

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

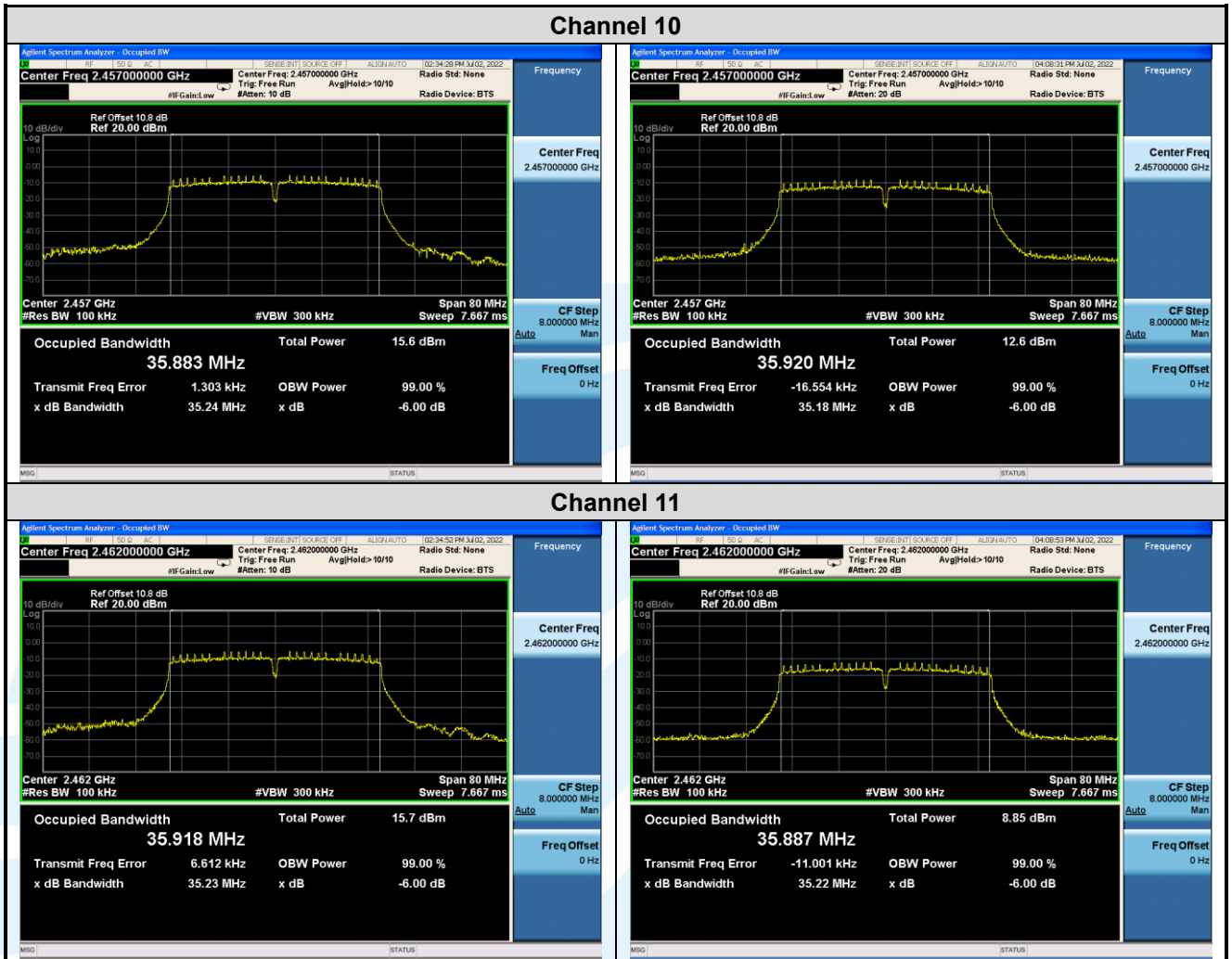
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UTTR-RF-FCCPART15.247-V1.1



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### 5.5 POWER SPECTRAL DENSITY

**Test Requirement:** FCC 47 CFR Part 15 Subpart C Section 15.247 (e)

**Test Method:** ANSI C63.10-2013 Clause 11.10.2

**Limit:** For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

**Test Procedure:** Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

Use the following spectrum analyzer settings:

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span to 1.5 times the DTS bandwidth.
- c) Set the RBW to:  $3\text{ kHz} \leq \text{RBW} \leq 100\text{ kHz}$ .
- d) Set the VBW  $\geq 3 \times \text{RBW}$ .
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

