



TEST REPORT

Application No.: SHCR2210002300AT
FCC ID: 2ADTD-K7CRT01E
Applicant: Hangzhou Hikvision Digital Technology Co., Ltd.
Address of Applicant: No.555 Qianmo Road,Binjiang District Hangzhou 310052,China
Manufacturer: Hangzhou Hikvision Digital Technology Co., Ltd.
Address of Manufacturer: No.555 Qianmo Road,Binjiang District Hangzhou 310052,China
Factory: 1, Hangzhou Hikvision Technology Co., Ltd.
2, Hangzhou Hikvision Electronics Co., Ltd.
3, Chongqing Hikvision Technology Co., Ltd.,
4, WuHan Hikvision Technology Co. Ltd
Address of Factory: 1, No.700,Dongliu Road, Binjiang District, Hangzhou City,Zhejiang,
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2, No.299,Qiushi Road,Tonglu Economic Development Zone,Tonglu
County, Hangzhou,Zhejiang, 311500,China.
3, NO.118.Haikang Road,Area C,Jianqiao Industrial Park,Dadukou District,
Chongqing,401325,China.
4, No. 12, Wenhua Road, Zhifang Street, Jiangxia District, Wuhan City
Equipment Under Test (EUT):
EUT Name: Stand Pole
Model No.: DS-K7CRT01/E
Standard(s) : 47 CFR Part 15, Subpart C 15.209
Date of Receipt: 2022-10-30
Date of Test: 2022-10-31 to 2022-11-02
Date of Issue: 2022-11-02

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

Parlam Zhan

Parlam Zhan
Laboratory Manager



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Report No.: SHCR221000230001

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Revision Record			
Version	Description	Date	Remark
00	Original	2022-11-02	/

Authorized for issue by:			
		Bill Wu	
		Bill Wu/Project Engineer	
		Parlam Zhan	
		Parlam Zhan/Reviewer	



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2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart C 15.209	N/A	47 CFR Part 15, Subpart C 15.203	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.209	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass
20dB Bandwidth	47 CFR Part 15, Subpart C 15.209	ANSI C63.10 (2013) Section 6.9	47 CFR Part 15, Subpart C 15.215	Pass
Radiated Emissions (9kHz-30MHz)	47 CFR Part 15, Subpart C 15.209	ANSI C63.10 (2013) Section 6.4&6.5	47 CFR Part 15, Subpart C 15.209	Pass
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart C 15.209	ANSI C63.10 (2013) Section 6.4&6.5	47 CFR Part 15, Subpart C 15.209	Pass



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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 12V 1A
Test voltage:	AC 120V/60Hz
Antenna Type:	Loop Antenna
Modulation Type:	ASK
Number of Channels:	1
Operation Frequency:	125kHz

4.2 Description of Support Units

The EUT has been tested as an independent unit.

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	8.4×10^{-8}
2	Timeout	2s
3	Duty cycle	0.4%
4	Occupied Bandwidth	3%
5	RF Radiated power	5.1dB (Below 1GHz) 5.9dB (Above 1GHz)
6	Radiated Spurious emission test	4.2dB (Below 30MHz) 4.5dB (30MHz-1GHz) 5.1dB (1GHz-6GHz) 5.4dB (6GHz-18GHz)
7	Temperature test	1°C
8	Humidity test	3%
9	Supply voltages	1.5%
10	Time	3%

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab
588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

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No tests were sub-contracted.

Note:

1. SGS is not responsible for wrong test results due to incorrect information (e.g. max. clock frequency, highest internal frequency, antenna gain, cable loss, etc) is provided by the applicant. (if applicable).
2. SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (if applicable).

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 6332.01)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the American Association for Laboratory Accreditation(A2LA).

- **FCC (Designation Number: CN1301)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

- **ISED (CAB Identifier: CN0020)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 8617A

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-13868, C-14336, T-12221, G-10830 respectively.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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5 Equipment List

