

Note:

U-NII-1 :

Note1: This EUT supports MIMO 3X3, any transmit signals are correlated with each other,
So Directional gain = $10\log[(10^{3.26/20} + 10^{3.26/20} + 10^{3.58/20})^2 / 3]$ dBi, that is Directional gain (dBi) = 8.14
Note2: Antenna gain is greater than 6, Power Density Limit = $17 - (8.14 - 6) = 14.86$ dBm/MHz

U-NII-2A :

Note1: This EUT supports MIMO 3X3, any transmit signals are correlated with each other,
So Directional gain = $10\log[(10^{3.2/20} + 10^{3.2/20} + 10^{3.36/20})^2 / 3]$ dBi, that is Directional gain (dBi) = 8.02
Note2: Antenna gain is greater than 6, Power Density Limit = $11 - (8.02 - 6) = 8.98$ dBm/MHz

U-NII-2C :

Note1: This EUT supports MIMO 3X3, any transmit signals are correlated with each other,
So Directional gain = $10\log[(10^{3.26/20} + 10^{3.26/20} + 10^{3.25/20})^2 / 3]$ dBi, that is Directional gain (dBi) = 8.03
Note2: Antenna gain is greater than 6, Power Density Limit = $11 - (8.03 - 6) = 8.97$ dBm/MHz

U-NII-3:

Note1: This EUT supports MIMO 3X3, any transmit signals are correlated with each other,
So Directional gain = $10\log[(10^{3.75/20} + 10^{3.75/20} + 10^{3.88/20})^2 / 3]$ dBi, that is Directional gain (dBi) = 8.56
Note2: Antenna gain is greater than 6, Power Density Limit = $30 - (8.56 - 6) = 27.44$ dBm/500kHz

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11. FREQUENCY STABILITY

11.1. LIMITS

According to §15.407(g), manufacturers 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.

11.2. TEST PROCEDURES

(1) Frequency stability with respect to ambient temperature

- a) Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT. If possible, a dummy load shall be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, then the EUT shall be placed in the center of the chamber with the antenna adjusted to the shortest length possible. Turn ON the EUT and tune it to one of the number of frequencies shown in §ANSI C63.10-2013(5.6).
- b) Couple the unlicensed wireless device output to the measuring instrument by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away), or by connecting a dummy load to the measuring instrument, through an attenuator if necessary.

NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory agency is the recommended measuring instrument.

- c) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).
- d) Turn the EUT OFF and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.
- e) Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.
- f) While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.
- g) Measure the frequency at each of frequencies specified in §ANSI C63.10-2013(5.6).
- h) Switch OFF the EUT but do not switch OFF the oscillator heater.
- i) Lower the chamber temperature by not more than 10°C, and allow the temperature inside the chamber to stabilize.
- j) Repeat step f) through step i) down to the lowest specified temperature.

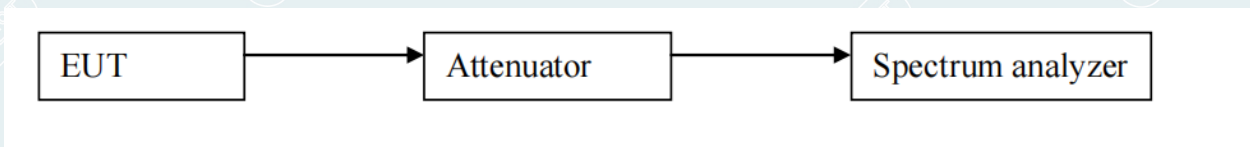
(2) Frequency stability when varying supply voltage

- a) Supply the EUT with nominal voltage or install a new or fully charged battery in the EUT. Turn ON the EUT and couple its output to a frequency counter or other frequency-measuring instrument.

NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory agency is the recommended measuring instrument.

- b) Tune the EUT to one of the number of frequencies required in §ANSI C63.10-2013(5.6). Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).
- c) Measure the frequency at each of the frequencies specified in §ANSI C63.10-2013(5.6).
- d) Repeat the above procedure at 85% and 115% of the nominal supply voltage as described in §ANSI C63.10-2013(5.13).

