



# TEST REPORT

**Reference No.**..... : WTA23F11240124W  
**FCC ID** ..... : 2AJJGHJRF  
**Applicant**..... : Qingdao Richmat Intelligence Technology Inc  
**Address**..... : NO.78 Kongquehe 4th Road, Qingdao Clothing Industry park, Jimo, Qingdao, Shandong Province, China.  
**Manufacturer** ..... : The same as above  
**Address**..... : The same as above  
**Product Name**..... : Module  
**Model No.**..... : HJ RF  
**Test specification**..... : FCC CFR47 Part 15 Subpart C (Section 15.249): 2021  
**Date of Receipt sample** .... : 2023-11-24  
**Date of Test** ..... : 2023-11-29  
**Date of Issue**..... : 2023-12-07  
**Test Report Form No.** ..... : WEW-15247A-01A  
**Test Result**..... **Pass**

**Remarks:**

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

**Prepared By:**

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Tested by:

Roy Hong

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Danny Zhou



## 1 Revision History

Test Report No.	Date of Issue	Description	Status
WTA23F11240124W	2023-12-07	Class II Permissive Change	Valid

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### 3 General Information

#### 3.1 General Description of E.U.T

**Product Name** ..... : Module  
**Model No.** ..... : HJ RF  
**Remark** ..... : The report is C2PC report, the following host models were added and tested.  
**Host Models** ..... : H158B, H158, H159  
**Rating** ..... : Battery 3V (2\*1.5V AAA)  
**Battery Capacity** ..... : ---  
**Power Adapter** ..... : ---

#### 3.2 Technical Characteristics of EUT

**Frequency Range** ..... : 2405-2480 MHz  
**Modulation** ..... : FSK  
**Quantity of Channels** ..... : 151  
**Channel Separation**..... : 0.5MHz  
**Type of Antenna** ..... : PCB Antenna  
**Antenna Gain** ..... : 0dBi

#### 3.3 Standards Applicable for Testing

The tests were performed according to following standards:

FCC Rules Part 15.249      Operation within the bands 902–928 MHz, 2400–2483.5 MHz, 5725–5875 MHz, and 24.0–24.25 GHz.

ANSI C63.10-2013      American National Standard for Testing Unlicensed Wireless Devices



### 3.4 Test Facility

The test facility has a test site registered with the following organizations:

- **ISED – Registration No.: 21895**

Waltek Testing Group (Foshan) Co., Ltd. has been registered and fully described in a report filed with the Innovation, Science and Economic Development Canada (ISED). The acceptance letter from the ISED is maintained in our files. Registration ISED number: 21895, March 12, 2019

- **FCC – Registration No.: 820106**

Waltek Testing Group (Foshan) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 820106, August 16, 2018

- **FCC – Designation No.: CN5034**

Waltek Testing Group (Foshan) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation No. CN5034.

- **NVLAP – Lab Code: 600191-0**

Waltek Testing Group (Foshan) Co., Ltd. EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 600191-0.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

### 3.5 Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

Yes  No

If Yes, list the related test items and lab information:

Test items: ---

Lab information: ---

### 3.6 Abnormalities from Standard Conditions

None.

### 3.7 Disclaimer

The antenna gain information is provided by the customer. The laboratory is not responsible for the accuracy of the antenna gain information.



#### 4 EUT Setup and Test Mode

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, with a duty cycle equal to 100%, and to measure its highest possible emissions level, more detailed description as follows:

##### Test Mode List

Test Mode	Description	Remark
TM1	Lowest Channel	2405MHz
TM2	Middle Channel	2440MHz
TM3	Highest Channel	2480MHz

##### Test Conditions

Temperature:	22~25°C
Relative Humidity:	50~55%
Atmospheric pressure:	101.9kPa

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## 5 Equipment Used during Test

### 5.1 Equipment List

<input type="checkbox"/> Conducted Emissions 1#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal Date	Cal Due Date
1.	EMI Test Receiver	R&S	ESR3	102423	2023-01-05	2024-01-04
2.	LISN	R&S	ENV216	101343	2023-01-05	2024-01-04
3.	Cable	HUBER+SUHNER	CBL2-NN-6M	223NN624	2023-01-05	2024-01-04
4.	Switch	CD	RSU-A4 18G	RSUA4008	2023-01-05	2024-01-04
<input type="checkbox"/> Conducted Emissions 2#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal Date	Cal Due Date
1.	EMI Test Receiver	R&S	ESCI	101178	2023-01-05	2024-01-04
2.	LISN	R&S	ENV216	101215	2023-01-05	2024-01-04
3.	Cable	HUBER+SUHNER	CBL2-NN-6M	6102701	2023-01-05	2024-01-04
4.	Switch	ESE	RSU/M2	---	2023-01-05	2024-01-04
<input type="checkbox"/> Conducted Emissions 3#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal Date	Cal Due Date
1.	EMI Test Receiver	R&S	ESR3	102842	2023-01-05	2024-01-04
2.	LISN	R&S	ENV216	101542	2023-01-05	2024-01-04
3.	Cable	YIHENG	LMR195UF-NMNM-2.5	---	2023-01-05	2024-01-04
4.	Manual RF Switch	YIHENG	SW-2	RSU0402	2023-01-05	2024-01-04
<input checked="" type="checkbox"/> Radiation Emissions						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	3m Semi-anechoic Chamber	CHANGCHUANG	9m×6m×6m	-	2021-01-11	2024-01-10
2.	EMI Test Receiver	RS	ESR7	101566	2023-01-05	2024-01-04
3.	EMC Analyzer	Agilent	N9020A	MY48011796	2023-05-15	2024-05-14
4.	Active Loop Antenna	SCHWARZBECK	FMZB1519B	00004	2023-01-05	2024-01-04
5.	Trilog Broadband Antenna	SCHWARZBECK	VULB 9162	9162-117	2023-03-10	2024-03-09
6.	Coaxial Cable (below 1GHz)	H+S	CBL3-NN-12+3 m	214NN320	2023-01-06	2024-01-05
7.	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	01561	2023-01-06	2024-01-05
8.	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	01119	2023-01-06	2024-01-05
9.	Coaxial Cable (above 1GHz)	Times-Microwave	CBL5-NN	-	2023-01-05	2024-01-04
10.	Amplifier	Lunar E M	LNA1G18-40	20160501002	2023-01-05	2024-01-04



<input type="checkbox"/> RF Conducted Testing						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	Spectrum Analyzer	Agilent	N9020A	MY48011796	2023-05-15	2024-05-14
2.	Analog Signal Generator	Agilent	N5181A	MY48180720	2023-01-05	2024-01-04
3.	RF Control Unit	CHANGCHUANG	JS0806-2	-	2023-01-06	2024-01-05

: Not Used

: Used

## 5.2 Test Software

Description	Manufacturer	Model	Version
EMI Test Software (Conducted Emission 1#)	FARATRONIC	EZ-EMC	EMEC-3A1
EMI Test Software (Conducted Emission 2#)	FARATRONIC	EZ-EMC	CON-03A1
EMI Test Software (Conducted Emission 3#)	FARATRONIC	EZ-EMC	COM 3A1.1
EMI Test Software (Radiated Emission)	FARATRONIC	EZ-EMC	RA-03A1-1
RF Conducted Test Software	TONSCEND	JS1120-2	V2.6

## 5.3 Special Accessories and Auxiliary Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.
1.	/	/	/	/

## 5.4 Measurement Uncertainty

Parameter	Uncertainty
RF Output Power	±2.2dB
Occupied Bandwidth	±1.5%
Conducted Emission	±2.6dB
Transmitter Spurious Emission	±3.8dB (for 25MHz-1GHz)
	±5.0dB (for 1GHz-18GHz)

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





## 6 Summary of Test Result

Test Items	FCC Rules	Result
Antenna Requirement	§15.203	N/A
Restricted Band of Operation	§15.205	N/A
Conducted Emissions	§15.207(a)	N/A
Radiated Spurious Emissions	§15.209(a)	Compliant
Field Strength of Emissions	§15.249(a)	N/A
Out of Band Emission	§15.249(d)	N/A
Emission Bandwidth	§15.215(c)	N/A

Remark:

- Pass      Test item meets the requirement  
 Fail      Test item does not meet the requirement  
 N/A      Test case does not apply to the test object

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## 6.1 Radiated Spurious Emissions

### 6.1.1 Standard Applicable

According to §15.249(a), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field strength of fundamental (milli-volts/meter)	Field strength of Harmonics (micro-volts/meter)
902-928MHz	50	500
2400-2483.5MHz	50	500
5725-5875MHz	50	500
24.0-24.25GHz	250	2500

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

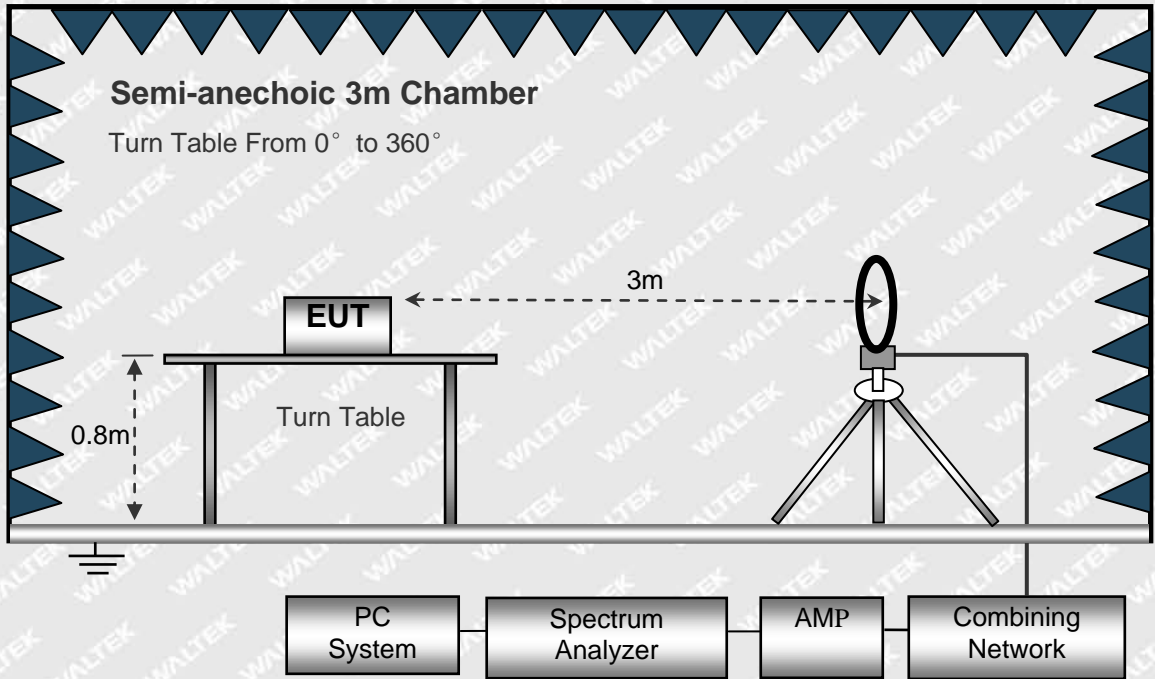
### 6.1.2 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.205 15.249(a) and FCC Part 15.209 Limit.

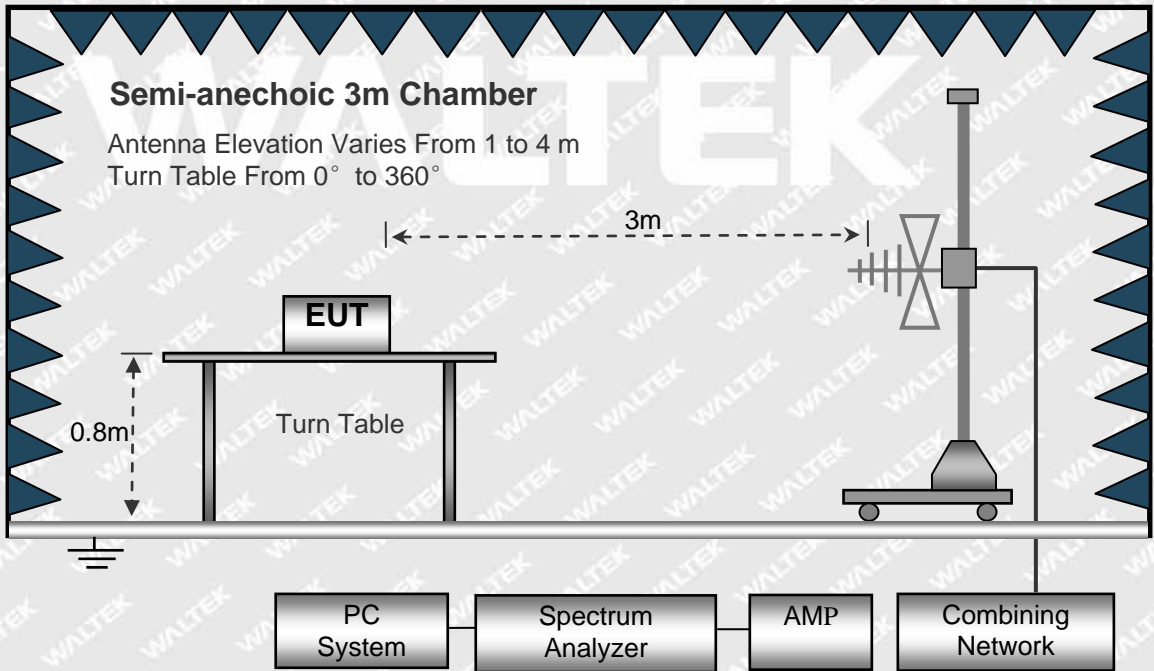
The external I/O cables were draped along the test table and formed a bundle 30 to 40cm long in the middle. The spacing between the peripherals was 10cm.



