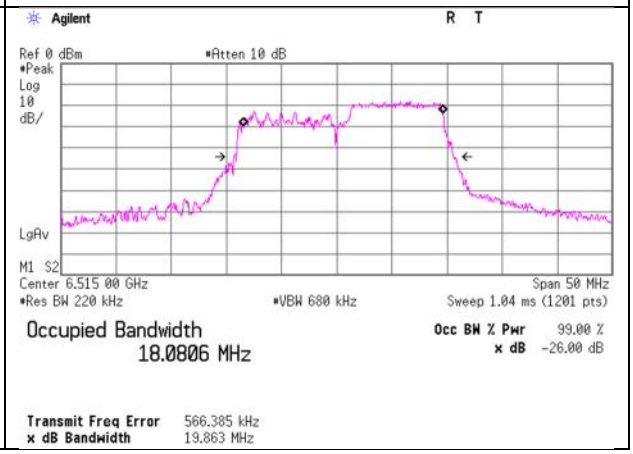


106-tone RU 6515 MHz

RU Index 53



RU Index 54

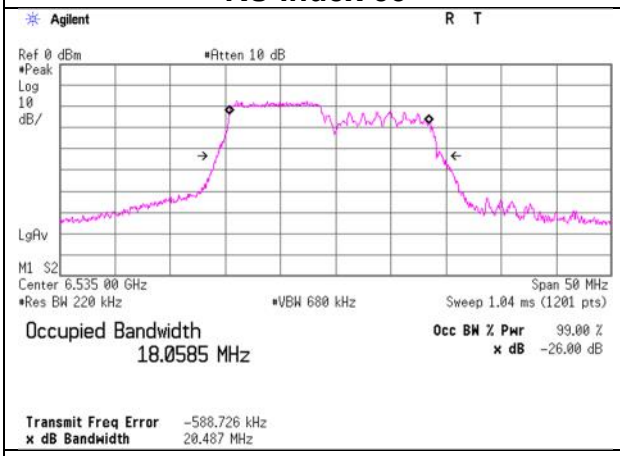


26 dB Emission Bandwidth

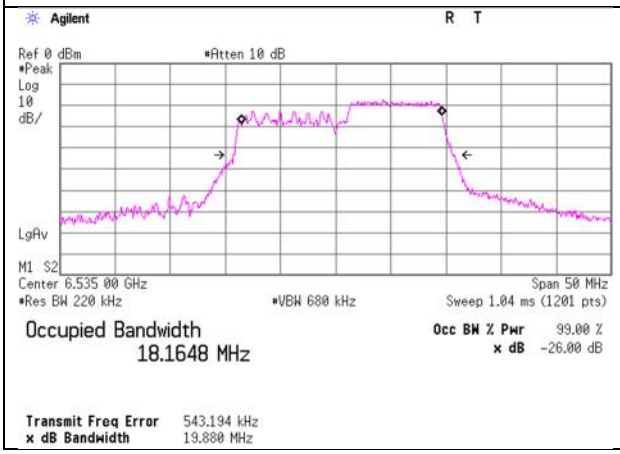
11ax-20 (OFDMA)

106-tone RU 6535 MHz

RU Index 53

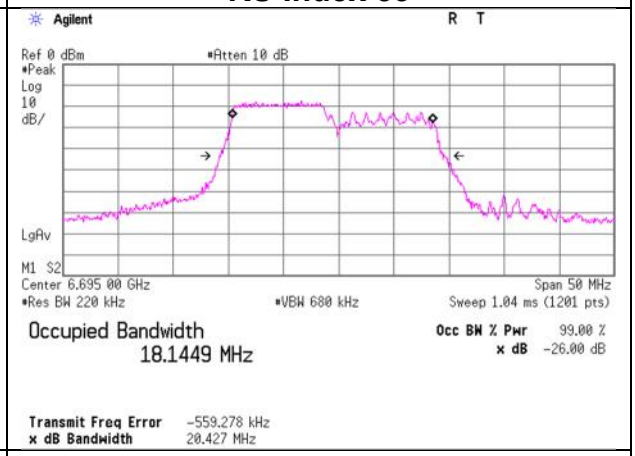


RU Index 54

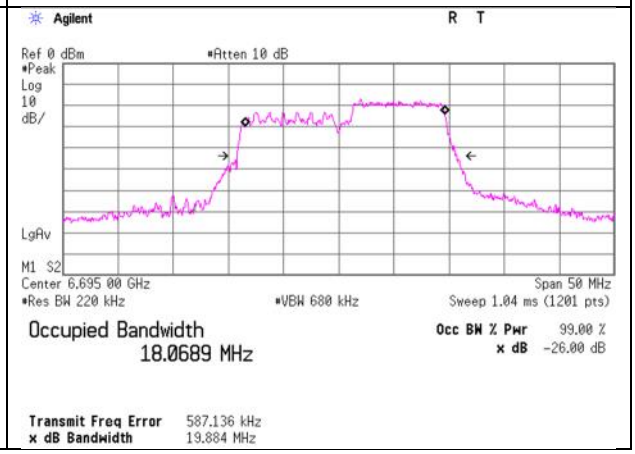


106-tone RU 6695 MHz

RU Index 53



RU Index 54

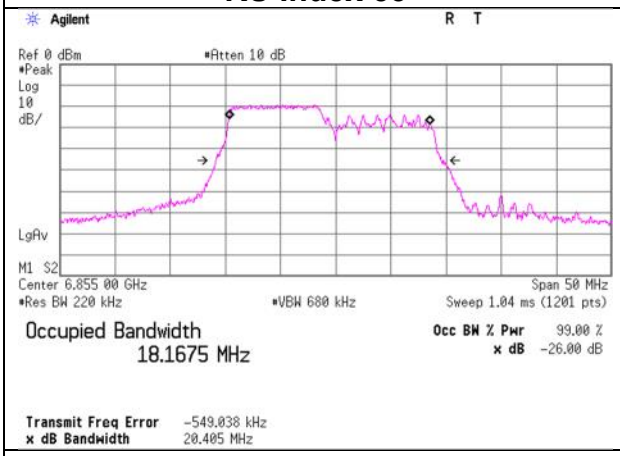


26 dB Emission Bandwidth

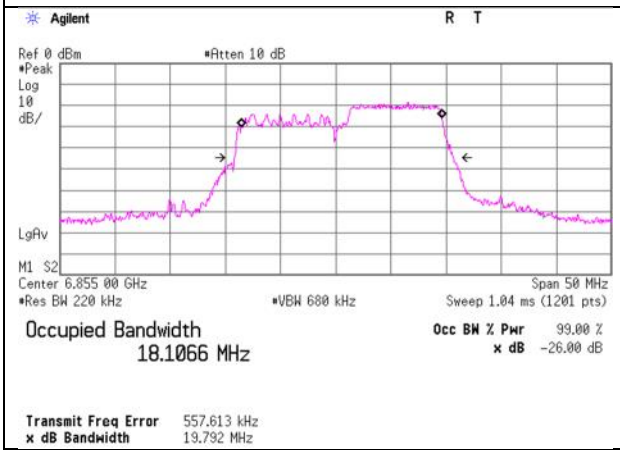
11ax-20 (OFDMA)

