

Report No.: FR152531-01AB



# RADIO TEST REPORT

FCC ID

: RSL-TQ6602GEN2

Equipment

: IEEE802.11ax dual-radio 5G/2.4GHz 4x4+4x4 wireless

AP

**Brand Name** 

: Allied Telesis

**Model Name** 

: AT-TQ6602 GEN2 , AT-TQm6602 GEN2

Applicant

: Allied Telesis K.K.

2nd. TOC Bldg.7-21-11 Nishi-Gotanda, Shinagawa-ku

Tokyo 1430031 Japan

Manufacturer

: Allied Telesis K.K

2nd. TOC Bldg.7-21-11 Nishi-Gotanda, Shinagawa-ku

Tokyo 1430031 Japan

Standard

: 47 CFR FCC Part 15,407

The product was received on Aug. 02, 2021, and testing was started from Aug. 16, 2021 and completed on Nov. 23, 2021. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory

No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)

TEL: 886-3-656-9065 FAX: 886-3-656-9085

Report Template No.: CB-A12\_1 Ver1.4

Page Number

: 1 of 33

Issued Date

: Dec. 09, 2021

Report Version : 02

# **Table of Contents**

Histo	istory of this test report			
Sum	nmary of Test Result	4		
1	General Description	5		
1.1	Information	5		
1.2	Applicable Standards	9		
1.3	Testing Location Information	9		
1.4	Measurement Uncertainty	10		
2	Test Configuration of EUT	11		
2.1	Test Channel Mode	11		
2.2	The Worst Case Measurement Configuration	13		
2.3	EUT Operation during Test	14		
2.4	Accessories	14		
2.5	Support Equipment	15		
2.6	Test Setup Diagram	16		
3	Transmitter Test Result	19		
3.1	AC Power-line Conducted Emissions	19		
3.2	Emission Bandwidth	21		
3.3	Maximum Output Power	22		
3.4	Power Spectral Density	24		
3.5	Unwanted Emissions	27		
4	Test Equipment and Calibration Data	31		
Appe	endix A. Test Results of AC Power-line Conducted Emissions			
Appe	endix B. Test Results of Emission Bandwidth			
Appe	endix C. Test Results of Maximum Output Power			
Appe	endix D. Test Results of Power Spectral Density			
Appe	endix E. Test Results of Unwanted Emissions			
Appe	endix F. Test Results of Radiated Emission Co-location			
Appe	endix G. Test Photos			
<b>Phot</b>	tographs of EUT v01			

TEL: 886-3-656-9065 FAX: 886-3-656-9085

Report Template No.: CB-A12\_1 Ver1.4

Page Number : 2 of 33

Issued Date : Dec. 09, 2021

Report No.: FR152531-01AB

Report Version : 02

# History of this test report

Report No. : FR152531-01AB

Report No.	Version	Description	Issued Date
FR152531-01AB	01	Initial issue of report	Dec. 07, 2021
FR152531-01AB	02	Changing Applicant and Manufacturer's address	Dec. 09, 2021

TEL: 886-3-656-9065 Page Number : 3 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

## **Summary of Test Result**

Report No.: FR152531-01AB

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.407(a)	Emission Bandwidth	PASS	-
3.3	15.407(a)	Maximum Output Power	PASS	-
3.4	15.407(a)	Power Spectral Density	PASS	-
3.5	15.407(b)	Unwanted Emissions	PASS	-

#### **Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

#### **Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen

Report Producer: Vicky Huang

TEL: 886-3-656-9065 Page Number : 4 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
5150-5250	a, n (HT20), ac (VHT20),	5180-5240	36-48 [4]
5725-5850	ax (HEW20)	5745-5825	149-165 [5]
5150-5250	n (HT40), ac (VHT40),	5190-5230	38-46 [2]
5725-5850	ax (HEW40)	5755-5795	151-159 [2]
5150-5250	ac (VHT80), ax (HEW80)	5210	42 [1]
5725-5850		5775	155 [1]

Report No. : FR152531-01AB

Band	Mode	BWch (MHz)	Nant
5.15-5.25GHz	802.11a	20	4TX
5.15-5.25GHz	802.11n HT20	20	4TX
5.15-5.25GHz	802.11n HT20-BF	20	4TX
5.15-5.25GHz	802.11ac VHT20	20	4TX
5.15-5.25GHz	802.11ac VHT20-BF	20	4TX
5.15-5.25GHz	802.11ax HEW20	20	4TX
5.15-5.25GHz	802.11ax HEW20-BF	20	4TX
5.15-5.25GHz	802.11n HT40	40	4TX
5.15-5.25GHz	802.11n HT40-BF	40	4TX
5.15-5.25GHz	802.11ac VHT40	40	4TX
5.15-5.25GHz	802.11ac VHT40-BF	40	4TX
5.15-5.25GHz	802.11ax HEW40	40	4TX
5.15-5.25GHz	802.11ax HEW40-BF	40	4TX
5.15-5.25GHz	802.11ac VHT80	80	4TX
5.15-5.25GHz	802.11ac VHT80-BF	80	4TX
5.15-5.25GHz	802.11ax HEW80	80	4TX
5.15-5.25GHz	802.11ax HEW80-BF	80	4TX

TEL: 886-3-656-9065 Page Number : 5 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

5.725-5.85GHz	802.11a	0.0	
	002.11a	20	4TX
5.725-5.85GHz	802.11n HT20	20	4TX
5.725-5.85GHz	802.11n HT20-BF	20	4TX
5.725-5.85GHz	802.11ac VHT20	20	4TX
5.725-5.85GHz	802.11ac VHT20-BF	20	4TX
5.725-5.85GHz	802.11ax HEW20	20	4TX
5.725-5.85GHz	802.11ax HEW20-BF	20	4TX
5.725-5.85GHz	802.11n HT40	40	4TX
5.725-5.85GHz	802.11n HT40-BF	40	4TX
5.725-5.85GHz	802.11ac VHT40	40	4TX
5.725-5.85GHz	802.11ac VHT40-BF	40	4TX
5.725-5.85GHz	802.11ax HEW40	40	4TX
5.725-5.85GHz	802.11ax HEW40-BF	40	4TX
5.725-5.85GHz	802.11ac VHT80	80	4TX
5.725-5.85GHz	802.11ac VHT80-BF	80	4TX
5.725-5.85GHz	802.11ax HEW80	80	4TX
5.725-5.85GHz	802.11ax HEW80-BF	80	4TX

Report No.: FR152531-01AB

#### Note:

- 11a, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- VHT20, VHT40, VHT80 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.
- HEW20, HEW40, HEW80 use a combination of OFDMA-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM modulation.
- BWch is the nominal channel bandwidth.

TEL: 886-3-656-9065 Page Number : 6 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

#### 1.1.2 Antenna Information

	Port				_	_	
Ant.	2.4GHz	5GHz	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	3	3	WNC	ATKK RANQ-AK72	PIFA	I-PEX	
2	4	4	WNC	ATKK RANQ-AK72	PIFA	I-PEX	Note 4
3	2	2	WNC	ATKK RANQ-AK72	PIFA	I-PEX	Note 1
4	1	1	WNC	ATKK RANQ-AK72	PIFA	I-PEX	

Report No.: FR152531-01AB

Note 1:

Ant.	Gain (dBi)						
AIII.	2.4GHz	5GHz UNII 1	5GHz UNII 2A	5GHz UNII 2C	5GHz UNII 3		
1	2.59	1.68	3.13	3.65	3.46		
2	3	1.6	1.93	1.82	2.4		
3	3.02	1.87	1.74	1.77	2.77		
4	1.42	1.87	2.75	4.23	4.42		
Directional Gain (dBi) (4T1S)	5.78	4.17	3.25	4.49	4.48		
Directional Gain (dBi) (4T2S)	3.02	1.87	3.13	4.23	4.42		
Directional Gain (dBi) (4T4S)	0.3	-1.27	-1.11	-0.39	0.18		

Note 2: The above information was declared by manufacturer.

Note 3: The directional gain is measured which follows the procedure of KDB 662911 D03. The antenna report is provided in the operational description for this application.

#### Note 4:

#### For 2.4GHz function:

#### For IEEE 802.11b/g/n/VHT/ax (4TX/4RX):

Port 1, Port 2, Pot 3 and Port 4 can be used as transmitting/receiving antenna.

Port 1, Port 2, Pot 3 and Port 4 could transmit/receive simultaneously.

#### For 5GHz function:

#### For IEEE 802.11a/n/ac/ax (4TX/4RX):

Port 1, Port 2, Pot 3 and Port 4 can be used as transmitting/receiving antenna.

Port 1, Port 2, Pot 3 and Port 4 could transmit/receive simultaneously

TEL: 886-3-656-9065 Page Number : 7 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

### 1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11a	0.934	0.3	1.46m	1k
802.11ax HEW20	0.968	0.14	5.02m	300
802.11ax HEW40	0.964	0.16	5.49m	300
802.11ax HEW80	0.944	0.25	5.49m	300

Report No.: FR152531-01AB

N	oto.	
ľ	OLG.	

- DC is Duty Cycle.
- DCF is Duty Cycle Factor.

### 1.1.4 EUT Operational Condition

EUT Power Type	From power adapter or PoE					
Beamforming Function	$\boxtimes$	With beamforming		Without beamforming		
	For 802.11n/ax/VHT in 2.4GHz, 802.11n/ac/ax in 5GHz.					
Function		Outdoor P2M	$\boxtimes$	Indoor P2M		
i diletion		Fixed P2P		Client		
Test Software Version	QLibDemo-MSVC10_Txpower.exe					

Note: The above information was declared by manufacturer.

## 1.1.5 Table for Multiple Listing

Model Name	Description	
AT-TQ6602 GEN2		
AT-TQm6602 GEN2	All the models are identical; different models serve as marketing strategy	

Note 1: From the above models, model: AT-TQ6602 GEN2 was selected as representative model for the test and its data was recorded in this report.

Note 2: The above information was declared by manufacturer.

TEL: 886-3-656-9065 Page Number : 8 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

## 1.2 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

Report No.: FR152531-01AB

- 47 CFR FCC Part 15
- ANSI C63.10-2013
- FCC KDB 789033 D02 v02r01

The following reference test guidance is not within the scope of accreditation of TAF.

- FCC KDB 662911 D03 v01
- FCC KDB 412172 D01 v01r01
- FCC KDB 414788 D01 v01r01

## 1.3 Testing Location Information

**Testing Location Information** 

Test Lab.: Sporton International Inc. Hsinchu Laboratory

Hsinchu ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)

(TAF: 3787) TEL: 886-3-656-9065 FAX: 886-3-656-9085

Test site Designation No. TW3787 with FCC.

Conformity Assessment Body Identifier (CABID) TW3787 with ISED.

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
RF Conducted	TH01-CB	Brian Sun	21.2~21.4 / 55~61	Oct. 04, 2021~ Nov. 09, 2021
Radiated (Below 1GHz)	10CH01-CB	Wei Li	22~24 / 54~58	Aug. 17, 2021~ Nov. 23, 2021
Radiated (Above1GHz)	03CH02-CB	Simmon Chang	24.4-25.5 / 55-58	Oct. 01, 2021~ Oct. 04, 2021
Radiated (Radiated Emission Co-location)	03CH01-CB	Simmon Chang	23.9-24.2 / 56-59	Nov. 18, 2021
AC Conduction	CO01-CB	Wei Li	23~24 / 56~59	Aug. 16, 2021

TEL: 886-3-656-9065 Page Number : 9 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

## 1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Report No.: FR152531-01AB

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	2.0 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	4.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.5 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.2 dB	Confidence levels of 95%
Conducted Emission	2.5 dB	Confidence levels of 95%
Output Power Measurement	1.3 dB	Confidence levels of 95%
Power Density Measurement	2.5 dB	Confidence levels of 95%
Bandwidth Measurement	0.9%	Confidence levels of 95%

TEL: 886-3-656-9065 Page Number : 10 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

# 2 Test Configuration of EUT

## 2.1 Test Channel Mode

For non-beamforming mode:

Mode	Power Setting	
802.11a_Nss1,(6Mbps)_4TX	-	
5180MHz	21	
5200MHz	24	
5240MHz	22	
5745MHz	21.5	
5785MHz	24	
5825MHz	24	
802.11ax HEW20_Nss1,(MCS0)_4TX	-	
5180MHz	20.5	
5200MHz	24	
5240MHz	22	
5745MHz	21.5	
5785MHz	24	
5825MHz	24	
802.11ax HEW40_Nss1,(MCS0)_4TX	-	
5190MHz	17.5	
5230MHz	21.5	
5755MHz	21	
5795MHz	24	
802.11ax HEW80_Nss1,(MCS0)_4TX	-	
5210MHz	17.5	
5775MHz	19.5	

Report No. : FR152531-01AB

TEL: 886-3-656-9065 Page Number : 11 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

For beamforming mode:

Mode	Power Setting
802.11ax HEW20-BF_Nss1,(MCS0)_4TX	-
5180MHz	20.5
5200MHz	24
5240MHz	22
5745MHz	21.5
5785MHz	24
5825MHz	24
802.11ax HEW40-BF_Nss1,(MCS0)_4TX	-
5190MHz	17.5
5230MHz	21.5
5755MHz	21
5795MHz	24
802.11ax HEW80-BF_Nss1,(MCS0)_4TX	-
5210MHz	17.5
5775MHz	19.5

Report No.: FR152531-01AB

#### Note:

- HEW20/HEW40/HEW80 covers HT20/HT40/VHT20/VHT40/VHT80, due to similar modulation. The power setting for HT20/HT40/VHT20/VHT40/VHT80 are the same or lower than HEW20/HEW40 /HEW80
- The EUT supports beamforming and CDD modes, and the CDD mode is the worst case. Therefore, all test items are evaluated in the report. The beamforming mode only evaluates the output power.

TEL: 886-3-656-9065 Page Number : 12 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

# 2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests			
Tests Item	Tests Item AC power-line conducted emissions		
Condition AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz			
Operating Mode Normal Link			
1 Normal Link - EUT + Adapter			
2 Normal Link - EUT + PoE 2			
For operating mode 1 is the worst case and it was record in this test report.			

Report No. : FR152531-01AB

The Worst Case Mode for Following Conformance Tests		
Tests Item	Emission Bandwidth Maximum Output Power Power Spectral Density	
Test Condition Conducted measurement at transmit chains		

The Worst Case Mode for Following Conformance Tests				
Tests Item	Unwanted Emissions			
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.			
Operating Mode < 1GHz	Normal Link			
1	Normal Link: EUT in Z axis + Adapter			
2	Normal Link: EUT in Y axis + Adapter			
Mode 1 has been evaluated to be the worst case among Mode 1~2, thus measurement for Mode 3 will follow this same test mode.				
3	Normal Link: EUT in Z axis + PoE 2			
Mode 3 has been evaluate this same test mode.	d to be the worst case among Mode 1~3, thus measurement for Mode 4 will follow			
4	Normal Link: EUT in X axis + PoE 2			
For operating mode 3 is the worst case and it was record in this test report.				
Operating Mode > 1GHz CTX				
The EUT was performed at X axis, Y axis and Z axis position. The worst case was found at Z axis, so it was selected to perform test and its test result was written in the report.				
1	EUT in Z axis			

TEL: 886-3-656-9065 Page Number : 13 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

The Worst Case Mode for Following Conformance Tests				
Tests Item Simultaneous Transmission Analysis - Radiated Emission Co-location				
Test Condition Radiated measurement				
Operating Mode Normal Link				
The EUT was performed at X axis, Y axis and Z axis position from Emissions in Restricted Frequency Bands above 1GHz. The worst case was found at Z axis, so it was selected to perform test and its test result was written in the report.				
1 EUT in Z axis-WLAN 2.4GHz+WLAN 5GHz				
Refer to Appendix F for Radiated Emission Co-location.				

Report No.: FR152531-01AB

The Worst Case Mode for Following Conformance Tests			
Tests Item Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation			
Operating Mode			
1 WLAN 2.4GHz+WLAN 5GHz			
Refer to Sporton Test Report No.: FA152531-01 for Co-location RF Exposure Evaluation.			

Note: The Adapter and PoE was for measurement only, would not be marketed.

The detail information as below

Support Unit	Brand	Model Name
Adapter	APD	DA-48Z12
PoE 1	Symbol	PD-9001GR/AT/AC
PoE 2	DELTA	ADP-60HR B

## 2.3 EUT Operation during Test

For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

For Normal Link:

During the test, the EUT operation to normal function.

#### 2.4 Accessories

Wall-mounted rack\*1

TEL: 886-3-656-9065 Page Number : 14 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

## 2.5 Support Equipment

#### For AC Conduction:

10/70 Odladololi						
	Support Equipment					
No.	Equipment	Brand Name	Model Name	FCC ID		
Α	5G LAN1 PC	DELL	T3400	N/A		
В	5G LAN2 PC	DELL	T3400	N/A		
С	2.4G NB	DELL	E6430	N/A		
D	5G NB	DELL	E6430	N/A		
Е	Adapter	APD	DA-48Z12	N/A		

Report No.: FR152531-01AB

For Radiated (below 1GHz):

	Support Equipment					
No.	Equipment	Brand Name	Model Name	FCC ID		
Α	PoE	DELTA	ADP-60HR B	N/A		
В	5G LAN1 PC	DELL	T3400	N/A		
С	2.4G NB	DELL	E6430	N/A		
D	5G NB	DELL	E6430	N/A		
Е	5G LAN2 PC	DELL	T3400	N/A		

For Radiated (above 1GHz) and RF Conducted:

	Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID	
Α	NB	DELL	E4300	N/A	
В	PoE	Symbol	PD-9001GR/AT/AC	N/A	

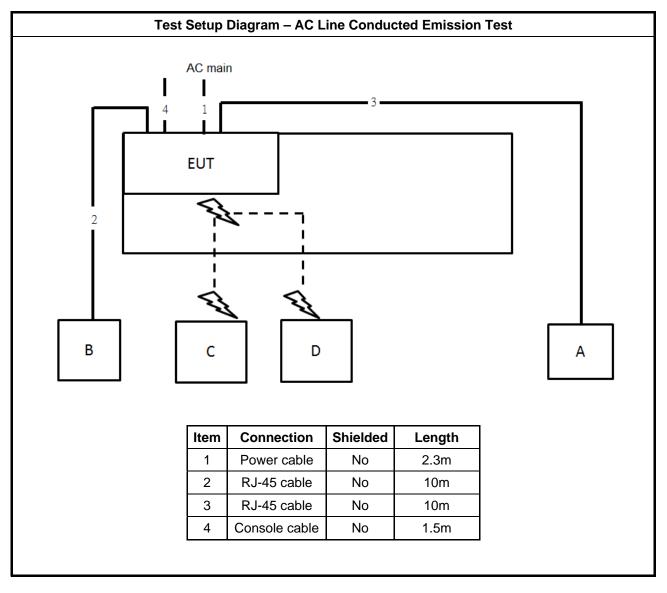
For Radiated (Radiated Emission Co-location):

	Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID	
Α	NB	DELL	E4300	N/A	
В	PoE	Symbol	PD-9001GR/AT/AC	N/A	
С	NB	DELL	E4300	N/A	
D	NB	DELL	E4300	N/A	

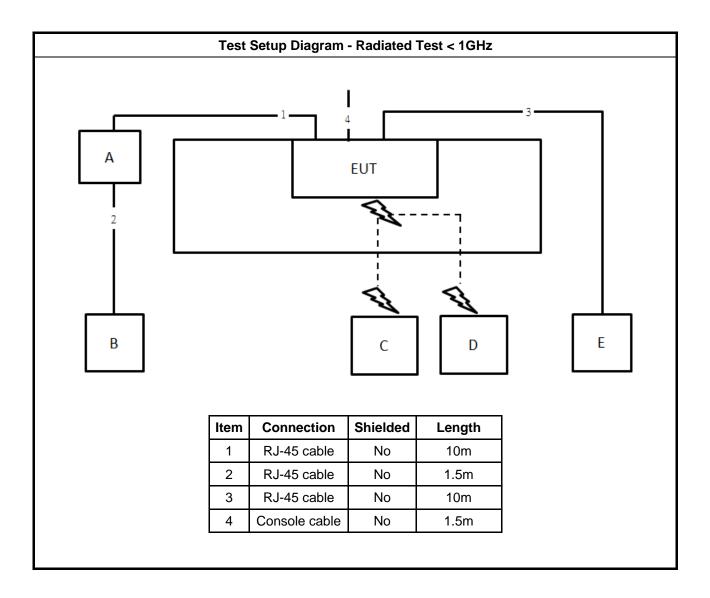
TEL: 886-3-656-9065 Page Number : 15 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021



## 2.6 Test Setup Diagram



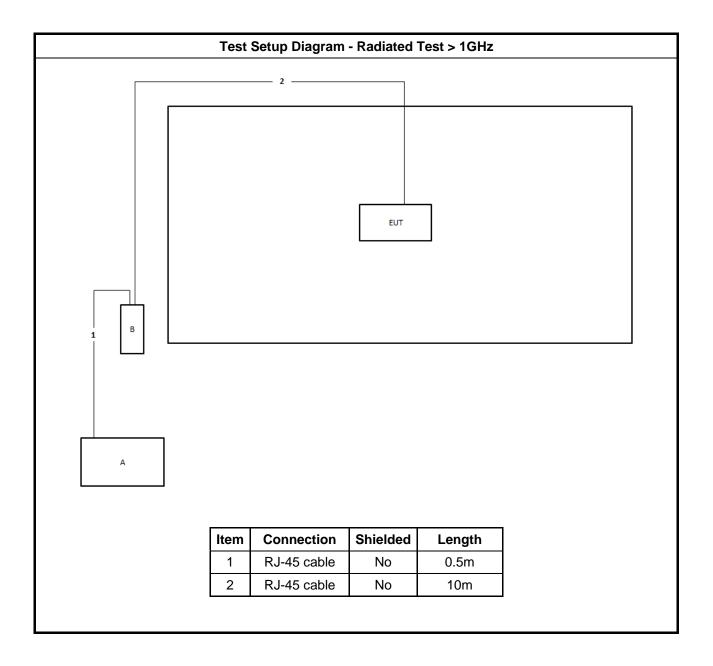
TEL: 886-3-656-9065 Page Number : 16 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021



Report No. : FR152531-01AB

TEL: 886-3-656-9065 Page Number : 17 of 33 FAX: 886-3-656-9085 : Dec. 09, 2021 Issued Date

Report No. : FR152531-01AB



TEL: 886-3-656-9065 Page Number : 18 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

## 3 Transmitter Test Result

## 3.1 AC Power-line Conducted Emissions

#### 3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

Report No.: FR152531-01AB

### 3.1.2 Measuring Instruments

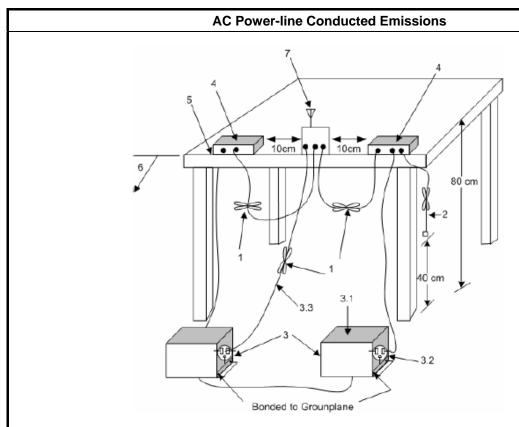
Refer a test equipment and calibration data table in this test report.

#### 3.1.3 Test Procedures

Test Method
Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

TEL: 886-3-656-9065 Page Number : 19 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

### 3.1.4 Test Setup



1—Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long.

Report No.: FR152531-01AB

- 2—The I/O cables that are not connected to an accessory shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- 3—EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50  $\Omega$  loads. LISN may be placed on top of, or immediately beneath, reference ground plane.
- 3.1—All other equipment powered from additional LISN(s).
- 3.2—A multiple-outlet strip may be used for multiple power cords of non-EUT equipment.
- 3.3—LISN at least 80 cm from nearest part of EUT chassis.
- 4—Non-EUT components of EUT system being tested.
- 5—Rear of EUT, including peripherals, shall all be aligned and flush with edge of tabletop.
- 6—Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.
- 7—Antenna can be integral or detachable. If detachable, then the antenna shall be attached for this test.

#### 3.1.5 Measurement Results Calculation

The measured Level is calculated using:

- a. Corrected Reading: LISN Factor (LISN) + Attenuator (AT/AUX) + Cable Loss (CL) + Read Level (Raw) = Level
- b. Margin = -Limit + Level

#### 3.1.6 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

TEL: 886-3-656-9065 Page Number : 20 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

## 3.2 Emission Bandwidth

#### 3.2.1 Emission Bandwidth Limit

	Emission Bandwidth Limit
UNI	I Devices
$\boxtimes$	For the 5.15-5.25 GHz band, N/A
	For the 5.25-5.35 GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz.
	For the $5.47-5.725$ GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz.
$\boxtimes$	For the 5.725-5.85 GHz band, 6 dB emission bandwidth ≥ 500kHz.
	For the 5.85-5.895 GHz band, 6 dB emission bandwidth ≥ 500kHz.
LE-	LAN Devices
	For the band 5.15-5.25 GHz, the maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log B$ , dBm, whichever power is less. B is the 99% emission bandwidth in MHz.
	For the 5.25-5.35 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz
	For the $5.47$ - $5.6$ GHz band and $5.65$ - $5.725$ GHz band, the maximum e.i.r.p. shall not exceed $1.0$ W or $17 + 10 \log B$ , dBm, whichever power is less. B is the 99% emission bandwidth in MHz
	For the 5.725-5.85 GHz band, 6 dB emission bandwidth ≥ 500kHz.

