Report No. : FR291332-02AA

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# **RADIO TEST REPORT**

FCC ID	: UDX-600130010	
Equipment	: SMART Camera	
Brand Name	: CISCO	
Model Name	: MV13-HW	
Applicant	: Cisco Systems, Inc. 170 West Tasman Drive, San Jose, CA 95134 USA	
Manufacturer	: Cisco Systems, Inc. 170 West Tasman Drive, San Jose, CA 95134 USA	
Standard	: 47 CFR FCC Part 15.247	

The product was received on Mar. 15, 2023, and testing was started from Mar. 16, 2023 and completed on Jul. 19, 2023. 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.

an

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-A10\_10 Ver1.3 Page Number: 1 of 33Issued Date: Oct. 04, 2023Report Version: 01

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# Photographs of EUT v01



# History of this test report

Report No.	Version	Description	Issued Date
FR291332-02AA	01	Initial issue of report	Oct. 04, 2023



# Summary of Test Result

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	15.247(a)	DTS Bandwidth	PASS	-
3.3	15.247(b)	Maximum Conducted Output Power	PASS	-
3.4	15.247(e)	Power Spectral Density	PASS	-
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	-
3.6	15.247(d)	Emissions in Restricted Frequency Bands	PASS	-

# Conformity Assessment Condition:

- 1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
- 2. The measurement uncertainty please refer to each test result in the chapter "Measurement Uncertainty".

# **Disclaimer:**

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Sam Chen Report Producer: Sophia Shiung



# **1** General Description

# 1.1 Information

# 1.1.1 **RF General Information**

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
2400-2483.5	b, g, n (HT20), VHT20	2412-2462	1-11 [11]
2400-2483.5	n (HT40), VHT40	2422-2452	3-9 [7]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	802.11b	20	1TX
2.4-2.4835GHz	802.11g	20	1TX
2.4-2.4835GHz	802.11n HT20	20	1TX
2.4-2.4835GHz	VHT20	20	1TX
2.4-2.4835GHz	802.11n HT40	40	1TX
2.4-2.4835GHz	VHT40	40	1TX

Note:

• 11b mode uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.

• 11g, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.

• VHT20, VHT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.

• BWch is the nominal channel bandwidth.



# 1.1.2 Antenna Information

	Port							
Ant.	WLAN 2.4GHz	WLAN 5GHz	Bluetooth	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	1	1	SERCOMM	Ant1	PIFA Antenna	I-PEX	Note 1
2	2	2	2	SERCOMM	Ant2	PIFA Antenna	I-PEX	Note 1

### Note 1:

Ant.		Antenna	Gain (dBi)	
Ant.	2.4GHz	5GHz UNII 1~2A	5GHz UNII 2C	5GHz UNII 3
1	3.82	4.21	4.51	3.94
2	1.98	2.62	2.11	2.32

Note 2: The above information was declared by manufacturer.

Note 3: The EUT support TX/RX diversity function.

The Port 1 generated the worst case. Thus it was selected to test and record in the report.

# Note 4: For 2.4GHz function

# For IEEE 802.11 b/g/n/VHT (1TX/1RX):

Both Port 1 and Port 2 can be used as transmitting/receiving antenna.

But only one of them can transmit and receive signal at the same time.

## For 5GHz function

# For IEEE 802.11a/n/ac (1TX/1RX):

Both Port 1 and Port 2 can be used as transmitting/receiving antenna. But only one of them can transmit and receive signal at the same time.

# For bluetooth function

# For bluetooth (1TX/1RX):

Both Port 1 and Port 2 can be used as transmitting/receiving antenna. But only one of them can transmit and receive signal at the same time.



# 1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11b	0.993	0.03	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11g	0.982	0.08	n/a (DC>=0.98)	n/a (DC>=0.98)
VHT20	0.982	0.08	n/a (DC>=0.98)	n/a (DC>=0.98)
VHT40	0.95	0.22	937.5u	3k

Note:

• DC is Duty Cycle.

DCF is Duty Cycle Factor.

# 1.1.4 EUT Operational Condition

EUT Power Type	Fro	From PoE			
Function	$\boxtimes$	Point-to-multipoint			
Beamforming Function	□ With beamforming ⊠ Without beamforming		Without beamforming		
Test Software Version	QR	QRCT V4.0.00201.0			

Note: The above information was declared by manufacturer.

# 1.1.5 Multiple Sources of Component Information

The EUT has second source verify for DDR4, UFS-3.1 256GB, PoE Transformer, LAN Transformer, ACT2, RF Connector, CMOS Coaxial Cable, LED Board Cable.

Note: The above information was declared by manufacturer.

# **1.1.6 EUT Combination Information**

Item	Туре	EUT 1	EUT 2
1	DDR4	Main Source	Second Source
2	UFS-3.1 256GB	Main Source	Second Source
3	PoE Transformer	Main Source	Second Source
4	LAN Transformer	Main Source	Second Source
5	ACT2	Main Source	Second Source
6	RF Connector	Main Source	Second Source
7	CMOS Coaxial Cable	Main Source	Second Source
8	LED Board Cable	Main Source	Second Source
9	Mic Board Cable	Main Source	Second Source

Note 1: After evaluating, the EUT 1 was selected to test all the test items and recorded in the report; the EUT 2 was selected to test AC power-line conducted emissions and Emissions in Restricted Frequency Bands below 1GHz.

Note 2: The above information was declared by manufacturer.



# **1.2 Applicable Standards**

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

- 47 CFR FCC Part 15.247
- ANSI C63.10-2013

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

- FCC KDB 558074 D01 v05r02
- FCC KDB 414788 D01 v01r01

# **1.3 Testing Location Information**

# Testing Location InformationTest Lab. : Sporton International Inc. Hsinchu LaboratoryHsinchuADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)(TAF: 3787)TEL: 886-3-656-9065FAX: 886-3-656-9085Test 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	TH03-CB	Brian Sun	23.5~24.2 / 62~69	Mar. 21, 2023~ May 05, 2023
Radiated < 1GHz	03CH05-CB	Black Lu	21.2-22.3 / 56-59	Jun. 23, 2023~ Jul. 10, 2023
Radiated > 1GHz	03CH02-CB	Roy Mai	20~21 / 55~58	Mar. 16, 2023~ May 10, 2023
Radiated (For Co-location)	03CH05-CB	Roy Mai	21.2~22.3 / 56~59	Mar. 16, 2023~ May 10, 2023
AC Conduction	CO01-CB	Gray Lee	21~22 / 54~55	Jul. 19, 2023



# **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)

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.4 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.1 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	5.2 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.7 dB	Confidence levels of 95%
Conducted Emission	3.2 dB	Confidence levels of 95%
Output Power Measurement	0.8 dB	Confidence levels of 95%
Power Density Measurement	3.2 dB	Confidence levels of 95%
Bandwidth Measurement	2.0 %	Confidence levels of 95%



# 2 Test Configuration of EUT

# 2.1 Test Channel Mode

Mode	Power Setting
802.11b_Nss1,(1Mbps)_1TX	-
2412MHz	21
2437MHz	18.5
2462MHz	18.5
802.11g_Nss1,(6Mbps)_1TX	-
2412MHz	18.5
2437MHz	21
2462MHz	18
VHT20_Nss1,(MCS0)_1TX	-
2412MHz	20
2417MHz	22
2437MHz	24.5
2457MHz	19.5
2462MHz	17.5
VHT40_Nss1,(MCS0)_1TX	-
2422MHz	16
2437MHz	17
2452MHz	14.5

Note:

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VHT20 / VHT40 covers HT20 / HT40 due to similar modulation. The power setting of HT20 / HT40 modes are the same or lower than VHT20 / VHT40.



# 2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests			
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	EUT 1 connected via Ethernet - Day mode + PoE 1		
2	EUT 1 connected via Ethernet - Night mode + PoE 1		
Mode 2 has been evaluated to be the worst case among Mode 1~2, thus measurement for Mode 3~6 will follow this same test mode.			
3	EUT 1 connected via WLAN 2.4GHz - Night mode + PoE 1		
4	EUT 1 connected via WLAN 2.4GHz - Night mode + PoE 2		
5	EUT 1 connected via WLAN 5GHz - Night mode + PoE 1		
6	EUT 1 connected via WLAN 5GHz - Night mode + PoE 2		
Mode 2 has been evaluated to be the worst case among Mode 1~6, thus measurement for Mode 7 will follow this same test mode.			
7	EUT 2 connected via Ethernet - Night mode + PoE 1		
For operating, Mode 2 is the worst case and it was recorded in this test report.			

Th	The Worst Case Mode for Following Conformance Tests		
Tests Item	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands		
Test Condition         Conducted measurement at transmit chains			
1	EUT 1		



Th	The Worst Case Mode for Following Conformance Tests				
Tests Item	Emissions in Restricted Frequency Bands				
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	EUT 1 in Z axis connected via Ethernet - Day mode + PoE 1				
2	EUT 1 in Y axis connected via Ethernet - Day mode + PoE 1				
3	EUT 1 in X axis connected via Ethernet - Day mode + PoE 1				
Mode 1 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	EUT 1 in Z axis connected via Ethernet - Night mode + PoE 1				
Mode 4 has been evaluate follow this same test mode	ed to be the worst case among Mode 1~4, thus measurement for Mode 5~8 will				
5	EUT 1 in Z axis connected via WLAN 2.4GHz - Night mode + PoE 1				
6	EUT 1 in Z axis connected via WLAN 2.4GHz - Night mode + PoE 2				
7	EUT 1 in Z axis connected via WLAN 5GHz - Night mode + PoE 1				
8	EUT 1 in Z axis connected via WLAN 5GHz - Night mode + PoE 2				
Mode 7 has been evaluate this same test mode.	d to be the worst case among Mode 1~8, thus measurement for Mode 9 will follow				
9	EUT 2 in Z axis connected via WLAN 5GHz - Night mode + PoE 1				
For operating, mode 9 is the	ne worst case and it was recorded in this test report.				
	СТХ				
Operating Mode > 1GHz	The EUT was performed at X axis, Y axis and Z axis position, and the worst case was found at X axis (Bandedge) and Y axis (Harmonic). Thus, the measurement will follow these same test configurations.				
1	EUT 1 in X axis (Bandedge) EUT 1 in Y axis (Harmonic)				



The Worst Case Mode for Following Conformance Tests		
Tests Item	Simultaneous Transmission Analysis - Radiated Emission Co-location	
Test Condition	Radiated measurement	
	Normal Link	
Operating Mode	EUT in Y axis generated the worst case at Radiated measurement above 1GHz (CTX – Harmonic) for WLAN 2.4GHz and 5GHz. Consequently, the measurement will follow this same test mode.	
1 EUT 1 in Y axis + Bluetooth + WLAN 2.4GHz		
2 EUT 1 in Y axis + Bluetooth + WLAN 5GHz		
For operating, mode 2 is the worst case and it was recorded in this test report.		
Refer to Appendix G for Radiated Emission Co-location.		

The Worst Case Mode for Following Conformance Tests			
Tests Item         Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation			
Operating Mode			
1	EUT 1 + Bluetooth + WLAN 2.4GHz		
2	EUT 1 + Bluetooth + WLAN 5GHz		
Refer to Sporton Test Report No.: FA291332-02 for Co-location RF Exposure Evaluation.			

Note: The PoEs were for measurement only and would not be marketed.

Their information is shown as below:

Support Unit	Brand	Model
PoE 1	PHIHONG	POEA33U-1ATE
PoE 2	Cisco	MA-PWR-MV-LV

# 2.3 EUT Operation during Test

# For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

# For Normal Link Mode:

During the test, the EUT operation to normal function.

# 2.4 Accessories

	Accessories
Wall-mounted rack 1*1	
Wall-mounted rack 2*1	
Wall-mounted rack 3*1	



# 2.5 Support Equipment

# For AC Conduction:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
А	PoE 1	PHIHONG	POEA30U-1AT-1	N/A
В	LAN NB	DELL	E6430	N/A
С	Smart phone	Samsung	Galaxy J2	N/A

# For Radiated (below 1GHz):

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
А	Notebook	Lenovo	L440	N/A
В	PoE 1	PHIHONG	POEA33U-1ATE	N/A
С	WLAN AP	ASUS	RT-AX88U	N/A
D	Smart phone	Samsung	Galaxy J2	N/A

# For Radiated (above 1GHz):

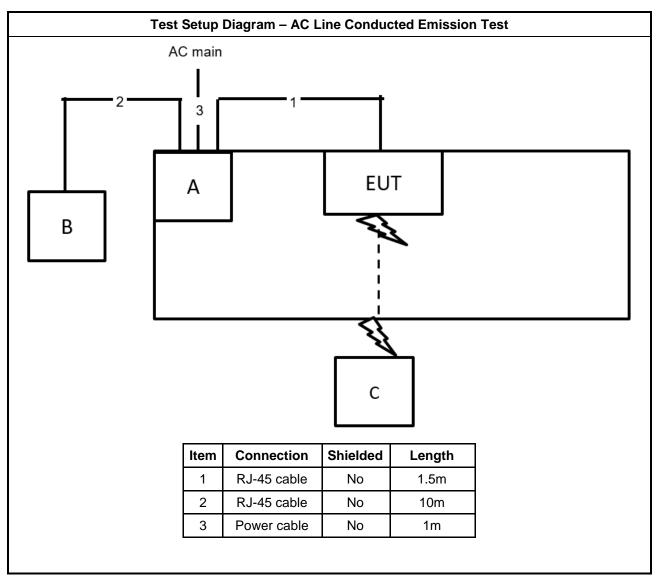
Support Equipment					
No.	No. Equipment Brand Name Model Name FCC ID				
А	Notebook	DELL	E4300	N/A	
В	PoE 1	PHIHONG	POEA30U-1AT-1	N/A	

# For RF Conducted:

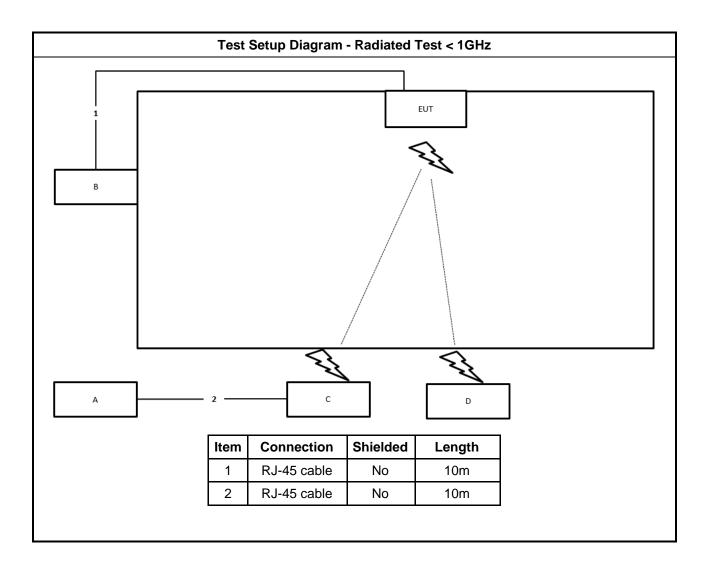
	Support Equipment				
No.	No. Equipment Brand Name Model Name FCC ID				
А	Notebook	DELL	E4300	N/A	
В	PoE 2	Cisco	MA-PWR-MV-LV	N/A	



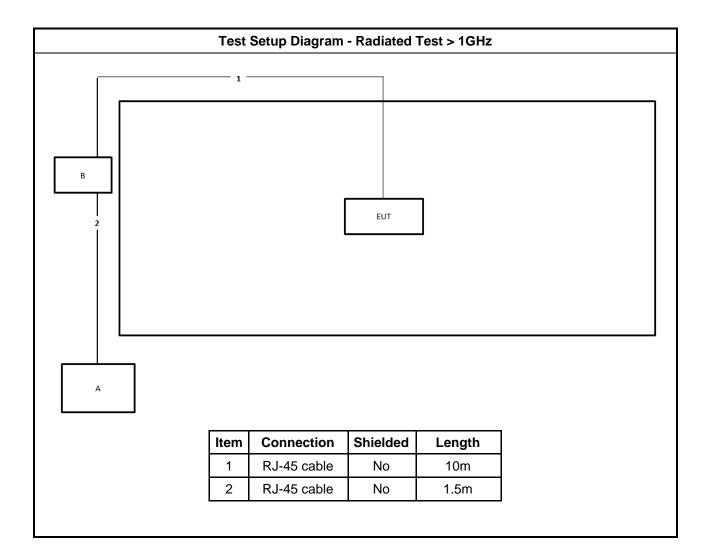
# 2.6 Test Setup Diagram













# 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.				

# 3.1.2 Measuring Instruments

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

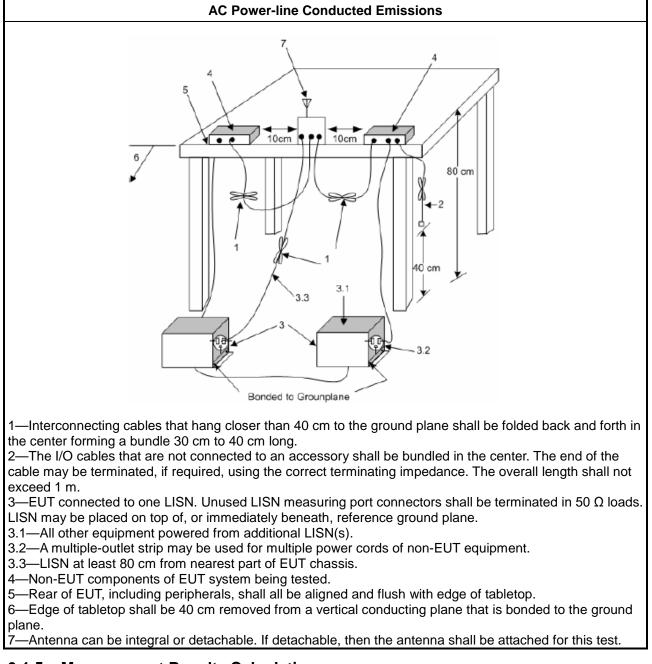
# 3.1.3 Test Procedures

**Test Method** 

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



# 3.1.4 Test Setup



# 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



### 3.2 **DTS Bandwidth**

### 3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit		
Systems using digital modulation techniques:		
<ul> <li>6 dB bandwidth ≥ 500 kHz.</li> </ul>		

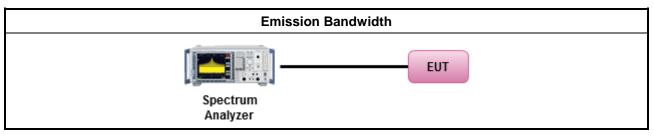
### 3.2.2 **Measuring Instruments**

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

### 3.2.3 **Test Procedures**

For	
	the emission bandwidth shall be measured using one of the options below:
	Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.1 Option 1 for 6 dB bandwidth measurement.
	Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.2 Option 2 for 6 dB bandwidth measurement.
	Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.

### Test Setup 3.2.4



### 3.2.5 **Test Result of Emission Bandwidth**

Refer as Appendix B



# 3.3 Maximum Conducted Output Power

# 3.3.1 Maximum Conducted Output Power Limit

# Maximum Conducted Output Power Limit

	If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)
•	If $G_{TX} \le 6$ dBi, then $P_{Out} \le 30$ dBm (1 W

- Point-to-point systems (P2P): If  $G_{TX} > 6$  dBi, then  $P_{Out} = 30 (G_{TX} 6)/3$  dBm
- Smart antenna system (SAS):
  - Single beam: If  $G_{TX} > 6$  dBi, then  $P_{Out} = 30 (G_{TX} 6)/3$  dBm
  - Overlap beam: If  $G_{TX} > 6 \text{ dBi}$ , then  $P_{Out} = 30 (G_{TX} 6)/3 \text{ dBm}$
  - Aggregate power on all beams: If  $G_{TX} > 6$  dBi, then  $P_{Out} = 30 (G_{TX} 6)/3 + 8$ dB dBm

 $P_{Out}$  = maximum peak conducted output power or 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.