106-tone RU 6855 MHz

RU Index 53

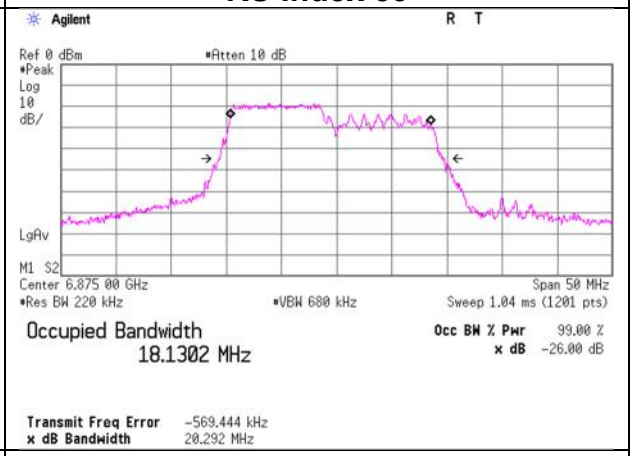


RU Index 54

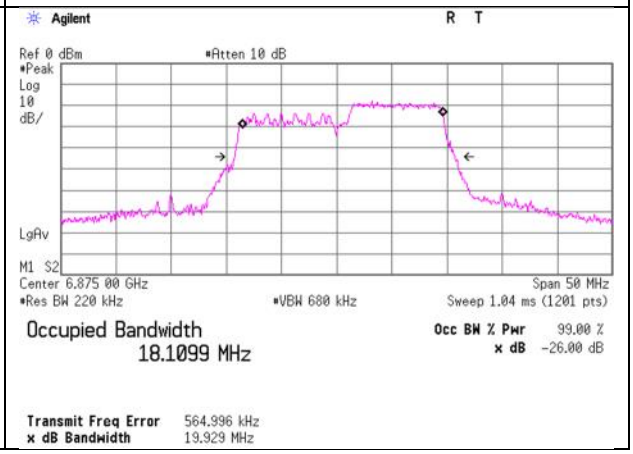


106-tone RU 6875 MHz

RU Index 53



RU Index 54

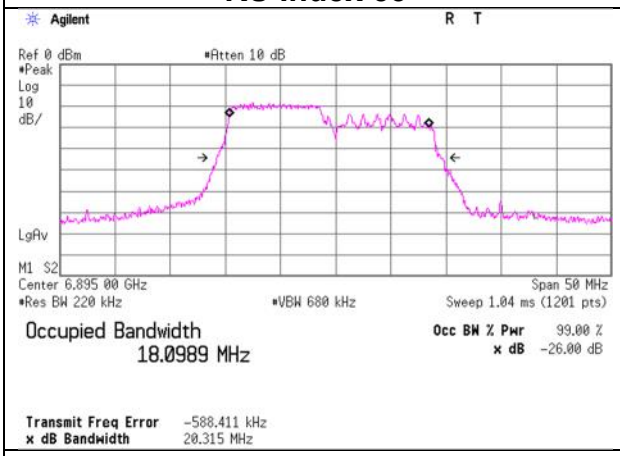


26 dB Emission Bandwidth

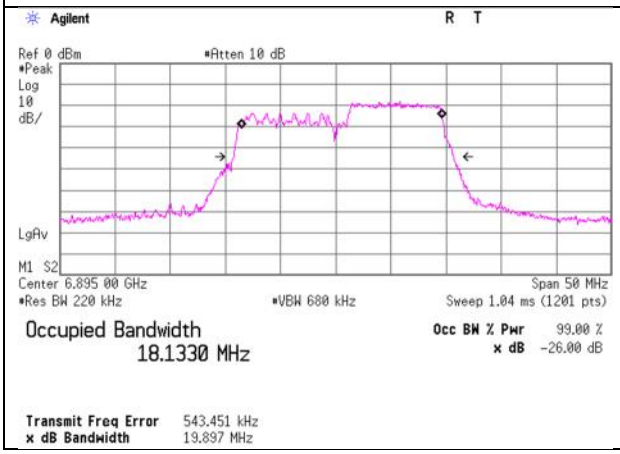
11ax-20 (OFDMA)

106-tone RU 6895 MHz

RU Index 53

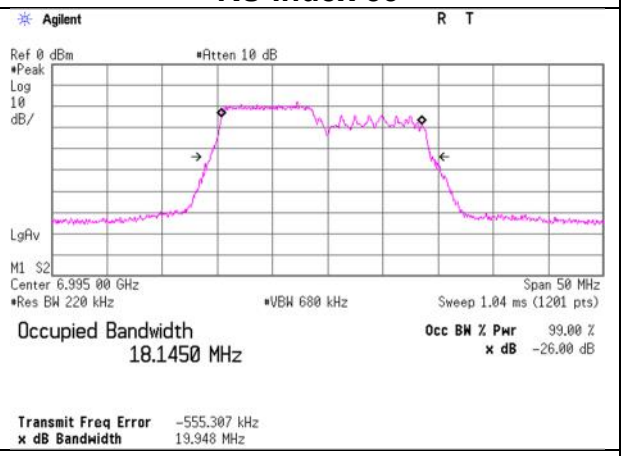


RU Index 54

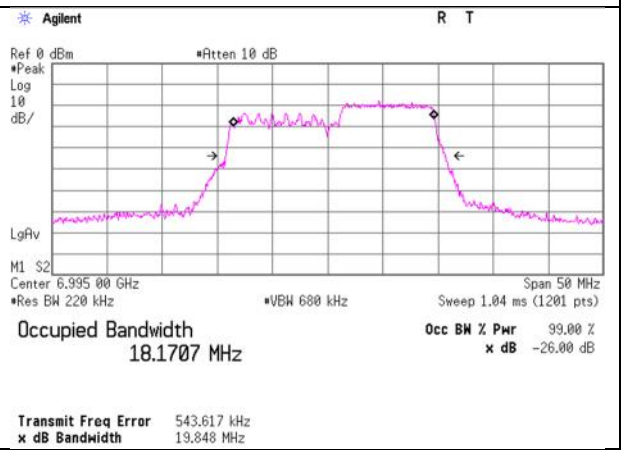


106-tone RU 6995 MHz

RU Index 53



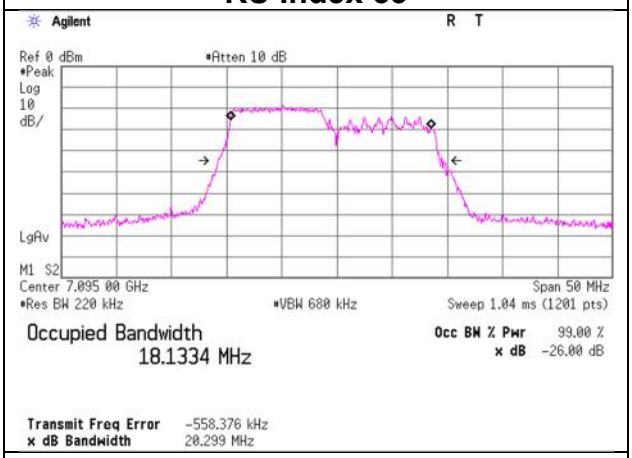
RU Index 54



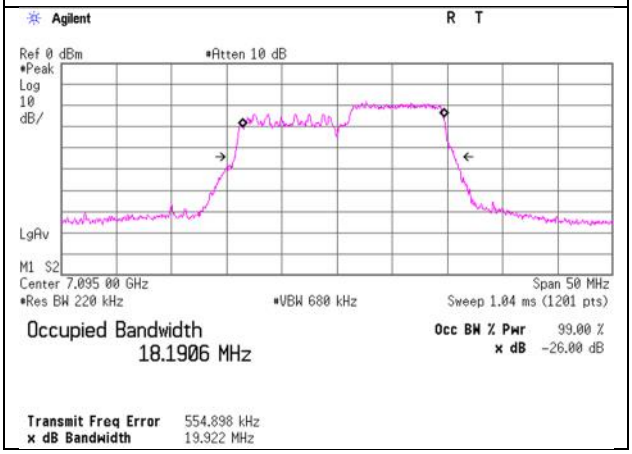
26 dB Emission Bandwidth

11ax-20 (OFDMA)
106-tone RU 7095 MHz

RU Index 53



RU Index 54

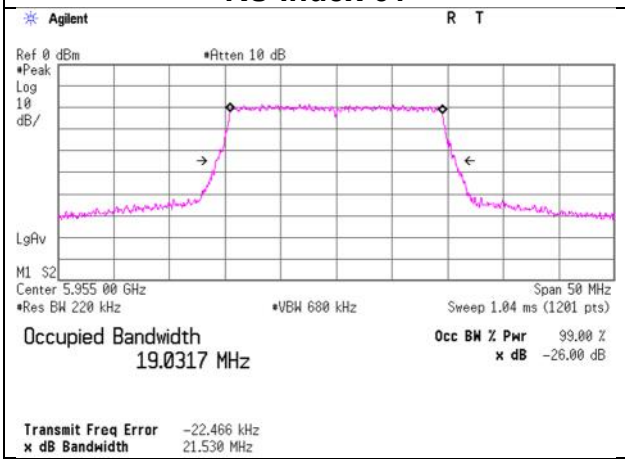


26 dB Emission Bandwidth

11ax-20 (OFDMA)

