

Test Report

Test report no.: 25041393-46046-1

Date of issue: 2026-03-11

Test result: The test item - **passed** - and complies with the listed standards.

Applicant

Schrader Electronics Ltd

Manufacturer

Schrader Electronics Ltd

Test Item

BG6FD4

Radio Frequency Testing
according to:

Ministry of Internal Affairs and Communications notification (Japan)
Article 88,
Annex 22-1

Tested by
(name, function, signature)

Piotr Sardyko
Lab Manager


signature

Approved by
(name, function, signature)

Janoschka Sebastian
Head of Department Radio


signature

Applicant and Test item details

Applicant	Schrader Electronics Ltd . 11 Technology Park, Belfast Road, BT41 1QS Antrim, Northern Ireland, UK
Manufacturer	Schrader Electronics Ltd. 11 Technology Park, Belfast Road, BT41 1QS Antrim, Northern Ireland, UK + Sensata Technologies China Co., Ltd. 18 Chuangxin Avenue, Xinbei District, Changzhou 213031, China + Sensata Technologies de Mexico S de RL de CV Av. Aguascalientes Sur # 401, Ex Ejido Salto de Ojocaliente, CP. 20290 Aguascalientes, Mexico + Sensata Technologies Malaysia Sdn Bhd Lot 84, Persiaran Subang Indah, Taman Perindustrian Subang USJ 1, 47600 Subang Jaya, Selangor Darul Ehsan
Test item description	TPMS sensor 433 MHz
Model/Type reference	BG6FD4

Disclaimer and Notes

The content of this report relates to the mentioned test sample(s) only.

IBL-Lab GmbH does not take samples. The samples used for testing are provided by the applicant.

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Signatures are done electronically, if signer does not match stated signer, it is signed per order.

Information supplied by the applicant can affect the validity of results. The data is marked accordingly.

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Within this test report, a ☒ point / ☐ comma is used as a decimal separator.

If otherwise, a detailed note is added adjoined to its use.

Decision rule:

Decision rule based on simple acceptance without guard bands, binary statement, based on mutually agreed uncertainty tolerances with expansion factor k=2.

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2 GENERAL INFORMATION

2.1 Administrative details

Testing laboratory	IBL-Lab GmbH Heinrich-Hertz-Allee 7 66386 St. Ingbert / Germany Fon: +49 6894 38938-0 Fax: +49 6894 38938-99 URL: https://ib-lenhardt.com/ E-Mail: info@ib-lenhardt.com
Testing location	IBL-Lab GmbH Heinrich-Hertz-Allee 7 66386 St. Ingbert / Germany
Date of receipt of test samples	2026-01-26
Start – End of tests	2026-01-29 - 2026-02-06

2.2 Possible test case verdicts

Test sample meets the requirements	P (PASS) – the measured value is below the acceptance limit, AL = TL
Test sample does not meet the requirements	F (FAIL) – the measured value is above the acceptance limit, AL = TL
Test case does not apply to the test sample	N/A (Not applicable)
Test case not performed	N/P (Not performed)

2.3 Observations

No additional observations other than the reported observations within this test report have been made.

2.4 Opinions and Interpretations

No appropriate opinions or interpretations according ISO/IEC 17025:2017 clause 7.8.7 are within this test report.

2.5 Revision History

-0: Initial version

Page: 8	Reason: Additional Information was added in Table 5.8. It was empty before.
Page: 26	Reason: Test equipment description was corrected.
Original Value / Entry	Revised Value / Entry
Conducted. Please see Chapter 8.	Set-up 15-18: Radiated. Please see Chapter 8. Set-up 1, 3, 5, 7: Conducted. Please see Chapter 8.

This test report 25041393-46046-1 replaces the previous test report 25041393-46046-0. Utilisation, publication and control of previous report editions is under responsibility of the applicant.

2.6 Further documents

List of further applicable documents belonging to the present test report:
None

3 ENVIRONMENTAL & TEST CONDITION

3.1 Environmental conditions of lab

Temperature	20°C
Relative humidity	25-75 % r.H.
Barometric Pressure	860-1060 mbar

4 TEST STANDARDS AND REFERENCES

Test standard

Ministry of Internal Affairs and Communications notification (Japan)
Article 88,
Annex 22-1

Reference	Description
none	---

5 EQUIPMENT UNDER TEST (EUT)

5.1 Product Description*

The BG6FD4 is a Tyre Pressure Monitoring Sensor which is installed with a valve stem on the tyre of a vehicle. The product measures periodically the pressure of the tyre and it transmits this information by RF communication to a receiver inside the vehicle. In addition, this TPMS product performs the following functions:

- Determines a temperature compensated pressure value.
- Determines any abnormal pressure variations.
- Monitors the state of the product internal battery and informs the receiver of a lowbattery condition.

*: declared by the applicant

5.2 Technical Data of Equipment*

Number of channel:	1
Channel tested:	433.92 MHz
Max output power:	-10 dBm = 0.1 mW
RF mode:	TX
Modulation mode:	FSK and ASK
Antenna Type:	Internal
Antenna gain:	-26.8 dBi
Antenna connector:	None
Equipment type:	Production model
Temperature range:	Tmin: -40 °C, Tmax: 120 °C
Type of power source:	3 V battery
Test source voltage:	Vmin: 2.7 VDC, Vnom: 3 VDC, Vmax: 3.3 VDC

*: declared by the applicant

5.3 Test Item (Equipment Under Test) Description*

Short designation	EUT Model	EUT Description	Serial number	Hardware status	Software status
EUT A	BG6FD4 Faraday, LF coil rotated	TPMS (external DC power supply, conducted sample, red dot)	70001064	04	0X100D0X00700103
EUT B	BG6FD4 Delta, LF coil rotated	TPMS (external DC power supply, conducted sample, red dot)	700010E3	04	0X100D0X00700103
EUT C	BG6FD4 Delta, standard PCB	TPMS (external DC power supply, conducted sample, blue dot)	5000C209	04	0X100D0X00700103
EUT D	BG6FD4 Faraday, standard PCB	TPMS (external DC power supply, conducted sample, blue dot)	5000C37C	04	0X100D0X00700103
EUT E	BG6FD4 Faraday, standard PCB	TPMS (radiated sample, green dot)	8002AA3D	04	0X100D0X00700103
EUT F	BG6FD4 Delta, standard PCB	TPMS (radiated sample, green dot)	8002A7B0	04	0X100D0X00700103
EUT G	BG6FD4 Faraday, LF coil rotated	TPMS (radiated sample, red dot)	70001114	04	0X100D0X00700103
EUT H	BG6FD4 Delta, LF coil rotated	TPMS (radiated sample, red dot)	700010E6	04	0X100D0X00700103
EUT I	BG6FD4 Faraday, standard PCB	TPMS (radiated sample, blue dot)	5000C347	04	0X100D0X00700103

EUT J	BG6FD4 Delta, standard PCB	TPMS (radiated sample, blue dot)	5000C541	04	0X100D0X00700103
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*: declared by the applicant

5.4 Auxiliary Equipment (AE) Description*

AE short designation	EUT Name (if available)	EUT Description	Serial number (if available)	Software (if used)
AE1	EMC mode for LF coil rotated EUTs	LF trigger tool	-	-
AE2	CW high mode for LF coil rotated EUTs	LF trigger tool	-	-
AE3	Long Protocol mode for LF coil rotated EUTs	LF trigger tool	-	-
AE4	Force Drive mode for LF coil rotated EUTs	LF trigger tool	-	-
AE5	EMC mode for standard PCB EUTs	LF trigger tool	-	-
AE6	CW high mode for standard PCB EUTs	LF trigger tool	-	-
AE7	Learn mode for EUT E and F	LF trigger tool	-	-

*: declared by the applicant

5.5 Test Item Operating Modes Description*

EUT operating mode no.	Description of operating modes	Additional information
op. 1	EMC mode	LF coil rotated: The sensor will transmit a block (400ms) of 3 FSK frames every 6sec. Sensor will transmit for 60 minutes. Standard PCB: The sensor will transmit a block (400ms) of 4 FSK frames every 3 sec. Sensor will transmit for 60 minutes.
op. 2	CW High	The sensor would transmit a constant tone at 433.92MHz MHz for 10 minutes.
op. 3	Long Protocol	LF coil rotated: The sensor will transmit a block (475ms) of 4 FSK frames (40ms) every 15 sec. Standard PCB: The sensor will transmit a block (475ms) of 4 FSK frames (40ms) every 17 sec.
op. 4	Force Drive	LF coil rotated: The sensor will transmit a block (690ms) of 7 FSK frames every 60 sec. Sensor will transmit for 60 minutes Standard PCB: The sensor will transmit a block (320ms) of 4 FSK frames every 60 sec. Sensor will transmit for 60 minutes
op. 5	Learn mode	The sensor will transmit an ASK Burst (50ms) + 3 FSK (7ms) 4 times in a block. The LF tool has been modified to allow repeated activation for 1 hour (can be stopped using the switch)

*: declared by the applicant

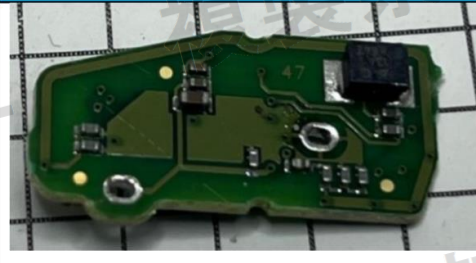
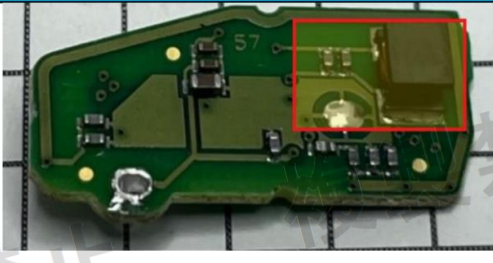
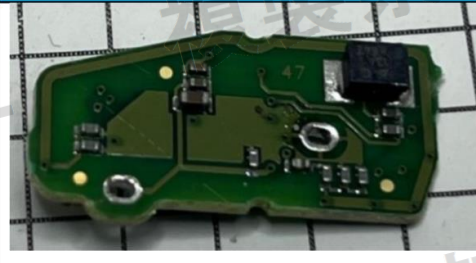
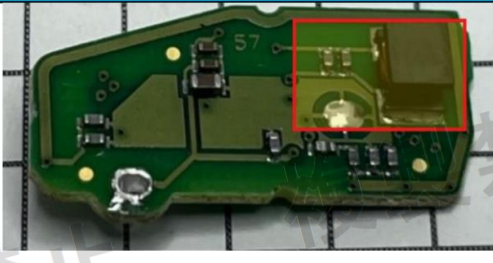
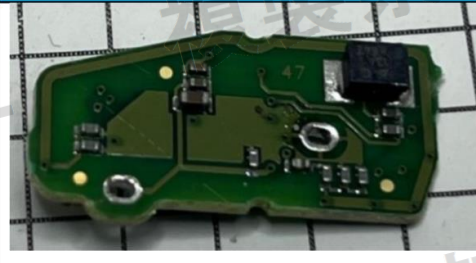
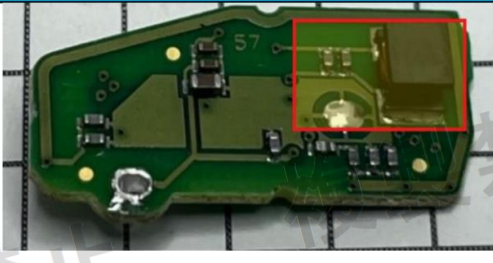
5.6 Test Item Set-ups Description

set. 1	EUT A + AE 1	Tested conducted.
set. 2	EUT A + AE 2	Tested conducted.
set. 3	EUT B + AE 1	Tested conducted.
set. 4	EUT B + AE 2	Tested conducted.
set. 5	EUT C + AE 5	Tested conducted.
set. 6	EUT C + AE 6	Tested conducted.
set. 7	EUT D + AE 5	Tested conducted.
set. 8	EUT D + AE 6	Tested conducted.
set. 9	EUT A + AE 3	Tested conducted.
set. 10	EUT A + AE 4	Tested conducted.
set. 11	EUT B + AE 3	Tested conducted.
set. 12	EUT B + AE 4	Tested conducted.
set. 13	EUT E + AE 7	Tested with test fixture.
set. 14	EUT F + AE 7	Tested with test fixture.
set. 15	EUT G + AE 2	Tested radiated.
set. 16	EUT H + AE 2	Tested radiated.
set. 17	EUT I + AE 6	Tested radiated.
set. 18	EUT J + AE 6	Tested radiated.

5.7 Normal test conditions

Temperatur, [°C]		Voltage, [V]	
Tnom	20	Vmin	2.7
		Vnom	3
		Vmax	3.3

5.8 Additional Information

Test items differences	None				
Additional application considerations to test a component or sub-assembly	Two sets of EUTs were tested: standard and alternative (LF coil rotated) design: <table border="1"> <thead> <tr> <th>Standard design</th><th>Alternative design</th></tr> </thead> <tbody> <tr> <td></td><td></td></tr> </tbody> </table> Please see EUT model information in table 5.3. to distinguish the designs. Here is the information provided by the applicant to these two designs: “PCB. We have a standard pcb design used for the vast majority of our customers and an alternative pcb design with a small change. The only difference is that the LF circuitry is rotated 90 degrees (the components are the same). The LF circuitry is only being used to receive the LF signals from the LF tool (the tool that you use to change the operational mode of the product, for example, CW mode, EMC Mode, etc) therefore it has no impact in our RF transmission/parameters.” Each set of EUTs is represented with two different mechanical packages- Faraday and Delta:	Standard design	Alternative design		
Standard design	Alternative design				
					

Faraday	Delta
	
Please see EUT model information in table 5.3. to distinguish the mechanical packages. Output power and Output power tolerance test and Transmitter Spurious Emissions test were done for both designs and both mechanical packages with CW signal (Op. 2). Frequency Allocations and Occupied Bandwidth test was done at first for both designs and both mechanical packages with FSK mode (Op. 1). For Frequency Allocations and Occupied Bandwidth test FSK mode is a "worst case" in comparison with ASK mode (the OBW of FSK mode is also higher). No significant differences were seen for both designs and both mechanical packages with FSK mode for Frequency Allocations and Occupied Bandwidth test. Also Output power and Output power tolerance test didn't show significant differences. Thus, Frequency Allocations and Occupied Bandwidth test for ASK mode was done only with standard design set with both mechanical packages.	

6 SUMMARY OF TEST RESULTS

Test specification

Ministry of Internal Affairs and Communications notification (Japan)
Article 88,
Annex 22-1

Requirement / Test Case	Voltage	Set-up	Operating mode	Result / Remark	Verdict
Transmitter requirement:					
Output power and Output power tolerance	Min, nom, max	2,4,6,8	2	None	Pass
Frequency Allocations and Occupied Bandwidth	Min, nom, max	1,3,5,7,13,14	1,5	None	Pass
Transmitter Spurious Emissions	Min, nom, max	2,4,6,8, 15-18	2	None	Pass
Secondary radiated Emissions Strength	Min, nom, max	-	-	The EUT works only in Tx mode	N/A
Restriction Function of Transmission Time	Nom	9-12	3-4	None	Pass

Notes

None

Comments and observations

None

7 TEST RESULTS

7.1 Output power and Output power tolerance

Test equipment (Please see Chapter 8 for exact information of test equipment)

Conducted. Please see Chapter 8.

Description

The measurement was done conducted.

Please see photos in Annex B for test Set-up.

Please see measurement plots below for spectrum analyzer settings.

Limits:

Limits:

Output Power:

1 mW (0 dBm)

Power Tolerance:

Upper Limit +20 %

Results: Pass*.

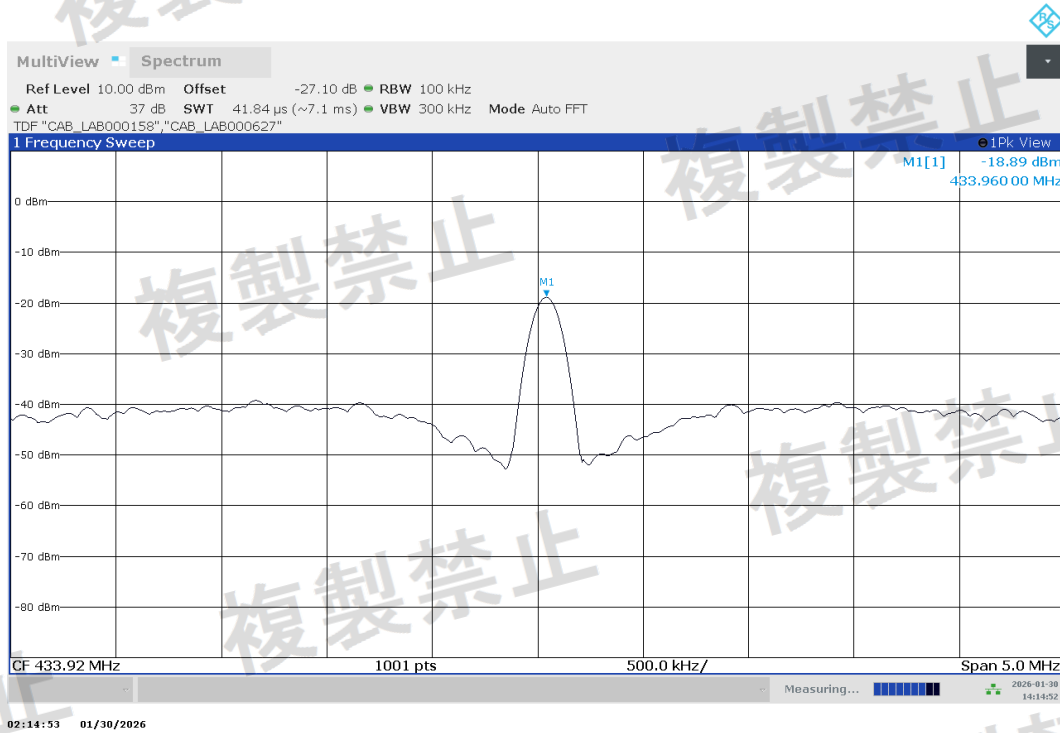
Op./ Set.	Condi- tions	Measured Power Level + CorFac = 0.3 dB		Declared Level		Power tolerance, [%]	Verdict
		[dBm]	[mW]	[dBm]	[mW]		
Set.2, Op. 2	Vnom	-18.59	0.0138435	-10	0.1	-86.16	Pass
Set.2, Op. 2	Vmin	-19.86	0.0103332	-10	0.1	-89.67	Pass
Set.2, Op. 2	Vmax	-17.69	0.0170046	-10	0.1	-83.00	Pass
Set.4, Op. 2	Vnom	-18.54	0.0140059	-10	0.1	-85.99	Pass
Set.4, Op. 2	Vmin	-19.81	0.0104488	-10	0.1	-89.55	Pass
Set.4, Op. 2	Vmax	-17.63	0.0172772	-10	0.1	-82.72	Pass
Set.6, Op. 2	Vnom	-18.88	0.0129351	-10	0.1	-87.06	Pass
Set.6, Op. 2	Vmin	-20.14	0.0096768	-10	0.1	-90.32	Pass
Set.6, Op. 2	Vmax	-17.98	0.0159375	-10	0.1	-84.06	Pass
Set.8, Op. 2	Vnom	-18.75	0.0133245	-10	0.1	-86.68	Pass
Set.8, Op. 2	Vmin	-20.02	0.0099576	-10	0.1	-90.04	Pass
Set.8, Op. 2	Vmax	-17.90	0.0162254	-10	0.1	-83.77	Pass

* Please see measurement plots below.

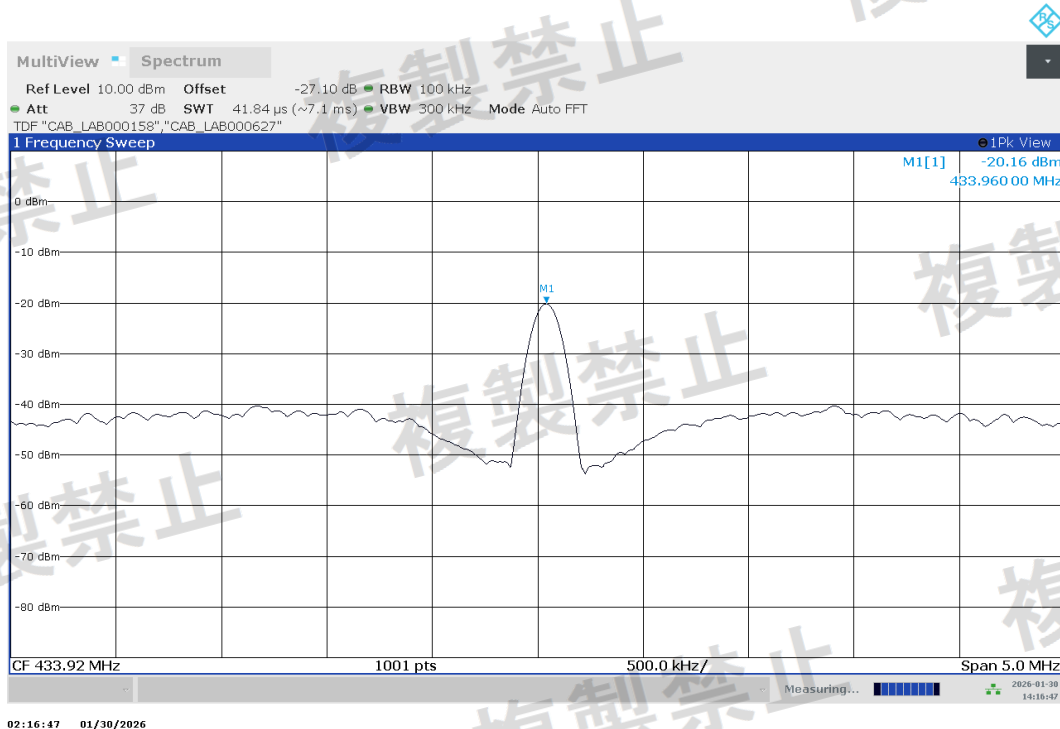
TR no.: 25041393-46046-1

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7.1.1 Tnom/Vnom, Set-up 2, Op. 2