Report No.: FR152531-01AB

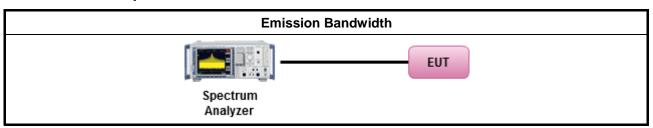
## 3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

#### 3.2.3 Test Procedures

		Test Method	
-	For the emission bandwidth shall be measured using one of the options below:		
	$\boxtimes$	Refer as FCC KDB 789033 D02, clause C for EBW and clause D for OBW measurement.	
		Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.	
		Refer as IC RSS-Gen, clause 4.6 for bandwidth testing.	

### 3.2.4 Test Setup



### 3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

TEL: 886-3-656-9065 Page Number : 21 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

# 3.3 Maximum Output Power

## 3.3.1 Limit

	Maximum Output Power Limit		
UNI	II Devices		
	For the 5.15-5.25 GHz band:		
	<ul> <li>Outdoor AP: the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6). e.i.r.p. at any elevation angle above 30 degrees ≤ 125mW [21dBm]</li> </ul>		
	Indoor AP: the maximum conducted output power ( $P_{Out}$ ) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$		
	Point-to-point AP: the maximum conducted output power ( $P_{Out}$ ) shall not exceed the lesser of 1 W If $G_{TX} > 23$ dBi, then $P_{Out} = 30 - (G_{TX} - 23)$ .		
	Mobile or Portable Client: the maximum conducted output power (P <sub>Out</sub> ) shall not exceed the lesser of 250 mW. If G <sub>TX</sub> > 6 dBi, then P <sub>Out</sub> = 24 - (G <sub>TX</sub> - 6).		
	For the 5.25-5.35 GHz band, the maximum conducted output power ( $P_{Out}$ ) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 24 - (G_{TX} - 6)$ .		
	For the 5.47-5.725 GHz band, the maximum conducted output power ( $P_{Out}$ ) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 24 - (G_{TX} - 6)$ .		
$\boxtimes$	For the 5.725-5.85 GHz band:		
	Point-to-multipoint systems (P2M): the maximum conducted output power ( $P_{Out}$ ) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ .		
	<ul> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W.</li> </ul>		
	Maximum EIRP Limit		
	For the 5.85-5.895 GHz band:		
	■ Indoor AP & subordinate device < 36 dBm		
	Client device < 30 dBm		
LE-	LAN Devices		
	For the 5.15-5.25 GHz band, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.		
	For the 5.25-5.35 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz		
	For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz		
	For the 5.725-5.85 GHz band:		
	Point-to-multipoint systems (P2M): the maximum conducted output power ( $P_{Out}$ ) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ .		
	■ Point-to-point systems (P2P): the maximum conducted output power (Po) shall not exceed the		

Report No. : FR152531-01AB

TEL: 886-3-656-9065 Page Number : 22 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

Report No.: FR152531-01AB

lesser of 1 W.

**P**<sub>Out</sub> = maximum conducted output power in dBm,

 $G_{TX}$  = the maximum transmitting antenna directional gain in dBi.

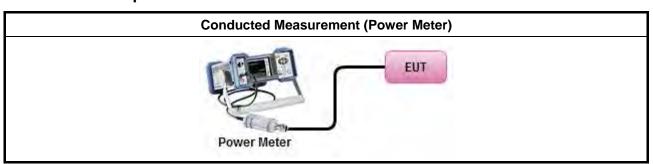
### 3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

#### 3.3.3 Test Procedures

		Test Method	
	Average over on/off periods with duty factor		
		Refer as FCC KDB 789033 D02, clause E Method SA-2 (spectral trace averaging).	
		Refer as FCC KDB 789033 D02, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)	
	Wid	eband RF power meter and average over on/off periods with duty factor	
	$\boxtimes$	Refer as FCC KDB 789033 D02, clause E Method PM-G (using an RF average power meter).	
$\boxtimes$	For	conducted measurement.	
	•	If the EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.	
	•	If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \ldots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$	
	For	radiated measurement.	
	•	Refer as FCC KDB 789033 D02 clause II A.1.F "Antenna-port Conducted versus Radiated Testing"	
	•	Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.	
	•	Refer as FCC KDB 412172 D01 clause 2.2 for EIRP calculation.	

### 3.3.4 Test Setup



## 3.3.5 Test Result of Maximum Output Power

Refer as Appendix C

TEL: 886-3-656-9065 Page Number : 23 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

# 3.4 Power Spectral Density

## 3.4.1 Limit

	Peak Power Spectral Density Limit
UNI	I Devices
$\boxtimes$	For the 5.15-5.25 GHz band:
	• Outdoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 17 - (G_{TX} - 6)$ .
	Indoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 17 - (G_{TX} - 6)$ .
	Point-to-point AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 23$ dBi, then $P_{Out} = 17 - (G_{TX} - 23)$ .
	Mobile or Portable Client: the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If G <sub>TX</sub> > 6 dBi, then PPSD= 11 - (G <sub>TX</sub> - 6)
	For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) $\leq$ 11 dBm/MHz. If $G_{TX} >$ 6 dBi, then PPSD= 11 – ( $G_{TX} -$ 6).
	For the 5.47-5.725 GHz band, the peak power spectral density (PPSD) $\leq$ 11 dBm/MHz. If $G_{TX} >$ 6 dBi, then PPSD= 11 $-$ ( $G_{TX} -$ 6).
$\boxtimes$	For the 5.725-5.85 GHz band:
	Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz. If $G_{TX} > 6$ dBi, then PPSD= $30 - (G_{TX} - 6)$ .
	Point-to-point systems (P2P): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz.
	EIRP Power Spectral Density Limit
	For the 5.85-5.895 GHz band:
	■ Indoor AP & subordinate device < 20dBm/MHz
	■ Client device < 14dBm/MHz
LE-	LAN Devices
	For the 5.15-5.25 GHz band, the e.i.r.p. peak power spectral density (PPSD) ≤ 10 dBm/MHz.
	For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) ≤ 11 dBm/MHz.
	<ul> <li>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:</li> <li>-13 dBW/MHz for 0° ≤ θ &lt; 8°; -13 − 0.716 (θ-8) dBW/MHz for 8° ≤ θ &lt; 40°</li> <li>-35.9 − 1.22 (θ-40) dBW/MHz for 40° ≤ θ ≤ 45°; -42 dBW/MHz for θ &gt; 45°</li> </ul>
	For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the peak power spectral density (PPSD) $\leq$ 11 dBm/MHz.
	For the 5.725-5.85 GHz band:
	Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) $\leq$ 30 dBm/500kHz. If $G_{TX} > 6$ dBi, then PPSD= $30 - (G_{TX} - 6)$ .
	Point-to-point systems (P2P): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz.
PPS	SD = neak nower spectral density that he same method as used to determine the conducted output

Report No.: FR152531-01AB

TEL: 886-3-656-9065 Page Number : 24 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

power shall be used to determine the power spectral density. And power spectral density in dBm/MHz  $G_{TX}$  = the maximum transmitting antenna directional gain in dBi.

Report No.: FR152531-01AB

## 3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

#### 3.4.3 Test Procedures

		Test Method
•	outp func	c power spectral density procedures that the same method as used to determine the conducted ut power shall be used to determine the peak power spectral density and use the peak search tion on the spectrum analyzer to find the peak of the spectrum. For the peak power spectral density be measured using below options:
		Refer as FCC KDB 789033 D02, F)5) power spectral density can be measured using resolution bandwidths < 1 MHz provided that the results are integrated over 1 MHz bandwidth
	[duty	r cycle ≥ 98% or external video / power trigger]
	$\boxtimes$	Refer as FCC KDB 789033 D02, clause E Method SA-1 (spectral trace averaging).
		Refer as FCC KDB 789033 D02, clause E Method SA-1 Alt. (RMS detection with slow sweep speed) $$
	duty	cycle < 98% and average over on/off periods with duty factor
	$\boxtimes$	Refer as FCC KDB 789033 D02, clause E Method SA-2 (spectral trace averaging).
		Refer as FCC KDB 789033 D02, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)
	For	conducted measurement.
	•	If the EUT supports multiple transmit chains using options given below:
		Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.
		Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,
		Option 3: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.
	•	If multiple transmit chains, EIRP PPSD calculation could be following as methods:  PPSD <sub>total</sub> = PPSD <sub>1</sub> + PPSD <sub>2</sub> + + PPSD <sub>n</sub> (calculated in linear unit [mW] and transfer to log unit [dBm])

TEL: 886-3-656-9065 Page Number : 25 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

Test Method

EIRP<sub>total</sub> = PPSD<sub>total</sub> + DG

For radiated measurement.

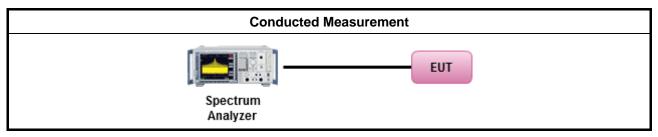
Refer as FCC KDB 789033 D02 clause II A.1.F "Antenna-port Conducted versus Radiated Testing"

Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.

Refer as FCC KDB 412172 D01 clause 2.2 for EIRP calculation.

Report No.: FR152531-01AB

### 3.4.4 Test Setup



### 3.4.5 Test Result of Power Spectral Density

Refer as Appendix D

TEL: 886-3-656-9065 Page Number : 26 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

#### 3.5 Unwanted Emissions

#### 3.5.1 Transmitter Unwanted Emissions Limit

Unwanted emissions below 1 GHz and restricted band emissions above 1GHz limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Report No.: FR152531-01AB

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

	Un-restricted band emissions above 1GHz Limit		
Operating Band	Limit		
⊠ 5.15 - 5.25 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]		
☐ 5.25 - 5.35 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]		
☐ 5.47 - 5.725 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]		
⊠ 5.725 - 5.85 GHz	all emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.		
☐ 5.85 - 5.895 GHz	(i) For an indoor access point or subordinate device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of 15 dBm/MHz and shall decrease linearly to an e.i.r.p. of - 7 dBm/MHz at or above 5.925 GHz.  (ii) For a client device all emissions at or above 5.895 GHz shall not exceed an		

TEL: 886-3-656-9065 Page Number : 27 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

e.i.r.p. of -5 dBm/MHz and shall decrease linearly to an e.i.r.p. of -27 dBm/MHz at or above 5.925 GHz.

Report No.: FR152531-01AB

(iii) For a client device or indoor access point or subordinate device, all emissions below 5.725 GHz shall not exceed an e.i.r.p. of -27 dBm/MHz at 5.65 GHz increasing linearly to 10 dBm/ MHz at 5.7 GHz, and from 5.7 GHz increasing linearly to a level of 15.6 dBm/MHz at 5.72 GHz, and from 5.72 GHz increasing linearly to a level of 27 dBm/MHz at 5.725 GHz.

Note 1: Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

#### 3.5.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

#### 3.5.3 Test Procedures

#### **Test Method**

- Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 m for frequencies above 30 MHz, unless it can be further demonstrated that measurements at a distance of 30 m or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).
- The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].
- For the transmitter unwanted emissions shall be measured using following options below:
  - Refer as FCC KDB 789033 D02, clause G)2) for unwanted emissions into non-restricted bands.
  - Refer as FCC KDB 789033 D02, clause G)1) for unwanted emissions into restricted bands.
    - Refer as FCC KDB 789033 D02, G)6) Method AD (Trace Averaging).
    - Refer as FCC KDB 789033 D02, G)6) Method VB (Reduced VBW).
    - Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time.
    - Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.
    - Refer as FCC KDB 789033 D02, clause G)5) measurement procedure peak limit.
    - Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.
- For radiated measurement.
  - Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.
  - Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.
  - Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.
- The any unwanted emissions level shall not exceed the fundamental emission level.

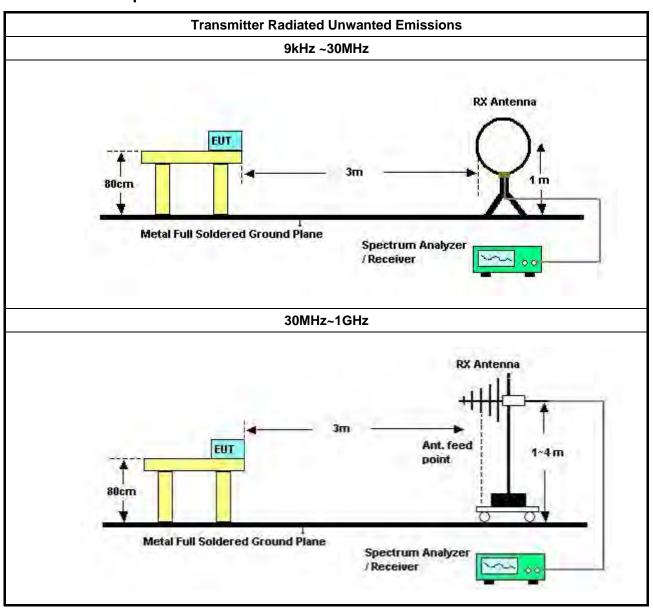
TEL: 886-3-656-9065 Page Number : 28 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

Report No. : FR152531-01AB

#### **Test Method**

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

## 3.5.4 Test Setup



TEL: 886-3-656-9065 Page Number : 29 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

Above 1GHz

Spectrum Analyzer

Above 1GHz

AMAX 30cm

Spectrum Analyzer

Report No.: FR152531-01AB

: 02

#### 3.5.5 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Antenna factor (AF) + Cable loss (CL) + Read level (Raw) - Preamp factor (PA)(if applicable) = Level.

### 3.5.6 Transmitter Unwanted Emissions (Below 30MHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10th harmonic or 40 GHz, whichever is appropriate.

#### 3.5.7 Test Result of Transmitter Unwanted Emissions

Refer as Appendix E

TEL: 886-3-656-9065 Page Number : 30 of 33 FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

# 4 Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	aracteristics Calibration Date		Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.4GHz Mar. 03, 2021		Mar. 02, 2022	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50- 16-2	04083	150kHz ~ 100MHz Jan. 06, 2021		Jan. 05, 2022	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Mar. 07, 2021	Mar. 06, 2022	Conduction (CO01-CB)
Pulse Limiter	Rohde& Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Jan. 30, 2021	Jan. 29, 2022	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	May 19, 2021	May 18, 2022	Conduction (CO01-CB)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
10m Semi Anechoic Chamber NSA	TDK	SAC-10M	10CH01-CB	30MHz~1GHz 10m,3m	Jan. 28, 2021	Jan. 27, 2022	Radiation (10CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10783	9kHz ~ 1.3GHz	Mar. 11, 2021	Mar. 10, 2022	Radiation (10CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10784	9kHz ~ 1.3GHz	Mar. 11, 2021	Mar. 10, 2022	Radiation (10CH01-CB)
Low Cable	Woken	SUCOFLEX 104	low cable-01	25MHz ~ 1GHz	Oct. 20, 2020	Oct. 19, 2021	Radiation (10CH01-CB)
Low Cable	Woken	SUCOFLEX 104	low cable-01	25MHz ~ 1GHz	Oct. 19, 2021	Oct. 18, 2022	Radiation (10CH01-CB)
High Cable	Woken	SUCOFLEX 104	low cable-02	25MHz ~ 1GHz	Oct. 20, 2020	Oct. 19, 2021	Radiation (10CH01-CB)
High Cable	Woken	SUCOFLEX 104	low cable-02	25MHz ~ 1GHz	Oct. 19, 2021	Oct. 18, 2022	Radiation (10CH01-CB)
Bilog Antenna with 6dB Attenuator	Chase & EMCI	CBL6111A &N-6-06	1543 &AT-N0609	30MHz ~ 1GHz	Jul. 01, 2021	Jun. 30, 2022	Radiation (10CH01-CB)
EMI Test Receiver	Rohde& Schwarz	ESCI	100186	9kHz ~ 3GHz Jul. 12, 2021		Jul. 11, 2022	Radiation (10CH01-CB)
Spectrum Analyzer	Rohde& Schwarz	FSV30	101026	9kHz ~ 30GHz Mar. 08, 2021		Mar. 07, 2022	Radiation (10CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Apr. 14, 2021	Apr. 13, 2022	Radiation (10CH01-CB)

Report No. : FR152531-01AB

TEL: 886-3-656-9065 Page Number : 31 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

Report No. : FR152531-01AB

Instrument	Brand	Model No.	Serial No.	Characteristics Calibration Date		Calibration Due Date	Remark
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (10CH01-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH01-CB	1GHz ~18GHz 3m	May 07, 2021	May 06, 2022	Radiation (03CH01-CB)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	BBHA 9120 D 1370	1GHz~18GHz	Sep. 14, 2021	Sep. 13, 2022	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Aug. 05, 2021	Aug. 04, 2022	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02121	1GHz ~ 26.5GHz	May 20, 2021	May 19, 2022	Radiation (03CH01-CB)
Pre-Amplifier	MITEQ	TTA1840-35-H G	1864479	18GHz ~ 40GHz	Jul. 13, 2021	Jul. 12, 2022	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	May 03, 2021	May 02, 2022	Radiation (03CH01-CB)
RF Cable-high	Woken	RG402	High Cable-16	1 GHz ~ 18 GHz	Oct. 04, 2021	Oct. 03, 2022	Radiation (03CH01-CB)
RF Cable-high	Woken	RG402	High Cable-16+17	1 GHz ~ 18 GHz	Oct. 04, 2021	Oct. 03, 2022	Radiation (03CH01-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 15, 2021	Jul. 14, 2022	Radiation (03CH01-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 15, 2021	Jul. 14, 2022	Radiation (03CH01-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH01-CB)
3m Semi Anechoic Chamber VSWR	RIKEN	SAC-3M	03CH02-CB	1GHz ~18GHz 3m	Mar. 27, 2021	Mar. 26, 2022	Radiation (03CH02-CB)
Horn Antenna	EMCO	3115	9610-4976	1GHz ~ 18GHz	May 04, 2021	May 03, 2022	Radiation (03CH02-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz Aug. 05, 2021		Aug. 04, 2022	Radiation (03CH02-CB)
Pre-Amplifier	Agilent	83017A	MY39501305	1GHz ~ 26.5GHz			Radiation (03CH02-CB)
Pre-Amplifier	MITEQ	TTA1840-35-H G	1864479	18GHz ~ 40GHz	Hz ~ 40GHz Jul. 13, 2021		Radiation (03CH02-CB)
Spectrum analyzer	R&S	FSU	100015	9kHz~26GHz Oct. 15, 2020 Oct. 14, 2021		Oct. 14, 2021	Radiation (03CH02-CB)

 TEL: 886-3-656-9065
 Page Number
 : 32 of 33

 FAX: 886-3-656-9085
 Issued Date
 : Dec. 09, 2021

Calibration Calibration Serial No. Instrument **Brand** Model No. Characteristics Remark **Due Date** Date Radiation RF Cable-high Woken RG402 High Cable-18 1GHz ~ 18GHz Oct. 04, 2021 Oct. 03, 2022 (03CH02-CB) Radiation High RF Cable-high Woken RG402 1GHz ~ 18GHz Oct. 04, 2021 Oct. 03, 2022 Cable-18+19 (03CH02-CB) 18GHz ~ High Radiation RF Cable-high Woken RG402 Jul. 15, 2021 Jul. 14, 2022 Cable-40G#1 40 GHz (03CH02-CB) High 18GHz ~ Radiation Jul. 14, 2022 RF Cable-high RG402 Jul. 15, 2021 Woken (03CH02-CB) Cable-40G#2 40 GHz Radiation Test Software **SPORTON** SENSE V5.10 N.C.R. N.C.R. (03CH02-CB) Spectrum Conducted 100979 May 20, 2022 R&S FSV40 9kHz~40GHz May 21, 2021 analyzer (TH01-CB) 1 GHz -Conducted RF Cable-high Woken RG402 High Cable-06 Oct. 04, 2021 Oct. 03, 2022 26.5 GHz (TH01-CB) 1 GHz -Conducted RF Cable-high Woken RG402 High Cable-07 Oct. 04, 2021 Oct. 03, 2022 26.5 GHz (TH01-CB) 1 GHz -Conducted High Cable-08 Oct. 03, 2022 RF Cable-high Woken RG402 Oct. 04, 2021 26.5 GHz (TH01-CB) 1 GHz -Conducted RF Cable-high Oct. 04, 2021 Oct. 03, 2022 Woken RG402 High Cable-09 26.5 GHz (TH01-CB) 1 GHz -Conducted RF Cable-high Woken RG402 High Cable-10 Oct. 04, 2021 Oct. 03, 2022 26.5 GHz (TH01-CB) 1 GHz -Conducted RF Cable-high Woken RG402 High Cable-30 Oct. 04, 2021 Oct. 03, 2022 26.5 GHz (TH01-CB) Conducted Feb. 22, 2022 Power Sensor US40442088 50MHz~18GHz Feb. 23, 2021 Agilent E9327A (TH01-CB) Conducted GB41291199 Power Meter E4416A 50MHz~18GHz Feb. 23, 2021 Feb. 22, 2022 Agilent (TH01-CB)

Report No.: FR152531-01AB

Conducted

(TH01-CB)

N.C.R.

N.C.R.

Note: Calibration Interval of instruments listed above is one year. NCR means Non-Calibration required.