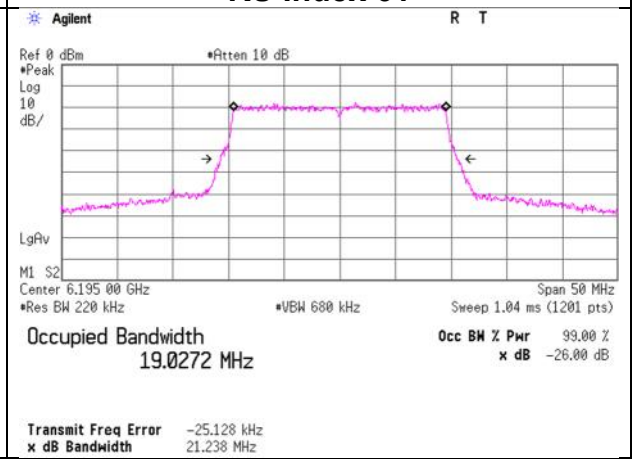
242-tone RU 5955 MHz

RU Index 61



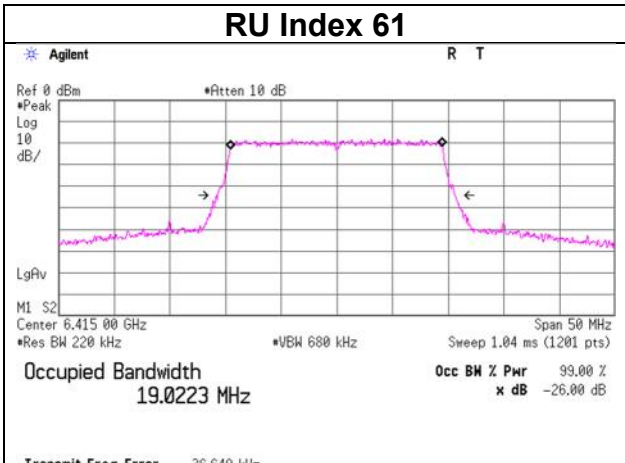
242-tone RU 6195 MHz

RU Index 61



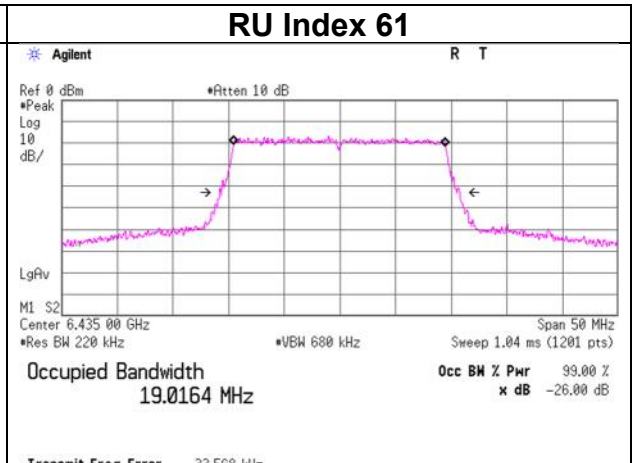
242-tone RU 6415 MHz

RU Index 61



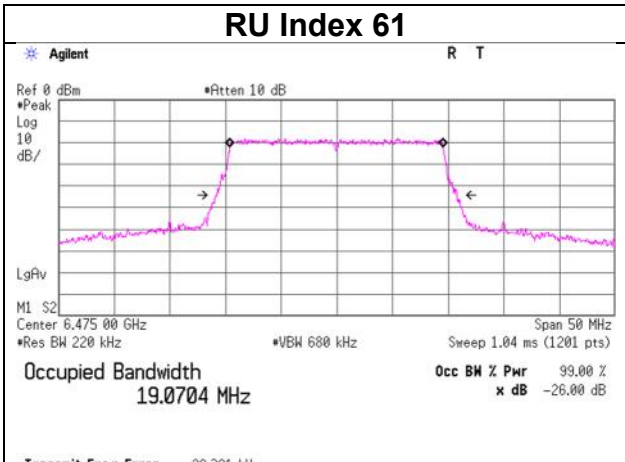
242-tone RU 6435 MHz

RU Index 61



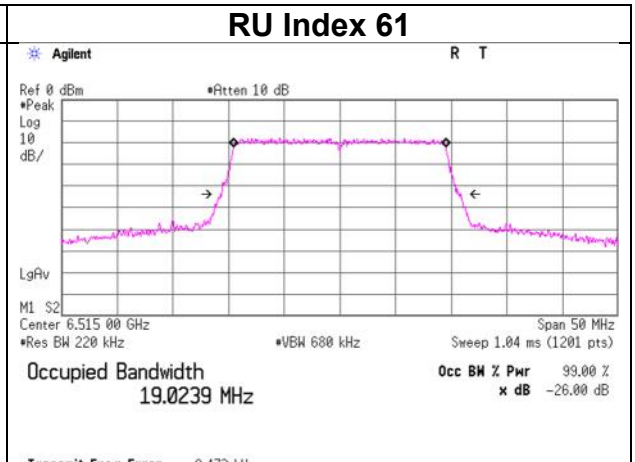
242-tone RU 6475 MHz

RU Index 61



242-tone RU 6515 MHz

RU Index 61

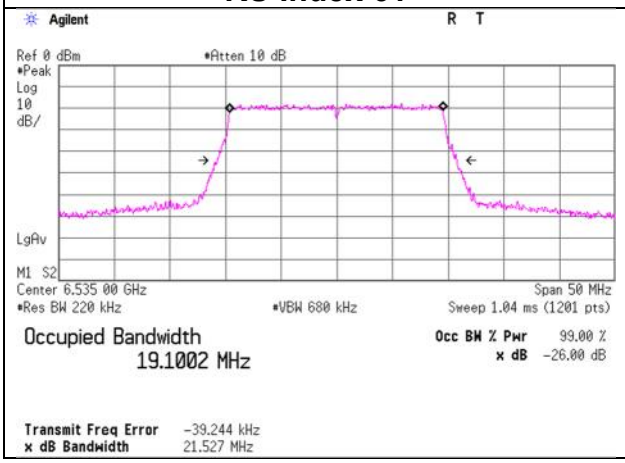


26 dB Emission Bandwidth

11ax-20 (OFDMA)

