

FCC 47 CFR PART 15 SUBPART C AND ANSI C63.10: 2013

TEST REPORT

For

Wireless N300 Router

Model: DIR-615

Data Applies To: DIR-612

Brand: D-Link

Issued for

D-Link Corporation

14420 Myford Road Suite 100, Irvine, California 92606, United States

Issued by Compliance Certification Services Inc.

Tainan Lab. No.8, Jiucengling, Xinhua Dist., Tainan City, Taiwan Issued Date: January 14, 2022

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REVISION HISTORY

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	00 December 14, 2021 Initial Issue		ALL	Gina Lin
01	December 24, 2021	See the following note rev.01	ALL	Gina Lin
02	January 10, 2022 See the following note rev.02		ALL	Gina Lin
03	January 14, 2022	See the following note rev.03	ALL	Gina Lin

Note:

Rev.01 Issue Date: December 24, 2021 Update supported equipment, all tables of test data and description of test modes.

Rev.02 Issue Date: January 10, 2022 Update test data of 6dB bandwidth, output power, PPSD, conducted spurious emission and setup photo.

Rev.03 Issue Date: January 14, 2022 Revised PPSD limit.



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Report No.: T210729N01-RP1

1. TEST REPORT CERTIFICATION

Applicant	:	D-Link Corporation 14420 Myford Road Suite 100, Irvine, California 92606, United States
Manufacturer	:	Amigo Technology Inc. No. 82, Gongye 2nd Rd., Annan Dist., Tainan City 709, Taiwan
Equipment Under Test	:	Wireless N300 Router
Model	:	DIR-615
Data Applies To	:	DIR-612
Brand	:	D-Link
Date of Test	:	July 30, 2021 ~ August 25, 2021

	APPLICABLE STANDARD				
ST	ANDARD		TEST RESI	JLT	
FCC Part 15 Subpart C AND ANSI C63.10: 2013		No non-compliar	ice noted		
FCC Standard Section	Report Section	Test Item		Result	
15.247(a)	8.1	6dB BANDWIDTH		Pass	
15.247(b)	8.2	MAXIMUM PEAK OUTPUT POWER		Pass	
-	8.3	DUTY CYCLE		-	
15.247(e)	8.4	POWER SPECTRAL DENSITY		Pass	
15.247(d)	8.5	CONDUCTED SPURIOUS EMISSION		Pass	
15.205(a)	8.6	RADIATED EMISSIONS		Pass	
15.207(a)	8.7	POWERLINE CONDUCTED EMISSIONS		Pass	
15.203	9	ANTENNA REG	Unique coupling antenna		

Statements of Conformity

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

Approved by:

Eric Huang Section Manager

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2. EUT DESCRIPTION

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2. EUT DESCRIP			
Product Name	Wireless N300 Router		
Model	DIR-615		
Data Applies To	DIR-612		
Brand	D-Link		
Received Date	July 29, 2021		
Frequency Range	IEEE 802.11b/g, 802.11n HT20 (DTS Band):2412MHz~2462MHz IEEE 802.11n HT40 (DTS Band):2422MHz~2452MHz		
Transmit Power	IEEE 802.11b Mode: 13.14dBm (20.606mW) IEEE 802.11g Mode: 22.80dBm (190.546mW) IEEE 802.11n HT20 Mode: 22.58dBm (181.134mW) IEEE 802.11n HT40 Mode: 21.54dBm (142.561mW)		
Channel Spacing	IEEE 802.11b/g, 802.11n HT20/HT40: 5MHz		
Channel Number	IEEE 802.11b/g, 802.11n HT20:11 Channels IEEE 802.11n HT40 :7 Channels		
Transmit Data Rate IEEE 802.11b : 11, 5.5, 2, 1 Mbps IEEE 802.11g : 54, 48, 36, 24, 18, 12, 9, 6 Mbps IEEE 802.11n HT20 : 65, 58.5, 52, 39, 26, 19.5, 13, 6.5 Mbps IEEE 802.11n HT40 : 135, 121.5, 108, 81, 54, 40.5, 27, 13.5 Mbps			
Type of Modulation	of ModulationIEEE 802.11b: DSSS (CCK, DQPSK, DBPSK)IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK)IEEE 802.11n HT20/HT40: OFDM (64QAM, 16QAM, QPSK, BPSK)		
Antenna Type	Two antenna (2TX2RX) Antenna 1: Type: RF Antenna Assembly Connector: i-pex Model: RF21C06560A Manufacturer: RenFeng Electronic technology Co., LTD. Gain: 5dBi Length: 150mm Antenna 2: Type: RF Antenna Assembly Connector: i-pex Model: RF21C06561A Manufacturer: RenFeng Electronic technology Co., LTD. Gain: 5dBi Length: 45mm MIMO / Directional Gain (For IEEE 802.11 n): 8.01 dBi		
Power Rating	AC 100V-240V, 65W, 50/60Hz		
Software Version	1.00		
Firmware Version	1.00		
Temperature Range	0°C ~ +40°C		
Reported Date	September 28, 2021		



Power Adapter :

Manufacturer	Model No.	Power Input	Power Output
SHENZHEN YOUNGHOPE ELECTRONICS TECHNOLOGY CO., LTD.	YHSW-050100UA	AC 100-240V, 0.25A, 50-60Hz	DC 5V, 1000mA

REMARK:

- 1. The sample (**DIR-615**) selected for test was engineering sample that approximated to production product and was provided by manufacturer.
- 2. This submittal(s) (test report) is intended for FCC ID: **KA2IR615Z1** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.
- 3. For more details, please refer to the User's manual of the EUT.
- 4. The listed model(s) (**DIR-612**) are all the same of the original model (**DIR-615**) design, except for different models name and is just for the marketing purpose.



3. DESCRIPTION OF TEST MODES

The EUT is a Wireless N300 Router. It has two transmitter chains and two receive chains (2x2 configurations).

Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

The RF chipset is manufactured by Realtek.

The antenna peak gain 5.0dBi (highest gain) were chosen for full testing.

IEEE 802.11 b ,802.11g ,802.11n HT20 mode (DTS Band)

The EUT had been tested under operating condition.

There are three channels have been tested as following:

Channel	Frequency (MHz)
Low	2412
Middle	2437
High	2462

IEEE 802.11b mode: 1Mbps long data rate (worst case) were chosen for full testing.

IEEE 802.11g mode: 6Mbps data rate (worst case) were chosen for full testing. IEEE 802.11n HT20 mode: 6.5Mbps data rate (worst case) were chosen for full testing.

IEEE 802.11n HT40 mode (DTS Band)

The EUT had been tested under operating condition.

There are three channels have been tested as following:

Channel	Frequency (MHz)
Low	2422
Middle	2437
High	2452

IEEE 802.11n HT40 mode: 13Mbps data rate (worst case) were chosen for full testing.

The worst-case data rates are determined according to the description above, based on the investigations by measuring the PSD, peak power and average power across all the data rates, bandwidths, modulations and spatial stream modes. This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可,不可部份複製。

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4. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10 and FCC CFR 47 15.207, 15.209 and 15.247.

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

No.8, Jiucengling, Xinhua Dist., Tainan City 712, Taiwan (R.O.C.)

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5.3 LABORATORY ACCREDITATIONS LISTINGS

The test facilities used to perform radiated and conducted emissions tests are accredited by Taiwan Accreditation Foundation for the specific scope of accreditation under Lab Code: 1109 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by TAF or any agency of the Government. In addition, the test facilities are listed with Federal Communications Commission (registration no: TW1109).



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5.4 TABLE OF ACCREDITATIONS AND LISTINGS

Our laboratories are accredited and approved by the following accreditation body according to ISO/IEC 17025.

Taiwan TAF

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada	Industry Canada (TW1109)	
Germany	TUV NORD	
Taiwan	BSMI	
USA	FCC	

Copies of granted accreditation certificates are available for downloading from our web site, <u>http://www.ccsrf.com</u>



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6. CALIBRATION AND UNCERTAINTY

6.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report

has been calibrated in accordance with the manufacturer's recommendations,

and is traceable to recognized national standards.

6.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz Test Site : OATS-6	±3.3456dB
Radiated Emission, 200 to 1000 MHz Test Site : OATS-6	±2.6828dB
Radiated Emission, 1 to 8 GHz	± 2.6485dB
Radiated Emission, 8 to 18 GHz	± 2.6852dB
Radiated Emission, 18 to 26.5 GHz	± 2.6485dB
Radiated Emission, 26 to 40 GHz	± 3.0295dB
Power Line Conducted Emission	±1.91dB
Band Width	136.49kHz
Peak Output Power MU	±1.904dB
Band Edge MU	±0.302dBuV
Channel Separation MU	361.69Hz
Duty Cycle MU	0.064ms
Frequency Stability MU	0.223kHz

Uncertainty figures are valid to a confidence level of 95%, K=2



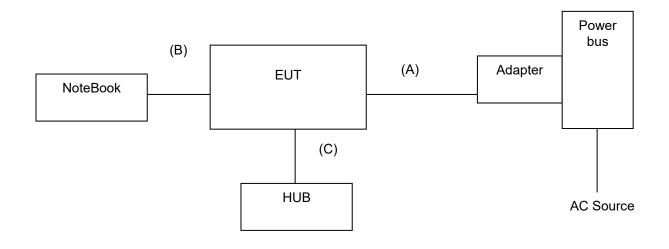
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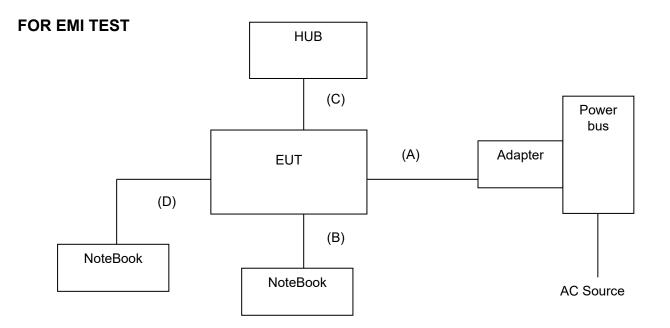
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7. SETUP OF EQUIPMENT UNDER TEST

7.1 SETUP CONFIGURATION OF EUT

FOR RF TEST







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7.2 SUPPORT EQUIPMENT

RF test

No.	Product	Manufacturer	Model No.	Certify No.	Signal cable
1	Notebook	Acer	AS 3830TG	PPD-QCWB335	Unshd, 1.8m
2	HUB	BARRICADE	SMC7008BR	Doc	N/A

No.	Signal cable descr	iption
А	DC Power	Unshielded, 1.0m, 1 pcs.
В	RJ-45	Unshielded, 1.0m, 1 pcs.
С	RJ-45	Unshielded, 3.0m, 4 pcs.

EMI test

No.	Product	Manufacturer	Model No.	Certify No.	Signal cable
1	HUB	BARRICADE	SMC7008BR	Doc	N/A
2	Notebook	TOSHIBA	PORTEGE R30-A	Doc	Unshd, 1.8m

No.	Signal cable descr	iption
А	DC Power	Unshielded, 1.2m, 1 pcs.
В	RJ-45	Unshielded, 10.0m, 1 pcs.
С	RJ-45	Unshielded, 3.0m, 3 pcs.
D	RJ-45	Unshielded, 10.0m, 1 pcs.

REMARK:

- 1. All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.
- 2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



7.3 EUT OPERATING CONDITION

RF Setup

- 1. Set up all computers like the setup diagram.
- 2. The Test Program "MP_TEST" software was used for testing.

💑 R.TL819x 3.7 - 2019/09/23	
Gemmal Flash Flash_AC	
WLANO: RTL8197G Connection IP 192 166 0 1 Test Log IC IF 1970 I Icon Icon Icon	Load Table Limit Power Target Power T. X. Power Limit Load Table Limit Power Target Power Antenna Fah A CK HT1S VHT1S ToPower Limit index: 0 HT2S VHT2S OFDM Fabrona Fah HT2S HT3S VHT3S HT3S Fabrona Fah HT3S VHT3S VHT3S
Test Setting Phy Band Z.40 T Packets TK Packets TK PG themal Corrent themal Corrent themal PG themal T SingleMae Dev WLAND SingleMae SingleMae F Stimut Mode SingleMae SingleMae SingleMae Per WLAND SingleMae SingleMae SingleMae RF B1XXD W Heaver Tack Beesd Beesd	Region domain POWEr by Rate Table H14S VH14S H14S VH14S Power by Rate Table Power by Rate Table Load PW Parameters Power by Rate Table Power by Rate Table Load Power by Rate Table Get_From_Flash Update reset Coad Radio D Load Radio D Radio D Radio D Radio D
Bandwidth Tope Stant Register Read/Write PA Type	CCK OFDM HT VHT IM 6M MC30 MC31 MC316 MC324 MC30 MC31 MC31
XCAP 32 Y2 A B RF Path A Y Packet Count 1000 Read Offset Value Value	0 × 0 × 0 × 0 × 0 × 0 × 0 × 0 × 0 × 0 × 0 × 0 × 0 × 36M MCS5 MCS1 MCS20 MCS5 MCS5 MCS5 0 × 0 × 0 × 0 × 0 × 0 × 0 × 0 × 0 × 0 ×

TX Mode:

- ⇒ IC TYPE : 92F
- ⇒ Test Setting : Continous TX
- \Rightarrow Tx Mode: CCK \land OFDM \land HT MixMode (Bandwidth: 20 \land 40)
- ⇒ Tx Data Rate: 1Mbps long (IEEE 802.11b mode ,Chain AB TX)

6Mbps (IEEE 802.11g mode ,Chain AB TX)

MCS7 (IEEE 802.11n HT20 mode ,Chain AB TX)

MCS7 (IEEE 802.11n HT40 mode, Chain AB TX)

Power control mode

Target Power: IEEE 802.11b Channel Low (2412MHz) = 18 (Chain AB) IEEE 802.11b Channel Middle (2437MHz) = 19 (Chain AB) IEEE 802.11b Channel High (2462MHz) = 19 (Chain AB)

Target Power: IEEE 802.11g Channel Low (2412MHz) = 31 (Chain AB) IEEE 802.11g Channel Middle (2437MHz) = 28 (Chain AB) IEEE 802.11g Channel High (2462MHz) = 25 (Chain AB)

Target Power: IEEE 802.11n HT20 Channel Low (2412MHz) = 27 (Chain AB) IEEE 802.11n HT20 Channel Middle (2437MHz) = 25 (Chain AB) IEEE 802.11n HT20 Channel High (2462MHz) = 23 (Chain AB)

Target Power: IEEE 802.11n HT40 Channel Low (2422MHz) = 24 (Chain AB) IEEE 802.11n HT40 Channel Middle (2437MHz) = 23 (Chain AB)

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⇒ Start

- RX Mode:
 - ⇒Test Setting : Packets RX ⇒ Start
- 3. All of the function are under run.
- 4. Start test.