The test setup for emission measurement below 30MHz.



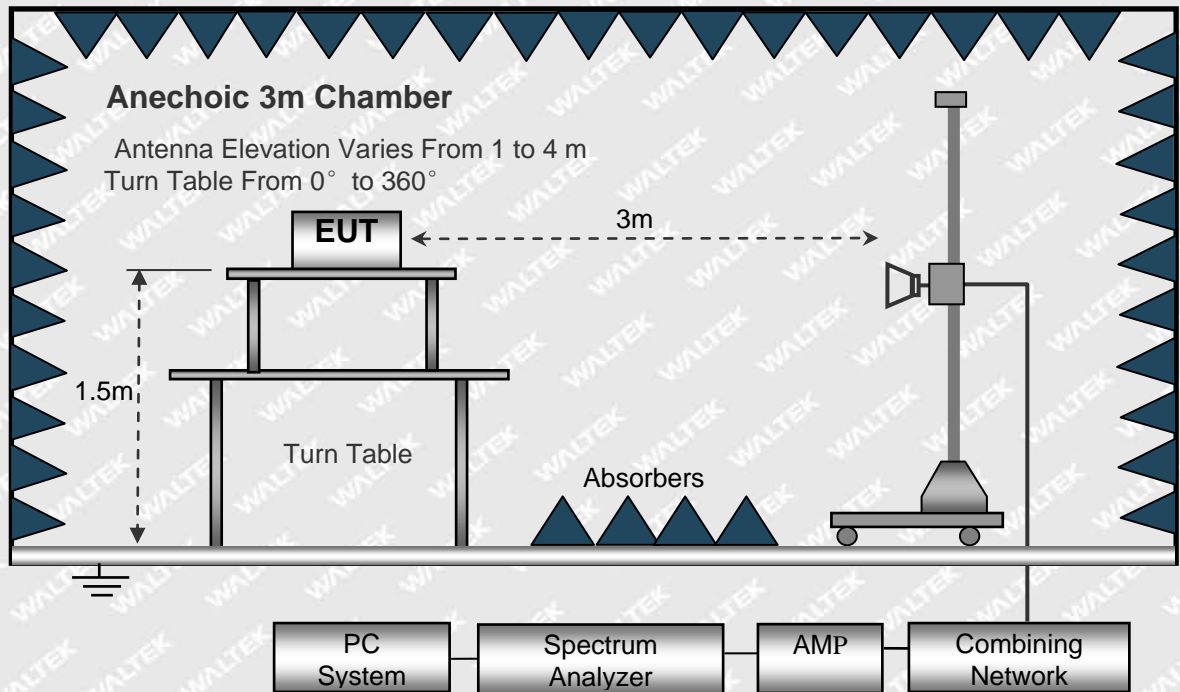
The test setup for emission measurement from 30 MHz to 1 GHz.







The test setup for emission measurement above 1 GHz.



#### 9KHz-30MHz

RBW=10kHz

VBW=30kHz

Sweep time=Auto

Trace=Max hold

Detector function=peak

#### 30MHz-1GHz

RBW=120kHz

VBW=300kHz

Sweep time=Auto

Trace=Max hold

Detector function=peak, QP

#### Above 1GHz

RBW=1MHz

VBW=3MHz(Peak), 10MHz(AV)

Sweep time=Auto

Trace=Max hold

Detector function=peak, AV

### 6.1.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Corr. Factor}$$

$$\text{Corr. Factor} = \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Limit}$$



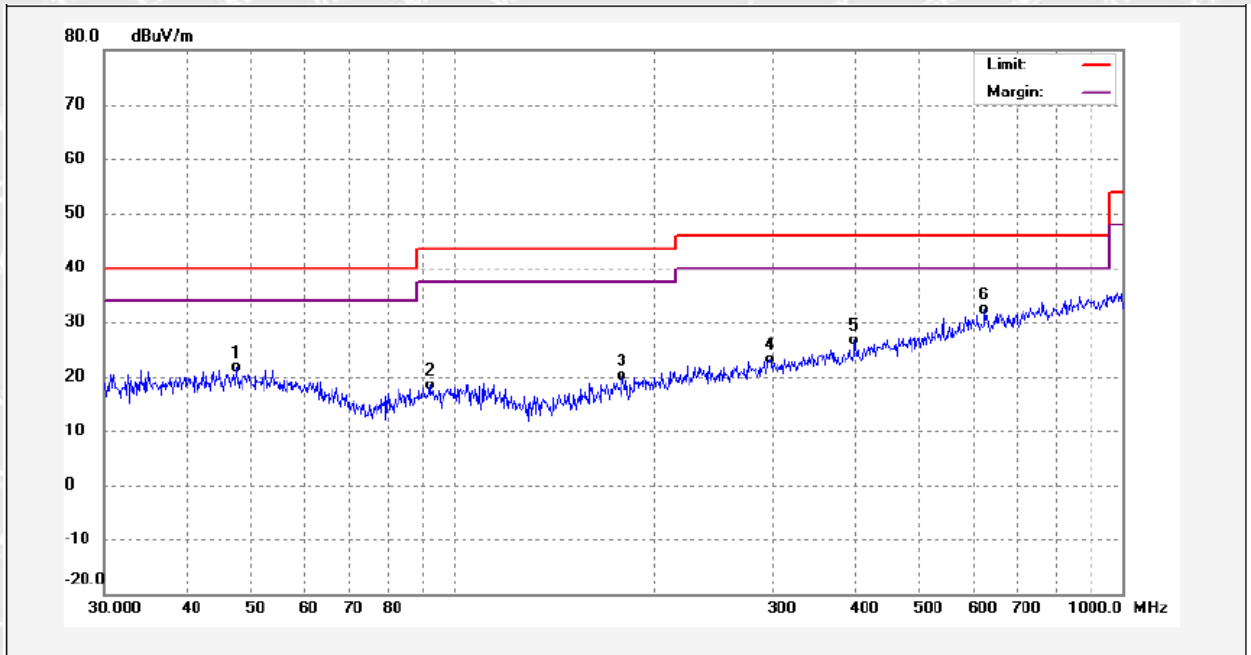
### 6.1.4 Test Results

**Test Model:** H158B

**Test Frequency:** Below 1GHz

**Test Channel:** Lowest Channel

**Polarization:** Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	47.3753	7.99	13.55	21.54	40.00	-18.46	QP	
2	92.3976	8.07	10.41	18.48	43.50	-25.02	QP	
3	179.3863	8.69	11.45	20.14	43.50	-23.36	QP	
4	298.1635	8.37	14.72	23.09	46.00	-22.91	QP	
5	398.6107	9.71	16.83	26.54	46.00	-19.46	QP	
6	624.2019	11.30	21.17	32.47	46.00	-13.53	QP	

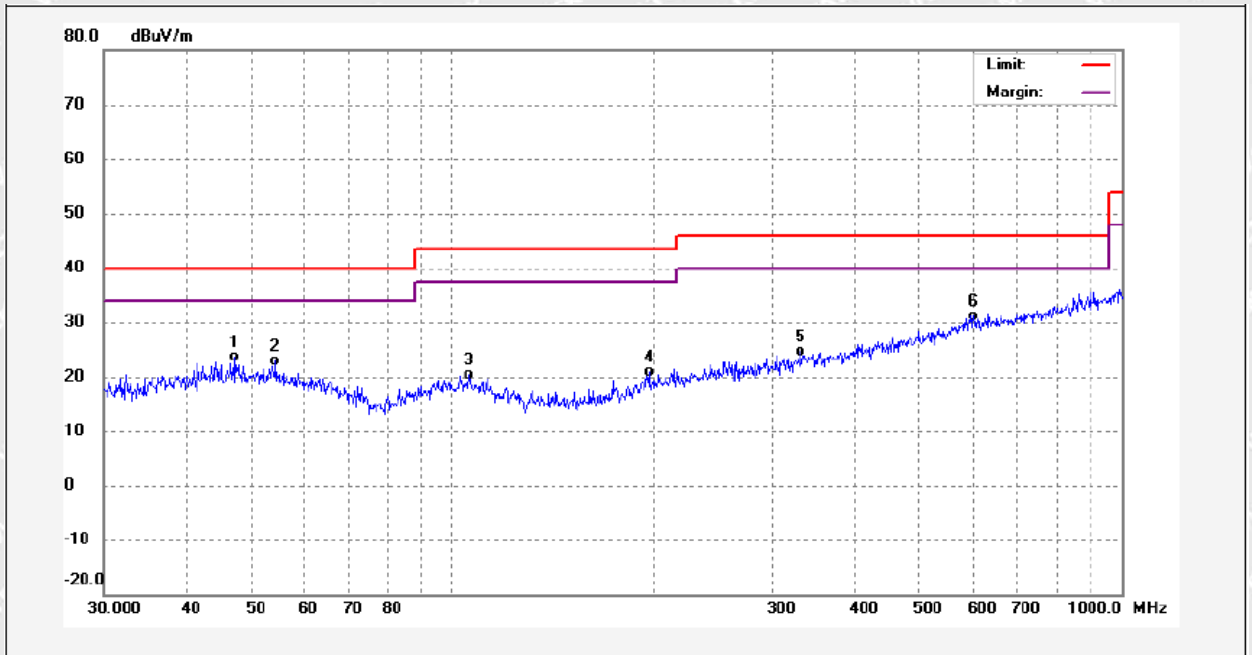


**Test Model:** H158B

**Test Frequency:** Below 1GHz

**Test Channel:** Lowest Channel

**Polarization:** Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	47.1764	9.46	14.08	23.54	40.00	-16.46	QP	
2	54.3181	9.14	13.70	22.84	40.00	-17.16	QP	
3	105.8269	7.85	12.41	20.26	43.50	-23.24	QP	
4	196.8547	9.06	11.84	20.90	43.50	-22.60	QP	
5	332.0526	9.46	15.26	24.72	46.00	-21.28	QP	
6	601.2156	10.51	20.71	31.22	46.00	-14.78	QP	



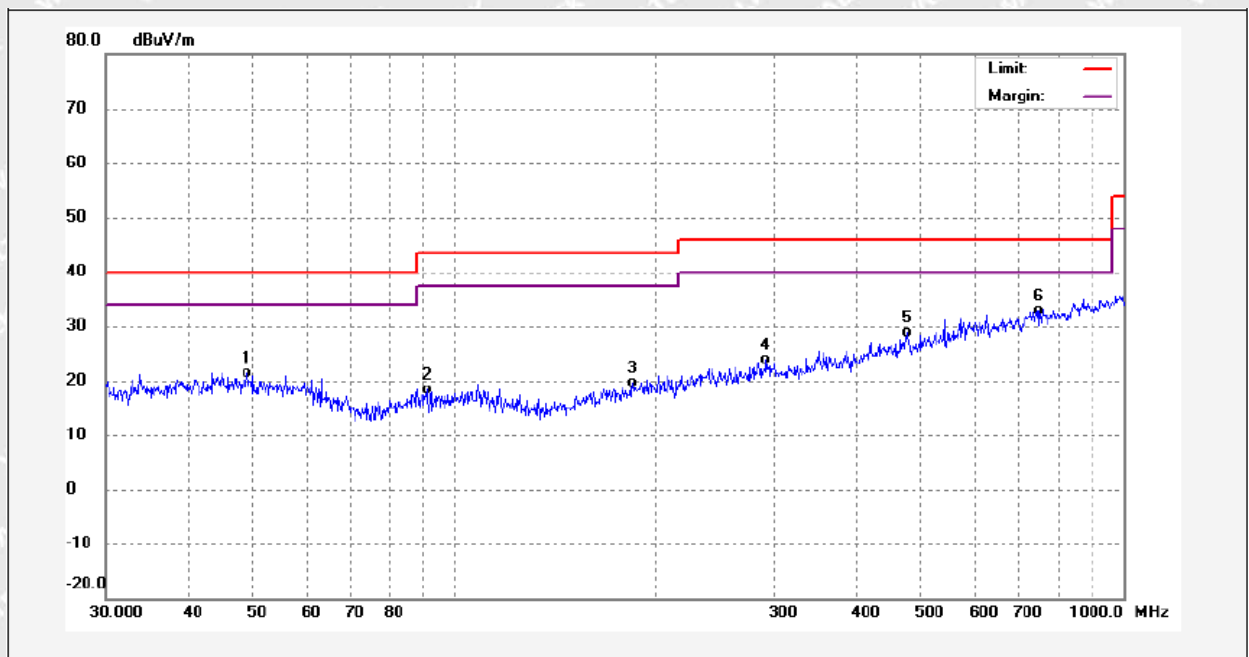


Test Model: H158B

Test Frequency: Below 1GHz

Test Channel: Middle Channel

Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	48.8429	8.09	13.40	21.49	40.00	-18.51	QP	
2	91.0787	8.13	10.30	18.43	43.50	-25.07	QP	
3	184.8784	7.63	11.98	19.61	43.50	-23.89	QP	
4	292.7761	9.33	14.60	23.93	46.00	-22.07	QP	
5	475.1658	10.58	18.20	28.78	46.00	-17.22	QP	
6	749.5823	10.03	22.92	32.95	46.00	-13.05	QP	

