TEST REPORT

Application No.:	SEWM2311000447RG
Applicant:	vivo Mobile Communication Co., Ltd.
Address of Applicant:	No.1, vivo Road, Chang'an, Dongguan, Guangdong, China
Manufacturer:	vivo Mobile Communication Co., Ltd.
Address of Manufacturer:	No.1, vivo Road, Chang'an, Dongguan, Guangdong, China
EUT Description:	Mobile Phone
Model No.:	V2318
Trade Mark:	vivo
FCC ID:	2AUCY-V2318
Standards:	FCC 47 CFR Part 2, Subpart J FCC 47 CFR Part 15, Subpart C
Date of Receipt:	2023/11/07
Date of Test:	2023/11/09 to 2023/12/06
Date of Issue:	2023/12/06
Test Result :	**PASS ***

* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Authorized Signature:

Well Wei
Wireless Laboratory Manager

South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone 215000 t (86-512) 62992980 www.sgsgroup.com.cn
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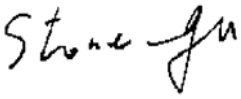
1 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2023/12/06		Original

Prepared By		 **(Ives Cheng) / Test Engineer**
Checked By		 **(Stone Gu) / Reviewer**

2 Test Summary

Test Item	FCC Rule No.	Test Method	Test Result	Result
Antenna Requirement	15.203/15.247(b)	--	Clause 4.1	PASS
AC Power Line Conducted Emission	15.207	ANSI C63.10-2013 Section 6.2	Clause 4.2	PASS
Duty Cycle	--	ANSI C63.10-2013 Section 11.6	Clause 4.3	For Report Purpose
Conducted Output Power	15.247 (b)(3)	ANSI C63.10-2013 Section 11.9.1.3	Clause 4.4	PASS
DTS (6 dB) Bandwidth & 99% Occupied Bandwidth	15.247 (a)(2)	ANSI C63.10-2013 Section 11.8 Option 2 / 6.9.3	Clause 4.5	PASS
Power Spectral Density	15.247 (e)	ANSI C63.10-2013 Section 11.10.2	Clause 4.6	PASS
Band-edge for RF Conducted Emissions	15.247(d)	ANSI C63.10-2013 Section 11.11	Clause 4.7	PASS
RF Conducted Spurious Emissions	15.247(d)	ANSI C63.10-2013 Section 11.11	Clause 4.8	PASS
Radiated Spurious Emissions	15.247(d);15.205/15.209	ANSI C63.10-2013 Section 11.12	Clause 4.9	PASS
Restricted bands around fundamental frequency (Radiated Emission)	15.247(d);15.205/15.209	ANSI C63.10-2013 Section 11.12	Clause 4.10	PASS

Contents

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3 General Information

3.1 Details of Client

Applicant:	vivo Mobile Communication Co., Ltd.
Address of Applicant:	No.1, vivo Road, Chang'an, Dongguan, Guangdong, China
Manufacturer:	vivo Mobile Communication Co., Ltd.
Address of Manufacturer:	No.1, vivo Road, Chang'an, Dongguan, Guangdong, China

3.2 Test Location

Company:	SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd.
Address:	South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone
Post code:	215000
Test engineer:	Ives Cheng, Tizzy Song

3.3 Test Facility

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

- **A2LA (Certificate No. 6336.01)**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 6336.01.

- **Innovation, Science and Economic Development Canada**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0120.

IC#: 27594.

- **FCC –Designation Number: CN1312**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized as an accredited testing laboratory.

Designation Number: CN1312.

Test Firm Registration Number: 717327

3.4 General Description of EUT

EUT Description:	Mobile Phone		
Model No.:	V2318		
Trade Mark:	vivo		
Hardware Version:	MP_0.1		
Software Version:	PD2323IF_EX_A_14.0.2.21.W30		
Power Supply:	Lithium Battery (3.91V)		
IMEI:	RF Conducted	IMEI1:869975079985936 IMEI2:869975079985928	
	RSE	IMEI1:869975079987957 IMEI2:869975079987940	
Operation Frequency:	802.11b/g/n(HT20)/VHT20/ax(HE20):	2412MHz to 2462MHz	
	802.11n(HT40)/VHT40/ax(HE40):	2422MHz to 2452MHz	
Modulation Type:	802.11b:	DSSS (DBPSK, DQPSK, CCK)	
	802.11g/n:	OFDM (BPSK, QPSK, 16QAM, 64QAM)	
	802.11VHT:	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)	
	802.11ax:	OFDM/OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)	
Number of Channels:	802.11b/g/n(HT20)/VHT20/ax(HE20): 11 802.11n(HT40)/VHT40/ax(HE40): 7		
Channel Spacing:	5MHz		
Smart System:	☒ SISO	802.11b/g/n/VHT/ax	
	☒ MIMO	802.11b/g/n/VHT/ax: 2Tx & 2Rx	
	☒ Diversity	802.11b/g: 2Tx & 2Rx	
Antenna Type:	PIFA Antenna		
Antenna Gain:	-2.3dBi (Ant22); 0.44dBi (Ant25);		
	Note: The antenna gain are derived from the gain information report provided by the manufacturer.		
RF Cable:	1.0dB		
Remark: As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.			

Operation Frequency of each channel (802.11b/g/n HT20 / VHT20 /ax HE20)							
Channel	**Frequency**	**Channel**	**Frequency**	**Channel**	**Frequency**	**Channel**	**Frequency**
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		
Operation Frequency of each channel (802.11n HT40 / VHT40 /ax HE40)							
Channel	**Frequency**	**Channel**	**Frequency**	**Channel**	**Frequency**	**Channel**	**Frequency**
3	2422MHz	6	2437MHz	9	2452MHz		
4	2427MHz	7	2442MHz				
5	2432MHz	8	2447MHz				

Remark:
802.11ax support OFDMA full RU tone and partial RU tone, both full RU and partial RU-left (for low CH) and partial RU-right (for high CH) test output power, the full RU power > partial RU, therefore the full RU perform full test to cover partial RU except for PSD/Duty cycle/BE.

3.5 Test Environment and Mode

Environment Parameter	101.0 kPa Selected Values During Tests	
Relative Humidity	44-46 % RH Ambient	
Value	Temperature(℃)	Voltage(V)
NTNV	22~23	3.91
Remark: NV: Normal Voltage NT: Normal Temperature		

3.6 Description of Support Units

The EUT has been tested as an independent unit.

3.7 Worst-case configuration and mode

Low data rate was used to test on antenna port conducted tests and radiated spurious emissions since it has the highest maximum power. Following are the worst-case data rates set for test:

Modulation Type	SISO - Data Rate	CDD/MIMO - Data Rate
802.11b	1 Mbps	2 Mbps
802.11g	6 Mbps	12 Mbps
802.11n (HT 20)	MCS0 (6.5 Mbps)	MCS0 (13 Mbps)
802.11n (HT 40)	MCS0 (13.5 Mbps)	MCS0 (27 Mbps)
802.11 (VHT 20)	MCS0 (6.5 Mbps)	MCS0 (13 Mbps)
802.11 (VHT 40)	MCS0 (13.5 Mbps)	MCS0 (27 Mbps)
802.11ax (HE 20)	MCS0 (8 Mbps)	MCS0 (16 Mbps)
802.11ax (HE 40)	MCS0 (16 Mbps)	MCS0 (32 Mbps)

4 Test results and Measurement Data

4.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203 /247(b)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(b) (4) requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	
The antenna is PIFA Antenna and no consideration of replacement. The best case gain of the antenna is -2.3dBi (Ant22); 0.44dBi (Ant25);* **Note:* *The antenna gain are derived from the gain information report provided by the manufacturer.* *Remark:* *As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.*	

Cyclic Delay Diversity (CDD) System:

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

If all antennas have the same gain, G_{ANT}, Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

- For power spectral density (PSD) measurements on all devices,
  Array Gain = 10 log(N_{ANT}/N_{SS} =1) dB.
- For power measurements on IEEE 802.11 devices:
  Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

For power, the directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

The Power and PSD limit should be modified if the directional gain of eut is over 6dbi.

The EUT supports CDD System.

Unequal antenna gain:

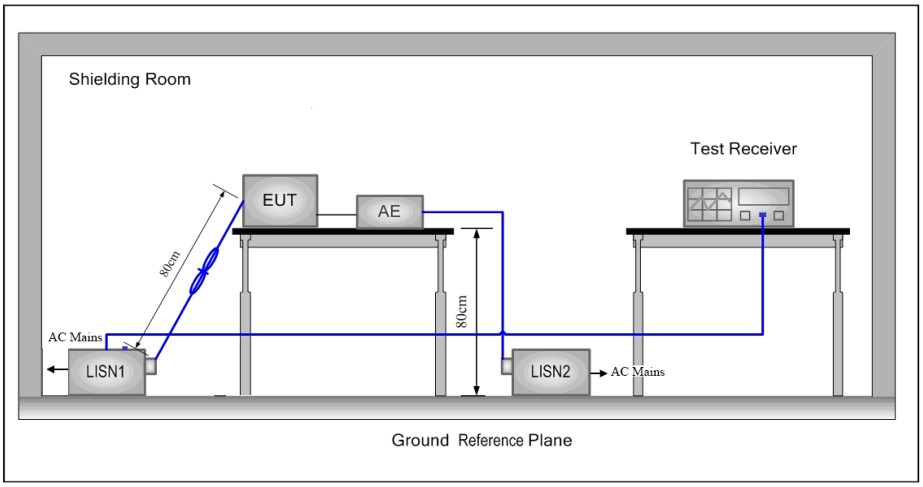
ANT Gain22 (dBi)	ANT Gain25 (dBi)	Power DG (dBi)	PSD DG (dBi)	Power Limit Reduction(dB)	PSD Limit Reduction(dB)
-2.3	0.44	0.44	2.19	0	0

Power Limit Reduction = Directional gain – 6dBi, (Directional gain < 6dBi) =0

PSD Limit Reduction = Directional gain – 6dBi, (Directional gain < 6dBi) =0

4.2 AC Power Line Conducted Emissions

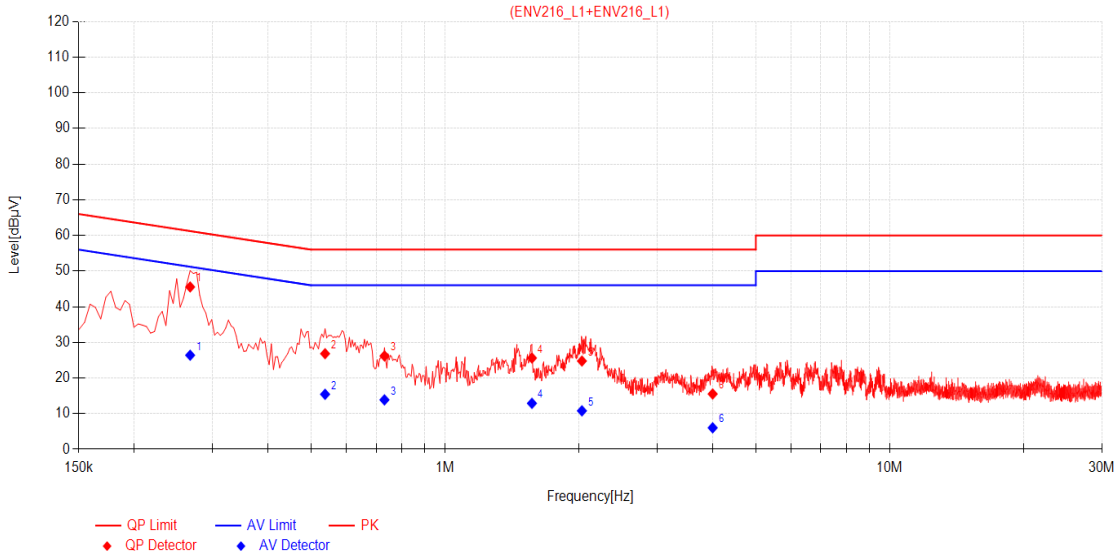
Test Requirement:	47 CFR Part 15C Section 15.207		
Test Method:	ANSI C63.10-2013 Section 6.2		
Test Frequency Range:	150kHz to 30MHz		
Receiver Setup:	RBW = 9kHz, VBW = 30kHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
	* Decreases with the logarithm of the frequency.		
Test Procedure:	1) The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10-2013 on conducted measurement.		

Test Setup:	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates at lowest, middle and highest channel. Charge + Transmitting mode.
Final Test Mode:	Refer to section 3.7 for details. Only the worst case is recorded in the report.
Instruments Used:	Refer to section 6 for details.
Test Results:	Pass

Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Phase:	Line

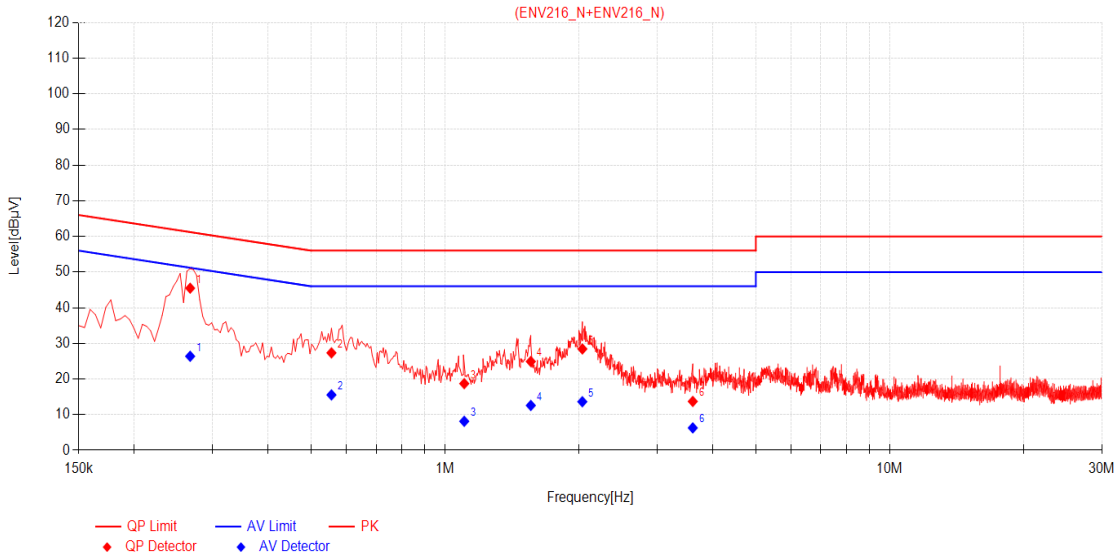


Data List

NO.	Frequency [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.2670	11.64	33.90	45.54	61.21	15.67	14.75	26.39	51.21	24.82	PASS
2	0.5370	11.61	15.21	26.82	56.00	29.18	3.82	15.43	46.00	30.57	PASS
3	0.7305	11.68	14.51	26.19	56.00	29.81	2.19	13.87	46.00	32.13	PASS
4	1.5675	11.73	13.88	25.61	56.00	30.39	1.17	12.90	46.00	33.10	PASS
5	2.0310	11.73	13.03	24.76	56.00	31.24	-0.94	10.79	46.00	35.21	PASS
6	3.9975	11.77	3.76	15.53	56.00	40.47	-5.74	6.03	46.00	39.97	PASS

Remark:
1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Value =Reading[dBµV] + Factor(Lisn factor[dB] + cable loss[dB]).
3. Margin = Limit[dBµV] – Value[dBµV]