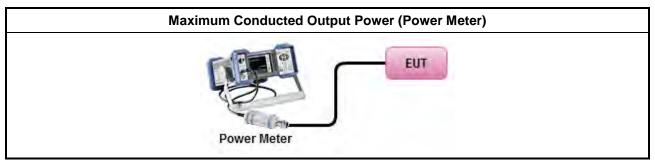


# 3.3.3 Test Procedures

		Test Method		
•	<ul> <li>Maximum Peak Conducted Output Power</li> </ul>			
		Refer as FCC KDB 558074, clause 8.3.1.1 & C63.10 clause 11.9.1.1 (RBW ≥ EBW method).		
		Refer as FCC KDB 558074, clause 8.3.1.3 & C63.10 clause 11.9.1.3 (peak power meter).		
•	Maximum Conducted Output Power			
	[duty	/ cycle ≥ 98% or external video / power trigger]		
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.2 Method AVGSA-1.		
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.3 Method AVGSA-1A. (alternative)		
	duty	cycle < 98% and average over on/off periods with duty factor		
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.4 Method AVGSA-2.		
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.5 Method AVGSA-2A (alternative)		
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.6 Method AVGSA-3		
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.7 Method AVGSA-3A (alternative)		
	Mea	surement using a power meter (PM)		
		Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.1 Method AVGPM (using an RF average power meter).		
	$\boxtimes$	Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.2 Method AVGPM-G (using an gate RF average power meter).		
•	<ul> <li>For conducted measurement.</li> </ul>			
		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: $P_{total} = P_1 + P_2 + + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) EIRP <sub>total</sub> = P <sub>total</sub> + DG		



# 3.3.4 Test Setup



# 3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C



# 3.4 Power Spectral Density

# 3.4.1 Power Spectral Density Limit

Power Spectral	Density Limit
----------------	---------------

■ Power Spectral Density (PSD) ≤ 8 dBm/3kHz

# 3.4.2 Measuring Instruments

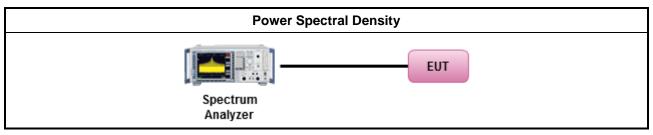
Refer a test equipment and calibration data table in this test report.

# 3.4.3 Test Procedures

	Test Method			
•	<ul> <li>Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).</li> </ul>			
	$\square$	Ref	er as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10 Method Max. PSD.	
•	For	cond	ucted measurement.	
	•	lf Tł	ne 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.	



# 3.4.4 Test Setup



# 3.4.5 Test Result of Power Spectral Density

Refer as Appendix D



# 3.5 Emissions in Non-restricted Frequency Bands

# 3.5.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit		
Limit (dBc)		
20		
30		

Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

# 3.5.2 Measuring Instruments

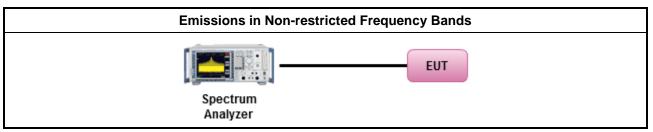
Refer a test equipment and calibration data table in this test report.

# 3.5.3 Test Procedures

Test Method

Refer as FCC KDB 558074, clause 8.5 for unwanted emissions into non-restricted bands.

# 3.5.4 Test Setup



# 3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E



# 3.6 Emissions in Restricted Frequency Bands

# 3.6.1 Emissions in Restricted Frequency Bands Limit

Restricted Band Emissions 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	

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.

# 3.6.2 Measuring Instruments

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

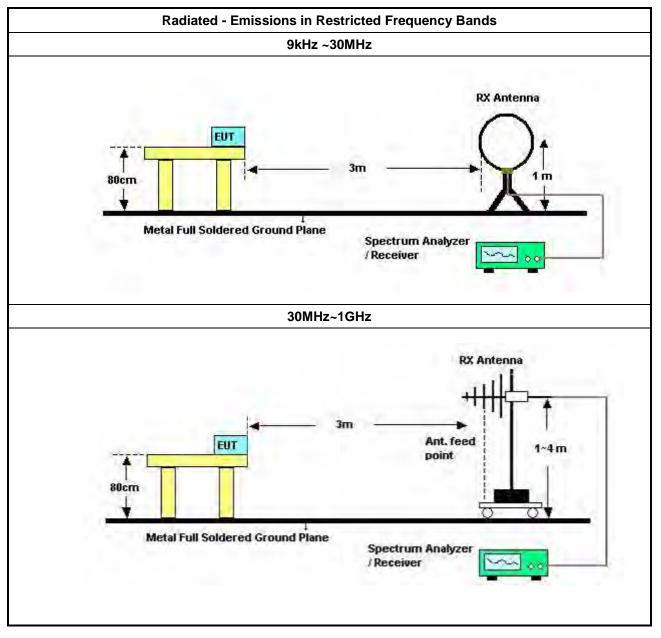


# 3.6.3 Test Procedures

	Test Method				
•	<ul> <li>The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].</li> </ul>				
•	<ul> <li>Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.</li> </ul>				
•	<ul> <li>For the transmitter unwanted emissions shall be measured using following options below:</li> </ul>				
	<ul> <li>Refer as FCC KDB 558074, clause 8.6 for unwanted emissions into restricted bands.</li> </ul>				
	Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.1(trace averaging for duty cycle ≥98%).				
	Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.2(trace averaging + duty factor).				
	☐ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.3(Reduced VBW≥1/T).				
	□ Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW $\ge$ 1/T, where T is pulse time.				
	Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.				
	Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.4 measurement procedure peak limit.				
•	For the transmitter band-edge emissions shall be measured using following options below:				
	<ul> <li>Refer as FCC KDB 558074 clause 8.7 &amp; C63.10 clause 11.13.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.</li> </ul>				
	<ul> <li>Refer as FCC KDB 558074, clause 8.7 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.</li> </ul>				
	<ul> <li>Refer as FCC KDB 558074, clause 8.7 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).</li> </ul>				
	<ul> <li>For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below:         <ul> <li>(1) Measure and sum the spectra across the outputs or</li> <li>(2) Measure and add 10 log(N) dB</li> </ul> </li> </ul>				
	<ul> <li>For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.</li> </ul>				

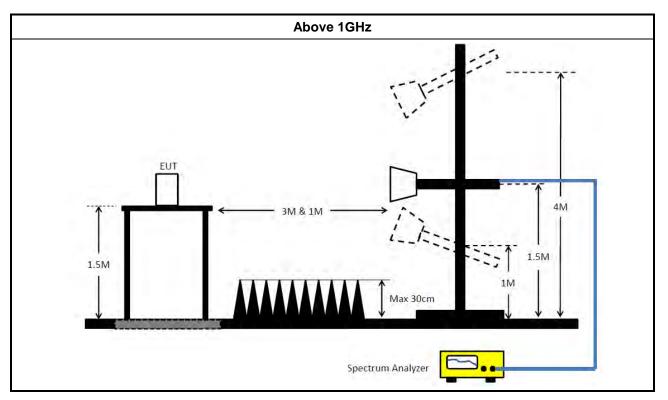


# 3.6.4 Test Setup









# 3.6.5 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.

# 3.6.6 Emissions in Restricted Frequency Bands (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.

# 3.6.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F



### **Test Equipment and Calibration Data** 4

Instrument	Brand	Model No.	Serial No.	Characteristics Calibration Date		Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.4GHz Feb. 20, 2023		Feb. 19, 2024	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50- 16-2	04083	150kHz ~ 100MHz Feb. 16, 2023		Feb. 15, 2024	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Apr. 27, 2023	Apr. 26, 2024	Conduction (CO01-CB)
Pulse Limiter	Rohde& Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Feb. 09, 2023	Feb. 08, 2024	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	Oct. 18, 2022	Oct. 17, 2023	Conduction (CO01-CB)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
Loop Antenna	Teseq	HLA 6120	31244	9kHz - 30 MHz	Mar. 23, 2023	Mar. 22, 2024	Radiation (03CH05-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH05-CB	30 MHz ~ 1 GHz Aug. 03, 2022		Aug. 02, 2023	Radiation (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESEQ & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz Mar. 24, 2023		Mar. 23, 2024	Radiation (03CH05-CB)
Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz May 03, 2023		May 02, 2024	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	Low Cable-04+23	30MHz~1GHz	Oct. 03, 2022	Oct. 02, 2023	Radiation (03CH05-CB)
3m Semi Anechoic Chamber VSWR	ТDК	SAC-3M	03CH05-CB	1GHz ~18GHz 3m	Nov. 06, 2022	Nov. 05, 2023	Radiation (03CH05-CB)
Horn Antenna	SCHWARZBE CK	BBHA9120D	BBHA 9120 D-1291	1GHz~18GHz	1GHz~18GHz Jun. 23, 2022		Radiation (03CH05-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz Aug. 22, 2022		Aug. 21, 2023	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC12630SE	980287	1GHz – 26.5GHz Jul. 01, 2022		Jun. 30, 2023	Radiation (03CH05-CB)
Pre-Amplifier	SGH	SGH184	20221107-3	18GHz ~ 40GHz Nov. 16, 202		Nov. 15, 2023	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-28	1GHz~18GHz	Oct. 03, 2022	Oct. 02, 2023	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-04+28	1GHz~18GHz	Oct. 03, 2022	Oct. 02, 2023	Radiation (03CH05-CB)
High Cable	Woken	WCA0929M	40G#5+6	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH05-CB)
High Cable	Woken	WCA0929M	40G#5	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH05-CB)

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# Report No. : FR291332-02AA

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
High Cable	Woken	WCA0929M	40G#6	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH05-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH05-CB)
3m Semi Anechoic Chamber VSWR	RIKEN	SAC-3M	03CH02-CB	1GHz ~18GHz	Mar. 26, 2022	Mar. 25, 2023	Radiation (03CH02-CB)
3m Semi Anechoic Chamber VSWR	RIKEN	SAC-3M	03CH02-CB	1GHz ~18GHz	Mar. 25, 2023	Mar. 24, 2024	Radiation (03CH02-CB)
Horn Antenna	EMCO	3115	9610-4976	1GHz ~ 18GHz	Apr. 19, 2022	Apr. 18, 2023	Radiation (03CH02-CB)
Horn Antenna	EMCO	3115	9610-4976	1GHz ~ 18GHz	Apr. 18, 2023	Apr. 17, 2024	Radiation (03CH02-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Aug. 22, 2022	Aug. 21, 2023	Radiation (03CH02-CB)
Pre-Amplifier	Agilent	83017A	MY39501305	1GHz ~ 26.5GHz Jul. 01, 2022		Jun. 30, 2023	Radiation (03CH02-CB)
Pre-Amplifier	SGH	SGH184	20221107-3	18GHz ~ 40GHz	Nov. 16, 2022	Nov. 15, 2023	Radiation (03CH02-CB)
Spectrum analyzer	R&S	FSU	100015	9kHz~26GHz	Dec. 05, 2022	Dec. 04, 2023	Radiation (03CH02-CB)
RF Cable-high	Woken	RG402	High Cable-18	1GHz ~ 18GHz	Oct. 03, 2022	Oct. 02, 2023	Radiation (03CH02-CB)
RF Cable-high	Woken	RG402	High Cable-18+19	1GHz ~ 18GHz	Oct. 03, 2022	Oct. 02, 2023	Radiation (03CH02-CB)
High Cable	Woken	WCA0929M	40G#5+6	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH02-CB)
High Cable	Woken	WCA0929M	40G#5	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH02-CB)
High Cable	Woken	WCA0929M	40G#6	1GHz ~ 40 GHz	z ~ 40 GHz Dec. 07, 2022		Radiation (03CH02-CB)
Test Software	SPORTON	SENSE	V5.10	- N.C.R.		N.C.R.	Radiation (03CH02-CB)
Signal Analyzer	R&S	FSV40	101903	9kHz ~ 40GHz	May 27, 2022	May 26, 2023	Conducted (TH03-CB)
Power Sensor	Anritsu	MA2411B	1531344	300MHz~ 40GHz	Jul. 31, 2022	Jul. 30, 2023	Conducted (TH03-CB)
Power Meter	Anritsu	ML2495A	1728002	300MHz~ 40GHz	Jul. 31, 2022	Jul. 30, 2023	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-11	1 GHz –18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-12	1 GHz –18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH03-CB)

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# Report No. : FR291332-02AA

Instrument	Brand	Model No.	Serial No.	Characteristics Calibration Date		Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-13	1 GHz –18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-14	1 GHz –18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-15	1 GHz –18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH03-CB)
Switch	SPTCB	SP-SWI	SWI-03	1 GHz – 26.5 GHz	Oct. 04, 2022	Oct. 03, 2023	Conducted (TH03-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conducted (TH03-CB)

Note: Calibration Interval of instruments listed above is one year.

NCR means Non-Calibration required.



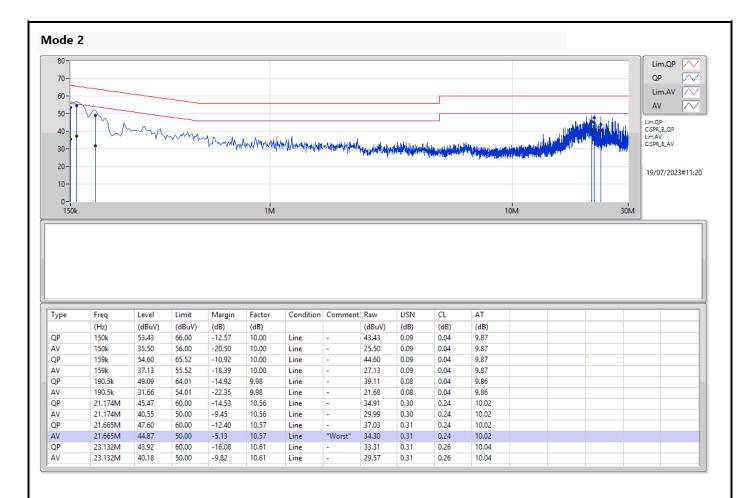
# **Conducted Emissions at Powerline**

# Appendix A

Summary								
Mode	Result	Туре	Freq	Level	Limit	Margin	Condition	
			(Hz)	(dBuV)	(dBuV)	(dB)		
Mode 2	Pass	AV	21.665M	44.89	50.00	-5.11	Neutral	

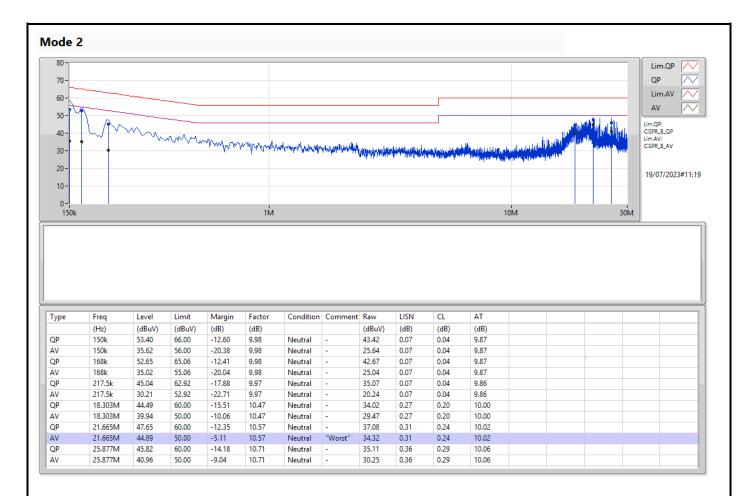


# Appendix A





# Appendix A





#### Summary

Mode	Max-N dB	Max-OBW	ITU-Code	Min-N dB	Min-OBW
	(Hz)	(Hz)		(Hz)	(Hz)
2.4-2.4835GHz	-	-	-	-	-
802.11b_Nss1,(1Mbps)_1TX	9.05M	14.066M	14M1G1D	8.075M	13.926M
802.11g_Nss1,(6Mbps)_1TX	15.65M	16.723M	16M7D1D	15.275M	16.588M
VHT20_Nss1,(MCS0)_1TX	16.525M	19.456M	19M5D1D	15.65M	17.737M
VHT40_Nss1,(MCS0)_1TX	35.7M	36.262M	36M3D1D	35.65M	36.192M

 $\label{eq:max-NdB} Max\cdot N\, dB = Maximum 6dB \ down \ bandwidth; \ Max-OBW = Maximum 99\% \ occupied \ bandwidth; \ Min-OBW = Minimum 99\% \ occupied \ bandwidth; \ Minimum 99\% \ occupied \ bandwidth;$ 



#### Result

Mode	Result	Limit	Port 1-N dB	Port 1-OBW
		(Hz)	(Hz)	(Hz)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-
2412MHz	Pass	500k	9.025M	14.066M
2437MHz	Pass	500k	9.05M	13.926M
2462MHz	Pass	500k	8.075M	13.94M
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-
2412MHz	Pass	500k	15.65M	16.59M
2437MHz	Pass	500k	15.625M	16.723M
2462MHz	Pass	500k	15.275M	16.588M
VHT20_Nss1,(MCS0)_1TX	-	-	-	-
2412MHz	Pass	500k	16.525M	17.792M
2437MHz	Pass	500k	16.525M	19.456M
2462MHz	Pass	500k	15.65M	17.737M
VHT40_Nss1,(MCS0)_1TX	-	-	-	-
2422MHz	Pass	500k	35.7M	36.192M
2437MHz	Pass	500k	35.65M	36.238M
2452MHz	Pass	500k	35.65M	36.262M

Port X-N dB = Port X 6dB down bandwidth; Port X-OBW = Port X 99% occupied bandwidth



CF



### 2.4-2.4835GHz\_802.11b\_Nss1,(1Mbps)\_1TX



2.42G

21/04/2023

2.42650

EBW

#### 2412MHz 30 30 CF 2.412GHz 20-2.412GHz 20-Span 10anna hanna Span 10manne 50MHz 29MHz 0. 0-RBW RBW -10-100kHz 200kHz -10--20 VBW VBW -20-300kHz 1MHz -30-Sweep Time Sweep Time -30 -40-100ms 100ms -40 -50-Detector Type Detector Type -50 Peak -60 Sample -70-2.387G -60-2.3975G 2.4G 2.41G 2.415G Port 1 📈 2.395G 2.4G 2.405G 2.41G 2.415G 2.42G 2.425G 2.43G 2.437G 2.405G 6dB(Hz) FI-6dB(Hz) Fh-6dB(Hz) OBW(Hz) FI-OBW(Hz) Fh-OBW(Hz) Limit(Hz) Port 9.025M 2.407475G 2.4165G 14.066M 2.404961G 2.419028G 500k

## 2.4-2.4835GHz\_802.11b\_Nss1,(1Mbps)\_1TX

#### 2437MHz 21/04/2023 20 20 CF CF 2.437GHz 2.437GHz 10anner her 10warming mana ully . Span Span 0. 0 50MHz 29MHz RBW -10-RBW -10 100kHz 200kHz -20--20 VBW VBW -30-300kHz 1MHz -30 ٩L Sweep Time -40-Sweep Time 100ms 100ms -40 -50 Detector Type Detector Type -50--60-Sample Peak -70-2.412G -60 Port 1 📈 2.4225G2.425G 2.43G 2.435G 2.44G 2.445G 2.42G 2.425G 2.43G 2.435G 2.44G 2.445G 2.45G 2.455G 2.4515G 2.462G FI-6dB(Hz) Fh-6dB(Hz) OBW(Hz) FI-OBW(Hz) Fh-OBW(Hz) Limit(Hz) 6dB(Hz) Port 9.05M 2.432475G 2.441525G 13.926M 2.430079G 2.444006G 500k



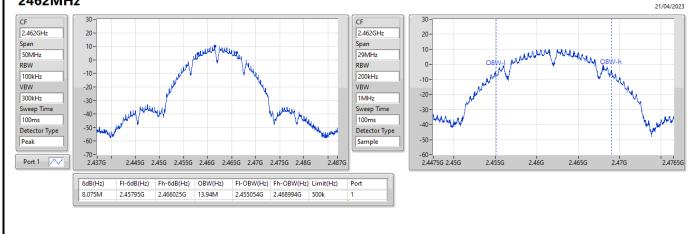


# 2.4-2.4835GHz\_802.11b\_Nss1,(1Mbps)\_1TX



**EBW** 

# 2462MHz



### 2.4-2.4835GHz\_802.11g\_Nss1,(6Mbps)\_1TX

#### 2412MHz 21/04/2023 20 20 CF CF 2.412GHz 10-2.412GHz 10-Span Span 0. OE 0. 50MHz 42.5MHz -10-RBW RBW -10-100kHz 200kHz -20 VBW -20 VBW -30-300kHz 1MHz -30 . Sweep Time Sweep Time -40-100m 100ms -40 -50-Detector Type Detector Type -50 -60-Peak Sample -70-2.387G -60-2.39075G Port 1 📈 2.395G 2.4G 2.405G 2.41G 2.415G 2.42G 2.425G 2.43G 2.4G 2.41G 2.42G 2.437G 2.43325G 6dB(Hz) FI-6dB(Hz) Fh-6dB(Hz) OBW(Hz) FI-OBW(Hz) Fh-OBW(Hz) Limit(Hz) Port 15.65M 2.404225G 2.419875G 16.59M 2.403702G 2.420292G 500k 1



## EBW

## 2.4-2.4835GHz\_802.11g\_Nss1,(6Mbps)\_1TX



**EBW** 



2462MHz

CF

Span

RBW

VBW

2.462GHz

50MHz

100kHz

300kHz

100m

Peak

Sweep Time

Detector Type

Port 1 📈

20

10-

0.