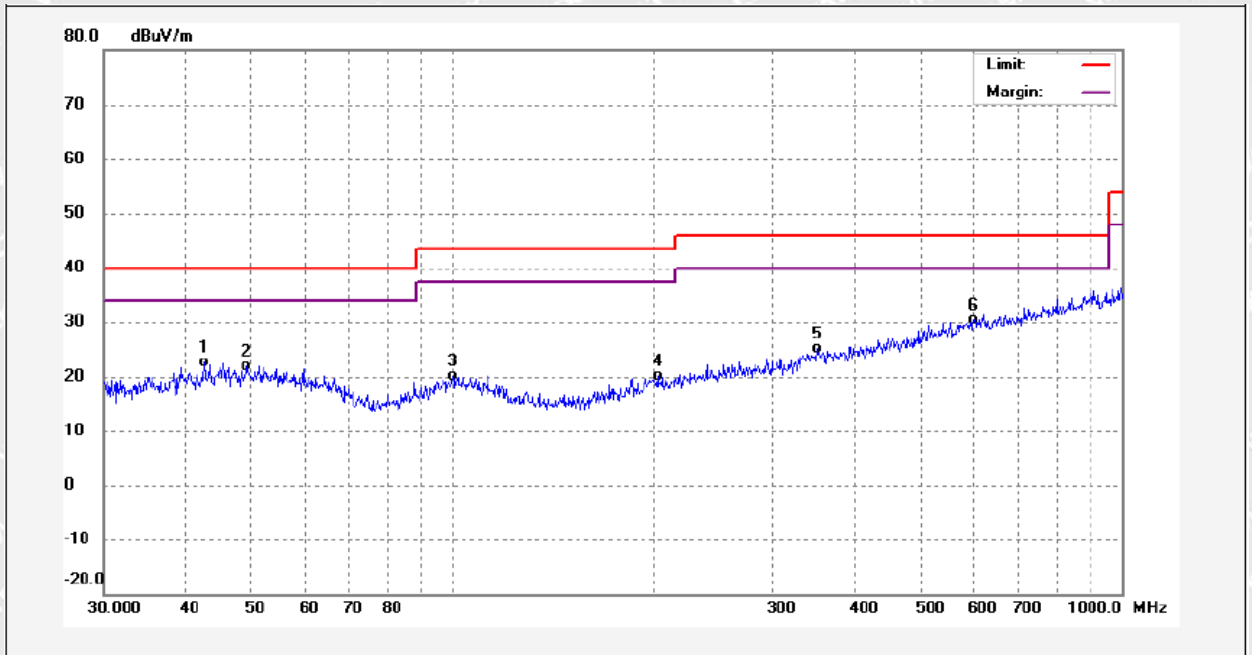


**Test Model:** H158B

**Test Frequency:** Below 1GHz

**Test Channel:** Middle Channel

**Polarization:** Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	42.4806	8.97	13.74	22.71	40.00	-17.29	QP	
2	49.2730	7.72	14.14	21.86	40.00	-18.14	QP	
3	100.0179	7.78	12.24	20.02	43.50	-23.48	QP	
4	202.5261	8.14	12.09	20.23	43.50	-23.27	QP	
5	349.4948	9.17	16.05	25.22	46.00	-20.78	QP	
6	601.0048	9.67	20.71	30.38	46.00	-15.62	QP	

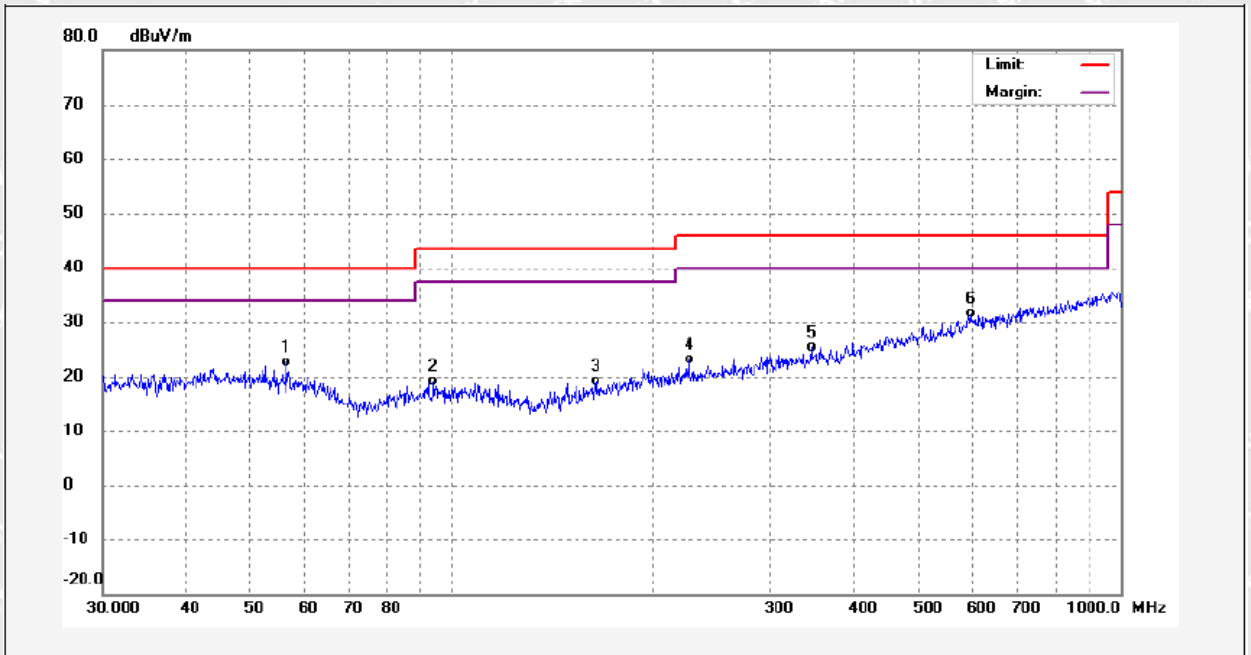


**Test Model:** H158B

**Test Frequency:** Below 1GHz

**Test Channel:** Highest Channel

**Polarization:** Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	56.6722	9.87	12.64	22.51	40.00	-17.49	QP	
2	93.9330	8.58	10.53	19.11	43.50	-24.39	QP	
3	164.6184	8.04	11.00	19.04	43.50	-24.46	QP	
4	226.4961	10.10	13.08	23.18	46.00	-22.82	QP	
5	344.7479	9.43	15.99	25.42	46.00	-20.58	QP	
6	596.5954	10.55	21.02	31.57	46.00	-14.43	QP	



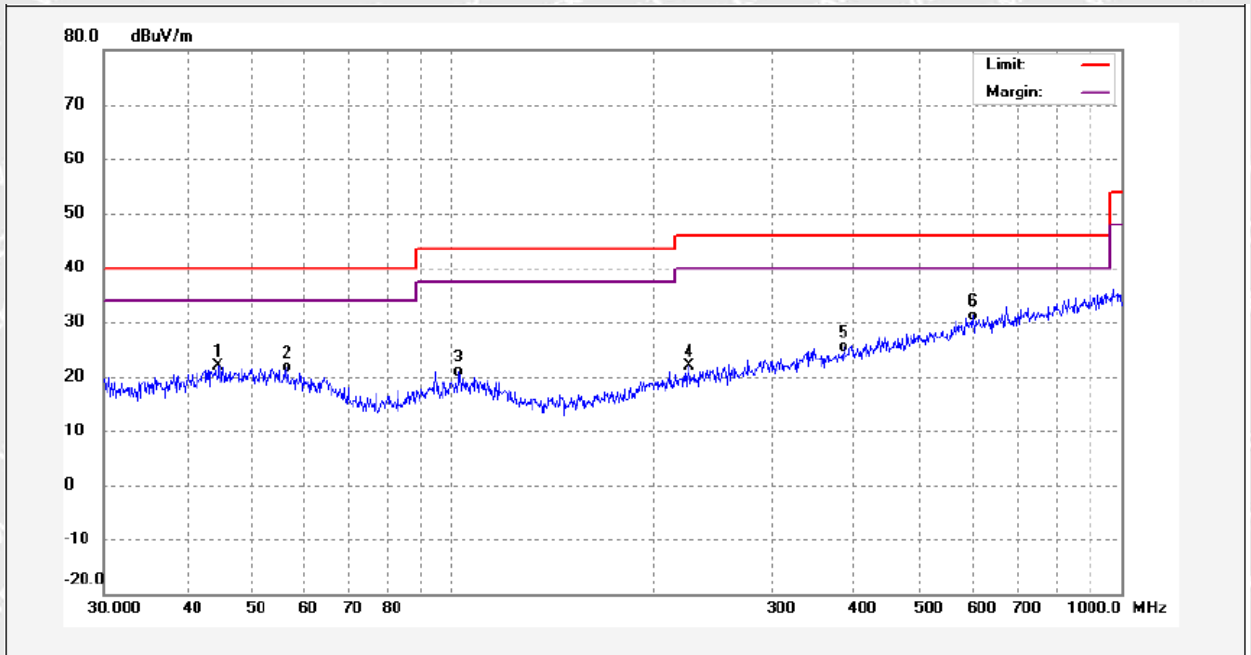


Test Model: H158B

Test Frequency: Below 1GHz

Test Channel: Highest Channel

Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	44.6181	8.05	13.94	21.99	40.00	-18.01	peak	
2	56.7519	8.47	13.14	21.61	40.00	-18.39	AVG	
3	102.0729	8.58	12.33	20.91	43.50	-22.59	QP	
4	225.6242	9.40	12.41	21.81	46.00	-24.19	peak	
5	384.2012	9.01	16.46	25.47	46.00	-20.53	AVG	
6	600.1625	10.51	20.70	31.21	46.00	-14.79	QP	

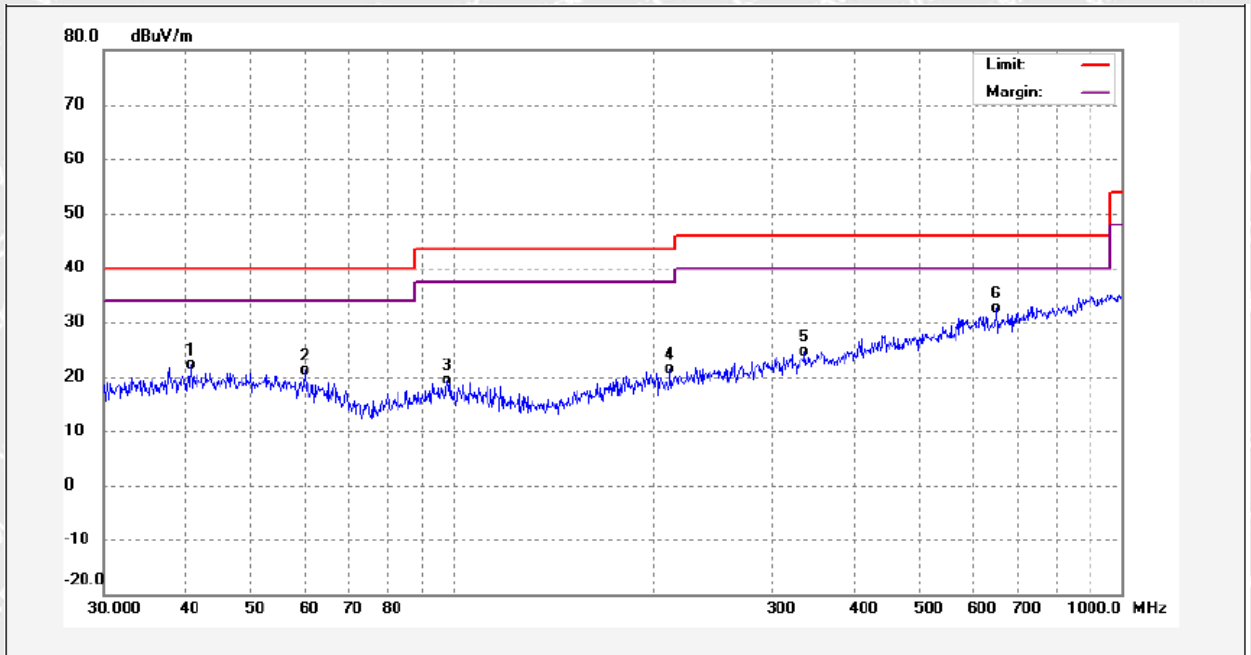


**Test Model:** H158

**Test Frequency:** Below 1GHz

**Test Channel:** Lowest Channel

**Polarization:** Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	40.5591	9.10	13.06	22.16	40.00	-17.84	QP	
2	60.1323	8.77	12.25	21.02	40.00	-18.98	QP	
3	98.2796	8.53	10.89	19.42	43.50	-24.08	QP	
4	211.5264	9.02	12.25	21.27	43.50	-22.23	QP	
5	336.5068	8.97	15.59	24.56	46.00	-21.44	QP	
6	650.3434	11.10	21.47	32.57	46.00	-13.43	QP	