SENSE

**SPORTON** 

Test Software

TEL: 886-3-656-9065 Page Number : 33 of 33
FAX: 886-3-656-9085 Issued Date : Dec. 09, 2021

Report Template No.: CB-A12\_1 Ver1.4 Report Version : 02

V5.10



## **Conducted Emissions at Powerline**

Appendix A

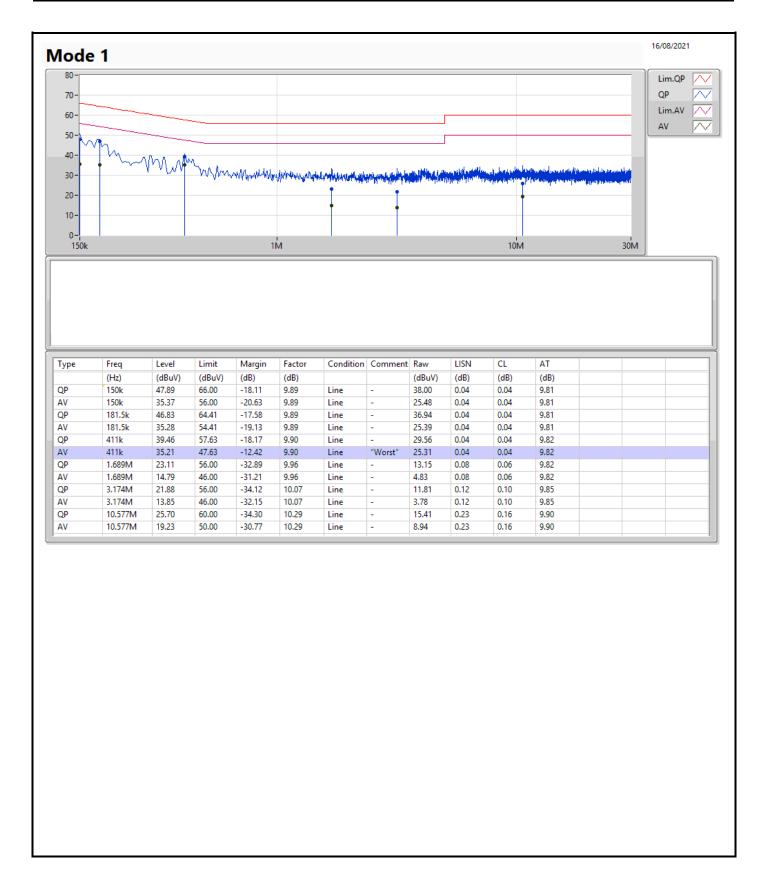
Summary

Mode	Result	Туре	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	AV	411k	35.21	47.63	-12.42	Line

Sporton International Inc. Hsinchu Laboratory Page No. : 1 of 3

Report No. : FR152531-01AB

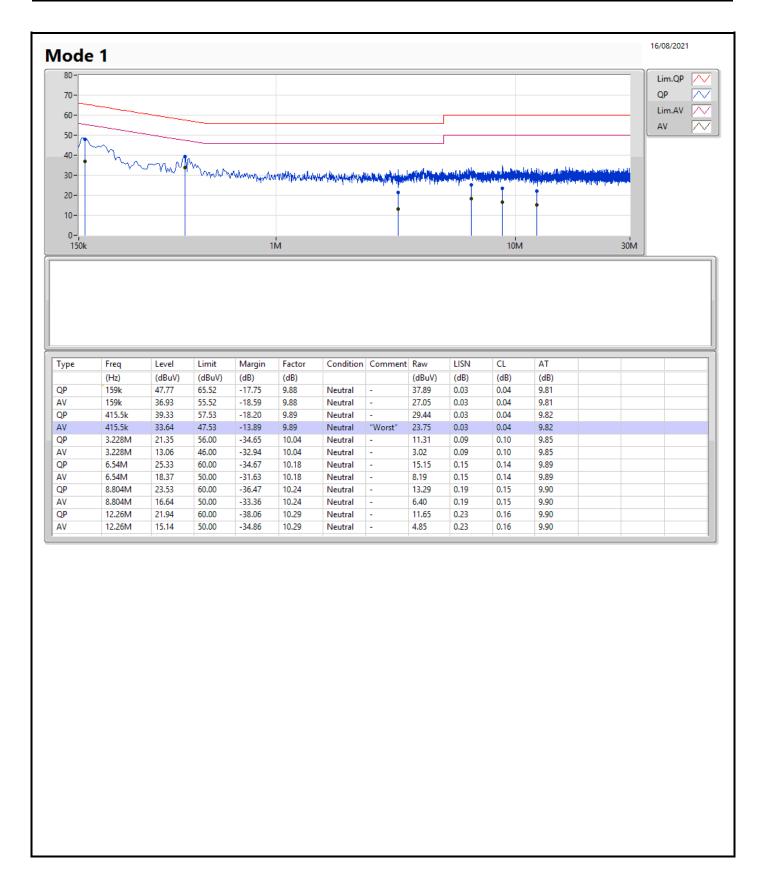




Page No. : 2 of 3

Report No. : FR152531-01AB





Page No. : 3 of 3

Report No. : FR152531-01AB



Appendix B **EBW** 

Summary

Mode	Max-N dB	Max-OBW	ITU-Code	Min-N dB	Min-OBW
	(Hz)	(Hz)		(Hz)	(Hz)
5.15-5.25GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_4TX	42.63M	29.085M	29M1D1D	20.64M	16.432M
802.11ax HEW20_Nss1,(MCS0)_4TX	47.01M	27.826M	27M8D1D	21.33M	18.891M
802.11ax HEW40_Nss1,(MCS0)_4TX	74.7M	39.94M	39M9D1D	40.74M	37.841M
802.11ax HEW80_Nss1,(MCS0)_4TX	83.04M	77.601M	77M6D1D	81.84M	77.361M
5.725-5.85GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_4TX	16.32M	30.375M	30M4D1D	15.06M	17.271M
802.11ax HEW20_Nss1,(MCS0)_4TX	19.05M	30.525M	30M5D1D	17.58M	19.31M
802.11ax HEW40_Nss1,(MCS0)_4TX	38.16M	59.07M	59M1D1D	35.4M	38.981M
802.11ax HEW80_Nss1,(MCS0)_4TX	76.2M	78.201M	78M2D1D	74.52M	77.721M

 $\label{eq:max-NdB} Max - N \ dB = Maximum \ 6dB \ down \ bandwidth \ for \ 5.725-5.85 GHz \ band \ / \ Maximum \ 26dB \ down \ bandwidth \ for \ other \ band; \\ Max-OBW = Maximum \ 99\% \ occupied \ bandwidth \ for \ 5.725-5.85 GHz \ band \ / \ Maximum \ 26dB \ down \ bandwidth \ for \ other \ band; \\ Min-OBW = Minimum \ 99\% \ occupied \ bandwidth \ for \ other \ band; \\ Min-OBW = Minimum \ 99\% \ occupied \ bandwidth \ for \ other \ band; \\ Min-OBW = Minimum \ 99\% \ occupied \ bandwidth \ for \ other \ band; \\ Min-OBW = Minimum \ 99\% \ occupied \ bandwidth \ for \ other \ band; \\ Minimum \ 99\% \ occupied \ bandwidth \ for \ other \ band; \\ Minimum \ 99\% \ occupied \ bandwidth \ for \ other \ bandwidth \ for \$ 

Sporton International Inc. Hsinchu Laboratory Page No. : 1 of 11



### Result

Mode	Result	Limit	Port 1-N dB	Port 1-OBW	Port 2-N dB	Port 2-OBW	Port 3-N dB	Port 3-OBW	Port 4-N dB	Port 4-OBW
		(Hz)	(Hz)	(Hz)	(Hz)	(Hz)	(Hz)	(Hz)	(Hz)	(Hz)
802.11a_Nss1,(6Mbps)_4TX	-	-	-	-	-	-	=	-	-	=
5180MHz	Pass	Inf	24.9M	16.612M	23.91M	16.702M	24.57M	16.582M	20.64M	16.432M
5200MHz	Pass	Inf	39.54M	25.457M	39.69M	22.999M	42.63M	29.085M	39.48M	24.858M
5240MHz	Pass	Inf	33.42M	17.121M	34.83M	17.781M	33.93M	18.111M	26.94M	17.061M
5745MHz	Pass	500k	15.42M	17.271M	16.02M	17.271M	15.06M	20.06M	15.36M	20.84M
5785MHz	Pass	500k	15.42M	29.775M	16.29M	27.496M	15.69M	29.625M	15.66M	26.987M
5825MHz	Pass	500k	16.32M	27.076M	16.32M	27.856M	15.72M	30.375M	15.36M	27.946M
802.11ax HEW20_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5180MHz	Pass	Inf	23.88M	18.891M	23.58M	19.07M	23.55M	18.951M	21.33M	18.921M
5200MHz	Pass	Inf	46.89M	22.549M	41.52M	20.06M	47.01M	27.826M	43.11M	22.879M
5240MHz	Pass	Inf	34.77M	19.28M	33.78M	19.28M	31.05M	19.25M	33.81M	19.25M
5745MHz	Pass	500k	18.75M	19.7M	18.66M	19.31M	17.91M	24.528M	18.06M	20.81M
5785MHz	Pass	500k	18.03M	28.726M	18.81M	26.957M	17.58M	28.006M	19.05M	27.076M
5825MHz	Pass	500k	18.63M	24.168M	18.75M	25.757M	18.6M	30.525M	19.02M	25.187M
802.11ax HEW40_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5190MHz	Pass	Inf	41.04M	38.141M	40.74M	37.901M	41.22M	38.081M	40.86M	37.841M
5230MHz	Pass	Inf	64.02M	38.741M	74.7M	39.4M	73.74M	39.94M	66.3M	38.381M
5755MHz	Pass	500k	36.54M	39.58M	37.86M	38.981M	36.06M	54.513M	36.48M	49.295M
5795MHz	Pass	500k	35.88M	53.253M	38.16M	53.853M	38.04M	59.07M	35.4M	55.232M
802.11ax HEW80_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5210MHz	Pass	Inf	82.68M	77.601M	82.2M	77.481M	83.04M	77.361M	81.84M	77.361M
5775MHz	Pass	500k	75.36M	77.721M	74.64M	77.841M	76.2M	78.201M	74.52M	77.841M

Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band Port X-OBW = Port X 99% occupied bandwidth

Sporton International Inc. Hsinchu Laboratory

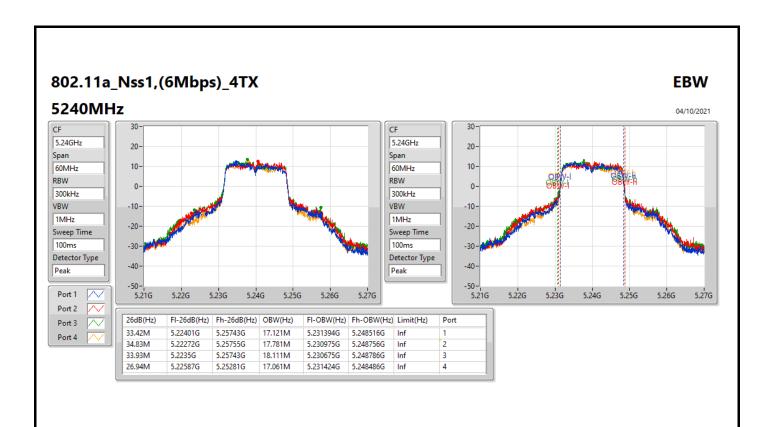
Page No. : 2 of 11

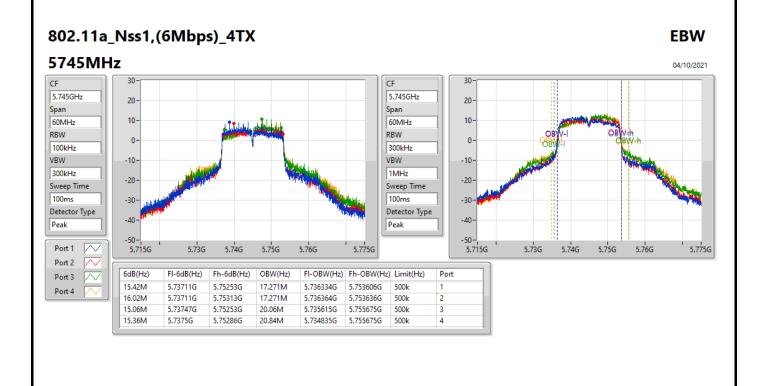




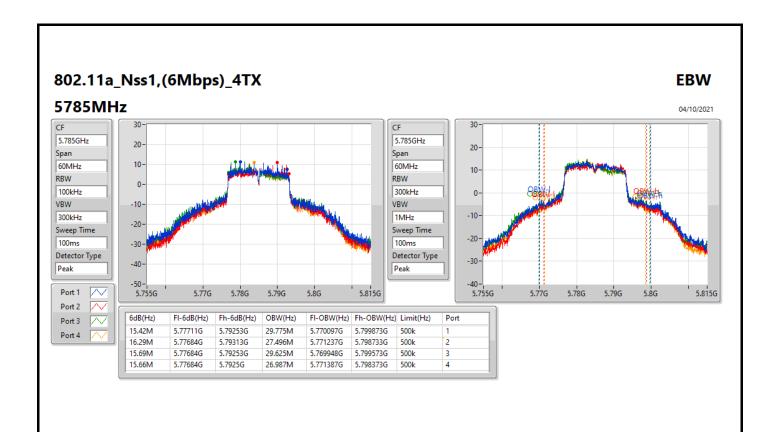
Page No. : 3 of 11

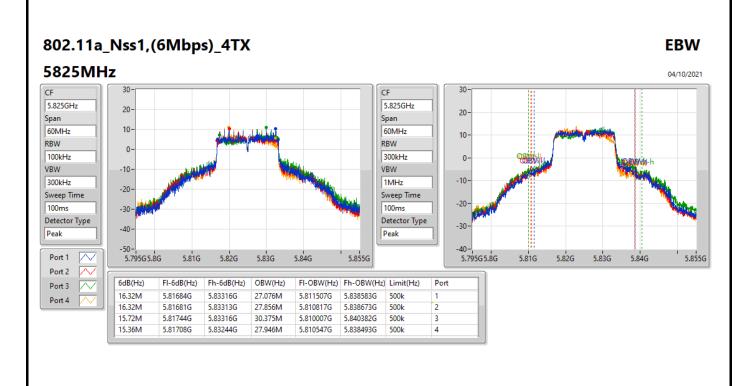
Report No. : FR152531-01AB



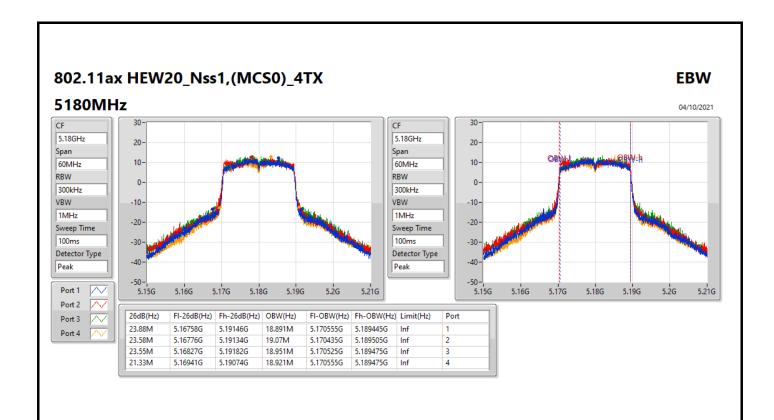


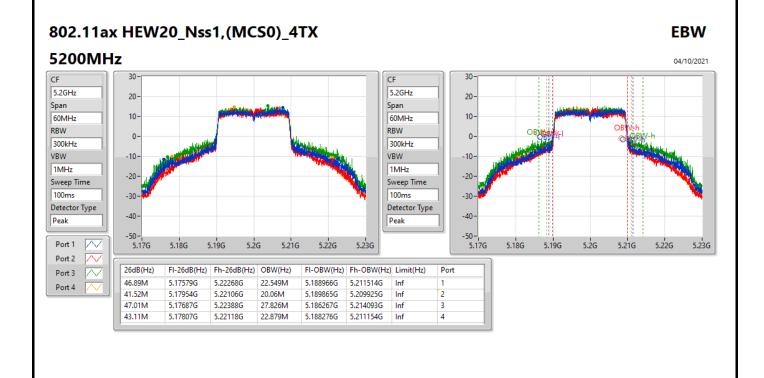
Page No. : 4 of 11



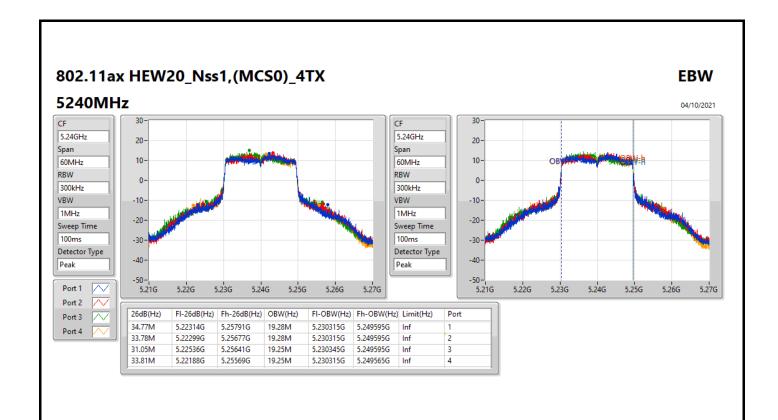


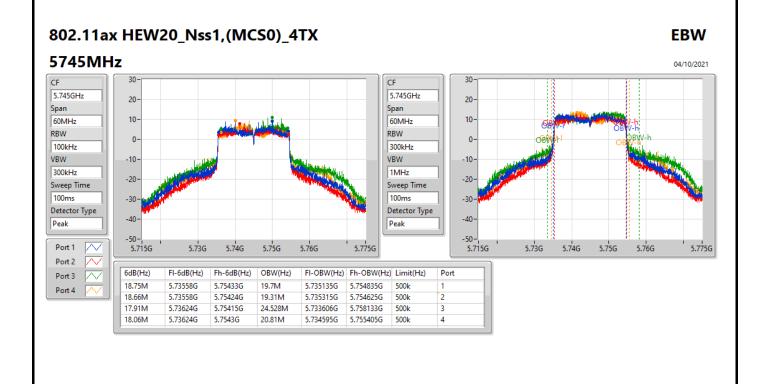
Page No. : 5 of 11



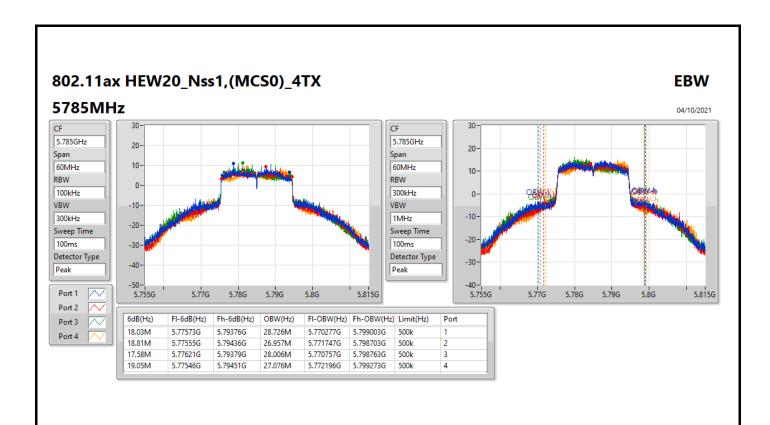


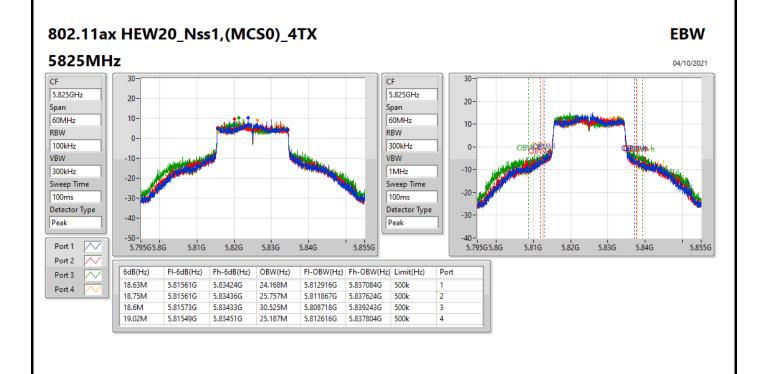
Page No. : 6 of 11



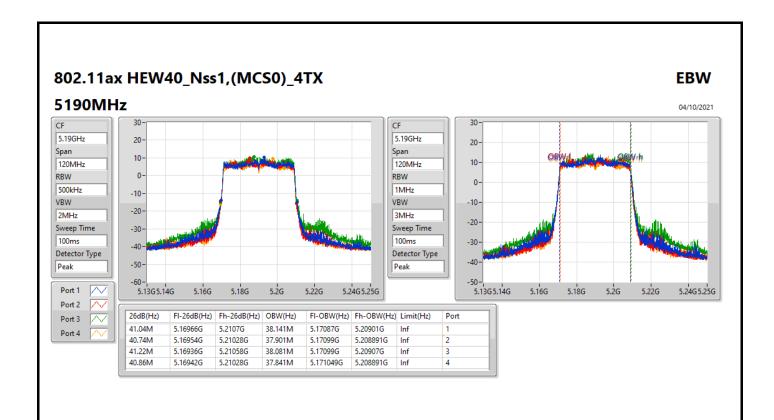


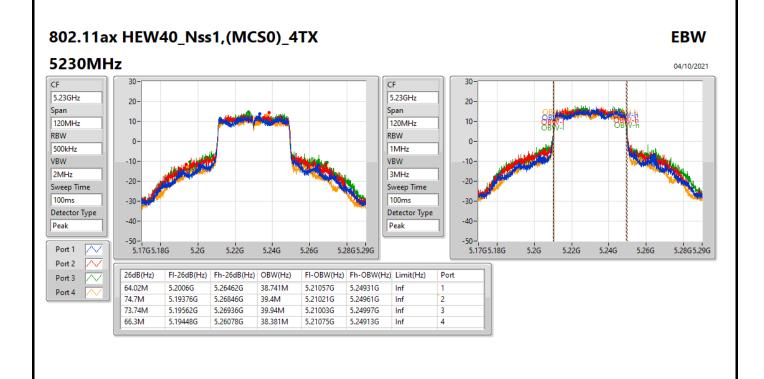
Page No. : 7 of 11



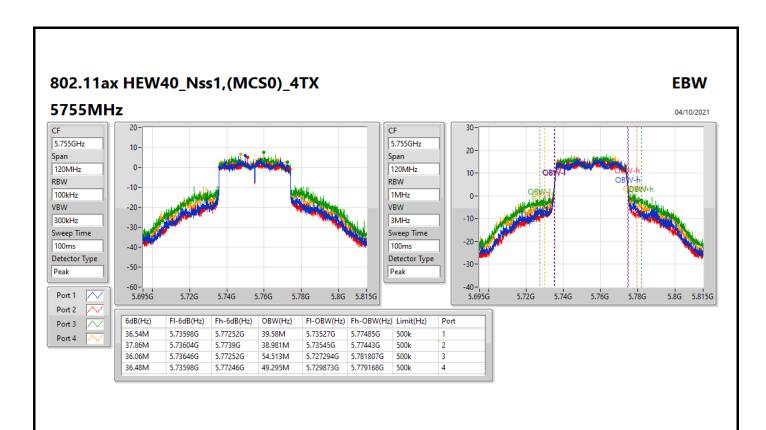


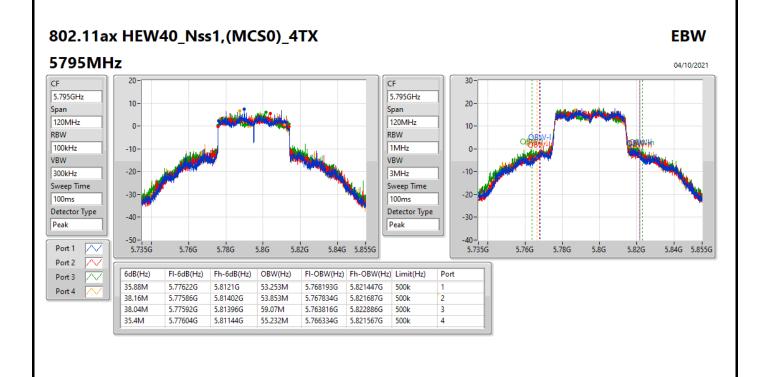
Page No. : 8 of 11



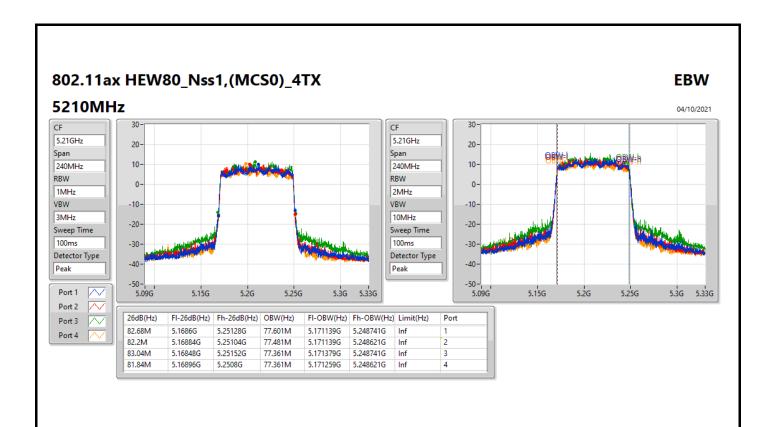


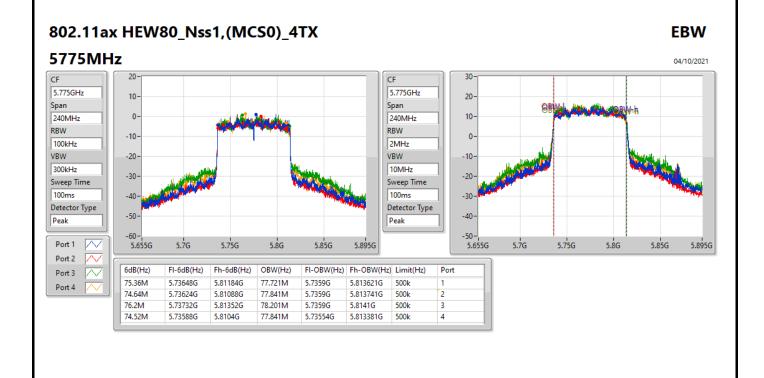
Page No. : 9 of 11





Page No. : 10 of 11





Page No. : 11 of 11

Report No. : FR152531-01AB



# For non-beamforming mode Summary

Mode	Total Power (dBm)	Total Power (W)
5.15-5.25GHz	-	-
802.11a_Nss1,(6Mbps)_4TX	28.27	0.67143
802.11ax HEW20_Nss1,(MCS0)_4TX	28.17	0.65615
802.11ax HEW40_Nss1,(MCS0)_4TX	27.07	0.50933
802.11ax HEW80_Nss1,(MCS0)_4TX	22.89	0.19454
5.725-5.85GHz	-	-
802.11a_Nss1,(6Mbps)_4TX	27.91	0.61802
802.11ax HEW20_Nss1,(MCS0)_4TX	27.88	0.61376
802.11ax HEW40_Nss1,(MCS0)_4TX	27.64	0.58076
802.11ax HEW80_Nss1,(MCS0)_4TX	24.81	0.30269

