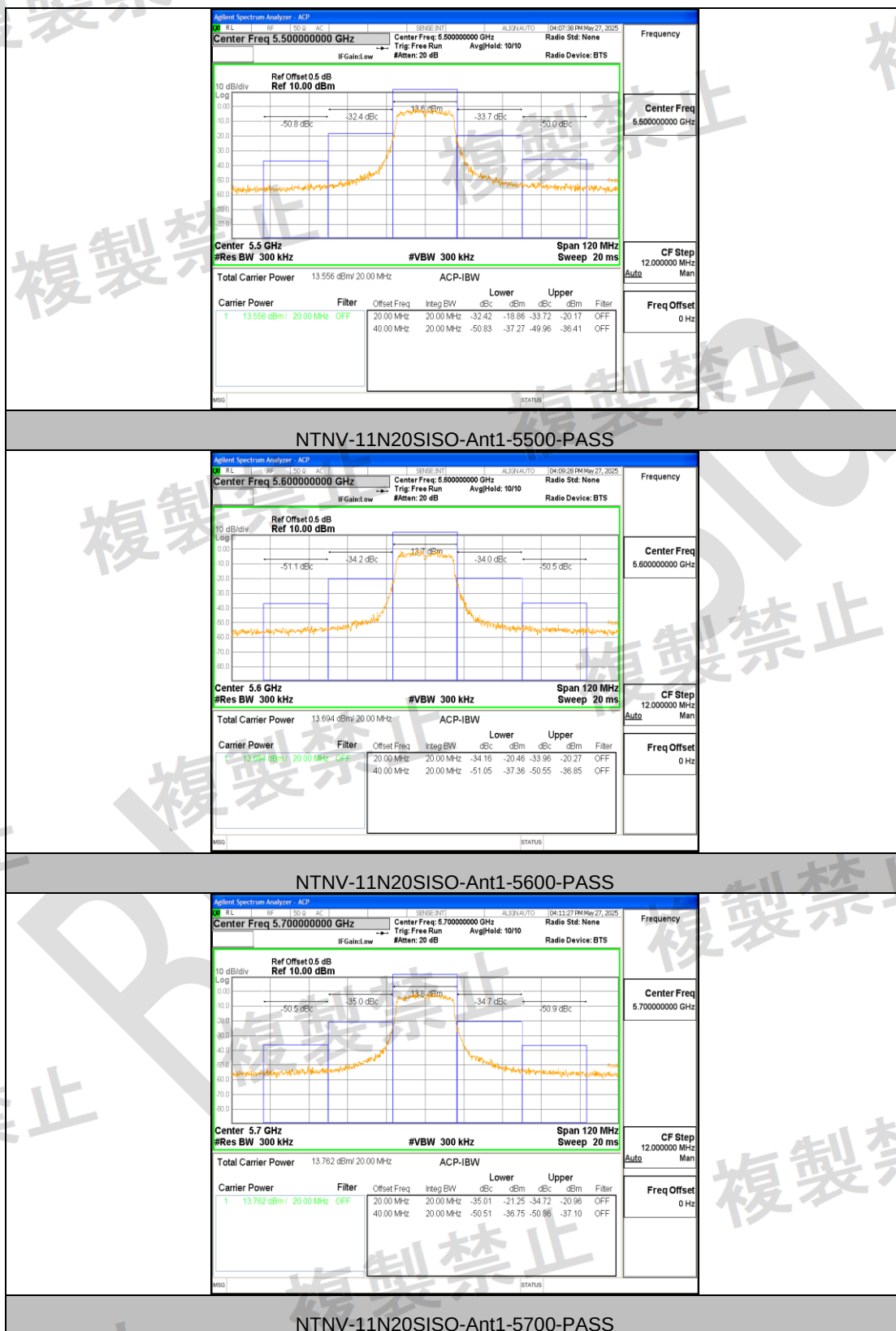




Version:v1.1

5.2 Tolerance of Unwanted Emission Intensity & Out-Band Leakage Power

Test Requirement: Item 19-3 of Article 2-1

Tolerance of Unwanted Emission Intensity

OBW: ≤20MHz
a.OFDM, ≤5460MHz, ≥5765MHz, (e.i.r.p) ≤2.5uW/MHz
b.Others, ≤5470MHz, ≥5730MHz, (e.i.r.p) ≤12.5uW/MHz
OBW: 20~40MHz
≤5460MHz, ≥5770MHz, (e.i.r.p) ≤12.5uW/MHz
OBW: 40~80MHz
≤5460MHz, ≥5770MHz, (e.i.r.p) ≤12.5uW/MHz
OBW: 80~160MHz
≤5419.6MHz, ≥5725MHz, (e.i.r.p) 12.5uW/MHz

Tolerance of Out-Band Leakage Power

OBW	Frequency Band (W56Band)	Deviation frequency(Df)	EIRP
≤20MHz(5470MHz~5725MHz)	~5460MHz	---	≤2.5μW/MHz
	5460MHz~5470MHz	---	≤12.5μW/MHz
	5470MHz~5745MHz	---	≤10mW/MHz
	5745MHz~5765MHz	---	≤12.5μW/MHz
	5765MHz~	---	≤2.5μW/MHz

OBW	Frequency Band (W56Band)	Deviation frequency(Df)	EIRP
20MHz~40MHz (5470MHz~5725MHz)	~5460MHz	---	≤12.5μW/MHz
	5460MHz~5470MHz	---	≤50μW/MHz
	5470MHz~5745MHz	---	≤5mW/MHz

OBW	Frequency Band (W56Band)	Deviation frequency(Df)	EIRP
40MHz~80MHz (5470MHz~5725MHz)	~5460MHz	---	≤12.5μW/MHz
	5460MHz~5469.5MHz	---	≤50μW/MHz
	5469.5MHz~5470MHz	---	≤51.2μW/MHz
	5470MHz~5745MHz	---	≤2.5mW/MHz

Test Status:

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
Following channel(s) was (were) selected for the final test as listed below.

Test Configuration:**Test Procedure:**

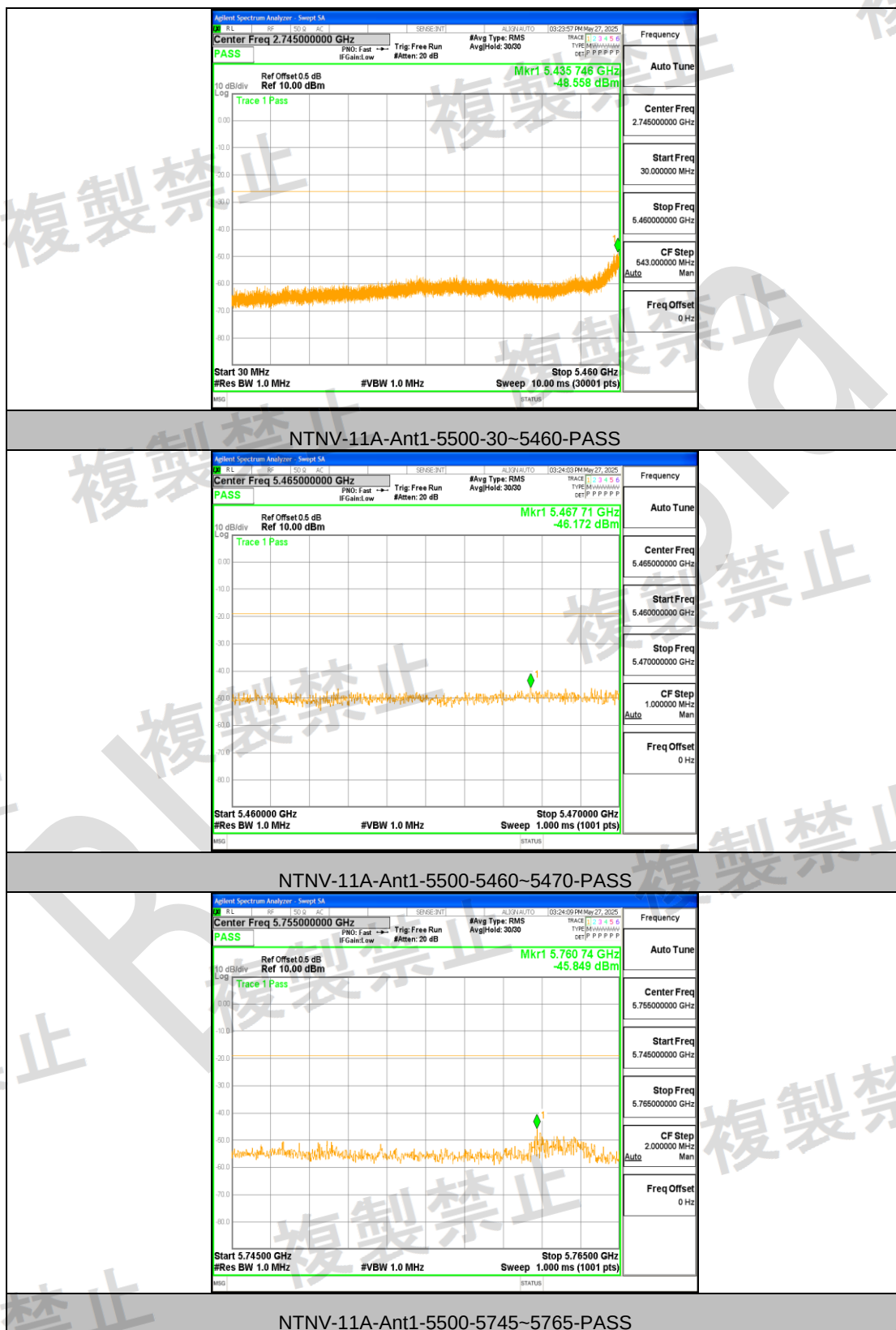
- 1) Test Conditions:
Spectrum Analyzer is used for measurement.
- 2) EUT conditions:
Modulation/Spread
For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal.
- 3) Spectrum Analyzer conditions:
Step1
All spurious are measured from 30MHz to 40GHz by peak mode.
Step 2:
Frequency: Spurious Frequency
RBW 1 MHz
VBW 1 MHz
Sweep Time Auto
detector mode Sample
Indication mode Max hold