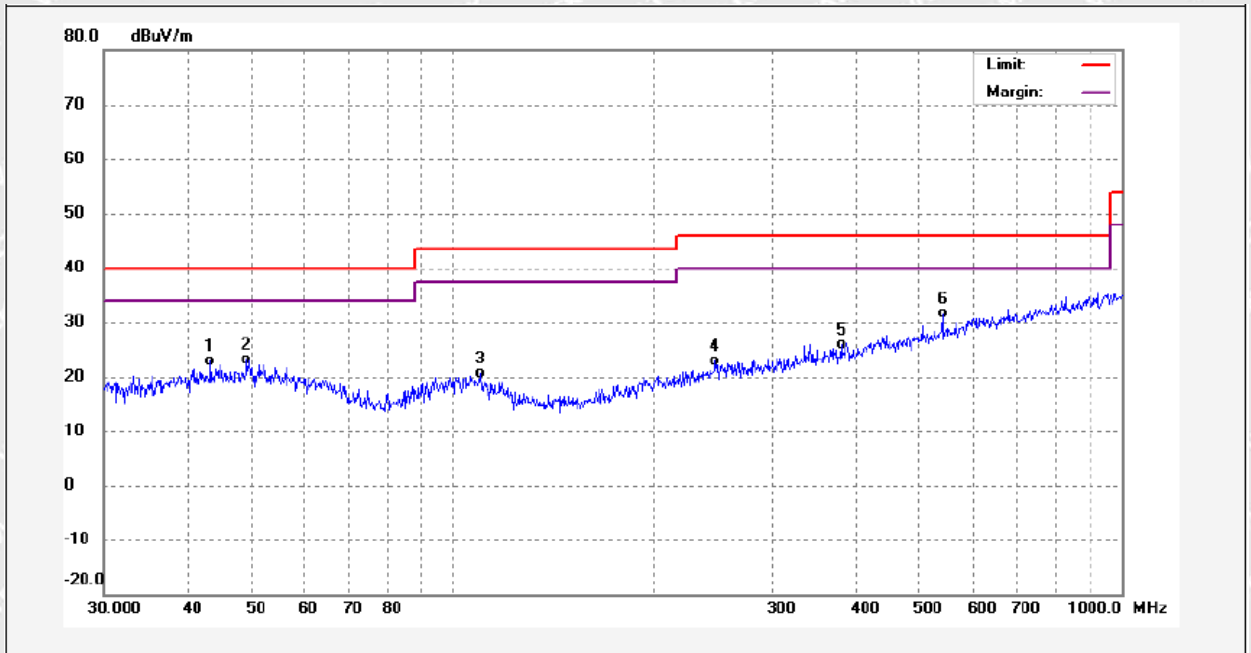


Test Model: H158

Test Frequency: Below 1GHz

Test Channel: Lowest Channel

Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	43.3838	9.08	13.84	22.92	40.00	-17.08	QP	
2	49.3247	8.87	14.14	23.01	40.00	-16.99	QP	
3	109.8729	8.56	12.18	20.74	43.50	-22.76	QP	
4	246.9013	9.48	13.38	22.86	46.00	-23.14	QP	
5	381.1150	9.56	16.35	25.91	46.00	-20.09	QP	
6	540.0452	12.48	19.20	31.68	46.00	-14.32	QP	



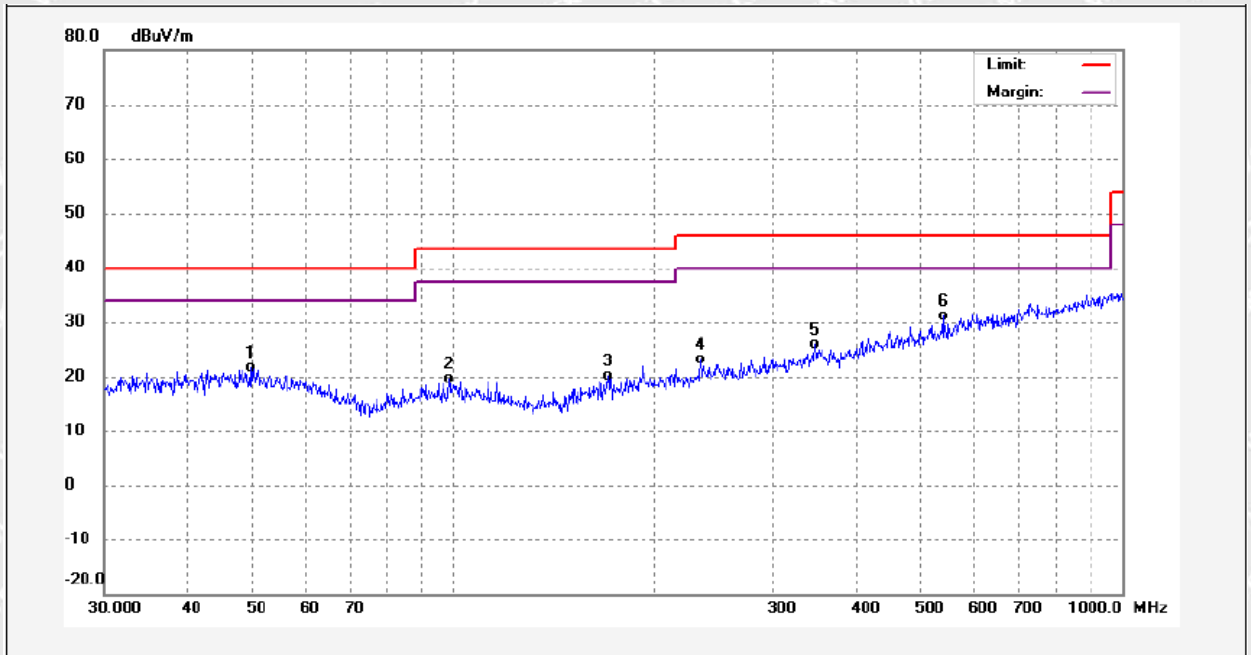


Test Model: H158

Test Frequency: Below 1GHz

Test Channel: Middle Channel

Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	49.7940	8.29	13.27	21.56	40.00	-18.44	QP	
2	98.6594	8.72	10.93	19.65	43.50	-23.85	QP	
3	170.6728	8.89	11.15	20.04	43.50	-23.46	QP	
4	234.4970	9.54	13.49	23.03	46.00	-22.97	QP	
5	348.0274	9.66	16.16	25.82	46.00	-20.18	QP	
6	540.0453	11.68	19.50	31.18	46.00	-14.82	QP	

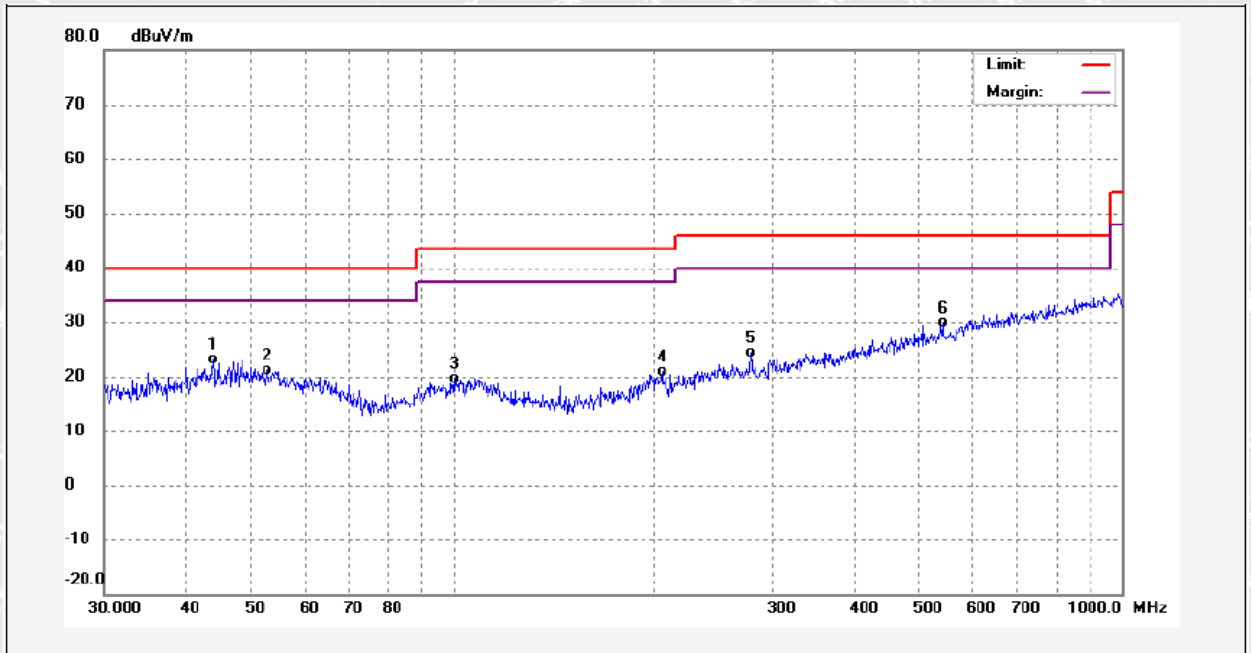


Test Model: H158

Test Frequency: Below 1GHz

Test Channel: Middle Channel

Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	43.6584	9.20	13.87	23.07	40.00	-16.93	QP	
2	52.6306	7.26	13.89	21.15	40.00	-18.85	QP	
3	100.2284	7.39	12.25	19.64	43.50	-23.86	QP	
4	205.3867	8.93	11.92	20.85	43.50	-22.65	QP	
5	278.5547	10.48	13.91	24.39	46.00	-21.61	QP	
6	540.0452	10.63	19.20	29.83	46.00	-16.17	QP	

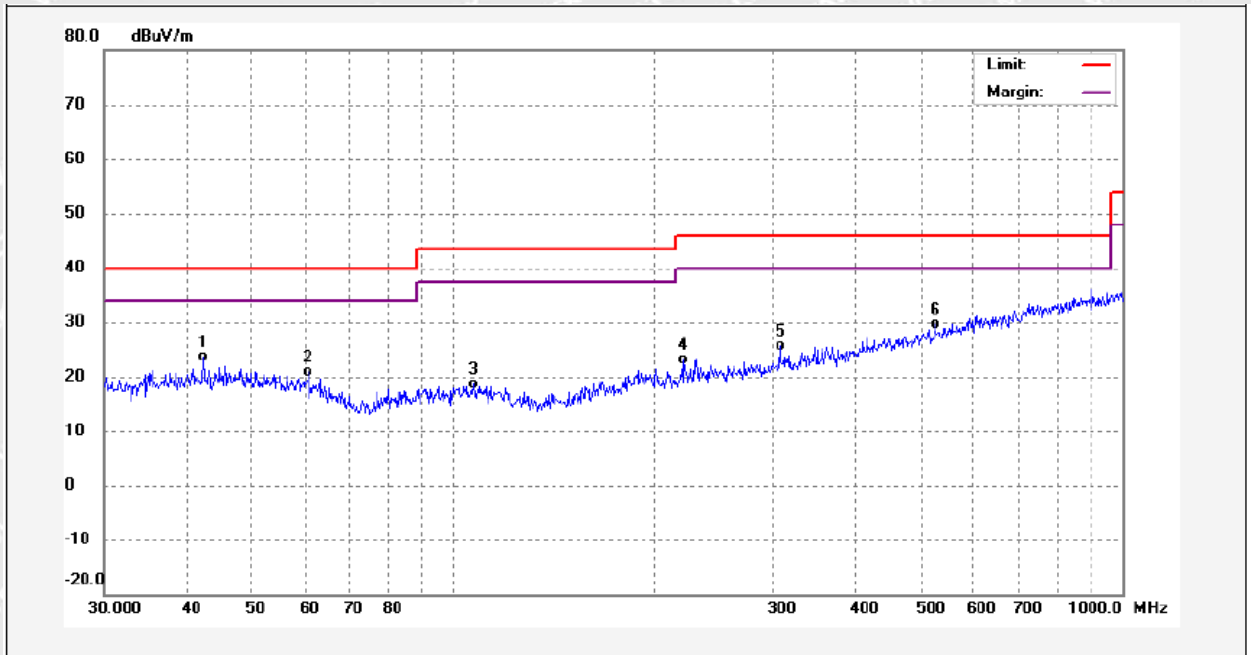


Test Model: H158

Test Frequency: Below 1GHz

Test Channel: Highest Channel

Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	42.3616	10.36	13.33	23.69	40.00	-16.31	QP	
2	60.7256	8.88	12.06	20.94	40.00	-19.06	QP	
3	107.4723	7.47	11.11	18.58	43.50	-24.92	QP	
4	221.3144	10.39	12.83	23.22	46.00	-22.78	QP	
5	308.0472	10.74	14.94	25.68	46.00	-20.32	QP	
6	525.6589	10.29	19.29	29.58	46.00	-16.42	QP	