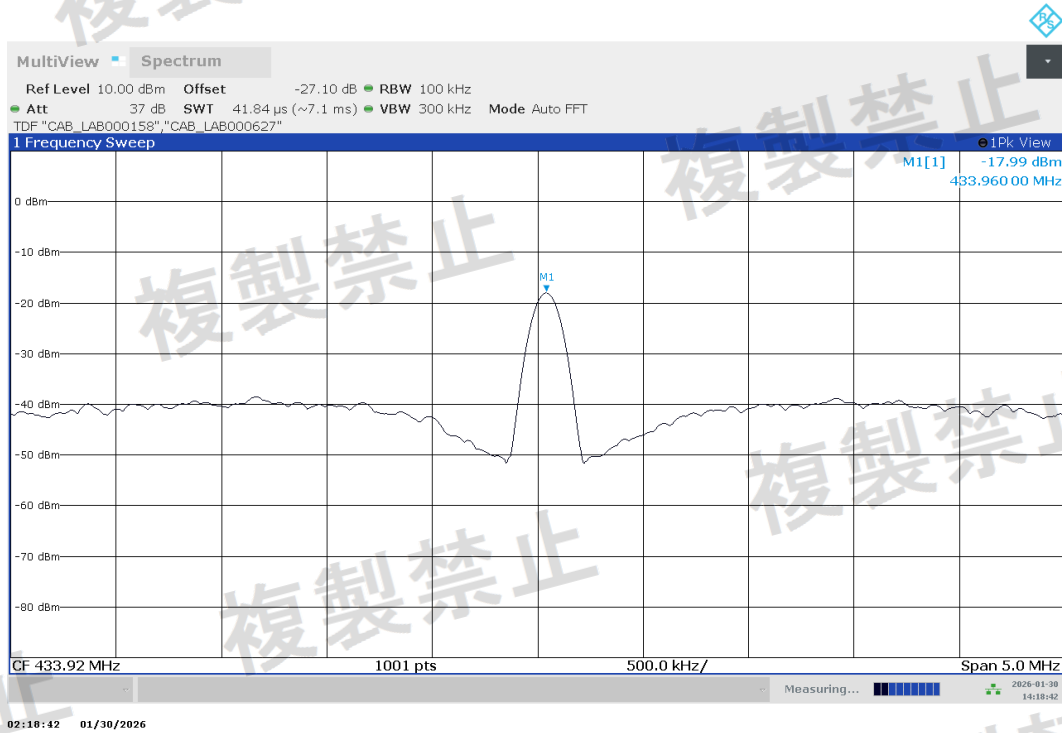
7.1.2 Tnom/Vmin, Set-up 2, Op. 2



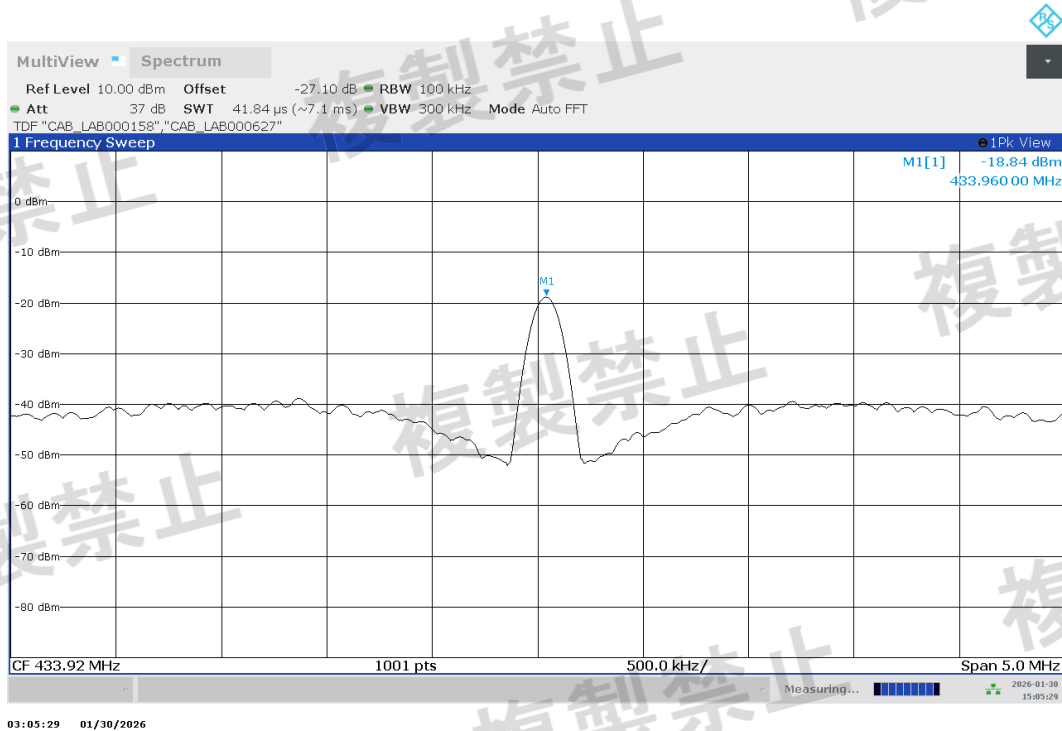
TR no.: 25041393-46046-1

2026-03-11

7.1.3 Tnom/Vmax, Set-up 2, Op. 2



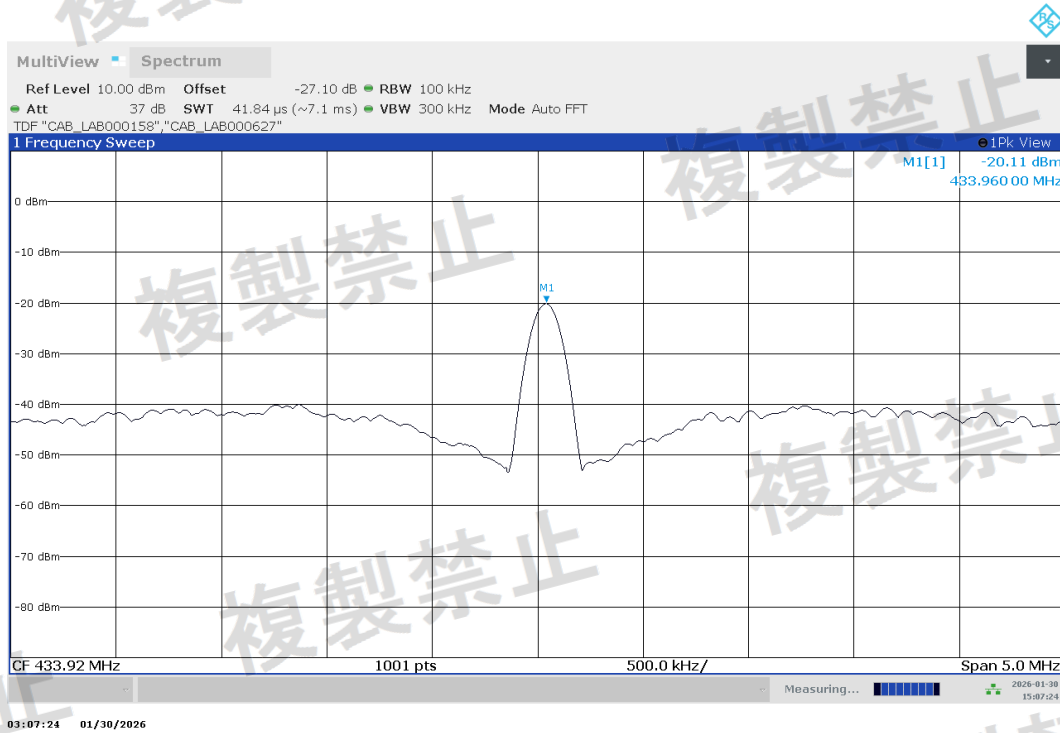
7.1.4 Tnom/Vnom, Set-up 4, Op. 2



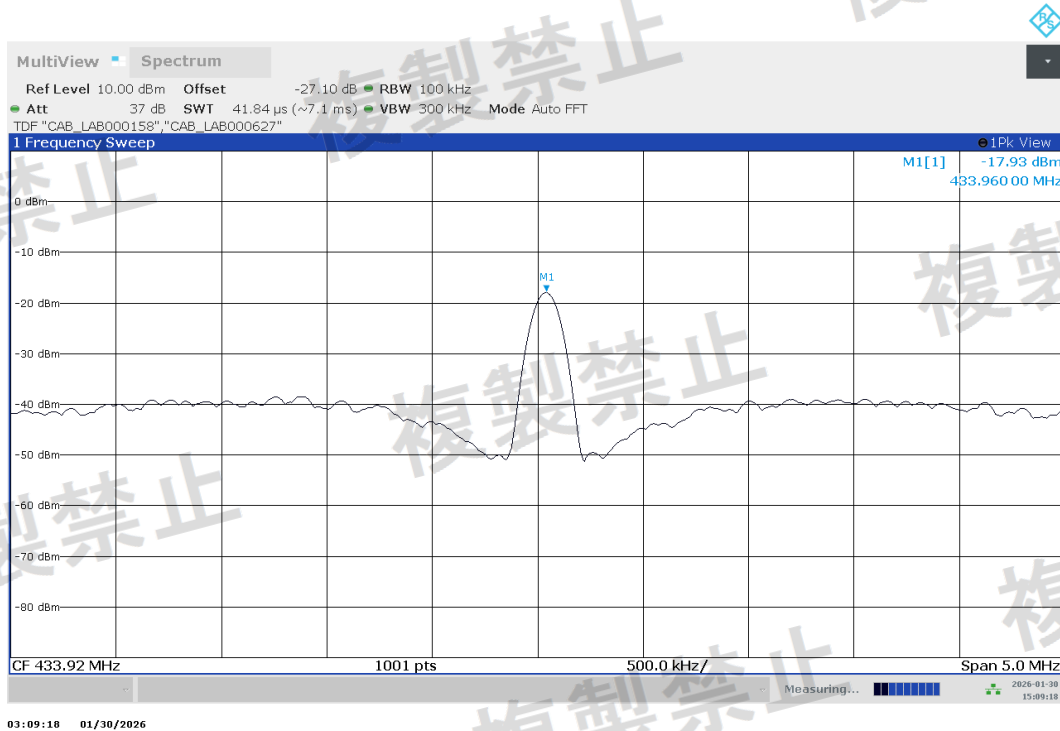
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7.1.5 Tnom/Vmin, Set-up 4, Op. 2



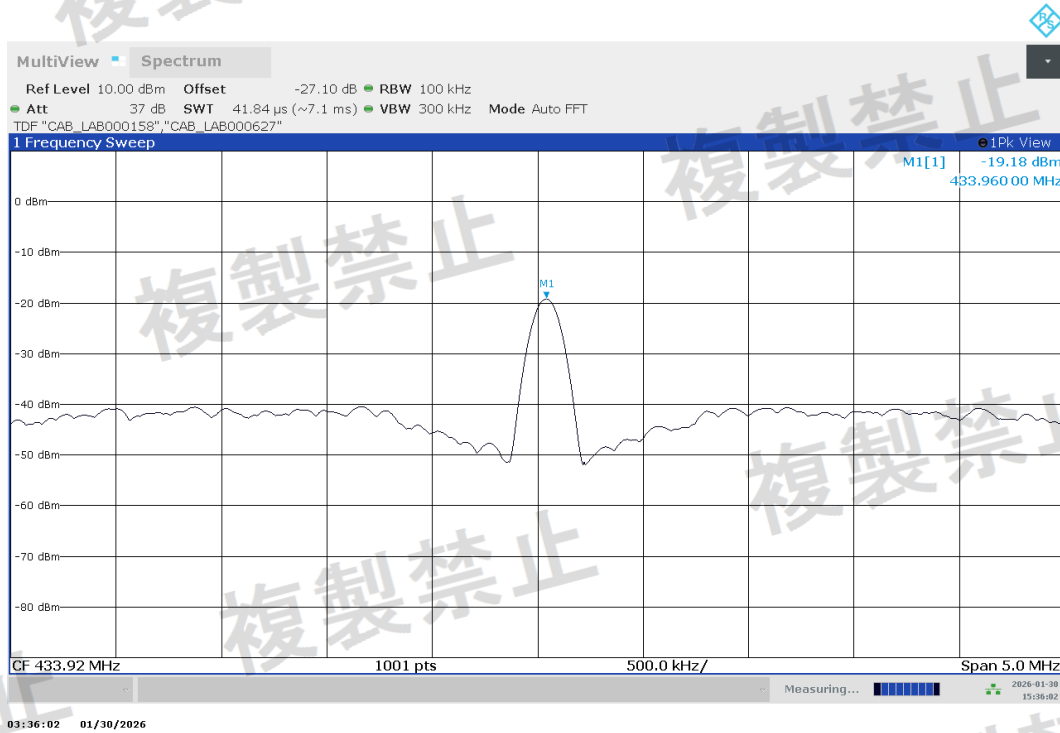
7.1.6 Tnom/Vmax, Set-up 4, Op. 2



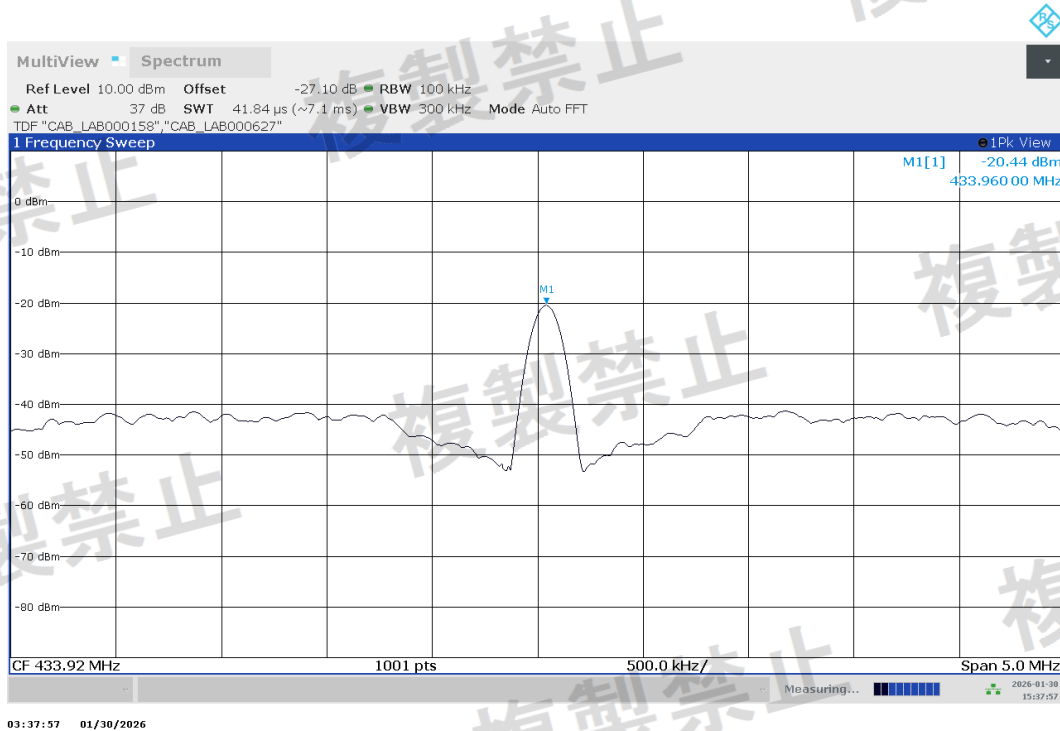
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7.1.7 Tnom/Vnom, Set-up 6, Op. 2



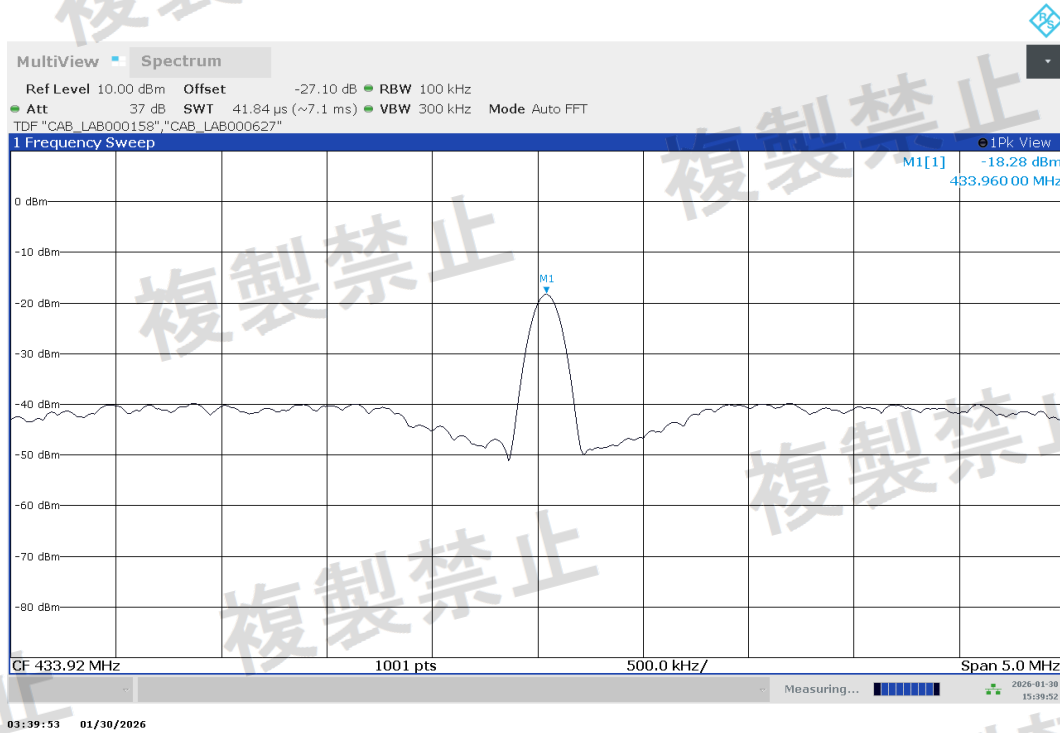
7.1.8 Tnom/Vmin, Set-up 6, Op. 2



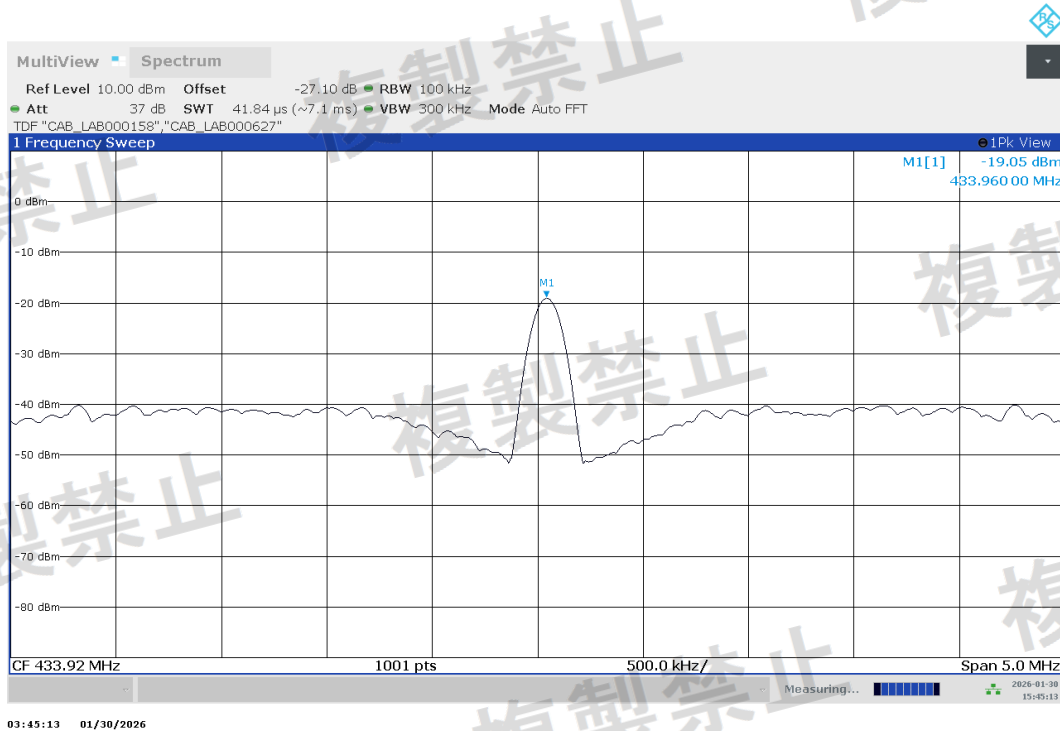
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7.1.9 Tnom/Vmax, Set-up 6, Op. 2



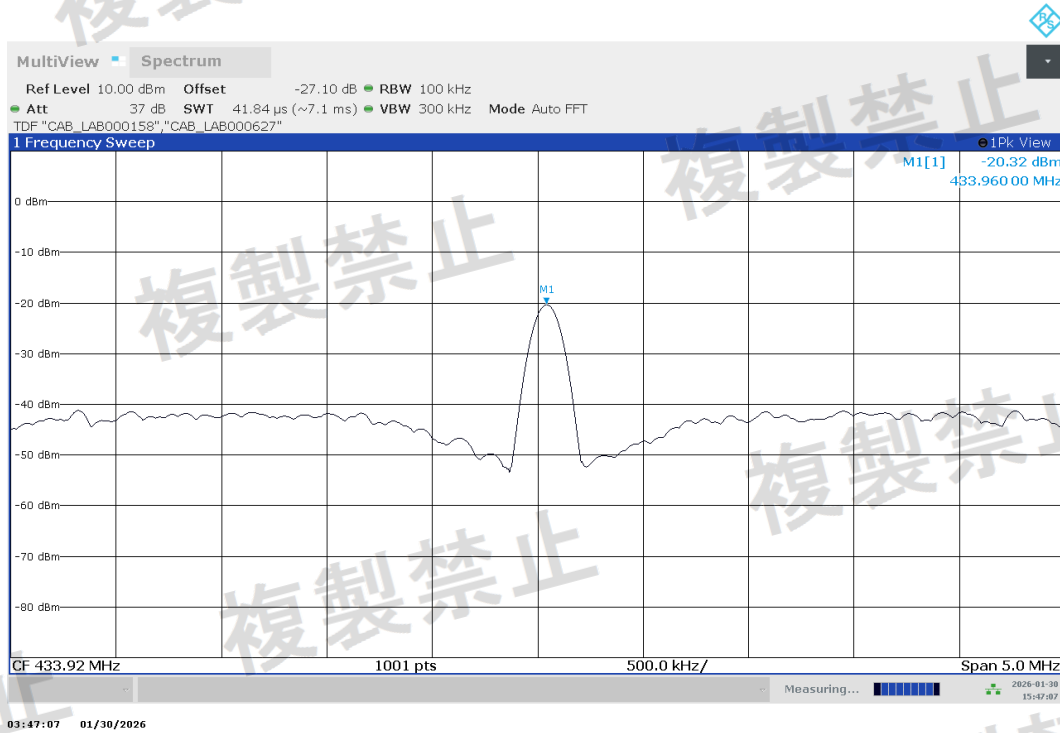
7.1.10 Tnom/Vnom, Set-up 8, Op. 2



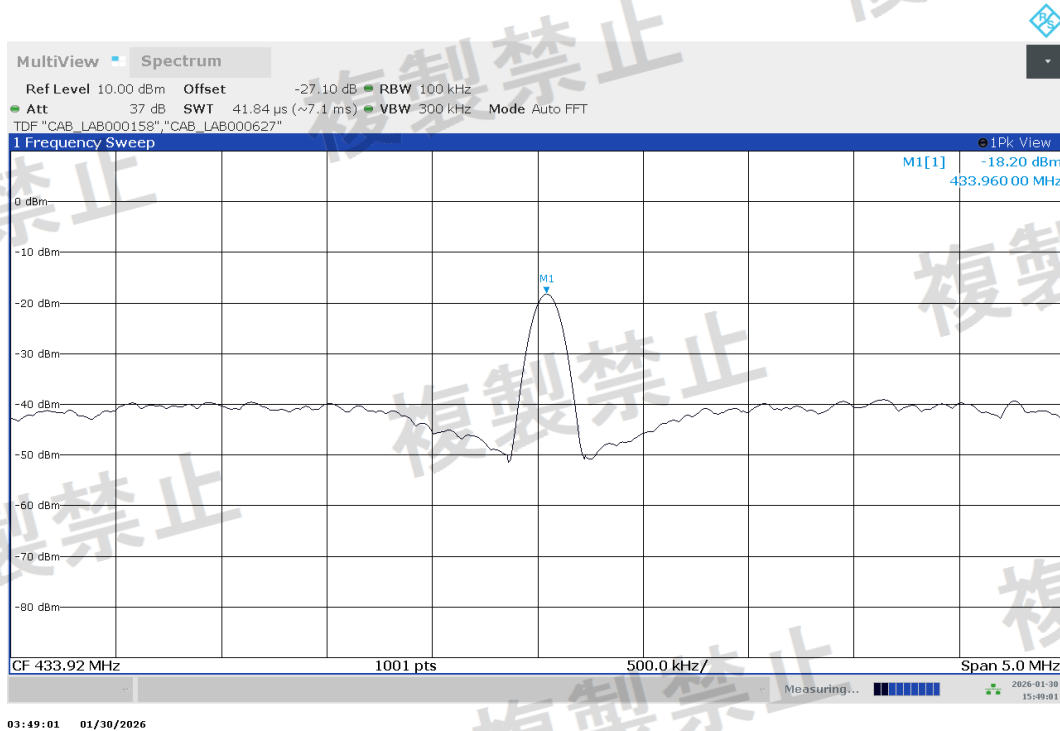
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7.1.11 Tnom/Vmin, Set-up 8, Op. 2



7.1.12 Tnom/Vmax, Set-up 8, Op. 2



7.2 Occupied Bandwidth

Test equipment (Please see Chapter 8 for exact information of test equipment)

Conducted. Please see Chapter 8.

Description

The measurement was done conducted.
Please see photos in Annex B for test Set-up.
Please see measurement plots below for spectrum analyzer settings.

Limits:

Limits:
Frequency allocations in 433.92MHz (433.795~434.045MHz)
Occupied bandwidth below 250 kHz or less.

Results*

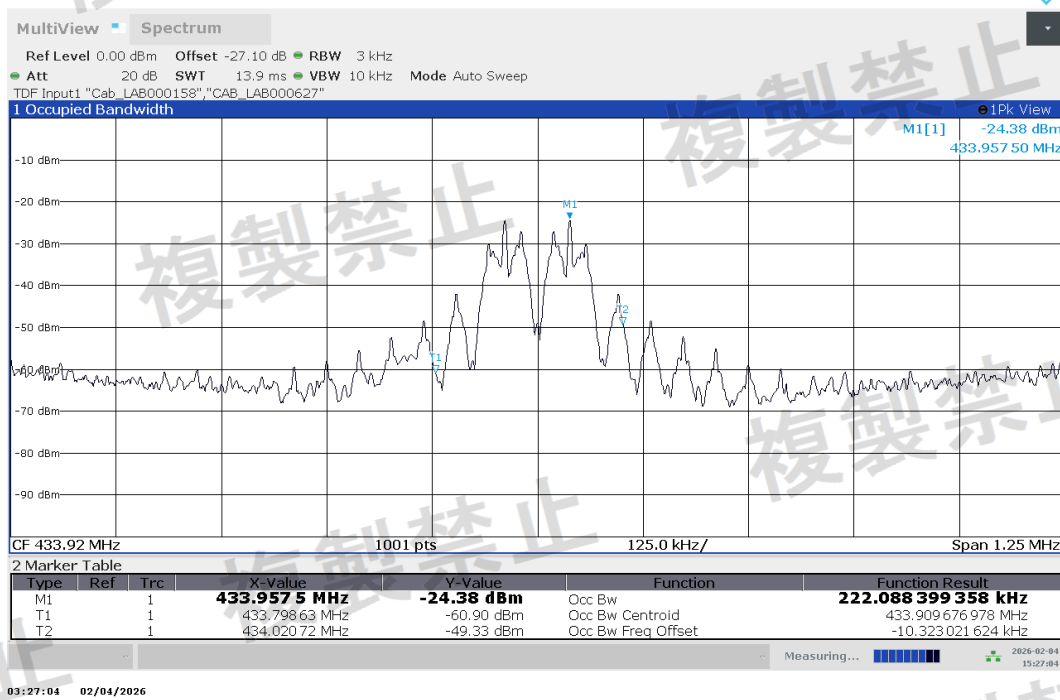
Op./ Set.	Conditions	Detector	F _{low} 99 % OBW, [MHz]	F _{high} 99 % OBW, [MHz]	99 % OBW, [kHz]	Verdict
Set.1, Op. 1	Vnom	Peak	433.798633	434.0207212	222.088	Pass
Set.1, Op. 1	Vmin	Peak	433.817989	434.0206601	202.671	Pass
Set.1, Op. 1	Vmax	Peak	433.817494	434.0213889	203.895	Pass
Set.3, Op. 1	Vnom	Peak	433.818869	434.0193041	200.436	Pass
Set.3, Op. 1	Vmin	Peak	433.817455	434.0203189	202.864	Pass
Set.3, Op. 1	Vmax	Peak	433.81767	434.0211211	203.451	Pass
Set.5, Op. 1	Vnom	Peak	433.827254	434.02149	194.236	Pass
Set.5, Op. 1	Vmin	Peak	433.823993	434.02293	198.937	Pass
Set.5, Op. 1	Vmax	Peak	433.826491	434.022598	196.107	Pass
Set.7, Op. 1	Vnom	Peak	433.817397	434.027047	209.65	Pass
Set.7, Op. 1	Vmin	Peak	433.823825	434.026128	202.303	Pass
Set.7, Op. 1	Vmax	Peak	433.825732	434.027692	201.96	Pass
Set.14, Op. 5	Vnom/min/max	Peak	433.82527	434.01962	194.35	Pass
Set.13, Op. 5	Vnom/min/max	Peak	433.81093	434.03038	219.45	Pass

* Please see measurement plots below.