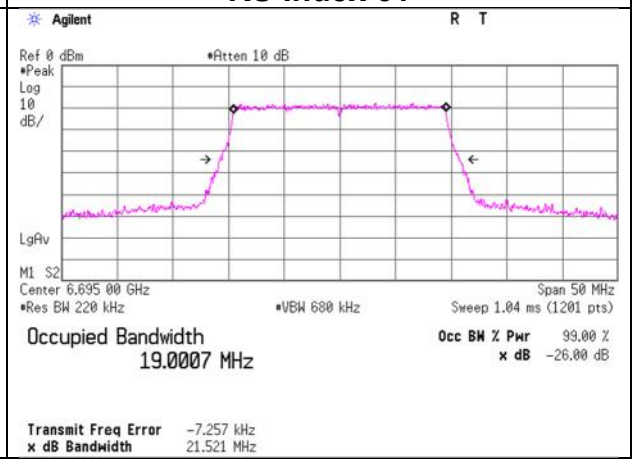
242-tone RU 6535 MHz

RU Index 61



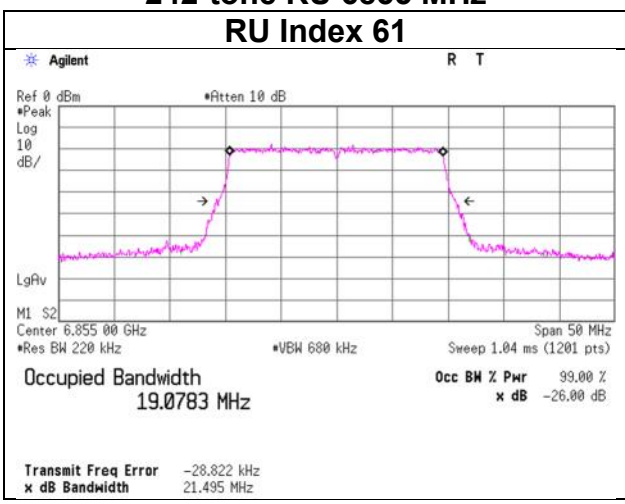
242-tone RU 6695 MHz

RU Index 61



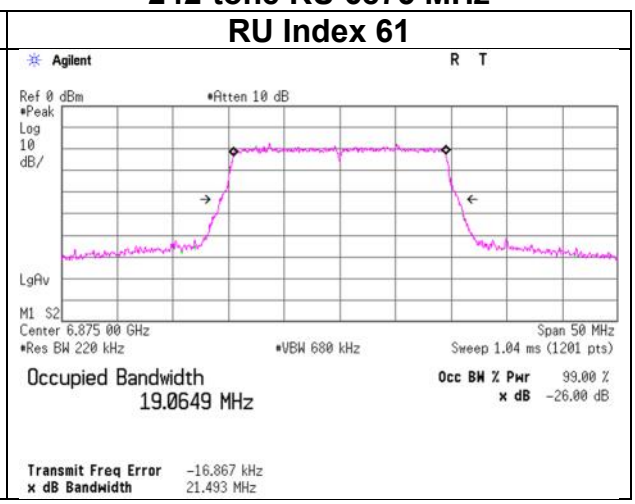
242-tone RU 6855 MHz

RU Index 61



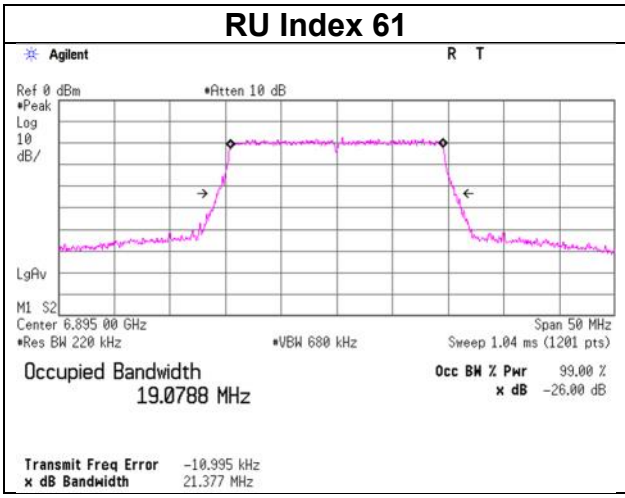
242-tone RU 6875 MHz

RU Index 61



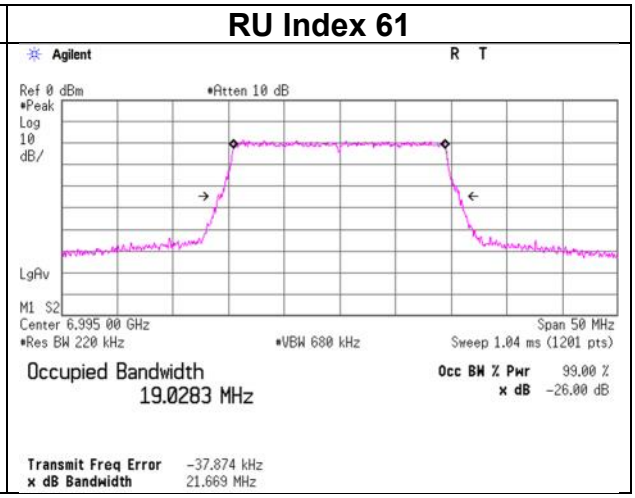
242-tone RU 6895 MHz

RU Index 61



242-tone RU 6995 MHz

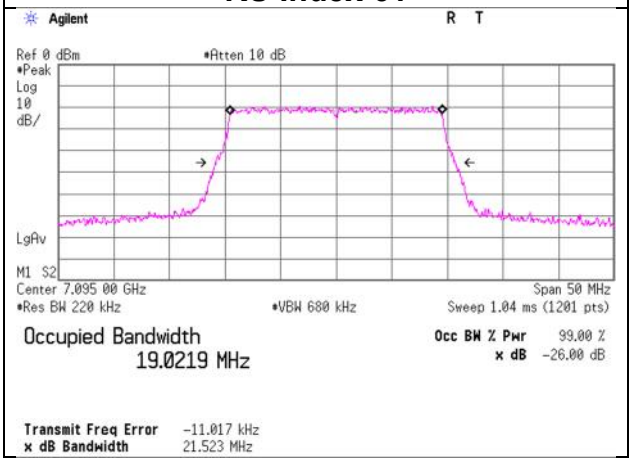
RU Index 61



26 dB Emission Bandwidth

11ax-20 (OFDMA)
242-tone RU 7095 MHz

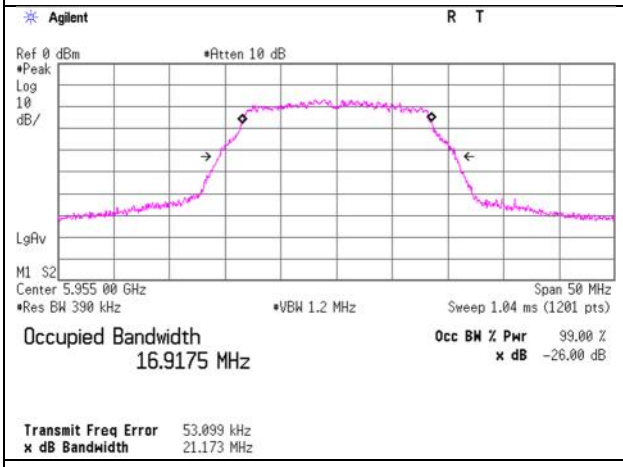
RU Index 61



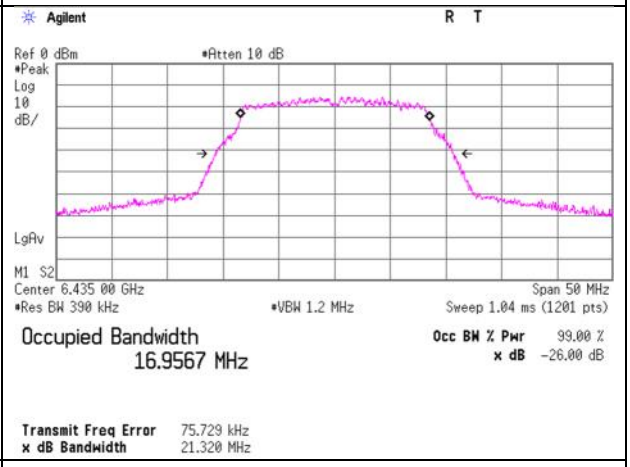
99 % Occupied Bandwidth

11a

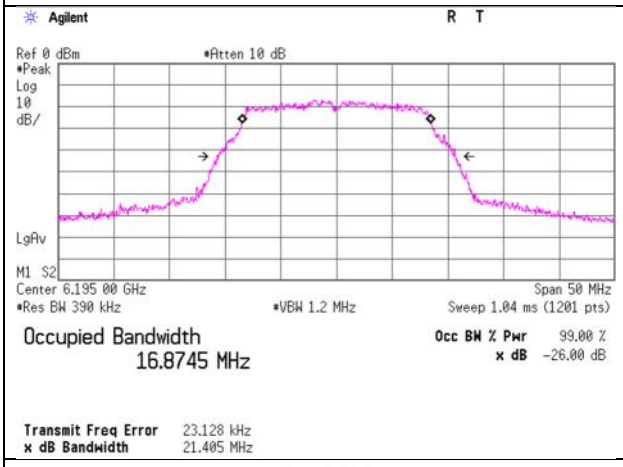
5955 MHz



