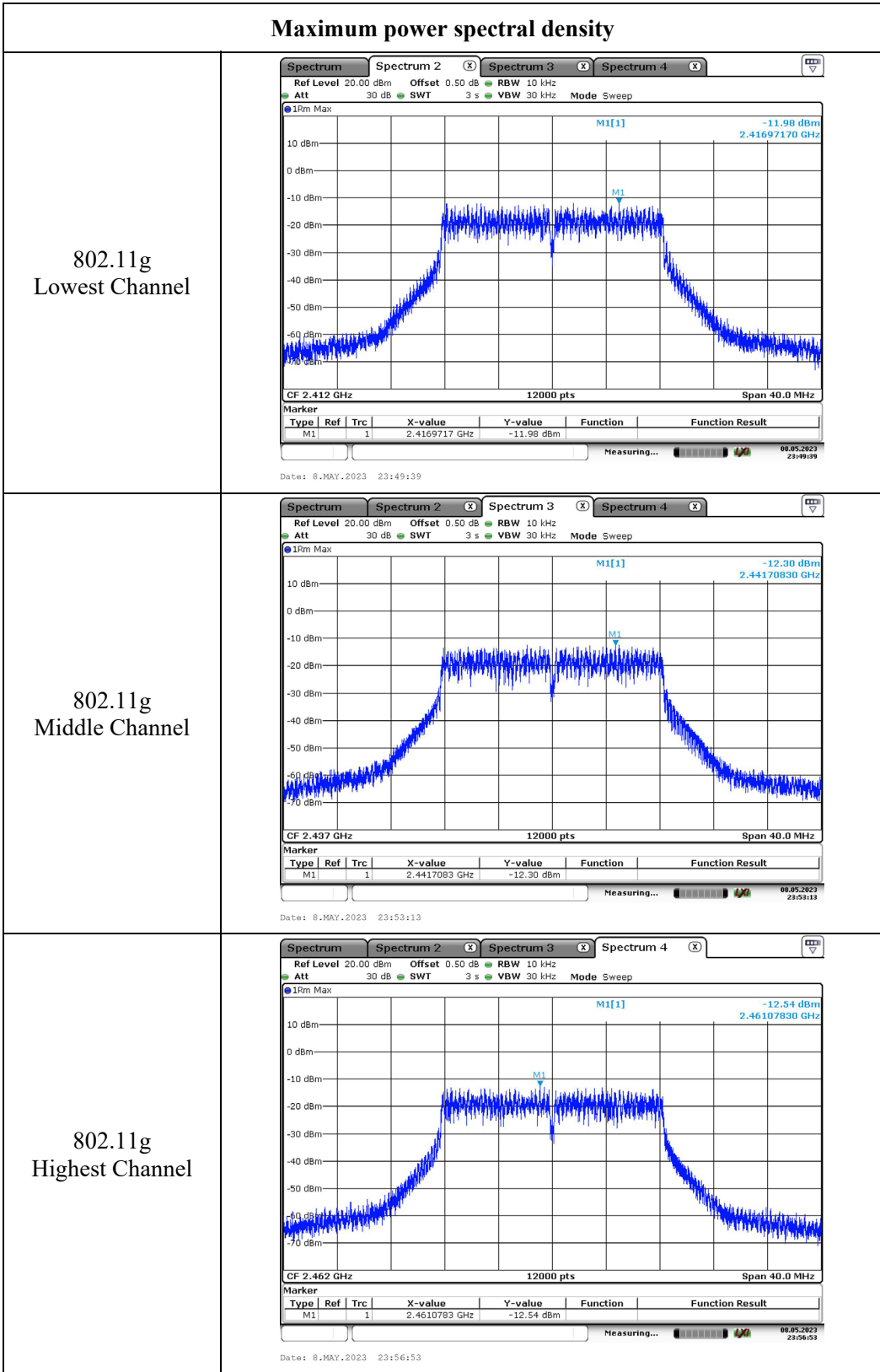
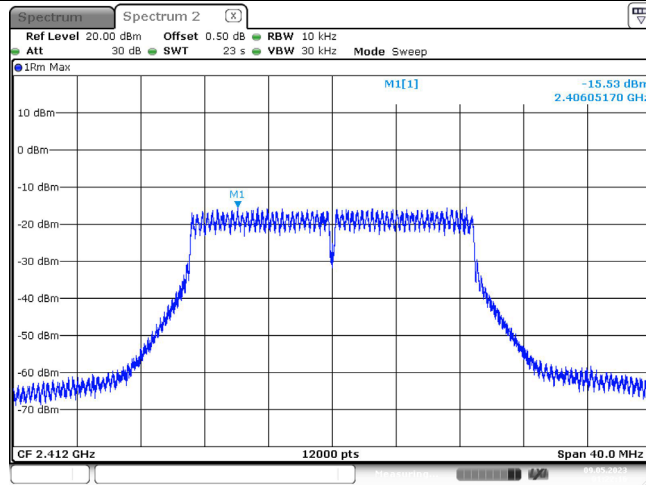