8. APPLICABLE LIMITS AND TEST RESULTS

8.1 6dB BANDWIDTH

<u>LIMIT</u>

 $\$ 15.247(a) (2) For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz

TEST EQUIPMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY54430216	07/22/2021	07/21/2022
Power Meter	Anritsu	ML2487A	6K00003888	05/18/2021	05/17/2023
Power Sensor	Anritsu	MA2491A	033265	05/18/2021	05/17/2023
SMA Cable + 10dB Attenuator	CCS	SMA+10dB ATT	SMA/10dB	01/29/2021	01/28/2022
Software		Ex	cel(ccs-o6-2020	v1.1)	

TEST SETUP





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- 1. Set resolution bandwidth (RBW) = 1-5 % of the emission bandwidth (EBW).
- 2. Set the video bandwidth (VBW) \geq 3 x RBW.
- 3. Detector = Peak.
- 4. Trace mode = max hold.
- 5. Sweep = auto couple.
- 6. Allow the trace to stabilize.
- 7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission. Compare the resultant bandwidth with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is 1-5 %.



TEST RESULTS

No non-compliance noted.

Model Name	DIR-615	Test By	Peter Chu
Temp & Humidity	26.4°C , 60%	Test Date	2021/07/30

IEEE 802.11b mode

Channel	Channel Frequency (MHz)	6dB Bandwidth ChainA (MHz)	Minimum Limit (kHz)	Pass / Fail
Low	2412	10.13	500	PASS
Middle	2437	10.13	500	PASS
High	2462	10.12	500	PASS

NOTE : 1. At finial test to get the worst-case emission at 1Mbps long.
 2. The cable assembly insertion loss of 11.1dB (including 10 dB pad and 1.1 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11g mode

Channel	Channel Frequency (MHz)	6dB Bandwidth ChainA (MHz)	Minimum Limit (kHz)	Pass / Fail
Low	2412	16.58	500	PASS
Middle	2437	16.59	500	PASS
High	2462	16.58	500	PASS

NOTE : 1. At finial test to get the worst-case emission at 6Mbps.

2. The cable assembly insertion loss of 11.1dB (including 10 dB pad and 1.1 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.



IEEE 802.11n HT20 mode

Channel	Channel Frequency (MHz)	6dB Bandwidth ChainA (MHz)	6dB Bandwidth ChainB (MHz)	Minimum Limit (kHz)	Pass / Fail
Low	2412	17.81	17.80	500	PASS
Middle	2437	17.80	17.80	500	PASS
High	2462	17.80	17.80	500	PASS

NOTE : 1. At finial test to get the worst-case emission at 6.5Mbps.
 2. The cable assembly insertion loss of 11.1dB (including 10 dB pad and 1.1 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11n HT40 mode

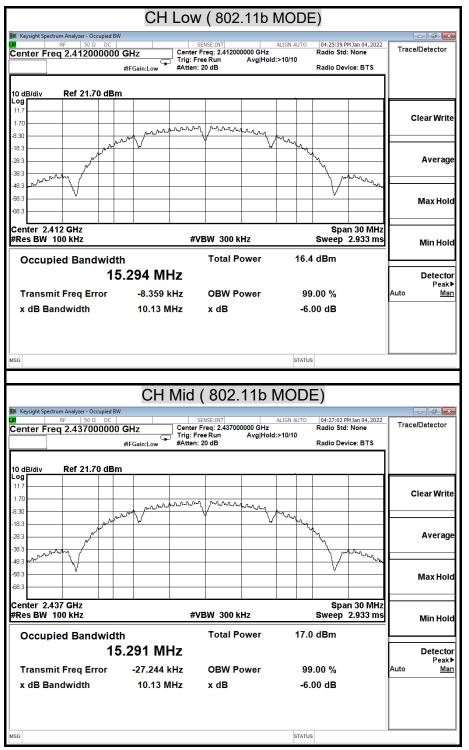
Channel	Channel Frequency (MHz)	6dB Bandwidth ChainA (MHz)	6dB Bandwidth ChainB (MHz)	Minimum Limit (kHz)	Pass / Fail
Low	2422	36.41	36.40	500	PASS
Middle	2437	36.40	36.41	500	PASS
High	2452	36.40	36.41	500	PASS

NOTE : 1. At finial test to get the worst-case emission at 1Mbps.
 2. The cable assembly insertion loss of 11.1dB (including 10 dB pad and 1.1 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.



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6dB BANDWIDTH (802.11b MODE)





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X	m Analyzer - Occupied RF 50 Ω DC 2.46200000	BW	S		A	ILIGN AUTO	,		Trac	e/Detector
10 dB/div	Ref 21.70 dE	im .								
11.7		man	hann	man	hhara				(Clear Write
3.30 18.3 28.3 38.3	mar and	~~~V				MAN Not	hy hy			Averag
38.3 48.3 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~							\sim	A.M. Mark		Max Hol
enter 2.462 Res BW 10			#V	'BW 300 k	Hz			n 30 MHz 2.933 ms		Min Hol
Occupie	ed Bandwid	^{Ith} 5.301 M	U-,	Total Po	ower	16.8	dBm			Detecto
Transmit x dB Ban	Freq Error	-33.014 -33.014 10.12 I	kHz	OBW Po x dB	ower		.00 % 00 dB		Auto	Detecto Peak <u>Ma</u>
SG						STATUS				



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6dB BANDWIDTH (802.11g MODE)

	CH Low	(802.11g	MODE)		
Keysight Spectrum Analyzer - Occupied BW		· •	· · · · ·		- 5 ×
Χ RF 50 Ω DC		SENSE:INT		PM Jan 04, 2022	Trace/Detector
Center Freq 2.412000000	0112	Freq: 2.412000000 GHz ree Run Avg Hol	Radio Sto d:>10/10	d: None	Taccibeteetor
		: 20 dB		vice: BTS	
10 dB/div Ref 21.70 dBm					
Log					
11.7					Clear Write
1.70					Clear Write
-8.30		- Company	ver work		
-18.3					
-28.3			den a		Average
a NV T			and the second s	~	, it of age
- MYNV				Mr. W. W.	
40.3					
-58.3					Max Hold
-68.3					
Center 2.412 GHz			Om/	20.0411-	
#Res BW 100 kHz	#	/BW 300 kHz		an 30 MHz 2.933 ms	
TOO KIIZ	7	VDVV JOO KIIZ	Jweep	2.933 1113	Min Hold
Occupied Bandwidt	h	Total Power	18.5 dBm		
-					
16	.463 MHz				Detector Peak►
Transmit Freq Error	-17.752 kHz	OBW Power	99.00 %		Auto <u>Man</u>
x dB Bandwidth	16.58 MHz	x dB	-6.00 dB		
	10.00 11112	A GB	0.00 48		
	CH Mid	(802.11a	MODE)		
Keysight Spectrum Analyzer - Occupied BW RF 50 Ω DC		(802.11g	ALIGN AUTO 04:31:42	PM Jan 04, 2022	[
XI RF 50 Ω DC	GHz Center	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol	ALIGN AUTO 04:31:42 Radio Sto d:>10/10	d: None	Trace/Detector
XI RF 50 Ω DC	GHz Center	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol	ALIGN AUTO 04:31:42 Radio Sto d:>10/10		[
RF 50 Ω DC Center Freq 2.437000000 Control Contro Contro Control Control Contro Control Control Contro Control C	GHz Center #IFGain:Low #Atten	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol	ALIGN AUTO 04:31:42 Radio Sto d:>10/10	d: None	[
RF 50 Ω DC Center Freq 2.437000000	GHz Center #IFGain:Low #Atten	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol	ALIGN AUTO 04:31:42 Radio Sto d:>10/10	d: None	
20 RF 150 Ω DC Center Freq 2.437000000	GHz Center #IFGain:Low #Atten	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol	ALIGN AUTO 04:31:42 Radio Sto d:>10/10	d: None	[
RF ISO Ω DC Center Freq 2.437000000 Ref 21.70 dBm 10 dB/div Ref 21.70 dBm 112 112	GHz Center #IFGain:Low #Atten	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol	ALIGN AUTO 04:31:42 Radio Sto d:>10/10	d: None	Trace/Detector
RF ISO Ω DC Center Freq 2.437000000	GHz Center #IFGain:Low #Atten	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol	ALIGN AUTO 04:31:42 Radio Sto d:>10/10	d: None	Trace/Detector
PF S0 20 DC Center Freq 2.437000000	GHz Center #IFGain:Low #Atten	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol	ALIGN AUTO 04:31:42 Radio Sto d:>10/10	d: None	Trace/Detector
RE ISO D DC Center Freq 2.437000000 Center Freq 2.437000000 Center Freq 2.437000000 10 dB/div Ref 21.70 dBm Center Freq 2.437000000 10 dB/div Ref 21.70 dBm Center Freq 2.437000000 11.7	GHz Center #IFGain:Low #Atten	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol	ALIGN AUTO 04:31:42 Radio Sto d:>10/10	d: None vice: BTS	Trace/Detector
Ref S0 Ω DC Center Freq 2.437000000	GHz Center #IFGain:Low #Atten	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol	ALIGN AUTO 04:31:42 Radio Sto d:>10/10	d: None vice: BTS	Trace/Detector
Ref S0 Ω DC Center Freq 2.437000000 Ref 21.70 dBm Log	GHz Center #IFGain:Low #Atten	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol	ALIGN AUTO 04:31:42 Radio Sto d:>10/10	d: None	Trace/Detector
Ref S0 Ω DC Center Freq 2.437000000	GHz Center #IFGain:Low #Atten	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol	ALIGN AUTO 04:31:42 Radio Sto d:>10/10	d: None vice: BTS	Trace/Detector
Ref S0 2 DC Center Freq 2.437000000 Ref 21.70 dBm Log	GHz Center #IFGain:Low #Atten	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol	ALIGN AUTO 04:31:42 Radio Sto d:>10/10	d: None vice: BTS	Trace/Detector Clear Write Average
Ref 50.0 DC Center Freq 2.437000000 Ref 21.70 dBm 10 dB/div Ref 21.70 dBm 10,7 - 10,7 - 10,7 - 10,7 - 8.3 - 18.3 - 28.3 - 38.3 - 38.3 - 38.3 - 38.3 - 38.3 - 38.3 - 38.3 - 38.3 -	GHz Center #IFGain:Low #Atten	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol	ALIGN AUTO 04:31:42 Radio Str d:>10/10 Radio De	d: None vice: BTS	Trace/Detector Clear Write Average
Ref 50.0 DC Center Freq 2.437000000 Ref 21.70 dBm 10 dB/div Ref 21.70 dBm 10 dB/div Ref 21.70 dBm 10	GHz Center Trig: F #IFGain:Low #Atten	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol	ALIGN AUTO 04:31:42 Radio Str d:>10/10 Radio De	d: None vice: BTS	Trace/Detector Clear Write Average Max Hold
RE SO D DC Center Freq 2.437000000 Ref 21.70 dBm Log 11.7 10.0 11.7 10.0 10.0 1.70 10.0 10.0 1.70 10.0 10.0 1.70 10.0 10.0 1.70 10.0 10.0 4.83 10.0 10.0 683 10.0 10.0 Center 2.437 GHz 10.0 #Res BW 100 kHz 100 kHz	GHz Center Trig: F #IFGain:Low #Atten	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol 20 dB	ALIGN AUTO 04:31:42 Radio Str d:>10/10 Radio De	d: None vice: BTS	Trace/Detector Clear Write Average Max Hold
Ref S0.0 DC Center Freq 2.437000000 Ref 21.70 dBm 10 dB/div Ref 21.70 dBm 11,7	GHz Center Trig: F #FGain:Low #Atten	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol 2 0 dB	ALIGN AUTO 04:31:42 Radio Str d:>10/10 Radio De	d: None vice: BTS	Trace/Detector Clear Write Average Max Hold Min Hold
Center Freq 2.437000000 Center Freq 2.437000000	GHz #FGain:Low Center Trig: F #Atten At	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol 20 dB / Sense Avg Hol Avg Hol	ALIGN AUTO 04:31:42 Radio Str d:>10/10 Radio De	d: None vice: BTS	Trace/Detector Clear Write Average Max Hold Min Hold Detecto Peak
	GHz Center Trig: F #FGain:Low #Atten	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol 20 dB	ALIGN AUTO 04:31:42 Radio Str d:>10/10 Radio De	d: None vice: BTS	Trace/Detector Clear Write Average
Center Freq 2.437000000 Center Freq 2.437000000	GHz #FGain:Low Center Trig: F #Atten At	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol 20 dB / Sense Avg Hol Avg Hol	ALIGN AUTO 04:31:42 Radio Str d:>10/10 Radio De	d: None vice: BTS	Trace/Detector Clear Write Average Max Hold Min Hold Detector Peak
Ref 50.0 DC Center Freq 2.437000000 Ref 21.70 dBm 10 dB/div Ref 21.70 dBm 20 dBm Ref 21.70 dBm 21 dBm Ref 21.70 dBm 22 dBm Ref 21.70 dBm 23 dBm Ref 21.70 dBm 24 dBm Ref 21.70 dBm 23 dBm Ref 21.70 dBm <td>GHz Center #FGain:Low #Atten</td> <td>SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol 20 dB // // // // // // // // // // // // //</td> <td>ALIGN AUTO 04:31:42 Radio Str d:>10/10 Radio De Commune Str Sweep 16.7 dBm 99.00 %</td> <td>d: None vice: BTS</td> <td>Trace/Detector Clear Write Average Max Hold Min Hold Detecto Peak</td>	GHz Center #FGain:Low #Atten	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol 20 dB // // // // // // // // // // // // //	ALIGN AUTO 04:31:42 Radio Str d:>10/10 Radio De Commune Str Sweep 16.7 dBm 99.00 %	d: None vice: BTS	Trace/Detector Clear Write Average Max Hold Min Hold Detecto Peak
Ref 50.0 DC Center Freq 2.437000000 Ref 21.70 dBm 10 dB/div Ref 21.70 dBm 20 dBm Ref 21.70 dBm 21 dBm Ref 21.70 dBm 22 dBm Ref 21.70 dBm 23 dBm Ref 21.70 dBm 24 dBm Ref 21.70 dBm 23 dBm Ref 21.70 dBm <td>GHz Center #FGain:Low #Atten</td> <td>SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol 20 dB // // // // // // // // // // // // //</td> <td>ALIGN AUTO 04:31:42 Radio Str d:>10/10 Radio De Commune Str Sweep 16.7 dBm 99.00 %</td> <td>d: None vice: BTS</td> <td>Trace/Detector Clear Write Average Max Hold Min Hold Detecto Peak</td>	GHz Center #FGain:Low #Atten	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol 20 dB // // // // // // // // // // // // //	ALIGN AUTO 04:31:42 Radio Str d:>10/10 Radio De Commune Str Sweep 16.7 dBm 99.00 %	d: None vice: BTS	Trace/Detector Clear Write Average Max Hold Min Hold Detecto Peak
Image: Solution of the	GHz Center #FGain:Low #Atten	SENSE:INT Freq: 2.437000000 GHz ree Run Avg Hol 20 dB // // // // // // // // // // // // //	ALIGN AUTO 04:31:42 Radio Str d:>10/10 Radio De Commune Str Sweep 16.7 dBm 99.00 %	d: None vice: BTS	Trace/Detector Clear Write Average Max Hold Min Hold Detecto Peak

