

TEST REPORT



Certificate #4312.01

Product Name: Wireless Communication Base
Trade Mark: PAX
Model No.: L920MAX-BE
Report Number: 25101420269RFC-4
Test Standards: FCC 47 CFR Part 15 Subpart E
RSS-247 Issue 4
RSS-Gen Issue 5
FCC ID: V5PL920MAXBE
IC: 11689A-L920MAXBE
Test Result: PASS
Date of Issue: December 8, 2025

Prepared for:

PAX Technology Limited
Room 2416, 24/F., Sun Hung Kai Centre, 30 Harbour Road, Wanchai,
Hong Kong

Prepared by:

Shenzhen UnionTrust Quality and Technology Co., Ltd.
16/F, Block A, Building 6th, Baoneng Science and Technology Park,
Longhua Street, Longhua District, Shenzhen, China
TEL: +86-755-2823 0888
FAX: +86-755-2823 0886

Prepared by:

David Chen

David Chen

Senior Project Engineer

Reviewed by:

Henry Lu

Henry Lu
Team Leader

Approved by:



Assistant Manager

Date:

December 8, 2025

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

Version

Version No.	Date	Description
V1.0	December 8, 2025	Original

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com<http://www.uttlab.com>UTTR-RF-RSS247-V1.1

CONTENTS

1. GENERAL INFORMATION	4
1.1 CLIENT INFORMATION	4
1.2 EUT INFORMATION	4
1.2.1 GENERAL DESCRIPTION OF EUT	4
1.2.2 DESCRIPTION OF ACCESSORIES	4
1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD	4
1.4 OTHER INFORMATION	6
1.5 DESCRIPTION OF SUPPORT UNITS	6
1.6 TEST LOCATION	6
1.7 TEST FACILITY	6
1.8 DEVIATION FROM STANDARDS	7
1.9 ABNORMALITIES FROM STANDARD CONDITIONS	7
1.10 OTHER INFORMATION REQUESTED BY THE CUSTOMER	7
1.11 MEASUREMENT UNCERTAINTY	7
2. TEST SUMMARY	8
3. EQUIPMENT LIST	9
4. TEST CONFIGURATION	11
4.1 ENVIRONMENTAL CONDITIONS FOR TESTING	11
4.1.1 NORMAL OR EXTREME TEST CONDITIONS	11
4.1.2 RECORD OF NORMAL ENVIRONMENT AND TEST SAMPLE	11
4.2 TEST CHANNELS	12
4.3 EUT TEST STATUS	12
4.4 PRE-SCAN	13
4.5 TEST SETUP	14
4.5.1 FOR RADIATED EMISSIONS TEST SETUP	14
4.5.2 FOR CONDUCTED EMISSIONS TEST SETUP	15
4.5.3 FOR CONDUCTED RF TEST SETUP	16
4.6 SYSTEM TEST CONFIGURATION	17
4.7 DUTY CYCLE	18
5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION	22
5.1 REFERENCE DOCUMENTS FOR TESTING	22
5.2 ANTENNA REQUIREMENT	22
5.3 26 dB BANDWIDTH & OCCUPIED BANDWIDTH	23
5.4 6 dB BANDWIDTH & OCCUPIED BANDWIDTH	24
5.5 MAXIMUM CONDUCTED OUTPUT POWER OR E.I.R.P	25
5.6 PEAK POWER SPECTRAL DENSITY	31
5.7 RADIATED EMISSIONS AND BAND EDGE MEASUREMENT	34
5.8 DYNAMIC FREQUENCY SELECTION	62
5.9 AC POWER LINE CONDUCTED EMISSION	66
APPENDIX A RF TEST DATA	69
A1. 99% BANDWIDTH	69
A2. 26dB BANDWIDTH	100
A3. PEAK POWER SPECTRAL DENSITY	124
A4. 6dB BANDWIDTH	156
A5. DYNAMIC FREQUENCY SELECTION	164
APPENDIX 1 PHOTOS OF TEST SETUP	171
APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS	171

1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	PAX Technology Limited
Address of Applicant:	Room 2416, 24/F., Sun Hung Kai Centre, 30 Harbour Road, Wanchai, Hong Kong
Manufacturer:	PAX Computer Technology (Shenzhen) Co., Ltd.
Address of Manufacturer:	Room 701, PAX Technology Building, Shanxia Community, Pinghu Sub-district, Longgang District, Shenzhen, China

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	Wireless Communication Base		
Model No.:	L920MAX-BE		
Trade Mark:	PAX		
DUT Stage:	Identical Prototype		
EUT Supports Function: (Provided by the customer)	2.4 GHz ISM Band:	IEEE 802.11b/g/n	
		Bluetooth V5.0	
	5 GHz U-NII Bands:	5 150 MHz to 5 250 MHz	IEEE 802.11a/n/ac
		5 250 MHz to 5 350 MHz	IEEE 802.11a/n/ac
		5 470 MHz to 5 730MHz	IEEE 802.11a/n/ac
		5 730 MHz to 5 850 MHz	IEEE 802.11a/n/ac
Sample Received Date:	October 14, 2025		
Sample Tested Date:	October 16, 2025 to November 3, 2025		

Remark: The above EUT's information was provided by customer. Please refer to the specifications or user's manual for more detailed description.

1.2.2 Description of Accessories

None

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

Frequency Bands:	5150 MHz to 5250 MHz (U-NII-1)
	5250 MHz to 5350 MHz (U-NII-2A)
	5470 MHz to 5730 MHz (U-NII-2C) ^{Note1}
	5730 MHz to 5850 MHz (U-NII-3)
Frequency Ranges:	5180 MHz to 5240 MHz
	5260 MHz to 5320 MHz
	5500 MHz to 5700 MHz
	5745 MHz to 5825 MHz
Support Standards:	IEEE 802.11a/n/ac
TPC Function:	Not Support
DFS Operational mode:	Slave without radar Interference detection function
Type of Modulation:	IEEE 802.11a: OFDM(64QAM, 16QAM, QPSK, BPSK)
	IEEE 802.11n: OFDM(64QAM, 16QAM, QPSK, BPSK)
	IEEE 802.11ac: OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK)
Channel Spacing:	IEEE 802.11a/n-HT20/ac-VHT20: 20 MHz
	IEEE 802.11n-HT40/ac-VHT40: 40 MHz

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

	IEEE 802.11ac-VHT80: 80 MHz				
Data Rate:	IEEE 802.11a: Up to 54 Mbps				
	IEEE 802.11n-HT20: Up to MCS7				
	IEEE 802.11n-HT40: Up to MCS7				
	IEEE 802.11ac-VHT20: Up to MCS8				
	IEEE 802.11ac-VHT40: Up to MCS9				
	IEEE 802.11ac-VHT80: Up to MCS9				
	Number of Channels:	5150 MHz to 5250 MHz: 4 for IEEE 802.11a/n-HT20/ac-VHT20 2 for IEEE 802.11n-HT40/ac-VHT40 1 for IEEE 802.11ac-VHT80			
5250 MHz to 5350 MHz: 4 for IEEE 802.11a/n-HT20/ac-VHT20 2 for IEEE 802.11n-HT40/ac-VHT40 1 for IEEE 802.11ac-VHT80					
5470 MHz to 5725 MHz: 11 for IEEE 802.11a/n-HT20/ac-VHT20 5 for IEEE 802.11n-HT40/ac-VHT40 2 for IEEE 802.11ac-VHT80					
5725 MHz to 5850 MHz: 5 for IEEE 802.11a/n-HT20/ac-VHT20 2 for IEEE 802.11n-HT40/ac-VHT40 1 for IEEE 802.11ac-VHT80					
Antenna Type:	FPC Antenna				
Antenna Gain: (Provided by the customer)	5150 MHz to 5250 MHz: -1.83 dBi				
	5250 MHz to 5350 MHz: -1.85 dBi				
	5470 MHz to 5730 MHz: 0.95 dBi				
	5730 MHz to 5850 MHz: 1.11 dBi				
Maximum conducted output power (dBm):		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
	IEEE 802.11a:	16.31	16.17	16.5	13.42
	IEEE 802.11n-HT20:	15.77	15.89	16.02	12.99
	IEEE 802.11n-HT40:	15.81	15.72	16.33	12.93
	IEEE 802.11ac-VHT20	15.98	15.97	15.96	12.98
	IEEE 802.11ac-VHT40	15.78	15.69	16.77	12.92
	IEEE 802.11ac-VHT80	15.55	15.37	16.02	12.43
Maximum EIRP (dBm):		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
	IEEE 802.11a:	14.48	14.32	17.45	14.53
	IEEE 802.11n-HT20:	13.94	14.04	16.97	14.1
	IEEE 802.11n-HT40:	13.98	13.87	17.28	14.04
	IEEE 802.11ac-VHT20	14.15	14.12	16.91	14.09
	IEEE 802.11ac-VHT40	13.95	13.84	17.72	14.03
	IEEE 802.11ac-VHT80	13.72	13.52	16.97	13.54
Normal Test Voltage:	5Vdc				
Note: 1. The device (subject to RSS-247) shall not be capable of transmitting within the band 5600-5650 MHz					

1.4 OTHER INFORMATION

Operation Frequency Each of Channel				
	U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
IEEE 802.11a, IEEE 802.11n-HT20, IEEE 802.11ac-VHT20	$f = 5000 + 5k, k = 32 + 4n$			$f = 5000 + 5k,$ $k = 145 + 4n$
	$n = 1, \dots, 4$	$n = 5, \dots, 8$	$n = 17, \dots, 27$	$n = 1, \dots, 5$
IEEE 802.11n-HT40, IEEE 802.11ac-VHT40	$f = 5000 + 5k, k = 30 + 8n$			$f = 5000 + 5k,$ $k = 143 + 8n$
	$n = 1, 2$	$n = 1, \dots, 5$	$n = 9, \dots, 13$	$n = 1, 2$
IEEE 802.11ac-VHT80	$f = 5000 + 5k, k = 26 + 16n$			$f = 5000 + 5k,$ $k = 155$
	$n = 1$	$n = 1, 2$	$n = 5, 6$	
Note: f is the operating frequency (MHz); k is the operating channel.				

1.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.

1) Support Equipment

Description	Manufacturer	Model No.	Serial Number	FCC ID	Supplied by
Notebook	DELL	Latitude 3400	16238087894	N/A	UnionTrust
Mouse	DELL	MS111	CN-011D3V-738	N/A	UnionTrust
Wireless Home Router	SAGEMCOM	FAST5280	253703944	VW3FAST5280	UnionTrust
Key-Press Attenuator	Huaxin	KT2.5-90/1S-2S	UTTL-EN023	N/A	UnionTrust
4 Way Divider	WOKEN	0120A040560002D	UTTL-EN028	N/A	UnionTrust

2) Support Cable

Cable No.	Description	Connector	Length	Supplied by
1	Antenna Cable	SMA	0.1Meter	Applicant

1.6 TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Telephone: +86 (0) 755 2823 0888

Fax: +86 (0) 755 2823 0886

1.7 TEST FACILITY

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L9069

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

A2LA-Lab Certificate No.: 4312.01

Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

ISED Wireless Device Testing Laboratories

CAB identifier: CN0032

FCC Accredited Lab.

Designation Number: CN1194

Test Firm Registration Number: 259480

1.8 DEVIATION FROM STANDARDS

None.

1.9 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.10 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

1.11 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Measurement Uncertainty
1	Conducted emission 9kHz-150kHz	±3.2 dB
2	Conducted emission 150kHz-30MHz	±2.7 dB
3	Radiated emission 9kHz-30MHz	± 4.7 dB
4	Radiated emission 30MHz-1GHz	± 4.9 dB
5	Radiated emission 1GHz-18GHz	± 4.8 dB
6	Radiated emission 18GHz-26GHz	± 5.1 dB
7	Radiated emission 26GHz-40GHz	± 5.1 dB
8	Conducted spurious emissions	± 2.7 dB
9	RF Power, Conducted	± 0.68 dB
10	Occupied Bandwidth	± 1.86 %
11	Radio Frequency	5.6 GHz: ± 6.4 × 10 ⁻⁸
12	Transmission Time	± 0.19 %

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

2. TEST SUMMARY

FCC 47 CFR Part 15 Subpart E Test Cases			
Test Item	Test Requirement	Test Method	Result
Antenna Requirement	FCC 47 CFR Part 15 Subpart C Section 15.203 FCC 47 CFR Part 15 Subpart E Section 15.407(a)(1) (2) RSS-Gen Issue 5, Section 6.8	N/A	PASS
26 dB emission bandwidth	FCC 47 CFR Part 15 Subpart E Section 15.407 (a)(2)(5) RSS-247 Issue 4 Section 7.3.1.3	KDB 789033 D02 v02r01 Section C.1	PASS
6 dB bandwidth	FCC 47 CFR Part 15 Subpart E Section 15.407 (e) RSS-247 Issue 4 Section 7.3.4.2/ 7.3.5.2	KDB 789033 D02 v02r01 Section C.2	PASS
Occupied Bandwidth	RSS-Gen Issue 5, Section 6.7	RSS-Gen Issue 5, section 6.7	PASS
Maximum conducted output power	FCC 47 CFR Part 15 Subpart E Section 15.407 (a)(1)(2)(3) RSS-247 Issue 4 Section 7.3.1.2/ 7.3.2.2/ 7.3.3.2/ 7.3.4.3/ 7.3.5.3	KDB 789033 D02 v02r01 Section E.3.a (Method PM)	PASS
Peak Power Spectral Density	FCC 47 CFR Part 15 Subpart E Section 15.407 (a)(1)(2)(3) RSS-247 Issue 4 Section 7.3.1.2/ 7.3.2.2/ 7.3.3.2/ 7.3.4.3/ 7.3.5.3	KDB 789033 D02 v02r01 Section F	PASS
Radiated Emissions and Band Edge Measurement	FCC 47 CFR Part 15 Subpart E Section 15.407 (b)(1)(2)(3)(4)(6) FCC 47 CFR Part 15 Subpart C Section 15.209/205 RSS-247 Issue 4 Section 7.3.1.3/ 7.3.2.3/ 7.3.3.3/ 7.3.4.4/ 7.3.5.4	KDB 789033 D02 v02r01 Section G.3, G.4, G.5, and G.6	PASS
Dynamic Frequency Selection	FCC 47 CFR Part 15 Subpart E Section 15.407 (h) RSS-247 Issue 4 Section 7.3.6	KDB 905462 D03 Client Without DFS New Rules v01r02	PASS
AC Power Line Conducted Emission	FCC 47 CFR Part 15 Subpart E Section 15.407 (b)(6) FCC 47 CFR Part 15 Subpart C Section 15.207 RSS-Gen Issue 5, Section 8.8	ANSI C63.10-2020, Section 6.2.	PASS
Note: 1) N/A: In this whole report not applicable.			
Disclaimer and Explanations: The declared of product specification and data (e.g. antenna gain, RF specification, etc) for EUT presented in the report are provided by the customer, and the customer takes all the responsibilities for the accuracy of product specification.			

For Dynamic Frequency Selection

Test Case	Result
Channel Availability Check Time	N/A ¹
U-NII Detection Bandwidth	N/A ¹
Channel Closing Transmission Time	PASS
Channel Move Time	PASS
DFS Detection Threshold	N/A ¹

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

Non- Occupancy Period	N/A ¹
Note: 1) The EUT is slave, NA In this whole report not applicable.	

3. EQUIPMENT LIST

Radiated Emission Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
☒	3m SAC	ETS-LINDGREN	3m	Euroshiedpn-CT001270-1317	11-Nov-2023	10-Nov-2026
☒	Receiver	R&S	ESIB26	100114	25-Oct-2024 24-Oct-2025	24-Oct-2025 23-Oct-2026
☒	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	28-Mar-2025	27-Mar-2026
☒	Loop Antenna	ETS-LINDGREN	6502	00202525	28-Oct-2024 26-Oct-2025	27-Oct-2025 25-Oct-2026
☒	Broadband Antenna	ETS-LINDGREN	3142E	00201566	29-Oct-2024 26-Oct-2025	28-Oct-2025 25-Oct-2026
☒	6dB Attenuator	Talent	RA6A5-N-18	18103001	29-Oct-2024 24-Oct-2025	28-Oct-2025 23-Oct-2026
☒	Preamplifier	HP	8447F	2805A02960	25-Oct-2024 24-Oct-2025	24-Oct-2025 23-Oct-2026
☒	Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201541	29-Mar-2025	28-Mar-2026
☒	Pre-amplifier	ETS-Lindgren	00118385	00201874	29-Mar-2025	28-Mar-2026
☒	Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	28-Oct-2024 24-Oct-2025	27-Oct-2025 23-Oct-2026
☒	Pre-amplifier	ETS-Lindgren	00118384	00202652	28-Oct-2024 24-Oct-2025	27-Oct-2025 23-Oct-2026
☒	Band Rejection Filter (2400MHz~2500MHz)	Micro-Tronics	BRM50702	G590	21-Feb-2025	20-Feb-2026
☒	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
☒	Test Software	Audix	e3	Software Version: 9.160323		

Conducted Emission Test						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
☒	LISN	ETS-Lindgren	3816/2SH	00201088	25-Oct-2024 24-Oct-2025	24-Oct-2025 23-Oct-2026
☒	LISN	R&S	ENV216	3560.6550.12	26-Sep-2025	25-Sep-2026
☒	Receiver	R&S	ESCI3	1166.5950.03	25-Oct-2024 24-Oct-2025	24-Oct-2025 23-Oct-2026
☒	Shielding room	ETS-Lindgren	843	Euroshiedpn-CT001270-1246	5-Nov-2021 25-Oct-2024	4-Nov-2024 24-Oct-2027
☒	Test Software	EZ-EMC	EZ-CON	Software Version: EMC-CON 3A1.1		

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

Conducted RF test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
☒	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	28-Mar-2025	27-Mar-2026
☒	USB Wideband Power Sensor	KEYSIGHT	U2021XA	MY55430035	25-Oct-2024	24-Oct-2025
					24-Oct-2025	23-Oct-2026
☐	MXG X-Series RF Vector Signal Generator	KEYSIGHT	N5182B	MY51350267	25-Oct-2024	24-Oct-2025
					24-Oct-2025	23-Oct-2026

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

4. TEST CONFIGURATION

4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

4.1.1 Normal or Extreme Test Conditions

Environment Parameter	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage (V)	Relative Humidity (%)
NT/NV	+15 to +35	5	20 to 75
Remark: 1) NV: Normal Voltage; NT: Normal Temperature			

4.1.2 Record of Normal Environment and Test Sample

Test Item	Temperature (°C)	Relative Humidity (%)	Pressure (kPa)	Sample No.	Tested by
26 dB emission bandwidth	24.1	49.7	100.2	S202510147006-ZJA04/6	David Du
6 dB bandwidth					
Occupied Bandwidth					
Maximum conducted output power					
Peak Power Spectral Density					
Dynamic Frequency Selection	23.4	57.6	100.5	S202510147006-ZJA03/6	Leo Li
Radiated Emissions and Band Edge Measurement					
AC Power Line Conducted Emission	22.8	57.6	100.2	S202510147006-ZJA01/6	Fire Huo

4.2 TEST CHANNELS

Mode	Tx/Rx Frequency	Test RF Channel Lists		
		Lowest(L)	Middle(M)	Highest(H)
IEEE 802.11a IEEE 802.11n-HT20 IEEE 802.11ac-VHT20	5150 MHz to 5250 MHz	Channel 36	Channel 44	Channel 48
		5180 MHz	5220 MHz	5240 MHz
	5250 MHz to 5350 MHz	Channel 52	Channel 60	Channel 64
		5260 MHz	5300 MHz	5320 MHz
	5470 MHz to 5725 MHz	Channel 100	Channel 116	Channel 140
		5500 MHz	5580 MHz	5700 MHz
IEEE 802.11n-HT40 IEEE 802.11ac-VHT40	5150 MHz to 5250 MHz	Channel 149	Channel 157	Channel 165
		5745 MHz	5785 MHz	5825 MHz
	5250 MHz to 5350 MHz	Channel 38	--	Channel 46
		5190 MHz	--	5230 MHz
	5470 MHz to 5725 MHz	Channel 54	--	Channel 62
		5270 MHz	--	5310 MHz
IEEE 802.11ac-VHT80	5150 MHz to 5250 MHz	Channel 102	Channel 110	Channel 134
		5510 MHz	5550 MHz	5670 MHz
	5250 MHz to 5350 MHz	Channel 151	--	Channel 159
		5755 MHz	--	5795 MHz
	5470 MHz to 5725 MHz	--	Channel 42	--
		--	5210 MHz	--
IEEE 802.11ac-VHT80	5150 MHz to 5250 MHz	--	Channel 58	--
		--	5290 MHz	--
	5250 MHz to 5350 MHz	Channel 106	--	--
		5530 MHz	--	--
	5470 MHz to 5725 MHz	--	Channel 155	--
		--	5775 MHz	--

4.3 EUT TEST STATUS

Mode	Tx/Rx Function	Description
IEEE 802.11a/n/ac	1Tx/1Rx	1. Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.

Power Setting				
	U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
IEEE 802.11a	14	14	16	12
IEEE 802.11n-HT20	14	14	16	12
IEEE 802.11n-HT40	14	14	16	12
IEEE 802.11ac-VHT20	14	14	16	12
IEEE 802.11ac-VHT40	14	14	17	12
IEEE 802.11ac-VHT80	14	14	17	12

Test Software
Test software name: SecureCRT

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

4.4 PRE-SCAN

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and data rate. Following data rate was (were) selected for the final test as listed below

Mode	Worst-case data rates
IEEE 802.11a	6 Mbps
IEEE 802.11n-HT20	MCS0
IEEE 802.11n-HT40	MCS0
IEEE 802.11ac-VHT20	MCS0
IEEE 802.11ac-VHT40	MCS0
IEEE 802.11ac-VHT80	MCS0

4.5 TEST SETUP

4.5.1 For Radiated Emissions test setup

Figure 1. Below 30MHz

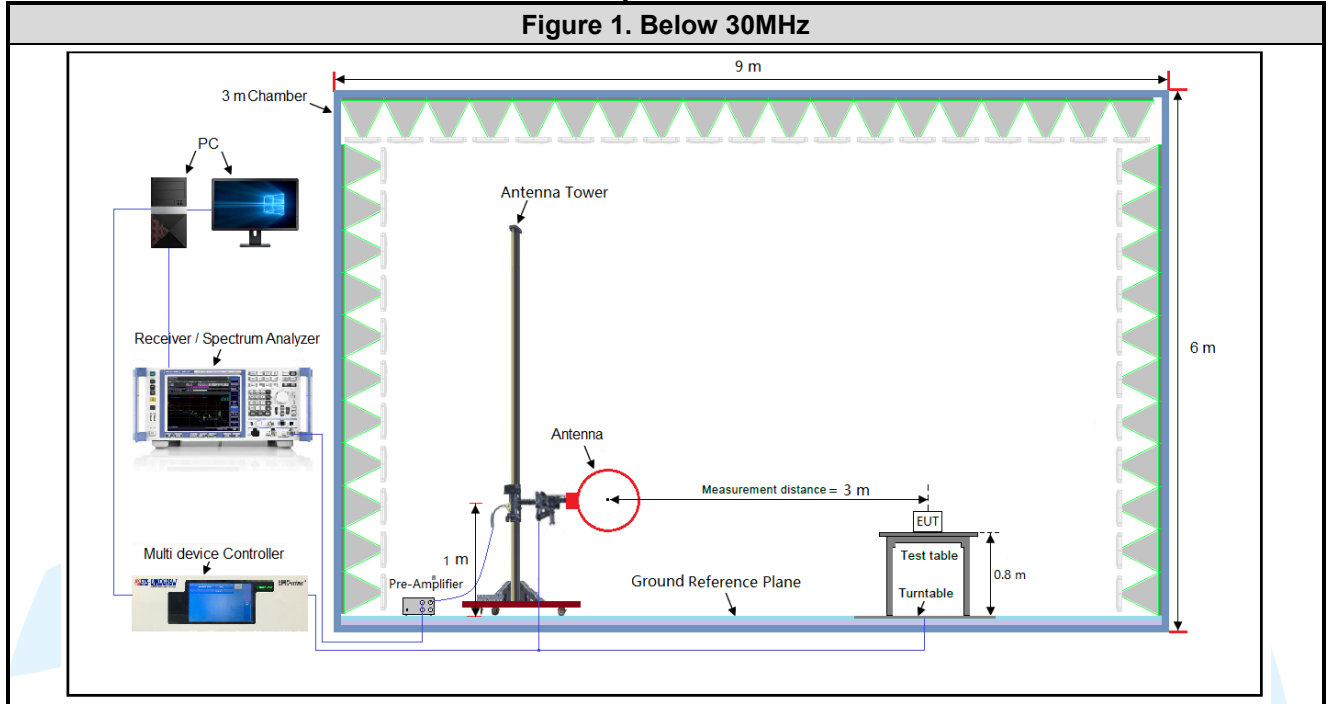
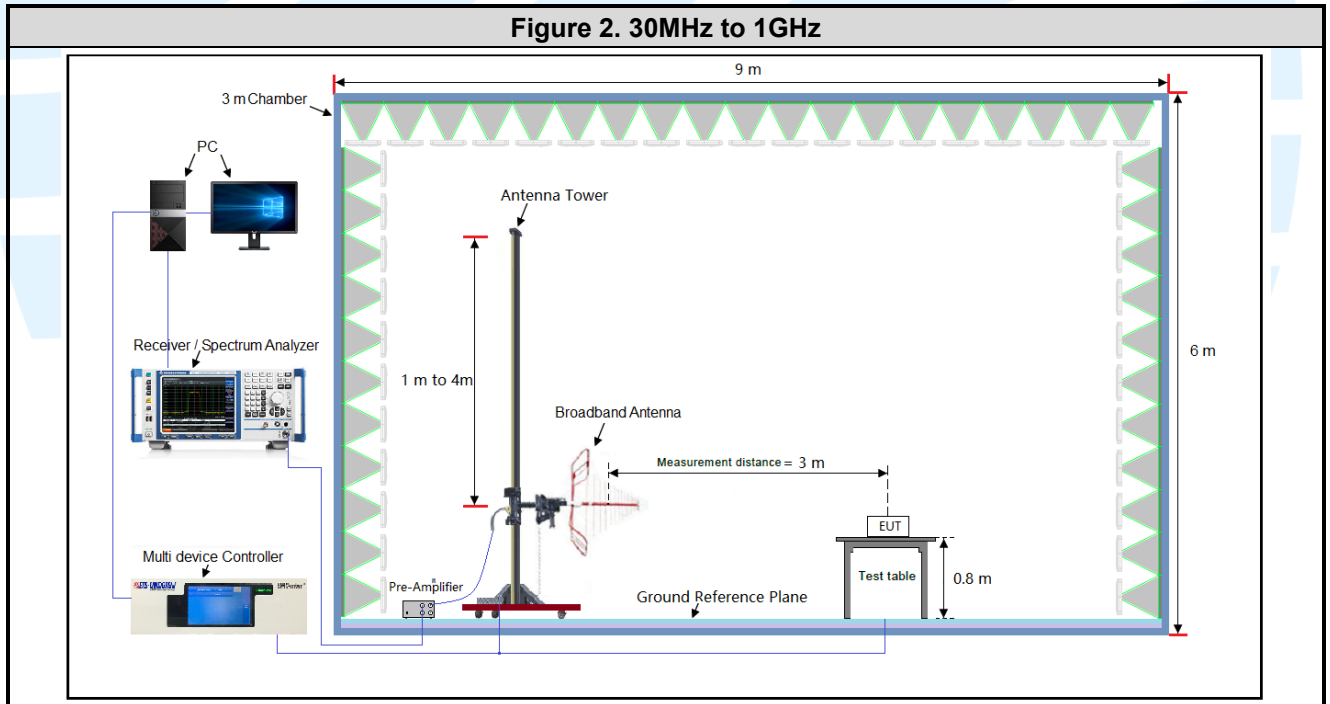
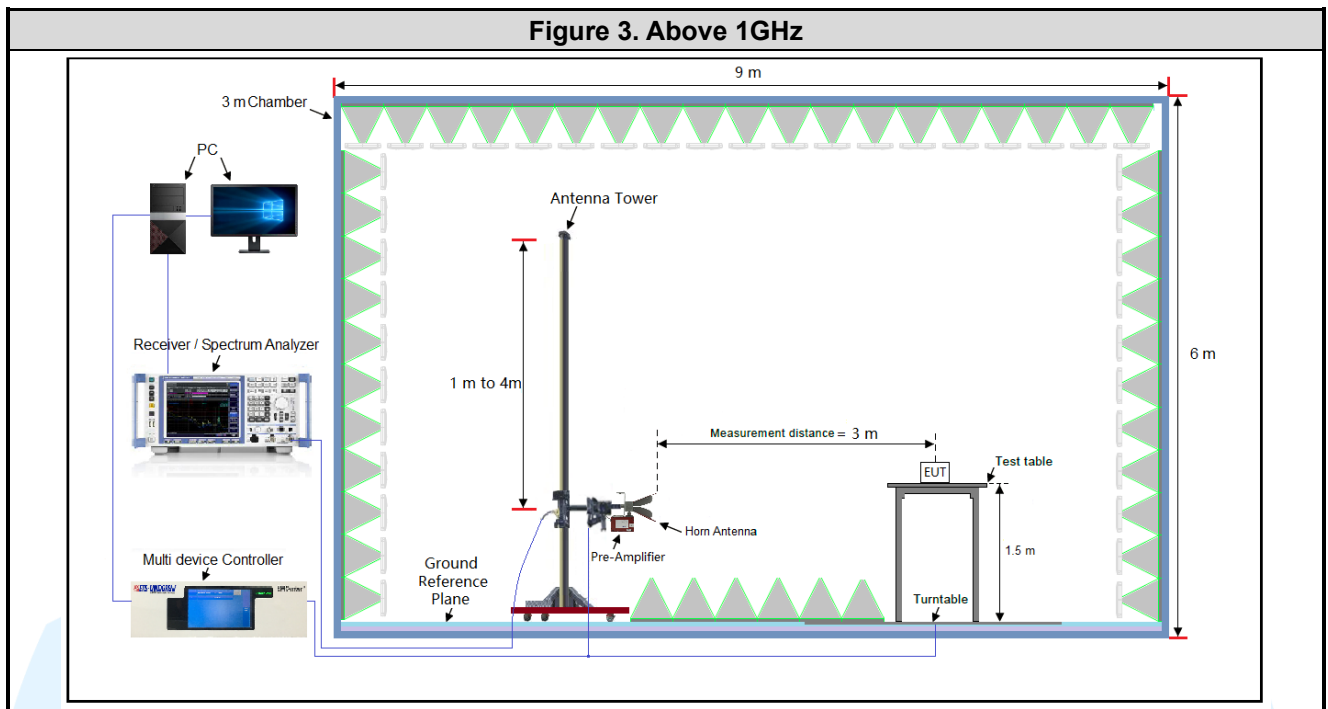
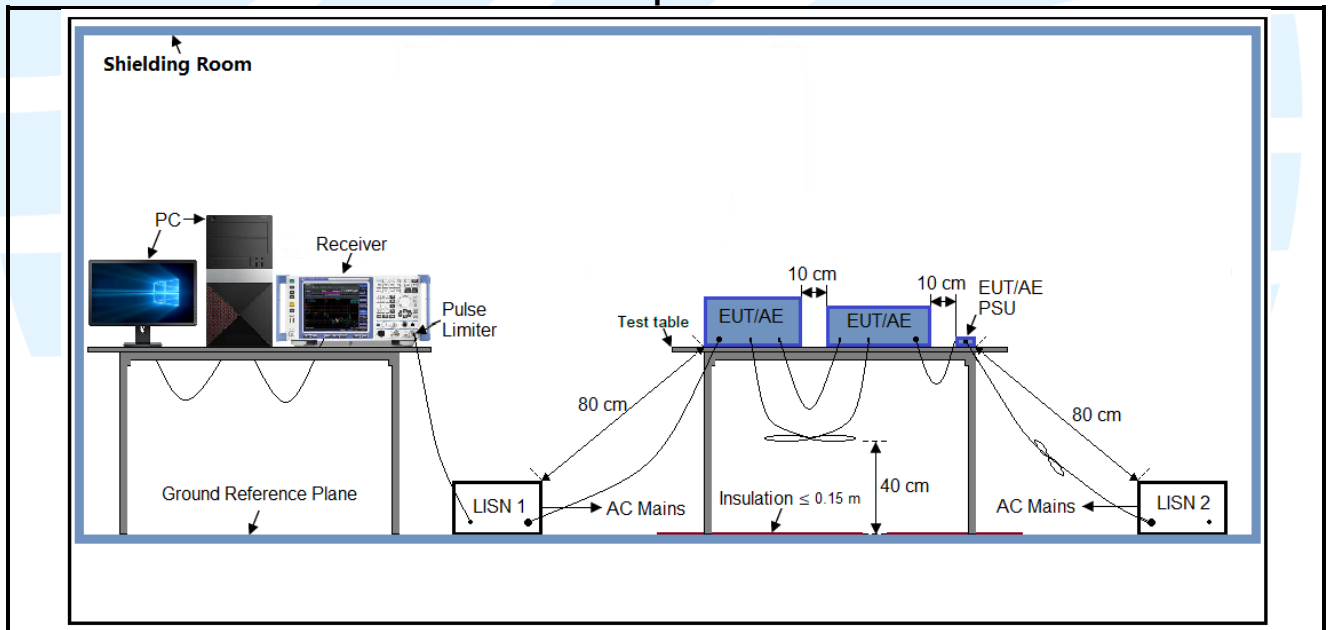


Figure 2. 30MHz to 1GHz

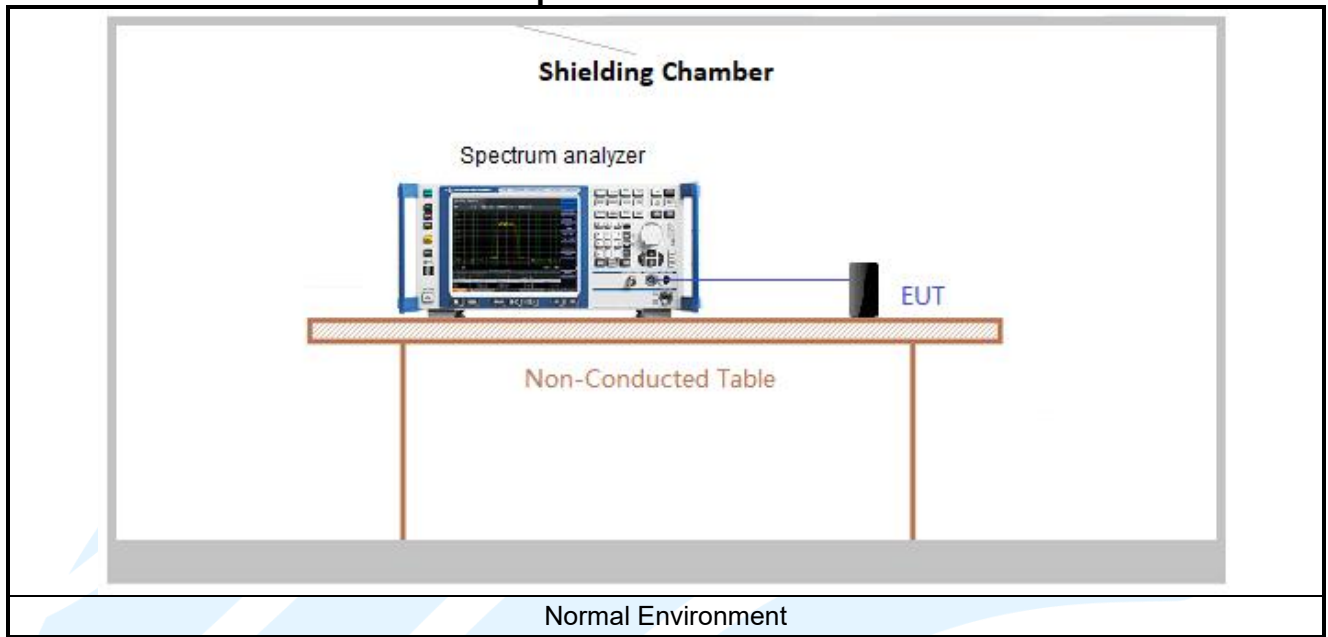




4.5.2 For Conducted Emissions test setup



4.5.3 For Conducted RF test setup



4.6 SYSTEM TEST CONFIGURATION

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, radiated emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario. Only the worst case data were recorded in this test report.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. Therefore, all final radiated testing was performed with the EUT in (see table below) orientation.

Frequency	Mode	Antenna Port	Worst-case axis positioning
Above 1GHz	1TX	Chain 0	Y axis

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

4.7 DUTY CYCLE

Test Procedure: ANSI C63.10-2020 Clause 12.2.

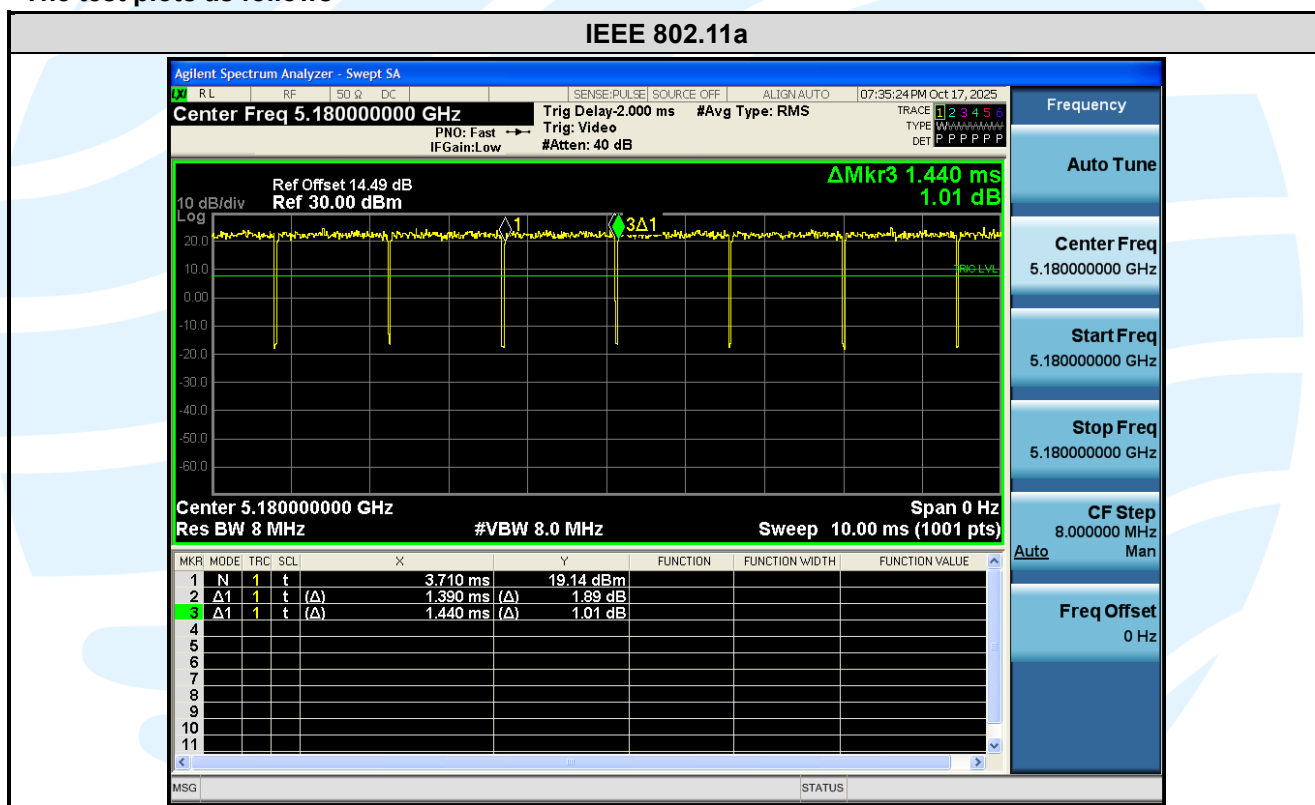
Test Results

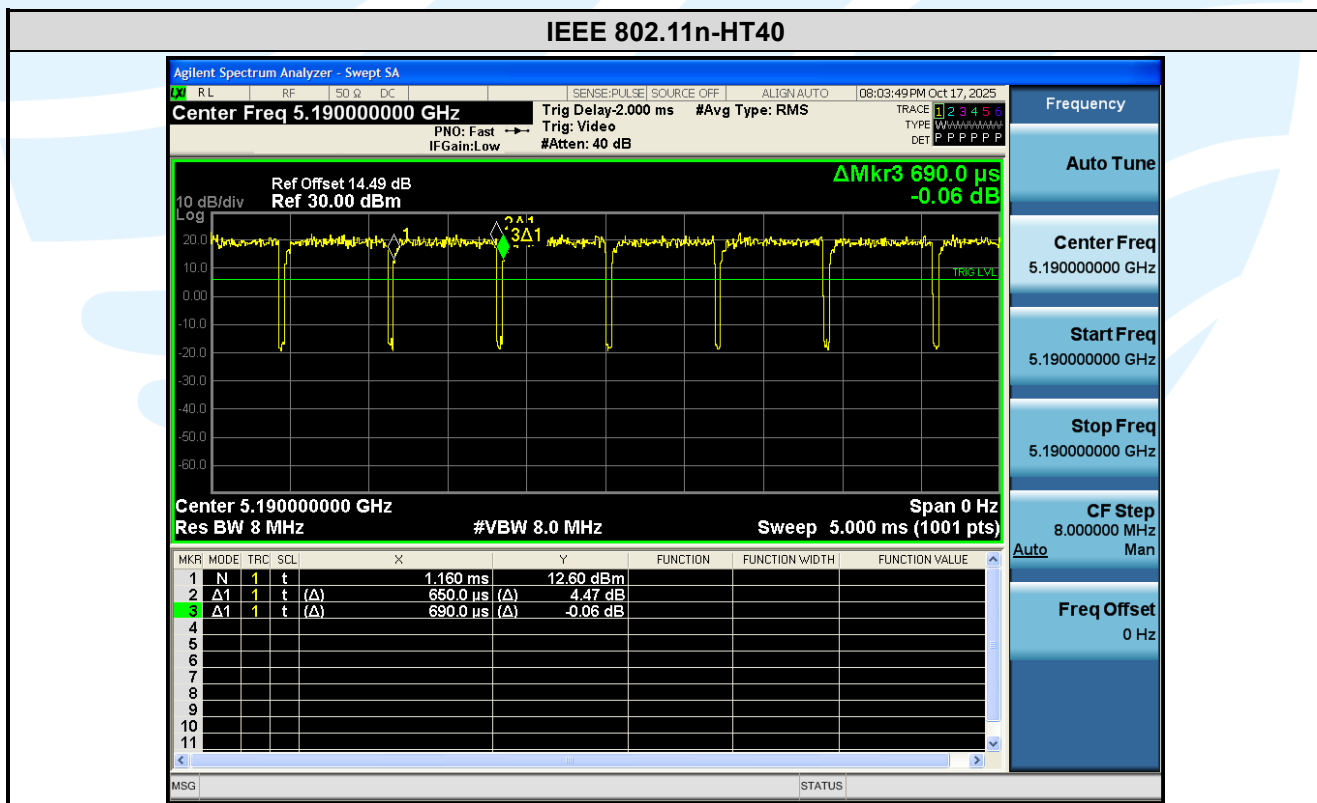
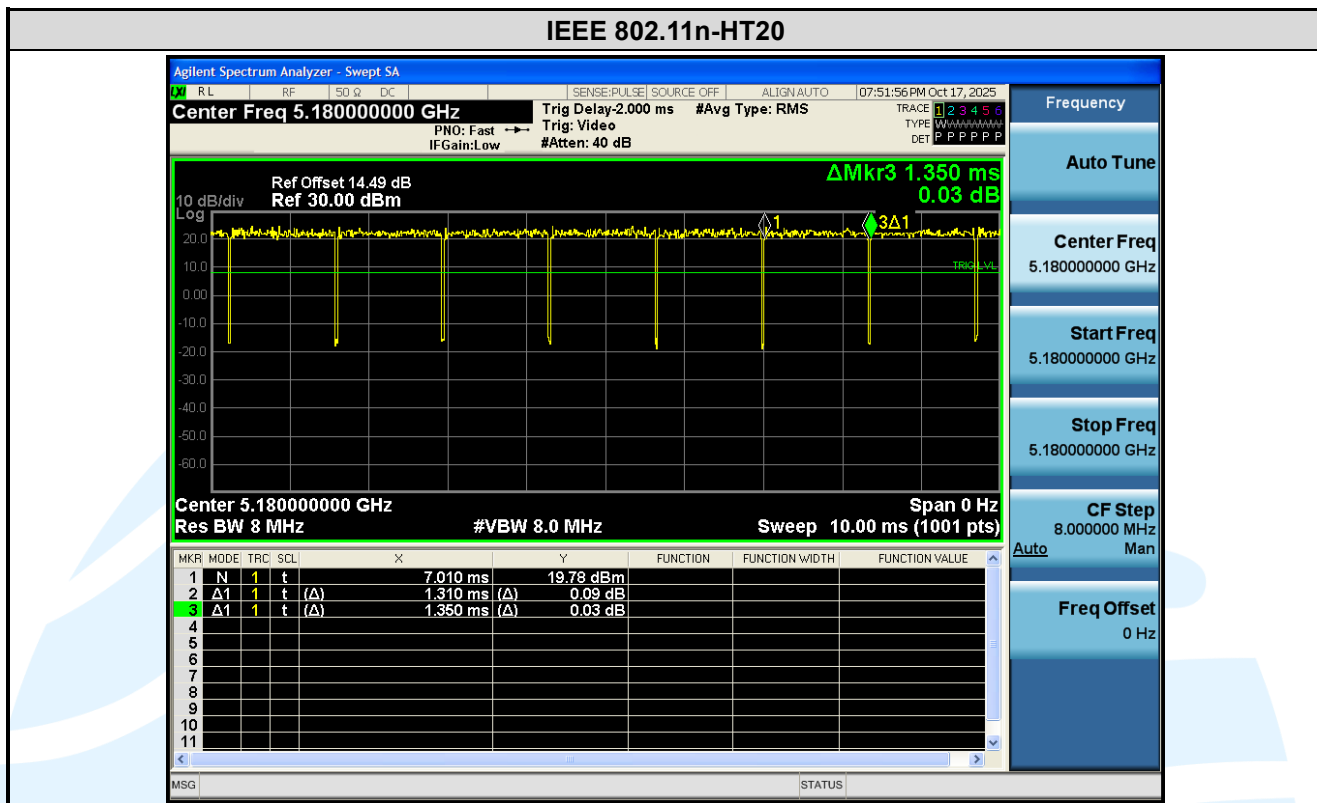
Mode	Data Rates	On Time (msec)	Period (msec)	Duty Cycle (linear)	Duty Cycle (%)	Duty Cycle Factor (dB)	1/T Minimum VBW (kHz)
IEEE 802.11a	6 Mbps	1.39	1.44	0.97	96.53	0.15	0.72
IEEE 802.11n-HT20	MCS 0	1.31	1.35	0.97	97.04	0.13	0.76
IEEE 802.11n-HT40	MCS 0	0.65	0.69	0.94	94.20	0.26	1.54
IEEE 802.11ac-VHT20	MCS 0	1.31	1.36	0.96	96.32	0.16	0.76
IEEE 802.11ac-VHT40	MCS 0	0.65	0.69	0.94	94.20	0.26	1.54
IEEE 802.11ac-VHT80	MCS 0	0.32	0.36	0.89	88.89	0.51	3.13