Sporton International Inc. Hsinchu Laboratory Page No. : 1 of 2



## Result

Mode	Result	DG	Port 1	Port 2	Port 3	Port 4	Total Power	Power Limit
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)
802.11a_Nss1,(6Mbps)_4TX	-	-	-	-	-	-	-	-
5180MHz	Pass	1.87	19.85	20.03	20.71	19.44	26.05	30.00
5200MHz	Pass	1.87	22.09	22.02	22.94	21.88	28.27	30.00
5240MHz	Pass	1.87	20.59	20.59	21.30	20.47	26.77	30.00
5745MHz	Pass	4.42	20.29	20.09	20.98	20.89	26.60	30.00
5785MHz	Pass	4.42	22.03	21.61	22.09	21.80	27.91	30.00
5825MHz	Pass	4.42	21.60	21.44	21.76	21.58	27.62	30.00
802.11ax HEW20_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
5180MHz	Pass	1.87	19.55	19.86	20.23	19.18	25.74	30.00
5200MHz	Pass	1.87	21.89	21.79	22.82	22.01	28.17	30.00
5240MHz	Pass	1.87	20.72	21.00	21.33	20.78	26.98	30.00
5745MHz	Pass	4.42	20.61	20.18	21.33	20.97	26.81	30.00
5785MHz	Pass	4.42	21.91	21.76	22.06	21.71	27.88	30.00
5825MHz	Pass	4.42	21.62	21.37	19.83	21.31	27.11	30.00
802.11ax HEW40_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
5190MHz	Pass	1.87	16.90	16.73	17.97	16.41	23.06	30.00
5230MHz	Pass	1.87	20.60	21.35	21.72	20.40	27.07	30.00
5755MHz	Pass	4.42	20.56	20.34	21.74	21.32	27.05	30.00
5795MHz	Pass	4.42	20.97	21.72	21.99	21.72	27.64	30.00
802.11ax HEW80_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
5210MHz	Pass	1.87	16.66	16.59	17.81	16.23	22.89	30.00
5775MHz	Pass	4.42	18.49	18.27	19.33	18.97	24.81	30.00

DG = Directional Gain; Port X = Port X output power

Page No. : 2 of 2



# For beamforming mode Summary

Mode	Total Power (dBm)	Total Power (W)
5.15-5.25GHz	-	-
802.11ax HEW20-BF_Nss1,(MCS0)_4TX	28.17	0.65615
802.11ax HEW40-BF_Nss1,(MCS0)_4TX	27.07	0.50933
802.11ax HEW80-BF_Nss1,(MCS0)_4TX	22.89	0.19454
5.725-5.85GHz	-	-
802.11ax HEW20-BF_Nss1,(MCS0)_4TX	27.88	0.61376
802.11ax HEW40-BF_Nss1,(MCS0)_4TX	27.64	0.58076
802.11ax HEW80-BF_Nss1,(MCS0)_4TX	24.81	0.30269

Sporton International Inc. Hsinchu Laboratory Page No. : 1 of 2



#### Result

Mode	Result	DG	Port 1	Port 2	Port 3	Port 4	Total Power	Power Limit
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)
802.11ax HEW20-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
5180MHz	Pass	4.17	19.55	19.86	20.23	19.18	25.74	30.00
5200MHz	Pass	4.17	21.89	21.79	22.82	22.01	28.17	30.00
5240MHz	Pass	4.17	20.72	21	21.33	20.78	26.98	30.00
5745MHz	Pass	4.48	20.61	20.18	21.33	20.97	26.81	30.00
5785MHz	Pass	4.48	21.91	21.76	22.06	21.71	27.88	30.00
5825MHz	Pass	4.48	21.62	21.37	19.83	21.31	27.11	30.00
802.11ax HEW40-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
5190MHz	Pass	4.17	16.9	16.73	17.97	16.41	23.06	30.00
5230MHz	Pass	4.17	20.6	21.35	21.72	20.4	27.07	30.00
5755MHz	Pass	4.48	20.56	20.34	21.74	21.32	27.05	30.00
5795MHz	Pass	4.48	20.97	21.72	21.99	21.72	27.64	30.00
802.11ax HEW80-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
5210MHz	Pass	4.17	16.66	16.59	17.81	16.23	22.89	30.00
5775MHz	Pass	4.48	18.49	18.27	19.33	18.97	24.81	30.00

DG = Directional Gain; Port X = Port X output power

Page No. : 2 of 2



Summary

Mode	PD (dBm/RBW)
5.15-5.25GHz	-
802.11a_Nss1,(6Mbps)_4TX	14.87
802.11ax HEW20_Nss1,(MCS0)_4TX	13.78
802.11ax HEW40_Nss1,(MCS0)_4TX	10.33
802.11ax HEW80_Nss1,(MCS0)_4TX	3.38
5.725-5.85GHz	-
802.11a_Nss1,(6Mbps)_4TX	13.57
802.11ax HEW20_Nss1,(MCS0)_4TX	12.58
802.11ax HEW40_Nss1,(MCS0)_4TX	9.67
802.11ax HEW80_Nss1,(MCS0)_4TX	4.28

RBW = 500kHz for 5.725-5.85GHz band / 1MHz for other band;

Sporton International Inc. Hsinchu Laboratory

Page No. : 1 of 11



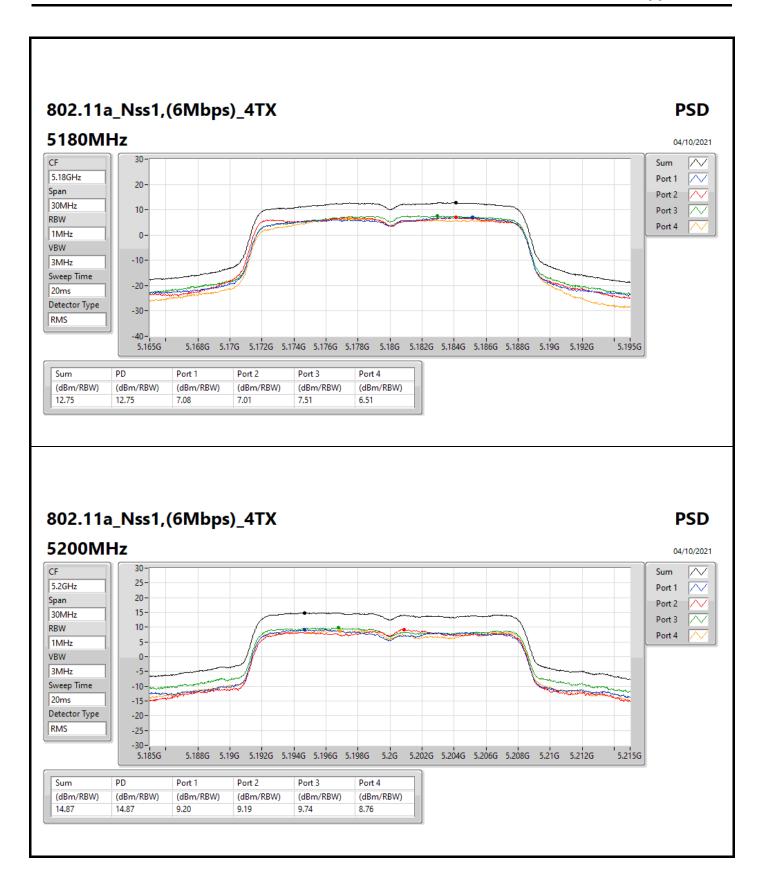
### Result

Mode	Result	DG	Port 1	Port 2	Port 3	Port 4	PD	PD Limit
		(dBi)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
802.11a_Nss1,(6Mbps)_4TX	-	-	-	-	-	-	-	-
5180MHz	Pass	4.17	7.08	7.01	7.51	6.51	12.75	17.00
5200MHz	Pass	4.17	9.20	9.19	9.74	8.76	14.87	17.00
5240MHz	Pass	4.17	8.03	8.16	8.55	7.55	13.58	17.00
5745MHz	Pass	4.48	6.33	5.61	7.28	6.91	12.03	30.00
5785MHz	Pass	4.48	7.70	7.18	8.12	8.17	13.57	30.00
5825MHz	Pass	4.48	6.57	6.34	7.25	7.36	12.31	30.00
802.11ax HEW20_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
5180MHz	Pass	4.17	6.01	6.17	6.61	5.78	11.81	17.00
5200MHz	Pass	4.17	8.13	8.34	8.77	8.77	13.78	17.00
5240MHz	Pass	4.17	7.18	7.33	7.95	7.19	12.91	17.00
5745MHz	Pass	4.48	5.59	4.89	6.75	6.90	11.33	30.00
5785MHz	Pass	4.48	7.05	6.19	7.72	6.85	12.58	30.00
5825MHz	Pass	4.48	6.98	5.63	6.98	6.11	11.99	30.00
802.11ax HEW40_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
5190MHz	Pass	4.17	0.80	0.35	2.05	0.57	6.19	17.00
5230MHz	Pass	4.17	4.65	4.91	5.98	4.42	10.33	17.00
5755MHz	Pass	4.48	3.04	2.00	4.03	4.21	9.14	30.00
5795MHz	Pass	4.48	3.76	3.47	4.25	4.15	9.67	30.00
802.11ax HEW80_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
5210MHz	Pass	4.17	-2.39	-2.40	-0.84	-2.32	3.38	17.00
5775MHz	Pass	4.48	-1.93	-2.74	-0.75	-0.72	4.28	30.00

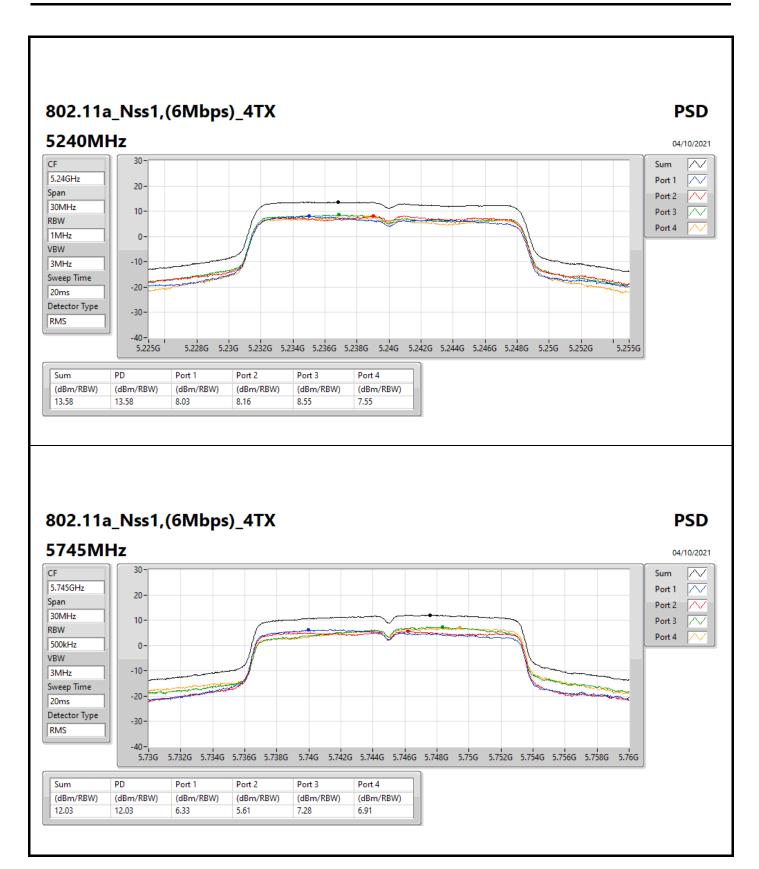
Sporton International Inc. Hsinchu Laboratory

Page No.

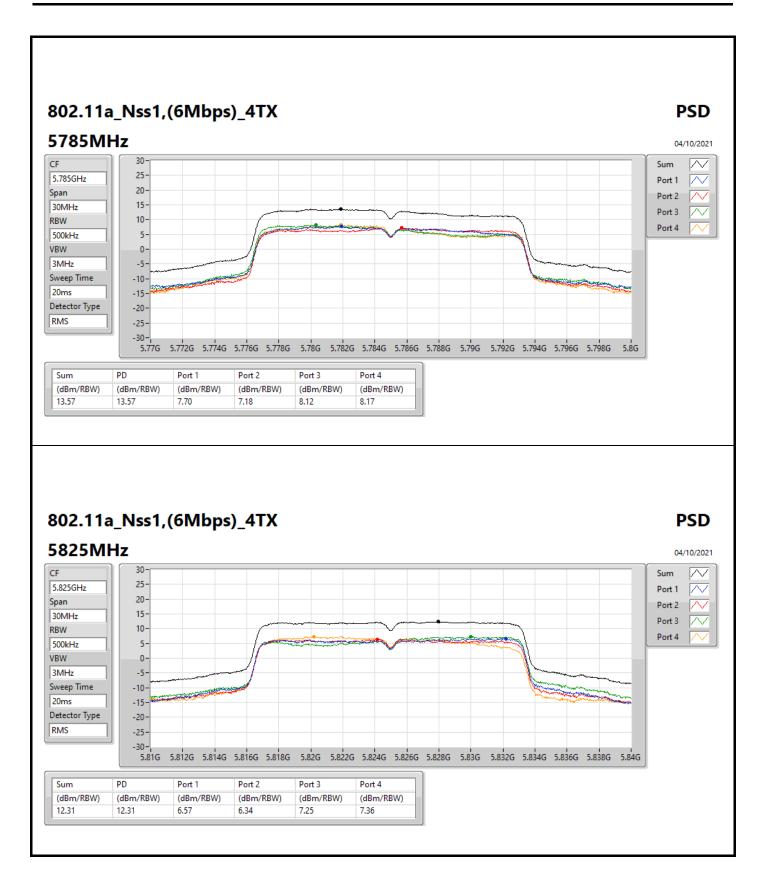
DG = Directional Gain; RBW = 500kHz for 5.725-5.85GHz band / 1MHz for other band; PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;



