



TEST REPORT

Report No.: DHQ-18FE0123VTSPB

Test Model: DH-IPC-HFW1831EN

Received: Feb.07, 2018

ISSUED: Feb.28, 2018

Applicant: ZHEJIANG DAHUA VISION TECHNOLOGY CO., LTD.

Address: No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China

Issued By: BUREAU VERITAS ADT (Shanghai) Corporation

Lab Location: No. 829, Xinzhuan Road, Shanghai, P.R.China (201612)

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1. TEST PROGRAM

PRODUCT: IP CAMERA

TEST MODEL: DH-IPC-HFW1831EN

SERIES MODEL: DH-IPC-HFW1831EN, DH-IPC-HFW1831EP, IPC-HFW1831EP,
IPC-HFW1831EN, DH-IPC-HFW1831E, IPC-HFW1831E

APPLICANT: ZHEJIANG DAHUA VISION TECHNOLOGY CO.,LTD.

TESTED: Feb.07 to Feb.28, 2018

STANDARDS: 47 CFR FCC Part15, Subpart B
ANSI C63.4:2014

We, BUREAU VERITAS ADT (Shanghai) Corporation, declare that the equipment above has been tested and found compliance with the requirement limits of applicable standards. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate under the standards herein specified.

PREPARED BY : Bing Ye, **DATE:** Feb.28, 2018

Bing YE
Project Engineer

APPROVED BY : Joy ZHU, **DATE:** Feb.28, 2018

Joy ZHU
Testing Manager



2. Summary of Test Procedure and Test Results

EMISSION(47 CFR FCC Part15, Subpart B)		
Test Item	Normative References	Test Result
Conducted Emission	47 CFR FCC Part15, Subpart B 15.107	Meets the Class B requirements
Radiated Emission	47 CFR FCC Part15, Subpart B 15.109	Meets the Class B requirements



3. Test Configuration of Equipment under Test

3.1. Manufacturer information

Manufacturer : ZHEJIANG DAHUA VISION TECHNOLOGY CO.,LTD.

Address : No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China

3.2. Factory information

Factory (1) : ZHEJIANG DAHUA VISION TECHNOLOGY CO.,LTD.

Address : No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China

Factory (2) : ZHEJIANG DAHUA ZHILIAN CO.,LTD.

Address : No.28, Dongqiao Road, Dongzhou Street, Fuyang District, Hangzhou,
P.R.China.

3.3. Feature of Equipment under Test

Product Name:	IP CAMERA
Test Model:	DH-IPC-HFW1831EN
Series Model:	DH-IPC-HFW1831EN, DH-IPC-HFW1831EP, IPC-HFW1831EP, IPC-HFW1831EN, DH-IPC-HFW1831E, IPC-HFW1831E
Model Discrepancy:	All models have same internal structure, just different appearance and model name.
EUT Power Rating:	12VDC 1A and POE(802.3af, 37-57V), 0.35A

Note: Please refer to user manual.

3.4. Description of support units

NO.	PRODUCT	BRAND	MODEL NO.
1	PC	Lenovo	Thinkpad L470
2	AC adapter	HUAWEI	HKA02412020-1K
3	POE injector	SUPLET	LAS60-57CN-RJ45
4	Network Cable	--	--



3.5. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT:

This listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement		Value
Conducted emissions		2.55 dB
Radiated emissions	30 MHz ~ 1GHz	3.22 dB
	Above 1GHz	2.89 dB



4. Test of Conducted Emission

4.1. Test Limit

TEST STANDARD:

CFR 47 FCC Part 15, Subpart B (Section: 15.107)

FREQUENCY (MHz)	Class A (dB μ V)		Class B (dB μ V)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

- NOTES:**
1. The lower limit shall apply at the transition frequencies.
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
 3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.



4.4. Measurement Equipment

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	E1R1002	Mar.26, 2018
LISN ROHDE & SCHWARZ	ENV216	E1L1011	Jul.24, 2018
LISN	ISNT800	E1C4010	Sep.18, 2018
LISN	ISNT8-CAT6	E1C4011	Sep.18, 2018
Software ADT	ADT_Cond_V7.3.0	N/A	N/A