**Test Setup:** Refer to section 4.5.3 for details.

**Instruments Used:** Refer to section 3 for details

**Test Results:**

Mode	Channel	Freq. (MHz)	CONDUCTED PSD (dBm/3kHz)			PSD Limit (dBm/3kHz)	Result
			Ant. 0	Ant. 1	Total		
IEEE 802.11b	1	2412	-8.37	-8.35	N/A	8	Pass
	6	2437	-7.72	-6.77	N/A		Pass
	11	2462	-7.85	-9.15	N/A		Pass
	12	2467	-13.57	-14.25	N/A		Pass
	13	2472	-14.00	-14.72	N/A		Pass
IEEE 802.11g	1	2412	-14.76	-14.86	N/A	8	Pass
	6	2437	-7.89	-9.79	N/A		Pass
	11	2462	-15.72	-16.01	N/A		Pass
	12	2467	-19.46	-19.46	N/A		Pass
	13	2472	-21.78	-21.78	N/A		Pass
IEEE 802.11n-HT20	1	2412	-15.90	-16.16	-13.02	8	Pass
	6	2437	-16.99	-10.01	-9.22		Pass
	11	2462	-16.63	-16.30	-13.46		Pass
	12	2467	-16.27	-20.12	-14.77		Pass
	13	2472	-15.44	-23.36	-14.79		Pass
IEEE 802.11n-HT40	3	2422	-17.66	-19.24	-15.37	8	Pass
	6	2437	-16.35	-15.94	-13.13		Pass
	9	2452	-18.16	-18.07	-15.11		Pass
	10	2457	-18.35	-23.17	-17.11		Pass
	11	2462	-17.76	-26.26	-17.19		Pass

Remark:

1. Total (Ant 0+1) =  $10 \cdot \log[(10^{\text{Ant. 0}/10}) + (10^{\text{Ant. 1}/10})]$

2. Directional gain and the maximum conducted power spectral density limit see table below:

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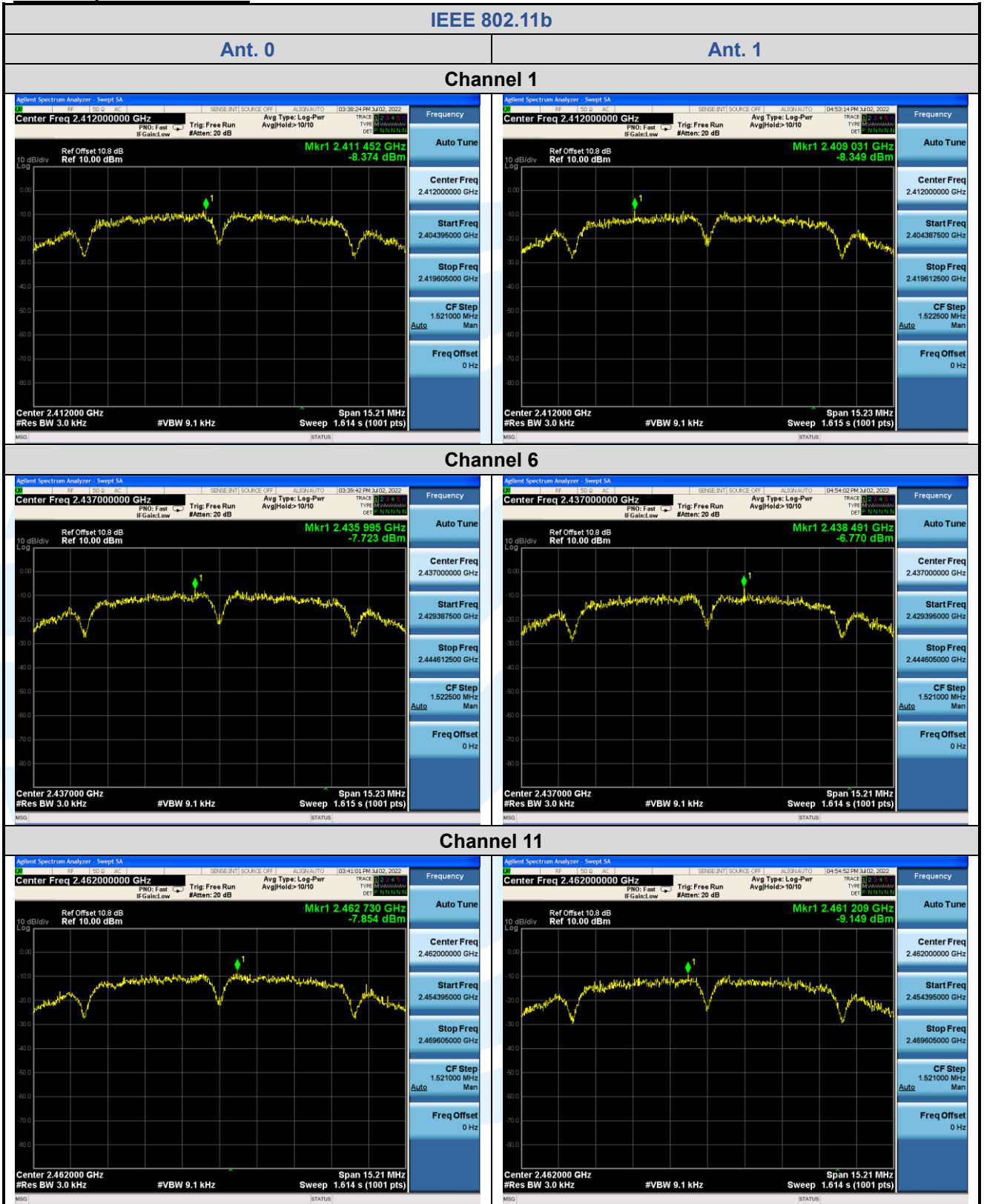
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The test plots as follows:



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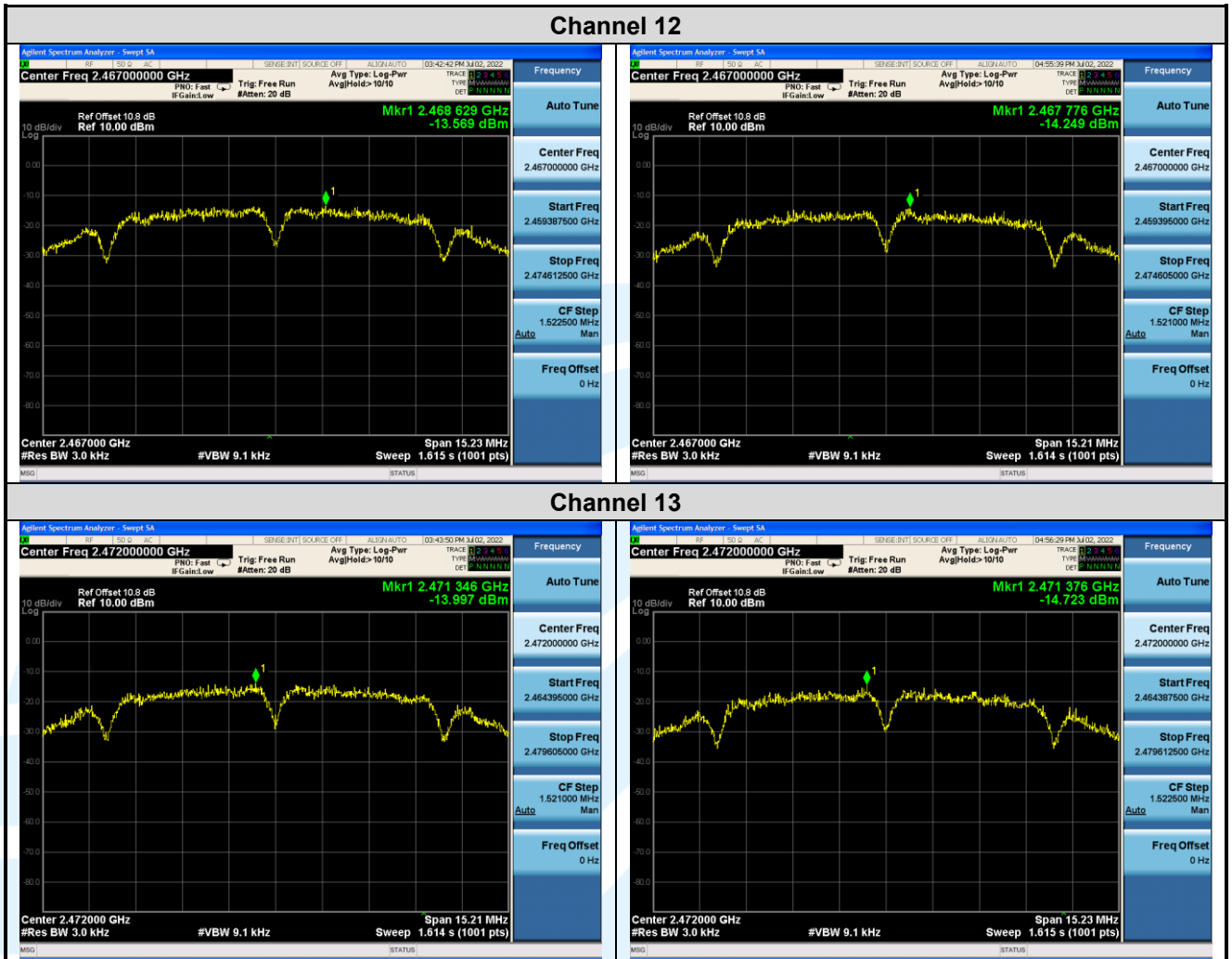
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