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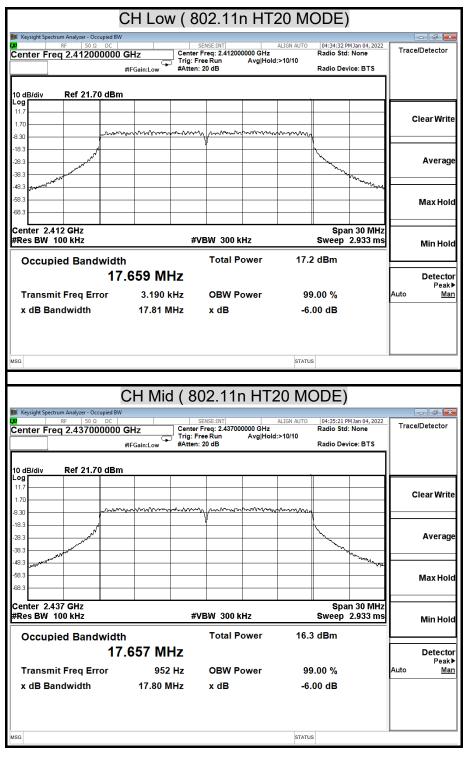
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Keysight Spectrum			-	(802				PM Jan 04, 2022	[
Center Freq	2.462000000) GHz #IFGain:Low ↔		Freq: 2.46200 ree Run : 20 dB	00000 GHz Avg Hol	d:>10/10	Radio St		Trac	e/Detector
10 dB/div I	Ref 21.70 dBr	n								
11.7									'	Clear Writ
18.3		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~********	V	www.com-u/w	ດ ງ ເຫຼົາງ ແລະ ເຊິ່ງ ເ	ι			
28.3 36.3 48.3 mm ² / ¹	MMMMM							www		Averag
18.3 mm//////								. Marine Ma		Max Ho
68.3										maxino
enter 2.462 Res BW 100			#\	/BW 3001	KHZ			an 30 MHz 2.933 ms		Min Ho
Occupied	d Bandwidt			Total F	ower	15	.4 dBm			
Transmit F		6.465 M		OBW P	ower		99.00 %		Auto	Detect Peak Ma
x dB Band		16.58 N		x dB	ower		6.00 dB			
SG						STA	TUS			



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6dB BANDWIDTH (802.11n HT20 MODE) ChainA





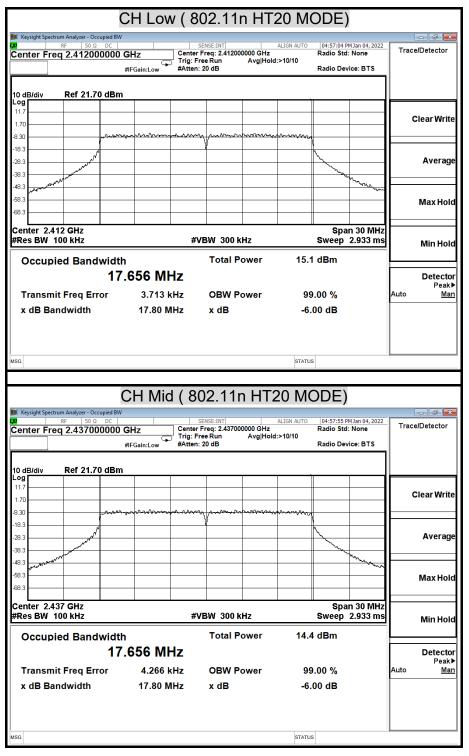
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		High (8	802.11n H	IT20 M	ODE)		
Keysight Spectrum Analyzer - O	ccupied BW		SENSE:INT	ALIGN AUTO	04.00.47		(- 6
Center Freq 2.4620		Center	Freq: 2.462000000 G	Hz	Radio Sto	PM Jan 04, 2022 d: None	Trac	e/Detector
	#IFGain:		ree Run Avg : 20 dB	Hold:>10/10	Radio De	vice: BTS		
10 dB/div Ref 21. 3	70 dBm							
Log								
11.7								Clear Writ
1.70								
8.30	- And Contraction	Annana	s manuna	som hor and	l –			
18.3	Л				h			
28.3	·				l'han			Averag
38.3					مر کر	<u> </u>		
48.3						- South and a start		
58.3								Max Ho
68.3								
Center 2.462 GHz						an 30 MHz		
Res BW 100 kHz		#	VBW 300 kHz			2.933 ms		Min Ho
Occupied Ban	dwidth		Total Power	· 14.9	9 dBm			
	17.658	3 MHz						Detecte
Transmit Freq E	ror	-931 Hz	OBW Power	. 99	9.00 %		Auto	Ma
x dB Bandwidth	17	.80 MHz	x dB	-6	.00 dB			
sg				STATU	s			



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6dB BANDWIDTH (802.11n HT20 MODE) ChainB





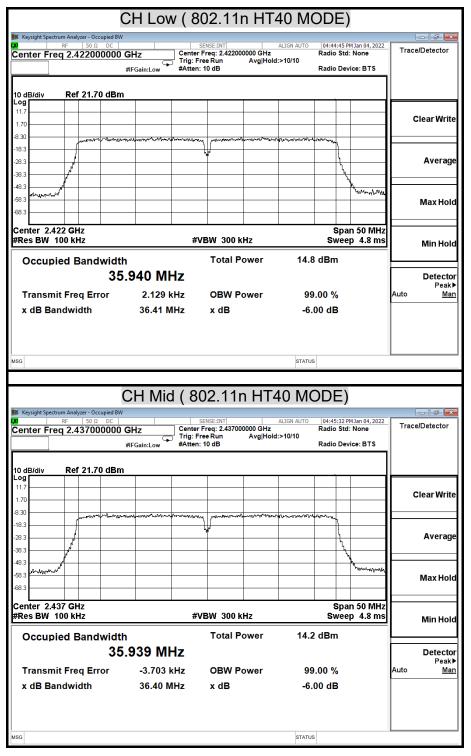
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C	H High(8	302.11n HT	20 MC	DDE)	
Keysight Spectrum Analyzer - Occupied BW RF 50 Ω DC Center Freq 2.462000000 (Trig: F	SENSE:INT r Freq: 2.462000000 GHz Free Run Avg Hol h: 20 dB	d:>10/10	04:59:31 PMJan 04, 2022 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 21.70 dBm					
11.7					Clear Wri
18.3 28.3	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		nonnon	<u></u>	Avera
88.3				And the second second	Max Ho
Center 2.462 GHz Res BW 100 kHz	#	VBW 300 kHz		Span 30 MHz Sweep 2.933 ms	
Occupied Bandwidth		Total Power	13.1	dBm	
17. Transmit Freg Error	658 MHz	OBW Power	99.	00 %	Detect Peal Auto Mi
x dB Bandwidth	17.80 MHz	x dB		0 dB	
SG			STATUS		18



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6dB BANDWIDTH (802.11n HT40 MODE) ChainA



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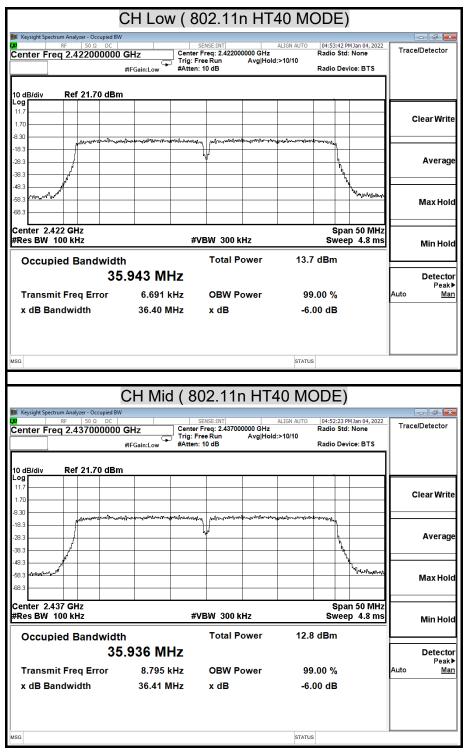
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10 dB/div Log 11.7 1.70 	Ref 21.70 dBm							
11.7 1.70 8.30								
	an and the cost of						с	lear Writ
8.3		พระนี้แระวางคำมารีคาาร์งการการการการการการการการการการการการการก	ny menonmansharense	~~ เ ขษามของสมาน	haven			Avera
18.3	p ^{re}					Muranny		
58.3 "						- MARANA		Max Hol
enter 2.452 Res BW 10		#	VBW 300 kHz			50 MHz 4.8 ms		Min Ho
Occupie	d Bandwidth 35	935 MHz	Total Power	12.9	dBm			Detect
Transmit	Freq Error	-6.503 kHz	OBW Power	99.	00 %		Auto	Peak <u>Ma</u>
x dB Ban	dwidth	36.40 MHz	x dB	-6.0	0 dB			



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6dB BANDWIDTH (802.11n HT40 MODE) ChainB





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We wight Constant	m Analyzer - Occupied BW	CH High(8	302.11n HT	40 MC	DDE)	- 7
LXI	RF 50 Ω DC 2.452000000	GHz Center	SENSE:INT Freq: 2.452000000 GHz ree Run Avg Hol : 10 dB	d:>10/10	04:49:54 PMJan 04, 2022 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div	Ref 21.70 dBm	1				
Log 11.7 1.70						Clear Write
8.30 18.3 28.3	in Although the second	ษุใกรณ์-พุนิมัยประกาณที่รับประกาณที่	hy pulperson for an and the second	manantronominant		Averag
48.3	A C C C C C C C C C C C C C C C C C C C					
58.3 , , , , , , , , , , , , , , , , , , ,					^h ulling Weightsman	Max Hol
Center 2.45 Res BW 10		#	VBW 300 kHz		Span 50 MHz Sweep 4.8 ms	Min Hol
Occupie	d Bandwidt	h	Total Power	11.1	dBm	
		.938 MHz				Detecto
Transmit	Freq Error	7.113 kHz	OBW Power	99.	00 %	Auto <u>Ma</u>
x dB Ban	dwidth	36.41 MHz	x dB	-6.0	0 dB	
sg				STATUS		

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8.2 MAXIMUM PEAK OUTPUT POWER

<u>LIMIT</u>

§ 15.247(b) The maximum peak output power of the intentional radiator shall not exceed the following :

§ 15.247(b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands : 1 watt.

§ 15.247(b) (4) Except as shown in paragraphs (c) of this section , if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (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.

TEST EQUIPMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due		
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY54430216	07/22/2021	07/21/2022		
Power Meter	Anritsu	ML2487A	6K00003888	05/18/2021	05/17/2023		
Power Sensor	Anritsu	MA2491A	033265	05/18/2021	05/17/2023		
SMA Cable + 10dB Attenuator	CCS	SMA+10dB ATT	SMA/10dB	01/29/2021	01/28/2022		
Software	Excel(ccs-o6-2020 v1.1)						

TEST SETUP



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TEST PROCEDURE

The tests were performed in accordance with KDB 662911 D01 and KDB 558074 D01 v05r02 8.3.1.

11.9.1.2(ANSI C63.10) Measurement Procedure PK2:

- 1. Set the RBW = 1 MHz.
- 2. Set the VBW \geq 3 RBW
- 3. Set the span \geq 1.5 x DTS bandwidth.
- 4. Detector = peak.
- 5. Sweep time = auto couple.
- 6. Trace mode = max hold.
- 7. Allow trace to fully stabilize.
- 8. Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select peak detector). If the instrument does not have a band power function,
- 9. Sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS bandwidth.