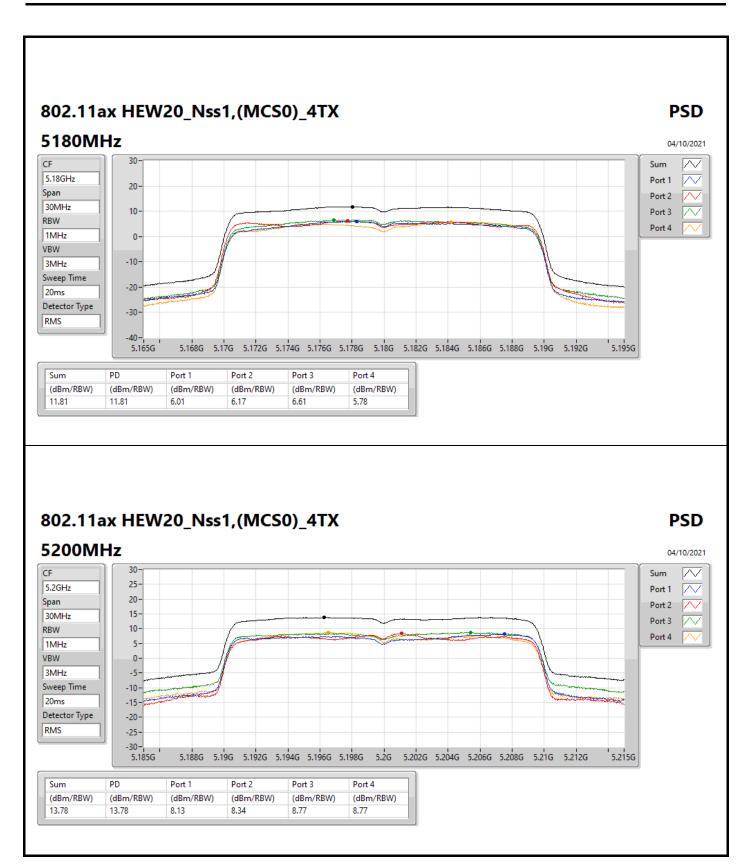
Page No. : 3 of 11



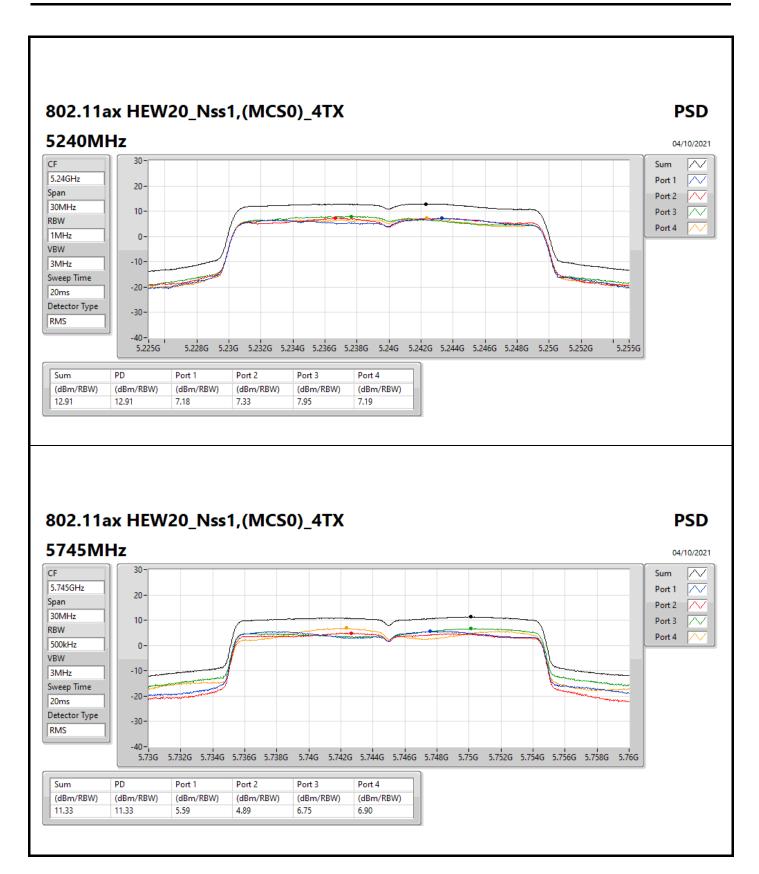
Page No. : 4 of 11



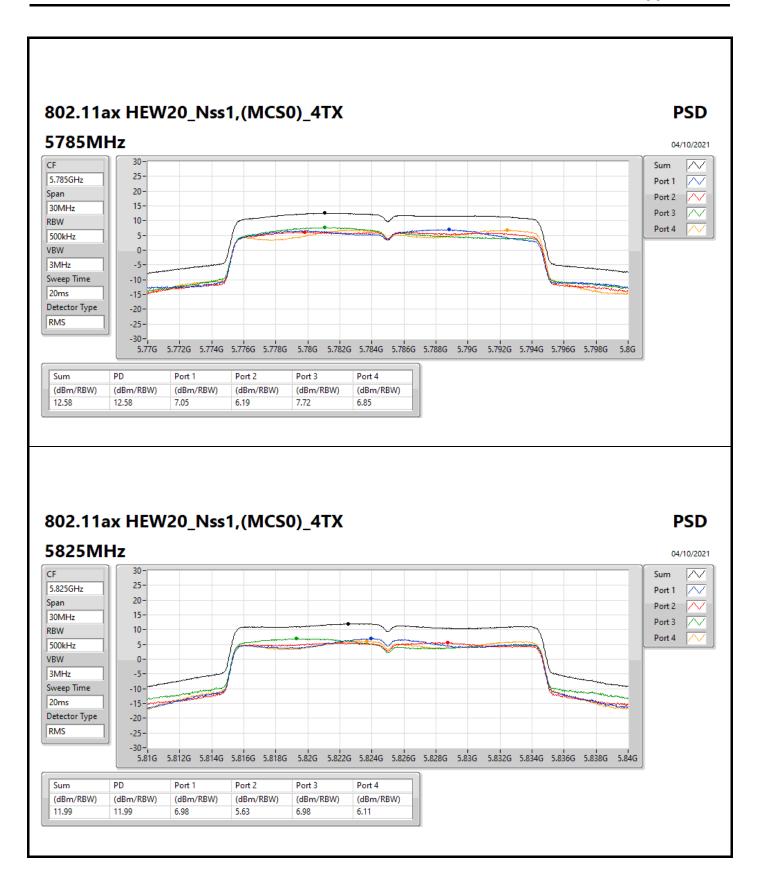
Page No. : 5 of 11



Page No. : 6 of 11



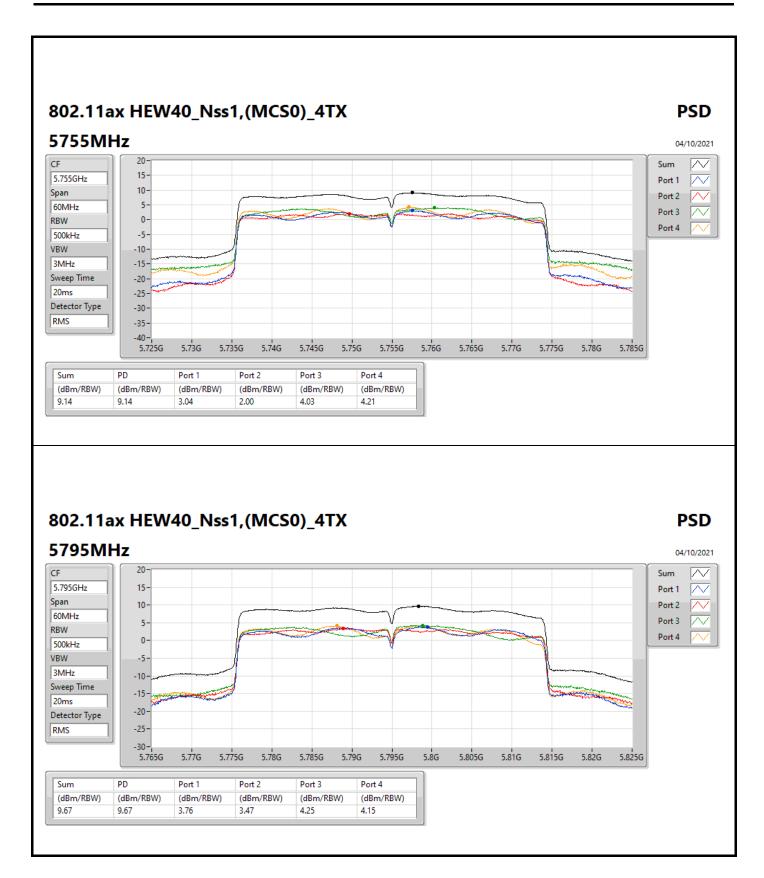
Page No. : 7 of 11



Page No. : 8 of 11

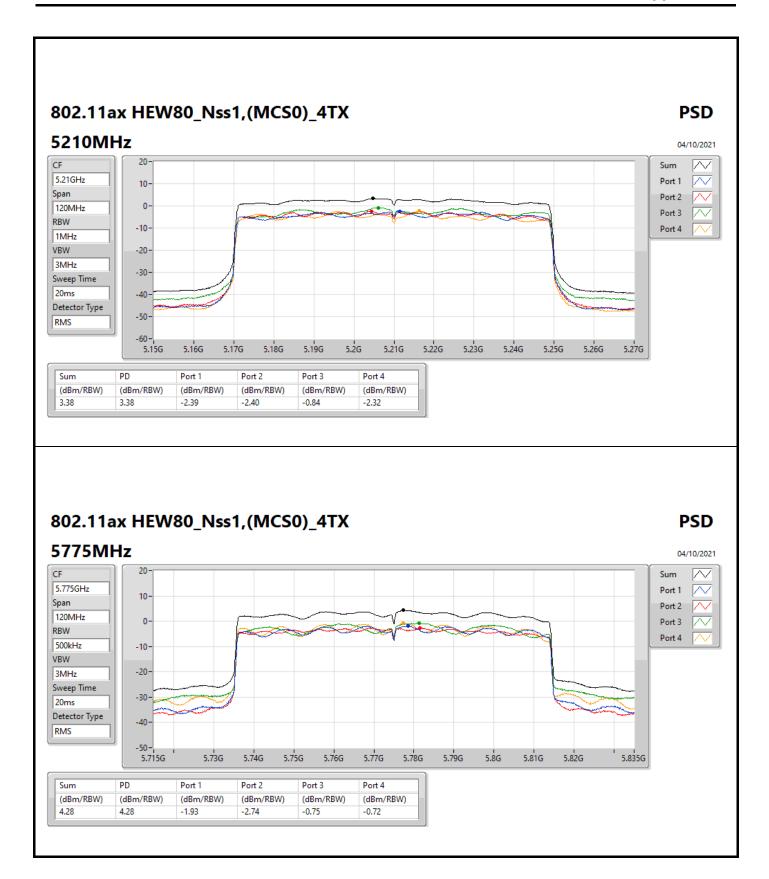


Page No. : 9 of 11



Page No. : 10 of 11

Report No. : FR152531-01AB



Page No. : 11 of 11



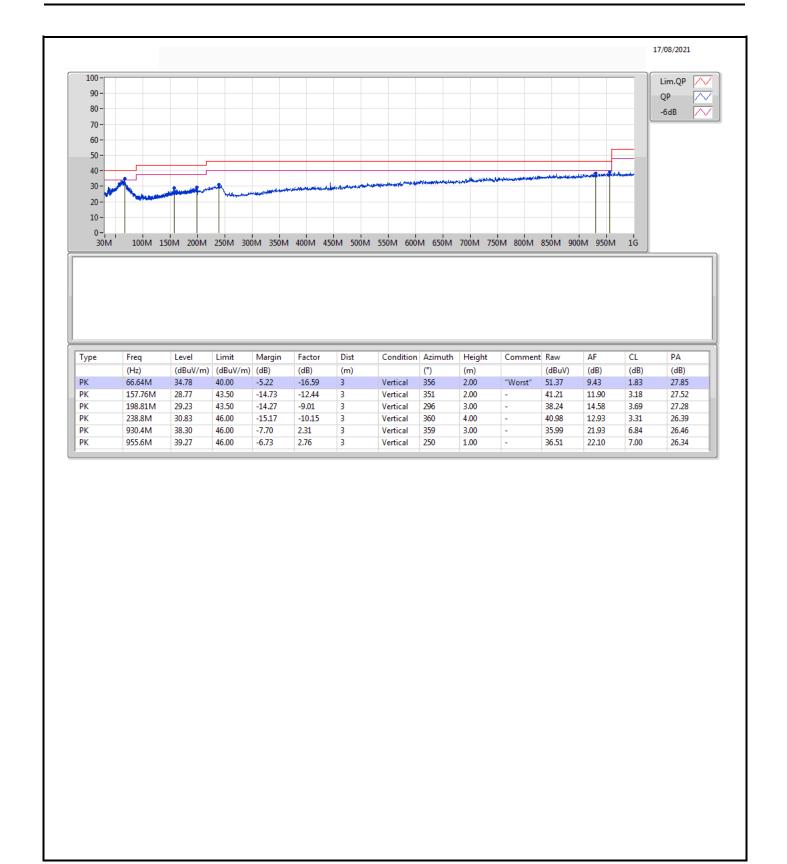
# Radiated Emissions below 1GHz

Appendix E.1

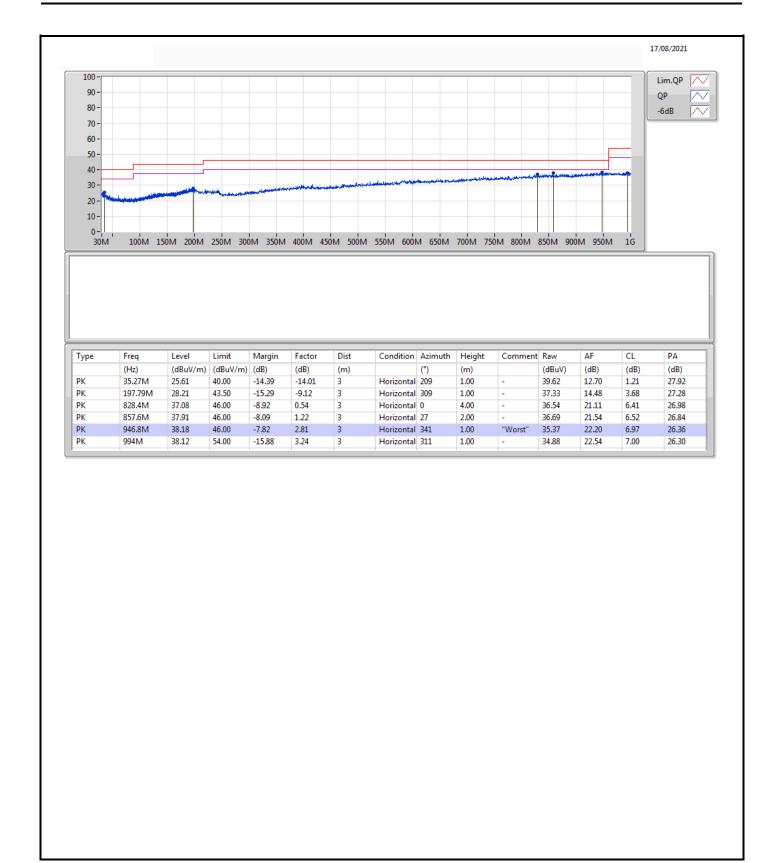
Summary

Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 3	Pass	PK	66.64M	34.78	40.00	-5.22	Vertical

Sporton International Inc. Hsinchu Laboratory Page No. : 1 of 3



Page No. : 2 of 3



Page No. : 3 of 3



# RSE TX above 1GHz

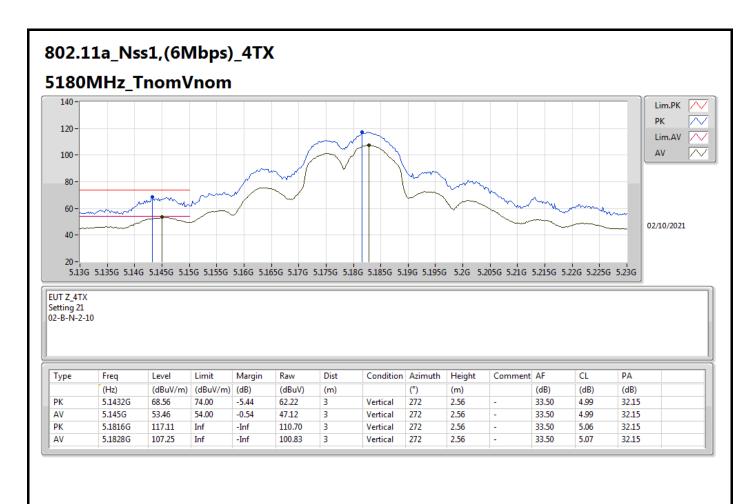
Appendix E.2

Summary

Mode	Result	Туре	Freq	Level	Limit	Margin	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(m)		(°)	(m)	
5.725-5.85GHz	-		-	-	-		-		-	-	-
802.11ax HEW20_Nss1,(MCS0)_4TX	Pass	PK	17.241G	68.11	68.20	-0.09	3	Horizontal	142	3.00	-

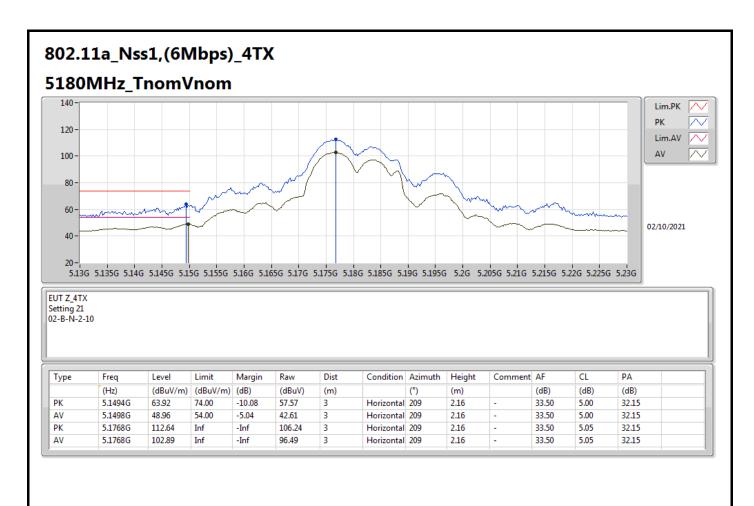
Sporton International Inc. Hsinchu Laboratory Page No. : 1 of 73





