



Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 12V
Test Mode:	(5745-5825MHz)		

Condition	Mode	Frequency (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	а	5745	16.532	0.5	Pass
NVNT	а	5785	16.525	0.5	Pass
NVNT	а	5825	16.508	0.5	Pass
NVNT	n20	5745	17.669	0.5	Pass
NVNT	n20	5785	17.612	0.5	Pass
NVNT	n20	5825	17.617	0.5	Pass
NVNT	n40	5755	36.336	0.5	Pass
NVNT	n40	5795	36.381	0.5	Pass
NVNT	ac20	5745	17.631	0.5	Pass
NVNT	ac20	5785	17.648	0.5	Pass
NVNT	ac20	5825	17.646	0.5	Pass
NVNT	ac40	5755	36.348	0.5	Pass
NVNT	ac40	5795	36.354	0.5	Pass
NVNT	ac80	5775	75.844	0.5	Pass

Condition	Mode	Frequency (MHz)	99% OBW (MHz)
NVNT	а	5745	16.507
NVNT	а	5785	16.513
NVNT	а	5825	16.5
NVNT	n20	5745	17.636
NVNT	n20	5785	17.666
NVNT	n20	5825	17.631
NVNT	n40	5755	36.036
NVNT	n40	5795	36.027
NVNT	ac20	5745	17.654
NVNT	ac20	5785	17.675
NVNT	ac20	5825	17.644
NVNT	ac40	5755	36.022
NVNT	ac40	5795	36.032
NVNT	ac80	5775	75.21

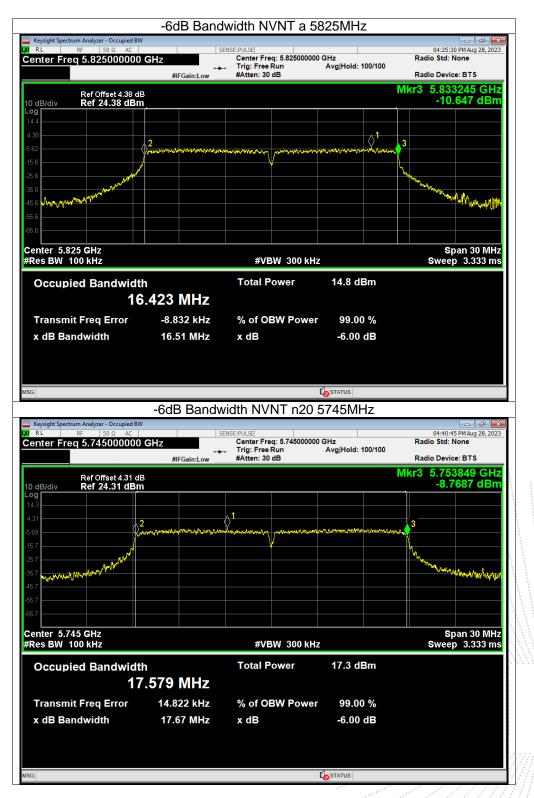
Edition: B.O







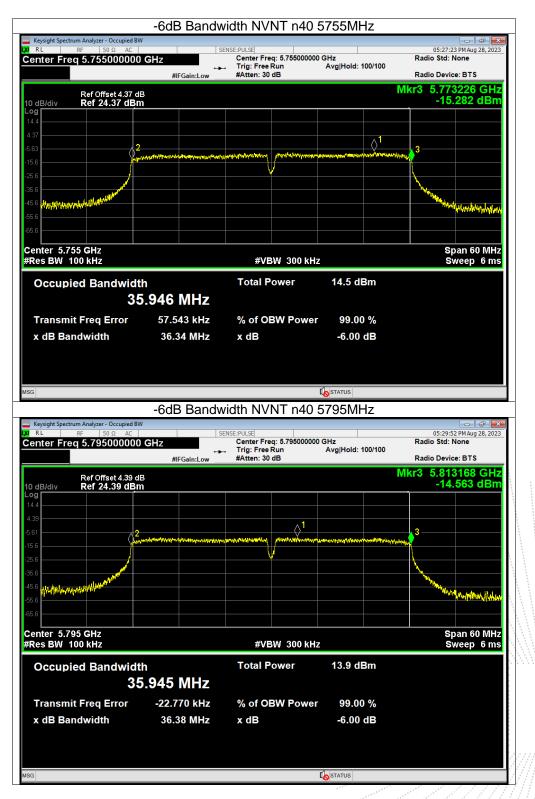






Keysight Spectrum Analyzer - Occupied BW RL RF 50 Ω AC enter Freq 5.785000000	GHz	ENSE:PULSE Center Freq: 5.785000000 → Trig: Free Run #Atten: 30 dB	GHz Avg Hold: 100/100	04:42:33 PM Aug 28, 2023 Radio Std: None Radio Device: BTS
Ref Offset 4.39 dB	#IFGain:Low	#Atten: 30 dB		Mkr3 5.793813 GHz
dB/div Ref 24.39 dBm				-7.3151 dBm
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enter 5.785 GHz Res BW 100 kHz		#VBW 300 kHz		Span 30 MHz Sweep 3.333 ms
Occupied Bandwidth		Total Power	17.2 dBm	
	.595 MHz			
Transmit Freq Error	6.618 kHz	% of OBW Power		
x dB Bandwidth	17.61 MHz	x dB	-6.00 dB	
			1	
		vidth NVNT n20 క	<u> </u>	
Keysight Spectrum Analyzer - Occupied BW RL RF 50 Ω AC	S	vidth NVNT n20 {	5825MHz	04:44:36 PM Aug 28, 2023 Radio Std: None
Keysight Spectrum Analyzer - Occupied BW RL RF 50 Ω AC	S	vidth NVNT n20 {	5825MHz	04:44:36 PM Aug 28, 2023
Keysight Spectrum Analyzer - Occupied BW RL RF 50 Ω AC enter Freq 5.825000000 Ref Offset 4.38 dB	GHz #FGain:Low	vidth NVNT n20 { ENSE:PULSE Center Freq: 5.825000000 Trig: Free Run	5825MHz	04:44:36 PM Aug 28, 2023 Radio Std: None
Keysight Spectrum Analyzer - Occupied BW RL RF 50 Q AC enter Freq 5.8250000000 Ref Offset 4.38 dB Ref 24.38 dBm 9	GHz #FGain:Low	vidth NVNT n20 { ENSE:PULSE Center Freq: 5.825000000 Trig: Free Run	5825MHz	04:44:36 PM Aug 28, 2023 Radio Std: None Radio Device: BTS Mkr3 5.833814 GH2
Keysight Spectrum Analyzer - Occupied BW RL RF 50 Ω AC enter Freq 5.825000000 Ref Offset 4.38 dB Ref Offset 4.38 dB Ref 24.38 dB 9	GHz #FGain:Low 3	vidth NVNT n20 { ENSE:PULSE Center Freq: 5.825000000 Trig: Free Run	5825MHz	04:44:36 PM Aug 28, 2023 Radio Std: None Radio Device: BTS Mkr3 5.833814 GH2
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Keysight Spectrum Analyzer - Occupied BW RL RF 50 Ω AC enter Freq 5.825000000 Ref Offset 4.38 dBm GB/div Ref 24.38 dBm Ref 0/ffset 4.38 dBm GB/div Ref 24.38 dBm Ref 0/ffset 4.38 dBm GB/div Ref 24.38 dBm GB/div Ref 24.38 dBm GB/div Ref 24.38 dBm GC G GC G <td>GHz #FGain:Low</td> <td>vidth NVNT n20 \$ Center Freq: 5.825000000 Trig: Free Run #Atten: 30 dB #VBW 300 kHz Total Power % of OBW Power</td> <td>5825MHz GHz Avg Hold: 100/100 16.8 dBm 99.00 %</td> <td>04:44:36 PM Aug 28, 2023 Radio Std: None Radio Device: BTS Mkr3 5.833814 GHz -7.8647 dBm</td>	GHz #FGain:Low	vidth NVNT n20 \$ Center Freq: 5.825000000 Trig: Free Run #Atten: 30 dB #VBW 300 kHz Total Power % of OBW Power	5825MHz GHz Avg Hold: 100/100 16.8 dBm 99.00 %	04:44:36 PM Aug 28, 2023 Radio Std: None Radio Device: BTS Mkr3 5.833814 GHz -7.8647 dBm