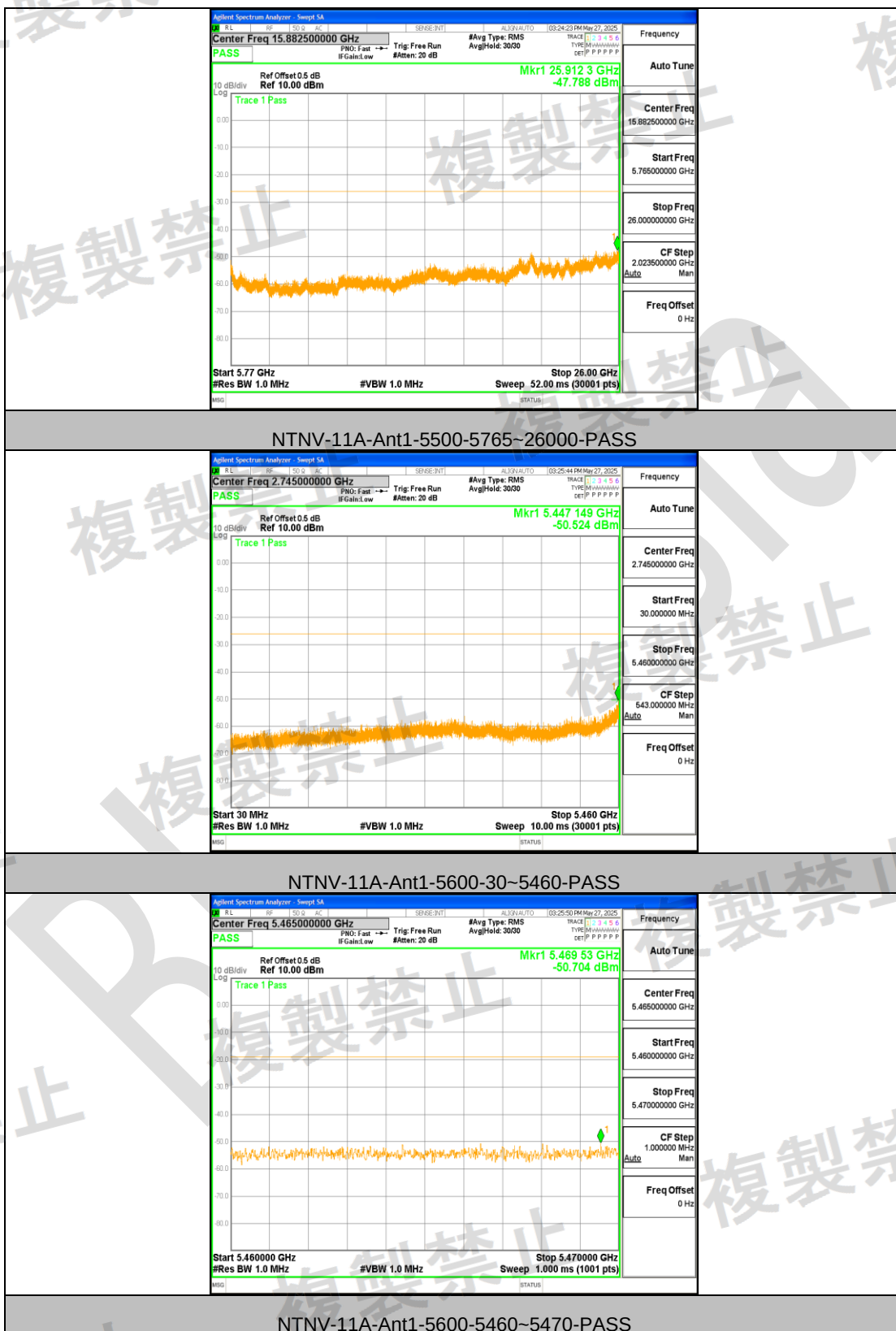
5.2.1 Test Result

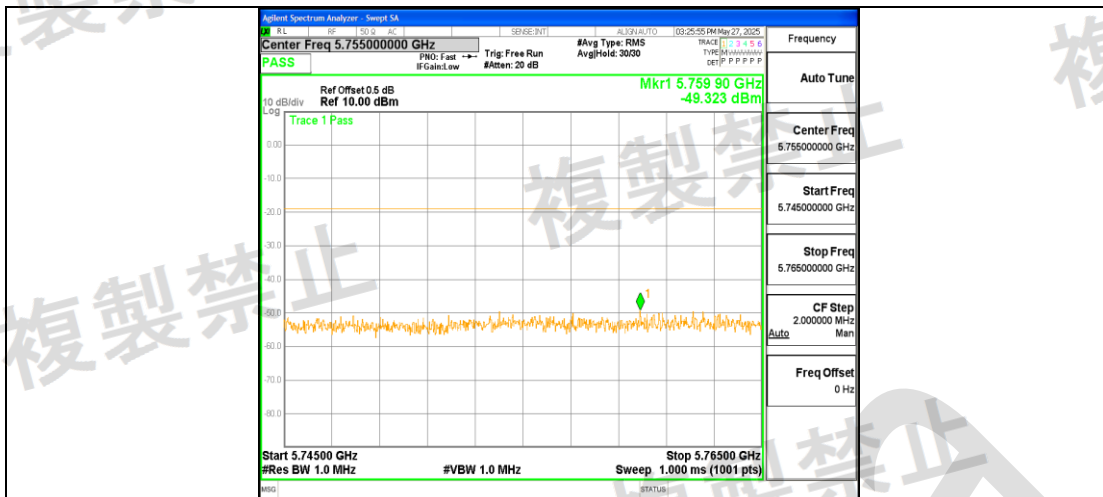
Test Condition	Test Mode	Antenna	Channel	Freq.Range [MHz]	Result [dBm/MHz]	E.I.R.P [dBm/MHz]	Limit [dBm/MHz]	Verdict
NTNV	11A	Ant1	5500	30~5460	-48.56	-45.33	≤-26.02	PASS
				5460~5470	-46.17	-42.94	≤-19.03	PASS
				5745~5765	-45.85	-42.62	≤-19.03	PASS
				5765~26000	-47.79	-44.56	≤-26.02	PASS
			5600	30~5460	-50.52	-47.29	≤-26.02	PASS
				5460~5470	-50.70	-47.47	≤-19.03	PASS
				5745~5765	-49.32	-46.09	≤-19.03	PASS
				5765~26000	-47.21	-43.98	≤-26.02	PASS
			5700	30~5460	-44.53	-41.3	≤-26.02	PASS
				5460~5470	-52.81	-49.58	≤-19.03	PASS
				5745~5765	-47.54	-44.31	≤-19.03	PASS
				5765~26000	-47.23	-44	≤-26.02	PASS
	11N20	Ant1	5500	30~5460	-39.50	-36.27	≤-26.02	PASS
				5460~5470	-46.49	-43.26	≤-19.03	PASS
				5745~5765	-52.31	-49.08	≤-19.03	PASS
				5765~26000	-46.00	-42.77	≤-26.02	PASS
			5600	30~5460	-51.79	-48.56	≤-26.02	PASS
				5460~5470	-49.98	-46.75	≤-19.03	PASS
				5745~5765	-50.19	-46.96	≤-19.03	PASS
				5765~26000	-43.90	-40.67	≤-26.02	PASS
			5700	30~5460	-53.13	-49.9	≤-26.02	PASS
				5460~5470	-52.48	-49.25	≤-19.03	PASS
				5745~5765	-47.24	-44.01	≤-19.03	PASS
				5765~26000	-47.61	-44.38	≤-26.02	PASS
	11N40	Ant1	5510	30~5460	-48.12	-44.89	≤-19.03	PASS
				5460~5470	-44.61	-41.38	≤-13.01	PASS
				5770~26000	-47.22	-43.99	≤-19.03	PASS
			5590	30~5460	-50.86	-47.63	≤-19.03	PASS
				5460~5470	-49.12	-45.89	≤-13.01	PASS
				5770~26000	-46.75	-43.52	≤-19.03	PASS
			5670	30~5460	-51.46	-48.23	≤-19.03	PASS
				5460~5470	-51.61	-48.38	≤-13.01	PASS

				5770~26000	-47.14	-43.91	≤-19.03	PASS
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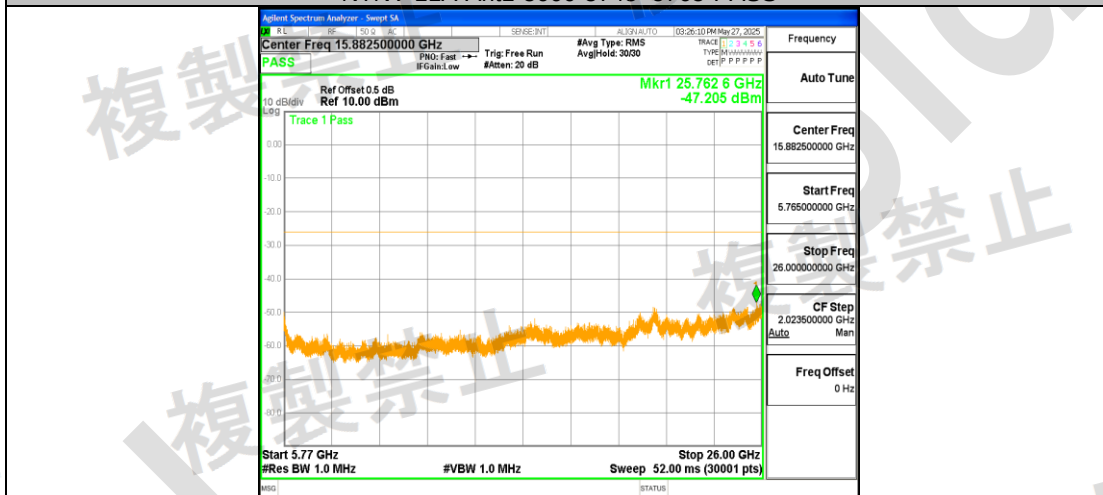
5.2.2 Test Graphs



