

## ELECTROMAGNETIC EMISSIONS **COMPLIANCE REPORT**



Applicant:	Silex Technology, Inc.
	2-3-1 Hikaridai, Seika-cho, Soraku-gun, Kyoto 619-0237,
	Japan
Manufacturer:	Silex Technology, Inc.
	2-3-1 Hikaridai, Seika-cho, Soraku-gun, Kyoto 619-0237,
	Japan
Product Name:	SX-PCEBE-AP
Brand Name:	Silex Technology
Model No./ISED HVIN:	SX-PCEBE-AP
ISED PMN:	Embedded wireless module
Report Number:	TERF2412003977ER
FCC ID	N6C-PCEBEAP
IC:	4908A-PCEBEAP
Date of EUT Received:	December 06, 2024
Date of Test:	December 09, 2024 $\sim$ February 21, 2025
Issue Date:	March 27, 2025

Approved By CHUN; CHIZEH, CHIEN

## CHUN-CHIEH, CHEN

## We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT comply with FCC rule part §15.247, ISED RSS-247.

The results of this report relate only to the sample identified in this report.

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Revision History							
Report Number	Revision	Description	Issue Date	Revised By	Remark		
TERF2412003977ER	00	Original	March 27, 2025	Karen Huang			

## Note:

1 • The remark "\*" indicates modification of the report upon requests from certification body.

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#### **GENERAL INFORMATION** 1

#### 1.1 **Product Description**

Product Name:	SX-PCEBE-AP	
Brand Name:	Silex Technology	
Model No./ISED HVIN:	SX-PCEBE-AP	
Hardware Version:	N/A	
Firmware Version:	N/A	
EUT Series No.:	PW105450X6	
Power Supply:	3.3 VDC and 5 VDC	
Test Software (Name/Version)	QRCT/Version 4.0.211.0	

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#### 1.2 **RF Specification**

## WLAN 2.4GHz

Wi-Fi	Frequency	Channels	Rated Pov	wer (dBm)	Modulation	
VVI-F1	Range	Charmers	Peak	Avg.	Technology	
802.11b	2412~2462	11	24.10	21.43	DSSS	
802.11g	2412~2462	11	29.58	23.93	OFDM	
802.11n_HT20	2412~2462	11	29.72	23.97	OFDM	
802.11n_HT40	2422~2452	7	25.34	19.22	OFDM	
802.11ax_HE20	2412~2462	11	29.91	23.96	OFDMA	
802.11ax_HE40	2422~2452	7	25.34	19.09	OFDMA	
802.11be_EHT20	2412~2462	11	29.96	24.03	OFDMA	
802.11be_EHT40	2422~2452	7	25.40	19.11	OFDMA	
Modulation type:		CCK, DQPSK, DBPSK for DSSS in 802.11b 64QAM, 16QAM, QPSK, BPSK for OFDM in 802.11g,11n 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA in 802.11ax 4096QAM, 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA in 802.11be 802.11b: 1/2/5.5/11 Mbps				
Data Rat	802.11b: 1/2/5 802.11g: 6/9/1 802.11n_HT20 802.11n_HT40 802.11ax_HE2 802.11ax_HE4 802.11be_EHT 802.11be_EHT	2/18/24/36/48/ up to 144.4Mb up to 300Mbp 0:up to 286.8M 0:up to 573.6M 20:up to 344.1	ps s 1bps 1bps Mbps			

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## WLAN 2.4GHz for IC

Wi-Fi	Frequency	Channels	Rated Pov	wer (dBm)	Rated Power	Modulation
VVI-I I	Range	Charmers	Peak	Avg.	in dBm (EIRP)	Technology
802.11b	2412~2462	11	24.10	21.43	24.63	DSSS
802.11g	2412~2462	11	29.58	23.93	27.13	OFDM
802.11n_HT20	2412~2462	11	29.72	23.97	27.17	OFDM
802.11n_HT40	2422~2452	7	25.34	19.22	22.42	OFDM
802.11ax_HE20	2412~2462	11	29.91	23.96	27.16	OFDMA
802.11ax_HE40	2422~2452	7	25.34	19.09	22.29	OFDMA
802.11be_EHT20	2412~2462	11	29.96	24.03	27.23	OFDMA
802.11be_EHT40	2422~2452	7	25.40	19.11	22.31	OFDMA
Modulation type:		64QAM, 16QAM, QPSK, BPSK for OFDM in 802.11g,11n 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA in 802.11ax 4096QAM, 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA in 802.11be				
Data Rat	e:	802.11b: 1/2/5.5/11 Mbps         802.11g: 6/9/12/18/24/36/48/54 Mbps         802.11n_HT20:up to 144.4Mbps         802.11n_HT20:up to 144.4Mbps         802.11n_HT40:up to 300Mbps         802.11ax_HE20:up to 286.8Mbps         802.11ax_HE40:up to 573.6Mbps         802.11be_EHT20:up to 344.1Mbps         802.11be_EHT40:up to 688.2Mbps				

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#### 1.3 **Antenna Designation**

Antenna Type	Antenna Model No.	Freq.	Element Gain (dBi)	Cable Loss	Net Gain (dBi)	Remark
Dipole	146153		3.35	0.175	3.175	
Dipole	H2B1PC1A1Cxxxx		2.9	0.23	2.67	
Monopole	GW.05.0153	2.4GHz	2.8	0	2.8	
PIFA	6001535		3.2	0.5	2.7	Main
FIFA	6001555		4.3	1.1	3.2	Aux

Note:

- 1. Pre-scanned was done on the above antennas, measurements were demonstrated by using the antenna with the highest gain as the worst case scenarios.
- Antenna information is provided by the applicant. 2.

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#### **Test Methodology of Applied Standards** 1.4

FCC Part 15, Subpart C §15.247 FCC KDB 558074 D01 15.247 Meas Guidance v05r02 FCC KDB 662911 D01 Multiple Transmitter Output v02r01 RSS-247 issue 3 Aug. 2023 RSS-Gen, Issue 5 April 2018, Amendment 2 (February 2021) ANSI C63.10:2013

#### 1.5 **Test Facility**

Laboratory	Test Site Address	Test Site Name	FCC Designa- tion number	IC CAB identifier
		SAC 1		
		SAC 2		
		SAC 3		
	No.134, Wu Kung Road, New Taipei	Conduction 1		
		Conducted 1		
	Industrial Park, Wuku District, New	Conducted 2	TW0027	
	Taipei City, Taiwan.	Conducted 3		
		Conducted 4		
		Conducted 5		
SGS Taiwan Ltd.		Conducted 6		
Central RF Lab.		Conduction C		TW3702
		SAC C		
(TAF code 3702)		SAC D		
		SAC G		
	No 2 Kaji 1st Dd. Guisban District	Conducted A		
	No.2, Keji 1st Rd., Guishan District,	Conducted B	TW0028	
	Taoyuan City, Taiwan 333	Conducted C		
		Conducted D		
		Conducted E		
		Conducted F		
		Conducted G		

Note: Test site name is remarked on the equipment list in each section of this report as an indication where measurements occurred in specific test site and address.

#### 1.6 **Special Accessories**

There are no special accessories used while test was conducted.

#### 1.7 **Equipment Modifications**

There was no modification incorporated into the EUT.

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#### SYSTEM TEST CONFIGURATION 2

#### 2.1 **EUT Configuration**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

#### 2.2 **EUT Exercise**

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

#### 2.3 **Test Procedure**

#### 2.3.1 **Conducted Emissions**

The EUT is placed on a table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz. The CISPR Quasi-Peak and Average detector mode is employed. The two LISNs provide 50uH/50 ohm of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

#### 2.3.2 **Conducted Test (RF)**

The active antenna port of the unlicensed wireless device is connected to the spectrum analyzer with attenuator to protect the instrumentation. If a second antenna port is available, it is tested at one operating frequency, with other port(s) appropriately terminated, to verify it has similar output characteristics as the fully tested port.

#### 2.3.3 **Radiated Emissions**

The EUT is placed on a turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

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#### 2.4 **Measurement Results Explanation Example**

#### Radiated Emission Test Sites For Measurements From 9 kHz To 30 MHz 2.4.1

Radiated emission below 30MHz is measured in a 9m\*6m\*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

#### 2.4.2 For all conducted test items:

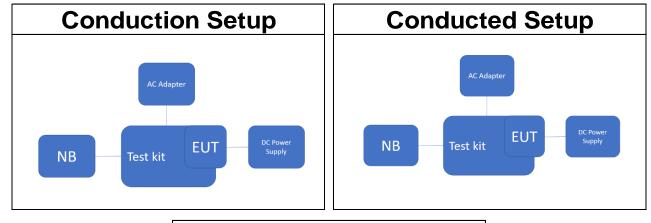
The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

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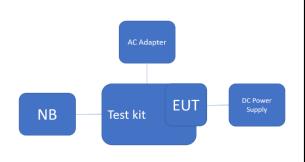
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#### 2.5 **Test Configuration**







#### 2.6 Control Unit(s)

AC Power-Line Conducted Emission Test Site: Conduction 1						
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL. (mm/dd/yyyy)	CAL DUE. (mm/dd/yyyy)	
AC Adapter	MEAN WELL	GST60A12	N/A	N/A	N/A	
Test kit	Silex	SCH-39019 REV F	N/A	N/A	N/A	
Notebook	Lenovo	T440P	PC-01V5PW 14/11	N/A	N/A	
	C	onducted Emission	Test Site: Conducted	2		
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL. (mm/dd/yyyy)	CAL DUE. (mm/dd/yyyy)	
AC Adapter	MEAN WELL	GST60A12	N/A	N/A	N/A	
Test kit	Silex	SCH-39019 REV F	N/A	N/A	N/A	
Notebook	Lenovo	T14	PF-380WLW	N/A	N/A	
	Radiated Emission Test Site: SAC 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL. (mm/dd/yyyy)	CAL DUE. (mm/dd/yyyy)	
AC Adapter	MEAN WELL	GST60A12	N/A	N/A	N/A	
Test kit	Silex	SCH-39019 REV F	N/A	N/A	N/A	
Notebook	Lenovo	T440P	PC-01V5PW 14/11	N/A	N/A	