**Maximum power spectral density**



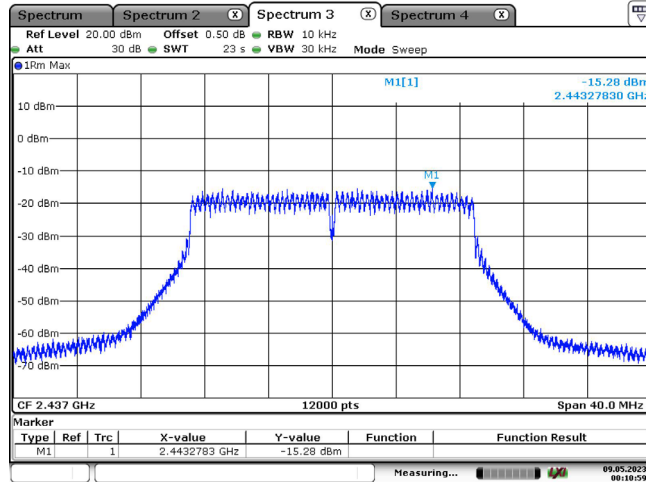
### Maximum power spectral density

802.11n ht20  
Lowest Channel



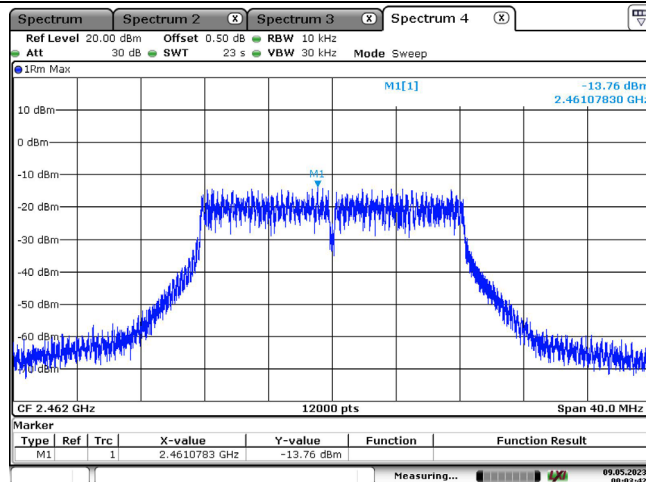
Date: 9.MAY.2023 01:22:16

802.11n ht20  
Middle Channel



Date: 9.MAY.2023 00:10:59

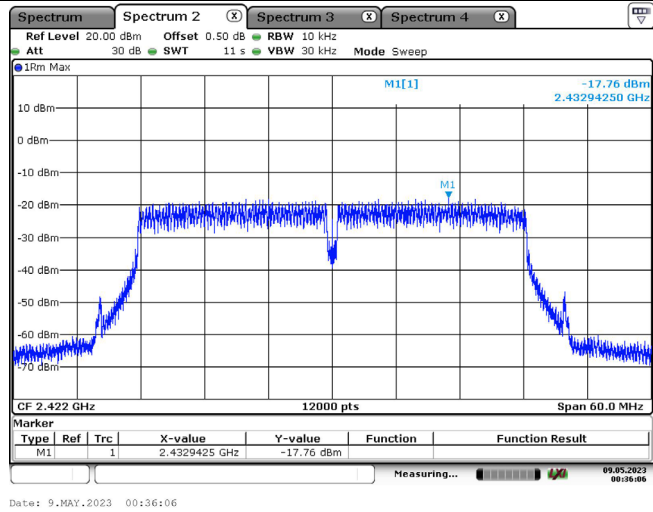
802.11n ht20  
Highest Channel



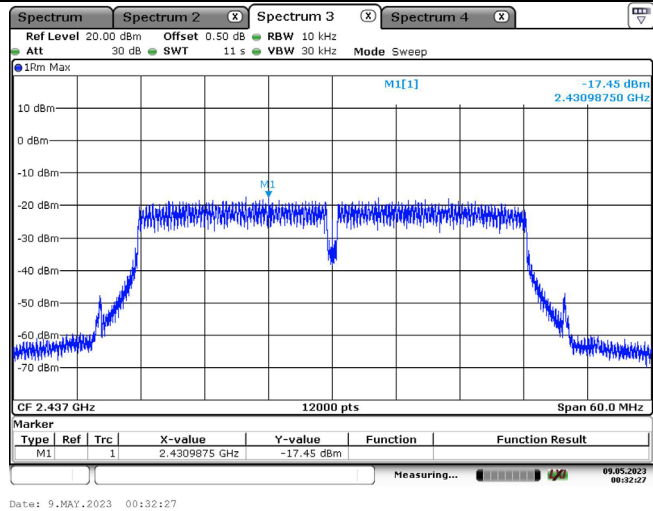
Date: 9.MAY.2023 00:03:42

### Maximum power spectral density

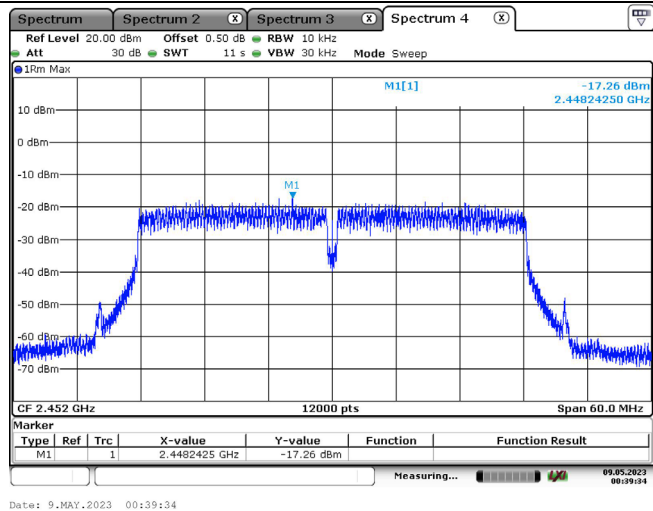
802.11n ht40  
Lowest Channel



802.11n ht40  
Middle Channel



802.11n ht40  