4.5. Test Result and Data

4.5.1 Conducted Emission Test Data

For DC12 port test on AC adapter

Phase : LINE

Location: Conduction 1

Date: 2/23/2018

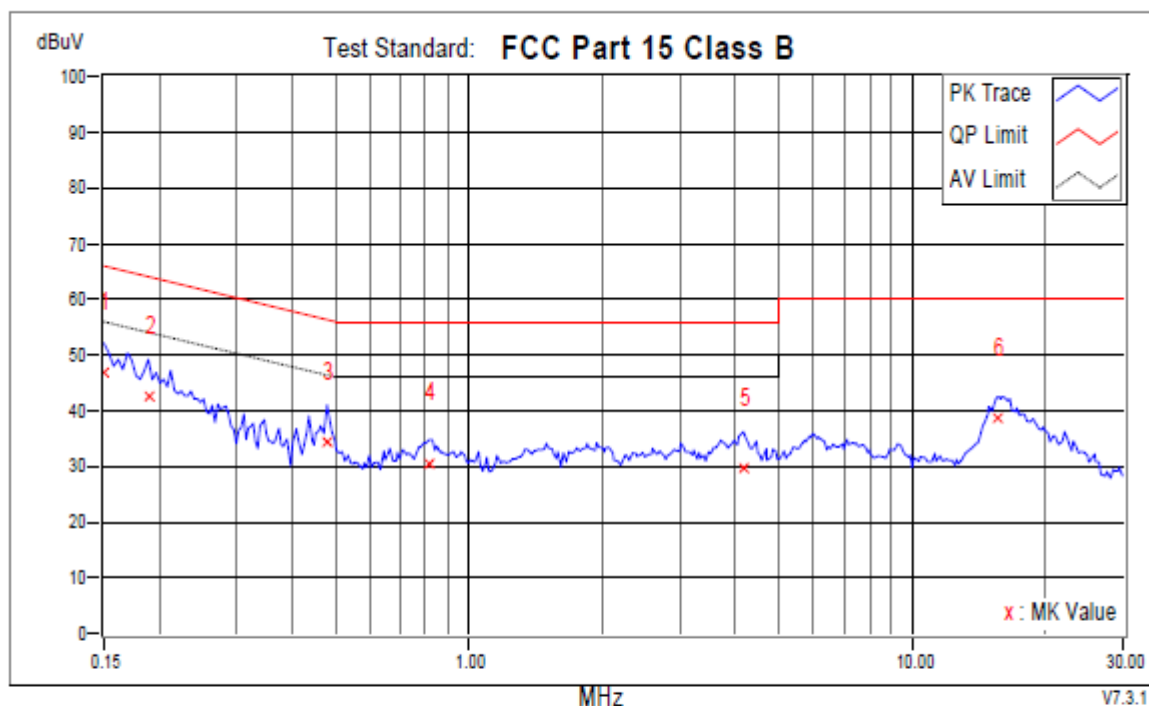
Time: 2:03:28 PM

Phase L1

Temperatuer (C): 25

Humidity (%): 48

Approved by:



No.	Frequency MHz	Corr. Factor dB	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
			QP	AV	QP	AV	QP	AV	QP	AV	
1	0.15000	9.60	37.28	19.48	46.88	29.08	66.00	56.00	-19.12	-26.92	
2	0.18910	9.60	32.81	17.17	42.41	26.77	64.08	54.08	-21.67	-27.31	
3	0.47844	9.60	24.76	14.03	34.36	23.63	56.37	46.37	-22.01	-22.74	
4	0.81079	9.60	20.70	12.48	30.30	22.08	56.00	46.00	-25.70	-23.92	
5	4.16319	9.61	20.20	14.82	29.81	24.43	56.00	46.00	-26.19	-21.57	
+6	15.60303	10.39	28.17	23.42	38.56	33.81	60.00	50.00	-21.44	-16.19	

Phase : NEUTRAL

Location: Conduction 1

Date: 2/23/2018

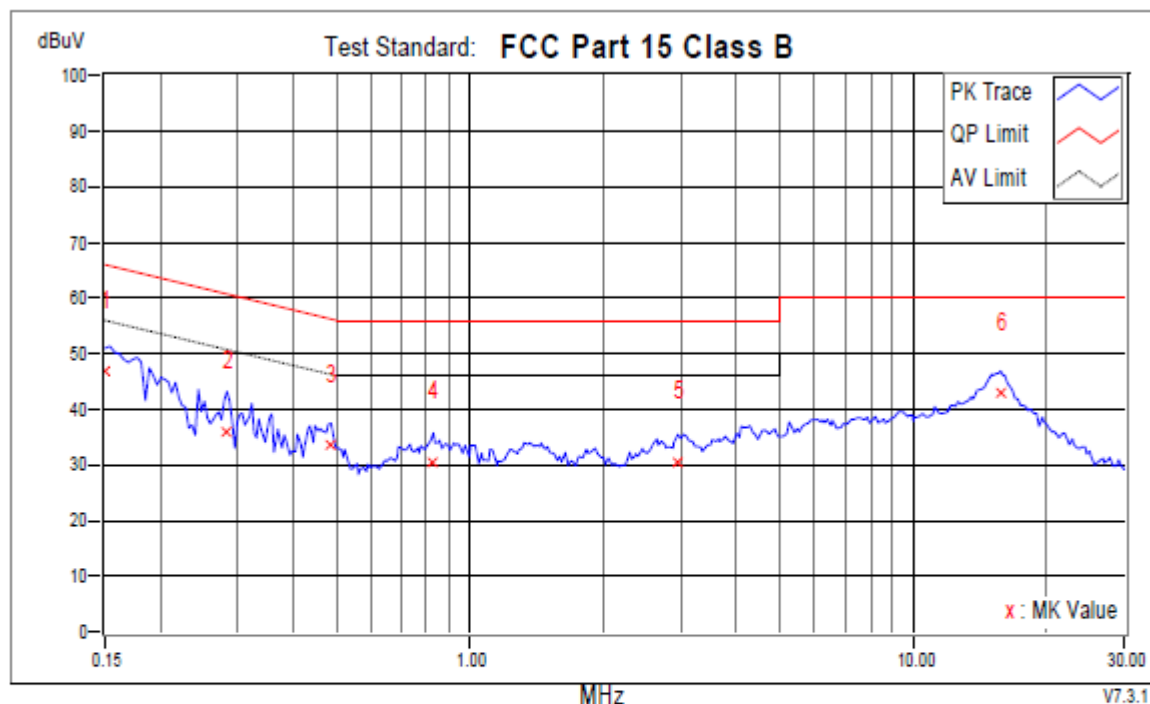
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Phase N