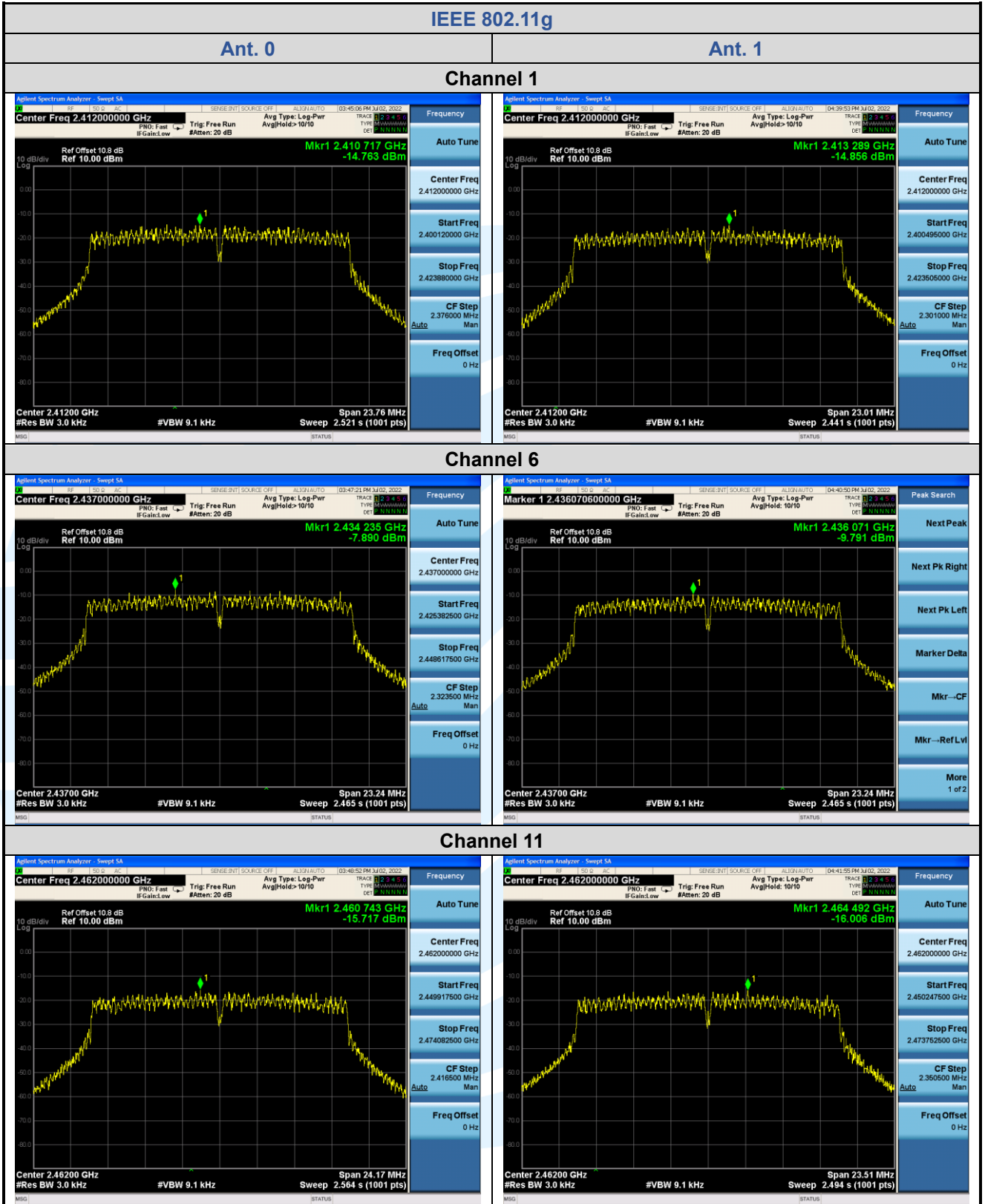
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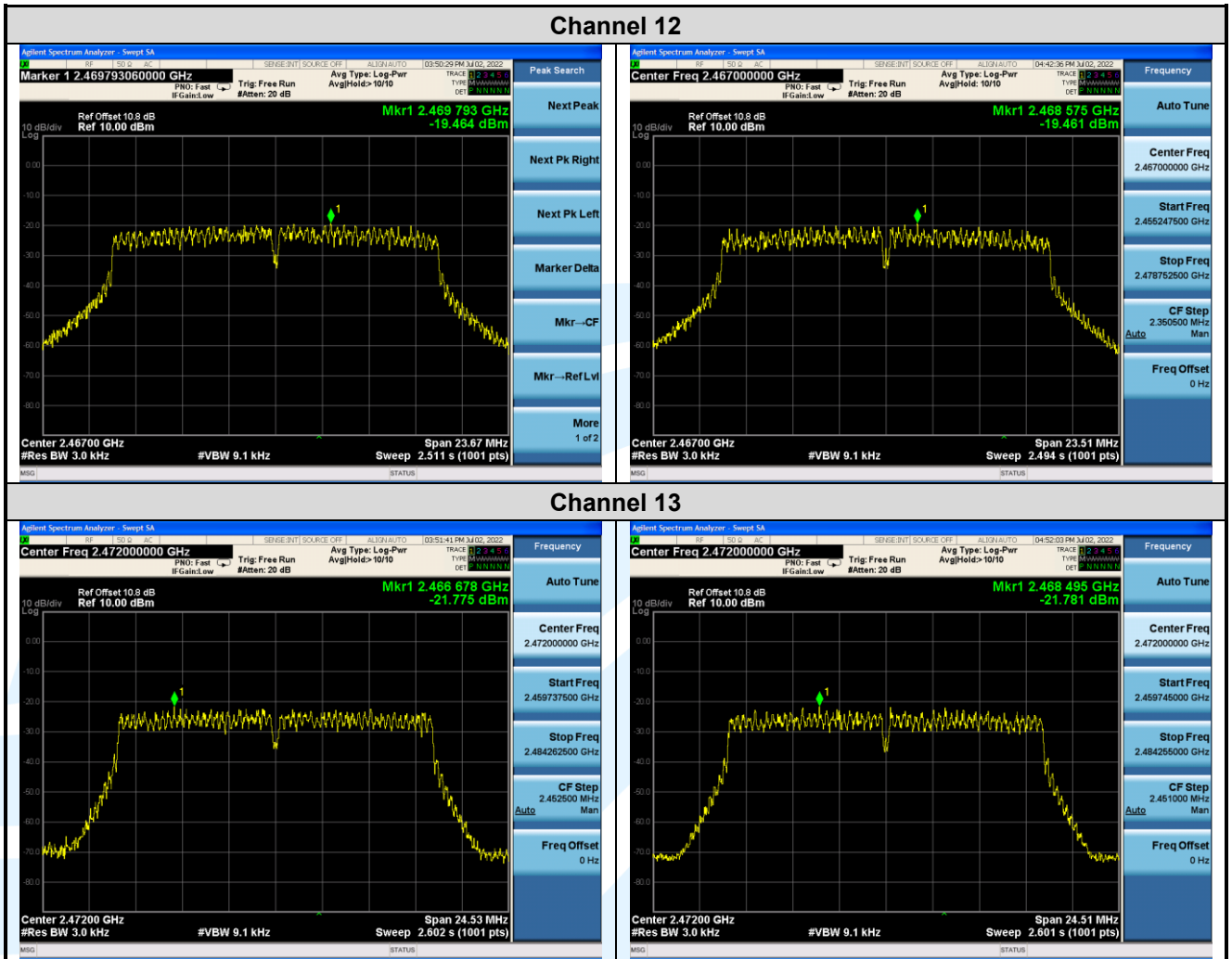