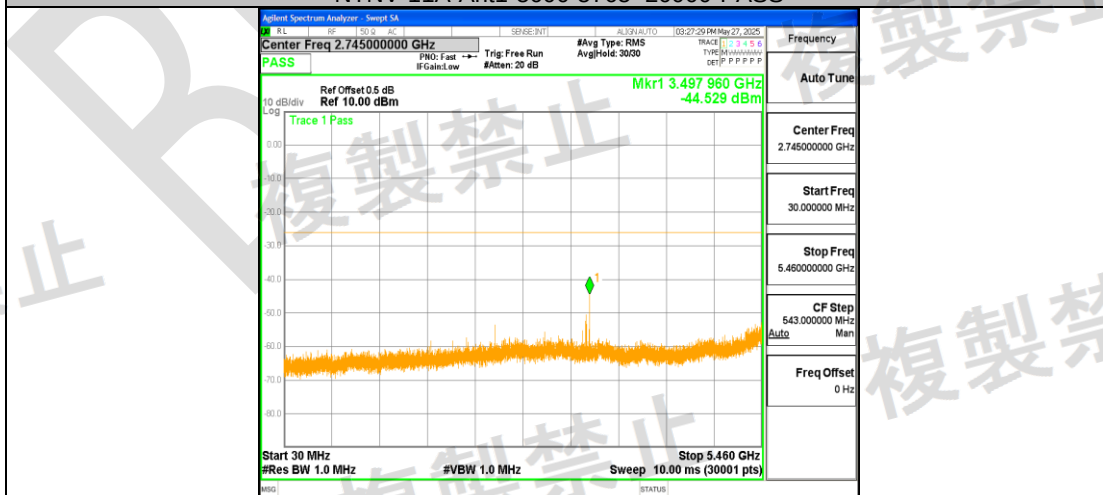




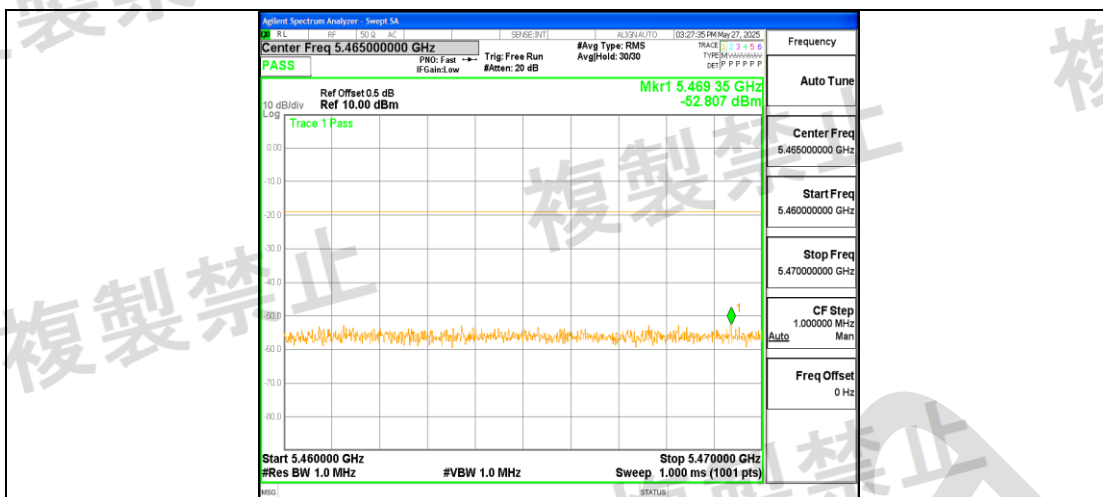
NTNV-11A-Ant1-5600-5745~5765-PASS



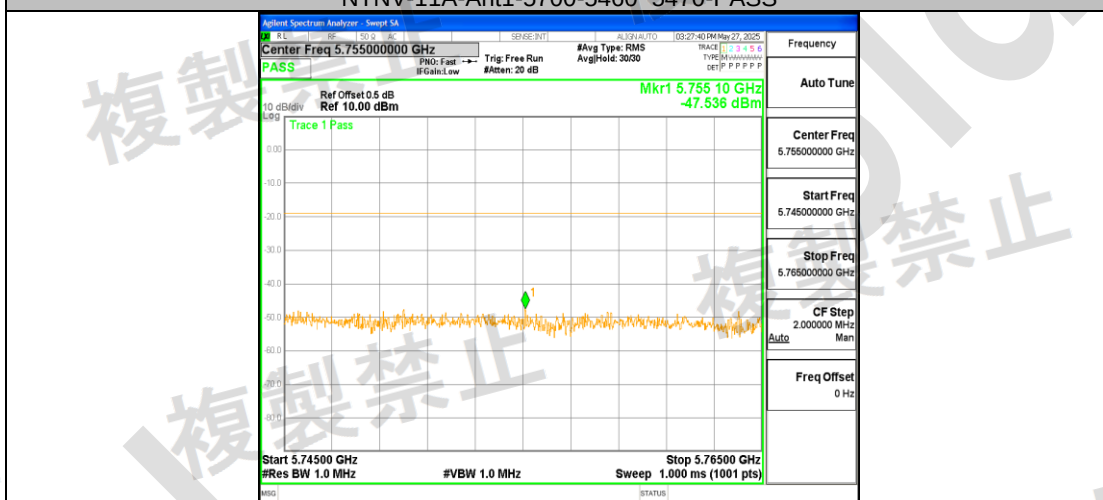
NTNV-11A-Ant1-5600-5765~26000-PASS



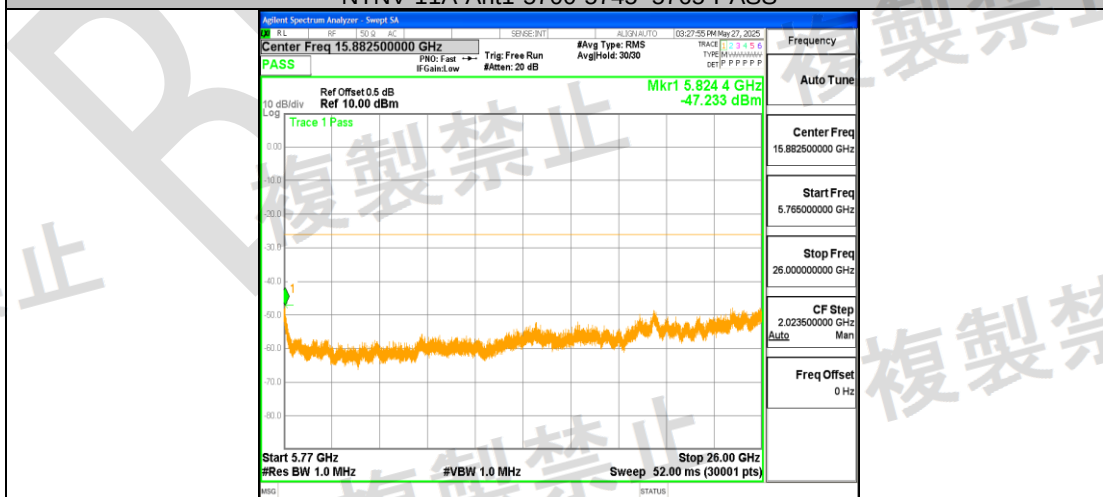
NTNV-11A-Ant1-5700-30~5460-PASS



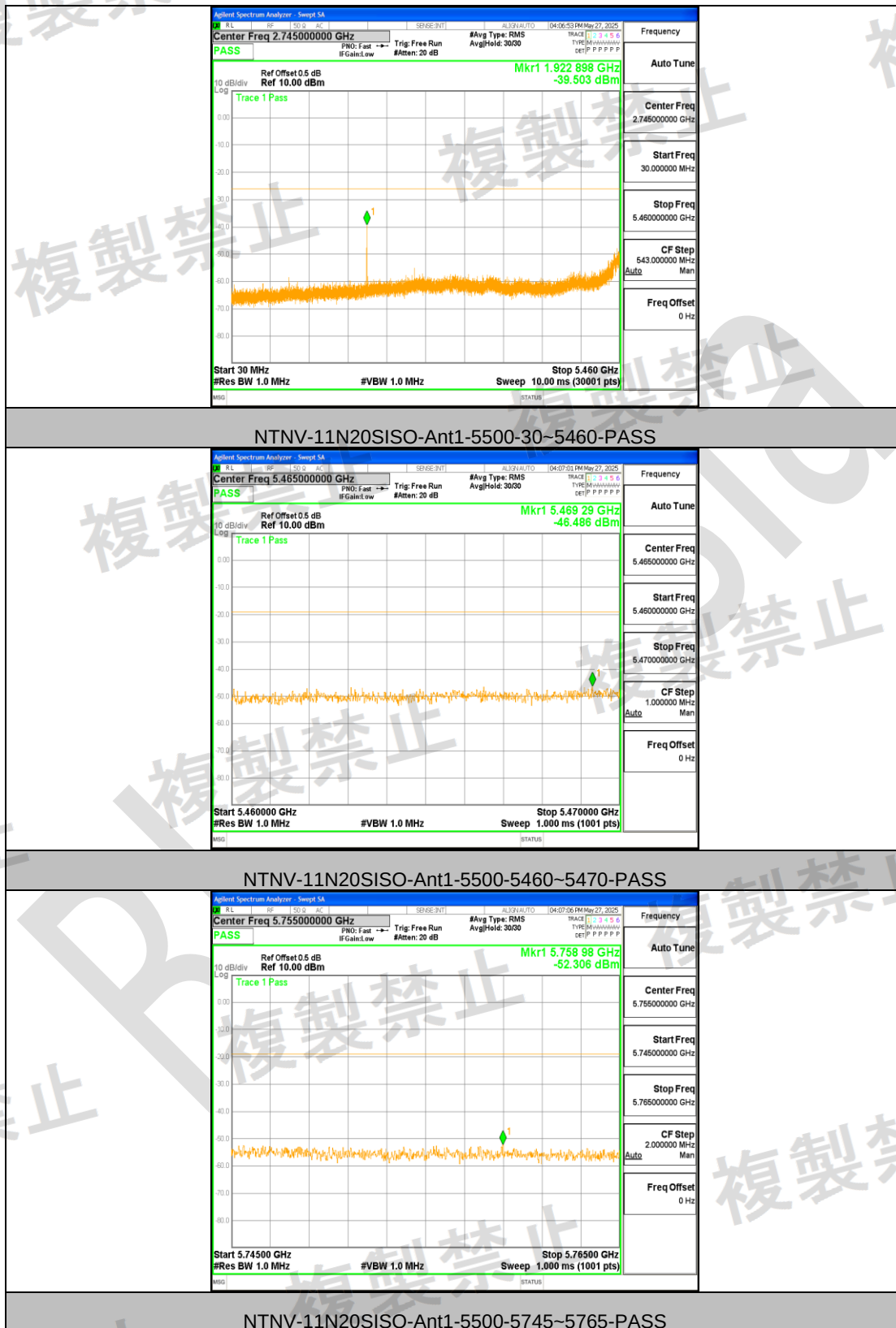
NTNV-11A-Ant1-5700-5460~5470-PASS

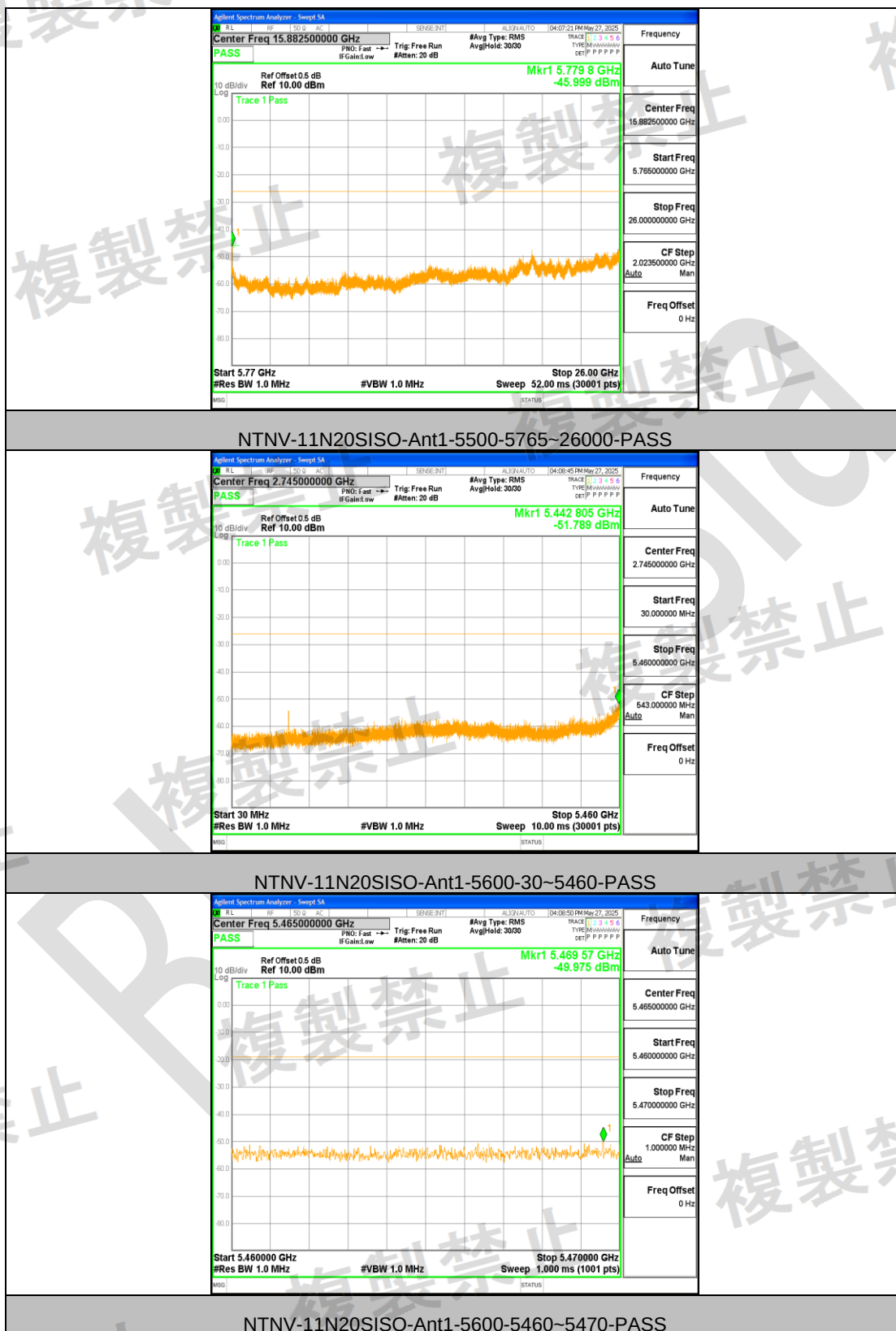


NTNV-11A-Ant1-5700-5745~5765-PASS



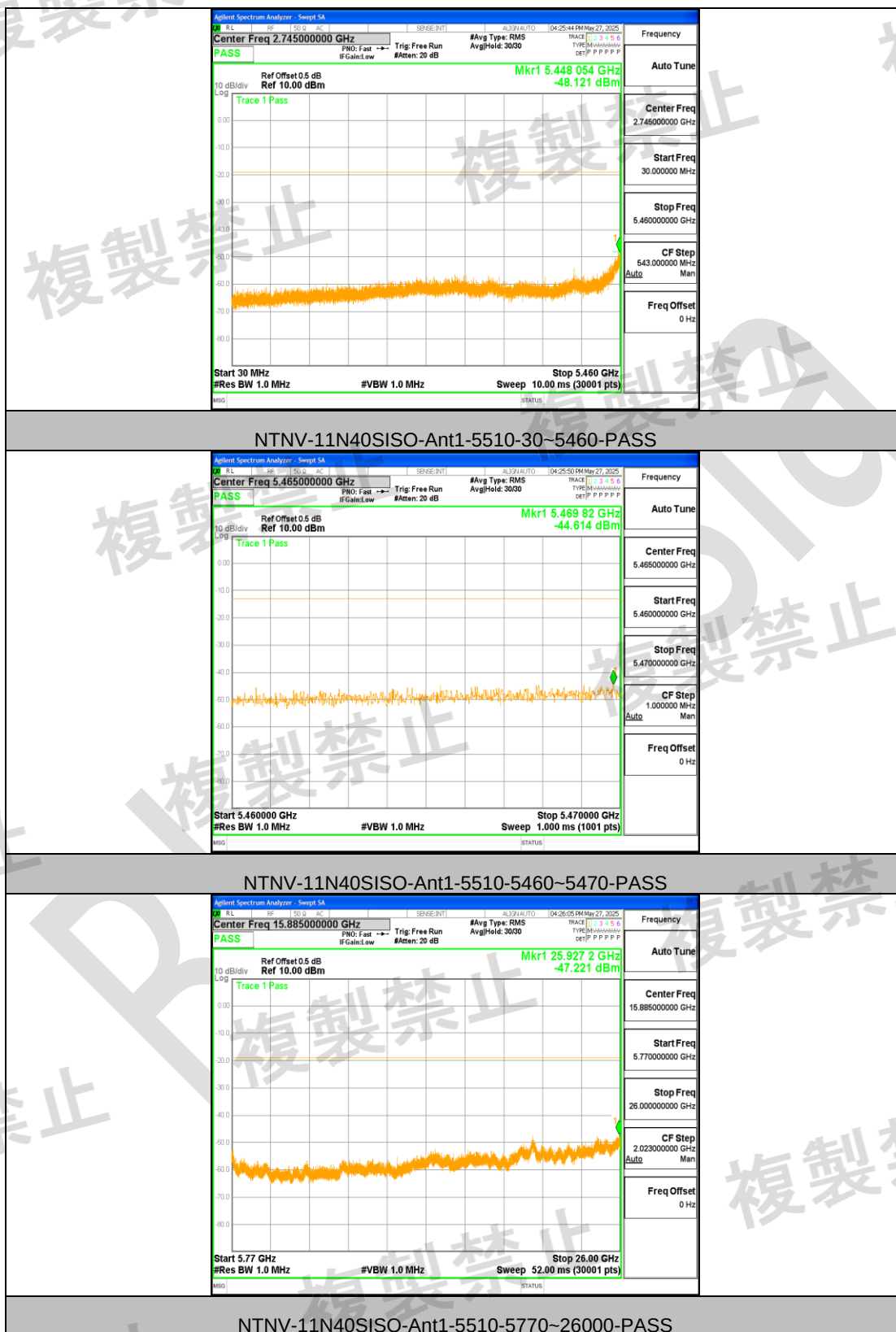
NTNV-11A-Ant1-5700-5765~26000-PASS

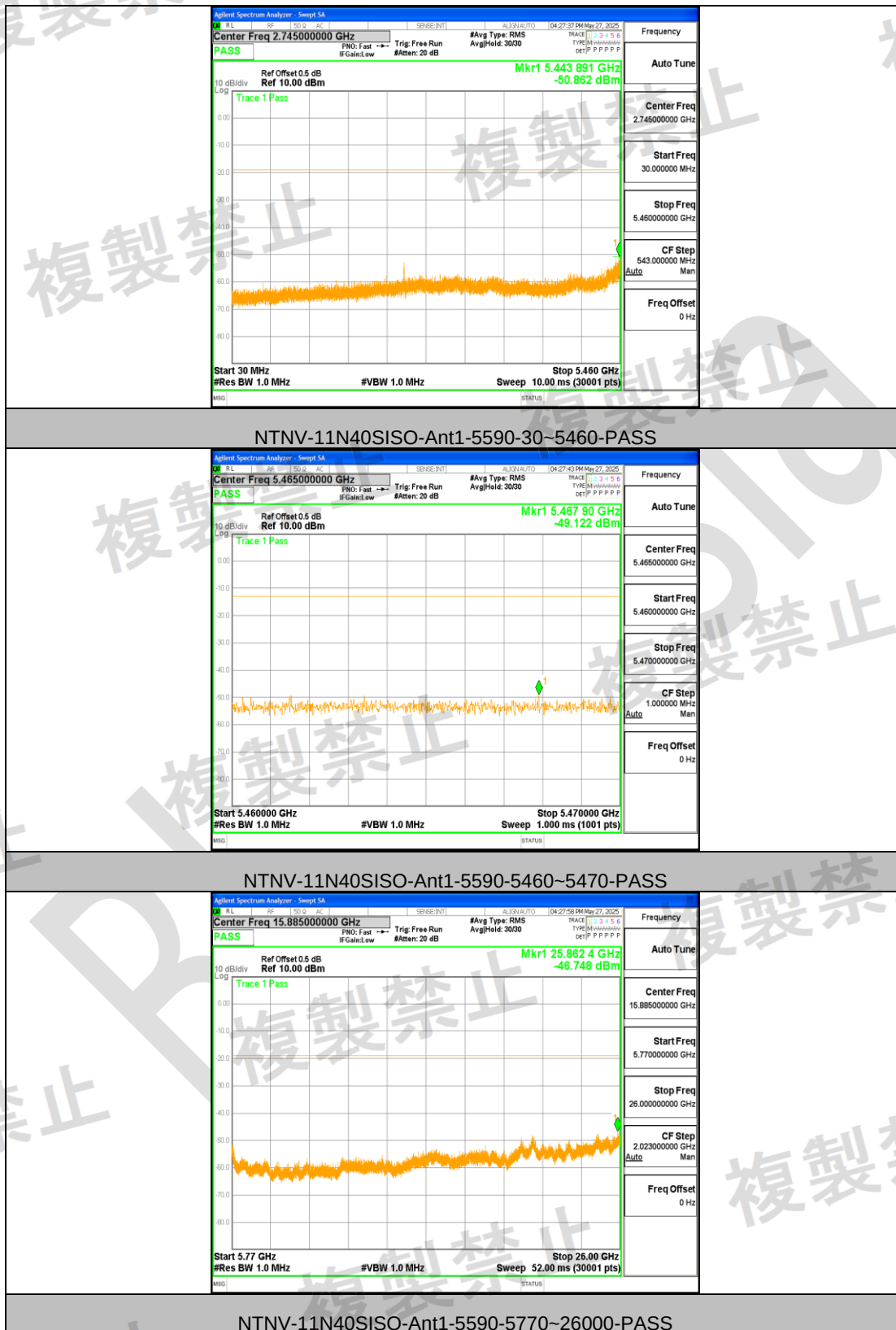