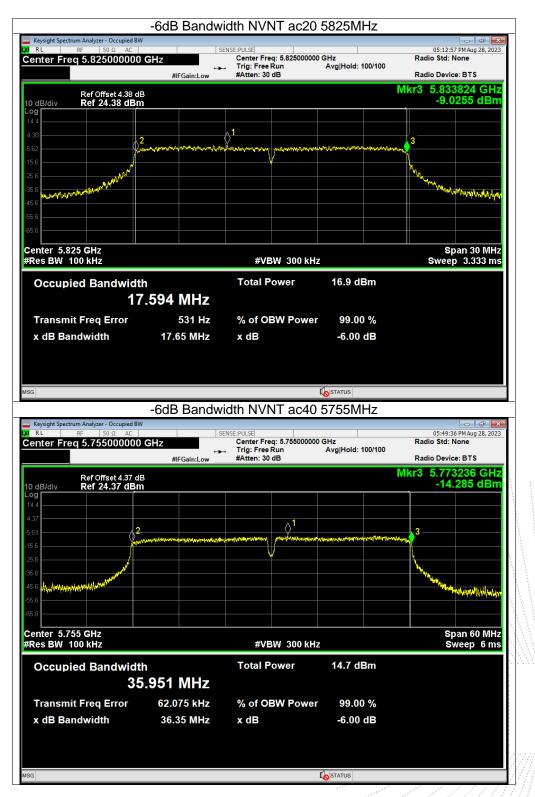




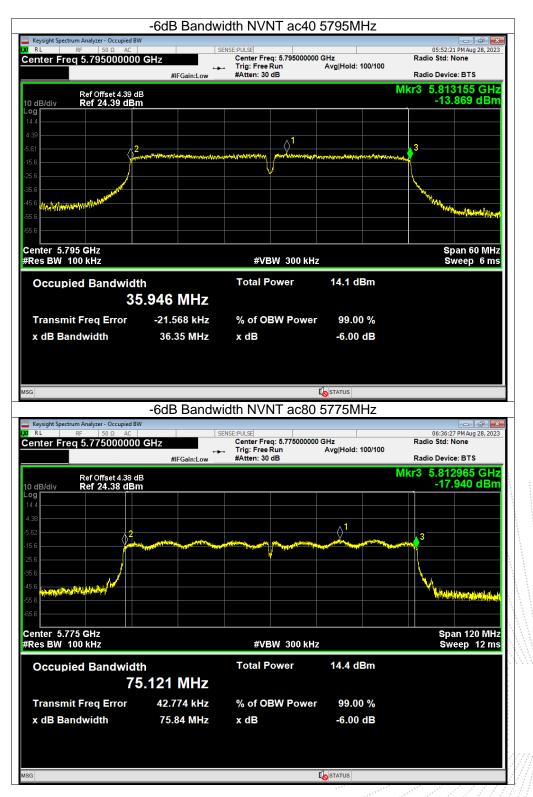




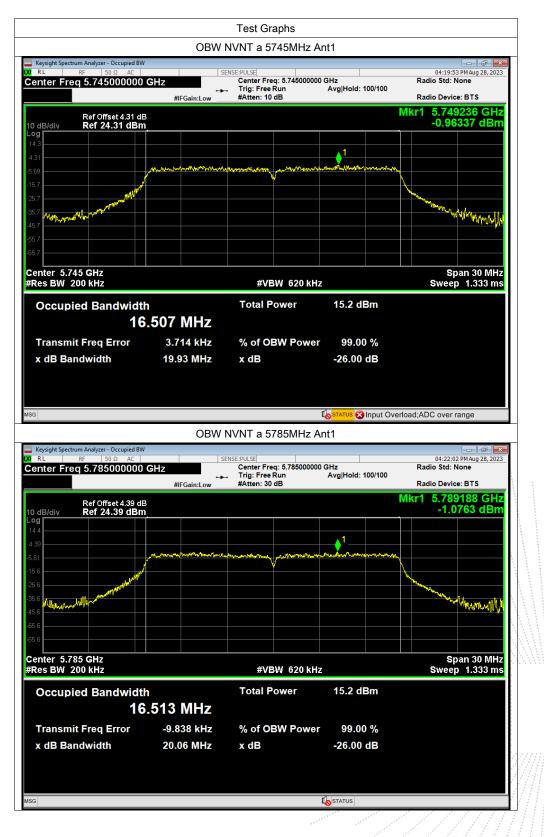




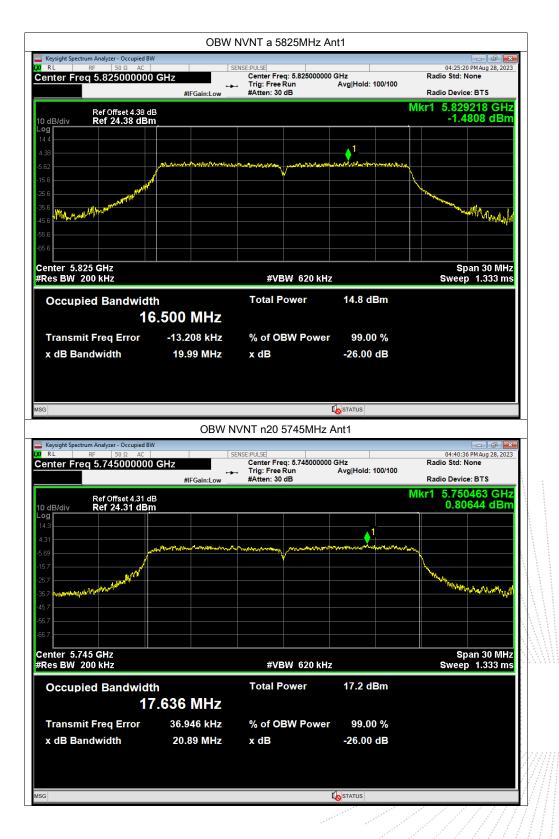




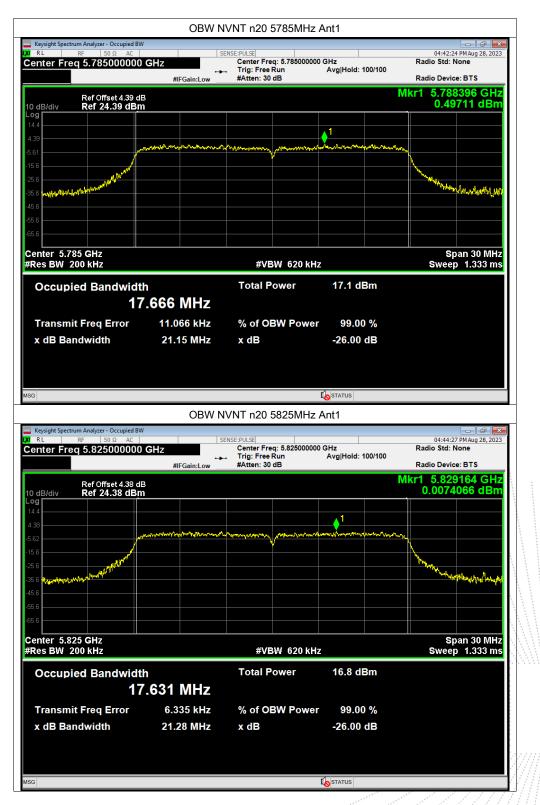




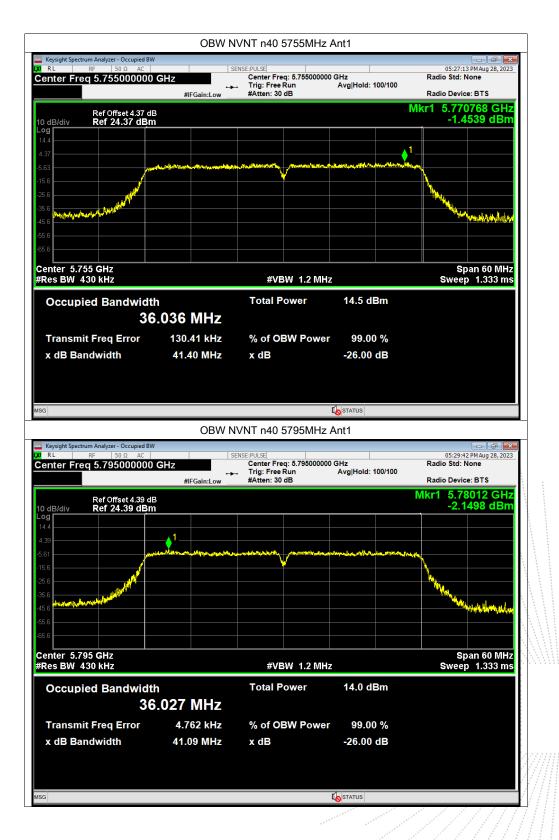








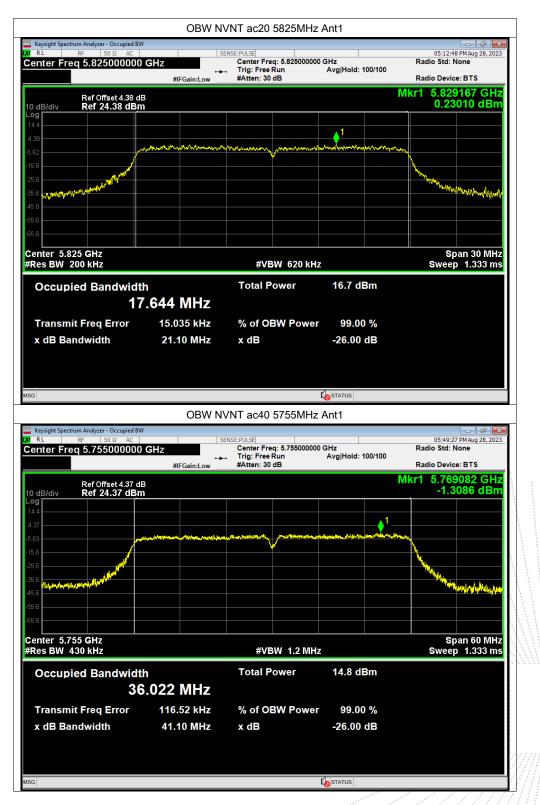




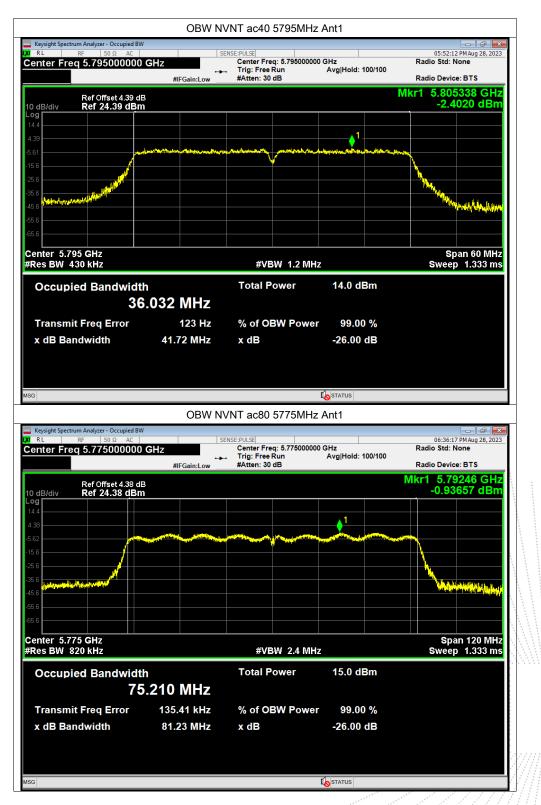


	OBW N	VNT ac20 5745MHz	z Ant1	
Keysight Spectrum Analyzer - Occupied BW RL RF 50 Ω AC enter Freq 5.745000000	SI	ENSE:PULSE Center Freq: 5.74500000 - Trig: Free Run #Atten: 30 dB	00 GHz Avg Hold: 100/100	05:04:02 PMAug 28, 2023 Radio Std: None Radio Device: BTS
		#Atten: 30 dB		Mkr1 5.74917 GHz
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Res BW 200 kHz		#VBW 620 kH		Sweep 1.333 ms
Occupied Bandwidt		Total Power	17.3 dBm	
	.654 MHz			
Transmit Freq Error	30.307 kHz	% of OBW Powe		
x dB Bandwidth	21.54 MHz	x dB	-26.00 dB	
1				
			2	
G			STATUS	
	-	VNT ac20 5785MHz		
Keysight Spectrum Analyzer - Occupied BW RL RF 50 Ω AC	SI	ENSE:PULSE	z Ant1	05:06:14 PM Aug 28, 2023 Radio Std: None
Keysight Spectrum Analyzer - Occupied BW RL RF 50 Ω AC	SI		z Ant1	