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
RF Radiated Test					
EMI test Receiver	R&S	ESU40	SHEM051-1	2021-12-20	2022-12-19
Spectrum Analyzer	R&S	FSP-30	SHEM002-1	2021-12-20	2022-12-19
Communication Tester	R&S	CMW500	SHEM268-1	2022-07-25	2023-07-24
Loop Antenna (9kHz-30MHz)	Schwarzbeck	FMZB1519	SHEM135-1	2021-12-20	2022-12-19
Antenna (25MHz-2GHz)	Schwarzbeck	VULB9168	SHEM048-1	2021-09-11	2023-09-10
Antenna (25MHz-2GHz)	Schwarzbeck	VULB9168	SHEM202-1	2021-05-07	2023-05-06
Horn Antenna (1-18GHz)	Schwarzbeck	HF906	SHEM009-1	2022/8/11	2024-08-10
Horn Antenna (1-18GHz)	Schwarzbeck	BBHA9120D	SHEM050-1	2021-09-18	2023-09-17
Horn Antenna (14-40GHz)	Schwarzbeck	BBHA 9170	SHEM049-1	2021-09-18	2023-09-17
Pre-Amplifier	HP	8447D	SHEM236-1	2022-08-02	2023-08-01
High-amplifier (14-40GHz)	Schwarzbeck	10001	SHEM049-2	2021-12-20	2022-12-19
Band Filter	LORCH	9BRX-875/X150	SHEM156-1	/	/
Band Filter	LORCH	13BRX-1950/X500	SHEM083-2	/	/
Band Filter	LORCH	5BRX-2400/X200	SHEM155-1	/	/
Band Filter	LORCH	5BRX-5500/X1000	SHEM157-2	/	/
High pass Filter	Wainwright	WHK3.0/18G	SHEM157-1	/	/
High pass Filter	Wainwright	WHKS1700	SHEM157-3	/	/
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2020-05-25	2023-05-24
RE test Cable	/	RE01, RE02, RE06	/	2022-01-07	2023-01-06
Test software	ESE	E3	Version: 6.111221a	/	/
Conducted Emission at Mains Terminals (150kHz-30MHz)					
EMI test receiver	R&S	ESR7	SHEM162-1	2021-12-20	2022-12-19
LISN	Schwarzbeck	NSLK8127	SHEM061-1	2021-12-20	2022-12-19
LISN	EMCO	3816/2	SHEM019-1	2021-12-20	2022-12-19
Pulse limiter	R&S	ESH3-Z2	SHEM029-1	2021-12-20	2022-12-19
Shielding Room	ZHONGYU	8*4*3M	SHEM079-2	2021-12-20	2022-12-19
CE test Cable	/	CE01	/	2022-01-07	2023-01-07
Test software	ESE	E3	Version: 6.111221a	/	/



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6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203

6.1.2 Conclusion

Standard Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit permanently attached antenna or of an so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT Antenna:

The antenna is loop antenna and no consideration of replacement.

Antenna location: Refer to Appendix (Internal Photos)



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7 Radio Spectrum Matter Test Results

7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207

Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

Frequency of emission(MHz)	Conducted limit(dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

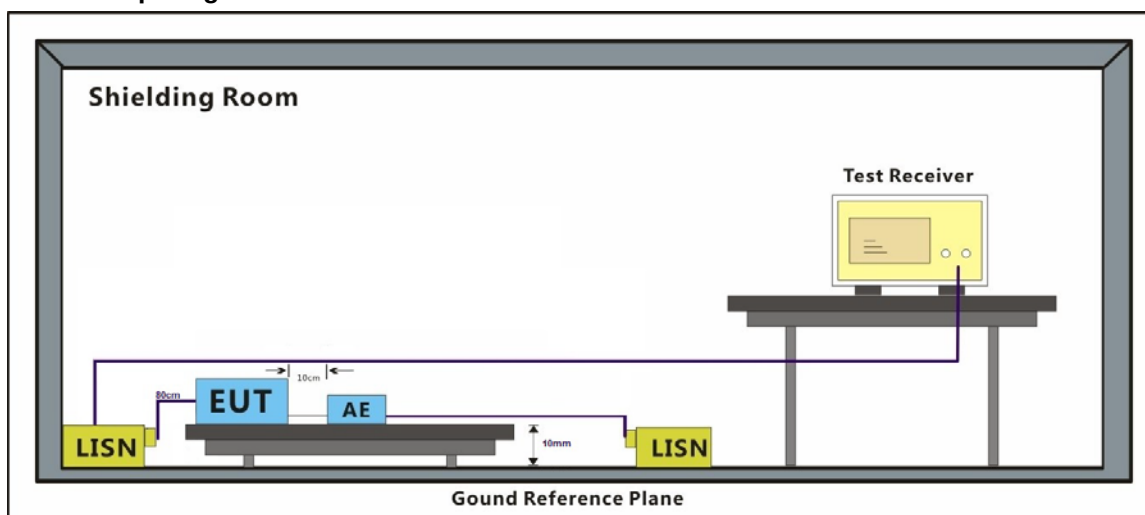
7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 45 % RH Atmospheric Pressure: 1001 mbar

Test mode b: TX mode_Keep the EUT in transmitting with modulation mode.

7.1.2 Test Setup Diagram



7.1.3 Measurement Procedure and Data

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed directly on the horizontal ground reference plane or 10mm above the horizontal ground reference plane with insulating material.
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Remark: LISN=Read Level+ Cable Loss+ LISN Factor