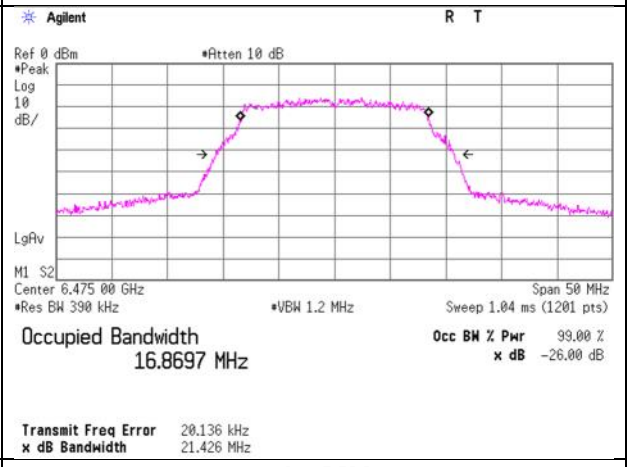
6435 MHz



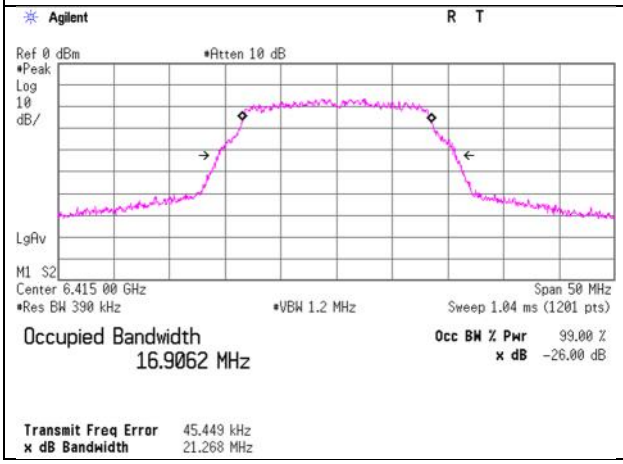
6195 MHz



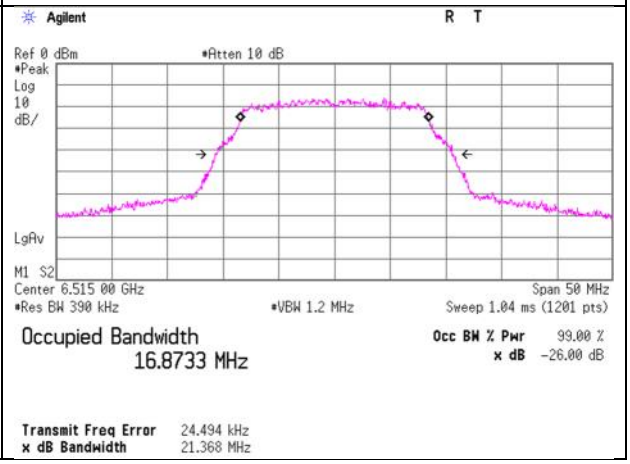
6475 MHz



6415 MHz



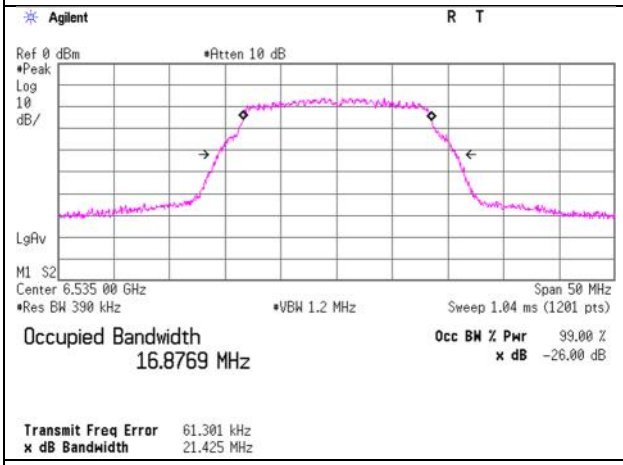
6515 MHz



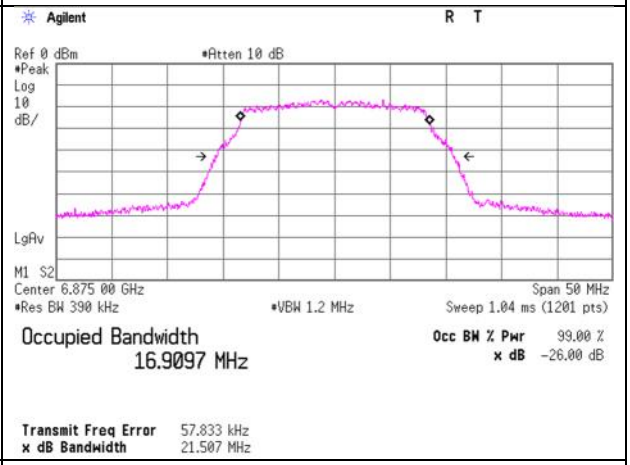
99 % Occupied Bandwidth

11a

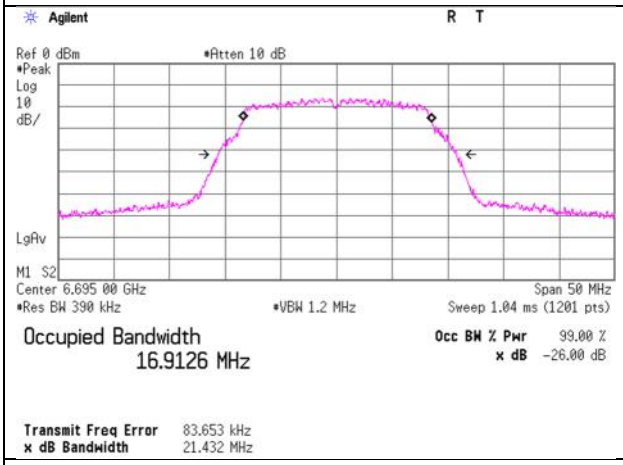
6535 MHz



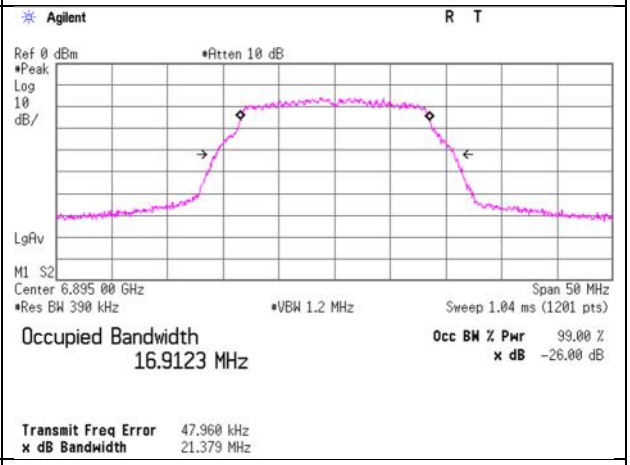
6875 MHz



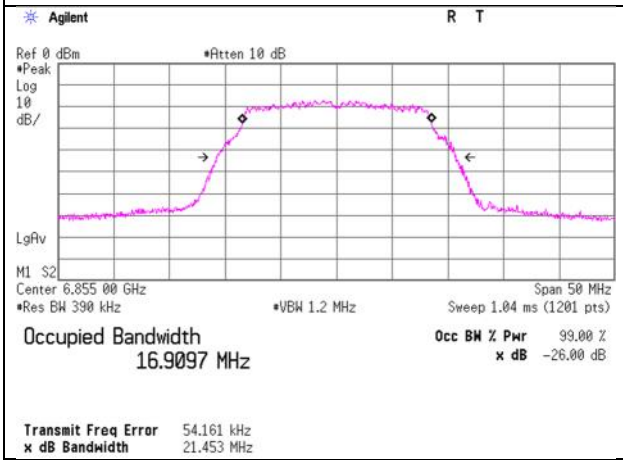
6695 MHz



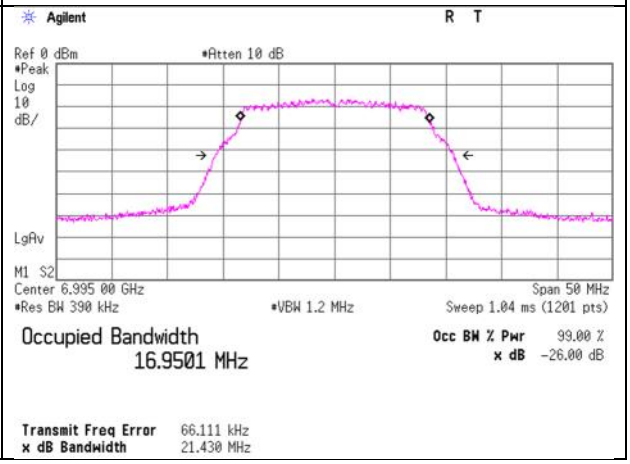
6895 MHz



6855 MHz



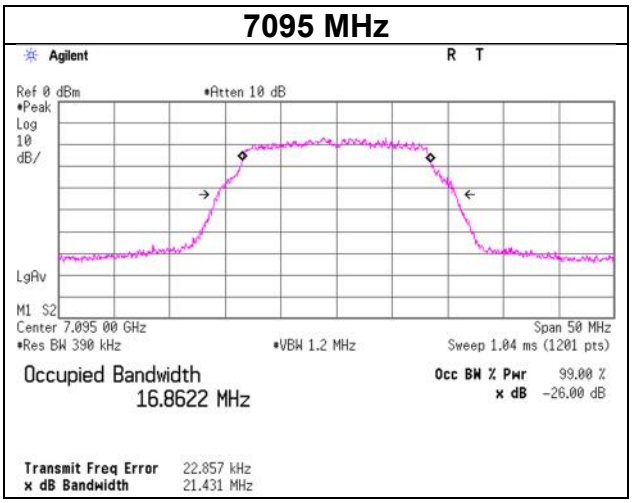
6995 MHz



99 % Occupied Bandwidth

11a

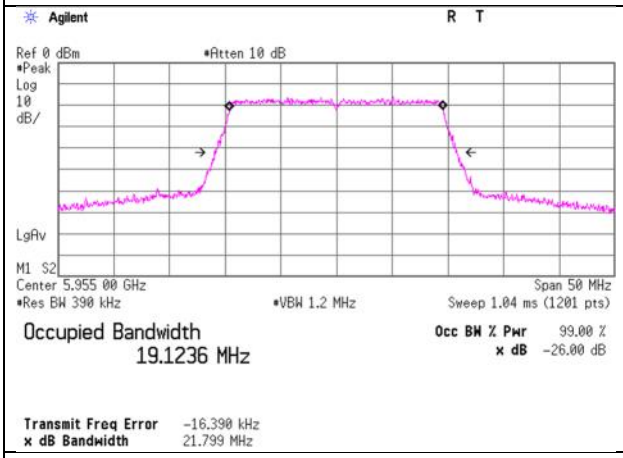
7095 MHz



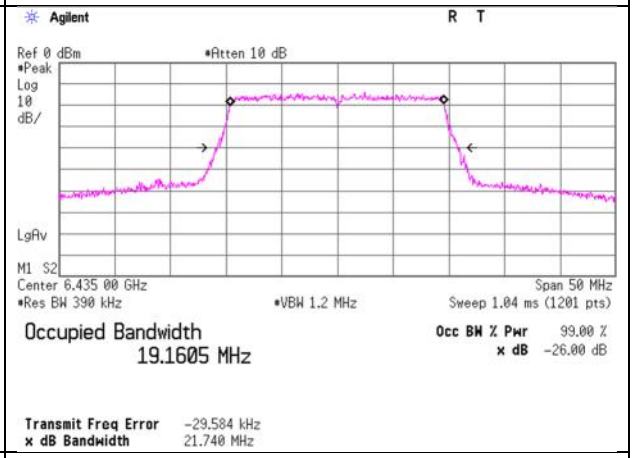
99 % Occupied Bandwidth

11ax-20 (OFDM)