Keysight Spectrum Analyzer - Occupied BW RL RF 50 Ω AC enter Freq 5.785000000 Ref Offset 4.39 dE	GHz #FGain:Low	ENSE:PULSE Center Freq: 5.78500000 → Trig: Free Run	z Ant1 ^{00 GHz} Avg Hold: 100/100	05:06:14 PM Aug 28, 2023 Radio Std: None Radio Device: BTS Akr1 5.789203 GH2
Keysight Spectrum Analyzer - Occupied BW RL RF 50 Q AC enter Freq 5.785000000 Ref Offset 4.39 dE 0 dB/div Ref 24.39 dBm 9	GHz #FGain:Low	ENSE:PULSE Center Freq: 5.78500000 → Trig: Free Run	z Ant1 ^{00 GHz} Avg Hold: 100/100	05:06:14 PMAug 28, 2023 Radio Std: None Radio Device: BTS
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10. Maximum Conducted Output Power

10.1 Block Diagram Of Test Setup



10.2 Limit

■ For the band 5.15-5.25 GHz,

(a) (1) (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(a) (1) (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(a) (1) (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(a) (1) (iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands

(a) (2) The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting



antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

■ For the band 5.725-5.85 GHz

(a) (3) for the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations

10.3 Test Procedure

Maximum conducted output power may be measured using a spectrum analyzer/EMI receiver or an RF power meter.