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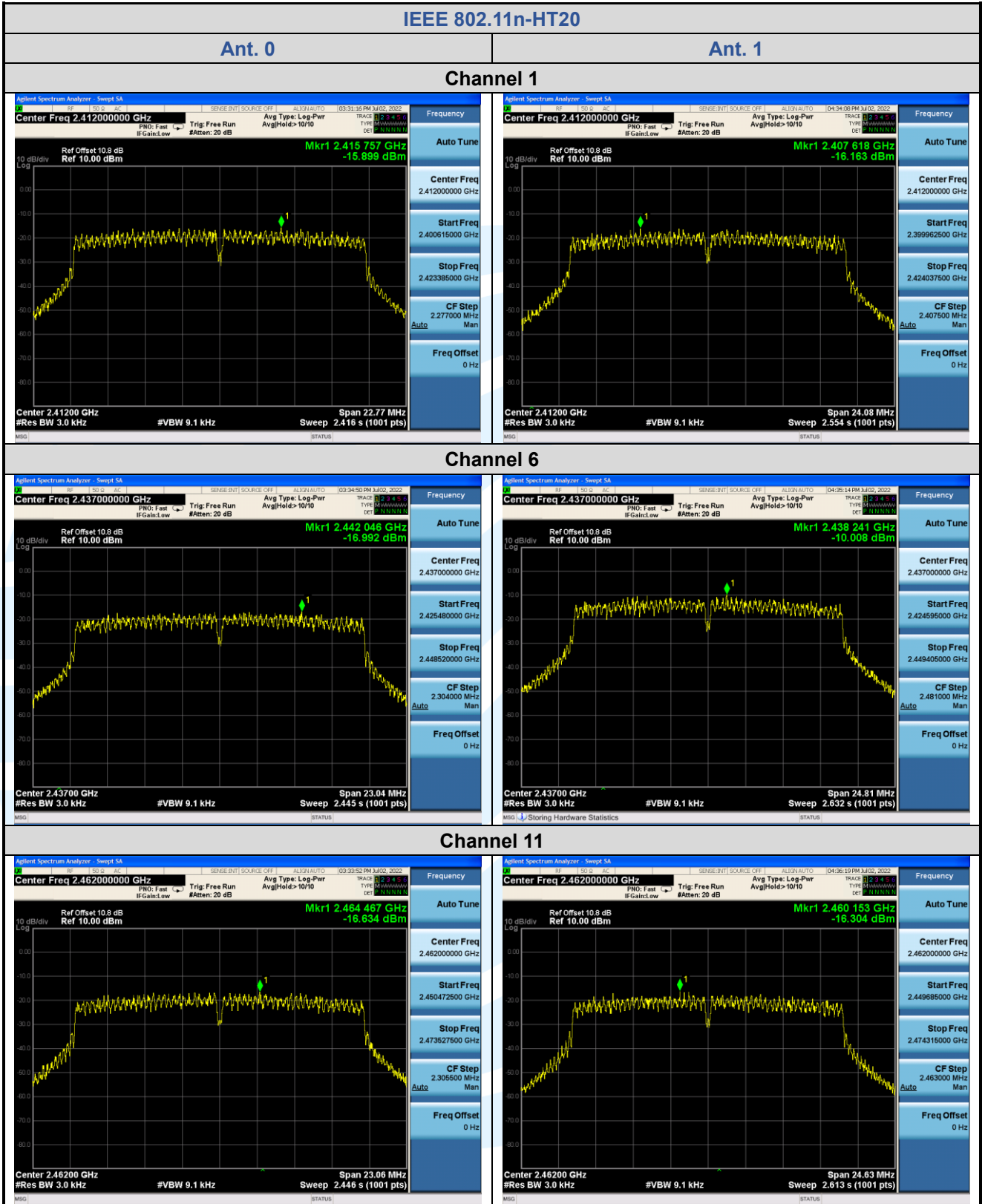
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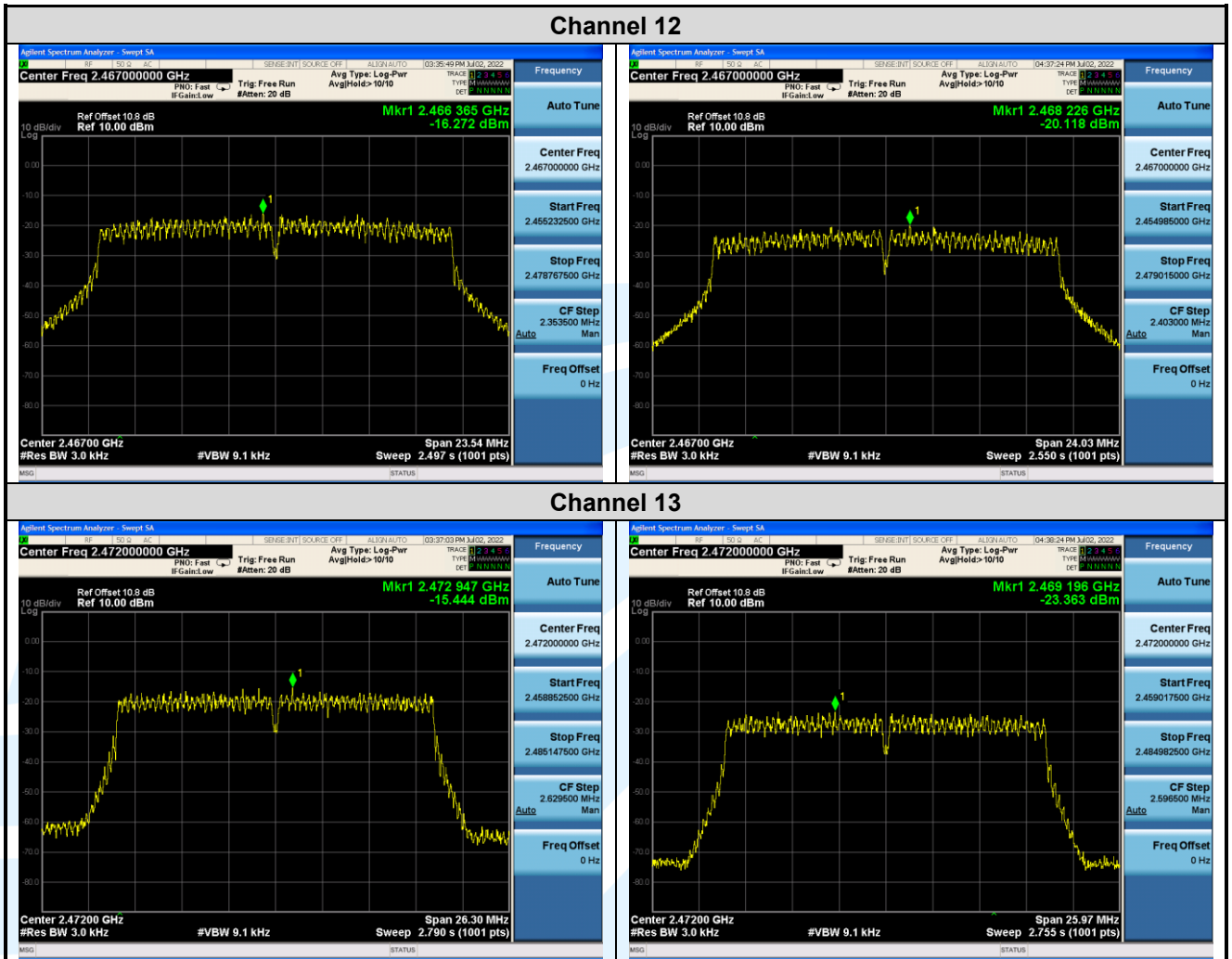