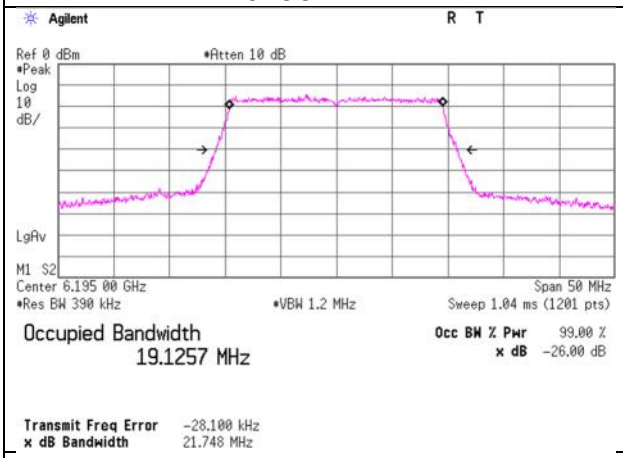
5955 MHz



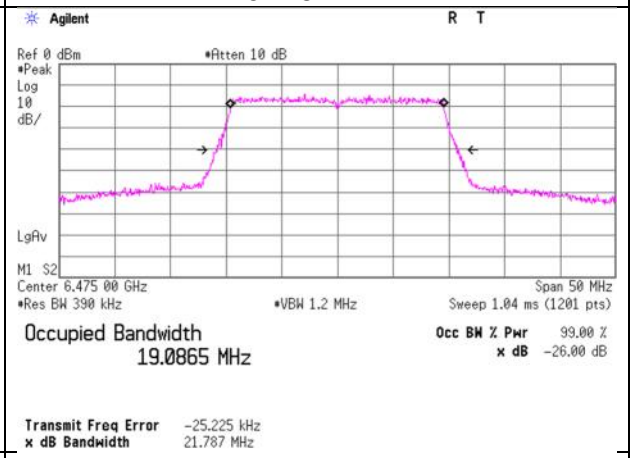
6435 MHz



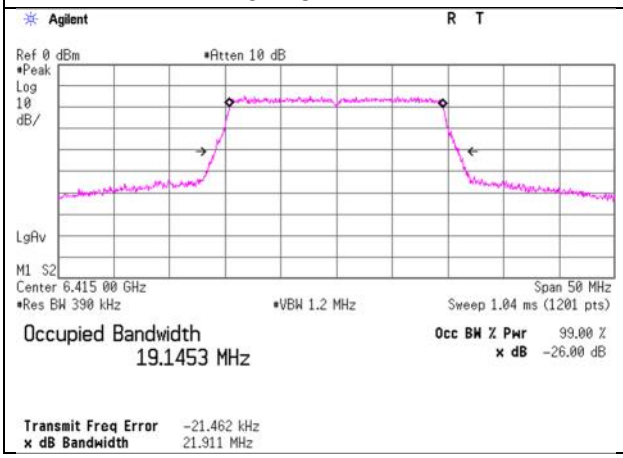
6195 MHz



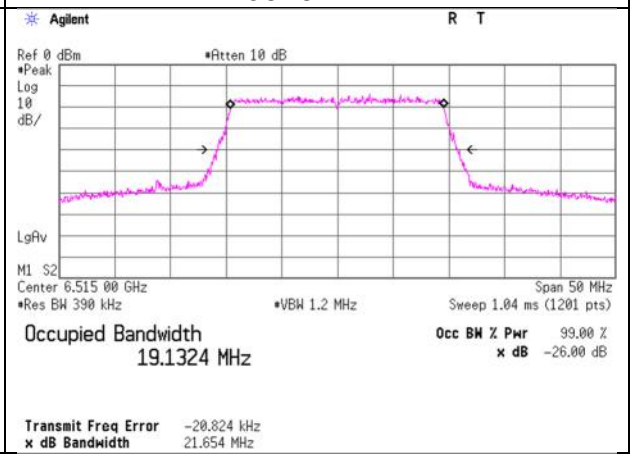
6475 MHz



6415 MHz



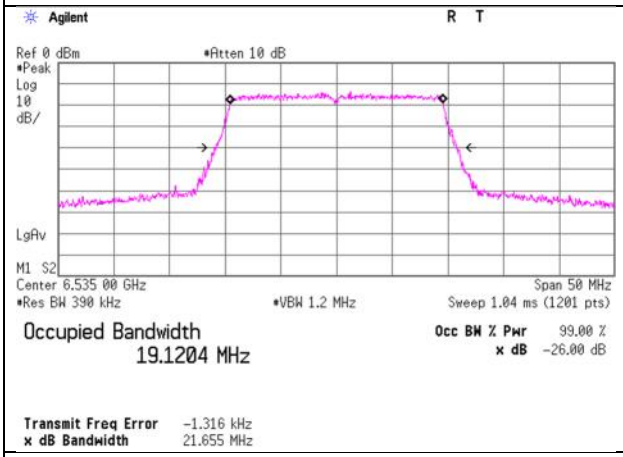
6515 MHz



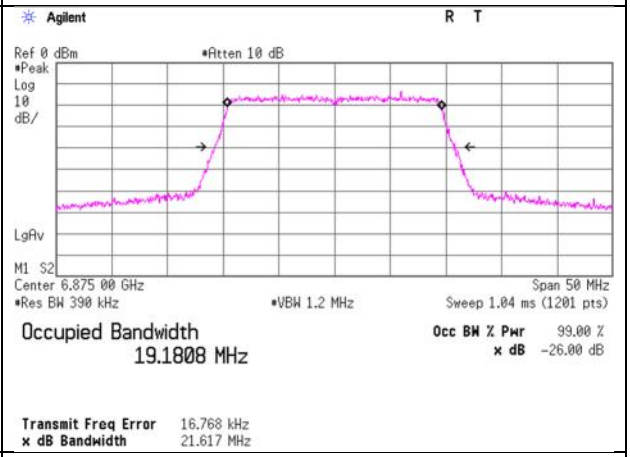
99 % Occupied Bandwidth

11ax-20 (OFDM)

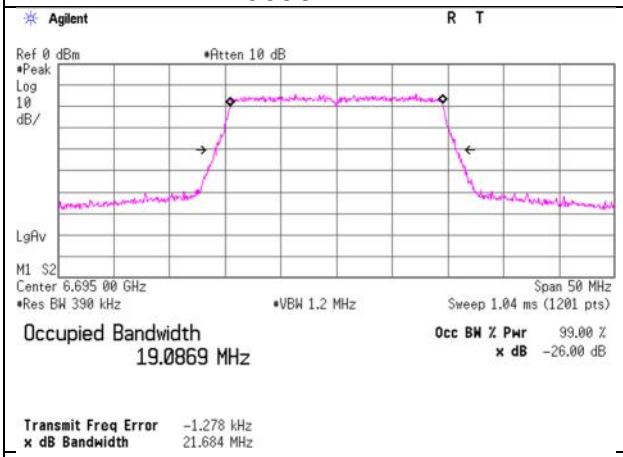
6535 MHz



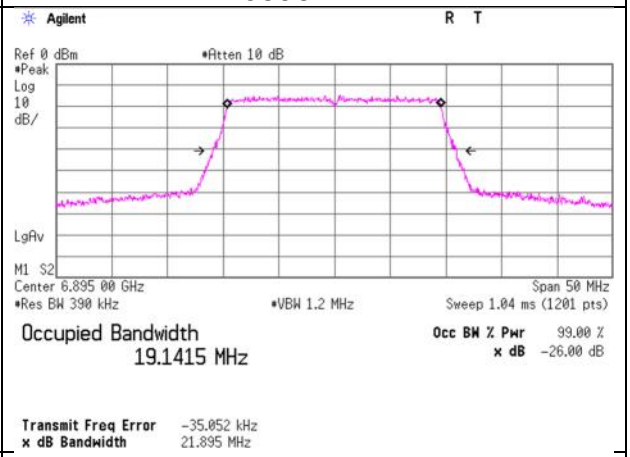
6875 MHz



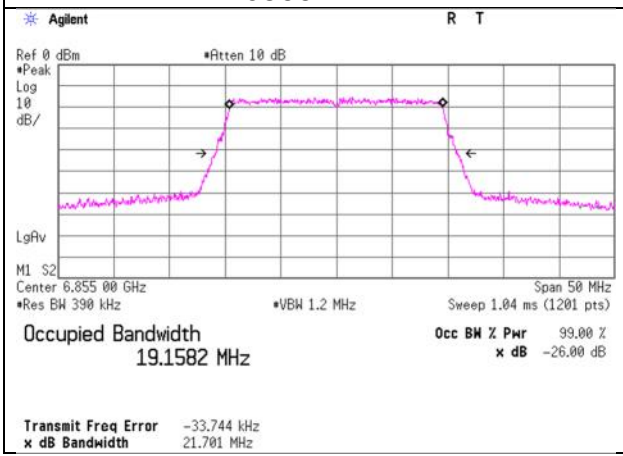
6695 MHz



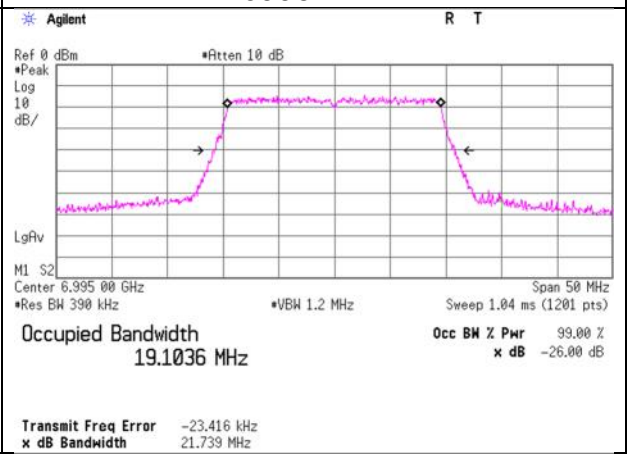
6895 MHz



6855 MHz



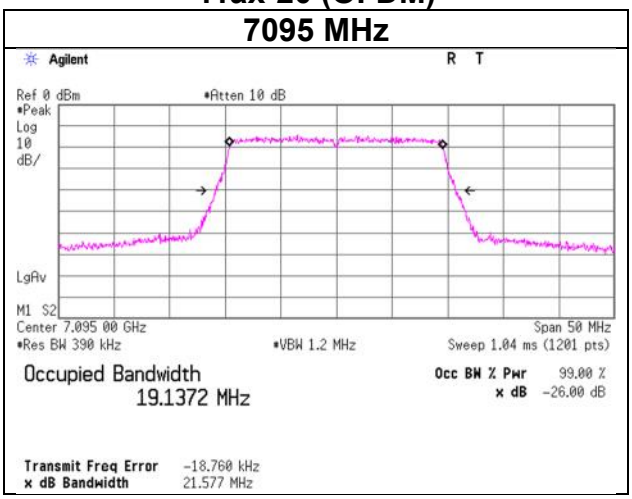
6995 MHz



99 % Occupied Bandwidth

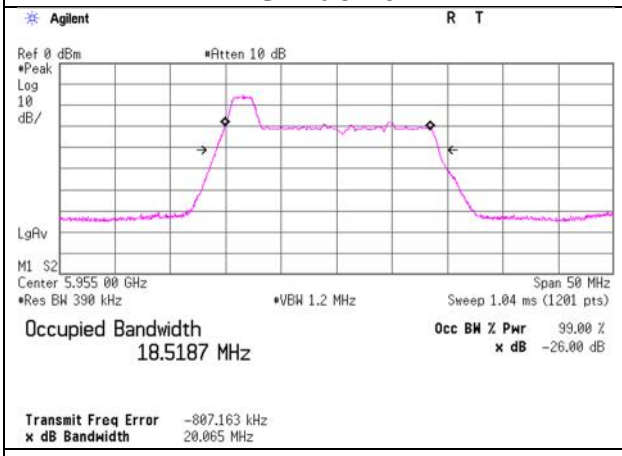
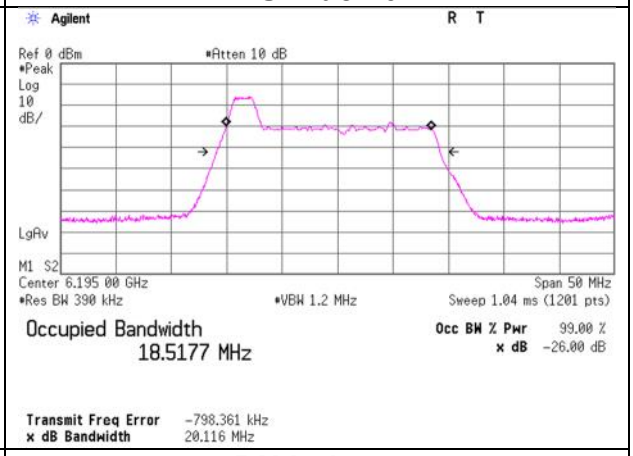
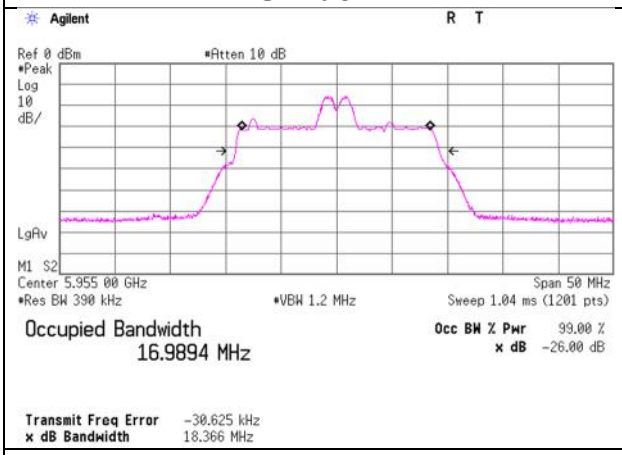
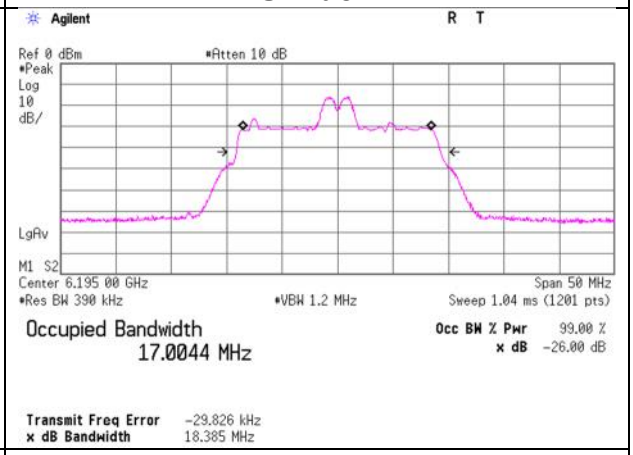
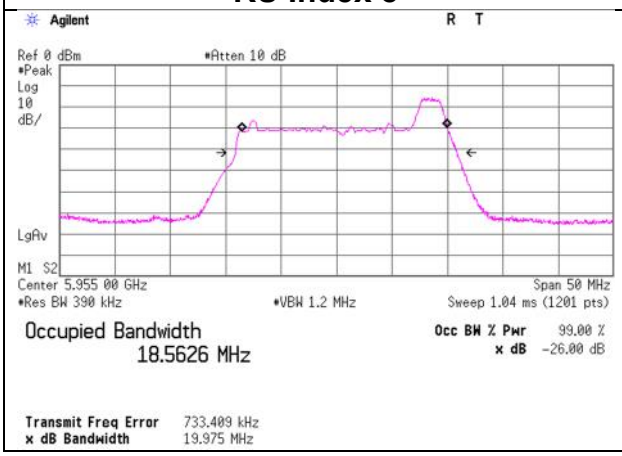
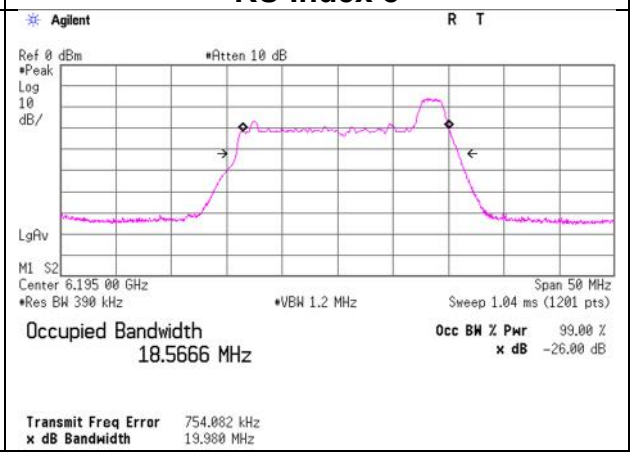
11ax-20 (OFDM)