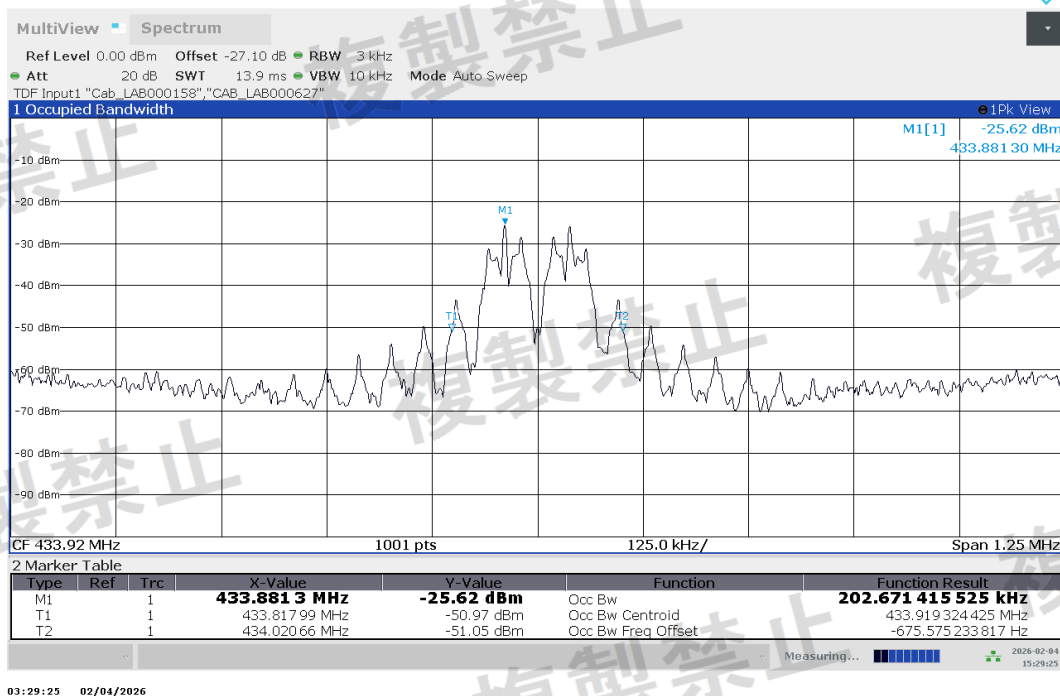
TR no.: 25041393-46046-1

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7.2.1 Tnom/Vnom, Set-up 1, Op. 1



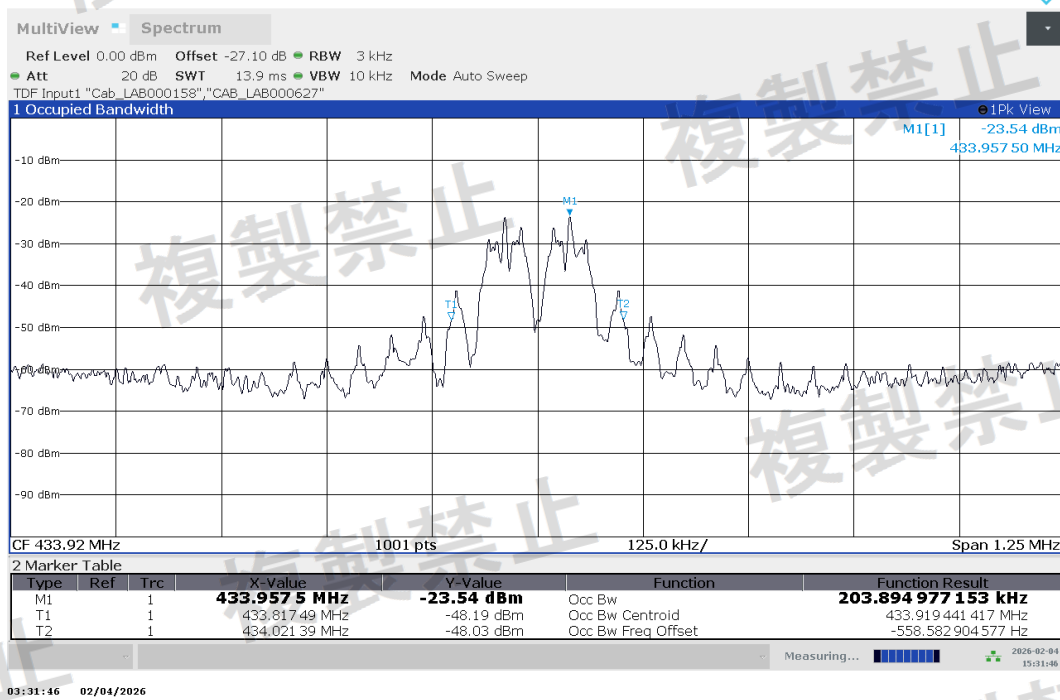
7.2.2 Tnom/Vmin, Set-up 1, Op. 1



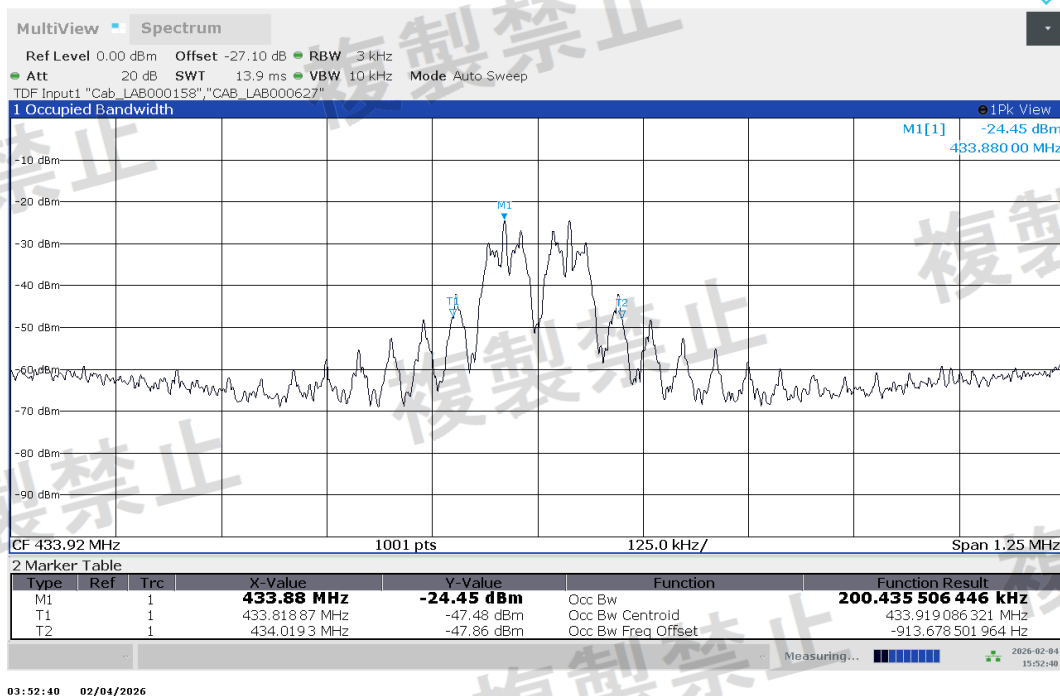
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7.2.3 Tnom/Vmax, Set-up 1, Op. 1



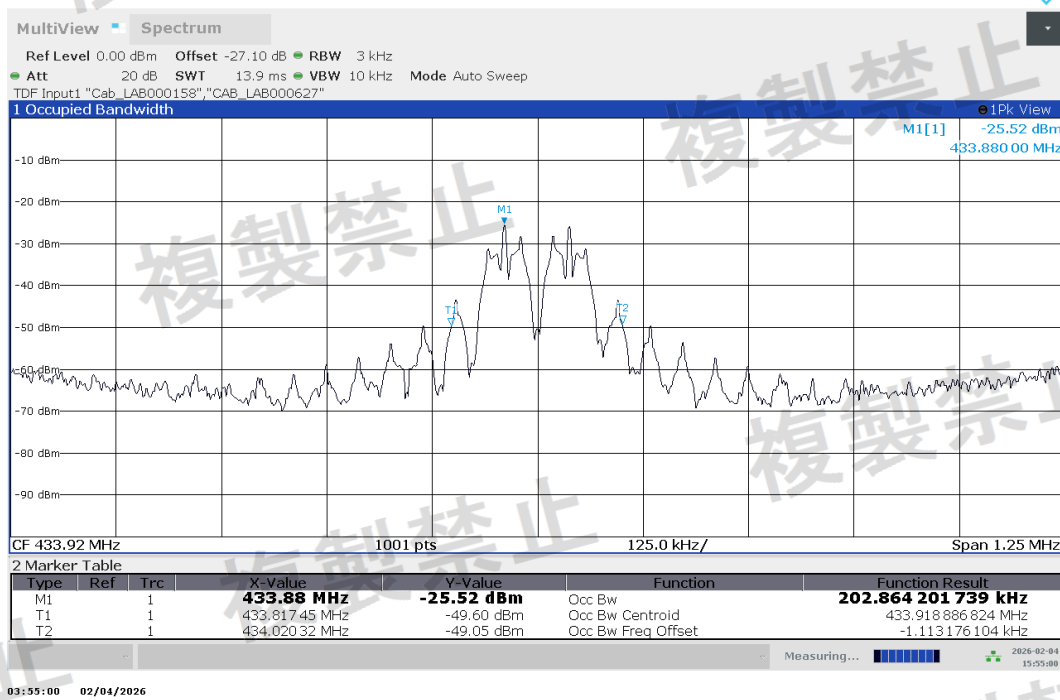
7.2.4 Tnom/Vnom, Set-up 3, Op. 1



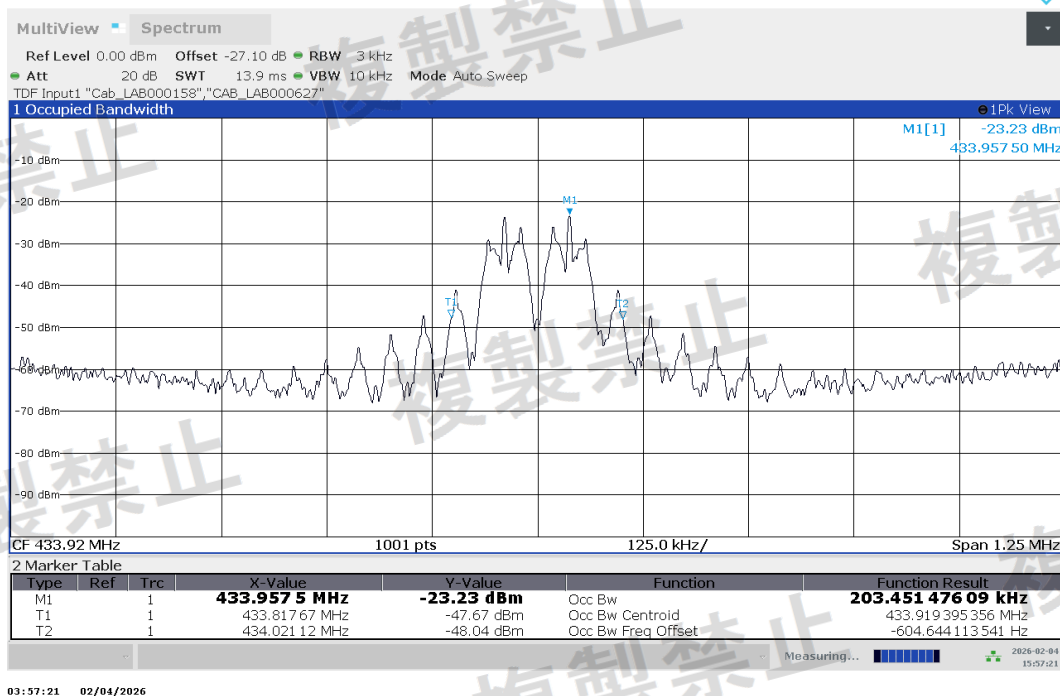
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7.2.5 Tnom/Vmin, Set-up 3, Op. 1



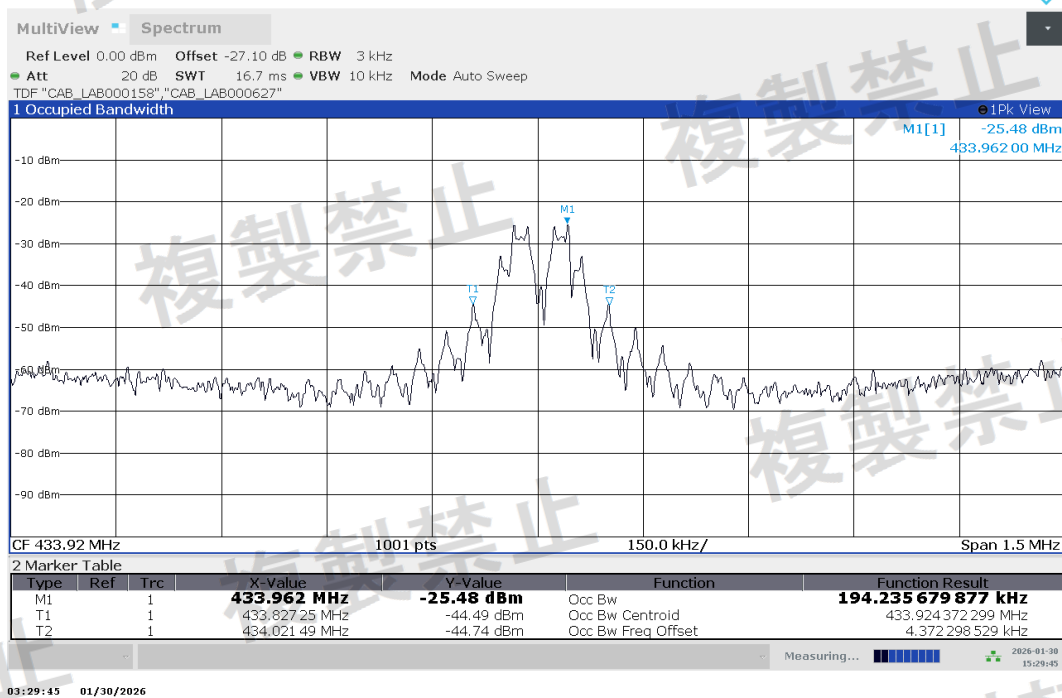
7.2.6 Tnom/Vmax, Set-up 3, Op. 1



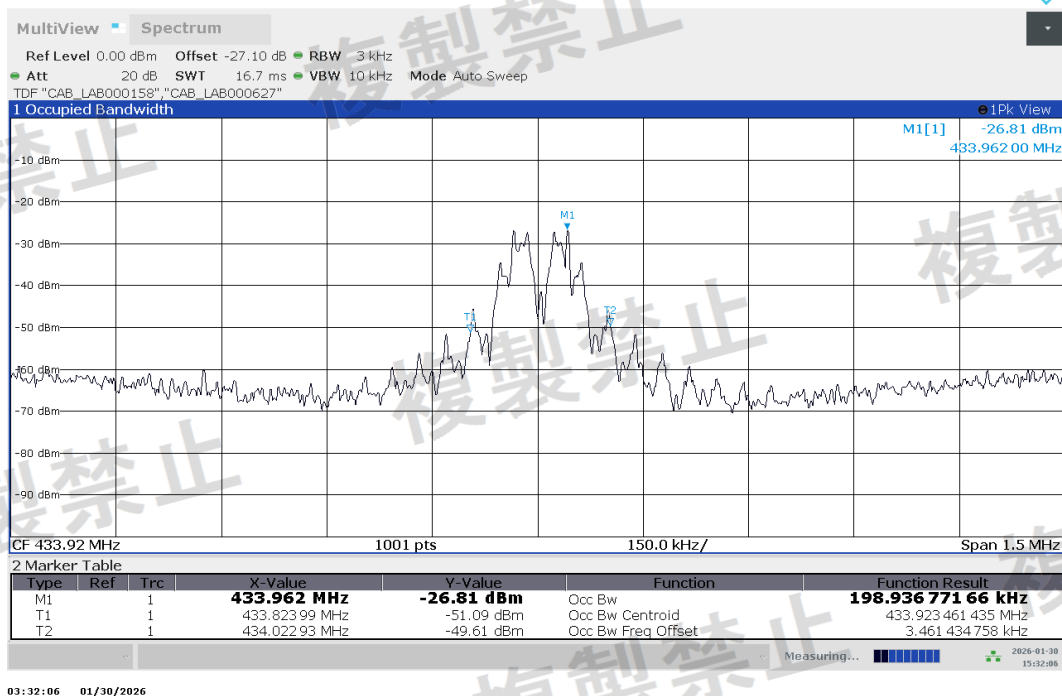
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7.2.7 Tnom/Vnom, Set-up 5, Op. 1



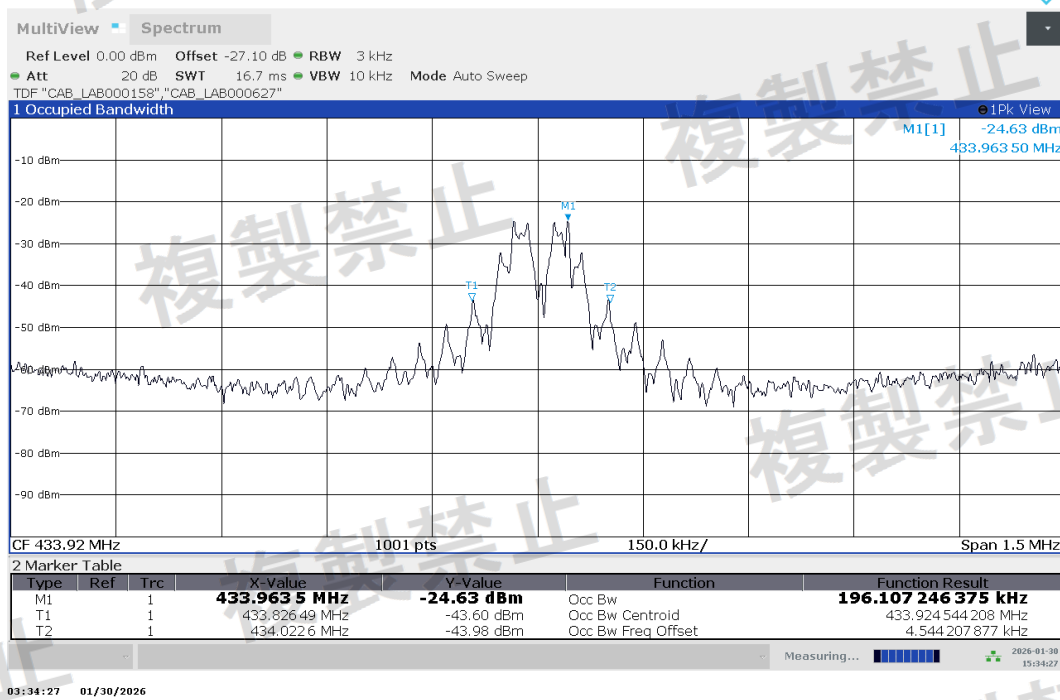
7.2.8 Tnom/Vmin, Set-up 5, Op. 1



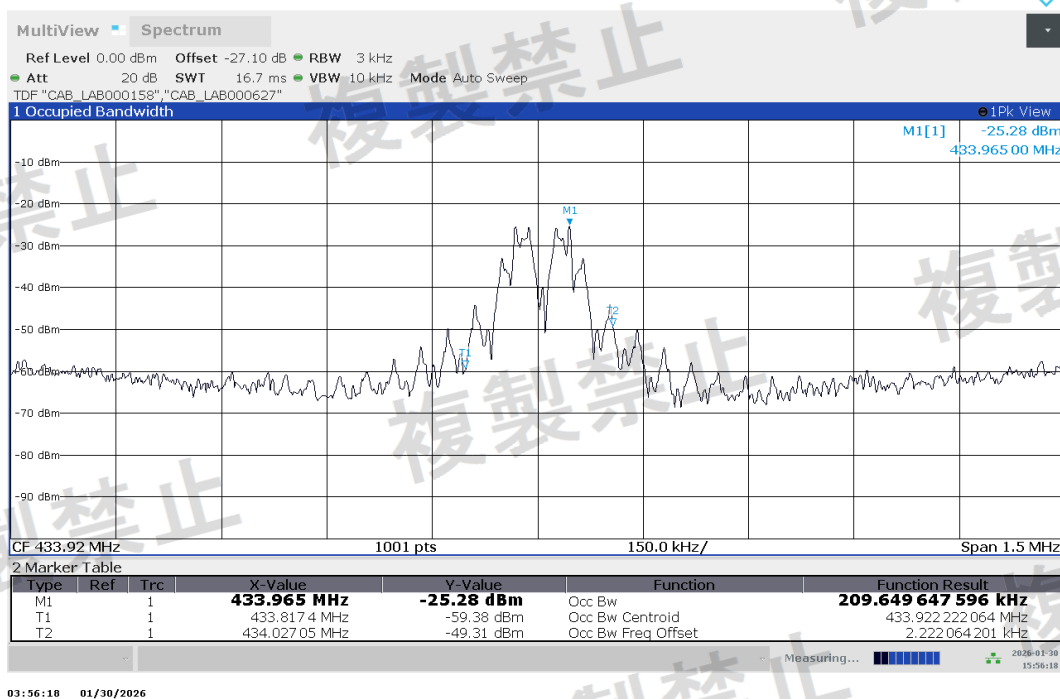
TR no.: 25041393-46046-1

2026-03-11

7.2.9 Tnom/Vmax, Set-up 5, Op. 1



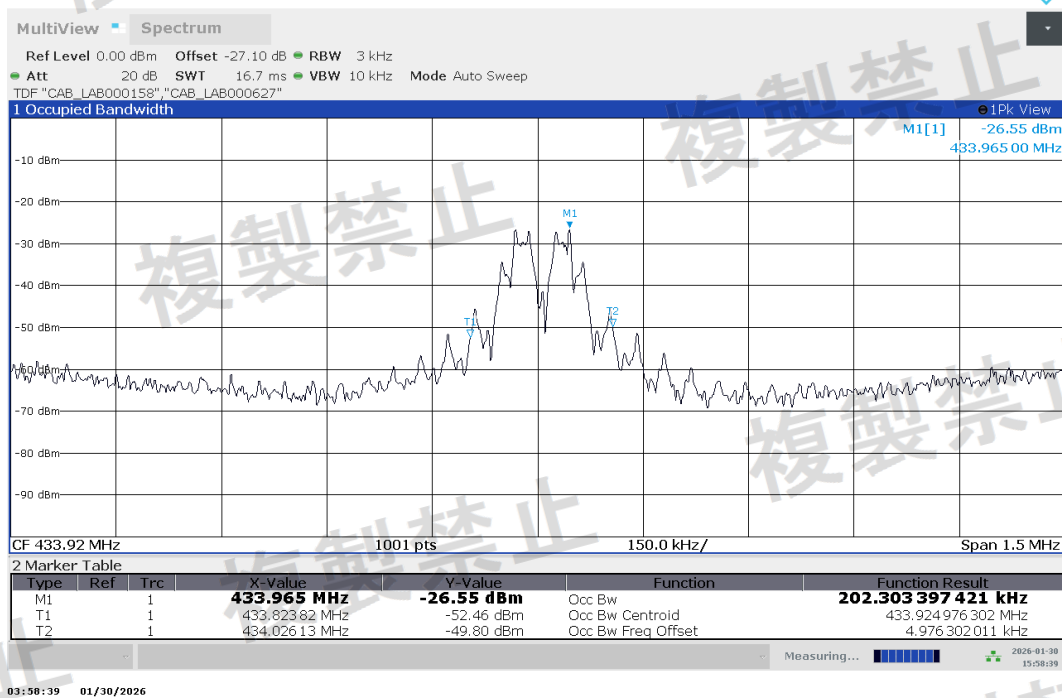
7.2.10 Tnom/Vnom, Set-up 7, Op. 1



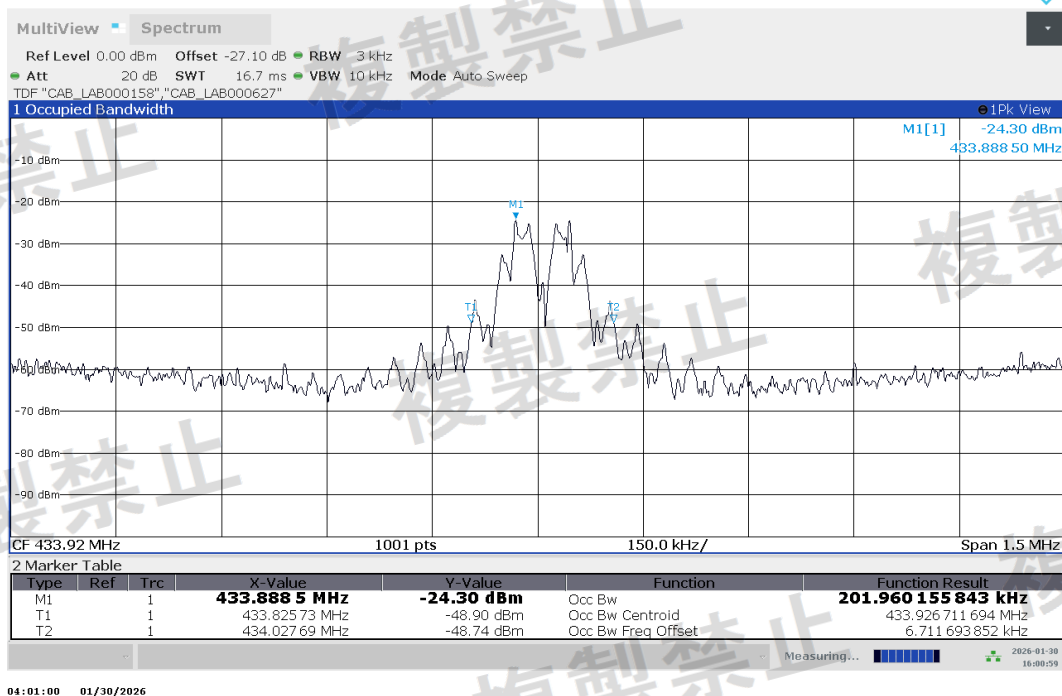
TR no.: 25041393-46046-1

2026-03-11

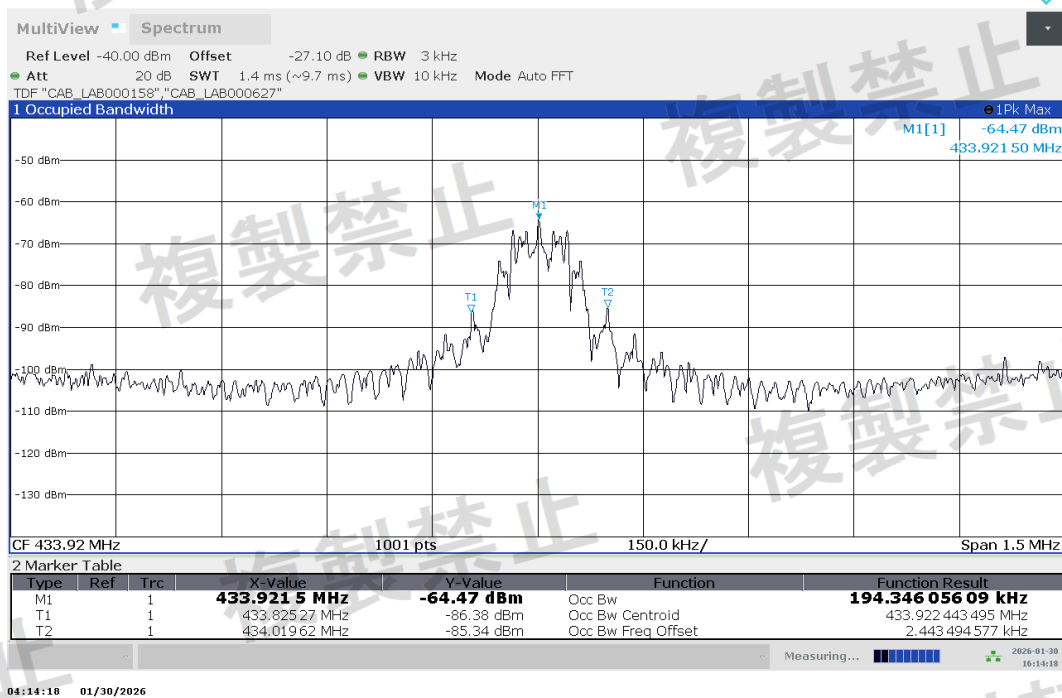
7.2.11 Tnom/Vmin, Set-up 7, Op. 1



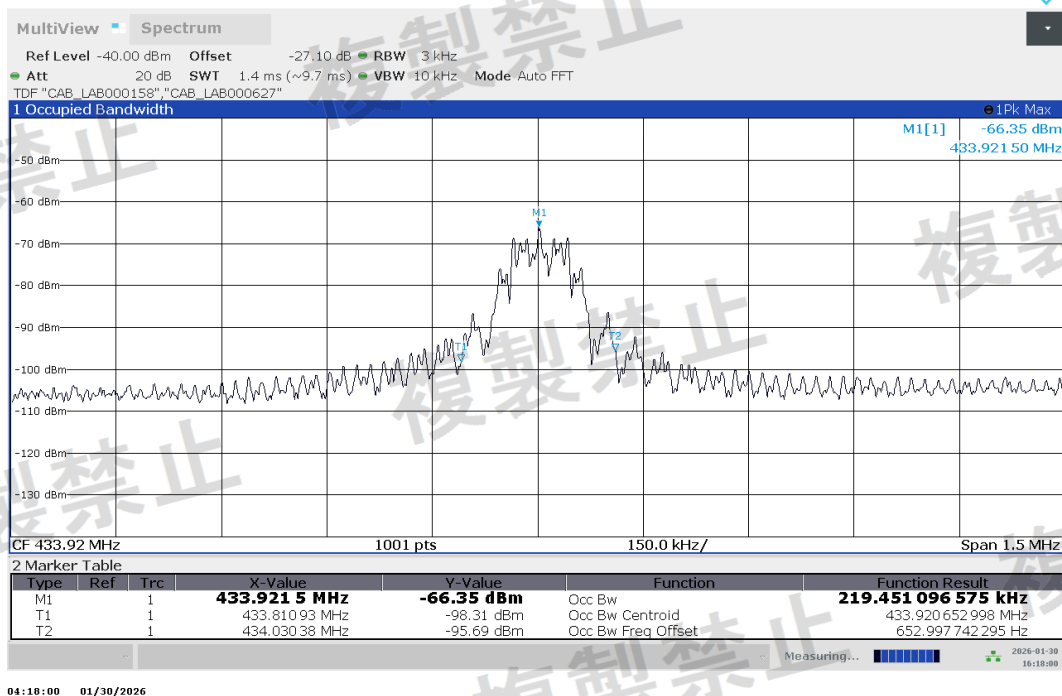
7.2.12 Tnom/Vmax, Set-up 7, Op. 1



7.2.13 Tnom/ Vnom/min/max, Set-up 14, Op. 5



7.2.14 Tnom/ Vnom/min/max, Set-up 13, Op. 5



7.3 Transmitter Spurious Emissions

Test equipment (Please see Chapter 8 for exact information of test equipment)

Set-up 15-18: Radiated. Please see Chapter 8.

Set-up 1, 3, 5, 7: Conducted. Please see Chapter 8.