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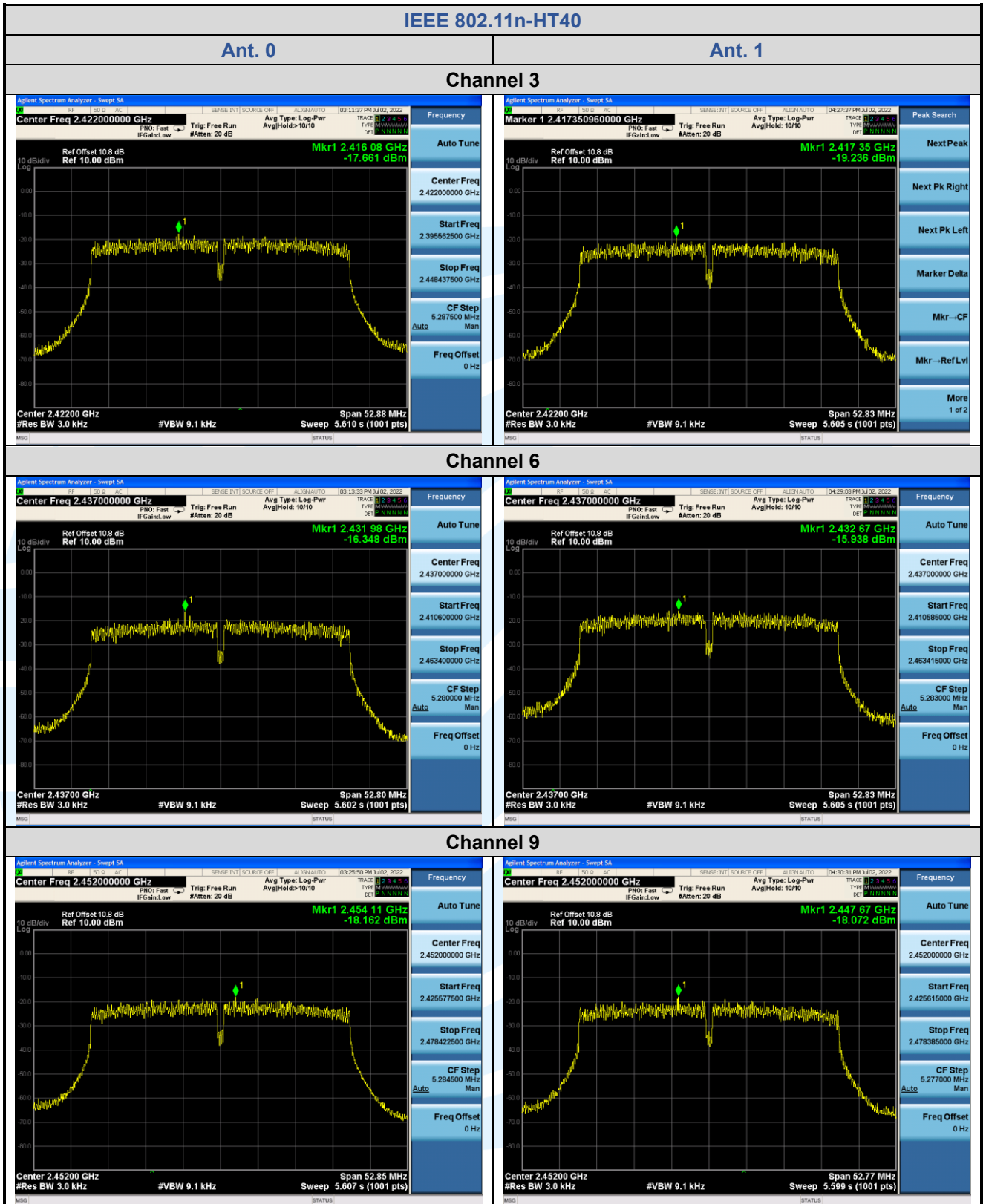
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