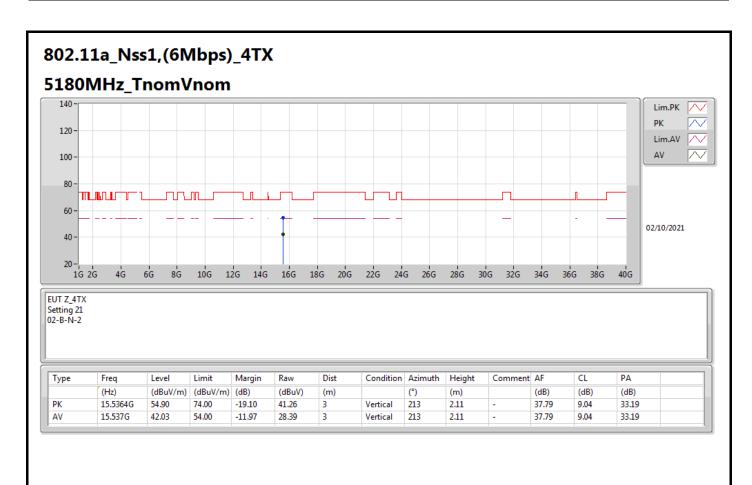
Page No. : 2 of 73





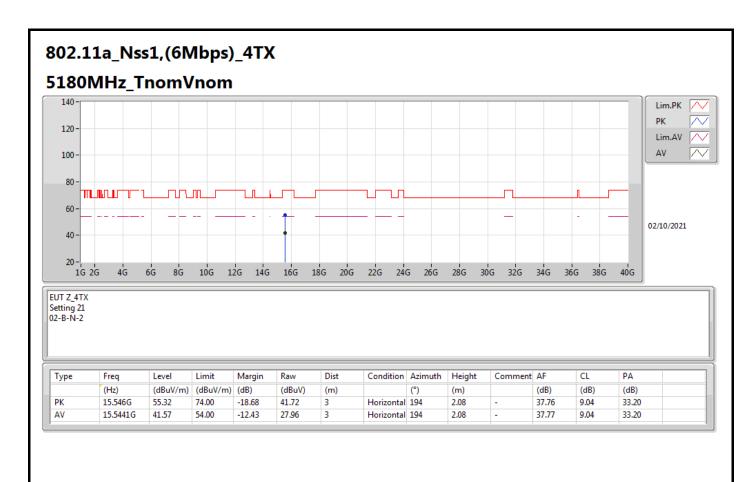
Page No. : 3 of 73





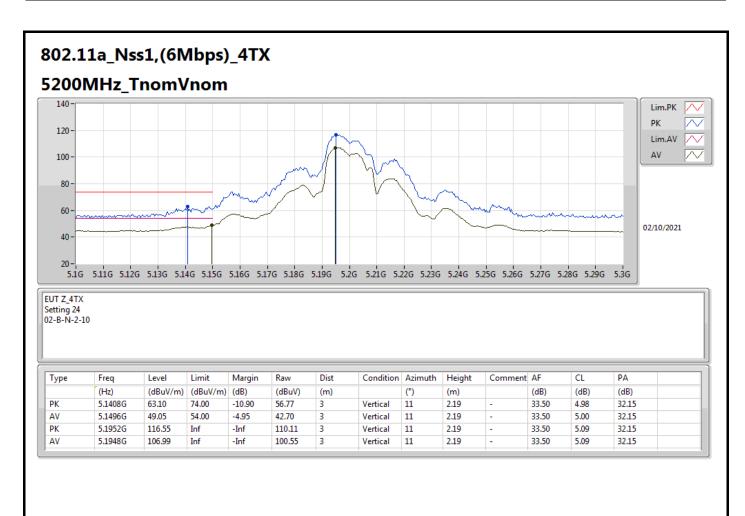
Page No. : 4 of 73





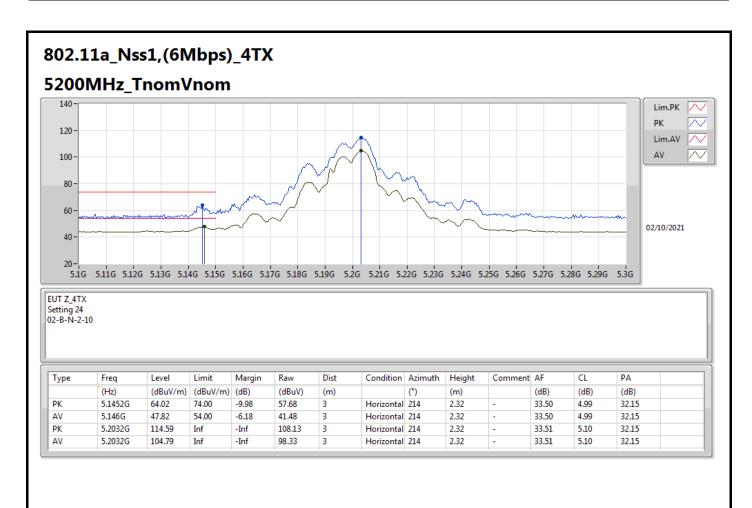
Page No. : 5 of 73





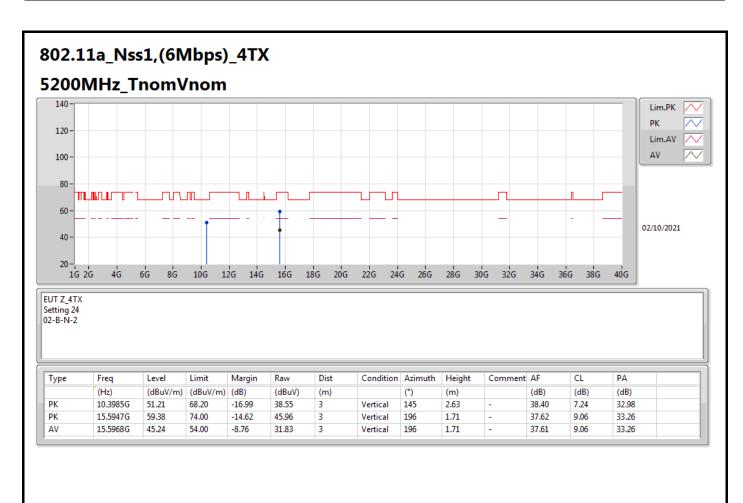
Page No. : 6 of 73





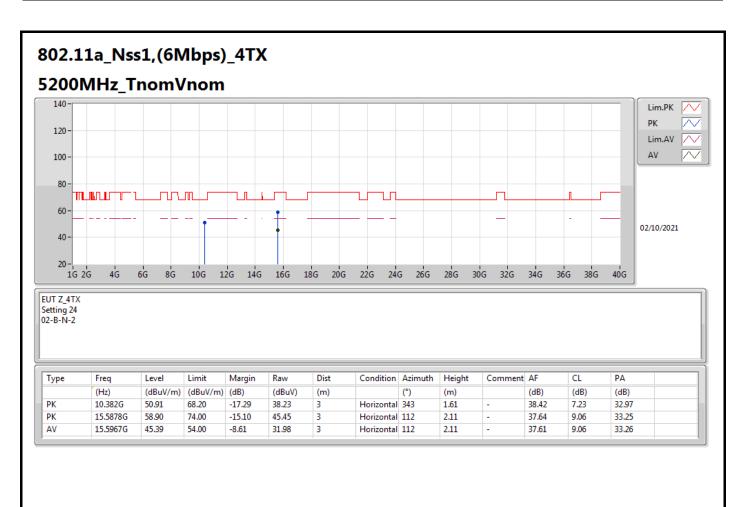
Page No. : 7 of 73





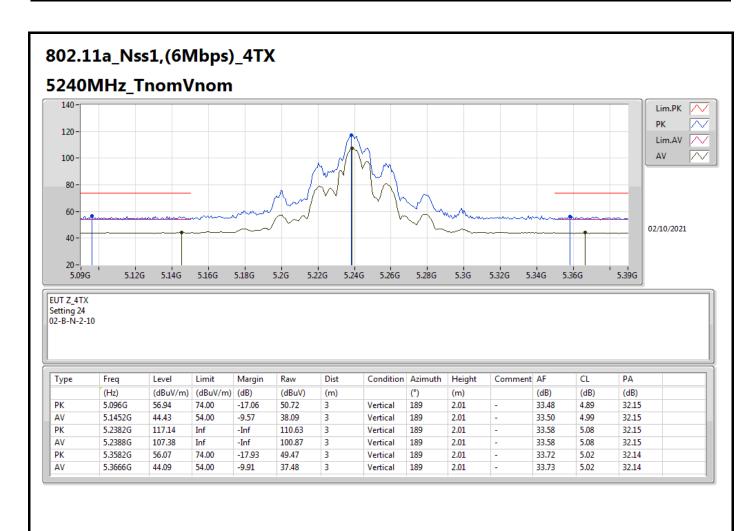
Page No. : 8 of 73





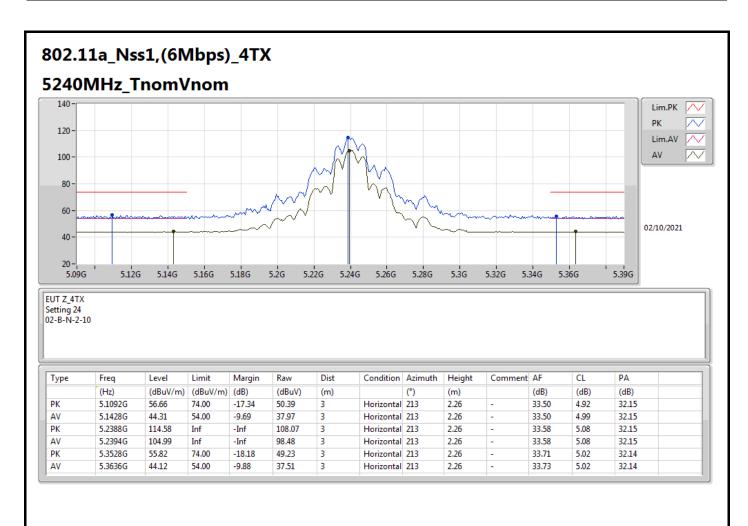
Page No. : 9 of 73





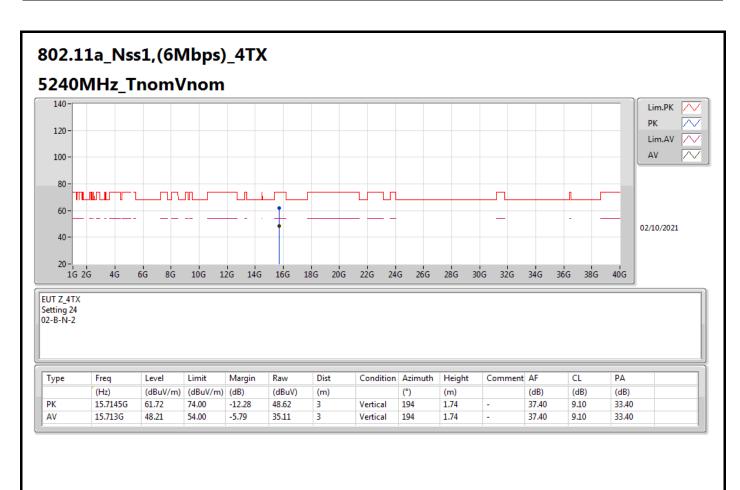
Page No. : 10 of 73





Page No. : 11 of 73

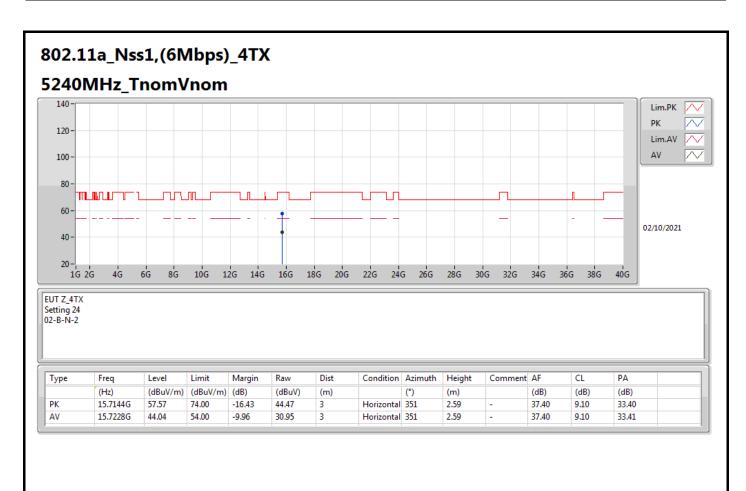




Page No. : 12 of 73

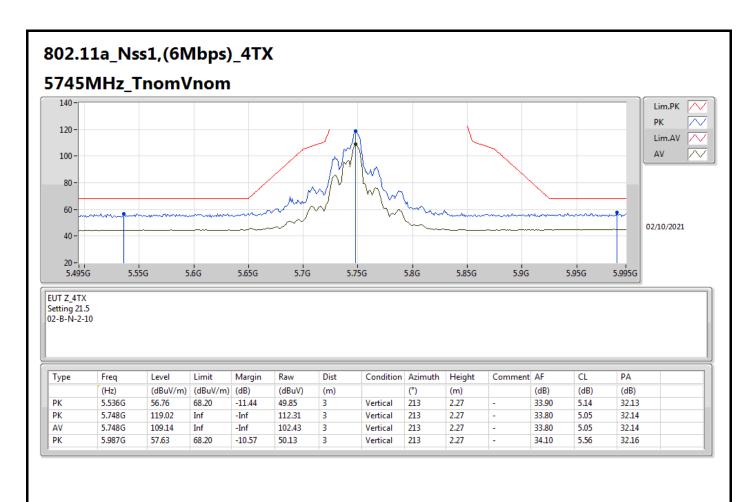
Report No. : FR152531-01AB





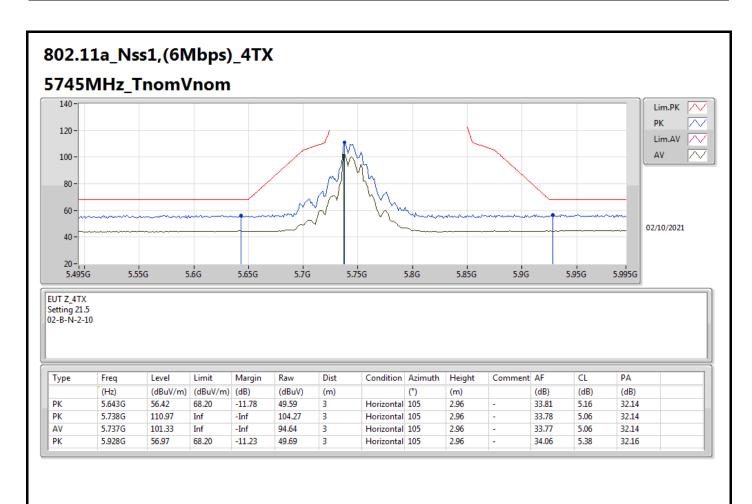
Page No. : 13 of 73





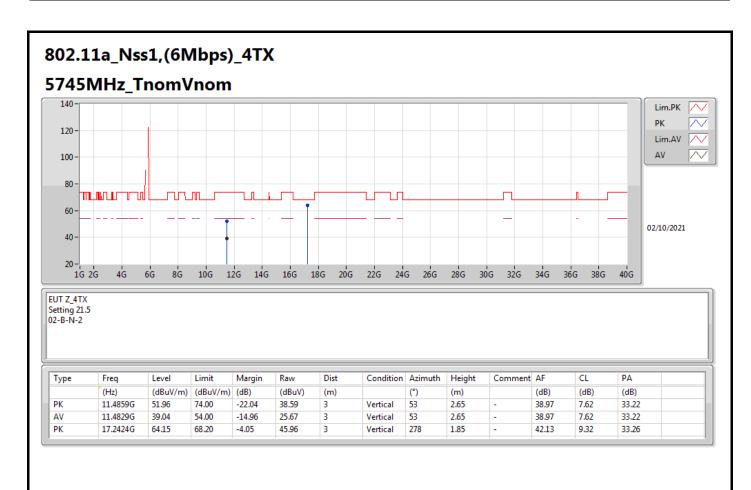
Page No. : 14 of 73





Page No. : 15 of 73

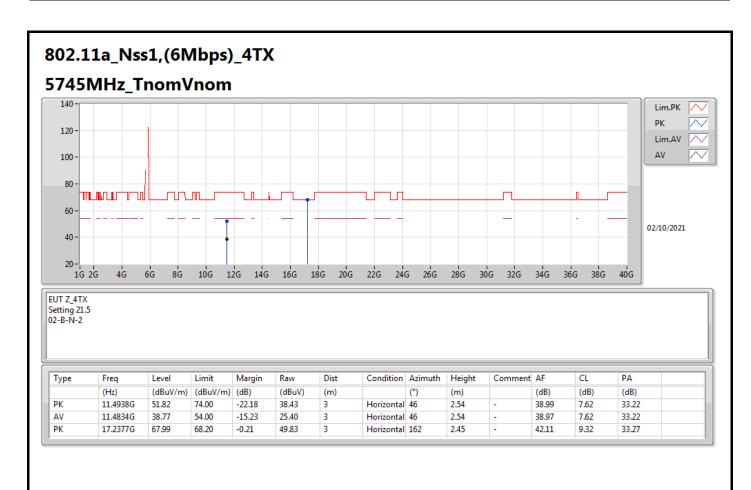




Page No. : 16 of 73

Report No. : FR152531-01AB

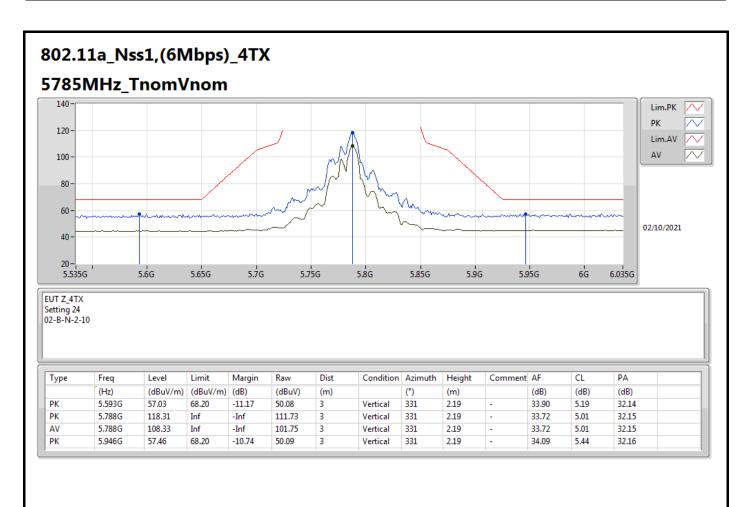




Page No. : 17 of 73

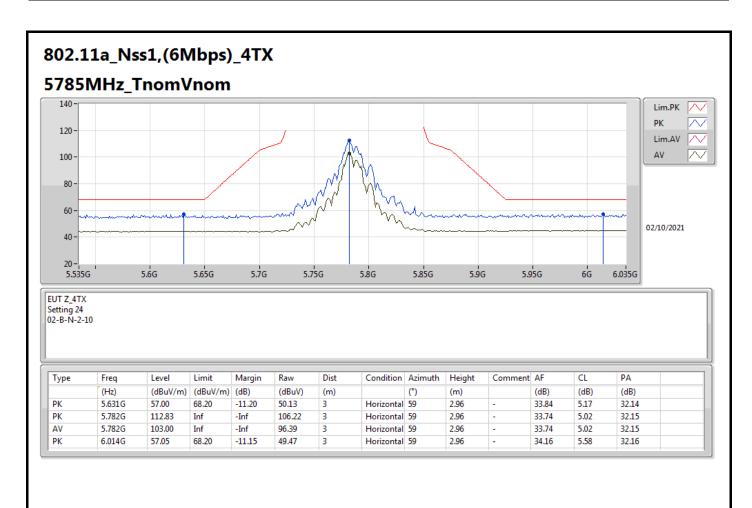
Report No. : FR152531-01AB





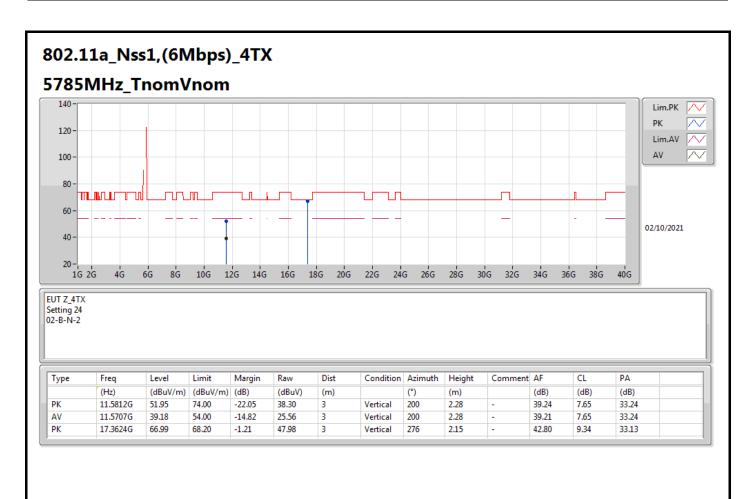
Page No. : 18 of 73





Page No. : 19 of 73

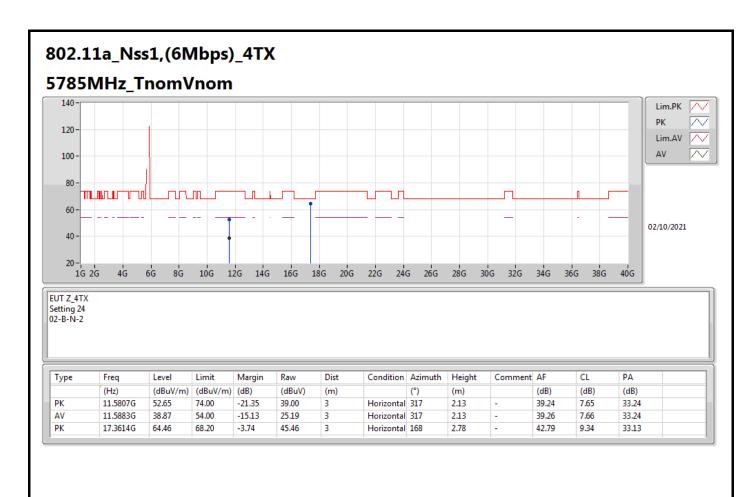




Page No. : 20 of 73

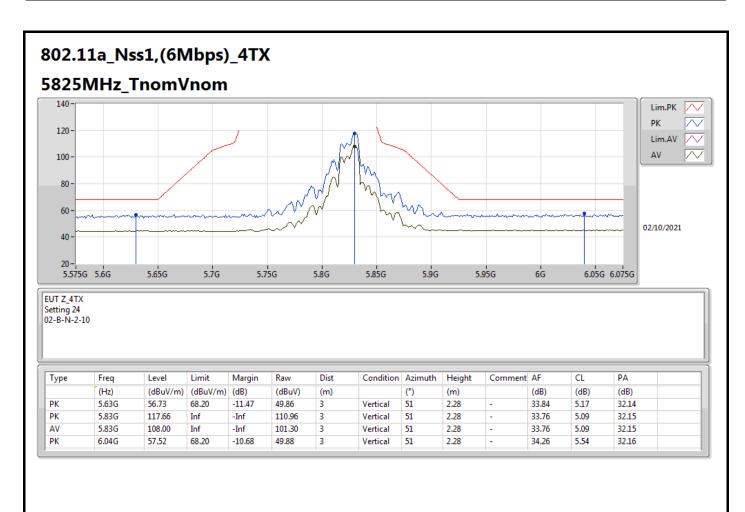
Report No. : FR152531-01AB





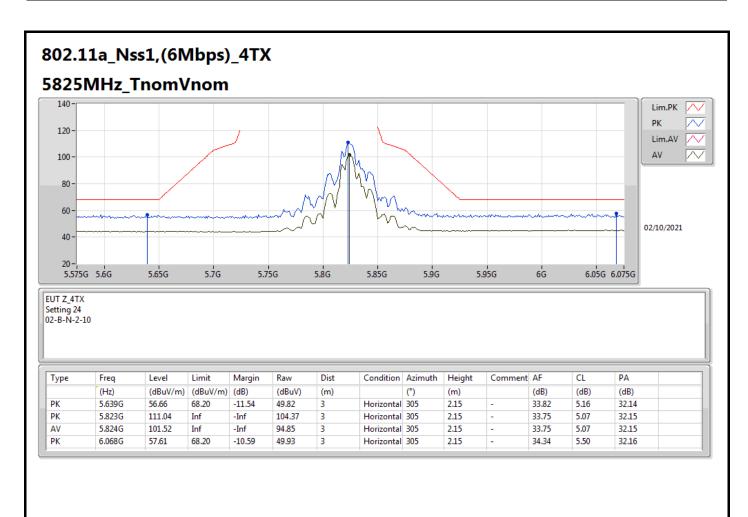
Page No. : 21 of 73





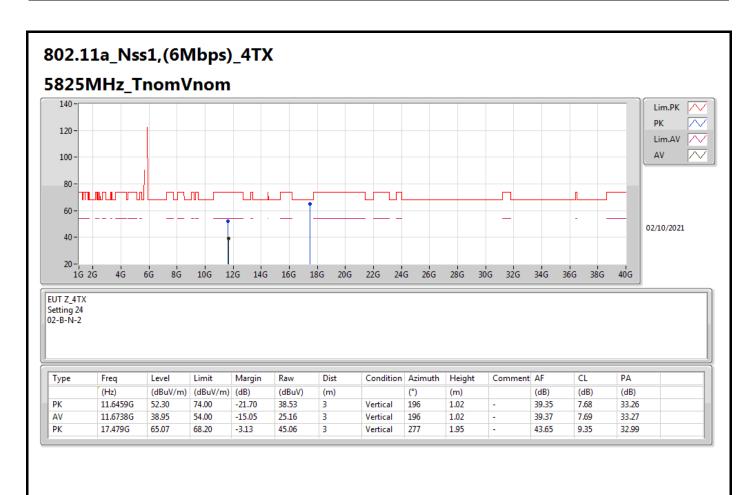
Page No. : 22 of 73





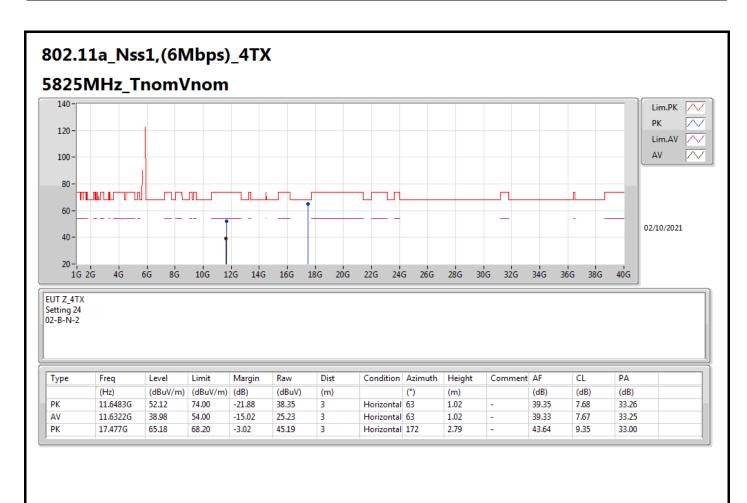
Page No. : 23 of 73





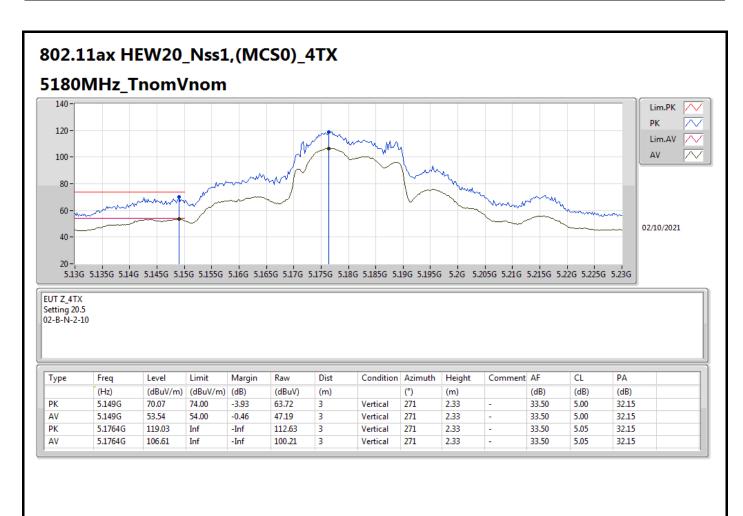
Page No. : 24 of 73





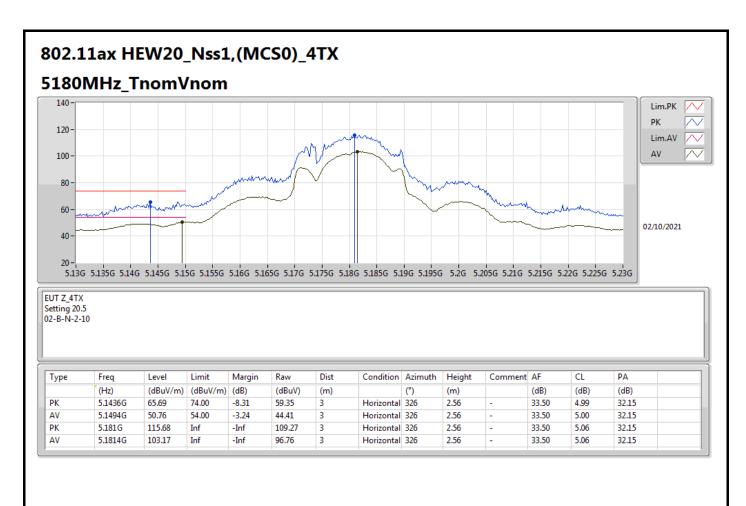
Page No. : 25 of 73 Report No. : FR152531-01AB