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#### 3 SUMMARY OF TEST RESULTS

FCC Rules	ISED Rules	Description Of Test	Result
§15.207(a)	RSS-Gen §8.8	AC Power Line Conducted Emission	Compliant
§15.247(b) (3)	RSS-247 §5.4 d	Peak Output Power	Compliant
§15.247(a)(2)	RSS-247 §5.2 a RSS-Gen §6.7	Emission Bandwidth	Compliant
§15.209 §15.247(d)	RSS-247 §5.5	Conducted Band Edge and Spurious Emission	Compliant
§15.209 §15.247(d)	RSS-247 §5.5	Radiated Band Edge and Spurious Emission	Compliant
§15.205	RSS-Gen § 8.10	Restricted Bands	Compliant
§15.247(e)	RSS-247 §5.2 b	Power Spectral Density	Compliant
§15.203	N/A	Antenna Requirement	Compliant

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#### DESCRIPTION OF TEST MODES 4

#### 4.1 **Operating Frequencies**

2400~2483.5 MHz					
1Hz					
Freq. (MHz)					
2412					
2417					
2422					
2427					
2432					
2437					
2442					
2447					
2452					
2457					
2462					
	1Hz         Freq. (MHz)         2412         2417         2422         2423         2432         2432         2432         2432         2432         2432         2432         2432         2432         2437         2442         2442         24452         2457				

40N	1Hz
СН	Freq. (MHz)
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452

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#### 4.2 The Worst Test Modes and Channel Details

- 1. The EUT has been tested under operating condition.
- 2. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
- 3. Investigation has been done on all the possible configurations for searching the worst case.

The given UE is pre-scanned among below modes.

								Single			Multi	
	Modulation			Tra	nsmiss	sion	Chain		Т	ansmission	Т	ansmission
										Spatial		Spatial
۷	802.11 b	V	Ch0	V	Ch1		Ch2	Ch3		1TX	V	2TX
۷	802.11 g	V	Ch0	V	Ch1		Ch2	Ch3		1TX	V	2TX
V	802.11 n	V	Ch0	V	Ch1		Ch2	Ch3		1TX	V	2TX
V	802.11 ac	V	Ch0	V	Ch1		Ch2	Ch3		1TX	V	2TX
۷	802.11 ax	V	Ch0	V	Ch1		Ch2	Ch3		1TX	V	2TX
۷	802.11 be	V	Ch0	V	Ch1		Ch2	Ch3		1TX	V	2TX

4. Therefore, below summary is the modes of test configuration that yield the highest reading and generate the highest emission chosen to carry out the relevantly mandatory test items.

CONDUCTED TEST							
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT		
802.11b	1 to 11	1,2,3,6,9,10,11	DSSS	1	2TX		
802.11g	1 to 11	1,2,3,4,6,9,10,11	OFDM	6	2TX		
802.11n_HT20	1 to 11	1,2,3,4,5,6,8,9,10,11	OFDM	MCS0	2TX		
802.11n_HT40	3 to 9	3,4,5,6,7,8,9	OFDM	MCS0	2TX		

	CONDUCTED TEST								
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	RU CONFIGURATION	DATA RATE (Mbps)	ANTENNA PORT			
802.11be_EHT20	1 to 11	1,2,3,4,5,6,7,8,9,10,11	OFDMA	FULL RU	MCS0	2TX			
802.11be_EHT40	3 to 9	3,4,5,6,7,8,9	OFDMA	FULL RU	MCS0	2TX			

TRANSMIT RADIATED EMISSION TEST (BELOW 1 GHz)								
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT			
802.11g	1 to 11	6	OFDM	6	2TX			

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TRANSMIT RADIATED EMISSION TEST (ABOVE 1 GHz)								
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)		ANTENNA PORT		
802.11b	1 to 11	1,6,11	DSSS	1		2TX		
802.11g	1 to 11	1,6,11	OFDM	6		2TX		
802.11n_HT20	1 to 11	1,6,11	OFDM	MCS0		2TX		
802.11n_HT40	3 to 9	3,6,9	OFDM	MCS0		2TX		
	TRANSMIT RADIATED EMISSION TEST (ABOVE 1 GHz)							
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	RU CONFIGURATION	DATA RATE (Mbps)	ANTENNA PORT		
802.11be_EHT20	1 to 11	1,6,11	OFDMA	FULL RU	MCS0	2TX		
802.11be_EHT40	3 to 9	3,6,9	OFDMA	FULL RU	MCS0	2ТХ		

## Note:

The field strength of radiated emission was measured as the EUT positioned in different orthogonal planes (E1/E2/H) based on actual usage of the EUT to pre-scan the emissions for determining the worst case scenario.

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#### **MEASUREMENT UNCERTAINTY** 5

Test Items	Un	certain	ty
AC Power Line Conducted Emission	+/-	1.54	dB
Output Power measurement	+/-	0.97	dB
Emission Bandwidth	+/-	1.38	Hz
Conducted emission measurement	+/-	0.77	dB
Peak Power Density	+/-	0.61	dB
Temperature	+/-	0.6	°C
Humidity	+/-	3	%
DC / AC Power Source	+/-	1	%

Radiated Spurious Emission Measurement Uncertainty					
	+/-	1.89	dB	9kHz~30MHz	
Polarization: Vertical	+/-	4.15	dB	30MHz - 1000MHz	
	+/-	3.43	dB	1GHz - 18GHz	
	+/-	3.86	dB	18GHz - 40GHz	
	+/-	1.89	dB	9kHz~30MHz	
Polarization: Horizontal	+/-	4.02	dB	30MHz - 1000MHz	
Folarization. Horizontai	+/-	3.43	dB	1GHz - 18GHz	
	+/-	3.86	dB	18GHz - 40GHz	
	+/-	2	dB	33GHz-50GHz	
	+/-	1.59	dB	50GHz-60GHz	
Radiated Spurious Emission	+/-	1.7	dB	60GHz-90GHz	
	+/-	1.64	dB	90GHz-140GHz	
	+/-	3.83	dB	140GHz-220GHz	

## Note:

- 1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 2. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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#### MEASUREMENT EQUIPMENT USED 6

#### 6.1 **Emission from AC power line**

AC Power-Line Conducted Emission Test Site: Conduction 1							
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.		
		MODELNOMBER	JENIALNONIDEN	(mm/dd/yyyy)	(mm/dd/yyyy)		
Coaxial Cables	EMC Instruments	EMCCFD300-BM-	161207	06/22/2024	06/21/2025		
Coaxial Cables	Corp.	BM-3000	101207	00/22/2024	00/21/2023		
DC Power Supply	Gwinstek	SPS-3610	GEV856733	12/04/2024	12/03/2025		
EMI Test Receiver	R&S	ESR 7	102525	02/17/2024	02/16/2025		
LISN	SCHWARZBECK	NSLK 8127	1040	09/07/2024	09/06/2025		
LISN	SCHWARZBECK	NSLK 8127	1041	11/04/2024	11/03/2025		
Pulse Limiter	SCHWARZBECK	VTSD 9561F-N	793	06/22/2024	06/21/2025		
Test Software	Audix	e3	Ver. 9.210616	N.C.R	N.C.R		

#### 6.2 **Conducted Measurement**

	Conducted Emission Test Site: Conducted 2							
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.			
				(mm/dd/yyyy)	(mm/dd/yyyy)			
Attenuator	Mini-Circuits	BW-S10W2+	14	12/11/2024	12/10/2025			
Attenuator	Mini-Circuits	BW-S10W2+	28	12/11/2024	12/10/2025			
DC Block	Mini-Circuits	BLK-18-S+	31129	12/11/2024	12/10/2025			
DC Power Supply	Gwinstek	SPS-3610	GEV856733	12/04/2024	12/03/2025			
Power Meter	Anritsu	ML2496A	2138003	10/09/2024	10/08/2025			
Power Sensor	Anritsu	MA2411B	1911393	10/09/2024	10/08/2025			
Power Sensor	Anritsu	MA2411B	1911394	10/09/2024	10/08/2025			
PXA Spectrum	Kausiaht	NOODOD	NAV(C1220404	02/22/2024	02/21/2025			
Analyzer	Keysight	N9030B	MY61330494	03/22/2024	03/21/2025			
Test Software	SGS	Radio Test	Ver. 21	N.C.R	N.C.R			
rescontware	202	Software	ver. 21	N.C.R	IN.C.K			

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#### 6.3 **Radiated Measurement**

	Radiated Emission Test Site: SAC 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL. (mm/dd/yyyy)	CAL DUE. (mm/dd/yyyy)	
4G High Pass Filter	WI	WHKX4.0	24	12/11/2024	12/10/2025	
Band Reject Filter 2400-2483.5	Titan	T04N2400248350S0 1	23040703-10	12/11/2024	12/10/2025	
Bi-log Antenna	SCHWARZBECK	VULB9168	378	08/09/2024	08/08/2025	
Coaxial Cable	EMCI	EMC104-SM-SM- 8000+EMC106-SM- SM-7600	RX Cable 9K- 18G(160125+150817 )	08/30/2024	08/29/2025	
Coaxial Cables	Huber Suhner	SUCOFLEX 102	RX Cable 18G-40G MY2630/2+805062/ 2	08/30/2024	08/29/2025	
DC Power Supply	Gwinstek	SPD-3606	GEW923151	05/16/2024	05/15/2025	
EMI Test Receiver	R&S	ESCI 7	100759	08/28/2024	08/27/2025	
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY60242081	10/23/2024	10/22/2025	
Horn Antenna	RF SPIN	DRH0844	LE2D05A0844	07/10/2024	07/09/2025	
Horn Antenna	SCHWARZBECK	BBHA9120D	D803	01/12/2024	01/11/2025	
Horn Antenna	SCHWARZBECK	BBHA9120D	D803	01/09/2025	01/08/2026	
Loop Antenna	COM-POWER	AL-130R	10160104	12/19/2024	12/18/2025	
Pre-Amplifier	EMCI	EMC118A45SEE	980933	08/30/2024	08/29/2025	
Pre-Amplifier	EMCI	EMC184045SEE	9080939	08/30/2024	08/29/2025	
Pre-Amplifier	HP	8447D	2944A09469	08/30/2024	08/29/2025	
Site Cal	SGS	SAC 1	N/A	08/30/2024	08/29/2025	
Test Software	Audix	e3	Ver. 9.210616	N.C.R	N.C.R	

NOTE: N.C.R refers to Not Calibrated Required.