1. Device Configuration

If possible, configure or modify the operation of the EUT so that it transmits continuously at its maximum power control level (see section II.B.).

a) The intent is to test at 100 percent duty cycle; however a small reduction in duty cycle (to no lower than 98 percent) is permitted if required by the EUT for amplitude control purposes. Manufacturers are expected to provide software to the test lab to permit such continuous operation.

b) If continuous transmission (or at least 98 percent duty cycle) cannot be achieved due to hardware limitations (e.g., overheating), the EUT shall be operated at its maximum power control level with the transmit duration as long as possible and the duty cycle as high as possible.

2. Measurement using a Spectrum Analyzer or EMI Receiver (SA)

Measurement of maximum conducted output power using a spectrum analyzer requires integrating the spectrum across a frequency span that encompasses, at a minimum, either the EBW or the 99-percent occupied bandwidth of the signal.1 However, the EBW must be used to determine bandwidth dependent limits on maximum conducted output power in accordance with § 15.407(a).

a) The test method shall be selected as follows: (i) Method SA-1 or SA-1 Alternative (averaging with the EUT transmitting at full power throughout each sweep) shall be applied if either of the following conditions can be satisfied:

• The EUT transmits continuously (or with a duty cycle ≥ 98 percent).

• Sweep triggering or gating can be implemented in a way that the device transmits at the maximum power control level throughout the duration of each of the instrument sweeps to be averaged. This condition can generally be achieved by triggering the instrument's sweep if the duration of the sweep (with the analyzer configured as in Method SA-1, below) is equal to or shorter than the duration T of each transmission from the EUT and if those transmissions exhibit full power throughout their durations.



(ii) Method SA-2 or SA-2 Alternative (averaging across on and off times of the EUT transmissions, followed by duty cycle correction) shall be applied if the conditions of (i) cannot be achieved and the transmissions exhibit a constant duty cycle during the measurement duration. Duty cycle will be considered to be constant if variations are less than ± 2 percent.

(iii) Method SA-3 (RMS detection with max hold) or SA-3 Alternative (reduced VBW with max hold) shall be applied if the conditions of (i) and (ii) cannot be achieved.

b) Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep): (i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.

(ii) Set RBW = 1 MHz.

(iii) Set VBW ≥ 3 MHz.

(iv) Number of points in sweep \geq 2 Span / RBW. (This ensures that bin-to-bin spacing is \leq RBW/2, so that narrowband signals are not lost between frequency bins.)

(v) Sweep time = auto.

(vi) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.

(vii) If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle \geq 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run".

(viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.

(ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum

10.4 EUT Operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

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10.5 Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 12V
Test Mode:	5180-5240MHz		

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	а	5180	9.11	24	Pass
NVNT	а	5200	11.47	24	Pass
NVNT	а	5240	11.28	24	Pass
NVNT	n20	5180	10.75	24	Pass
NVNT	n20	5200	11.9	24	Pass
NVNT	n20	5240	10.28	24	Pass
NVNT	n40	5190	10.16	24	Pass
NVNT	n40	5230	10.99	24	Pass
NVNT	ac20	5180	10.96	24	Pass
NVNT	ac20	5200	12.21	24	Pass
NVNT	ac20	5240	10.47	24	Pass
NVNT	ac40	5190	7.65	24	Pass
NVNT	ac40	5230	10.58	24	Pass
NVNT	ac80	5210	10.9	24	Pass



Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 12V
Test Mode:		5745-5825MHz	

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	а	5745	9.88	30	Pass
NVNT	а	5785	9.91	30	Pass
NVNT	а	5825	9.46	30	Pass
NVNT	n20	5745	11.96	30	Pass
NVNT	n20	5785	11.91	30	Pass
NVNT	n20	5825	11.54	30	Pass
NVNT	n40	5755	9.11	30	Pass
NVNT	n40	5795	8.5	30	Pass
NVNT	ac20	5745	12.06	30	Pass
NVNT	ac20	5785	12.01	30	Pass
NVNT	ac20	5825	11.54	30	Pass
NVNT	ac40	5755	9.26	30	Pass
NVNT	ac40	5795	8.63	30	Pass
NVNT	ac80	5775	8.49	30	Pass

Page: 89 of 128



11. Out Of Band Emissions

11.1 Block Diagram Of Test Setup



11.2 Limit

According to FCC §15.407(b)

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits: (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

FCC Part15 C Section 15.209 and 15.205

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-61 <mark>4</mark>	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

11.3 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect



its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range. 3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.

4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.

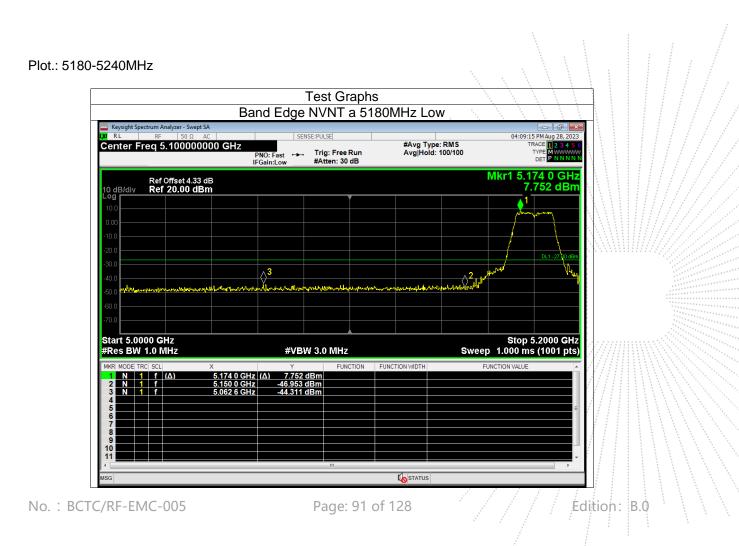
5. Repeat above procedures until all measured frequencies were complete.