-10-

-20

-30-

-40-

-50-

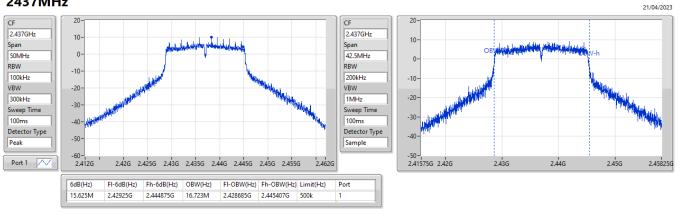
-60-

-70-2.437G

6dB(Hz)

15.275M

2.4545G



### 2.4-2.4835GHz\_802.11g\_Nss1,(6Mbps)\_1TX

.

2.445G 2.45G 2.455G 2.46G 2.465G 2.47G 2.475G 2.48G

2.4537G

16.588M

FI-OBW(Hz) Fh-OBW(Hz) Limit(Hz)

2.470288G 500k

Port

1

FI-6dB(Hz) Fh-6dB(Hz) OBW(Hz)

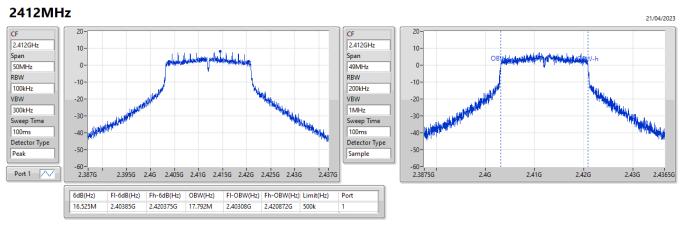
2.469775G

#### 21/04/2023 20 CF 2.462GHz 10-Span 0. 42.5MHz RBW -10-200kHz VBW -20 1MHz -30 . Sweep Time 100ms -40 Detector Type -50 Sample -60-2.44075G 2.45G 2.46G 2.47G 2.487G 2.48325G

EBW

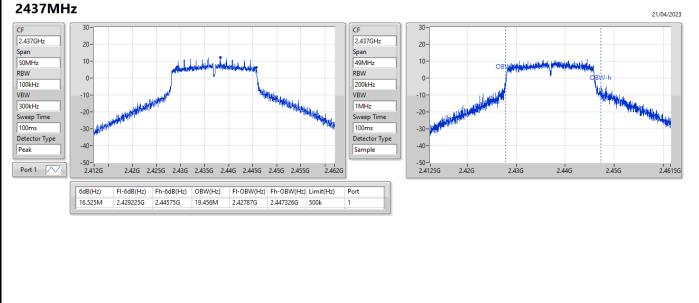


### 2.4-2.4835GHz\_VHT20\_Nss1,(MCS0)\_1TX



### 2.4-2.4835GHz\_VHT20\_Nss1,(MCS0)\_1TX

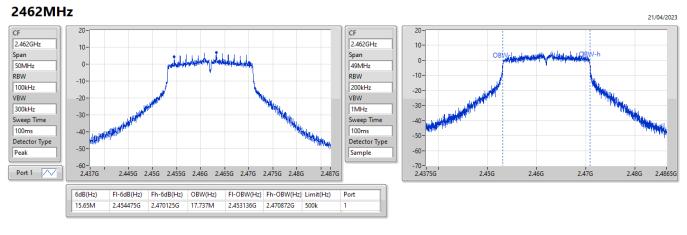
EBW



EBW

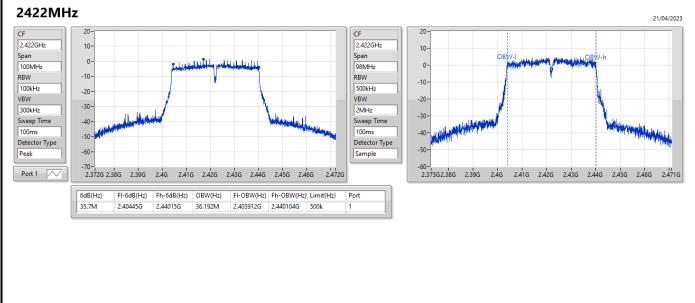


### 2.4-2.4835GHz\_VHT20\_Nss1,(MCS0)\_1TX



### 2.4-2.4835GHz\_VHT40\_Nss1,(MCS0)\_1TX

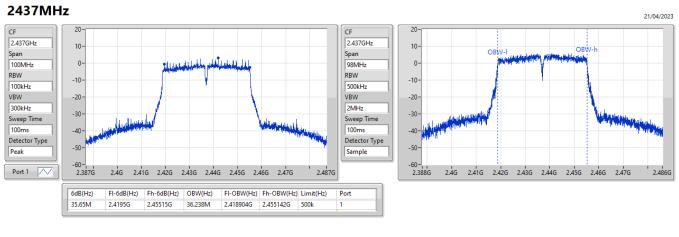
#### EBW





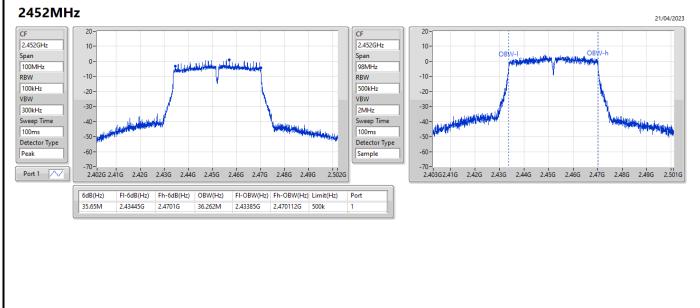
## 2.4-2.4835GHz\_VHT40\_Nss1,(MCS0)\_1TX

EBW



### 2.4-2.4835GHz\_VHT40\_Nss1,(MCS0)\_1TX

#### EBW





#### Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_1TX	20.20	0.10471
802.11g_Nss1,(6Mbps)_1TX	19.50	0.08913
VHT20_Nss1,(MCS0)_1TX	21.73	0.14894
VHT40_Nss1,(MCS0)_1TX	16.31	0.04276



# Average Power

# Appendix C

#### Result

Mode	Result	DG	Port 1	Total Power	Power Limit
		(dBi)	(dBm)	(dBm)	(dBm)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	3.82	20.20	20.20	30.00
2437MHz	Pass	3.82	18.16	18.16	30.00
2462MHz	Pass	3.82	18.75	18.75	30.00
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	3.82	16.95	16.95	30.00
2437MHz	Pass	3.82	19.50	19.50	30.00
2462MHz	Pass	3.82	17.32	17.32	30.00
VHT20_Nss1,(MCS0)_1TX	-	-	-	-	-
2412MHz	Pass	3.82	18.17	18.17	30.00
2417MHz	Pass	3.82	19.93	19.93	30.00
2437MHz	Pass	3.82	21.73	21.73	30.00
2457MHz	Pass	3.82	18.28	18.28	30.00
2462MHz	Pass	3.82	16.60	16.60	30.00
VHT40_Nss1,(MCS0)_1TX	-	-	-	-	-
2422MHz	Pass	3.82	15.22	15.22	30.00
2437MHz	Pass	3.82	16.31	16.31	30.00
2452MHz	Pass	3.82	14.45	14.45	30.00

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



#### Summary

Mode	PD
	(dBm/RBW)
2.4-2.4835GHz	-
802.11b_Nss1,(1Mbps)_1TX	-3.96
802.11g_Nss1,(6Mbps)_1TX	-6.22
VHT20_Nss1,(MCS0)_1TX	-4.60
VHT40_Nss1,(MCS0)_1TX	-12.94

RBW = 3kHz;

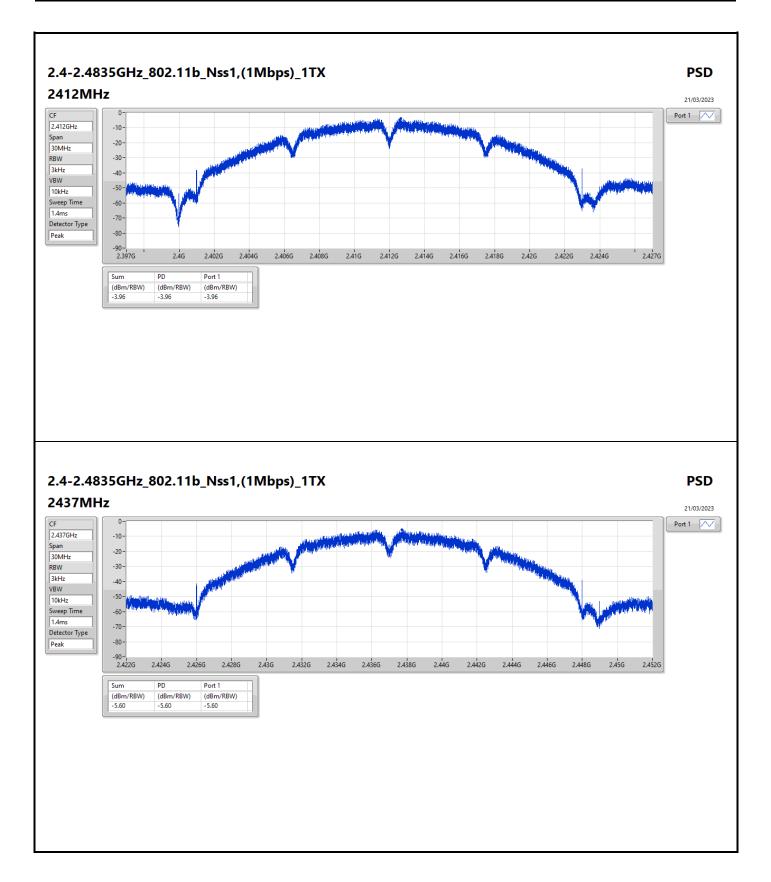


#### Result

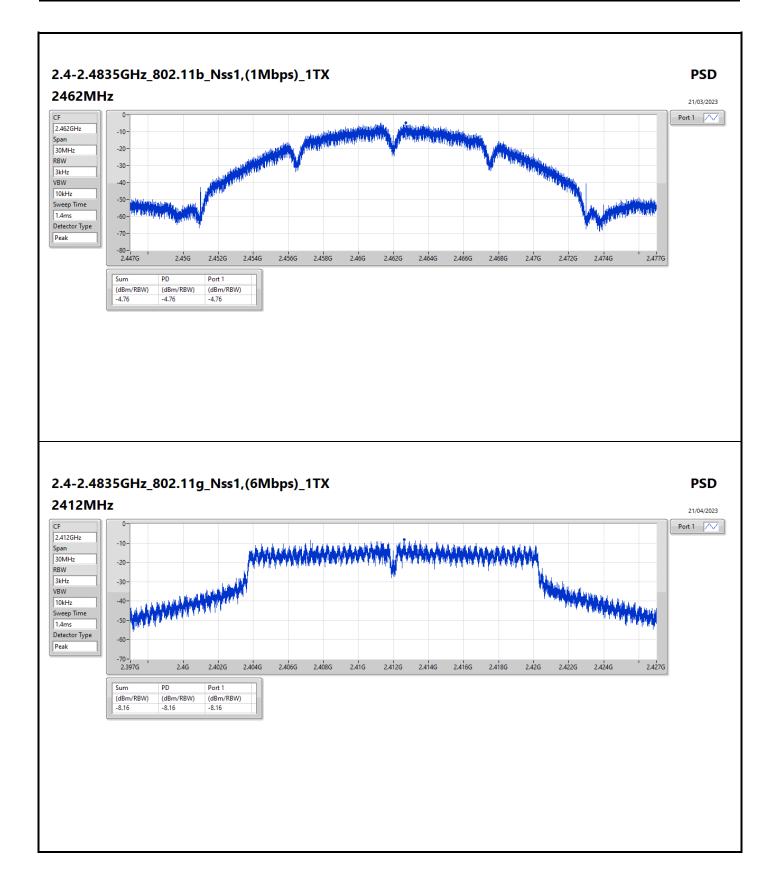
Mode	Result	DG	Port 1	PD	PD Limit
		(dBi)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	3.82	-3.96	-3.96	8.00
2437MHz	Pass	3.82	-5.60	-5.60	8.00
2462MHz	Pass	3.82	-4.76	-4.76	8.00
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	3.82	-8.16	-8.16	8.00
2437MHz	Pass	3.82	-6.22	-6.22	8.00
2462MHz	Pass	3.82	-8.82	-8.82	8.00
VHT20_Nss1,(MCS0)_1TX	-	-	-	-	-
2412MHz	Pass	3.82	-6.87	-6.87	8.00
2437MHz	Pass	3.82	-4.60	-4.60	8.00
2462MHz	Pass	3.82	-8.90	-8.90	8.00
VHT40_Nss1,(MCS0)_1TX	-	-	-	-	-
2422MHz	Pass	3.82	-13.66	-13.66	8.00
2437MHz	Pass	3.82	-12.94	-12.94	8.00
2452MHz	Pass	3.82	-14.70	-14.70	8.00

DG = Directional Gain; RBW = 3kHz; PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;