Description

The measurement was done radiated for frequency range 30 MHz – 1 GHz and conducted for frequency range 1 GHz – 12.75 GHz.

Please see photos in Annex B for test Set-up.

Please see measurement plots below for spectrum analyzer settings.

Limits

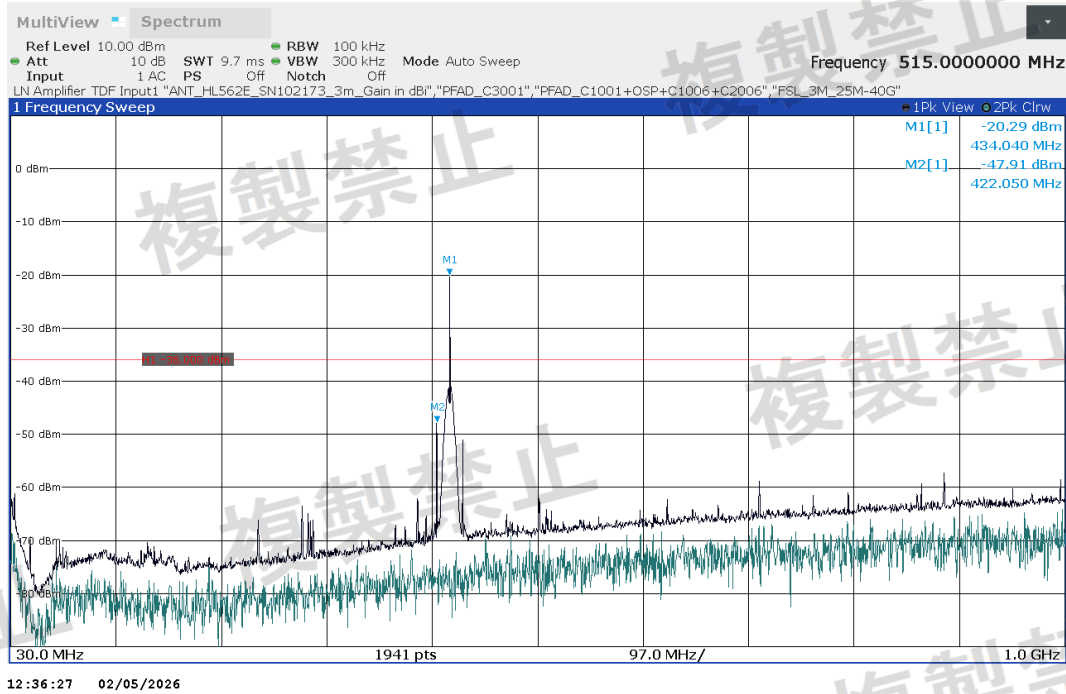
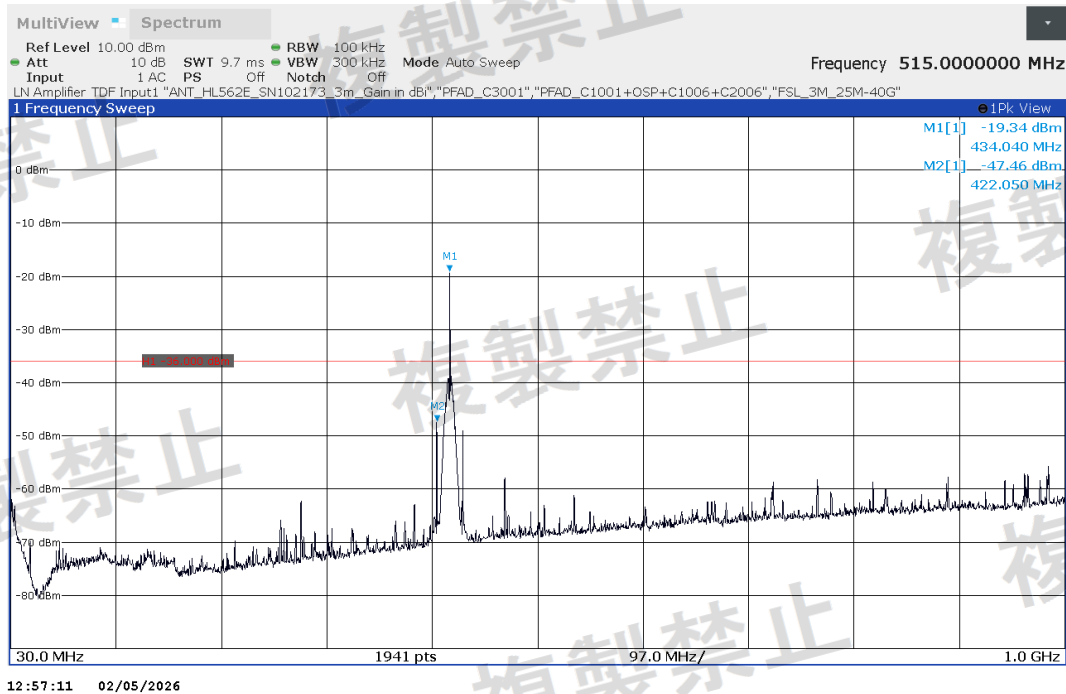
30 MHz – 433.795 MHz / 434.045 MHz – 1 GHz: <250 nW/100 kHz (-36 dBm/100 kHz)

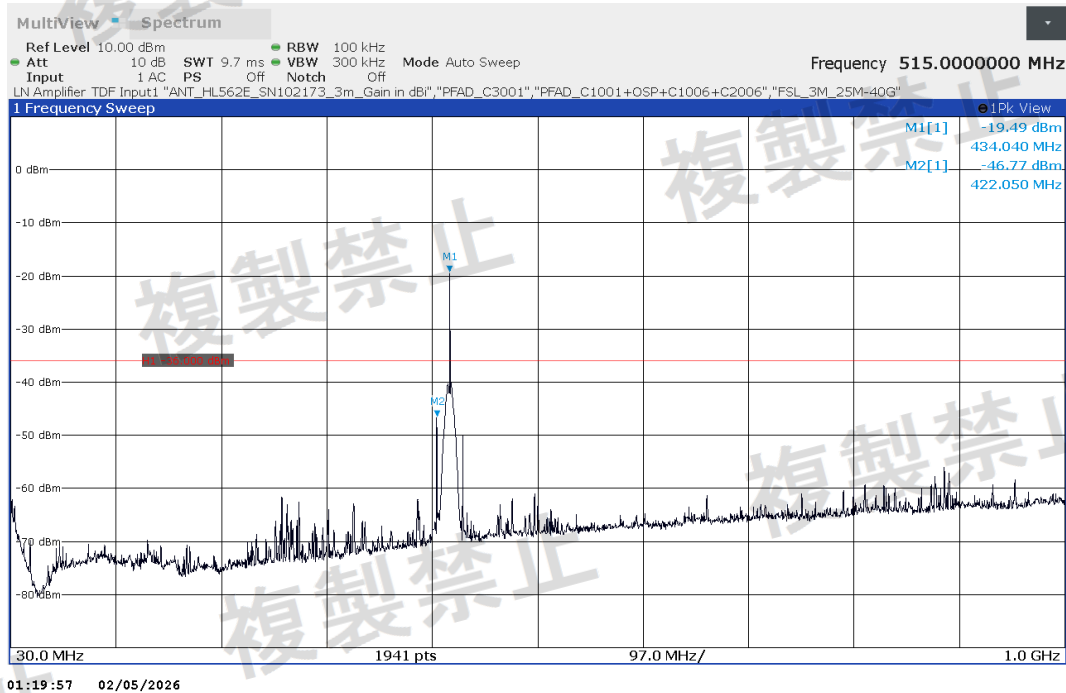
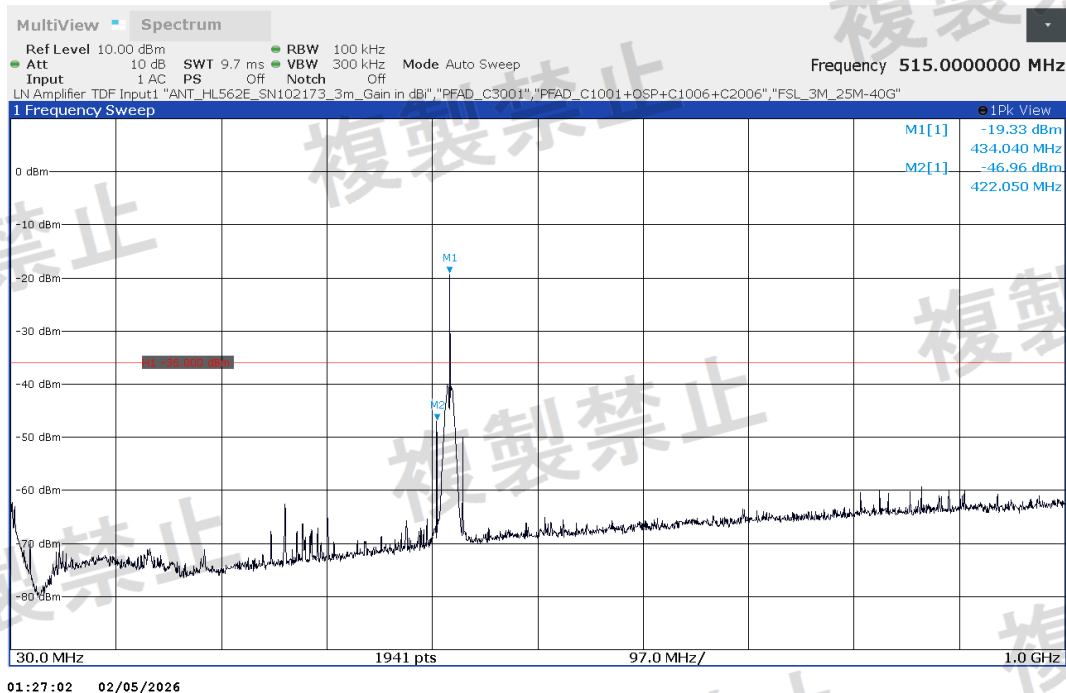
Above 1 GHz: < 1 µW/1MHz (-30 dBm/1 MHz)

Results*

Op./ Set.	Frequency	Detector	Frequency range, [MHz]	Highest level + Offset=0.3 dB, [dBm]	Limit, [dBm]	Margin, [dB]	Verdict
Set.15, Op. 2	Vnom/Vmin/Vmax	Peak	30 - 1000	-47.91	-36	11.91	Pass
Set.16, Op. 2	Vnom/Vmin/Vmax	Peak	30 - 1000	-47.46	-36	11.46	Pass
Set.17, Op. 2	Vnom/Vmin/Vmax	Peak	30 - 1000	-46.77	-36	10.77	Pass
Set.18, Op. 2	Vnom/Vmin/Vmax	Peak	30 - 1000	-46.96	-36	10.96	Pass
Set.1, Op. 2	Vnom	Peak	1000-12750	-53.83	-30	23.83	Pass
Set.1, Op. 2	Vmin	Peak	1000-12750	-54.43	-30	24.43	Pass
Set.1, Op. 2	Vmax	Peak	1000-12750	-78.06	-30	48.06	Pass
Set.3, Op. 2	Vnom	Peak	1000-12750	-52.52	-30	22.52	Pass
Set.3, Op. 2	Vmin	Peak	1000-12750	-53.22	-30	23.22	Pass
Set.3, Op. 2	Vmax	Peak	1000-12750	-52.49	-30	22.49	Pass
Set.5, Op. 2	Vnom	Peak	1000-12750	-54.54	-30	24.54	Pass
Set.5, Op. 2	Vmin	Peak	1000-12750	-55.09	-30	25.09	Pass
Set.5, Op. 2	Vmax	Peak	1000-12750	-54.83	-30	24.83	Pass
Set.7, Op. 2	Vnom	Peak	1000-12750	-54.40	-30	24.40	Pass
Set.7, Op. 2	Vmin	Peak	1000-12750	-55.06	-30	25.06	Pass
Set.7, Op. 2	Vmax	Peak	1000-12750	-54.80	-30	24.80	Pass

* Please see measurement plots below.

Frequency range: 30 MHz -1000 MHz**7.3.1 Tnom/Vnom/Vmin/Vmax, Set-up 15, Op. 2****7.3.2 Tnom/Vnom/Vmin/Vmax, Set-up 16, Op. 2**

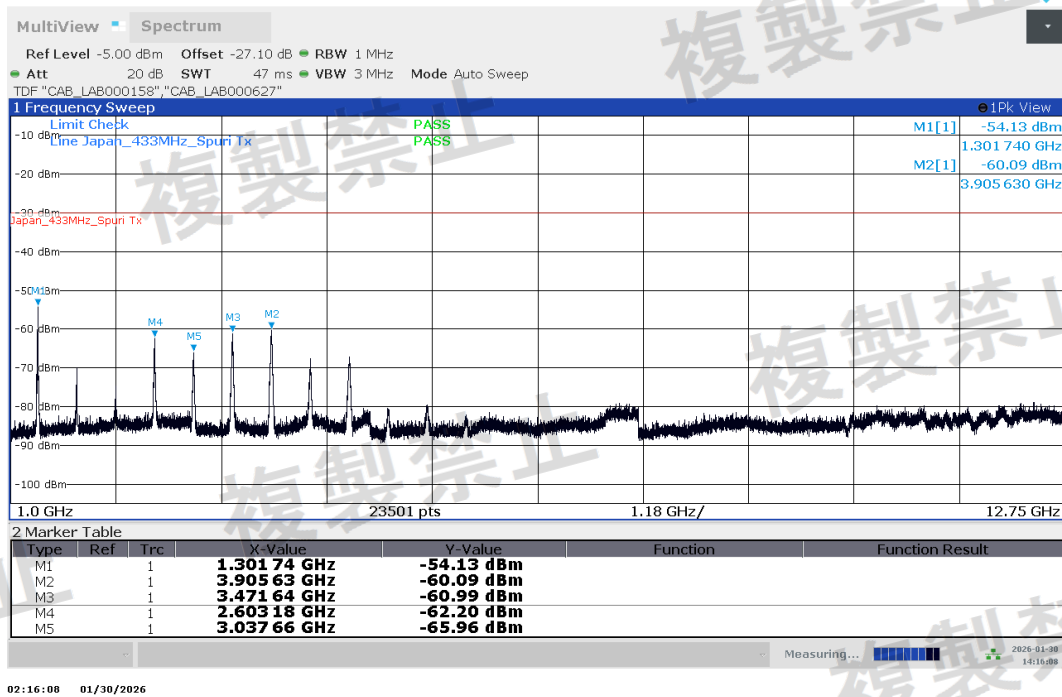
7.3.3 Tnom/Vnom/Vmin/Vmax, Set-up 17, Op. 2**7.3.4 Tnom/Vnom/Vmin/Vmax, Set-up 18, Op. 2**

TR no.: 25041393-46046-1

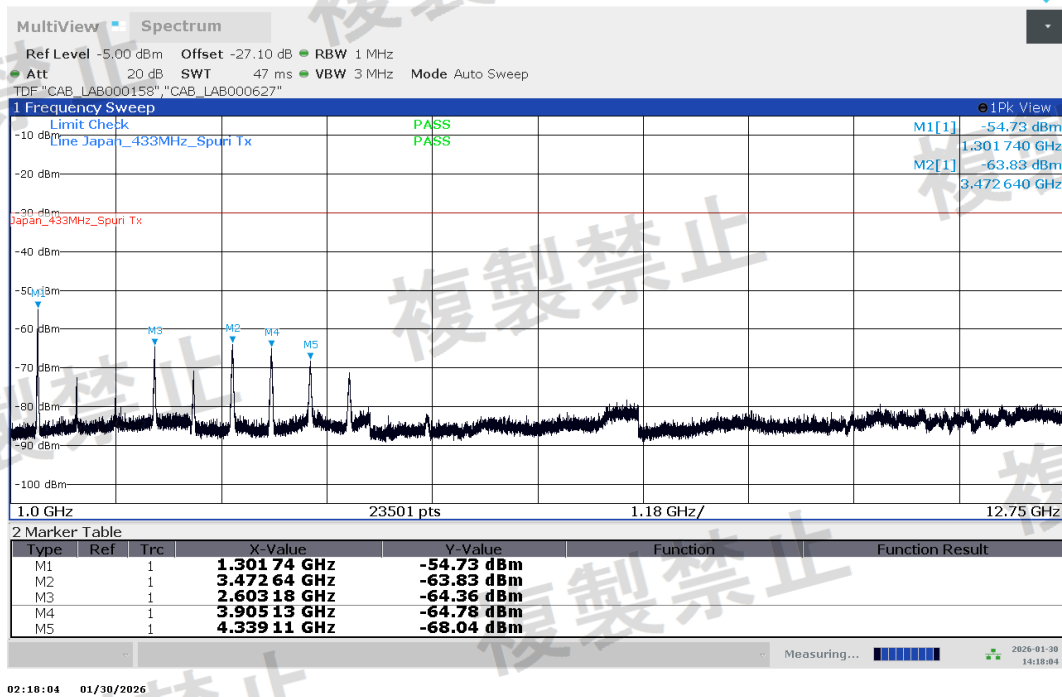
2026-03-11

Frequency range: 1000 MHz -12750 MHz

7.3.5 Tnom/Vnom, Set-up 1, Op. 2



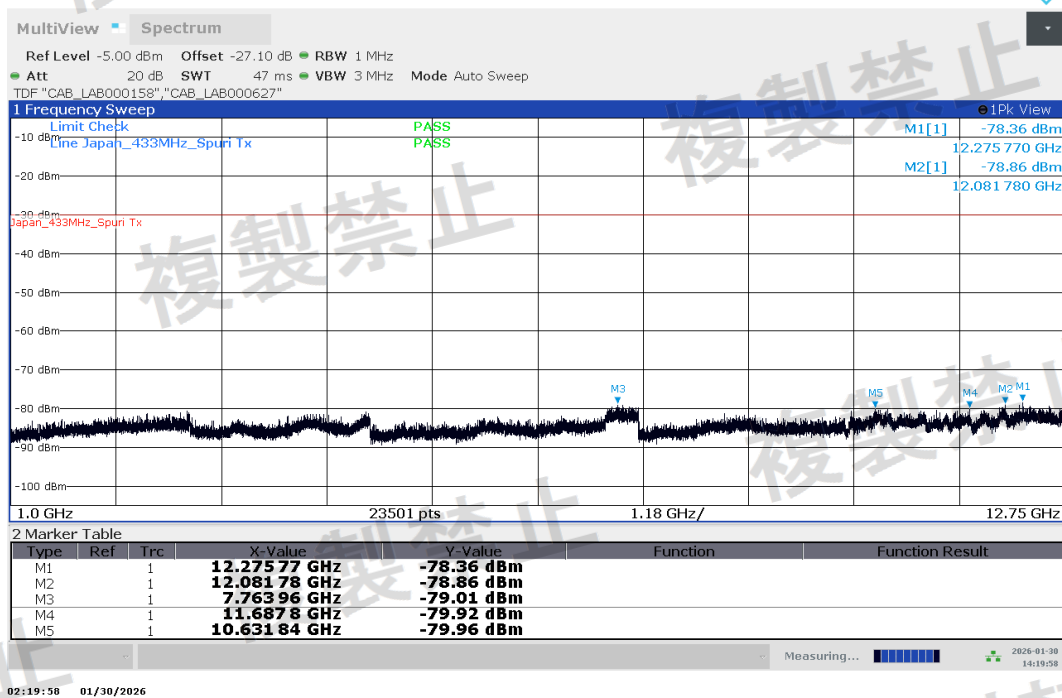
7.3.6 Tnom/Vmin, Set-up 1, Op. 2



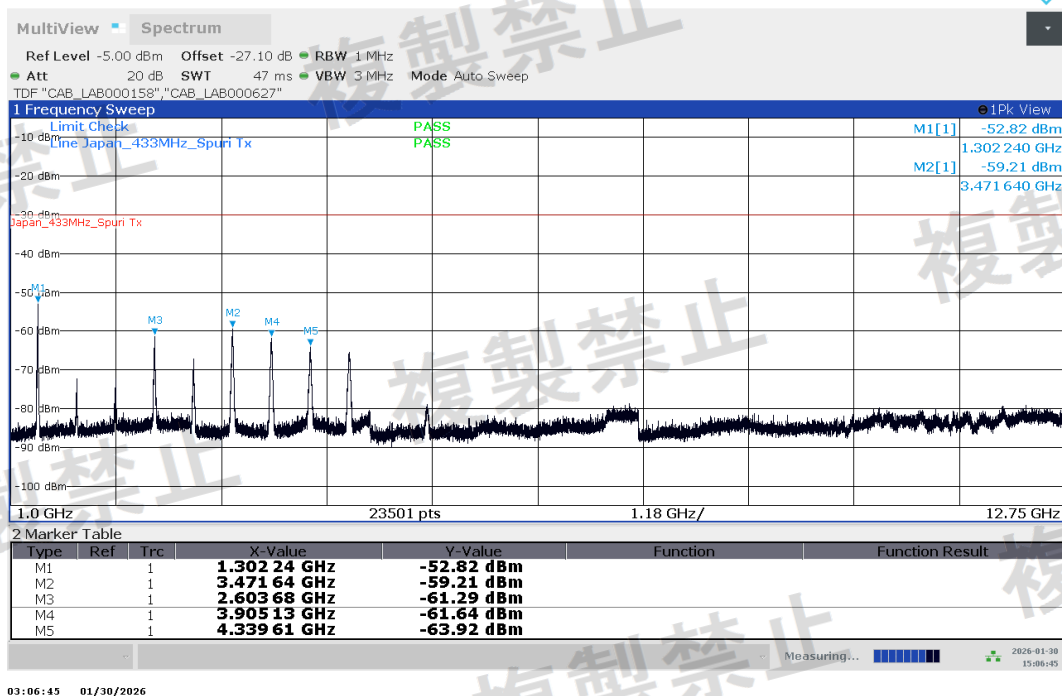
TR no.: 25041393-46046-1

2026-03-11

7.3.7 Tnom/Vmax, Set-up 1, Op. 2



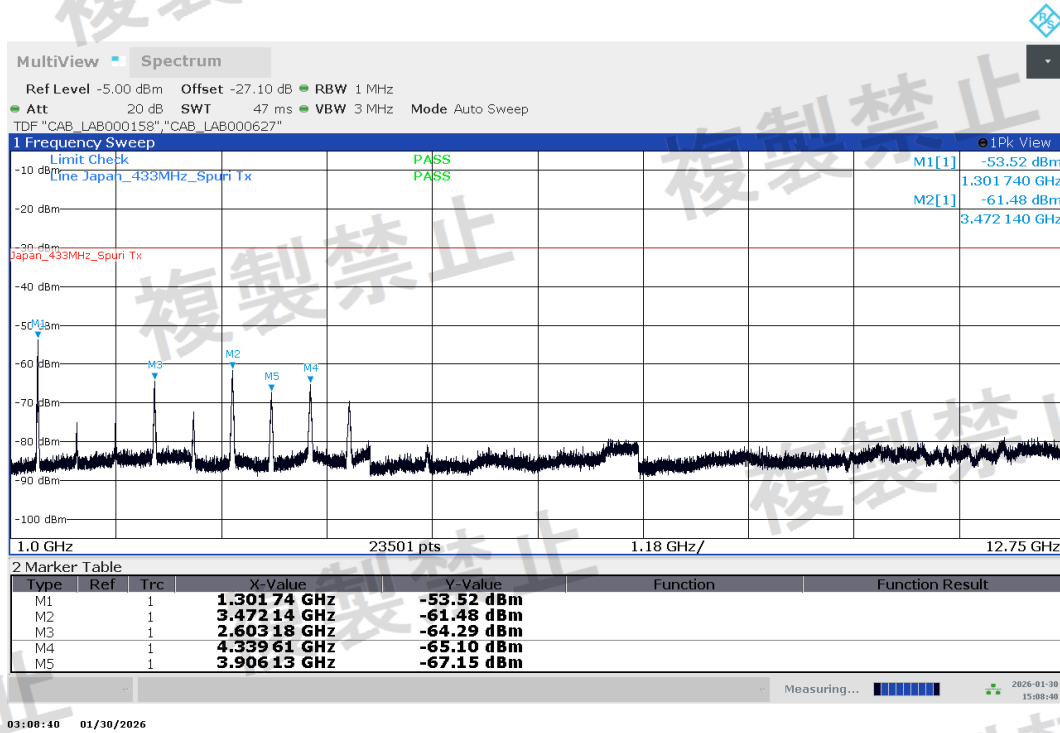
7.3.8 Tnom/Vnom, Set-up 3, Op. 2



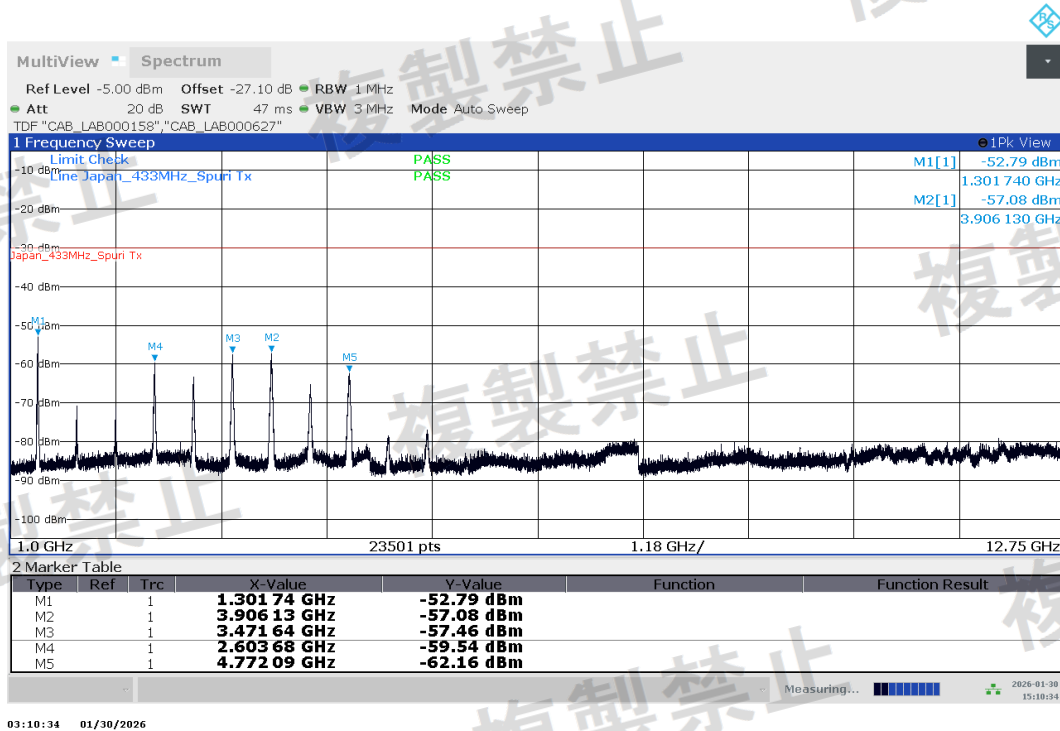
TR no.: 25041393-46046-1

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7.3.9 Tnom/Vmin, Set-up 3, Op. 2