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TEST RESULTS

No non-compliance noted

Model Name	DIR-615	Test By	Peter Chu
Temp & Humidity	26.4°C , 60%	Test Date	2021/07/30

IEEE 802.11b mode

Channel	Frequency (MHz)	Data Rate	Power Set		: Power Bm)		: Power otal	Limit (dBm)	Result
	(101112)		Oel	ChainA	ChainB	(dBm)	(W)	(ubiii)	
Low	2412	1	18	12.53	-	12.53	0.0179		PASS
Middle	2437	1	19	13.14	-	13.14	0.0206	30.00	PASS
High	2462	1	19	13.09	-	13.09	0.0204		PASS

Channel	Frequency (MHz)	Data Rate	Power Set	-	: Power Bm)		: Power otal	Limit (dBm)	Result
	(101112)		Oet	ChainA	ChainB	(dBm)	(W)	(ubiii)	
Low	2412	1	18	-	10.82	10.82	0.0121		PASS
Middle	2437	1	19	-	11.66	11.66	0.0147	30.00	PASS
High	2462	1	19	-	11.63	11.63	0.0146		PASS

NOTE : 1. At finial test to get the worst-case emission at 1Mbps long.
2. The cable assembly insertion loss of 11.1dB (including 10 dB pad and 1.1 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11g mode

Channel	Frequency (MHz)	Data Rate	Power Set		: Power 3m)		Power tal	Limit (dBm)	Result
	(101112)		Oet	ChainA	ChainB	(dBm)	(W)	(ubiii)	
Low	2412	6	31	22.80	-	22.80	0.1905		PASS
Middle	2437	6	28	21.26	-	21.26	0.1337	30.00	PASS
High	2462	6	25	19.87	-	19.87	0.0971		PASS

Channel	Frequency (MHz)	Data Rate	Power Set		: Power Bm)	-	: Power otal	Limit (dBm)	Result
	(101112)		Oet	ChainA	ChainB	(dBm)	(W)	(ubiii)	
Low	2412	6	31	-	21.32	21.32	0.1355		PASS
Middle	2437	6	28	-	20.18	20.18	0.1042	30.00	PASS
High	2462	6	25	-	18.40	18.40	0.0692		PASS

NOTE : 1.At finial test to get the worst-case emission at 6Mbps.

2. The cable assembly insertion loss of 11.1dB (including 10 dB pad and 1.1 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.



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IEEE 802.11n HT20 mode

Channel	Frequency (MHz)	Data Rate	Power Set		: Power 8m)		: Power otal	Limit (dBm)	Result
	(11112)		Jei	ChainA	ChainB	(dBm)	(W)	(ubiii)	
Low	2412	MCS8	27	20.18	18.86	22.58	0.1811		PASS
Middle	2437	MCS8	25	19.49	18.06	21.84	0.1529	27.99	PASS
High	2462	MCS8	23	18.34	16.82	20.66	0.1163		PASS

NOTE : 1. At finial test to get the worst-case emission at 6.5Mbps.
 2. The cable assembly insertion loss of 11.1dB (including 10 dB pad and 1.1 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11n HT40 mode

Channel	Frequency (MHz)	Data Rate	Power Set	r Output Power (dBm)			: Power otal	Limit (dBm)	Result
	(101112)		Oet	ChainA	ChainB	(dBm)	(W)	(ubiii)	
Low	2422	MCS8	24	19.18	17.76	21.54	0.1425		PASS
Middle	2437	MCS8	23	18.58	16.92	20.84	0.1213	27.99	PASS
High	2452	MCS8	21	17.13	15.34	19.34	0.0858		PASS

NOTE: 1. At finial test to get the worst-case emission at 1Mbps.

2. The cable assembly insertion loss of 11.1dB (including 10 dB pad and 1.1 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.



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Report No.: T210729N01-RP1 Average Power Data

IEEE 802.11b mode

Channel	Frequency	Data Rate	Power Set	Output Power (dBm)		Output Power Total	
	(MHz)		Oet	ChainA	ChainB	(dBm)	(W)
Low	2412	1	18	9.92	-	9.92	0.0098
Middle	2437	1	19	10.60	-	10.60	0.0115
High	2462	1	19	10.54	-	10.54	0.0113

Channel	Frequency	Data Rate	Power Set	Output Power (dBm)		Output Power Total		
	(MHz)		Jei	ChainA	ChainB	(dBm)	(W)	
Low	2412	1	18	-	8.26	8.26	0.0067	
Middle	2437	1	19	-	8.37	8.37	0.0069	
High	2462	1	19	-	8.26	8.26	0.0067	

IEEE 802.11g mode

Channel	Frequency	Data Rate	Power Set	Output Power (dBm)		Output Power Total	
	(MHz)		000	ChainA	ChainB	(dBm)	(W)
Low	2412	6	31	12.92	-	12.92	0.0196
Middle	2437	6	28	11.22	-	11.22	0.0132
High	2462	6	25	9.72	-	9.72	0.0094

Channel	Frequency	Data Rate	Power Set	Output (dE	: Power Bm)	Output Power Total	
	(MHz)		Oet	ChainA	ChainB	(dBm)	(W)
Low	2412	6	31	-	10.37	10.37	0.0109
Middle	2437	6	28	-	9.12	9.12	0.0082
High	2462	6	25	-	7.53	7.53	0.0057

IEEE 802.11n HT20 mode

Channel	Frequency	Data Rate	Power Set	Output Power (dBm)		Output Power Total	
	(MHz)		Oet	ChainA	ChainB	(dBm)	(W)
Low	2412	MCS8	27	10.14	8.14	12.26	0.0168
Middle	2437	MCS8	25	9.35	7.35	11.47	0.0140
High	2462	MCS8	23	8.15	6.05	10.24	0.0106

IEEE 802.11n HT40 mode

Channel	Frequency	equency Data Rate Power Set		Output Power (dBm)		Output Power Total	
	(MHz)		Jei	ChainA	ChainB	(dBm)	(W)
Low	2422	MCS8	24	9.08	7.35	11.31	0.0135
Middle	2437	MCS8	23	8.32	6.57	10.54	0.0113
High	2452	MCS8	21	6.86	5.26	9.14	0.0082



8.3 DUTY CYCLE

LIMIT

Nil (No dedicated limit specified in the Rules) **TEST EQUIPMENTS**

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due		
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY54430216	07/22/2021	07/21/2022		
Power Meter	Anritsu	ML2487A	6K00003888	05/18/2021	05/17/2023		
Power Sensor	Anritsu	MA2491A	033265	05/18/2021	05/17/2023		
SMA Cable + 10dB Attenuator	CCS	SMA+10dB ATT	SMA/10dB	01/29/2021	01/28/2022		
Software	Excel(ccs-o6-2020 v1.1)						

TEST SETUP



TEST 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.
- 3. The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value. Set VBW ≥ RBW. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if T ≤ 16.7 microseconds.)

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TEST RESULTS

No non-compliance noted.

TEST DATA

Model Name	DIR-615	Test By	Peter Chu
Temp & Humidity	26.4°C , 60%	Test Date	2021/07/30

	us	Times	Ton	Total Ton time(ms)
Ton1	100000.000	1	100000	
Ton2		0	0	
Ton3			0	100
Тр				100

Ton	100
Tp(Ton+Toff)	100
Duty Cycle	1
10 * log (1/x) =	0



TEST PLOT

<u>Plot</u>

■ Keysight Spectrum Analyzer - Swept SA ■ RL RF 50 Ω DC Center Freq 2.412000000 G	INT REF iHz PNO: Fast ↔ Trig: Free Run	ALIGN AUTO	11:15:24 AM Aug 04, 2021	- F ×
	FGain:Low #Atten: 20 dB	#Avg Type. Rivis	TRACE 1 2 3 4 5 6 TYPE WWWWW DET P P A P P P	Frequency
Ref Offset 11.7 dB 0 dB/div Ref 21.70 dBm	Gain.Low Antican Lo L2		Mkr1 56.90 ms 2.78 dBm	Auto Tune
11.7		▲1		Center Freq 2.412000000 GHz
1.70			<u> </u>	Start Freq 2.412000000 GHz
18.3				Stop Freq
28.3				CF Step
48.3				2.462000000 GHz Auto <u>Man</u>
58.3				Freq Offset 0 Hz
68.3				
Center 2.412000000 GHz Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 7	Span 0 Hz 100.0 ms (1001 pts)	

		IE	EE 802.1	1b CH Mid		
Keysight Spectrum Analyzer						- 6 -
RL RF 5 Center Freq 2.437	0 Ω DC 0000000 GH	z	INT REF	ALIGN AUTO #Avg Type: RMS	11:19:45 AM Aug 04, 2021 TRACE 1 2 3 4 5 6	Frequency
•	PI	IO: East	rig: Free Run Atten: 20 dB		DET P P A P P P	·
Ref Offset 10 dB/div Ref 21.7					Mkr1 36.10 ms 3.47 dBm	
Log						Center Fre
11.7		≜ 1				2.437000000 GH
1.70		V				Start Fre
-8.30						2.437000000 GH
-18.3						Stop Fre
-28.3						2.437000000 GH
-38.3						CF Ste 2.462000000 G⊦
-48.3						2.462000000 GF Auto <u>Ma</u>
-58.3						Freq Offse
						0 H
-68.3						
Center 2.43700000 Res BW 1.0 MHz) GHz	#VBW 3.	0 MHz	Sween	Span 0 Hz 100.0 ms (1001 pts)	
MSG		<i>"•</i> • • • • • • • •	•	STATU	· · · ·	

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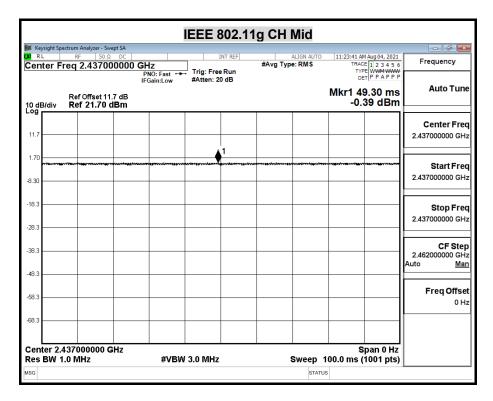
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📕 Keysigh 📈 R L	Spectrum Analyzer - S RF 50	Swept SA Ω DC		INT REF	ALIGN AUTO	11:20:22 AM Aug 04, 2021	Frequency
Center	Freq 2.4620		i Hz PNO: Fast ↔ FGain:Low	Trig: Free Run #Atten: 20 dB	#Avg Type: RMS	TRACE 1 2 3 4 5 6 TYPE DET P P A P P P	Auto Tur
10 dB/di	Ref Offset 1 Ref 21.70					Mkr1 63.30 ms 3.42 dBm	
11.7							Center Fre 2.462000000 G
1.70	~						
-8.30							Start Fr 2.462000000 G
-18.3							Stop Fr 2.462000000 G
-28.3							
-38.3							CF Ste 2.462000000 G Auto <u>M</u>
-40.3							Freq Offs 0
-68.3							
	2.462000000 / 1.0 MHz	GHz	#VBW	3.0 MHz	Sweep	Span 0 Hz 100.0 ms (1001 pts)	



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🖌 Keysiaht S	pectrum Analyzer - Swept SA	I	EEE 802.11	lg CH Low	v	
RL	RF 50 Ω DC Freq 2.412000000		INT REF	ALIGN A #Avg Type: RM		-
0 dB/div	Ref Offset 11.7 dB Ref 21.70 dBm	PNO: Fast ++ IFGain:Low	Trig: Free Run #Atten: 20 dB	#Avg Type. Kills	Mkr1 66.50 ms 1.22 dBm	Auto Tui
.og 11.7						Center Fr 2.412000000 G
1.70 8.30	********					Start Fr 2.412000000 G
28.3						Stop Fr 2.412000000 G
38.3 <u> </u>						CF St 2.462000000 G Auto <u>M</u>
58.3						Freq Offs 0
	.412000000 GHz	#\/B\A	3.0 MHz	Swar	Span 0 Hz	
Center 2 Res BW		#VBW	3.0 MHz		Span 0 Hz ep 100.0 ms (1001 pts) status	





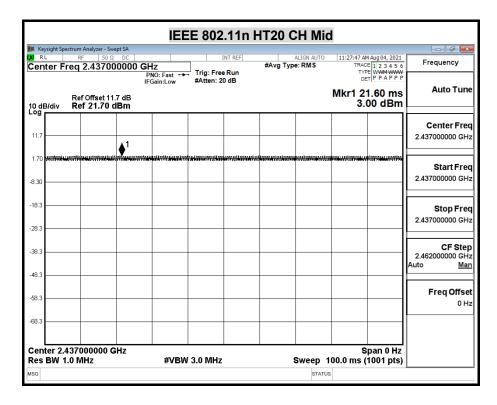
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Keysight Spectrum Ana RE RF Center Freq 2.	50 Ω DC 462000000 G	i Hz PNO: Fast ↔ FGain:Low	Trig: Free Run #Atten: 20 dB	ALIGN AUT #Avg Type: RMS	0 11:24:42 AM Aug 04, 2021 TRACE 1 2 3 4 5 6 TYPE WWWWW DET P P A P P P	Frequency
	ffset 11.7 dB 2 1.70 dBm	Guineow			Mkr1 21.30 ms -1.95 dBm	Auto Tur
11.7						Center Fre 2.462000000 GH
8.30	1					Start Fre 2.462000000 Gi
28.3						Stop Fr 2.462000000 G
38.3						CF Ste 2.462000000 G Auto <u>M</u>
58.3						Freq Offs
68.3					Span 0 Hz	



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📜 Key 🗶 RI		um Analyzer - Sw RF 50 Ω			T	NT REF		I IGN AUTO	11:20:01 4	1 Aug 04, 2021	
		q 2.41200	00000 GI		1		#Avg Type		TRAC	E123456	Frequency
10 dE		Ref Offset 11 Ref 21.70 (ı⊧ .7 dB	PNO: Fast ↔ Gain:Low	↓ Trig: Free #Atten: 20				Mkr1 5	3.90 ms b5 dBm	Auto Tur
11.7											Center Fre 2.412000000 GH
1.70	na luxuurina l			PRIMANNAPPINA	NAMATAMANAMATA	ALIAN ANTANANAN	AAN MARKING AN MARKANA		ANADAMIN'N MALANDAN	NALAWONWY ALAW	
-8.30											Start Fre 2.412000000 GF
-18.3											Stop Fre
-28.3											
38.3											CF Sto 2.462000000 G Auto <u>M</u>
-48.3 -58.3											Freq Offs
68.3											0
	ter 2.41 BW 1.0	2000000 G MHz	Hz	#VBW	/ 3.0 MHz		s	Sweep 1	S 00.0 ms (pan 0 Hz 1001 pts)	