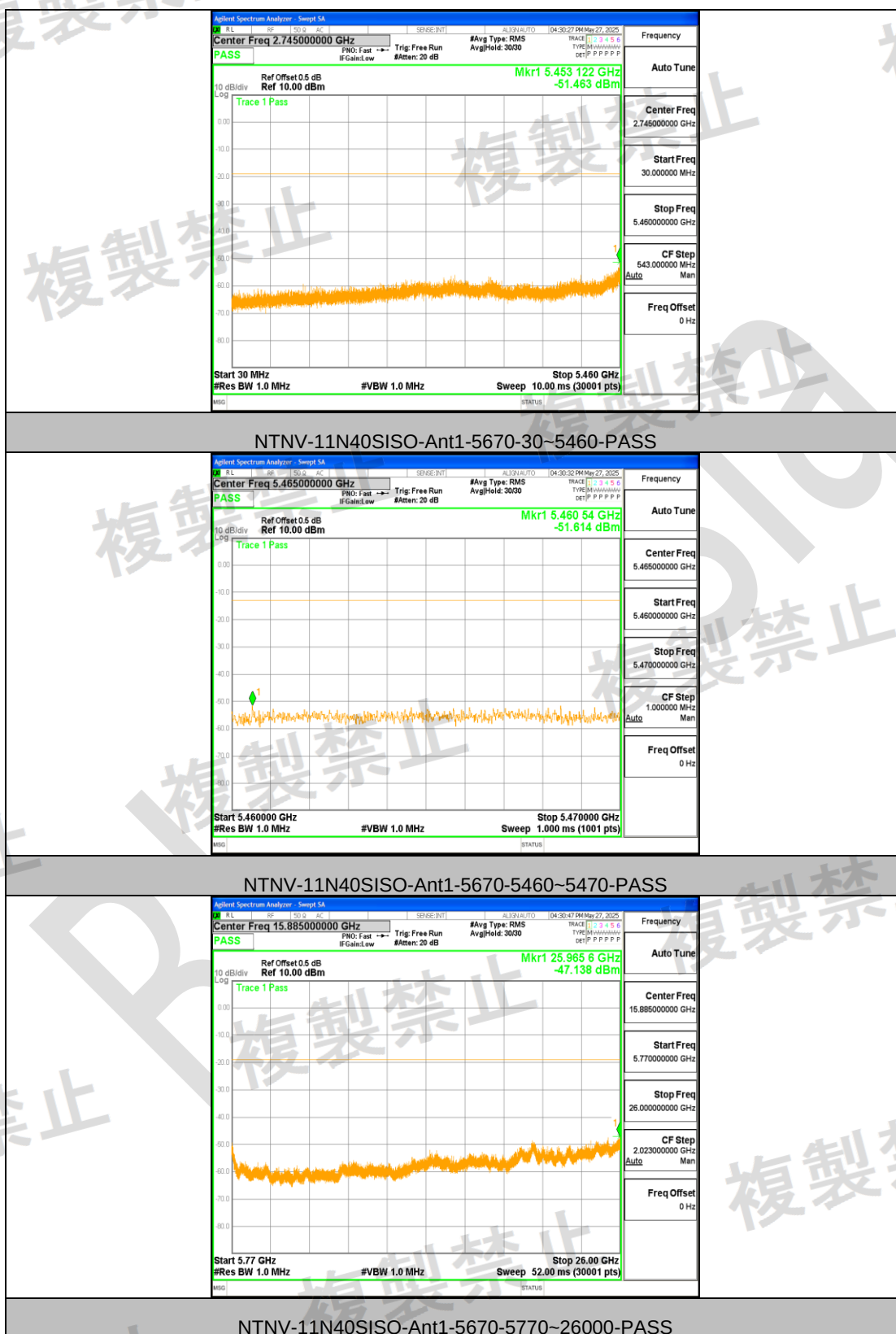












5.3 Spurious Emissions of Rx

Test Requirement: Item 19-3 of Article 2-1

- (1) Below 1 GHz : 4 nW or less
- (2) 1 GHz and over : 20 nW or less

Test Status: Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Test Configuration:



Test Procedure:

1) Test Conditions:

Spectrum Analyzer is used for measurement.

2) EUT conditions:

Modulation/Spread

For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal.

3) Spectrum Analyzer conditions:

Step1

All spurious are measured from 30MHz to 40GHz by peak mode.

Step 2:

Frequency: Spurious Frequency

RBW 1 MHz

VBW 1 MHz

Sweep Time Auto

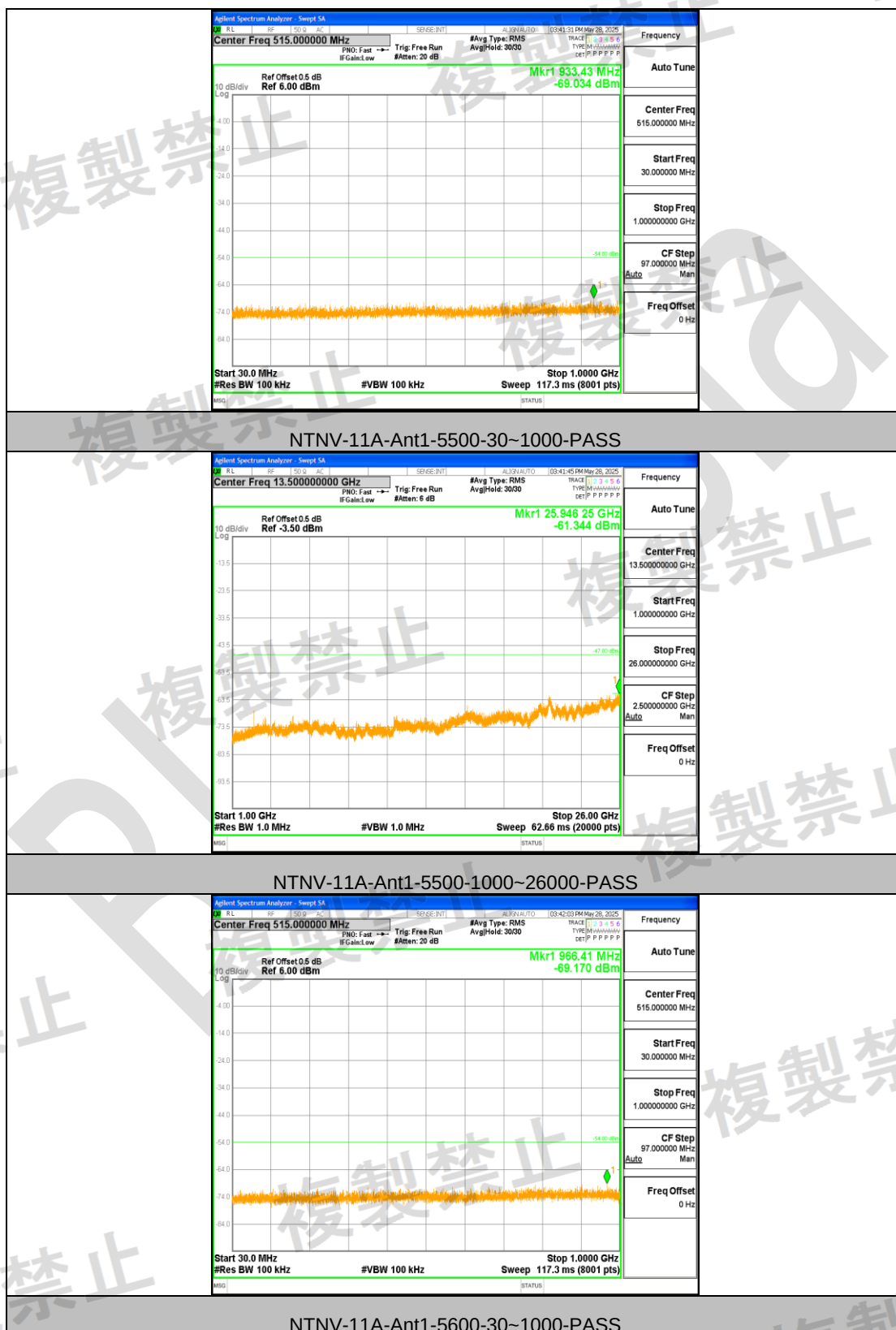
detector mode Sample

Indication mode Max hold

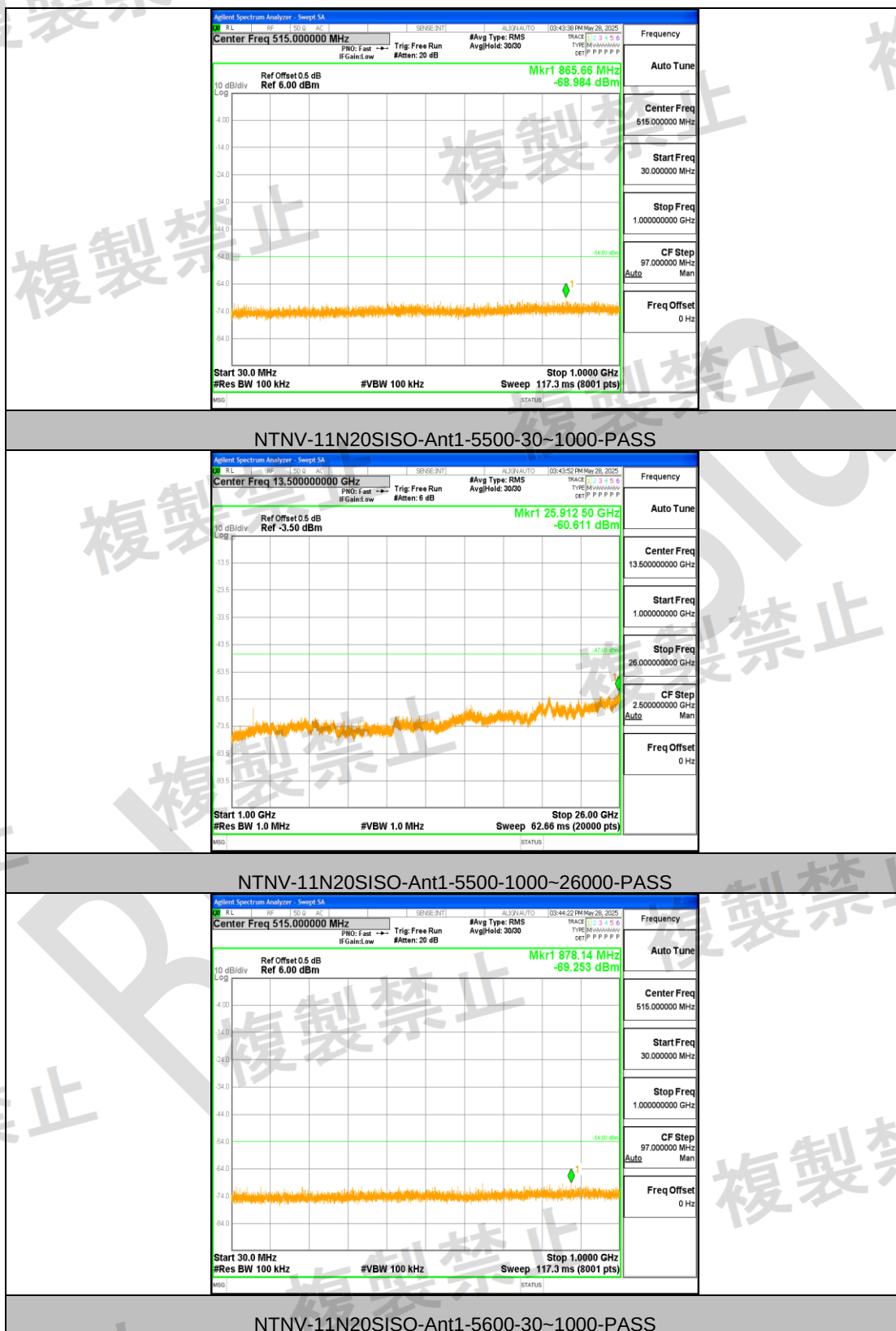
5.3.1 Test Result

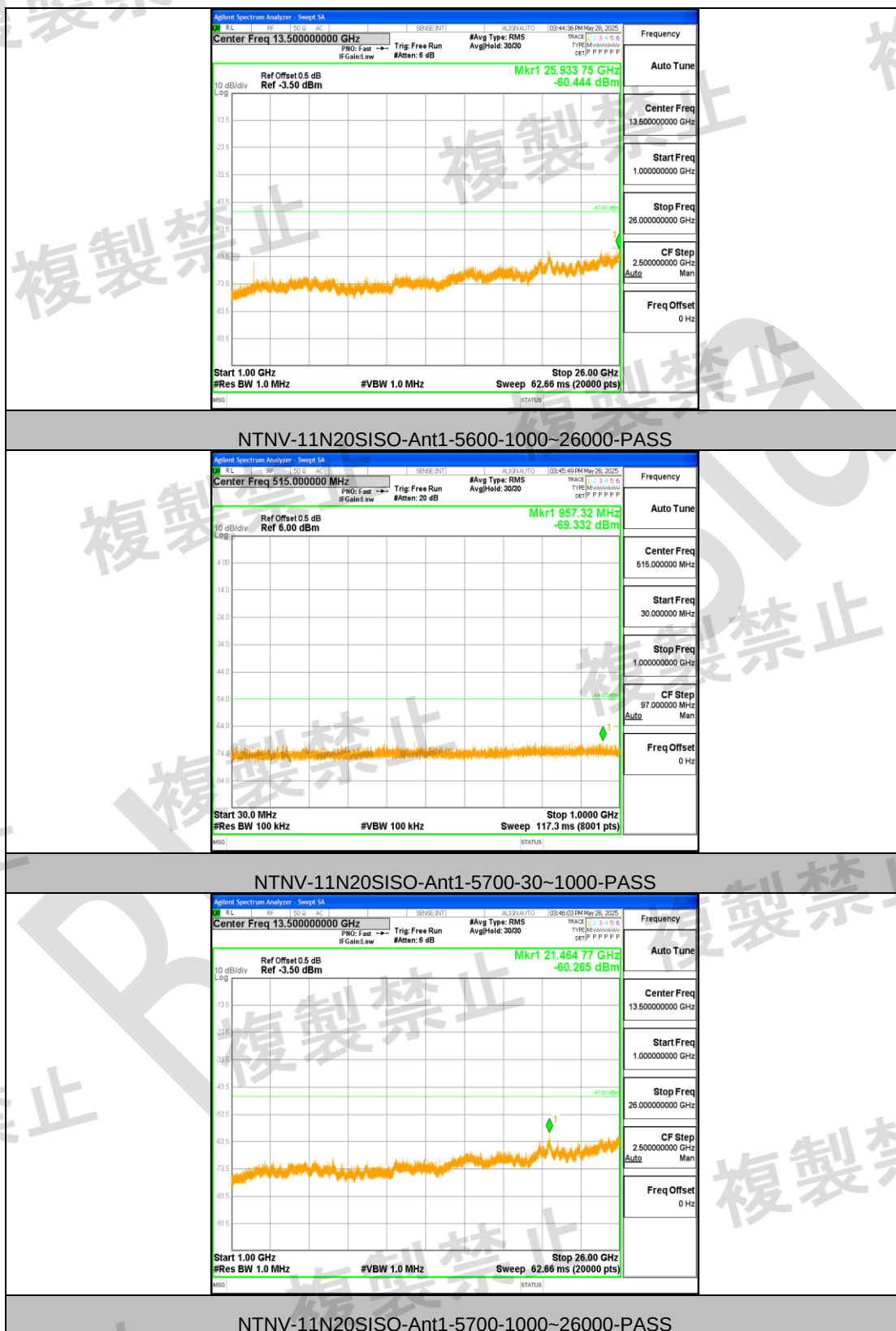
TestCondition	TestMode	Antenna	Channel	Freq.Range [MHz]	Result [dBm]	Limit [dBm]	Verdict
NTNV	11A	Ant1	5500	30~1000	-69.03	≤-54	PASS
				1000~26000	-61.34	≤-47	PASS
			5600	30~1000	-69.17	≤-54	PASS
				1000~26000	-60.76	≤-47	PASS
			5700	30~1000	-68.98	≤-54	PASS
				1000~26000	-61.43	≤-47	PASS
	11N20	Ant1	5500	30~1000	-68.98	≤-54	PASS
				1000~26000	-60.61	≤-47	PASS
			5600	30~1000	-69.25	≤-54	PASS
				1000~26000	-60.44	≤-47	PASS
			5700	30~1000	-69.33	≤-54	PASS
				1000~26000	-60.27	≤-47	PASS
	11N40	Ant1	5510	30~1000	-69.29	≤-54	PASS
				1000~26000	-61.83	≤-47	PASS
			5590	30~1000	-68.92	≤-54	PASS
				1000~26000	-61.07	≤-47	PASS
			5670	30~1000	-69.40	≤-54	PASS
				1000~26000	-60.77	≤-47	PASS