Phase:	Neutral



Data List

NO.	Frequency [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.2670	11.64	33.83	45.47	61.21	15.74	14.74	26.38	51.21	24.83	PASS
2	0.5550	11.62	15.71	27.33	56.00	28.67	3.93	15.55	46.00	30.45	PASS
3	1.1040	11.73	6.99	18.72	56.00	37.28	-3.60	8.13	46.00	37.87	PASS
4	1.5585	11.73	13.18	24.91	56.00	31.09	0.85	12.58	46.00	33.42	PASS
5	2.0355	11.73	16.70	28.43	56.00	27.57	1.90	13.63	46.00	32.37	PASS
6	3.6060	11.76	1.95	13.71	56.00	42.29	-5.48	6.28	46.00	39.72	PASS

Remark:
1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Value =Reading[dBµV] + Factor(Lisn factor[dB] + cable loss[dB]).
3. Margin = Limit[dBµV] – Value[dBµV]

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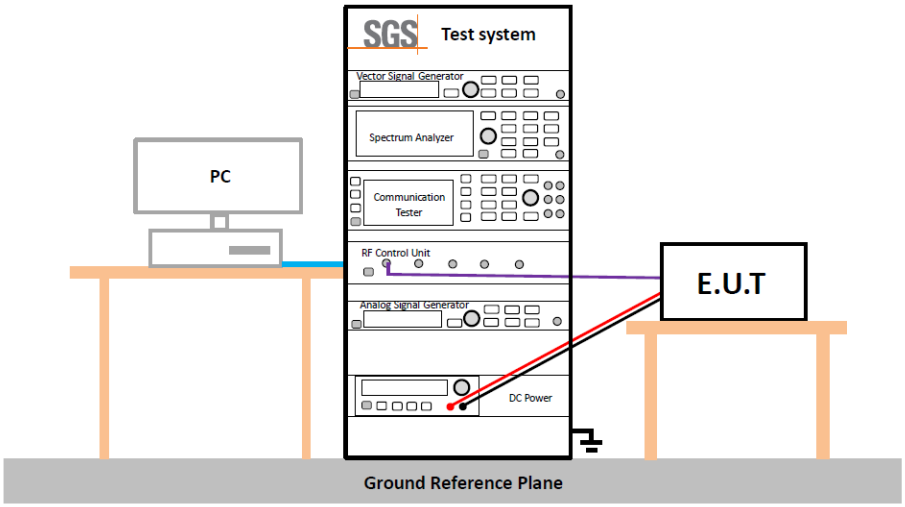
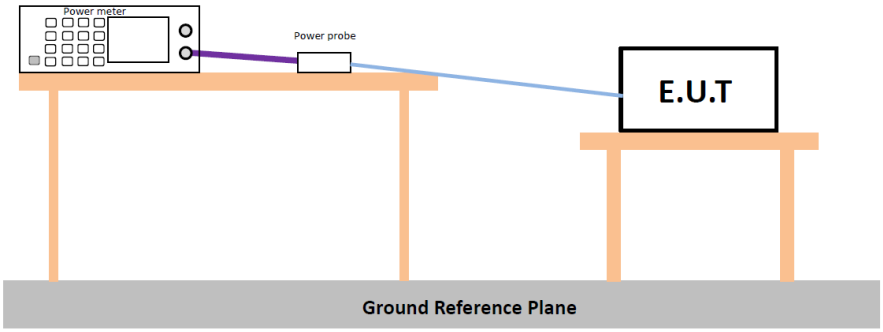
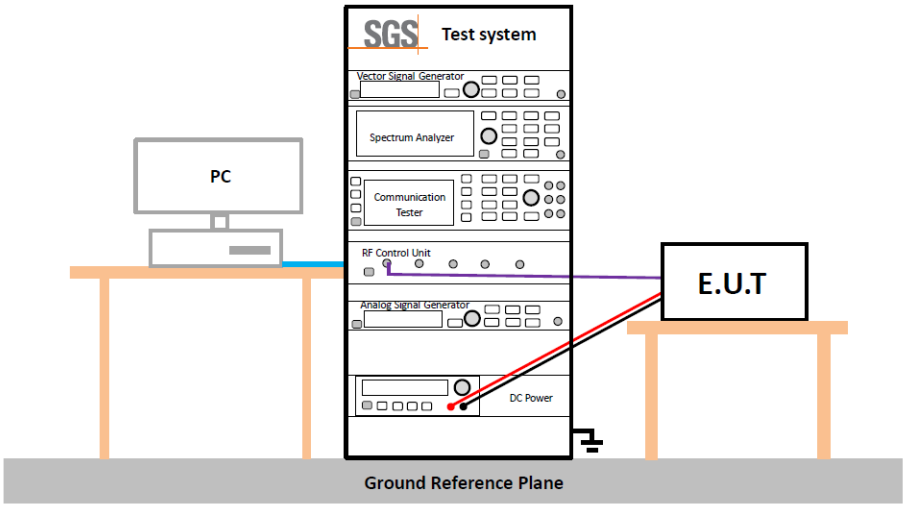
4.3 Duty Cycle

Test Requirement:	ANSI C63.10-2013 Section 11.6
Test Method:	ANSI C63.10-2013 Section 11.6
Test Setup:	
Instruments Used:	Refer to section 6 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Refer to section 3.7 for details.
Limit:	No restriction limits
Test Results:	For Report Purpose
The detailed test data see: **Appendix**	

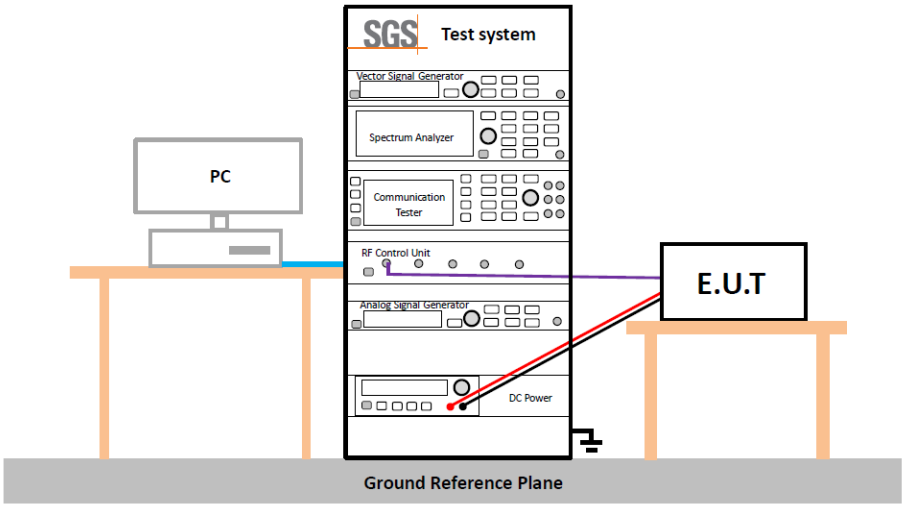
4.4 Conducted Output Power

Test Requirement:	47 CFR Part 15C Section 15.247 (b)(3)
Test Method:	ANSI C63.10-2013 Section 11.9.1.3
Test Setup:	 * Test with power meter (Detector function: Peak)
Test Instruments:	Refer to section 6 for details.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Refer to section 3.7 for details.
Limit:	30dBm
Test Results:	Pass
The detailed test data see: **Appendix**	

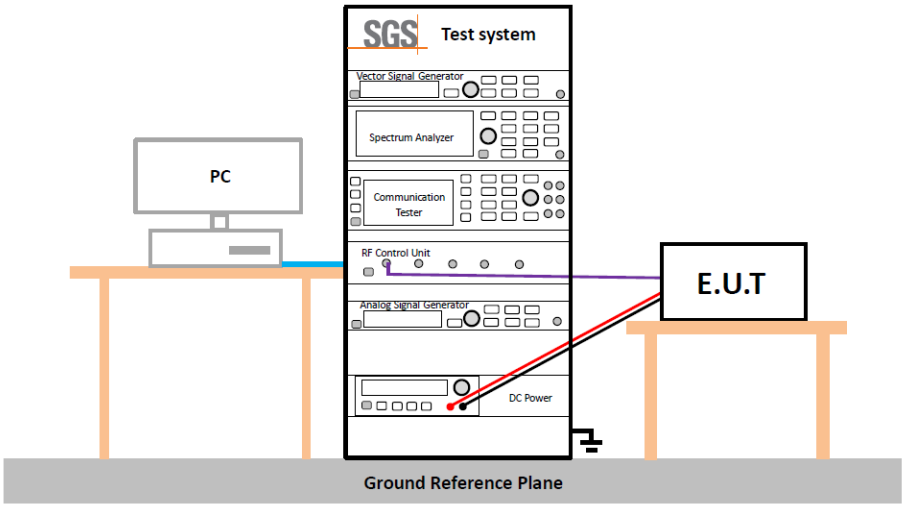
4.5 DTS (6 dB) Bandwidth & 99% Occupied Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(2)
Test Method:	ANSI C63.10-2013 Section 11.8 Option 2 / 6.9.3
Test Setup:	
Instruments Used:	Refer to section 6 for details.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Refer to section 3.7 for details.
Limit:	≥ 500 kHz for DTS Bandwidth
Test Results:	Pass
The detailed test data see: **Appendix**	

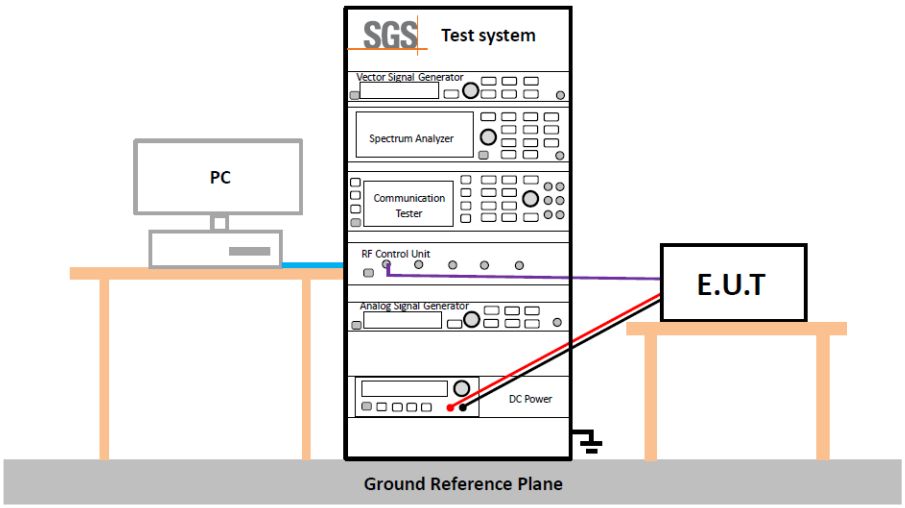
4.6 Power Spectral Density

Test Requirement:	47 CFR Part 15C Section 15.247 (e)
Test Method:	ANSI C63.10-2013 Section 11.10.2
Test Setup:	
Test Instruments:	Refer to section 6 for details.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Refer to section 3.7 for details.
Limit:	≤8.00dBm/3kHz
Test Results:	Pass
The detailed test data see: **Appendix**	

4.7 Band-edge for RF Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10-2013 Section 11.11
Test Setup:	
Instruments Used:	Refer to section 6 for details.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Refer to section 3.7 for details.
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test Results:	Pass
The detailed test data see: **Appendix**	

4.8 RF Conducted Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10-2013 Section 11.11
Test Setup:	
Instruments Used:	Refer to section 6 for details.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Refer to section 3.7 for details.
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test Results:	Pass
The detailed test data see: **Appendix**	

4.9 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205				
Test Method:	ANSI C63.10-2013 Section 11.12				
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Test Frequency:	9kHz ~ 25GHz				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	3MHz	Peak
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz-88MHz	100	40.0	Quasi-peak	3
	88MHz-216MHz	150	43.5	Quasi-peak	3
	216MHz-960MHz	200	46.0	Quasi-peak	3
	960MHz-1GHz	500	54.0	Quasi-peak	3
	Above 1GHz	500	54.0	Average	3
	Remark: 15.35(b),Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.				

Test Setup:

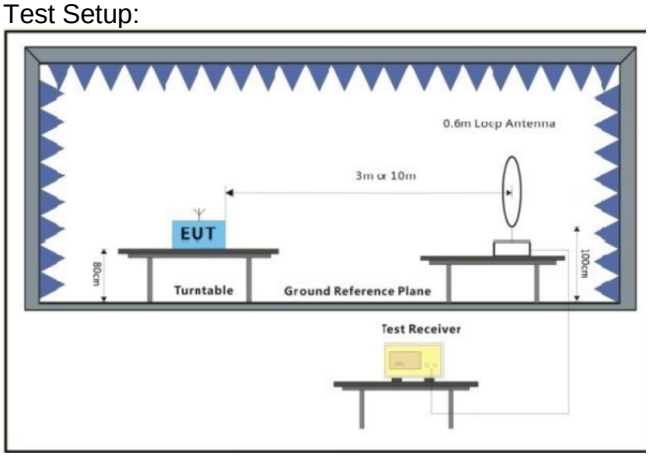


Figure 1. Below 30MHz

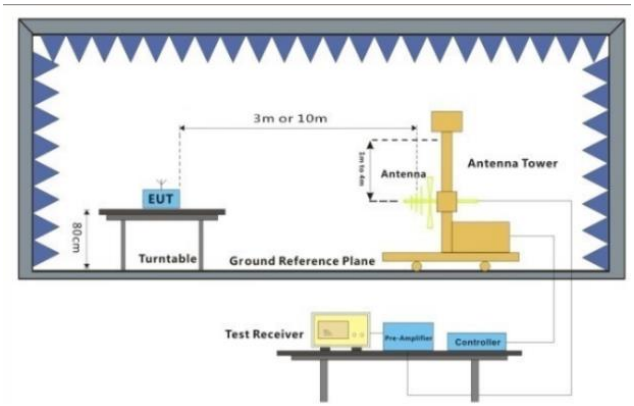


Figure 2. 30MHz to 1GHz

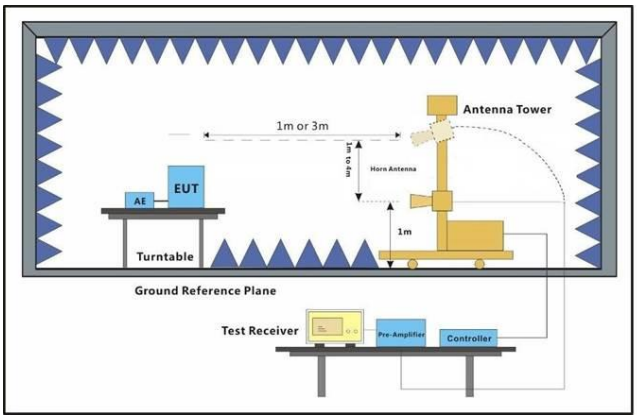


Figure 3. Above 1 GHz

Test Procedure:	a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation (Distance from antenna to EUT is 1m for measurements >18GHz). c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters(for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

	f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. g. Test the EUT in the lowest channel, the middle channel ,the Highest channel. h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case. i. Repeat above procedures until all frequencies measured was complete. j. The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported k. The disturbance above 18GHz was very low, and the harmonics were the highest point could be found when testing, so only the harmonics had been displayed. l. At a measurement distance of 1 meter the limit line was increased by 20*LOG(3/1) = 9.54 dB.
Test Configuration:	Measurements below 30MHz • RBW = 10 kHz • VBW = 30 kHz • Detector = Peak & Average & Quasi-peak • Trace mode = max hold Measurements Below 1000MHz • RBW = 120 kHz • VBW = 300 kHz • Detector = Quasi-peak • Trace mode = max hold Peak Measurements Above 1000 MHz • RBW = 1 MHz • VBW ≥ 3 MHz • Detector = Peak • Sweep time = auto • Trace mode = max hold Average Measurements Above 1000MHz • RBW = 1 MHz • VBW = 10 Hz, when duty cycle is no less than 98 percent. • VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates. Charge + Transmitting mode.
Final Test Mode:	Refer to section 3.7 for details. For below 1GHz part, through pre-scan all channels, but only the worst case is recorded in the report.
Instruments Used:	Refer to section 6 for details.
Test Results:	Pass
The detailed test data see: **Appendix**	