11.4 EUT Operating Conditions

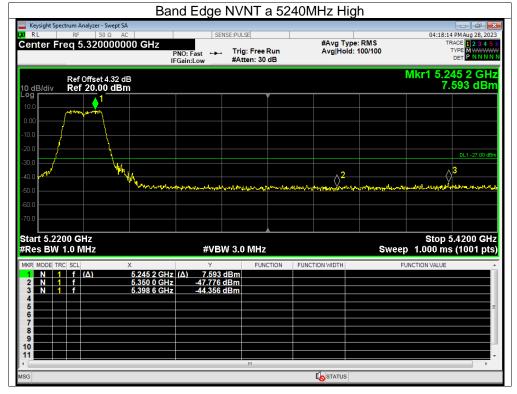
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data

11.5 Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Voltage:	DC 12V







Edition: B.0



Keysight Spectrum Analyzer - Swep		I Edge NVN	IT n20 51	80MHz Lo	W		-
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					A 3	DL'	-27.00 dBm
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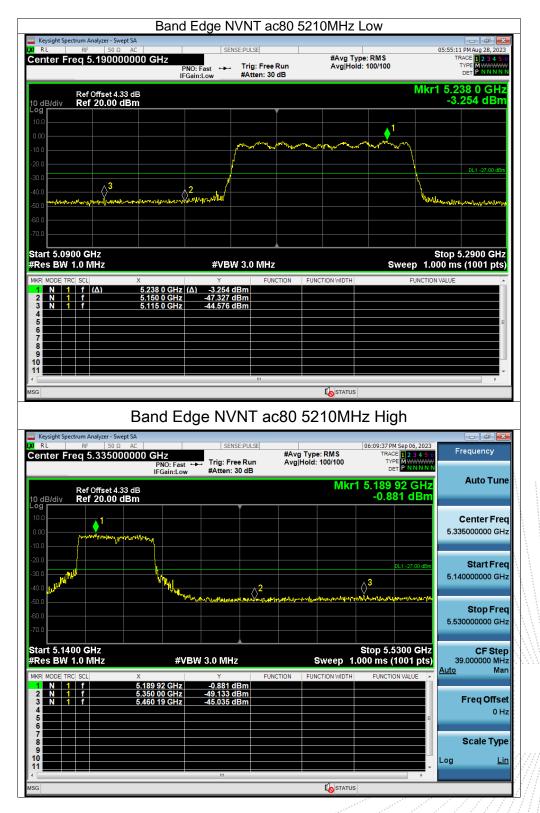






Keysight Spectrum Analyzer - Swept SA R L RF 50 Ω AC		SENSE:PULSE		05:35:46 PM Aug 2	8,2023
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: 5745-5825MHz





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es BW 1.0 MHz	X	#VBW 3.0 MHz	TION FUNCTION WIDTH	Sweep 1.000 m	s (1001 pts)
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N 1 f	5.724 8 GHz	-25.230 dBm			
	Band	Edge NVNT n2	20 5825MHz Hid	h	
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RL RF 50 Ω Inter Freq 5.90500	ept SA AC DOOOO GHZ PNC IFGa 38 dB	SENSE:PULSE	#Avg Type: tun Avg Hold: 1	04:46: RMS 00/100 Mkr1 5.8	33 PM Aug 28, 2023 TRACE 1 2 3 4 5 6 TYPE MWWWWW DET PNNNNN
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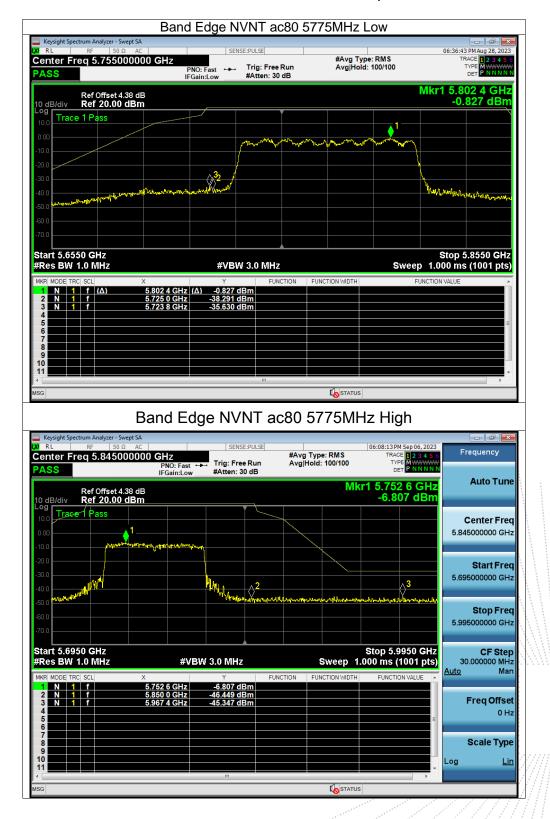


Keysight Spectrum Analyzer - Swept SA RL RF 50 Ω AC	Band Edge NVN				
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	24 0 GHz -24.975 dBm				
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Keysight Spectrum Analyzer - Swept SA					- đ ×
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art 5.8050 GHz Res BW 1.0 MHz N MODE TRC SCL X N 1 f (Δ) 5.8 N 1 f 5.8	Υ 19 4 GHz (Δ) 7.144 dBm	FUNCTION	FUNCTION WIDTH	-	



Keysight Spectrum Analyzer - Swept SA R L RF 50 Ω AC		SENSE:PULSE	HAur Turne DMS	05:49:53 PM Aug TRACE 1	a 🕹 🔀
enter Freq 5.6950000 ASS		► Trig: Free Run #Atten: 30 dB	#Avg Type: RMS Avg Hold: 100/100		3456 WWWW INNNN
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12. Spurious RF Conducted Emissions

12.1 Block Diagram Of Test Setup



12.2 Limit

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits: (1)For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2)For transmitters operating in the 5.725-5.85 GHz band(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at 5 MHz above or below the band edge.

12.3 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
 Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.

4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.

5. Repeat above procedures until all measured frequencies were complete.

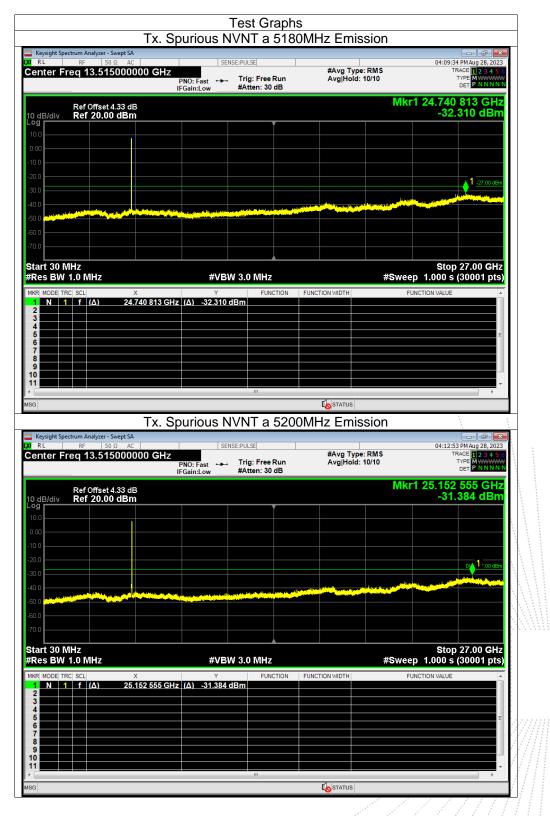
12.4 Test Result

Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandege measurement data.