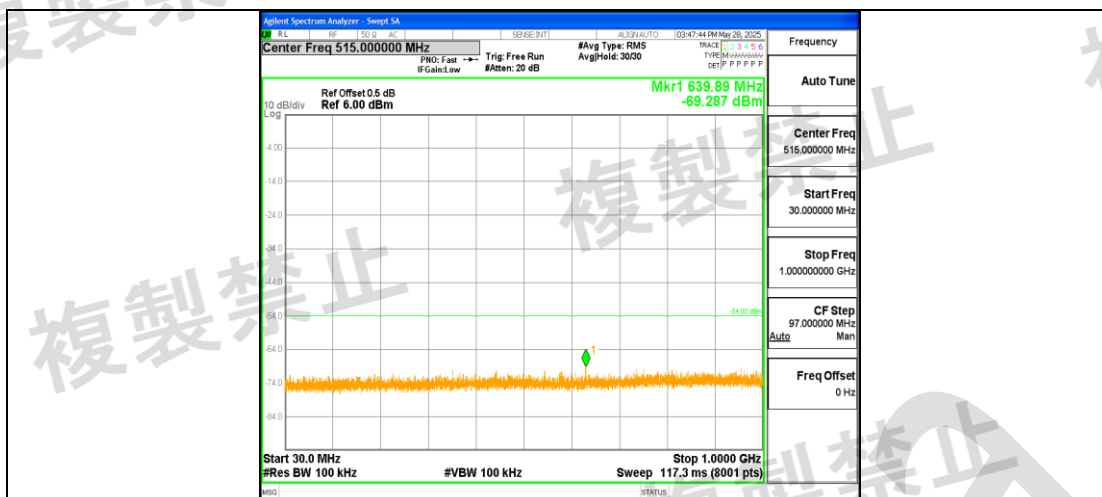
5.3.2 Test Graphs



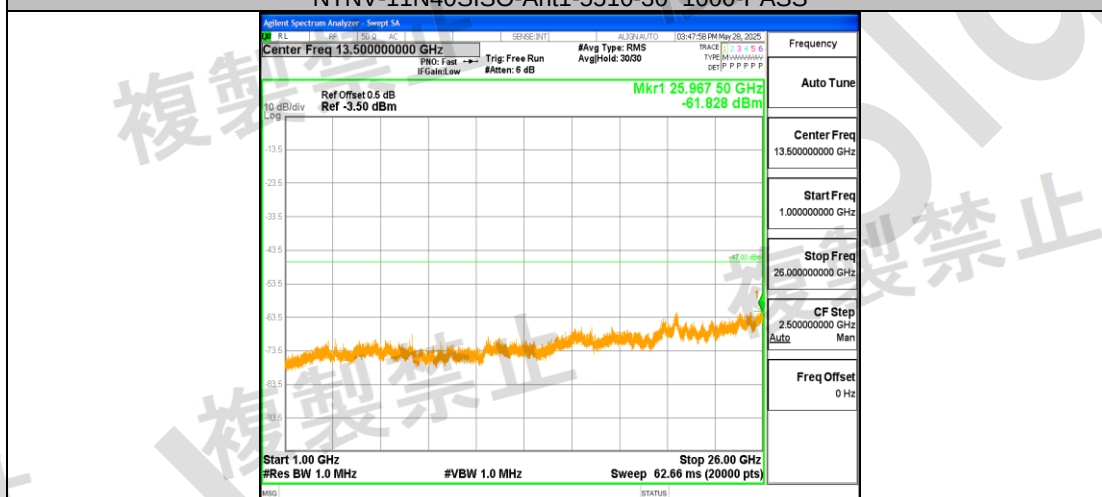




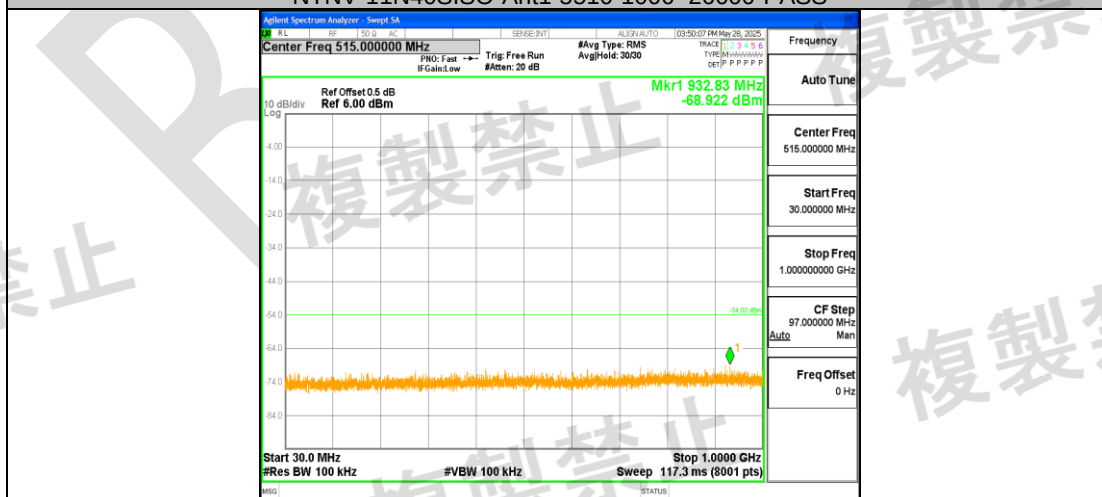




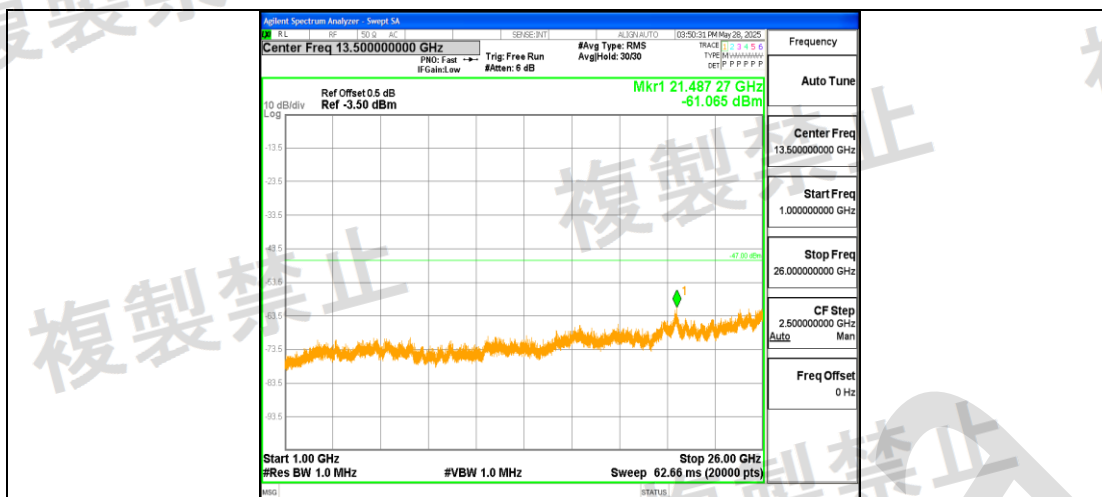
NTNV-11N40SISO-Ant1-5510-30~1000-PASS



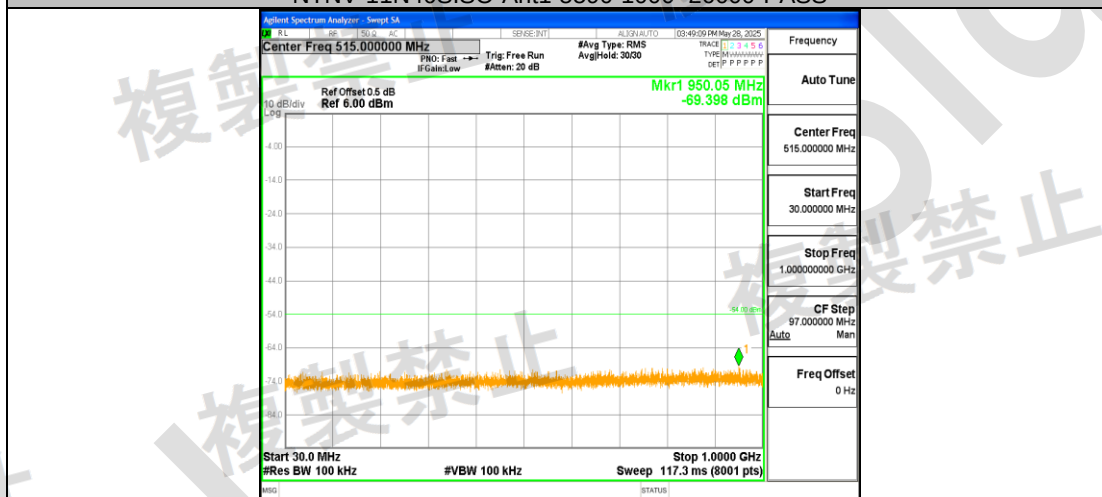
NTNV-11N40SISO-Ant1-5510-1000~26000-PASS



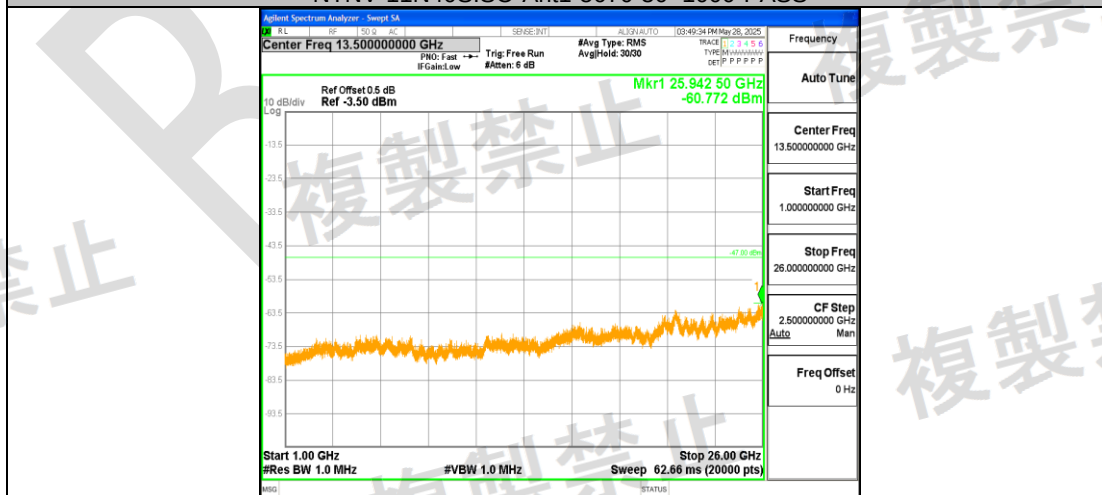
NTNV-11N40SISO-Ant1-5590-30~1000-PASS



NTNV-11N40SISO-Ant1-5590-1000~26000-PASS



NTNV-11N40SISO-Ant1-5670-30~1000-PASS



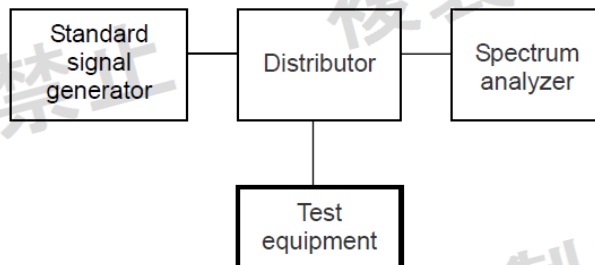
NTNV-11N40SISO-Ant1-5670-1000~26000-PASS

5.4 Carrier sense capability

Test Requirement: Item 19-3 of Article 2-1

Shall not transmit radio wave when receiving over 100mV/m

Test Configuration: Test with test equipment only



Test Procedure:

1) Test Conditions:

Spectrum Analyzer and signal generator is used for measurement.

2) EUT conditions:

Set the test equipment at the test frequency and the test spread code, and set it to the receiving mode, when using external test equipment, establish a connection

3) Set the standard signal generator as follows:

Carrier frequency: Center frequency of receiving frequency band of test equipment

Modulation: No modulation (when the carrier sense function does not work by the the unmodulated subcarrier in center frequency, shift the frequency or modulate if needed.)

Output level: In the antenna input unit of a test equipment, field intensity is equivalent to the value which becomes 100mV/m.

4) Set the spectrum analyzer as follows:

Center frequency: Center frequency of the bandwidth used.

Sweep frequency band: 50MHz

Resolution bandwidth: Approximately 1 MHz