Highest Channel



**4.7 100 kHz Bandwidth of Frequency Band Edge:**

Serial Number:	24G1_1	Test Date:	2023/04/29-2023/05/05
Test Site:	RF	Test Mode:	Transmitting
Tester:	Jim Wei	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	23.6-25.9	Relative Humidity: (%)	63-68	ATM Pressure: (kPa)	100.5-100.8
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**Test Equipment List and Details:**

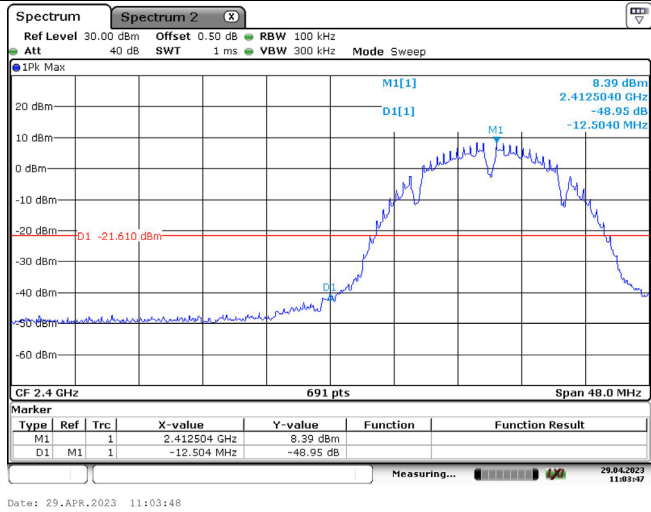
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101943	2022/07/25	2023/07/24
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A