About:26.5GHz-40GHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



Plot.: 5180-5240MHz



Edition: B.0





-32.344 dBm	CTION FUNCTION WIDTH	#Sweep	TRACE 2 3 4 5 TYPE 2 4 87 DET 21 067 GH2 -32.344 dBm 1 27.00 dBm Stop 27.00 GH2 1.000 s (30001 pts ICTION VALUE
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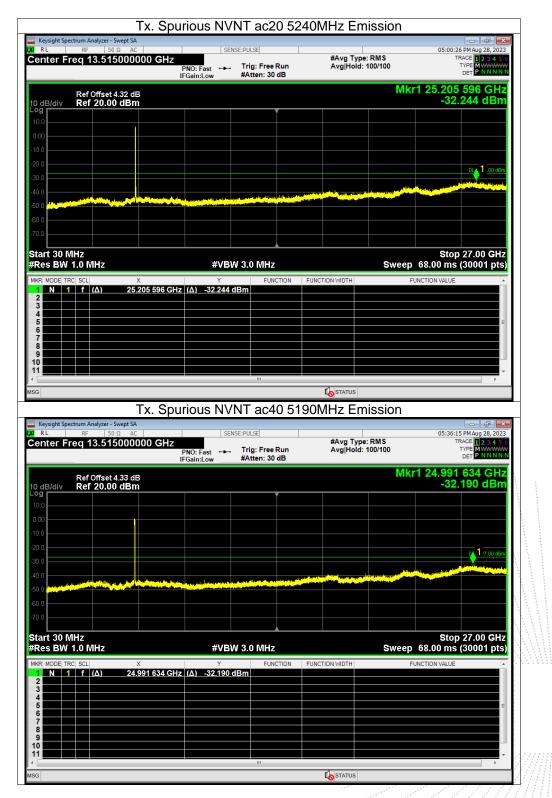


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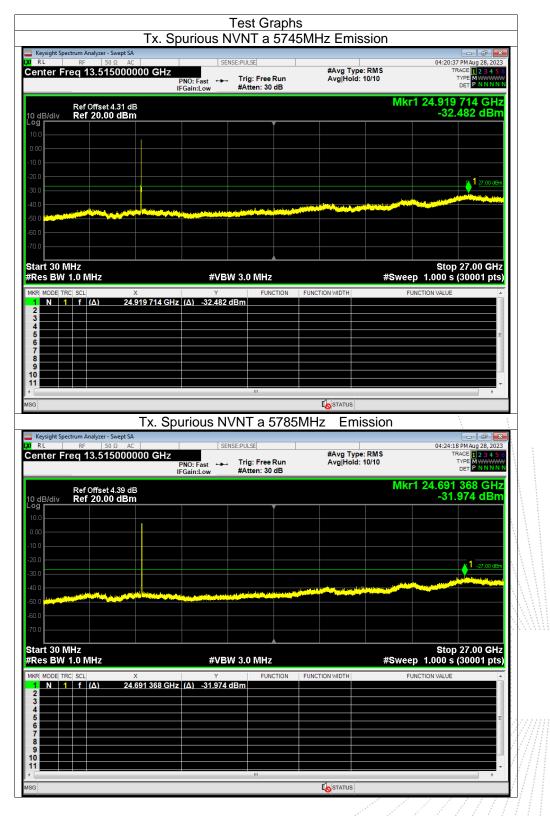




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Keysight Spectrum Analyzer - Swept SA								
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: 5745-58250MHz



Edition: B.0



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	1 30 MHz s BW 1.0 MHz MODE TRC SCL X	Y FUNCTION		Sweep 1.000 s (30001



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enter Freq 13.51	5000000 GHz	PNO: Fast ↔	Trig: Free Run #Atten: 30 dB	#Avg Type: F Avg Hold: 10	RMS //10	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P N N N N N
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Res BW 1.0 MHz		#VBW	3.0 MHz			1.000 s (30001 pts)
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enter Freq 13.51			:PULSE	#Avg Type: F Avg Hold: 10	RMS 10	04:46:52 PM Aug 28, 2023 TRACE 1 2 3 4 5 6 TYPE M WWWW DET P N N N N N
			#Atten: 30 dB	<u> </u>		DET P NNNNN 24.890 047 GHz
Ref Offset dB/div Ref 20.0					IVIKI I 2	-32.181 dBm
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	Ω AC	SENS	E:PULSE				6 PM Aug 28, 2023
enter Freq 13.515	F	PNO: Fast ↔→ Gain:Low	Trig: Free Run #Atten: 30 dB	#Avg Typ Avg Hold	e: RMS : 100/100	TF	RACE 1 2 3 4 5 6 TYPE M WWWW DET P N N N N
Ref Offset 4 dB/div Ref 20.00	l.37 dB dBm				Mkr	1 25.103 -31.	110 GHz 733 dBm
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Keysight Spectrum Analyzer - S R L RF 50	wept SA		E:PULSE			05:30:3	5 PM Aug 28, 2023
enter Freq 13.515	F	NO: Fast	Trig: Free Run #Atten: 30 dB	#Avg Typ Avg Hold	e: RMS : 100/100	TF	RACE 1 2 3 4 5 6 TYPE MWWWW DET P NNNN
Ref Offset 4		Gain:Low	#Atten: 00 ub		Mkr	1 24.955	674 GHz
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art 30 MHz					Surcon		27.00 GHz
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Keysight Spectrum Analyzer - Swept S		Lorus	C-DUI CE			05-07-5	
RL RF 50 Ω A enter Freq 13.515000		SENS	Trig: Free Run	#Avg Typ Avg Hold	e: RMS : 100/100	TE	5 PM Aug 28, 2023 RACE 1 2 3 4 5 6 TYPE M WWW DET P N N N N
	IFG	ain:Low	#Atten: 30 dB		Mir		
Ref Offset 4.31 d dB/div Ref 20.00 dB					IVIKI	-32.	431 GHz 757 dBm
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art 30 MHz tes BW 1.0 MHz		#VBW	3.0 MHz		Sweep		27.00 GHz (30001 pts)
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		ous NVI	VI ac20 5	785MHz En	nission		
RL RF 50 Ω 4	AC	SENS	E:PULSE				PM Aug 28, 2023
enter Freq 13.515000	PN	IO: Fast ↔→→	Trig: Free Run	#Avg Typ Avg∣Hold	e: RMS : 100/100	TF	RACE 1 2 3 4 5 6 TYPE MWWWW DET P NNNN
		ain:Low	#Atten: 30 dB		Mk		175 GHz
dB/div Ref 20.00 dB							379 dBm
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art 30 MHz Res BW 1.0 MHz		#VBW	3.0 MHz		Sweep		27.00 GHz (30001 pts)
R MODE TRC SCL	Х	Y	FUNCTION	FUNCTION WIDTH		JNCTION VALUE	
	4.595 175 GHz (
							E



Keysight Spectrum Analyzer - Swept RL RF 50 Ω enter Freq 13.51500	AC 0000 GHz	SENSE:PU	ig: Free Run	#Avg Type Avg Hold:	: RMS	TF	1 PM Aug 28, 2023 RACE 1 2 3 4 5 6
			tten: 30 dB	Arginola.	100/100		
Ref Offset 4.38	dB				Mkr		296 GHz 376 dBm
dB/div Ref 20.00 dE	\$m		Ţ			-32.	576 UBIII
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art 30 MHz tes BW 1.0 MHz		#VBW 3.	0 MHz		Sweep		27.00 GHz (30001 pts)
R MODE TRC SCL N 1 f (Δ) 2	X 24 576 296 CHz	γ (Δ) -32.376 dBm	FUNCTION	FUNCTION WIDTH	F	JNCTION VALUE	^
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		rious NVNI	ac40 57	755MHz Err	ission		
Keysight Spectrum Analyzer - Swept R L RF 50 Ω	AC	SENSE:PU	ILSE				1 PM Aug 28, 2023
nter Freq 13.51500	F		ig: Free Run Atten: 30 dB	#Avg Type Avg Hold:	100/100	1	RACE 1 2 3 4 5 6 TYPE M WWWW DET P N N N N N
		FGain:Low #A	tten: 30 dB		Mkr		685 GHz
dB/div Ref 20.00 dE	dB Sm				WIKI		104 dBm
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					Sweep	68.00 ms	(30001 pts)
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rt 30 MHz les BW 1.0 MHz MODE TRC SCL N 1 f (Δ) 2		Y	FUNCTION	FUNCTION WIDTH	FI	UNCTION VALUE	× E
art 30 MHz tes BW 1.0 MHz R MODE[TRC] SCL N 1 f (Δ) 2		Y	FUNCTION	FUNCTION WIDTH	Fi	UNCTION VALUE	
Art 30 MHz Res BW 1.0 MHz R MODE TRC SCL N 1 f (Δ) 2		Y	FUNCTION	FUNCTION WIDTH	FI	UNCTION VALUE	