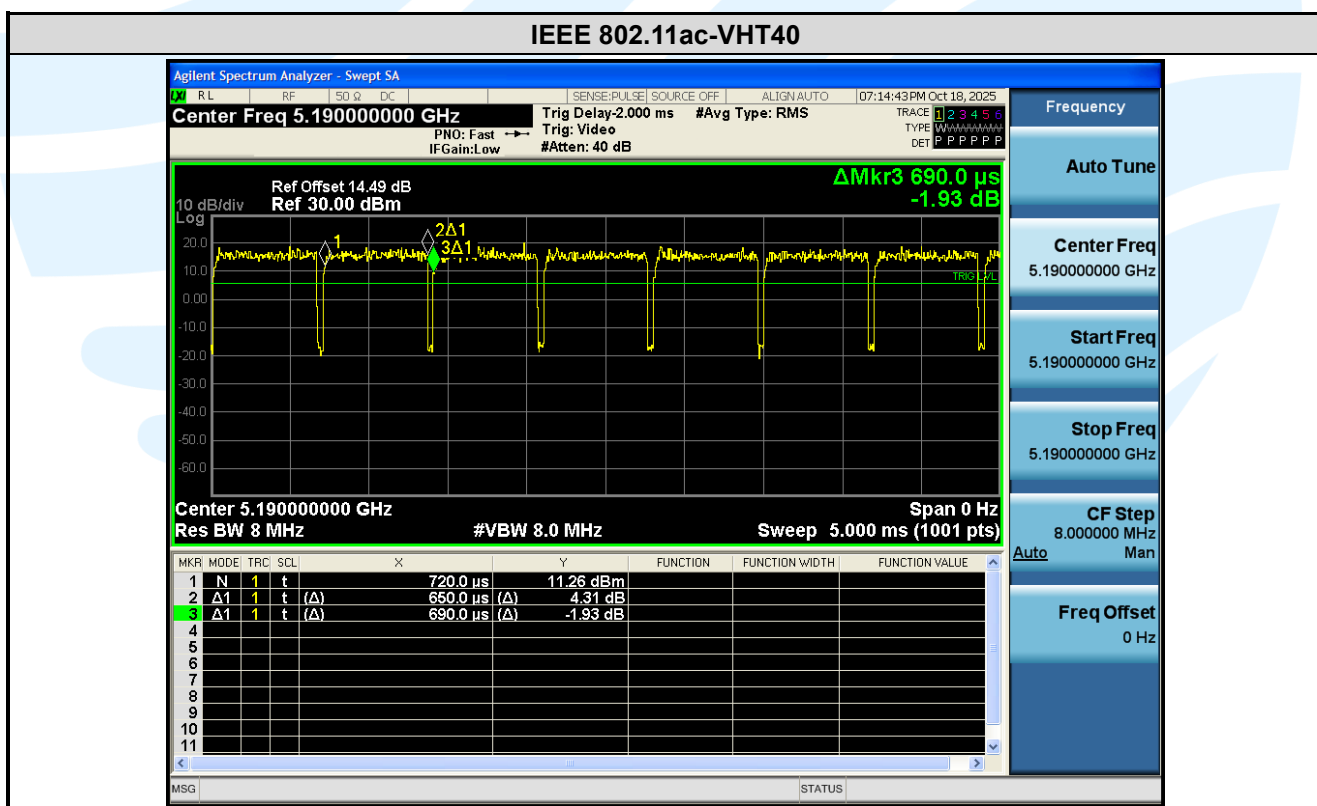
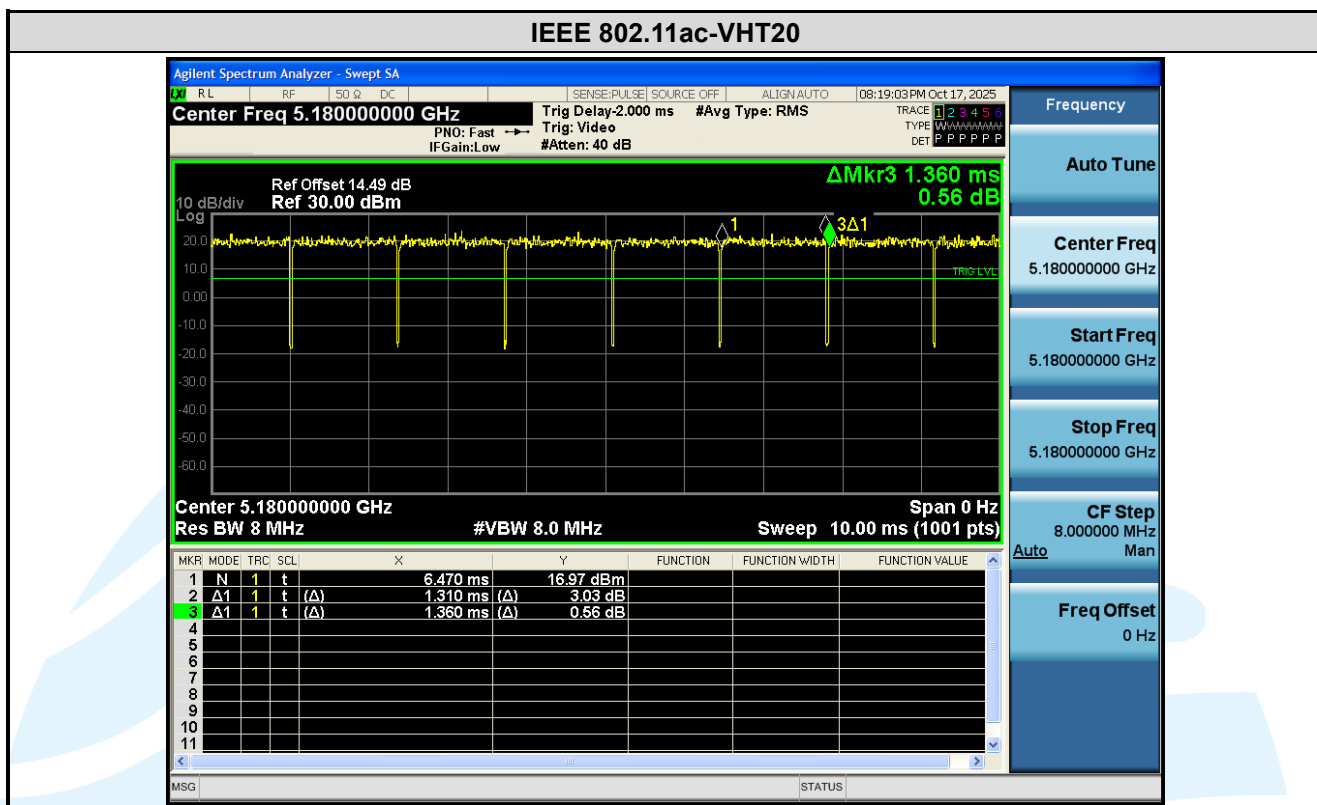
Remark:

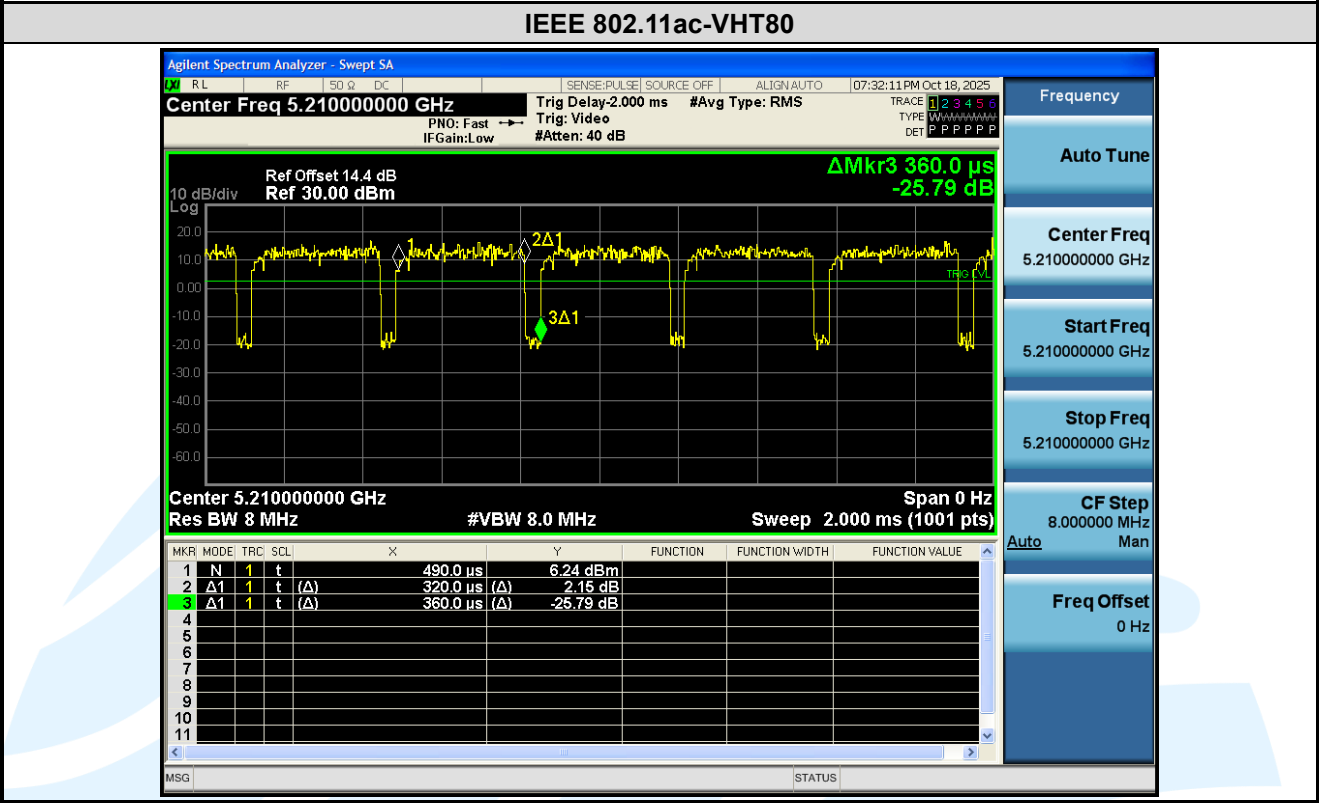
- 1) Duty cycle= On Time/ Period;
- 2) Duty Cycle factor = $10 * \log(1/\text{Duty cycle})$;
- 3) Average factor = $20 \log_{10} \text{Duty Cycle}$.

The test plots as follows









5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION

5.1 REFERENCE DOCUMENTS FOR TESTING

No.	Identity	Document Title
1	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations
2	FCC 47 CFR Part 15	Radio Frequency Devices
3	RSS-247 Issue 4	Digital Transmission Systems, Frequency Hopping Systems and Licence-Exempt Local Area Network Devices in 902-928 MHz, 2400-2483.5 MHz, 5150-5350 MHz, and 5470-5895 MHz bands
4	RSS-Gen Issue 5	General Requirements for Compliance of Radio Apparatus
5	ANSI C63.10-2020	American National Standard for Testing Unlicensed Wireless Devices
6	KDB 789033 D02 General UNII Test Procedures New Rules v02r01	Guidelines for compliance testing of unlicensed national information infrastructure (U-NII) device part 15, subpart E
7	KDB 905462 D06 802.11 Channel Plans New Rules v02	Operation in U-NII bands -802.11 channel PLAN(§15.407)
8	KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02	Compliance measurement procedures for Unlicensed –National Information Infrastructure devices operates in the frequency bands 5250 MHz to 5350 MHz and 5470 MHz to 5730 MHz bands incorporating dynamic frequency selection
9	KDB 905462 D03 Client Without DFS New Rules v01r02	U-NII client devices without radar detection capability

5.2 ANTENNA REQUIREMENT

Standard Requirement
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.407(a)(1) (2) requirement: The conducted output power limit specified in paragraph (a) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (a) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power and the peak power spectral density shall be reduced by the by the amount in dB that the directional gain of the antenna exceeds 6 dBi. RSS-Gen Issue 5, Section 6.8 requirement: According to RSS-Gen Issue 5, Section 6.8, a transmitter can only be sold or operated with antennas with which it was certified. A transmitter may be certified with multiple antenna types. An antenna type comprises antennas having similar in-band and out-of-band radiation patterns. EUT Antenna: Antenna in the interior of the equipment and no consideration of replacement. The max gain of the antenna is 1.11 dBi.

5.326 DB BANDWIDTH & 99% OCCUPIED BANDWIDTH

Test Requirement: FCC 47 CFR Part 15 Subpart E Section 15.407 (a)(2)(5)
RSS-247 Issue 4 Section 7.3.1.3
Test Method: KDB 789033 D02 v02r01 Section C.1
Limit: None; for reporting purposes only.
Test Procedure:

The output from the transmitter was connected to an attenuator and then to the input of the RF Spectrum analyzer.

Spectrum analyzer according to the following Settings:

- a) Set RBW = approximately 1 % to 5% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1 % to 5%.

The automatic bandwidth measurement capability of a spectrum analyzer or an EMI receiver may be employed if it implements the functionality described in the preceding items.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.5.3 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Test Results: Please refer to Appendix A

5.46 DB BANDWIDTH & OCCUPIED BANDWIDTH

Test Requirement: FCC 47 CFR Part 15 Subpart E Section 15.407 (e)
RSS-247 Issue 4 Section 7.3.4.2/ 7.3.5.2
RSS-Gen Issue 5, Section 6.7

Test Method: KDB 789033 D02 v02r01 Section C.2

Limit: All devices shall have a 6 dB bandwidth of at least 500 kHz.

Test Procedure:

The output from the transmitter was connected to an attenuator and then to the input of the RF Spectrum Analyzer.

Spectrum analyzer according to the following Settings:

6dB Bandwidth

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) $\geq 3 * \text{RBW}$.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Occupied Bandwidth

- a) Set center frequency to the nominal EUT channel center frequency.
- b) Set span = 1.5 times to 5.0 times the OBW.
- c) Set RBW = 1% to 5% of the OBW
- d) Set VBW $\geq 3 \times \text{RBW}$
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- f) Use the 99% power bandwidth function of the instrument (if available).
- g) If the instrument does not have a 99% power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.5.3 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Transmitter mode

Test Results: Please refer to Appendix A

5.5 MAXIMUM CONDUCTED OUTPUT POWER OR E.I.R.P

Test Requirement: FCC 47 CFR Part 15 Subpart E Section 15.407 (a)(1)(2)(3)
RSS-247 Issue 4 Section 7.3.1.2/ 7.3.2.2/ 7.3.3.2/ 7.3.4.3/ 7.3.5.3

Test Method: KDB 789033 D02 v02r01 Section E.3.a (Method PM)

Limits: FCC 47 CFR Part 15 Subpart E

1. For the band 5.15-5.25 GHz.
 - (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
 - (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
 - (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
 - (iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
2. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
3. For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Limits: RSS-247 Issue 4

1. Frequency band 5150-5250 MHz

For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or $1.76 + 10 \log_{10} B$, dBm, whichever is less. Devices shall implement transmitter power control (TPC) in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.

For other devices, the maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

2. Frequency band 5250-5350 MHz

For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or $1.76 + 10 \log_{10} B$, dBm, whichever is less. Devices shall implement TPC in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.

Devices, other than devices installed in vehicles, shall comply with the following:

- a) The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band;
- b) The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

Additional requirements

In addition to the above requirements, devices shall comply with the following, where applicable:

- a) Outdoor fixed devices with a maximum e.i.r.p. greater than 200 mW shall comply with the following e.i.r.p. at different elevations, where θ is the angle above the local horizontal plane (of the Earth) as shown below:

i. -13 dBW/MHz	for $0^\circ \leq \theta < 8^\circ$
ii. $-13 - 0.716 (\theta - 8)$ dBW/MHz	for $8^\circ \leq \theta < 40^\circ$
iii. $-35.9 - 1.22 (\theta - 40)$ dBW/MHz	for $40^\circ \leq \theta \leq 45^\circ$
iv. -42 dBW/MHz	for $\theta > 45^\circ$

The measurement procedure defined in Annex A of this document shall be used to verify the compliance to the e.i.r.p. at different elevations.

- b) Devices, other than outdoor fixed devices, having an e.i.r.p. greater than 200 mW shall comply with either i. or ii. below:
 - i. devices shall comply with the e.i.r.p. elevation mask in 6.2.2.3(a); or
 - ii. devices shall implement a method to permanently reduce their e.i.r.p. via a firmware feature in the event that the Department requires it. The test report must demonstrate how the device's power table can be updated to meet this firmware requirement. The manufacturer shall provide this firmware to update all systems automatically in compliance with the directions received from the Department.

3. Frequency bands 5470-5725 MHz

The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

4. Frequency band 5725-5850 MHz

The maximum conducted output power shall not exceed 1 W. The output power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point devices

operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed point-to-point operations exclude the use of point-to-multipoint³ systems, omnidirectional applications and multiple collocated transmitters transmitting the same information.

Test Procedure:

1. Connected the EUT's antenna port to measure device by 10dB attenuator.
2. Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of Tx on burst.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.5.3 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Transmitter mode

Test Results: Pass

Test Data:

Gain and the maximum output power limit.
RSS-247 Issue 4

Frequency Band	Antenna Gain (dBi)	Power Limits (dBm)
U-NII-1	-1.83	23.0
U-NII-2A	-1.85	24.0
U-NII-2C	0.95	24.0
U-NII-3	1.11	30.0

FCC 47 CFR Part 15 Subpart E

Frequency Band	Antenna Gain (dBi)	Power Limits (dBm)
U-NII-1	-1.83	24.0
U-NII-2A	-1.85	24.0
U-NII-2C	0.95	24.0
U-NII-3	1.11	30.0

Frequency band 5150-5250 MHz**RSS-247 Issue 4:**

For IEEE 802.11a, the minimum 99% emission bandwidth is 17.124MHz

$10 \text{ dBm} + 10\log_{10}(17.124) = 22.34 \text{ dBm} < 23 \text{ dBm}$

So the 22.34 dBm limit applicable

For IEEE 802.11n-HT20/ ac-VHT20, the minimum 99% emission bandwidth is 18.121 MHz

$10 \text{ dBm} + 10\log_{10}(18.121) = 22.58 \text{ dBm} < 23 \text{ dBm}$

So the 22.58 dBm limit applicable

For IEEE 802.11n-HT40/ ac-VHT40, the minimum 99% emission bandwidth is 36.357 MHz

$10 \text{ dBm} + 10\log_{10}(36.357) = 25.61 \text{ dBm} > 23 \text{ dBm}$

So the 23 dBm limit applicable

Frequency band 5250-5350 MHz**RSS-247 Issue 4:**

For IEEE 802.11 a, the minimum 99% emission bandwidth is 17.194 MHz

$11 \text{ dBm} + 10\log_{10}(17.194) = 23.35 \text{ dBm} < 24 \text{ dBm}$

So the 23.35 dBm limit applicable

For IEEE 802.11n-HT20/ ac-VHT20, the minimum 99% emission bandwidth is 18.156 MHz

$11 \text{ dBm} + 10\log_{10}(18.156) = 23.59 \text{ dBm} < 24 \text{ dBm}$

So the 23.59 dBm limit applicable

For IEEE 802.11 n-HT40/ac-VHT40, the minimum 99% emission bandwidth is 36.357 MHz

$11 \text{ dBm} + 10\log_{10}(36.357) = 26.61 \text{ dBm} > 24 \text{ dBm}$

So the 24 dBm limit applicable

EIRP:

For IEEE 802.11 a/n-HT20/ac-VHT20, the minimum 99% emission bandwidth is 17.194 MHz

$17 \text{ dBm} + 10\log_{10}(17.194) = 29.35 \text{ dBm}$

$29.35 \text{ dBm} > 27 \text{ dBm}$

So the 27 dBm limit applicable

For IEEE 802.11 n-HT40/ac-VHT40, the minimum 99% emission bandwidth is 36.357 MHz

$17 \text{ dBm} + 10\log_{10}(36.357) = 32.61 \text{ dBm} > 27 \text{ dBm}$

So the 27 dBm limit applicable

FCC 47 CFR Part 15 Subpart E:

For IEEE 802.11 a/n/ac, the minimum 26 dB emission bandwidth is 20.60 MHz

$11 \text{ dBm} + 10\log_{10}(20.60) = 24.13 \text{ dBm} > 24 \text{ dBm}$

So the 24 dBm limit applicable

Frequency bands 5470-5730 MHz**RSS-247 Issue 4:**

For IEEE 802.11 a, the minimum 99% emission bandwidth is 17.407 MHz

$11 \text{ dBm} + 10\log_{10}(17.407) = 23.41 \text{ dBm} < 24 \text{ dBm}$

So the 23.41 dBm limit applicable

For IEEE 802.11n-HT20/ac-VHT20, the minimum 99% emission bandwidth is 18.362 MHz

$11 \text{ dBm} + 10\log_{10}(18.362) = 23.64 \text{ dBm} < 24 \text{ dBm}$

So the 23.64 dBm limit applicable

For IEEE 802.11 n-HT40/ac-VHT40, the minimum 99% emission bandwidth is 36.542 MHz

$11 \text{ dBm} + 10\log_{10}(36.542) = 26.63 \text{ dBm} > 24 \text{ dBm}$

So the 24 dBm limit applicable

EIRP:

For IEEE 802.11 a/n-HT20/ac-VHT20, the minimum 99% emission bandwidth is 17.407 MHz
 $17 \text{ dBm} + 10\log_{10}(17.407) = 29.41 \text{ dBm}$
 $29.52 \text{ dBm} > 27 \text{ dBm}$
 So the 27 dBm limit applicable

For IEEE 802.11 n-HT40/ac-VHT40, the minimum 99% emission bandwidth is 36.542 MHz
 $17 \text{ dBm} + 10\log_{10}(36.542) = 32.63 \text{ dBm} > 27 \text{ dBm}$
 So the 27 dBm limit applicable

FCC 47 CFR Part 15 Subpart E:

For IEEE 802.11 a/n/ac, the minimum 26 dB emission bandwidth is 21.11 MHz
 $11 \text{ dBm} + 10\log_{10}(21.11) = 24.24 \text{ dBm} > 24 \text{ dBm}$
 So the 24 dBm limit applicable

Test Mode	Antenna	Freq(MHz)	Result [dBm]	FCC Limit [dBm]	ISED Limit [dBm]	Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Verdict
11A	Ant1	5180	16.31	24	--	-1.83	14.48	22.34	PASS
11A	Ant1	5200	16.23	24	--	-1.83	14.40	22.34	PASS
11A	Ant1	5240	16.13	24	--	-1.83	14.30	22.34	PASS
11A	Ant1	5260	16.17	24	23.35	-1.85	14.32	27	PASS
11A	Ant1	5280	16.09	24	23.35	-1.85	14.24	27	PASS
11A	Ant1	5320	15.98	24	23.35	-1.85	14.13	27	PASS
11A	Ant1	5500	16.50	24	23.41	0.95	17.45	27	PASS
11A	Ant1	5600	16.28	24	23.41	0.95	17.23	27	PASS
11A	Ant1	5700	16.05	24	23.41	0.95	17.00	27	PASS
11A	Ant1	5745	13.42	30	30	1.11	14.53	--	PASS
11A	Ant1	5785	12.77	30	30	1.11	13.88	--	PASS
11A	Ant1	5825	13.10	30	30	1.11	14.21	--	PASS
11N20SISO	Ant1	5180	15.76	24	--	-1.83	13.93	22.58	PASS
11N20SISO	Ant1	5200	15.77	24	--	-1.83	13.94	22.58	PASS
11N20SISO	Ant1	5240	15.72	24	--	-1.83	13.89	22.58	PASS
11N20SISO	Ant1	5260	15.58	24	23.59	-1.85	13.73	27	PASS
11N20SISO	Ant1	5280	15.89	24	23.59	-1.85	14.04	27	PASS
11N20SISO	Ant1	5320	15.38	24	23.59	-1.85	13.53	27	PASS
11N20SISO	Ant1	5500	16.02	24	23.64	0.95	16.97	27	PASS
11N20SISO	Ant1	5600	15.74	24	23.64	0.95	16.69	27	PASS
11N20SISO	Ant1	5700	15.74	24	23.64	0.95	16.69	27	PASS
11N20SISO	Ant1	5745	12.99	30	30	1.11	14.10	--	PASS
11N20SISO	Ant1	5785	12.54	30	30	1.11	13.65	--	PASS
11N20SISO	Ant1	5825	12.82	30	30	1.11	13.93	--	PASS
11N40SISO	Ant1	5190	15.81	24	--	-1.83	13.98	23	PASS
11N40SISO	Ant1	5230	15.80	24	--	-1.83	13.97	23	PASS
11N40SISO	Ant1	5270	15.72	24	24	-1.85	13.87	27	PASS
11N40SISO	Ant1	5310	15.52	24	24	-1.85	13.67	27	PASS
11N40SISO	Ant1	5510	16.33	24	24	0.95	17.28	27	PASS
11N40SISO	Ant1	5550	16.15	24	24	0.95	17.10	27	PASS
11N40SISO	Ant1	5670	15.57	24	24	0.95	16.52	27	PASS
11N40SISO	Ant1	5755	12.93	30	30	1.11	14.04	--	PASS
11N40SISO	Ant1	5795	12.48	30	30	1.11	13.59	--	PASS
11AC20SISO	Ant1	5180	15.82	24	--	-1.83	13.99	22.58	PASS
11AC20SISO	Ant1	5200	15.98	24	--	-1.83	14.15	22.58	PASS
11AC20SISO	Ant1	5240	15.84	24	--	-1.83	14.01	22.58	PASS
11AC20SISO	Ant1	5260	15.97	24	23.59	-1.85	14.12	27	PASS
11AC20SISO	Ant1	5280	15.89	24	23.59	-1.85	14.04	27	PASS
11AC20SISO	Ant1	5320	15.43	24	23.59	-1.85	13.58	27	PASS
11AC20SISO	Ant1	5500	15.96	24	23.64	0.95	16.91	27	PASS
11AC20SISO	Ant1	5600	15.86	24	23.64	0.95	16.81	27	PASS
11AC20SISO	Ant1	5700	15.79	24	23.64	0.95	16.74	27	PASS

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

11AC20SISO	Ant1	5745	12.98	30	30	1.11	14.09	--	PASS
11AC20SISO	Ant1	5785	12.62	30	30	1.11	13.73	--	PASS
11AC20SISO	Ant1	5825	12.65	30	30	1.11	13.76	--	PASS
11AC40SISO	Ant1	5190	15.70	24	--	-1.83	13.87	23	PASS
11AC40SISO	Ant1	5230	15.78	24	--	-1.83	13.95	23	PASS
11AC40SISO	Ant1	5270	15.69	24	24	-1.85	13.84	23	PASS
11AC40SISO	Ant1	5310	15.51	24	24	-1.85	13.66	27	PASS
11AC40SISO	Ant1	5510	16.30	24	24	0.95	17.25	27	PASS
11AC40SISO	Ant1	5550	16.19	24	24	0.95	17.14	27	PASS
11AC40SISO	Ant1	5670	16.77	24	24	0.95	17.72	27	PASS
11AC40SISO	Ant1	5755	12.92	30	30	1.11	14.03	--	PASS
11AC40SISO	Ant1	5795	12.52	30	30	1.11	13.63	--	PASS
11AC80SISO	Ant1	5210	15.55	24	--	-1.83	13.72	23	PASS
11AC80SISO	Ant1	5290	15.37	24	24	-1.85	13.52	27	PASS
11AC80SISO	Ant1	5530	16.02	24	24	0.95	16.97	27	PASS
11AC80SISO	Ant1	5610	16.01	24	24	0.95	16.96	27	PASS
11AC80SISO	Ant1	5775	12.43	30	30	1.11	13.54	---	PASS

5.6 PEAK POWER SPECTRAL DENSITY

Test Requirement: FCC 47 CFR Part 15 Subpart E Section 15.407 (a)(1)(2)(3)
RSS-247 Issue 4 Section 7.3.1.2/ 7.3.2.2/ 7.3.3.2/ 7.3.4.3/ 7.3.5.3

Test Method: KDB 789033 D02 v02r01 Section F

Limits: FCC 47 CFR Part 15 Subpart E

1. For the band 5.15-5.25 GHz.
 - (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
 - (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
 - (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
 - (iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
2. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
3. For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Limits: RSS-247 Issue 4

1. Frequency band 5150-5250 MHz

For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or $1.76 + 10 \log_{10} B$, dBm, whichever is less. Devices shall implement transmitter power control (TPC) in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.

For other devices, the maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

2. Frequency band 5250-5350 MHz

For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or $1.76 + 10 \log_{10} B$, dBm, whichever is less. Devices shall implement TPC in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.

Devices, other than devices installed in vehicles, shall comply with the following:

- a) The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band;
- b) The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

Unwanted emission limits

Devices shall comply with the following:

- a) All emissions outside the band 5250-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p.; or
- b) All emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. and its power shall comply with the spectral power density for operation within the band 5150-5250 MHz. The device, except devices installed in vehicles, shall be labelled or include in the user manual the following text "for indoor use only."

Additional requirements

In addition to the above requirements, devices shall comply with the following, where applicable:

- a) Outdoor fixed devices with a maximum e.i.r.p. greater than 200 mW shall comply with the following e.i.r.p. at different elevations, where θ is the angle above the local horizontal plane (of the Earth) as shown below:

i. -13 dBW/MHz	for $0^\circ \leq \theta < 8^\circ$
ii. $-13 - 0.716 (\theta - 8)$ dBW/MHz	for $8^\circ \leq \theta < 40^\circ$
iii. $-35.9 - 1.22 (\theta - 40)$ dBW/MHz	for $40^\circ \leq \theta \leq 45^\circ$
iv. -42 dBW/MHz	for $\theta > 45^\circ$

The measurement procedure defined in Annex A of this document shall be used to verify the compliance to the e.i.r.p. at different elevations.

- b) Devices, other than outdoor fixed devices, having an e.i.r.p. greater than 200 mW shall comply with either i. or ii. below:
 - iii. devices shall comply with the e.i.r.p. elevation mask in 6.2.2.3(a); or
 - iv. devices shall implement a method to permanently reduce their e.i.r.p. via a firmware feature in the event that the Department requires it. The test report must demonstrate how the device's power table can be updated to meet this firmware requirement. The manufacturer shall provide this firmware to update all systems automatically in compliance with the directions received from the Department.

3. Frequency bands 5470-5725 MHz

The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall

implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

4. Frequency band 5725-5850 MHz

The maximum conducted output power shall not exceed 1 W. The output power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed point-to-point operations exclude the use of point-to-multipoint³ systems, omnidirectional applications and multiple colocated transmitters transmitting the same information.

Test Procedure:

The output from the transmitter was connected to an attenuator and then to the input of the RF Spectrum Analyzer.

Spectrum analyzer according to the following Settings:

1. For U-NII-1, U-NII-2A, U-NII-2C band:

Using method SA-2

- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz, Set VBW $\geq$ 3 RBW, Detector = RMS
- Sweep time = auto, trigger set to "free run".
- Trace average at least 100 traces in power averaging mode.
- Record the max value and add 10 log (1/duty cycle)

2. For U-NII-3 band:

- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 500 kHz, Set VBW $\geq$ 3 RBW, Detector = RMS
- Use the peak marker function to determine the maximum power level in any 500 kHz band segment within the fundamental EBW.
- Sweep time = auto, trigger set to "free run".
- Trace average at least 100 traces in power averaging mode.
- Record the max value and add 10 log (1/duty cycle)

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.5.3 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Transmitter mode

Test Results: Please refer to Appendix A

Test Data:

Gain and the maximum output power limit.

RSS-247 Issue 4:

Frequency Band	Antenna Gain (dBi)	PSD Limits (dBm/MHz or dBm/500kHz)
U-NII-1	-1.83	10.0
U-NII-2A	-1.85	10.0
U-NII-2C	0.95	11.0
U-NII-3	1.11	30.0

FCC 47 CFR Part 15 Subpart E:

Frequency Band	Antenna Gain (dBi)	PSD Limits (dBm/MHz or dBm/500kHz)
U-NII-1	-1.83	11.0
U-NII-2A	-1.85	11.0
U-NII-2C	0.95	11.0
U-NII-3	1.11	30.0

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

5.7 RADIATED EMISSIONS AND BAND EDGE MEASUREMENT

Test Requirement: FCC 47 CFR Part 15 Subpart E Section 15.407 (b)(1)(2)(3)(4)(6)
 FCC 47 CFR Part 15 Subpart C Section 15.209/205
 RSS-247 Issue 4 Section 7.3.1.3/ 7.3.2.3/ 7.3.3.3/ 7.3.4.4/ 7.3.5.4

Test Method: KDB 789033 D02 v02r01 Section G.3, G.4, G.5, and G.6

Receiver Setup:

Frequency	RBW
0.009 MHz-0.150 MHz	200/300 kHz
0.150 MHz -30 MHz	9/10 kHz
30 MHz-1 GHz	100/120 kHz
Above 1 GHz	1 MHz

Limits:

1. Limits of Radiated Emission and Band edge Measurement

Radiated emissions that fall in the restricted bands must comply with the general emissions limits in 15.209(a) as below table. Other emissions shall be at least 20 dB below the highest level of the desired power.

Frequency	Field strength (microvolt/meter)	Limit (dB μ V/m)	Remark	Measurement distance (m)
0.009 MHz-0.490 MHz	2400/F(kHz)	--	--	300
0.490 MHz-1.705 MHz	24000/F(kHz)	--	--	30
1.705 MHz-30 MHz	30	--	--	30
30 MHz-88 MHz	100	40.0	Quasi-peak	3
88 MHz-216 MHz	150	43.5	Quasi-peak	3
216 MHz-960 MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1 GHz	500	54.0	Average	3

Remark:

- The lower limit shall apply at the transition frequencies.
- Emission level (dB μ V/m) = 20 log Emission level (uV/m).
- For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

2. Limits of Unwanted Emission Out of the Restricted Bands

Applicable To	Limit	
789033 D02 General U-NII Test Procedures New Rules v01r04	Field Strength at 3 m	
	PK: 74 (dBμV/m)	AV: 54 (dBμV/m)
Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
FCC Part 15.407 (b)(1) RSS-247 Issue 4 Section 6.2.1.2	PK: -27 (dBm/MHz)	PK: 74 (dBμV/m)
FCC Part 15.407 (b)(2) RSS-247 Issue 4 Section 6.2.2.2	PK: -27 (dBm/MHz)	PK: 74 (dBμV/m)
FCC Part 15.407 (b)(3) RSS-247 Issue 4 Section 6.2.3.2	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m)
FCC Part 15.407 (b)(4) RSS-247 Issue 4 Section 6.2.4.2	27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edges;	PK: 68.2 (dBμV/m)
	15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges;	
	10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges;	
	-27 dBm/MHz at frequencies more than 75 MHz above or below the band edges.	

Test Setup: Refer to section 4.5.1 for details.

Test Procedures:

- The EUT was placed on the top of a rotating table 0.8 meters (for below 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Remark:

- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for RMS Average (Duty cycle < 98 %) for Average detection (AV) at frequency above 1 GHz, then the measurement results was added to a correction factor (10 log(1/duty cycle)).
- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz (Duty cycle ≥ 98 %) or ≥ 1/T(duty cycle is < 98%) for Average detection (AV) at frequency above 1 GHz.
- All modes of operation were investigated and the worst-case emissions are reported.

Equipment Used: Refer to section 3 for details.