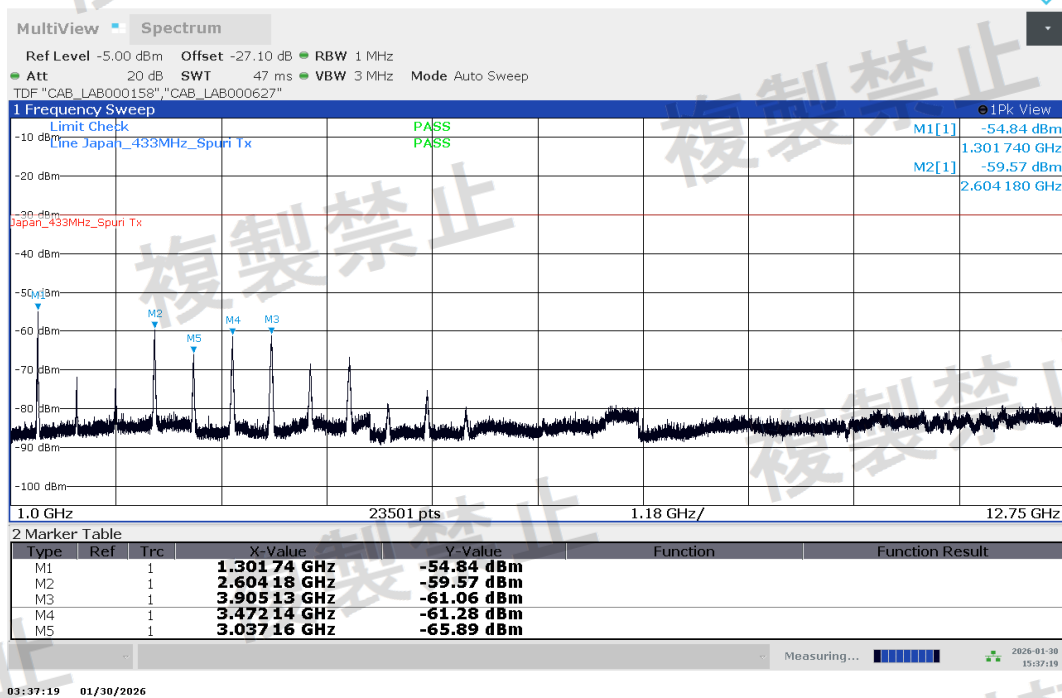
7.3.10 Tnom/Vmax, Set-up 3, Op. 2



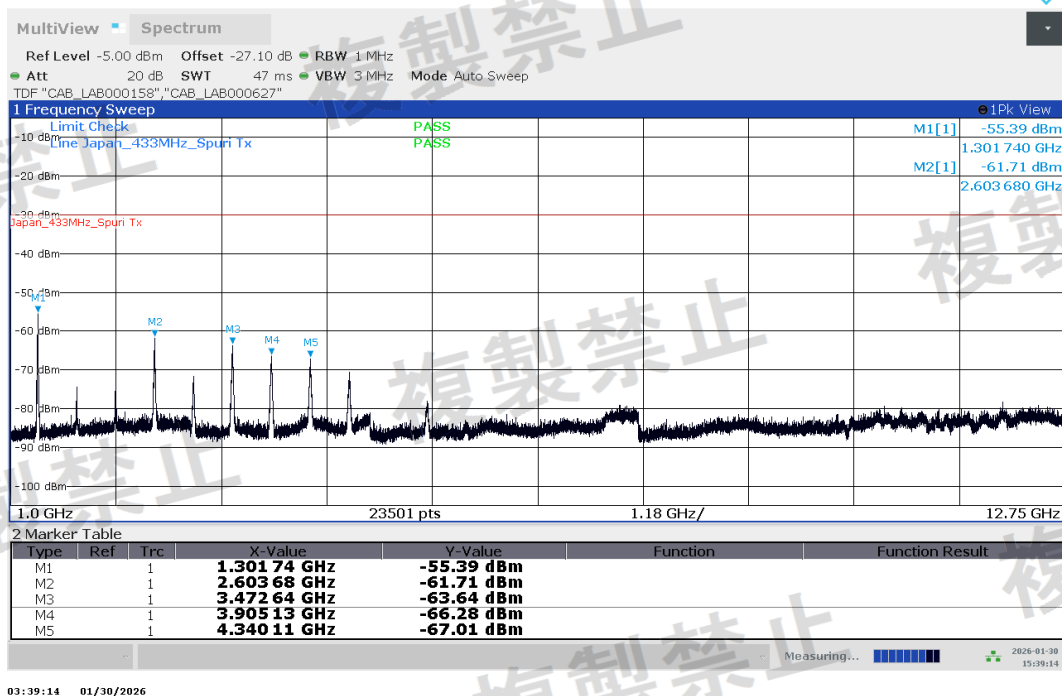
TR no.: 25041393-46046-1

2026-03-11

7.3.11 Tnom/Vnom, Set-up 5, Op. 2



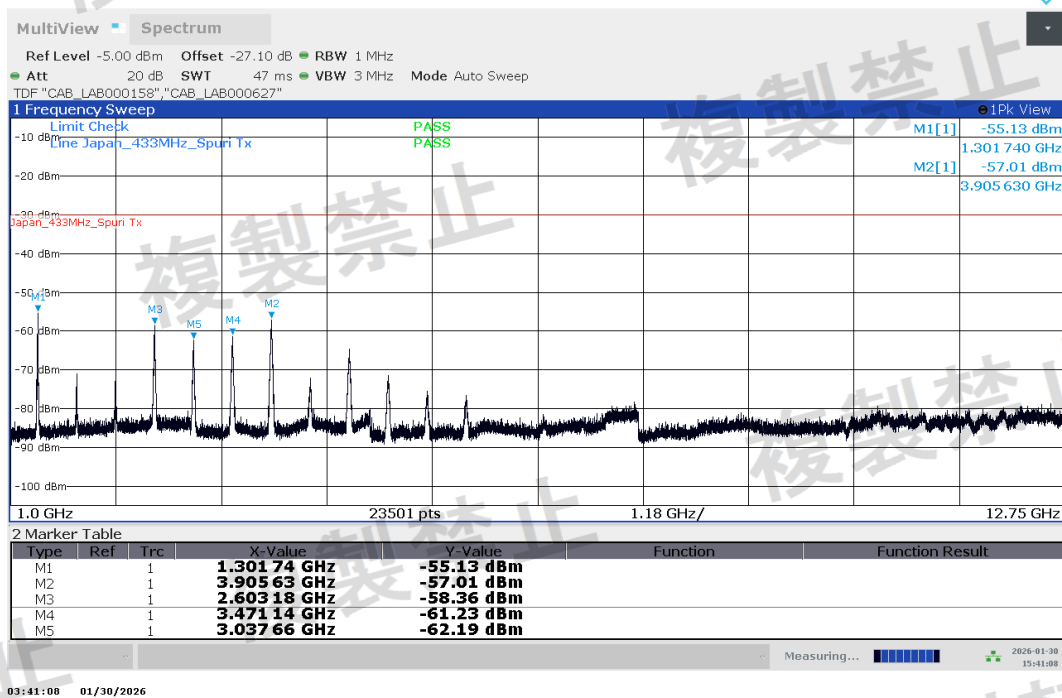
7.3.12 Tnom/Vmin, Set-up 5, Op. 2



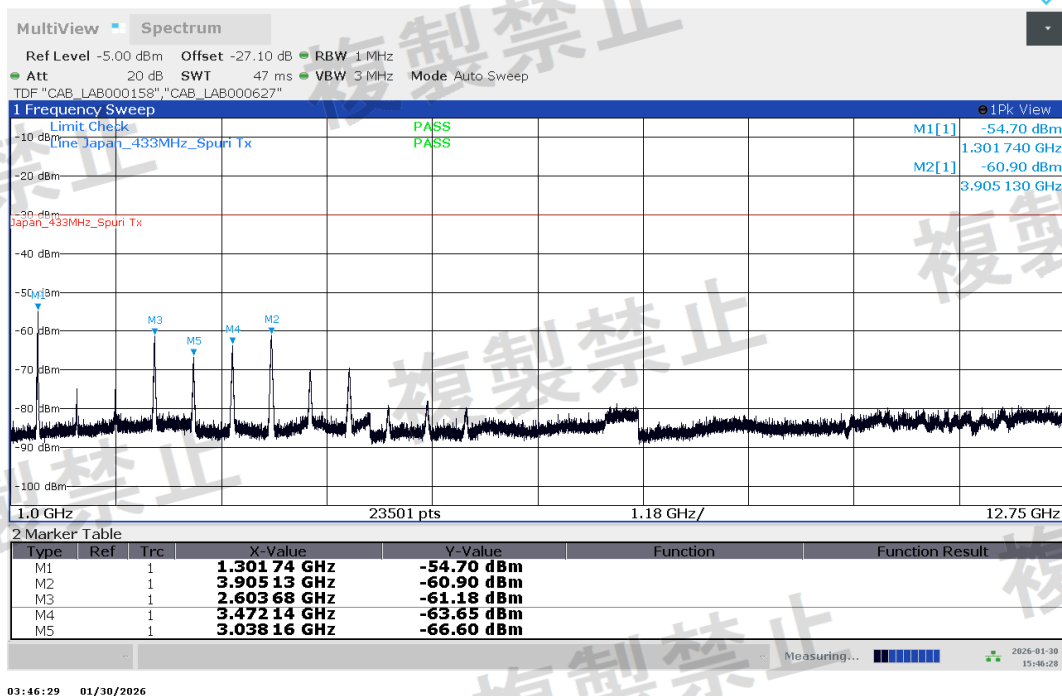
TR no.: 25041393-46046-1

2026-03-11

7.3.13 Tnom/Vmax, Set-up 5, Op. 2



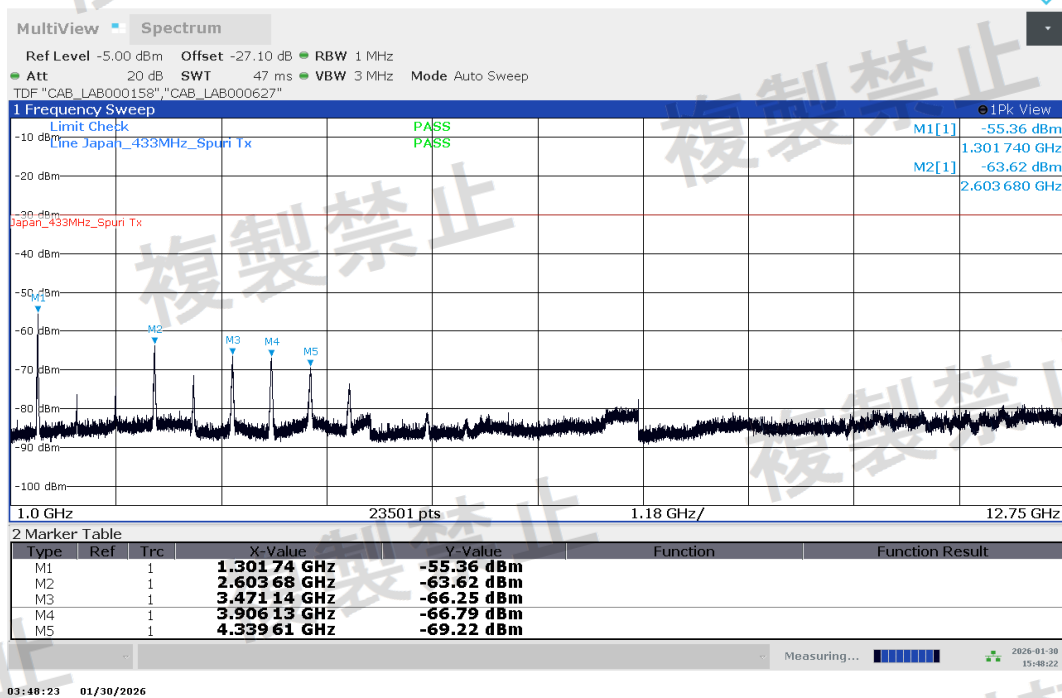
7.3.14 Tnom/Vnom, Set-up 7, Op. 2



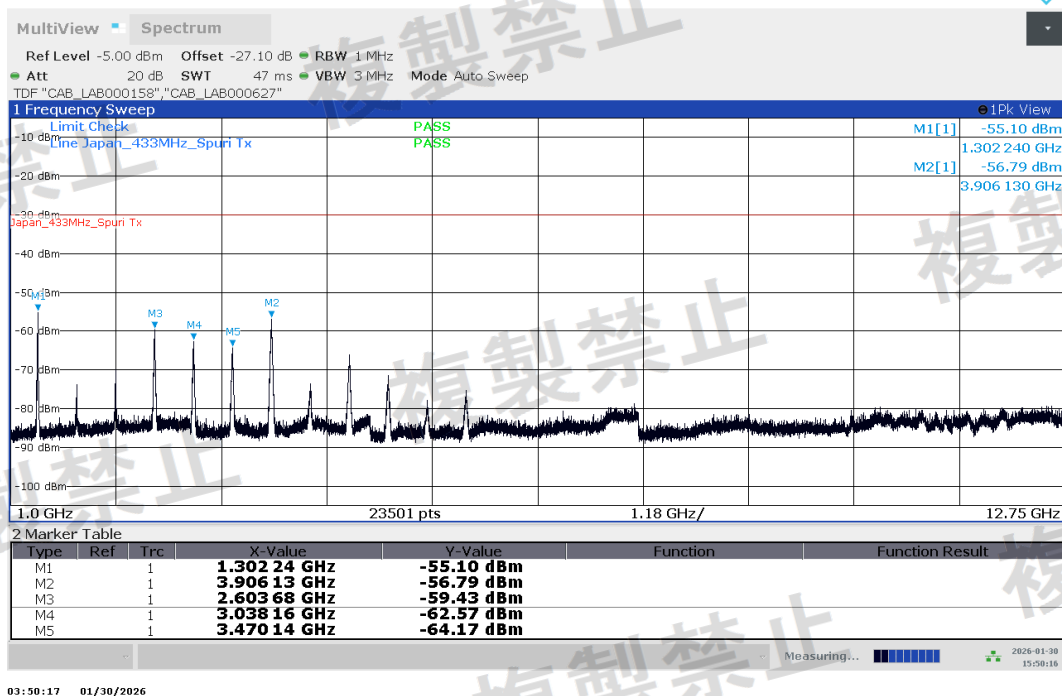
TR no.: 25041393-46046-1

2026-03-11

7.3.15 Tnom/Vmin, Set-up 7, Op. 2



7.3.16 Tnom/Vmax, Set-up 7, Op. 2



7.4 Restriction Function of Transmission Time

Test equipment (Please see Chapter 8 for exact information of test equipment)

Conducted. Please see Chapter 8.

Description

The measurement was done radiated.

Please see photos in Annex B for test Set-up.

Please see measurement plots below for spectrum analyzer settings.

Limits:

360 sec/hour or less

In the case of periodic transmission:

Transmission time: 1 s or less

Quiescent time: 1 s or more

Results*

Op./ Set.	Conditions	Measured time, [ms]	Limit**, [s]		Margin, [ms]	Verdict
		Trans. / quies. time	Trans. / quies. time		Trans. / quies. time	
Set.9, Op. 3	Vnom	162.8 / 18100	≤1	≥1	837.2/ 17100	Pass
Set.10, Op. 4	Vnom	70.92 / 61600	≤1	≥1	929.08 / 60600	Pass
Set.11, Op. 3	Vnom	162.8 / 18100	≤1	≥1	837.2/ 17100	Pass
Set.12, Op. 4	Vnom	70.92 / 61600	≤1	≥1	929.08 / 60600	Pass
Op./ Set.	Conditions	Measured time, [s]	Limit**, [s]		Margin, [s]	Verdict
			Total transmission time / 1 hour			
Set.9, Op. 3	Vnom	32.38	360		327.62	Pass
Set.10, Op. 4	Vnom	4.14	360		355.86	Pass
Set.11, Op. 3	Vnom	32.38	360		327.62	Pass
Set.12, Op. 4	Vnom	4.14	360		355.86	Pass

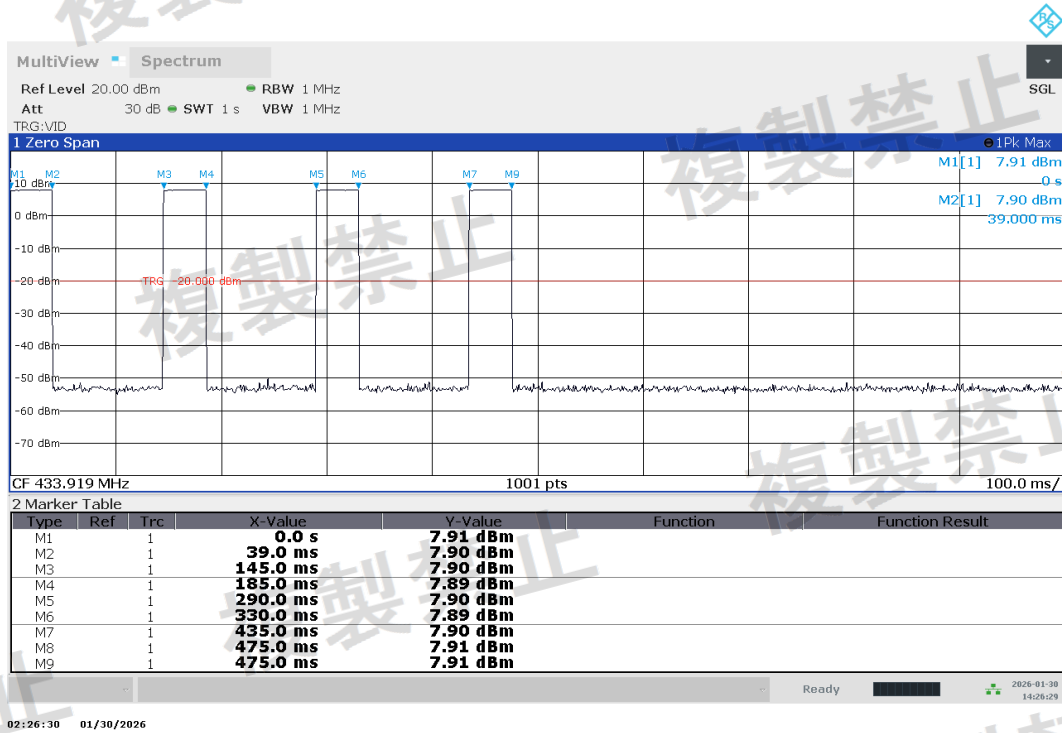
* Please see measurement plots below.