Temperature (C): 25

Humidity (%): 48

Approved by:



No.	Frequency MHz	Corr. Factor dB	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
			QP	AV	QP	AV	QP	AV	QP	AV	
1	0.15000	9.60	37.10	17.57	46.70	27.17	66.00	56.00	-19.30	-28.83	
2	0.28294	9.60	26.23	12.59	35.83	22.19	60.73	50.73	-24.90	-28.54	
3	0.48626	9.60	23.82	16.39	33.42	25.99	56.23	46.23	-22.81	-20.24	
4	0.82643	9.60	20.70	13.27	30.30	22.87	56.00	46.00	-25.70	-23.13	
5	2.94718	9.60	20.89	14.94	30.49	24.54	56.00	46.00	-25.51	-21.46	
+6	15.74770	10.44	32.56	27.83	43.00	38.27	60.00	50.00	-17.00	-11.73	



For POE port test on POE adapter

Phase : LINE

Location: Conduction 1

Date: 2/23/2018

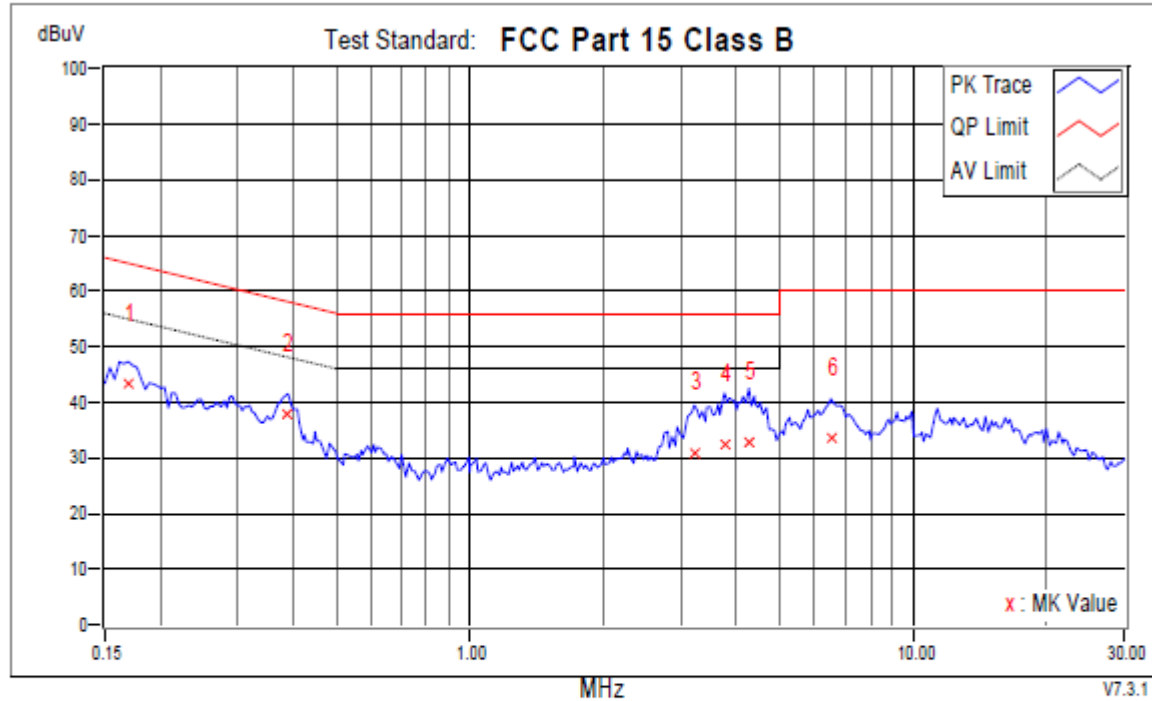
Time: 1:36:05 PM

Phase L1

Temperatuer (C): 25

Humidity (%): 48

Approved by:



No.	Frequency MHz	Corr. Factor dB	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
			QP	AV	QP	AV	QP	AV	QP	AV	
1	0.16955	10.04	33.19	22.31	43.23	32.35	64.98	54.98	-21.75	-22.63	
+2	0.38851	10.04	27.79	21.73	37.83	31.77	58.10	48.10	-20.26	-16.32	
3	3.20524	10.14	20.59	10.13	30.73	20.27	56.00	46.00	-25.27	-25.73	
4	3.74873	10.16	22.18	12.43	32.34	22.59	56.00	46.00	-23.66	-23.41	
5	4.26094	10.18	22.58	13.13	32.76	23.31	56.00	46.00	-23.24	-22.69	
6	6.52483	10.26	23.22	16.88	33.48	27.14	60.00	50.00	-26.52	-22.86	