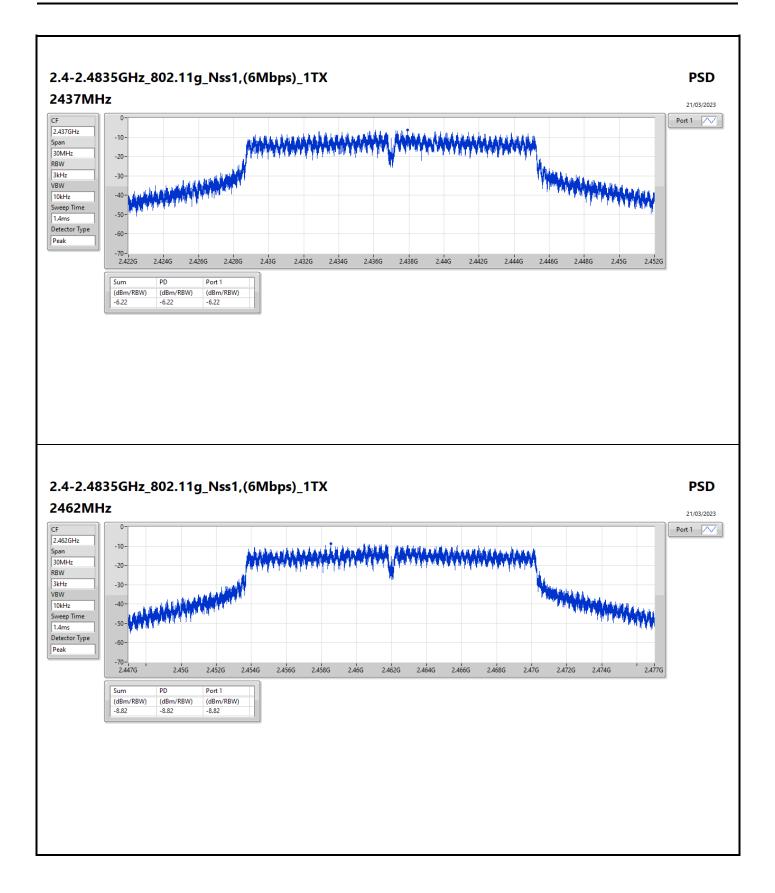




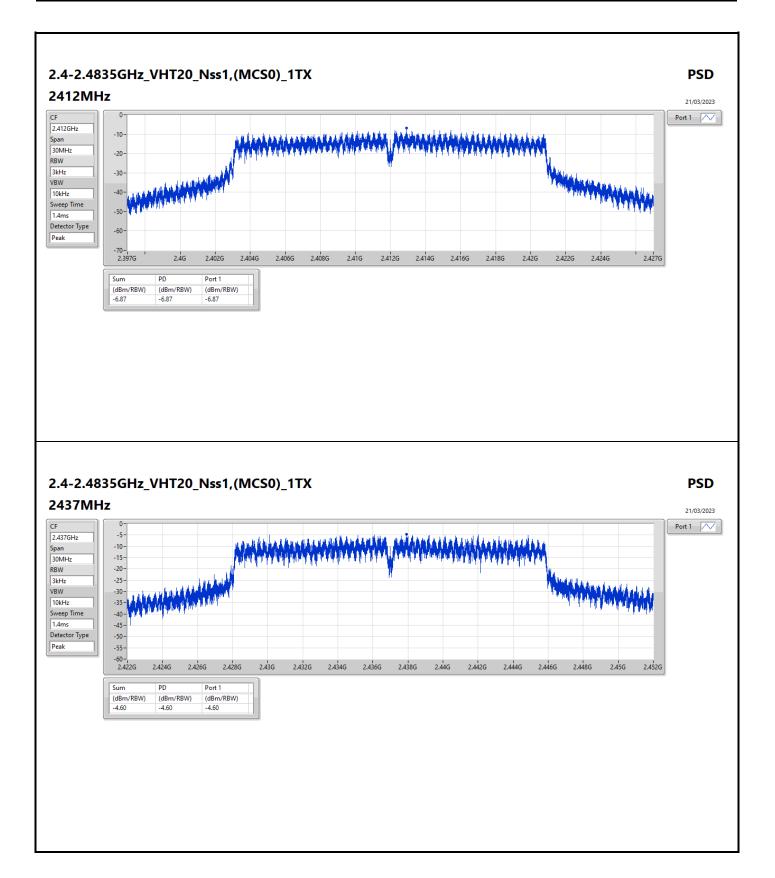




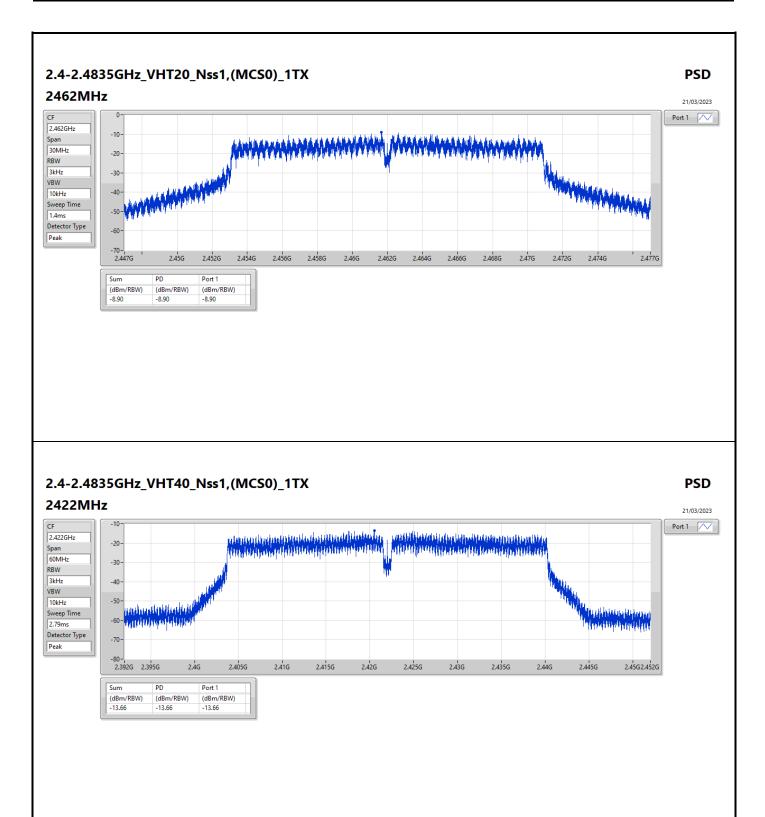




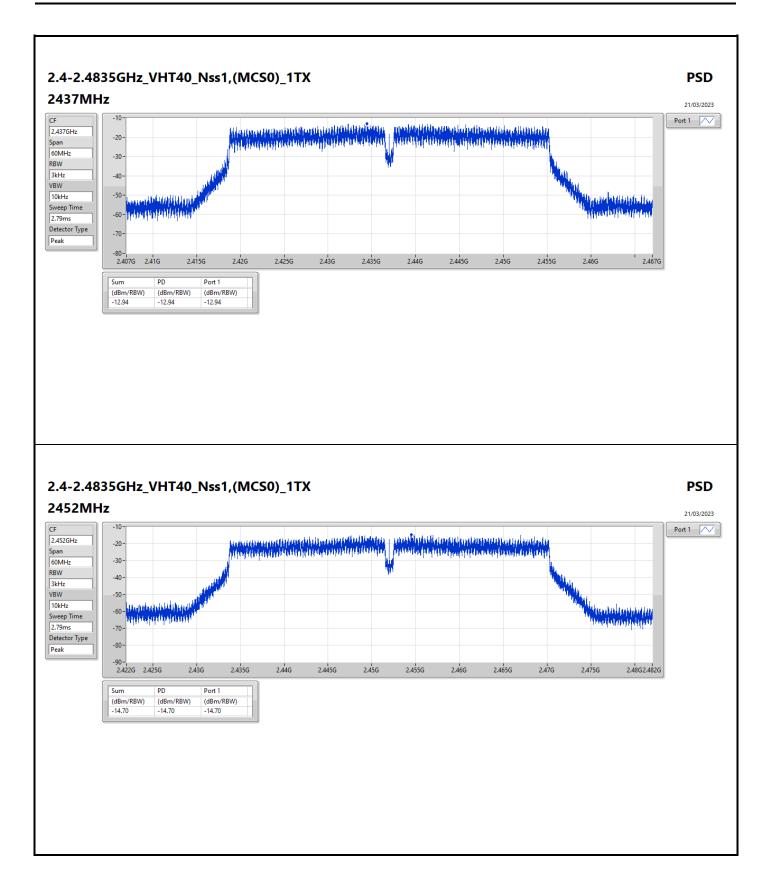














# CSE (NdB Down)

# Appendix E

#### Summary

Mode	Result	Ref	Ref	Limit	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Port
		(Hz)	(dBm)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
802.11b_Nss1,(1Mbps)_1TX	Pass	2.41102G	11.42	-18.58	1.84274G	-52.68	2.39904G	-31.55	2.4G	-43.22	2.51974G	-50.34	7.00526G	-48.76	1
802.11g_Nss1,(6Mbps)_1TX	Pass	2.43574G	9.88	-20.12	1.88818G	-53.96	2.39984G	-21.39	2.4G	-20.33	2.5215G	-49.25	21.98815G	-47.77	1
VHT20_Nss1,(MCS0)_1TX	Pass	2.43574G	12.24	-17.76	2.30525G	-52.70	2.3996G	-19.03	2.4G	-18.33	2.5003G	-48.89	21.57233G	-47.32	1
VHT40_Nss1,(MCS0)_1TX	Pass	2.44192G	3.22	-26.78	2.16772G	-52.89	2.39712G	-32.26	2.4G	-34.21	2.50142G	-49.22	21.46345G	-47.48	1



# CSE (NdB Down)

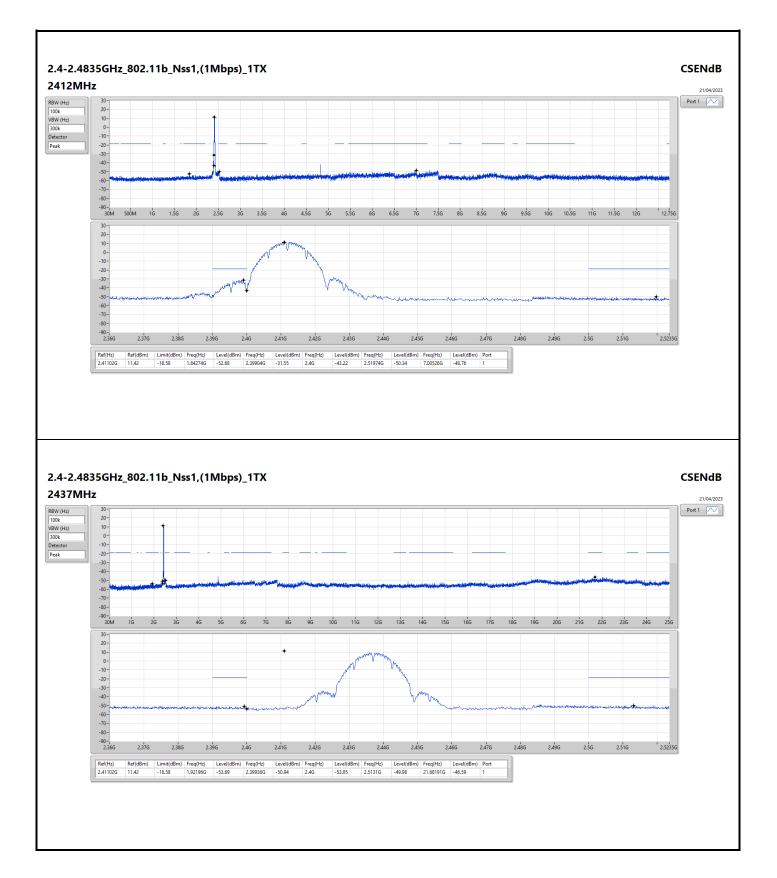
# Appendix E

#### Result

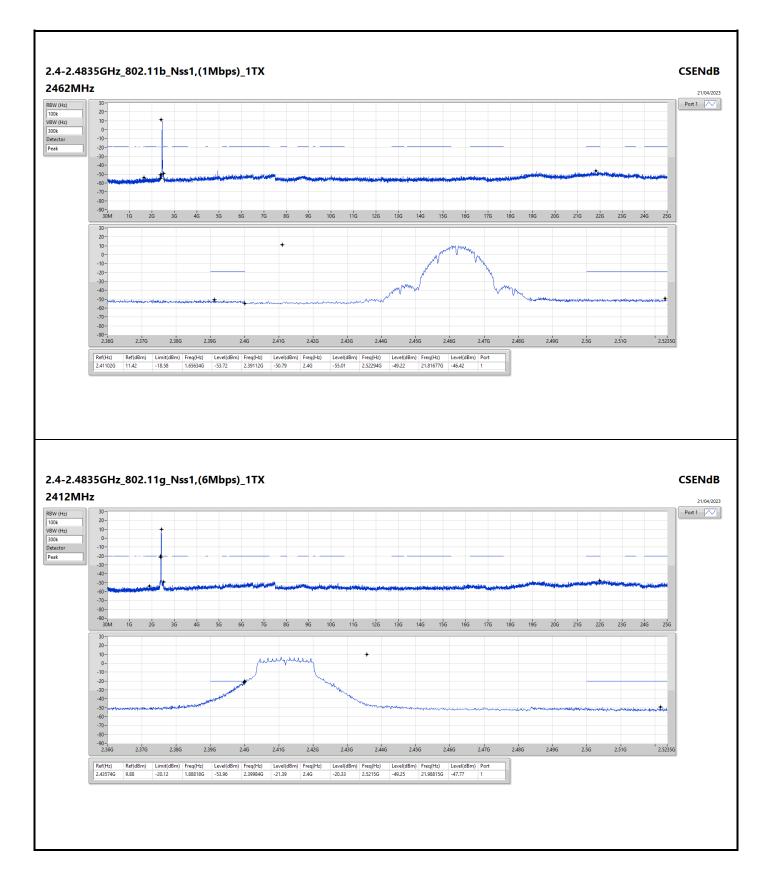
Mode	Result	Ref	Ref	Limit	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Port
		(Hz)	(dBm)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-	-	-	-	-	-	-	-		-	-
2412MHz	Pass	2.41102G	11.42	-18.58	1.84274G	-52.68	2.39904G	-31.55	2.4G	-43.22	2.51974G	-50.34	7.00526G	-48.76	1
2437MHz	Pass	2.41102G	11.42	-18.58	1.92196G	-53.69	2.39936G	-50.94	2.4G	-53.85	2.5131G	-49.98	21.68191G	-46.59	1
2462MHz	Pass	2.41102G	11.42	-18.58	1.65634G	-53.72	2.39112G	-50.79	2.4G	-55.01	2.52294G	-49.22	21.81677G	-46.42	1
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-		-	-	-	-	-	-	-		-	-
2412MHz	Pass	2.43574G	9.88	-20.12	1.88818G	-53.96	2.39984G	-21.39	2.4G	-20.33	2.5215G	-49.25	21.98815G	-47.77	1
2437MHz	Pass	2.43574G	9.88	-20.12	2.10487G	-54.06	2.39992G	-44.45	2.4G	-45.88	2.50838G	-45.87	21.69876G	-46.42	1
2462MHz	Pass	2.43574G	9.88	-20.12	1.82993G	-52.47	2.39184G	-50.72	2.4G	-53.25	2.50414G	-47.75	21.91229G	-47.50	1
VHT20_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-	-	-	-	-	-		-	-
2412MHz	Pass	2.43574G	12.24	-17.76	2.30525G	-52.70	2.3996G	-19.03	2.4G	-18.33	2.5003G	-48.89	21.57233G	-47.32	1
2437MHz	Pass	2.43574G	12.24	-17.76	2.1072G	-54.03	2.39696G	-36.78	2.4G	-37.75	2.50006G	-46.76	21.651G	-47.09	1
2462MHz	Pass	2.43574G	12.24	-17.76	2.10487G	-53.52	2.4G	-49.01	2.4G	-53.65	2.50638G	-47.66	21.72686G	-47.94	1
VHT40_Nss1,(MCS0)_1TX	-	-	-	-		-		-	-	-	-	-		-	-
2422MHz	Pass	2.44192G	3.22	-26.78	2.16772G	-52.89	2.39712G	-32.26	2.4G	-34.21	2.50142G	-49.22	21.46345G	-47.48	1
2437MHz	Pass	2.44192G	3.22	-26.78	2.03833G	-53.49	2.39952G	-32.73	2.4G	-37.70	2.50254G	-48.17	21.70744G	-45.43	1
2452MHz	Pass	2.44192G	3.22	-26.78	2.17115G	-53.66	2.4G	-51.33	2.4G	-51.84	2.5019G	-46.29	21.51112G	-47.64	1



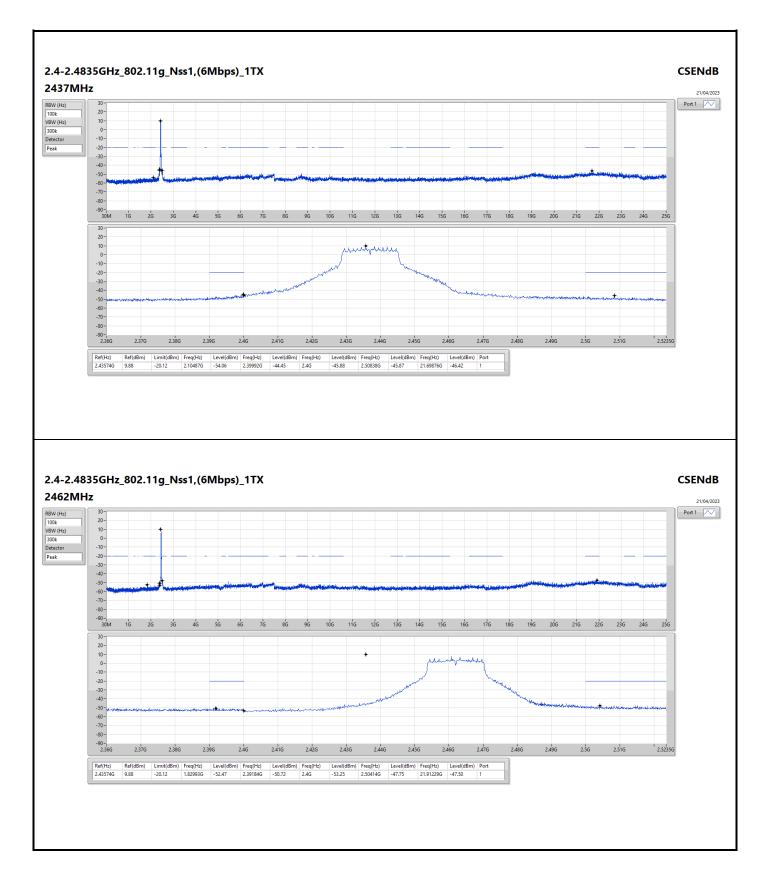
Appendix E



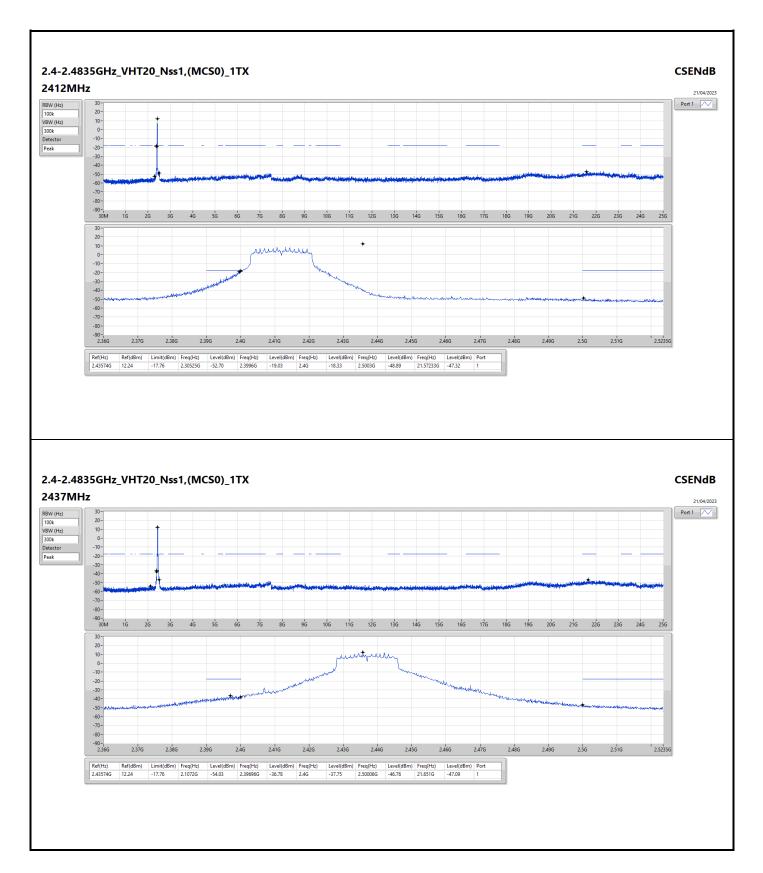




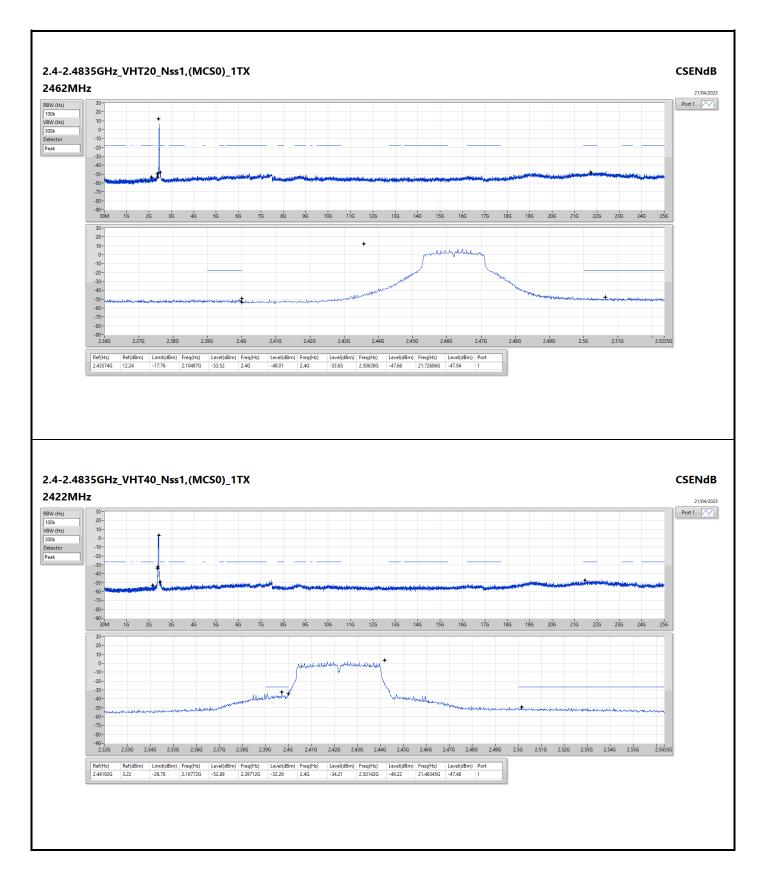




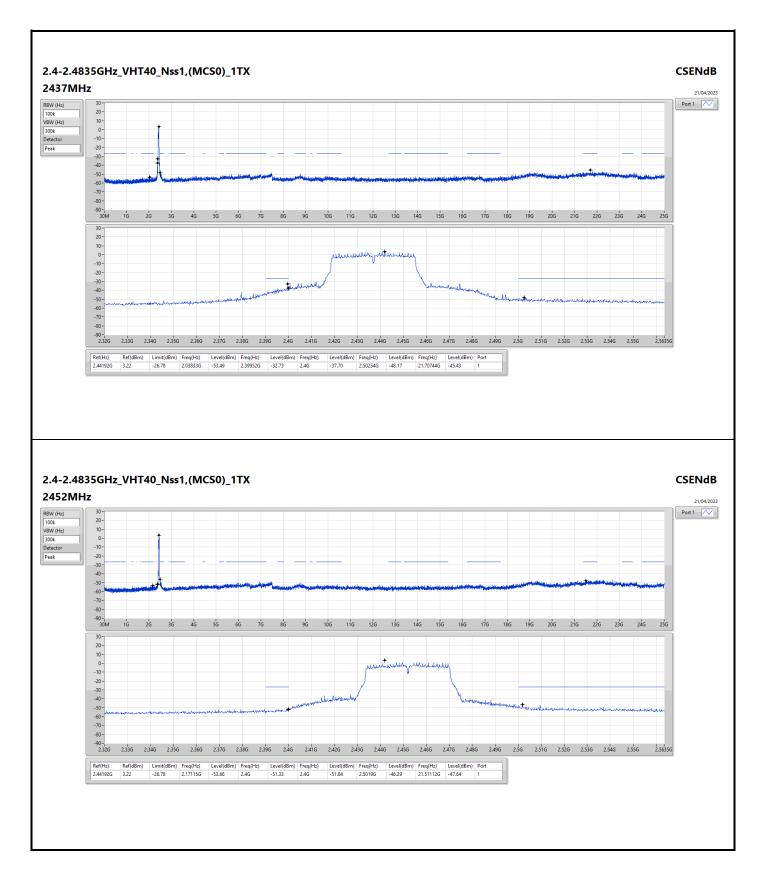














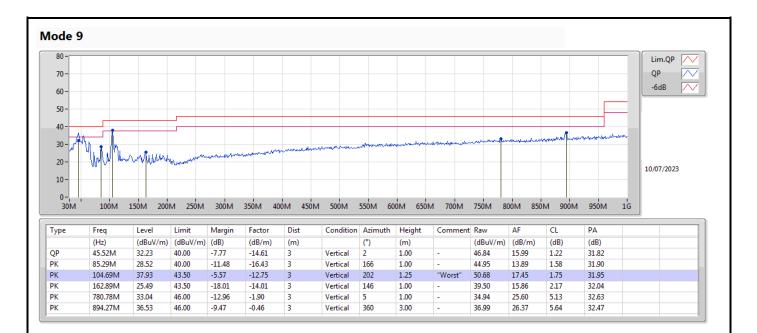
# Radiated Emissions below 1GHz

Summary							
Mode	Result	Туре	Freq	Level	Limit	Margin	Condition
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	
Mode 9	Pass	PK	104.69M	37.93	43.50	-5.57	Vertical