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#### CONDUCTED EMISSION TEST 7

#### 7.1 **Standard Applicable**

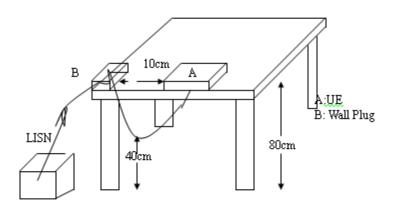
Frequency range within 150kHz to 30MHz shall not exceed the Limit table as below.

Frequency range	Limits (dBuV)				
MHz	Quasi-peak	Average			
0.15 to 0.50	66 to 56	56 to 46			
0.50 to 5	56	46			
5 to 30	60	50			
Note					
1.The lower limit shall apply at the transition frequencies					
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.					

#### 7.2 EUT Setup:

- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
- 2. The AC/DC Power adaptor of EUT was plug-in LISN. The EUT was placed flushed with the rear of the table.
- 3. The LISN was connected with 120Vac/60Hz power source.

#### 7.3 **Test Setup**



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#### 7.4 **Measurement Procedure**

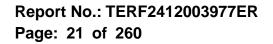
- 1. The EUT was placed on a table which is 0.8m above ground plane.
- 2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 3. Repeat above procedures until all phases of power being supplied by given UE are completed

#### 7.5 **Measurement Result**

Note: Refer to next page for measurement data and plots. Note2: The \* reveals the worst-case results that closest to the limit.

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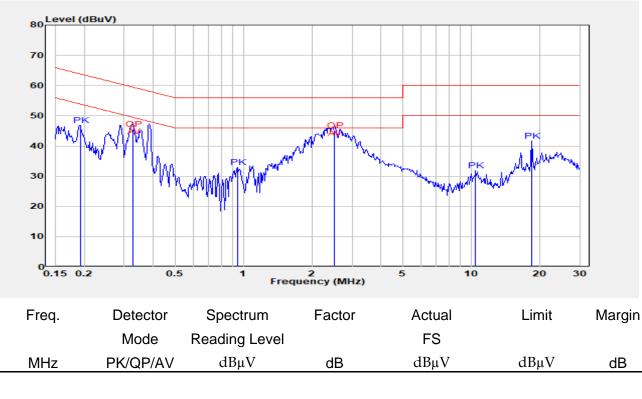


# SGS

## AC POWER LINE CONDUCTED EMISSION TEST DATA

Report Number	:TERF2412003977ER
Operation Mode	:WLAN 2.4G
Power	:120V/60Hz
Probe	:L
Note:	:

Test Site :Conduction 1 Test Date :2025-01-07 Temp./Humi. :24.1°C/62% Engineer :WJ Lin



_	MHz	PK/QP/AV	dBµV	dB	dBµV	dBµV	dB
	0.192	Peak	36.74	10.13	46.87	63.96	-17.09
	0.328	Average	32.92	10.14	43.06	49.49	-6.43
	0.328	QP	35.31	10.14	45.45	59.49	-14.04
	0.940	Peak	22.68	10.20	32.87	56.00	-23.13
	2.512	Average	32.35	10.22	42.57	46.00	-3.43
	2.512	QP	34.82	10.22	45.04	56.00	-10.96
	10.477	Peak	21.40	10.39	31.79	60.00	-28.21
	18.494	Peak	31.06	10.51	41.57	60.00	-18.43

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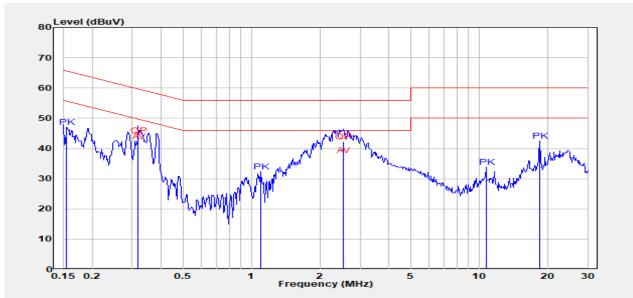
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:TERF2412003977ER
:WLAN 2.4G
:120V/60Hz
:N
:

Test Site	:Conduction 1
Test Date	:2025-01-07
Temp./Humi.	:24.1℃/62%
Engineer	:WJ Lin



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBμV	dBµV	dB
0.155	Peak	36.86	10.12	46.98	65.74	-18.77
0.318	Average	32.11	10.14	42.25	49.75	-7.50
0.318	QP	34.06	10.14	44.20	59.75	-15.55
1.096	Peak	22.17	10.19	32.36	56.00	-23.64
2.531	Average	27.52	10.23	37.75	46.00	-8.25
2.531	QP	31.98	10.23	42.21	56.00	-13.79
10.721	Peak	23.36	10.42	33.78	60.00	-26.22
18.494	Peak	31.82	10.57	42.39	60.00	-17.61

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## 8 PEAK OUTPUT POWER MEASUREMENT

## 8.1 Standard Applicable

## 8.1.1 Duty Cycle

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle.

All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

## 8.1.2 FCC

For systems using digital modulation in the 2400-2483.5 MHz bands, the limit for peak output power is 1Watt.

If the transmitting antenna of directional gain greater than 6dBi are used the peak output power form the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6dBi.

In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of Antenna exceeds 6dBi.

## 8.1.3 ISED

For systems using digital modulation in the 2400-2483.5 MHz bands, the limit for peak output power is 1Watt and the e.i.r.p. shall not exceed 4 W.

## Note:

When the antenna gain is greater than 6 dBi, the power limit attenuated accordingly.

## As per section F. 2). e). (ii) of FCC KDB 662911 D01

If antenna gains are not equal and each transmit antenna is driven by only one spatial stream, directional gain may be calculated by either of the following formulas.

• DirectionalGain = 
$$10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

## where

## Each antenna is driven by no more than one spatial stream;

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NSS = the number of independent spatial streams of data;

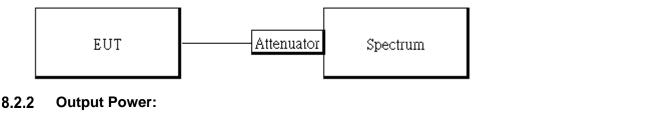
NANT = the total number of antennas

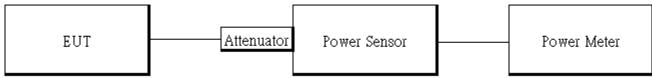
 $g_{j,k} = 10^{Gk/20}$  if the kth antenna is being fed by spatial stream j, or zero if it is not;

 $G_k$  is the gain in dBi of the kth antenna.

## 8.2 Test Setup

## 8.2.1 Duty Cycle





## 8.3 Measurement Procedure

## 8.3.1 Duty Cycle:

- 1. Set span = Zero
- 2. RBW = 8MHz
- 3. VBW = 8MHz,
- 4. Detector = Peak

## 8.3.2 Output Power

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter.

## **Power Meter:**

It is used as the auxiliary test equipment to conduct the output power measurement.

- 4. Record the max. Reading as observed from Spectrum or Power Meter.
- 5. MIMO mode: offset is set with "measure and add 10 Log (N)" to measurement for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna, cable loss is specified below.

## \* Note: The duty cycle factor and below is compensated to obtain the maximum value of measurement in average.

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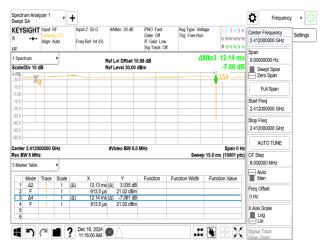
#### 8.4 **Measurement Result**

#### 8.4.1 **Duty Cycle:**

Мс	de	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log(1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)	
802	.11b	99.92	0.00	0.08	0.01	
802	802.11g		0.03	0.51	0.01	
802.1	802.11n_20		0.02	0.18	0.01	
802.1	1n_40	99.63	0.02	0.18	0.01	
Mode	RU Config	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log(1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)	
802.11ax_20	Full	99.63	0.02	0.18	0.01	
802.11ax_40	Full	99.63	0.02	0.18	0.01	
802.11be_20	Full	99.63	0.02	0.18	0.01	
802.11be_40	Full	99.63	0.02	0.18	0.01	

#### 8.4.2 **Duty Cycle test plots**

802.11b\_20MHz\_Chain0\_2412MHz



#### 802.11g\_20MHz\_Chain0\_2412MHz



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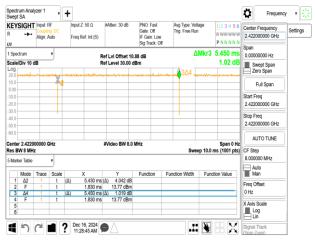
## Report No.: TERF2412003977ER Page: 26 of 260



#### 802.11n 20MHz Chain0 2412MHz



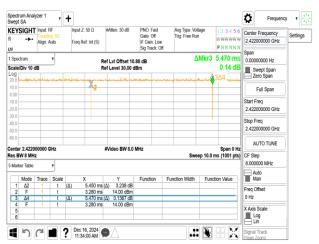
802.11n 40MHz Chain0 2422MHz



#### 802.11ax\_20MHz\_Chain0\_2412MHz



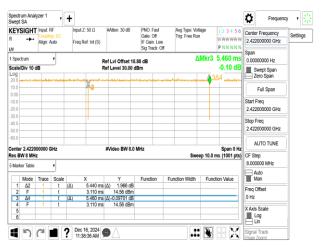
#### 802.11ax 40MHz Chain0 2422MHz



802.11be 20MHz Chain0 2412MHz



#### 802.11be\_40MHz\_Chain0\_2422MHz



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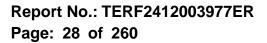
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**Output Power** 8.4.3