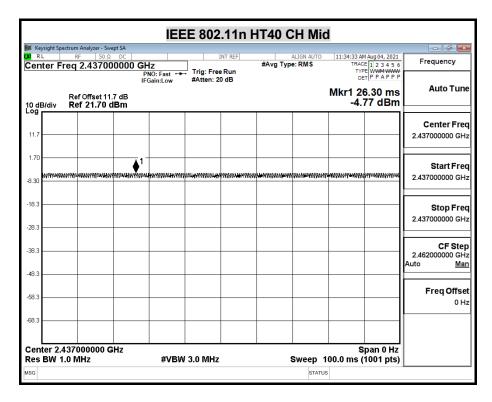
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				IEE	EE 802. ⁻	11n H	T20 C	H Hig	h		
		ctrum Analyz									
XI RI		RF	50 Ω DC 52000000 (207	11	IT REF	#Avg Typ	ALIGN AUTO e: RMS		M Aug 04, 2021	Frequency
Cen		eq 2.40	2000000	PNO: Fast +	Trig: Free #Atten: 20				TYF		
				IFGain:Low	#Atten: 20	ab				0.40 ms	Auto Tur
10 dE	7/46.		et 11.7 dB . 70 dBm							86 dBm	
Log	5/017	Reizi	.70 นธกก								
											Center Fro
11.7											2.462000000 G
			≬ 1								
1.70	iyye ne ndi	WYNU MWNYN	หหล่องที่ไปหลองจาก	AND ANY MARKING AN	ANNIN'NA AMIN'NA AMIN'	UMINA PANA UMINA	MANDAVANNI (MANDA	and in the second s	A CONTRACTOR OF A CONTRACT	TAN MANAGANA MANA	Start Fr
-8.30											2.462000000 G
-18.3											Oton Er
											Stop Fr 2.462000000 G
-28.3											2.402000000
											CF Ste
-38.3					+ +						2.462000000 G
											Auto <u>M</u>
-48.3											
-68.3											Freq Offs
											0
-68.3				_							
Cont	tor 2	1620000	00 CH2							pan 0 Hz	
		1020000 .0 MHz		#VB۱	N 3.0 MHz		:	Sweep	ت) 100.0 ms		
ISG								STATU			I
									-		



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					IE	EE 802	.11n I	HT40 C		N		
📜 Key 🚺 RL		ctrum An RF	alyzer - Swe					1				- 7
			50 Ω 42200	0000 G	iHz		NT REF	#Avg Typ	ALIGN AUTO e: RMS	TRAC	E 1 2 3 4 5 6	Frequency
					PNO: Fast + FGain:Low	Trig: Free #Atten: 2				TYF	T P P A P P P	
					Guilleon					Mkr1 6	0.00 ms	Auto Tun
10 dE	3/div		ffset 11. 2 1.70 d								24 dBm	
^{og} [
44.7												Center Fre
11.7												2.422000000 GH
1.70												
								♦ ¹				Start Fre
8.30	1907-044-0101	nuwwinn	******	444444444444	- Mannada - Manna	******	mmmmm	numumnum	muawamu	**********	*****	2.422000000 G
-18.3					-							Stop Fre
												2.422000000 GI
28.3		-										
38.3												CF Ste
38.3												2.462000000 G
48.3												Auto <u>M</u>
10.0												
68.3					_							Freq Offs
												01
-68.3												
Cent	ter 2.4	2200	0000 G	Hz			1	1	I		pan 0 Hz	
		.0 MH			#VB	W 3.0 MHz		:	Sweep	100.0 ms (
ISG									STATU	IS		





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			IEE	E 802.	11n H	IT40 C	H Hig	h		
🔰 Keysight Spe 📈 R L	ctrum Analyzer - Sw RF 50 Ω	ept SA DC			INT REF		ALIGN AUTO	11,25,10 44	1 Aug 04, 2021	
	req 2.45200	00000 GI		1		#Avg Typ		TRAC	E123456	Frequency
			NO: Fast 🔸	#Atten: 2				DE	E WWMWWW T P P A P P P	
								Mkr1 49	9.20 ms	Auto Tur
10 dB/div	Ref Offset 11 Ref 21.70								25 dBm	
- ^{og}										
										Center Fro
11.7										2.452000000 G
1.70										
1.70				Å	1					Start Fr
.8.30 		MANA MANA MANA MANA MANA MANA MANA MANA	HALLANY WALLAND	MININ PORMANIA	, HAMAR HAMAR		an manager	1 Martin Martin	HAMPON AND THE	2.452000000 G
18.3										Stop Fr
										2.452000000 G
-28.3										
										CF Ste
38.3										2.462000000 G
										Auto <u>M</u>
-48.3										
-58.3										Freq Offs
00.0										0
-68.3						1	1	1		1
-68.3										
-68.3										
	152000000 C	SHz	#VBW	3.0 MHz			Sweep	S 100.0 ms (pan 0 Hz 1001 pts)	



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8.4 POWER SPECTRAL DENSITY

<u>LIMIT</u>

§ 15.247(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST EQUIPMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due				
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY54430216	07/22/2021	07/21/2022				
Power Meter	Anritsu	ML2487A	6K00003888	05/18/2021	05/17/2023				
Power Sensor	Anritsu	MA2491A	033265	05/18/2021	05/17/2023				
SMA Cable + 10dB Attenuator	CCS	SMA+10dB ATT	SMA/10dB	01/29/2021	01/28/2022				
Software		Excel(ccs-o6-2020 v1.1)							

TEST SETUP





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TEST PROCEDURE

The tests were performed in accordance with KDB 662911 D01 and KDB 558074 D01 v05r02 8.4.

11.10.2 (ANSI C63.10) Measurement Procedure PKPSD:

- 1. Set analyzer center frequency to DTS channel center frequency.
- 2. Set the span to 1.5 times the *DTS bandwidth*.
- 3. Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- 4. Set the VBW \geq 3 RBW.
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the maximum amplitude level within the RBW.
- 10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.



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Report No.: T210729N01-RP1

TEST RESULTS

Model Name	DIR-615	Test By	Peter Chu
Temp & Humidity	26.4°C , 60%	Test Date	2021/07/30

IEEE 802.11b mode

Channel	Frequency (MHz)	PPSD/3kHz ChainA (dBm)	ChainA Limit		Pass / Fail
Low	2412	-20.86	8.00	-28.86	PASS
Middle	2437	-20.33	8.00	-28.33	PASS
High	2462	-20.45	8.00	-28.45	PASS

NOTE: 1. At finial test to get the worst-case emission at 1long Mbps long.

2. The cable assembly insertion loss of 11.1dB (including 10 dB pad and 1.1 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11g mode

Channel	Frequency (MHz)	PPSD/3kHz ChainA (dBm)	Limit (dBm)	Margin (dB)	Pass / Fail
Low	2412	-16.69	8.00	-24.69	PASS
Middle	2437	-18.36	8.00	-26.36	PASS
High	2462	-19.80	8.00	-27.80	PASS

NOTE : 1. At finial test to get the worst-case emission at 6Mbps long.
2. The cable assembly insertion loss of 11.1dB (including 10 dB pad and 1.1 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

Channel	Frequency (MHz)	PPSD/3kHz ChainA (dBm)	PPSD/3kHz ChainB (dBm)	PPSD/3kHz Total (dBm)	Limit (dBm)	Margin (dB)	Pass / Fail
Low	2412	-16.99	-19.06	-14.89	8.00	-22.89	PASS
Middle	2437	-17.80	-19.51	-15.56	8.00	-23.56	PASS
High	2462	-19.18	-20.66	-16.84	8.00	-24.84	PASS

IEEE 802.11n HT20 mode

NOTE: 1. At finial test to get the worst-case emission at 6.5Mbps long.

2. The cable assembly insertion loss of 11.1dB (including 10 dB pad and 1.1 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11n HT40 mode

Channel	Frequency (MHz)	PPSD/3kHz ChainA (dBm)	PPSD/3kHz ChainB (dBm)	PPSD/3kHz Total (dBm)	Limit (dBm)	Margin (dB)	Pass / Fail
Low	2422	-20.02	-23.72	-18.47	8.00	-26.47	PASS
Middle	2437	-20.98	-24.60	-19.41	8.00	-27.41	PASS
High	2452	-22.24	-25.96	-20.70	8.00	-28.70	PASS

NOTE: 1. At finial test to get the worst-case emission at 13Mbps long.

2. The cable assembly insertion loss of 11.1dB (including 10 dB pad and 1.1 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.



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POWER SPECTRAL DENSITY (IEEE 802.11b MODE) CH Low (802.11b MODE) Keysight Spectrum Analyzer - Swept SA - 6 × 05:32:08 PM Jan 04, 2022 TRACE 1 2 3 4 5 6 TYPE M WWW DET P P A N N N Avg Type: Log-Pwr Avg|Hold: 10/10 Frequency Center Freq 2.412000000 GHz PNO: Fast Trig: Free Run #Atten: 10 dB Auto Tune Mkr1 2.411 301 GHz Ref Offset 11.7 dB Ref 11.70 dBm -20.858 dBm 10 dB/div **Center Freq** 1.7 2.412000000 GHz 3 3 Start Freq 2.404402500 GHz 18. 28. Stop Freq 2.419597500 GHz 38.3 CF Step 48.3 1.519500 MHz Man Auto 58 Freq Offset 68. 0 Hz 78.3 Center 2.412000 GHz Span 15.20 MHz #Res BW 3.0 kHz #VBW 10 kHz Sweep 1.602 s (1001 pts) STATUS CH Mid (802.11b MODE) 📕 Keysight Spectrum Analyzer - Swept SA - # × 05:33:11 PM Jan 04, 2022 TRACE 1 2 3 4 5 6 TYPE M WHWWW DET P P A N N N ALIGN AUTO Avg Type: Log-Pwr Avg|Hold:>10/10 Center Freq 2.437000000 GHz PN0: Fast IFGain:Low Frequency Trig: Free Run #Atten: 10 dB Mkr1 2.436 301 GHz -20.327 dBm Auto Tune Ref Offset 11.7 dB Ref 11.70 dBm 10 dB/div **Center Freq** 1.7 2.437000000 GHz 8.3 Start Freq 2.429402500 GHz 18.: 28 : Stop Freq 2.444597500 GHz 38 **CF Step** 1.519500 MHz Man 48 Auto 58. Freq Offset 68. 0 Hz 78 : Center 2.437000 GHz Span 15.20 MHz #Res BW 3.0 kHz #VBW 10 kHz Sweep 1.602 s (1001 pts) STATUS SG



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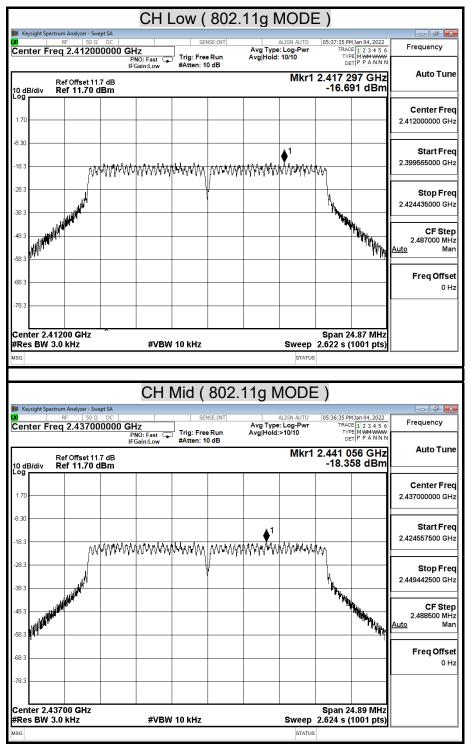
Reysight Spectrum Analyzer - Swe RF 50 Ω enter Freq 2.46200	DC	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	05:34:09 PM Jan 04, 2022 TRACE 1 2 3 4 5 6 TYPE M WWW DET P P A N N N	Frequency
Ref Offset 11. D dB/div Ref 11.70 c			Mkr1	2.461 287 GHz -20.452 dBm	Auto Tun
1.70					Center Fre 2.462000000 GH
8.3					Start Fre 2.454410000 GH
8.3					Stop Fre 2.469590000 GH
8.3					CF Ste 1.518000 MH <u>Auto</u> Ma
8.3					Freq Offse 0 H
8.3				Span 15.18 MHz	

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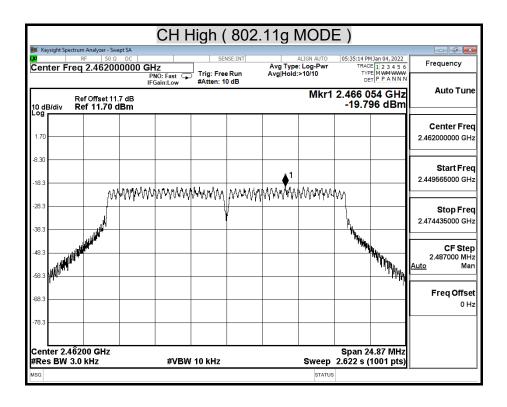
POWER SPECTRAL DENSITY (IEEE 802.11g MODE)



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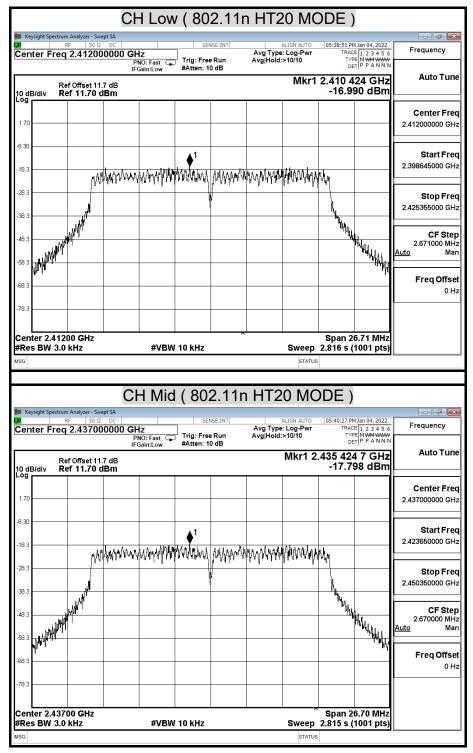
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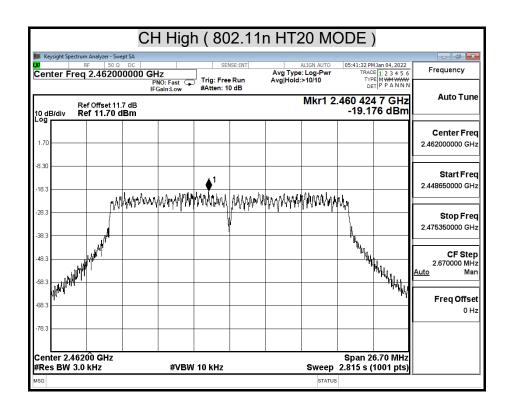
Report No.: T210729N01-RP1