*\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

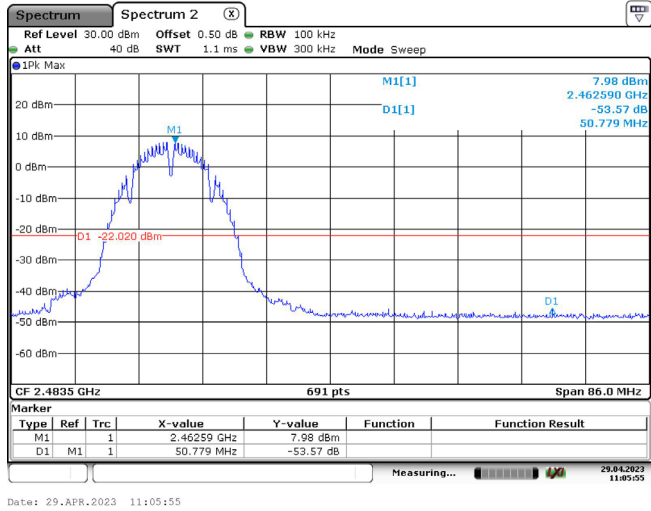
**Test Data:**

100 kHz Bandwidth of Frequency Band Edge

802.11b  
Lowest Band edge

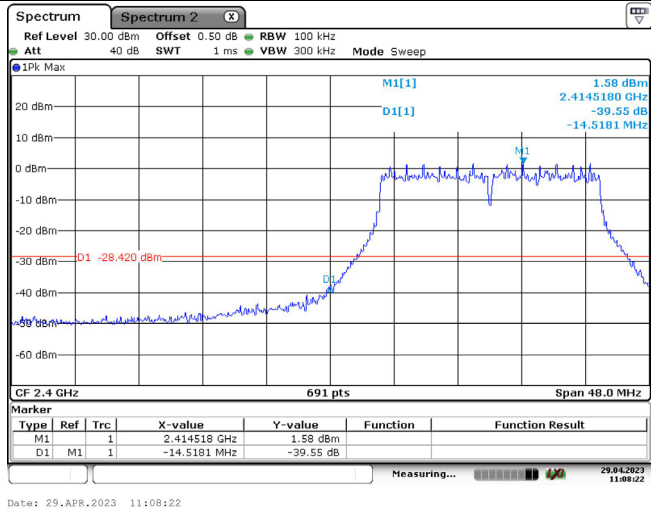


802.11b  
Highest Band edge

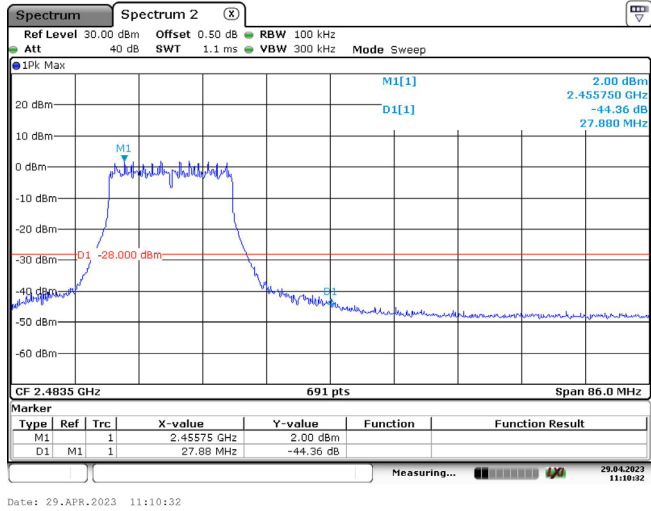


### 100 kHz Bandwidth of Frequency Band Edge

802.11g  
Lowest Band edge