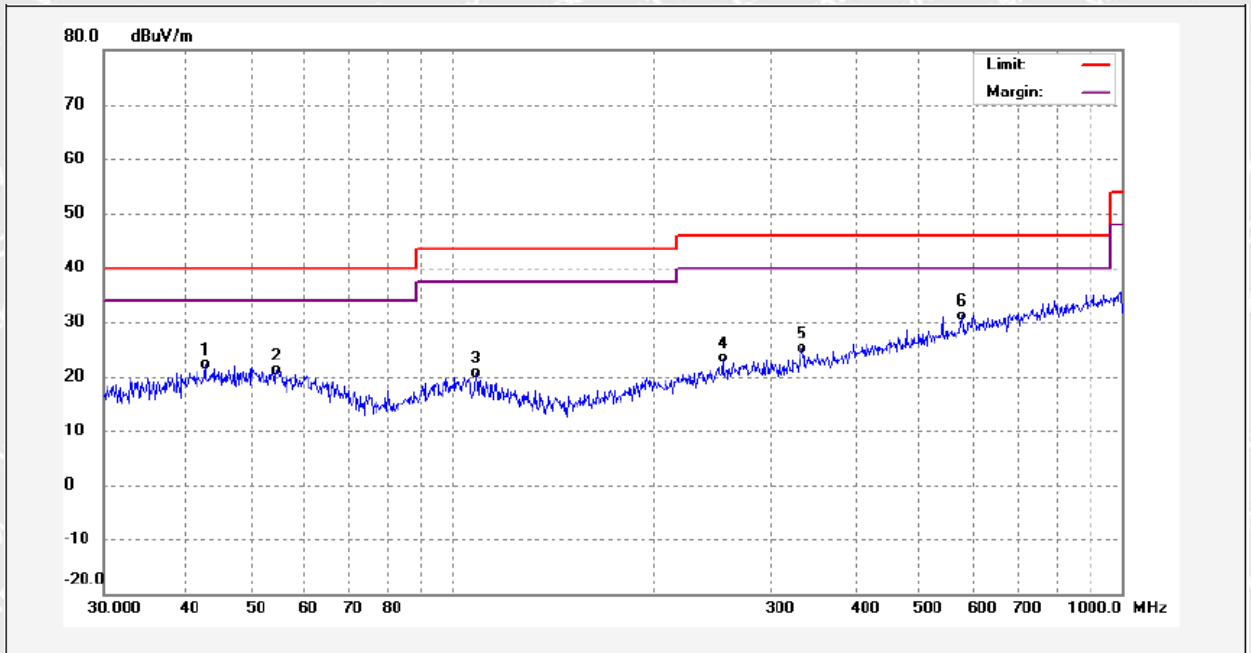


Test Model: H158

Test Frequency: Below 1GHz

Test Channel: Highest Channel

Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	42.7045	8.26	13.77	22.03	40.00	-17.97	QP	
2	54.4705	7.57	13.67	21.24	40.00	-18.76	QP	
3	108.2665	8.25	12.26	20.51	43.50	-22.99	QP	
4	253.6587	5.55	17.84	23.39	46.00	-22.61	QP	
5	332.9854	9.81	15.34	25.15	46.00	-20.85	QP	
6	577.6562	11.16	20.09	31.25	46.00	-14.75	QP	

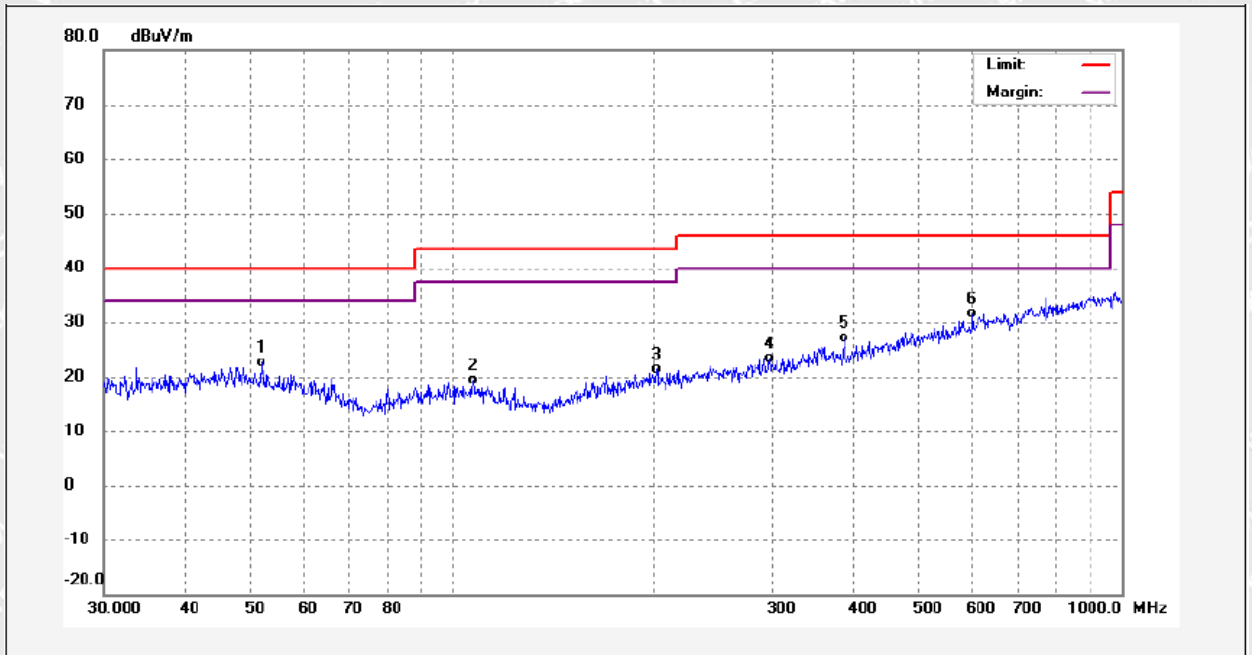


**Test Model:** H159

**Test Frequency:** Below 1GHz

**Test Channel:** Lowest Channel

**Polarization:** Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	51.6615	9.55	13.17	22.72	40.00	-17.28	QP	
2	107.4346	8.22	11.12	19.34	43.50	-24.16	QP	
3	201.6048	9.09	12.33	21.42	43.50	-22.08	QP	
4	297.5368	8.75	14.70	23.45	46.00	-22.55	QP	
5	384.6055	10.64	16.47	27.11	46.00	-18.89	QP	
6	597.4328	10.70	21.05	31.75	46.00	-14.25	QP	

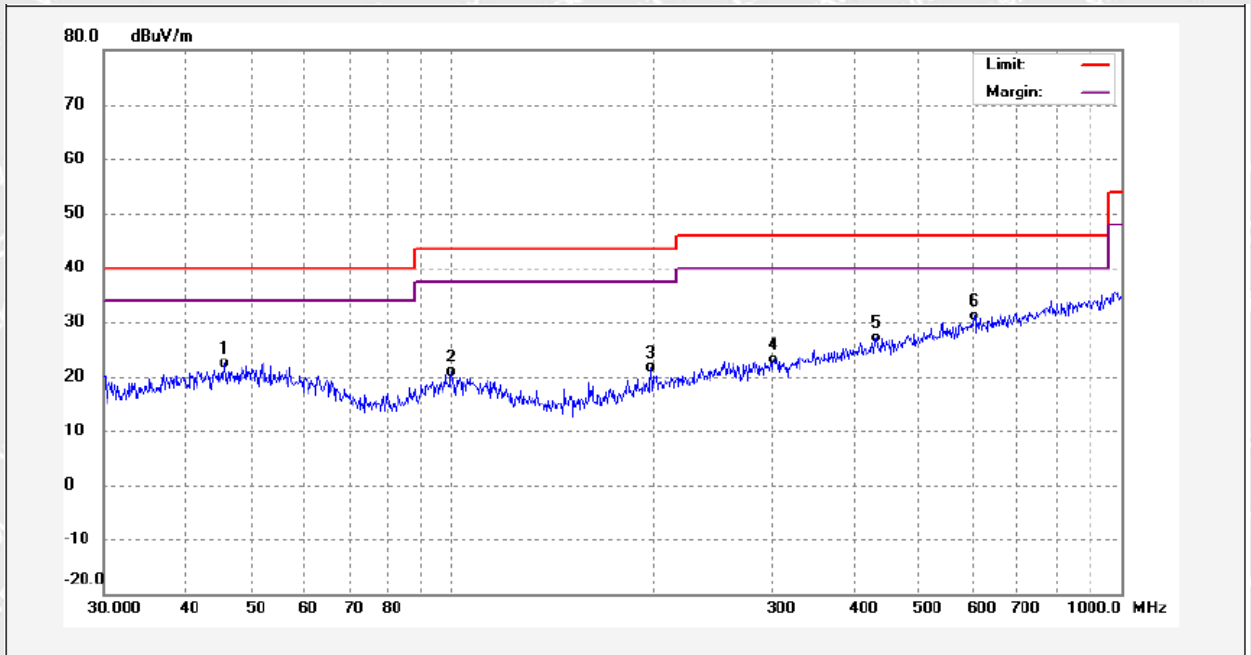


**Test Model:** H159

**Test Frequency:** Below 1GHz

**Test Channel:** Lowest Channel

**Polarization:** Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	45.6467	8.49	13.99	22.48	40.00	-17.52	QP	
2	99.6677	8.65	12.20	20.85	43.50	-22.65	QP	
3	197.9621	9.67	11.98	21.65	43.50	-21.85	QP	
4	302.0572	8.58	14.50	23.08	46.00	-22.92	QP	
5	431.0314	9.59	17.42	27.01	46.00	-18.99	QP	
6	601.4265	10.52	20.71	31.23	46.00	-14.77	QP	



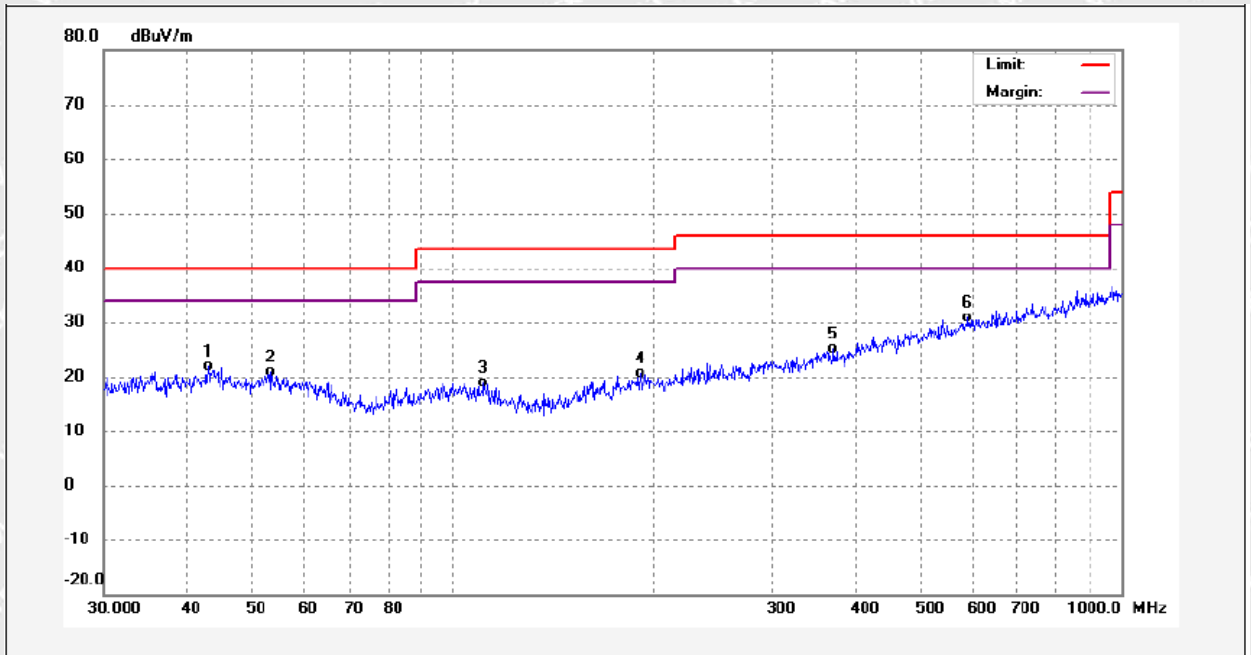


Test Model: H159

Test Frequency: Below 1GHz

Test Channel: Middle Channel

Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	43.0655	8.43	13.41	21.84	40.00	-18.16	QP	
2	53.6367	7.87	13.00	20.87	40.00	-19.13	QP	
3	111.1517	8.06	10.73	18.79	43.50	-24.71	QP	
4	190.8729	8.15	12.43	20.58	43.50	-22.92	QP	
5	370.8323	8.83	16.21	25.04	46.00	-20.96	QP	
6	590.5594	10.07	20.89	30.96	46.00	-15.04	QP	