** The manufacturer is responsible for not exceeding this requirement.

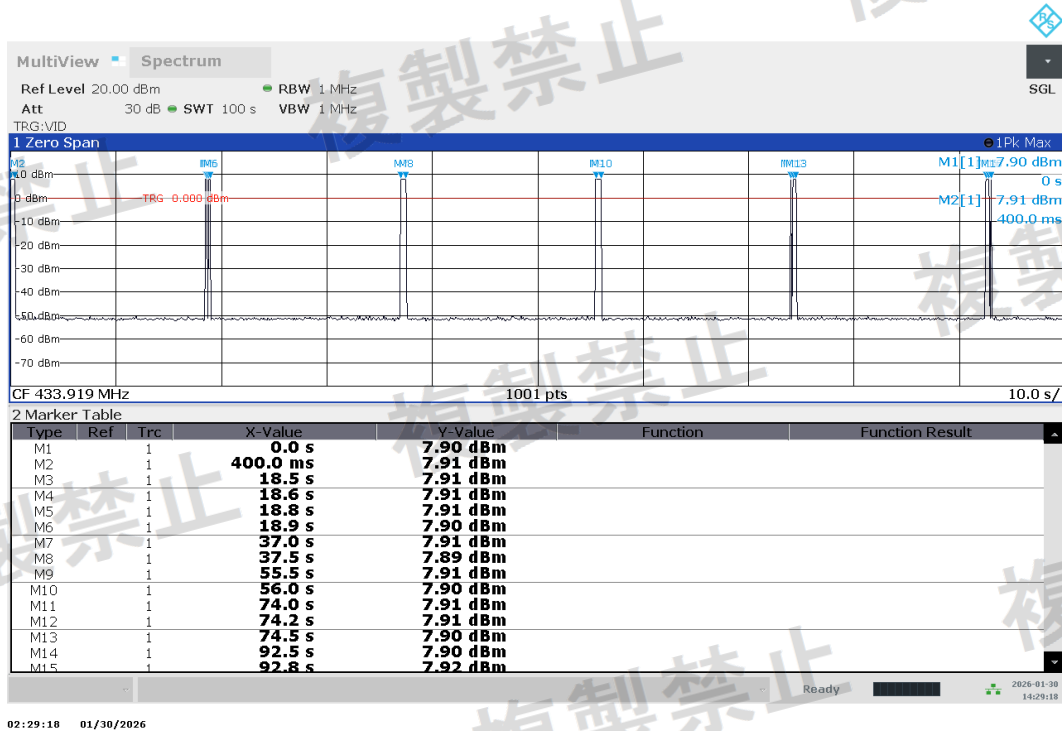
TR no.: 25041393-46046-1

2026-03-11

7.4.1 Tnom/Vnom, Set-up 9, Op. 3, 1 s



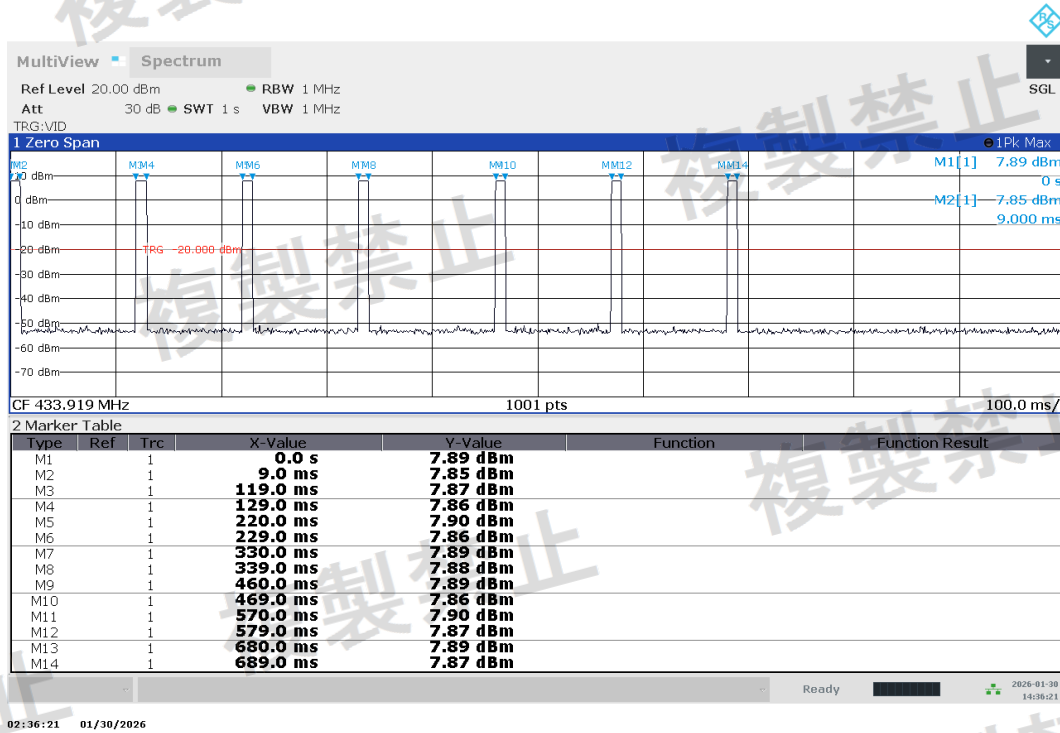
7.4.2 Tnom/Vnom, Set-up 9, Op. 3, 100s



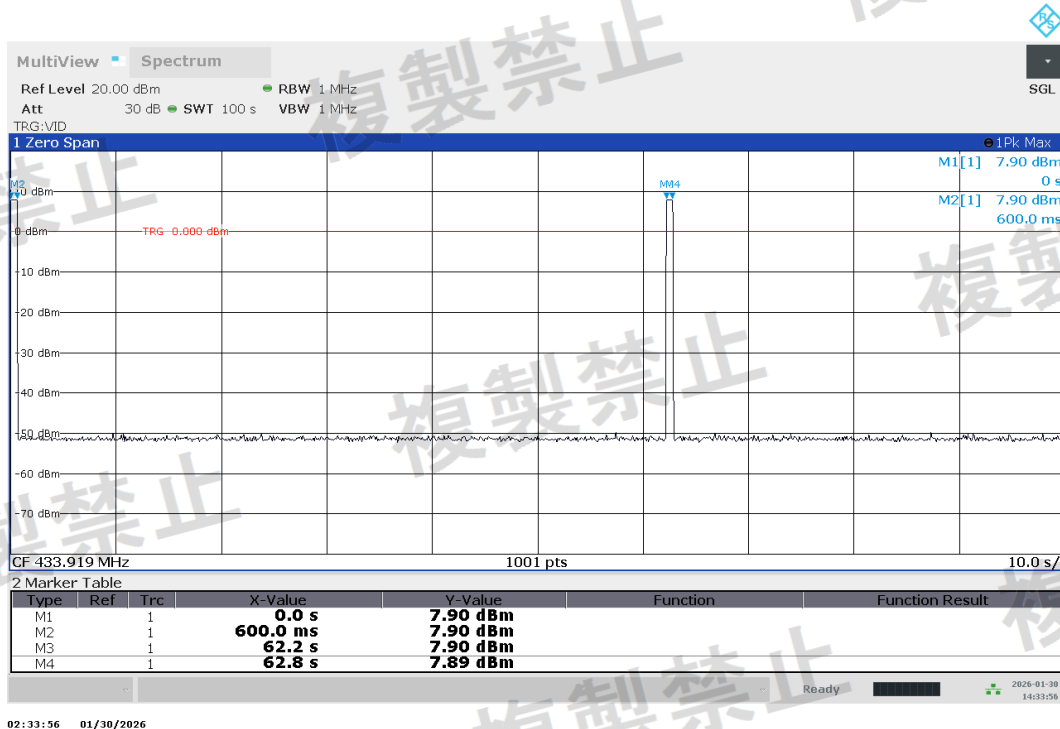
TR no.: 25041393-46046-1

2026-03-11

7.4.3 Tnom/Vnom, Set-up 10, Op. 4, 1 s



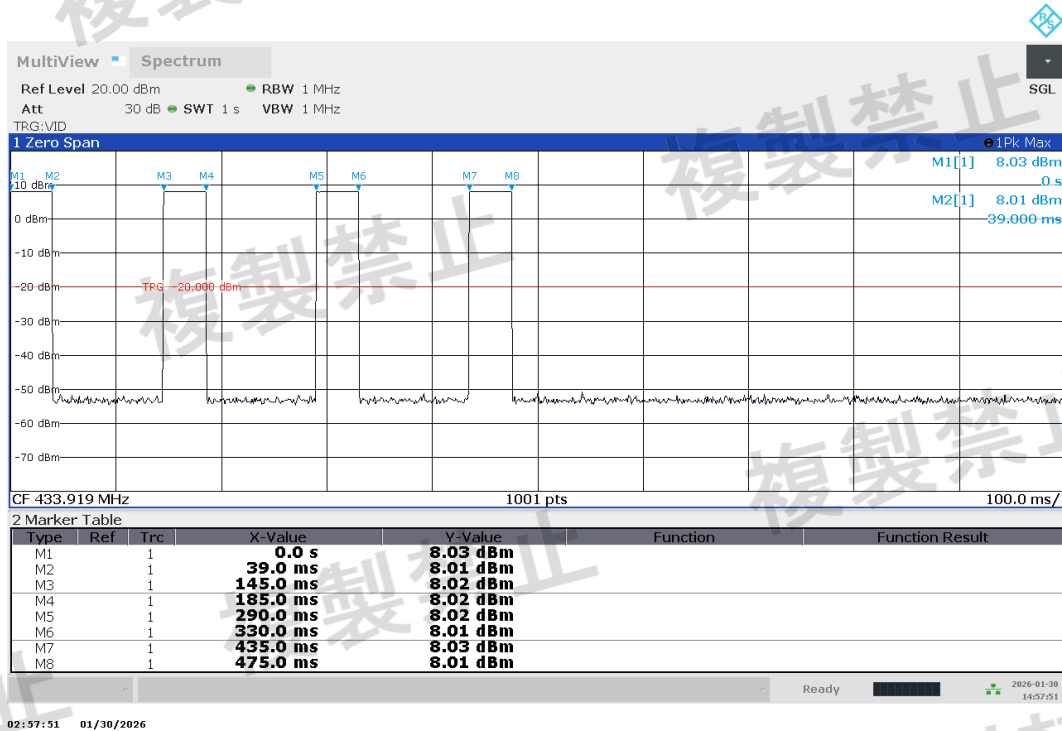
7.4.4 Tnom/Vnom, Set-up 10, Op. 4, 100s



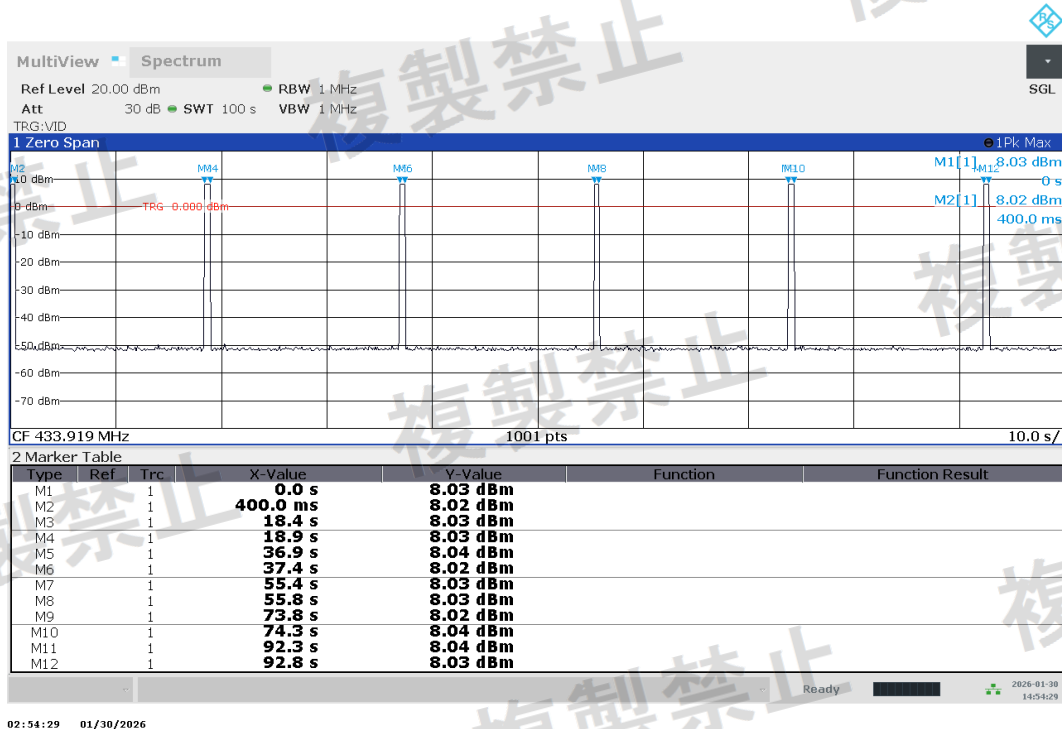
TR no.: 25041393-46046-1

2026-03-11

7.4.5 Tnom/Vnom, Set-up 11, Op. 3, 1 s



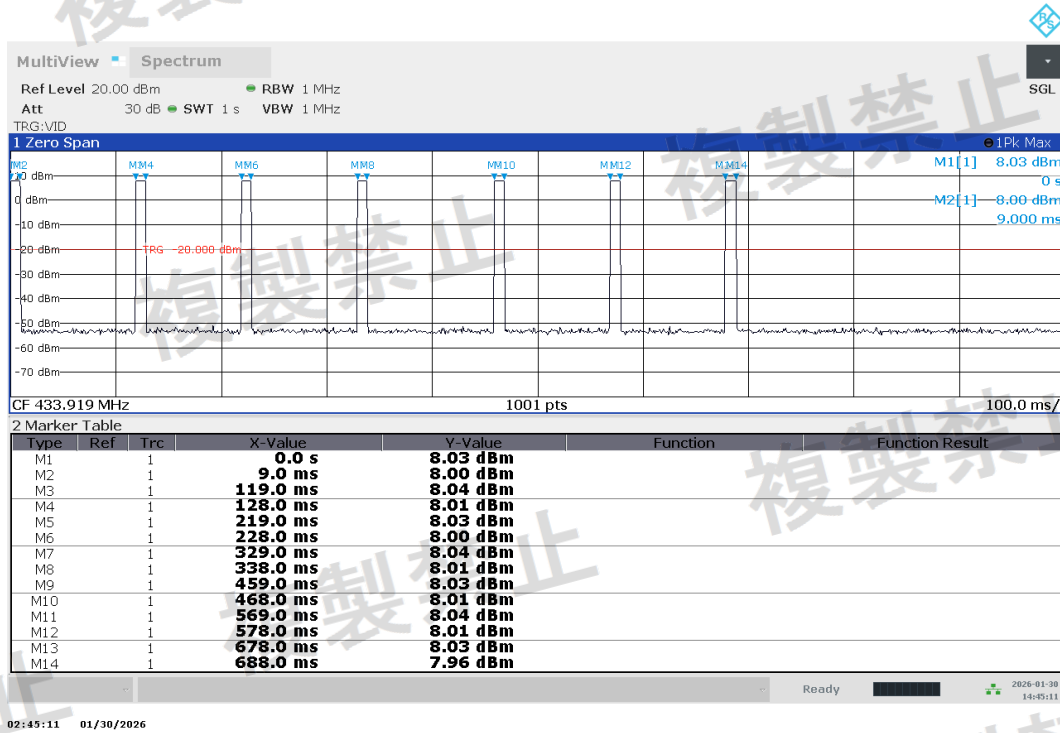
7.4.6 Tnom/Vnom, Set-up 11, Op. 3, 100s



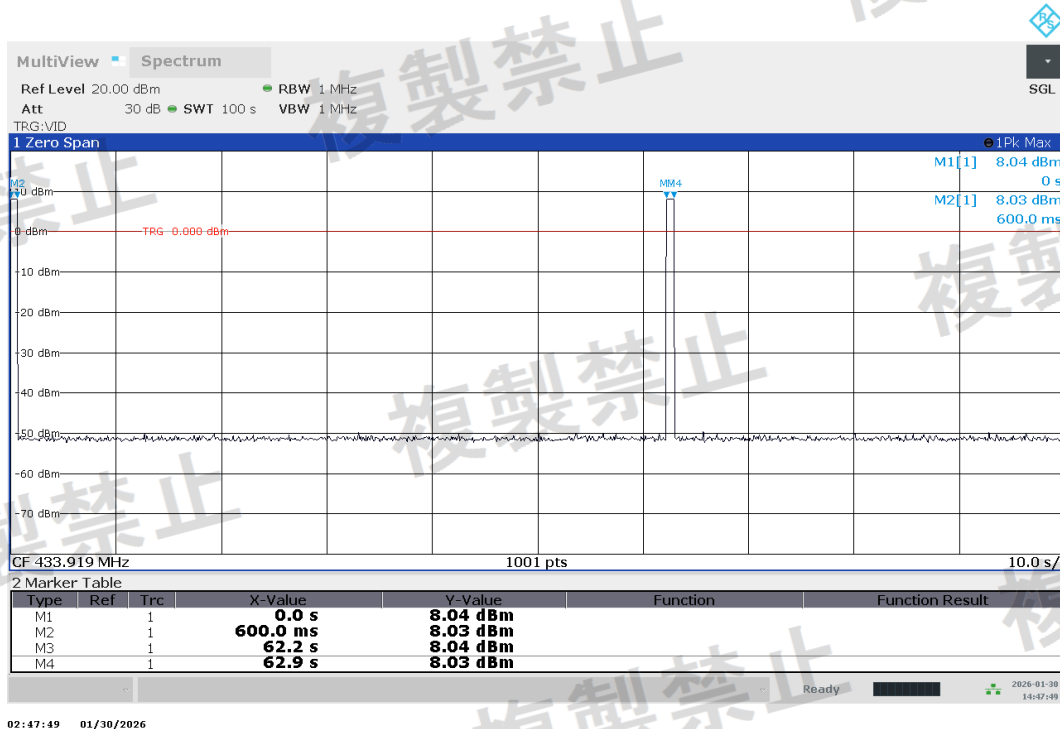
TR no.: 25041393-46046-1

2026-03-11

7.4.7 Tnom/Vnom, Set-up 12, Op. 4, 1 s



7.4.8 Tnom/Vnom, Set-up 12, Op. 4, 100s



8 MEASUREMENT EQUIPMENT**

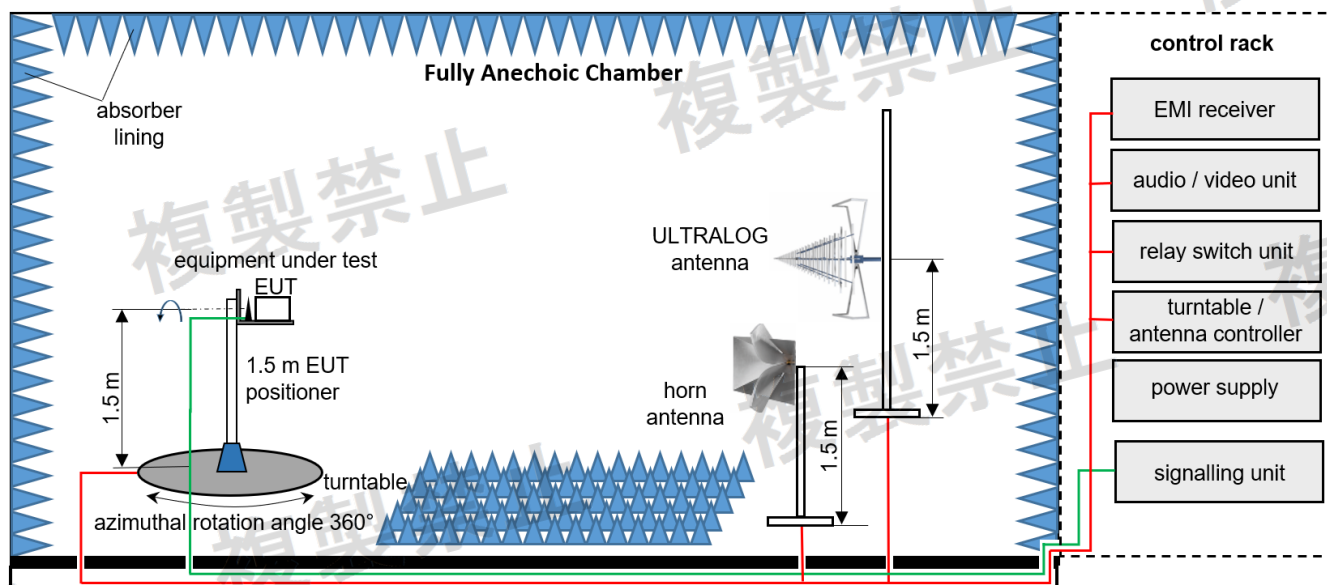
Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Cyclic chamber inspections and range calibrations are performed. Where possible, RF generating and signalling equipment as well as measuring receivers and analysers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Lab/Item).

Kind of calibration (abbreviations):

- C = calibrated
- CM = cyclic maintenance
- NR = not required
- L = locked

8.1 Fully Anechoic Chamber



Measurement distance: ULTRALOG antenna and horn antenna at 3 m; loop antenna at 3 m
 EMC32 software version: 11.20.00 (if used)

Description:

$$\text{EIRP} = \text{AV} + \alpha_{\text{radiated loss}} + G_{\text{antenna}} + G_{\text{amplifier}} + \alpha_{\text{cable loss}}$$

$$P = 10^{\frac{\text{EIRP}_{\text{dBm}}}{10}}$$

- radiated output power → EIRP_{dBm}
- analyzer value → AV_{dB}
- free space loss → $\alpha_{\text{radiated loss}_{\text{dB}}}$
- antenna gain → $G_{\text{antenna}_{\text{dBi}}}$
- amplifier gain → $G_{\text{amplifier}_{\text{dB}}}$
- cable loss → $\alpha_{\text{cable loss}_{\text{dB}}}$

Example:

$$\text{EIRP} = -65.0 \text{ dBm} + 50 \text{ dB} - 20 \text{ dBi} + 5 \text{ dB} = -30 \text{ dBm}$$

List of test equipment used:

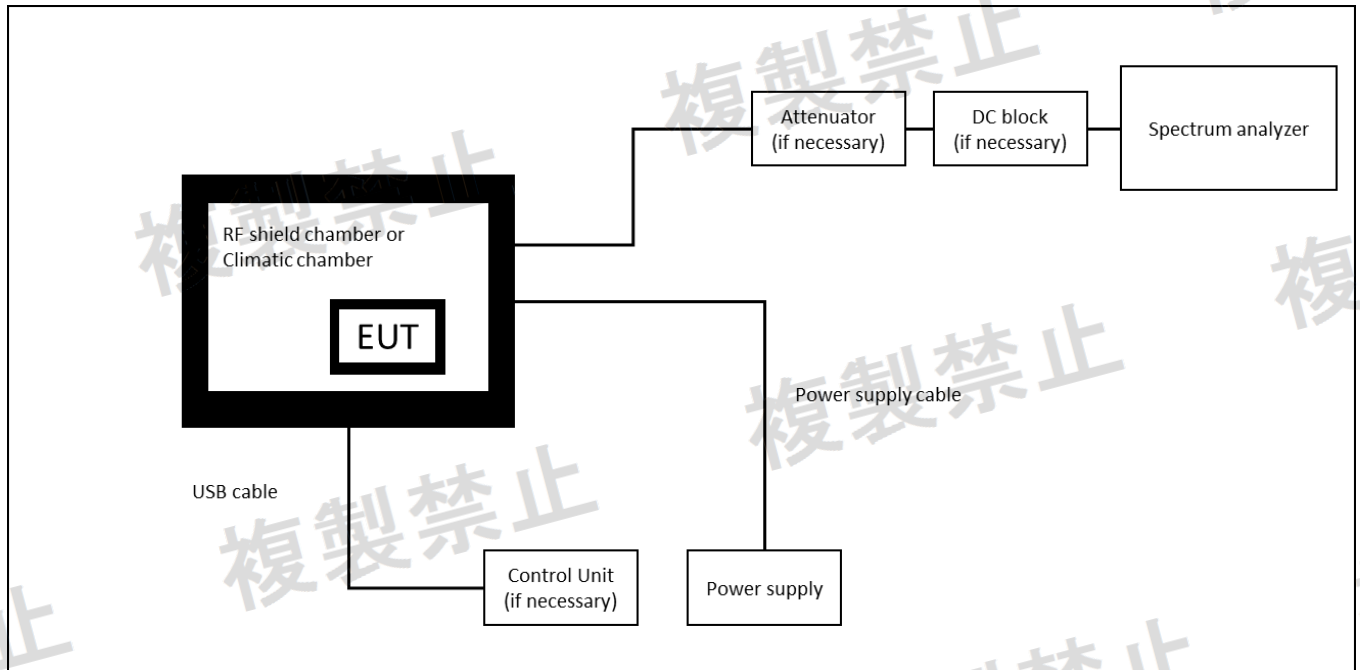
No.	Equipment	Manufacturer	Type	Serial No.	IBL No.	Kind of Calibration ¹⁾	Last / Next Calibration
1	Power Supply	Elektro-Automatik GmbH & Co. KG	EA-PSI 9080-40 T	2000230001	LAB000313	NR	–
2	Test table	innco systems GmbH	PT1208-080-RH	-	LAB000306	NR	–
3	Positioner	matur GmbH	TD 1.5-10KG	-	LAB000258	NR	–
4	Compressed Air	Implotex	1-850-30	-	LAB000256	NR	–
5	EMI Test Receiver	Rohde & Schwarz	ESW26	101481	LAB000236	C	2025-06-13 → 12M → 2026-06-13
6	Semi-Anechoic Chamber (SAC)	Albatross Projects GmbH	SAC 5 (Babylon 5)	20168.PR.B	LAB000235	CM	2025-03-18 → 36M → 2028-03-18
7	Measurement Software	Rohde & Schwarz	EMC32 V11.00.10	-	LAB000226	NR	–
8	Turntable	matur GmbH	TT2.0-2t	TT2.0-2t/921	LAB000225	NR	–
9	Antenna Mast	matur GmbH	CAM4.0-P	CAM4.0-P/316	LAB000224	NR	–
10	Antenna Mast	matur GmbH	BAM4.5-P	BAM4.5-P/272	LAB000223	NR	–
11	Controller	matur GmbH	FCU 3.0	10082	LAB000222	NR	–
12	Multimeter	Keysight	U1242B	MY59240021	LAB000187	C	2025-09-05 → 12M → 2026-09-05
13	Open Switch and Control Platform	Rohde & Schwarz	OSP200 Base Unit 2HU	101748	LAB000149	CM	–
14	Antenna	Rohde & Schwarz	HF907	102898	LAB000124	C	2023-06-13 → 36M → 2026-06-13
15	Antenna	Rohde & Schwarz	HL562E	102001	LAB000123	C	2023-04-05 → 36M → 2026-04-05
16	Antenna	Rohde & Schwarz	HFH2-Z2E - Active Loop Antenna	100954	LAB000108	C	2023-05-05 → 36M → 2026-05-05
17	Pre-Amplifier	Schwarzbeck Mess-Elektronik OHG	BBV 9718 C	84	LAB000169	NR	–
18	Low noise amplifier	B&Z Technologies	BZ-01000900-111550-202320	24336	LAB000296	NR	–
19	Low noise amplifier	B&Z Technologies	BZ-08001800-180855-202020	22105	LAB000297	NR	–
20	High-pass filter (7 GHz – 23 GHz)	AtlantRF	HPF 7-23	-	LAB000444	NR	–
21	High-pass filter (3.3 GHz – 12.75 GHz)	AtlantRF	HPF 3.3-11	-	LAB000382	NR	–
22	High-pass filter (1.3 GHz – 12.75 GHz)	Microwave Circuits Inc	H1G713G1	46291	LAB000443	NR	–

* The gain values of Amp and attenuation values of Cab and Att are remeasured annually internal.

** All the devices in the table above with "Next calibration" date are DAkkS calibrated (Germany), which is equivalent to calibration conducted by the NICT or a designated calibration agency under Article 102-18-1 of the Radio Act. All the devices without "Next calibration" date were calibrated or/and checked on site by using measuring instruments, which have been calibrated as described above.

1) C- calibrated. CM- cyclic maintenance. NR- not relevant.

8.2 Measurements under normal and extreme climatic conditions



$$FS = UR + CL + AF$$

(FS-field strength; UR-voltage at the receiver; CL-loss of the cable; AF-antenna factor)

Example calculation:

$$FS [dB\mu V/m] = 12.35 [dB\mu V/m] + 1.90 [dB] + 16.80 [dB\mu V/m] = 31.05 [dB\mu V/m]$$

List of test equipment used:

No.	Equipment	Manufacturer	Type	Serial No.	IBL No.	Calibration
1	Power Supply	Elektro-Automatik GmbH & Co. KG	EA-PS 2042-10 B	2878350263	LAB000191	
2	Multimeter	Keysight	U1242B	MY59240020	LAB000188	2025-09-05 → 12M → 2026-09-05
3	Spectrum Analyser	Rohde & Schwarz	FSW43	101391	LAB000289	2025-06-12 → 12M → 2026-06-12
4	RF shield box	Rohde & Schwarz	CMW-Z10	101612	LAB000693	-
5	RF cable	Huber & Suhner	ST18/48"	2276454-02	LAB000158	2025-04-25 → 12M → 2026-04-25
6	RF cable	Huber & Suhner	SUCOFLEX 101P	593/1P	LAB000627	2025-04-25 → 12M → 2026-04-25

* The gain values of LNA amplifiers (if used) and attenuation values of cables and attenuators (if used) are remeasured annually internal.

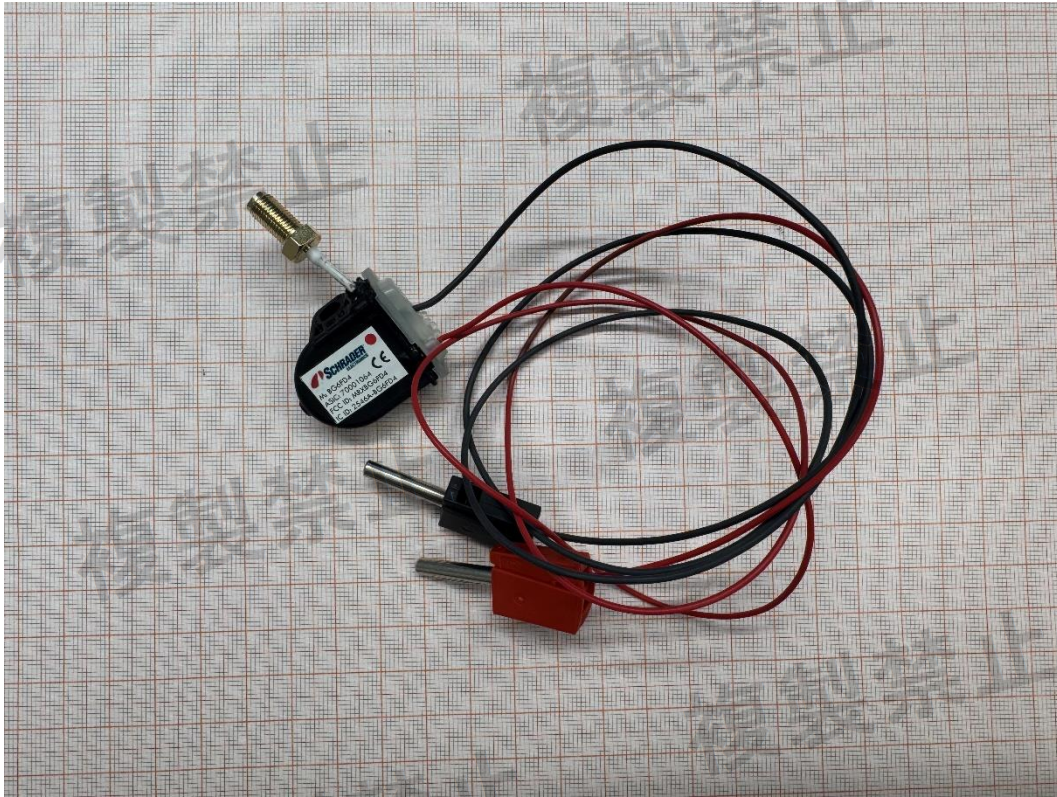
** All the devices in the table above with "Next calibration" date are DAkkS calibrated (Germany), which is equivalent to calibration conducted by the NICT or a designated calibration agency under Article 102-18-1 of the Radio Act. All the devices without "Next calibration" date were calibrated or/and checked on site by using measuring instruments, which have been calibrated as described above.

9 MEASUREMENT UNCERTAINTIES

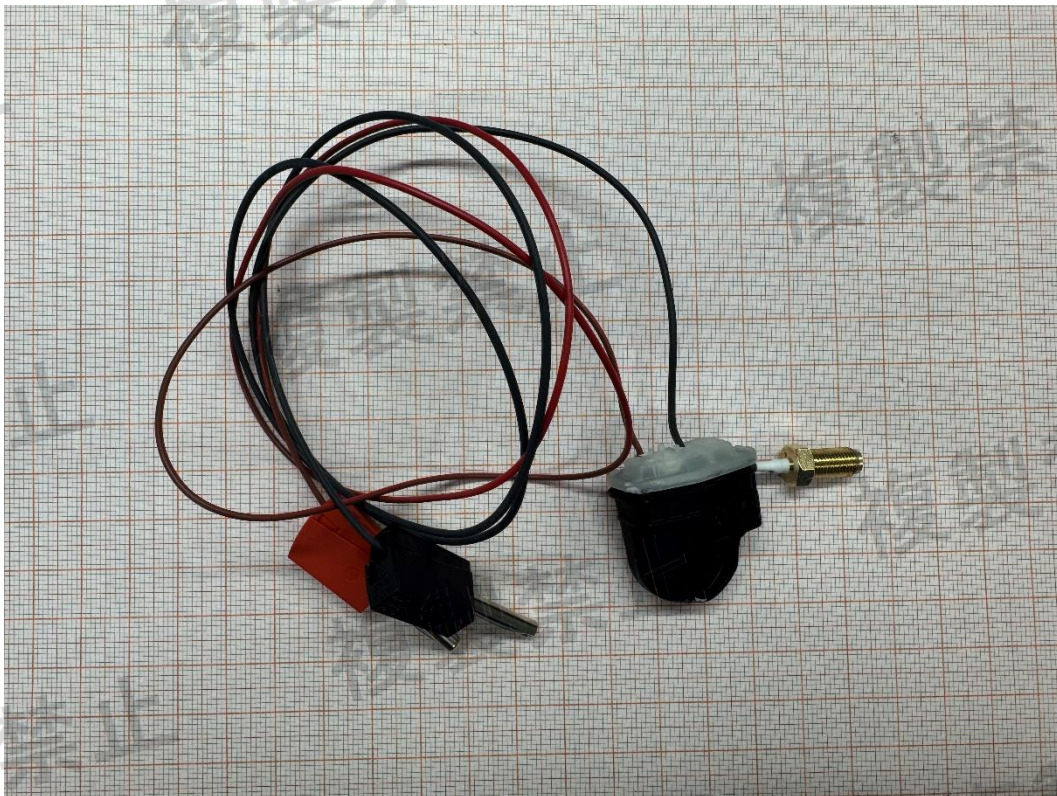
Test case	Measurement uncertainty*
Output power and Output power tolerance	$\leq \pm 6$ dB
Transmitter Spurious Emissions	$\leq \pm 6$ dB
Secondary radiated Emissions Strength Secondary radiated	$\leq \pm 6$ dB
Occupied Bandwidth	± 2.7 %
Radio frequency	± 0.4 ppm
Time domain measurement	± 2.32 ms
DC and low frequency voltages	± 3 %
Temperature	± 1 °C
Humidity	± 3 %

*) The indicated expanded measurement uncertainty corresponds to the standard measurement uncertainty for the measurement results multiplied by the coverage factor $k = 2$. The true value is located in the corresponding interval with a probability of 95 %.