802.11	1b_2TX		_	-			_		
СН	Freq. (MHz)	Data Rate	Power Setting		put Power 3m)	Total Peak Output Power (mW)	Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1	(111 VV)	(ubili)		
1	2412	1	18.5	21.11	21.07	257.06	24.10	30.00	PASS
2	2417	1	18.5	21.01	20.99	251.79	24.01	30.00	PASS
3	2422	1	18.5	21.06	20.97	252.67	24.03	30.00	PASS
6	2437	1	18.5	21.04	20.95	251.51	24.01	30.00	PASS
9	2452	1	18.5	21.16	20.88	253.08	24.03	30.00	PASS
10	2457	1	18.5	21.18	20.83	252.28	24.02	30.00	PASS
11	2462	1	18.5	21.02	20.89	249.22	23.97	30.00	PASS
802.11	1b_2TX			-			-	_	_
СН	Freq. (MHz)	Data Rate	Power Setting	-	put Power 3m)	Total Avg. Output Power (mW)	Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1	(11100)	(ubiii)		
1	2412	1	18.5	18.35	18.44	138.33	21.41	30.00	PASS
2	2417	1	18.5	18.27	18.37	135.96	21.33	30.00	PASS
3	2422	1	18.5	18.35	18.48	138.97	21.43	30.00	PASS
6	2437	1	18.5	18.35	18.47	138.81	21.42	30.00	PASS
9	2452	1	18.5	18.46	18.37	138.96	21.43	30.00	PASS
10	2457	1	18.5	18.41	18.22	135.83	21.33	30.00	PASS
11	2462	1	18.5	18.36	18.11	133.37	21.25	30.00	PASS

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802.11	lg_2TX	·							
СН	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (dBm)		Total Peak Output Power (mW)	Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1	(11174)	(uBill)		
1	2412	6	16.5	21.62	21.81	296.92	24.73	30.00	PASS
2	2417	6	19	24.25	24.52	549.21	27.40	30.00	PASS
3	2422	6	20.5	25.46	25.65	718.84	28.57	30.00	PASS
4	2427	6	21.5	26.35	26.78	907.95	29.58	30.00	PASS
6	2437	6	21.5	26.31	26.61	885.70	29.47	30.00	PASS
9	2452	6	21.5	26.49	26.44	886.21	29.48	30.00	PASS
10	2457	6	19	24.29	24.87	575.44	27.60	30.00	PASS
11	2462	6	16	21.23	21.14	262.76	24.20	30.00	PASS
802.11	lg_2TX							-	
СН	Freq. (MHz)	Data Rate	Power Setting	•	put Power 3m)	Total Avg. Output Power (mW)	Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1	(11144)	(ubili)		
1	2412	6	16.5	15.98	16.02	79.67	19.01	30.00	PASS
2	2417	6	19	18.25	18.48	137.39	21.38	30.00	PASS
3	2422	6	20.5	19.87	19.94	195.80	22.92	30.00	PASS
4	2427	6	21.5	20.84	20.96	246.23	23.91	30.00	PASS
6	2437	6	21.5	20.81	20.91	243.97	23.87	30.00	PASS
9	2452	6	21.5	21.02	20.81	247.13	23.93	30.00	PASS
10	2457	6	19	18.47	18.35	138.78	21.42	30.00	PASS
11	2462	6	16	15.51	15.35	69.88	18.44	30.00	PASS

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## C

802.11	n_HT20N	/_2TX							
СН	Freq. (MHz)	Data Rate	Power Setting		put Power 3m)	Total Peak Output Power (mW)	Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1	(11144)	(dbiii)		
1	2412	MCS0	15	20.44	20.46	221.84	23.46	30.00	PASS
2	2417	MCS0	18.5	23.65	23.81	472.18	26.74	30.00	PASS
3	2422	MCS0	20	25.32	25.53	697.68	28.44	30.00	PASS
4	2427	MCS0	21	26.07	26.33	834.11	29.21	30.00	PASS
5	2432	MCS0	21.5	26.51	26.91	938.62	29.72	30.00	PASS
6	2437	MCS0	21.5	26.49	26.64	906.97	29.58	30.00	PASS
8	2447	MCS0	21.5	26.51	26.78	924.14	29.66	30.00	PASS
9	2452	MCS0	20	25.48	25.14	679.77	28.32	30.00	PASS
10	2457	MCS0	18.5	23.72	23.44	456.31	26.59	30.00	PASS
11	2462	MCS0	15	20.67	20.24	222.36	23.47	30.00	PASS
802.11	n_HT20N	/_2TX							
СН	Freq. (MHz)	Data Rate	Power Setting	-	put Power 3m)	Total Avg. Output Power (mW)	Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1	(111¥¥)	(dBill)		
1	2412	MCS0	15	14.53	14.67	57.64	17.61	30.00	PASS
2	2417	MCS0	18.5	17.89	18.91	139.20	21.44	30.00	PASS
3	2422	MCS0	20	19.50	19.52	178.50	22.52	30.00	PASS
4	2427	MCS0	21	20.33	20.53	220.68	23.44	30.00	PASS
5	2432	MCS0	21.5	20.91	21.01	249.27	23.97	30.00	PASS
6	2437	MCS0	21.5	20.83	20.83	241.90	23.84	30.00	PASS
8	2447	MCS0	21.5	20.91	20.85	244.71	23.89	30.00	PASS
9	2452	MCS0	20	19.53	19.28	174.31	22.41	30.00	PASS
10	2457	MCS0	18.5	17.94	17.68	120.74	20.82	30.00	PASS
11	2462	MCS0	15	14.64	14.44	56.85	17.55	30.00	PASS

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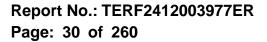
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## SG

802.11	1n_HT40M	_2TX							
СН	Freq. (MHz)	Data Rate	Power Setting		put Power 3m)	Total Peak Output Power	Total Peak Output Power	Limit (dBm)	RESULT
				Ch0	Ch1	(mW)	(dBm)		
3	2422	MCS0	12	17.68	17.71	117.63	20.71	30.00	PASS
4	2427	MCS0	14	19.52	19.61	180.95	22.58	30.00	PASS
5	2432	MCS0	15.5	21.23	21.43	271.73	24.34	30.00	PASS
6	2437	MCS0	16.5	22.15	22.27	332.71	25.22	30.00	PASS
7	2442	MCS0	16.5	22.17	22.48	341.83	25.34	30.00	PASS
8	2447	MCS0	15	20.62	20.92	238.94	23.78	30.00	PASS
9	2452	MCS0	14	19.62	19.21	174.99	22.43	30.00	PASS
802.11	1n_HT40M	_2TX							
СН	Freq. (MHz)	Data Rate	Power Setting		put Power 3m)	Total Avg. Output Power	Total Avg. Output Power	Limit (dBm)	RESULT
				Ch0	Ch1	(mW)	(dBm)		
3	2422	MCS0	12	11.86	11.98	31.09	14.93	30.00	PASS
4	2427	MCS0	14	13.80	13.88	48.38	16.85	30.00	PASS
5	2432	MCS0	15.5	15.18	15.53	68.63	18.36	30.00	PASS
6	2437	MCS0	16.5	16.15	16.26	83.40	19.21	30.00	PASS
7	2442	MCS0	16.5	16.16	16.27	83.59	19.22	30.00	PASS
8	2447	MCS0	15	14.79	14.99	61.62	17.90	30.00	PASS
9	2452	MCS0	14	13.89	13.63	47.52	16.77	30.00	PASS

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802.11	lax_HE20	M_2TX								
СН	Freq. (MHz)	Data Rate	RU Config	Power Setting		put Power 3m)	Total Peak Output Power (mW)	Total Peak Output Power (dBm)	Limit (dBm)	RESULT
					Ch0	Ch1	(mW)	(ubili)		
1	2412	MCS0	full	14	20.19	20.21	209.43	23.21	30.00	PASS
2	2417	MCS0	full	17	22.81	22.83	382.85	25.83	30.00	PASS
3	2422	MCS0	full	19	24.71	24.76	595.03	27.75	30.00	PASS
4	2427	MCS0	full	20.5	26.07	26.28	829.20	29.19	30.00	PASS
5	2432	MCS0	full	21	20.31	26.78	583.83	27.66	30.00	PASS
6	2437	MCS0	full	21.5	26.89	26.91	979.56	29.91	30.00	PASS
7	2442	MCS0	full	21	26.28	26.61	882.76	29.46	30.00	PASS
8	2447	MCS0	full	20.5	26.35	26.01	830.54	29.19	30.00	PASS
9	2452	MCS0	full	19.5	25.55	24.91	668.66	28.25	30.00	PASS
10	2457	MCS0	full	17	23.01	22.41	374.17	25.73	30.00	PASS
11	2462	MCS0	full	14	20.12	19.48	191.52	22.82	30.00	PASS
802.11	ax_HE20	M_2TX								
СН	Freq. (MHz)	Data Rate	RU Config	Power Setting		out Power 3m)	Total Avg. Output Power	Total Avg. Output Power	Limit (dBm)	RESULT
				_	Ch0	Ch1	(mW)	(dBm)		
1	2412	MCS0	full	14	13.61	13.70	46.36	16.66	30.00	PASS
2	2417	MCS0	full	17	16.44	16.53	88.95	19.49	30.00	PASS
3	2422	MCS0	full	19	18.46	18.53	141.30	21.50	30.00	PASS
4	2427	MCS0	full	20.5	19.91	20.13	200.81	23.03	30.00	PASS
5	2432	MCS0	full	21	20.51	20.60	227.07	23.56	30.00	PASS
6	2437	MCS0	full	21.5	20.90	21.01	248.99	23.96	30.00	PASS
7	2442	MCS0	full	21	20.44	20.40	220.11	23.43	30.00	PASS
8	2447	MCS0	full	20.5	19.91	19.83	193.94	22.88	30.00	PASS
9	2452	MCS0	full	19.5	19.03	18.81	155.88	21.93	30.00	PASS
10	2457	MCS0	full	17	16.55	16.25	87.28	19.41	30.00	PASS
11	2462	MCS0	full	14	13.73	13.41	45.49	16.58	30.00	PASS