4.10 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205		
Test Method:	ANSI C63.10-2013 Section 11.12		
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)		
Limit:	Frequency	Limit (dBuV/m)	Remark
	30MHz-88MHz	40.0	Quasi-peak
	88MHz-216MHz	43.5	Quasi-peak
	216MHz-960MHz	46.0	Quasi-peak
	960MHz-1GHz	54.0	Quasi-peak
	Above 1GHz	54.0	Average Value
		74.0	Peak Value

Test Setup:

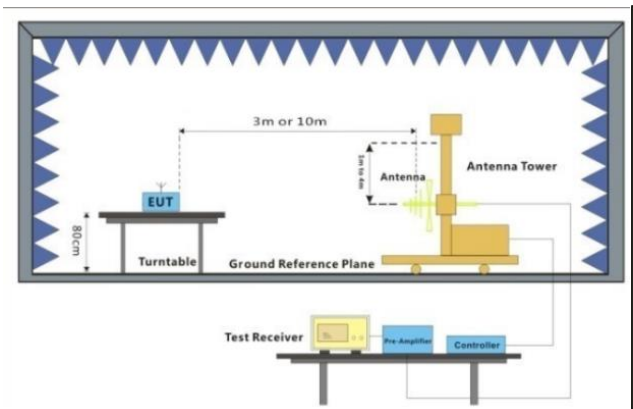


Figure 1. 30MHz to 1GHz

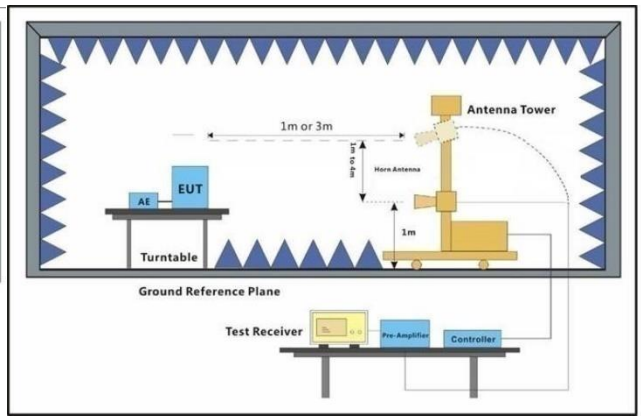


Figure 2. Above 1 GHz

Test Procedure:	a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. g. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel h. Test the EUT in the lowest channel , the Highest channel i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode,And found the X axis positioning which it is worse case. j. Repeat above procedures until all frequencies measured was complete.
Test Configuration:	Measurements Below 1000MHz • RBW = 120 kHz • VBW = 300 kHz • Detector = Quasi-peak • Trace mode = max hold Peak Measurements Above 1000 MHz • RBW = 1 MHz • VBW ≥ 3 MHz • Detector = Peak • Sweep time = auto • Trace mode = max hold Average Measurements Above 1000MHz • RBW = 1 MHz • VBW = 10 Hz, when duty cycle is no less than 98 percent. • VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates. Charge + Transmitting mode.
Final Test Mode:	Refer to section 3.7 for details.
Instruments Used:	Refer to section 6 for details.

Test Results:	Pass
The detailed test data see: **Appendix**	

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5 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Total RF power, conducted	±0.54dB
2	RF power density, conducted	±1.03dB
3	Spurious emissions, conducted	±0.54dB
4	Radio Frequency	±1.0 %
5	Duty Cycle	±0.37%
6	Occupied Bandwidth	±1.0 %
7	Conduction Emission	± 2.90dB (150kHz to 30MHz)
8	Radiated Emission	± 3.13dB (9k -30MHz)
		± 4.88dB (30M -1GHz)
		± 4.75dB (1GHz to 18GHz)
		± 4.77dB (Above 18GHz)

Remark:
The U_{lab} (lab Uncertainty) is less than $U_{cispr/ETSI}$ (CISPR/ETSI Uncertainty), so the test results
– compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
– non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

6 Equipment List

RF Test Equipment					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. date (yyyy/mm/dd)**	**Cal.Due date (yyyy/mm/dd)**
Shielding Room	Brilliant-emc	N/A	SUWI-04-01-06	2021/05/08	2024/05/07
Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-07	2023/02/06	2024/02/05
Signal Analyzer	ROHDE&SCHWARZ	FSV3030	SUWI-01-02-02	2023/05/11	2024/05/10
Measurement Software	Tonscend	JS1120-3 Test System V 3.3.20	SUWI-02-09-09	NCR	NCR
Signal Analyzer	ROHDE& SCHWARZ	FSW43	SUWI-01-02-04	2023/05/11	2024/05/10
Temperature Chamber	ESPEC	SU-242	SUWI-01-13-01	2023/02/06	2024/02/05
Wideband Radio Communication Tester	ROHDE&SCHWARZ	CMW500	SUWI-01-16-05	2023/02/06	2024/02/05
DC Power Supply	HYELEC	HY3005B	SUWI-01-18-01	2023/02/06	2024/02/05
Power meter	Anritsu	ML2495A	SUWI-01-31-01	2022/11/23	2023/11/22
				2023/11/21	2024/11/20
Pulse power sensor	Anritsu	MA2411B	SUWI-01-32-01	2022/11/23	2023/11/22
				2023/11/21	2024/11/20
MXG Vector signal genitor	KEYSIGHT	N5182B	SUWI-01-38-01	2023/02/06	2024/02/05

Conduction Test Equipment					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. date (yyyy/mm/dd)**	**Cal.Due date (yyyy/mm/dd)**
Shielding Room	Brilliant-emc	N/A	SUWI-04-03-01	2021/05/08	2024/05/07
Test receiver	ROHDE&SCHWARZ	ESR7	SUWI-01-10-01	2023/02/08	2024/02/07
Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-06	2023/02/07	2024/02/06
Artificial network	ROHDE&SCHWARZ	ENV216	SUWI-01-19-03	2023/02/08	2024/02/07
Artificial network	ROHDE&SCHWARZ	ENV216	SUWI-01-19-04	2023/02/08	2024/02/07
Measurement Software	Tonscend	JS32-CE V4.0.0.2	SUWI-02-09-05	NCR	NCR

RSE Test System					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date (yyyy/mm/dd)**	**Cal Due Date (yyyy/mm/dd)**
Semi-Anechoic Chamber	Brilliant-emc	N/A	SUWI-04-02-02	2021/11/25	2024/11/24
Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-13	2023/02/07	2024/02/06
Signal Analyzer	ROHDE &SCHWARZ	FSW43	SUWI-01-02-04	2023/05/11	2024/05/10
Signal Analyzer	KEYSIGHT	N9020A	SUWI-01-02-06	2022/11/23	2023/11/22
				2023/11/21	2024/11/20
Test receiver	ROHDE &SCHWARZ	ESR7	SUWI-01-10-01	2023/02/08	2024/02/07
Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	VULB 9168	SUWI-01-11-04	2021/12/05	2023/12/04
				2023/11/25	2024/11/24
Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	BBHA 9120D	SUWI-01-11-05	2021/12/05	2023/12/04
				2023/11/25	2024/11/24
Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	BBHA 9170	SUWI-01-11-03	2023/05/12	2024/05/11
Active Loop Antenna	SCHWRZBECK MESS-ELEKTRONIK	FMZB 1519B	SUWI-01-21-01	2023/05/13	2024/05/12
Amplifier	Tonscend	TAP9K3G32	SUWI-01-14-06	2022/11/23	2023/11/22
				2023/11/21	2024/11/20
Amplifier	Tonscend	TAP01018050	SUWI-01-14-04	2022/11/23	2023/11/22
				2023/11/21	2024/11/20
Amplifier	Tonscend	TAP30M7G30	SUWI-01-14-05	2022/11/23	2023/11/22
				2023/11/21	2024/11/20
Measurement Software	Tonscend	JS32-RE 4.0.0.0	SUWI-02-09-04	NCR	NCR

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7 Photographs - Setup Photos

Refer to Appendix A.2 WLAN Setup Photos.

Appendix

DTS Bandwidth

Test Result

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11b-CDD	Ant22	2412	8.12	2407.92	2416.04	≥0.5	PASS
11b-CDD	Ant25	2412	7.68	2407.88	2415.56	≥0.5	PASS
11b-CDD	Ant22	2417	7.20	2413.36	2420.56	≥0.5	PASS
11b-CDD	Ant25	2417	7.16	2413.40	2420.56	≥0.5	PASS
11b-CDD	Ant22	2437	7.64	2432.92	2440.56	≥0.5	PASS
11b-CDD	Ant25	2437	7.16	2433.40	2440.56	≥0.5	PASS
11b-CDD	Ant22	2462	7.64	2457.92	2465.56	≥0.5	PASS
11b-CDD	Ant25	2462	7.40	2458.16	2465.56	≥0.5	PASS
11g-CDD	Ant22	2412	14.52	2404.36	2418.88	≥0.5	PASS
11g-CDD	Ant25	2412	15.44	2404.16	2419.60	≥0.5	PASS
11g-CDD	Ant22	2417	14.12	2409.80	2423.92	≥0.5	PASS
11g-CDD	Ant25	2417	15.20	2409.36	2424.56	≥0.5	PASS
11g-CDD	Ant22	2437	14.52	2430.00	2444.52	≥0.5	PASS
11g-CDD	Ant25	2437	15.36	2429.20	2444.56	≥0.5	PASS
11g-CDD	Ant22	2457	15.72	2449.16	2464.88	≥0.5	PASS
11g-CDD	Ant25	2457	14.52	2450.04	2464.56	≥0.5	PASS
11g-CDD	Ant22	2462	15.08	2454.44	2469.52	≥0.5	PASS
11g-CDD	Ant25	2462	14.48	2455.08	2469.56	≥0.5	PASS
11VHT20MIMO	Ant22	2412	15.12	2404.40	2419.52	≥0.5	PASS
11VHT20MIMO	Ant25	2412	14.12	2405.44	2419.56	≥0.5	PASS
11VHT20MIMO	Ant22	2417	13.96	2409.36	2423.32	≥0.5	PASS
11VHT20MIMO	Ant25	2417	15.76	2408.80	2424.56	≥0.5	PASS
11VHT20MIMO	Ant22	2437	12.60	2429.44	2442.04	≥0.5	PASS
11VHT20MIMO	Ant25	2437	17.24	2428.16	2445.40	≥0.5	PASS
11VHT20MIMO	Ant22	2457	16.60	2448.80	2465.40	≥0.5	PASS
11VHT20MIMO	Ant25	2457	16.36	2448.80	2465.16	≥0.5	PASS
11VHT20MIMO	Ant22	2462	16.84	2453.56	2470.40	≥0.5	PASS
11VHT20MIMO	Ant25	2462	13.92	2455.60	2469.52	≥0.5	PASS
11VHT40MIMO	Ant22	2422	25.20	2405.60	2430.80	≥0.5	PASS
11VHT40MIMO	Ant25	2422	32.72	2405.60	2438.32	≥0.5	PASS
11VHT40MIMO	Ant22	2427	33.36	2410.60	2443.96	≥0.5	PASS
11VHT40MIMO	Ant25	2427	34.56	2409.96	2444.52	≥0.5	PASS
11VHT40MIMO	Ant22	2437	34.00	2420.60	2454.60	≥0.5	PASS
11VHT40MIMO	Ant25	2437	35.76	2419.00	2454.76	≥0.5	PASS
11VHT40MIMO	Ant22	2447	35.20	2429.32	2464.52	≥0.5	PASS
11VHT40MIMO	Ant25	2447	35.52	2429.08	2464.60	≥0.5	PASS
11VHT40MIMO	Ant22	2452	32.72	2436.24	2468.96	≥0.5	PASS
11VHT40MIMO	Ant25	2452	31.68	2436.24	2467.92	≥0.5	PASS
11ax20MIMO	Ant22	2412	18.60	2402.84	2421.44	≥0.5	PASS
11ax20MIMO	Ant25	2412	17.04	2403.44	2420.48	≥0.5	PASS
11ax20MIMO	Ant22	2417	15.20	2409.36	2424.56	≥0.5	PASS
11ax20MIMO	Ant25	2417	14.40	2409.04	2423.44	≥0.5	PASS
11ax20MIMO	Ant22	2437	18.80	2427.60	2446.40	≥0.5	PASS
11ax20MIMO	Ant25	2437	18.60	2427.68	2446.28	≥0.5	PASS
11ax20MIMO	Ant22	2457	17.44	2448.56	2466.00	≥0.5	PASS
11ax20MIMO	Ant25	2457	18.48	2447.84	2466.32	≥0.5	PASS
11ax20MIMO	Ant22	2462	14.88	2453.52	2468.40	≥0.5	PASS
11ax20MIMO	Ant25	2462	14.16	2455.40	2469.56	≥0.5	PASS
11ax40MIMO	Ant22	2422	26.40	2404.40	2430.80	≥0.5	PASS
11ax40MIMO	Ant25	2422	26.32	2403.76	2430.08	≥0.5	PASS

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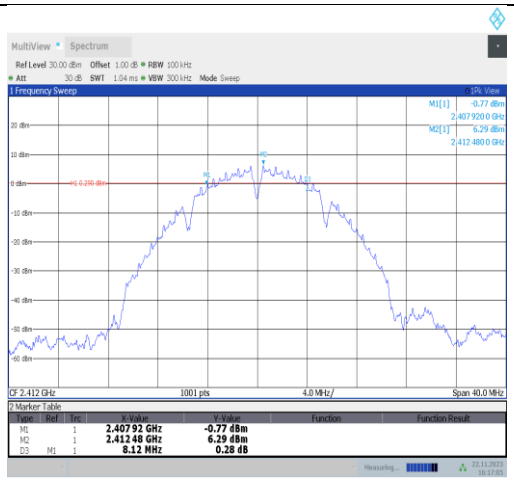
11ax40MIMO	Ant22	2427	34.48	2410.12	2444.60	≥0.5	PASS
11ax40MIMO	Ant25	2427	32.24	2409.32	2441.56	≥0.5	PASS
11ax40MIMO	Ant22	2437	38.08	2417.96	2456.04	≥0.5	PASS
11ax40MIMO	Ant25	2437	31.20	2423.40	2454.60	≥0.5	PASS
11ax40MIMO	Ant22	2447	32.72	2430.60	2463.32	≥0.5	PASS
11ax40MIMO	Ant25	2447	35.28	2429.32	2464.60	≥0.5	PASS
11ax40MIMO	Ant22	2452	35.28	2434.32	2469.60	≥0.5	PASS
11ax40MIMO	Ant25	2452	28.88	2439.20	2468.08	≥0.5	PASS

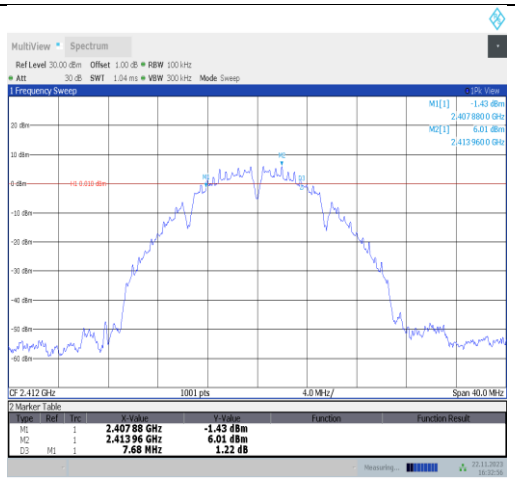
Remark:

For 802.11n HT20/VHT20 and 802.11n HT40/VHT40 mode, the whole testing have assessed only, 802.11 VHT20/40 by referring to their higher output power.