11.3. TEST SETUP



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11.4. TEST RESULTS

Tested By	Qin Tingting	Tested Date	2022/12/15~2023/01/19
Environmental Conditions	20.9°C/47%RH/101.1kPa	Test Voltage	AC120V/60Hz

Band U-NII-1:

Condition	Mode	Frequency (MHz)	Antenna	Measured Frequency (MHz)	Frequency Error (Hz)	Deviation (ppm)
NVNT	a	5180	Ant1	5180.02	20000	3.86
NVNT	a	5180	Ant2	5180.02	20000	3.86
NVNT	a	5180	Ant3	5180	0	0
NVNT	a	5200	Ant1	5200.02	20000	3.85
NVNT	a	5200	Ant2	5200.02	20000	3.85
NVNT	a	5200	Ant3	5200.02	20000	3.85
NVNT	a	5240	Ant1	5239.98	-20000	-3.82
NVNT	a	5240	Ant2	5240	0	0
NVNT	a	5240	Ant3	5240	0	0
NVLT	a	5180	Ant1	5180	0	0
NVLT	a	5180	Ant2	5179.98	-20000	-3.86
NVLT	a	5180	Ant3	5180	0	0
NVLT	a	5200	Ant1	5200	0	0
NVLT	a	5200	Ant3	5200	0	0
NVLT	a	5200	Ant3	5200	0	0
NVLT	a	5240	Ant1	5240.02	20000	3.82
NVLT	a	5240	Ant2	5239.98	-20000	-3.82
NVLT	a	5240	Ant3	5240.02	20000	3.82
NVHT	a	5180	Ant1	5180	0	0
NVHT	a	5180	Ant2	5179.98	-20000	-3.86
NVHT	a	5180	Ant3	5180	0	0
NVHT	a	5200	Ant1	5200	0	0
NVHT	a	5200	Ant3	5199.98	-20000	-3.86
NVHT	a	5200	Ant3	5200	0	0
NVHT	a	5240	Ant1	5240.02	20000	3.82
NVHT	a	5240	Ant2	5239.98	-20000	-3.86
NVHT	a	5240	Ant3	5240	0	0
LVNT	a	5180	Ant1	5180.04	40000	7.72
LVNT	a	5180	Ant2	5180.02	20000	3.86
LVNT	a	5180	Ant3	5180.02	20000	3.86
LVNT	a	5200	Ant1	5200.02	20000	3.85
LVNT	a	5200	Ant3	5199.98	-20000	-3.85
LVNT	a	5200	Ant3	5200	0	0
LVNT	a	5240	Ant1	5240.02	20000	3.82

LVNT	a	5240	Ant2	5240	0	0
LVNT	a	5240	Ant3	5240	0	0
HVNT	a	5180	Ant1	5180	0	0
HVNT	a	5180	Ant2	5180	0	0
HVNT	a	5180	Ant3	5179.98	-20000	-3.86
HVNT	a	5200	Ant1	5200	0	0
HVNT	a	5200	Ant2	5199.98	-20000	-3.86
HVNT	a	5200	Ant3	5199.98	-20000	-3.86
HVNT	a	5240	Ant1	5240.02	20000	3.82
HVNT	a	5240	Ant2	5239.98	-20000	-3.86
HVNT	a	5240	Ant3	5240	0	0

Band U-NII-2A:

Condition	Mode	Frequency (MHz)	Antenna	Measured Frequency (MHz)	Frequency Error (Hz)	Deviation (ppm)
NVNT	a	5260	Ant1	5259.98	-20000	-3.8
NVNT	a	5260	Ant2	5259.98	-20000	-3.8
NVNT	a	5260	Ant3	5260	0	0
NVNT	a	5280	Ant1	5280.02	20000	3.79
NVNT	a	5280	Ant2	5279.98	-20000	-3.79
NVNT	a	5280	Ant3	5279.98	-20000	-3.79
NVNT	a	5320	Ant1	5320	0	0
NVNT	a	5320	Ant2	5320	0	0
NVNT	a	5320	Ant3	5320	0	0
NVLT	a	5260	Ant1	5260	0	0
NVLT	a	5260	Ant2	5260.02	20000	3.8
NVLT	a	5260	Ant3	5260	0	0
NVLT	a	5280	Ant1	5280	0	0
NVLT	a	5280	Ant2	5280	0	0
NVLT	a	5280	Ant3	5280	0	0
NVLT	a	5320	Ant1	5320.02	20000	3.76
NVLT	a	5320	Ant2	5320	0	0
NVLT	a	5320	Ant3	5320	0	0
NVHT	a	5260	Ant1	5260	0	0
NVHT	a	5260	Ant2	5260.02	20000	3.8
NVHT	a	5260	Ant3	5260	0	0
NVHT	a	5280	Ant1	5280	0	0
NVHT	a	5280	Ant2	5280.02	20000	3.79
NVHT	a	5280	Ant3	5280	0	0
NVHT	a	5320	Ant1	5320	0	0
NVHT	a	5320	Ant2	5320	0	0
NVHT	a	5320	Ant3	5320	0	0
LVNT	a	5260	Ant1	5260	0	0