Phase : NEUTRAL

Location: Conduction 1

Date: 2/23/2018

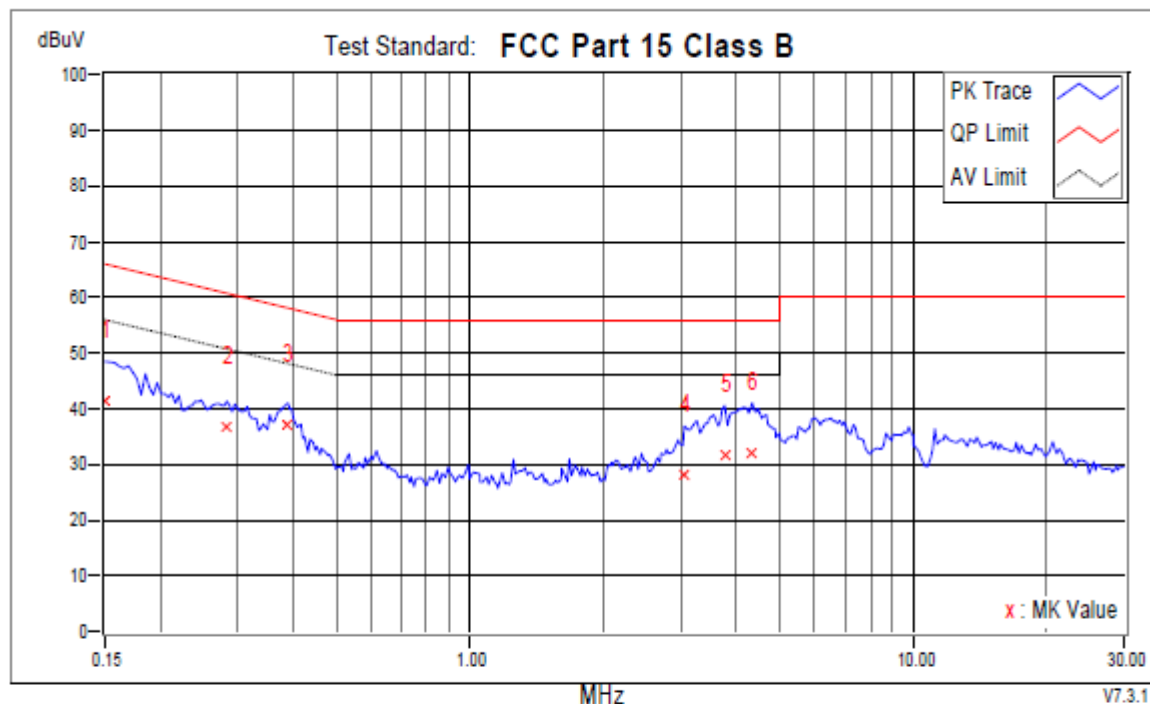
Time: 1:32:34 PM

Phase N

Temperature (C): 25

Humidity (%): 48

Approved by:



No.	Frequency MHz	Corr. Factor dB	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
			QP	AV	QP	AV	QP	AV	QP	AV	
1	0.15000	9.96	31.59	17.01	41.55	26.97	66.00	56.00	-24.45	-29.03	
2	0.28294	10.02	26.53	19.23	36.55	29.25	60.73	50.73	-24.18	-21.48	
+3	0.38851	10.03	26.97	21.07	37.00	31.10	58.10	48.10	-21.10	-17.00	
4	3.04493	10.12	17.99	8.56	28.11	18.68	56.00	46.00	-27.89	-27.32	
5	3.75655	10.13	21.61	11.82	31.74	21.95	56.00	46.00	-24.26	-24.05	
6	4.33132	10.13	21.84	13.11	31.97	23.24	56.00	46.00	-24.03	-22.76	

4.6. Test Photographs





5. Test of Radiated Emission

5.1. Test Limit

TEST STANDARD:

CFR 47 FCC Part 15, Subpart B (Section: 15.109)

FOR FREQUENCY BELOW 1000 MHz

FREQUENCY (MHz)	Class A (at 10m)		Class B (at 3m)	
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
30 – 88	90	39.1	100	40.0
88 – 216	150	43.5	150	43.5
216 – 960	210	46.4	200	46.0
960 – 1000	300	49.5	500	54.0

LIMIT OF RADIATED EMISSION OF FCC PART 15, SUBPART B FOR FREQUENCY ABOVE 1000 MHz

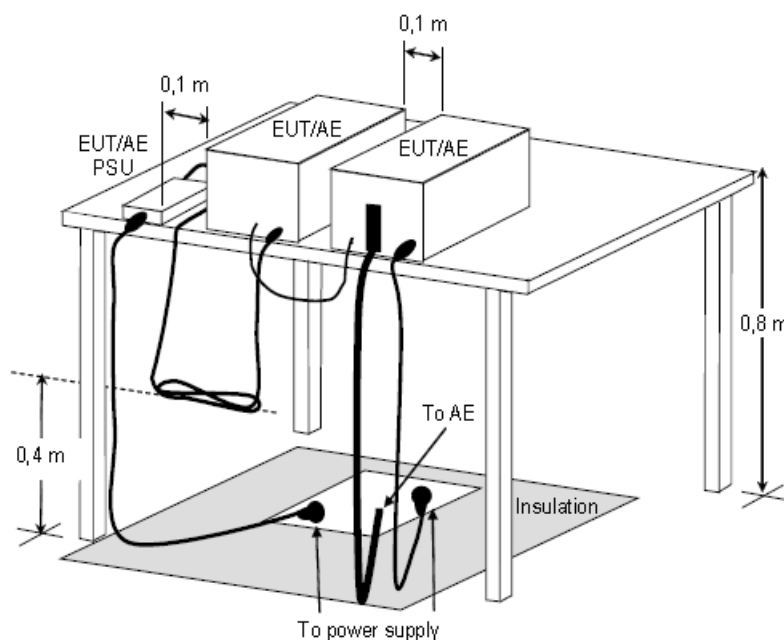
FREQUENCY (MHz)	Class A ($\text{dB}\mu\text{V/m}$) (at 3m)		Class B ($\text{dB}\mu\text{V/m}$) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80.0	60.0	74.0	54.0