POWER SPECTRAL DENSITY (802.11n HT20 MODE) ChainA



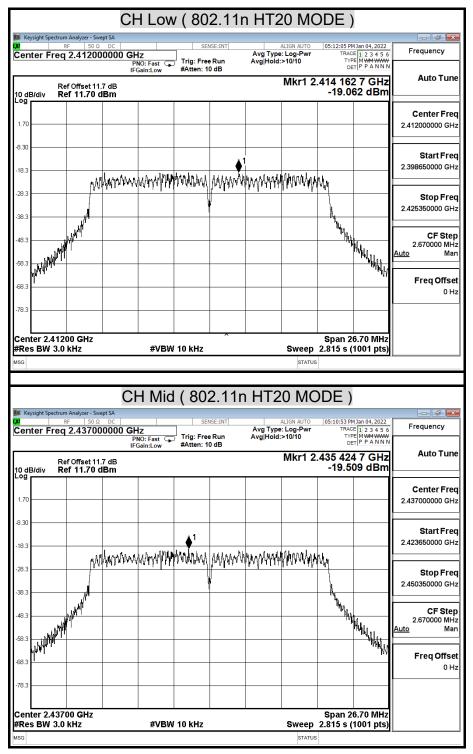


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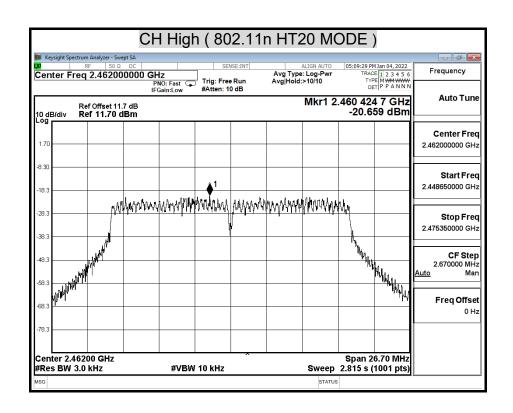


POWER SPECTRAL DENSITY (802.11n HT20 MODE) ChainB



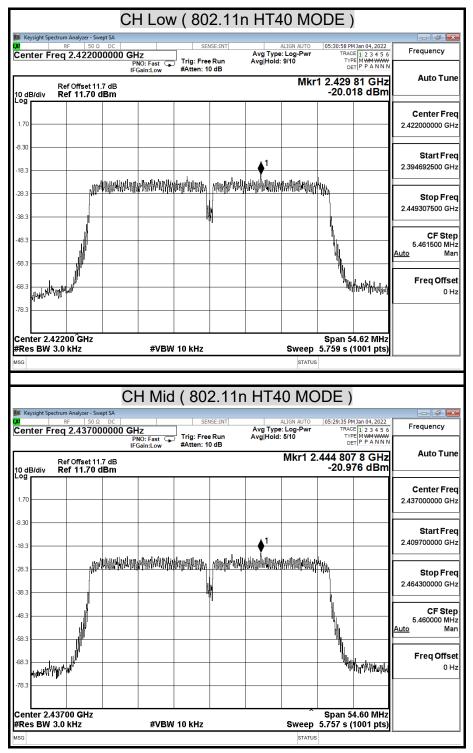


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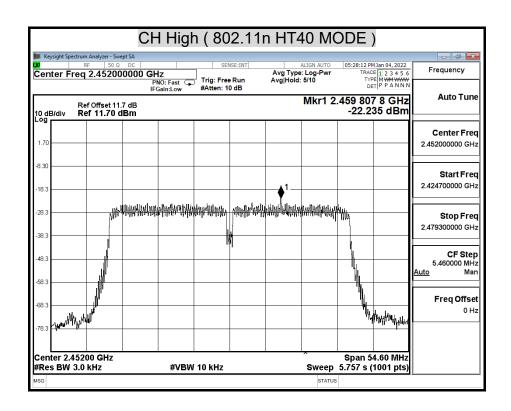


POWER SPECTRAL DENSITY (IEEE 802.11n HT40 MODE) ChainA



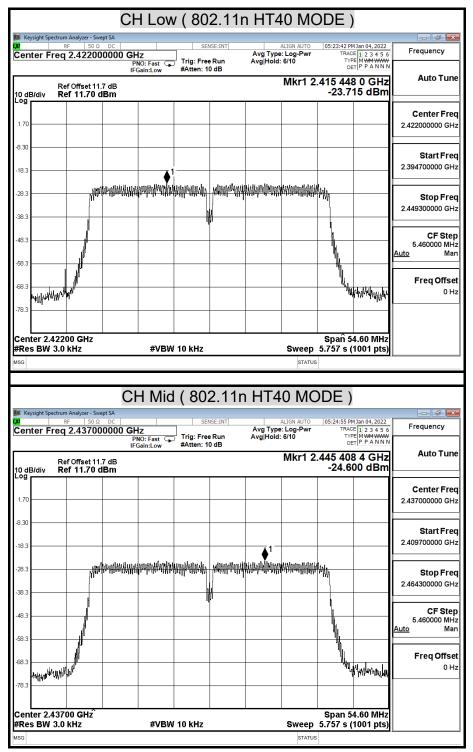


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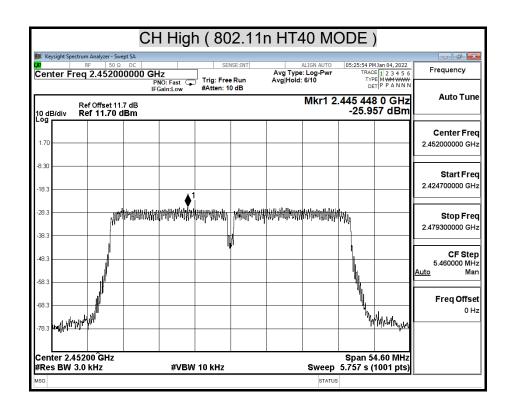


POWER SPECTRAL DENSITY (IEEE 802.11n HT40 MODE) ChainB





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8.5 CONDUCTED SPURIOUS EMISSION

<u>LIMITS</u>

§ 15.247(d) 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 and that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

TEST EQUIPMENTS

Name of Equipment	nt Manufacturer Model		Serial Number	Calibration Date	Calibration Due				
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY54430216	07/22/2021	07/21/2022				
Power Meter	Anritsu	ML2487A	6K00003888	05/18/2021	05/17/2023				
Power Sensor	Anritsu	MA2491A	033265	05/18/2021	05/17/2023				
SMA Cable + 10dB Attenuator	CCS	SMA+10dB ATT	SMA/10dB	01/29/2021	01/28/2022				
Software		Excel(ccs-o6-2020 v1.1)							

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

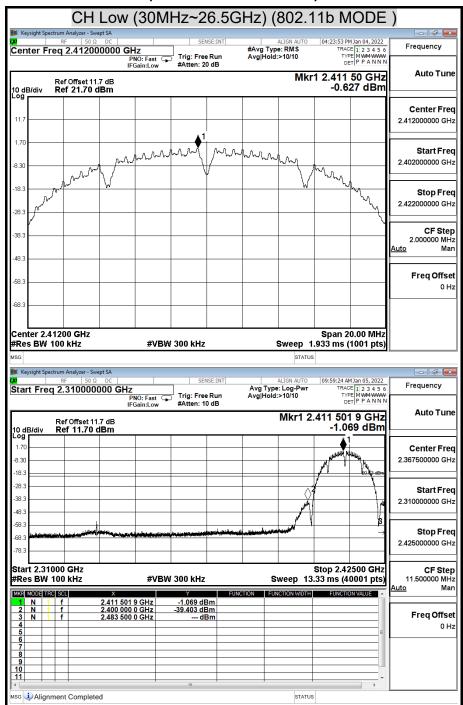
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TEST RESULTS

OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

Model Name	DIR-615	Test By	Peter Chu
Temp & Humidity	26.4°C, 60%	Test Date	2021/07/30



(IEEE 802.11b MODE)

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- 6 🗙

Auto Tune

Center Freq

Start Freq

Stop Freq

26.50000000 GHz

CF Step 2.647000000 GHz <u>Auto</u> Man

Freq Offset 0 Hz

Auto

30.000000 MHz

13.265000000 GHz

20.63 d

Frequency

III Keysight Spectrum Anary VI RF 50 Ω DC Stop Freq 26.500000000 GHz IFGain:Low Discrete Keysight Spectrum Analyzer - Swept SA ALIGN AUTO Avg Type: Log-Pwr Avg|Hold:>10/10 10:01:29 AM Jan 05, 2022 TRACE TYPE TYPE DET P P A N N N Trig: Free Run #Atten: 10 dB Mkr1 2.410 3 GHz -1.136 dBm Ref Offset 11.7 dB Ref 11.70 dBm 10 a. Log dB/div 1.70 -8.30 -18.3 -28.3 -38.3 48.3 -58.3 -68.3 78.3 Start 30 MHz Stop 26.50 GHz #VBW 300 kHz Sweep 2.531 s (40001 pts) #Res BW 100 kHz MKR MODE TRC SCL FUNCTION VALUE FUNCTION FUNCTION WIDTH -1.136 dBm -40.845 dBm -64.830 dBm 2.410 3 GHz 2.400 000 0 GHz 2.483 500 0 GHz N 1 f N 1 f N 1 f 234 6 8 9 10 11 MSG 🗼 Alignment Completed STATUS

CH Mid (30MHz~26.5GHz) (802.11b MODE)

XI	RF 50 Ω	DC	I	SEI	NSE:INT		ALIGN AUTO		MJan 04, 2022	Frequency
PNO: Fast IFGain:Low Trig: Free Run #Atten: 20 dB Avg Hoid:>10/10 Tyre Mwawww DET P P ANN Ref Offset 11.7 dB Mkr1 2.436 50 GHz -0.026 dBm -0.026 dBm										Auto Tu
11.7				* 1						Center Fr 2.437000000 G
1.70 3.30	- March	m	h	m	mm	hhhm		hh		Start Fi 2.427000000 0
18.3 28.3		W					W	- \\	hon hong	Stop F 2.447000000 0
38.3									```	CF S 2.000000 M Auto
i8.3										Freq Off
	43700 GHz								0.00 MHz	
#Res BW	100 kHz		#VBW	300 kHz			Sweep 1.	.933 ms (1001 pts)	