Test Graphs



11b-CDD-Ant22-2412-PASS



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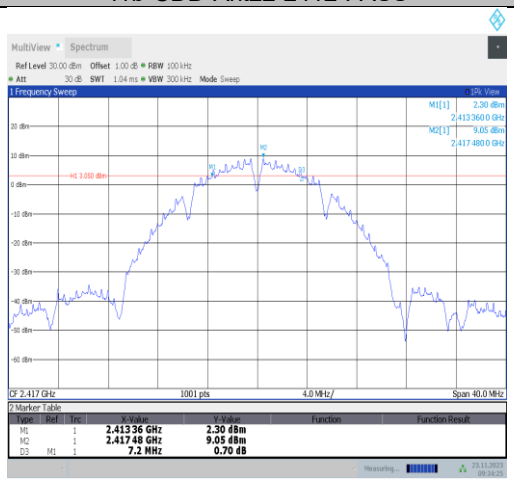

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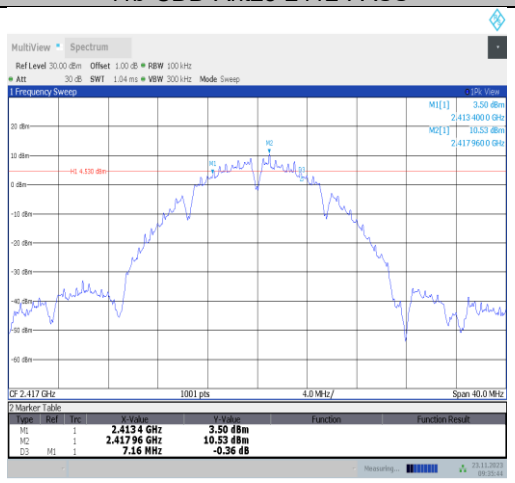

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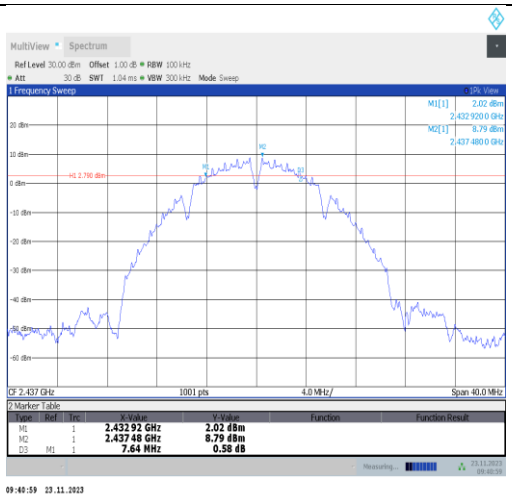

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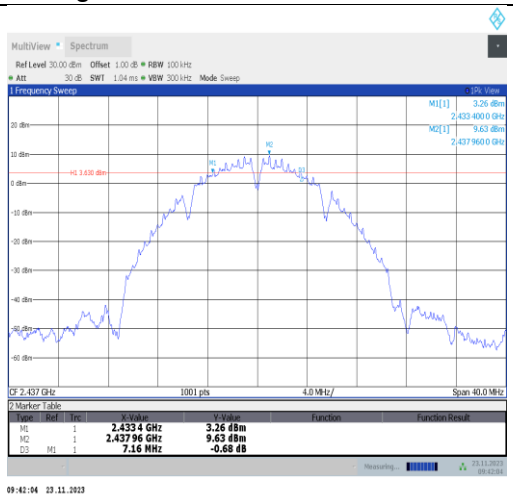

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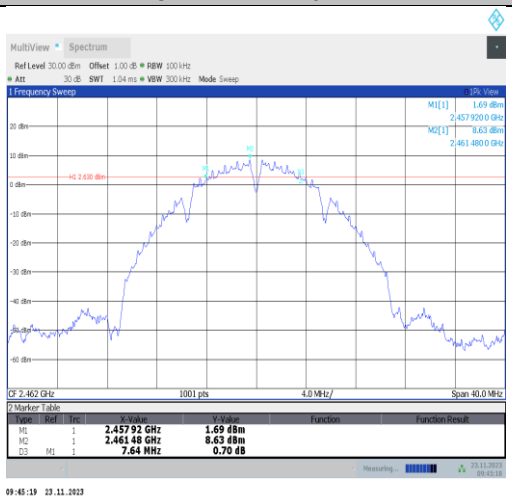

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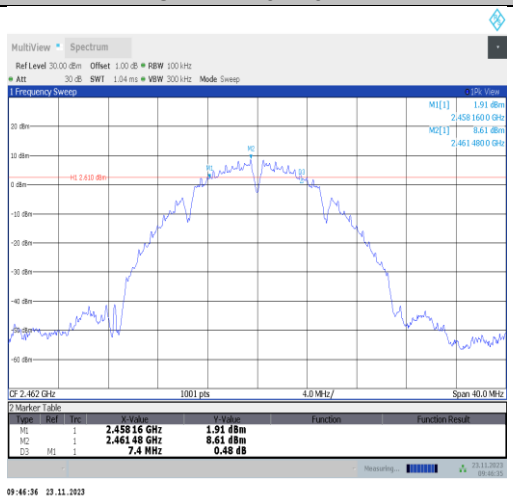
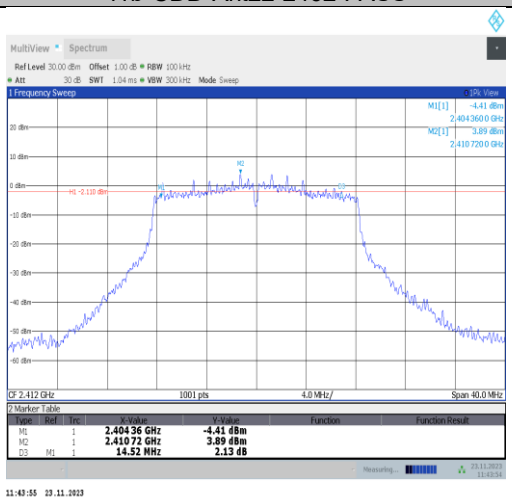


11b-CDD-Ant25-2462-PASS



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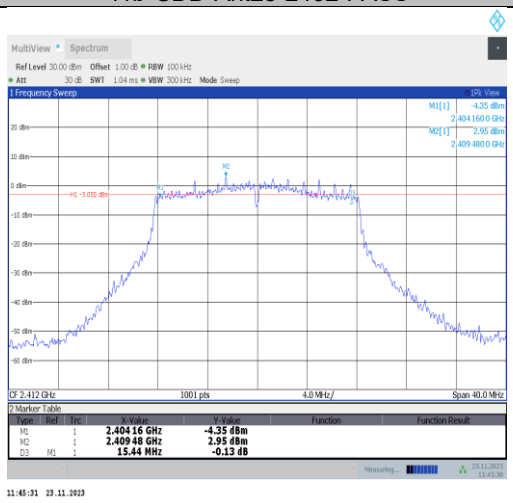
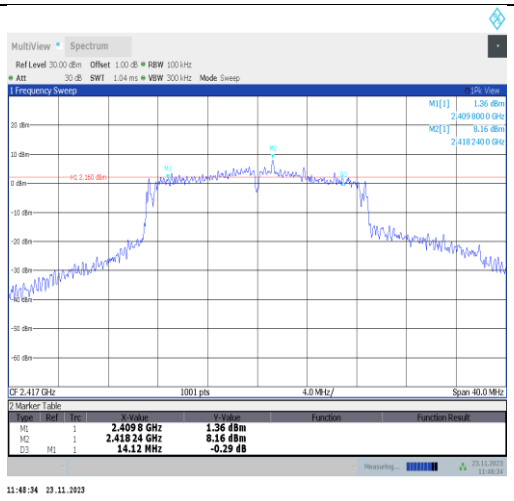
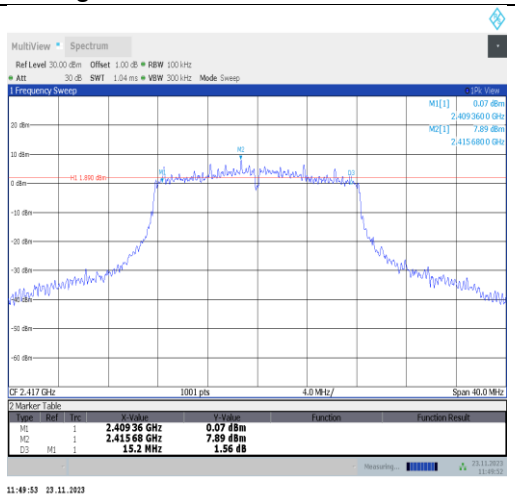