# Radiated Emissions below 1GHz

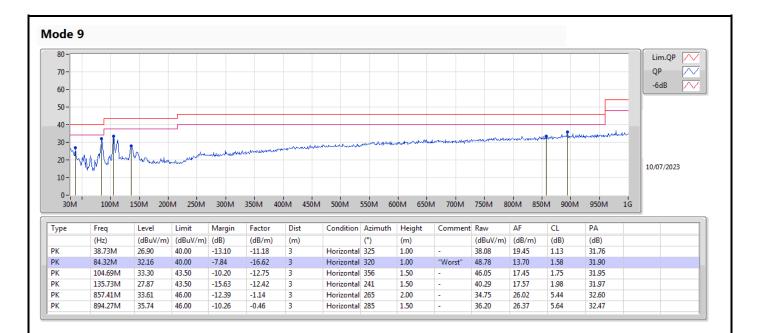
# Appendix F.1





# Radiated Emissions below 1GHz

# Appendix F.1





# RSE TX above 1GHz

# Appendix F.2

#### Summary

Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
VHT20_Nss1,(MCS0)_1TX	Pass	AV	7.30922G	53.92	54.00	-0.08	3	Horizontal	293	2.06	-



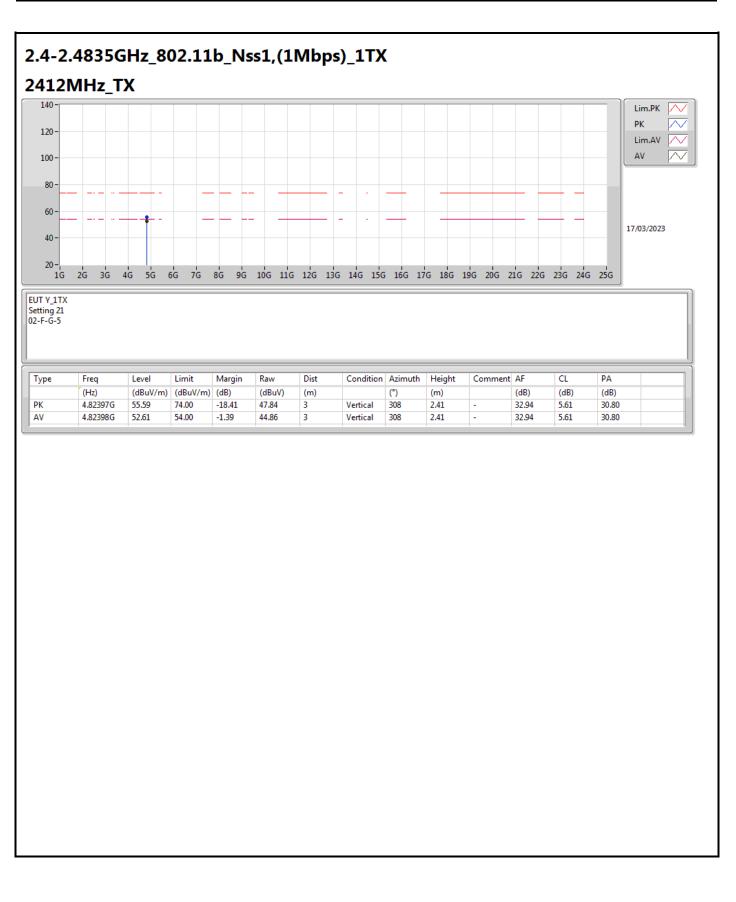
#### 2.4-2.4835GHz\_802.11b\_Nss1,(1Mbps)\_1TX 2412MHz\_TX 140-Lim.PK $\wedge$ РК $\sim$ 120 - $\sim$ Lim.AV $\sim$ AV 100 -80-60-17/03/2023 40 -20-2.462G 2.362G 2.37G 2.38G 2.39G 2.4G 2.41G 2.42G 2.43G 2.44G 2.45G EUT X\_1TX Setting 21 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (Hz) (m) (°) (m) (dB) PK 2.3874G 3.19 58.08 74.00 -15.92 26.52 3 Vertical 3 1.28 28.37 AV 2.3868G 47.29 54.00 -6.71 15.73 3 Vertical 3 1.28 28.37 3.19 РК 2.413G 108.62 3 1.28 3.21 -Inf 77.01 3 28.40 Inf Vertical --AV 2.4128G 103.27 71.66 3 3 3.21 Inf -Inf Vertical 1.28 . 28.40 -



#### 2.4-2.4835GHz\_802.11b\_Nss1,(1Mbps)\_1TX 2412MHz\_TX 140-Lim.PK $\wedge$ РК $\sim$ 120 - $\sim$ Lim.AV $\sim$ AV 100 -80-60-17/03/2023 40 -20-2.462G 2.362G 2.37G 2.38G 2.4G 2.41G 2.42G 2.43G 2.44G 2.45G 2.39G EUT X\_1TX Setting 21 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (Hz) (m) (m) (dB) (°) PK 2.3888G 3.00 3.19 60.65 74.00 -13.35 29.08 3 Horizontal 293 28.38 AV 2.3872G 51.88 54.00 -2.12 20.32 3 Horizontal 293 3.00 28.37 3.19 РК 2.411G 80.25 Horizontal 293 3.00 3.21 111.86 -Inf 3 28.40 Inf --AV 2.4112G 75.95 3 Horizontal 293 3.00 3.21 107.56 Inf -Inf \_ 28.40 -

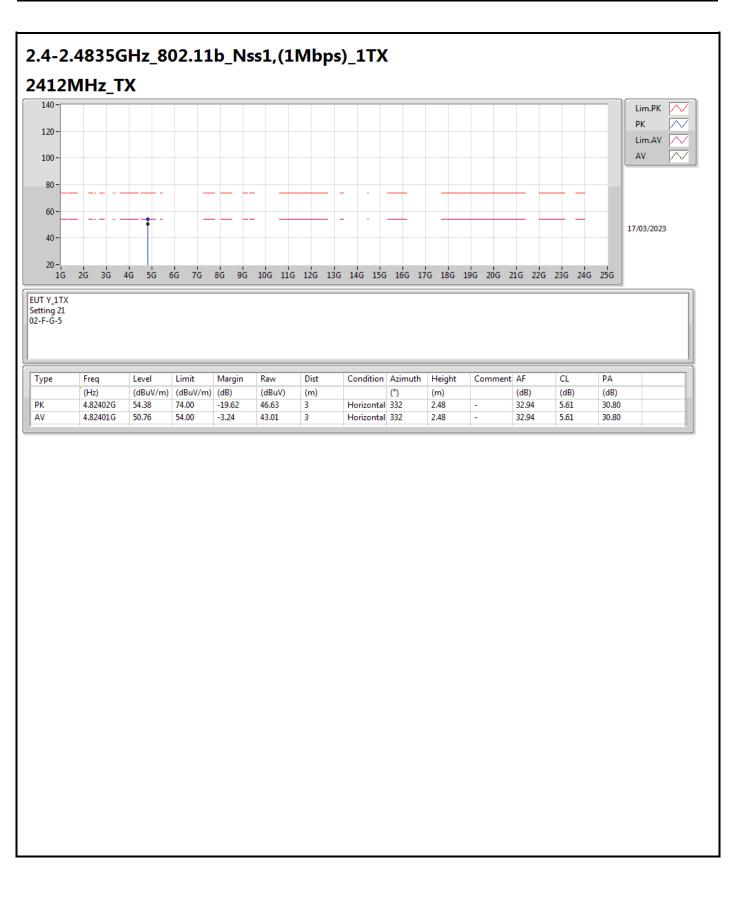


# Appendix F.2





# Appendix F.2



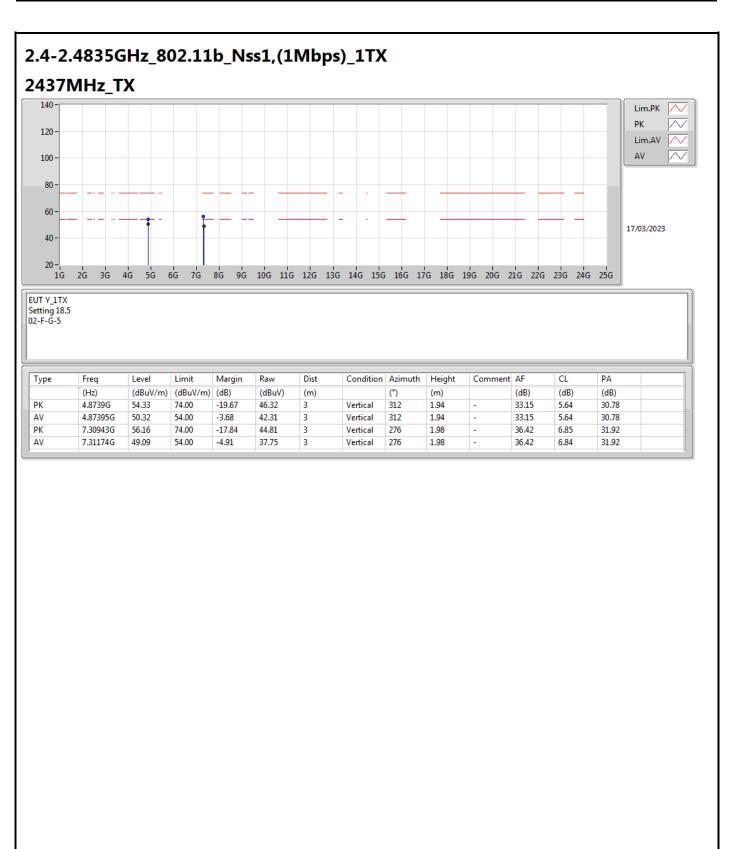


#### 2.4-2.4835GHz\_802.11b\_Nss1,(1Mbps)\_1TX 2437MHz\_TX 140 Lim.PK $\wedge$ РК $\sim$ 120- $\sim$ Lim.AV $\sim$ AV 100 -80-60 -17/03/2023 40-20 -2.387G 2.4G 2.41G 2.42G 2.43G 2.44G 2.45G 2.46G 2.47G 2.48G 2.487G EUT X\_1TX Setting 24.5 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (dB) (Hz) (m) (m) (°) РΚ 2.39G 74.00 -17.74 24.68 Vertical 3.20 56.26 3 14 1.10 28.38 AV 2.39G 44.67 54.00 -9.33 13.09 3 Vertical 14 1.10 28.38 3.20 PK 2.436G 111.08 79.46 14 1.10 28.40 3.22 Inf -Inf 3 Vertical AV 2.4362G 106.75 -Inf 75.13 28.40 3.22 Inf 3 Vertical 14 1.10 РΚ 2.4848G 59.60 74.00 -14.40 27.82 3 Vertical 14 1.10 28.54 3.24 --AV 2.4858G 51.18 54.00 -2.82 19.40 3 Vertical 14 1.10 28.54 3.24

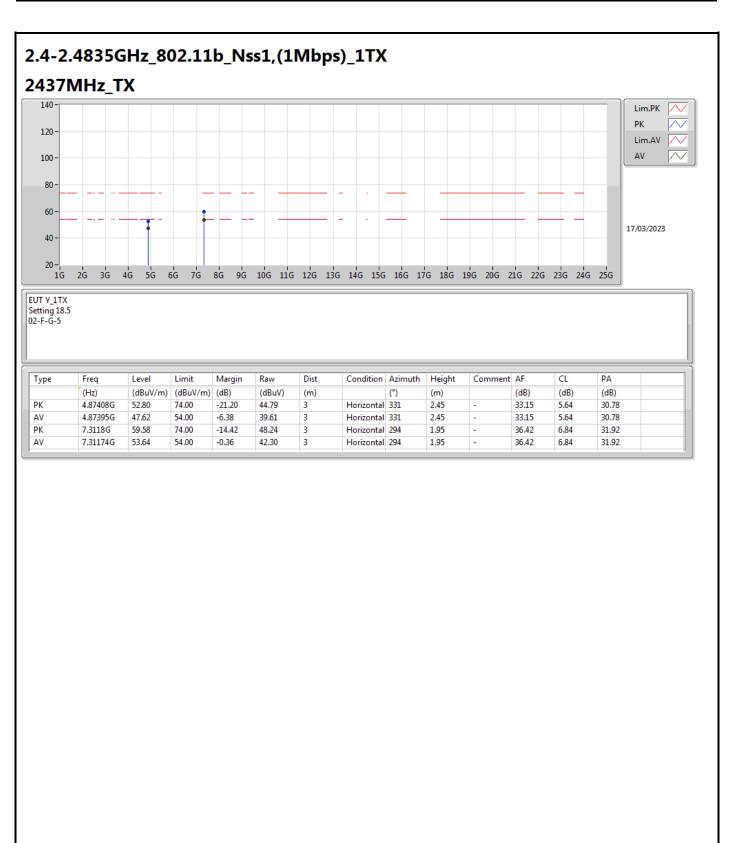


#### 2.4-2.4835GHz\_802.11b\_Nss1,(1Mbps)\_1TX 2437MHz\_TX 140 Lim.PK $\wedge$ РК $\sim$ 120- $\sim$ Lim.AV $\sim$ AV 100 -80-60 -17/03/2023 40-20-2.387G 2.4G 2.41G 2.42G 2.43G 2.44G 2.45G 2.46G 2.47G 2.48G 2.487G EUT X\_1TX Setting 24.5 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (dB) (Hz) (m) (m) (°) РΚ 2.3892G 74.00 -17.77 24.66 Horizontal 248 3.19 56.23 3 1.13 28.38 AV 2.39G 44.85 54.00 -9.15 13.27 3 Horizontal 248 1.13 28.38 3.20 PK 2.438G 111.44 79.82 Horizontal 248 1.13 28.40 3.22 Inf -Inf 3 AV 2.4362G 107.12 -Inf 75.50 Horizontal 248 28.40 3.22 Inf 3 1.13 РΚ 2.4856G 60.36 74.00 -13.64 28.58 3 Horizontal 248 1.13 28.54 3.24 --AV 2.4858G 52.27 54.00 -1.73 20.49 3 Horizontal 248 1.13 28.54 3.24





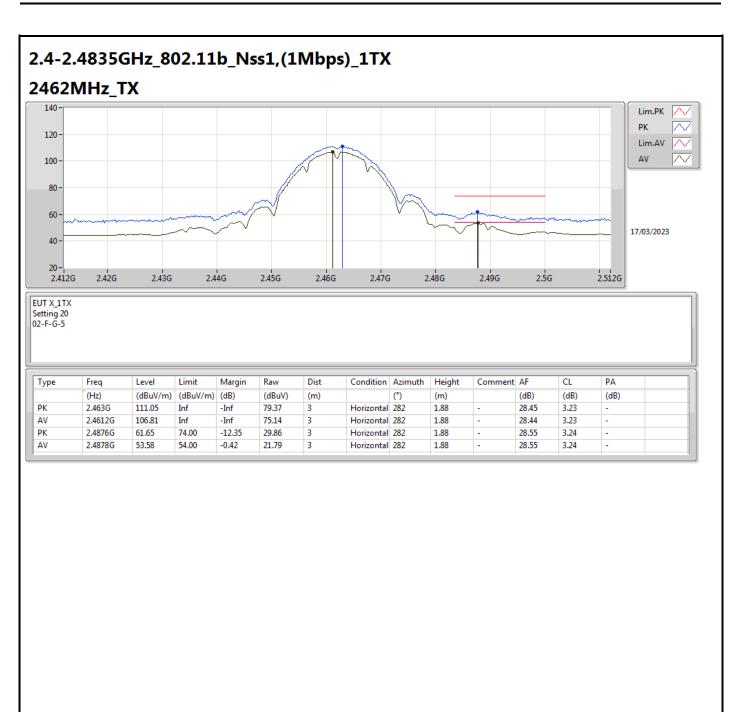




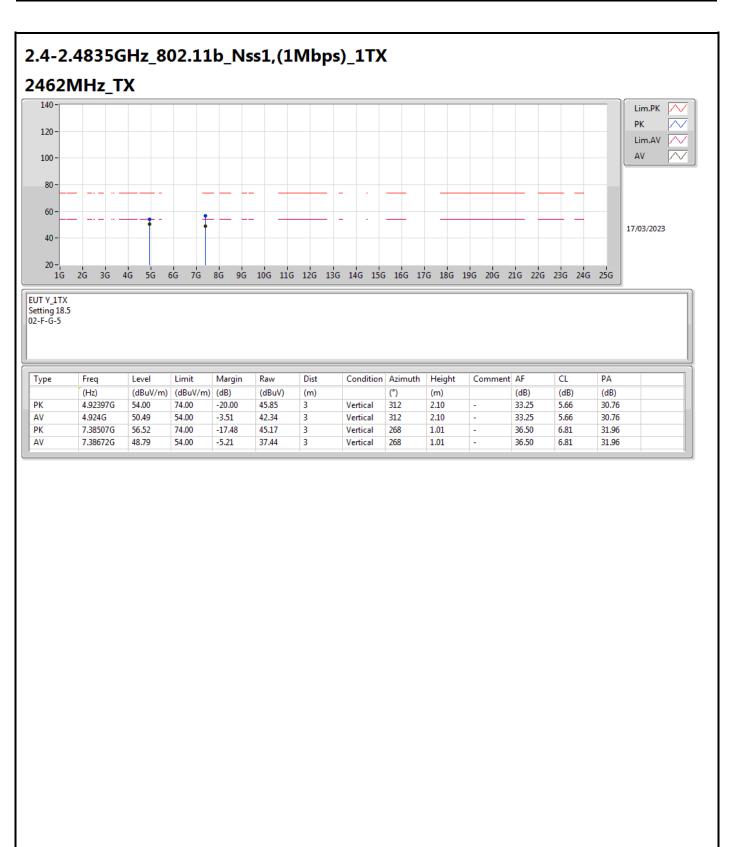


#### 2.4-2.4835GHz\_802.11b\_Nss1,(1Mbps)\_1TX 2462MHz\_TX 140 Lim.PK $\wedge$ РК $\sim$ 120- $\sim$ Lim.AV $\sim$ AV 100 -80-60-17/03/2023 40 -20 2.512G 2.42G 2.43G 2.44G 2.45G 2.46G 2.47G 2.48G 2.49G 2.5G 2.412G EUT X\_1TX Setting 20 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (Hz) (m) (°) (m) (dB) PK 2.461G 108.36 1.08 3.23 Inf -Inf 76.69 3 Vertical 1 28.44 AV 2.4612G 104.12 Inf -Inf 72.45 3 Vertical 1 1.08 28.44 3.23 РК 2.4876G 59.91 74.00 1.08 28.55 3.24 -14.09 28.12 3 1 Vertical --AV 2.4878G 52.02 54.00 20.23 3 1 3.24 -1.98 Vertical 1.08 \_ 28.55 -