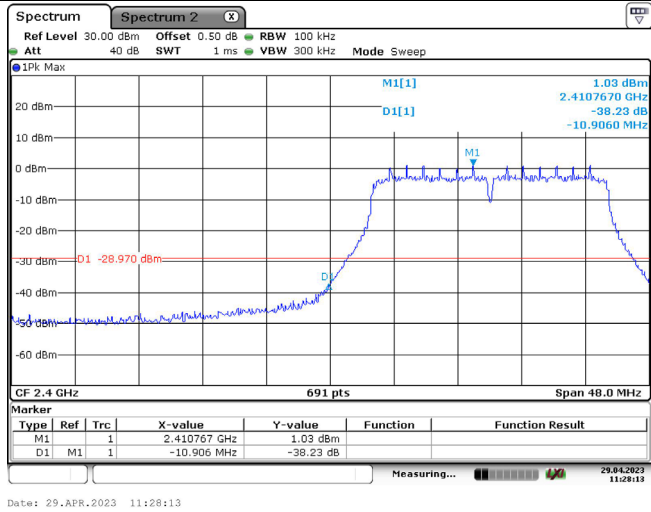


802.11g  
Highest Band edge

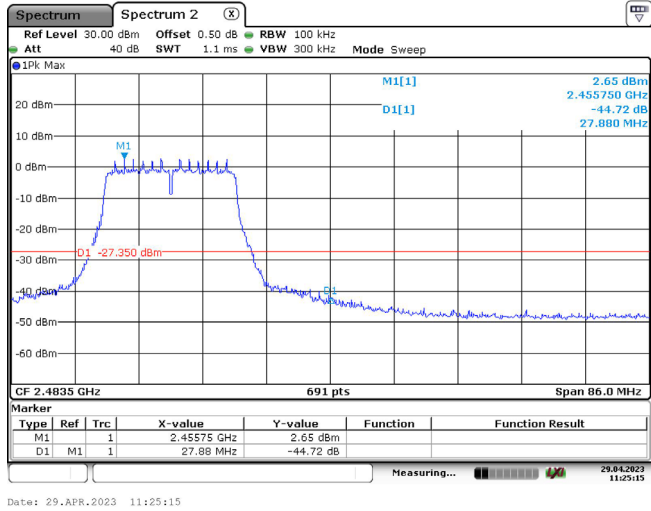


### 100 kHz Bandwidth of Frequency Band Edge

802.11n ht20  
Lowest Band edge

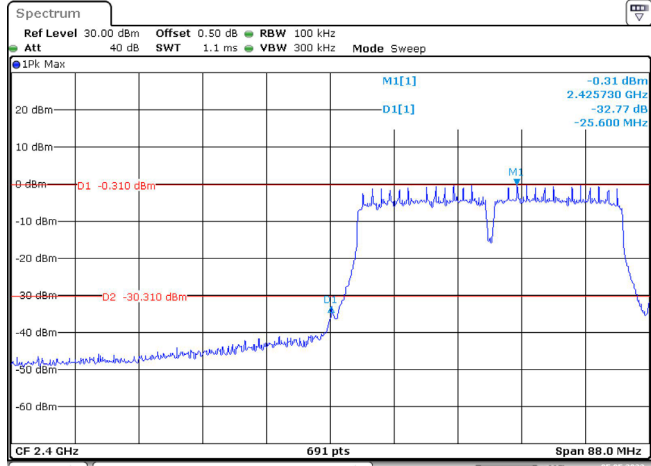


802.11n ht20  
Highest Band edge



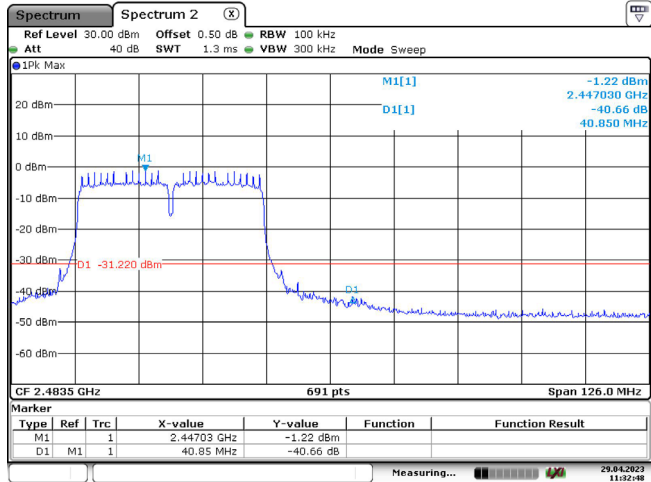
100 kHz Bandwidth of Frequency Band Edge