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PI IFC	NO:Fast 🔾				
	Gain:Low	Trig: Free Run #Atten: 10 dB	Avg Hold:>10/10	TYPE MWWWW DET P P A N N N	
t 11.7 dB 70 dBm			Mki	r1 2.438 1 GHz -0.433 dBm	Auto Tune
					Center Freq 13.265000000 GHz
				-20.03 dBm	13.20300000 GHz
					Start Freq
					30.000000 MHz
سرقدي وربيه أجتبه	-	A DESCRIPTION OF THE OWNER OF THE			Stop Freq
					26.50000000 GHz
				Oton 26 50 OU	
	#VBW	(300 kHz	Sweep 2		CF Step 2.64700000 GHz
X			-		<u>Auto</u> Man
2.438	1 GHz	-0.433 dBm			
2.400 000 0	0 GHZ	-64.905 dBm			Freq Offset
				E	0 Hz
			+ +	•	
	(30M	Hz~26.5	GHz) (802.1	1b MODE	-
		SENSE:INT			
	-	JENGEAN	ALIGN AUTO	04:28:10 PM Jan 04, 2022	Frequency
PI	NO: Fast 🕞	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	TRACE 1 2 3 4 5 6	Frequency
P i IFC			Avg Type: Log-Pwr Avg Hold:>10/10	TRACE 1 2 3 4 5 6 TYPE M WHWWW DET P P A N N N	Frequency
PI	NO: Fast 🕞	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>10/10	TRACE 1 2 3 4 5 6	Frequency
Pi IFC t 11.7 dB	NO: Fast 🕞	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>10/10	TRACE 1 2 3 4 5 6 TYPE DET P P A NN N 1 2.461 50 GHz	Frequency Auto Tune
Pi IFC t 11.7 dB	NO: Fast 🕞	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>10/10	TRACE 1 2 3 4 5 6 TYPE DET P P A NN N 1 2.461 50 GHz	Frequency Auto Tune Center Freq
Pi IFC t 11.7 dB	NO: Fast 🕞	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>10/10	TRACE 1 2 3 4 5 6 TYPE DET P P A NN N 1 2.461 50 GHz	Frequency Auto Tune Center Freq
PH IFC t 11.7 dB 70 dBm	NO: Fast ⊊ Gain:Low	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>10/10 Mkr'	TRACE 1 2 3 4 5 6 TYPE DET P P A NN N 1 2.461 50 GHz	Frequency Auto Tune Center Freq 2.46200000 GHz
PI IFC t 11.7 dB 70 dBm	NO: Fast 🕞	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>10/10	12.461 50 GHz -0.250 dBm	Frequency Auto Tune Center Freq 2.46200000 GHz Start Freq
PH IFC t 11.7 dB 70 dBm	NO: Fast G	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>10/10 Mkr'	12.461 50 GHz -0.250 dBm	Frequency Auto Tune Center Freq 2.46200000 GHz Start Freq
PI IFC t 11.7 dB 70 dBm	NO: Fast G	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>10/10 Mkr'	TRACE 12.3.4.5.6 TYPE MMMWWW DET PPANNN 12.461 50 GHz -0.250 dBm	Frequency Auto Tune Center Freq 2.46200000 GHz Start Freq 2.45200000 GHz
PI IFC t 11.7 dB 70 dBm	NO: Fast G	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>10/10 Mkr'	12.461 50 GHz -0.250 dBm	Frequency Auto Tune Center Freq 2.46200000 GHz Start Freq 2.45200000 GHz Stop Freq
PI IFC t 11.7 dB 70 dBm	NO: Fast G	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>10/10 Mkr'	TRACE 12.3.4.5.6 TYPE MMMWWW DET PPANNN 12.461 50 GHz -0.250 dBm	Frequency Auto Tune Center Freq 2.46200000 GHz Start Freq 2.45200000 GHz Stop Freq
PI IFC t 11.7 dB 70 dBm	NO: Fast G	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>10/10 Mkr'	TRACE 12.3.4.5.6 TYPE MMMWWW DET PPANNN 12.461 50 GHz -0.250 dBm	Frequency Auto Tune Center Freq 2.46200000 GHz Start Freq 2.452000000 GHz Stop Freq 2.472000000 GHz
PI IFC t 11.7 dB 70 dBm	NO: Fast G	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>10/10 Mkr'	TRACE 12.3.4.5.6 TYPE MMMWWW DET PPANNN 12.461 50 GHz -0.250 dBm	Frequency Auto Tune Center Freq 2.46200000 GHz Start Freq 2.45200000 GHz Stop Freq 2.47200000 GHz CF Step 2.000000 MHz
PI IFC t 11.7 dB 70 dBm	NO: Fast G	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>10/10 Mkr'	TRACE 12.3.4.5.6 TYPE MMMWWW DET PPANNN 12.461 50 GHz -0.250 dBm	Frequency Auto Tune Center Freq 2.46200000 GHz Start Freq 2.45200000 GHz Stop Freq 2.47200000 GHz CF Step 2.00000 MHz
PI IFC t 11.7 dB 70 dBm	NO: Fast G	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>10/10 Mkr'	TRACE 12.3.4.5.6 TYPE MMMWWW DET PPANNN 12.461 50 GHz -0.250 dBm	Frequency Auto Tune Center Freq 2.46200000 GHz Start Freq 2.45200000 GHz Stop Freq 2.47200000 GHz CF Step 2.00000 MHz Auto Man Freq Offset
PI IFC t 11.7 dB 70 dBm	NO: Fast G	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>10/10 Mkr'	TRACE 12.3.4.5.6 TYPE MMMWWW DET PPANNN 12.461 50 GHz -0.250 dBm	Frequency Auto Tune Center Freq 2.46200000 GHz Start Freq 2.45200000 GHz Stop Freq 2.47200000 GHz CF Step 2.00000 MHz Auto Man Freq Offset
PI IFC t 11.7 dB 70 dBm	NO: Fast ⊊ Gain:Low	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>10/10 Mkr'	TRACE 12.3.4.5.6 TYPE MMMWWW DET PPANNN 12.461 50 GHz -0.250 dBm	Frequency Auto Tune Center Freq 2.46200000 GHz Start Freq 2.45200000 GHz Stop Freq 2.47200000 GHz CF Step 2.00000 MHz Auto Man Freq Offset
PI IFC t 11.7 dB 70 dBm	NO: Fast ⊊ Gain:Low	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>10/10 Mkr'	TRACE 12.3.4.5.6 TYPE MMMWWW DET PPANNN 12.461 50 GHz -0.250 dBm	Frequency Auto Tune Center Freq 2.46200000 GHz Start Freq 2.45200000 GHz Stop Freq 2.47200000 GHz CF Step 2.00000 MHz Auto Man Freq Offset
PI IFC t 11.7 dB 70 dBm	NO: Fast C	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>10/10 Mkr'	TRACE 12.3.4.5.6 TYPE MMMWWW DET PPANNN 12.461 50 GHz -0.250 dBm	Frequency Auto Tune Center Freq 2.462000000 GHz Start Freq 2.452000000 GHz Stop Freq 2.472000000 GHz CF Step 2.000000 MHz
er S	x 2.438 2.400 000 2.483 500 2.483 500 	x 2438 1 GHz 2.400 000 0 GHz 2.483 500 0 GHz H High (30M er - Swept SA	X Y FL 2.438 1 GHz 0.433 dBm 2.400 000 0 GHz -63 076 dBm 2.483 500 0 GHz -64.905 dBm "" H High (30MHz~26.50	X Y FUNCTION FUNCTION WIDTH 2.400 000 GHz -0.433 dBm 2.400 000 GHz -63 076 dBm 2.483 500 0 GHz -64.905 dBm " status H High (30MHz~26.5GHz) (802.1	X 2.438 1 GHz 2.400 000 0 GHz 2.400 000 0 GHz 2.483 500 0 GHz .64.905 dBm



10 a Log B/div

1.70

-8.30

18.3

28.3

-38.3

48.3

-58.3

-68 :

78.3

2 3 4

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Kevsight Spectrum Analyzer - Swept SA - 6 × ALIGN AUTO Avg Type: Log-Pwr Avg|Hold:>10/10 10:04:53 AM Jan 05, 2022 TRACE 1 2 3 4 5 6 TYPE M WHWWW DET P P A N N N Frequency Start Freq 2.450000000 GHz Trig: Free Run #Atten: 10 dB PNO: Fast IFGain:Low Auto Tune Mkr1 2.461 498 75 GHz -0.521 dBm Ref Offset 11.7 dB Ref 11.70 dBm **Center Freq** MARIN mus 2.475000000 GHz 20.25 Start Freq 2.450000000 GHz ∕3 Stop Freq 2.50000000 GHz Start 2.45000 GHz Stop 2.50000 GHz CF Step 5.000000 MHz Man #Res BW 100 kHz #VBW 300 kHz Sweep 5.333 ms (40001 pts) Auto MKR MODE TRC SCL FUNCTION VALUE x FUNCTION FUNCTION WIDTH -0.521 dBm --- dBm -62.637 dBm 2.461 498 75 GHz 2.400 000 0 GHz 2.483 500 0 GHz N 1 f N 1 f N 1 f Freq Offset 0 Hz STATUS - 6 💌 ALIGN AUTO Avg Type: Log-Pwr Avg|Hold:>10/10 10:04:08 AM Jan 05, 2022 TRACE 1 2 3 4 5 6 TYPE M WWW DET P P A N N N Frequency PNO: Fast 😱 IFGain:Low Trig: Free Run #Atten: 10 dB Auto Tune Mkr1 2.463 3 GHz Ref Offset 11.7 dB Ref <u>11.70 dBm</u> -0.569 dBm Center Freq 13.265000000 GHz 20.25 d Start Freq 30.000000 MHz Stop Freq 26.500000000 GHz Stop 26.50 GHz Sweep 2.531 s (40001 pts) CF Step 2.64700000 GHz #VBW 300 kHz Man Auto FUNCT FUNCTION 2.463 3 GHz 2.400 000 0 GHz 2.483 500 0 GHz -0.569 dBm -63.440 dBm -63.833 dBm Freq Offset 0 Hz

10 11 MSG 🔰 Keysight Spectrum Analyzer - Swept SA Start Freq 30.000000 MHz 10 dB/div Log 1.7 -8.3 18.3 -28.3 38.3 48.3 -58.3 -68.3 78.3 Start 30 MHz #Res BW 100 kHz MKR MODE TRC SCL 1 N 1 f 2 N 1 f 3 N 1 f 9 10 11 STATUS



OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED

MEASUREMENT

(802.11g MODE)

-				(002.	_		-			
	CH	Low	(30N	1Hz~2	6.5G	Hz) (802.1	l1g M	IODE)
📕 Keysight Sp 📈	ectrum Analyzer - Sw RF 50 Ω			SEN	SE:INT		ALIGN AUTO	04-22-56 PM	1 Jan 04, 2022	
	req 2.4120	00000 GH				Avg Type Avg Hold	e: Log-Pwr	TRAC	E123456	Frequency
		P	NO:Fast ⊂ Gain:Low	#Atten: 20		Avginoid	.~10/10	DE	T P P A N N N	
	Ref Offset 11	.7 dB					Mkr	1 2.409		Auto Tune
10 dB/div Log	Ref 21.70							-2.1	85 dBm	
										Center Freq
11.7										2.412000000 GHz
				.						
1.70										Start Freq
-8.30	Amm	, www.	and warding the second s	many	min	mann	rivenvin	hmunn	η	2.402000000 GHz
0.00	1			. V	ł				l	
-18.3	4								Y.	Stop Freq
\sim									www.	2.422000000 GHz
-28.3										
-38.3										CF Step
										2.000000 MHz <u>Auto</u> Man
-48.3										
										Freq Offset
-58.3		1					1			0 Hz
-68.3										
Center 2	41200 GHz							Snan 2	0.00 MHz	
#Res BW			#VBI	N 300 kHz			Sweep 1			
MSG							STATUS	;		
📕 Keysight Sp	ectrum Analyzer - Sw									- 5 -
Stop Fre	q 2.425000	000 GHz			SE:INT	Avg Type	ALIGN AUTO e: Log-Pwr	TRAC	1Jan 05, 2022 E 1 2 3 4 5 6	Frequency
.	•	Р	NO:Fast ⊂ Gain:Low	Trig: Free #Atten: 10		Avg Hold	:>10/10	TYP	E MWMWWW T P P A N N N	
	Ref Offset 11	17 dB					Mkr1 2	409 498	3 0 GHz	Auto Tune
10 dB/div	Ref 11.70	dBm						-2.36	62 dBm	
Log 1.70								1		Center Freq
-8.30								and the second se	-	2.367500000 GHz
-18.3								/ '	-22.19 dBm	
-28.3							- ^\$	(\rightarrow	Start Freq
-38.3									\	2.310000000 GHz
-48.3		ı								
-58.3	ور والدينية الإربي والمدينة		والمستعد المغيريا		i dan kati kati				3 →	Stop Freq
-68.3							1			2.425000000 GHz
-78.3										
Start 2.31						_		Stop 2.42		CF Step
#Res BW			#VB	N 300 kHz			weep 13	· ·		11.500000 MHz <u>Auto</u> Man
MKR MODE T	f	× 2.409 498	0 GHz	-2.362 dB	m	TION FUI	NCTION WIDTH	FUNCTIO	N VALUE	
2 N 1 3 N 1	f f	2.400 000 2.483 500	0 GHz	-38.257 dB dB	m					Freq Offset
4 5										0 Hz
6 7										
8					1	1				II
8 9 10										
8				m						
8 9 10 11				m			STATUS			

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Discrete Keysight Spectrum Analyzer - Swept SA - 6 🗙 10:11:14 AM Jan 05, 2022 TRACE TYPE MWWWW DET P P A N N N Avg Type: Log-Pwr Avg|Hold:>10/10 Frequency Start Freq 30.000000 MHz Trig: Free Run #Atten: 10 dB PNO: Fast 😱 IFGain:Low Auto Tune Mkr1 2.409 7 GHz -2.322 dBm Ref Offset 11.7 dB Ref 11.70 dBm IB/div 10 c Log 1.70 **Center Freq** -8.30 13.265000000 GHz -18.3 -22.19 d 28.3 Start Freq -38.3 30.000000 MHz 48.3 -58.3 Stop Freq -68 (26.500000000 GHz 78.3 Start 30 MHz Stop 26.50 GHz CF Step 2.647000000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.531 s (40001 pts) Auto MKR MODE TRC SCL FUNCTION FUNCTION WIDTH FUNCTION VALUE -2.322 dBm -36.167 dBm -61.559 dBm N 1 f N 1 f N 1 f 2.409 7 GHz 2.400 000 0 GHz 2.483 500 0 GHz 2 3 4 Freq Offset 0 Hz 10 11 STATUS ISG CH Mid (30MHz~26.5GHz) (802.11g MODE) 📕 Keysight - -
 ALIGN AUTO
 04:31:23 PM Jan 04, 2022

 Avg Type: Log-Pwr
 TRACE [1 2 3 4 5 6]

 Avg|Hold:>10/10
 TYPE M WM WWW

 DET [P P A NN N
 SENSE:INT Frequency Mkr1 2.434 50 GHz -3.754 dBm Auto Tune Ref Offset 11.7 dB Ref 21.70 dBm 10 dB/div **Center Freq** 11 2.437000000 GHz 1.70 -win Start Freq v~~v~n_v mm 2.427000000 GHz 8.30 18.3 Stop Freq 2.447000000 GHz 28 CF Step 2.000000 MHz 38. Auto Man 48. Freq Offset 68. 0 Hz 58 Span 20.00 MHz Sweep 1.933 ms (1001 pts) Center 2.43700 GHz #Res BW 100 kHz #VBW 300 kHz

STATUS



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📕 Keysight Spectrum Analyzer - Sw							- 7 ×
Σtart Freq 30.00000		SENSE:I	Avg Type: n Avg Hold:>	LIGN AUTO Log-Pwr >10/10	TRAC	I Jan 05, 2022 E 1 2 3 4 5 6 E M WM WWW T P P A N N N	Frequency
-	IFGain:Low	#Atten: 10 dB		Mk	r1 2.434		Auto Tune
Ref Offset 11 10 dB/div Ref 11.70 Log	1.7 dB dBm					55 dBm	
1.70							Center Freq
-8.30							13.265000000 GHz
-18.3						-23.75 dBm	
-38.3							Start Freq 30.000000 MHz
-48.3							
-58.3	A REAL PROPERTY AND A REAL PROPERTY A REAL PROPERTY AND A REAL PROPERTY A REAL PROPERTY AND A REAL PROPERTY A REAL PROPERTY A REAL PROPERTY AND A		فأسلحه ويقتني والبنائل ويرهجا وانتسا		أفراده وتعليا وسريا		Stop Freq
-68.3							26.500000000 GHz
Start 30 MHz					Stop 2	6.50 GHz	CE Stop
#Res BW 100 kHz	#V	BW 300 kHz	ę	Sweep 2	2.531 s (4)		CF Step 2.647000000 GHz
MKR MODE TRC SCL	× 2.434 8 GHz	۲ -4.055 dBm	FUNCTION FUNC	CTION WIDTH	FUNCTIO	N VALUE	<u>Auto</u> Man
2 N 1 f 3 N 1 f	2.400 000 0 GHz 2.483 500 0 GHz	-61.544 dBm -62.165 dBm					Freq Offset
<u>4</u> 5						=	0 Hz
6 7							
8 9 10							
MSG				STATUS	6		L
	Liah (20			000 /	11a M)
Keysight Spectrum Analyzer - Sw			.5GHz) (8	0UZ.	i ig iv	IODE	
RF 50 Ω Center Freq 2.46200	2 DC	SENSE:I	NT A Avg Type:	LIGN AUTO	04:30:27 PM TRAC	1 Jan 04, 2022 E 1 2 3 4 5 6	Frequency
00110111042.4020	PNO: Fast IFGain:Lov	Trig: Free Ru #Atten: 20 dB	n Avg Hold:>	>10/10	TYP	T P P A N N N	
Ref Offset 11				Mkr	1 2.459		Auto Tune
10 dB/div Ref 21.70	dBm				-5.34	47 dBm	
							Center Freq
11.7							2.462000000 GHz
1.70		<u>_</u> 1					Start Freq
-8.30	www.www.	winning w	mann	$\sim \sim $	mmunan	a	2.452000000 GHz
		V				}	
-18.3						L.	Stop Freq
-28.3						- Vyy	2.472000000 GHz
							CF Step
-38.3							2.000000 MHz <u>Auto</u> Man
-48.3							<u></u>
-58.3							Freq Offset
							0 Hz
-68.3							
						0.00 541	
Center 2.46200 GHz #Res BW 100 kHz	#V	'BW 300 kHz	s	weep 1	Span 2 .933 ms (0.00 MHz 1001 pts)	
MSG				STATUS			