Test Result: Pass

The measurement data as follows:

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

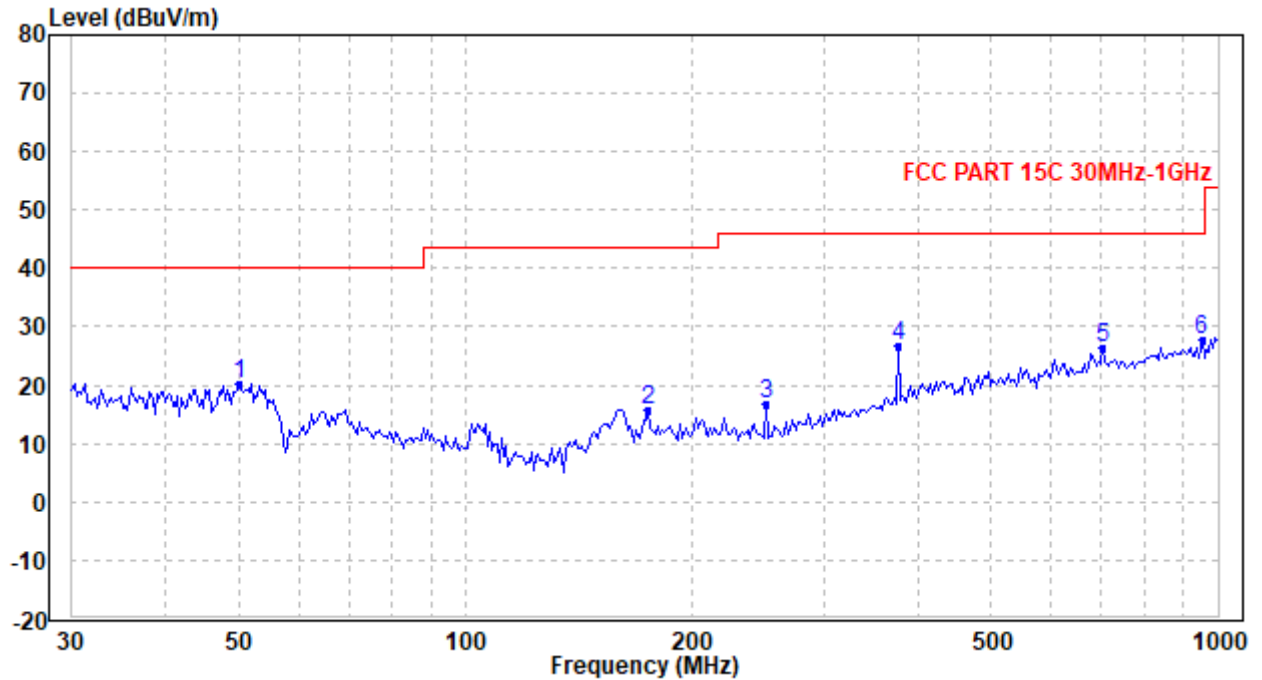
E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

Radiated Emission Test Data (9 KHz ~ 30 MHz):

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

Radiated Emission Test Data (30 MHz ~ 1 GHz):
Worst-Case Configuration
Horizontal


No.	Frequency (MHz)	Reading (dBμV/m)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	50.108	34.33	-14.05	20.28	40.00	-19.72	QP
2	175.040	27.32	-11.57	15.75	43.50	-27.75	QP
3	250.486	27.40	-10.61	16.79	46.00	-29.21	QP
4	376.523	32.12	-5.45	26.67	46.00	-19.33	QP
5	703.731	25.16	1.38	26.54	46.00	-19.46	QP
6	952.000	22.91	4.78	27.69	46.00	-18.31	QP

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

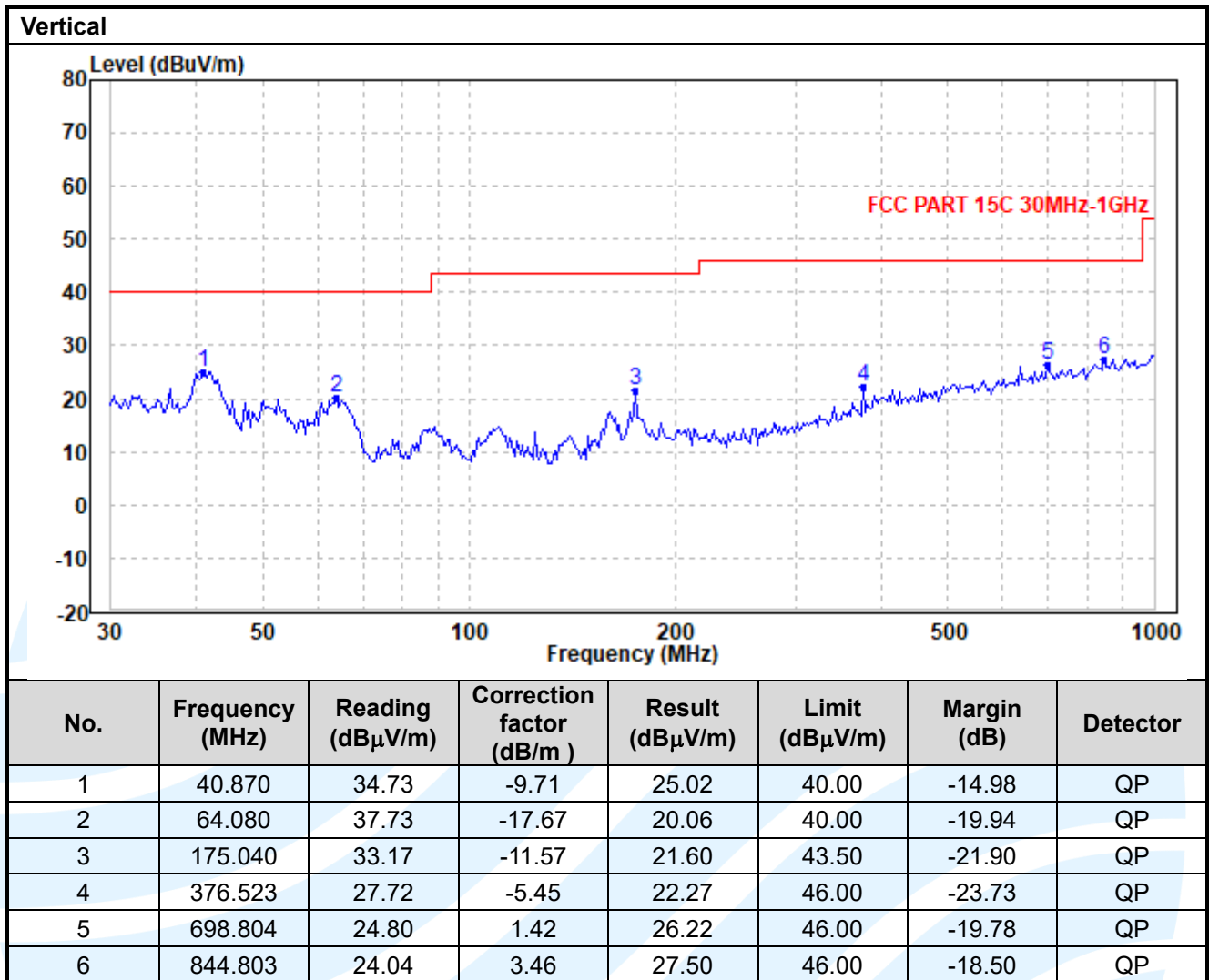
Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1



Radiated Emission Test Data (Above 1GHz):								
No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
5G_A_5180 MHz 10360 MHz 15540 MHz								
1	10360.000	33.19	3.38	36.57	54.00	-17.43	Average	Horizontal
2	10360.000	44.76	3.38	48.14	74.00	-25.86	Peak	Horizontal
3	15540.000	30.81	7.56	38.37	54.00	-15.63	Average	Horizontal
4	15540.000	41.89	7.56	49.45	74.00	-24.55	Peak	Horizontal
5	10360.000	32.63	3.38	36.01	54.00	-17.99	Average	Vertical
6	10360.000	43.72	3.38	47.10	74.00	-26.90	Peak	Vertical
7	15540.000	30.73	7.56	38.29	54.00	-15.71	Average	Vertical
8	15540.000	42.43	7.56	49.99	74.00	-24.01	Peak	Vertical
5G_A_5220 MHz 10440 MHz 15660 MHz								
1	10440.000	33.54	3.38	36.92	54.00	-17.08	Average	Horizontal
2	10440.000	45.99	3.38	49.37	74.00	-24.63	Peak	Horizontal
3	15660.000	31.35	7.46	38.81	54.00	-15.19	Average	Horizontal
4	15660.000	43.42	7.46	50.88	74.00	-23.12	Peak	Horizontal
5	10440.000	32.78	3.38	36.16	54.00	-17.84	Average	Vertical
6	10440.000	43.82	3.38	47.20	74.00	-26.80	Peak	Vertical
7	15660.000	31.35	7.46	38.81	54.00	-15.19	Average	Vertical
8	15660.000	42.96	7.46	50.42	74.00	-23.58	Peak	Vertical
5G_A_5240 MHz 10480 MHz 15720 MHz								
1	10480.000	32.50	3.39	35.89	54.00	-18.11	Average	Horizontal
2	10480.000	44.71	3.39	48.10	74.00	-25.90	Peak	Horizontal
3	15720.000	31.21	7.40	38.61	54.00	-15.39	Average	Horizontal
4	15720.000	42.26	7.40	49.66	74.00	-24.34	Peak	Horizontal
5	10480.000	31.74	3.39	35.13	54.00	-18.87	Average	Vertical
6	10480.000	42.42	3.39	45.81	74.00	-28.19	Peak	Vertical
7	15720.000	31.17	7.40	38.57	54.00	-15.43	Average	Vertical
8	15720.000	43.65	7.40	51.05	74.00	-22.95	Peak	Vertical
5G_A_5260 MHz 10520 MHz 15780 MHz								
1	10520.000	32.77	3.35	36.12	54.00	-17.88	Average	Horizontal
2	10520.000	43.42	3.35	46.77	74.00	-27.23	Peak	Horizontal
3	15780.000	31.46	7.35	38.81	54.00	-15.19	Average	Horizontal
4	15780.000	42.20	7.35	49.55	74.00	-24.45	Peak	Horizontal
5	10480.000	31.74	3.39	35.13	54.00	-18.87	Average	Vertical
6	10520.000	43.32	3.35	46.67	74.00	-27.33	Peak	Vertical
7	15720.000	31.17	7.40	38.57	54.00	-15.43	Average	Vertical
8	15780.000	42.55	7.35	49.90	74.00	-24.10	Peak	Vertical
5G_A_5300 MHz 10600 MHz 15900 MHz								
1	10600.000	31.80	3.19	34.99	54.00	-19.01	Average	Horizontal
2	10600.000	44.19	3.19	47.38	74.00	-26.62	Peak	Horizontal

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

3	15900.000	30.11	7.24	37.35	54.00	-16.65	Average	Horizontal
4	15900.000	41.51	7.24	48.75	74.00	-25.25	Peak	Horizontal
5	10600.000	31.80	3.19	34.99	54.00	-19.01	Average	Vertical
6	10600.000	43.55	3.19	46.74	74.00	-27.26	Peak	Vertical
7	15900.000	30.11	7.24	37.35	54.00	-16.65	Average	Vertical
8	15900.000	41.99	7.24	49.23	74.00	-24.77	Peak	Vertical
5G_A_5320 MHz 10640 MHz 15960 MHz								
1	10640.000	32.00	3.10	35.10	54.00	-18.90	Average	Horizontal
2	10640.000	43.32	3.10	46.42	74.00	-27.58	Peak	Horizontal
3	15960.000	29.98	7.19	37.17	54.00	-16.83	Average	Horizontal
4	15960.000	41.70	7.19	48.89	74.00	-25.11	Peak	Horizontal
5	10640.000	30.70	3.10	33.80	54.00	-20.20	Average	Vertical
6	10640.000	42.42	3.10	45.52	74.00	-28.48	Peak	Vertical
7	15960.000	29.70	7.19	36.89	54.00	-17.11	Average	Vertical
8	15960.000	41.34	7.19	48.53	74.00	-25.47	Peak	Vertical
5G_A_5500 MHz 11000 MHz 16500 MHz								
1	11000.000	32.63	2.36	34.99	54.00	-19.01	Average	Horizontal
2	11000.000	45.99	2.36	48.35	74.00	-25.65	Peak	Horizontal
3	16500.000	31.13	8.00	39.13	54.00	-14.87	Average	Horizontal
4	16500.000	43.84	8.00	51.84	74.00	-22.16	Peak	Horizontal
5	11000.000	31.82	2.36	34.18	54.00	-19.82	Average	Vertical
6	11000.000	42.72	2.36	45.08	74.00	-28.92	Peak	Vertical
7	16500.000	31.25	8.00	39.25	54.00	-14.75	Average	Vertical
8	16500.000	41.90	8.00	49.90	74.00	-24.10	Peak	Vertical
5G_A_5580 MHz 11600 MHz 16740 MHz								
1	11200.000	31.32	2.24	33.56	54.00	-20.44	Average	Horizontal
2	11200.000	44.00	2.24	46.24	74.00	-27.76	Peak	Horizontal
3	16800.000	30.40	8.39	38.79	54.00	-15.21	Average	Horizontal
4	16800.000	42.71	8.39	51.10	74.00	-22.90	Peak	Horizontal
5	11200.000	29.49	2.24	31.73	54.00	-22.27	Average	Vertical
6	11200.000	41.01	2.24	43.25	74.00	-30.75	Peak	Vertical
7	16800.000	30.18	8.39	38.57	54.00	-15.43	Average	Vertical
8	16800.000	41.49	8.39	49.88	74.00	-24.12	Peak	Vertical
5G_A_5700 MHz 11400 MHz 17100 MHz								
1	11400.000	31.64	2.11	33.75	54.00	-20.25	Average	Horizontal
2	11400.000	44.34	2.11	46.45	74.00	-27.55	Peak	Horizontal
3	17100.000	31.54	8.79	40.33	54.00	-13.67	Average	Horizontal
4	17100.000	43.72	8.79	52.51	74.00	-21.49	Peak	Horizontal
5	11400.000	31.09	2.11	33.20	54.00	-20.80	Average	Vertical
6	11400.000	42.99	2.11	45.10	74.00	-28.90	Peak	Vertical
7	17100.000	31.31	8.79	40.10	54.00	-13.90	Average	Vertical
8	17100.000	44.72	8.79	53.51	74.00	-20.49	Peak	Vertical
5G_A_5745 MHz 11490 MHz 17235 MHz								

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

1	11490.000	31.51	2.06	33.57	54.00	-20.43	Average	Horizontal
2	11490.000	42.72	2.06	44.78	74.00	-29.22	Peak	Horizontal
3	17235.000	29.89	8.99	38.88	54.00	-15.12	Average	Horizontal
4	17235.000	41.95	8.99	50.94	74.00	-23.06	Peak	Horizontal
5	11490.000	31.04	2.06	33.10	54.00	-20.90	Average	Vertical
6	11490.000	43.76	2.06	45.82	74.00	-28.18	Peak	Vertical
7	17235.000	30.61	8.99	39.60	54.00	-14.40	Average	Vertical
8	17235.000	41.88	8.99	50.87	74.00	-23.13	Peak	Vertical
5G_A_5785 MHz 11570 MHz 17355 MHz								
1	11570.000	31.14	2.05	33.19	54.00	-20.81	Average	Horizontal
2	11570.000	42.03	2.05	44.08	74.00	-29.92	Peak	Horizontal
3	17355.000	30.19	9.16	39.35	54.00	-14.65	Average	Horizontal
4	17355.000	41.49	9.16	50.65	74.00	-23.35	Peak	Horizontal
5	11570.000	30.34	2.05	32.39	54.00	-21.61	Average	Vertical
6	11570.000	41.27	2.05	43.32	74.00	-30.68	Peak	Vertical
7	17355.000	30.05	9.16	39.21	54.00	-14.79	Average	Vertical
8	17355.000	41.41	9.16	50.57	74.00	-23.43	Peak	Vertical
5G_A_5825 MHz 11650 MHz 17475 MHz								
1	11650.000	32.15	2.08	34.23	54.00	-19.77	Average	Horizontal
2	11650.000	43.49	2.08	45.57	74.00	-28.43	Peak	Horizontal
3	17475.000	29.11	9.33	38.44	54.00	-15.56	Average	Horizontal
4	17475.000	40.55	9.33	49.88	74.00	-24.12	Peak	Horizontal
5	11650.000	31.82	2.08	33.90	54.00	-20.10	Average	Vertical
6	11650.000	45.76	2.08	47.84	74.00	-26.16	Peak	Vertical
7	17475.000	28.80	9.33	38.13	54.00	-15.87	Average	Vertical
8	17475.000	43.94	9.33	53.27	74.00	-20.73	Peak	Vertical
5G_AC20_5180 MHz 10360 MHz 15540 MHz								
1	10360.000	33.25	3.38	36.63	54.00	-17.37	Average	Horizontal
2	10360.000	44.64	3.38	48.02	74.00	-25.98	Peak	Horizontal
3	15540.000	30.85	7.56	38.41	54.00	-15.59	Average	Horizontal
4	15540.000	41.59	7.56	49.15	74.00	-24.85	Peak	Horizontal
5	10360.000	32.39	3.38	35.77	54.00	-18.23	Average	Vertical
6	10360.000	44.05	3.38	47.43	74.00	-26.57	Peak	Vertical
7	15540.000	30.73	7.56	38.29	54.00	-15.71	Average	Vertical
8	15540.000	42.61	7.56	50.17	74.00	-23.83	Peak	Vertical
5G_AC20_5220 MHz 10440 MHz 15660 MHz								
1	10440.000	33.54	3.38	36.92	54.00	-17.08	Average	Horizontal
2	10440.000	44.21	3.38	47.59	74.00	-26.41	Peak	Horizontal
3	15660.000	31.39	7.46	38.85	54.00	-15.15	Average	Horizontal
4	15660.000	43.87	7.46	51.33	74.00	-22.67	Peak	Horizontal
5	10440.000	32.78	3.38	36.16	54.00	-17.84	Average	Vertical
6	10440.000	43.78	3.38	47.16	74.00	-26.84	Peak	Vertical
7	15660.000	31.39	7.46	38.85	54.00	-15.15	Average	Vertical

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

8	15660.000	43.83	7.46	51.29	74.00	-22.71	Peak	Vertical
5G_AC20_5240 MHz 10480 MHz 15720 MHz								
1	10480.000	32.70	3.39	36.09	54.00	-17.91	Average	Horizontal
2	10480.000	43.65	3.39	47.04	74.00	-26.96	Peak	Horizontal
3	15720.000	31.13	7.40	38.53	54.00	-15.47	Average	Horizontal
4	15720.000	42.81	7.40	50.21	74.00	-23.79	Peak	Horizontal
5	10480.000	31.71	3.39	35.10	54.00	-18.90	Average	Vertical
6	10480.000	44.17	3.39	47.56	74.00	-26.44	Peak	Vertical
7	15720.000	31.01	7.40	38.41	54.00	-15.59	Average	Vertical
8	15720.000	43.04	7.40	50.44	74.00	-23.56	Peak	Vertical
5G_AC20_5260 MHz 10520 MHz 15780 MHz								
1	10520.000	32.90	3.35	36.25	54.00	-17.75	Average	Horizontal
2	10520.000	44.56	3.35	47.91	74.00	-26.09	Peak	Horizontal
3	15780.000	31.46	7.35	38.81	54.00	-15.19	Average	Horizontal
4	15780.000	43.80	7.35	51.15	74.00	-22.85	Peak	Horizontal
5	10520.000	31.75	3.35	35.10	54.00	-18.90	Average	Vertical
6	10520.000	44.51	3.35	47.86	74.00	-26.14	Peak	Vertical
7	15780.000	31.22	7.35	38.57	54.00	-15.43	Average	Vertical
8	15780.000	43.20	7.35	50.55	74.00	-23.45	Peak	Vertical
5G_AC20_5300 MHz 10600 MHz 15900 MHz								
1	10600.000	31.87	3.19	35.06	54.00	-18.94	Average	Horizontal
2	10600.000	43.35	3.19	46.54	74.00	-27.46	Peak	Horizontal
3	15900.000	29.98	7.24	37.22	54.00	-16.78	Average	Horizontal
4	15900.000	41.80	7.24	49.04	74.00	-24.96	Peak	Horizontal
5	10600.000	30.36	3.19	33.55	54.00	-20.45	Average	Vertical
6	10600.000	42.95	3.19	46.14	74.00	-27.86	Peak	Vertical
7	15900.000	29.74	7.24	36.98	54.00	-17.02	Average	Vertical
8	15900.000	41.90	7.24	49.14	74.00	-24.86	Peak	Vertical
5G_AC20_5320 MHz 10640 MHz 15960 MHz								
1	10640.000	32.07	3.10	35.17	54.00	-18.83	Average	Horizontal
2	10640.000	44.52	3.10	47.62	74.00	-26.38	Peak	Horizontal
3	15960.000	30.16	7.19	37.35	54.00	-16.65	Average	Horizontal
4	15960.000	42.81	7.19	50.00	74.00	-24.00	Peak	Horizontal
5	10640.000	30.66	3.10	33.76	54.00	-20.24	Average	Vertical
6	10640.000	41.95	3.10	45.05	74.00	-28.95	Peak	Vertical
7	15960.000	29.70	7.19	36.89	54.00	-17.11	Average	Vertical
8	15960.000	41.76	7.19	48.95	74.00	-25.05	Peak	Vertical
5G_AC20_5500 MHz 11000 MHz 16500 MHz								
1	11000.000	32.67	2.36	35.03	54.00	-18.97	Average	Horizontal
2	11000.000	43.92	2.36	46.28	74.00	-27.72	Peak	Horizontal
3	16500.000	31.25	8.00	39.25	54.00	-14.75	Average	Horizontal
4	16500.000	42.62	8.00	50.62	74.00	-23.38	Peak	Horizontal
5	11000.000	31.93	2.36	34.29	54.00	-19.71	Average	Vertical

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

6	11000.000	42.75	2.36	45.11	74.00	-28.89	Peak	Vertical
7	16500.000	31.09	8.00	39.09	54.00	-14.91	Average	Vertical
8	16500.000	42.30	8.00	50.30	74.00	-23.70	Peak	Vertical
5G_AC20_5580 MHz 11600 MHz 16740 MHz								
1	11200.000	31.16	2.24	33.40	54.00	-20.60	Average	Horizontal
2	11200.000	43.75	2.24	45.99	74.00	-28.01	Peak	Horizontal
3	16800.000	30.49	8.39	38.88	54.00	-15.12	Average	Horizontal
4	16800.000	42.72	8.39	51.11	74.00	-22.89	Peak	Horizontal
5	11200.000	29.20	2.24	31.44	54.00	-22.56	Average	Vertical
6	11200.000	41.96	2.24	44.20	74.00	-29.80	Peak	Vertical
7	16800.000	30.22	8.39	38.61	54.00	-15.39	Average	Vertical
8	16800.000	43.42	8.39	51.81	74.00	-22.19	Peak	Vertical
5G_AC20_5700 MHz 11400 MHz 17100 MHz								
1	11400.000	31.75	2.11	33.86	54.00	-20.14	Average	Horizontal
2	11400.000	43.31	2.11	45.42	74.00	-28.58	Peak	Horizontal
3	17100.000	31.50	8.79	40.29	54.00	-13.71	Average	Horizontal
4	17100.000	42.86	8.79	51.65	74.00	-22.35	Peak	Horizontal
5	11400.000	30.76	2.11	32.87	54.00	-21.13	Average	Vertical
6	11400.000	41.73	2.11	43.84	74.00	-30.16	Peak	Vertical
7	17100.000	31.03	8.79	39.82	54.00	-14.18	Average	Vertical
8	17100.000	41.65	8.79	50.44	74.00	-23.56	Peak	Vertical
5G_AC20_5745 MHz 11490 MHz 17235 MHz								
1	11490.000	31.47	2.06	33.53	54.00	-20.47	Average	Horizontal
2	11490.000	43.15	2.06	45.21	74.00	-28.79	Peak	Horizontal
3	17235.000	29.99	8.99	38.98	54.00	-15.02	Average	Horizontal
4	17235.000	40.79	8.99	49.78	74.00	-24.22	Peak	Horizontal
5	11490.000	31.04	2.06	33.10	54.00	-20.90	Average	Vertical
6	11490.000	44.45	2.06	46.51	74.00	-27.49	Peak	Vertical
7	17235.000	30.65	8.99	39.64	54.00	-14.36	Average	Vertical
8	17235.000	42.58	8.99	51.57	74.00	-22.43	Peak	Vertical
5G_AC20_5785 MHz 11570 MHz 17355 MHz								
1	11570.000	31.10	2.05	33.15	54.00	-20.85	Average	Horizontal
2	11570.000	42.84	2.05	44.89	74.00	-29.11	Peak	Horizontal
3	17355.000	30.05	9.16	39.21	54.00	-14.79	Average	Horizontal
4	17355.000	40.75	9.16	49.91	74.00	-24.09	Peak	Horizontal
5	11490.000	31.04	2.06	33.10	54.00	-20.90	Average	Vertical
6	11570.000	41.49	2.05	43.54	74.00	-30.46	Peak	Vertical
7	17235.000	30.65	8.99	39.64	54.00	-14.36	Average	Vertical
8	17355.000	43.73	9.16	52.89	74.00	-21.11	Peak	Vertical
5G_AC20_5825 MHz 11650 MHz 17475 MHz								
1	11650.000	32.00	2.08	34.08	54.00	-19.92	Average	Horizontal
2	11650.000	44.05	2.08	46.13	74.00	-27.87	Peak	Horizontal
3	17475.000	29.11	9.33	38.44	54.00	-15.56	Average	Horizontal

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

4	17475.000	41.10	9.33	50.43	74.00	-23.57	Peak	Horizontal
5	11650.000	32.07	2.08	34.15	54.00	-19.85	Average	Vertical
6	11650.000	45.56	2.08	47.64	74.00	-26.36	Peak	Vertical
7	17475.000	28.70	9.33	38.03	54.00	-15.97	Average	Vertical
8	17475.000	40.47	9.33	49.80	74.00	-24.20	Peak	Vertical
5G_AC40_5190 MHz 10380 MHz 15570 MHz								
1	10380.000	33.62	3.38	37.00	54.00	-17.00	Average	Horizontal
2	10380.000	44.70	3.38	48.08	74.00	-25.92	Peak	Horizontal
3	15570.000	30.91	7.54	38.45	54.00	-15.55	Average	Horizontal
4	15570.000	42.18	7.54	49.72	74.00	-24.28	Peak	Horizontal
5	10380.000	32.60	3.38	35.98	54.00	-18.02	Average	Vertical
6	10380.000	43.92	3.38	47.30	74.00	-26.70	Peak	Vertical
7	15570.000	30.83	7.54	38.37	54.00	-15.63	Average	Vertical
8	15570.000	43.46	7.54	51.00	74.00	-23.00	Peak	Vertical
5G_AC40_5230 MHz 10460 MHz 15690 MHz								
1	10460.000	33.43	3.40	36.83	54.00	-17.17	Average	Horizontal
2	10460.000	45.70	3.40	49.10	74.00	-24.90	Peak	Horizontal
3	15690.000	31.51	7.42	38.93	54.00	-15.07	Average	Horizontal
4	15690.000	42.43	7.42	49.85	74.00	-24.15	Peak	Horizontal
5	10460.000	32.69	3.40	36.09	54.00	-17.91	Average	Vertical
6	10460.000	45.68	3.40	49.08	74.00	-24.92	Peak	Vertical
7	15690.000	31.43	7.42	38.85	54.00	-15.15	Average	Vertical
8	15690.000	43.45	7.42	50.87	74.00	-23.13	Peak	Vertical
5G_AC40_5270 MHz 10540 MHz 15810 MHz								
1	10540.000	32.66	3.30	35.96	54.00	-18.04	Average	Horizontal
2	10540.000	44.33	3.30	47.63	74.00	-26.37	Peak	Horizontal
3	15810.000	30.71	7.33	38.04	54.00	-15.96	Average	Horizontal
4	15810.000	41.71	7.33	49.04	74.00	-24.96	Peak	Horizontal
5	10540.000	31.05	3.30	34.35	54.00	-19.65	Average	Vertical
6	10540.000	42.00	3.30	45.30	74.00	-28.70	Peak	Vertical
7	15810.000	30.50	7.33	37.83	54.00	-16.17	Average	Vertical
8	15810.000	41.58	7.33	48.91	74.00	-25.09	Peak	Vertical
5G_AC40_5310 MHz 10620 MHz 15930 MHz								
1	10620.000	31.36	3.14	34.50	54.00	-19.50	Average	Horizontal
2	10620.000	43.89	3.14	47.03	74.00	-26.97	Peak	Horizontal
3	15930.000	29.73	7.21	36.94	54.00	-17.06	Average	Horizontal
4	15930.000	41.39	7.21	48.60	74.00	-25.40	Peak	Horizontal
5	10620.000	30.62	3.14	33.76	54.00	-20.24	Average	Vertical
6	10620.000	42.39	3.14	45.53	74.00	-28.47	Peak	Vertical
7	15930.000	29.77	7.21	36.98	54.00	-17.02	Average	Vertical
8	15930.000	40.53	7.21	47.74	74.00	-26.26	Peak	Vertical
5G_AC40_5510 MHz 11020 MHz 16530 MHz								
1	11020.000	32.44	2.35	34.79	54.00	-19.21	Average	Horizontal

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

2	11020.000	44.06	2.35	46.41	74.00	-27.59	Peak	Horizontal
3	16530.000	30.96	8.04	39.00	54.00	-15.00	Average	Horizontal
4	16530.000	42.71	8.04	50.75	74.00	-23.25	Peak	Horizontal
5	11020.000	31.87	2.35	34.22	54.00	-19.78	Average	Vertical
6	11020.000	42.87	2.35	45.22	74.00	-28.78	Peak	Vertical
7	16530.000	30.96	8.04	39.00	54.00	-15.00	Average	Vertical
8	16530.000	43.29	8.04	51.33	74.00	-22.67	Peak	Vertical
5G_AC40_5550 MHz 11100 MHz 16650 MHz								
1	11180.000	30.57	2.25	32.82	54.00	-21.18	Average	Vertical
2	11180.000	42.05	2.25	44.30	74.00	-29.70	Peak	Horizontal
3	16770.000	29.90	8.35	38.25	54.00	-15.75	Average	Vertical
4	16770.000	42.50	8.35	50.85	74.00	-23.15	Peak	Horizontal
5	11180.000	29.53	2.25	31.78	54.00	-22.22	Average	Vertical
6	11180.000	41.34	2.25	43.59	74.00	-30.41	Peak	Vertical
7	16770.000	30.22	8.35	38.57	54.00	-15.43	Average	Vertical
8	16770.000	41.65	8.35	50.00	74.00	-24.00	Peak	Vertical
5G_AC40_5670 MHz 11340 MHz 17010 MHz								
1	11340.000	31.20	2.16	33.36	54.00	-20.64	Average	Horizontal
2	11340.000	43.08	2.16	45.24	74.00	-28.76	Peak	Horizontal
3	17010.000	30.80	8.67	39.47	54.00	-14.53	Average	Horizontal
4	17010.000	42.85	8.67	51.52	74.00	-22.48	Peak	Horizontal
5	11340.000	30.45	2.16	32.61	54.00	-21.39	Average	Vertical
6	11340.000	42.08	2.16	44.24	74.00	-29.76	Peak	Vertical
7	17010.000	30.63	8.67	39.30	54.00	-14.70	Average	Vertical
8	17010.000	42.71	8.67	51.38	74.00	-22.62	Peak	Vertical
5G_AC40_5755 MHz 11510 MHz 17265 MHz								
1	11510.000	31.48	2.05	33.53	54.00	-20.47	Average	Horizontal
2	11510.000	43.75	2.05	45.80	74.00	-28.20	Peak	Horizontal
3	17265.000	29.90	9.03	38.93	54.00	-15.07	Average	Horizontal
4	17265.000	41.09	9.03	50.12	74.00	-23.88	Peak	Horizontal
5	11510.000	30.92	2.05	32.97	54.00	-21.03	Average	Vertical
6	11510.000	41.27	2.05	43.32	74.00	-30.68	Peak	Vertical
7	17265.000	30.35	9.03	39.38	54.00	-14.62	Average	Vertical
8	17265.000	41.87	9.03	50.90	74.00	-23.10	Peak	Vertical
5G_AC40_5795 MHz 11590 MHz 17385 MHz								
1	11590.000	31.08	2.07	33.15	54.00	-20.85	Average	Horizontal
2	11590.000	42.48	2.07	44.55	74.00	-29.45	Peak	Horizontal
3	17385.000	29.82	9.21	39.03	54.00	-14.97	Average	Horizontal
4	17385.000	41.66	9.21	50.87	74.00	-23.13	Peak	Horizontal
5	11590.000	29.91	2.07	31.98	54.00	-22.02	Average	Vertical
6	11590.000	41.21	2.07	43.28	74.00	-30.72	Peak	Vertical
7	17385.000	30.05	9.21	39.26	54.00	-14.74	Average	Vertical
8	17385.000	41.94	9.21	51.15	74.00	-22.85	Peak	Vertical

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

5G_AC80_5210 MHz		11100 MHz		16650 MHz				
1	10420.000	34.06	3.39	37.45	54.00	-16.55	Average	Vertical
2	10420.000	45.90	3.39	49.29	74.00	-24.71	Peak	Horizontal
3	15630.000	31.75	7.48	39.23	54.00	-14.77	Average	Vertical
4	15630.000	44.29	7.48	51.77	74.00	-22.23	Peak	Horizontal
5	10420.000	32.60	3.39	35.99	54.00	-18.01	Average	Vertical
6	10420.000	44.51	3.39	47.90	74.00	-26.10	Peak	Vertical
7	15630.000	31.49	7.48	38.97	54.00	-15.03	Average	Vertical
8	15630.000	43.50	7.48	50.98	74.00	-23.02	Peak	Vertical
5G_AC80_5290 MHz		11340 MHz		17010 MHz				
1	10580.000	32.60	3.23	35.83	54.00	-18.17	Average	Horizontal
2	10580.000	45.50	3.23	48.73	74.00	-25.27	Peak	Horizontal
3	15870.000	30.69	7.27	37.96	54.00	-16.04	Average	Horizontal
4	15870.000	43.39	7.27	50.66	74.00	-23.34	Peak	Horizontal
5	10580.000	31.51	3.23	34.74	54.00	-19.26	Average	Vertical
6	10580.000	42.30	3.23	45.53	74.00	-28.47	Peak	Vertical
7	15870.000	30.65	7.27	37.92	54.00	-16.08	Average	Vertical
8	15870.000	41.58	7.27	48.85	74.00	-25.15	Peak	Vertical
5G_AC80_5530 MHz		11420 MHz		17130 MHz				
1	11060.000	32.77	2.32	35.09	54.00	-18.91	Peak	Horizontal
2	11060.000	46.72	2.32	49.04	74.00	-24.96	Average	Horizontal
3	16590.000	29.61	8.11	37.72	54.00	-16.28	Peak	Horizontal
4	16590.000	43.80	8.11	51.91	74.00	-22.09	Average	Horizontal
5	11060.000	32.22	2.32	34.54	54.00	-19.46	Peak	Vertical
6	11060.000	43.75	2.32	46.07	74.00	-27.93	Average	Vertical
7	16590.000	29.56	8.11	37.67	54.00	-16.33	Peak	Vertical
8	16590.000	41.28	8.11	49.39	74.00	-24.61	Average	Vertical
5G_AC80_5775 MHz		11590 MHz		17385 MHz				
1	11550.000	31.89	2.06	33.95	54.00	-20.05	Average	Horizontal
2	11550.000	43.36	2.06	45.42	74.00	-28.58	Peak	Horizontal
3	17325.000	30.35	9.12	39.47	54.00	-14.53	Average	Horizontal
4	17325.000	41.58	9.12	50.70	74.00	-23.30	Peak	Horizontal
5	11550.000	31.36	2.06	33.42	54.00	-20.58	Average	Vertical
6	11550.000	42.46	2.06	44.52	74.00	-29.48	Peak	Vertical
7	17325.000	30.48	9.12	39.60	54.00	-14.40	Average	Vertical
8	17325.000	41.79	9.12	50.91	74.00	-23.09	Peak	Vertical

Remark:

1. Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain, the value was added to Original Receiver Reading by the software automatically.
2. Result = Reading + Correct Factor.
3. Margin = Result - Limit

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

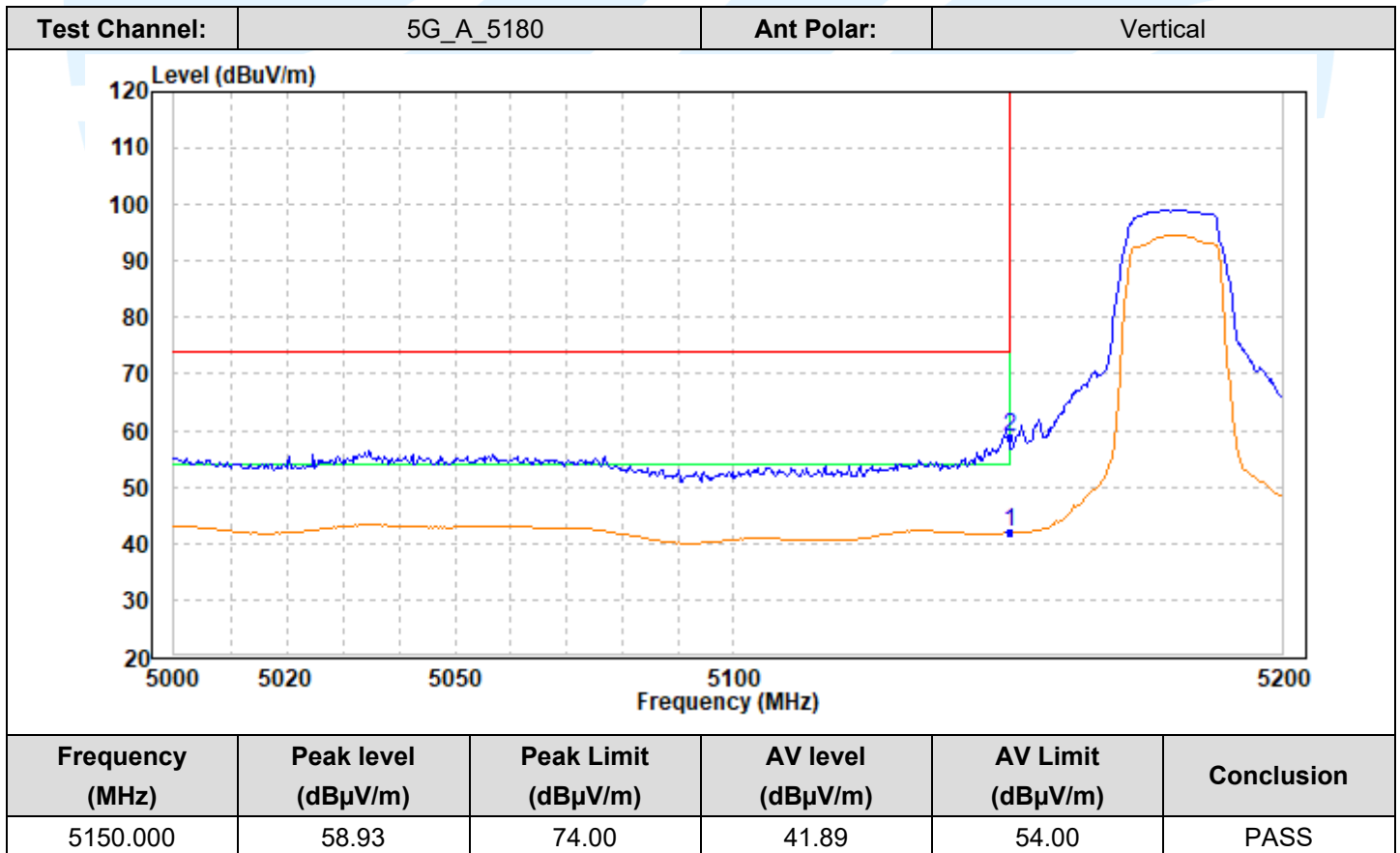
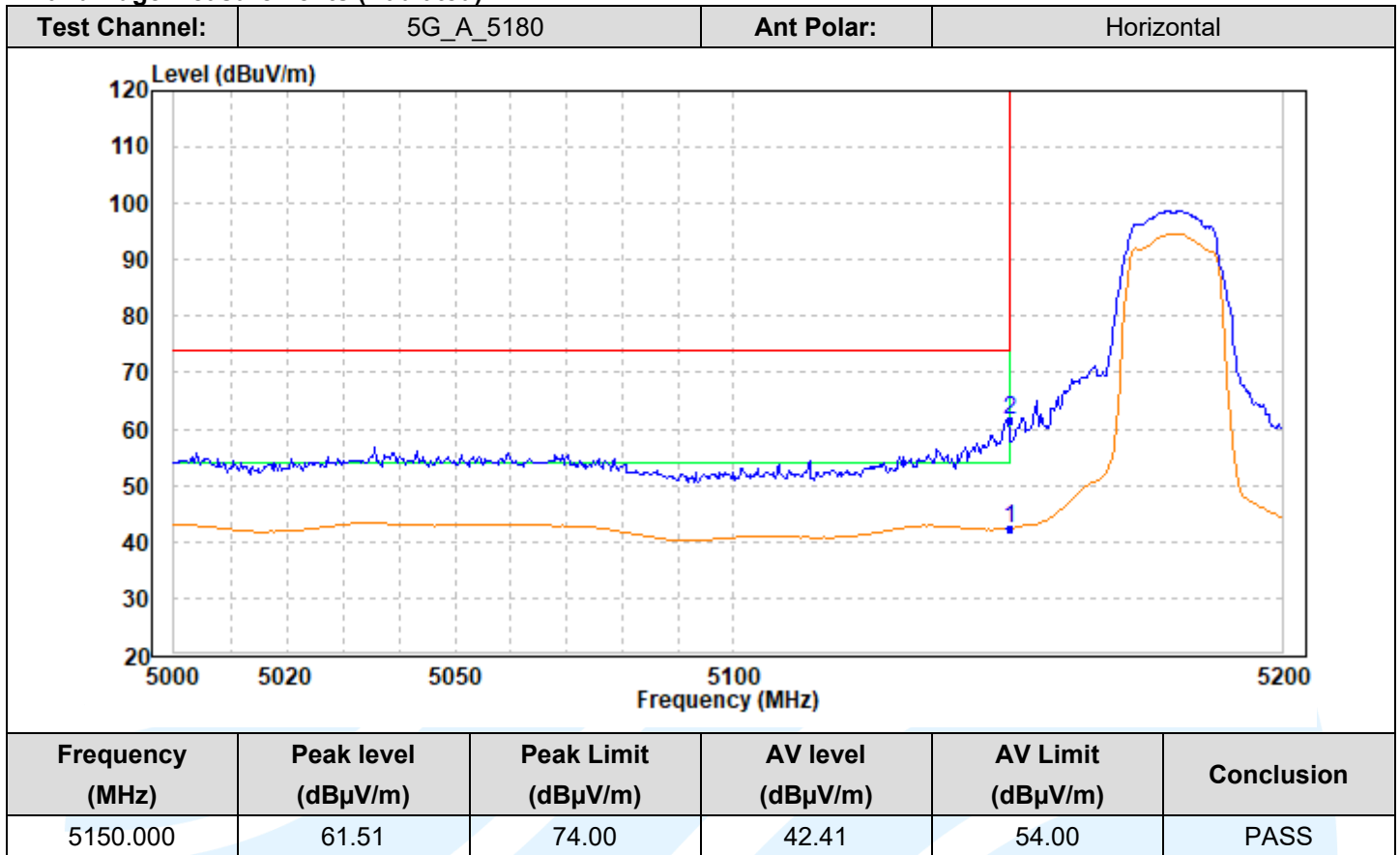
Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

Band Edge Measurements (Radiated)



Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

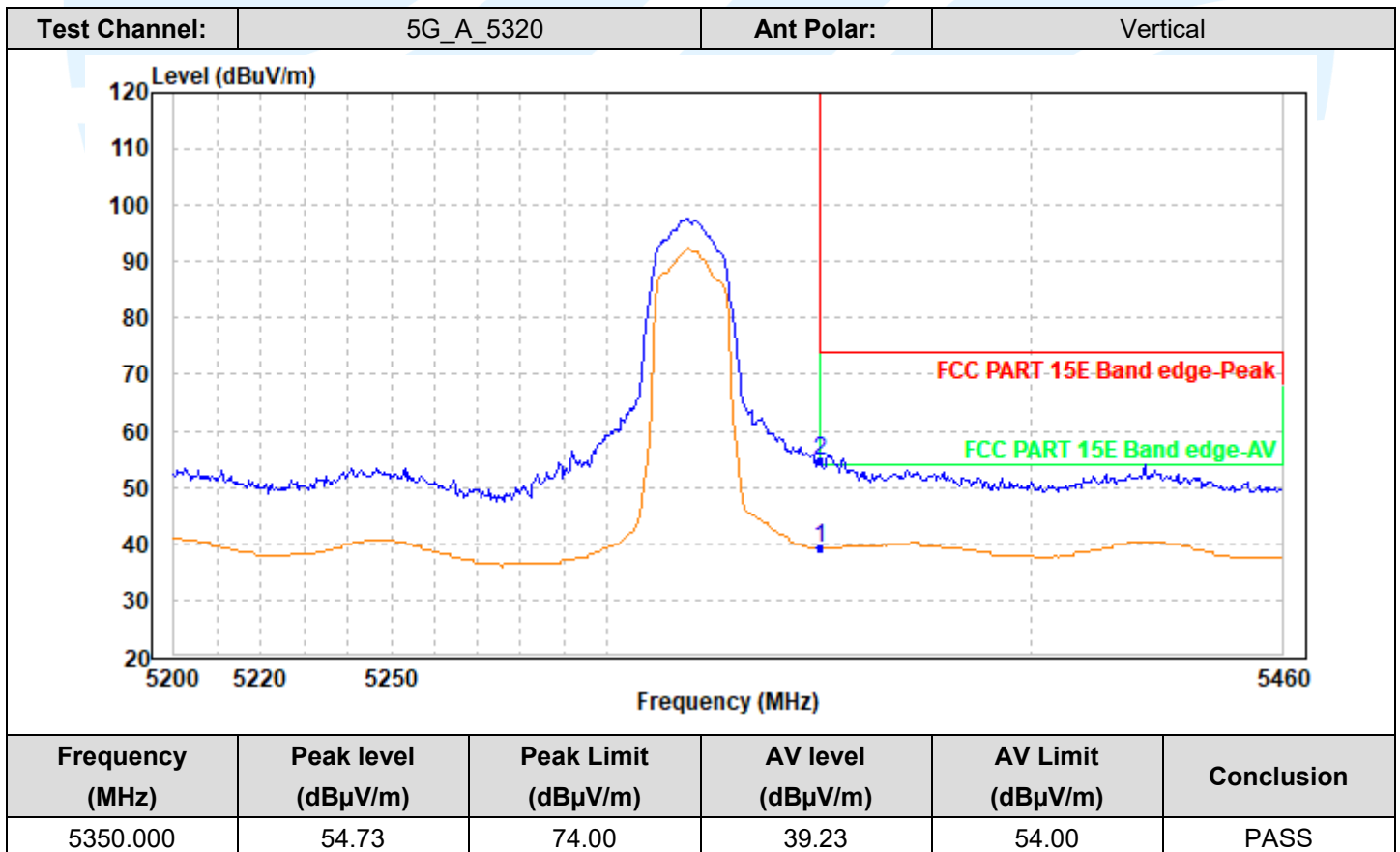
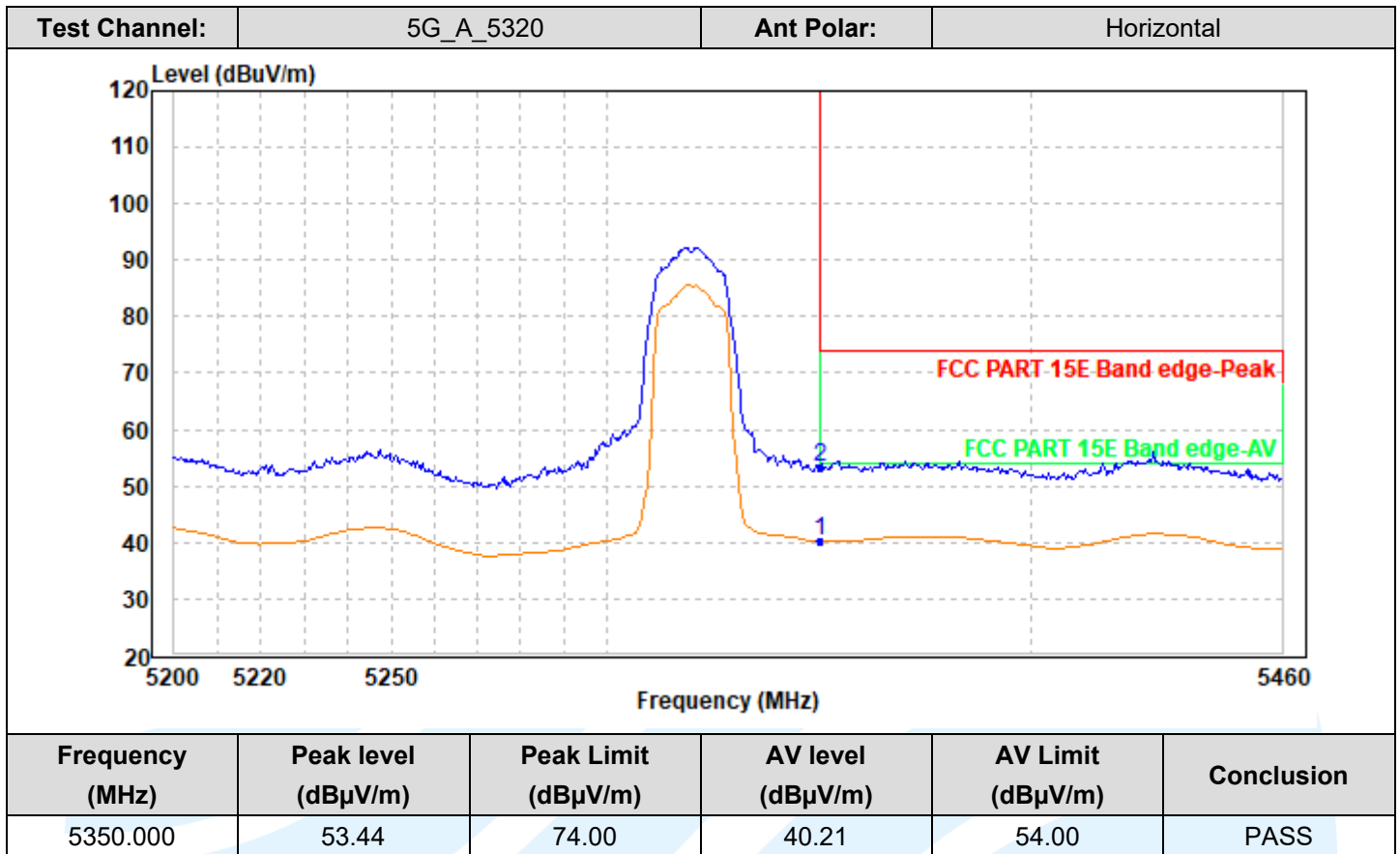
Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1



Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

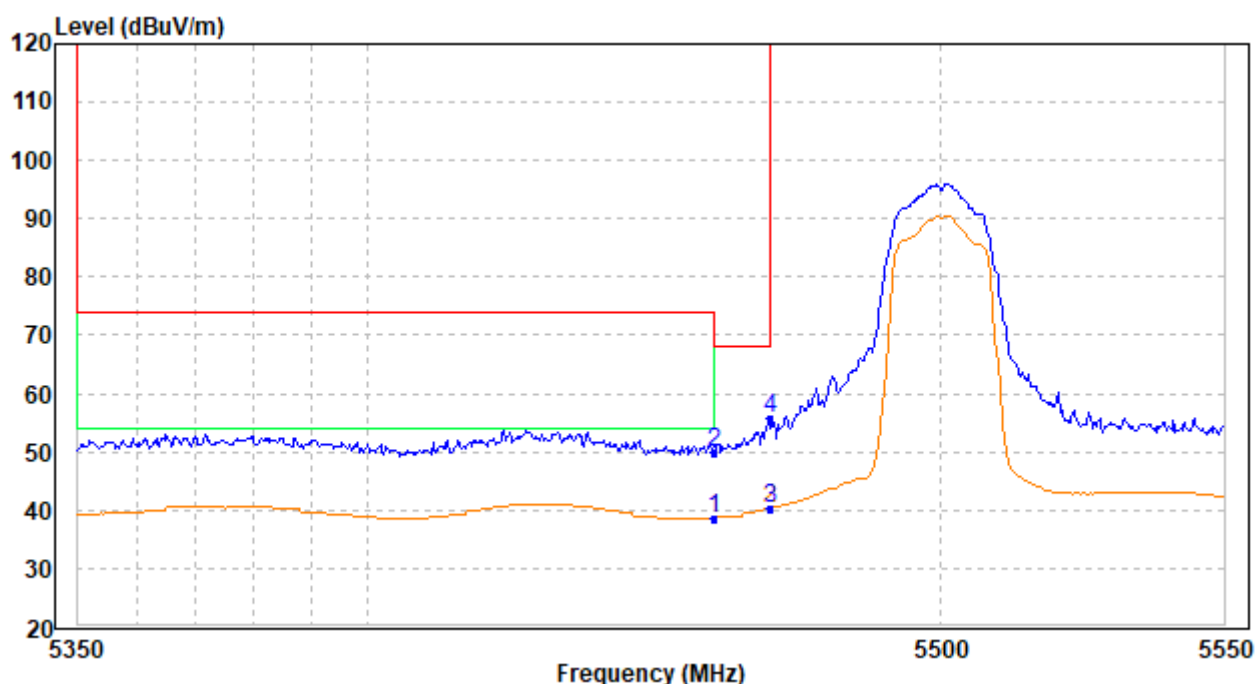
Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

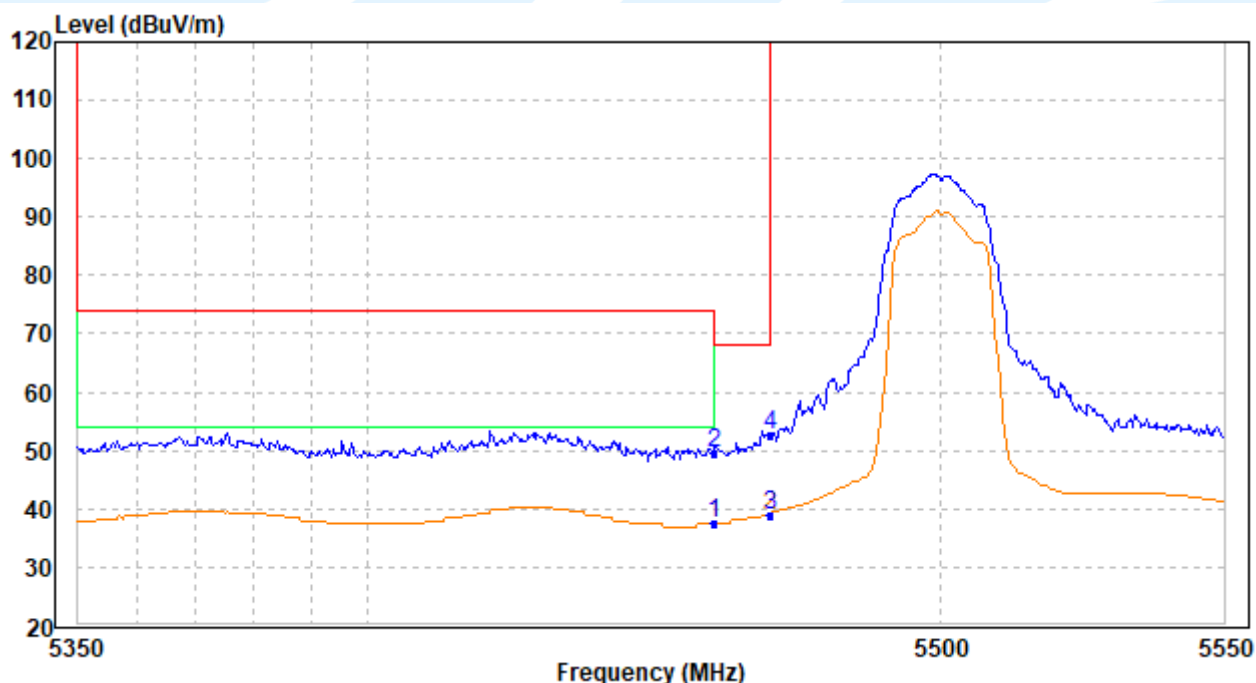
UTTR-RF-RSS247-V1.1

Test Channel:	5G_A_5500	Ant Polar:	Horizontal
---------------	-----------	------------	------------



Frequency (MHz)	Peak level (dBuV/m)	Peak Limit (dBuV/m)	AV level (dBuV/m)	AV Limit (dBuV/m)	Conclusion
5460.000	50.01	68.20	38.56	54.00	PASS
5470.000	55.60	68.20	40.32	68.20	PASS

Test Channel:	5G_A_5500	Ant Polar:	Vertical
---------------	-----------	------------	----------



Frequency (MHz)	Peak level (dBuV/m)	Peak Limit (dBuV/m)	AV level (dBuV/m)	AV Limit (dBuV/m)	Conclusion
5460.000	49.72	68.20	37.53	54.00	PASS
5470.000	52.63	68.20	39.05	68.20	PASS

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

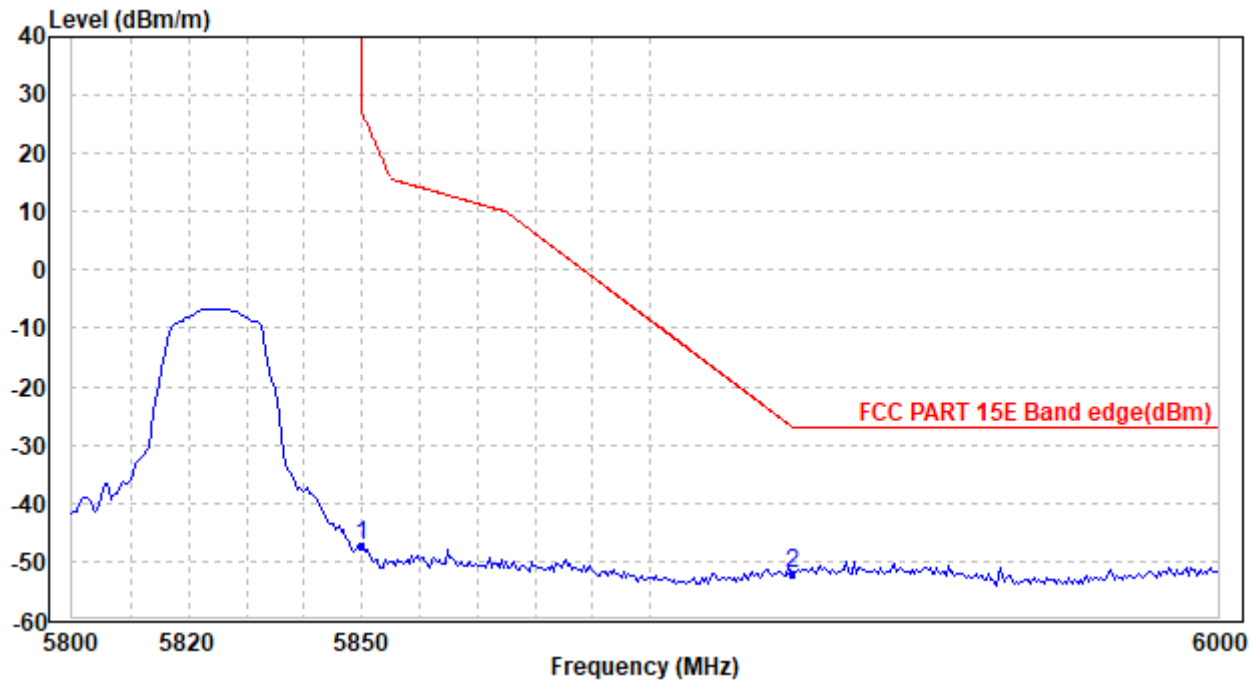
Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

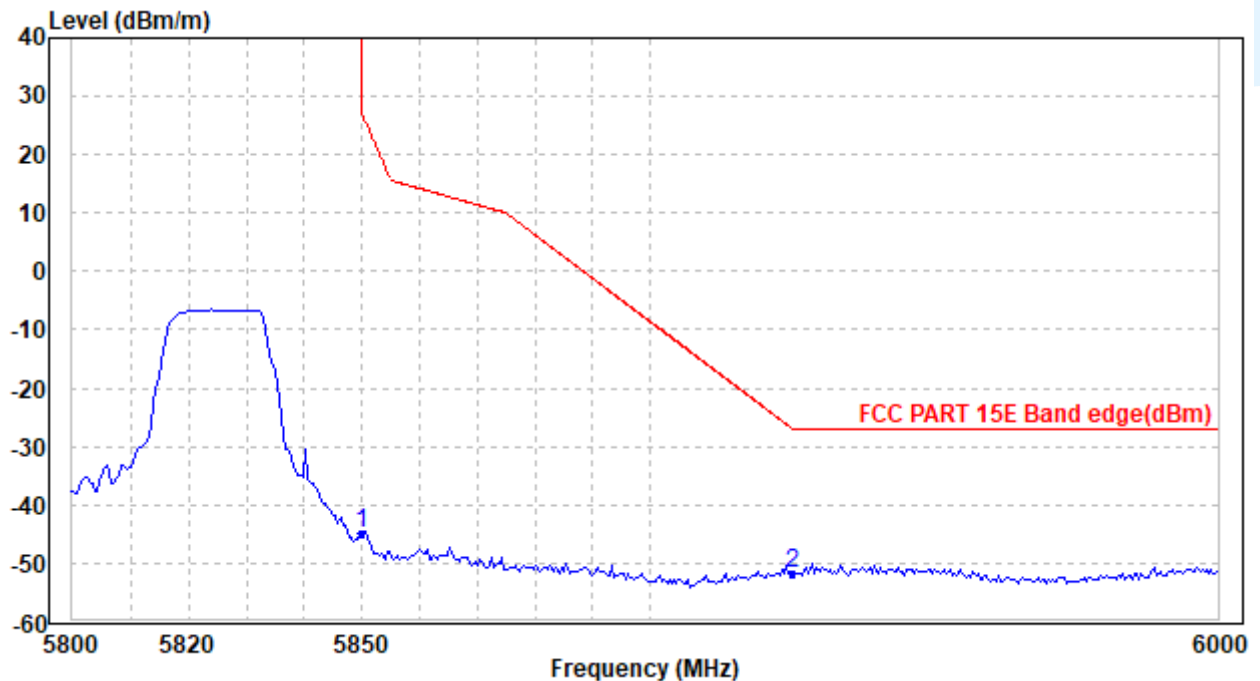
UTTR-RF-RSS247-V1.1

Test Channel:	5G_A_5825	Ant Polar:	Horizontal
---------------	-----------	------------	------------



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.000	-47.45	27.00	PASS
5925.000	-51.98	-27.00	PASS

Test Channel:	5G_A_5825	Ant Polar:	Vertical
---------------	-----------	------------	----------



Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Conclusion
5850.000	-44.88	27.00	PASS
5925.000	-51.75	-27.00	PASS

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

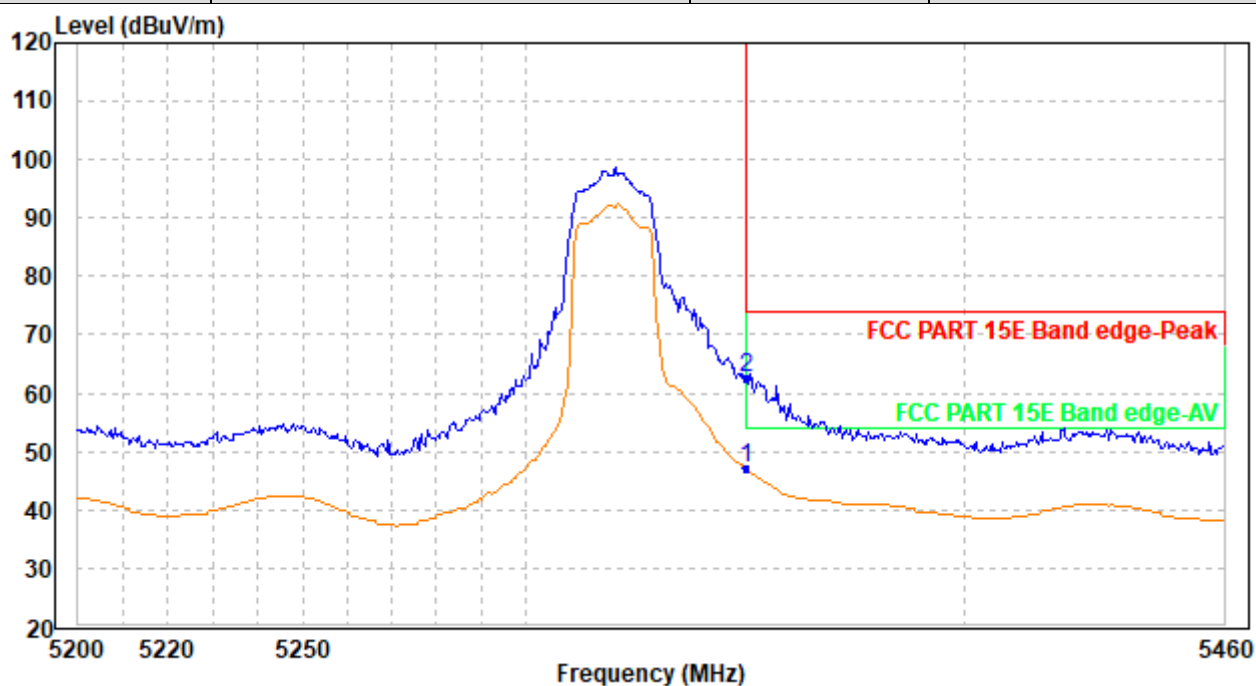
<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

Test Channel:	5G_AC20_5180	Ant Polar:	Vertical
---------------	--------------	------------	----------

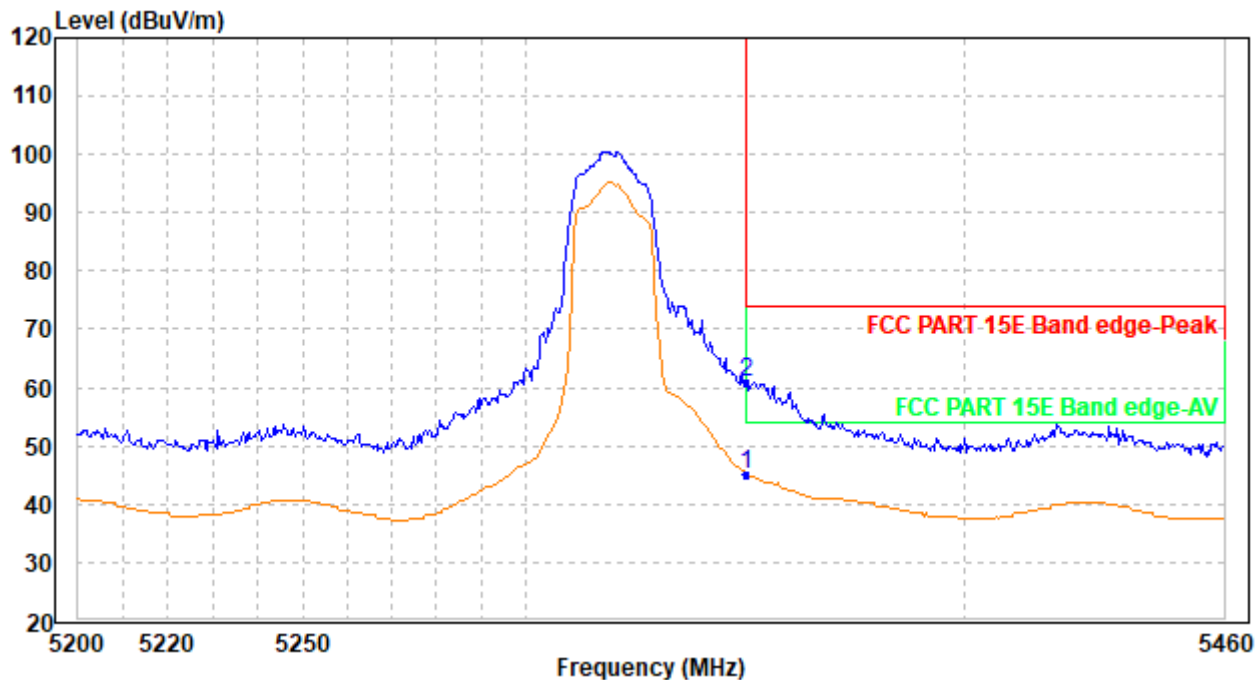
Frequency (MHz)	Peak level (dBuV/m)	Peak Limit (dBuV/m)	AV level (dBuV/m)	AV Limit (dBuV/m)	Conclusion
5150.000	62.36	74.00	48.92	54.00	PASS

Test Channel:	5G_AC20_5320	Ant Polar:	Horizontal
---------------	--------------	------------	------------



Frequency (MHz)	Peak level (dBuV/m)	Peak Limit (dBuV/m)	AV level (dBuV/m)	AV Limit (dBuV/m)	Conclusion
5350.000	62.56	74.00	47.19	54.00	PASS

Test Channel:	5G_AC20_5320	Ant Polar:	Vertical
---------------	--------------	------------	----------



Frequency (MHz)	Peak level (dBuV/m)	Peak Limit (dBuV/m)	AV level (dBuV/m)	AV Limit (dBuV/m)	Conclusion
5350.000	60.74	74.00	45.25	54.00	PASS

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

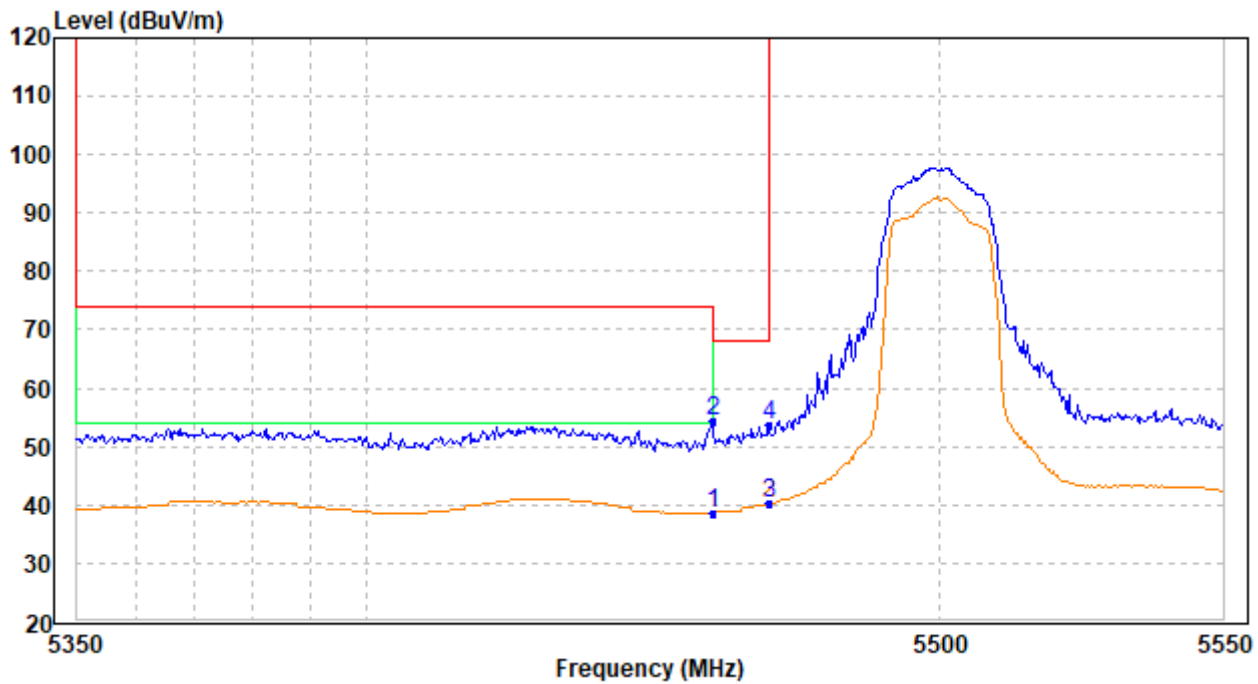
Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

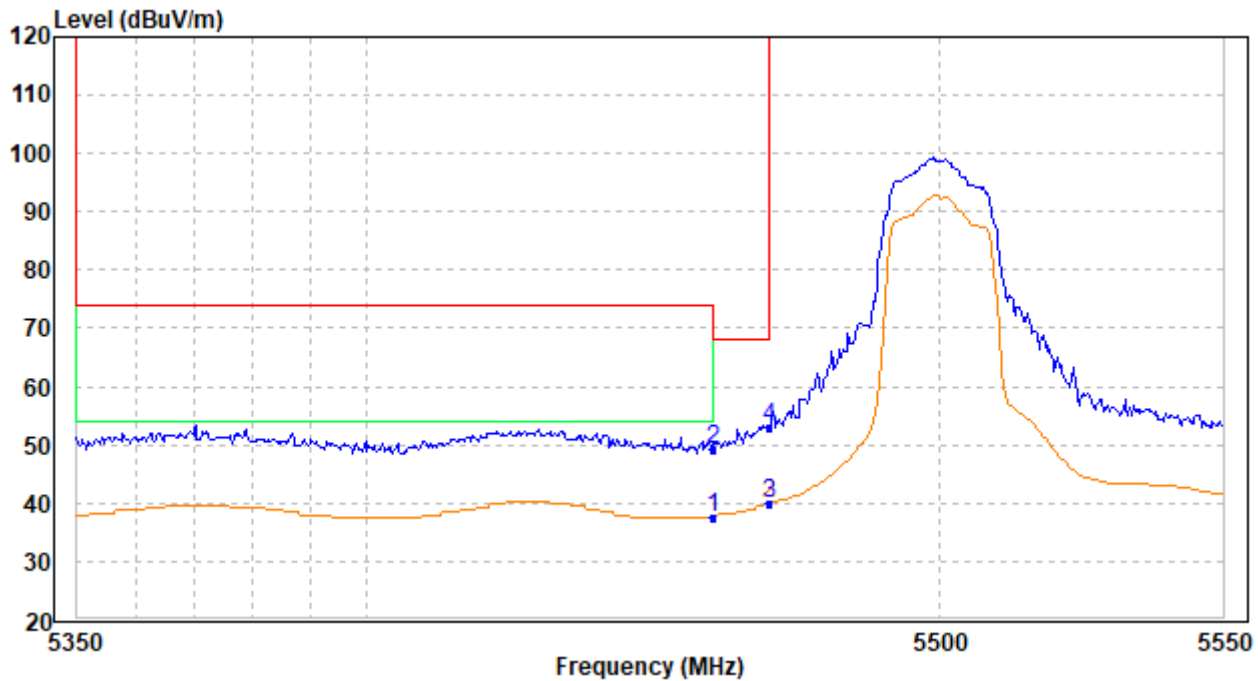
UTTR-RF-RSS247-V1.1

Test Channel:	5G_AC20_5500	Ant Polar:	Horizontal
---------------	--------------	------------	------------



Frequency (MHz)	Peak level (dBuV/m)	Peak Limit (dBuV/m)	AV level (dBuV/m)	AV Limit (dBuV/m)	Conclusion
5460.000	54.24	68.20	38.56	54.00	PASS
5470.000	53.67	68.20	40.32	68.20	PASS

Test Channel:	5G_AC20_5500	Ant Polar:	Vertical
---------------	--------------	------------	----------



Frequency (MHz)	Peak level (dBuV/m)	Peak Limit (dBuV/m)	AV level (dBuV/m)	AV Limit (dBuV/m)	Conclusion
5460.000	49.34	68.20	37.53	54.00	PASS
5470.000	52.99	68.20	39.92	68.20	PASS

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

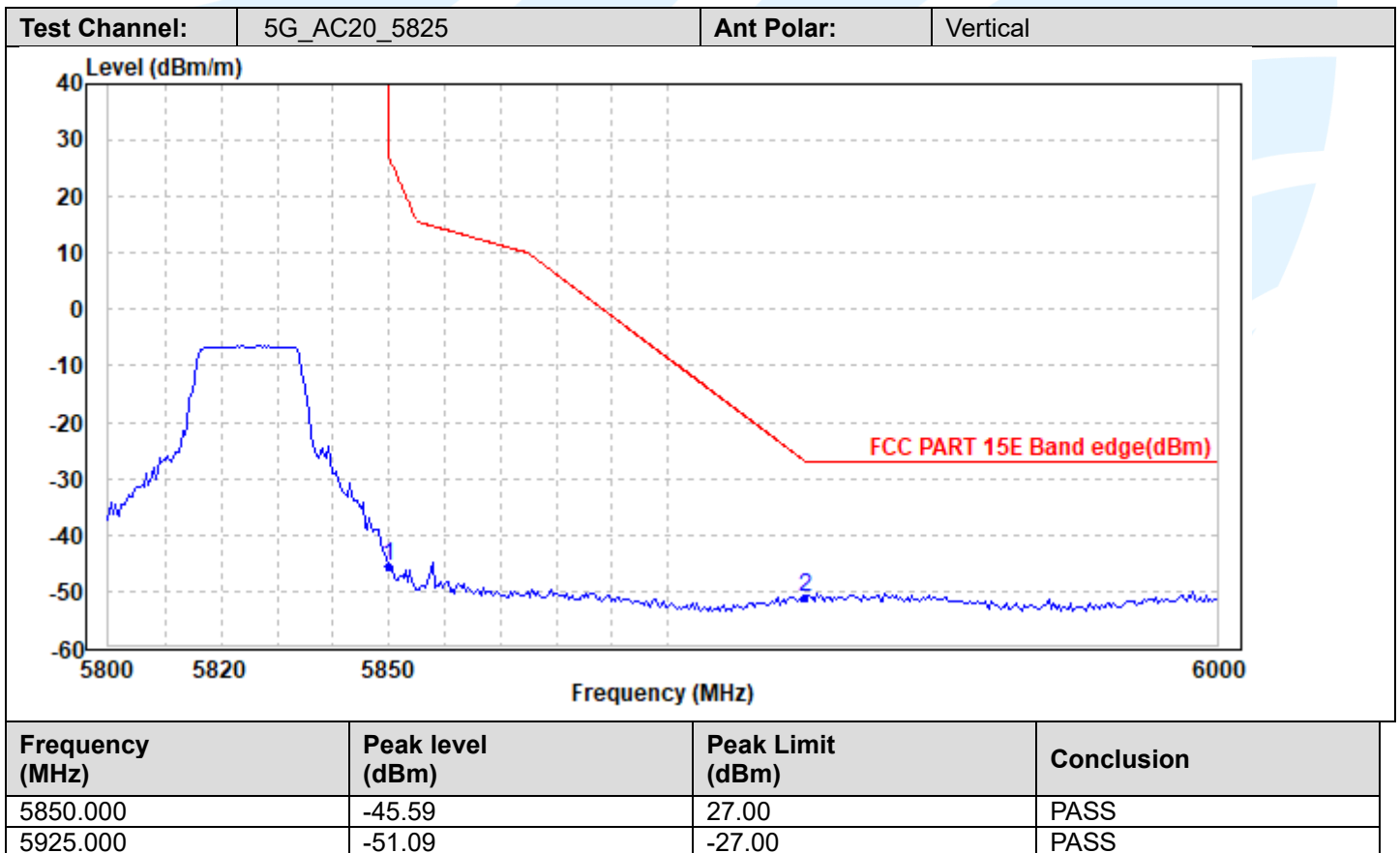
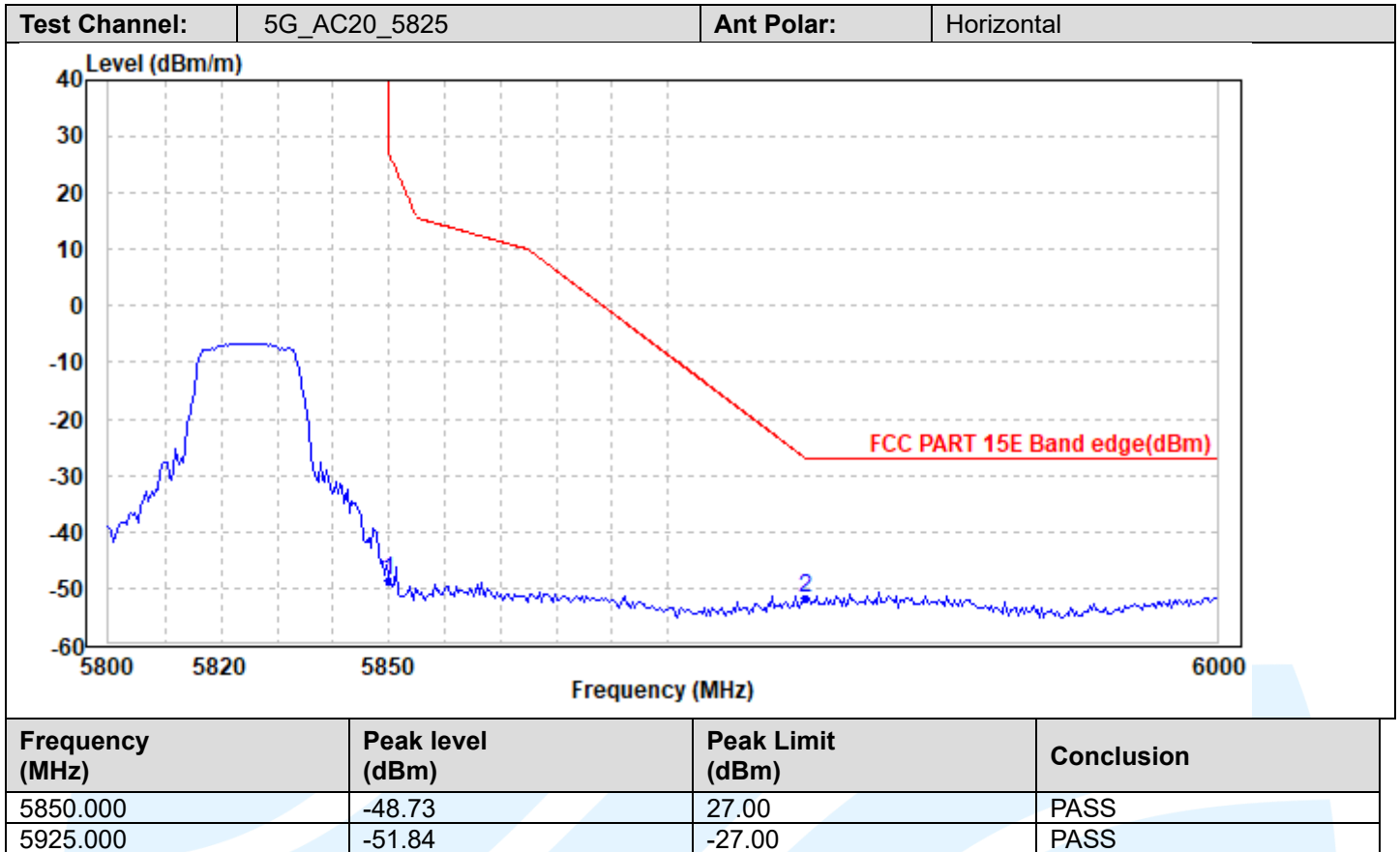
Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1



Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

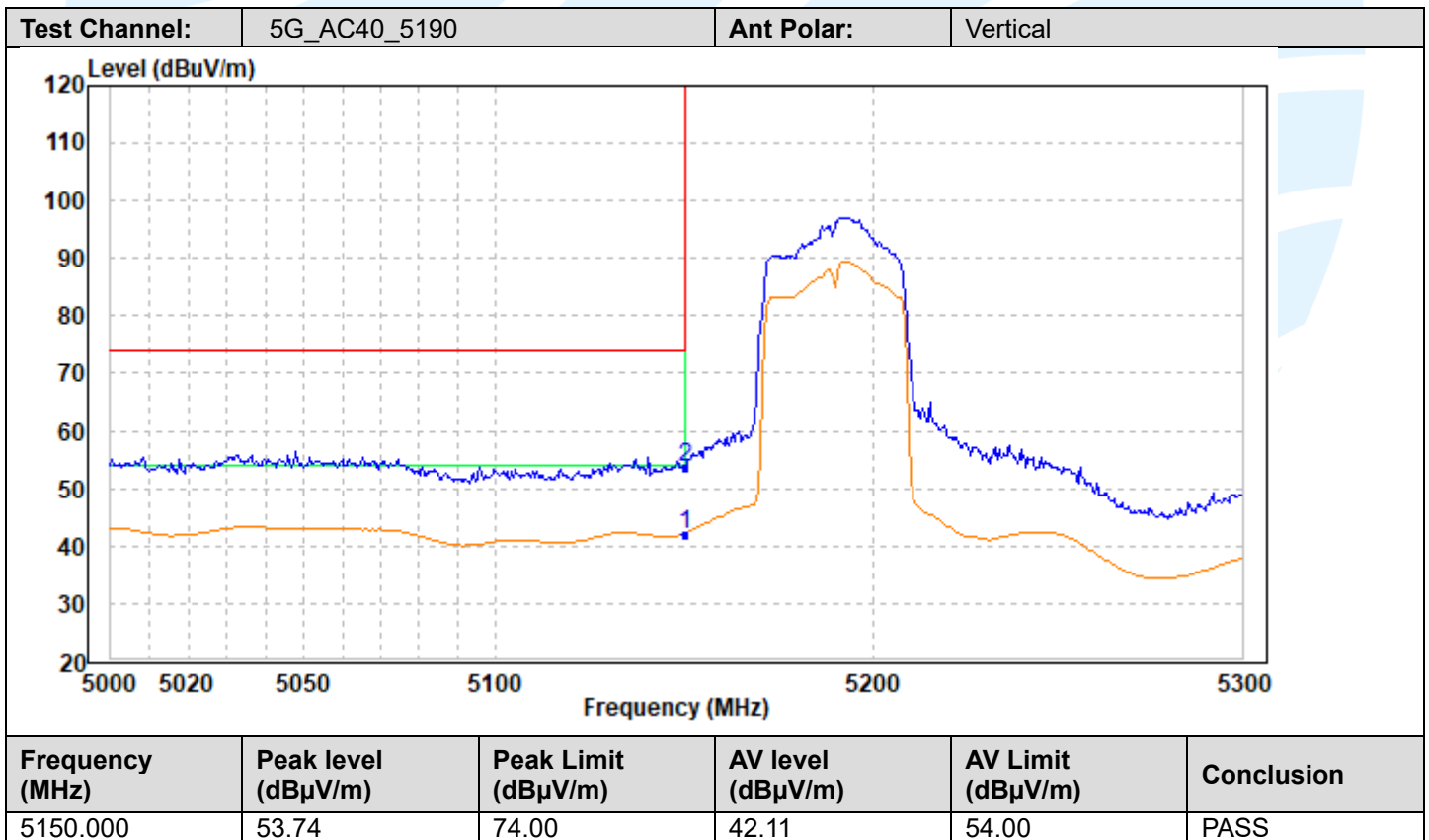
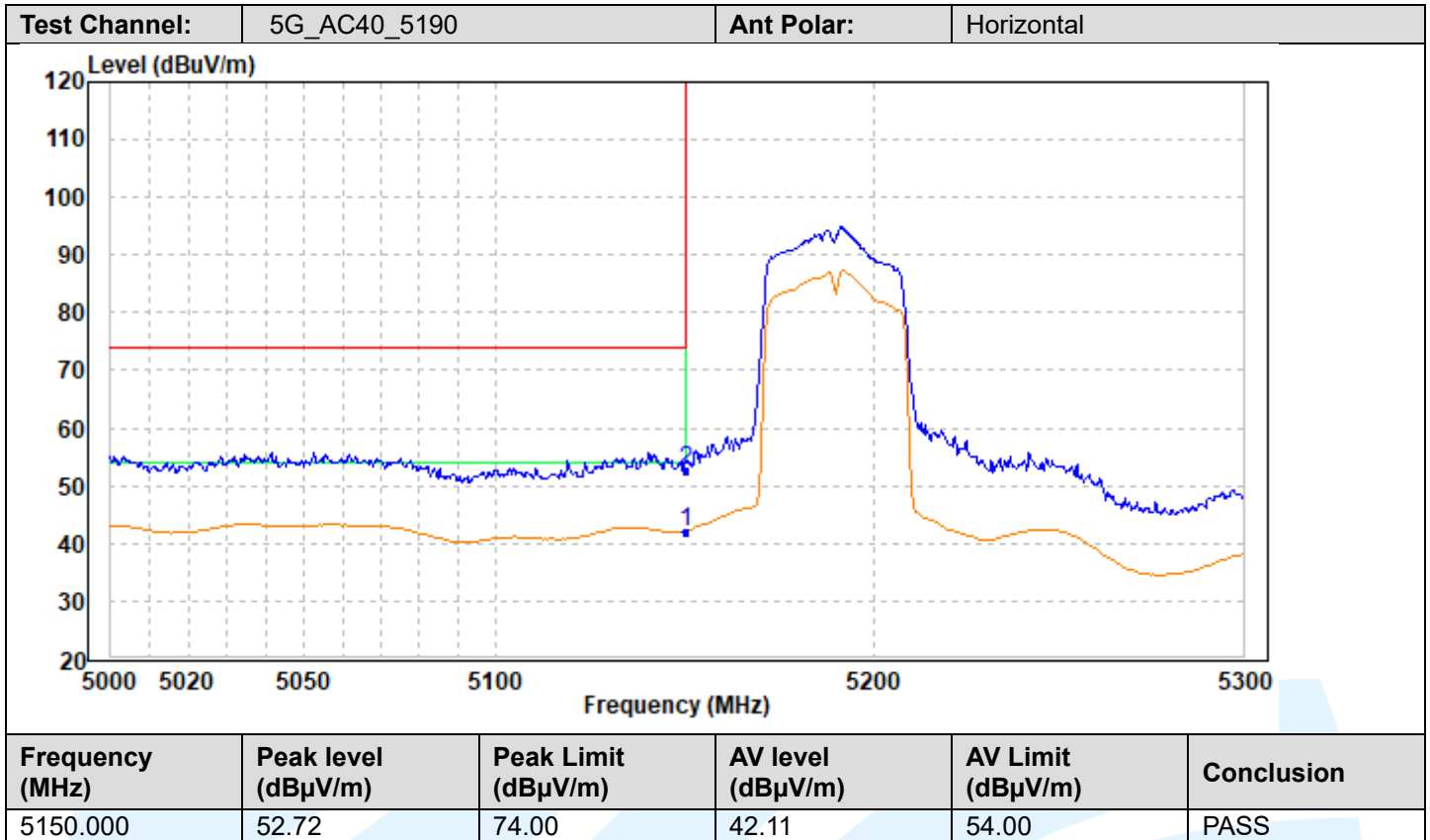
Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1



Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

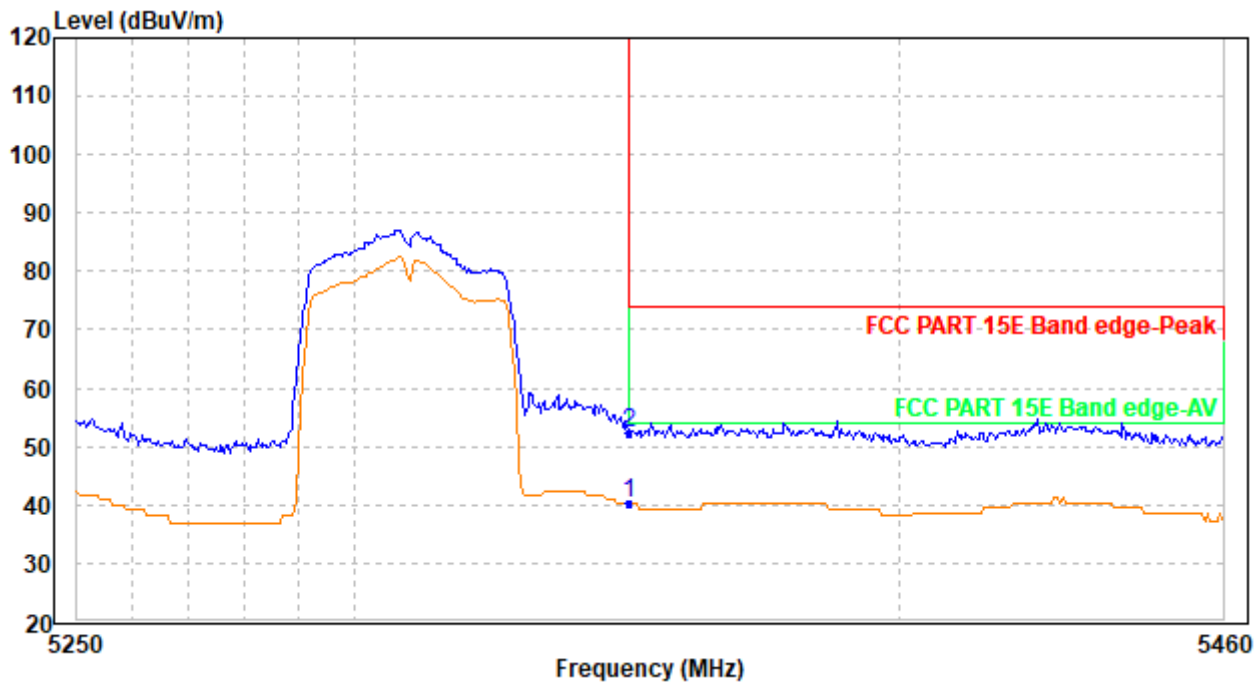
Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