802.11n ht40  
Lowest Band edge



Date: 5.MAY.2023 01:37:53

802.11n ht40  
Highest Band edge



Date: 29.APR.2023 11:32:48



**4.8 Duty Cycle:**

Serial Number:	24G1_1	Test Date:	2023/04/29
Test Site:	RF	Test Mode:	Transmitting
Tester:	Jim Wei	Test Result:	N/A

**Environmental Conditions:**

Temperature: (°C)	23.6	Relative Humidity: (%)	63	ATM Pressure: (kPa)	100.5
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101943	2022/07/25	2023/07/24
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A

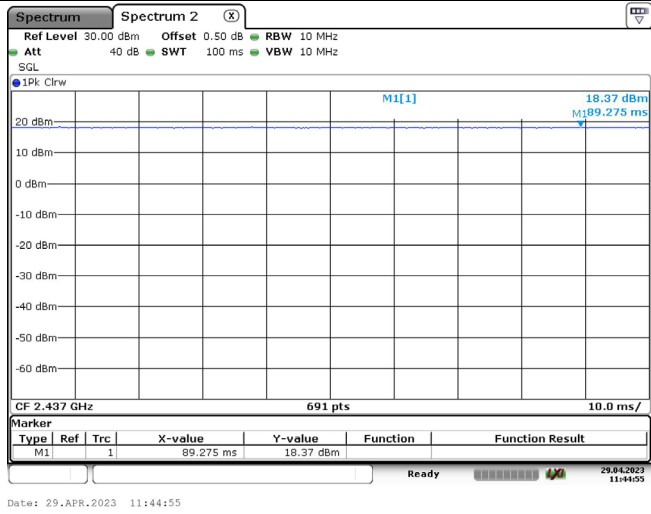
\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Data:**

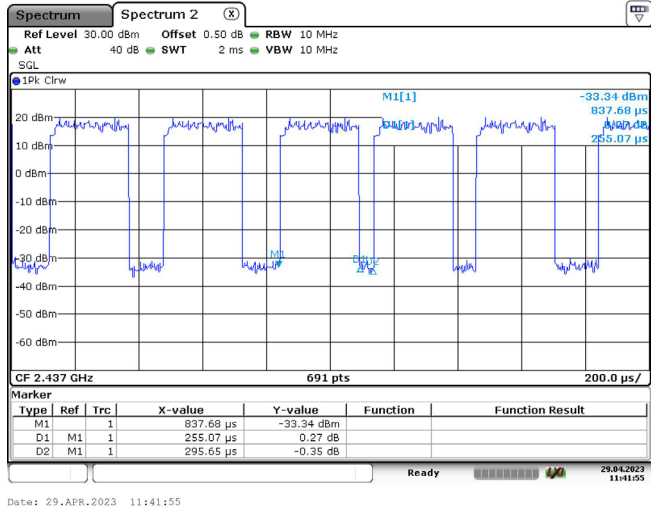
Test Modes	Ton (ms)	Ton+off (ms)	Duty cycle (%)	1/T (Hz)	Duty Factor (dB)
802.11b	100	100	100.00	10	/
802.11g	0.255	/	Not constant	3922	/
802.11n ht20	1.925	/	Not constant	519	/
802.11n ht40	0.962	/	Not constant	1040	/