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802.11	1ax_HE40	)M_2TX								
СН	Freq. (MHz)	Data Rate	RU Config	Power Setting	-	put Power 3m)	Total Peak Output Power	Total Peak Output Power	Limit (dBm)	RESULT
					Ch0	Ch1	(mW)	(dBm)		
3	2422	MCS0	full	13.5	19.12	19.07	162.38	22.11	30.00	PASS
4	2427	MCS0	full	14.5	20.28	20.31	214.06	23.31	30.00	PASS
5	2432	MCS0	full	15.5	21.33	21.61	280.71	24.48	30.00	PASS
6	2437	MCS0	full	16.5	22.24	22.34	338.89	25.30	30.00	PASS
7	2442	MCS0	full	16.5	22.25	22.41	342.06	25.34	30.00	PASS
8	2447	MCS0	full	15.5	21.28	21.41	272.63	24.36	30.00	PASS
9	2452	MCS0	full	14	19.67	19.31	177.99	22.50	30.00	PASS
802.11	1ax_HE40	M_2TX								
СН	Freq. (MHz)	Data Rate	RU Config	Power Setting		out Power 3m)	Total Avg. Output Power (mW)	Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
					Ch0	Ch1	(11114)	(dbiii)		
3	2422	MCS0	full	13.5	13.03	12.97	39.87	16.01	30.00	PASS
4	2427	MCS0	full	14.5	14.00	14.17	51.19	17.09	30.00	PASS
5	2432	MCS0	full	15.5	15.06	15.29	65.81	18.18	30.00	PASS
6	2437	MCS0	full	16.5	16.00	16.09	80.38	19.05	30.00	PASS
7	2442	MCS0	full	16.5	16.03	16.13	81.03	19.09	30.00	PASS
8	2447	MCS0	full	15.5	15.07	15.00	63.70	18.04	30.00	PASS
9	2452	MCS0	full	14	13.60	13.31	44.30	16.46	30.00	PASS

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802.11	lbe_EHT	20M_2TX								
СН	Freq. (MHz)	Data Rate	RU Config	Power Setting		put Power 3m)	Total Peak Output Power (mW)	Total Peak Output Power (dBm)	Limit (dBm)	RESULT
					Ch0	Ch1	(11177)	(ubili)		
1	2412	MCS0	full	14	20.22	20.25	211.12	23.25	30.00	PASS
2	2417	MCS0	full	17	22.88	22.93	390.42	25.92	30.00	PASS
3	2422	MCS0	full	19	24.77	24.79	601.22	27.79	30.00	PASS
4	2427	MCS0	full	20.5	26.17	26.35	845.52	29.27	30.00	PASS
5	2432	MCS0	full	21	26.45	26.88	929.10	29.68	30.00	PASS
6	2437	MCS0	full	21.5	26.94	26.95	989.76	29.96	30.00	PASS
7	2442	MCS0	full	21	26.38	26.78	910.94	29.59	30.00	PASS
8	2447	MCS0	full	20.5	26.45	26.11	849.89	29.29	30.00	PASS
9	2452	MCS0	full	19.5	25.69	24.99	686.18	28.36	30.00	PASS
10	2457	MCS0	full	17	23.09	22.53	382.76	25.83	30.00	PASS
11	2462	MCS0	full	14	20.22	19.56	195.56	22.91	30.00	PASS
802.11	be_EHT	20M_2TX								
СН	Freq. (MHz)	Data Rate	RU Config	Power Setting	•	put Power 3m)	Total Avg. Output Power	Total Avg. Output Power	Limit (dBm)	RESULT
	(				Ch0	Ch1	(mW)	(dBm)		
1	2412	MCS0	full	14	13.63	13.77	46.85	16.71	30.00	PASS
2	2417	MCS0	full	17	16.48	16.55	89.57	19.52	30.00	PASS
3	2422	MCS0	full	19	18.57	18.59	144.09	21.59	30.00	PASS
4	2427	MCS0	full	20.5	19.98	20.20	204.07	23.10	30.00	PASS
5	2432	MCS0	full	21	20.55	20.70	230.78	23.63	30.00	PASS
6	2437	MCS0	full	21.5	20.98	21.07	253.02	24.03	30.00	PASS
7	2442	MCS0	full	21	20.53	20.47	224.21	23.51	30.00	PASS
8	2447	MCS0	full	20.5	20.01	19.94	198.68	22.98	30.00	PASS
9	2452	MCS0	full	19.5	19.13	18.86	158.62	22.00	30.00	PASS
10	2457	MCS0	full	17	16.59	16.33	88.48	19.47	30.00	PASS
11	2462	MCS0	full	14	13.78	13.53	46.38	16.66	30.00	PASS

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802.11	1be_EHT	40M_2TX		_					-	-
СН	Freq. (MHz)	Data Rate	RU Config	Power Setting		put Power 3m)	Total Peak Output Power	Total Peak Output Power	Limit (dBm)	RESULT
					Ch0	Ch1	(mW)	(dBm)		
3	2422	MCS0	full	13.5	19.22	19.16	165.97	22.20	30.00	PASS
4	2427	MCS0	full	14.5	20.36	20.38	217.79	23.38	30.00	PASS
5	2432	MCS0	full	15.5	21.44	21.71	287.57	24.59	30.00	PASS
6	2437	MCS0	full	16.5	22.34	22.39	344.78	25.38	30.00	PASS
7	2442	MCS0	full	16.5	22.29	22.49	346.85	25.40	30.00	PASS
8	2447	MCS0	full	15.5	21.32	21.45	275.16	24.40	30.00	PASS
9	2452	MCS0	full	14	19.74	19.38	180.89	22.57	30.00	PASS
802.11	1be_EHT	40M_2TX	(							
СН	Freq. (MHz)	Data Rate	RU Config	Power Setting		out Power 3m)	Total Avg. Output Power (mW)	Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
					Ch0	Ch1	(mW)	(dBm)		
3	2422	MCS0	full	13.5	13.10	13.00	40.33	16.06	30.00	PASS
4	2427	MCS0	full	14.5	14.04	14.24	51.85	17.15	30.00	PASS
5	2432	MCS0	full	15.5	15.10	15.35	66.58	18.23	30.00	PASS
6	2437	MCS0	full	16.5	16.04	16.13	81.13	19.09	30.00	PASS
7	2442	MCS0	full	16.5	16.05	16.16	81.50	19.11	30.00	PASS
8	2447	MCS0	full	15.5	15.10	15.04	64.22	18.08	30.00	PASS
9	2452	MCS0	full	14	13.64	13.37	44.81	16.51	30.00	PASS

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#### **EIRP** 8.4.4

802.11	b_2TX					,,		-	
СН	Freq. (MHz)	Data Rate		out Power Bm)	Total Avg. Output Power	Antenna Gain	EIRP (dBm)	Limit (dBm)	RESULT
			Ch0	Ch1	(dBm)	(dBi)			
1	2412	1	18.35	18.44	21.41	3.20	24.61	36	PASS
2	2417	1	18.27	18.37	21.33	3.20	24.53	36	PASS
3	2422	1	18.35	18.48	21.43	3.20	24.63	36	PASS
6	2437	1	18.35	18.47	21.42	3.20	24.62	36	PASS
9	2452	1	18.46	18.37	21.43	3.20	24.63	36	PASS
10	2457	1	18.41	18.22	21.33	3.20	24.53	36	PASS
11	2462	1	18.36	18.11	21.25	3.20	24.45	36	PASS

## 802.11g 2TX

	<u> </u>								
СН	Freq. (MHz)	Data Rate	(dBm) Outpu	Total Avg. Output Power	Antenna Gain	EIRP (dBm)	Limit (dBm)	RESULT	
	. ,		Ch0	Ch1	(dBm)	(dBi)			
1	2412	6	15.98	16.02	19.01	3.20	22.21	36	PASS
2	2417	6	18.25	18.48	21.38	3.20	24.58	36	PASS
3	2422	6	19.87	19.94	22.92	3.20	26.12	36	PASS
4	2427	6	20.84	20.96	23.91	3.20	27.11	36	PASS
6	2437	6	20.81	20.91	23.87	3.20	27.07	36	PASS
9	2452	6	21.02	20.81	23.93	3.20	27.13	36	PASS
10	2457	6	18.47	18.35	21.42	3.20	24.62	36	PASS
11	2462	6	15.51	15.35	18.44	3.20	21.64	36	PASS

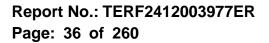
## 802.11n HT20M 2TX

СН	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)		Total Avg. Output Power	Antenna Gain	EIRP (dBm)	Limit (dBm)	RESULT
			Ch0	Ch1	(dBm)	(dBi)			
1	2412	MCS0	14.53	14.67	17.61	3.20	20.81	36	PASS
2	2417	MCS0	17.89	18.91	21.44	3.20	24.64	36	PASS
3	2422	MCS0	19.50	19.52	22.52	3.20	25.72	36	PASS
4	2427	MCS0	20.33	20.53	23.44	3.20	26.64	36	PASS
5	2432	MCS0	20.91	21.01	23.97	3.20	27.17	36	PASS
6	2437	MCS0	20.83	20.83	23.84	3.20	27.04	36	PASS
8	2447	MCS0	20.91	20.85	23.89	3.20	27.09	36	PASS
9	2452	MCS0	19.53	19.28	22.41	3.20	25.61	36	PASS
10	2457	MCS0	17.94	17.68	20.82	3.20	24.02	36	PASS
11	2462	MCS0	14.64	14.44	17.55	3.20	20.75	36	PASS

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## 802 11n HT40M 2TX

002.11		1_217							
СН	Freq. (MHz)	Data Rate		out Power 3m)	Total Avg. Output Power	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
			Ch0	Ch1	(dBm)				
3	2422	MCS0	11.86	11.98	14.93	3.20	18.13	36	PASS
4	2427	MCS0	13.80	13.88	16.85	3.20	20.05	36	PASS
5	2432	MCS0	15.18	15.53	18.36	3.20	21.56	36	PASS
6	2437	MCS0	16.15	16.26	19.21	3.20	22.41	36	PASS
7	2442	MCS0	16.16	16.27	19.22	3.20	22.42	36	PASS
8	2447	MCS0	14.79	14.99	17.90	3.20	21.10	36	PASS
9	2452	MCS0	13.89	13.63	16.77	3.20	19.97	36	PASS