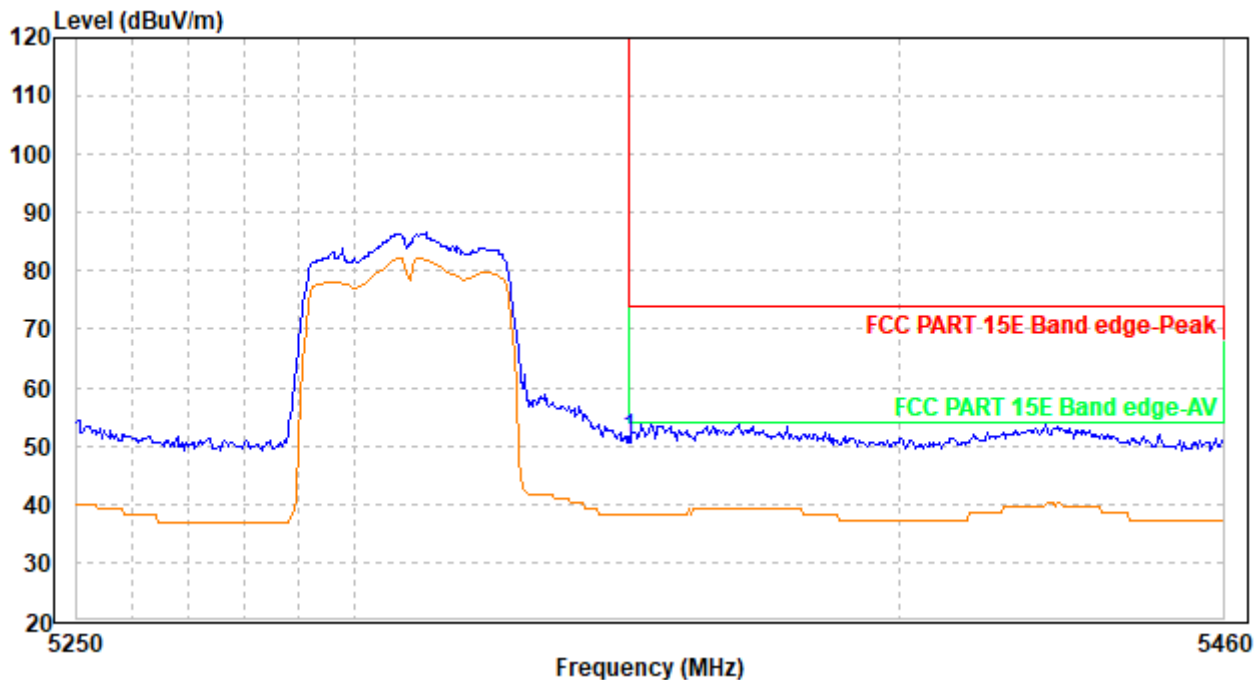
UTTR-RF-RSS247-V1.1

Test Channel:	5G_AC40_5310	Ant Polar:	Horizontal
---------------	--------------	------------	------------



Frequency (MHz)	Peak level (dBμV/m)	Peak Limit (dBμV/m)	AV level (dBμV/m)	AV Limit (dBμV/m)	Conclusion
5350.000	52.31	74.00	40.21	54.00	PASS

Test Channel:	5G_AC40_5310	Ant Polar:	Vertical
---------------	--------------	------------	----------



Frequency (MHz)	Peak level (dBμV/m)	Peak Limit (dBμV/m)	AV level (dBμV/m)	AV Limit (dBμV/m)	Conclusion
5350.000	51.27	74.00	38.89	54.00	PASS

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

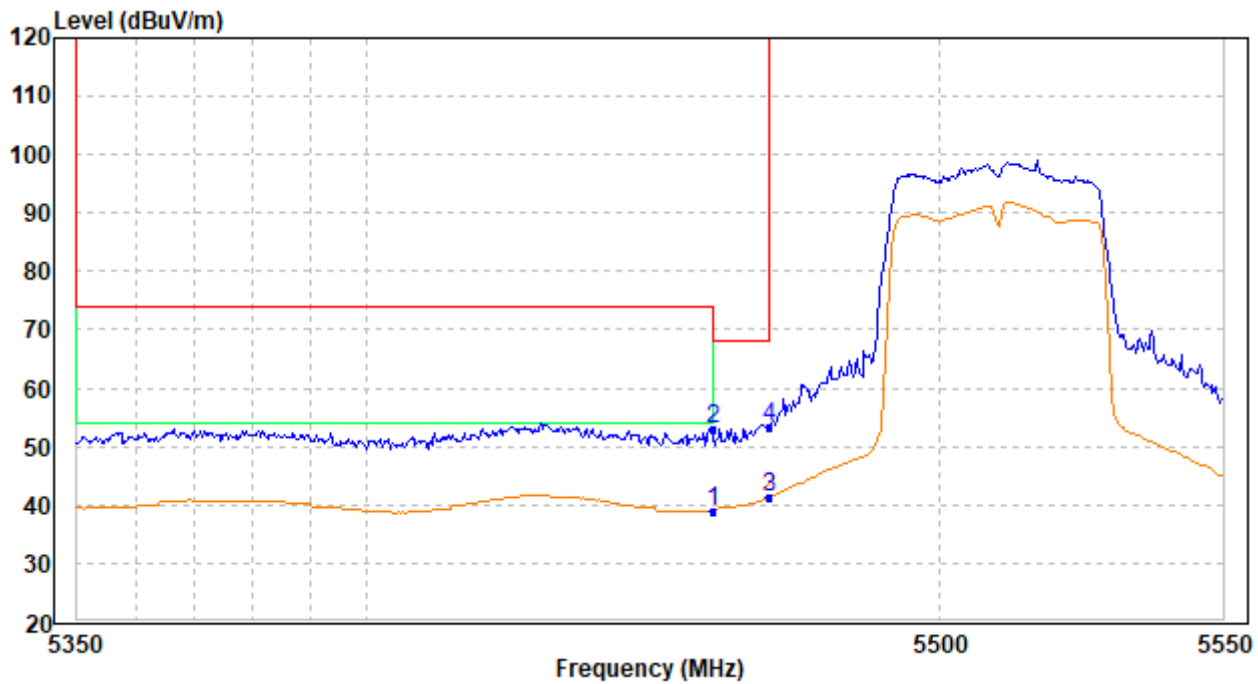
Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

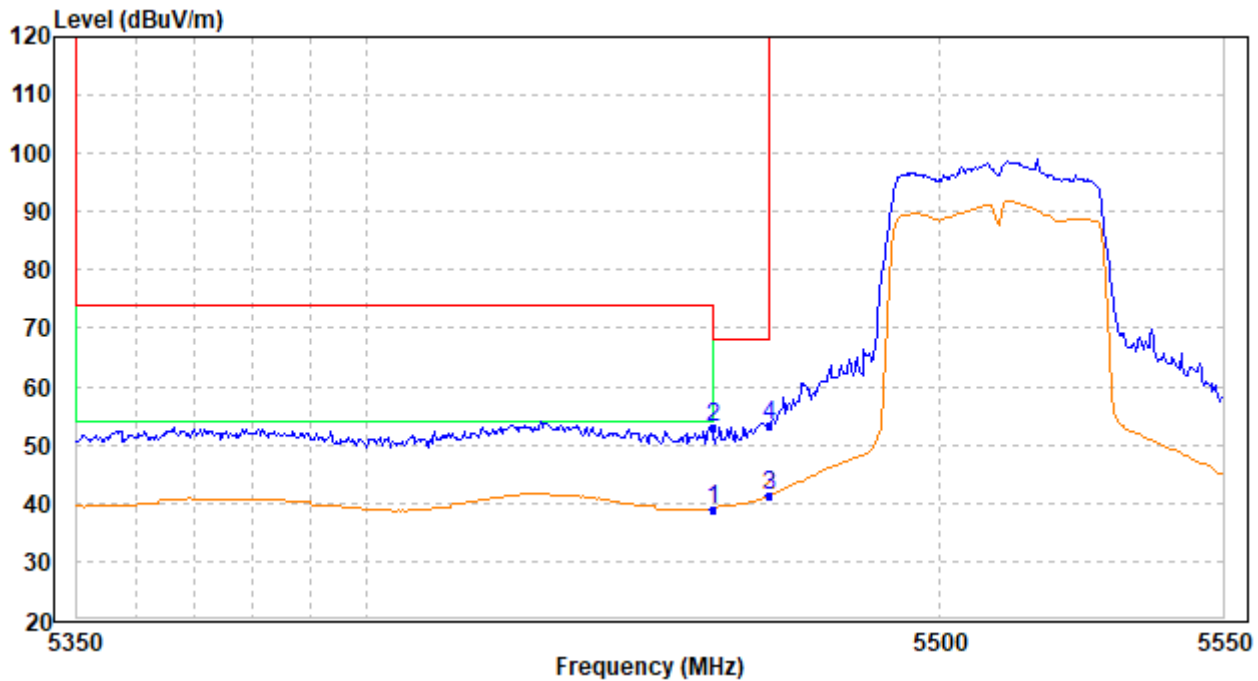
UTTR-RF-RSS247-V1.1

Test Channel:	5G_AC40_5510	Ant Polar:	Horizontal
---------------	--------------	------------	------------



Frequency (MHz)	Peak level (dBuV/m)	Peak Limit (dBuV/m)	AV level (dBuV/m)	AV Limit (dBuV/m)	Conclusion
5460.000	50.06	68.20	37.53	54.00	PASS
5470.000	51.85	68.20	39.05	68.20	PASS

Test Channel:	5G_AC40_5510	Ant Polar:	Vertical
---------------	--------------	------------	----------



Frequency (MHz)	Peak level (dBuV/m)	Peak Limit (dBuV/m)	AV level (dBuV/m)	AV Limit (dBuV/m)	Conclusion
5460.000	53.16	68.20	39.03	54.00	PASS
5470.000	53.46	68.20	41.43	68.20	PASS

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

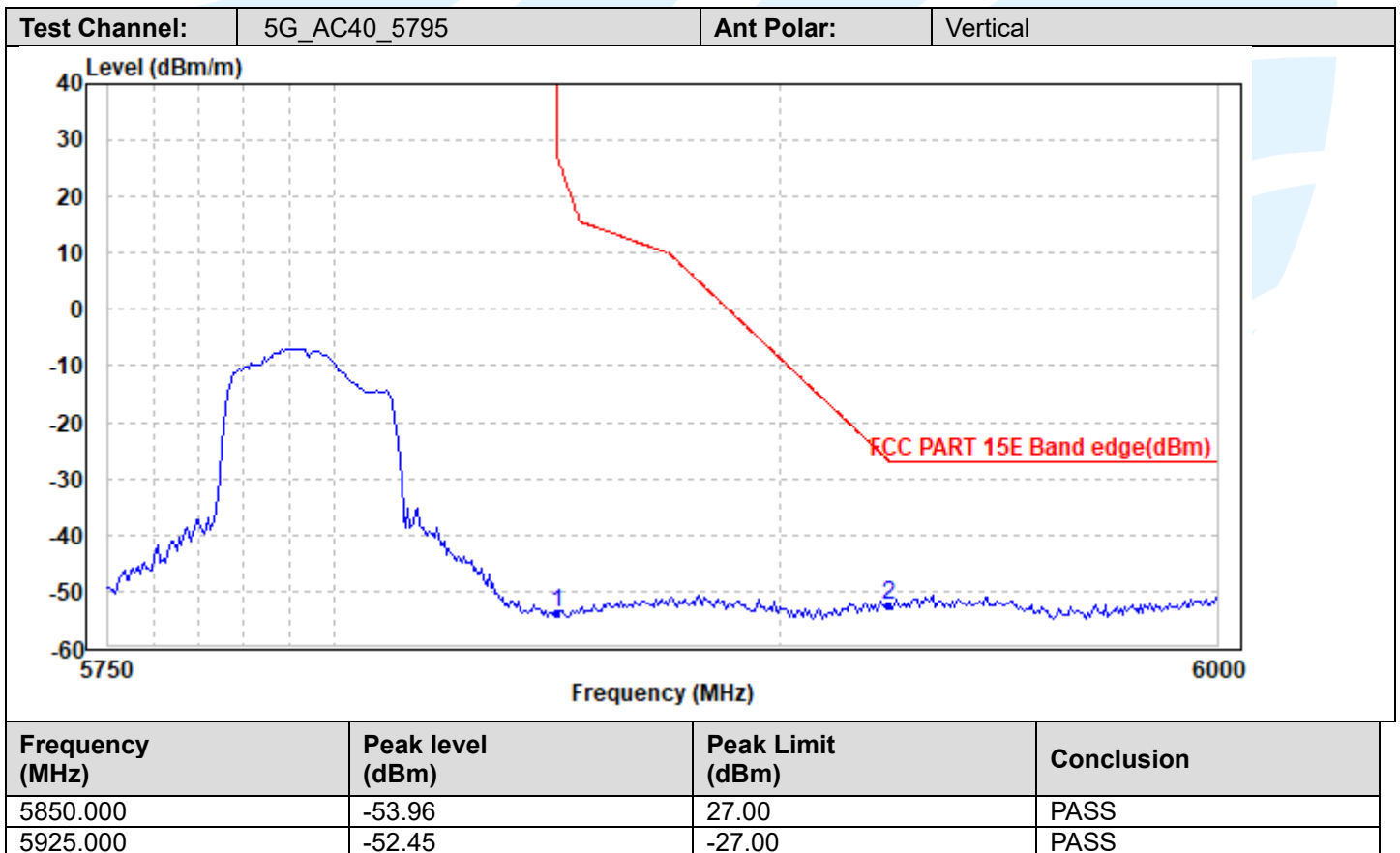
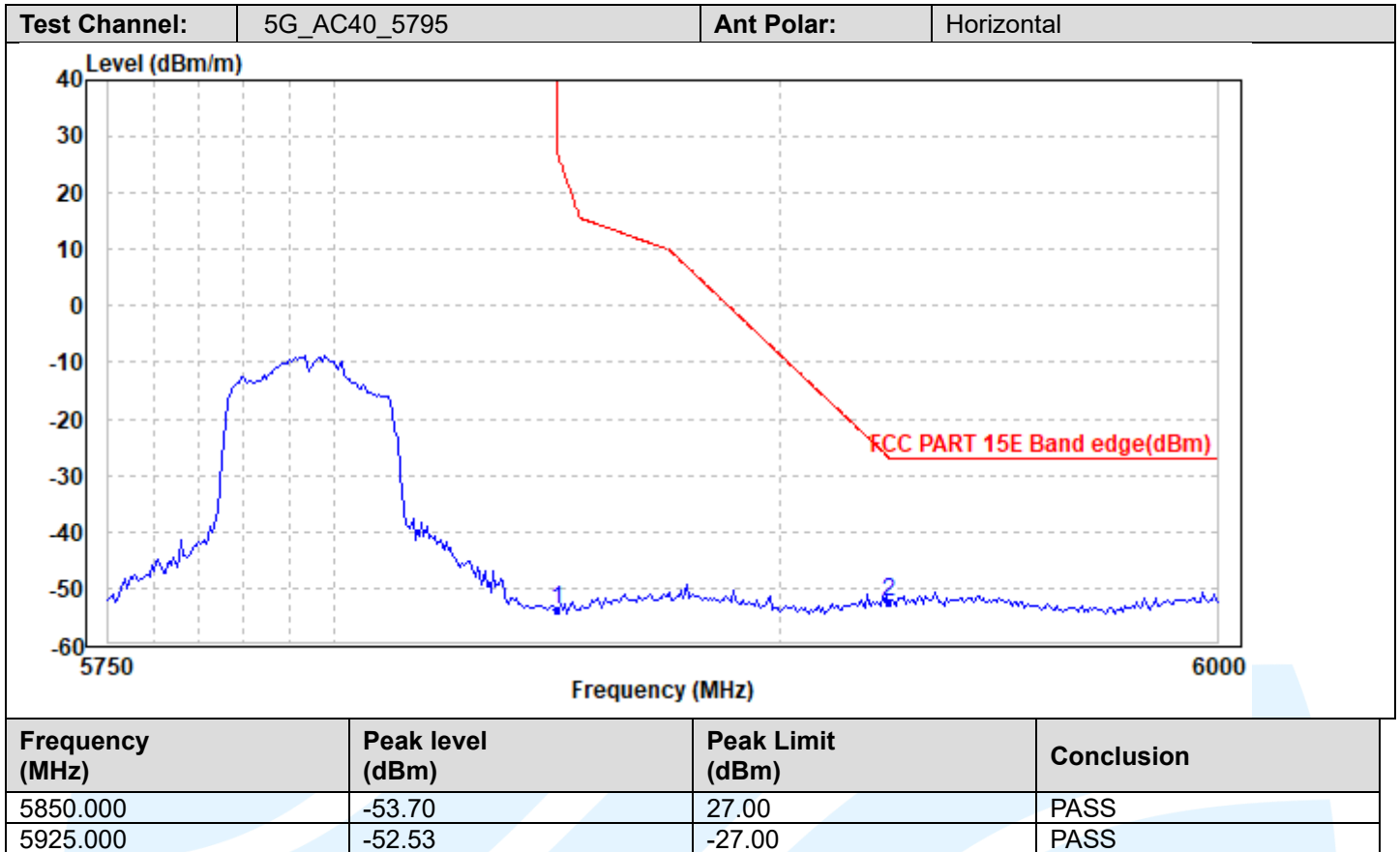
Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1



Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

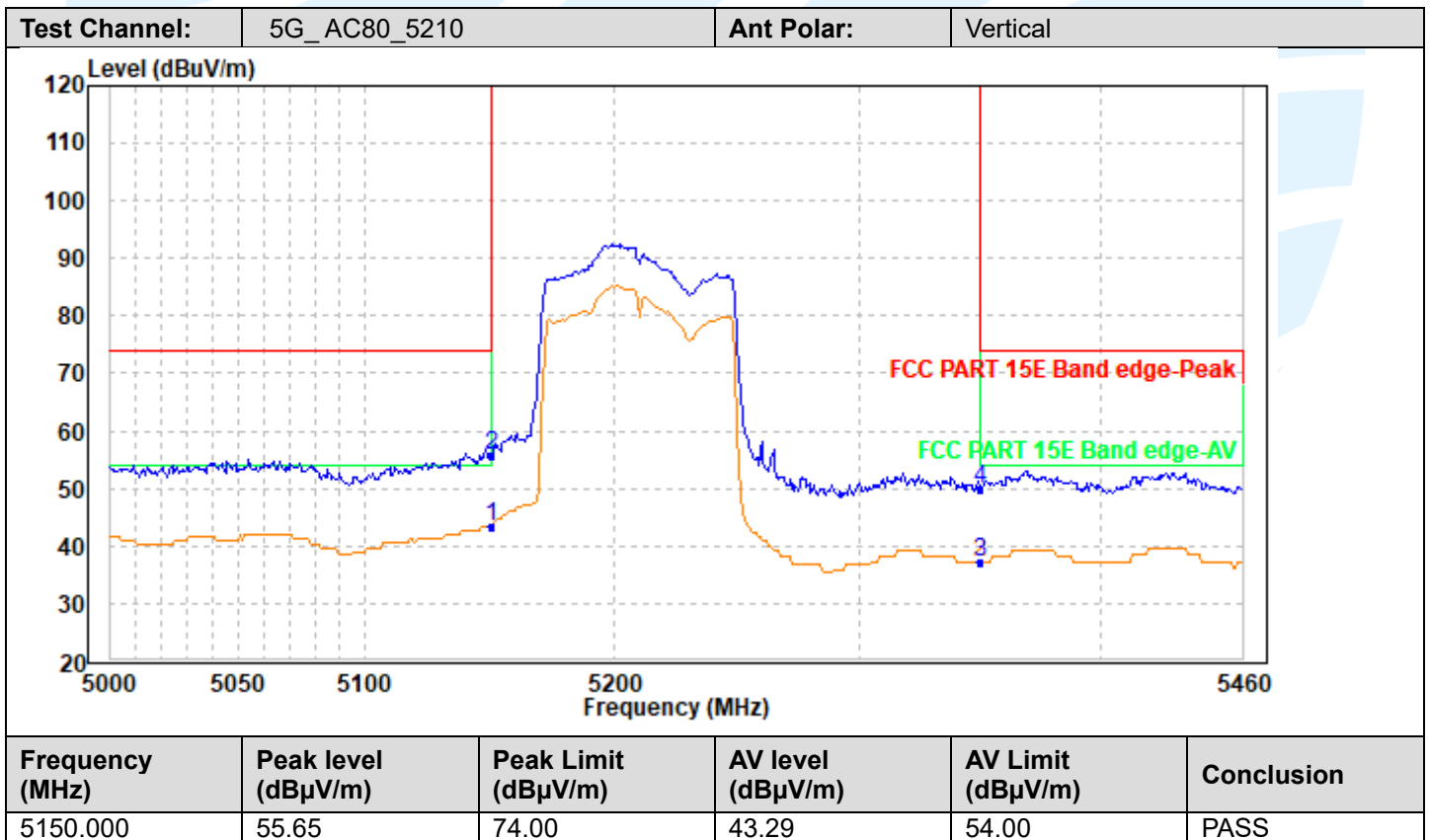
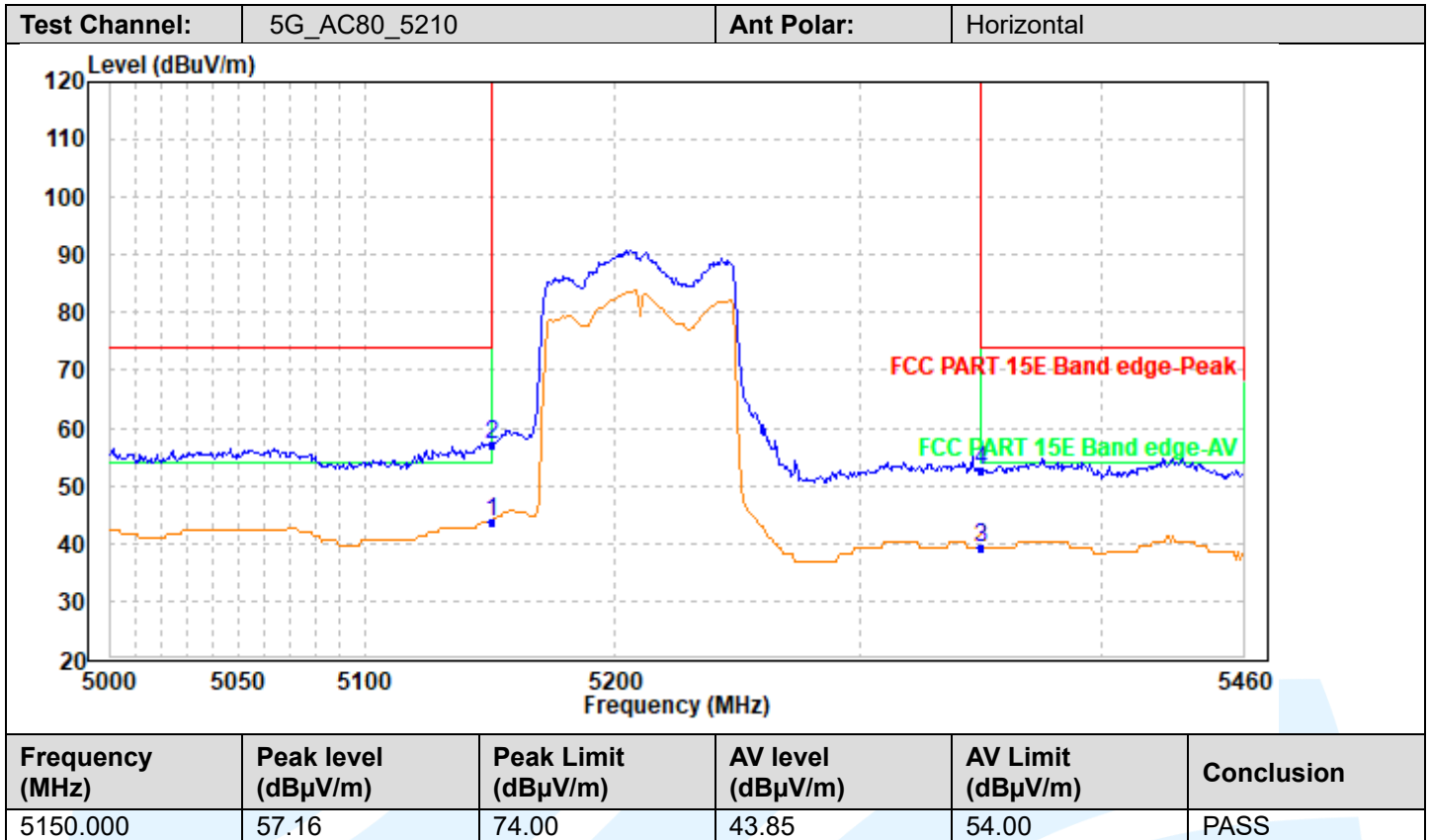
Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1



Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

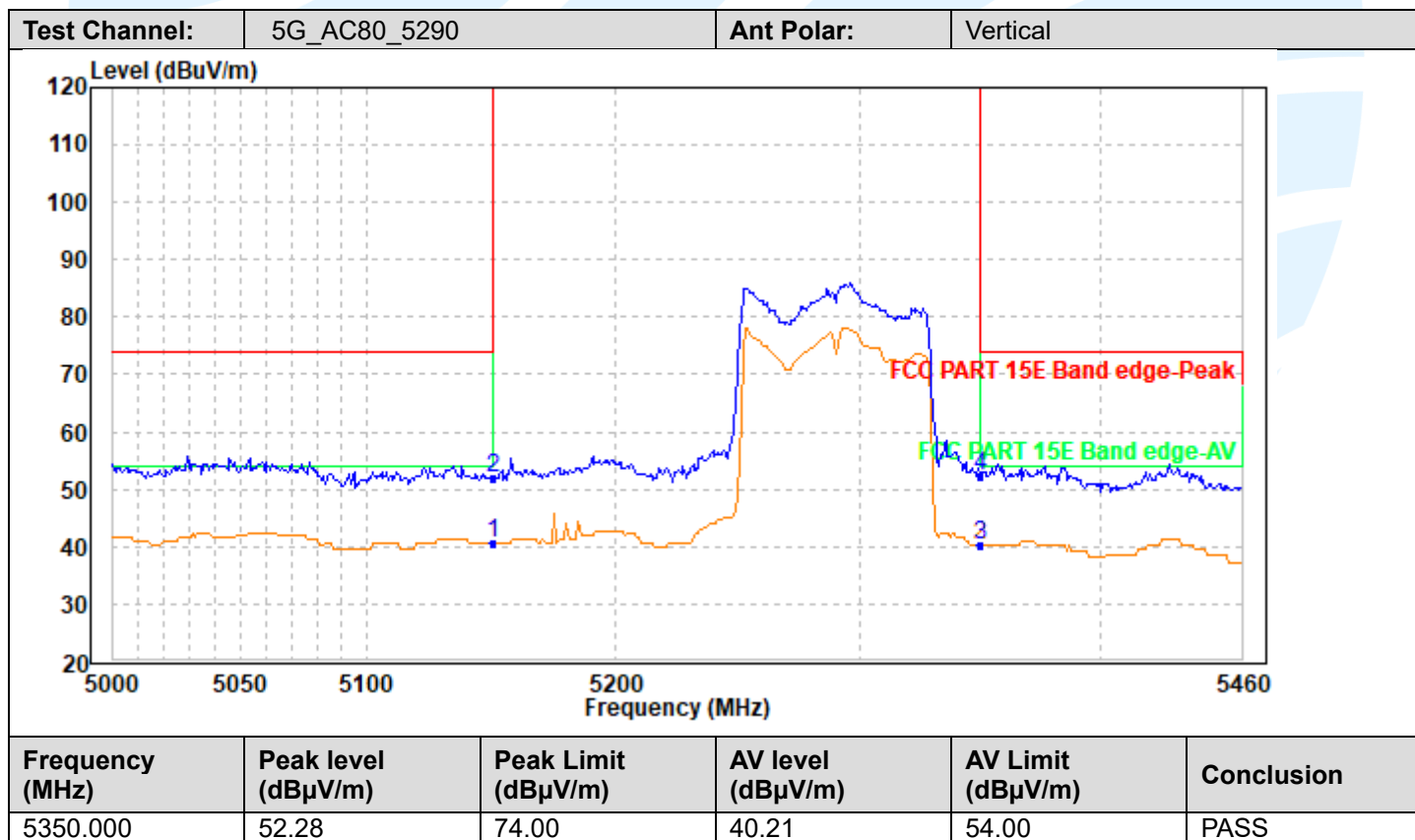
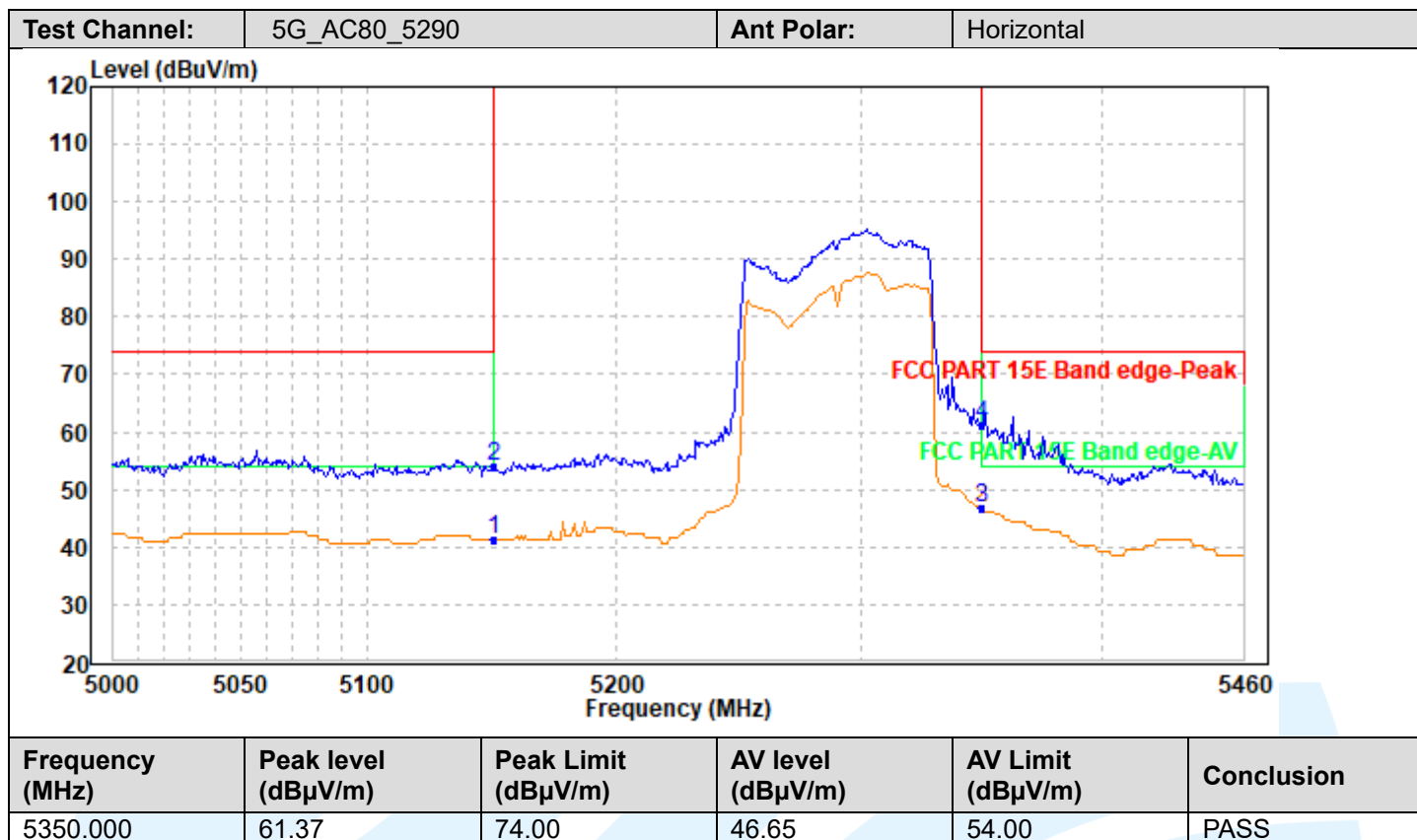
Tel: +86-755-28230888

Fax: +86-755-28230886

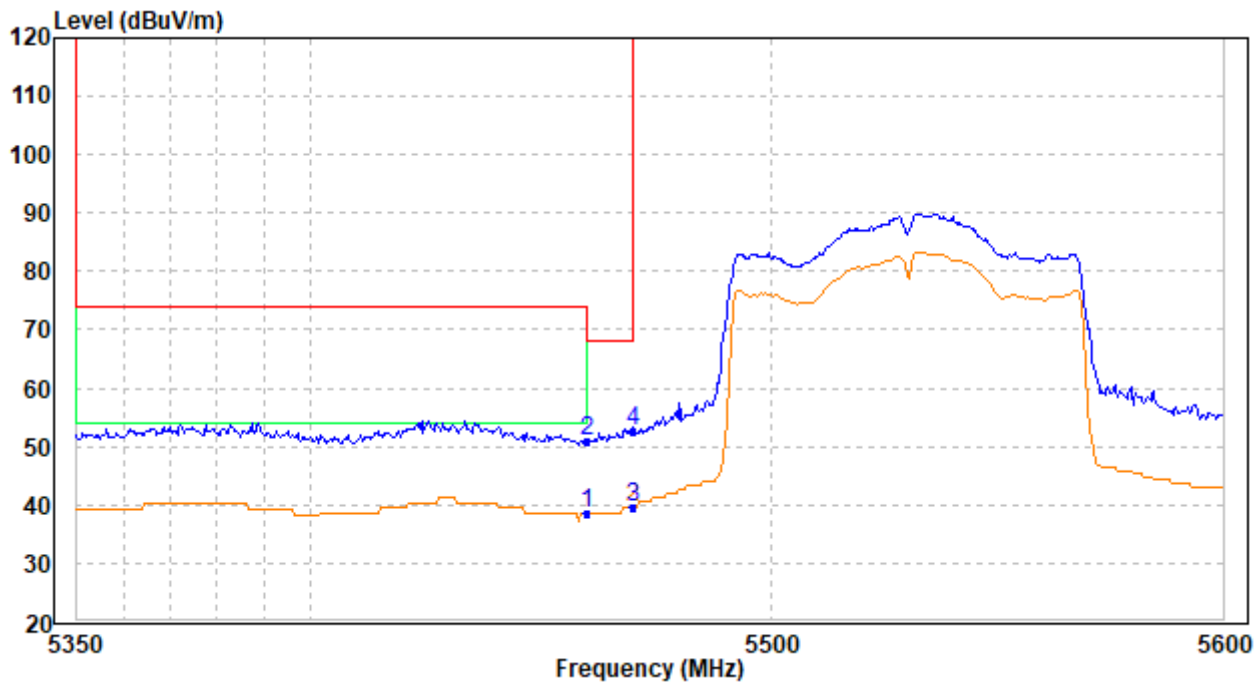
E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

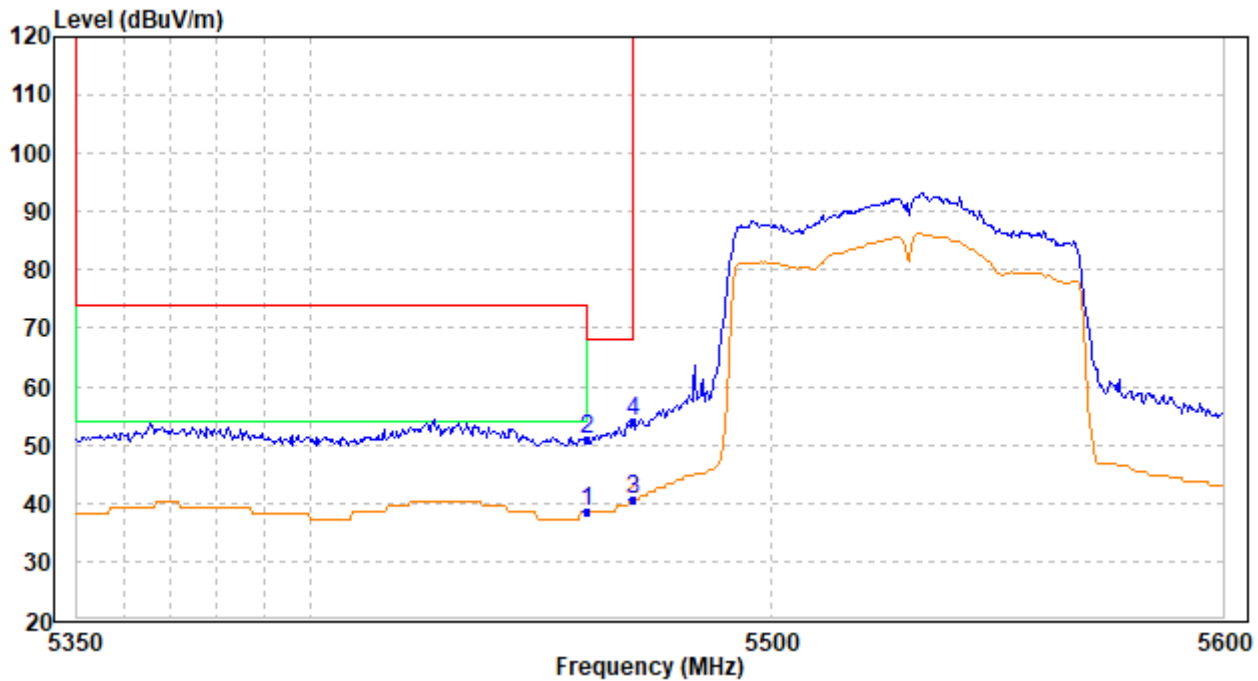


Test Channel:	5G_AC80_5530	Ant Polar:	Horizontal
---------------	--------------	------------	------------



Frequency (MHz)	Peak level (dBμV/m)	Peak Limit (dBμV/m)	AV level (dBμV/m)	AV Limit (dBμV/m)	Conclusion
5460.000	50.98	68.20	38.51	54.00	PASS
5470.000	52.64	68.20	39.56	68.20	PASS

Test Channel:	5G_AC80_5530	Ant Polar:	Vertical
---------------	--------------	------------	----------



Frequency (MHz)	Peak level (dBμV/m)	Peak Limit (dBμV/m)	AV level (dBμV/m)	AV Limit (dBμV/m)	Conclusion
5460.000	50.81	68.20	38.51	54.00	PASS
5470.000	54.06	68.20	40.47	68.20	PASS

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

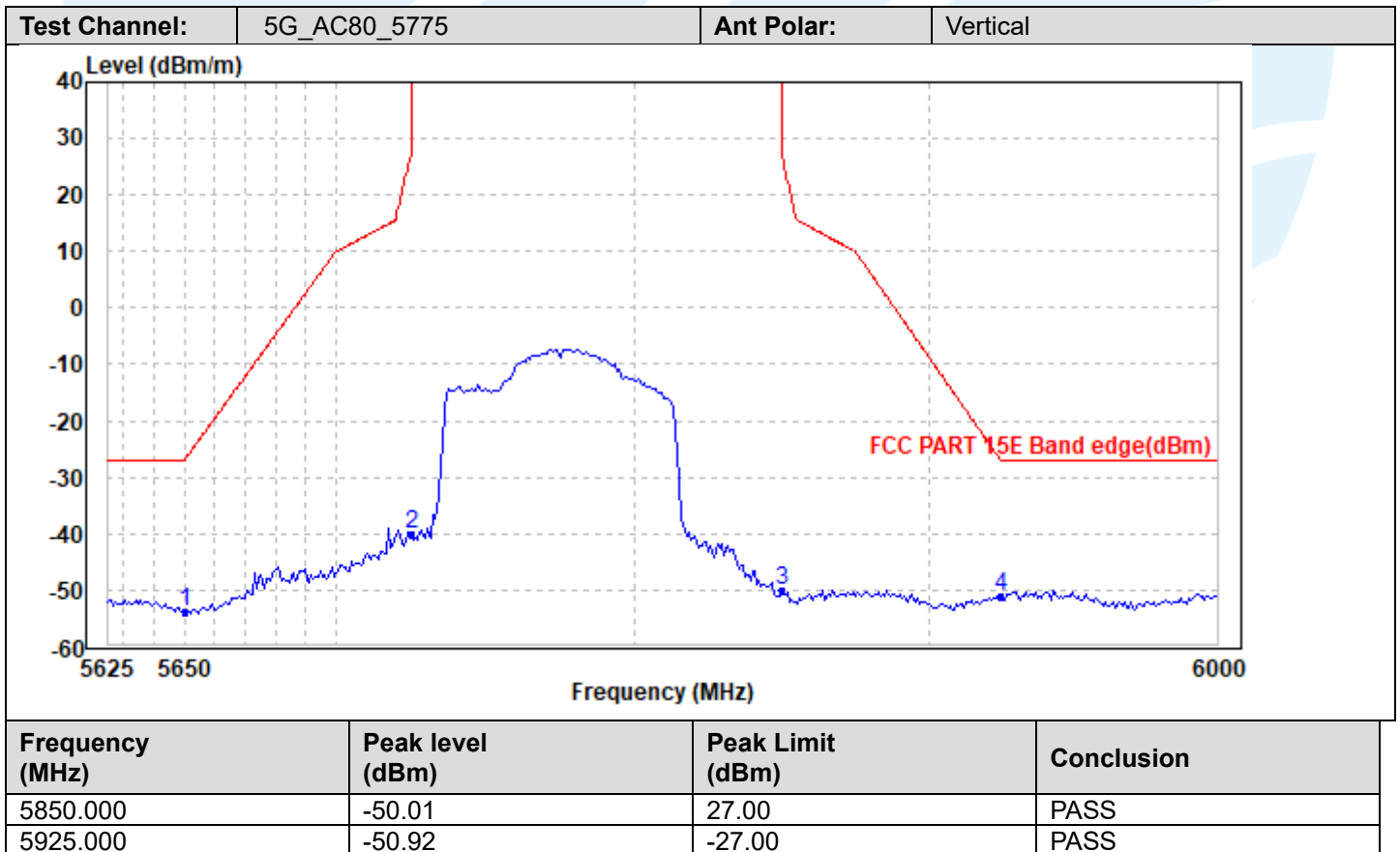
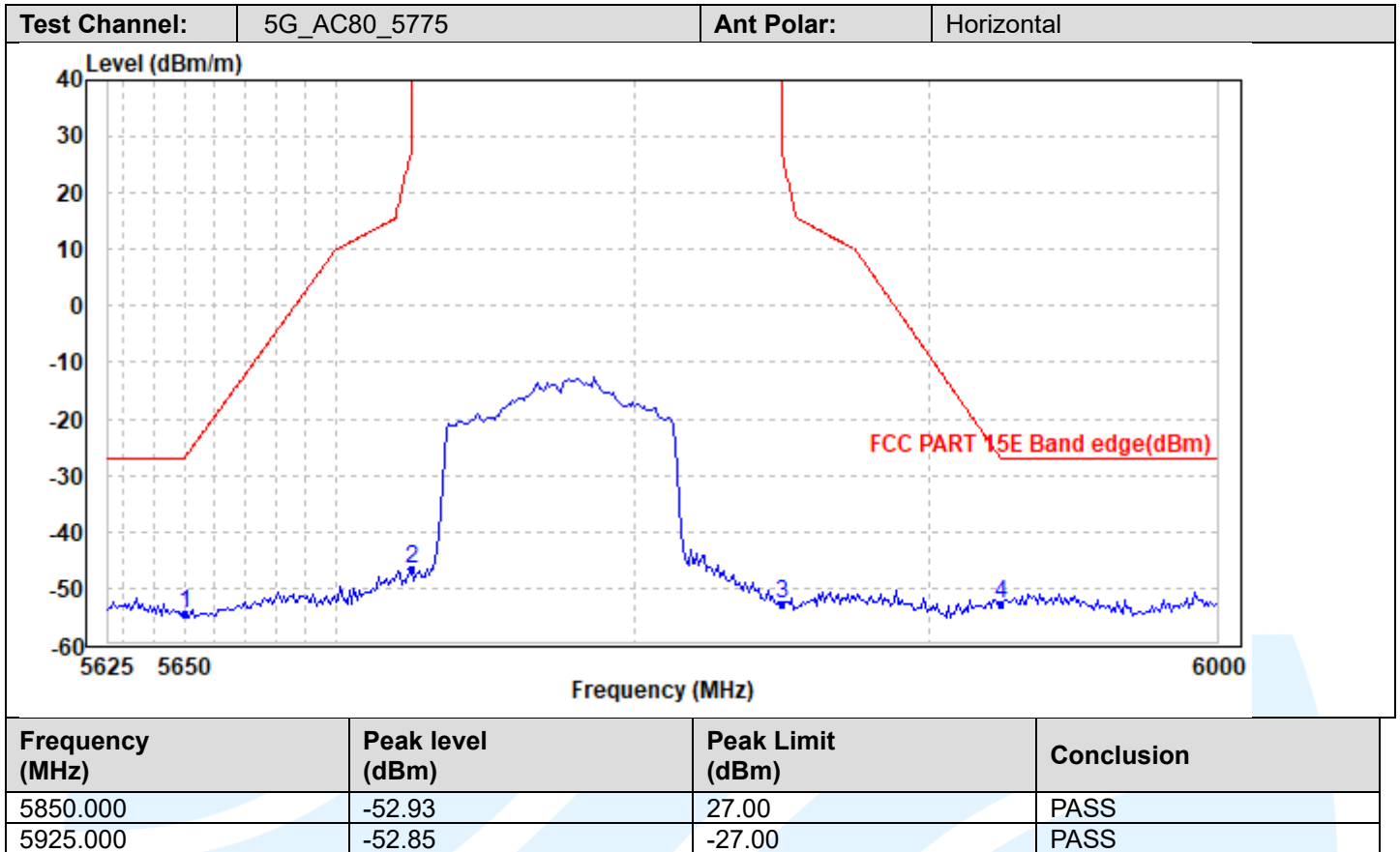
Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1



Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

5.8 DYNAMIC FREQUENCY SELECTION

Test Requirement: FCC 47 CFR Part 15 Subpart E Section 15.407 (h)
RSS-247 Issue 4 Section 7.3.6

Test Method: KDB 905462 D03 Client Without DFS New Rules v01r02

EUT Operating Mode:

DFS Operational mode	Operating Frequency Range	
	5250 MHz to 5350 MHz	5470 MHz to 5725 MHz
Slave without radar Interference detection function	✓	✓

Applicability:

The following table from KDB905462 and the lists of the applicable requirements for the DFS testing.