- Note:** (1) The lower limit shall apply at the transition frequencies.
 (2) Emission level ($\text{dB}\mu\text{V/m}$) = $20 \log$ Emission level ($\mu\text{V/m}$).
 (3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

5.2. Test Procedures

- The EUT was placed on a rotatable table top 0.8 meter above ground.
- The EUT was set 3/10 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- The table was rotated 360 degrees to determine the position of the highest radiation.
- The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.

5.3. Typical Test Setup



**Figure D.8 – Example measurement arrangement for table-top EUT
(Radiated emission measurement)**



5.4. Measurement Equipment

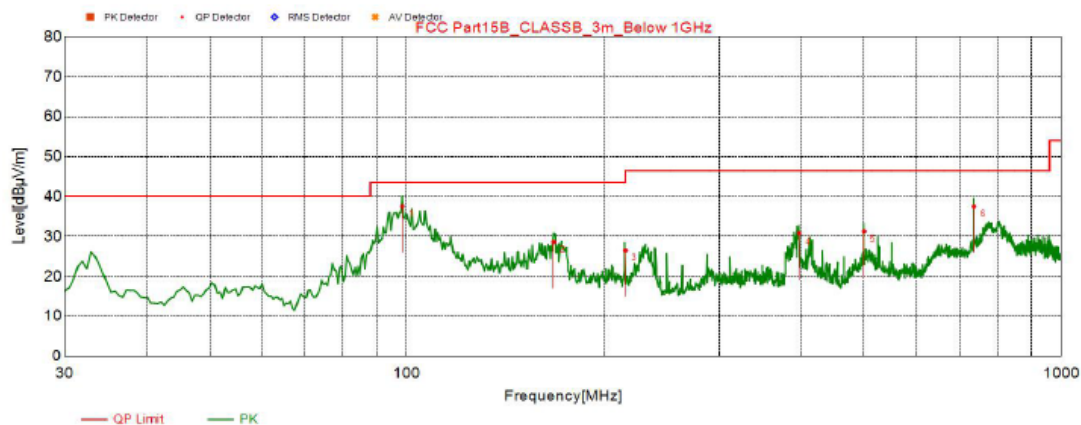
DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
EMI Test Spectrum ROHDE & SCHWARZ	ESR7	E1R1005	Nov.28, 2018
Broad-Band Antenna Schwarzbeck	VULB9168	E1A1001	Feb.27, 2019
Double Riaged Vroadband Horn Antenna Schwarzbeck	BBHA9120D	E1A1017	Aug.26, 2019
Preamplifier Agilent	8447D	E1A2001	Oct.20, 2018
Preamplifier Agilent	8449B	E1A2002	Mar.26, 2019

5.5. Test Result and Data (30MHz ~ 1GHz)

DC 12V mode

Position: Horizontal

Test Graph

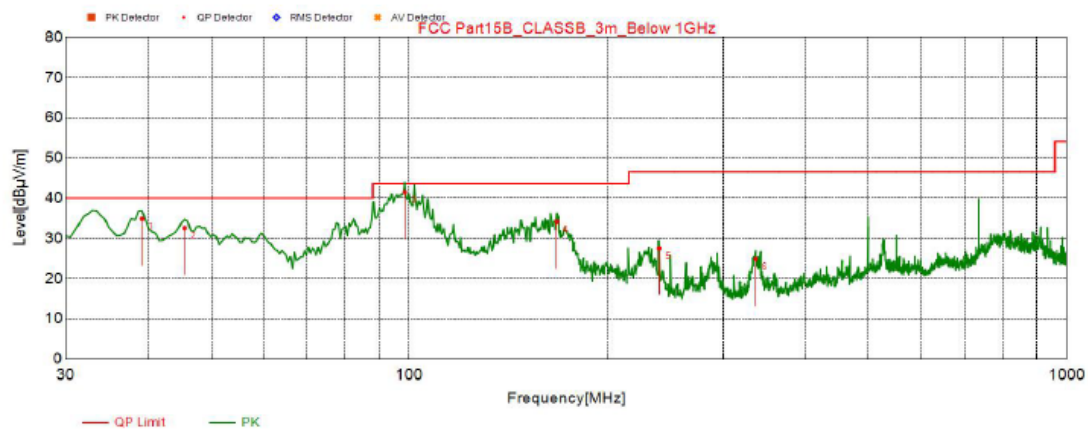


Final Data List

NO.	Freq. [MHz]	QP Value [dBμV]	Factor [dB]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	98.392	37.62	-18.63	43.5	5.88	197.9	122.9	Horizontal
2	167.740	28.70	-14.76	43.5	14.80	200	232	Horizontal
3	215.755	26.54	-16.91	43.5	16.96	100	187	Horizontal
4	398.115	30.74	-12.29	46.5	15.76	100	23	Horizontal
5	499.965	31.23	-10.98	46.5	15.27	200	71	Horizontal
6	736.160	37.57	-7.41	46.5	8.93	100	114	Horizontal