### 802.11ax\_HE20M\_2TX

СН	Freq. (MHz)			RU Config			Total Avg. Output Power	Antenna Gain	EIRP (dBm)	Limit	RESULT
				Ch0	Ch1	(dBm)	(dBi)				
1	2412	MCS0	full	13.61	13.70	16.66	3.20	19.86	36	PASS	
2	2417	MCS0	full	16.44	16.53	19.49	3.20	22.69	36	PASS	
3	2422	MCS0	full	18.46	18.53	21.50	3.20	24.70	36	PASS	
4	2427	MCS0	full	19.91	20.13	23.03	3.20	26.23	36	PASS	
5	2432	MCS0	full	20.51	20.60	23.56	3.20	26.76	36	PASS	
6	2437	MCS0	full	20.90	21.01	23.96	3.20	27.16	36	PASS	
7	2442	MCS0	full	20.44	20.40	23.43	3.20	26.63	36	PASS	
8	2447	MCS0	full	19.91	19.83	22.88	3.20	26.08	36	PASS	
9	2452	MCS0	full	19.03	18.81	21.93	3.20	25.13	36	PASS	
10	2457	MCS0	full	16.55	16.25	19.41	3.20	22.61	36	PASS	
11	2462	MCS0	full	13.73	13.41	16.58	3.20	19.78	36	PASS	

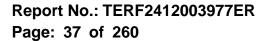
### 802.11ax\_HE40M\_2TX

СН	Freq. (MHz)	•			RU Config		out Power 3m)	Total Avg. Output Power	Antenna Gain	EIRP (dBm)	Limit	RESULT	
				Ch0	Ch1	(dBm)	(dBi)						
3	2422	MCS0	full	13.03	12.97	16.01	3.20	19.21	36	PASS			
4	2427	MCS0	full	14.00	14.17	17.09	3.20	20.29	36	PASS			
5	2432	MCS0	full	15.06	15.29	18.18	3.20	21.38	36	PASS			
6	2437	MCS0	full	16.00	16.09	19.05	3.20	22.25	36	PASS			
7	2442	MCS0	full	16.03	16.13	19.09	3.20	22.29	36	PASS			
8	2447	MCS0	full	15.07	15.00	18.04	3.20	21.24	36	PASS			
9	2452	MCS0	full	13.60	13.31	16.46	3.20	19.66	36	PASS			

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6

7

8

9

2437

2442

2447

2452

MCS0

MCS0

MCS0

MCS0

full

full

full

full

8 <b>02.1</b> 1	be_EHT	20M_2TX								
СН	Freq. (MHz)	Data Rate	RII Config	Avg. Output Power (dBm)	Total Avg. Output Power	Antenna Gain	EIRP (dBm)	Limit	RESULT	
				Ch0	Ch1	(dBm)	(dBi)			
1	2412	MCS0	full	13.63	13.77	16.71	3.20	19.91	36	PASS
2	2417	MCS0	full	16.48	16.55	19.52	3.20	22.72	36	PASS
3	2422	MCS0	full	18.57	18.59	21.59	3.20	24.79	36	PASS
4	2427	MCS0	full	19.98	20.20	23.10	3.20	26.30	36	PASS
5	2432	MCS0	full	20.55	20.70	23.63	3.20	26.83	36	PASS
6	2437	MCS0	full	20.98	21.07	24.03	3.20	27.23	36	PASS
7	2442	MCS0	full	20.53	20.47	23.51	3.20	26.71	36	PASS
8	2447	MCS0	full	20.01	19.94	22.98	3.20	26.18	36	PASS
9	2452	MCS0	full	19.13	18.86	22.00	3.20	25.20	36	PASS
10	2457	MCS0	full	16.59	16.33	19.47	3.20	22.67	36	PASS
11	2462	MCS0	full	13.78	13.53	16.66	3.20	19.86	36	PASS
802.11	be_EHT	40M_2TX								
СН	Freq. (MHz)	Data Rate	RU Config		out Power 3m)	Total Avg. Output Power	Antenna Gain	EIRP (dBm)	Limit	RESULT
				Ch0	Ch1	(dBm)	(dBi)			
3	2422	MCS0	full	13.10	13.00	16.06	3.20	19.26	36	PASS
4	2427	MCS0	full	14.04	14.24	17.15	3.20	20.35	36	PASS
5	2432	MCS0	full	15.10	15.35	18.23	3.20	21.43	36	PASS
		1		1	1					1

19.09

19.11

18.08

16.51

3.20

3.20

3.20

3.20

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16.04

16.05

15.10

13.64

16.13

16.16

15.04

13.37

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22.29

22.31

21.28

19.71

36

36

36

36

PASS

PASS

PASS

PASS

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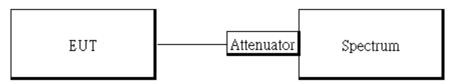


### **EMISSION BANDWIDTH MEASUREMENT** 9

#### 9.1 **Standard Applicable**

The minimum 6 dB bandwidth shall be at least 500 kHz.

#### 9.2 **Test Setup**



#### 9.3 **Measurement Procedure:**

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

#### 9.3.1 6dB BW measurements

- 1. The testing follows the Measurement Procedure of the KDB 558074 D01.
- Set the spectrum analyzer as RBW = 100 kHz. VBW = 3 X RBW,Span= 2 to 5 times of the OBW, Sweep=auto, Detector = Peak, and Max hold.
- 3. Mark the upper and lower frequencies of -6dB.
- 4. Repeat above procedures until all test default channel is completed.

#### 99% BW measurements 9.3.2

- 1. The testing follows the Measurement Procedure of the RSS-Gen section 6.7.
- 2. Set the spectrum analyzer as RBW= 1 % to 5% of 99%, VBW  $\geq$  3 X RBW. Span= large enough to capture all products of the modulation process Sweep=auto, Detector = Peak, and Max hold.
- 3. Mark the upper and lower frequencies of 99%.
- 4. Repeat above procedures until all test default channel is completed.

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#### 9.4 **Measurement Result:**

#### 9.4.1 6dB BW measurements

# 802.11b Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	8045	≧ 500	PASS
2437	8083	≧ 500	PASS
2462	8056	≧ 500	PASS

# 802.11b Ch1

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	8051	≧ 500	PASS
2437	8095	≧ 500	PASS
2462	8028	≧ 500	PASS

# 802.11a Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	16410	≧ 500	PASS
2437	16410	≧ 500	PASS
2462	16410	≧ 500	PASS

## 802.11g Ch1

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	16400	≧ 500	PASS
2437	16400	≧ 500	PASS
2462	16410	≧ 500	PASS

# 802.11n HT 20M Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	17630	≧ 500	PASS
2437	17660	≧ 500	PASS
2462	17640	≧ 500	PASS

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# 802.11n\_HT\_20M Ch1

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	17630	≧ 500	PASS
2437	17630	≧ 500	PASS
2462	17640	≧ 500	PASS

## 802.11n HT 40M Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2422	36420	≧ 500	PASS
2437	36430	≧ 500	PASS
2452	36430	≧ 500	PASS

# 802.11n HT 40M Ch1

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2422	36430	≧ 500	PASS
2437	36440	≧ 500	PASS
2452	36420	≧ 500	PASS

# 802.11be\_EHT\_20M Ch0

Freq. (MHz)	RU Config	6dB BW (kHz)	Limit (kHz)	Result
2412	full	19050	≧ 500	PASS
2437	full	19080	≧ 500	PASS
2462	full	19040	≧ 500	PASS

# 802.11be EHT 20M Ch1

Freq. (MHz)	RU Config	6dB BW (kHz)	Limit (kHz)	Result
2412	full	19020	≧ 500	PASS
2437	full	19010	≧ 500	PASS
2462	full	19020	≧ 500	PASS

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# 802.11be\_EHT\_40M Ch0

Freq. (MHz)	RU Config	6dB BW (kHz)	Limit (kHz)	Result
2422	full	38230	≧ 500	PASS
2437	full	38270	≧ 500	PASS
2452	full	38210	≧ 500	PASS

# 802.11be\_EHT\_40M Ch1

Freq. (MHz)	RU Config	6dB BW (kHz)	Limit (kHz)	Result
2422	full	38370	≧ 500	PASS
2437	full	38350	≧ 500	PASS
2452	full	38250	≧ 500	PASS

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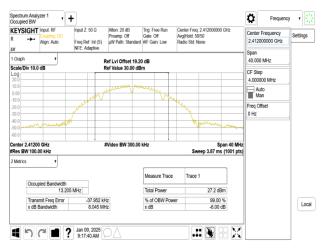
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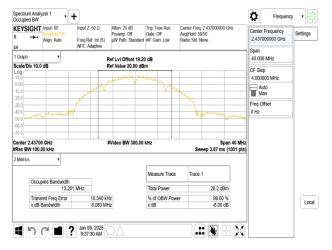
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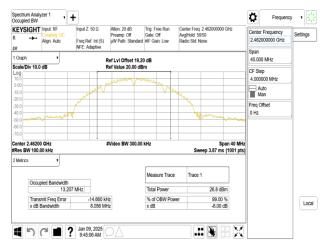
### 802.11b 20MHz Chain0 2412MHz