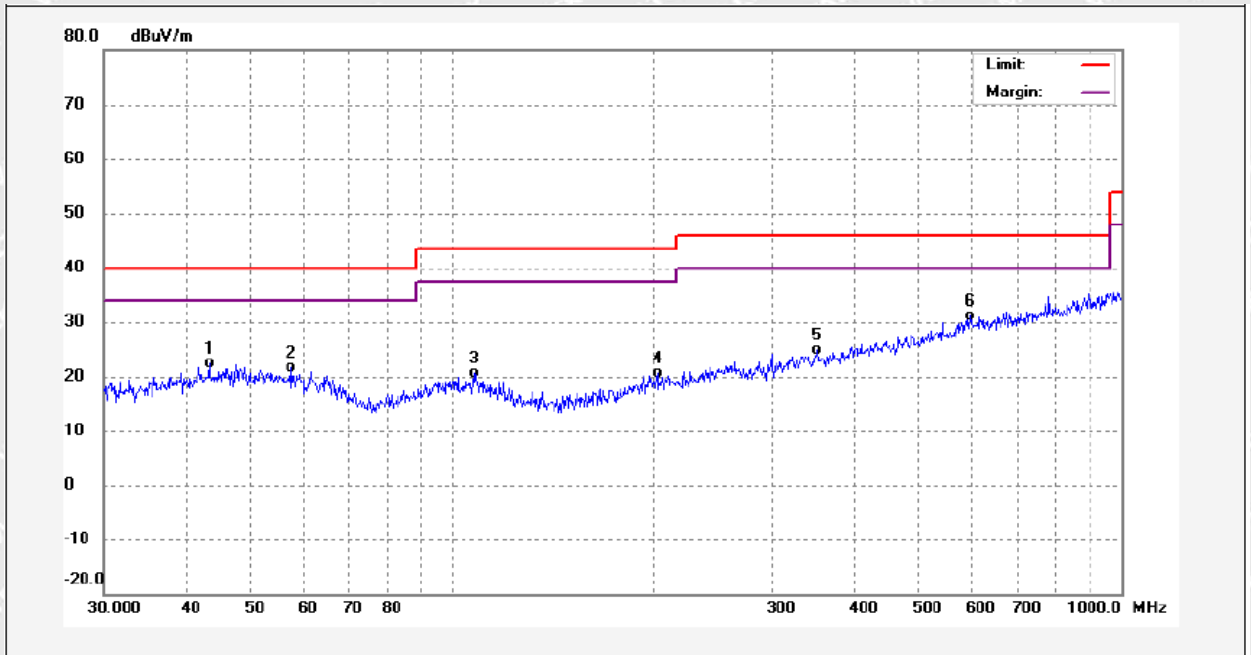


**Test Model:** H159

**Test Frequency:** Below 1GHz

**Test Channel:** Middle Channel

**Polarization:** Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	43.2471	8.53	13.82	22.35	40.00	-17.65	QP	
2	57.5534	8.77	12.91	21.68	40.00	-18.32	QP	
3	107.7741	8.30	12.29	20.59	43.50	-22.91	QP	
4	202.3130	8.43	12.10	20.53	43.50	-22.97	QP	
5	350.4766	8.84	16.05	24.89	46.00	-21.11	QP	
6	594.0902	10.38	20.63	31.01	46.00	-14.99	QP	

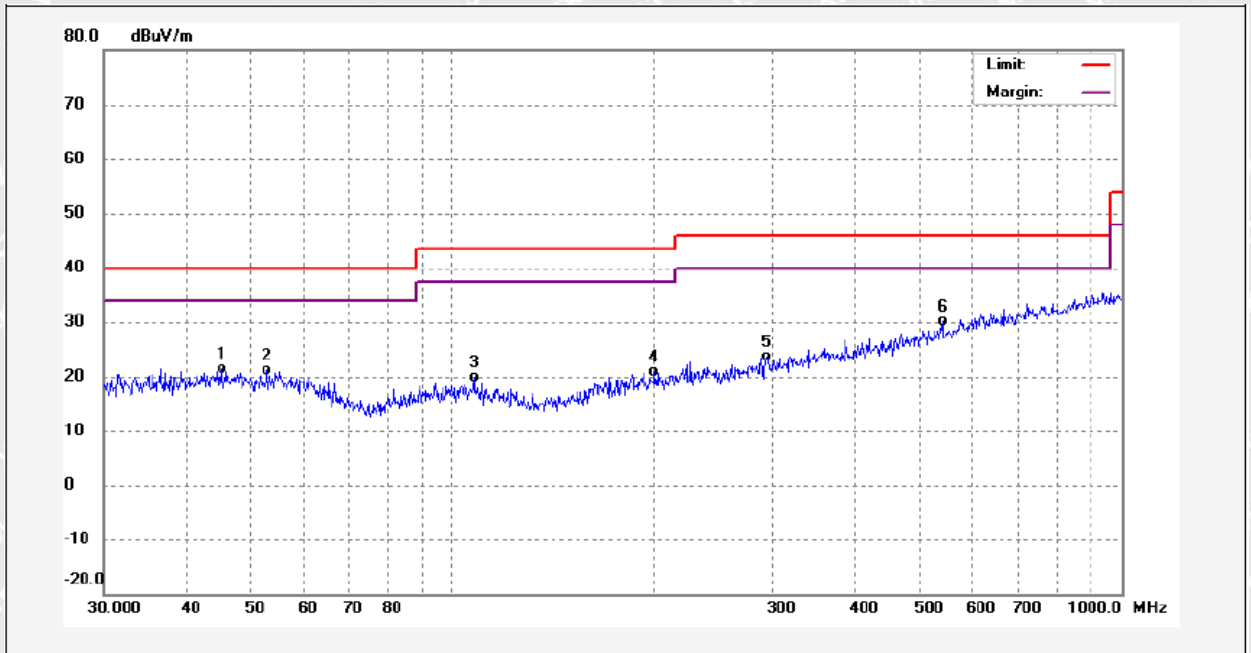


Test Model: H159

Test Frequency: Below 1GHz

Test Channel: Highest Channel

Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	45.1215	7.73	13.57	21.30	40.00	-18.70	QP	
2	52.8340	8.13	13.07	21.20	40.00	-18.80	QP	
3	107.7742	8.91	11.08	19.99	43.50	-23.51	QP	
4	200.5473	8.55	12.40	20.95	43.50	-22.55	QP	
5	294.5265	8.99	14.64	23.63	46.00	-22.37	QP	
6	540.0453	10.69	19.50	30.19	46.00	-15.81	QP	



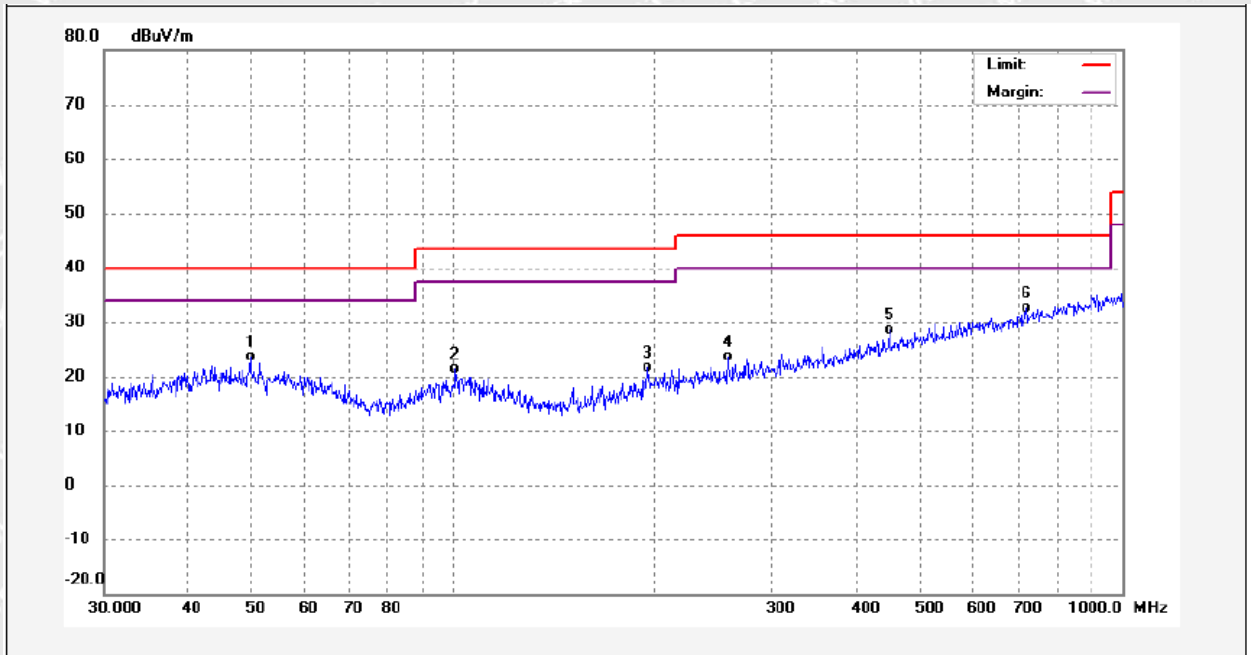


Test Model: H159

Test Frequency: Below 1GHz

Test Channel: Highest Channel

Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	49.7764	9.55	14.14	23.69	40.00	-16.31	QP	
2	100.6158	9.02	12.26	21.28	43.50	-22.22	QP	
3	195.8218	9.87	11.72	21.59	43.50	-21.91	QP	
4	256.7010	6.26	17.45	23.71	46.00	-22.29	QP	
5	449.0831	11.06	17.54	28.60	46.00	-17.40	QP	
6	721.2197	10.91	21.69	32.60	46.00	-13.40	QP	

**Test Frequency: Above 1GHz**

<b>Model H158</b>							
CH	Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H	2405	84	-10.42	114	30	PK
	V	2405	81.76	-10.17	114	32.24	PK
	H	2390	33.18	-10.47	74	40.82	PK
	H	2390	23.47	-10.47	54	30.53	AV
	V	2390	33.88	-10.23	74	40.12	PK
	V	2390	22.06	-10.23	54	31.94	AV
	H	4810	36.61	-3.59	74	37.39	PK
	H	4810	26.49	-3.59	54	27.51	AV
	V	4810	37.53	-3.46	74	36.47	PK
	V	4810	26.85	-3.46	54	27.15	AV
	H	7215	38.35	3.07	74	35.65	PK
	V	7215	42.93	2.97	74	31.07	PK
M	H	2440	82.36	-10.28	114	31.64	PK
	V	2440	79.54	-10.01	114	34.46	PK
	H	4880	37.03	-3.41	74	36.97	PK
	H	4880	27.03	-3.41	54	26.97	AV
	V	4880	37.15	-3.26	74	36.85	PK
	V	4880	28.54	-3.26	54	25.46	AV
H	H	2480	83.52	-10.12	114	30.48	PK
	V	2480	81.77	-9.83	114	32.23	PK
	H	2483.5	32.39	-10.11	74	41.61	PK
	H	2483.5	22.95	-10.11	54	31.05	AV
	V	2483.5	33.48	-9.82	74	40.52	PK
	V	2483.5	24.71	-9.82	54	29.29	AV
	H	4960	37.33	-3.22	74	36.67	PK
	H	4960	28.86	-3.22	54	25.14	AV
	V	4960	36.73	-3.03	74	37.27	PK
	V	4960	27.08	-3.03	54	26.92	AV