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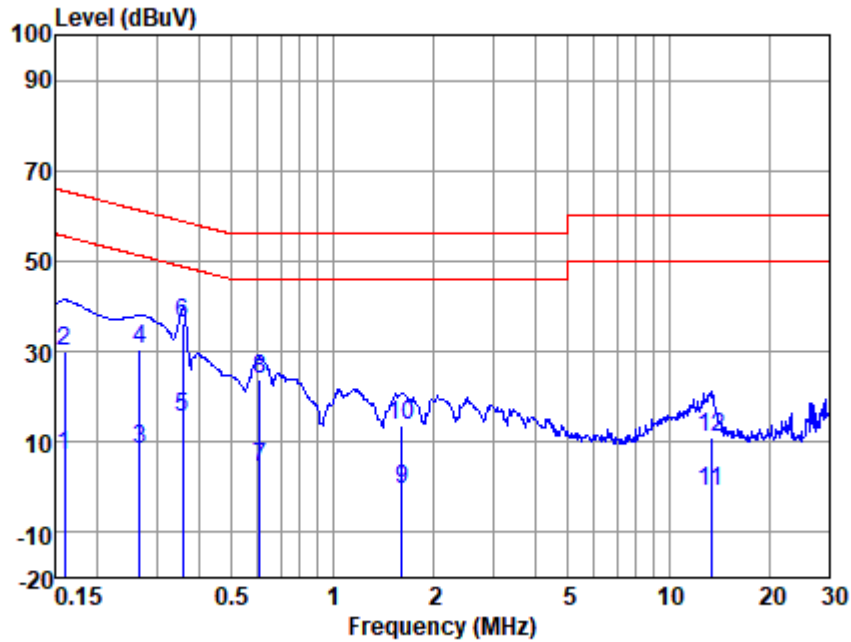
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Mode:b; Line:Live Line



LISN : LINE
EUT/Project No : 02300AT
Test Mode : 00

	Freq (MHz)	Read level (dBuV)	LISN Factor (dB)	Cable Loss (dB)	Emission Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Remark
1	0.16	-3.34	0.13	10.02	6.81	55.52	-48.71	Average
2	0.16	19.67	0.13	10.02	29.82	65.52	-35.70	QP
3	0.27	-1.60	0.10	10.05	8.55	51.20	-42.65	Average
4	0.27	20.18	0.10	10.05	30.33	61.20	-30.87	QP
5	0.36	5.30	0.10	10.06	15.46	48.78	-33.32	Average
6	0.36	25.96	0.10	10.06	36.12	58.78	-22.66	QP
7	0.61	-5.79	0.10	10.09	4.40	46.00	-41.60	Average
8	0.61	13.85	0.10	10.09	24.04	56.00	-31.96	QP
9	1.61	-10.84	0.10	10.16	-0.58	46.00	-46.58	Average
10	1.61	3.57	0.10	10.16	13.83	56.00	-42.17	QP
11	13.41	-11.51	0.37	10.33	-0.81	50.00	-50.81	Average
12	13.41	0.49	0.37	10.33	11.19	60.00	-48.81	QP

Notes: Emission Level = Read Level + LISN Factor + Cable loss



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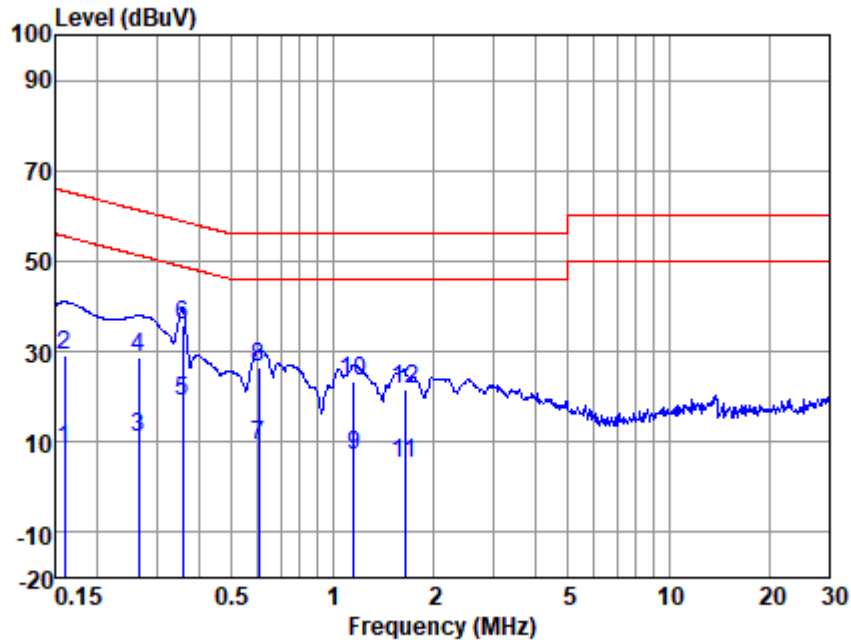
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Mode:b; Line:Neutral Line



LISN : NEUTRAL
EUT/Project No : 02300AT
Test Mode : 00

	Freq (MHz)	Read level (dBuV)	LISN Factor (dB)	Cable Loss (dB)	Emission Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Remark
1	0.16	-1.83	0.10	10.02	8.29	55.52	-47.23	Average
2	0.16	18.84	0.10	10.02	28.96	65.52	-36.56	QP
3	0.26	0.78	0.10	10.05	10.93	51.29	-40.36	Average
4	0.26	18.43	0.10	10.05	28.58	61.29	-32.71	QP
5	0.36	8.67	0.10	10.06	18.83	48.78	-29.95	Average
6	0.36	25.44	0.10	10.06	35.60	58.78	-23.18	QP
7	0.60	-1.03	0.10	10.09	9.16	46.00	-36.84	Average
8	0.60	16.09	0.10	10.09	26.28	56.00	-29.72	QP
9	1.16	-3.34	0.10	10.12	6.88	46.00	-39.12	Average
10	1.16	13.18	0.10	10.12	23.40	56.00	-32.60	QP
11	1.64	-4.85	0.10	10.16	5.41	46.00	-40.59	Average
12	1.64	11.16	0.10	10.16	21.42	56.00	-34.58	QP