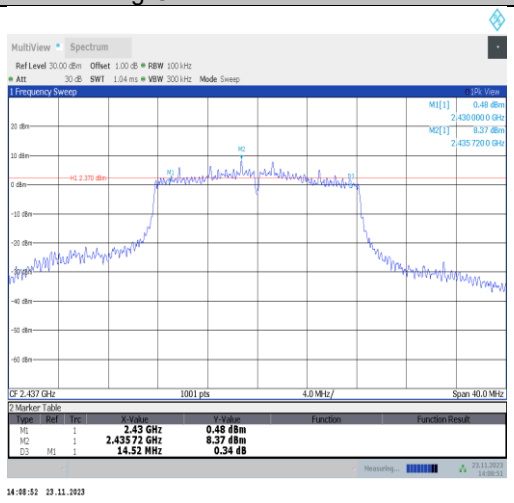
11g-CDD-Ant25-2412-PASS



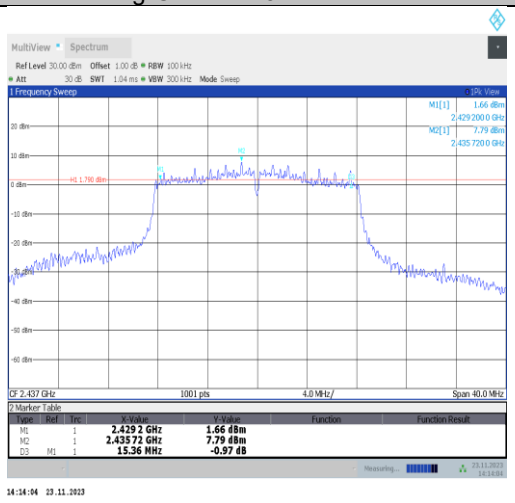
11g-CDD-Ant22-2417-PASS



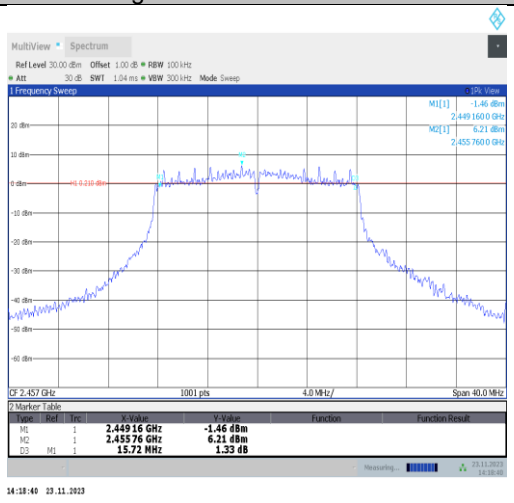
11g-CDD-Ant25-2417-PASS



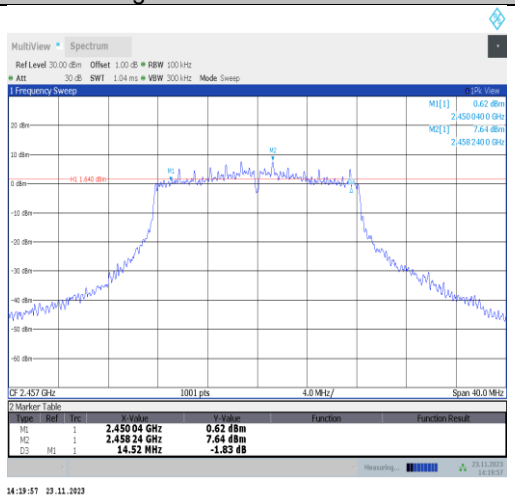
11g-CDD-Ant22-2437-PASS



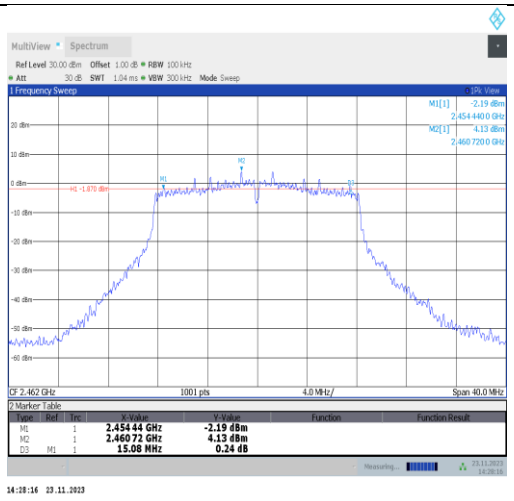
11g-CDD-Ant25-2437-PASS



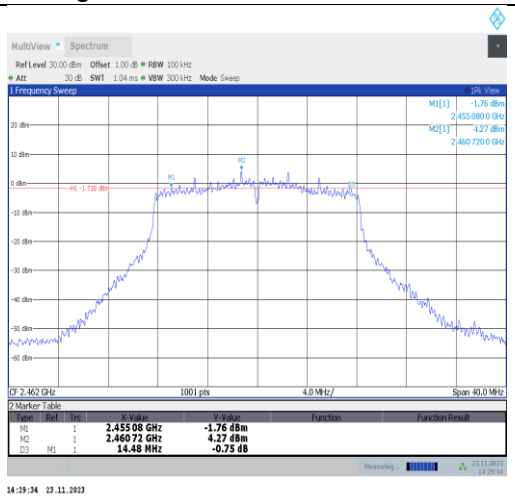
11g-CDD-Ant22-2457-PASS



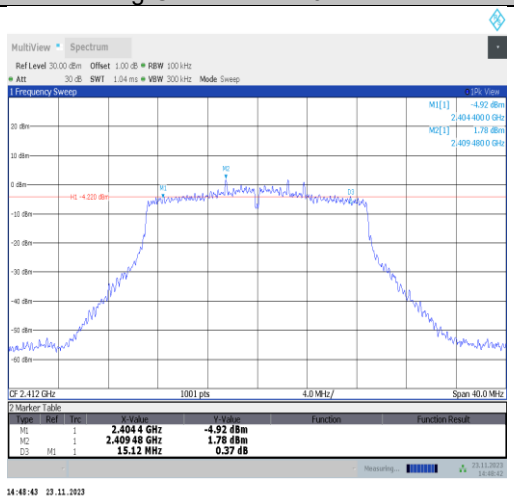
11g-CDD-Ant25-2457-PASS



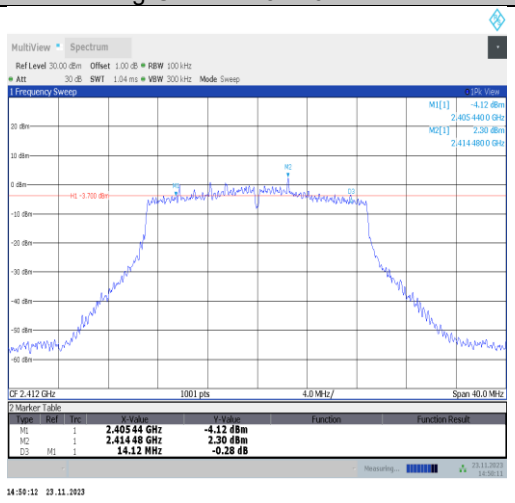
11g-CDD-Ant22-2462-PASS



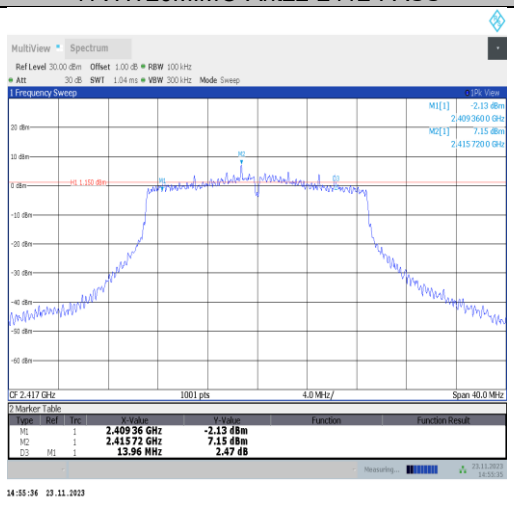
11g-CDD-Ant25-2462-PASS



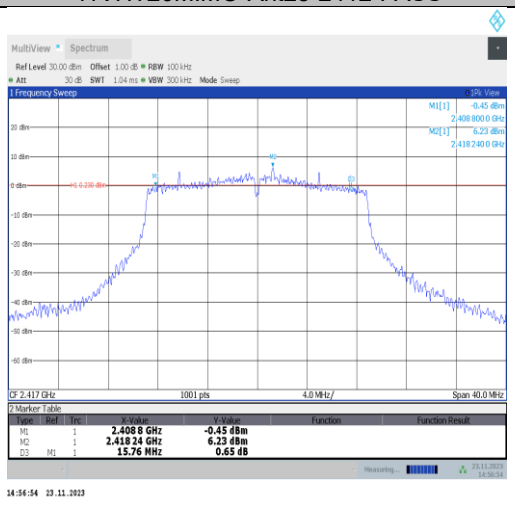
11VHT20MIMO-Ant22-2412-PASS



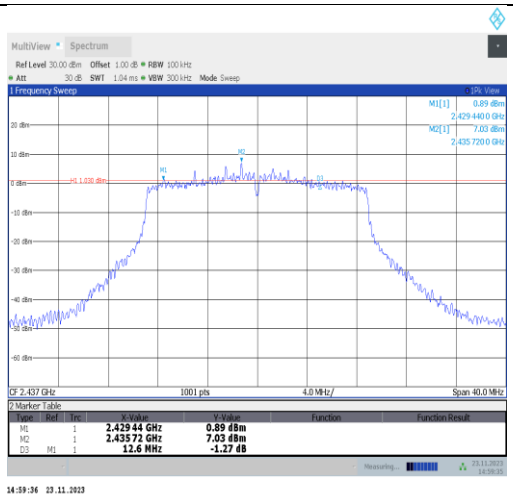
11VHT20MIMO-Ant25-2412-PASS



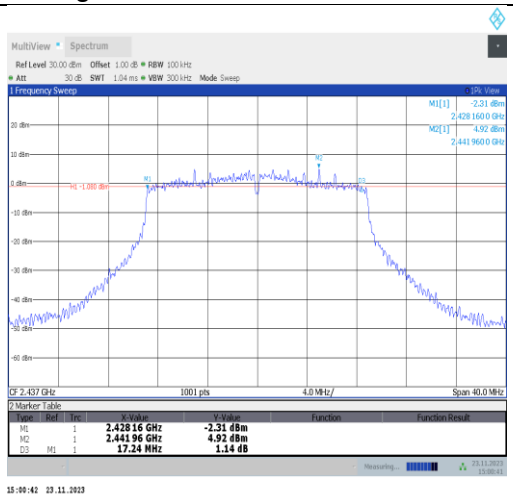
11VHT20MIMO-Ant22-2417-PASS



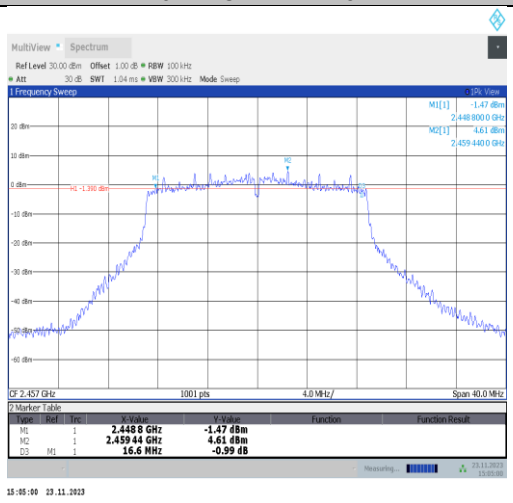
11VHT20MIMO-Ant25-2417-PASS



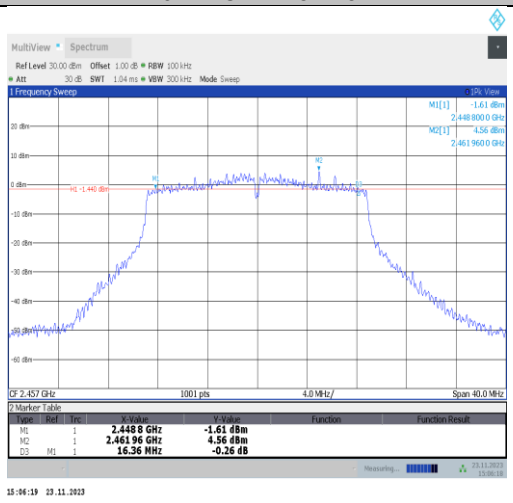
11VHT20MIMO-Ant22-2437-PASS



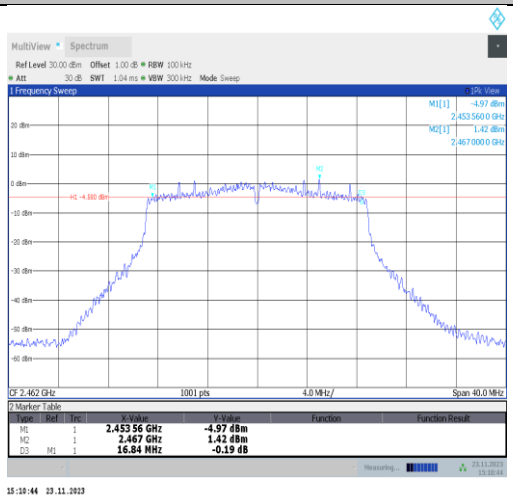
11VHT20MIMO-Ant25-2437-PASS



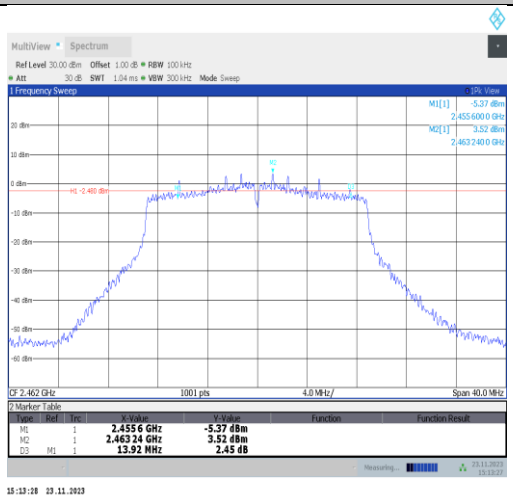
11VHT20MIMO-Ant22-2457-PASS



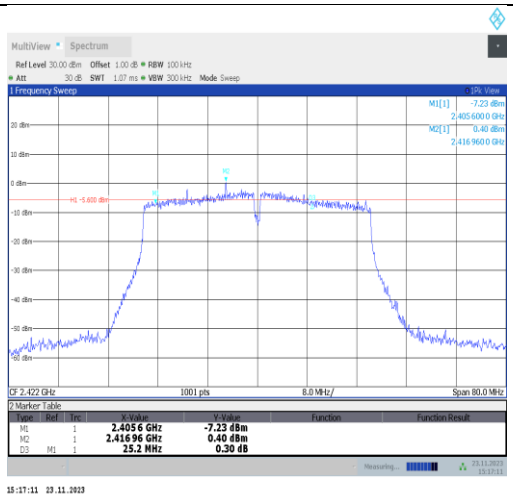
11VHT20MIMO-Ant25-2457-PASS



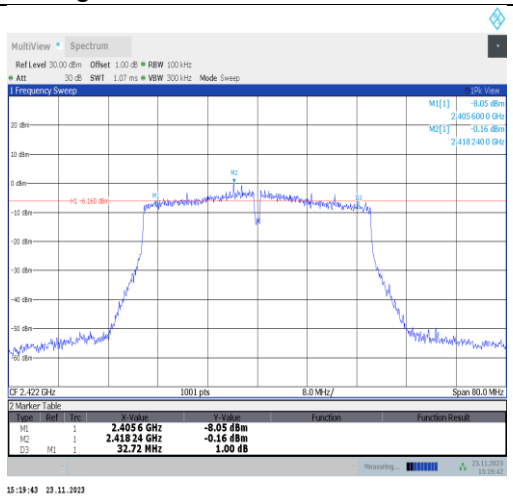
11VHT20MIMO-Ant22-2462-PASS



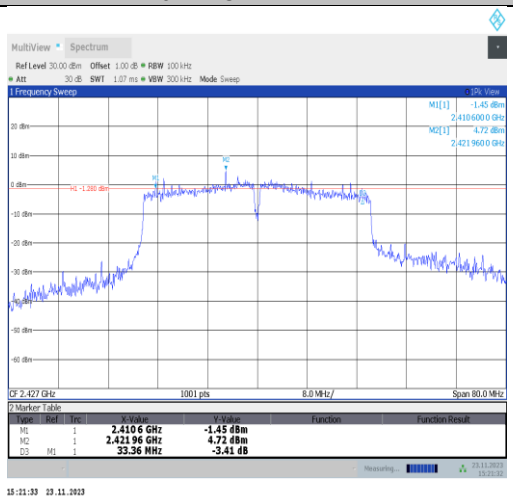
11VHT20MIMO-Ant25-2462-PASS



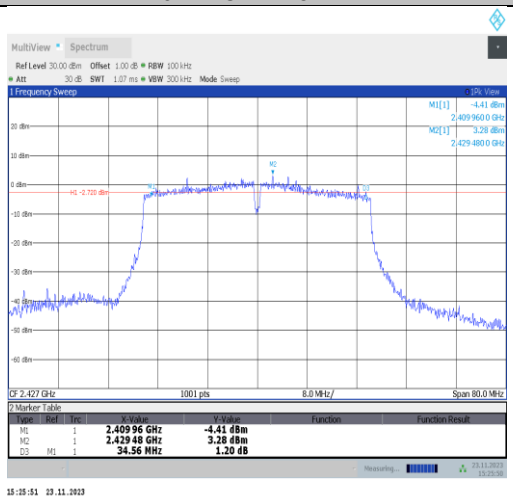
11VHT40MIMO-Ant22-2422-PASS



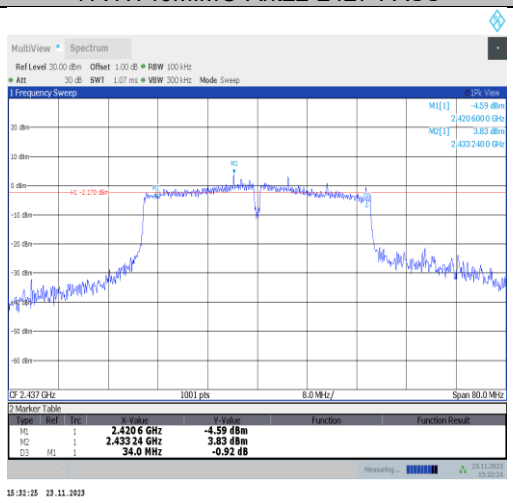
11VHT40MIMO-Ant25-2422-PASS



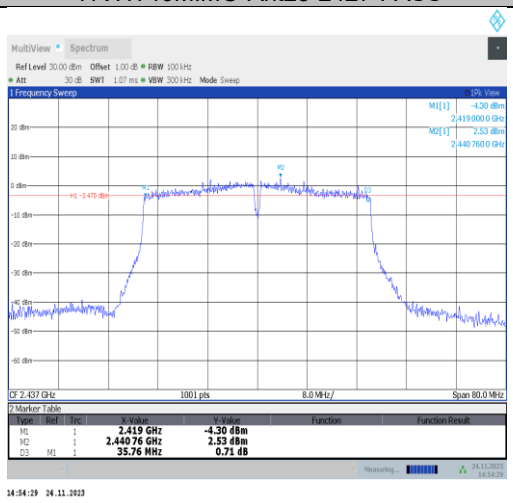
11VHT40MIMO-Ant22-2427-PASS



11VHT40MIMO-Ant25-2427-PASS



11VHT40MIMO-Ant22-2437-PASS



11VHT40MIMO-Ant25-2437-PASS

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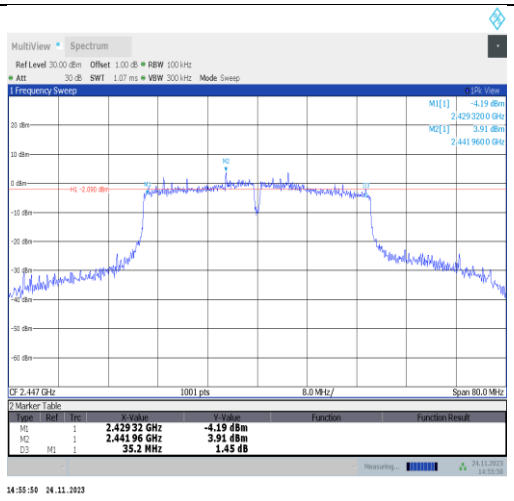
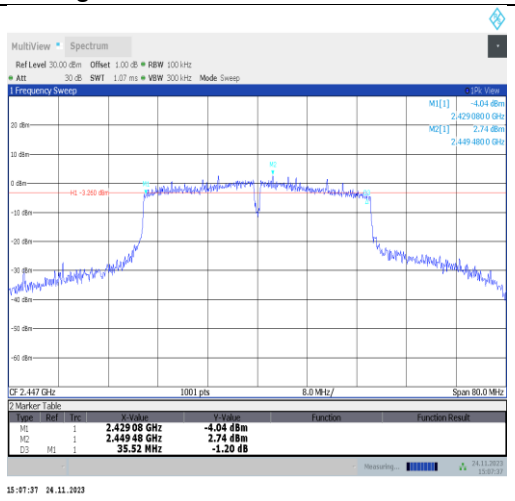
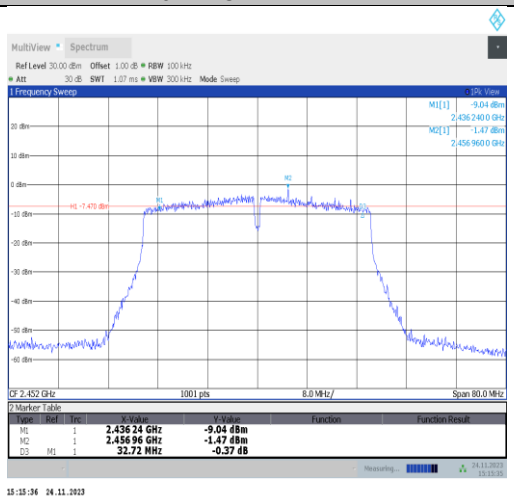