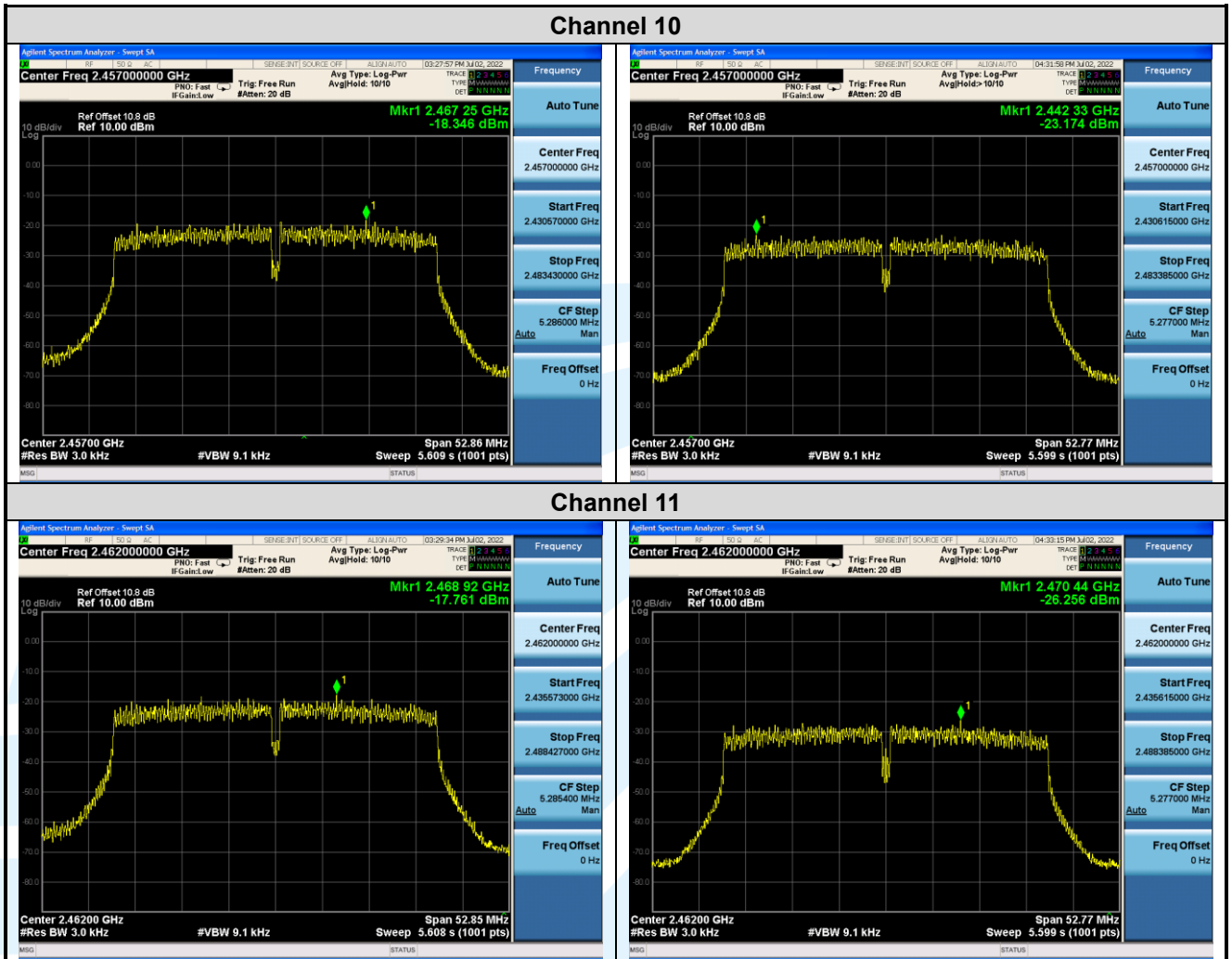
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## 5.6 CONDUCTED OUT OF BAND EMISSION