Notes: Emission Level = Read Level + LISN Factor + Cable loss



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7.2 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.215
Test Method: ANSI C63.10 (2013) Section 6.9
Limit: <200 kHz

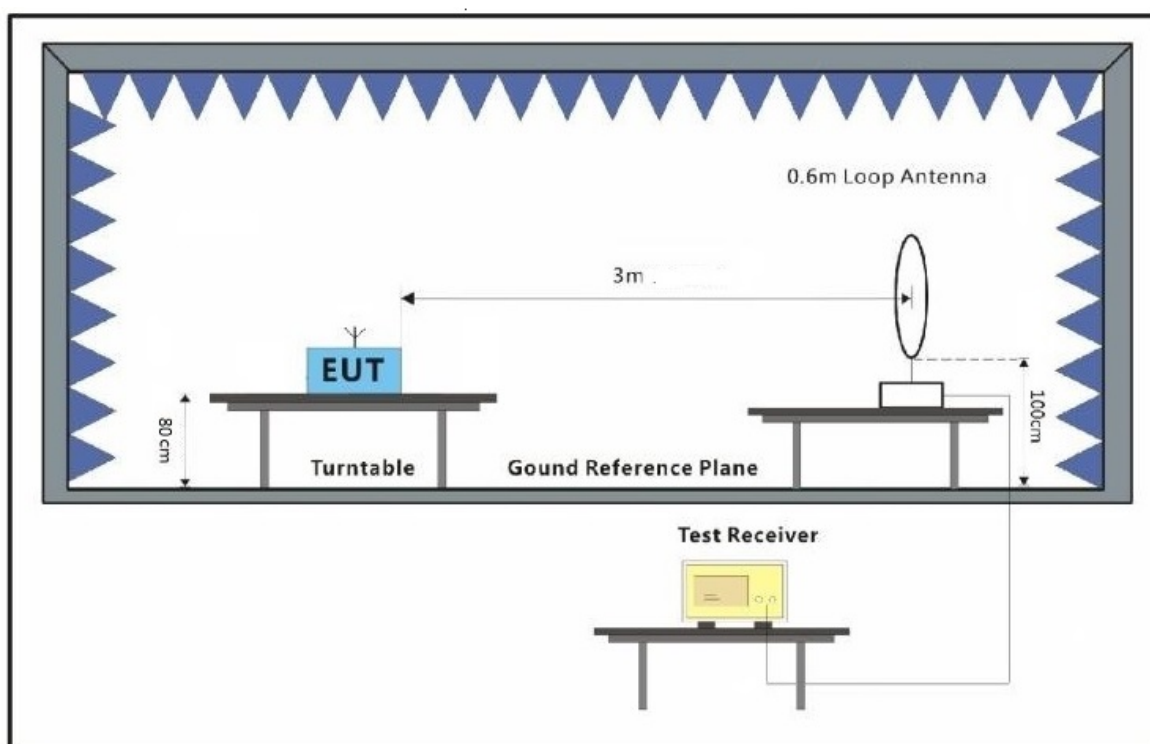
7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 45 % RH Atmospheric Pressure: 1001 mbar