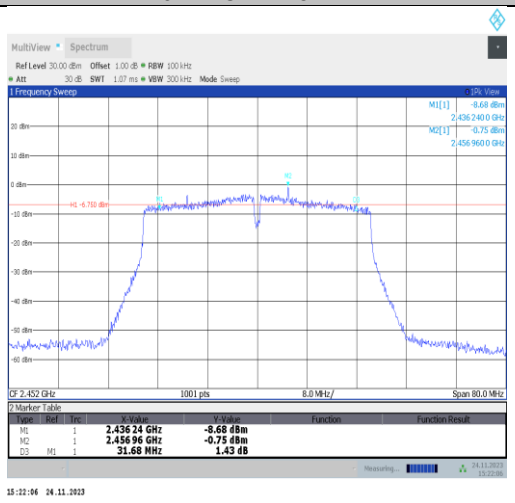
11VHT40MIMO-Ant22-2447-PASS



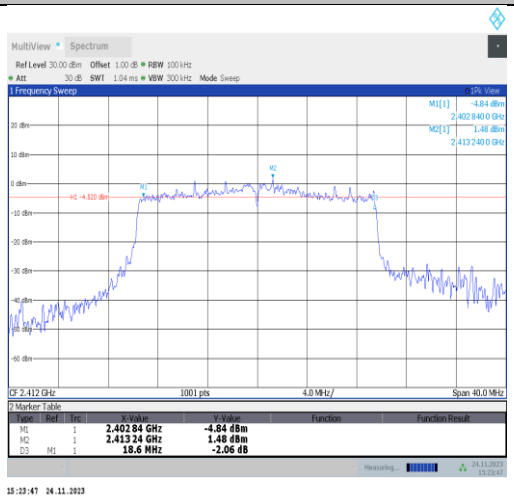
11VHT40MIMO-Ant25-2447-PASS



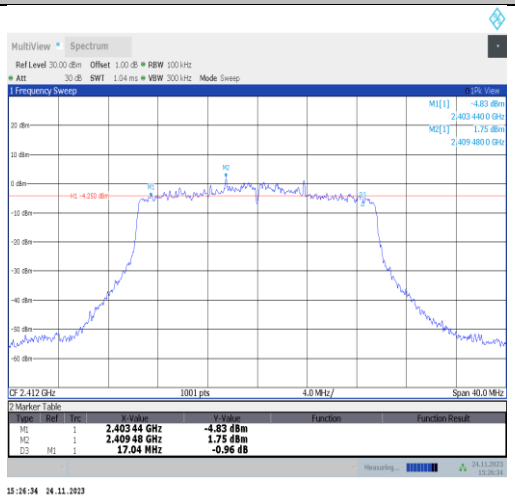
11VHT40MIMO-Ant22-2452-PASS



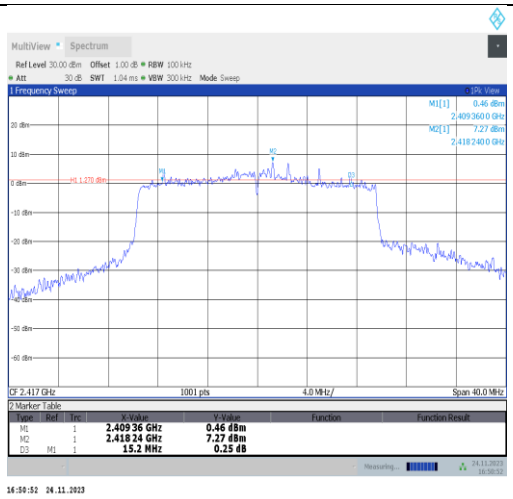
11VHT40MIMO-Ant25-2452-PASS



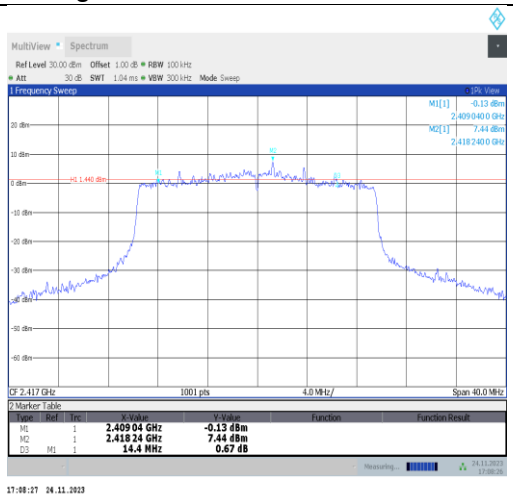
11ax20MIMO-Ant22-2412-PASS



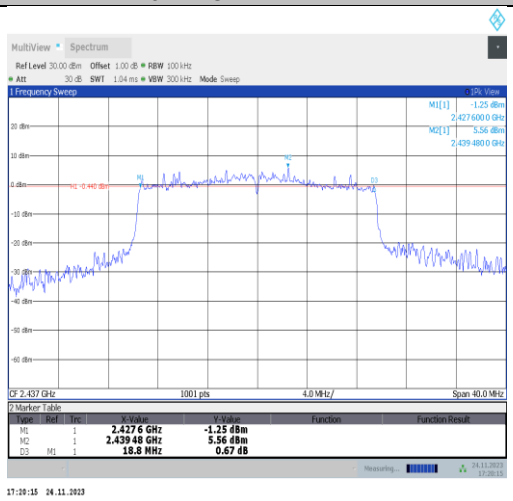
11ax20MIMO-Ant25-2412-PASS



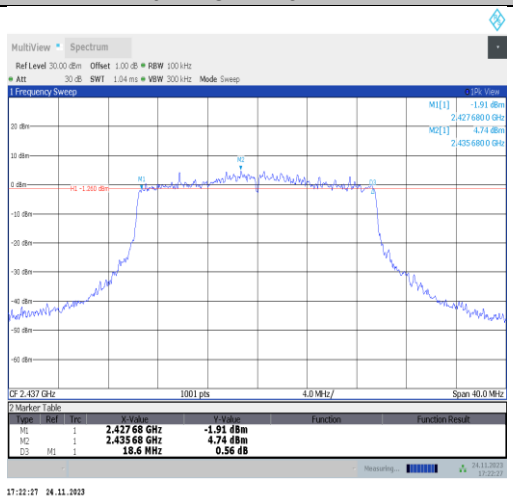
11ax20MIMO-Ant22-2417-PASS



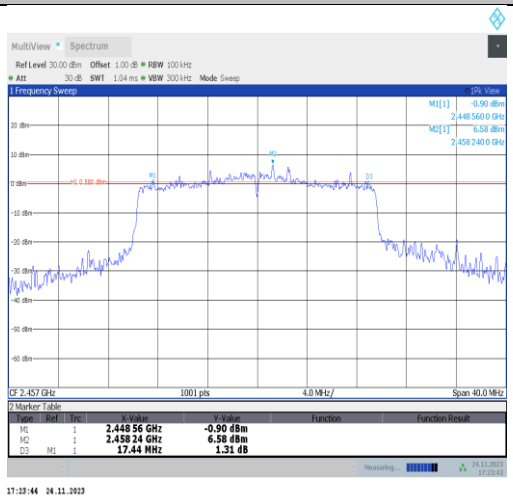
11ax20MIMO-Ant25-2417-PASS



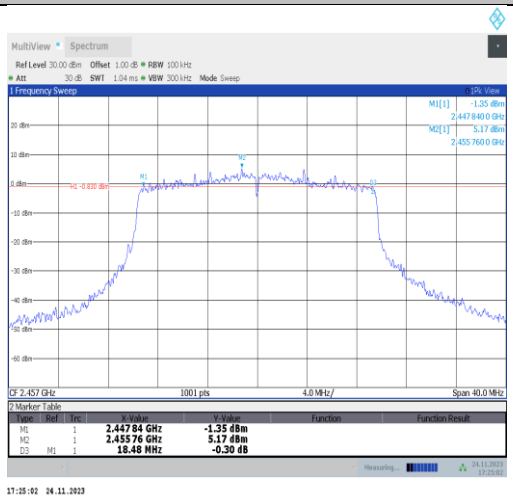
11ax20MIMO-Ant22-2437-PASS



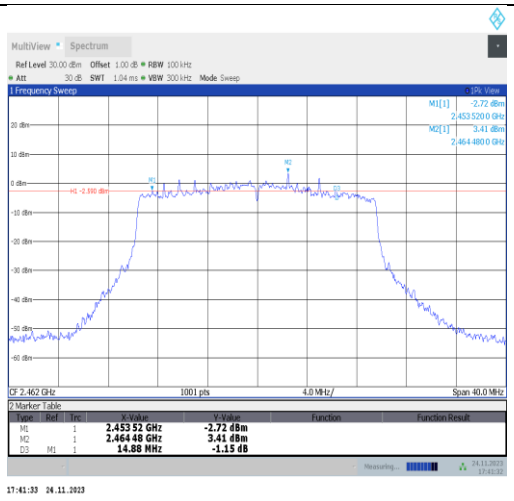
11ax20MIMO-Ant25-2437-PASS



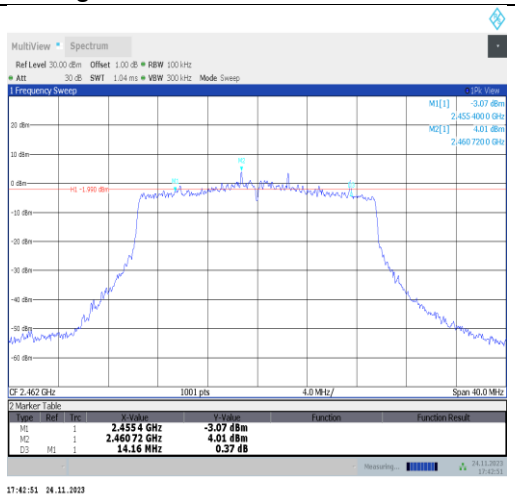
11ax20MIMO-Ant22-2457-PASS



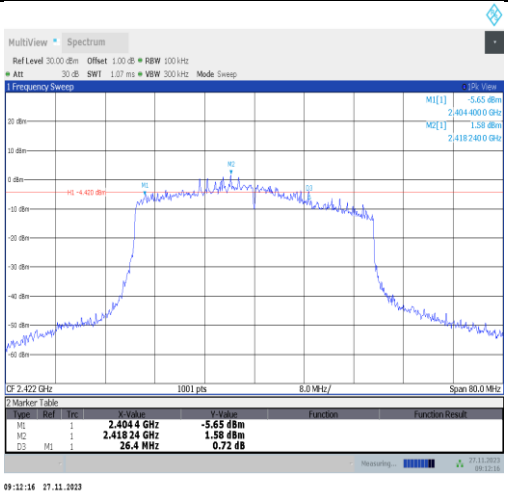
11ax20MIMO-Ant25-2457-PASS



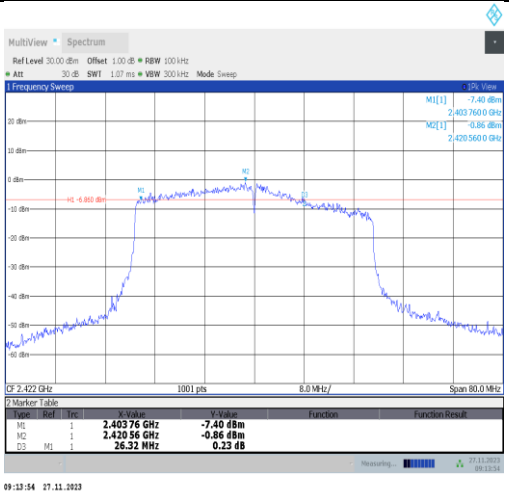
11ax20MIMO-Ant22-2462-PASS



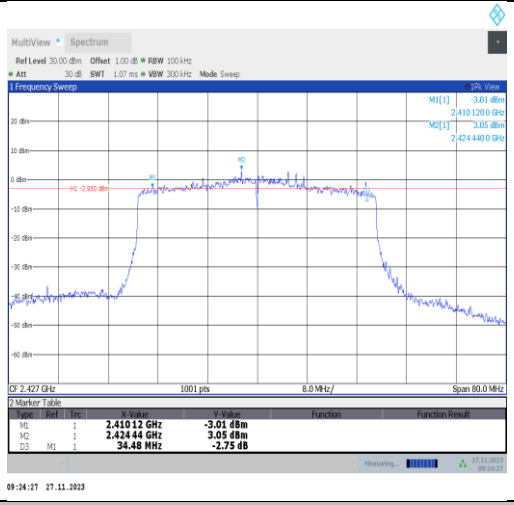
11ax20MIMO-Ant25-2462-PASS



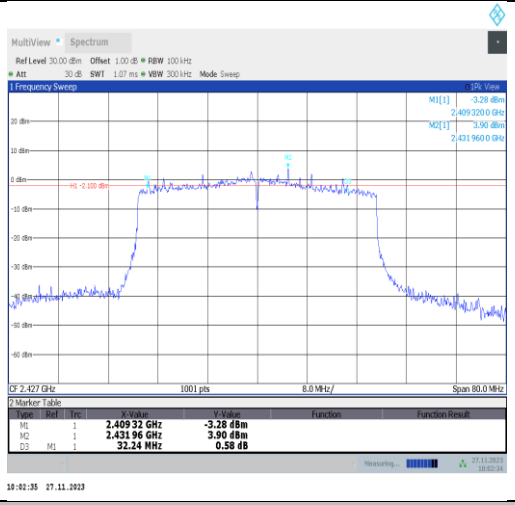
11ax40MIMO-Ant22-2422-PASS



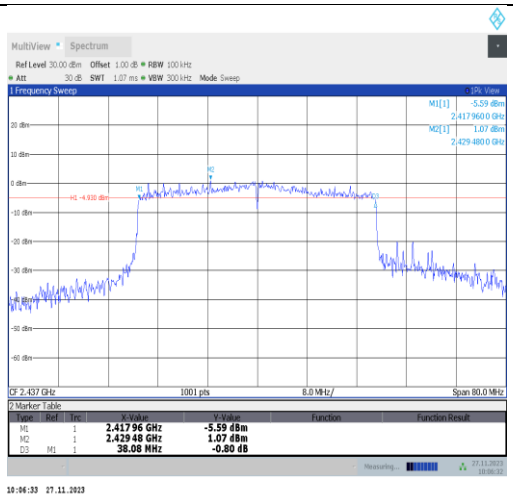
11ax40MIMO-Ant25-2422-PASS



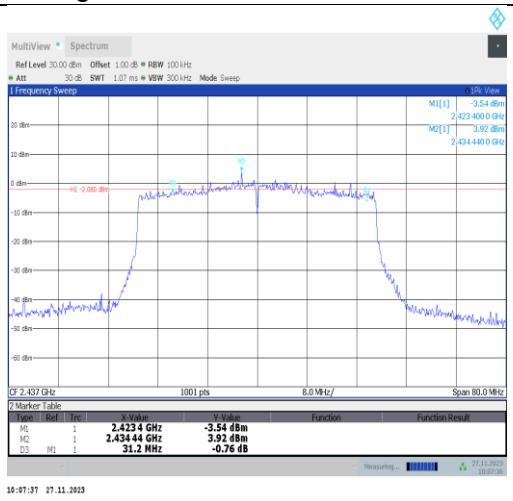
11ax40MIMO-Ant22-2427-PASS



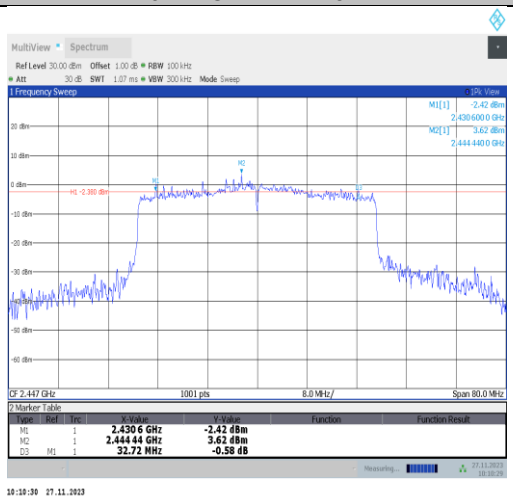
11ax40MIMO-Ant25-2427-PASS



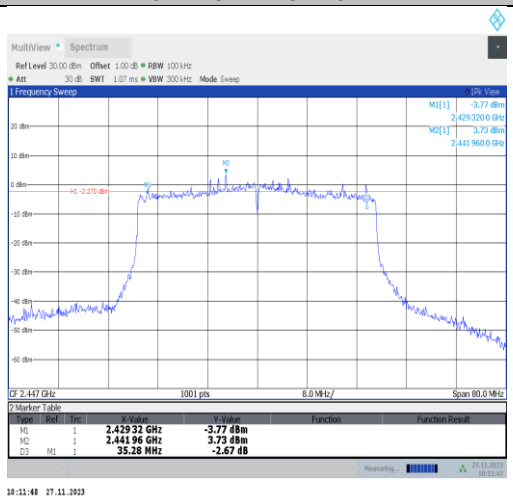
11ax40MIMO-Ant22-2437-PASS



11ax40MIMO-Ant25-2437-PASS



11ax40MIMO-Ant22-2447-PASS



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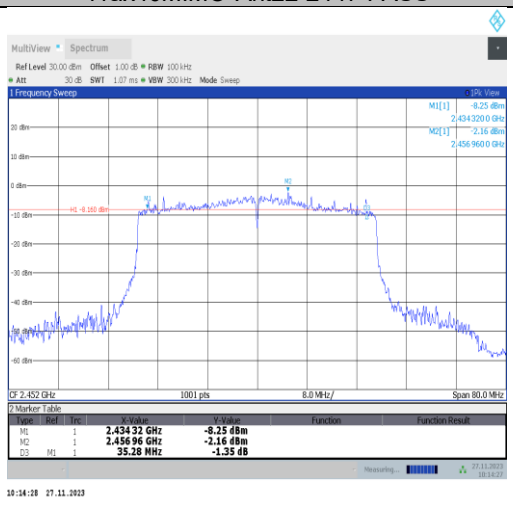
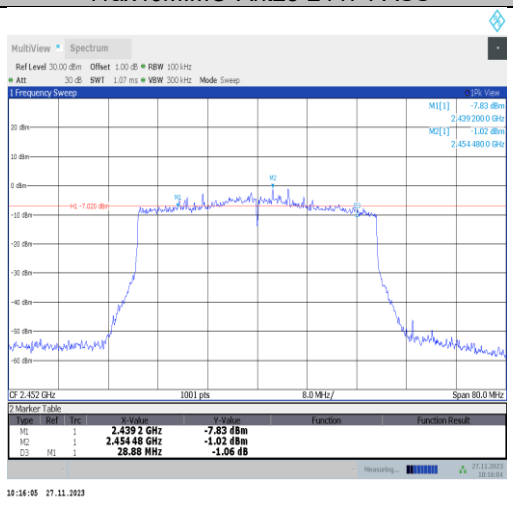


11ax40MIMO-Ant22-2452-PASS



11ax40MIMO-Ant25-2452-PASS

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Occupied Channel Bandwidth

Test Result

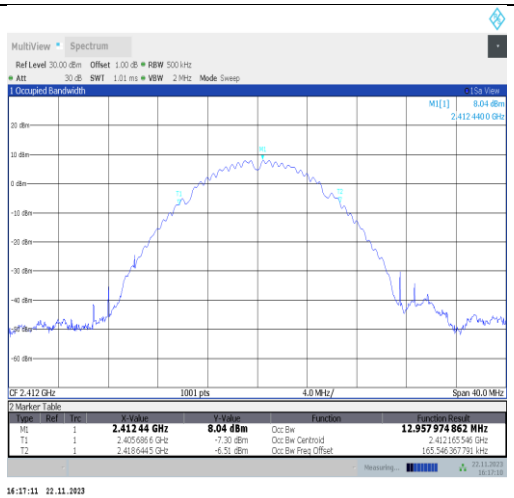
TestMode	Antenna	Channel Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Verdict
11b-CDD	Ant22	2412	12.958	2405.6866	2418.6445	For Report Purpose
11b-CDD	Ant25	2412	13.039	2405.4342	2418.4734	
11b-CDD	Ant22	2417	13.332	2410.3864	2423.7182	
11b-CDD	Ant25	2417	13.351	2410.3792	2423.7305	
11b-CDD	Ant22	2437	13.089	2430.4404	2443.5295	
11b-CDD	Ant25	2437	13.085	2430.4414	2443.5263	
11b-CDD	Ant22	2462	13.072	2455.4094	2468.4810	
11b-CDD	Ant25	2462	13.127	2455.3753	2468.5020	
11g-CDD	Ant22	2412	16.417	2403.7397	2420.1564	
11g-CDD	Ant25	2412	16.415	2403.7471	2420.1617	
11g-CDD	Ant22	2417	16.444	2408.7224	2425.1660	
11g-CDD	Ant25	2417	16.449	2408.7065	2425.1552	
11g-CDD	Ant22	2437	16.493	2428.6530	2445.1460	
11g-CDD	Ant25	2437	16.461	2428.7049	2445.1662	
11g-CDD	Ant22	2457	16.455	2448.7351	2465.1900	
11g-CDD	Ant25	2457	16.48	2448.7325	2465.2123	
11g-CDD	Ant22	2462	16.44	2453.7200	2470.1604	
11g-CDD	Ant25	2462	16.381	2453.7575	2470.1388	
11VHT20MIMO	Ant22	2412	17.616	2403.1340	2420.7497	
11VHT20MIMO	Ant25	2412	17.598	2403.1489	2420.7466	