### Duty Cycle

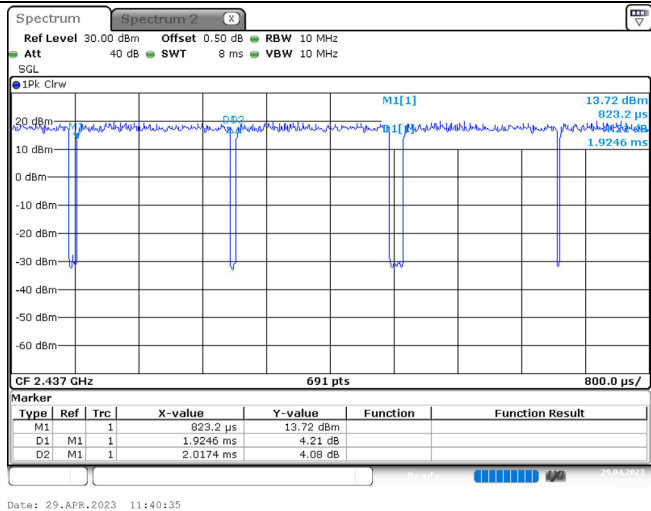
802.11b

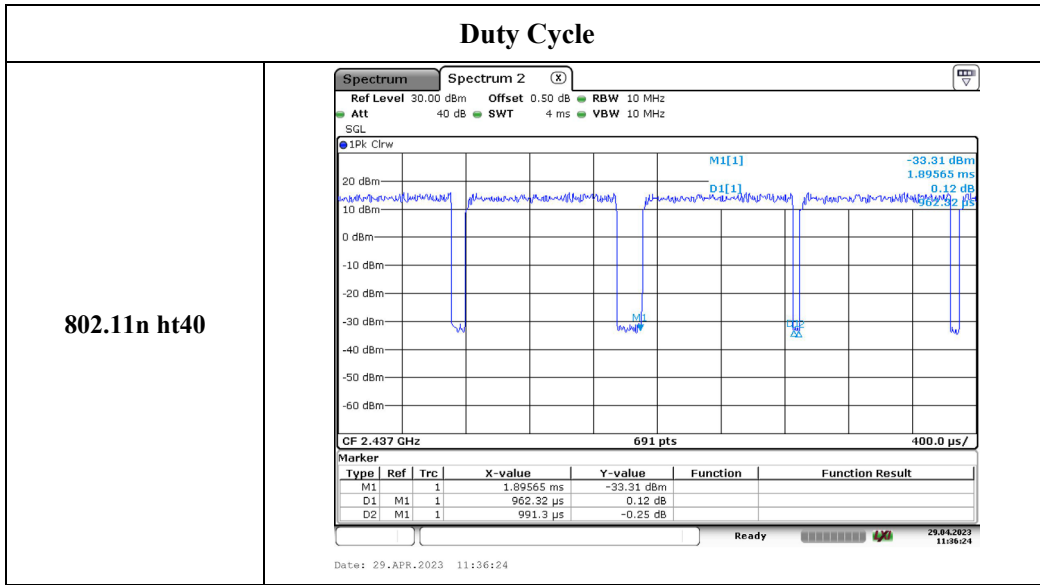


802.11g



802.11n ht20





## 5. RF EXPOSURE EVALUATION

### 5.1 Applicable Standard

FCC §15.247 (i) and subpart §1.1307

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

### 5.2 Procedure

According to §1.1307(b)(3)(i)

(C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least  $\lambda/2\pi$ , where  $\lambda$  is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of  $\lambda/4$  or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	$1,920 R^2$ .
1.34-30	$3,450 R^2/f^2$ .
30-300	$3.83 R^2$ .
300-1,500	$0.0128 R^2f$ .
1,500-100,000	$19.2R^2$ .

### 5.3 Measurement Result

Operation Modes	Frequency (MHz)	$\lambda/2\pi$ (mm)	Distance (mm)	Exemption ERP		Maximum Conducted Power including Tune-up Tolerance (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (mW)	MPE-Based Exemption
				(mW)	(dBm)					
Lora-FHSS	902.3-927.6	52.94	200	462	26.65	6	-1.74	2.11	1.63	Compliant
Lora-DTS	903-926.9	52.90	200	462	26.65	6	-1.74	2.11	1.63	Compliant
WiFi	2412-2462	19.80	200	768	28.85	18	-0.64	15.21	33.19	Compliant

Note: The Maximum Conducted Power including Tune-up Tolerance was declared by manufacturer.

#### Simultaneous transmission:

The Lora-FHSS and Lora-DTS can't transmit simultaneously. WiFi and Lora can transmit simultaneously:

$$\sum_{i=1}^a \left( \frac{P_i}{P_{th-i}} \right) + \sum_{j=1}^b \left( \frac{ERP_j}{ERP_{th-j}} \right) + \sum_{k=1}^c \left( \frac{Evaluated_k}{Exposure Limit_k} \right)$$

$$= ERP_{-WiFi} / RRP_{th-WiFi} + ERP_{-Lora} / ERP_{th-Lora}$$

$$= 33.19 / 768 + 1.63 / 462$$

$$= 0.05$$

**Result: The device compliant the MPE-Based Exemption at 20cm distances.**

**===== END OF REPORT =====**