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1210723					
Keysight Spectrum Analyzer	- Swept SA 50 Ω DC	SENSE:INT	ALIGN AUTO	10:06:15 AM Jan 05, 2022	
art Freq 2.4500		Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>10/10	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P P A N N N	Frequency
	PNO: Fast IFGain:Low			DET PPANNN	
Ref Offset	t 11.7 dB		Mkr1 2.4	459 503 75 GHz	Auto Tu
0 dB/div Ref 11.7				-5.407 dBm	
.70	<u> </u>				Center Fr
.30 /***********	miner management	Harrison and the second s			2.475000000 G
8.3	V			25.05.47	
8.3				-25.35 dBm	Start Fr
8.3		Miles Market			2.450000000 G
8.3		"Munuc	3		
8.3			Martin water and	والمعادية المقدانية والمعادية والمتحاد والمتحد والمتحاد	Stop Er
8.3					2.50000000 G
8.3					
tart 2.45000 GHz				Stop 2.50000 GHz	CF St
Res BW 100 kHz	#V	'BW 300 kHz	Sweep 5.	333 ms (40001 pts)	5.000000 N
KR MODE TRC SCL	х	Y	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> N
1 N 1 f 2 N 1 f	2.459 503 75 GHz 2.400 000 0 GHz	-5.407 dBm dBm			
3 N 1 F	2.483 500 0 GHz	-57.853 dBm			Freq Off
5					0
6 7					
8 9					
0					
••	ļ			•	1
				•	
G			STATU	s	
Keysight Spectrum Analyzer					
Keysight Spectrum Analyzer	50 Ω DC 000 MHz	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	10:08:12 AM Jan 05, 2022	Frequency
Keysight Spectrum Analyzer	50 Ω DC	SENSE:INT	ALIGN AUTO	10:08:12 AM Jan 05, 2022	Frequency
Keysight Spectrum Analyzer RF 5 art Freq 30.0000	0 Ω DC 000 MHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AM Jan 05, 2022	Frequency
Keysight Spectrum Analyzer RF 5 art Freq 30.0000 Ref Offset 0 dB/div Ref 11.7	000 MHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AM Jan 05, 2022 TRACE 1 2 3 4 5 6 TYPE M WM WWW DET P P A N N N	Frequency
Reysight Spectrum Analyzer	000 MHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AM Jan 05, 2022 TRACE [1 2 3 4 5 6 TYPE M WM WWW DET P P A N N N Kr1 2.459 3 GHz	Frequency Auto Tu
Reysight Spectrum Analyzer RF Scart Freq 30.0001 Ref Offset D dB/div Ref 11.7 29 70	000 MHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AM Jan 05, 2022 TRACE [1 2 3 4 5 6 TYPE M WM WWW DET P P A N N N Kr1 2.459 3 GHz	Frequency Auto Tu Center Fi
Keysight Spectrum Analyzer RF S art Freq 30.0000 D dB/div Ref 0ffset 70 30	000 MHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AM Jan 05, 2022 TRACE [1 2 3 4 5 6 TYPE M WM WWW DET P P A N N N Kr1 2.459 3 GHz	Frequency Auto Tu Center Fr
Keysight Spectrum Analyzer RF S art Freq 30.0000 Ref Offset Ref Offset 30 30 31 32	000 MHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AM Jan 05, 2022 TRACE [1 2 3 4 5 6 TYPE M WM WWW DET P P A N N N Kr1 2.459 3 GHz	Frequency Auto Tu Center Fr 13.26500000 0
Ref Offsel 0 dB/div 70 30 8.3 8.3 8.3 8.4 8.4 8.4 8.5 8.5 8.5 8.5 8.5 8.5 8.5 8.5	000 MHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AM Jan 05, 2022 TRACE [1] 23 4 5 6 TYPE IMMMWww DET P P A N N N cr1 2.459 3 GHz -5.505 dBm	Frequency Auto Tu Center Fr 13.26500000 c Start Fr
Keysight Spectrum Analyzer Keysight Spectrum Analyzer Start Freq 30.0001 Ref Offset B dB/div Ref 11.7 9 1 3 3 3 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4	000 MHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AM Jan 05, 2022 TRACE [1] 23 4 5 6 TYPE IMMMWww DET P P A N N N cr1 2.459 3 GHz -5.505 dBm	Frequency Auto Tu Center Fr 13.26500000 c Start Fr
Keysight Spectrum Analyzer RF IS art Freq 30.0000 dB/div Ref Offset dB/div Ref 11.7 70 30 33 34 33 33 34 34 35 35 35 35 35 36 36 36 37 36 37 37 38 37 38 38 38 39 39 30 30 30 30 30 30 30 30 30 30 30 30 30	000 MHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AM Jan 05, 2022 TRACE [1] 23 4 5 6 TYPE IMMMWww DET P P A N N N cr1 2.459 3 GHz -5.505 dBm	Frequency Auto TL Center Fr 13.26500000 C Start Fr 30.00000 N
Keysight Spectrum Analyzer RF IS RF S Sart Freq 30.0000 Ref Offset B3/dB/div Ref 11.7 30 - 31 - 8.3 - 8.3 - 8.3 - 8.3 - 8.3 -	000 MHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AM Jan 05, 2022 TRACE [1] 23 4 5 6 TYPE IMMMWww DET P P A N N N cr1 2.459 3 GHz -5.505 dBm	Frequency Auto Tu Center Fr 13.26500000 0 Start Fr 30.00000 N Stop Fr
Keysight Spectrum Analyzer RF IS Sart Freq 30.0001 Ref Offset B/dB/div Ref 11.7 30 I 33 I 8.3 I	000 MHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AM Jan 05, 2022 TRACE [1] 23 4 5 6 TYPE IMMMWww DET P P A N N N cr1 2.459 3 GHz -5.505 dBm	Frequency Auto Tu Center Fr 13.26500000 0 Start Fr 30.00000 N Stop Fr
Keysight Spectrum Analyzer RF S art Freq 30.0001 Ref Offset Ref 11.7 70 30 8.3 8.3 8.3 8.3 8.3 8.3 8.3 8.3	000 MHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AM Jan 05, 2022 TRACE [1 2 3 4 5 6 TYPE [M WH WWW DET] P P A NN N cr1 2.459 3 GHz -5.505 dBm -25.35 dBm	Frequency Auto Tu Center Fil 13.265000000 f Start Fil 30.000000 f Stop Fil 26.50000000 f
Keysight Spectrum Analyzer RF IS Start Freq 30.0000 Second Start Freq 30.0000 DeB/div Ref 0ffsel 0 dB/div Ref 11.7 30 1 33 1 8.3 3 8.3 3 8.3 3 8.3 3 8.3 3 8.3 3 8.3 3 8.3 3 8.3 3 8.3 3 8.3 3 8.3 3 8.3 3 8.3 3 8.3 3 8.3 3 8.4 4 9 4 9 4 9 4 9 4 9 4 9 4 9 4 9 4 9 4 9 4	20 DC DO 2000 MHz PNO: Fast IFGain:Low t11.7 dB 20 dBm 20 dBm 2	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hoid:>10/10	10:08:12 AM Jan 05, 2022 TRACE [1 2 3 4 5 6 TYPE [M ANN WW DET] P P A N N N cr1 2.459 3 GHz -5.505 dBm -25.35 dBm -25.35 dBm -25.35 dBm -25.35 dBm -25.35 dBm	Frequency Auto Tu Center Fr 13.26500000 0 Start Fr 30.000000 N Stop Fr 26.50000000 0 CF St
Keysight Spectrum Analyzer RF IS Start Freq 30.0000 D dB/div Ref 0ffset 0 Ref 0ffset 0 I 30 I 30 I 31 I 32 I 33 I 34 I 35 I 36 I 37 I 38 I 39 I 30 I 31 I 32 I 33 I 34 I 35 I 36 I 37 I 38 I 39 I 30 I 31 I 32 I 33 I 34 I 35 I 36 I 36 I	20 DC DO 2000 MHz PNO: Fast IFGain:Low t11.7 dB 20 dBm 20 dBm 2	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AMJan 05, 2022 TRACE[1 2 3 4 5 6 TYPE[MAWHWWW DET[P P A NN N Cr1 2.459 3 GHz -5.505 dBm -25.35 dBm	Frequency Auto Tu Center Fi 13.265000000 G Start Fi 30.000000 N Stop Fi 26.50000000 G CF St 2.647000000 G
Keysight Spectrum Analyzer RF IS Interference IS Interference Interference	2.459 3 GHz	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hoid:>10/10	10:08:12 AMJan 05, 2022 TRACE[1 2 3 4 5 6 TYPE[MAWHWWW DET[P P A NN N Cr1 2.459 3 GHz -5.505 dBm -25.35 dBm	Frequency Auto Tu Center Fi 13.265000000 G Start Fi 30.000000 N Stop Fi 26.50000000 G CF St 2.647000000 G
Keysight Spectrum Analyzer RF IS Interference SO OdB/div Ref Offset OdB/div Ref 11.7 70 1 30 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 9.0 1 1 1 2 N 1 1	200 DC 000 MHz PNO: Fast IFGain:Low t11.7 dB 0 dBm 0 dBm 4	BW 300 kHz	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AMJan 05, 2022 TRACE[1 2 3 4 5 6 TYPE[MAWHWWW DET[P P A NN N Cr1 2.459 3 GHz -5.505 dBm -25.35 dBm	Frequency Auto Tu Center Fit 13.26500000 G Start Fit 30.000000 N Stop Fit 26.5000000 G 2.64700000 G Auto Tu
Keysight Spectrum Analyzer RF IS B2 S B3 Ref Offsel B3 Image: S B4 Image: S B4 Image: S B4 Image: S B4 Image: S	2.459 3 GHz	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AMJan 05, 2022 TRACE[1 2 3 4 5 6 TYPE[MAWHWWW DET[P P A NN N Cr1 2.459 3 GHz -5.505 dBm -25.35 dBm	Frequency Auto Tu Center Fil 13.265000000 C Start Fil 30.000000 M Stop Fil 26.50000000 C Auto Tu CF St 2.647000000 C Auto Tu Freq Offs
Keysight Spectrum Analyzer RF 5 cart Freq 30.0000 Sef Offset 0 dB/div Ref Offset 70	200 DC 000 MHz PNO: Fast IFGain:Low t11.7 dB 0 dBm 0 dBm 4	BW 300 kHz	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AMJan 05, 2022 TRACE[1 2 3 4 5 6 TYPE[MAWHWWW DET[P P A NN N Cr1 2.459 3 GHz -5.505 dBm -25.35 dBm	Frequency Auto Tu Center Fil 13.265000000 C Start Fil 30.000000 M Stop Fil 26.50000000 C Auto Tu CF St 2.647000000 C Auto Tu Freq Offs
Keysight Spectrum Analyzer RF 5 cart Freq 30.0000 Sef Offset 0 dB/div Ref Offset 70	200 DC 000 MHz PNO: Fast IFGain:Low t11.7 dB 0 dBm 0 dBm 4	BW 300 kHz	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AMJan 05, 2022 TRACE[1 2 3 4 5 6 TYPE[MAWHWWW DET[P P A NN N Cr1 2.459 3 GHz -5.505 dBm -25.35 dBm	Frequency Auto Tu Center Fil 13.265000000 C Start Fil 30.000000 M Stop Fil 26.50000000 C Auto Tu CF St 2.647000000 C Auto Tu Freq Offs
Keysight Spectrum Analyzer RF IS att Freq 30.0000 Ref Offset DdB/div Ref 11.7 70 1 30 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 8.3 1 9 1 1 1 1 1 2 1 3 1 3 1 1 1 2 1 1 1 3 1 6 1 7 1 8 1	200 DC 000 MHz PNO: Fast IFGain:Low t11.7 dB 0 dBm 0 dBm 4	BW 300 kHz	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AMJan 05, 2022 TRACE[1 2 3 4 5 6 TYPE[MAWHWWW DET[P P A NN N Cr1 2.459 3 GHz -5.505 dBm -25.35 dBm	Frequency Auto Tu Center Fr 13.265000000 C Start Fr 30.000000 N Stop Fr 26.50000000 C 2.647000000 C Auto Tu Freq Off
Keysight Spectrum Analyzer Ref Offset Ref Offset o dB/div Ref Offset 0	200 DC 000 MHz PNO: Fast IFGain:Low t11.7 dB 0 dBm 0 dBm 4	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AMJan 05, 2022 TRACE[1 2 3 4 5 6 TYPE[MAWHWWW DET[P P A NN N Cr1 2.459 3 GHz -5.505 dBm -25.35 dBm	Auto Tu Center Fr 13.265000000 G Start Fr 30.000000 M Stop Fr 26.50000000 G CF St 2.647000000 G Auto M
Keysight Spectrum Analyzer RF 5 cart Freq 30.0000 Ref Offsel 0 dB/div Ref 01 0 dB/div Ref 01 0 dB/div Ref 11.7 0 dB/div Ref 11.7	200 DC 000 MHz PNO: Fast IFGain:Low t11.7 dB 0 dBm 0 dBm 4	BW 300 kHz	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>10/10	10:08:12 AM Jan 05, 2022 TRACE [1 2 3 4 5 6 TRACE [1 2 4 5 7 TRACE [1 2 4 5 7 TRAC	Frequency Auto Tu Center Fr 13.26500000 G Start Fr 30.00000 M Stop Fr 26.50000000 G 2.64700000 G Auto Tu Freq Offs Freq Offs