11VHT20MIMO	Ant22	2417	17.633	2408.1380	2425.7711	
11VHT20MIMO	Ant25	2417	17.586	2408.1527	2425.7382	
11VHT20MIMO	Ant22	2437	17.603	2428.1486	2445.7511	
11VHT20MIMO	Ant25	2437	17.631	2428.1559	2445.7867	
11VHT20MIMO	Ant22	2457	17.636	2448.1555	2465.7918	
11VHT20MIMO	Ant25	2457	17.638	2448.1578	2465.7959	
11VHT20MIMO	Ant22	2462	17.616	2453.1516	2470.7675	
11VHT20MIMO	Ant25	2462	17.607	2453.1475	2470.7549	
11VHT40MIMO	Ant22	2422	35.947	2403.9444	2439.8911	
11VHT40MIMO	Ant25	2422	36	2403.9081	2439.9083	
11VHT40MIMO	Ant22	2427	36.021	2408.9287	2444.9500	
11VHT40MIMO	Ant25	2427	35.973	2408.9476	2444.9207	
11VHT40MIMO	Ant22	2437	36.121	2418.9487	2455.0698	
11VHT40MIMO	Ant25	2437	36.034	2418.9675	2455.0019	
11VHT40MIMO	Ant22	2447	36.255	2428.8454	2465.1005	
11VHT40MIMO	Ant25	2447	36.307	2428.8168	2465.1234	
11VHT40MIMO	Ant22	2452	36	2433.9611	2469.9610	
11VHT40MIMO	Ant25	2452	36.007	2433.9535	2469.9607	
11ax20MIMO	Ant22	2412	18.887	2402.5067	2421.3939	
11ax20MIMO	Ant25	2412	18.85	2402.5185	2421.3685	
11ax20MIMO	Ant22	2417	18.935	2407.4867	2426.4217	
11ax20MIMO	Ant25	2417	18.845	2407.5135	2426.3581	
11ax20MIMO	Ant22	2437	18.93	2427.4836	2446.4135	
11ax20MIMO	Ant25	2437	18.945	2427.4930	2446.4382	
11ax20MIMO	Ant22	2457	18.922	2447.4935	2466.4155	
11ax20MIMO	Ant25	2457	18.876	2447.5299	2466.4063	
11ax20MIMO	Ant22	2462	18.869	2452.4953	2471.3639	
11ax20MIMO	Ant25	2462	18.858	2452.5066	2471.3650	
11ax40MIMO	Ant22	2422	36.891	2403.1260	2440.0165	

11ax40MIMO	Ant25	2422	36.94	2403.1529	2440.0931	
11ax40MIMO	Ant22	2427	37.686	2408.0898	2445.7757	
11ax40MIMO	Ant25	2427	37.742	2408.0919	2445.8334	
11ax40MIMO	Ant22	2437	37.683	2418.1373	2455.8203	
11ax40MIMO	Ant25	2437	37.82	2418.0334	2455.8532	
11ax40MIMO	Ant22	2447	37.704	2428.0935	2465.7977	
11ax40MIMO	Ant25	2447	37.745	2428.0935	2465.8387	
11ax40MIMO	Ant22	2452	37.677	2433.1264	2470.8031	
11ax40MIMO	Ant25	2452	37.71	2433.0923	2470.8026	

Remark:

For 802.11n HT20/VHT20 and 802.11n HT40/VHT40 mode, the whole testing have assessed only, 802.11 VHT20/40 by referring to their higher output power.

Test Graphs



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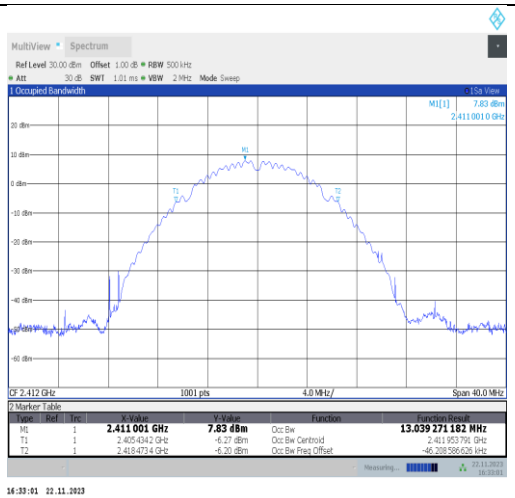

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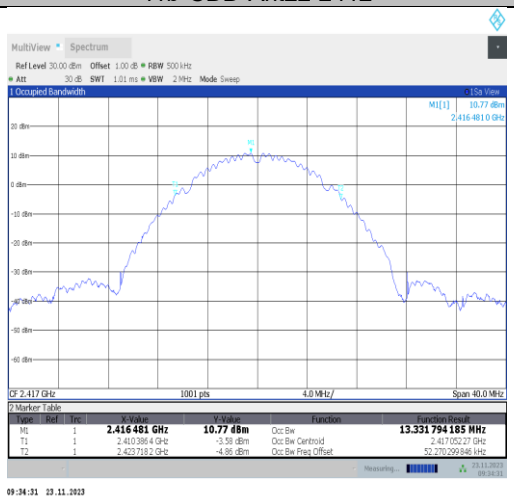

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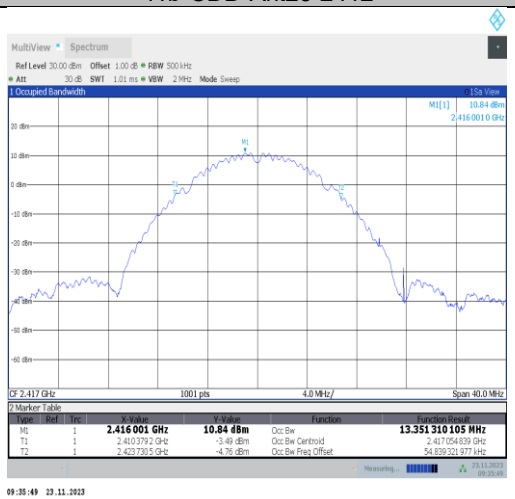

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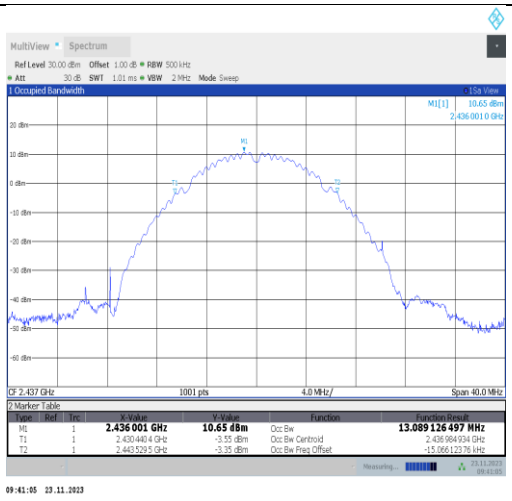

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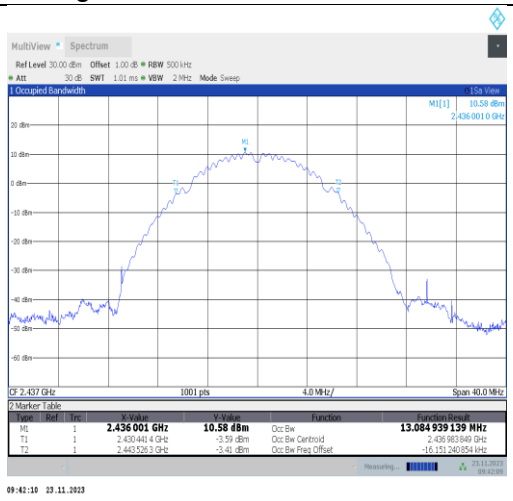

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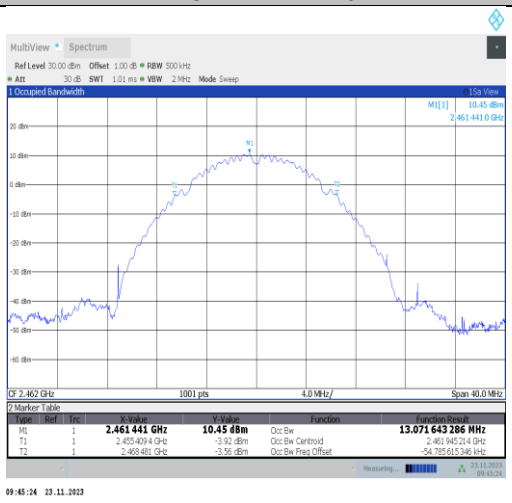

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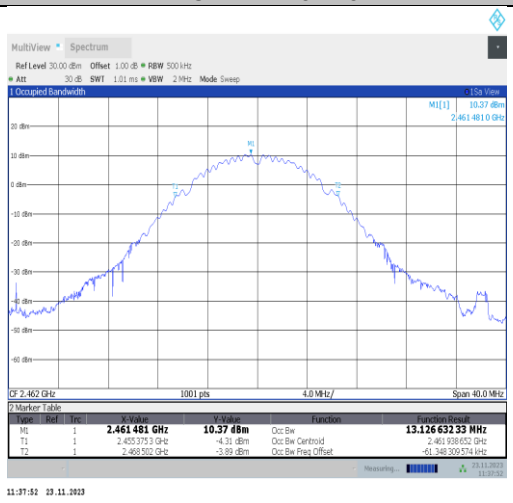

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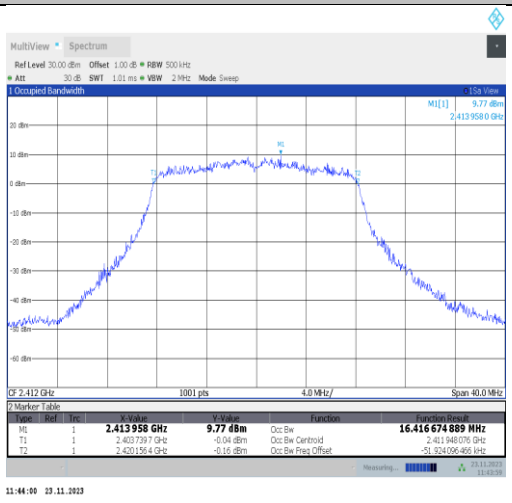