Keysight Spectrum Analyzer - Swept SA R L RF 50 Ω AC		ENSE:PULSE			05-52-04	
RL RF 50 Ω AC enter Freq 13.51500000		Trim Free Days	#Avg Type: Avg Hold: 1	RMS 00/100	TF	5 PM Aug 28, 2023 RACE 1 2 3 4 5 6 TYPE MWWWWW DET P N N N N N
Ref Offset 4.39 dB				Mkr		664 GHz 112 dBm
0 dB/div Ref 20.00 dBm		Ĭ				
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						t <mark>∳1</mark> 27.00 dBm
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tart 30 MHz Res BW 1.0 MHz	#VI	3.0 MHz		Sween		27.00 GHz (30001 pts)
KR MODE TRC SCL X	Υ 4 664 GHz (Δ) -32.11	FUNCTION	FUNCTION WIDTH		JNCTION VALUE	(occor pto)
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Keysight Spectrum Analyzer - Swept SA						
RL RF 50 Ω AC enter Freq 13.51500000		Trig: Free Run	#Avg Type: Avg Hold: 1	RMS 00/100	TF	L PM Aug 28, 2023 RACE 1 2 3 4 5 6 TYPE MWWWWW DET P N N N N N
	IFGain:Low	#Atten: 30 dB				905 GHz
Ref Offset 4.38 dB dB/div Ref 20.00 dBm						084 dBm
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0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	#VE	BW 3.0 MHz		Sweep	Stop 68.00 ms	27.00 GHz (30001 pts)
tart 30 MHz Res BW 1.0 MHz	Y	FUNCTION	FUNCTION WIDTH		Stop 68.00 ms	27.00 GHz (30001 pts)
<mark>1 N 1 f (Δ) 24.83</mark> 2	#VE 7 905 GHz (Δ) -32.08:	FUNCTION	FUNCTION WIDTH		68.00 ms	27.00 GHz (30001 pts)
0.0 μ	Y	FUNCTION	FUNCTION WIDTH		68.00 ms	27.00 GHz (30001 pts)
0.0 0.0 tart 30 MHz Res BW 1.0 MHz R MODE TRC SCL X 1 2 1 1 1 2 1 3 4 5 5 6 6	Y	FUNCTION	FUNCTION WIDTH		68.00 ms	27.00 GHz (30001 pts)
0.0 0.0 tart 30 MHz Res BW 1.0 MHz KR MODE TRC SCL 2 1 0 2 4 5 6 7 8 9	Y	FUNCTION	FUNCTION WIDTH		68.00 ms	27.00 GHz (30001 pts)
0.0 Δ1 Δ	Y	FUNCTION	FUNCTION WIDTH		68.00 ms	27.00 GHz (30001 pts)



13. Frequency Stability Measurement

13.1 Block Diagram Of Test Setup



13.2 Limit

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

The transmitter center frequency tolerance shall be \pm 20 ppm maximum for the 5 GHz band (IEEE 802.11n specification)..

13.3 Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer.

2. EUT have transmitted absence of modulation signal and fixed channelize.

3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.

4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.

5. fc is declaring of channel frequency. Then the frequency error formula is $(fc-f)/fc \times 106$ ppm and he limit is less than ± 20 ppm (IEEE 802.11nspecification).

6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value

7. Extreme temperature is -20°C~70°C.

No. : BCTC/RF-EMC-005

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Edition: B0



13.4 Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 24V
Test Mode:	TX (5.1G) Mode Frequency l	J-NII-1 (5180-5240MHz)	

Voltage vs. Frequency Stability

				Reference Frequency: 5180MHz				
	TES	ST CONDITIONS		f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)	
-		V nom (V)	24.00	5180.0123	5180	0.0123	2.3829	
T nom (°C)	20	V max (V)	27.60	5180.0112	5180	0.0112	2.1702	
(0)		V min (V)	10.20	5180.0157	5180	0.0157	3.0384	
Limits				5150-5250 MHz				
		Result		Complies				

				Ref	erence Freq	uency:5180Mł	Hz
Г	TEST CONDITIONS				fc	Max. Deviation (MHz)	Max. Deviation (ppm)
		T (°C)	-20	5180.0032	5180	0.0032	0.6140
		T (°C)	-10	5180.0086	5180	0.0086	1.6697
		T (°C)	0	5180.0048	5180	0.0048	0.9292
	24	T (°C)	10	5180.0081	5180	0.0081	1.5695
λ		T (°C)	20	5180.0104	5180	0.0104	2.0166
V nom (V)		T (°C)	30	5180.0102	5180	0.0102	1.9742
		T (°C)	40	5180.0048	5180	0.0048	0.9246
		T (°C)	50	5180.0090	5180	0.0090	1.7451
		T (°C)	60	5180.0110	5180	0.0110	2.1260
		T (°C)	70	5180.0074	5180	0.0074	1.4312
	Limits			*******	5150-5	250 MHz	
	Result			Complies			



Voltage vs. Frequency Stability

				Reference Frequency: 5200MHz			
	TES	ST CONDITIONS		f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
-		V nom (V)	24.00	5200.0092	5200	0.0092	1.7599
T nom (°C)	20	V max (V)	27.60	5200.0122	5200	0.0122	2.3451
(0)		V min (V)	10.20	5200.0085	5200	0.0085	1.6261
Limits				5725-5850 MHz			
		Result		Complies			

				Re	eference Fre	equency:5200MF	lz
Т	EST C	ONDITIONS	i	f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
		T (°C)	-20	5200.00241	5200	0.00241	0.4626
		T (°C)	-10	5200.00617	5200	0.00617	1.1861
		T (°C)	0	5200.01061	5200	0.01061	2.0395
		T (°C)	10	5200.01123	5200	0.01123	2.1589
V nom (V)	24	T (°C)	20	5200.00864	5200	0.00864	1.6607
v noni (v)		T (°C)	30	5200.01258	5200	0.01258	2.4192
		T (°C)	40	5200.00073	5200	0.00073	0.1396
		T (°C)	50	5200.00250	5200	0.00250	0.4812
		T (°C)	60	5200.01124	5200	0.01124	2.1611
		T (°C)	70	5200.00876	5200	0.00876	1.6852
	Limits			5150-5250 MHz			
	ł	Result			Co	mplies	