Position: Vertical

Test Graph



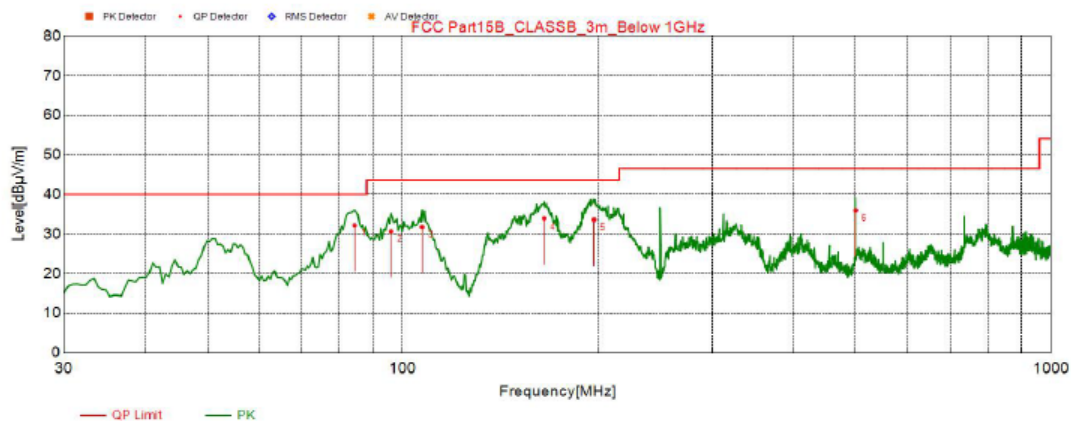
Final Data List

NO.	Freq. [MHz]	QP Value [dBμV]	Factor [dB]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	39.215	34.81	-16.03	40	5.19	200	43	Vertical
2	45.520	32.60	-15.66	40	7.40	100	161	Vertical
3	98.391	41.50	-18.63	43.5	2.00	138.1	72.3	Vertical
4	167.740	34.09	-14.76	43.5	9.41	100	206	Vertical
5	240.005	27.45	-16.14	46.5	19.05	100	294	Vertical
6	336.520	24.84	-13.41	46.5	21.66	200	138	Vertical

POE mode

Position: Horizontal

Test Graph

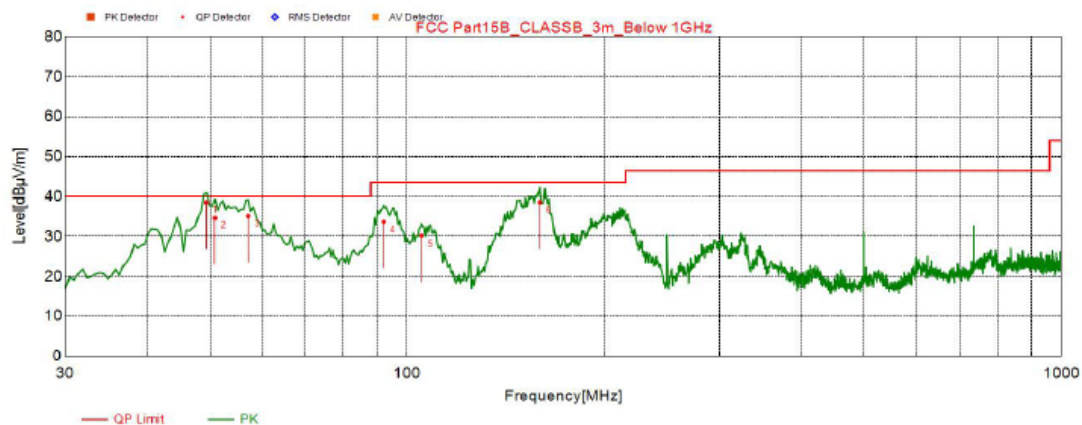


Final Data List

NO.	Freq. [MHz]	QP Value [dBuV]	Factor [dB]	QP Limit [dBuV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	84.320	32.21	-19.24	40	7.79	200	232	Horizontal
2	95.960	30.67	-18.89	43.5	12.83	200	120	Horizontal
3	107.115	31.79	-17.9	43.5	11.71	200	223	Horizontal
4	165.315	33.87	-14.82	43.5	9.63	200	251	Horizontal
5	197.325	33.60	-17.18	43.5	9.90	100	146	Horizontal
6	499.965	35.89	-10.98	46.5	10.61	100	306	Horizontal