Model H158B							
CH	Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H	2405	83.63	-10.42	114	30.37	PK
	V	2405	80.33	-10.17	114	33.67	PK
	H	2390	32.08	-10.47	74	41.92	PK
	H	2390	23.75	-10.47	54	30.25	AV
	V	2390	33.91	-10.23	74	40.09	PK
	V	2390	22.67	-10.23	54	31.33	AV
	H	4810	35.54	-3.59	74	38.46	PK
	H	4810	26.04	-3.59	54	27.96	AV
	V	4810	36.52	-3.46	74	37.48	PK
	V	4810	25.71	-3.46	54	28.29	AV
	H	7215	37.69	3.07	74	36.31	PK
	V	7215	41.64	2.97	74	32.36	PK
M	H	2440	82.24	-10.28	114	31.76	PK
	V	2440	79.61	-10.01	114	34.39	PK
	H	4880	38.39	-3.41	74	35.61	PK
	H	4880	28.31	-3.41	54	25.69	AV
	V	4880	37.91	-3.26	74	36.09	PK
	V	4880	27.48	-3.26	54	26.52	AV
H	H	2480	80.51	-10.12	114	33.49	PK
	V	2480	78.29	-9.83	114	35.71	PK
	H	2483.5	32.66	-10.11	74	41.34	PK
	H	2483.5	22.64	-10.11	54	31.36	AV
	V	2483.5	33.46	-9.82	74	40.54	PK
	V	2483.5	23.99	-9.82	54	30.01	AV
	H	4960	37.82	-3.22	74	36.18	PK
	H	4960	27.68	-3.22	54	26.32	AV
	V	4960	36.09	-3.03	74	37.91	PK
	V	4960	27.99	-3.03	54	26.01	AV





Model H159							
CH	Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H	2405	83.14	-10.42	114	30.86	PK
	V	2405	81.96	-10.17	114	32.04	PK
	H	2390	32.47	-10.47	74	41.53	PK
	H	2390	22.13	-10.47	54	31.87	AV
	V	2390	33.66	-10.23	74	40.34	PK
	V	2390	22.58	-10.23	54	31.42	AV
	H	4810	35.25	-3.59	74	38.75	PK
	H	4810	25.97	-3.59	54	28.03	AV
	V	4810	36.02	-3.46	74	37.98	PK
	V	4810	25.73	-3.46	54	28.27	AV
	H	7215	37.78	3.07	74	36.22	PK
	V	7215	41.93	2.97	74	32.07	PK
M	H	2440	81.97	-10.28	114	32.03	PK
	V	2440	79.32	-10.01	114	34.68	PK
	H	4880	38.29	-3.41	74	35.71	PK
	H	4880	29.87	-3.41	54	24.13	AV
	V	4880	37.08	-3.26	74	36.92	PK
	V	4880	27.41	-3.26	54	26.59	AV
H	H	2480	82.19	-10.12	114	31.81	PK
	V	2480	80.05	-9.83	114	33.95	PK
	H	2483.5	33.23	-10.11	74	40.77	PK
	H	2483.5	22.45	-10.11	54	31.55	AV
	V	2483.5	33.73	-9.82	74	40.27	PK
	V	2483.5	24.46	-9.82	54	29.54	AV
	H	4960	37.42	-3.22	74	36.58	PK
	H	4960	27.15	-3.22	54	26.85	AV
	V	4960	36.52	-3.03	74	37.48	PK
	V	4960	26.18	-3.03	54	27.82	AV

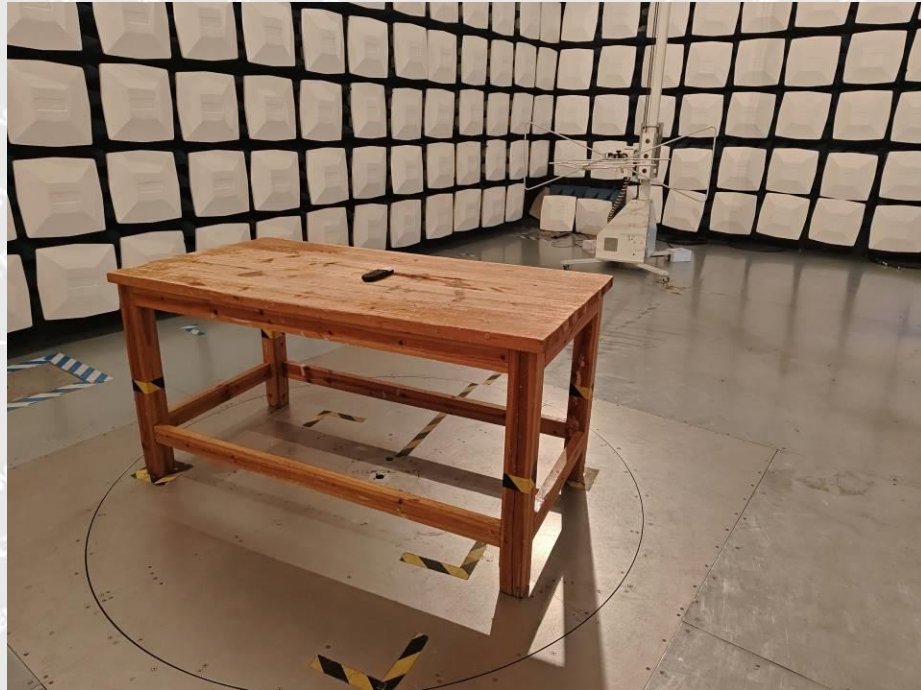
Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, which above 5<sup>th</sup> Harmonics are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured. The measurements greater than 20dB below the limit from 9kHz to 30MHz..



## 7 Photographs Test Setup

### 7.1 Photographs - Radiated Emission Test Setup

30MHz-1GHz



Above 1GHz







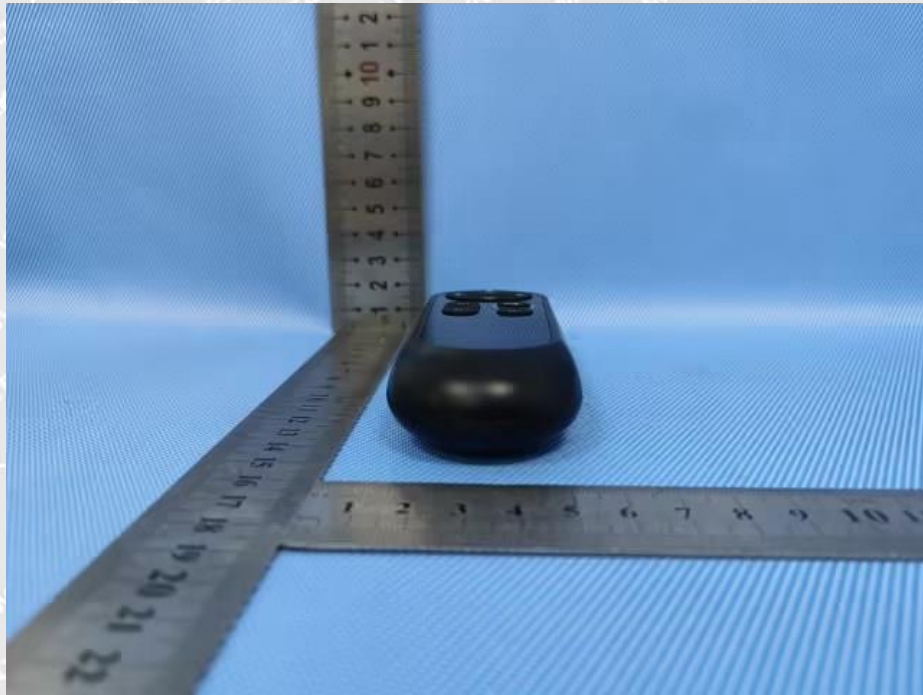
## 8 Photographs - Constructional Details