7095 MHz



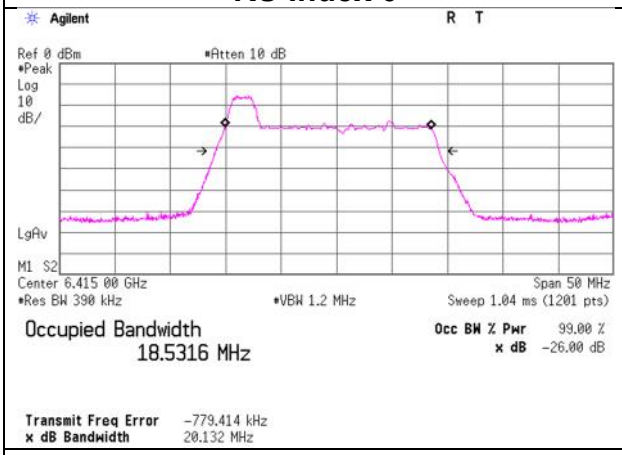
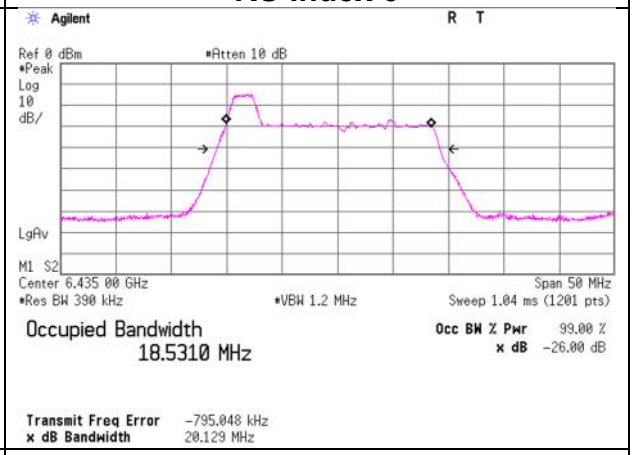
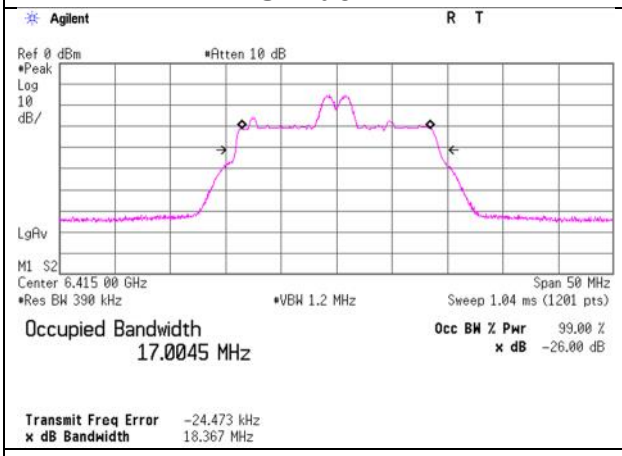
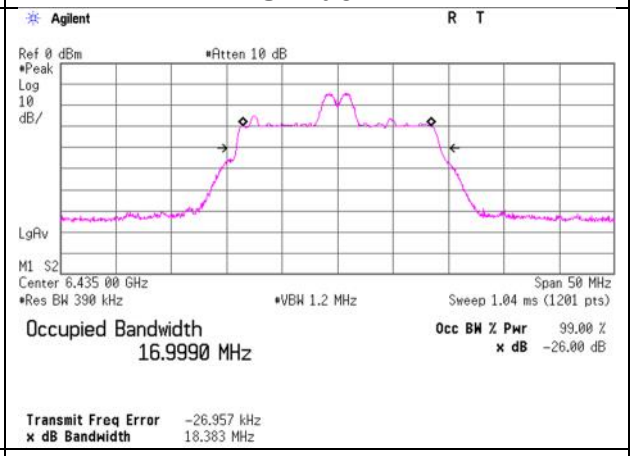
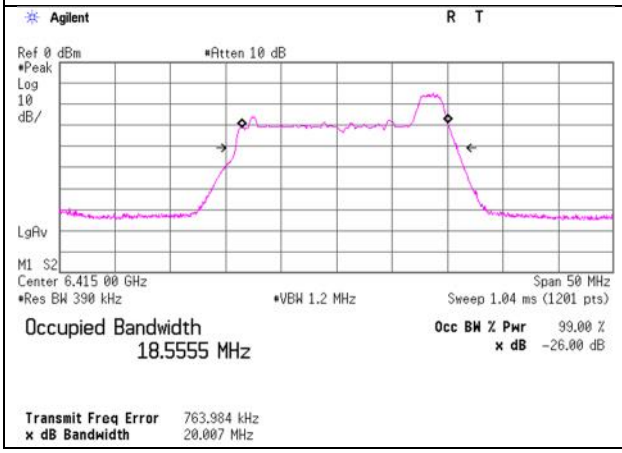
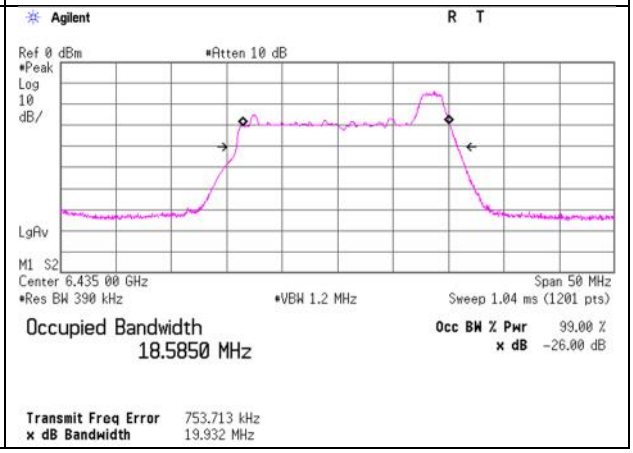
99 % Occupied Bandwidth

11ax-20 (OFDMA)