Video bandwidth: Approximately same as the resolution bandwidth

Y-axis scale: 10dB/Div

Trigger condition: Free-run

Detective mode: Positive peak

5) Measuring operation

(1) Test with test equipment only: Set the test equipment to the transmitting operation with the output of standard signal generator OFF, and confirm that it emits radio wave, using spectrum analyzer.

(2) Set the test equipment to the receiving mode.

(3) Set the test equipment to the transmitting operation with the output of standard signal generator ON, and confirm that it does not emit radio wave, using spectrum analyzer.

Channel	Test result	verdict
Low	Good	Pass
Mid	Good	Pass
High	Good	Pass

Test result: The product shall not transmit radio wave when receiving over 100mV/m. The unit does meet the requirements

5.5 Burst Length

Test Requirement: Item 19-3 of Article 2 Paragraph 1

8ms or less

Test Status: Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Test Configuration:



Test Procedure:

1) Test Conditions:

Frequency Counter or Spectrum Analyzer is used for measurement.

2) EUT conditions:

Modulation/Spread On,

3) Spectrum Analyzer conditions:

Frequency: Test Frequency

Span 0 MHz

RBW 1MHz,

VBW 3MHz,

Detector mode Positive peak

Indication mode Max hold

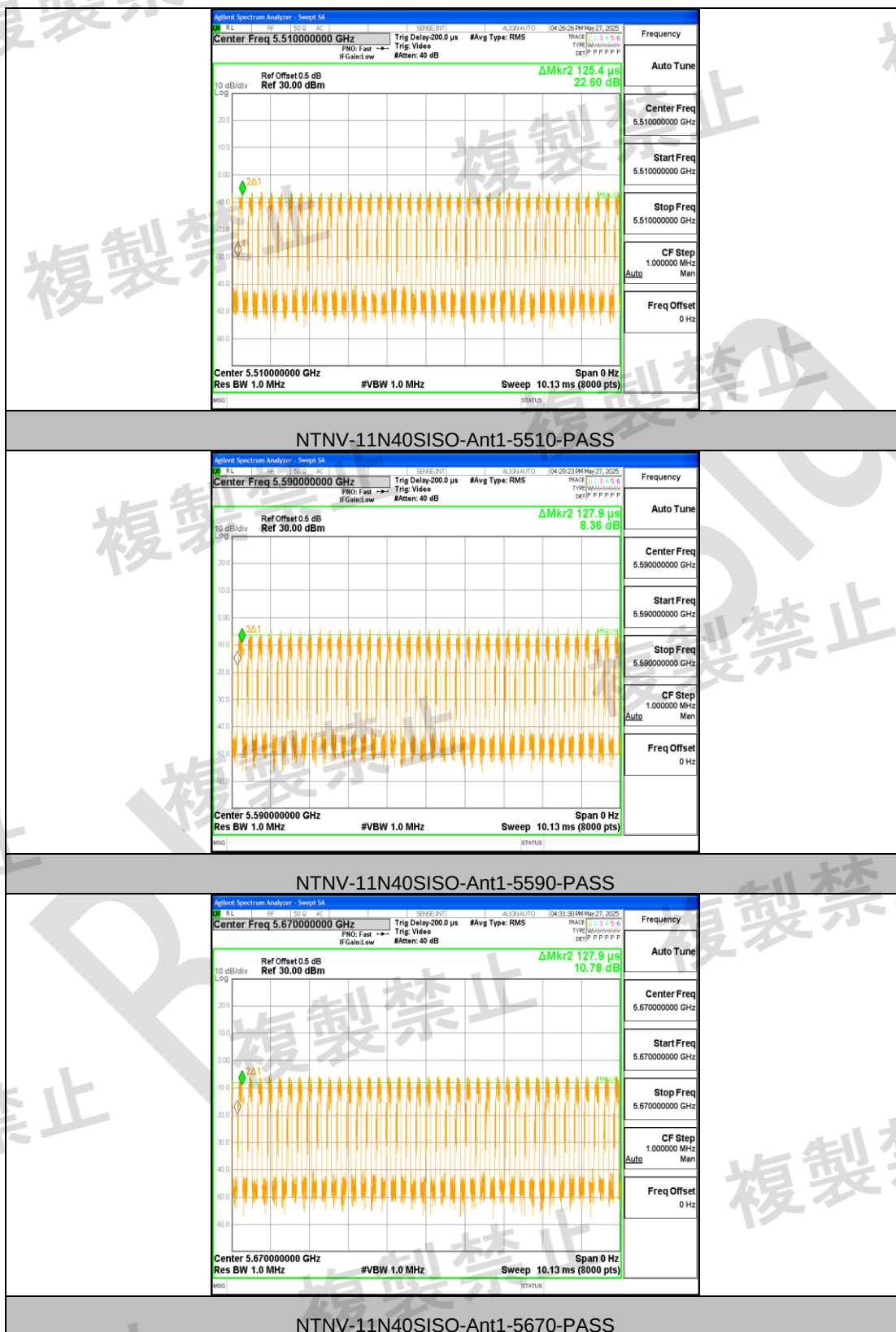
5.5.1 Test Result

TestCondition	TestMode	Antenna	Channel	Result [ms]	Limit [ms]	Verdict
NTNV	11A	Ant1	5500	0.25	≤8	PASS
			5600	0.25	≤8	PASS
			5700	0.25	≤8	PASS
	11N20	Ant1	5500	0.23	≤8	PASS
			5600	0.23	≤8	PASS
			5700	0.23	≤8	PASS
	11N40	Ant1	5510	0.13	≤8	PASS
			5590	0.13	≤8	PASS
			5670	0.13	≤8	PASS