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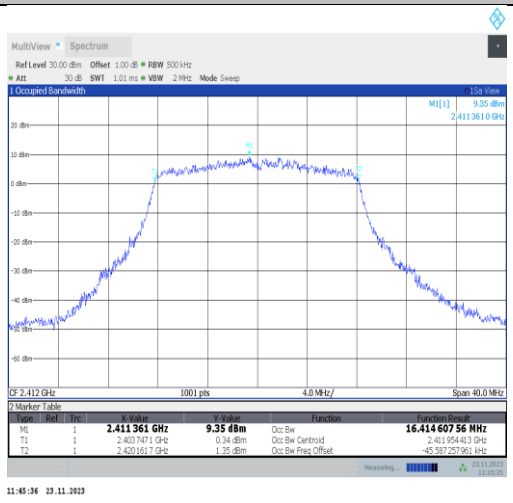

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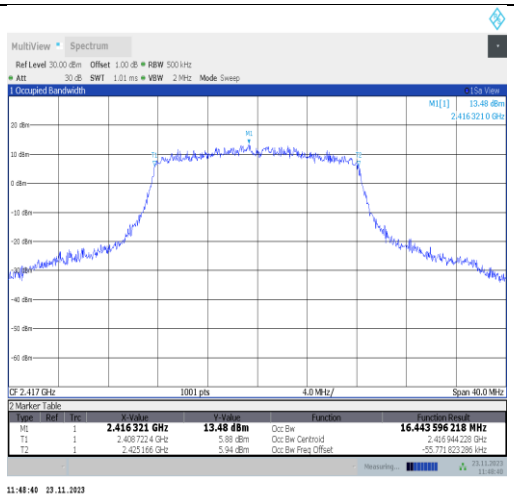

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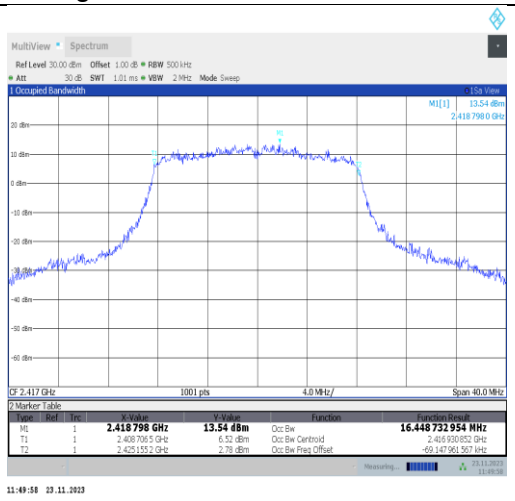

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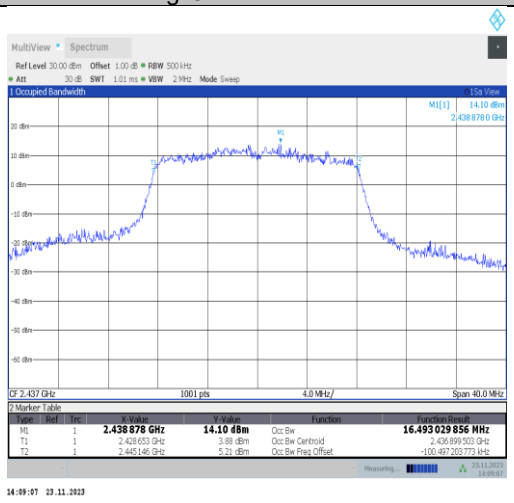

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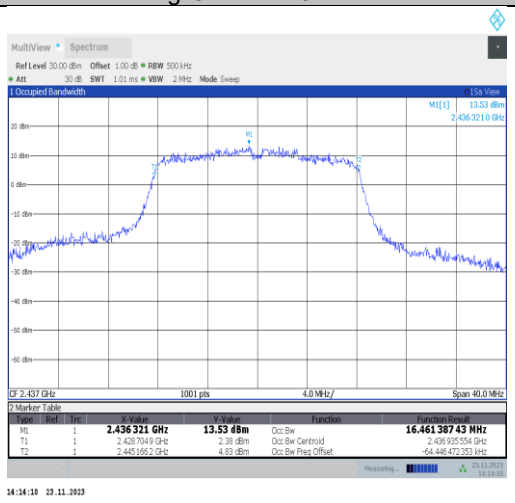

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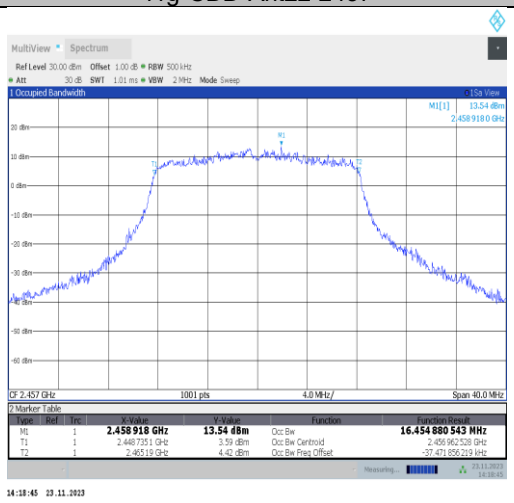

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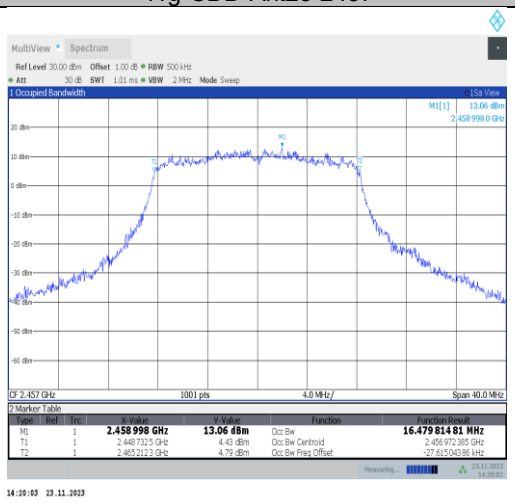

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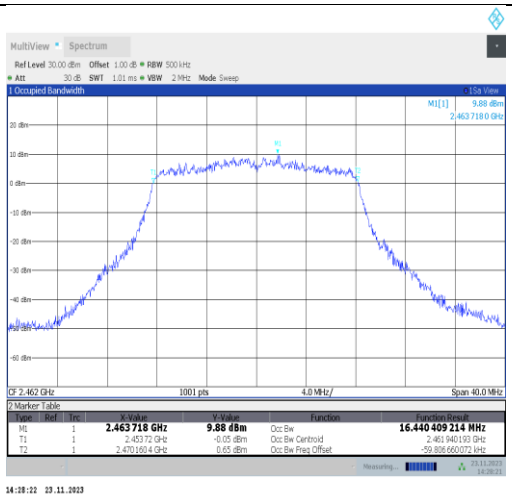

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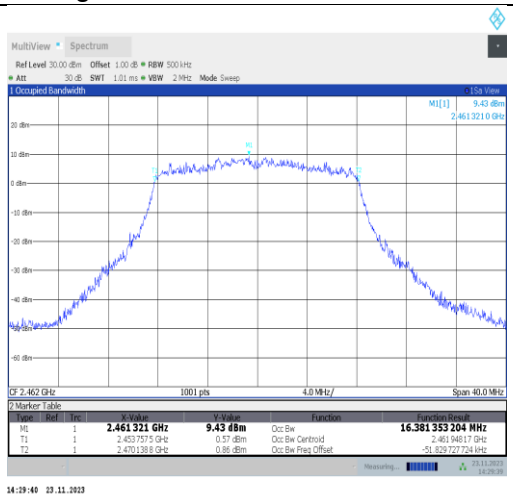

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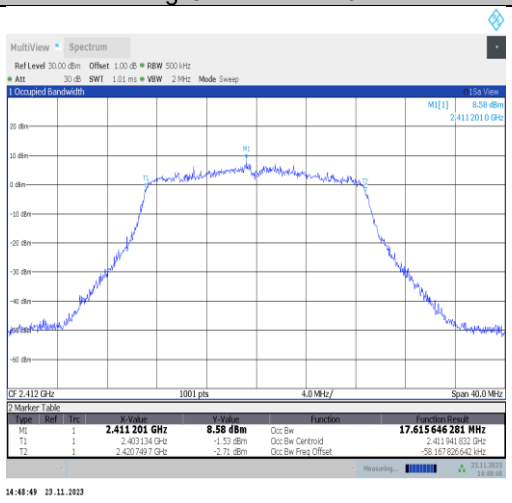

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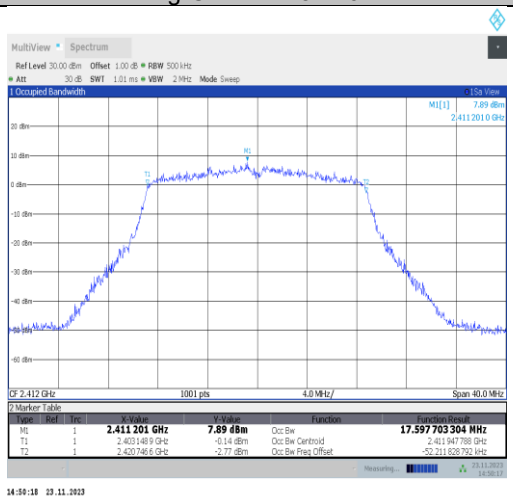

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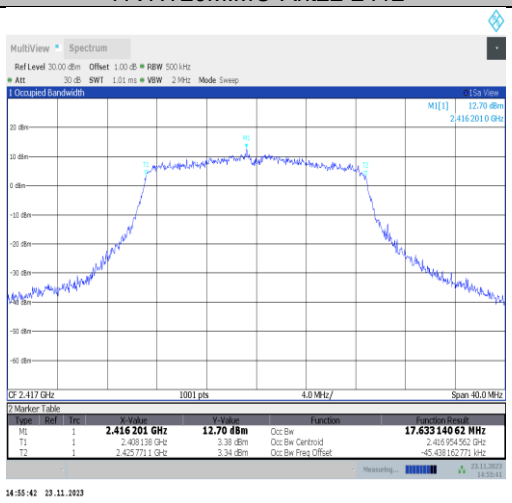

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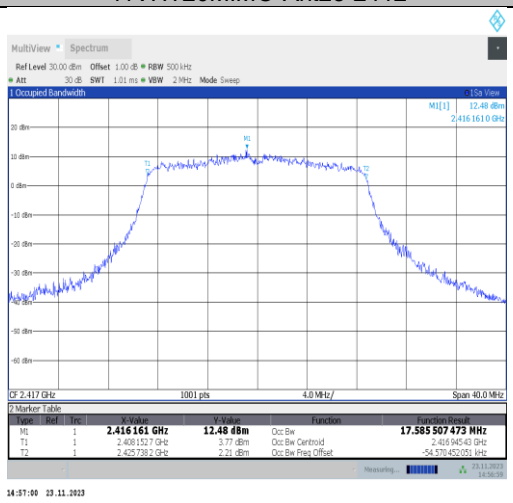

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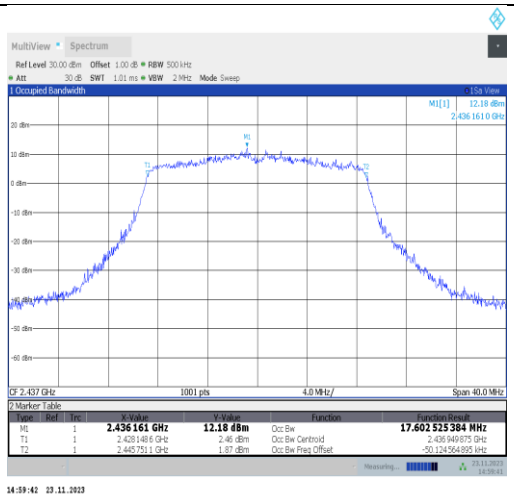

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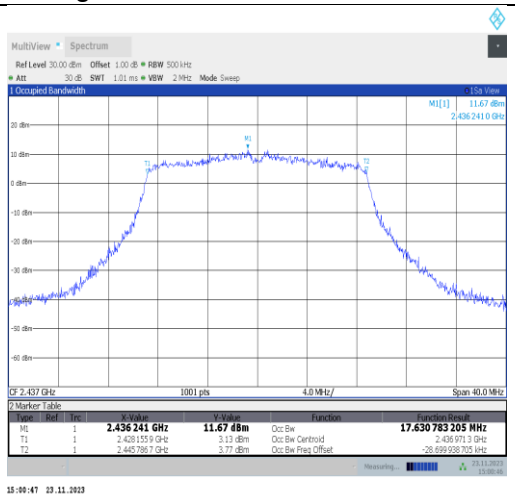

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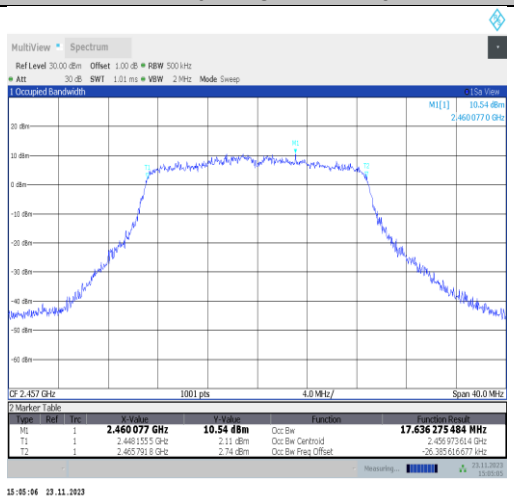

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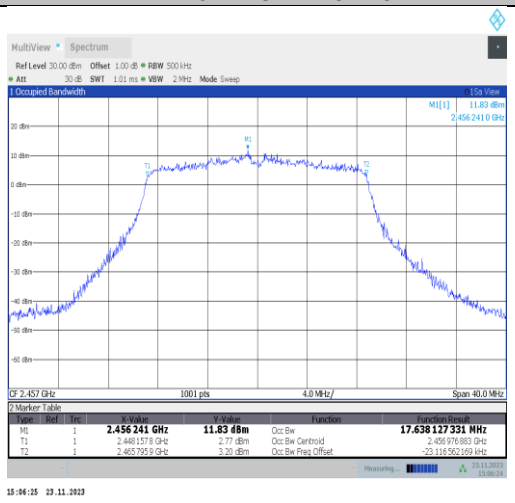

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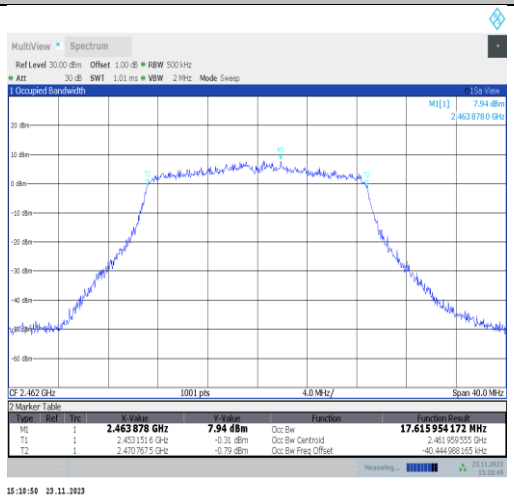

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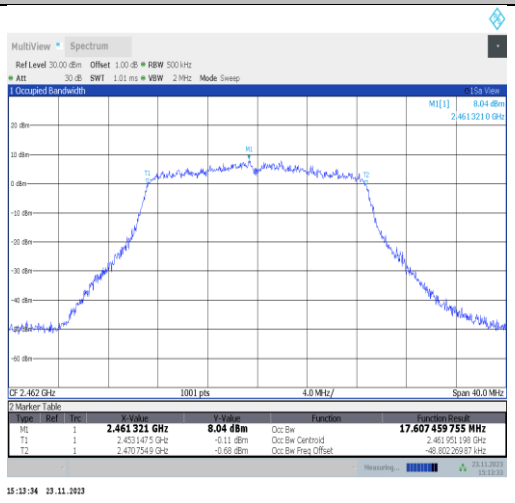

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