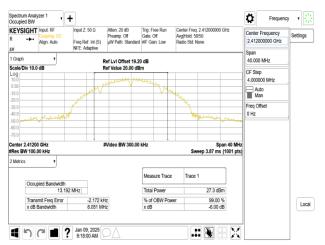
### 802.11b 20MHz Chain0 2437MHz



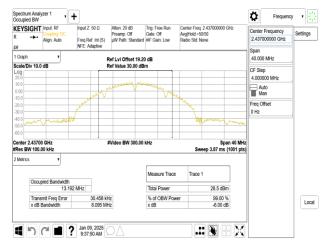
### 802.11b\_20MHz\_Chain0\_2462MHz



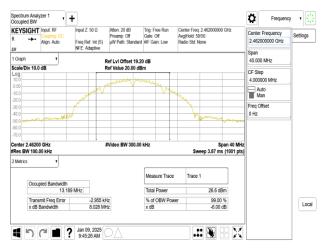
### 802.11b 20MHz Chain1 2412MHz



### 802.11b 20MHz Chain1 2437MHz



### 802.11b\_20MHz\_Chain1\_2462MHz



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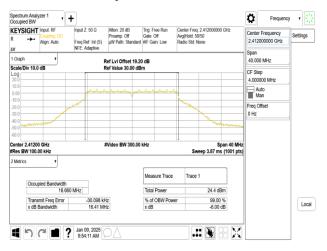
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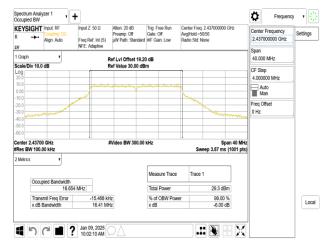
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### 802.11g 20MHz Chain0 2412MHz



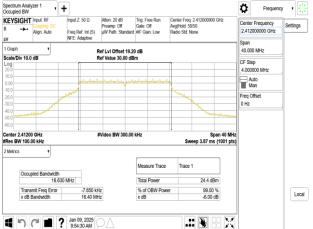
## 802.11g 20MHz Chain0 2437MHz



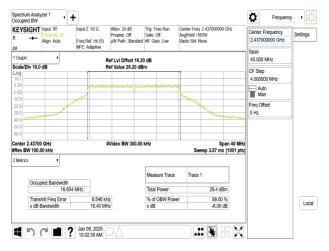
### 802.11g\_20MHz\_Chain0\_2462MHz



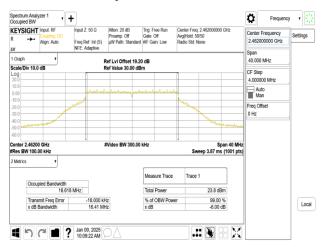
# 802.11g 20MHz Chain1 2412MHz



### 802.11g 20MHz Chain1 2437MHz



### 802.11g\_20MHz\_Chain1\_2462MHz



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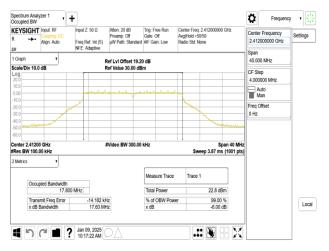
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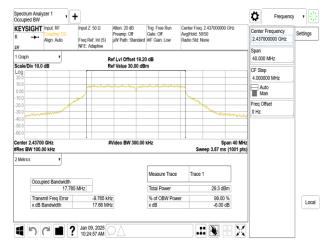
# Report No.: TERF2412003977ER Page: 44 of 260



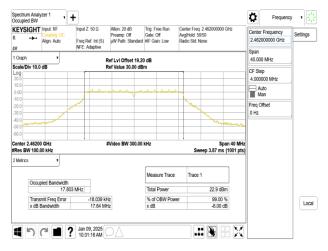
### 802.11n 20MHz Chain0 2412MHz



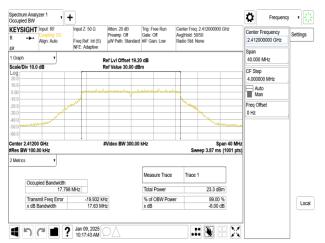
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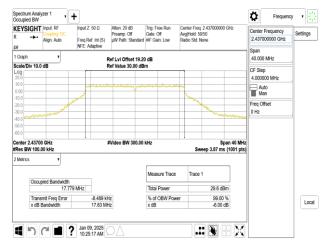
### 802.11n\_20MHz\_Chain0\_2462MHz



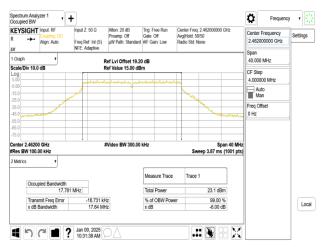
### 802.11n 20MHz Chain1 2412MHz



### 802.11n 20MHz Chain1 2437MHz



### 802.11n\_20MHz\_Chain1\_2462MHz



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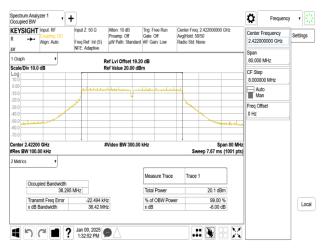
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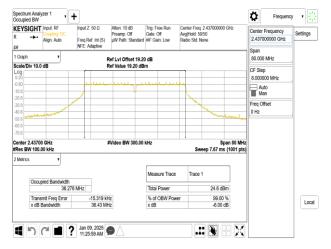
# Report No.: TERF2412003977ER Page: 45 of 260



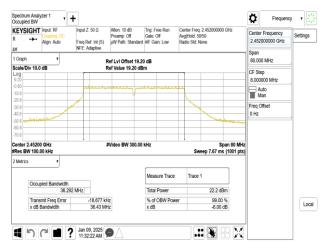
### 802.11n 40MHz Chain0 2422MHz



## 802.11n 40MHz Chain0 2437MHz



### 802.11n\_40MHz\_Chain0\_2452MHz



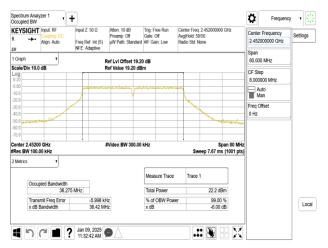
### 802.11n 40MHz Chain1 2422MHz



802.11n 40MHz Chain1 2437MHz



### 802.11n\_40MHz\_Chain1\_2452MHz



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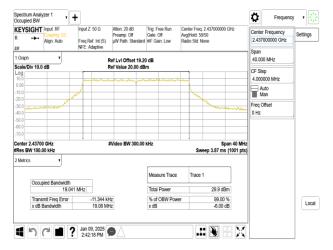
# Report No.: TERF2412003977ER Page: 46 of 260



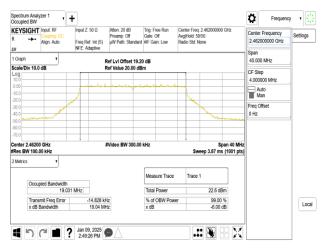
### 802.11be 20MHz Chain0 2412MHz



### 802.11be 20MHz Chain0 2437MHz



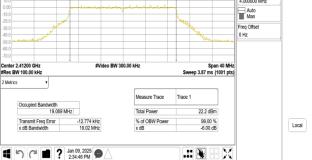
### 802.11be 20MHz Chain0 2462MHz



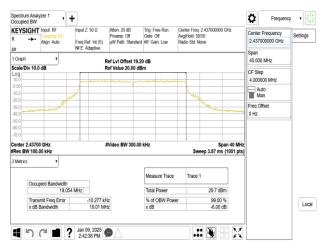
#### Spectrum Analyzer 1 Occupied BW Ö Frequency • · + Atten: 20 dB Preamp: Off µW Path: Standard KEYSIGHT Input RF put Z: 50 Ω Trig: Free Run Gate: Off rd #IF Gain: Low Center Freq: 2.412000000 GHz Avg|Hold: 50/50 Radio Std: None Center Frequency 2.412000000 GHz Settings Align: Auto Freq Ref: Int (S) 40.000 MHa Ref Lvi Offset 19.20 dB Ref Value 20.00 dBm Scale/Div 10.0 dB CF Ster 4.000000 MHz

802.11be 20MHz Chain1 2412MHz

-



802.11be 20MHz Chain1 2437MHz



### 802.11be\_20MHz\_Chain1\_2462MHz



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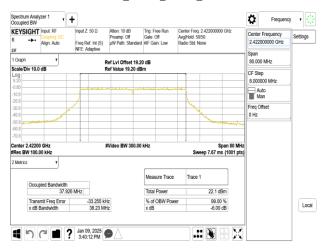
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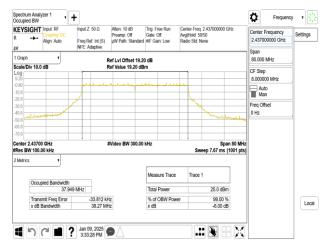
# Report No.: TERF2412003977ER Page: 47 of 260



### 802.11be 40MHz Chain0 2422MHz



802.11be 40MHz Chain0 2437MHz



### 802.11be 40MHz Chain0 2452MHz



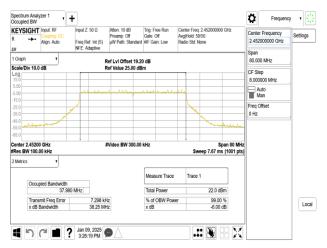
### 802.11be 40MHz Chain1 2422MHz



802.11be 40MHz Chain1 2437MHz



### 802.11be\_40MHz\_Chain1\_2452MHz



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#### 99% Bandwidth 9.4.2

# 802.11b Ch0

Freq.	99% BW
(MHz)	(MHz)
2412	13.219
2437	13.210
2462	13.215

# 802.11b Ch1

Freq.	99% BW
(MHz)	(MHz)
2412	13.217
2437	13.205
2462	13.202

# 802.11g Ch0

Freq.	99% BW
(MHz)	(MHz)
2412	17.168
2437	17.212
2462	17.126

# 802.11g Ch1

Freq.	99% BW
(MHz)	(MHz)
2412	17.114
2437	17.037
2462	17.074

# 802.11n\_HT20M Ch0

Freq.	99% BW
(MHz)	(MHz)
2412	18.185
2437	18.189
2462	18.178

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# 802.11n\_HT20M Ch1

Freq.	99% BW
(MHz)	(MHz)
2412	18.022
2437	17.995
2462	18.009

## 802.11n\_HT40M Ch0

Freq.	99% BW
(MHz)	(MHz)
2422	36.874
2437	36.935
2452	36.876

## 802.11n\_HT40M Ch1

Freq. (MHz)	99% BW (MHz)
2422	36.490
2437	36.484
2452	36.473

## 802.11be\_EHT20M Ch0

Freq. (MHz)	RU Config	99% BW (MHz)
2412	full	19.180
2437	full	19.223
2462	full	19.201