Test mode b:TX mode_Keep the EUT in continuously transmitting mode

7.2.2 Test Setup Diagram

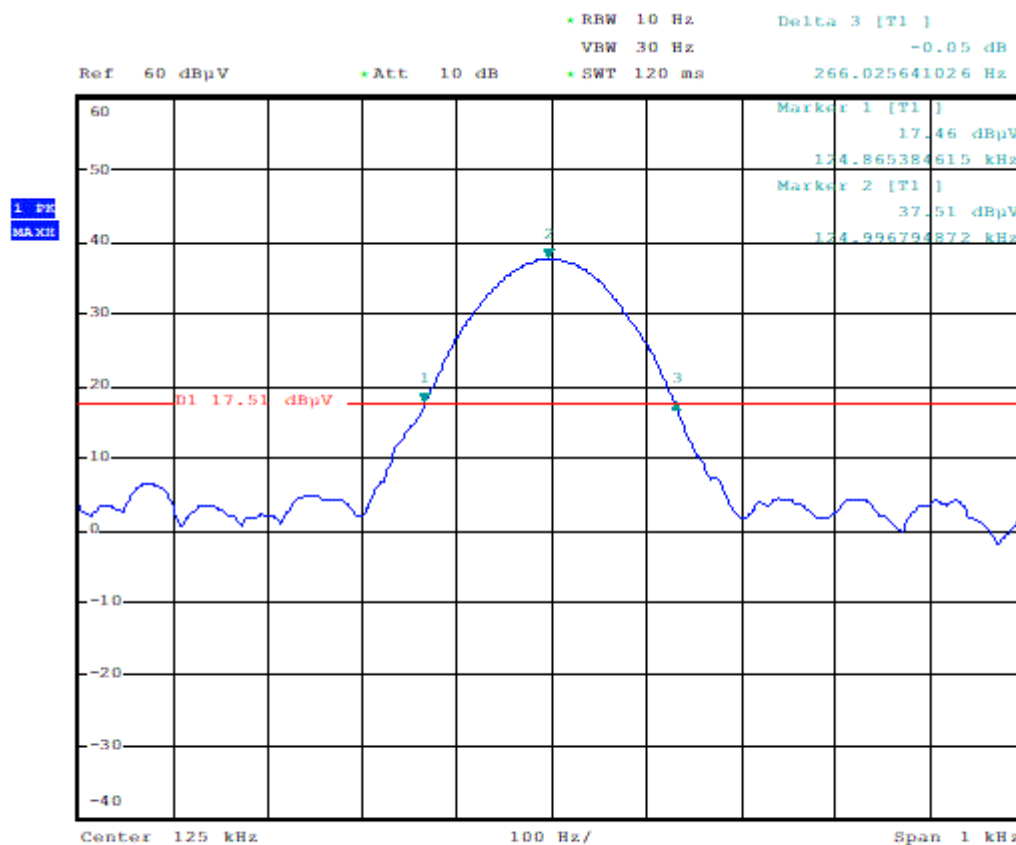


7.2.3 Measurement Procedure and Data



20dB bandwidth (Hz)	Result
266.026	Pass

Test plot as follows:



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7.3 Radiated Emissions (9kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.209
Test Method: ANSI C63.10 (2013) Section 6.4&6.5
Measurement Distance: 3m
Limit:

Frequency(MHz)	Field strength (microvolts/meter)	Limit (dBuV/m)	Detector	Measurement Distance (meters)
0.009-0.490	2400/F(kHz)	-	-	300
0.490-1.705	24000/F(kHz)	-	-	30
1.705-30	30	-	-	30
30-88	100	40.0	QP	3
88-216	150	43.5	QP	3
216-960	200	46.0	QP	3
960-1000	500	54.0	QP	3
Above 1000	500	54.0	AV	3

NOTE:

- (1) For test distance other than what is specified, but fulfilling the requirements of section 15.31(f) (2) the field strength is calculated by adding additionally an extrapolation factor of 40dB/decade (inverse linear distance for field strength measurements).

So the Distance Extrapolation Factor in dB is $40 \times \log(D_{TEST} / D_{SPEC})$ where D_{TEST} = Test Distance and D_{SPEC} = Specified Distance.

Field strength limit (dBuV/m)@test distance= Field strength limit (dBuV/m)@specified distance +Distance Extrapolation Factor

- (2) The lower limit shall apply at the transition frequencies.

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 45 % RH Atmospheric Pressure: 1001 mbar

Test mode b:TX mode_Keep the EUT in continuously transmitting mode



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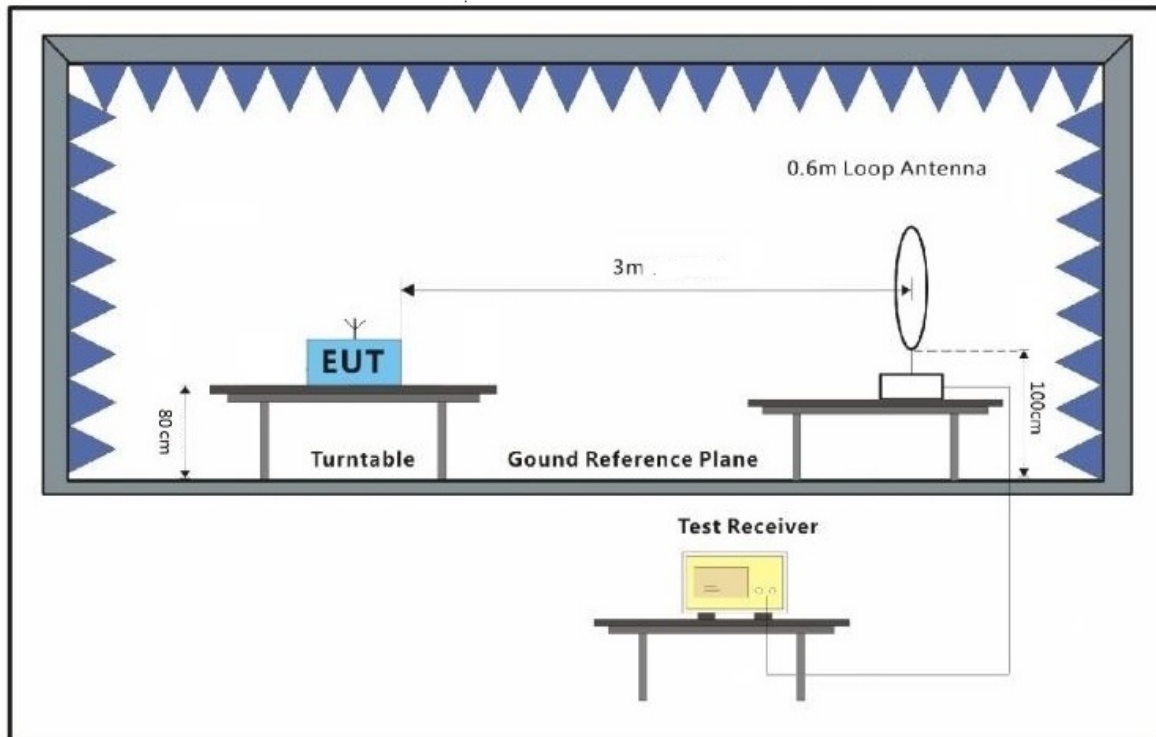
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7.3.2 Test Setup Diagram