26-tone RU 5955 MHz	26-tone RU 6195 MHz
RU Index 0	**RU Index 0**
	
RU Index 4	**RU Index 4**
	
RU Index 8	**RU Index 8**
	

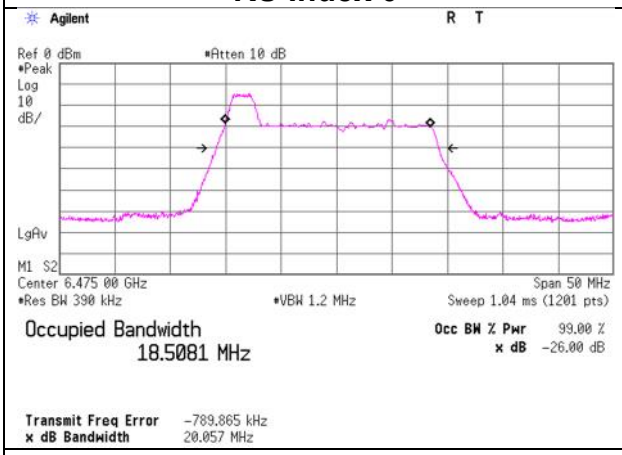
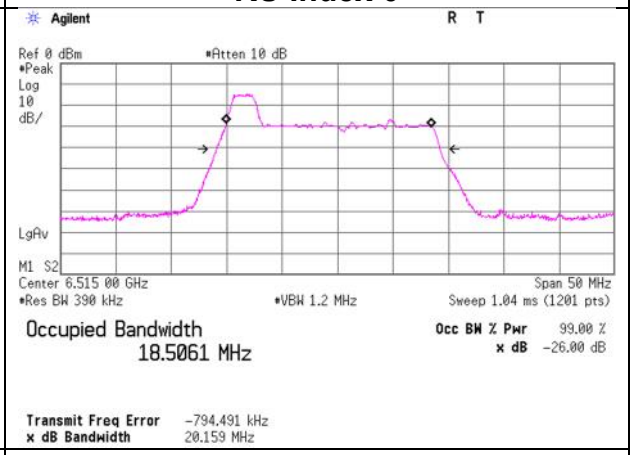
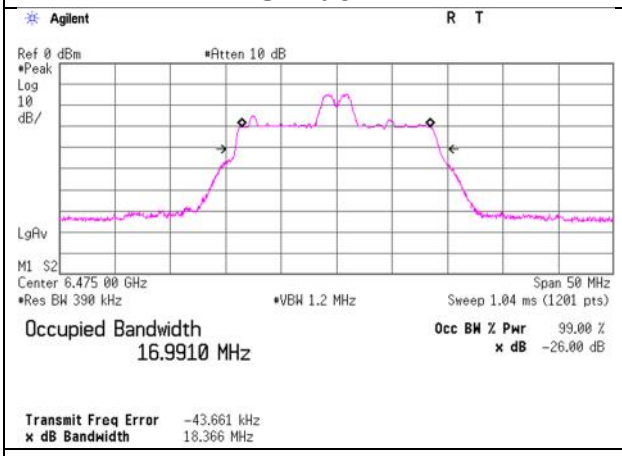
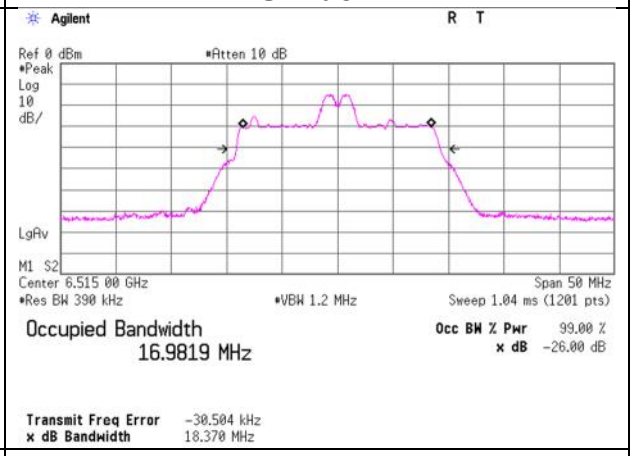
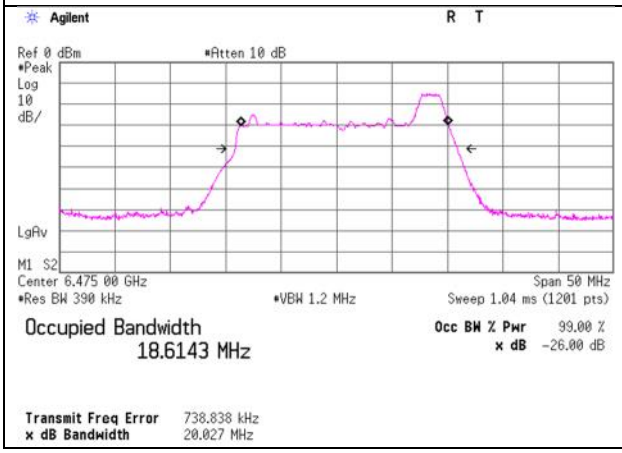
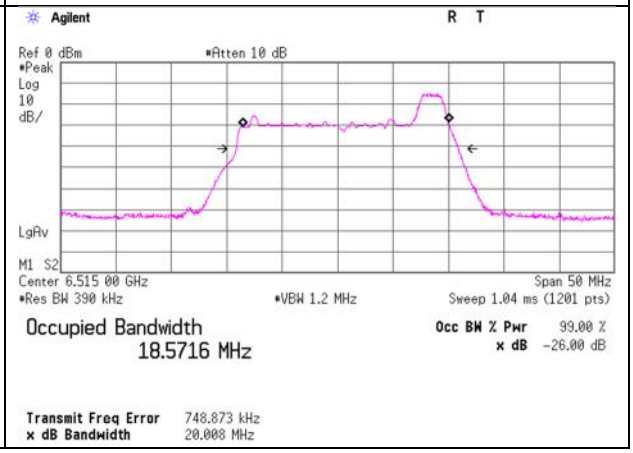
99 % Occupied Bandwidth

11ax-20 (OFDMA)

26-tone RU 6415 MHz	26-tone RU 6435 MHz
RU Index 0	**RU Index 0**
	
RU Index 4	**RU Index 4**
	
RU Index 8	**RU Index 8**
	

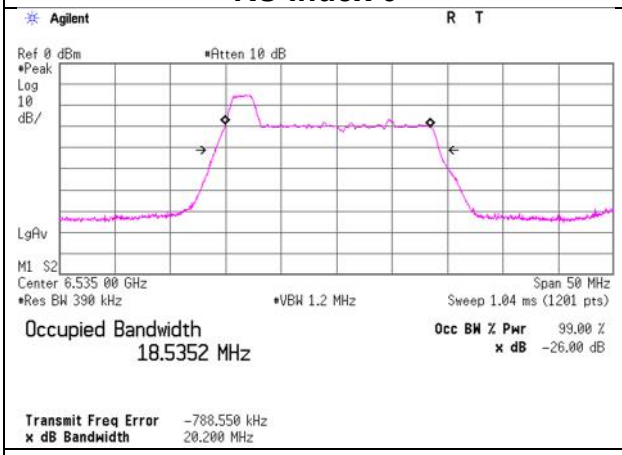
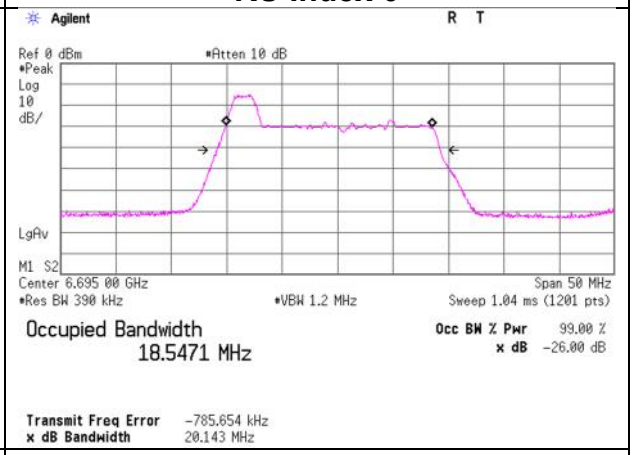
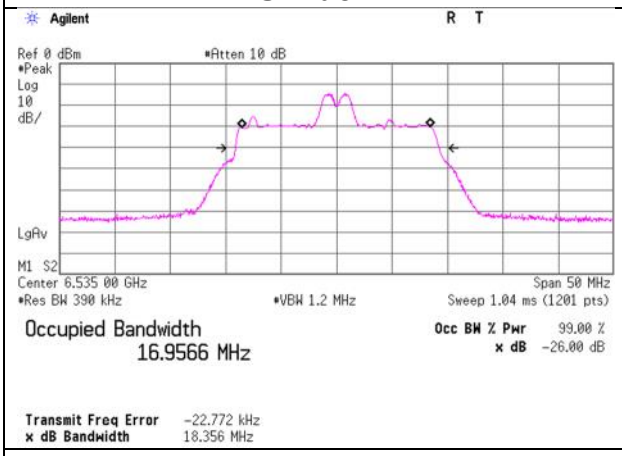
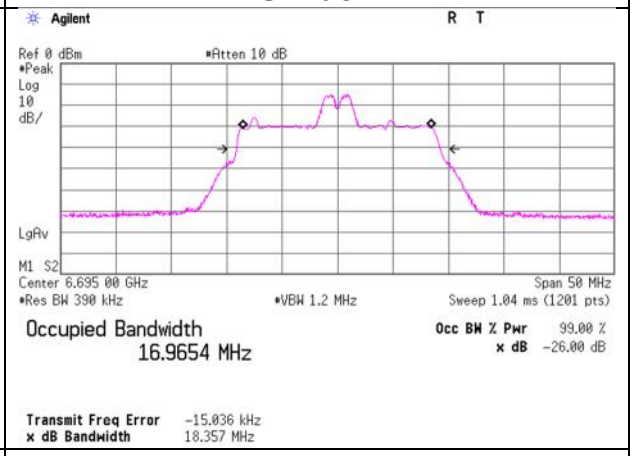
99 % Occupied Bandwidth

11ax-20 (OFDMA)

26-tone RU 6475 MHz	26-tone RU 6515 MHz
RU Index 0	**RU Index 0**
	
RU Index 4	**RU Index 4**
	
RU Index 8	**RU Index 8**
	

99 % Occupied Bandwidth

11ax-20 (OFDMA)

26-tone RU 6535 MHz	26-tone RU 6695 MHz
RU Index 0	**RU Index 0**
	
RU Index 4	**RU Index 4**
	
RU Index 8	**RU Index 8**