Voltage vs. Frequency Stability

				Reference Frequency: 5240MHz			
	TES	ST CONDITIONS		f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
-		V nom (V)	24.00	5240.0103	5240	0.0103	1.9727
T nom (°C)	20	V max (V)	27.60	5240.0077	5240	0.0077	1.4784
(0)		V min (V)	10.20	5240.0025	5240	0.0025	0.4759
Limits				5150-5250 MHz			
		Result		Complies			

				Я	Reference Fr	equency:5240Ml	Ηz	
Т	EST C	ONDITIONS	i	f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)	
		T (°C)	-20	5240.0016	5240	0.0016	0.3124	
		T (°C)	-10	5240.0065	5240	0.0065	1.2423	
		T (°C)	0	5240.0022	5240	0.0022	0.4168	
		T (°C)	10	5240.0056	5240	0.0056	1.0771	
V nom (V)	24	T (°C)	20	5240.0010	5240	0.0010	0.2001	
v noni (v)		T (°C)	30	5240.0036	5240	0.0036	0.6880	
		T (°C)	40	5240.0027	5240	0.0027	0.5162	
		T (°C)	50	5240.0037	5240	0.0037	0.7129	
		T (°C)	60	5240.0097	5240	0.0097	1.8455	
		T (°C)	70	5240.0078	5240	0.0078	1.4882	
	Limits			5150-5250 MHz				
	F	Result			C	omplies		



Temperature:	26 ℃	Relative Humidity:	54%				
Pressure:	101KPa	Test Voltage:	DC 24V				
Test Mode:	TX (5.8G) Mode Frequency U-NII-3 (5745-5825MHz)						

Voltage vs. Frequency Stabilit

				Reference Frequency: 5745MHz			
	TES	ST CONDITIONS		f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T		V nom (V)	24.00	5745.00730	5745	0.00730	1.2703
T nom (°C)	20	V max (V)	27.60	5745.00275	5745	0.00275	0.4783
(0)		V min (V)	10.20	5745.01117	5745	0.01117	1.9435
		Limits		5725-5850 MHz			
		Result		Complies			

i i i i i i i i i i i i i i i i i i i			•	Refe	rence Frequ	uency:5745MH	Ηz	
T	TEST CONDITIONS				fc	Max. Deviation (MHz)	Max. Deviation (ppm)	
		T (°C)	-20	5745.00948	5745	0.00948	1.6495	
		T (°C)	-10	5745.00242	5745	0.00242	0.4221	
		T (°C)	0	5745.01291	5745	0.01291	2.2465	
	24	T (°C)	10	5745.00224	5745	0.00224	0.3904	
λ (norm (λ /)		T (°C)	20	5745.01310	5745	0.01310	2.2805	
V nom (V)		T (°C)	30	5745.00605	5745	0.00605	1.0531	
		T (°C)	40	5745.00678	5745	0.00678	1.1797	
		T (°C)	50	5745.00894	5745	0.00894	1.5568	
		T (°C)	60	5745.00941	5745	0.00941	1.6385	
		T (°C)	70	5745.00147	5745	0.00147	0.2566	
	Limits				5725-58	50 MHz		
	Result				Com			



Voltage vs. Frequency Stability

				Reference Frequency: 5785MHz			
	TES	ST CONDITIONS		f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T		V nom (V)	24.00	5745.00730	5745	0.00730	1.2703
T nom (°C)	20	V max (V)	27.60	5745.00275	5745	0.00275	0.4783
(0)		V min (V)	10.20	5745.01117	5745	0.01117	1.9435
Limits			5725-5850 MHz				
		Result		Complies			

				Re	eference Fre	quency:5785MF	lz
Т	EST C	ONDITIONS		f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
		T (°C)	-20	5785.00353	5785	0.00353	0.6109
		T (°C)	-10	5785.00831	5785	0.00831	1.4369
		T (°C)	0	5785.00868	5785	0.00868	1.5004
		T (°C)	10	5785.00784	5785	0.00784	1.3554
V nom (V)	24	T (°C)	20	5785.00231	5785	0.00231	0.3996
v nom (v)	24	T (°C)	30	5785.01135	5785	0.01135	1.9627
		T (°C)	40	5785.00263	5785	0.00263	0.4546
		T (°C)	50	5785.01001	5785	0.01001	1.7311
		T (°C)	60	5785.00145	5785	0.00145	0.2509
		T (°C)	70	5785.00075	5785	0.00075	0.1291
	Limits			5725-5850 MHz			
		Result			Co	mplies	



Voltage vs. Frequency Stability

				Reference Frequency: 5825MHz			
	TES	ST CONDITIONS		f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T		V nom (V)	24.00	5825.00923	5825	0.00923	1.5839
T nom (°C)	20	V max (V)	27.60	5825.00443	5825	0.00443	0.7601
(0)		V min (V)	10.20	5825.00627	5825	0.00627	1.0763
Limits				5725-5850 MHz			
		Result		Complies			

TEST CONDITIONS				Reference Frequency: 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	24	T (°C)	-20	5825.00338	5825	0.00338	0.5799
		T (°C)	-10	5825.00965	5825	0.00965	1.6558
		T (°C)	0	5825.01251	5825	0.01251	2.1471
		T (°C)	10	5825.00253	5825	0.00253	0.4336
		T (°C)	20	5825.00811	5825	0.00811	1.3925
		T (°C)	30	5825.00694	5825	0.00694	1.1912
		T (°C)	40	5825.01063	5825	0.01063	1.8250
		T (°C)	50	5825.00190	5825	0.00190	0.3263
		T (°C)	60	5825.00154	5825	0.00154	0.2635
		T (°C)	70	5825.00684	5825	0.00684	1.1745
Limits				5725-5850 MHz			
Result				Complies			



14. Antenna Requirement

14.1 Limit

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

14.2 Test Result

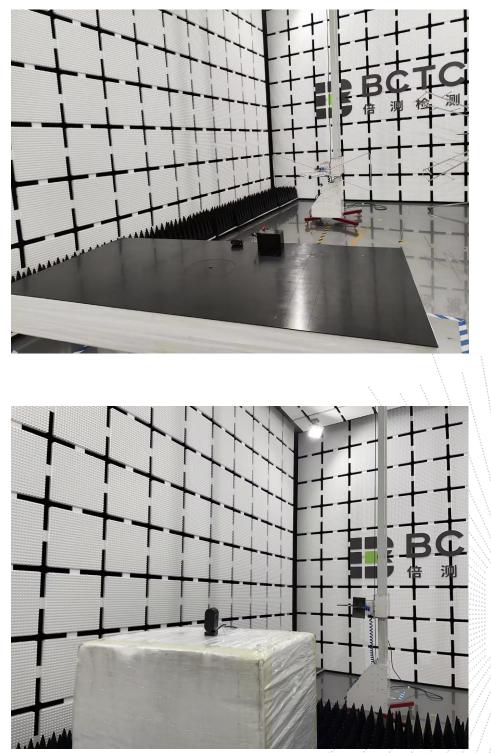
The EUT antenna is internal antenna, fulfill the requirement of this section.

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15. EUT Test Setup Photographs

Radiated Measurement Photos



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STATEMENT

1. The equipment lists are traceable to the national reference standards.

2. The test report can not be partially copied unless prior written approval is issued from our lab.

3. The test report is invalid without the "special seal for inspection and testing".

4. The test report is invalid without the signature of the approver.

5. The test process and test result is only related to the Unit Under Test.

6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.

7. The quality system of our laboratory is in accordance with ISO/IEC17025.

8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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***** END *****

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