Position: Vertical

Test Graph



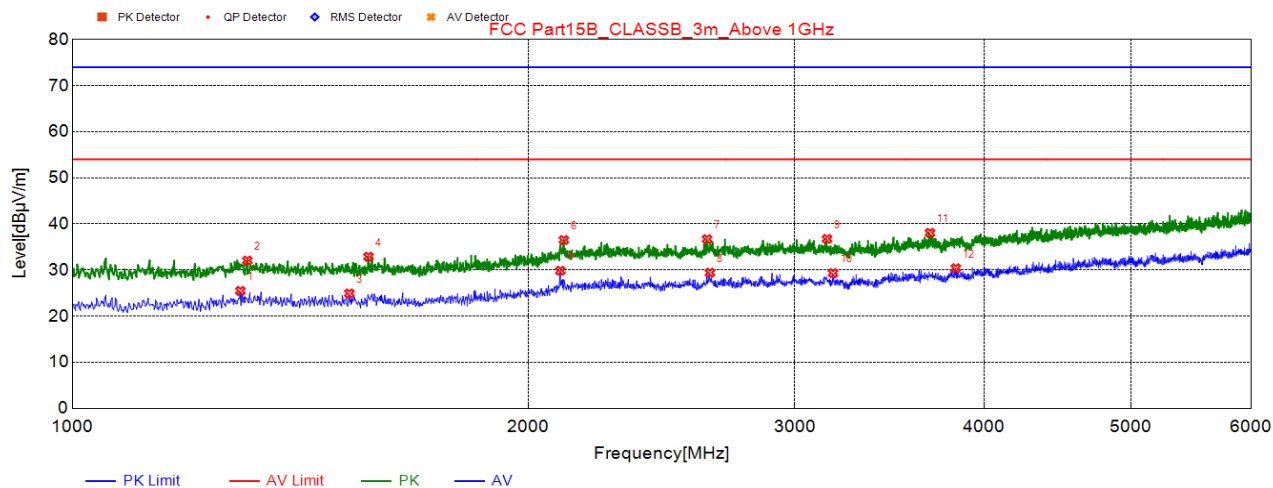
Final Data List

NO.	Freq. [MHz]	QP Value [dBμV]	Factor [dB]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	49.329	38.56	-15.39	40	1.44	100	327	Vertical
2	50.855	34.66	-15.46	40	5.34	100	330	Vertical
3	57.160	35.14	-16.22	40	4.86	100	355	Vertical
4	92.080	33.66	-19.32	43.5	9.84	100	320	Vertical
5	105.175	30.16	-18.06	43.5	13.34	100	355	Vertical
6	159.495	38.60	-14.94	43.5	4.90	100	304	Vertical

5.6. Test Result and Data (1GHz ~ 6GHz)

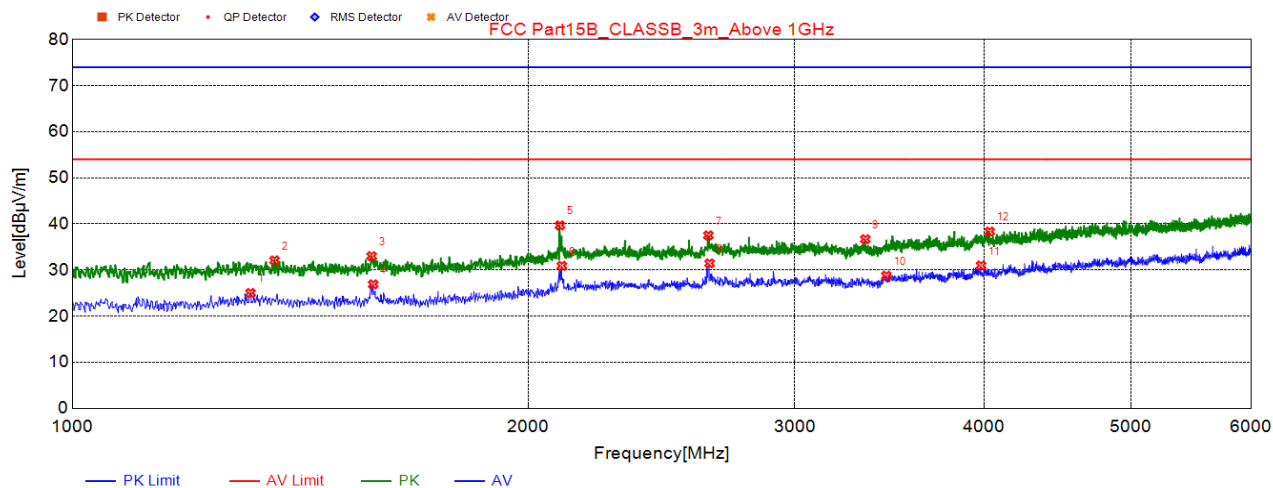
DC 12V mode

Position: Horizontal



Suspected List									
NO.	Freq. [MHz]	Readi ng [dBμ V/m]	Level [dB μV/m]	Limit [d BμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	1291.	32.03	25.48	54.00	28.52	100	155	Horizontal	AV
2	1305.	38.50	32.06	74.00	41.94	100	199	Horizontal	PK
3	1523.	30.90	24.93	54.00	29.07	200	93	Horizontal	AV
4	1568.	38.76	32.9	74.00	41.10	100	96	Horizontal	PK
5	2100.	32.19	29.86	54.00	24.14	100	96	Horizontal	AV
6	2111.	38.76	36.52	74.00	37.48	200	56	Horizontal	PK
7	2625.	38.07	36.7	74.00	37.30	200	152	Horizontal	PK
8	2636.	30.77	29.43	54.00	24.57	100	229	Horizontal	AV
9	3150.	37.22	36.76	74.00	37.24	200	263	Horizontal	PK
10	3179.	29.81	29.34	54.00	24.66	100	162	Horizontal	AV
11	3684.	37.32	38.07	74.00	35.93	100	199	Horizontal	PK
12	3831.	29.24	30.4	54.00	23.60	200	226	Horizontal	AV