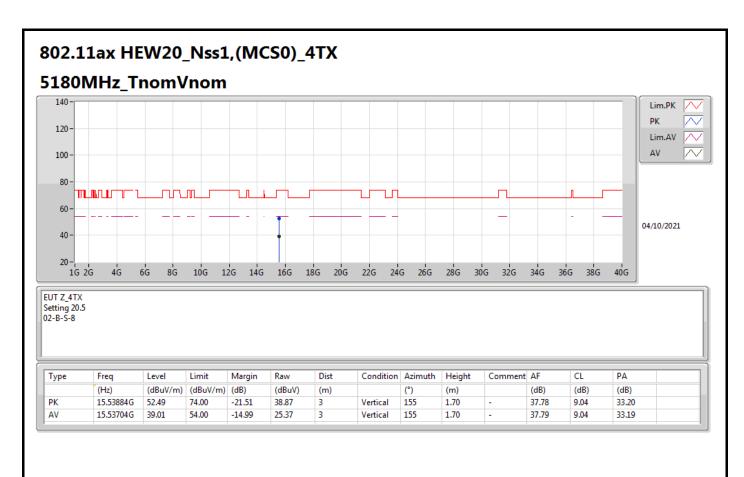
Page No. : 26 of 73





Page No. : 27 of 73

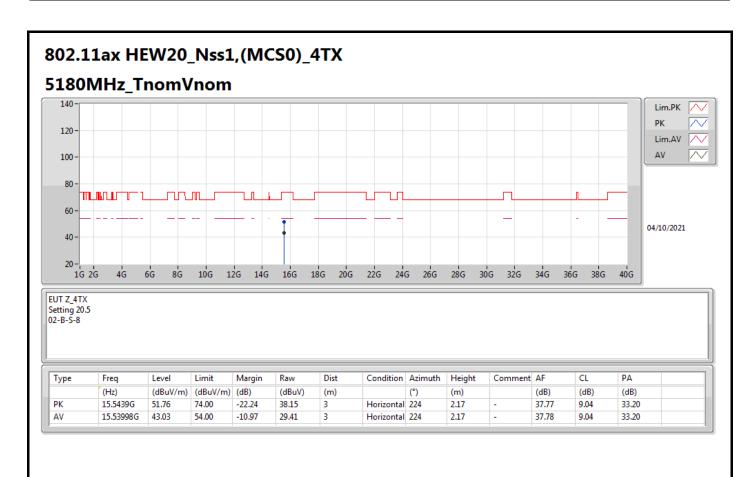




Page No. : 28 of 73

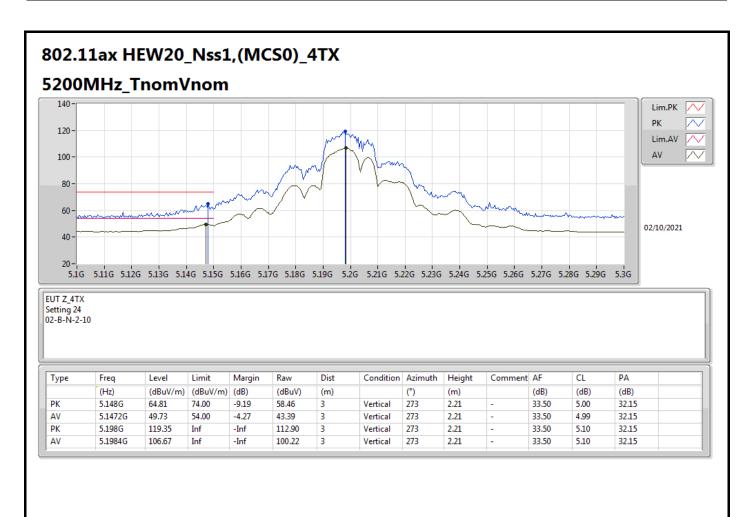
Report No. : FR152531-01AB





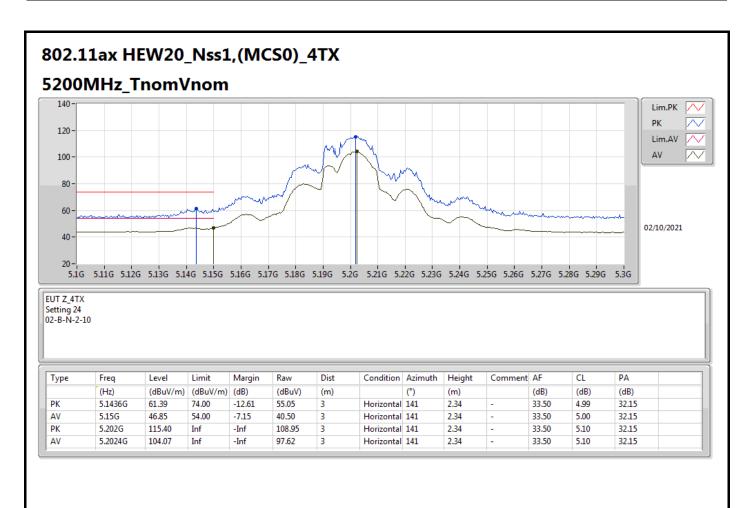
Page No. : 29 of 73





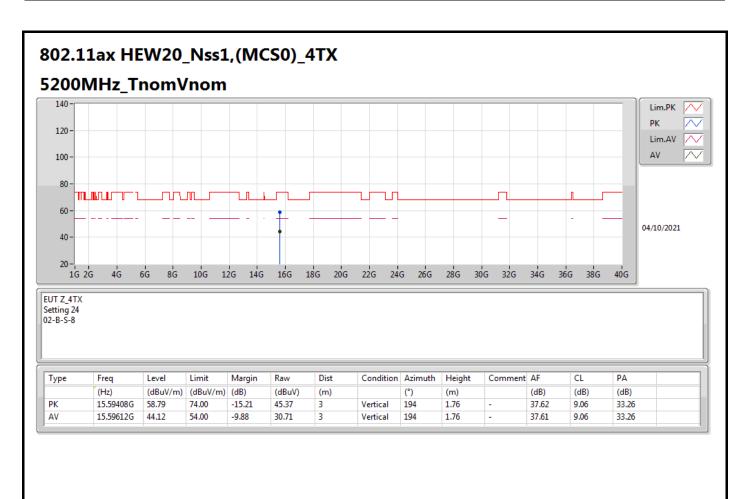
Page No. : 30 of 73





Page No. : 31 of 73

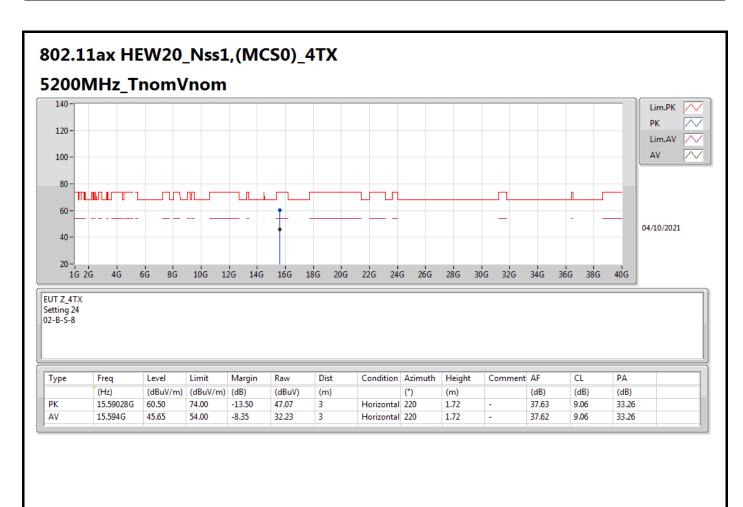




Page No. : 32 of 73

Report No. : FR152531-01AB

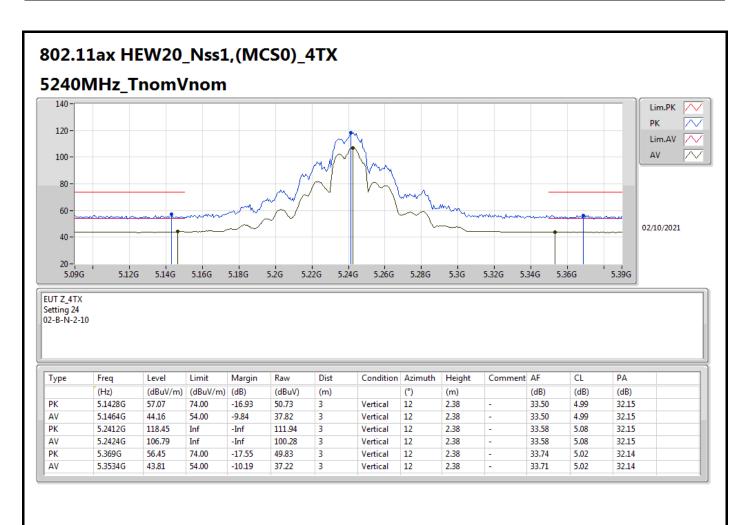




Page No. : 33 of 73

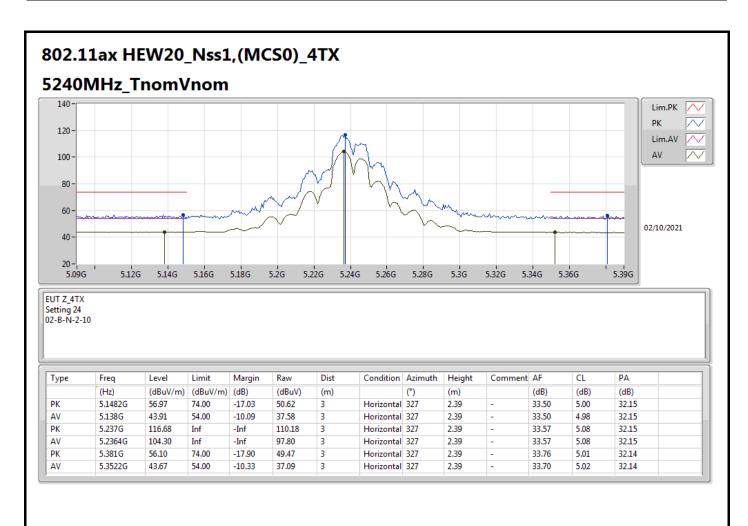
Report No. : FR152531-01AB





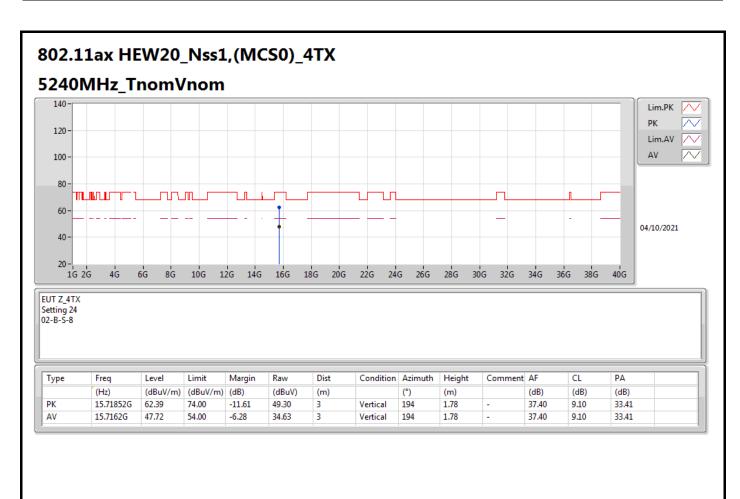
Page No. : 34 of 73





Page No. : 35 of 73

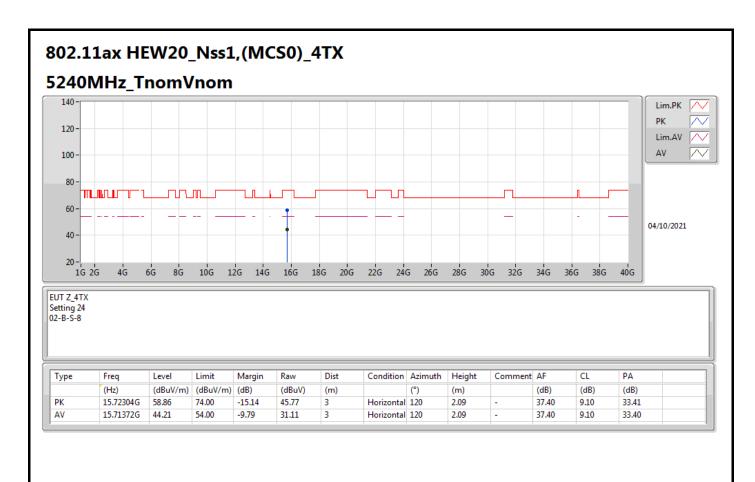




Page No. : 36 of 73

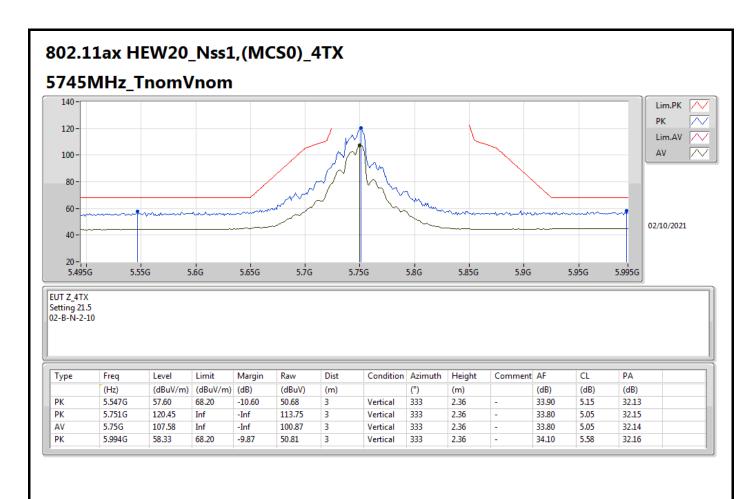
Report No. : FR152531-01AB





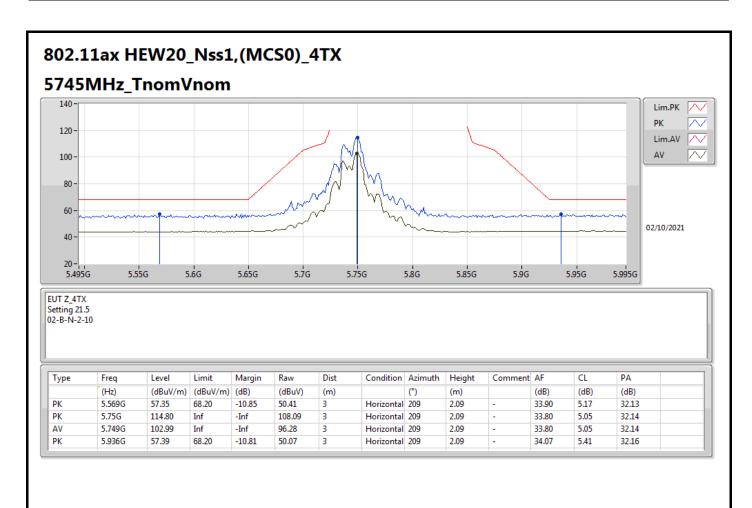
Page No. : 37 of 73





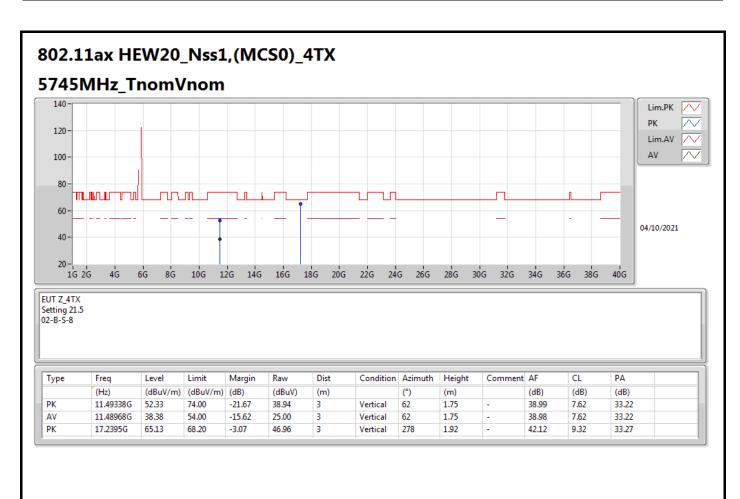
Page No. : 38 of 73





Page No. : 39 of 73

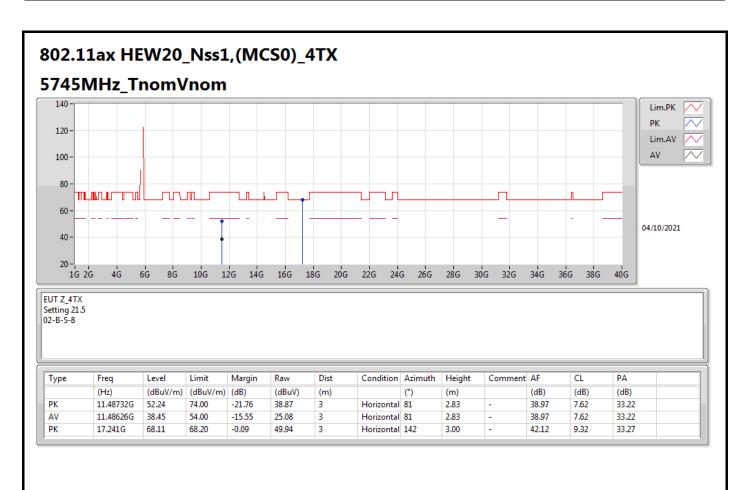




Page No. : 40 of 73

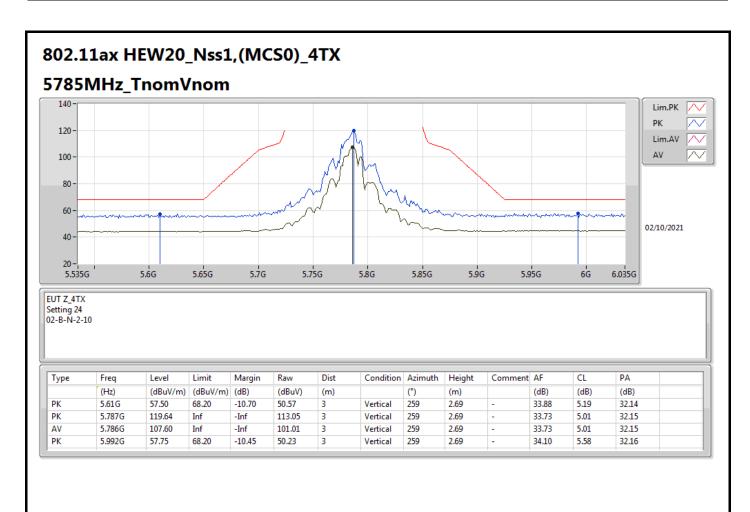
Report No. : FR152531-01AB





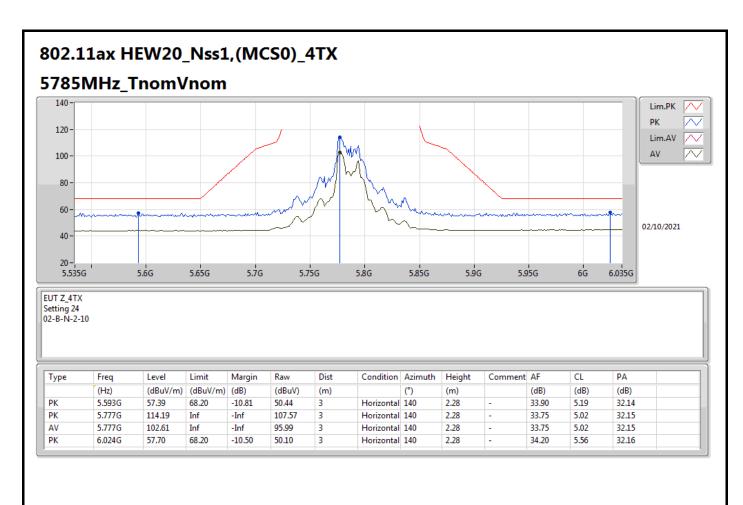
Page No. : 41 of 73





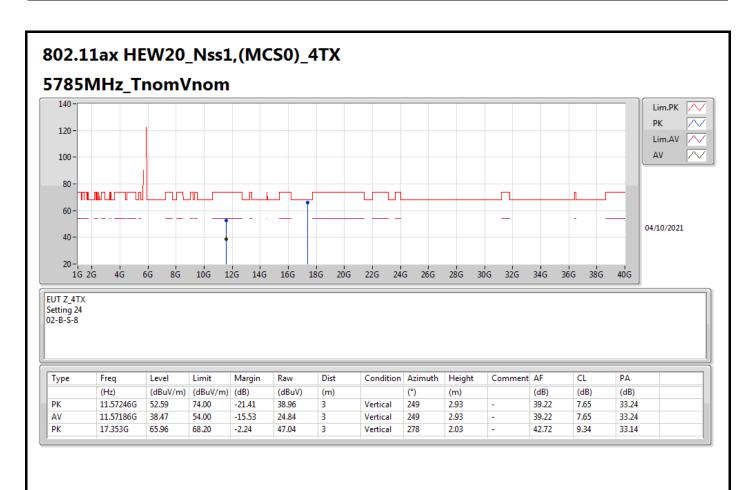
Page No. : 42 of 73





Page No. : 43 of 73

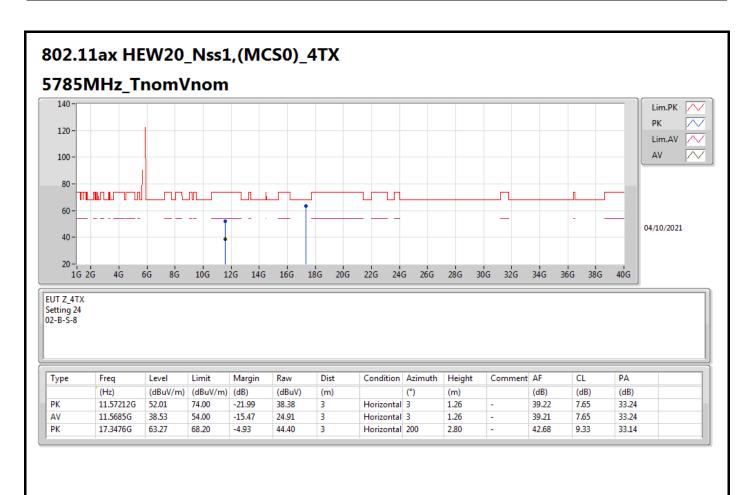




Page No. : 44 of 73

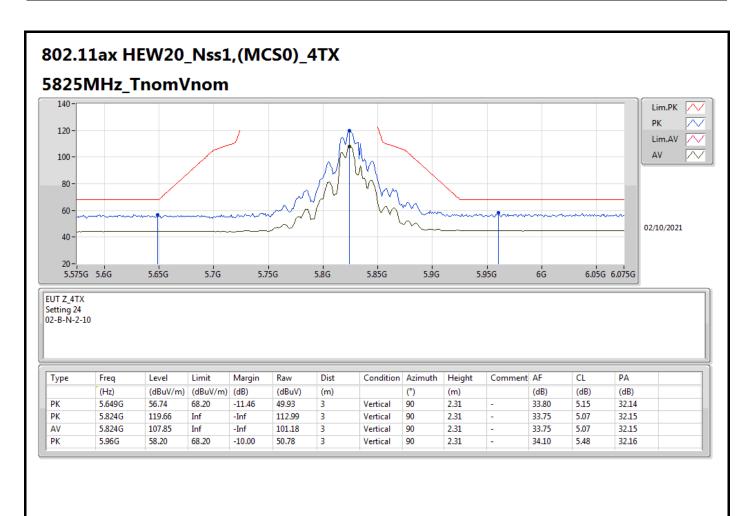
Report No. : FR152531-01AB





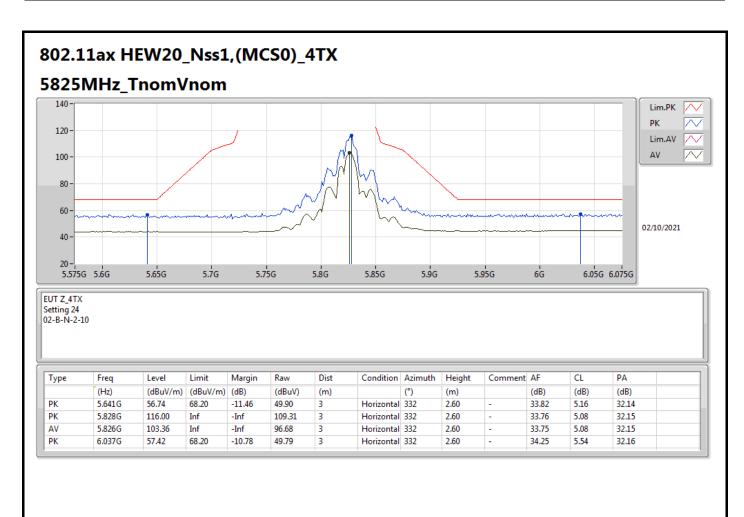
Page No. : 45 of 73





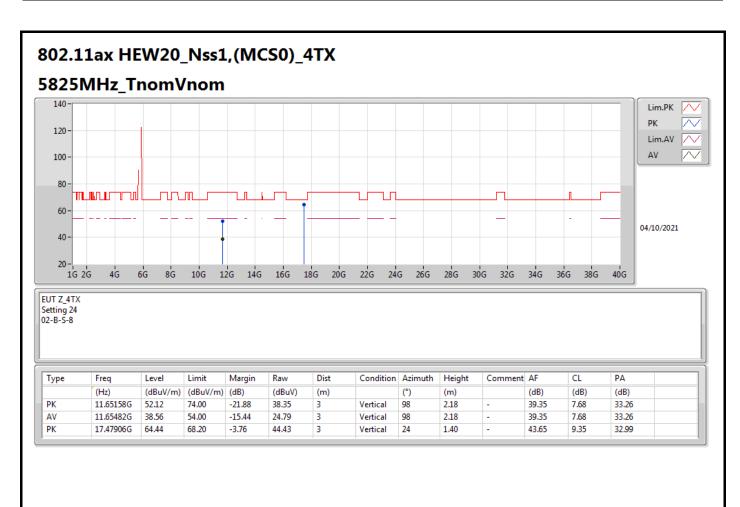
Page No. : 46 of 73





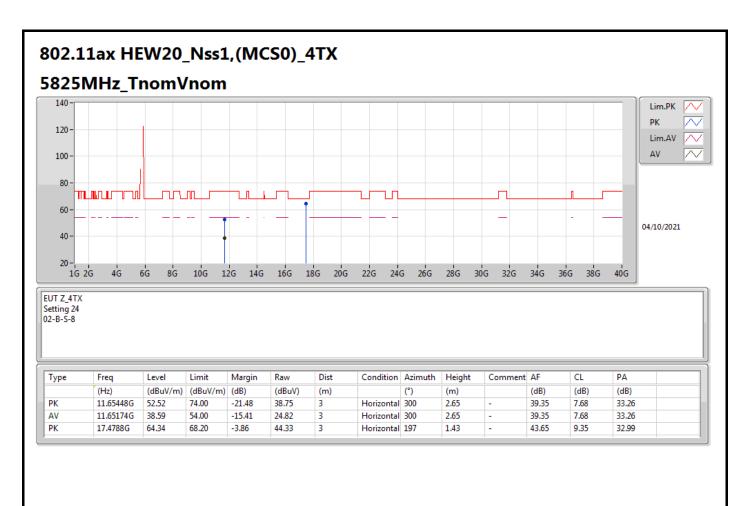
Page No. : 47 of 73





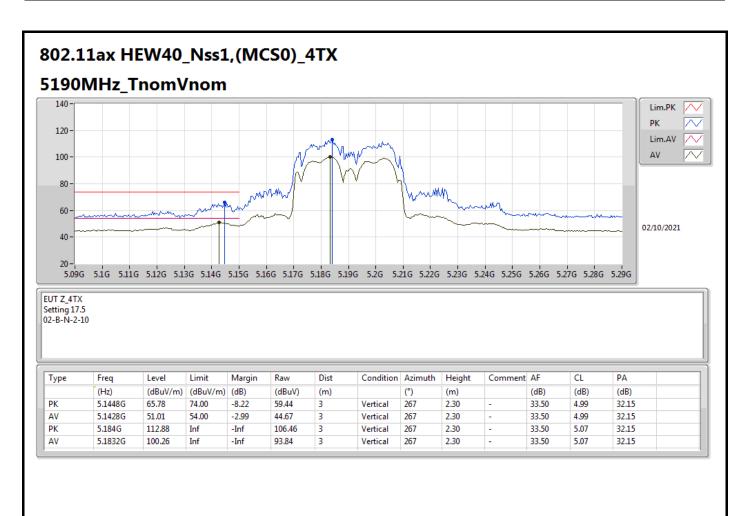
Page No. : 48 of 73





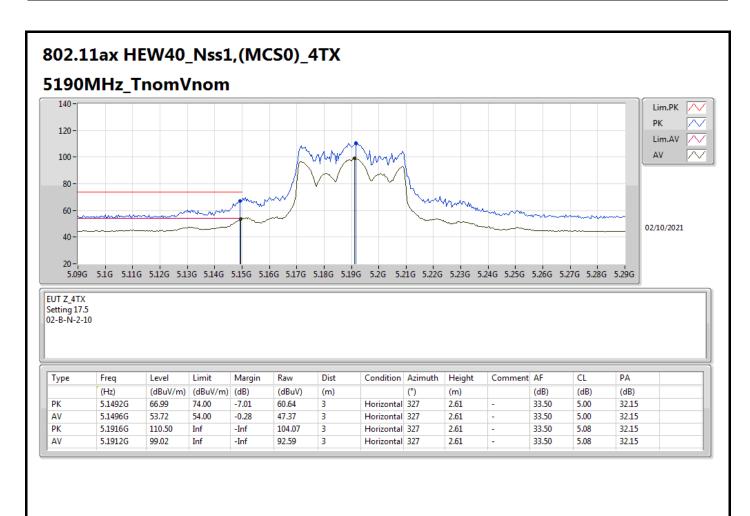
Page No. : 49 of 73





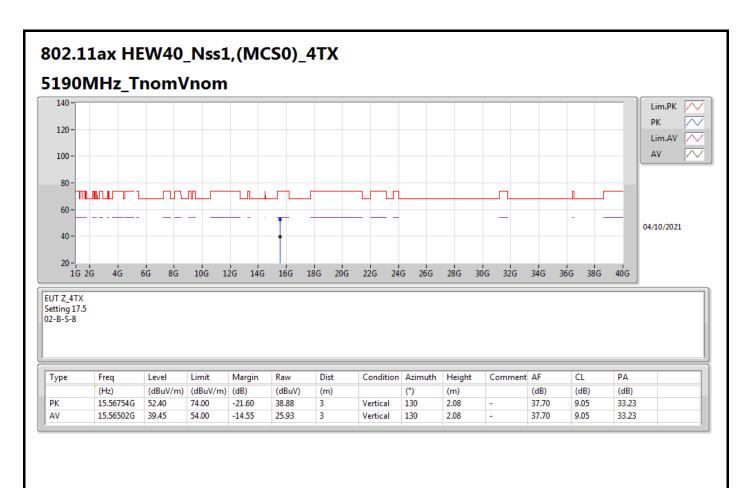
Page No. : 50 of 73





Page No. : 51 of 73

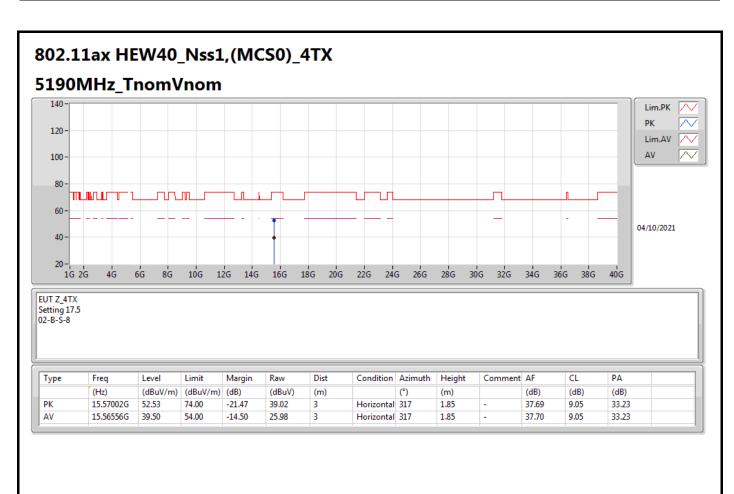