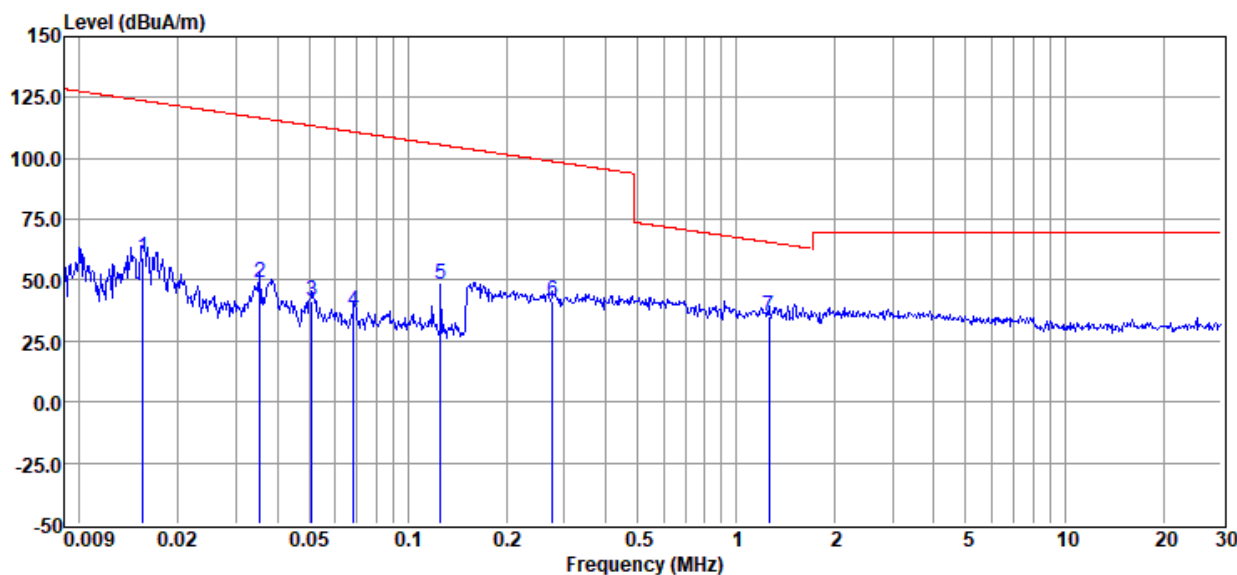


7.3.3 Measurement Procedure and Data

For testing performed with the loop antenna, the center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane. Only the worst position of vertical was shown in the report.



Vertical



	Freq.	Read Level	Correct Factor	Result Level@3m	Result Level@SPEC	Limit Line@SPEC	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.016	39.09	20.02	59.11	-20.89	43.71	-64.6	QP
2	0.035	29.13	19.92	49.05	-30.95	36.6	-67.55	QP
3	0.051	21.7	19.82	41.52	-38.48	33.43	-71.91	QP
4	0.068	17.34	19.82	37.16	-42.84	30.9	-73.74	QP
5	0.126	28.22	20.04	48.26	-31.74	25.61	-57.35	Peak
6	0.276	21.28	20.05	41.33	-38.67	18.78	-57.45	QP
7	1.258	14.94	20.35	35.29	-4.71	25.63	-30.34	QP



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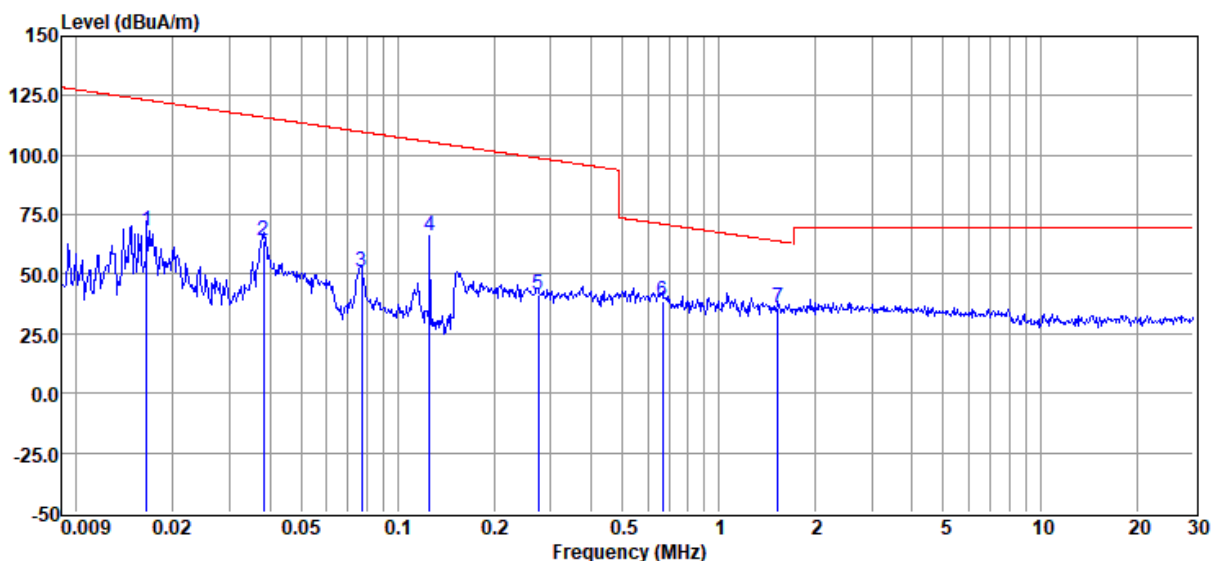
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Horizontal