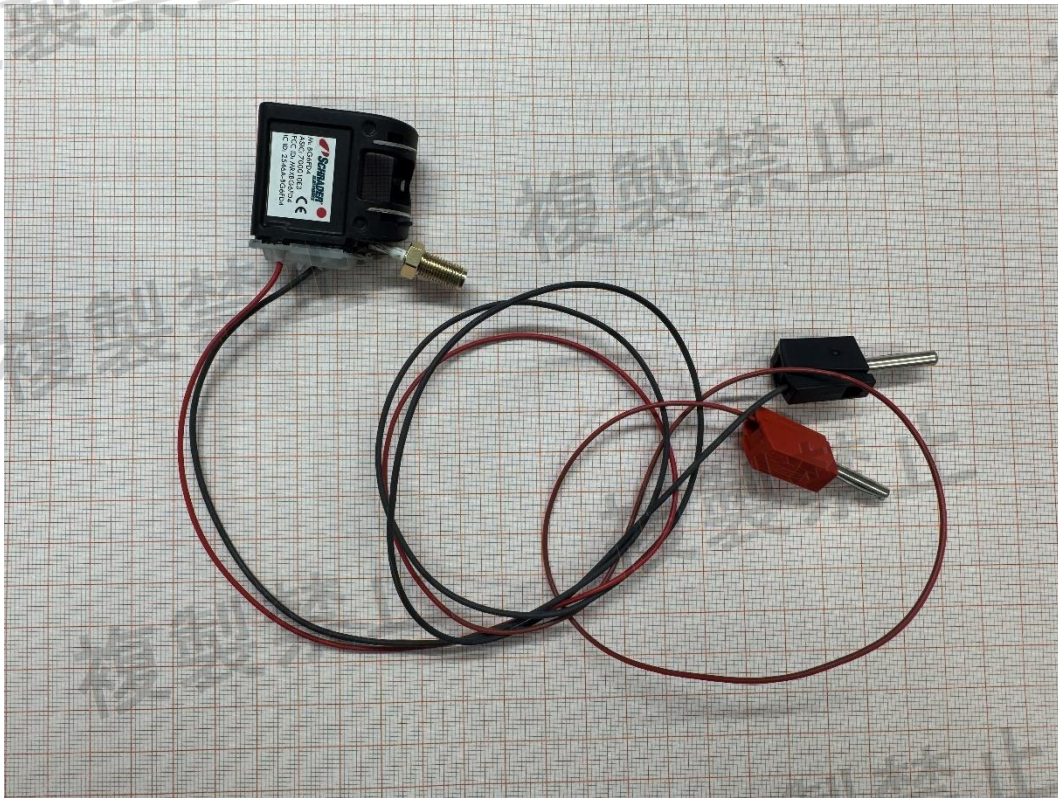
ANNEX A EXTERNAL PHOTOGRAPHS OF EUT



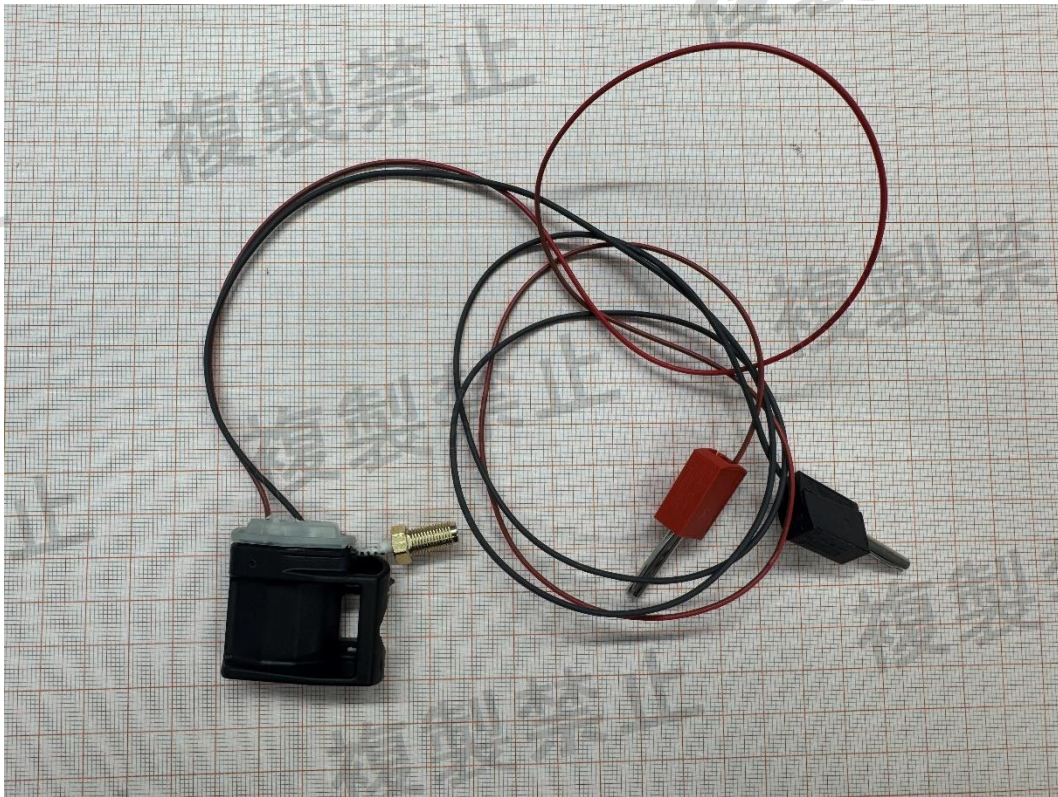
Photograph 1: EUT A, view 1



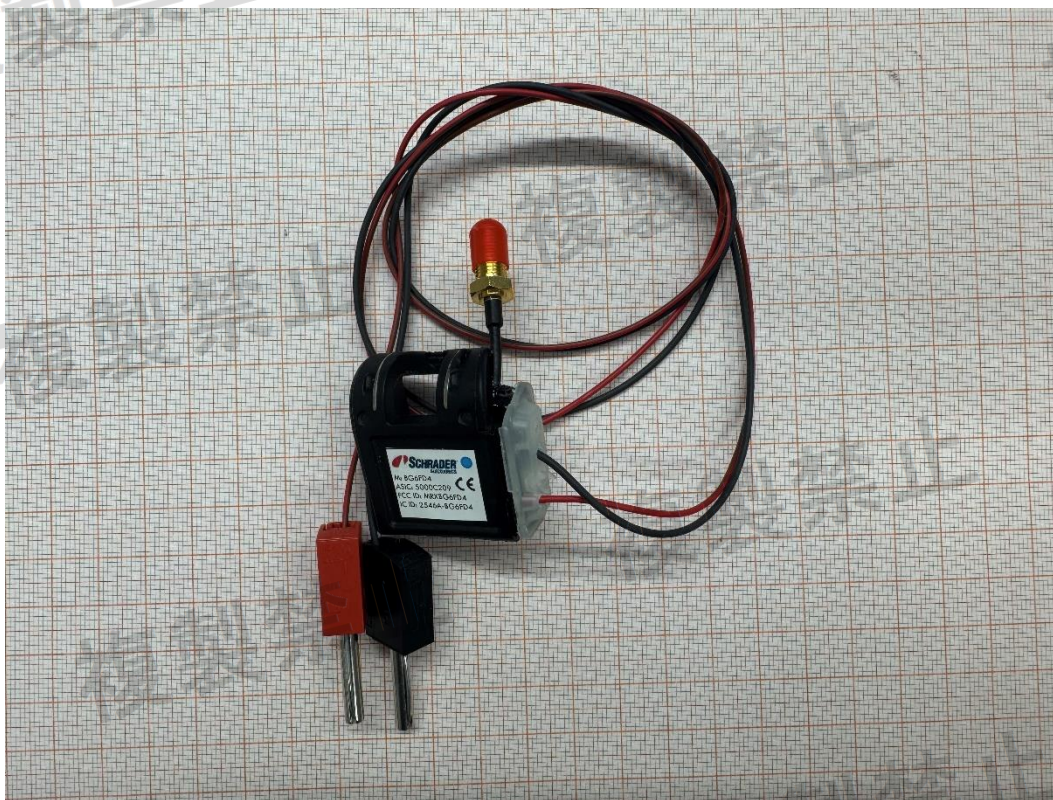
Photograph 2: EUT A, view 2



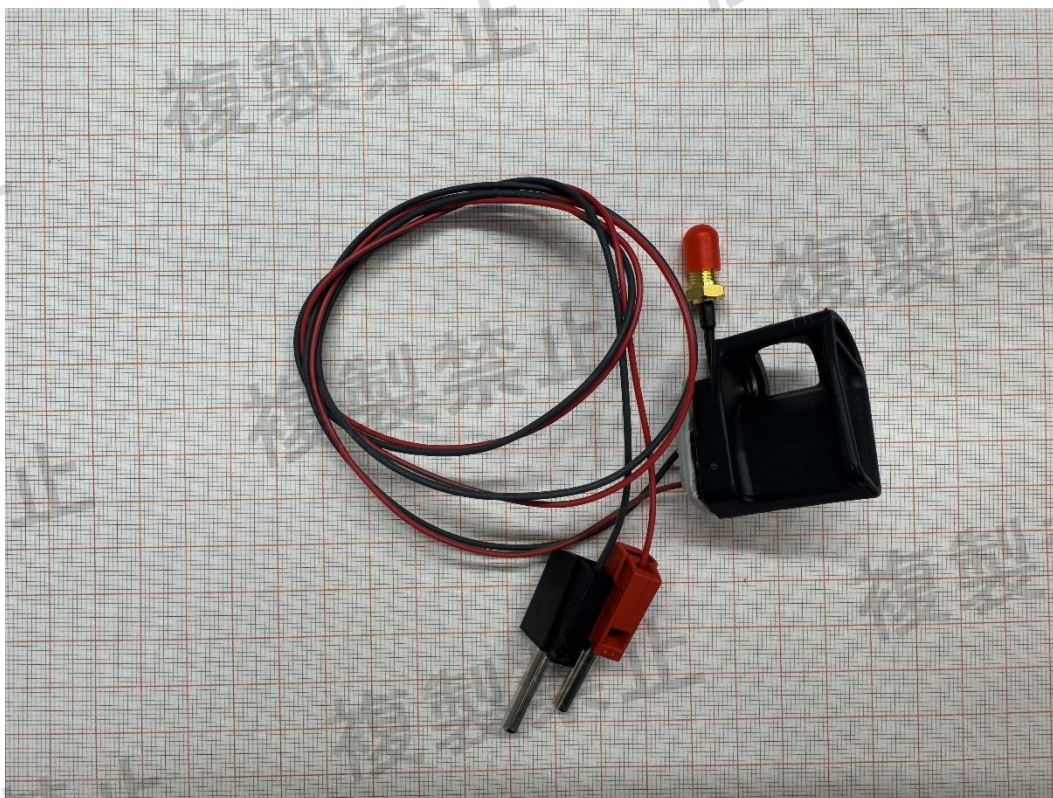
Photograph 3: EUT B, view 1



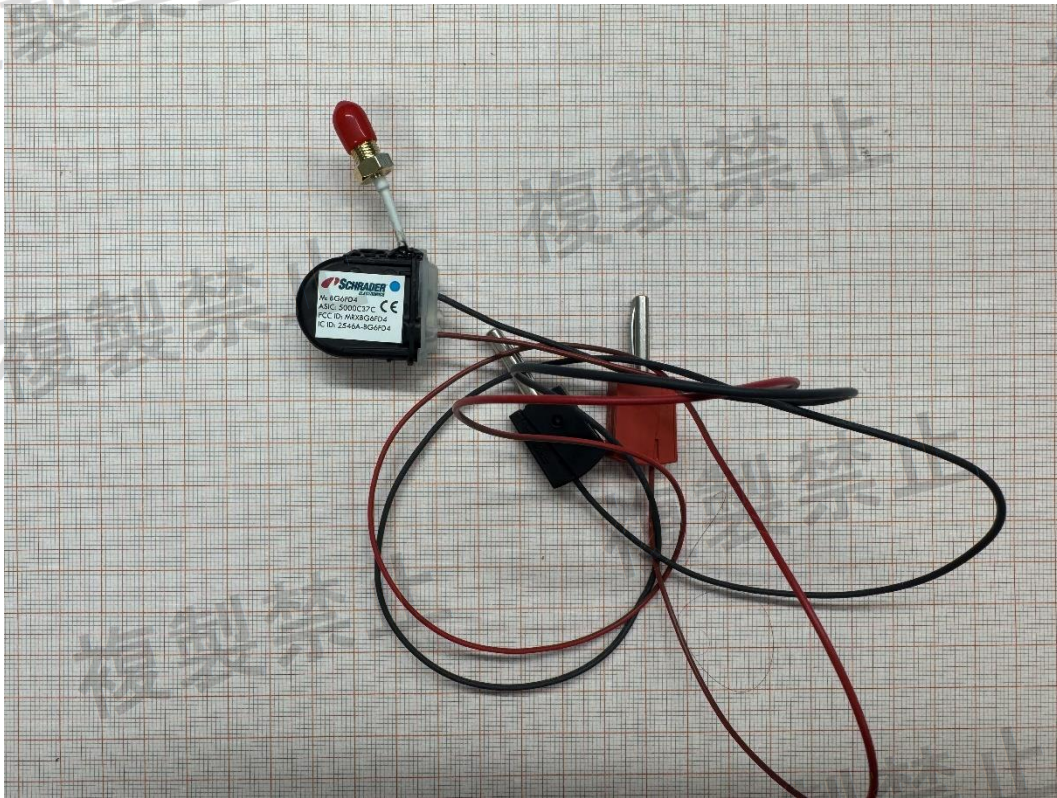
Photograph 4: EUT B, view 2



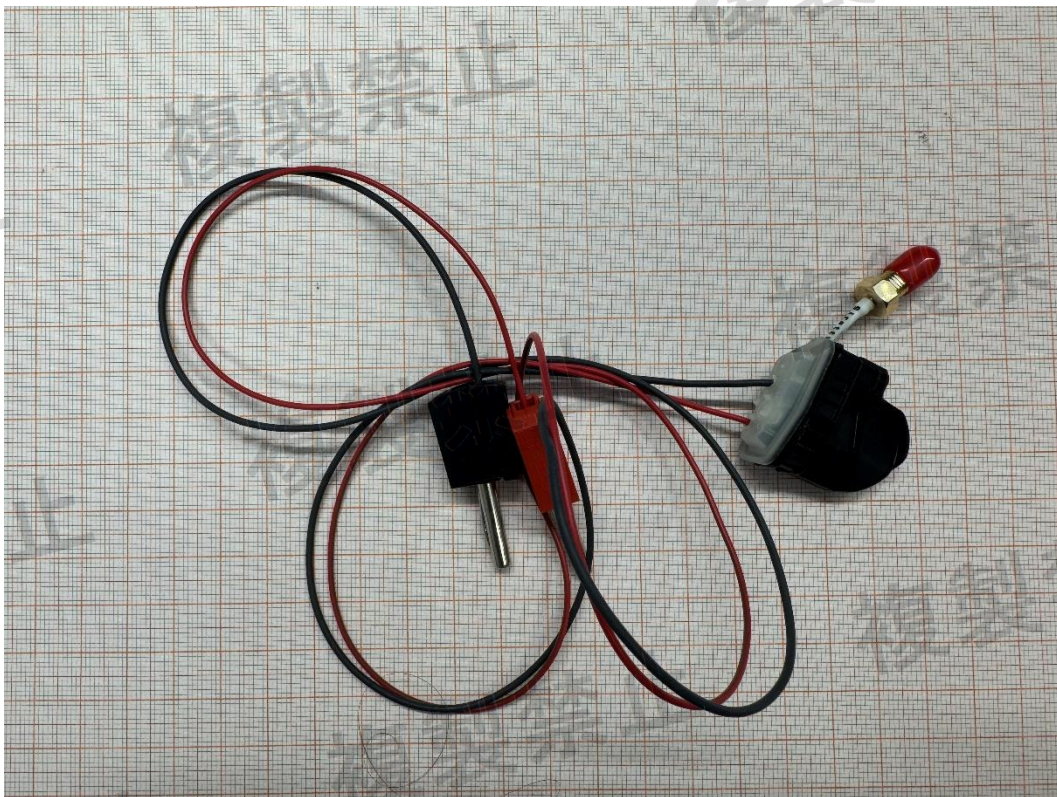
Photograph 5: EUT C, view 1



Photograph 6: EUT C, view 2



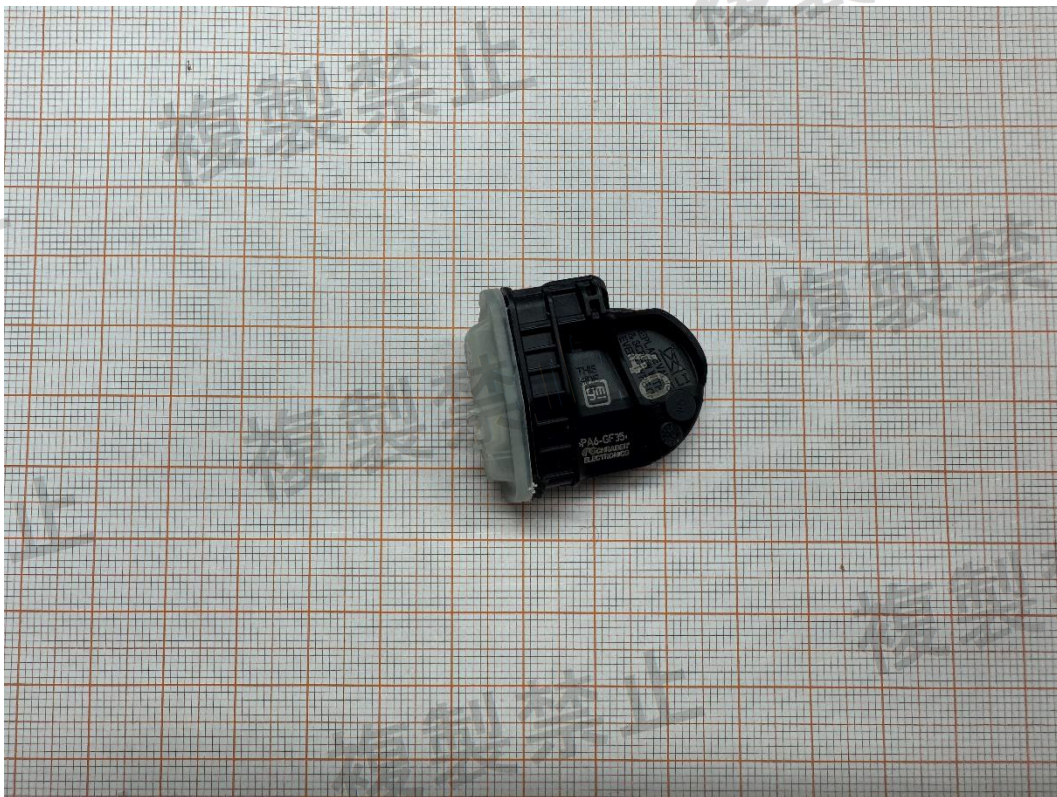
Photograph 7: EUT D, view 1



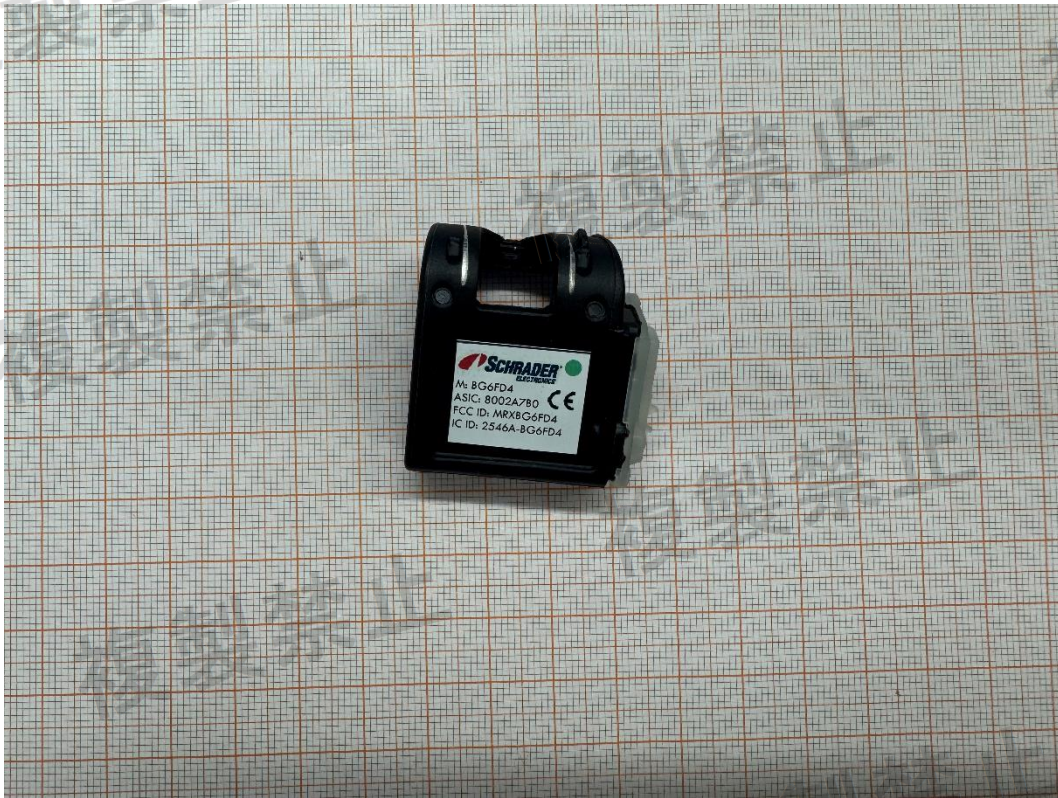
Photograph 8: EUT D, view 2



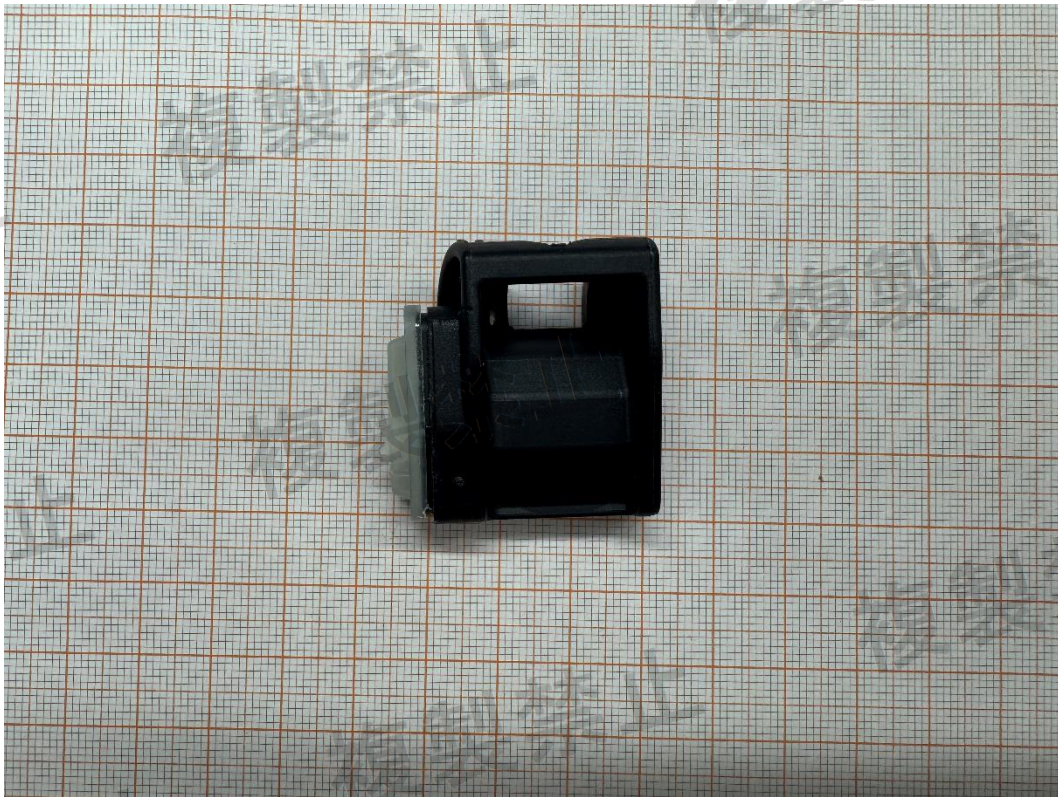
Photograph 9: EUT E, view 1



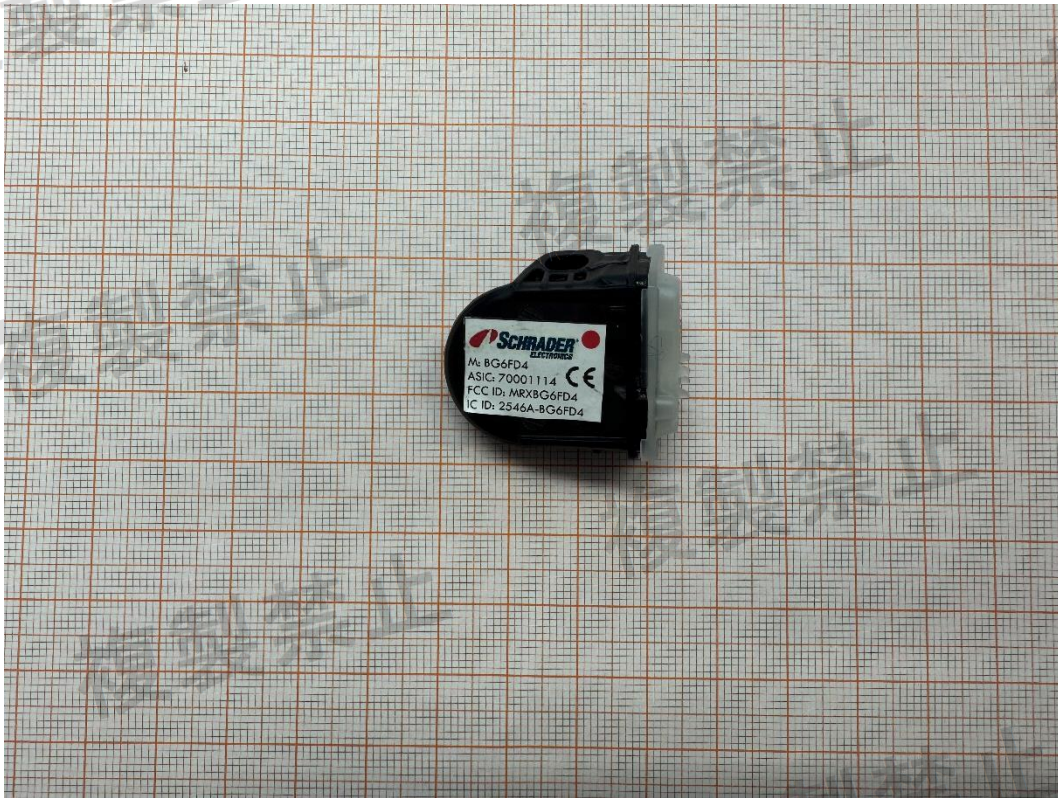
Photograph 10: EUT E, view 2



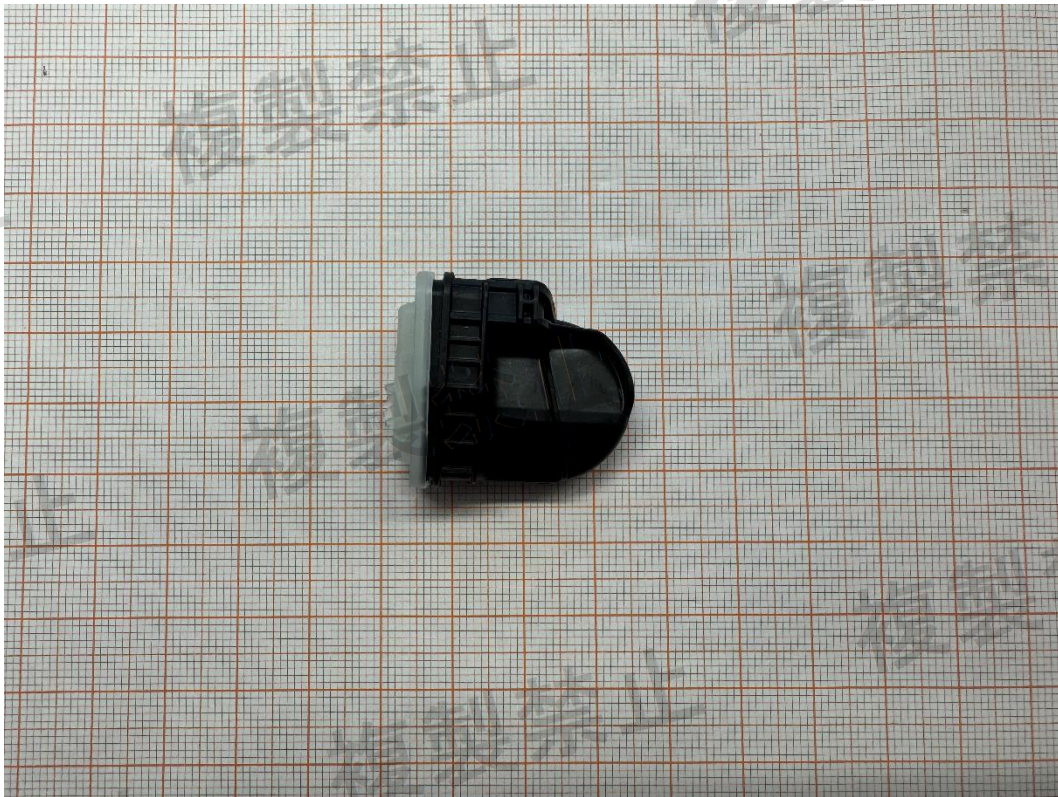
Photograph 11: EUT F, view 1



Photograph 12: EUT F, view 2



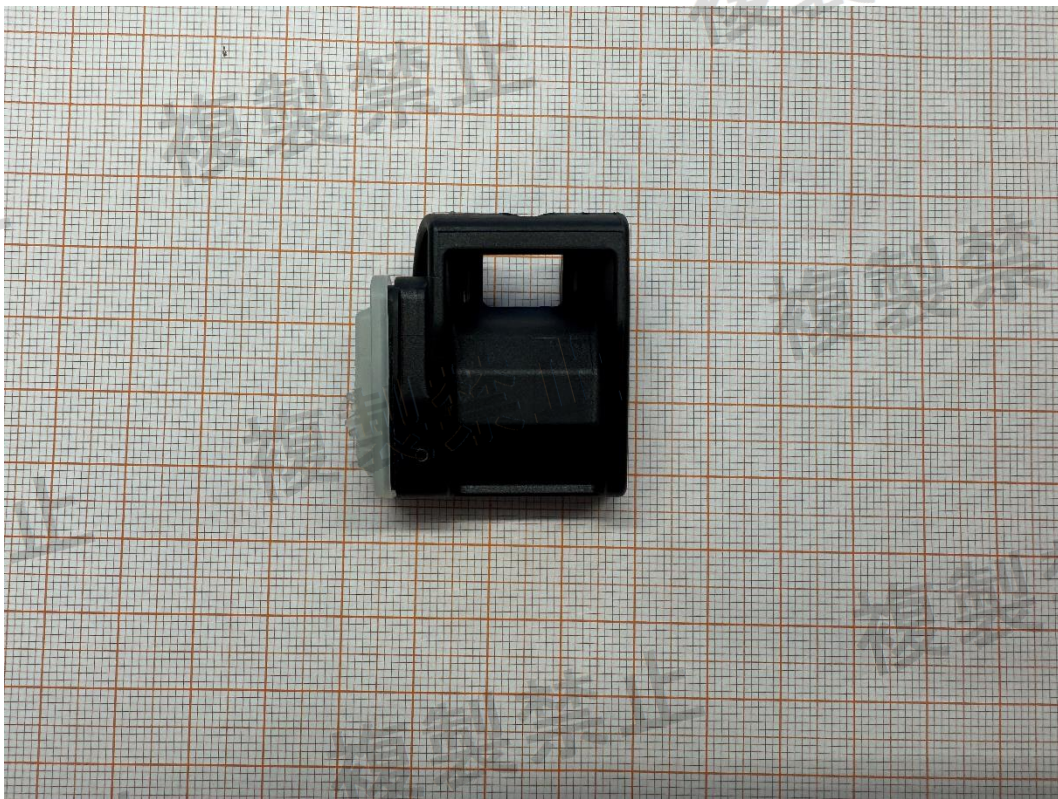
Photograph 13: EUT G, view 1



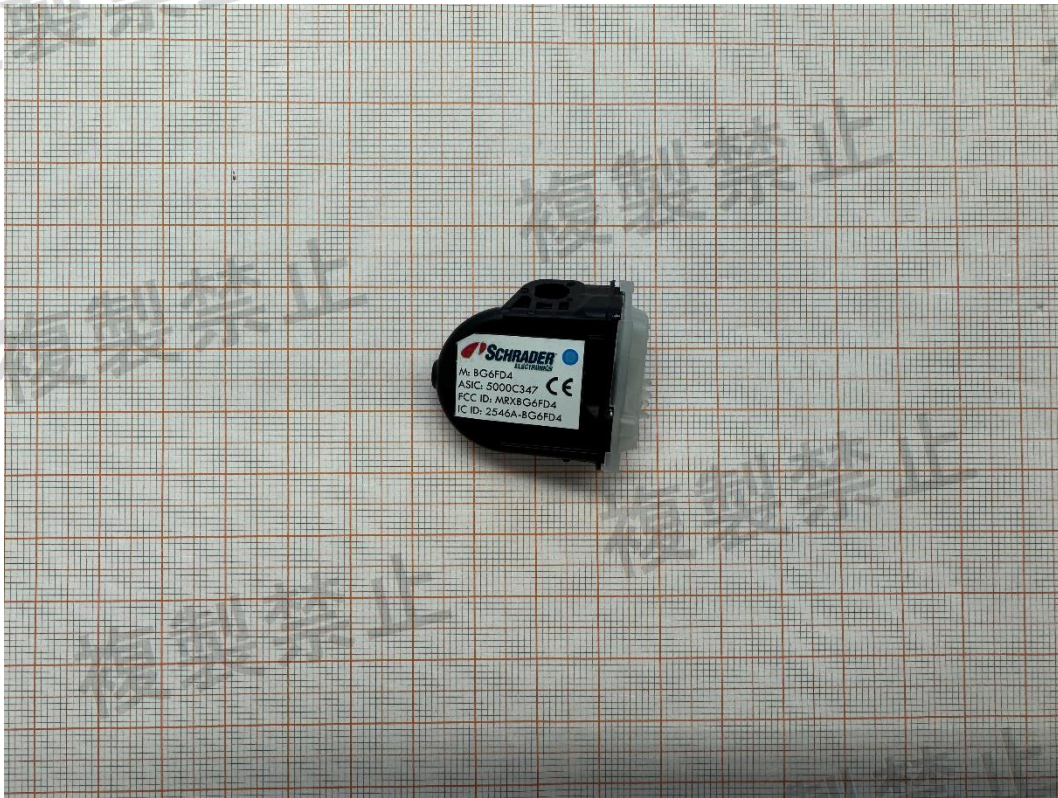