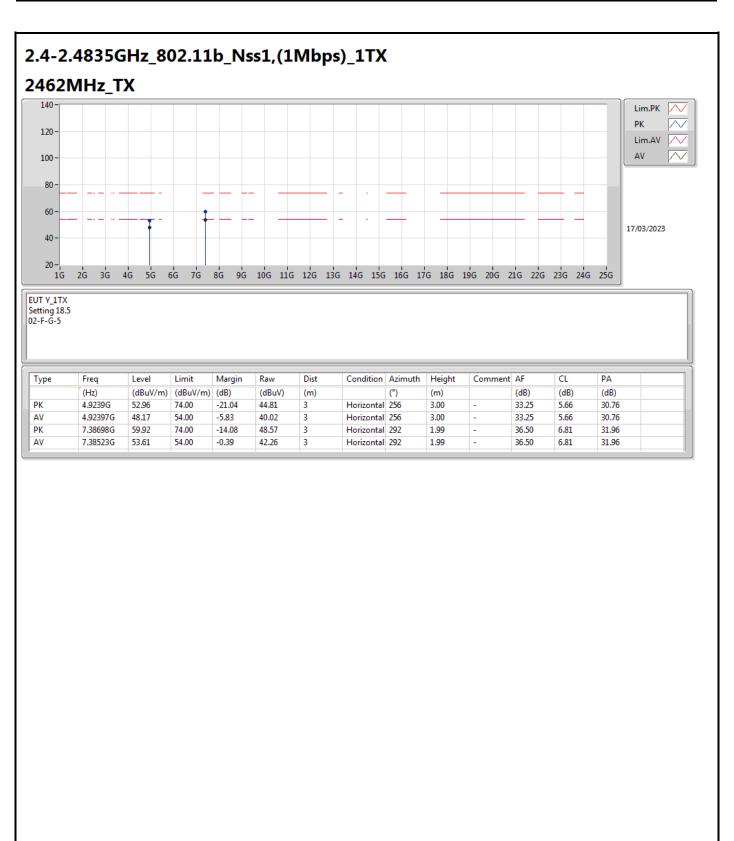












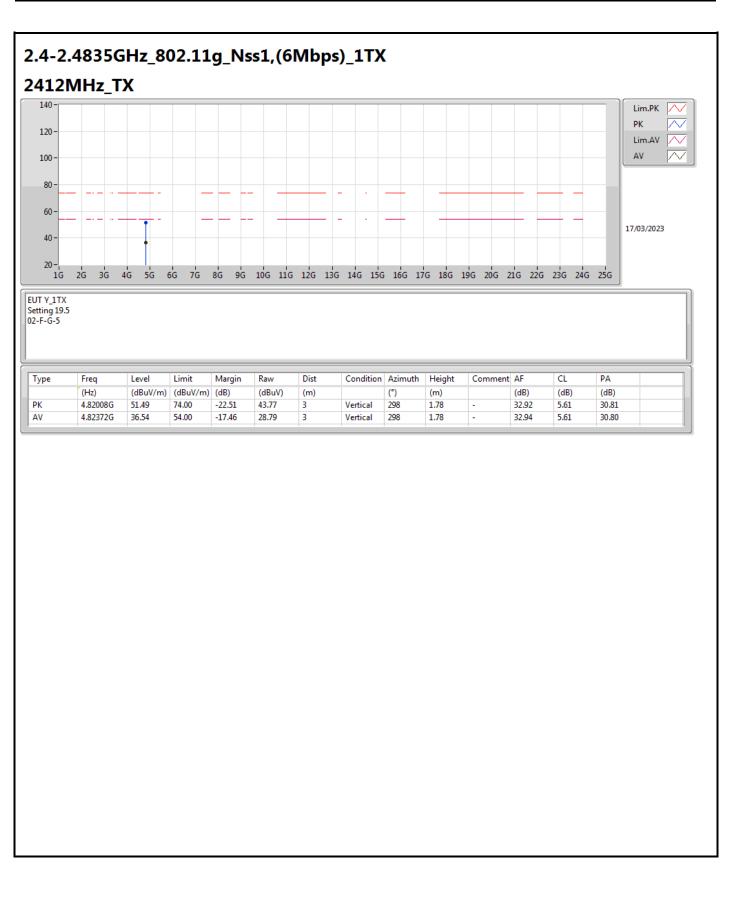


#### 2.4-2.4835GHz\_802.11g\_Nss1,(6Mbps)\_1TX 2412MHz\_TX 140-Lim.PK $\wedge$ РК $\sim$ 120- $\sim$ Lim.AV $\sim$ AV 100 -80-60-17/03/2023 40-20-2.462G 2.362G 2.37G 2.38G 2.4G 2.41G 2.42G 2.43G 2.44G 2.45G 2.39G EUT X\_1TX Setting 19.5 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (Hz) (m) (m) (dB) (°) PK 2.3898G 3.19 63.04 74.00 -10.96 31.47 3 Vertical 360 1.61 28.38 AV 2.39G 48.07 54.00 -5.93 16.49 3 Vertical 360 1.61 28.38 3.20 РК 2.4108G 360 3.21 108.07 -Inf 76.46 3 1.61 28.40 Inf Vertical --AV 2.413G 65.44 3 360 3.21 97.05 Inf -Inf Vertical 1.61 . 28.40 -

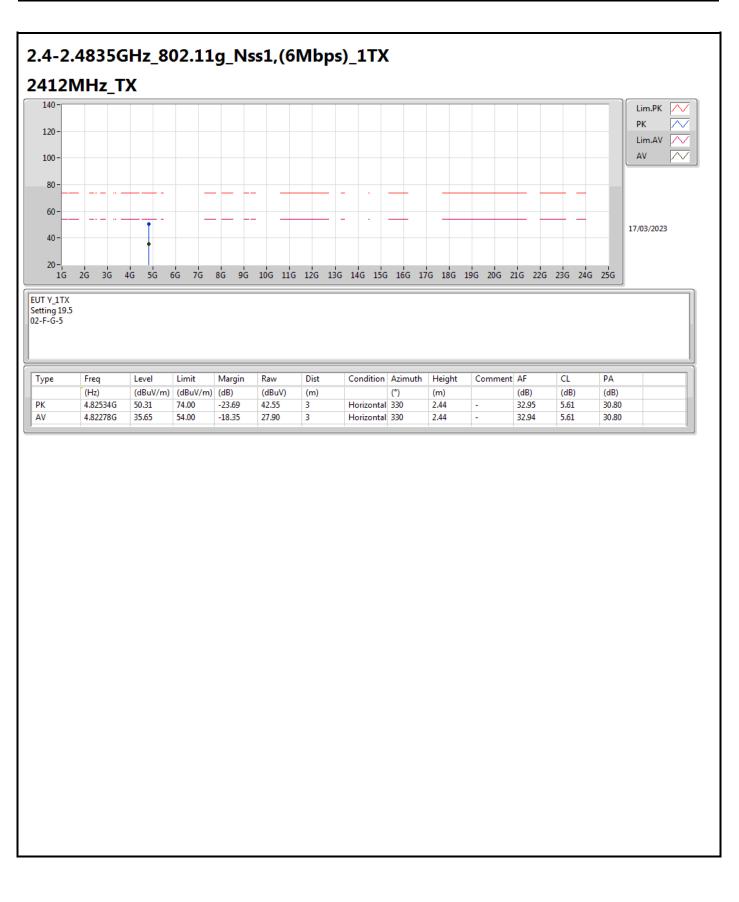


#### 2.4-2.4835GHz\_802.11g\_Nss1,(6Mbps)\_1TX 2412MHz\_TX 140-Lim.PK $\wedge$ РК $\sim$ 120- $\sim$ Lim.AV $\sim$ AV 100 -80-60-17/03/2023 40-20-2.462G 2.362G 2.37G 2.38G 2.4G 2.41G 2.42G 2.43G 2.44G 2.45G 2.39G EUT X\_1TX Setting 19.5 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (Hz) (m) (dB) (°) (m) PK 2.3898G 37.89 3.00 3.19 69.46 74.00 -4.54 3 Horizontal 306 28.38 AV 2.39G 53.01 54.00 -0.99 21.43 3 Horizontal 306 3.00 28.38 3.20 РК 2.4112G Horizontal 306 3.00 3.21 111.37 -Inf 79.76 3 28.40 Inf --AV 2.413G 68.50 Horizontal 306 3.00 3.21 100.11 Inf -Inf 3 \_ 28.40 -









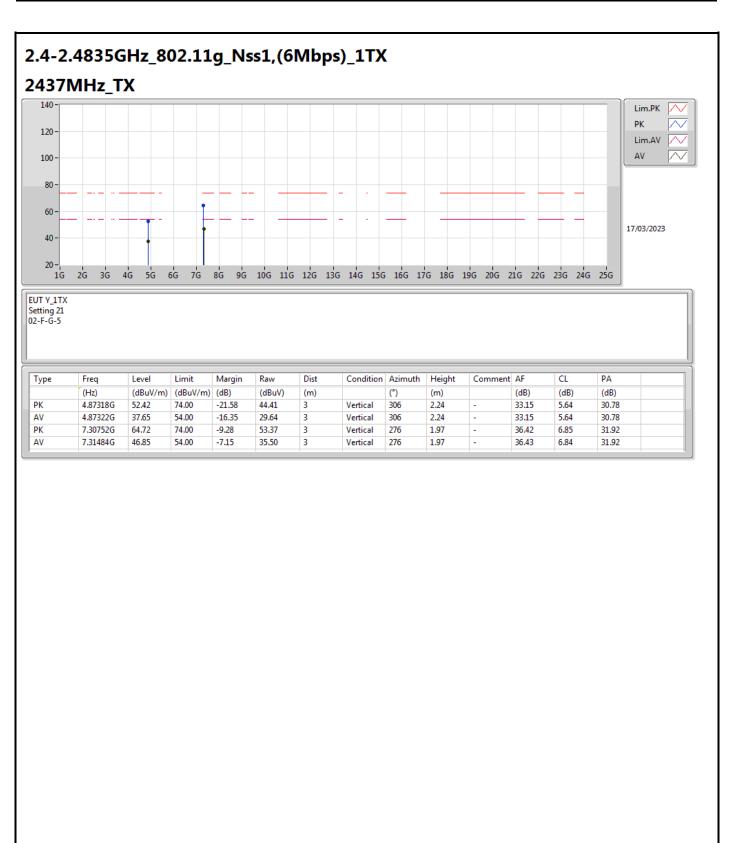


#### 2.4-2.4835GHz\_802.11g\_Nss1,(6Mbps)\_1TX 2437MHz\_TX 140 Lim.PK $\wedge$ РК $\sim$ 120- $\sim$ Lim.AV $\sim$ AV 100 -80-60 -17/03/2023 40 -20-2.4G 2.41G 2.42G 2.43G 2.44G 2.45G 2.46G 2.47G 2.48G 2.487G 2.387G EUT X\_1TX Setting 21 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (Hz) (m) (m) (dB) (°) РΚ 2.3878G 56.88 -17.12 25.31 Vertical 15 3.19 74.00 3 1.12 28.38 AV 2.3896G 45.23 54.00 -8.77 13.66 3 Vertical 15 1.12 28.38 3.19 PK 2.4354G 111.23 79.61 15 1.12 28.40 3.22 Inf -Inf 3 Vertical AV 2.4358G 99.55 -Inf 67.93 15 28.40 3.22 Inf 3 Vertical 1.12 РΚ 2.4835G 58.67 74.00 -15.33 26.90 3 Vertical 15 1.12 28.53 3.24 --AV 2.4835G 46.20 54.00 -7.80 14.43 3 Vertical 15 1.12 28.53 3.24

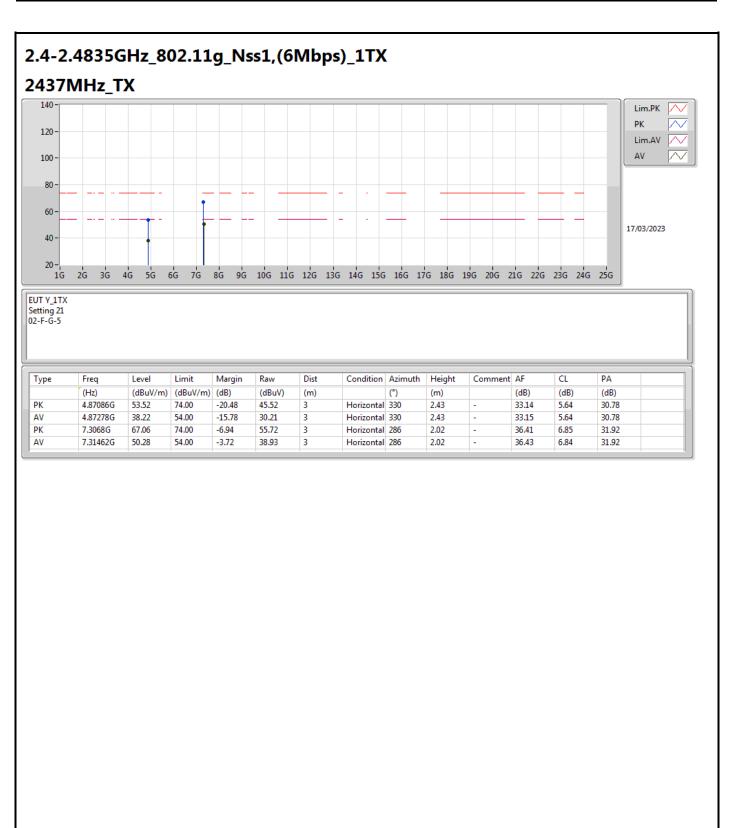


#### 2.4-2.4835GHz\_802.11g\_Nss1,(6Mbps)\_1TX 2437MHz\_TX 140 Lim.PK $\wedge$ РК $\sim$ 120- $\sim$ Lim.AV $\sim$ AV 100 -80-60 -17/03/2023 40-20-2.387G 2.4G 2.41G 2.42G 2.43G 2.44G 2.45G 2.46G 2.47G 2.48G 2.487G EUT X\_1TX Setting 21 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (Hz) (m) (dB) (°) (m) РΚ 2.3872G 57.83 74.00 -16.17 26.27 Horizontal 292 2.94 3.19 3 28.37 AV 2.39G 46.06 54.00 -7.94 14.48 3 Horizontal 292 2.94 28.38 3.20 PK 2.4354G 113.65 82.03 Horizontal 292 2.94 28.40 3.22 Inf -Inf 3 AV 2.436G 102.42 -Inf 70.80 Horizontal 292 2.94 3.22 Inf 3 28.40 РΚ 2.4842G 57.75 74.00 -16.25 25.97 3 Horizontal 292 2.94 28.54 3.24 --AV 2.4842G 45.87 54.00 -8.13 14.09 3 Horizontal 292 2.94 28.54 3.24





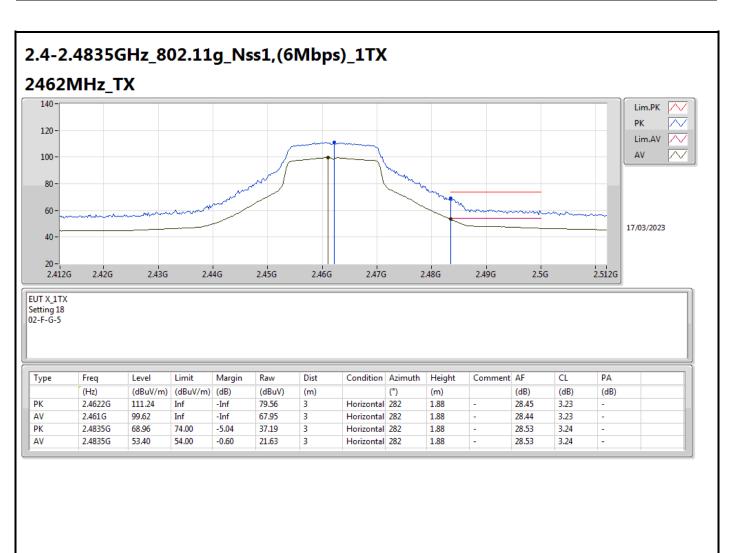




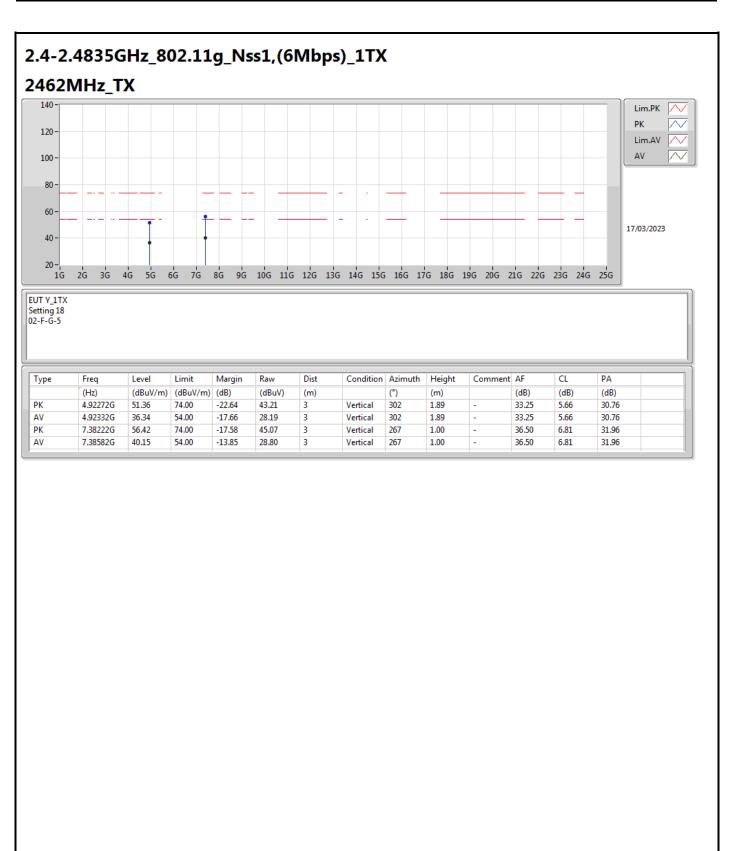


#### 2.4-2.4835GHz\_802.11g\_Nss1,(6Mbps)\_1TX 2462MHz\_TX 140 Lim.PK $\wedge$ РК $\sim$ 120- $\sim$ Lim.AV $\sim$ AV 100 -80-60-17/03/2023 40-20 2.512G 2.42G 2.43G 2.44G 2.45G 2.46G 2.47G 2.48G 2.49G 2.5G 2.412G EUT X\_1TX Setting 18 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (Hz) (m) (°) (m) (dB) PK 2.4608G 1.08 3.23 108.15 Inf -Inf 76.48 3 Vertical 6 28.44 AV 2.461G 96.50 Inf -Inf 64.83 3 Vertical 6 1.08 28.44 3.23 РК 2.4835G 66.49 -7.51 34.72 6 1.08 28.53 3.24 74.00 3 Vertical --AV 2.4835G 51.65 54.00 -2.35 19.88 3 6 3.24 Vertical 1.08 . 28.53 -

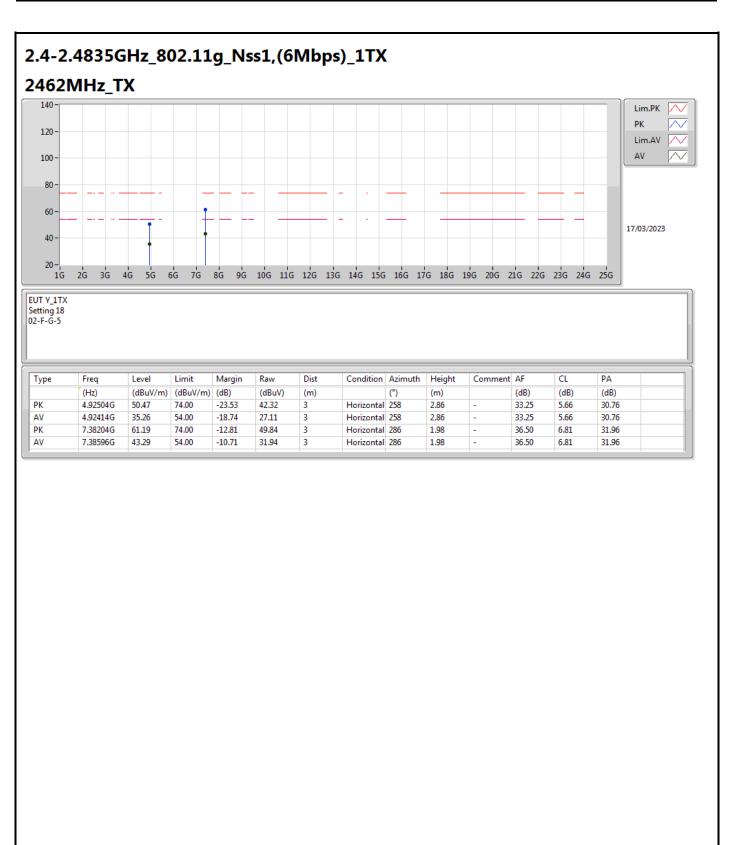












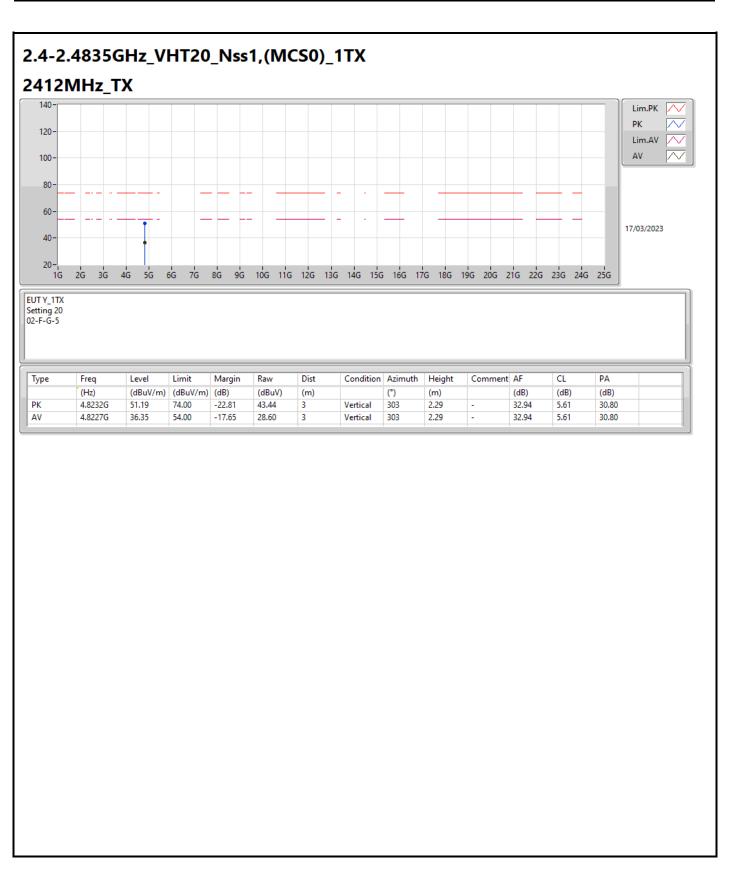


#### 2.4-2.4835GHz\_VHT20\_Nss1,(MCS0)\_1TX 2412MHz\_TX 140-Lim.PK РК $\sim$ 120- $\sim$ Lim.AV $\square$ AV 100· 80-60-17/03/2023 40-20-2.462G 2.362G 2.37G 2.38G 2.4G 2.41G 2.42G 2.43G 2.44G 2.45G 2.39G EUT X\_1TX Setting 20 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (Hz) (m) (°) (m) (dB) PK 2.39G 1.55 3.20 65.89 74.00 -8.11 34.31 3 Vertical 3 28.38 AV 2.39G 51.66 54.00 -2.34 20.08 3 Vertical 3 1.55 28.38 3.20 РК 2.4142G 108.35 76.74 3 1.55 28.40 3.21 -Inf 3 Inf Vertical --AV 2.413G 65.18 3 28.40 3.21 96.79 Inf -Inf 3 Vertical 1.55 . -