Page No. : 52 of 73

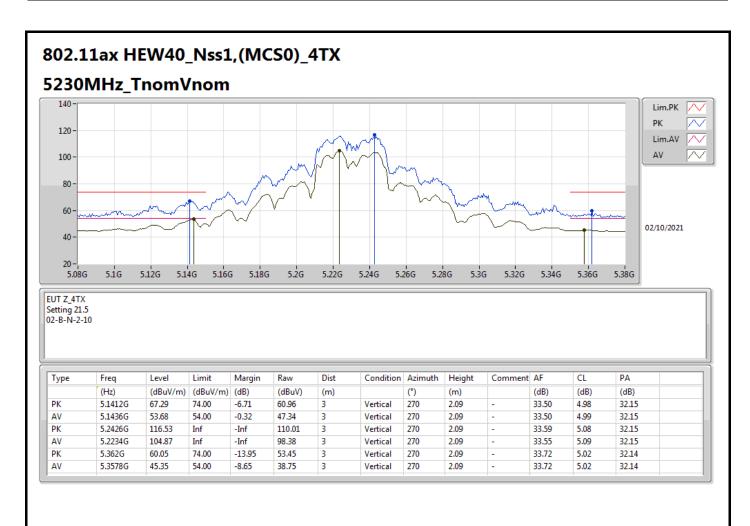
Report No. : FR152531-01AB





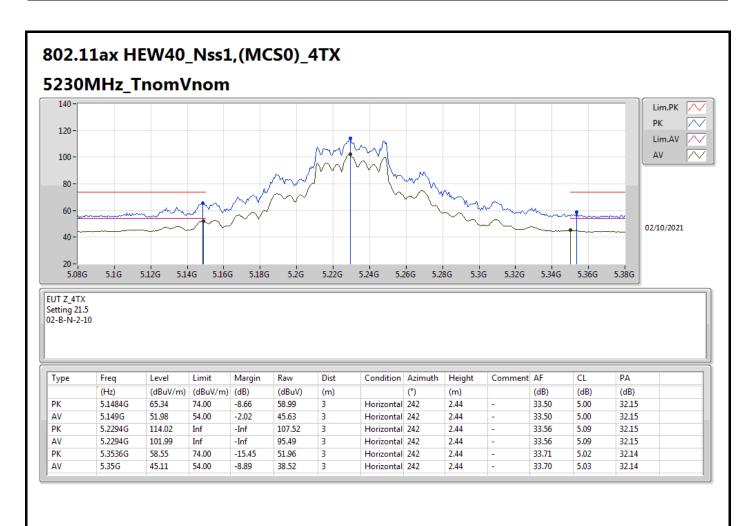
Page No. : 53 of 73





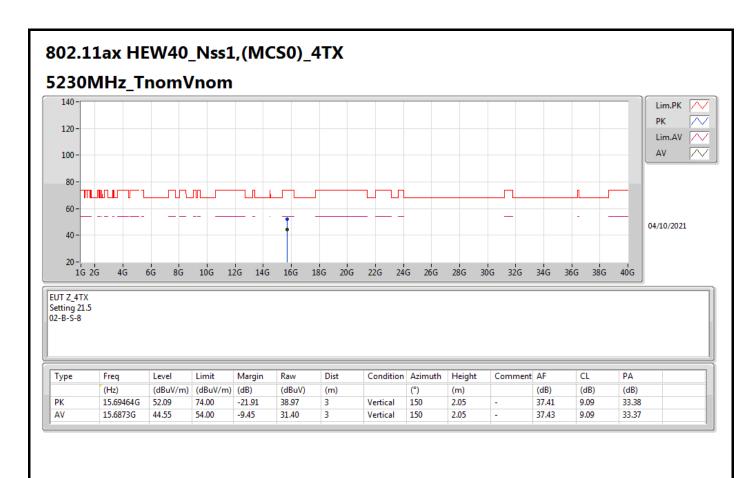
Page No. : 54 of 73





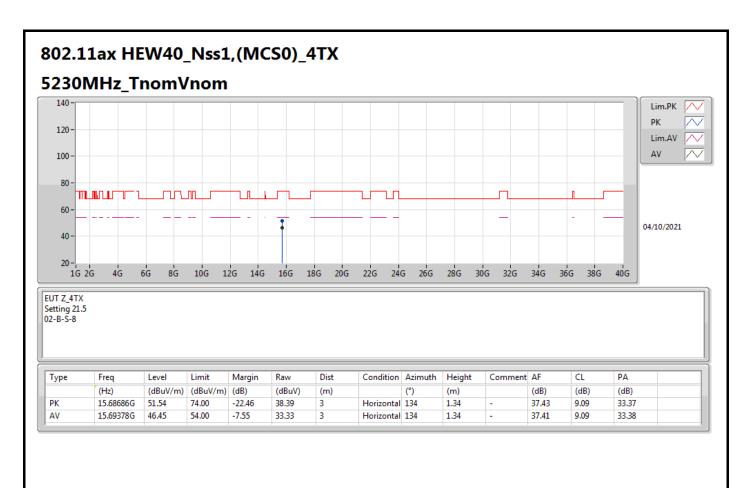
Page No. : 55 of 73





Page No. : 56 of 73 Report No. : FR152531-01AB

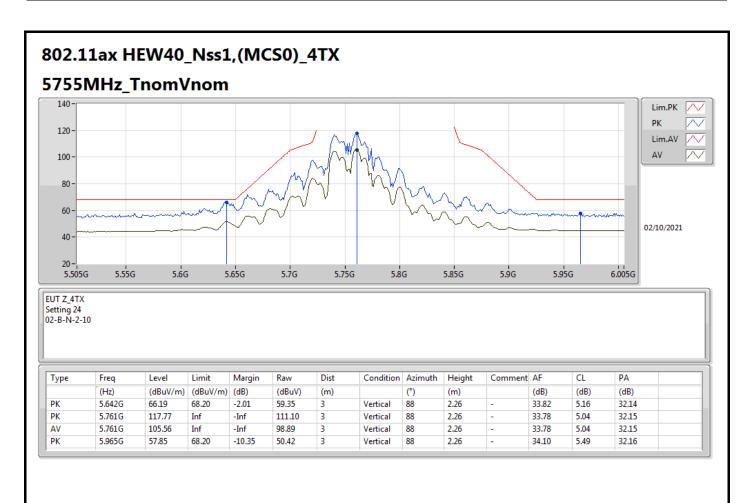




Page No. : 57 of 73

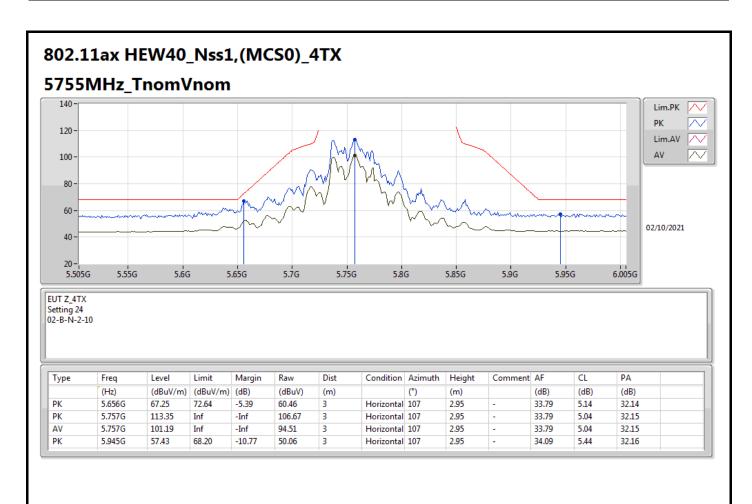
Report No. : FR152531-01AB





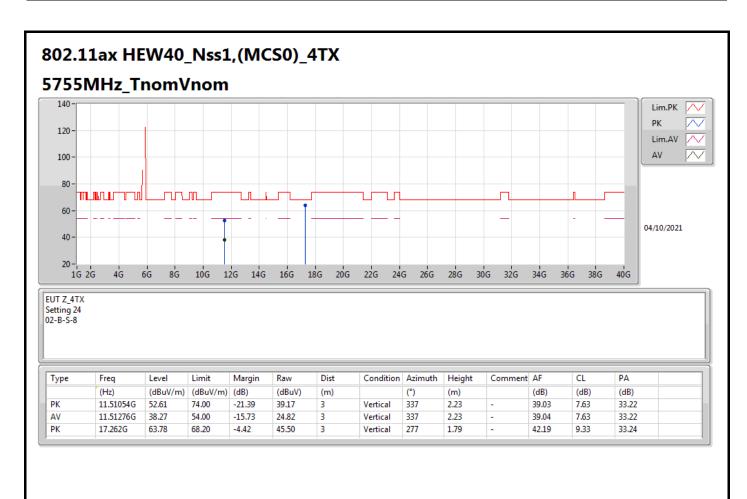
Page No. : 58 of 73





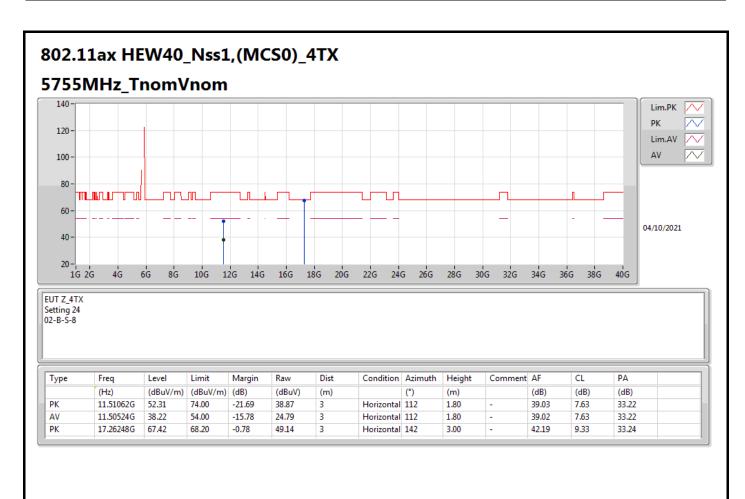
Page No. : 59 of 73





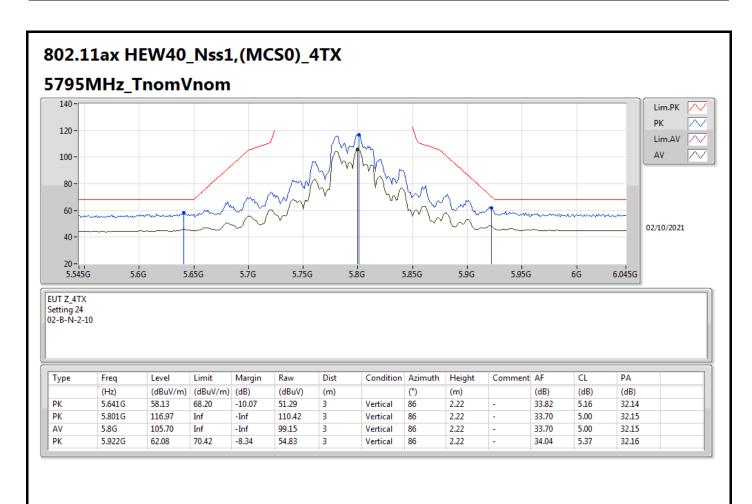
Page No. : 60 of 73





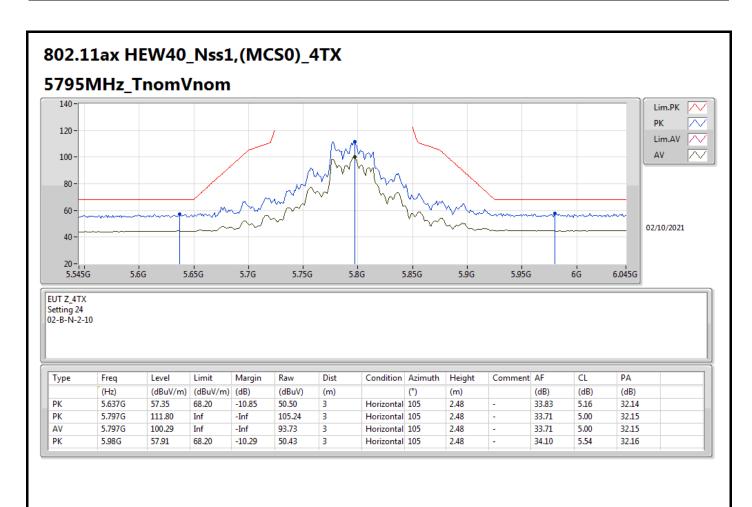
Page No. : 61 of 73





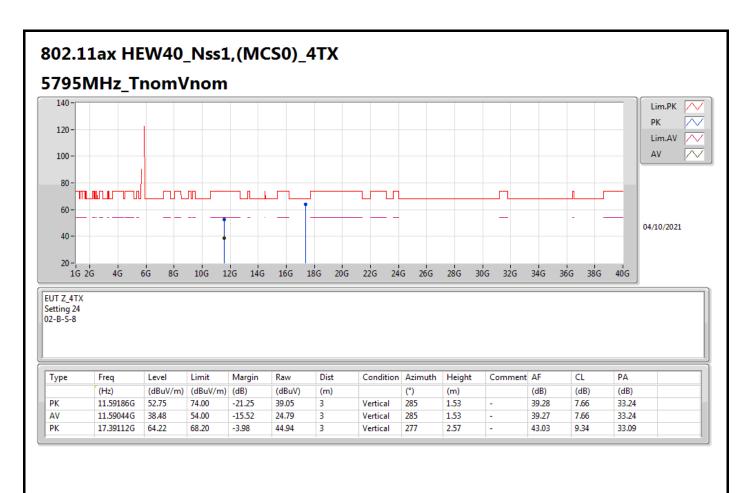
Page No. : 62 of 73





Page No. : 63 of 73

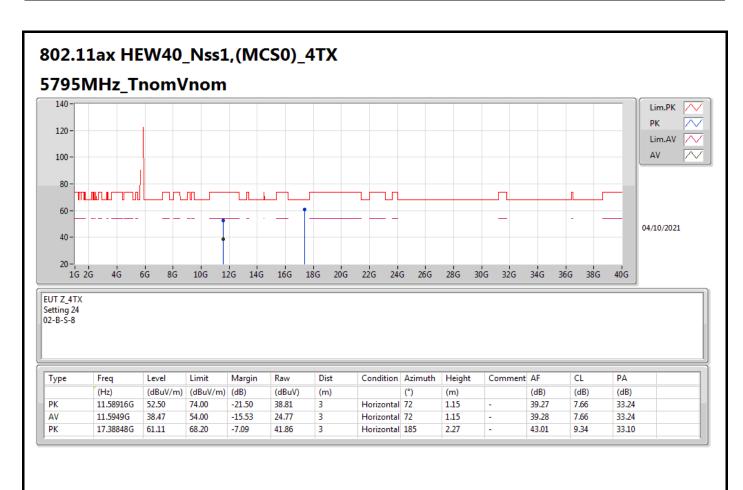




Page No. : 64 of 73

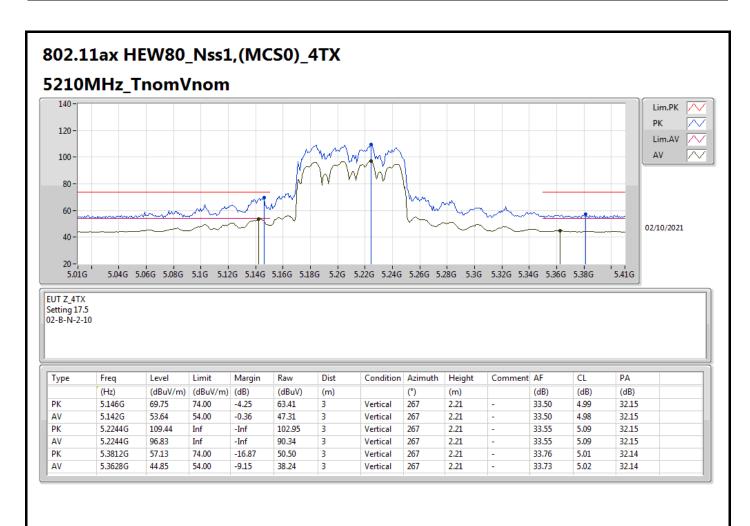
Report No. : FR152531-01AB





Page No. : 65 of 73

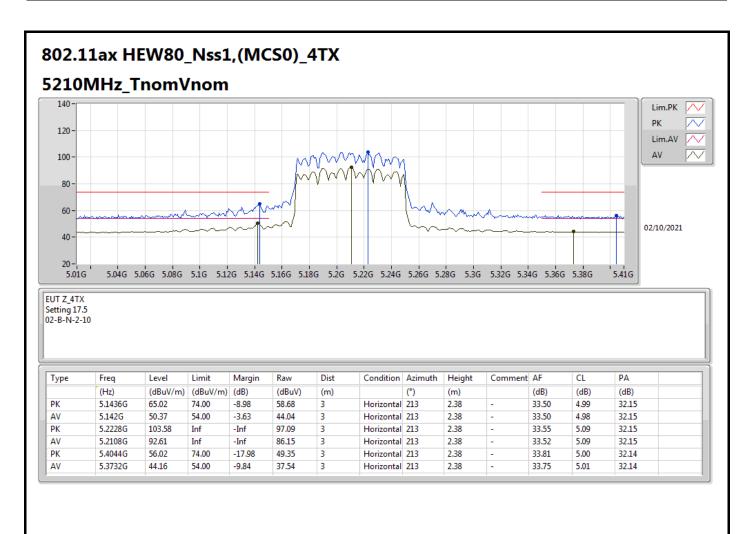




Page No. : 66 of 73

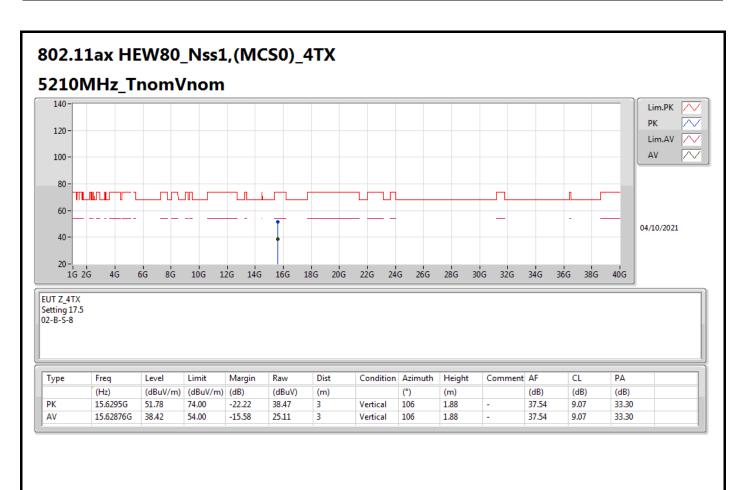
Report No. : FR152531-01AB





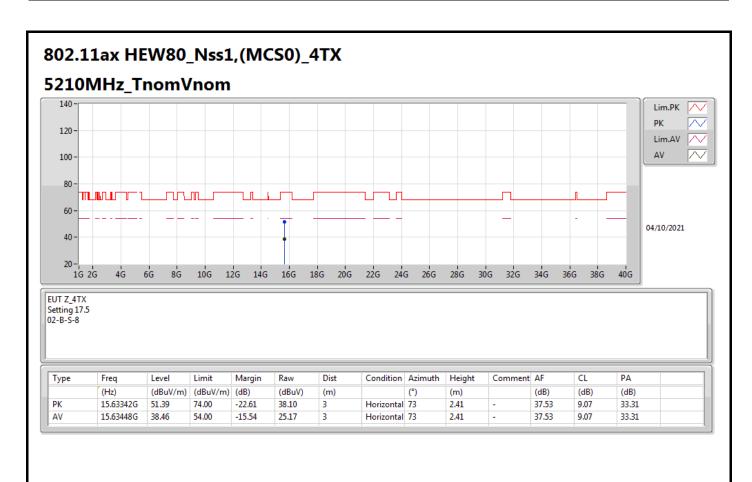
Page No. : 67 of 73





Page No. : 68 of 73

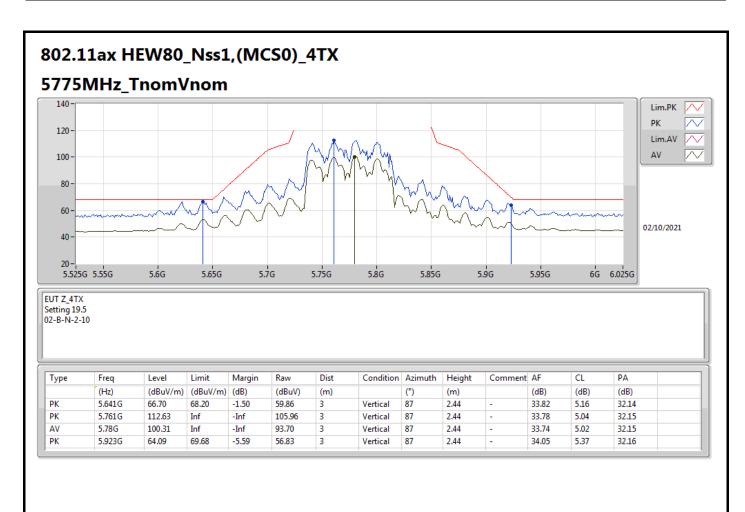




Page No. : 69 of 73

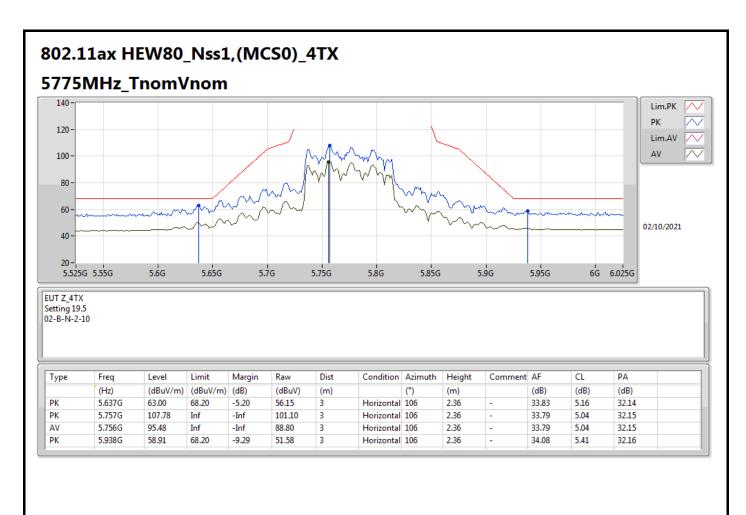
Report No. : FR152531-01AB





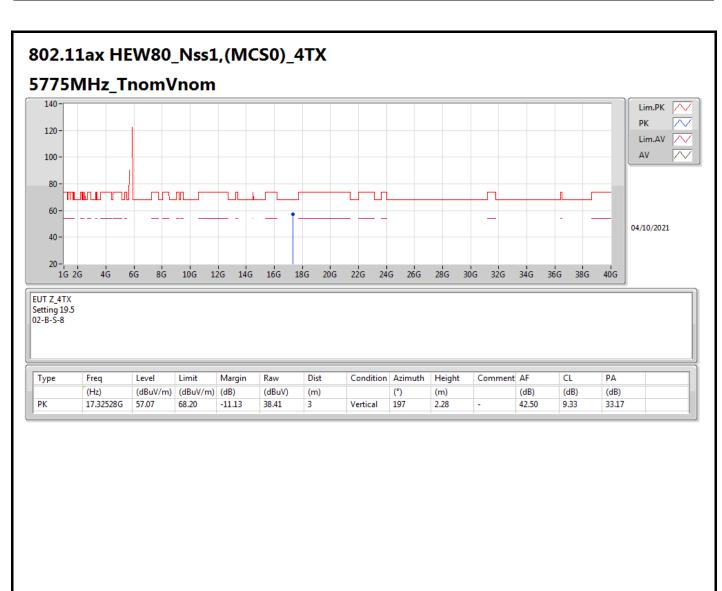
Page No. : 70 of 73





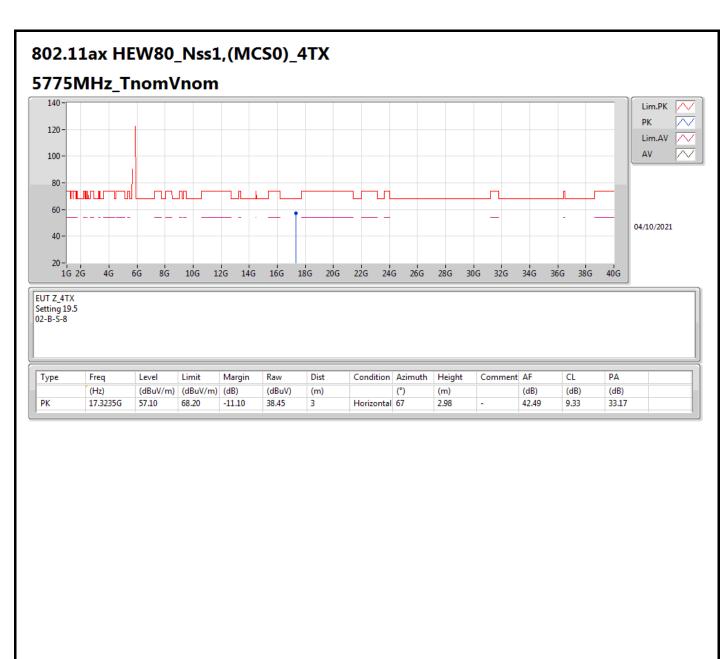
Page No. : 71 of 73





Page No. : 72 of 73





Page No. : 73 of 73



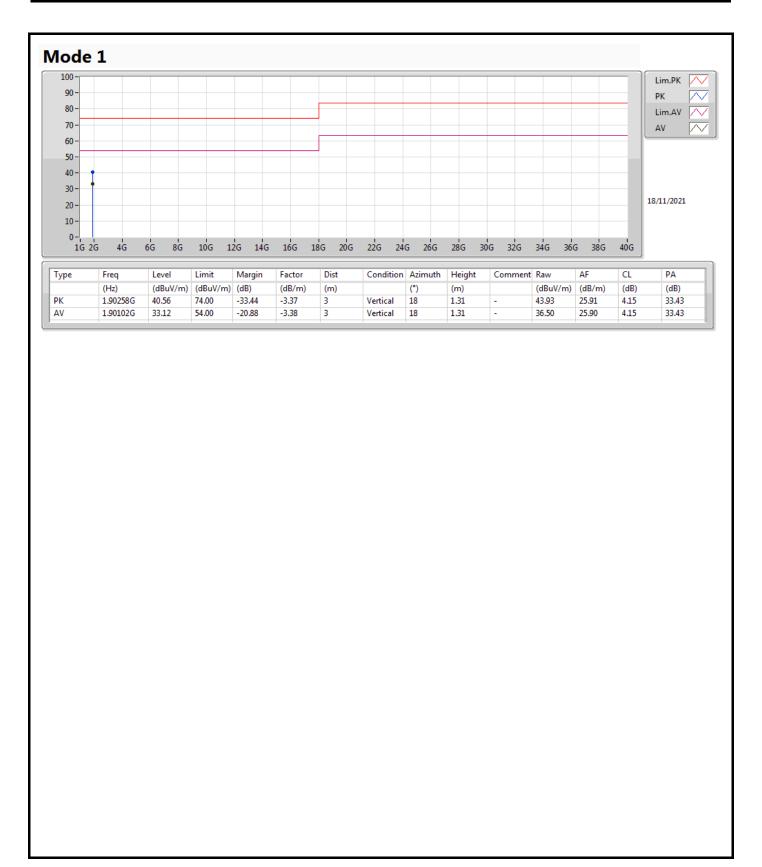
## Radiated Emission Co-location Report

Appendix F

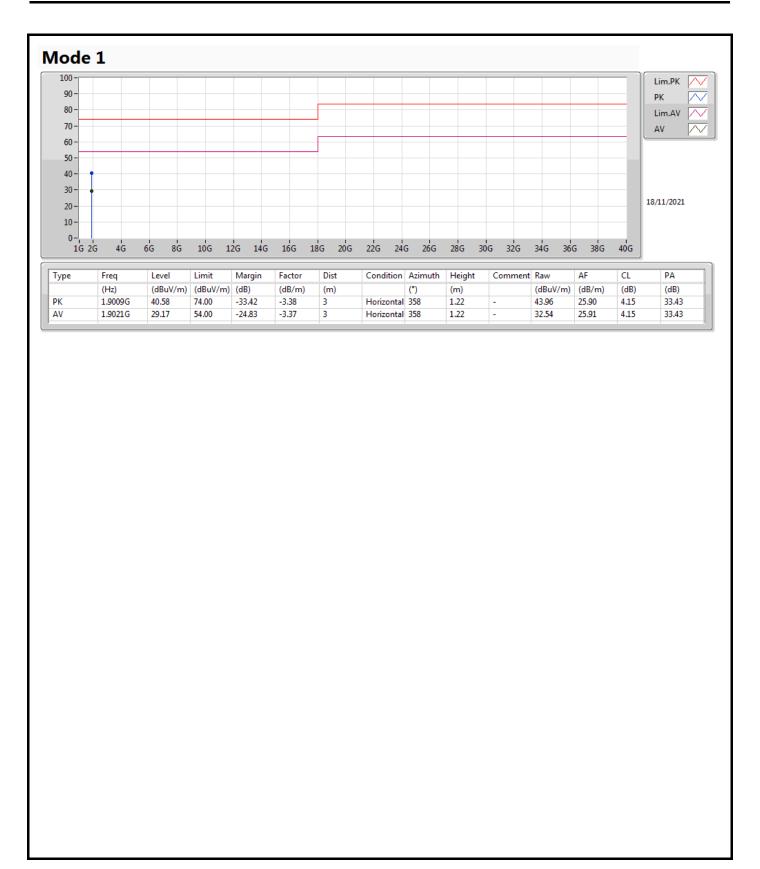
Summary

Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 1	Pass	AV	1.90102G	33.12	54.00	-20.88	Vertical

Sporton International Inc. Hsinchu Laboratory Page No. : 1 of 3



Page No. : 2 of 3



Page No. : 3 of 3