LVNT	a	5260	Ant2	5259.98	-20000	-3.8
LVNT	a	5260	Ant3	5260	0	0
LVNT	a	5280	Ant1	5280	0	0
LVNT	a	5280	Ant2	5279.98	-20000	-3.79
LVNT	a	5280	Ant3	5279.98	-20000	-3.79
LVNT	a	5320	Ant1	5320.02	20000	3.76
LVNT	a	5320	Ant2	5320	0	0
LVNT	a	5320	Ant3	5320	0	0
HVNT	a	5260	Ant1	5260	0	0
HVNT	a	5260	Ant2	5260.02	20000	3.8
HVNT	a	5260	Ant3	5260	0	0
HVNT	a	5280	Ant1	5280	0	0
HVNT	a	5280	Ant2	5280.98	-20000	-3.79
HVNT	a	5280	Ant3	5280	0	0
HVNT	a	5320	Ant1	5320	0	0
HVNT	a	5320	Ant2	5319.98	-20000	-3.79
HVNT	a	5320	Ant3	5320	0	0

Band U-NII-2C:

Condition	Mode	Frequency (MHz)	Antenna	Measured Frequency (MHz)	Frequency Error (Hz)	Deviation (ppm)
NVNT	a	5500	Ant1	5500.02	20000	3.64
NVNT	a	5500	Ant2	5499.98	-20000	-3.64
NVNT	a	5500	Ant3	5499.98	-20000	-3.64
NVNT	a	5600	Ant1	5600.02	20000	3.57
NVNT	a	5600	Ant2	5600	0	0
NVNT	a	5600	Ant3	5600.02	20000	3.57
NVNT	a	5700	Ant1	5700.02	20000	3.51
NVNT	a	5700	Ant2	5700	0	0
NVNT	a	5700	Ant3	5700	0	0
NVLT	a	5500	Ant1	5500	0	0
NVLT	a	5500	Ant2	5500	0	0
NVLT	a	5500	Ant3	5500	0	0
NVLT	a	5600	Ant1	5599.98	-20000	-3.57
NVLT	a	5600	Ant2	5599.98	-20000	-3.57
NVLT	a	5600	Ant3	5599.98	-20000	-3.57
NVLT	a	5700	Ant1	5700	0	0
NVLT	a	5700	Ant2	5700	0	0
NVLT	a	5700	Ant3	5700	0	0
NVHT	a	5500	Ant1	5499.98	-20000	-3.64
NVHT	a	5500	Ant2	5499.98	-20000	-3.64
NVHT	a	5500	Ant3	5499.98	-20000	-3.64
NVHT	a	5600	Ant1	5599.98	-20000	-3.57

NVHT	a	5600	Ant2	5600	0	0
NVHT	a	5600	Ant3	5600	0	0
NVHT	a	5700	Ant1	5699.96	-40000	-7.02
NVHT	a	5700	Ant2	5700	0	0
NVHT	a	5700	Ant3	5699.98	-20000	-3.51
LVNT	a	5500	Ant1	5500.02	20000	3.64
LVNT	a	5500	Ant2	5500	0	0
LVNT	a	5500	Ant3	5499.98	-20000	-3.64
LVNT	a	5600	Ant1	5599.98	-20000	-3.57
LVNT	a	5600	Ant2	5600.02	20000	3.57
LVNT	a	5600	Ant3	5600	0	0
LVNT	a	5700	Ant1	5700	0	0
LVNT	a	5700	Ant2	5700	0	0
LVNT	a	5700	Ant3	5700	0	0
HVNT	a	5500	Ant1	5500	0	0
HVNT	a	5500	Ant2	5500	0	0
HVNT	a	5500	Ant3	5600.02	20000	3.57
HVNT	a	5600	Ant1	5599.98	-20000	-3.57
HVNT	a	5600	Ant2	5600	0	0
HVNT	a	5600	Ant3	5600	0	0
HVNT	a	5700	Ant1	5699.98	-20000	-3.51
HVNT	a	5700	Ant2	5700	0	0
HVNT	a	5700	Ant3	5700	0	0