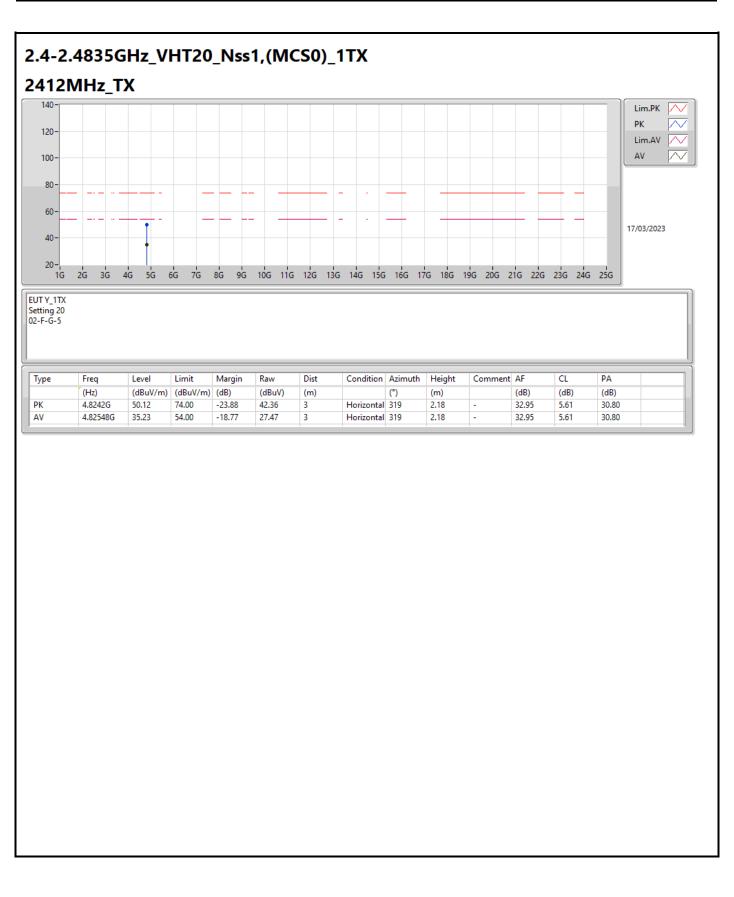


#### 2.4-2.4835GHz\_VHT20\_Nss1,(MCS0)\_1TX 2412MHz\_TX 140-Lim.PK $\wedge$ РК $\sim$ 120- $\sim$ Lim.AV $\sim$ AV 100-80-60-17/03/2023 40-20-2.462G 2.362G 2.37G 2.38G 2.4G 2.41G 2.42G 2.43G 2.44G 2.45G 2.39G EUT X\_1TX Setting 20 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (Hz) (m) (m) (dB) (°) PK 2.39G 3.20 67.99 74.00 -6.01 36.41 3 Horizontal 268 1.13 28.38 AV 2.39G 53.90 54.00 -0.10 22.32 3 Horizontal 268 1.13 28.38 3.20 РК 2.4138G 79.56 Horizontal 268 1.13 28.40 3.21 111.17 3 Inf -Inf --AV 2.413G 68.07 Horizontal 268 28.40 3.21 99.68 Inf -Inf 3 1.13 . -









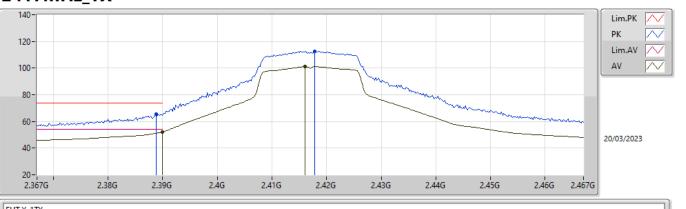


#### 2.4-2.4835GHz\_VHT20\_Nss1,(MCS0)\_1TX 2417MHz\_TX 140-Lim.PK $\wedge$ РК $\sim$ 120- $\sim$ Lim.AV $\square$ AV 100· 80-60-20/03/2023 40-20-2.4G 2.367G 2.38G 2.41G 2.42G 2.43G 2.44G 2.45G 2.46G 2.467G 2.39G EUT X\_1TX Setting 22 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (Hz) (m) (°) (m) (dB) PK 2.3894G 1.05 3.19 67.56 74.00 -6.44 35.99 3 Vertical 10 28.38 AV 2.39G 53.01 54.00 -0.99 21.43 3 Vertical 10 1.05 28.38 3.20 РК 2.4182G 113.23 10 1.05 28.40 3.21 81.62 3 Inf -Inf Vertical --AV 2.4184G 10 28.40 3.21 101.65 Inf -Inf 70.04 3 Vertical 1.05 . -



# 2.4-2.4835GHz\_VHT20\_Nss1,(MCS0)\_1TX





EUT X\_1TX Setting 22 02-F-G-5

Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
РК	2.3888G	65.75	74.00	-8.25	34.18	3	Horizontal	340	2.92	-	28.38	3.19	-	
AV	2.39G	52.19	54.00	-1.81	20.61	3	Horizontal	340	2.92	-	28.38	3.20	-	
РК	2.4178G	112.66	Inf	-Inf	81.05	3	Horizontal	340	2.92	-	28.40	3.21	-	
AV	2.416G	101.12	Inf	-Inf	69.51	3	Horizontal	340	2.92	-	28.40	3.21	-	

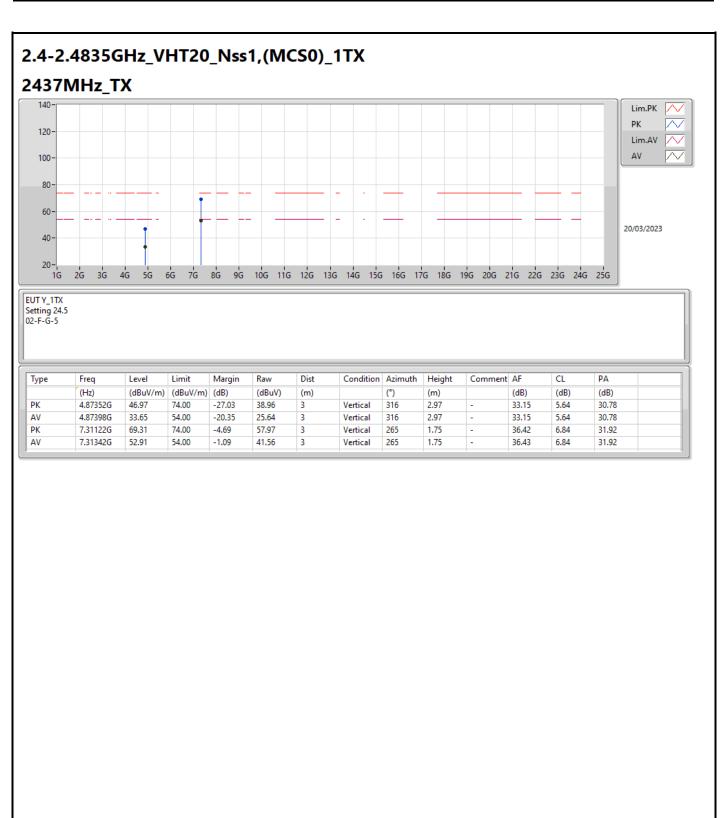


#### 2.4-2.4835GHz\_VHT20\_Nss1,(MCS0)\_1TX 2437MHz\_TX 140-Lim.PK $\wedge$ РК $\sim$ 120- $\sim$ Lim.AV $\sim$ AV 100· 80-60-17/03/2023 40-20-2.4G 2.41G 2.42G 2.43G 2.44G 2.45G 2.46G 2.47G 2.48G 2.387G 2.487G EUT X\_1TX Setting 24.5 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (Hz) (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (dB) (m) (m) (°) РΚ 31.38 2.3878G 62.95 Vertical 28.38 3.19 74.00 -11.05 3 14 1.12 AV 2.39G 50.08 54.00 -3.92 18.50 3 Vertical 14 1.12 28.38 3.20 PK 2.4362G 112.28 80.66 14 1.12 28.40 3.22 -Inf 3 Vertical Inf AV 2.436G 69.19 14 28.40 3.22 100.81 Inf -Inf 3 Vertical 1.12 РΚ 2.4866G 64.74 74.00 -9.26 32.95 3 Vertical 14 1.12 28.55 3.24 --AV 2.4835G 51.03 54.00 -2.97 19.26 3 Vertical 14 1.12 28.53 3.24

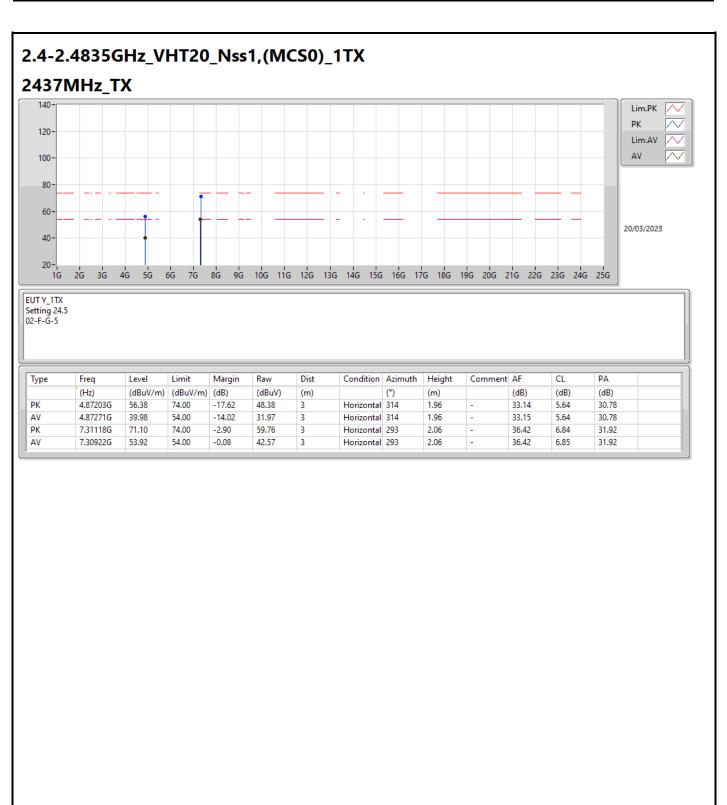


#### 2.4-2.4835GHz\_VHT20\_Nss1,(MCS0)\_1TX 2437MHz\_TX 140-Lim.PK $\wedge$ РК $\sim$ 120- $\sim$ Lim.AV $\sim$ AV 100· 80-60-17/03/2023 40-20-2.387G 2.4G 2.41G 2.42G 2.43G 2.44G 2.45G 2.46G 2.47G 2.48G 2.487G EUT X\_1TX Setting 24.5 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (Hz) (m) (m) (dB) (°) РΚ 2.39G 65.90 34.32 2.93 28.38 3.20 74.00 -8.10 3 Horizontal 299 AV 2.39G 51.61 54.00 -2.39 20.03 3 Horizontal 299 2.93 28.38 3.20 РК 2.4348G 115.79 84.17 Horizontal 299 2.93 28.40 3.22 -Inf 3 Inf AV 2.436G 104.04 72.42 Horizontal 299 28.40 3.22 Inf -Inf 3 2.93 PK 2.4835G 64.47 74.00 -9.53 32.70 3 Horizontal 299 2.93 28.53 3.24 --AV 2.4835G 50.67 54.00 -3.33 18.90 3 Horizontal 299 2.93 28.53 3.24





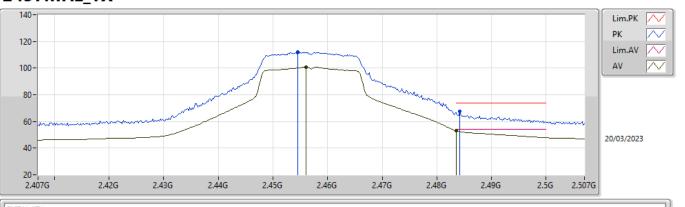






# 2.4-2.4835GHz\_VHT20\_Nss1,(MCS0)\_1TX

### 2457MHz\_TX



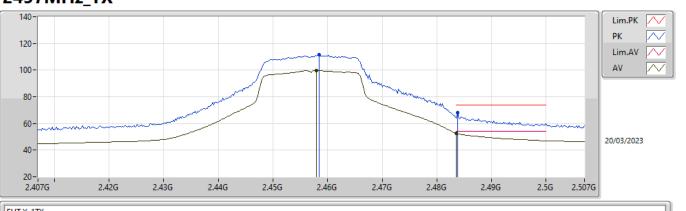
EUT X\_1TX Setting 19.5 02-F-G-5

Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
PK	2.4546G	111.92	Inf	-Inf	80.27	3	Vertical	24	1.19	-	28.42	3.23	-
AV	2.456G	100.64	Inf	-Inf	68.99	3	Vertical	24	1.19	-	28.42	3.23	-
PK	2.4842G	67.75	74.00	-6.25	35.97	3	Vertical	24	1.19	-	28.54	3.24	-
AV	2.4835G	52.86	54.00	-1.14	21.09	3	Vertical	24	1.19	-	28.53	3.24	-



# 2.4-2.4835GHz\_VHT20\_Nss1,(MCS0)\_1TX

### 2457MHz\_TX



EUT X\_1TX Setting 19.5 02-F-G-5

Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
PK	2.4584G	111.32	Inf	-Inf	79.66	3	Horizontal	279	2.79	-	28.43	3.23	-
AV	2.458G	99.78	Inf	-Inf	68.12	3	Horizontal	279	2.79	-	28.43	3.23	-
PK	2.4838G	68.21	74.00	-5.79	36.43	3	Horizontal	279	2.79	-	28.54	3.24	-
AV	2.4835G	52.68	54.00	-1.32	20.91	3	Horizontal	279	2.79	-	28.53	3.24	-

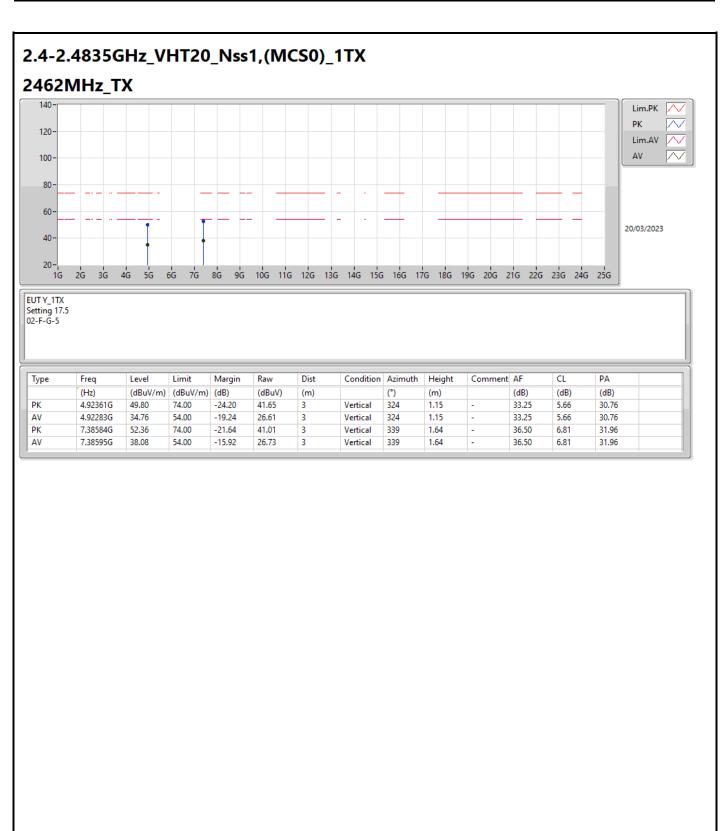


#### 2.4-2.4835GHz\_VHT20\_Nss1,(MCS0)\_1TX 2462MHz\_TX 140-Lim.PK РК $\sim$ 120- $\sim$ Lim.AV $\square$ AV 100-80-60-17/03/2023 40-20-2.512G 2.412G 2.42G 2.43G 2.44G 2.45G 2.46G 2.47G 2.48G 2.49G 2.5G EUT X\_1TX Setting 17.5 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (Hz) (m) (°) (m) (dB) PK 2.461G 107.35 1.07 28.44 3.23 Inf -Inf 75.68 3 Vertical 13 AV 2.461G 95.68 Inf -Inf 64.01 3 Vertical 13 1.07 28.44 3.23 РК 2.4836G 66.32 -7.68 34.55 13 1.07 28.53 3.24 74.00 3 Vertical --AV 2.4835G 52.41 54.00 -1.59 20.64 13 28.53 3.24 3 Vertical 1.07 . -

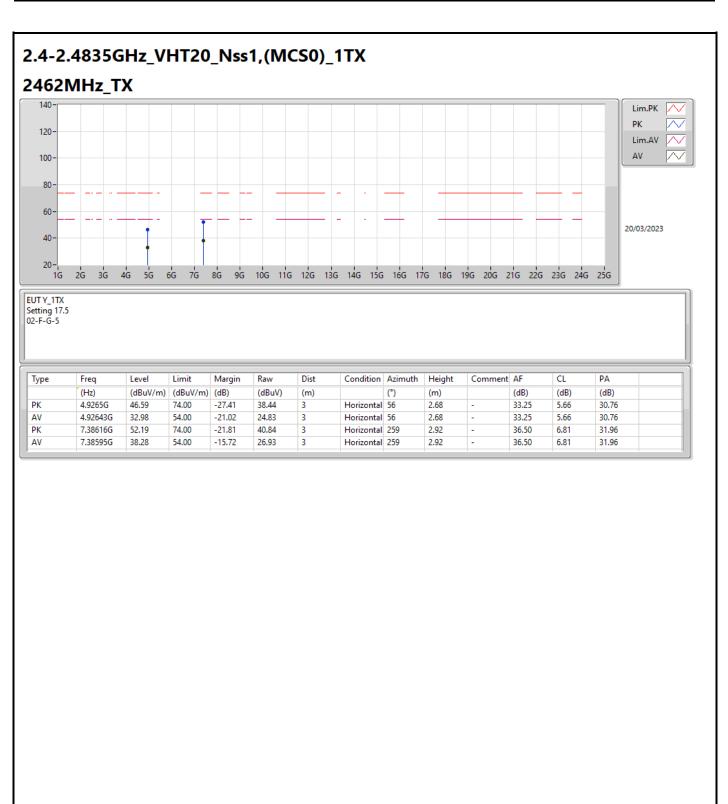


#### 2.4-2.4835GHz\_VHT20\_Nss1,(MCS0)\_1TX 2462MHz\_TX 140-Lim.PK $\wedge$ РК $\sim$ 120- $\sim$ Lim.AV $\square$ AV 100-80-60-17/03/2023 40-20-2.512G 2.412G 2.42G 2.43G 2.44G 2.45G 2.46G 2.47G 2.48G 2.49G 2.5G EUT X\_1TX Setting 17.5 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (Hz) (m) (m) (dB) (°) PK 2.4614G 28.45 3.23 110.37 Inf -Inf 78.69 3 Horizontal 277 1.88 AV 2.461G 98.76 Inf -Inf 67.09 3 Horizontal 277 1.88 28.44 3.23 РК 2.4836G -7.10 35.13 Horizontal 277 1.88 28.53 3.24 66.90 74.00 3 --AV 2.4835G 53.50 54.00 -0.50 21.73 Horizontal 277 28.53 3.24 3 1.88 . -