### 8.1 EUT - External Photos

#### Model H158













### Model H158B













### Model H159







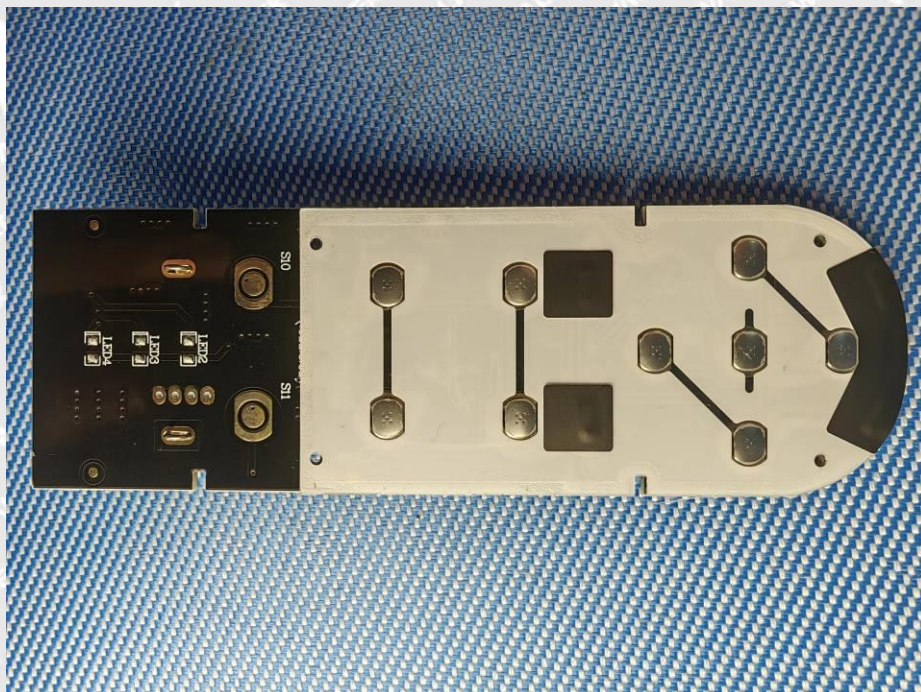




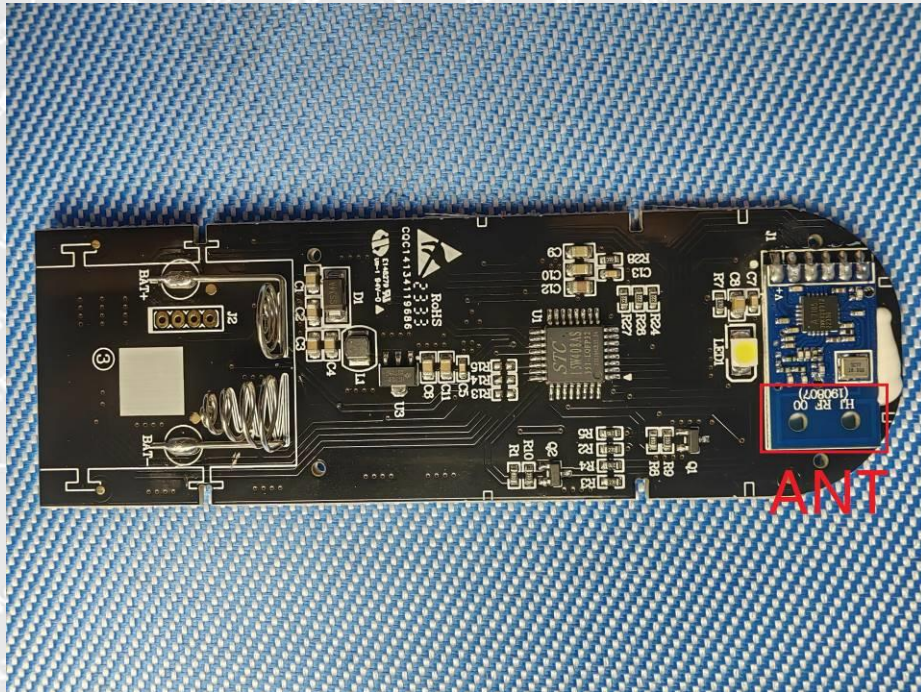


## 8.2 EUT – Internal Photos

### Model H158



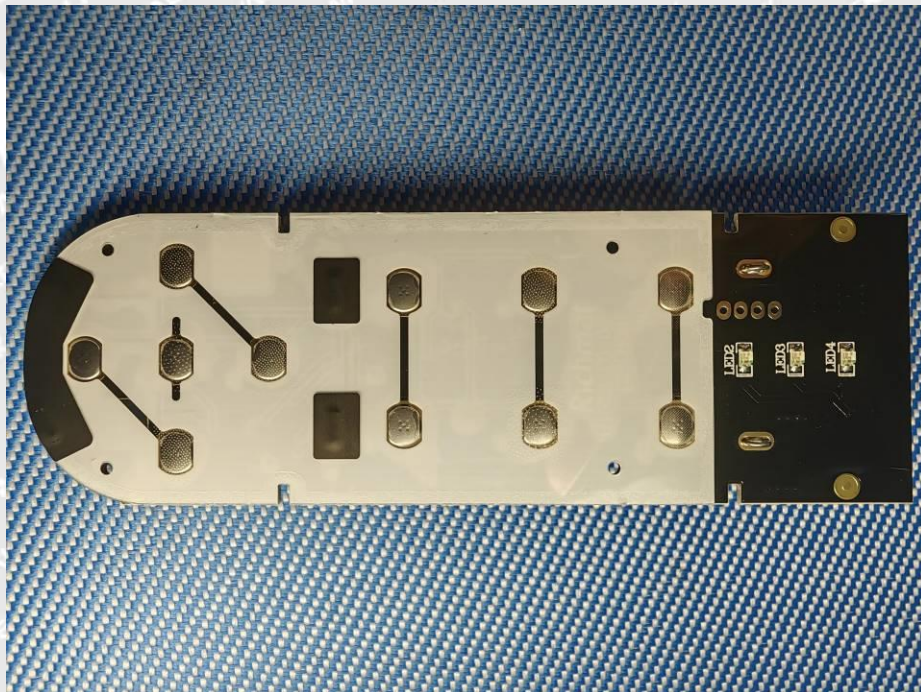




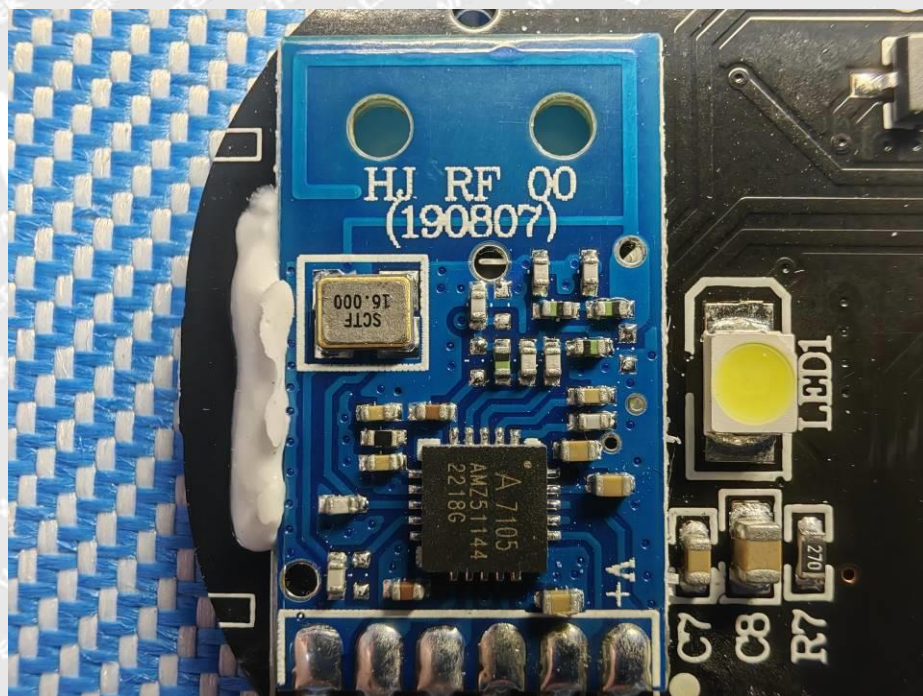
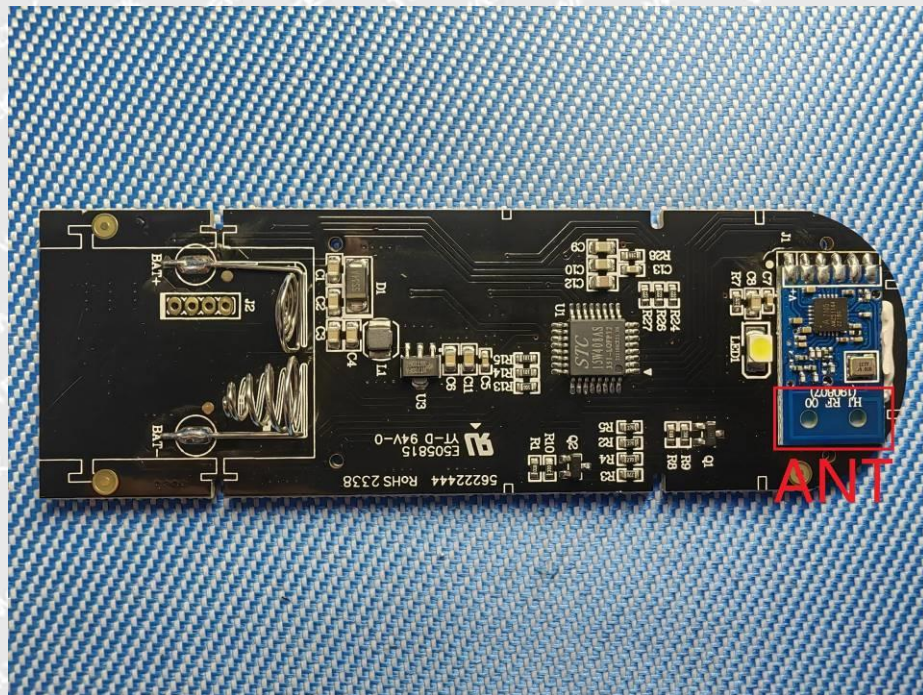




**Model H158B**



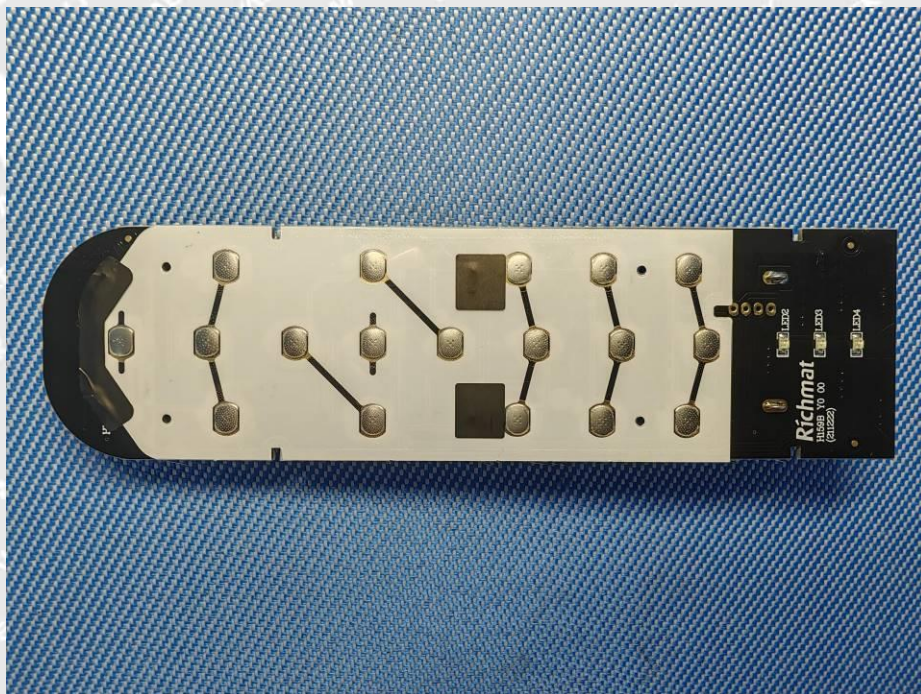
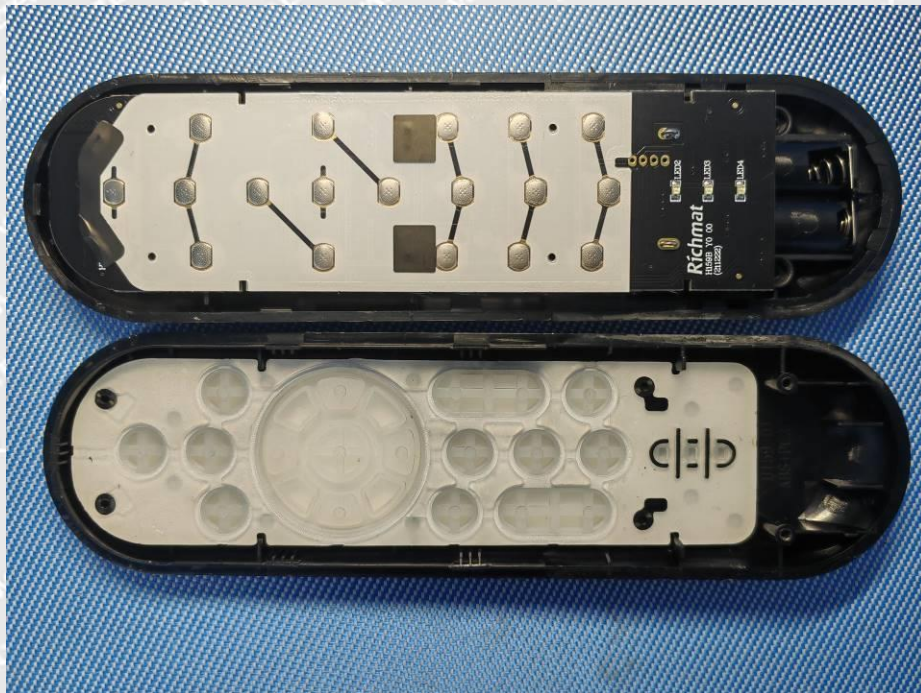




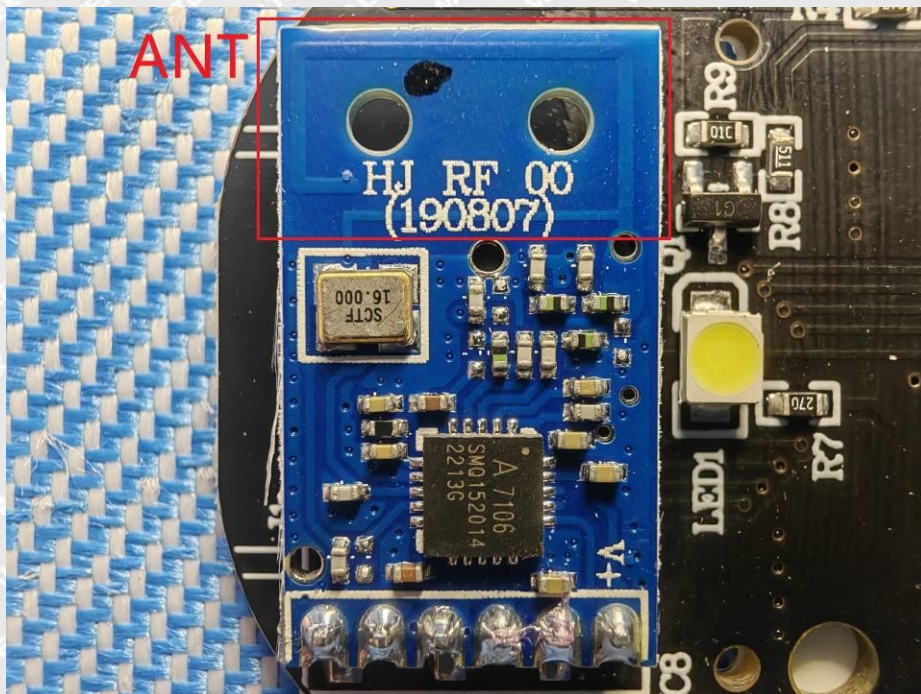
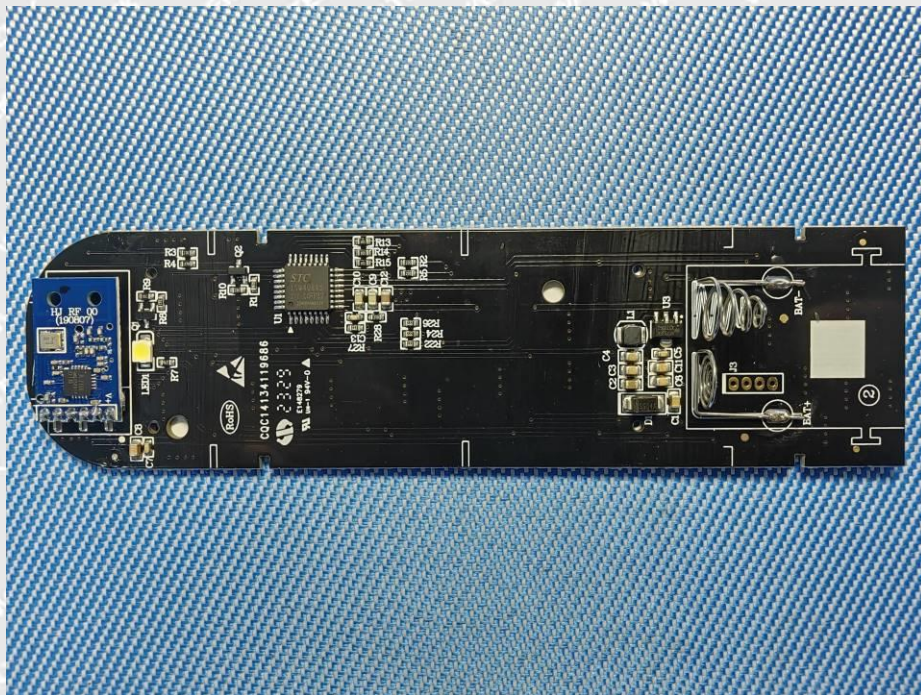




**Model H159**







====End of Report====