	Freq.	Read Level	Correct Factor	Result Level@3m	Result Level@SPEC	Limit Line@SPEC	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.017	48.22	20.02	68.24	-11.76	43.22	-54.98	QP
2	0.038	44.32	19.92	64.24	-15.76	35.97	-51.73	QP
3	0.077	30.87	19.98	50.85	-29.15	29.84	-58.99	QP
4	0.126	46.41	20.04	66.45	-13.55	25.61	-39.16	Peak
5	0.274	21.45	20.05	41.5	-38.5	18.85	-57.35	QP
6	0.668	18.29	20.2	38.49	-1.51	31.11	-32.62	QP
7	1.528	15.44	20.39	35.83	-4.17	23.95	-28.12	QP



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7.4 Radiated Emissions (30MHz-1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.209
Test Method: ANSI C63.10 (2013) Section 6.4&6.5
Limit:.

Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
30MHz-88MHz	100	40.0	Quasi-peak	3
88MHz-216MHz	150	43.5	Quasi-peak	3
216MHz-960MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3

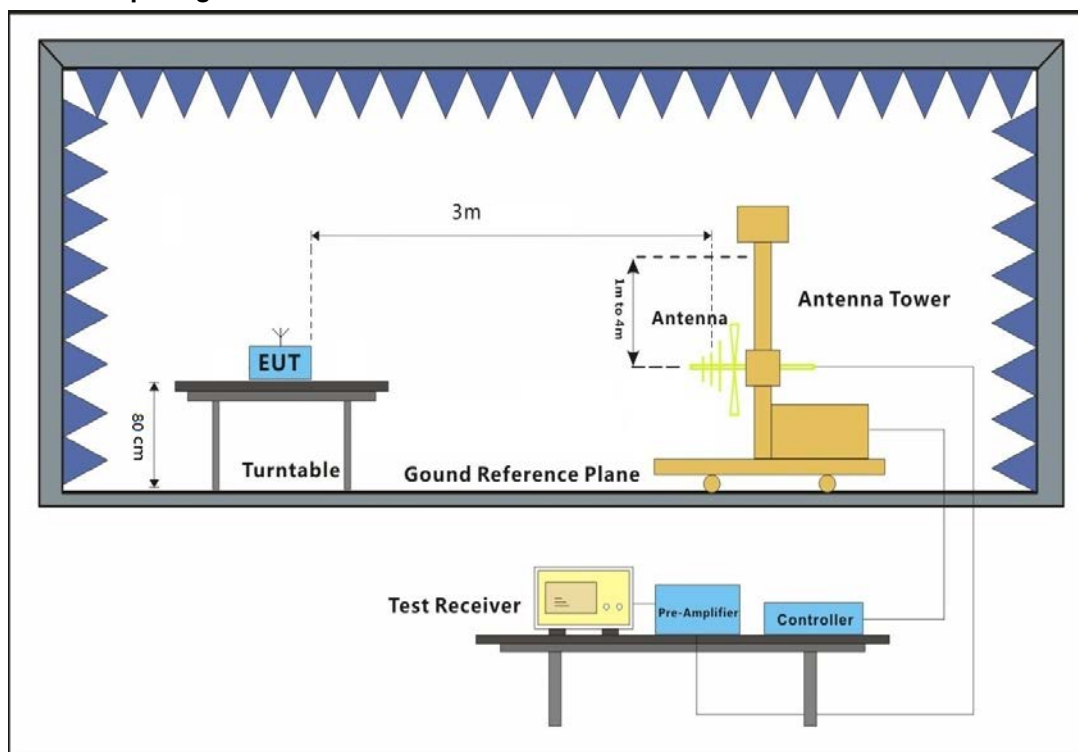
7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 45% RH Atmospheric Pressure: 1001 mbar

Test mode b: TX mode_Keep the EUT in transmitting with modulation mode.