**Test Requirement:** FCC 47 CFR Part 15 Subpart C Section 15.247(d)

**Test Method:** ANSI C63.10-2013 Clause 11.11

**Limit:** In any 100kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

**Test Procedure:** Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

Use the following spectrum analyzer settings:

### Step 1: Measurement Procedure REF

- a) Set instrument center frequency to DTS channel center frequency.
- b) Set the span to  $\geq 1.5$  times the DTS bandwidth.
- c) Set the RBW = 100 kHz.
- d) Set the VBW  $\geq 3 \times$  RBW.
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum PSD level.
- j) Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

### Step 2: Measurement Procedure OOBE

- a) Set RBW = 100 kHz.
- b) Set VBW  $\geq 300$  kHz.
- c) Detector = peak.
- d) Sweep = auto couple.
- e) Trace Mode = max hold.
- f) Allow trace to fully stabilize.
- g) Use the peak marker function to determine the maximum amplitude level.

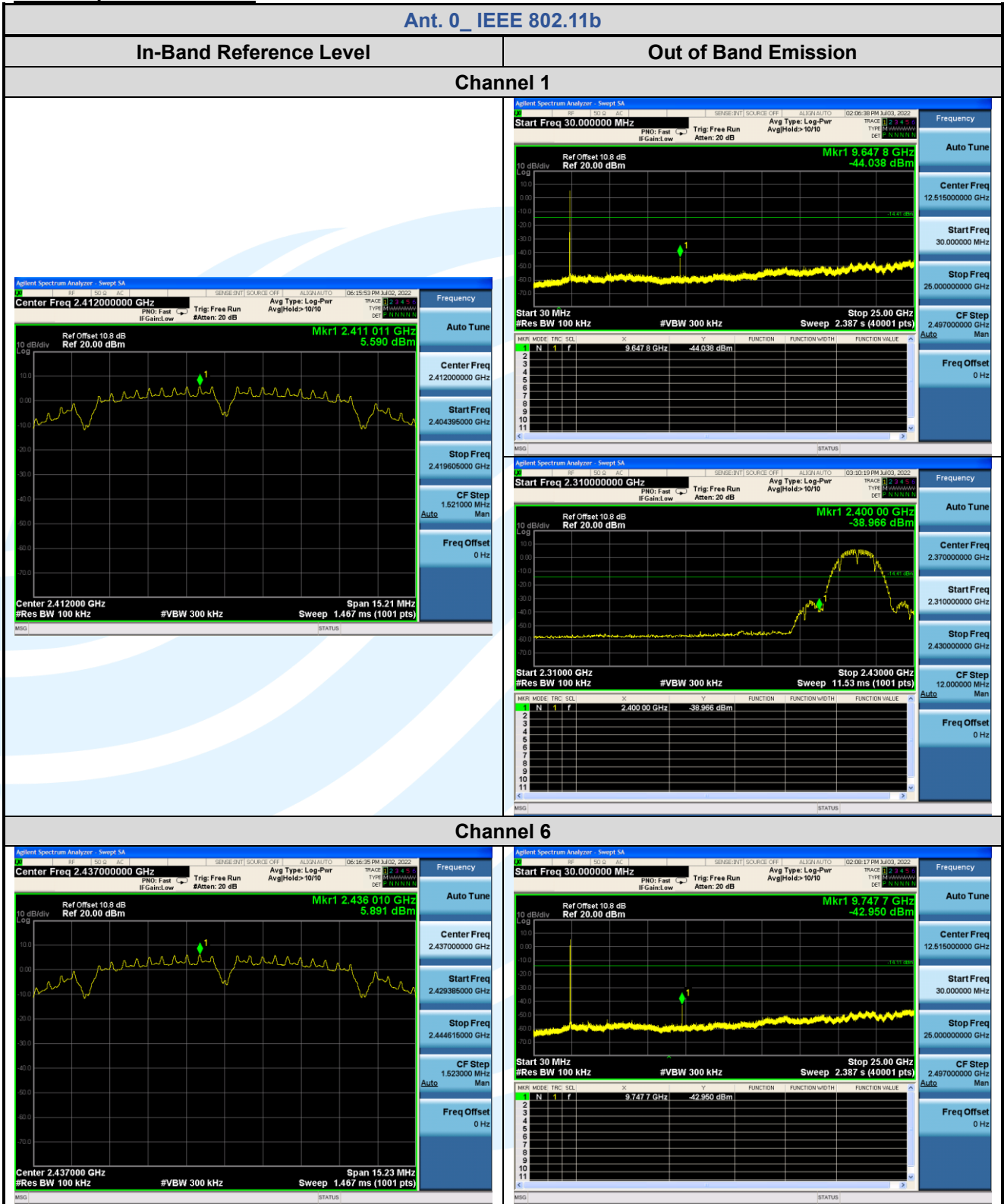
Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

**Test Setup:** Refer to section 4.5.3 for details.

**Instruments Used:** Refer to section 3 for details

**Test Results:** Pass

The test plots as follows:



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