Applicability of DFS Requirements Prior to Use of a Channel:

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
Non-Occupancy Period	✓	Not required	Yes
DFS Detection Threshold	✓	Not required	Yes
Channel Availability Check Time	✓	Not required	Not required
U-NII Detection Bandwidth	✓	Not required	Yes

Applicability of DFS requirements during normal operation:

Requirement	Operational Mode	
	Master Device or Client with Radar Detection	Client Without Radar Detection
DFS Detection Threshold	Yes	Not required
Channel Closing Transmission Time	Yes	Yes
Channel Move Time	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required
Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar Detection	Client Without Radar Detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.		

DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection:

Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP $\geq$ 200 milliwatt	-64 dBm
EIRP $<$ 200 milliwatt and power spectral density $<$ 10 dBm/MHz	-62 dBm
EIRP $<$ 200 milliwatt that do not meet the power spectral density requirement	-64dBm

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.

Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

DFS Radar Signal Parameter Values:

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds (See Note 1.)
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. (See Notes 1 and 2.)
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. (See Note 3.)

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

DFS Radar Signal Parameter:

Radar Type 0 was used in the evaluation of the Client device for the purpose of measuring the Channel Move Time and the Channel Closing Transmission Time

Table 1-Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (μsec)	PRI (μsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Trials
0	1	1428	18	See Note 1.	See Note 1.
1	1	Test A Test B	$\text{Roundup} \left\{ \left(\frac{1}{360} \right) \left(\frac{19 \cdot 10^6}{\text{PRI}_{\mu\text{sec}}} \right) \right\}$	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

Note 1: Short Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.

Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a

Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms.

If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B.

The aggregate is the average of the percentage of successful detections of short pulse radar types

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

1-4

Table 2-Long Pulse Radar Test Waveform

Radar Type	Pulse Width (μsec)	Chirp Width (MHz)	PRI (μsec)	Number of Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

Table 3-Frequency Hopping Radar Test Waveform

Radar Type	Pulse Width (μsec)	PRI (μsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	9	0.333	300	70%	30

In-Service Monitoring: Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period

Limit of In-Service Monitoring:

Reference to DFS Radar Signal Parameter Values.

Test Procedures:

- One frequency will be chosen from the Operating Channels of the EUT within the 5250-5350 MHz or 5470-5725 MHz bands. For 802.11 devices, the test frequency must contain control signals. This can be verified by disabling channel loading and monitoring the spectrum analyzer. If no control signals are detected, another frequency must be selected within the emission bandwidth where control signals are detected.
- In case the EUT is a Master Device, a U-NII device operating as a Client Device will be used and it is assumed that the Client will associate with the EUT (Master). For radiated tests, the emissions of the Radar Waveform generator will be directed towards the Master Device. If the Master Device has antenna gain, the main beam of the antenna will be directed toward the radar emitter. Vertical polarization is used for testing.
- The TCP protocol unicast data stream was generated by the iperf software command line with at least 17% activity ratio over any 100ms period.
- Timing plots are reported with calculations demonstrating a minimum channel loading of approximately 17% or greater. For example, channel loading can be estimated by setting the spectrum analyzer for zero span and approximate the Time On/ (Time On + Off Time).
- At time T_0 the Radar Waveform generator sends a Burst of pulses for one of the Short Pulse Radar Types 1-4 at DFS Detection Threshold levels on the Operating Channel. An additional 1 dB is added to the radar test signal to ensure it is at or above the DFS Detection Threshold, accounting for equipment variations/errors.
- Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds. Measure and record the transmissions from the EUT during the observation time (Channel Move Time). Measure and record the Channel Move Time and Channel Closing Transmission Time if radar detection occurs.
- When operating as a Master Device, monitor the EUT for more than 30 minutes following instant T_2 to verify that the EUT does not resume any transmissions on this Channel. Perform this test once and record the measurement result.

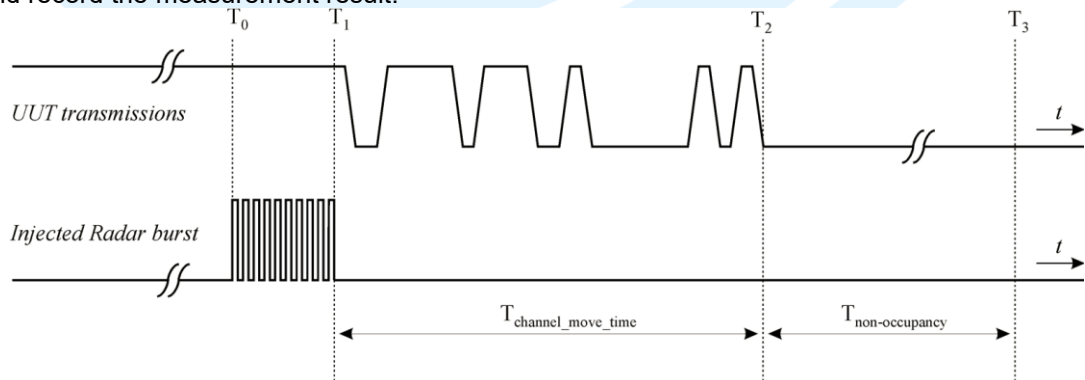


Figure 17: Channel Closing Transmission Time, Channel Move Time and Non-Occupancy Period

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

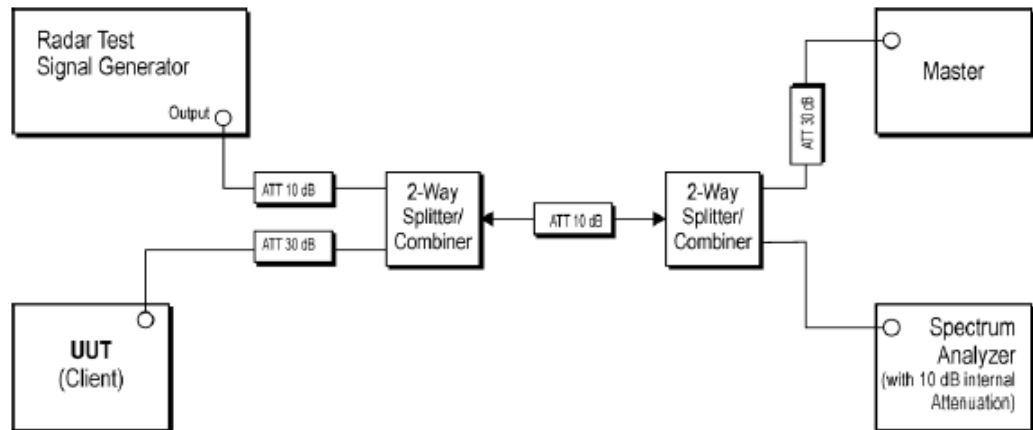
Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

Conducted test setup



Setup for Client with injection at the Master

Equipment Used: Refer to section 3 for details.

Test Result: Please refer to Appendix A

The measurement data as follows:

5.9 AC POWER LINE CONDUCTED EMISSION

Test Requirement: FCC 47 CFR Part 15 Subpart E Section 15.407 (b)(6)
FCC 47 CFR Part 15 Subpart C Section 15.207
RSS-Gen Issue 5, Section 8.8

Test Method: ANSI C63.10-2020, Section 6.2.

Limits:

Frequency range (MHz)	Limits (dB(μV))	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

Remark:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

Test Setup: Refer to section 4.5.2 for details.

Test Procedures:

Test frequency range :150KHz-30MHz

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Equipment Used: Refer to section 3 for details.

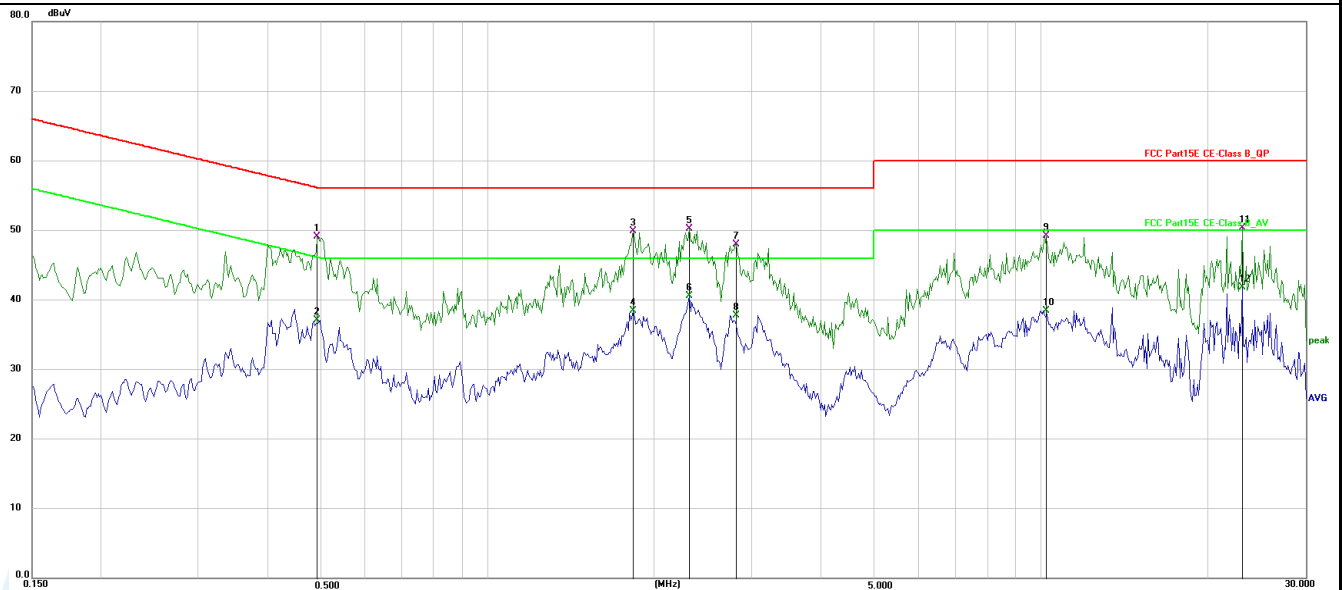
Test Result: Pass

The worst measurement data as follows:

Quasi Peak and Average:

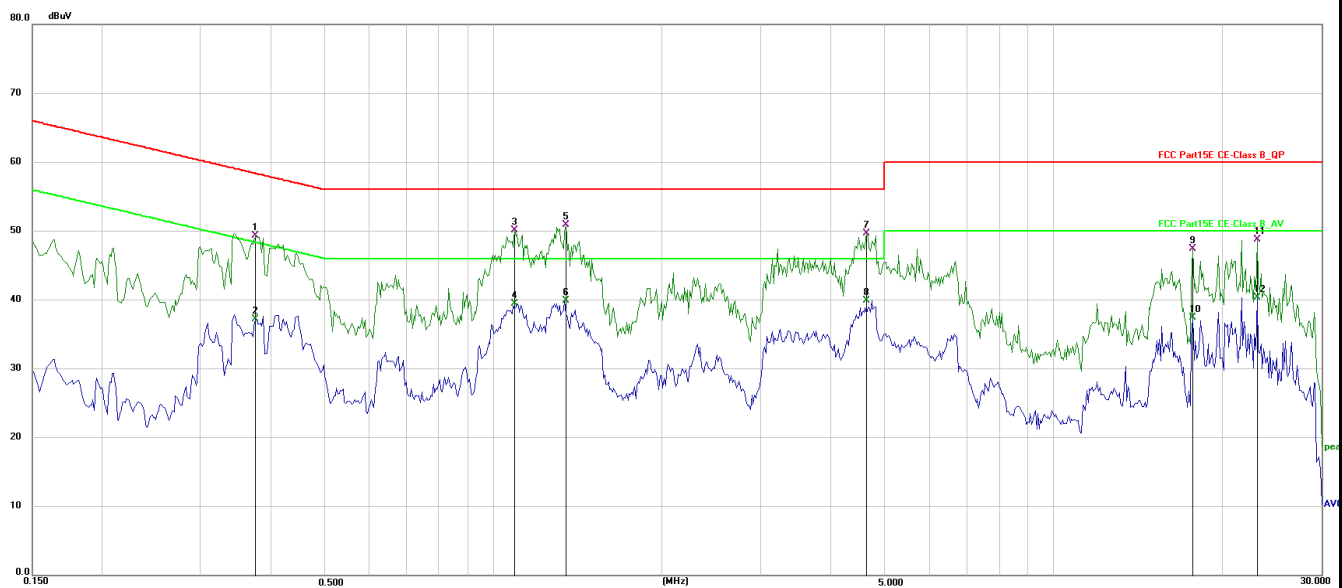
Mode: WIFI Link

Live Line



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.4920	39.29	9.80	49.09	56.13	-7.04	QP
2	0.4920	27.32	9.80	37.12	46.13	-9.01	AVG
3	1.8330	40.12	9.71	49.83	56.00	-6.17	QP
4	1.8330	28.68	9.71	38.39	46.00	-7.61	AVG
5	2.3100	40.45	9.72	50.17	56.00	-5.83	QP
6	2.3100	30.84	9.72	40.56	46.00	-5.44	AVG
7	2.8230	38.25	9.73	47.98	56.00	-8.02	QP
8	2.8230	27.98	9.73	37.71	46.00	-8.29	AVG
9	10.1489	39.48	9.69	49.17	60.00	-10.83	QP
10	10.1489	28.74	9.69	38.43	50.00	-11.57	AVG
11	23.1270	40.37	9.90	50.27	60.00	-9.73	QP
12	23.1270	31.90	9.90	41.80	50.00	-8.20	AVG

Neutral Line



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.3769	39.57	9.78	49.35	58.35	-9.00	QP
2	0.3769	27.45	9.78	37.23	48.35	-11.12	AVG
3	1.0905	40.42	9.71	50.13	56.00	-5.87	QP
4	1.0905	29.73	9.71	39.44	46.00	-6.56	AVG
5	1.3470	41.18	9.71	50.89	56.00	-5.11	QP
6	1.3470	30.13	9.71	39.84	46.00	-6.16	AVG
7	4.6455	39.93	9.75	49.68	56.00	-6.32	QP
8	4.6455	30.10	9.75	39.85	46.00	-6.15	AVG
9	17.6951	37.54	9.87	47.41	60.00	-12.59	QP
10	17.6951	27.60	9.87	37.47	50.00	-12.53	AVG
11	23.1270	38.87	9.90	48.77	60.00	-11.23	QP
12	23.1270	30.40	9.90	40.30	50.00	-9.70	AVG

Remark:

1. Correct Factor = LISN Factor + Cable Loss + Pulse Limiter Factor, the value was added to Original Receiver Reading by the software automatically.
2. Result = Reading + Correct Factor.
3. Margin = Result - Limit
4. An initial pre-scan was performed on the Phase and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

APPENDIX A RF TEST DATA

A1. 99% BANDWIDTH

Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	FL [MHz]	FH [MHz]
11A	Ant1	5180	17.197	5171.3373	5188.5343
11A	Ant1	5200	17.124	5191.3809	5208.5049
11A	Ant1	5240	17.333	5231.2506	5248.5836
11A	Ant1	5260	17.206	5251.3204	5268.5264
11A	Ant1	5280	17.198	5271.2920	5288.4900
11A	Ant1	5320	17.194	5311.3146	5328.5086
11A	Ant1	5500	17.635	5491.1974	5508.8324
11A	Ant1	5600	17.965	5591.0538	5609.0188
11A	Ant1	5700	17.407	5691.2165	5708.6235
11A	Ant1	5745	17.220	5736.3542	5753.5742
11A	Ant1	5785	17.241	5776.2958	5793.5368
11A	Ant1	5825	17.289	5816.2581	5833.5471
11N20SISO	Ant1	5180	18.234	5170.8607	5189.0947
11N20SISO	Ant1	5200	18.121	5190.9796	5209.1006
11N20SISO	Ant1	5240	18.157	5230.8941	5249.0511
11N20SISO	Ant1	5260	18.162	5250.8954	5269.0574
11N20SISO	Ant1	5280	18.156	5270.8560	5289.0120
11N20SISO	Ant1	5320	18.230	5310.8352	5329.0652
11N20SISO	Ant1	5500	18.398	5490.9010	5509.2990
11N20SISO	Ant1	5600	18.616	5590.7813	5609.3973
11N20SISO	Ant1	5700	18.391	5690.7816	5709.1726
11N20SISO	Ant1	5745	18.187	5735.8791	5754.0661
11N20SISO	Ant1	5785	18.225	5775.8492	5794.0742
11N20SISO	Ant1	5825	18.200	5815.8712	5834.0712
11N40SISO	Ant1	5190	36.442	5171.9041	5208.3461
11N40SISO	Ant1	5230	36.401	5211.8576	5248.2586
11N40SISO	Ant1	5270	36.410	5251.7950	5288.2050
11N40SISO	Ant1	5310	36.433	5291.7449	5328.1779
11N40SISO	Ant1	5510	36.847	5491.8273	5528.6743
11N40SISO	Ant1	5550	36.941	5531.8416	5568.7826
11N40SISO	Ant1	5670	36.542	5651.7560	5688.2980
11N40SISO	Ant1	5755	36.269	5736.8834	5773.1524
11N40SISO	Ant1	5795	36.380	5776.8203	5813.2003
11AC20SISO	Ant1	5180	18.146	5170.9045	5189.0505
11AC20SISO	Ant1	5200	18.198	5190.9024	5209.1004
11AC20SISO	Ant1	5240	18.180	5230.8959	5249.0759
11AC20SISO	Ant1	5260	18.183	5250.8867	5269.0697
11AC20SISO	Ant1	5280	18.266	5270.8308	5289.0968
11AC20SISO	Ant1	5320	18.185	5310.8648	5329.0498
11AC20SISO	Ant1	5500	18.461	5490.8282	5509.2892
11AC20SISO	Ant1	5600	18.602	5590.7217	5609.3237
11AC20SISO	Ant1	5700	18.362	5690.7874	5709.1494
11AC20SISO	Ant1	5745	18.174	5735.9008	5754.0748
11AC20SISO	Ant1	5785	18.206	5775.8730	5794.0790
11AC20SISO	Ant1	5825	18.232	5815.8663	5834.0983
11AC40SISO	Ant1	5190	36.449	5171.8490	5208.2980
11AC40SISO	Ant1	5230	36.374	5211.8426	5248.2166
11AC40SISO	Ant1	5270	36.357	5251.7956	5288.1526
11AC40SISO	Ant1	5310	36.411	5291.7400	5328.1510
11AC40SISO	Ant1	5510	36.978	5491.8115	5528.7895
11AC40SISO	Ant1	5550	37.079	5531.8171	5568.8961
11AC40SISO	Ant1	5670	36.818	5651.6446	5688.4626
11AC40SISO	Ant1	5755	36.383	5736.8228	5773.2058
11AC40SISO	Ant1	5795	36.338	5776.8275	5813.1655
11AC80SISO	Ant1	5210	75.327	5172.5156	5247.8426
11AC80SISO	Ant1	5290	75.296	5252.2746	5327.5706
11AC80SISO	Ant1	5530	76.408	5492.5167	5568.9247
11AC80SISO	Ant1	5610	75.979	5572.4128	5648.3918
11AC80SISO	Ant1	5775	75.466	5737.3322	5812.7982

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

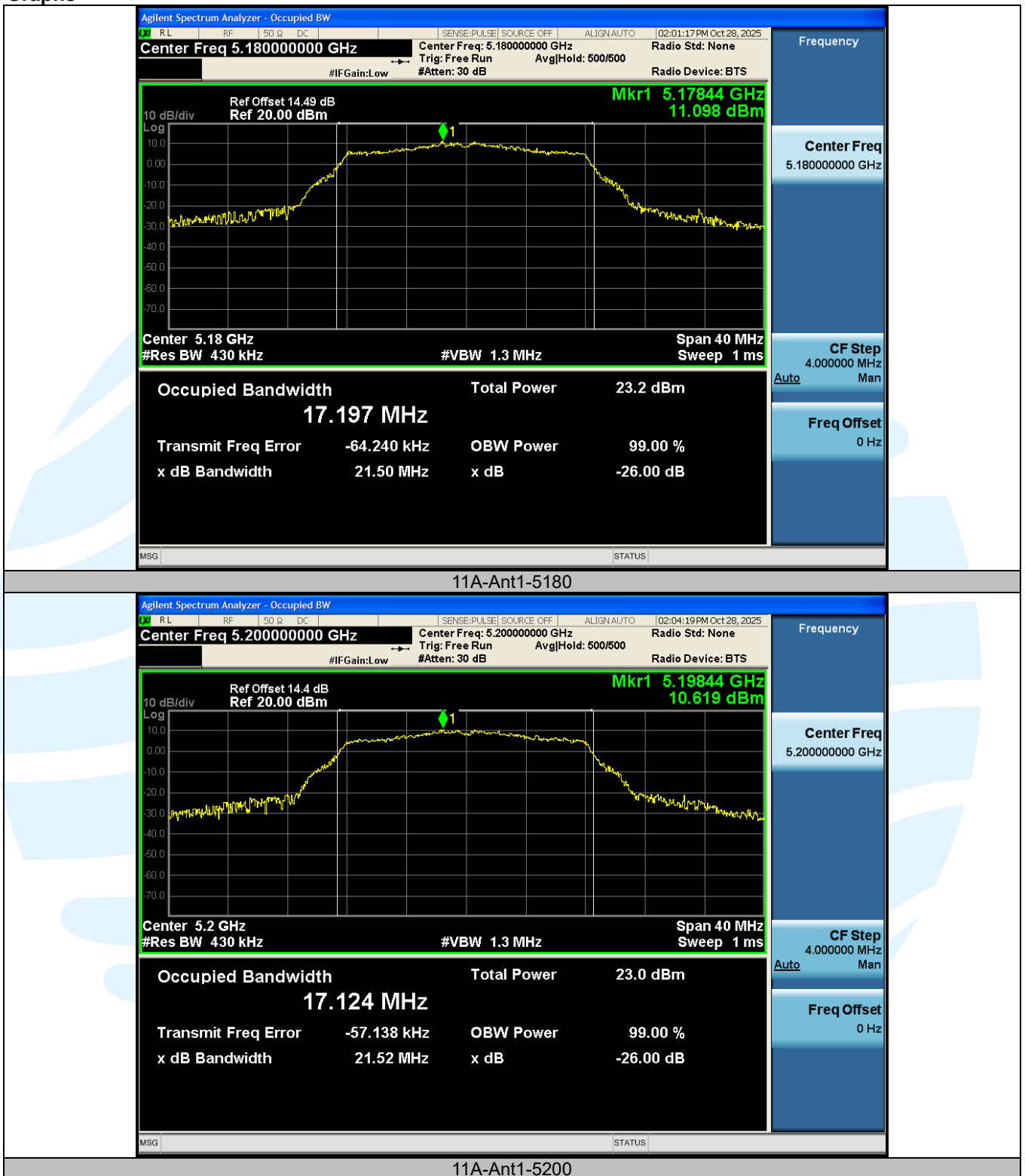
Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

Test Graphs



Shenzhen UnionTrust Quality and Technology Co., Ltd.

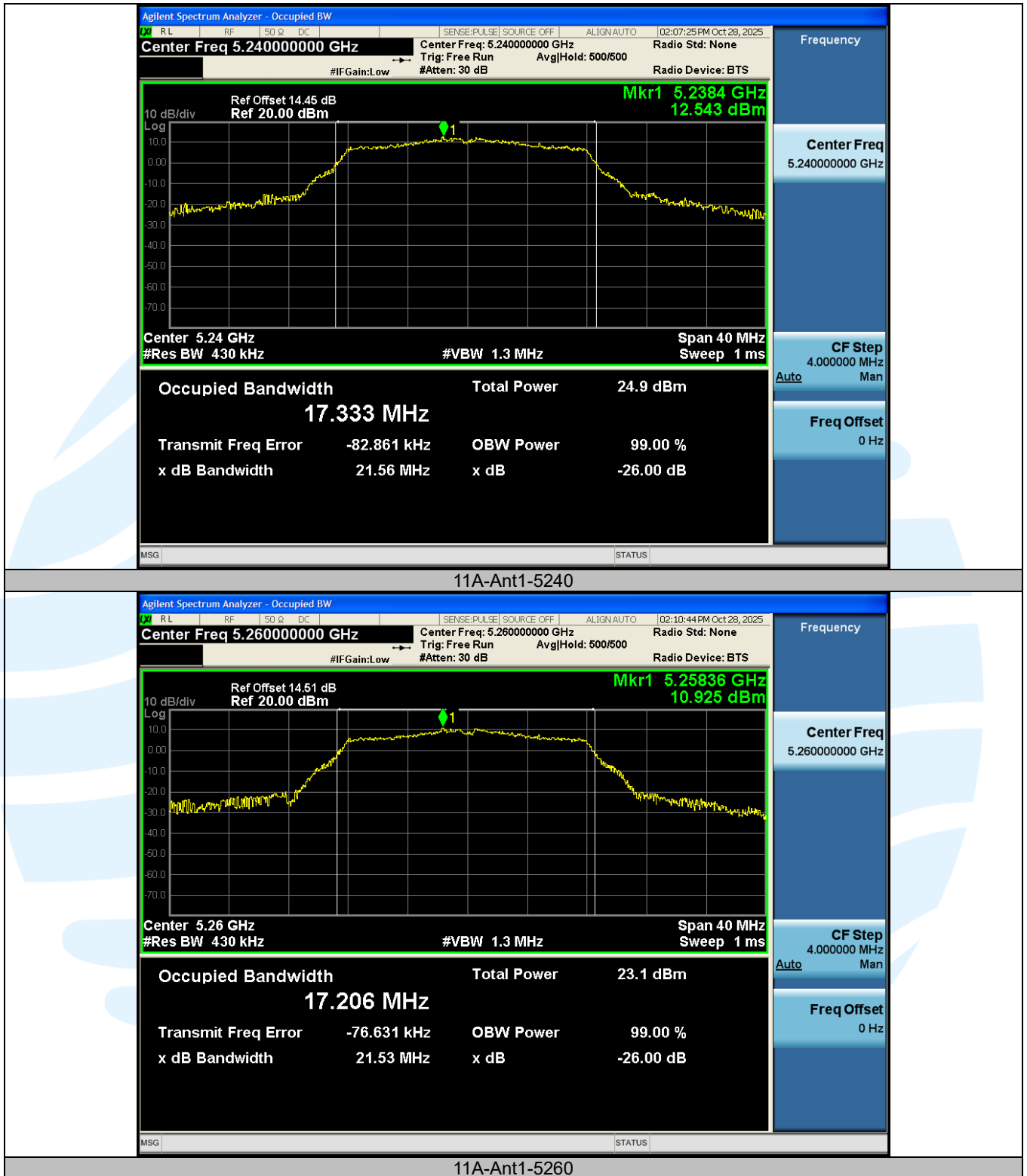
Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

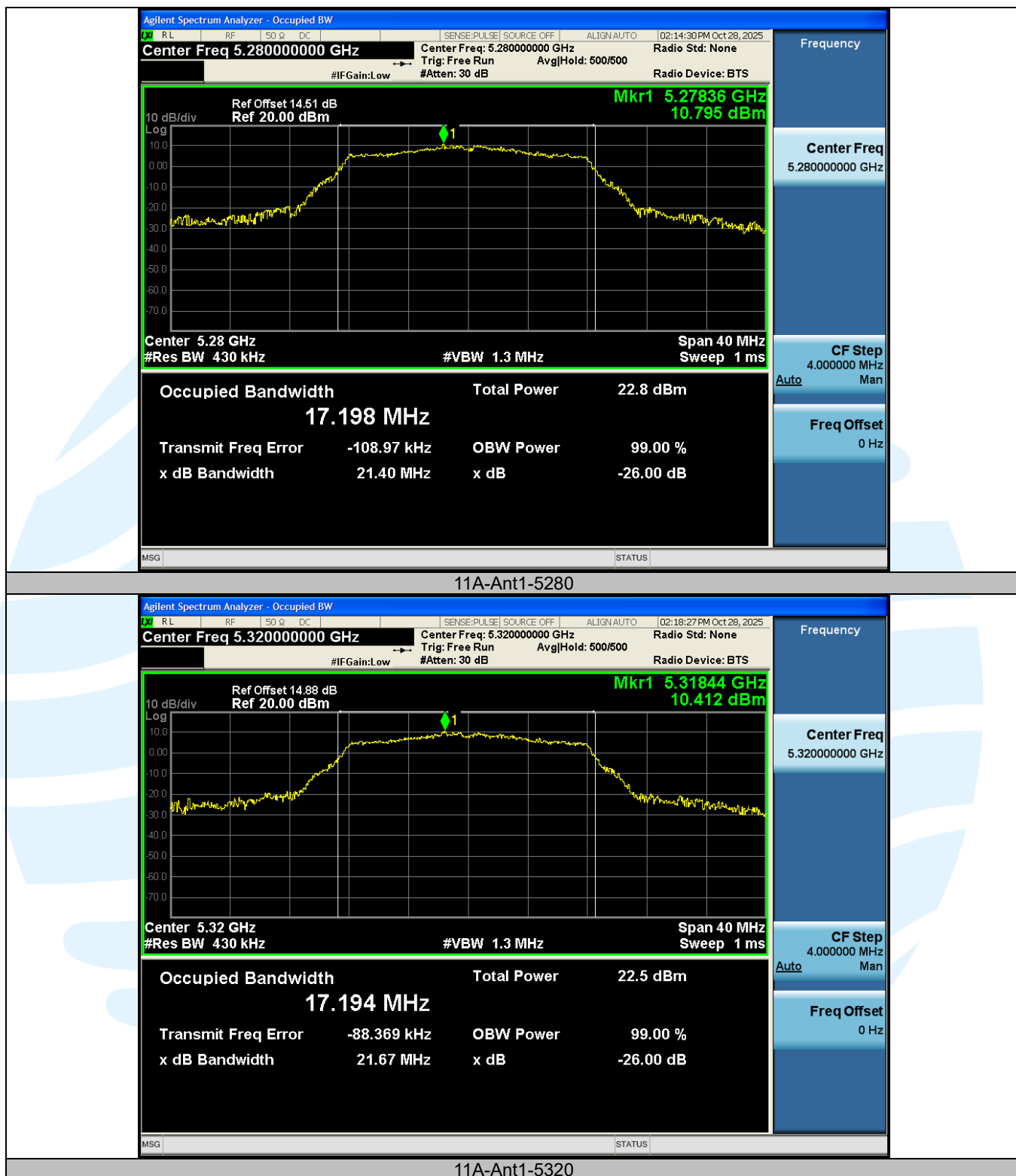
Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com
<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1