5.5.2 Test Graphs







5.6 RF accessibility

Standard requirement

Article 2, Item (19) Notice 88 Appendix 43, 44, 45

The EUT shall be constructed in such a way that sensitive RF parts, (like modulation and oscillator parts) cannot be reached easily by the user. These parts shall be covered by soldered metal caps or glue or by other mechanical covers. If the covers are fixed with screws, these shall be not the common type(s) like a Phillips, but special versions like Torx, so that the user cannot open the device with common tools.

RF and Modulation components are covered with shielding case and this shielding case is soldered. the radio frequency part cannot be easily contacted when in use.

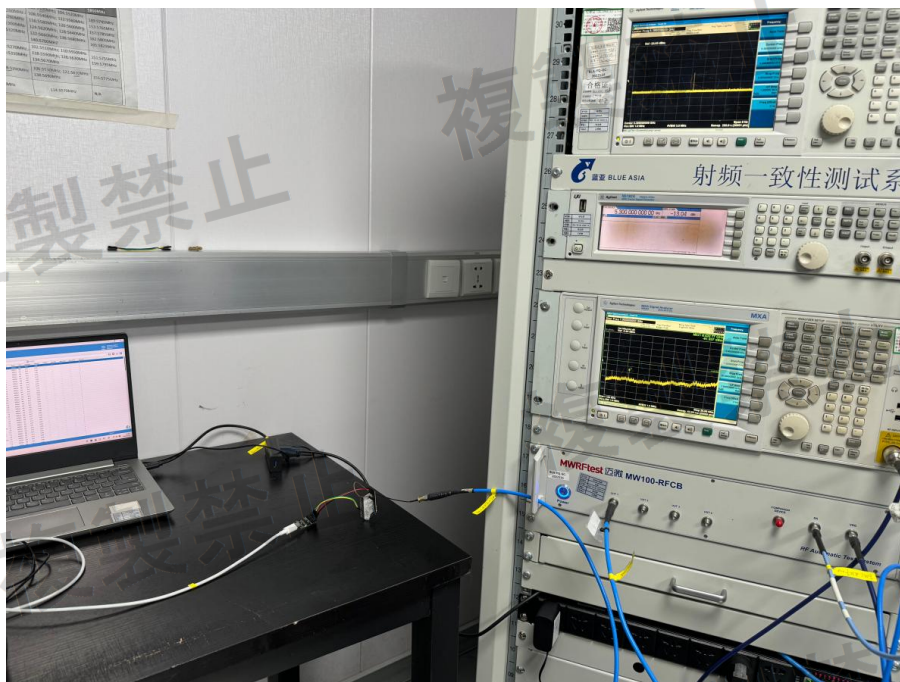


5 Dynamic Frequency Selection(Slave)

The WAS/RLAN device operating in slave without radar detection Mode (Slave Device) can be operated in a network controlled by a WAN/RLAN device operating in Master Mode (Master Device).

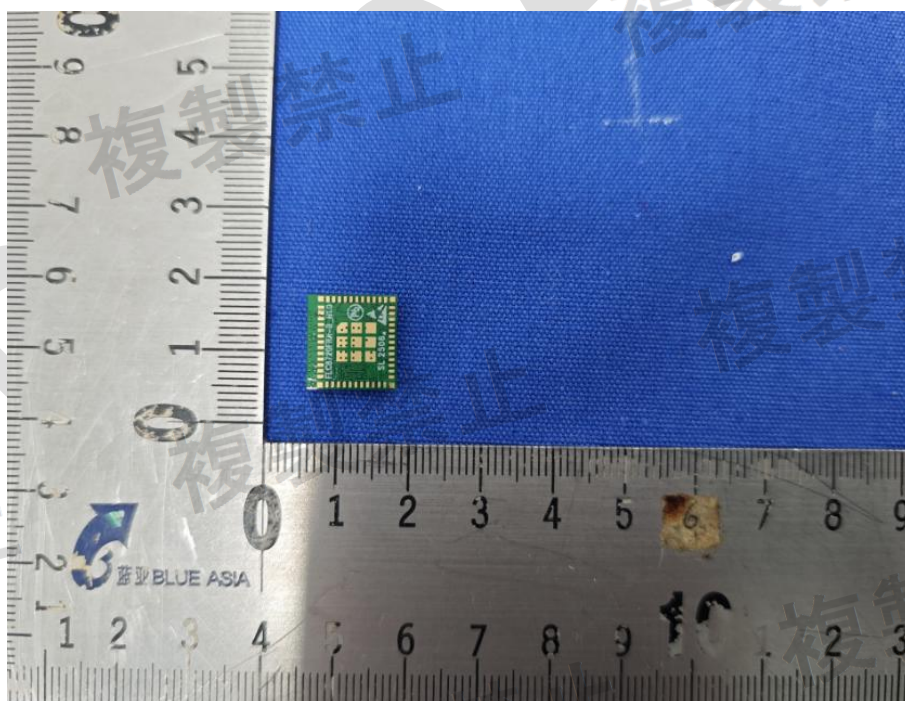
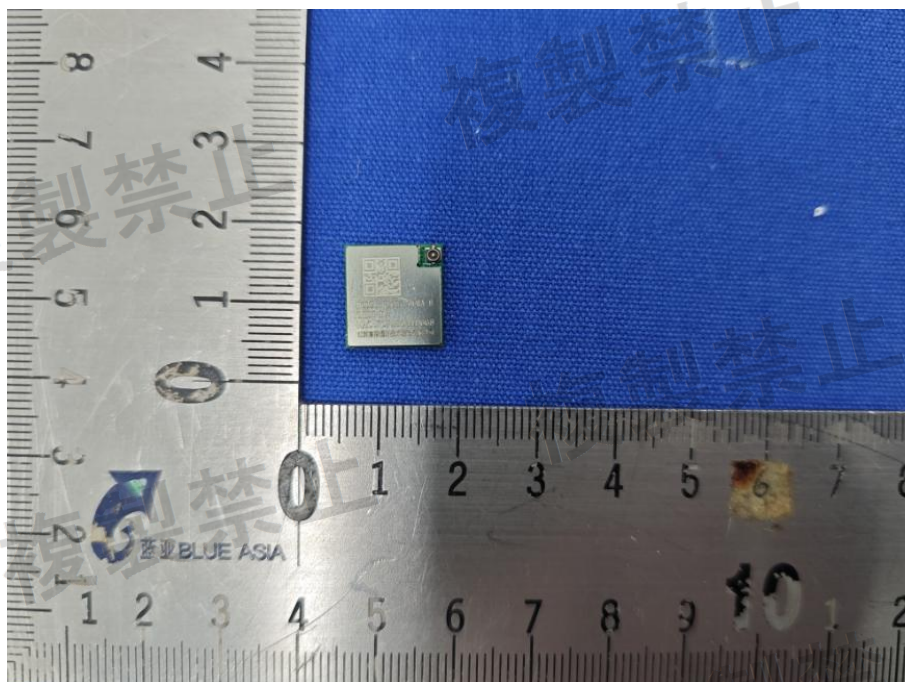
Test result: The unit does meet the requirements

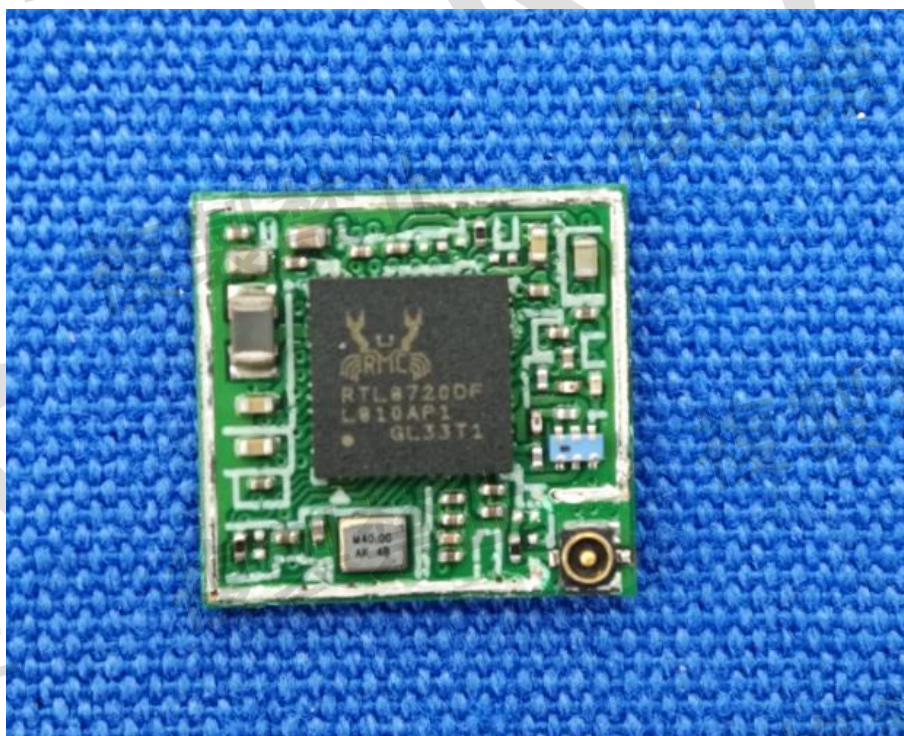
6 Photographs of test setup



7 Photographs

7.1 EUT Constructional Details





*** End of Report ***

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