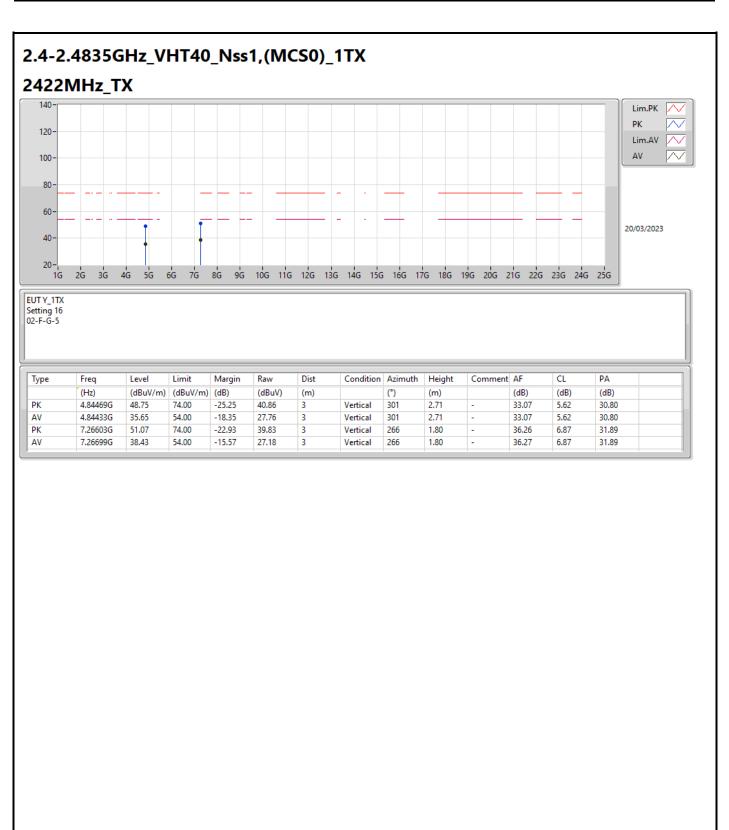


#### 2.4-2.4835GHz\_VHT40\_Nss1,(MCS0)\_1TX 2422MHz\_TX 140-Lim.PK $\wedge$ РК $\sim$ 120- $\sim$ Lim.AV $\sim$ AV 100· 80-60-17/03/2023 40-20-2.522G 2.38G 2.4G 2.5G 2.322G 2.34G 2.36G 2.44G 2.46G 2.48G 2.42G EUT X\_1TX Setting 16 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (dB) (Hz) (m) (°) (m) РΚ 2.388G 62.59 31.02 Vertical 1.59 28.38 3.19 74.00 -11.41 3 6 AV 2.39G 51.33 54.00 -2.67 19.75 3 Vertical 6 1.59 28.38 3.20 РК 2.42G 102.35 70.74 6 1.59 28.40 3.21 -Inf 3 Vertical Inf AV 2.4192G 92.96 61.35 28.40 3.21 Inf -Inf 3 Vertical 6 1.59 PK 2.4908G 56.84 74.00 -17.16 25.03 3 Vertical 6 1.59 28.56 3.25 --AV 2.4936G 46.27 54.00 -7.73 14.45 3 Vertical 6 1.59 28.57 3.25

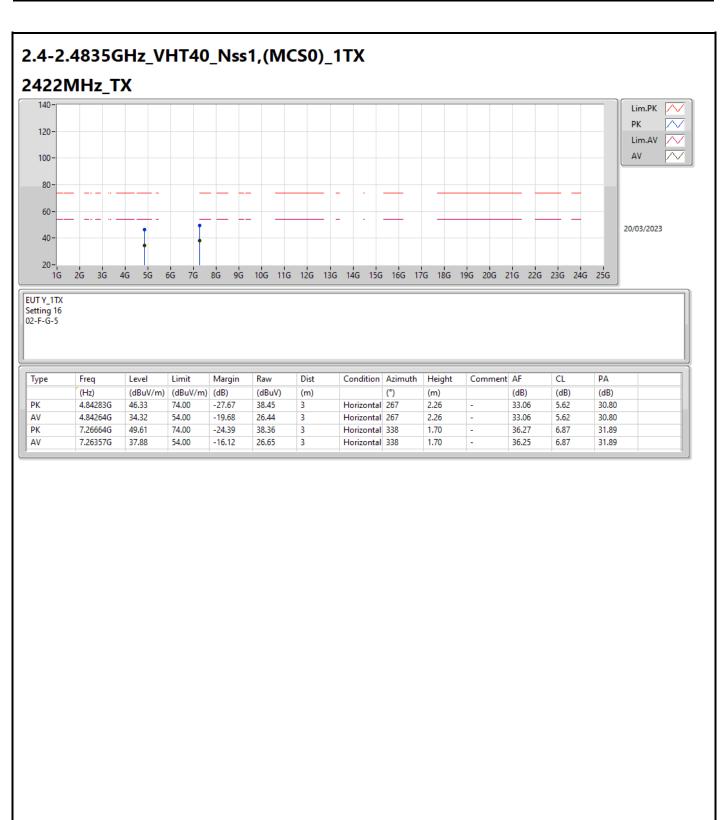


#### 2.4-2.4835GHz\_VHT40\_Nss1,(MCS0)\_1TX 2422MHz\_TX 140-Lim.PK $\wedge$ РК $\sim$ 120- $\sim$ Lim.AV $\sim$ AV 100· 80-60-17/03/2023 40-20-2.522G 2.38G 2.4G 2.5G 2.322G 2.34G 2.36G 2.42G 2.44G 2.46G 2.48G EUT X\_1TX Setting 16 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (dB) (Hz) (m) (m) (°) РΚ 2.39G 32.78 Horizontal 308 2.92 28.38 3.20 64.36 74.00 -9.64 3 AV 2.39G 53.55 54.00 -0.45 21.97 3 Horizontal 308 2.92 28.38 3.20 РК 2.42G 106.11 74.50 Horizontal 308 2.92 28.40 3.21 -Inf 3 Inf AV 2.42G 64.95 Horizontal 308 28.40 3.21 96.56 Inf -Inf 3 2.92 PK 2.4884G 57.89 74.00 -16.11 26.10 3 Horizontal 308 2.92 28.55 3.24 --AV 2.484G 46.42 54.00 -7.58 14.64 3 Horizontal 308 2.92 28.54 3.24









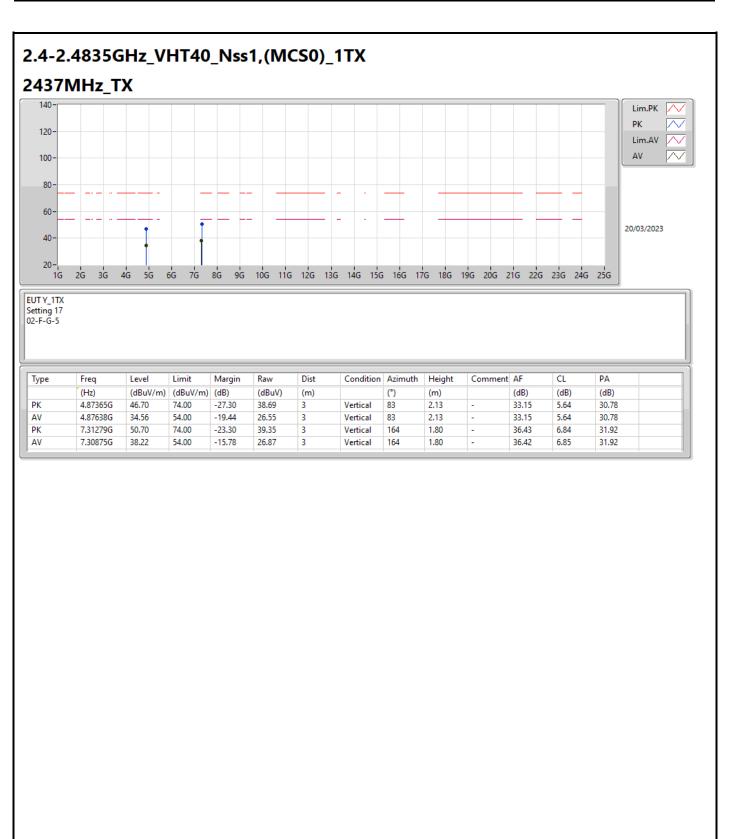


#### 2.4-2.4835GHz\_VHT40\_Nss1,(MCS0)\_1TX 2437MHz\_TX 140-Lim.PK $\wedge$ РК $\sim$ 120- $\sim$ Lim.AV $\sim$ AV 100· 80-60-17/03/2023 40-20-2.337G 2.38G 2.4G 2.52G 2.36G 2.42G 2.44G 2.46G 2.48G 2.5G 2.537G EUT X\_1TX Setting 17 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (dB) (Hz) (m) (m) (°) РΚ 2.3894G 27.79 Vertical 1.09 28.38 3.19 59.36 74.00 -14.64 3 14 AV 2.3898G 48.10 54.00 -5.90 16.53 3 Vertical 14 1.09 28.38 3.19 РК 2.435G 104.45 72.83 14 1.09 28.40 3.22 -Inf 3 Vertical Inf AV 2.4338G 95.01 63.39 14 28.40 3.22 Inf -Inf 3 Vertical 1.09 PK 2.4858G 66.07 74.00 -7.93 34.29 3 Vertical 14 1.09 28.54 3.24 --AV 2.4835G 53.24 54.00 -0.76 21.47 3 Vertical 14 1.09 28.53 3.24

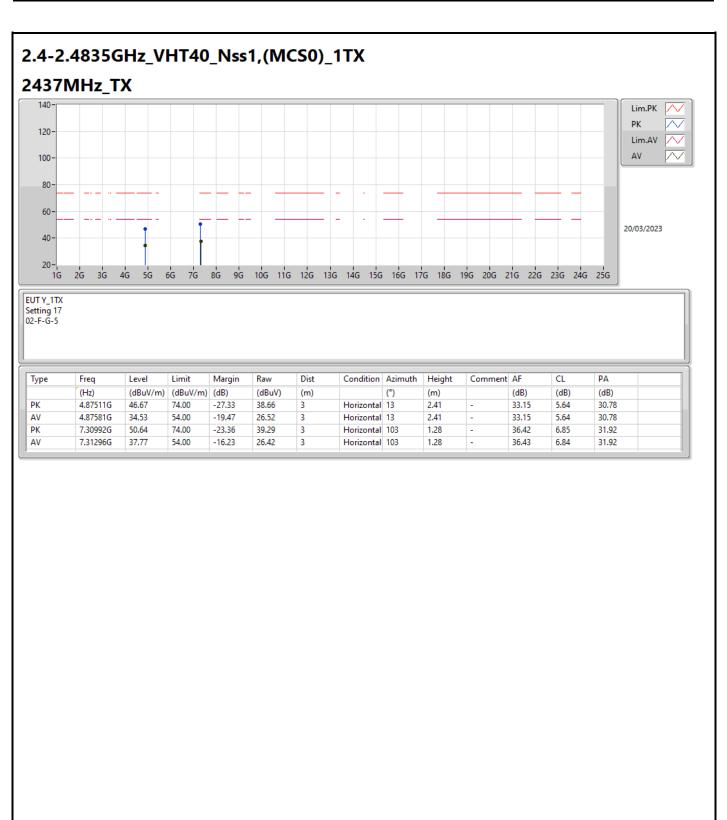


#### 2.4-2.4835GHz\_VHT40\_Nss1,(MCS0)\_1TX 2437MHz\_TX 140-Lim.PK $\wedge$ РК $\sim$ 120- $\sim$ Lim.AV $\sim$ AV 100· 80-60-17/03/2023 40-20-2.337G 2.38G 2.4G 2.36G 2.42G 2.44G 2.46G 2.48G 2.5G 2.52G 2.537G EUT X\_1TX Setting 17 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (dB) (Hz) (m) (m) (°) РΚ 2.389G -11.51 30.92 Horizontal 303 2.93 28.38 3.19 62.49 74.00 3 AV 2.3898G 49.29 54.00 -4.71 17.72 3 Horizontal 303 2.93 28.38 3.19 РК 2.4358G 108.68 77.06 Horizontal 303 2.93 28.40 3.22 -Inf 3 Inf AV 2.4346G 66.77 Horizontal 303 28.40 3.22 98.39 Inf -Inf 3 2.93 PK 2.4846G 65.23 74.00 -8.77 33.45 3 Horizontal 303 2.93 28.54 3.24 --AV 2.4835G 52.58 54.00 -1.42 20.81 3 Horizontal 303 2.93 28.53 3.24









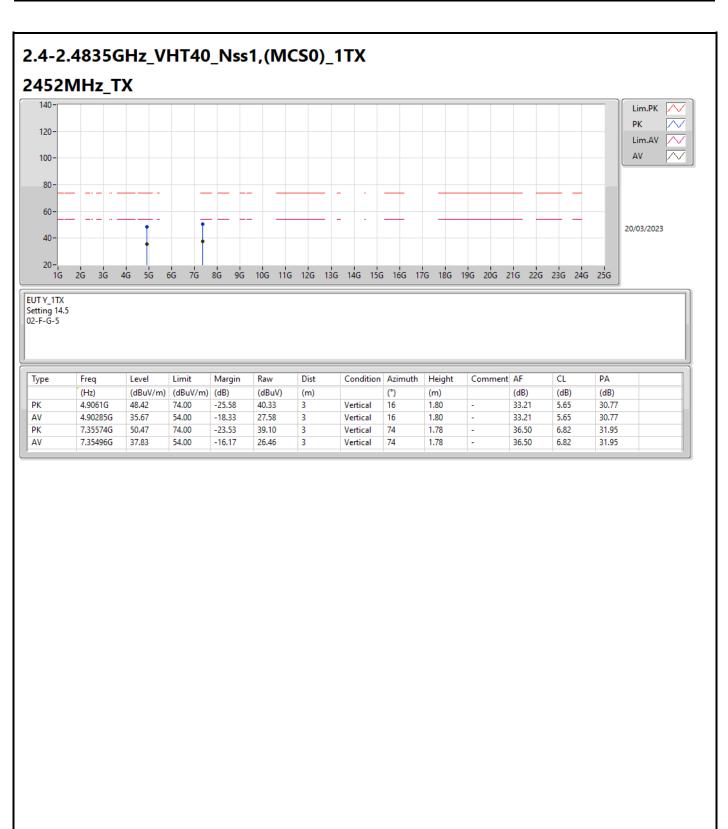


#### 2.4-2.4835GHz\_VHT40\_Nss1,(MCS0)\_1TX 2452MHz\_TX 140-Lim.PK $\wedge$ РК $\sim$ 120- $\sim$ Lim.AV $\sim$ AV 100· 80-60-17/03/2023 40-20-2.4G 2.352G 2.38G 2.42G 2.44G 2.46G 2.48G 2.5G 2.52G 2.54G 2.552G EUT X\_1TX Setting 14.5 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (dB) (Hz) (m) (°) (m) РΚ 2.3864G 55.80 -18.20 24.24 Vertical 1.45 28.37 3.19 74.00 3 -0 AV 2.3776G 45.02 54.00 -8.98 13.47 3 Vertical -0 1.45 28.36 3.19 PK 2.4556G 101.76 70.11 -0 1.45 28.42 3.23 -Inf 3 Vertical Inf AV 2.4544G 61.00 -0 1.45 28.42 3.23 92.65 Inf -Inf 3 Vertical PK 2.4835G 63.76 74.00 -10.24 31.99 3 Vertical -0 1.45 28.53 3.24 --AV 2.4848G 52.06 54.00 -1.94 20.28 3 Vertical -0 1.45 28.54 3.24

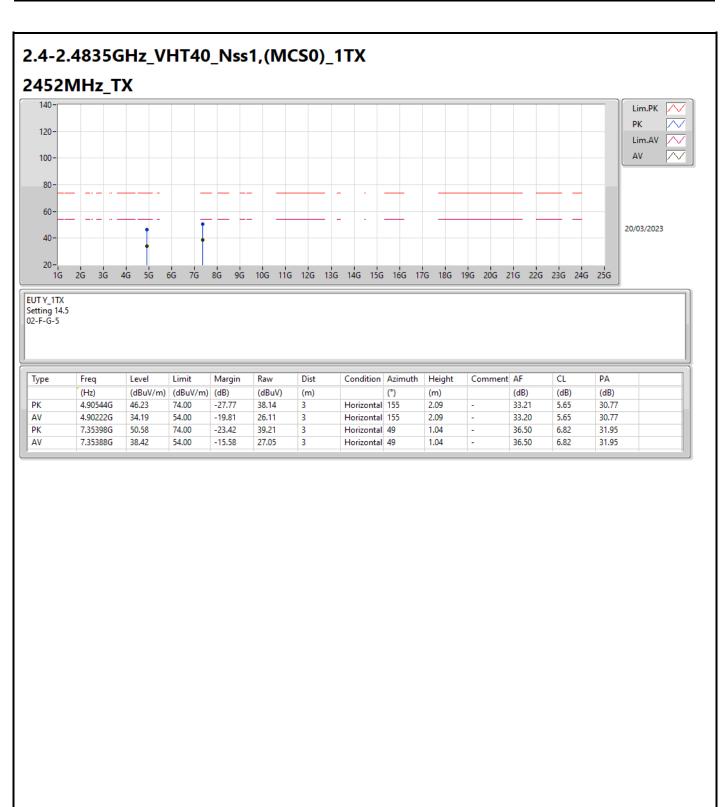


#### 2.4-2.4835GHz\_VHT40\_Nss1,(MCS0)\_1TX 2452MHz\_TX 140-Lim.PK $\wedge$ РК $\sim$ 120- $\sim$ Lim.AV $\sim$ AV 100· 80-60-17/03/2023 40-20-2.4G 2.38G 2.42G 2.44G 2.48G 2.5G 2.52G 2.54G 2.552G 2.352G 2.46G EUT X\_1TX Setting 14.5 02-F-G-5 Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (dB) (Hz) (m) (m) (°) РΚ 2.3524G 56.00 -18.00 24.52 Horizontal 283 28.30 3.18 74.00 3 1.87 AV 2.376G 45.10 54.00 -8.90 13.56 3 Horizontal 283 1.87 28.35 3.19 PK 2.4564G 105.13 73.47 Horizontal 283 1.87 28.43 3.23 -Inf 3 Inf AV 2.4572G 95.55 63.89 Horizontal 283 1.87 28.43 3.23 Inf -Inf 3 PK 2.4872G 64.37 74.00 -9.63 32.58 3 Horizontal 283 1.87 28.55 3.24 --AV 2.4835G 53.25 54.00 -0.75 21.48 3 Horizontal 283 1.87 28.53 3.24











## Radiated Emission Co-location

# Appendix G

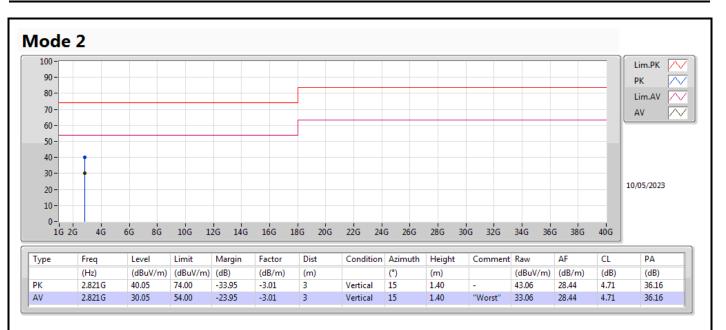
#### Summary

Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 2	Pass	AV	2.821G	30.05	54.00	-23.95	Vertical



#### **Radiated Emission Co-location**

### Appendix G





#### **Radiated Emission Co-location**

### Appendix G