**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

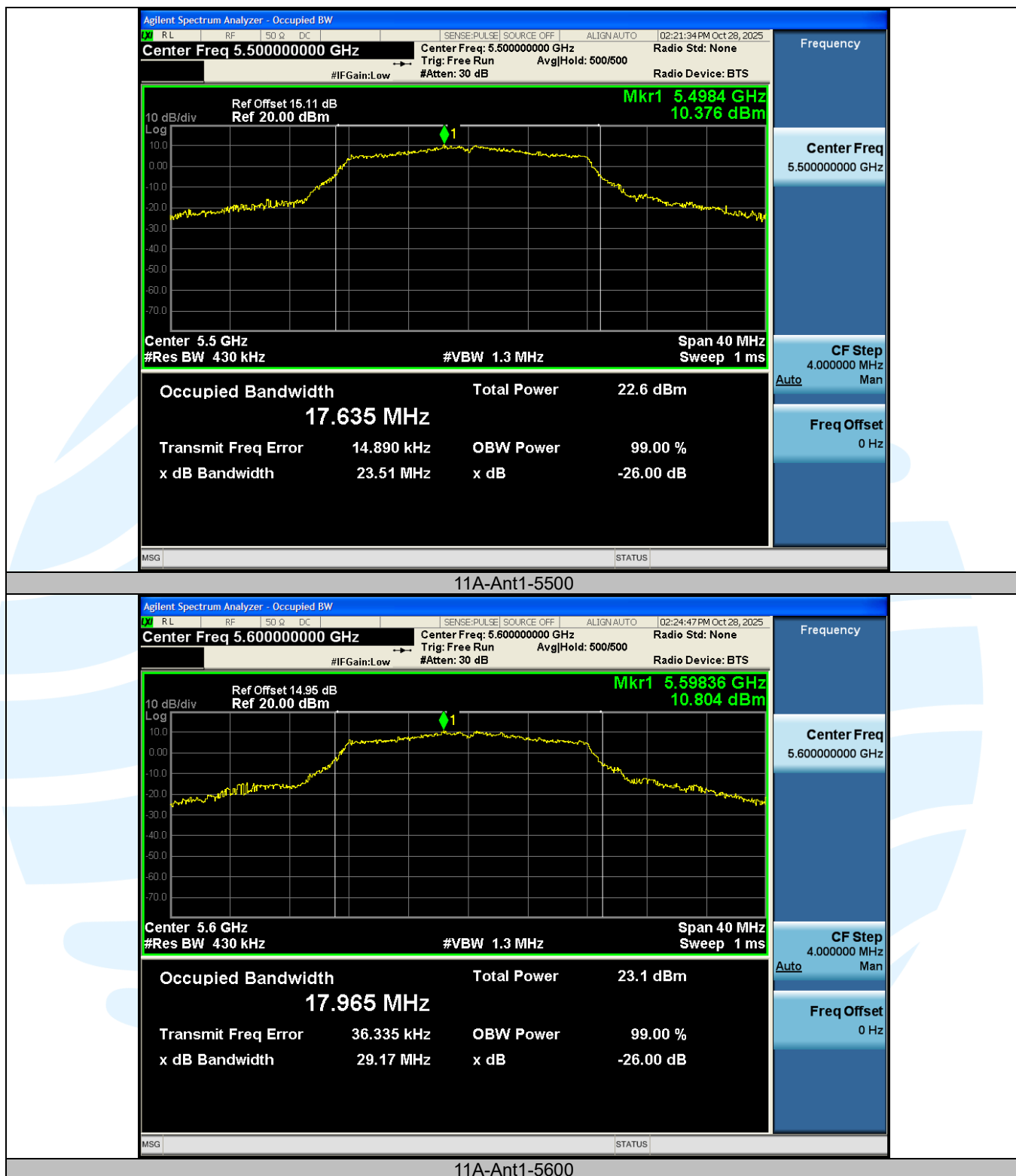
Tel: +86-755-28230888

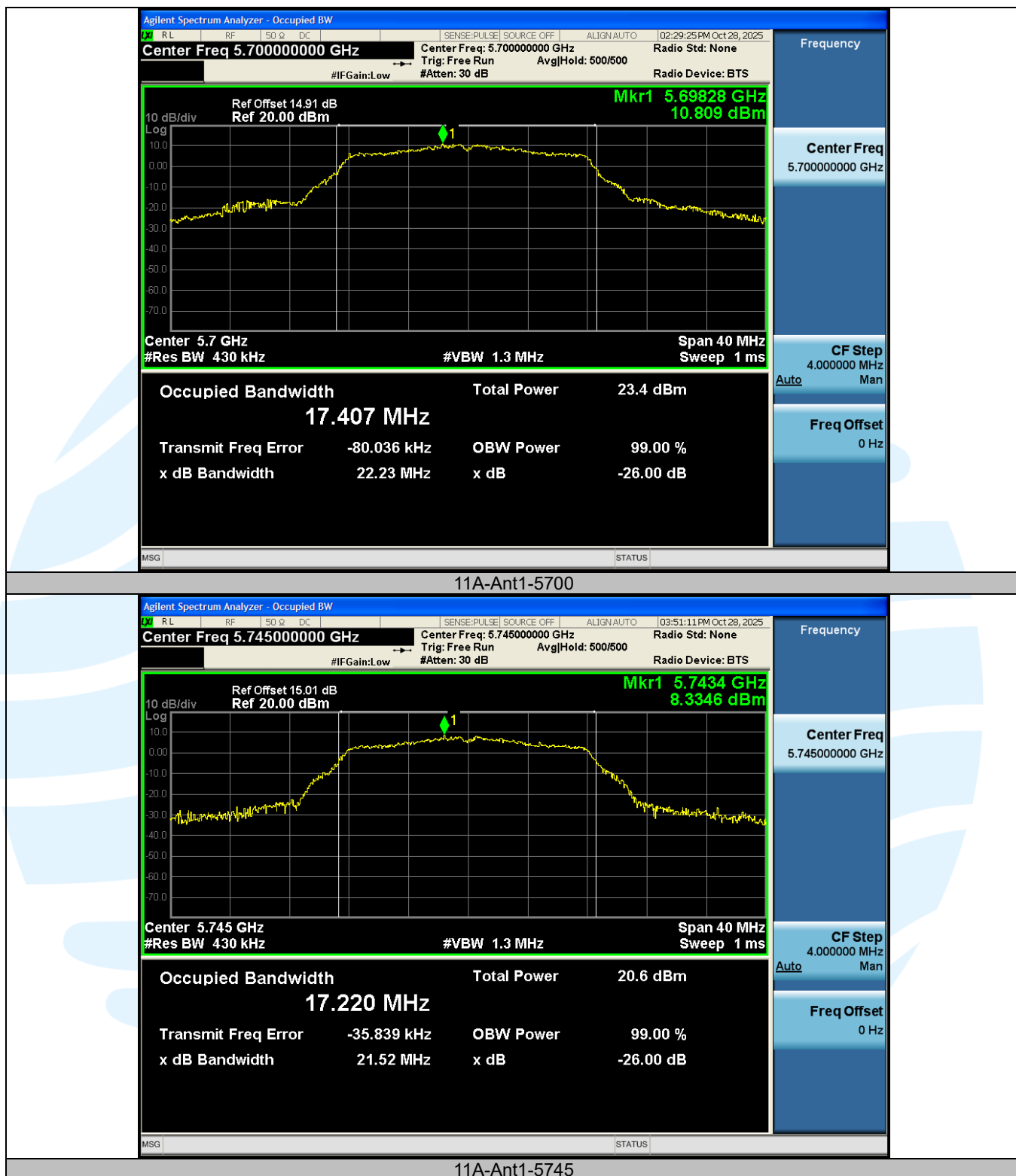
Fax: +86-755-28230886

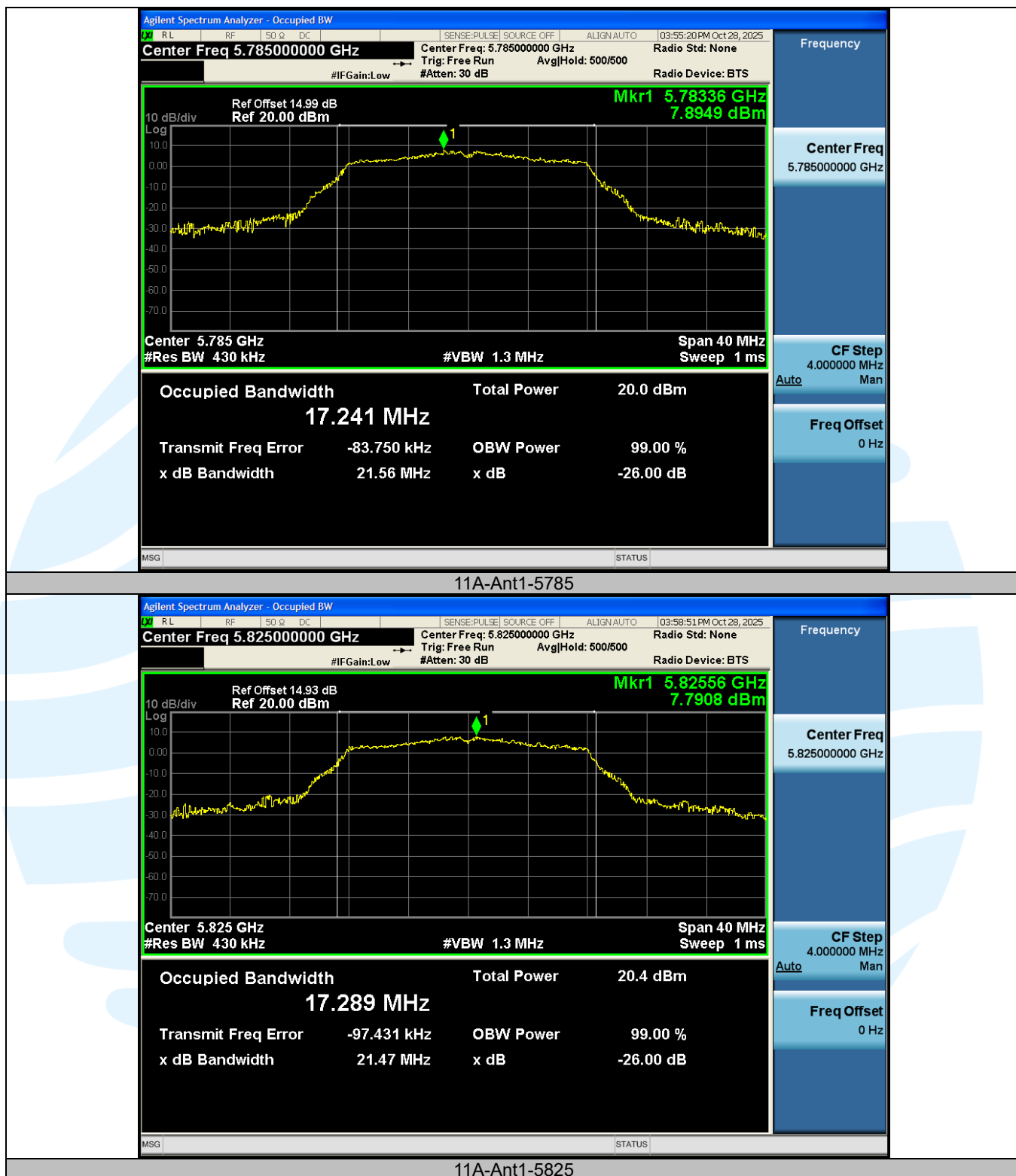
E-mail: info@uttlab.com

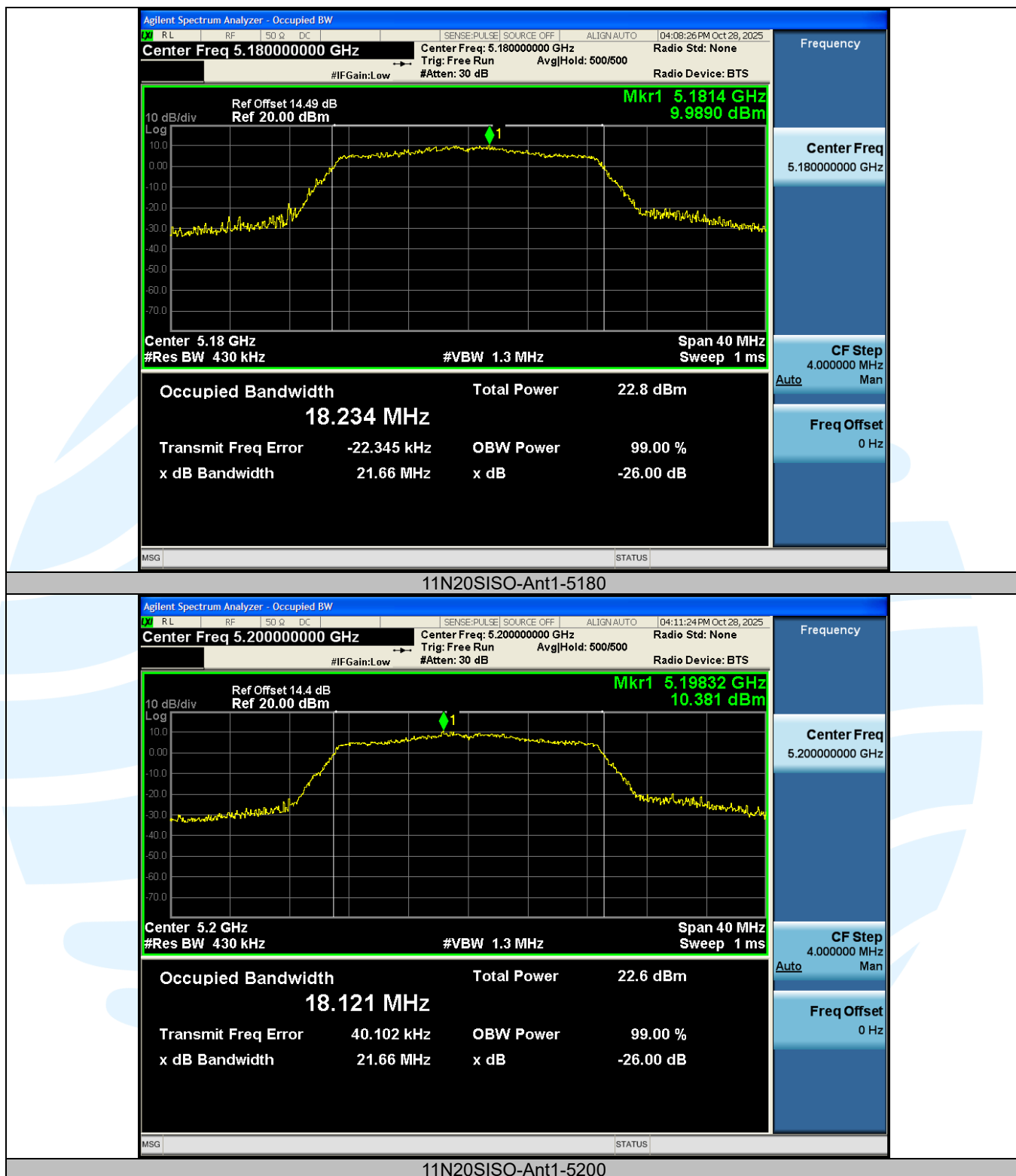
<http://www.uttlab.com>

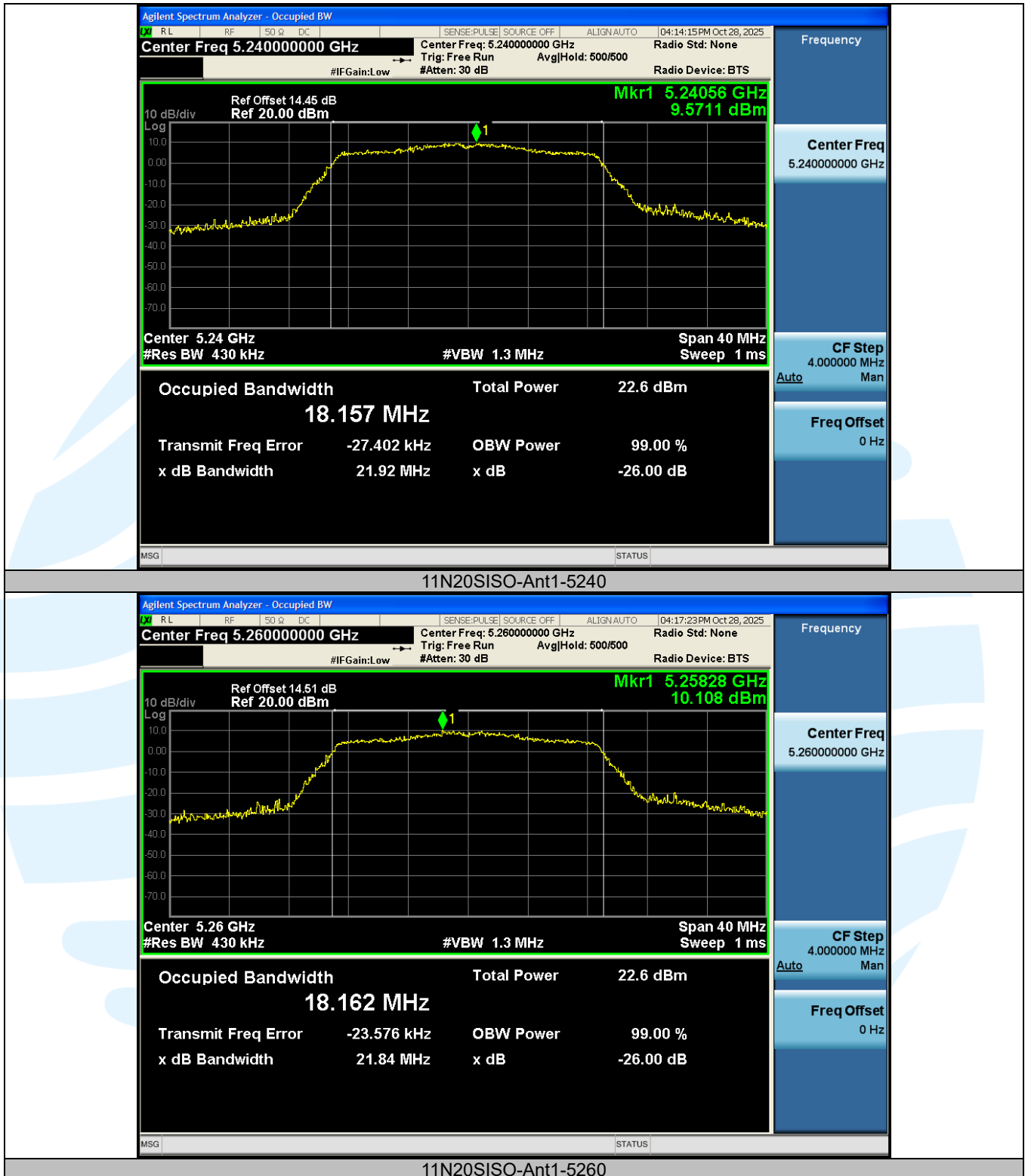
UTTR-RF-RSS247-V1.1

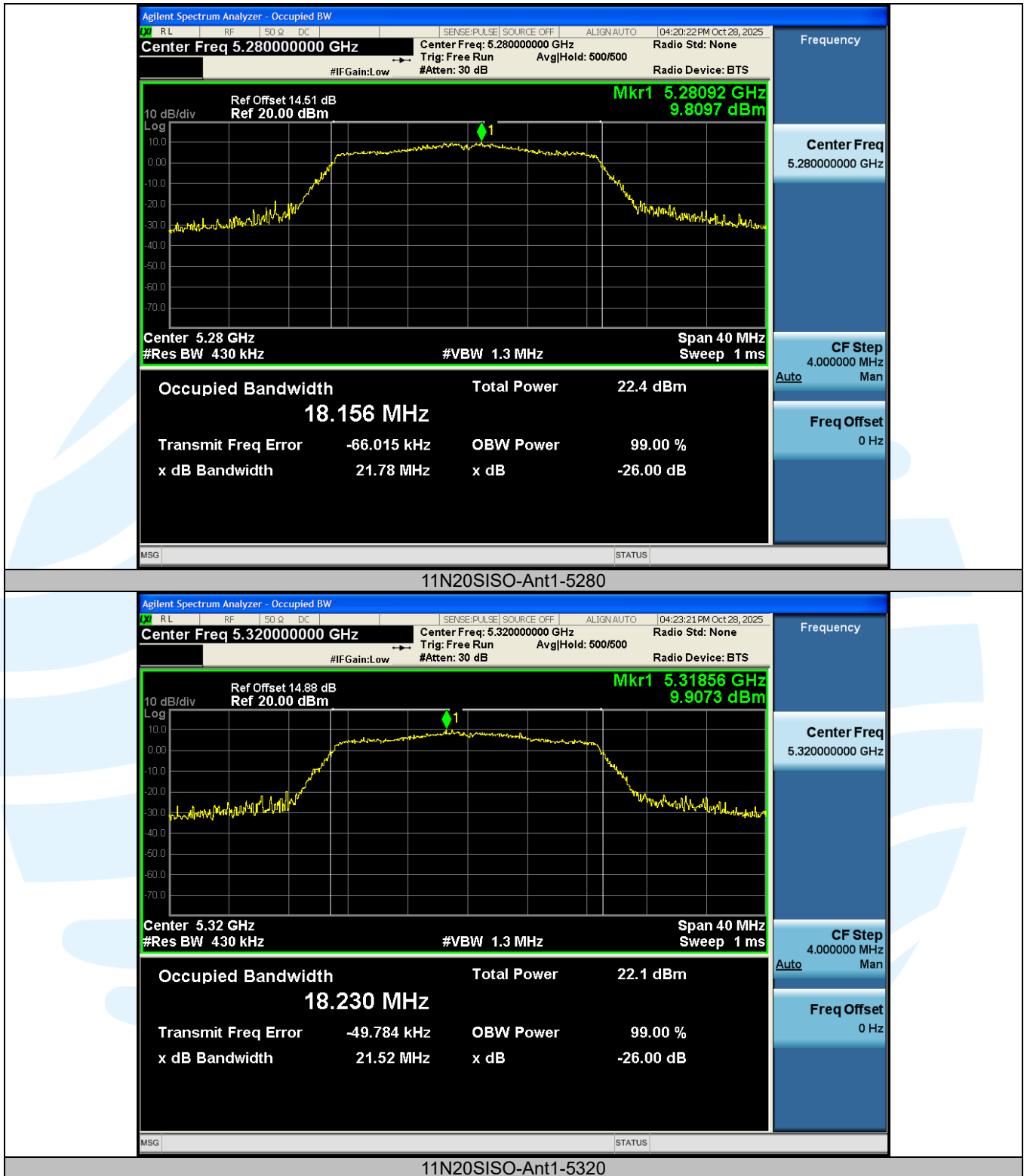


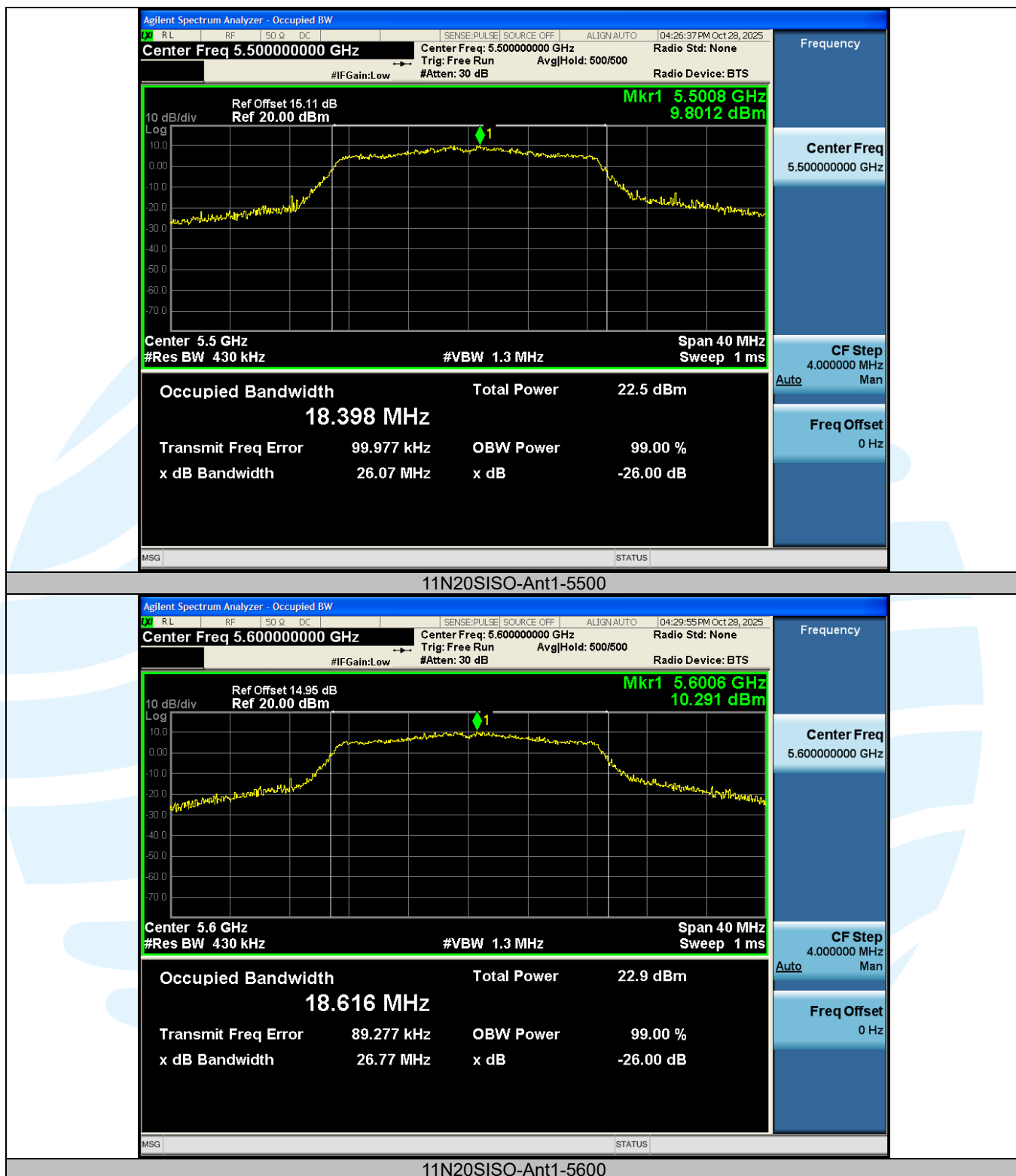


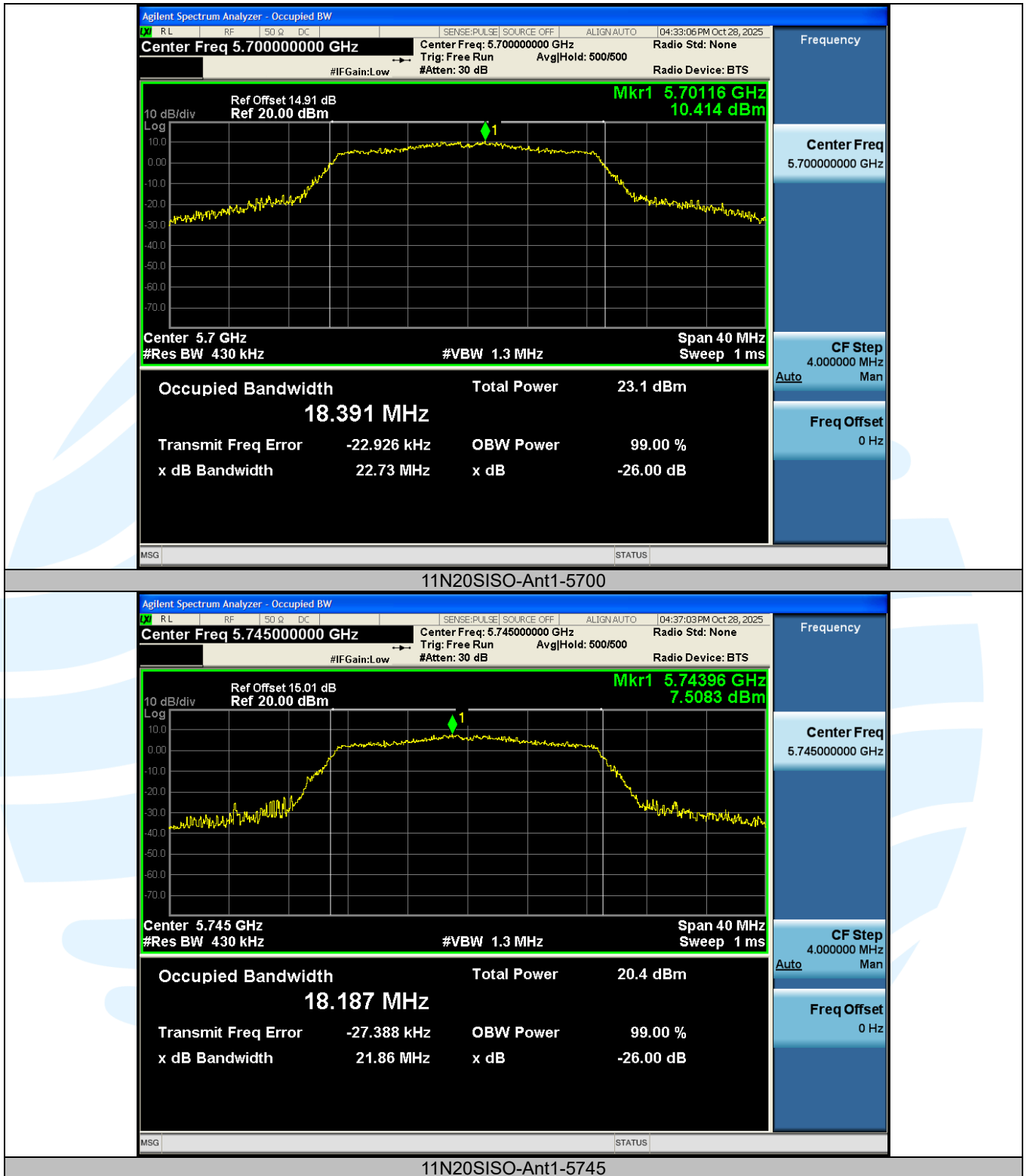


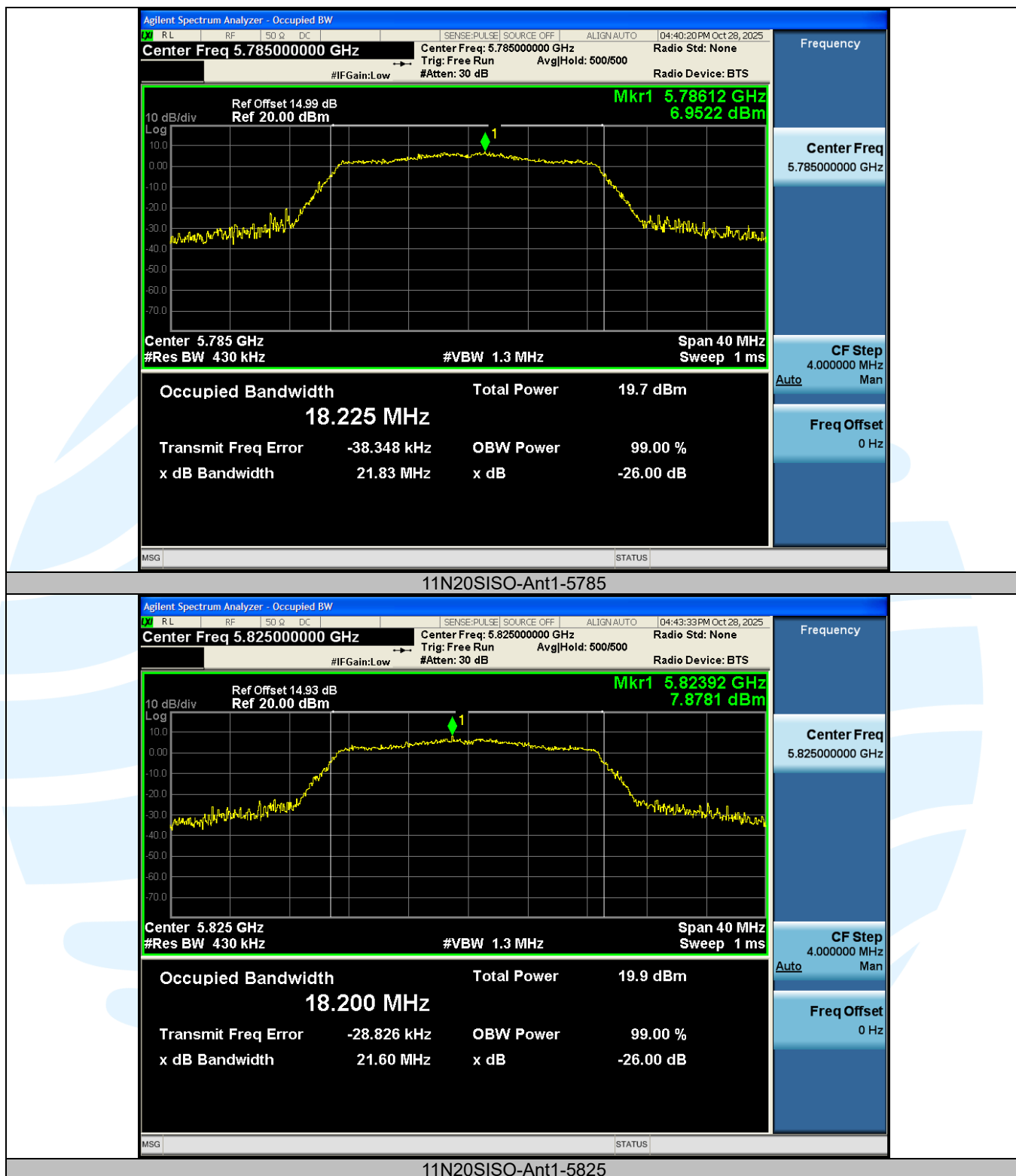


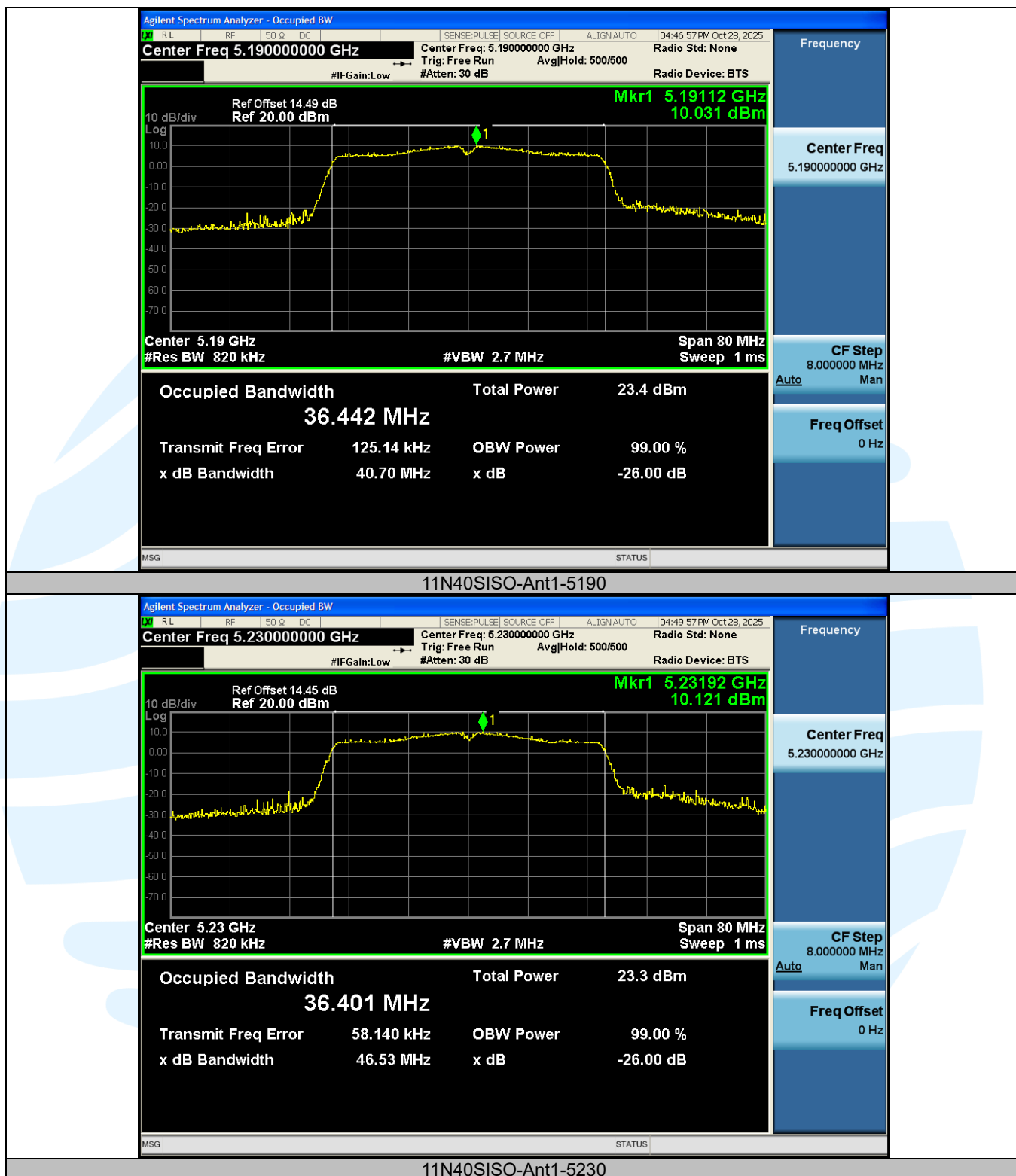


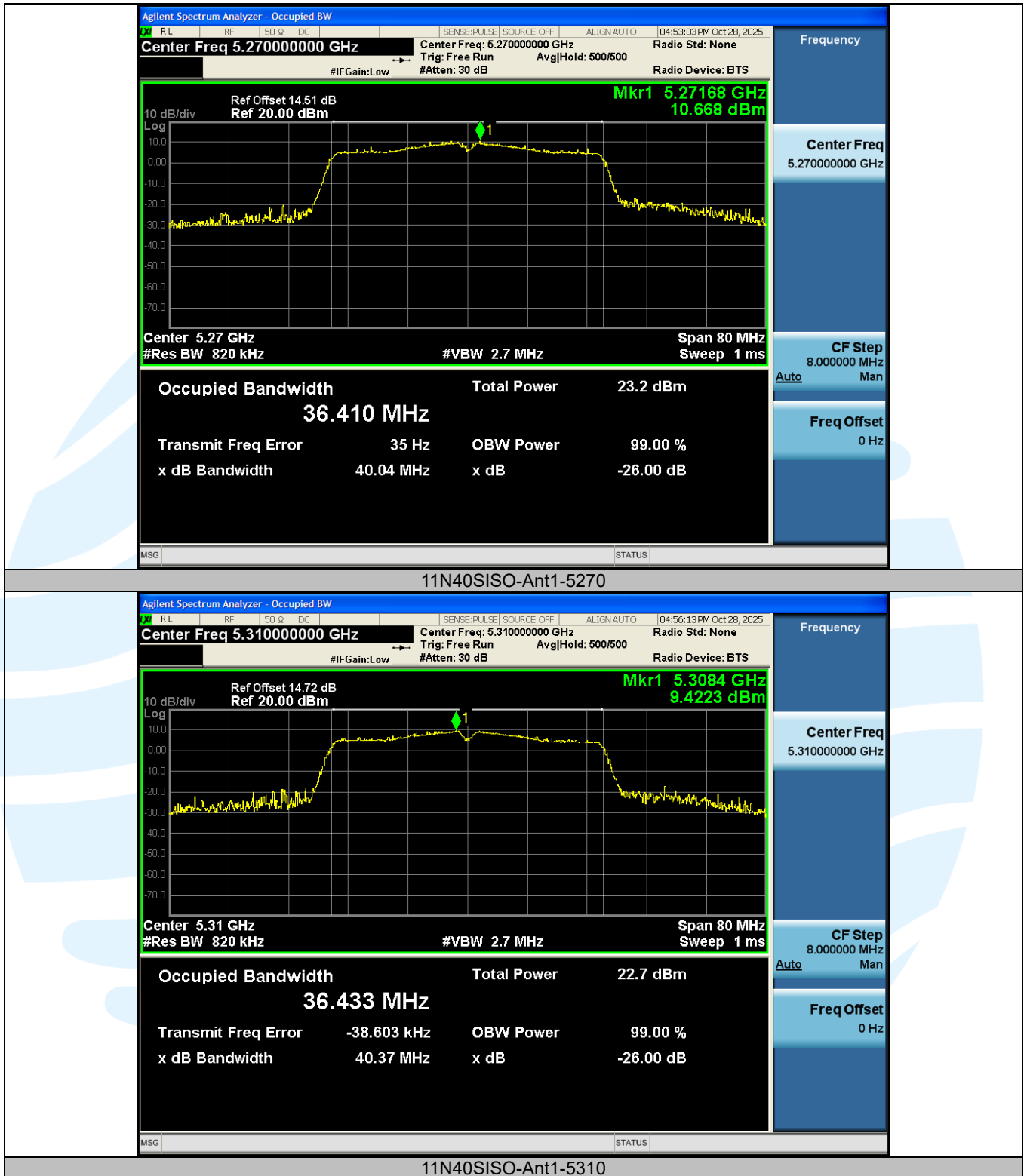


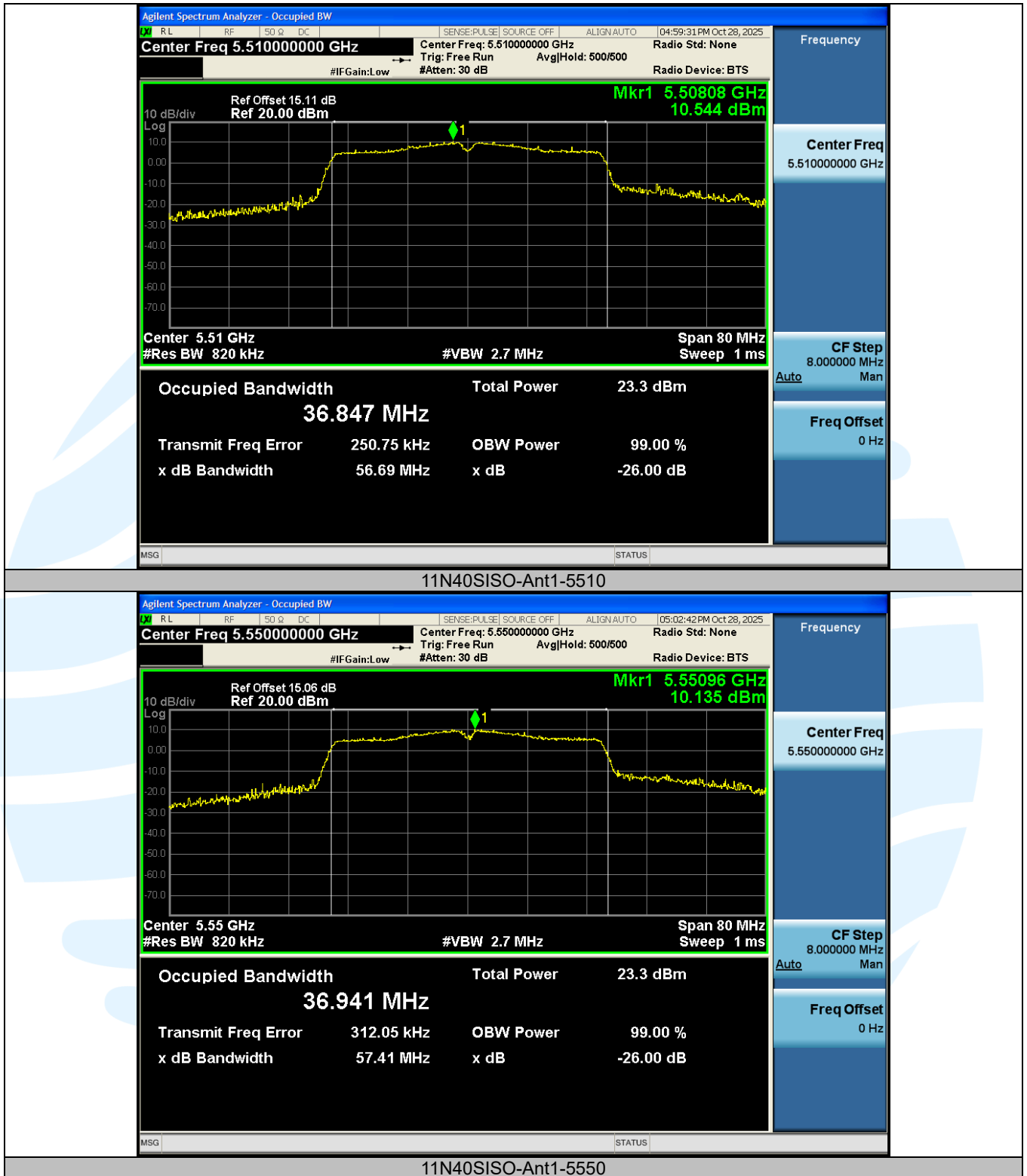


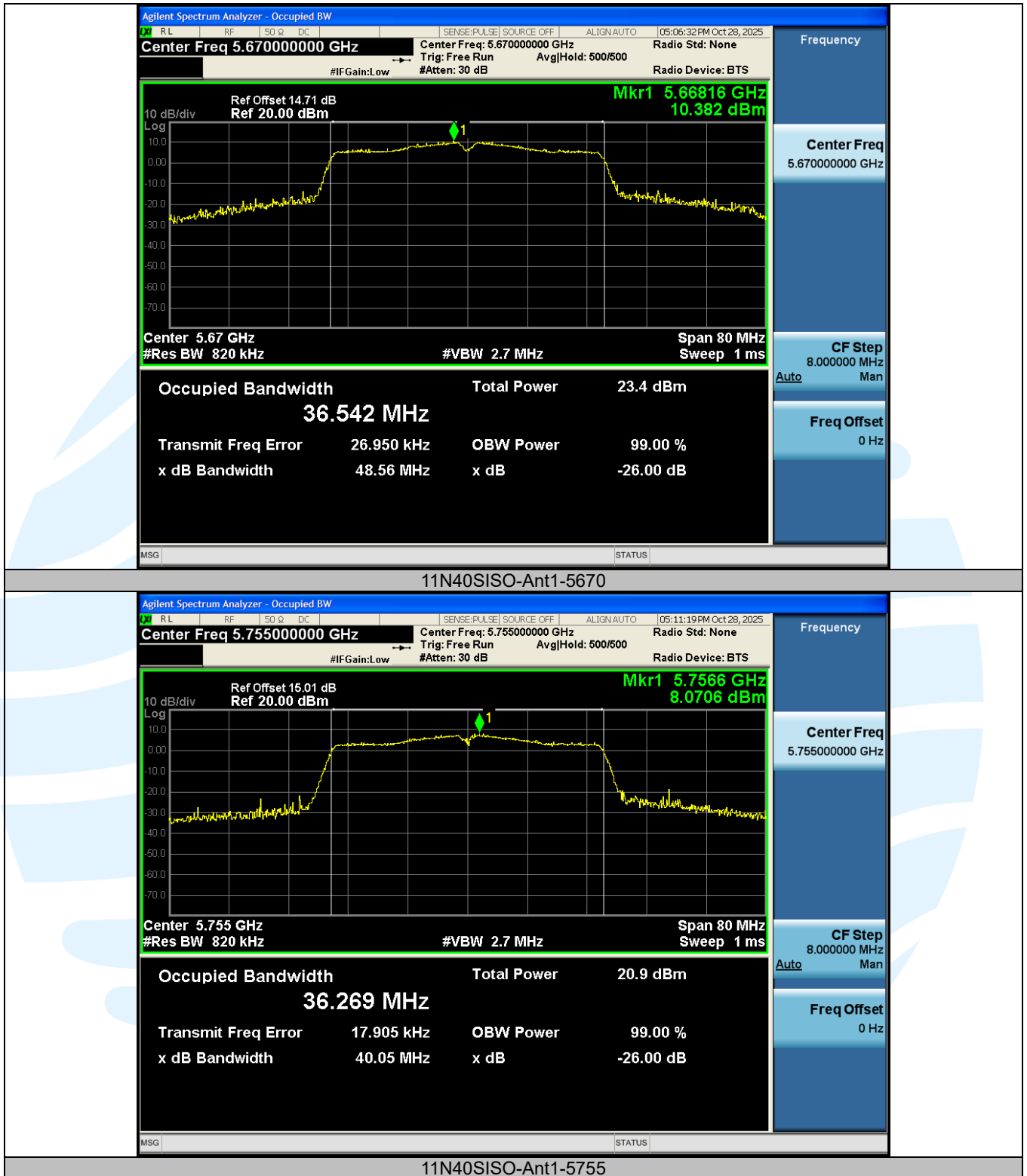


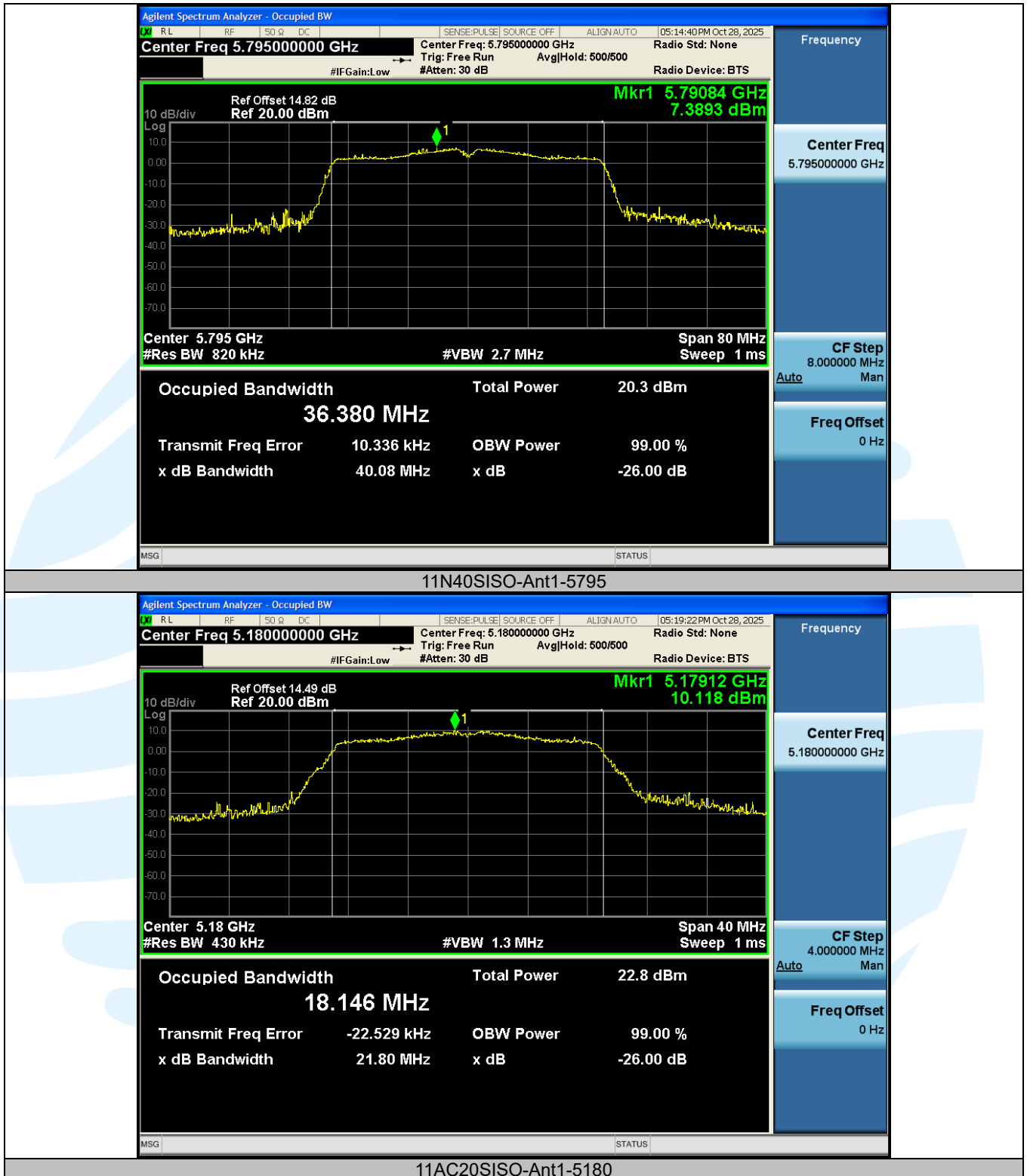










**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

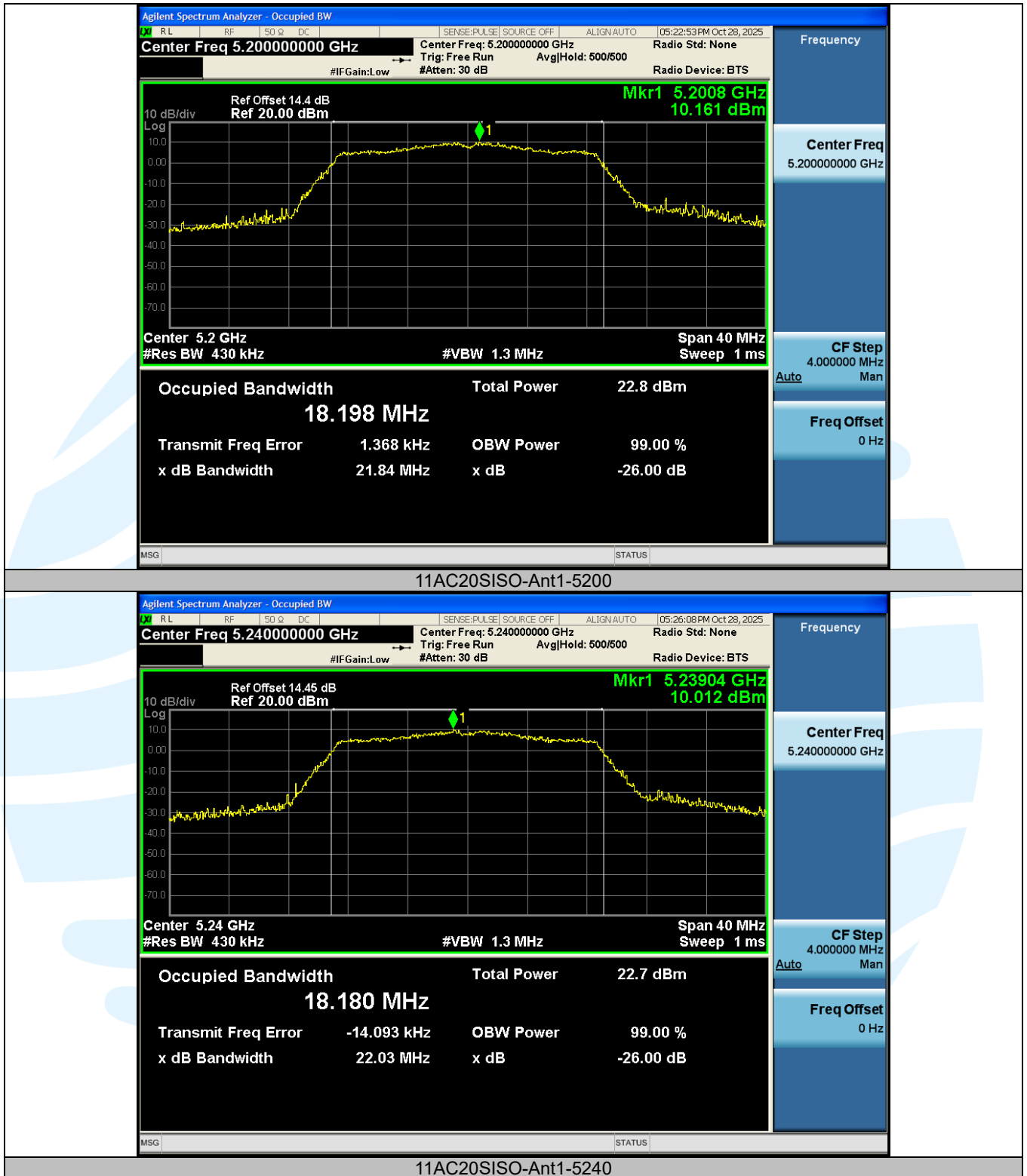
Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1



Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

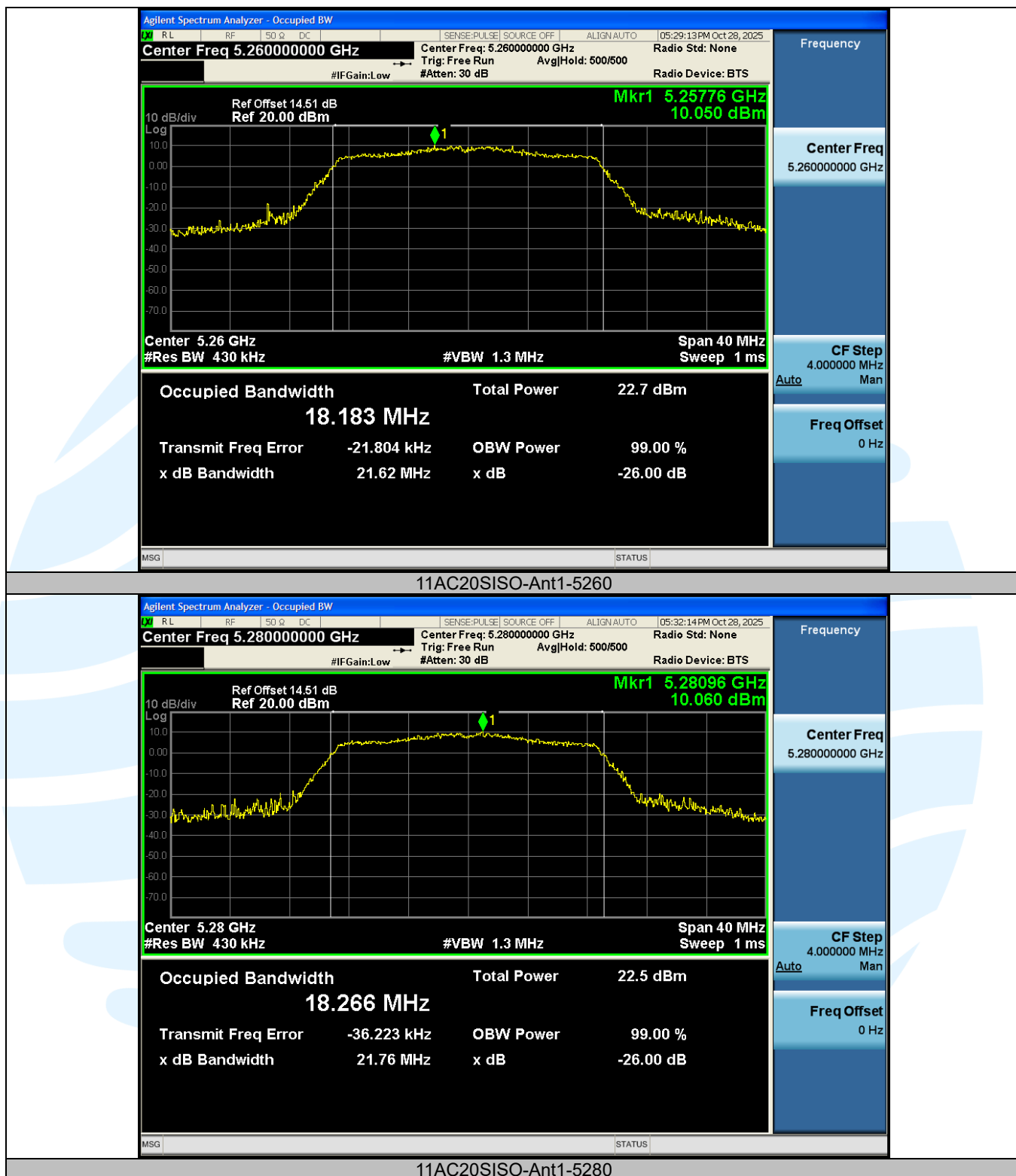
Tel: +86-755-28230888

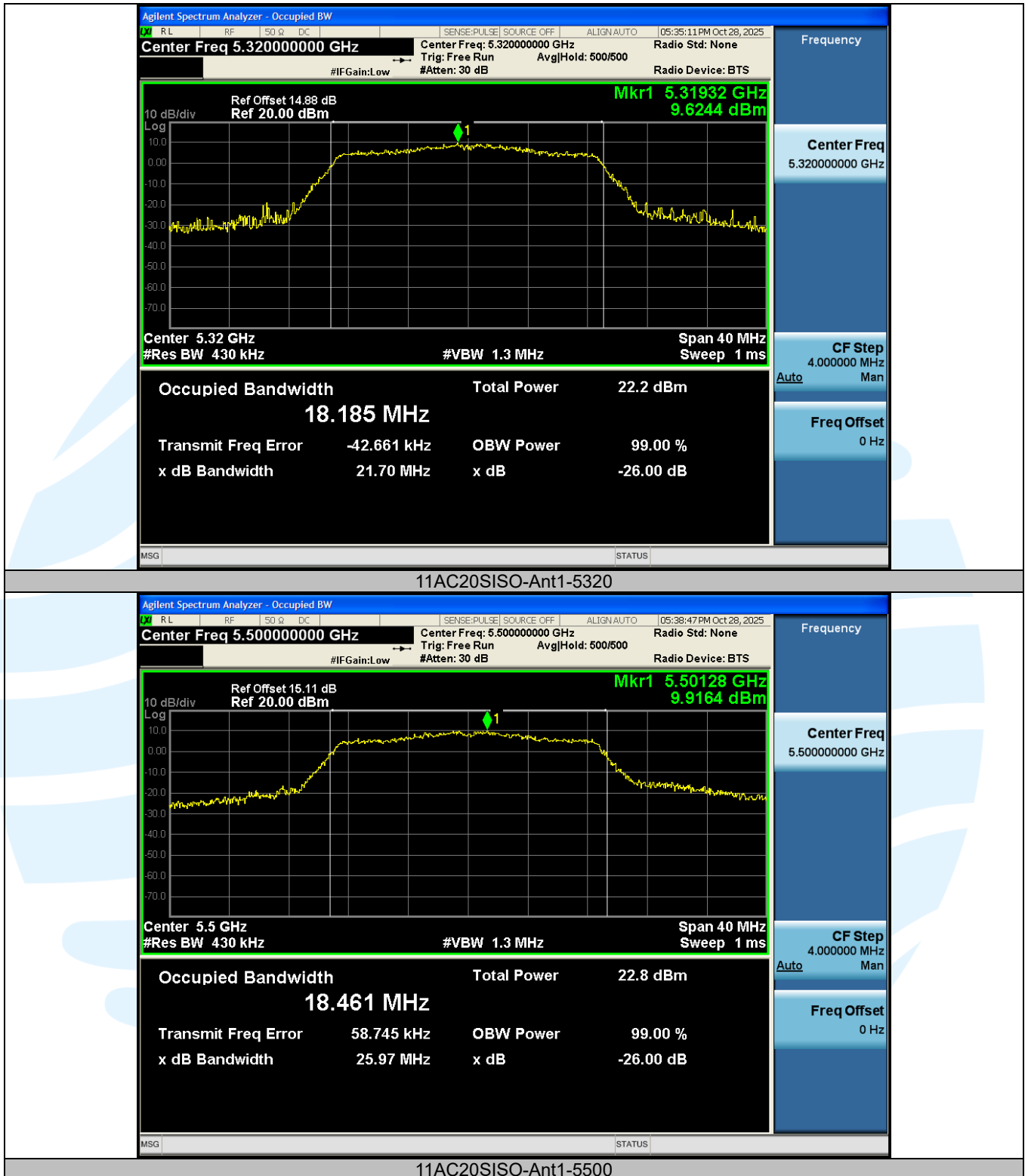
Fax: +86-755-28230886

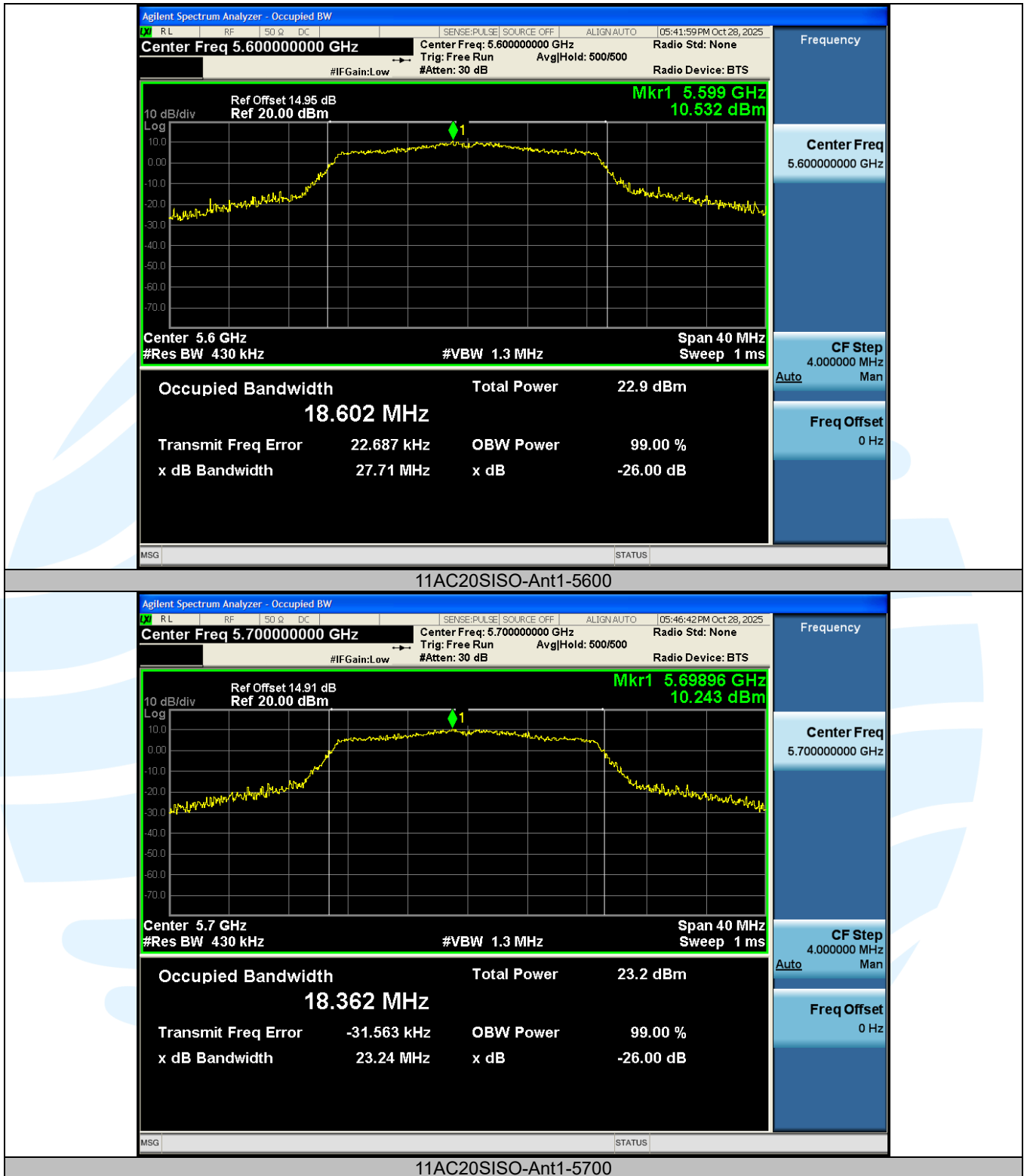
E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1







Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

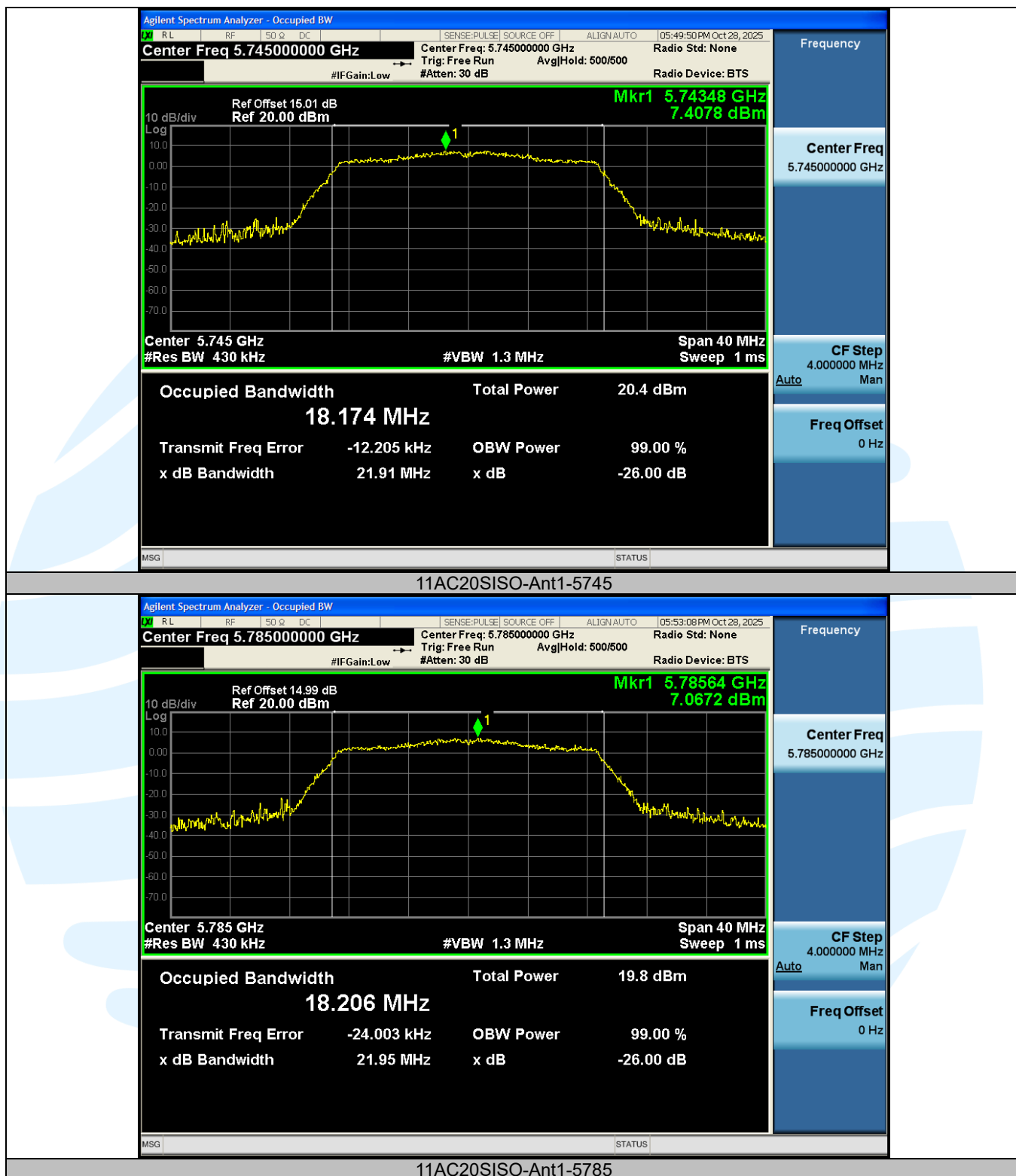
Tel: +86-755-28230888

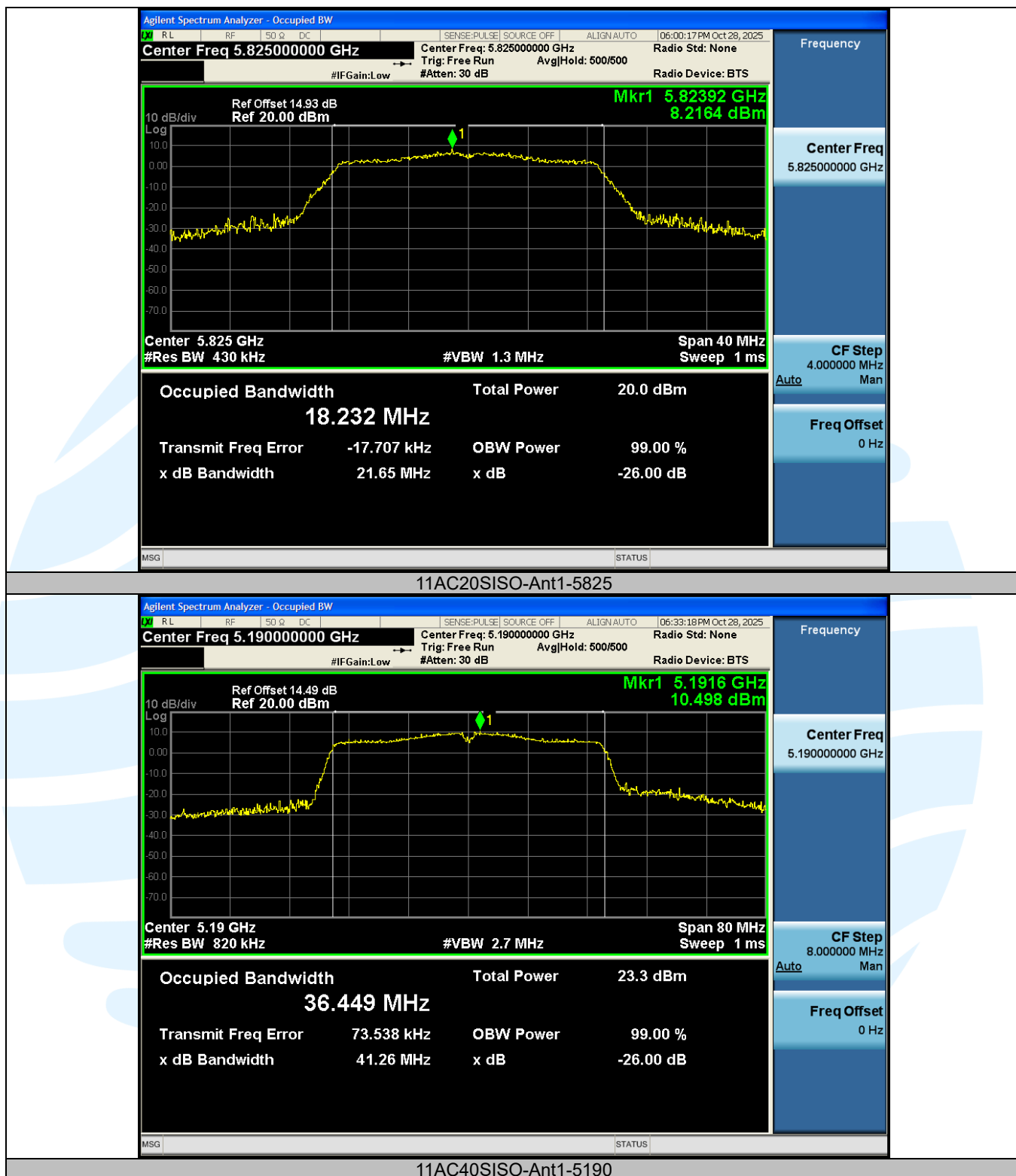
Fax: +86-755-28230886

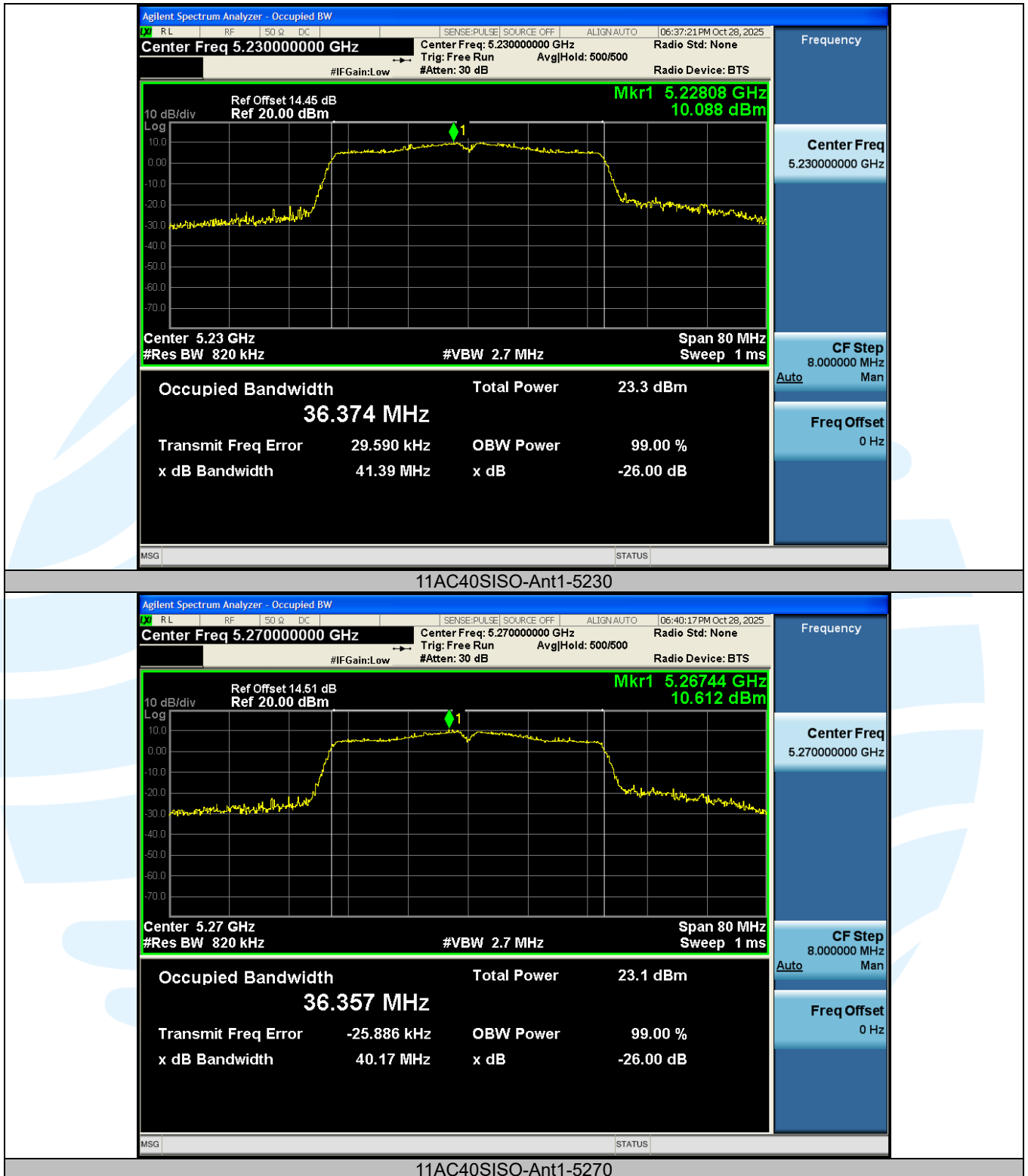
E-mail: info@uttlab.com

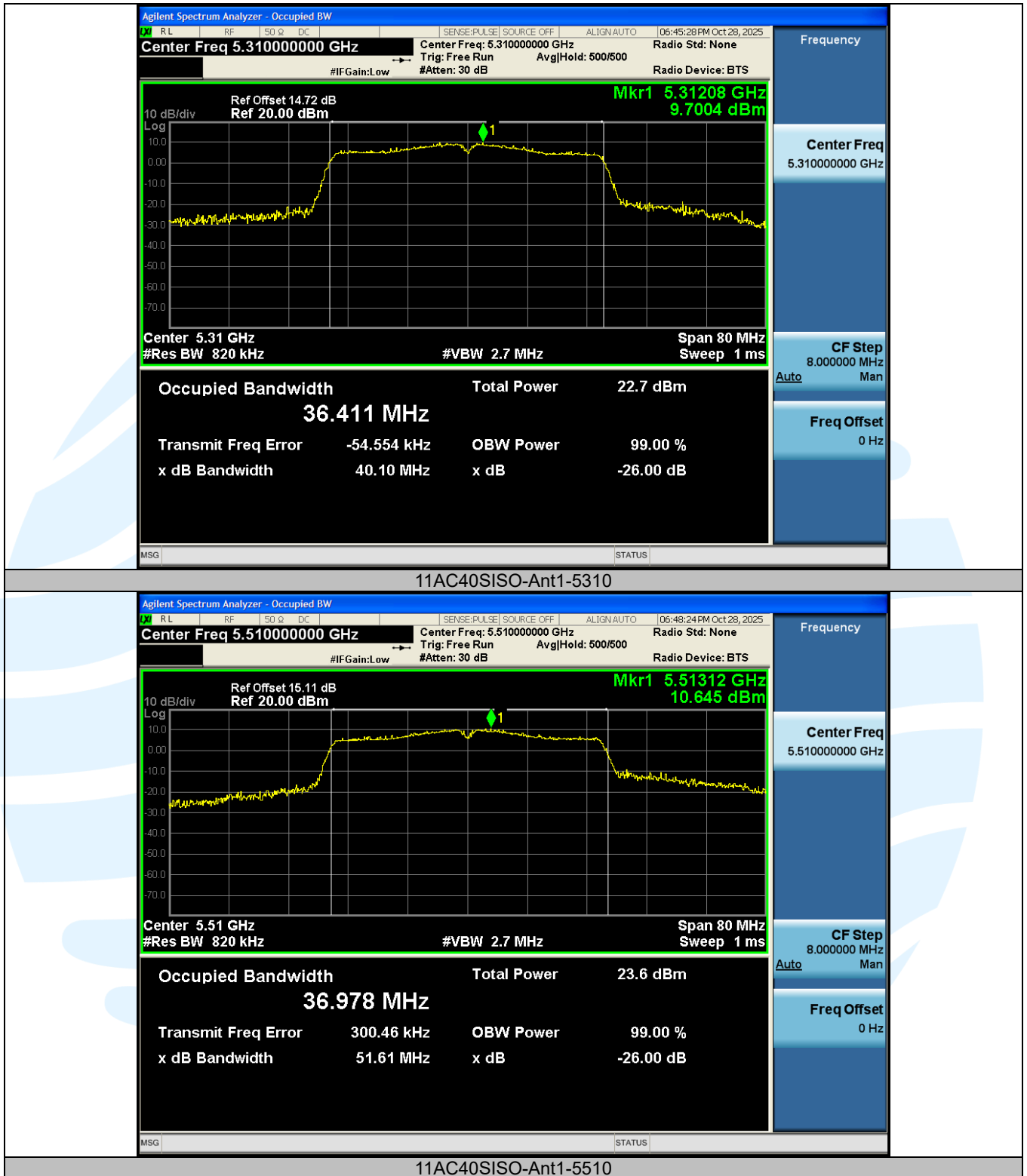
<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1









Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

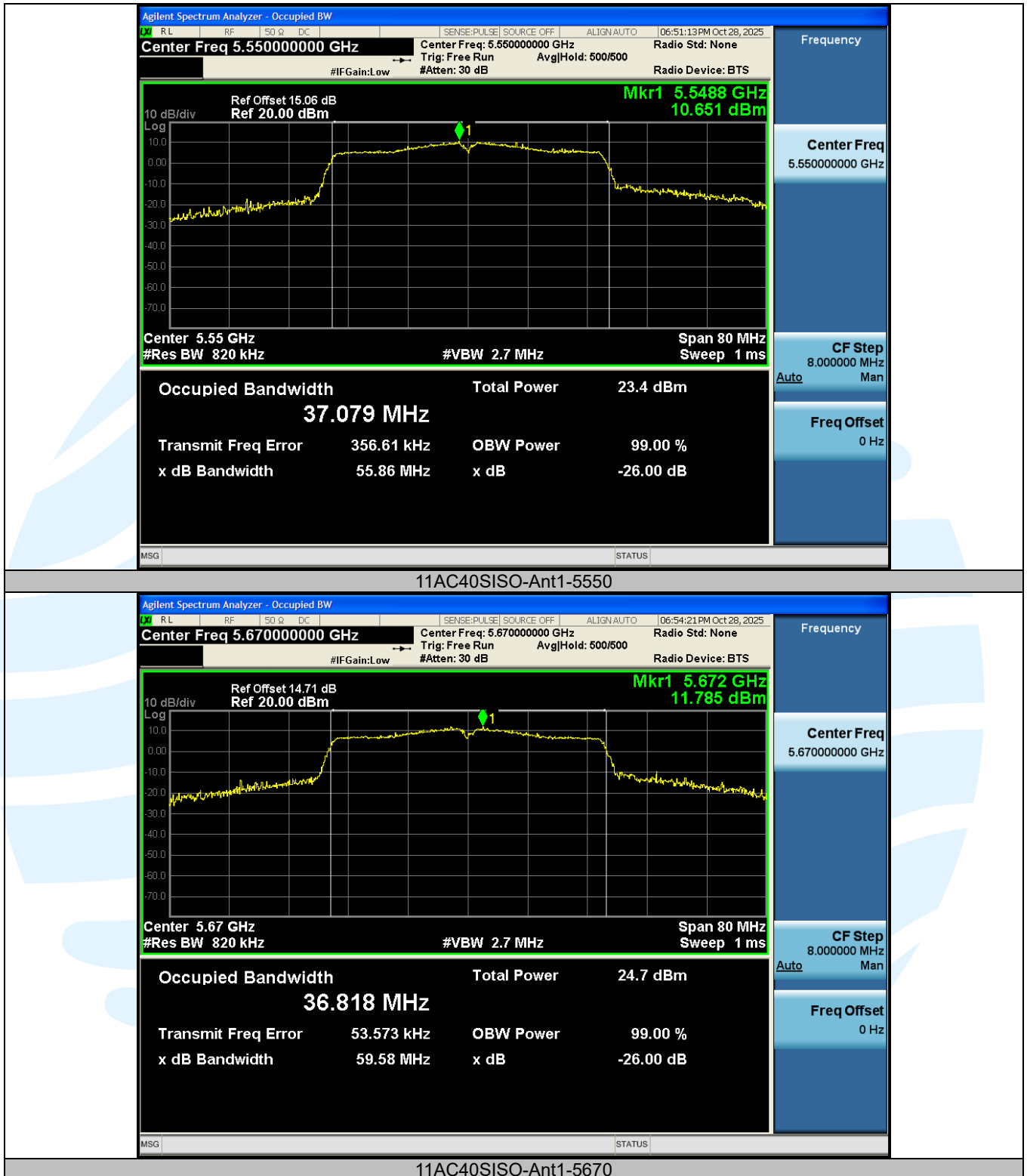
Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

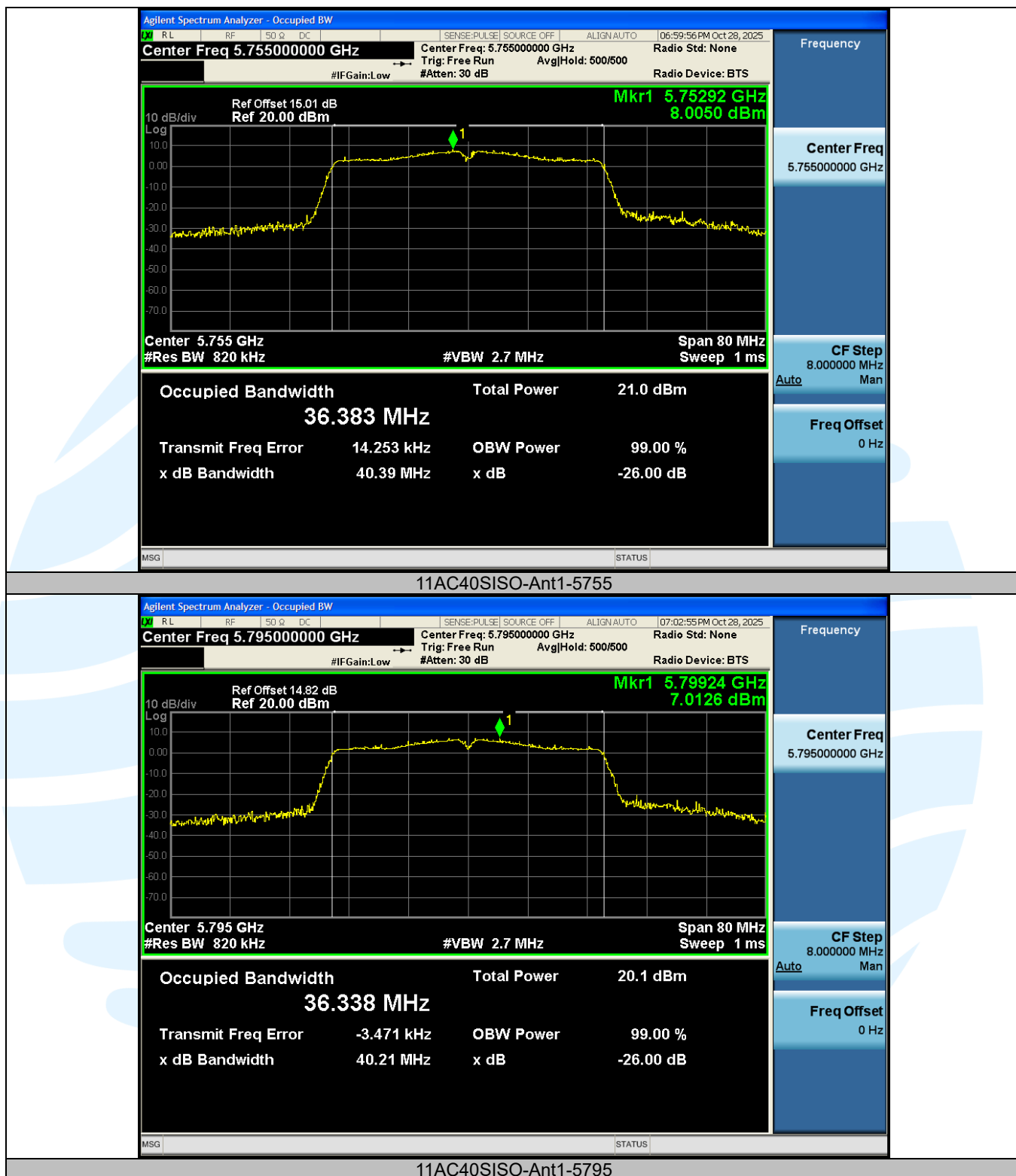
Tel: +86-755-28230888

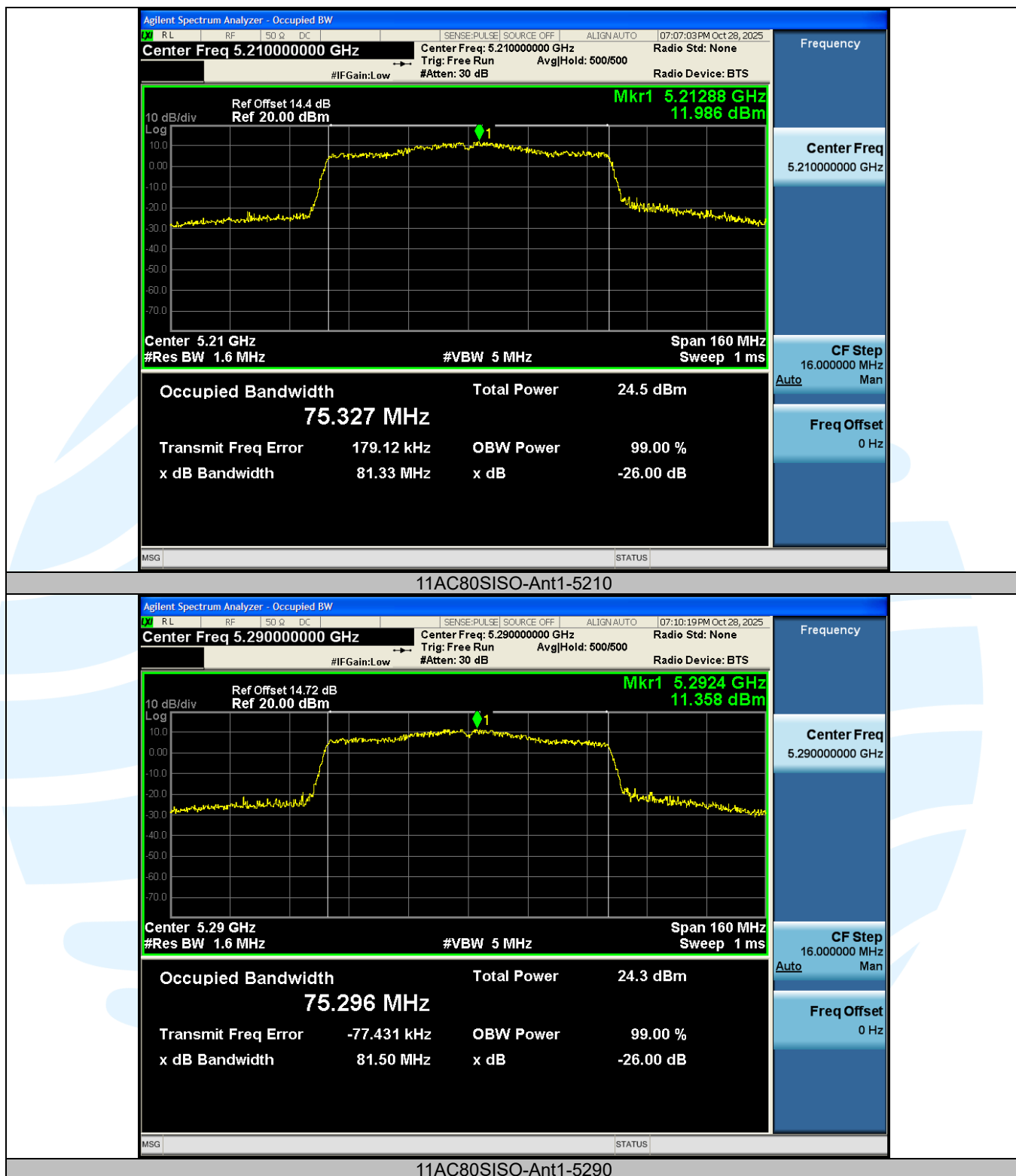
Fax: +86-755-28230886

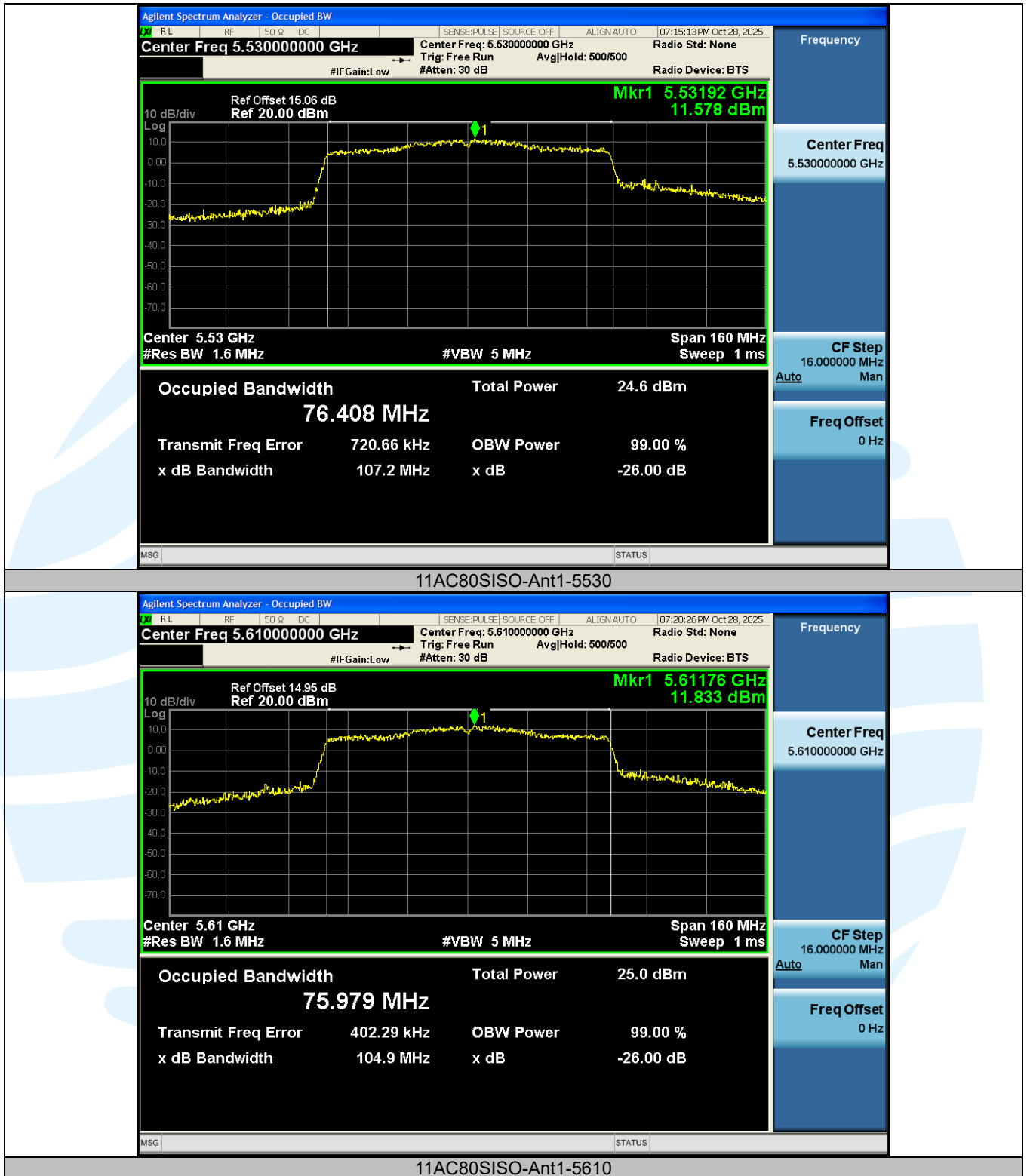
E-mail: info@uttlab.com

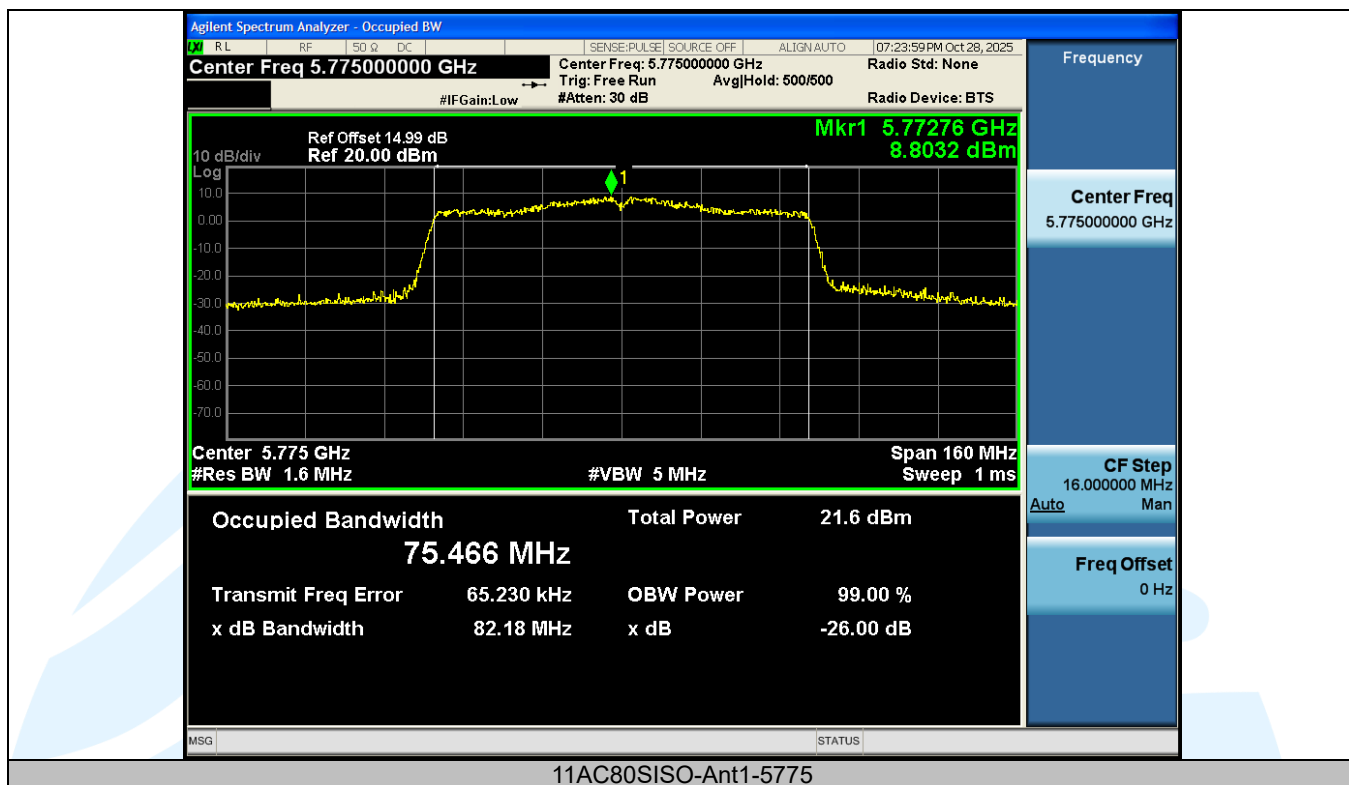
<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1









Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS247-V1.1