7.4.2 Test Setup Diagram

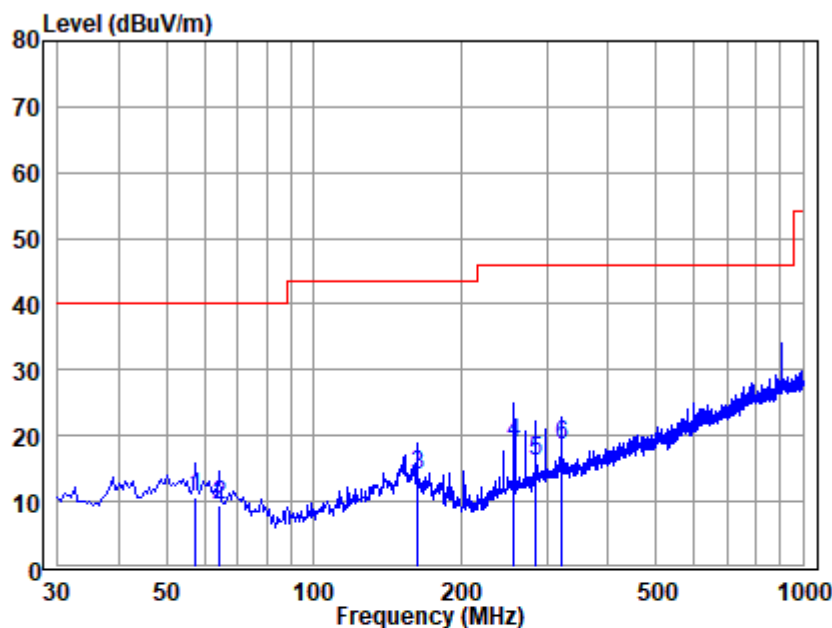


7.4.3 Measurement Procedure and Data

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground for below 1GHz at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case.
- i. Repeat above procedures until all frequencies measured was complete.

Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Horizontal:



Antenna Polarity :Horizontal

EUT/Project :2300AT

Test mode :00

	Read	Antenna	Cable	Preamp	Emission	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1 57.17	27.60	13.35	1.76	32.00	10.71	40.00	-29.29	QP
2 63.97	26.88	12.65	1.95	31.90	9.58	40.00	-30.42	QP
3 162.96	29.96	13.18	3.14	32.27	14.01	43.50	-29.49	QP
4 256.12	35.40	11.98	4.03	32.49	18.92	46.00	-27.08	QP
5 284.75	31.53	13.20	4.25	32.78	16.20	46.00	-29.80	QP
6 320.18	33.12	14.08	4.59	33.11	18.68	46.00	-27.32	QP

Note: Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

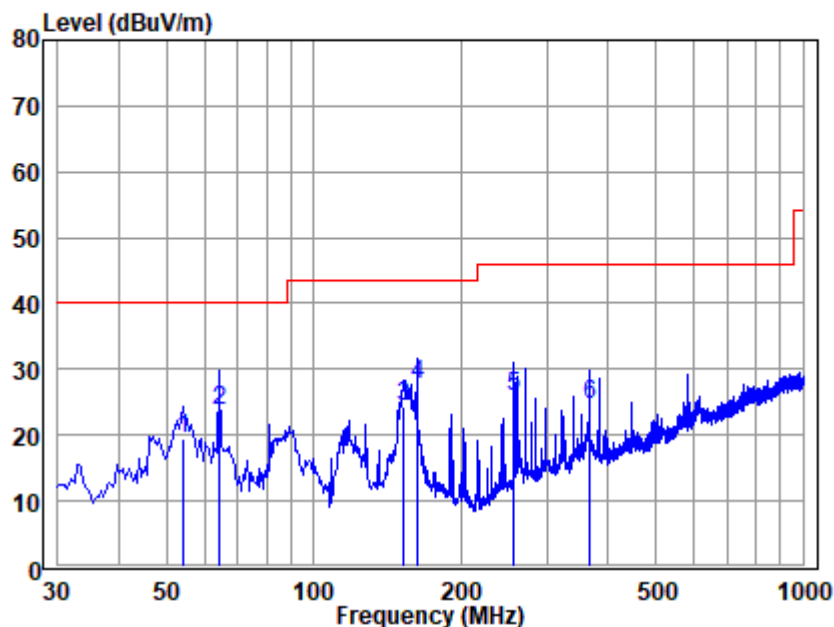


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Vertical:



Antenna Polarity :Vertical

EUT/Project :2300AT

Test mode :00

	Read	Antenna	Cable	Preamp	Emission	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1 54.26	36.03	13.58	1.77	32.00	19.38	40.00	-20.62	QP
2 63.97	41.04	12.65	1.95	31.90	23.74	40.00	-16.26	QP
3 152.77	40.02	13.45	3.01	32.14	24.34	43.50	-19.16	QP
4 162.96	43.51	13.18	3.14	32.27	27.56	43.50	-15.94	QP
5 256.12	42.39	11.98	4.03	32.49	25.91	46.00	-20.09	QP
6 366.27	38.30	14.82	4.87	33.24	24.75	46.00	-21.25	QP

Note: Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



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8 Test Setup Photographs

Refer to the < Test Setup photos >.

9 EUT Constructional Details

Refer to the < External Photos > & < Internal Photos >.

- End of the Report -



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