Band U-NII-3:

Condition	Mode	Frequency (MHz)	Antenna	Measured Frequency (MHz)	Frequency Error (Hz)	Deviation (ppm)
NVNT	a	5745	Ant1	5745	0	0
NVNT	a	5745	Ant2	5744.98	-20000	-3.48
NVNT	a	5745	Ant3	5745	0	0
NVNT	a	5785	Ant1	5784.98	-20000	-3.46
NVNT	a	5785	Ant2	5784.96	-40000	-6.91
NVNT	a	5785	Ant3	5785	0	0
NVNT	a	5825	Ant1	5825.02	20000	3.43
NVNT	a	5825	Ant2	5824.98	-20000	-3.43
NVNT	a	5825	Ant3	5824.98	-20000	-3.43
NVLT	a	5745	Ant1	5744.98	-20000	-3.48
NVLT	a	5745	Ant2	5744.98	-20000	-3.48
NVLT	a	5745	Ant3	5744.98	-20000	-3.48
NVLT	a	5785	Ant1	5784.98	-20000	-3.46
NVLT	a	5785	Ant2	5784.98	-20000	-3.46
NVLT	a	5785	Ant3	5784.98	-20000	-3.46
NVLT	a	5825	Ant1	5825	0	0

NVLT	a	5825	Ant2	5825	0	0
NVLT	a	5825	Ant3	5824.98	-20000	-3.43
NVHT	a	5745	Ant1	5744.98	-20000	-3.48
NVHT	a	5745	Ant2	5745	0	0
NVHT	a	5745	Ant3	5744.98	-20000	-3.48
NVHT	a	5785	Ant1	5785	0	0
NVHT	a	5785	Ant2	5785	0	0
NVHT	a	5785	Ant3	5785	0	0
NVHT	a	5825	Ant1	5825	0	0
NVHT	a	5825	Ant2	5824.98	-20000	-3.43
NVHT	a	5825	Ant3	5825	0	0
LVNT	a	5745	Ant1	5745.02	20000	3.48
LVNT	a	5745	Ant2	5745	0	0
LVNT	a	5745	Ant3	5745	0	0
LVNT	a	5785	Ant1	5785.02	20000	3.46
LVNT	a	5785	Ant2	5785	0	0
LVNT	a	5785	Ant3	5784.98	-20000	-3.46
LVNT	a	5825	Ant1	5825.02	20000	3.43
LVNT	a	5825	Ant2	5825	0	0
LVNT	a	5825	Ant3	5825	0	0
HVNT	a	5745	Ant1	5745.02	20000	3.48
HVNT	a	5745	Ant2	5745.02	20000	3.48
HVNT	a	5745	Ant3	5745	0	0
HVNT	a	5785	Ant1	5785.02	20000	3.46
HVNT	a	5785	Ant2	5784.98	-20000	-3.46
HVNT	a	5785	Ant3	5785	0	0
HVNT	a	5825	Ant1	5825	0	0
HVNT	a	5825	Ant2	5825	0	0
HVNT	a	5825	Ant3	5825.02	20000	3.43

Note: 1.This report records the worst case of temperature change test observation time 0/2/5/10min.

2. Test Voltage-NV:AC120V/60Hz, Test Voltage-LV:AC102V/60Hz, Test Voltage-HV:AC138V/60Hz.

3. Temperature Range:-5°C~45°C, Temperature-NT: 24°C.

APPENDIX A. PHOTOGRAPH OF THE TEST CONNECTION DIAGRAM

Please refer to the attached document E202212085403-01-1Test setup photo.

----- **End of Report** -----