Photograph 14: EUT G, view 2



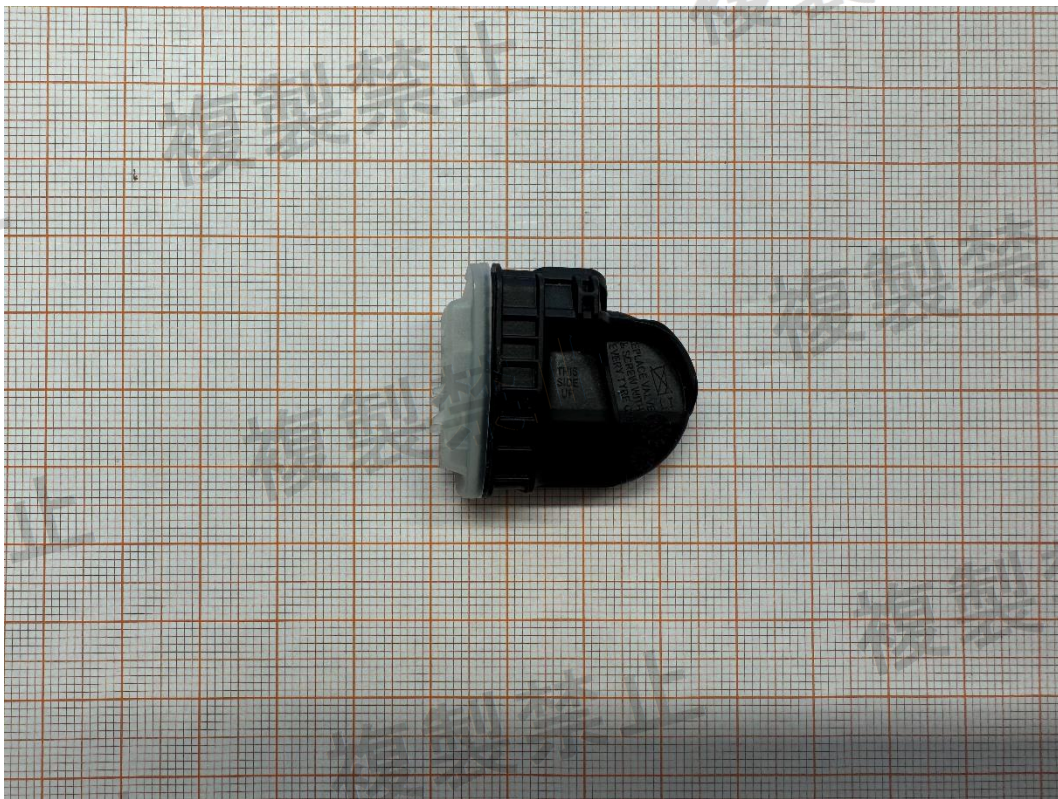
Photograph 15: EUT H, view 1



Photograph 16: EUT H, view 2



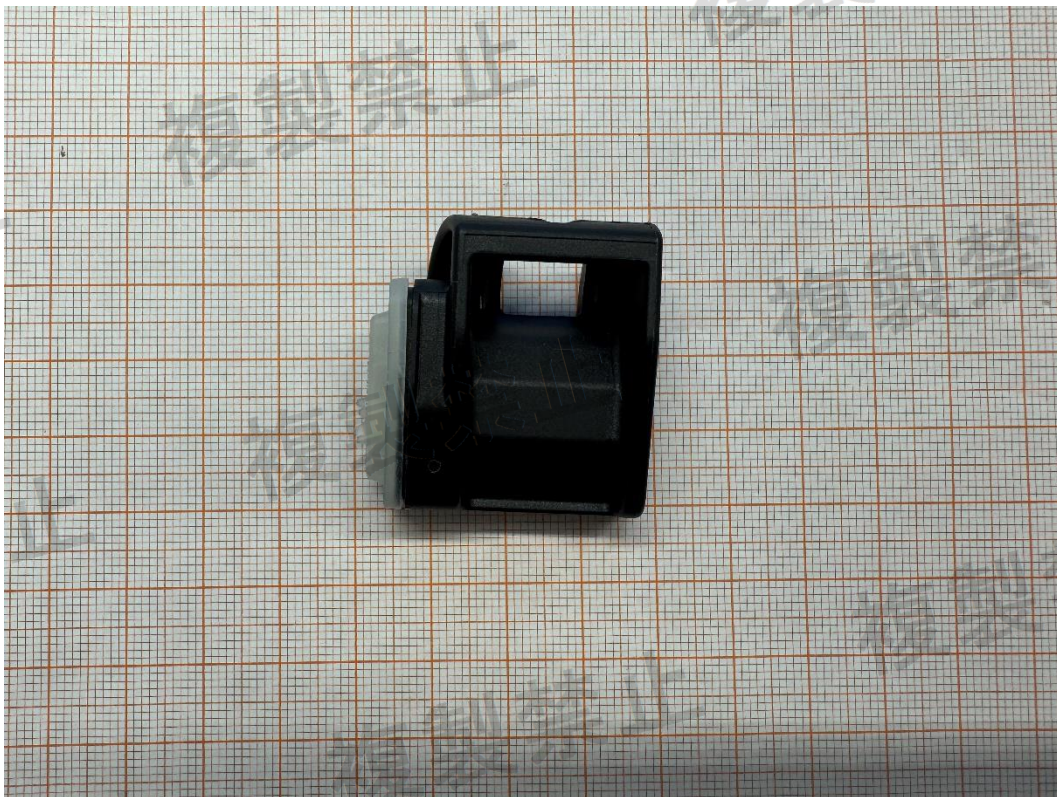
Photograph 17: EUT I, view 1



Photograph 18: EUT I, view 2



Photograph 19: EUT J, view 1



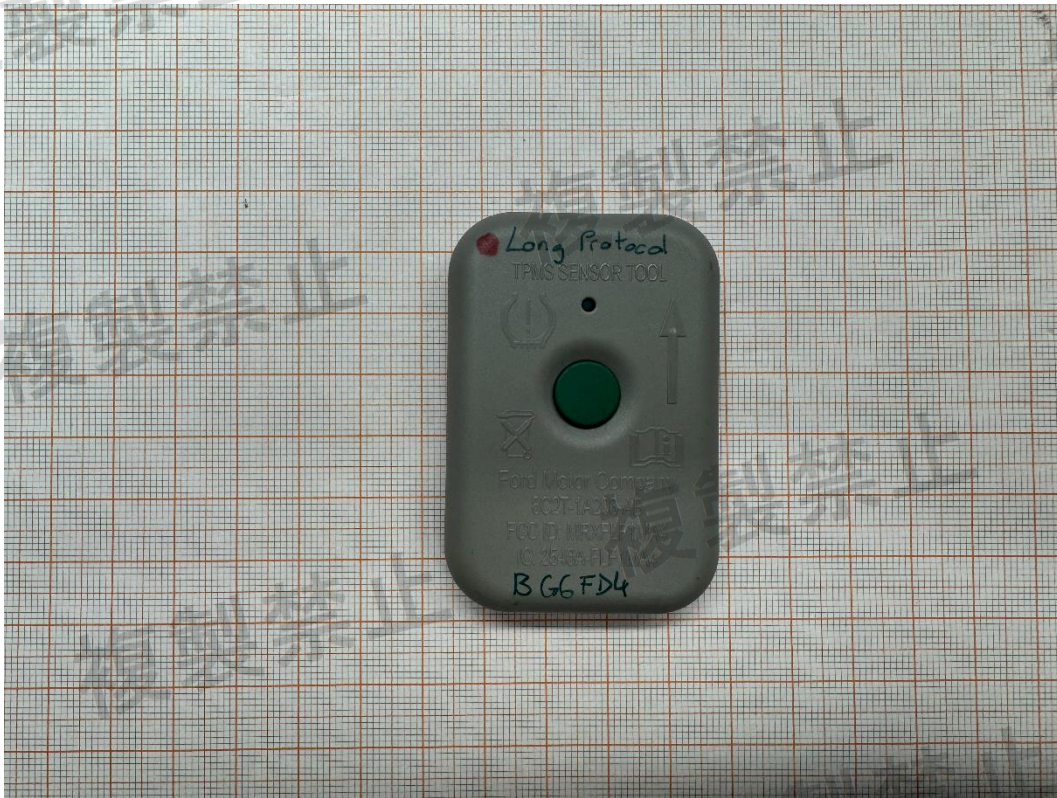
Photograph 20: EUT J, view 2



Photograph 21: AE1



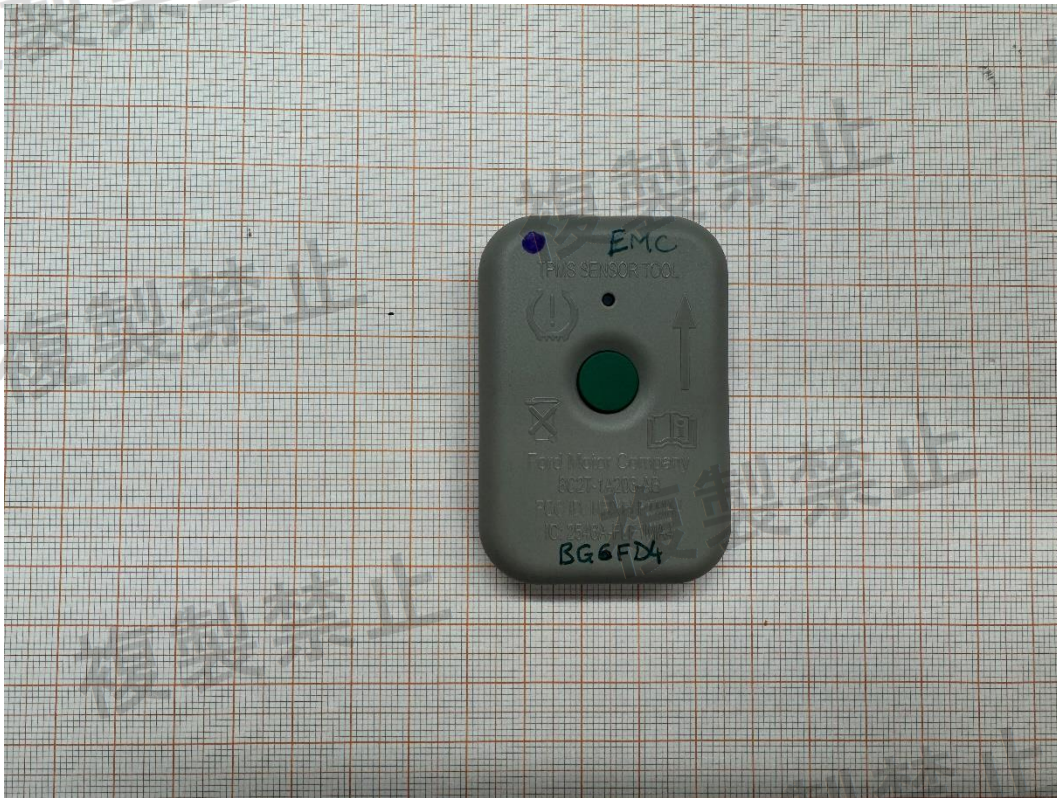
Photograph 22: AE2



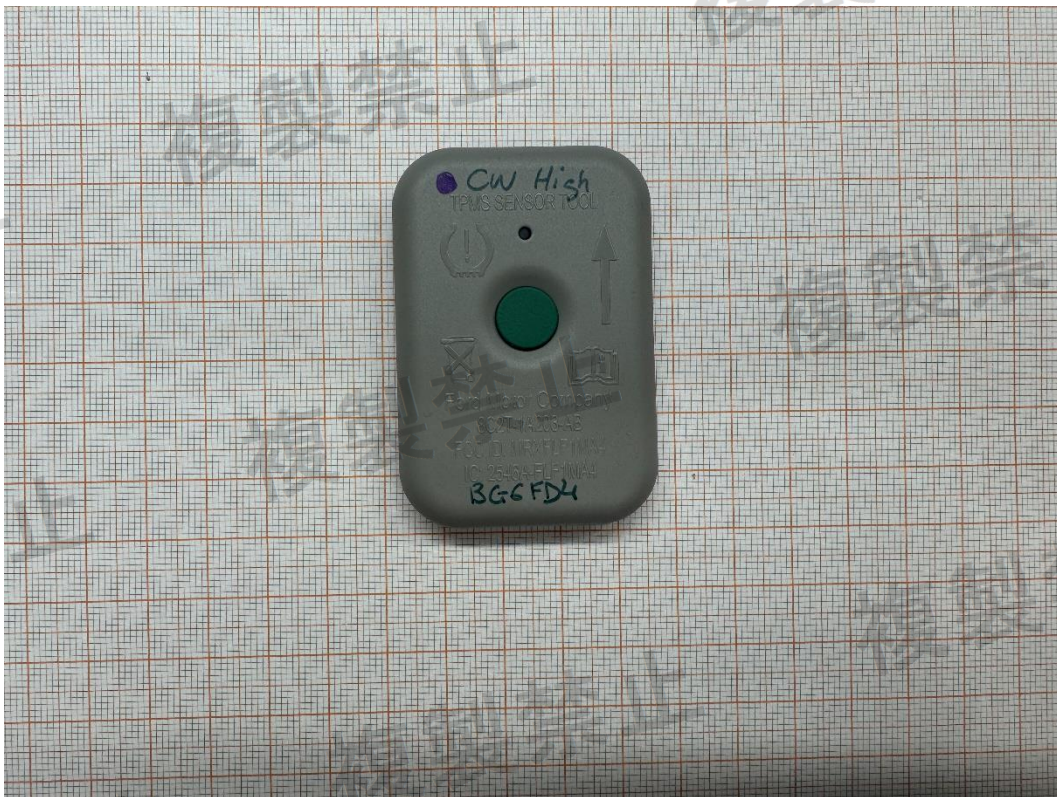
Photograph 23: AE3



Photograph 24: AE4



Photograph 25: AE5

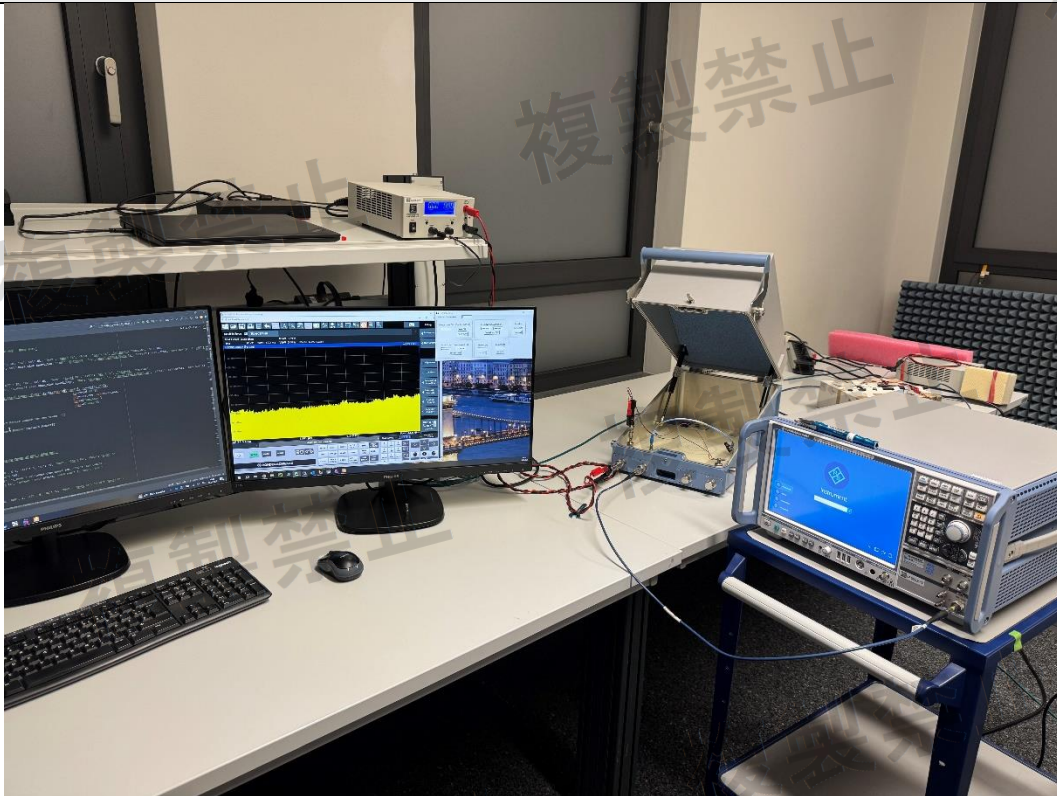


Photograph 26: AE6

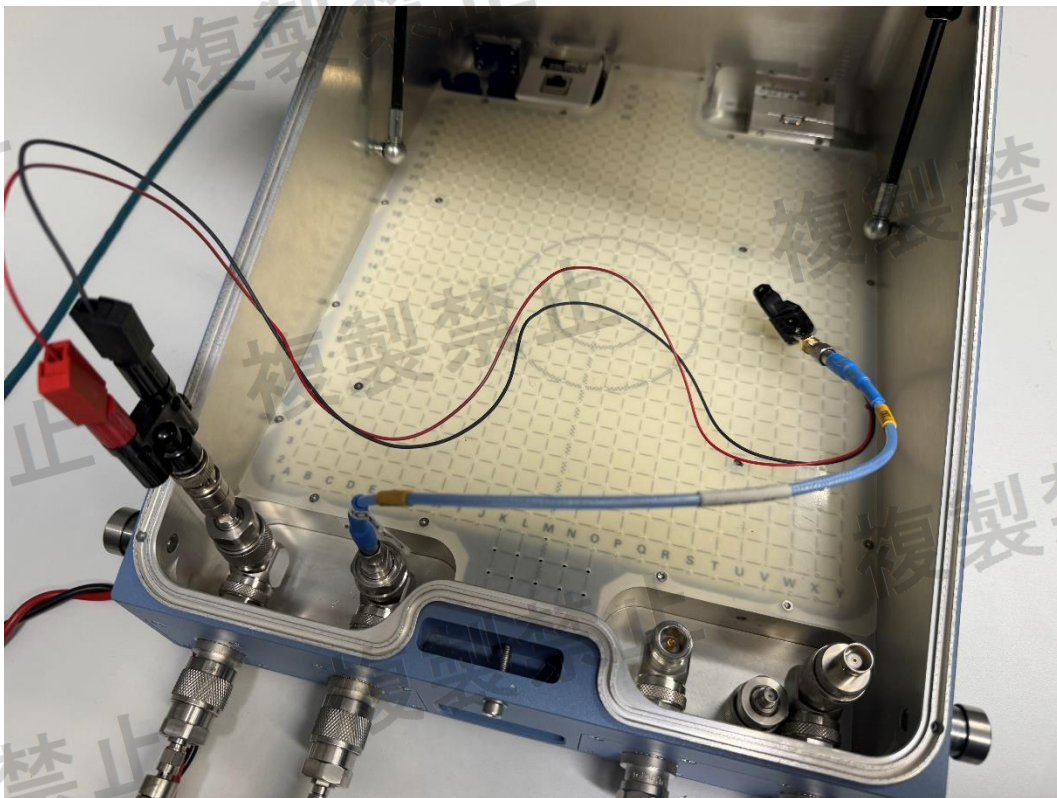


Photograph 27: AE7

ANNEX B TEST SETUP PHOTOGRAPHS



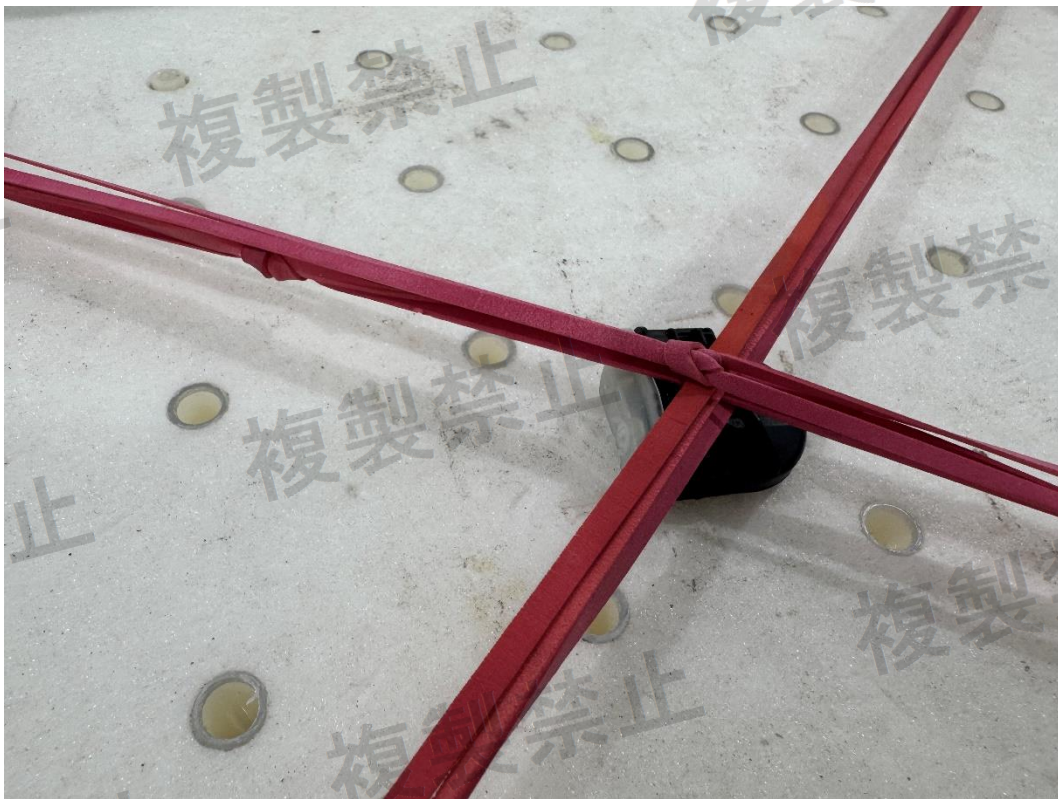
Photograph 28: Conducted measurement, overall view.



Photograph 29: Conducted measurement, close view.



Photograph 30: Radiated measurement, overall view.



Photograph 31: Radiated measurement, close view.

END OF TEST REPORT