## 802.11be\_EHT20M Ch1

Freq.	RU	99% BW
(MHz)	Config	(MHz)
2412	full	19.185
2437	full	19.216
2462	full	19.189

## 802.11be\_EHT40M Ch0

Freq. (MHz)	RU Config	99% BW (MHz)
2422	full	38.084
2437	full	38.089
2452	full	38.115

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# 802.11be\_EHT40M Ch1

Freq.	RU	99% BW
(MHz)	Config	(MHz)
2422	full	38.105
2437	full	38.087
2452	full	38.134

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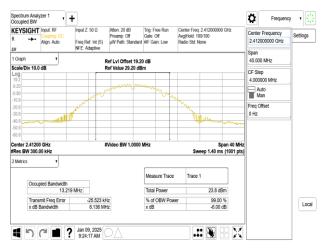
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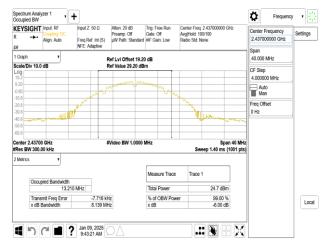
# Report No.: TERF2412003977ER Page: 51 of 260



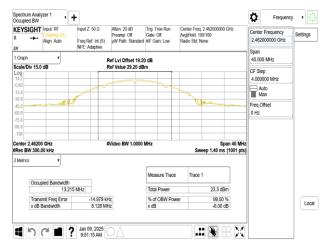
### 802.11b 20MHz Chain0 2412MHz



### 802.11b 20MHz Chain0 2437MHz



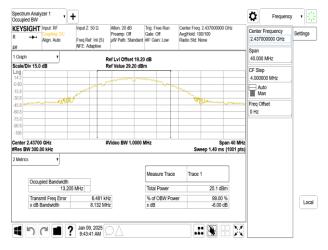
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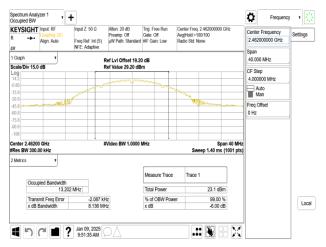
#### Spectrum Analyzer 1 Occupied BW Ö Frequency • · + Atten: 20 dB Preamp: Off µW Path: Standa KEYSIGHT Input RF Trig: Free Run Gate: Off rd #IF Gain: Low Center Freq: 2.412000000 GH Avg[Hold: 100/100 Radio Std: None put Z: 50 Ω Center Frequency 2.412000000 GHz -Align: Auto Freq Ref: Int (S) 40.000 MHa Ref Lvi Offset 19.20 dB Ref Value 29.20 dBm Scale/Div 15.0 dB CF Ster 4.000000 MHz Auto Man Freq Offse 0 Hz Center 2.41200 GHz #Res BW 300.00 kH Span 40 MH Sweep 1.40 ms (1001 pts Metrics Measure Trace Trace 1 Occupied Bandwidth 13.217 MHz Total Powe 23.6 dBm % of OBW Powe x dB Transmit Freq Error x dB Bandwidth -6.188 kHz 8.128 MHz 99.00 % -6.00 dB Local 📲 🥱 🌈 🔳 ? Jan 09, 2025 9:24:37 AM .# 🖹 -- X

802.11b 20MHz Chain1 2412MHz

### 802.11b 20MHz Chain1 2437MHz



### 802.11b\_20MHz\_Chain1\_2462MHz



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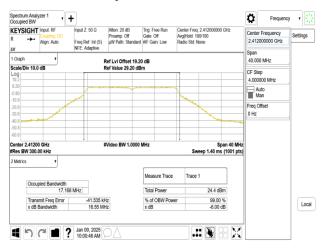
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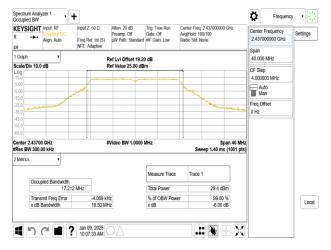
# Report No.: TERF2412003977ER Page: 52 of 260



### 802.11g\_20MHz\_Chain0\_2412MHz



## 802.11g 20MHz Chain0 2437MHz



### 802.11g\_20MHz\_Chain0\_2462MHz



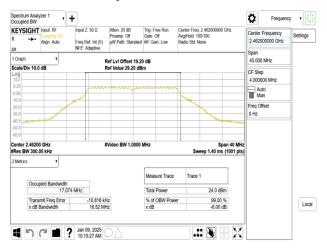
#### Spectrum Analyzer 1 Occupied BW Ö Frequency • · + Atten: 20 dB Trig: Free Run Preamp: Off Gate: Off µW Path: Standard #IF Gain: Low KEYSIGHT Input RF put Z: 50 Ω Center Freq: 2.412000000 GHz Avg|Hold: 100/100 Radio Std: None Center Frequency 2.412000000 GHz Settings -Align: Auto Freq Ref: Int (S) 40.000 MHa Ref Lvi Offset 19.20 dB Ref Value 29.20 dBm Scale/Div 10.0 dB CF Ster 4.000000 MHz Auto Man Freq Offse 0 Hz Center 2.41200 GHz #Res BW 300.00 kH 0 BW 1 0000 MH Span 40 MH Sweep 1.40 ms (1001 pts Metrics Measure Trace Trace 1 Occupied Bandwidth 17.114 MHz Total Powe 24.6 dBm % of OBW Power x dB Transmit Freq Error x dB Bandwidth 99.00 % -6.00 dB -27.332 kHz 16.53 MHz Local International State (19, 2025) 10:01:07 AM .# 🖹 -- X

802.11g 20MHz Chain1 2412MHz

802.11g 20MHz Chain1 2437MHz



### 802.11g\_20MHz\_Chain1\_2462MHz



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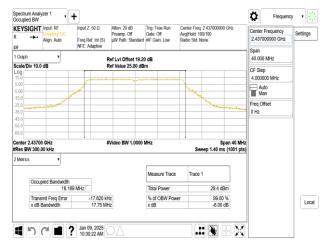
# Report No.: TERF2412003977ER Page: 53 of 260



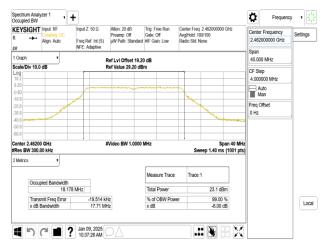
### 802.11n 20MHz Chain0 2412MHz



### 802.11n 20MHz Chain0 2437MHz



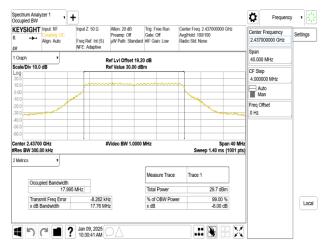
### 802.11n\_20MHz\_Chain0\_2462MHz



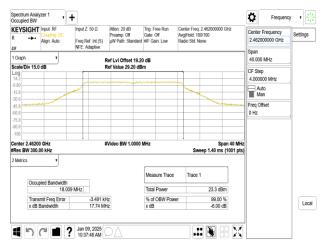
#### Spectrum Analyzer 1 Occupied BW Ö Frequency • · + Atten: 20 dB Trig: Free Run Preamp: Off Gate: Off µW Path: Standard #IF Gain: Low KEYSIGHT Input RF put Z: 50 Ω Center Freq: 2.412000000 GHz Avg|Hold: 100/100 Radio Std: None Center Frequency 2.412000000 GHz Settings -Align: Auto Freq Ref: Int (S) 40.000 MHa Ref Lvi Offset 19.20 dB Ref Value 29.20 dBm Scale/Div 15.0 dB CF Ster 4.000000 MHz Auto Man Freq Offse 0 Hz Center 2.41200 GHz #Res BW 300.00 kH #Mideo RW 1 0000 MH Span 40 MH Sweep 1.40 ms (1001 pts Metrics Measure Trace Trace 1 Occupied Bandwidth 18.022 MHz Total Powe 23.3 dBm % of OBW Power x dB Transmit Freq Error x dB Bandwidth -18.743 kHz 17.74 MHz 99.00 % -6.00 dB Local **■** <sup>∩</sup> **■ ?** Jan 09, 2025 10:24:20 AM .# 🖹 -- X

802.11n 20MHz Chain1 2412MHz

### 802.11n 20MHz Chain1 2437MHz



### 802.11n\_20MHz\_Chain1\_2462MHz



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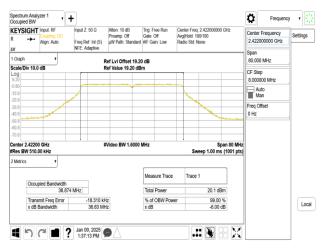
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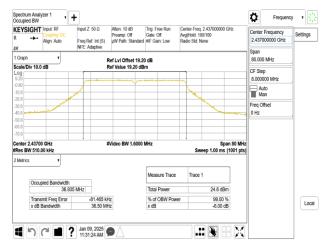
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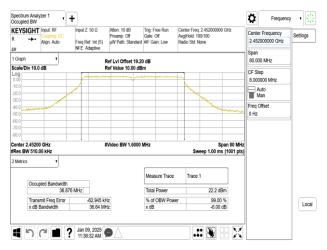
### 802.11n 40MHz Chain0 2422MHz



### 802.11n 40MHz Chain0 2437MHz



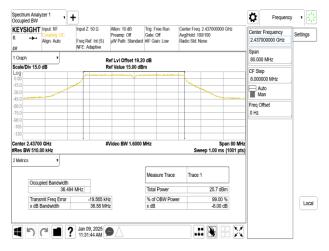
### 802.11n\_40MHz\_Chain0\_2452MHz



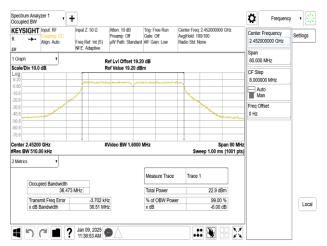
### 802.11n 40MHz Chain1 2422MHz



### 802.11n 40MHz Chain1 2437MHz



### 802.11n\_40MHz\_Chain1\_2452MHz



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