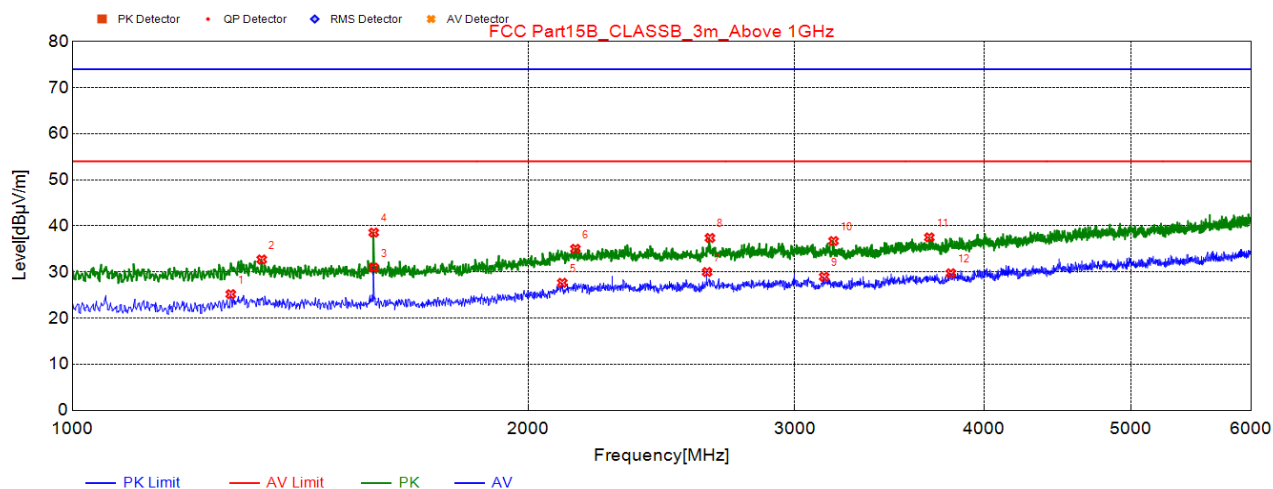
Position: Vertical



Suspected List									
NO.	Freq. [MHz]	Readi ng [dBμ V/m]	Level [dB μV/m]	Limit [d BμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	1311.	31.45	25.03	54.00	28.97	200	11	Vertical	AV
2	1360.	38.32	32.1	74.00	41.90	200	331	Vertical	PK
3	1576.	38.86	33.02	74.00	40.98	100	170	Vertical	PK
4	1580.	32.74	26.9	54.00	27.10	200	160	Vertical	AV
5	2099.	42.03	39.69	74.00	34.31	100	147	Vertical	PK
6	2105.	33.20	30.91	54.00	23.09	100	162	Vertical	AV
7	2630.	38.88	37.52	74.00	36.48	100	177	Vertical	PK
8	2635.	32.79	31.45	54.00	22.55	100	170	Vertical	AV
9	3339.	37.40	36.7	74.00	37.30	200	63	Vertical	PK
10	3448.	29.01	28.78	54.00	25.22	100	230	Vertical	AV
11	3981.	29.24	30.99	54.00	23.01	100	355	Vertical	AV
12	4034.	36.45	38.35	74.00	35.65	200	56	Vertical	PK

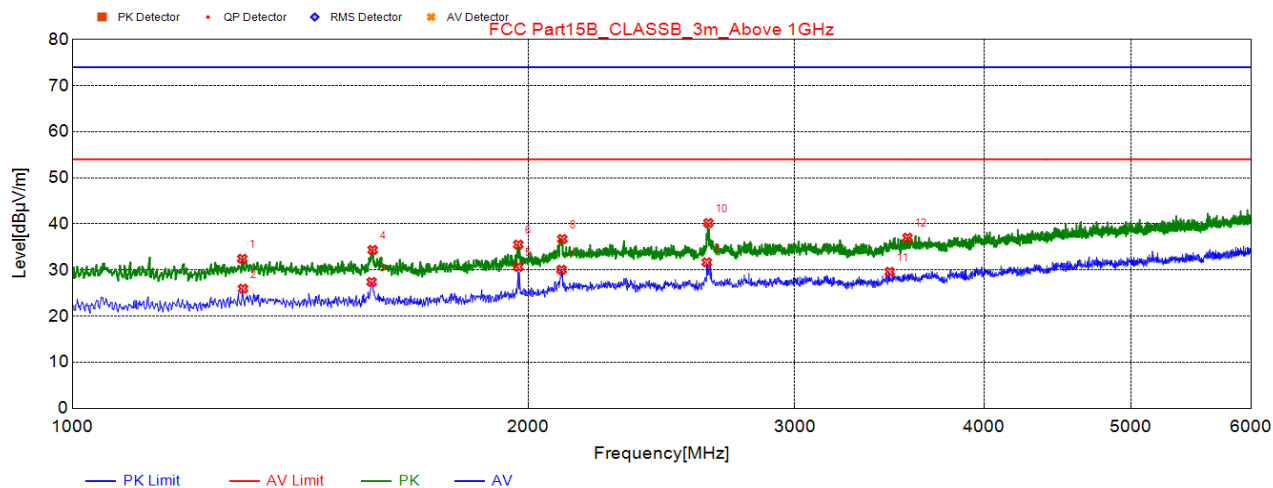
POE mode

Position: Horizontal



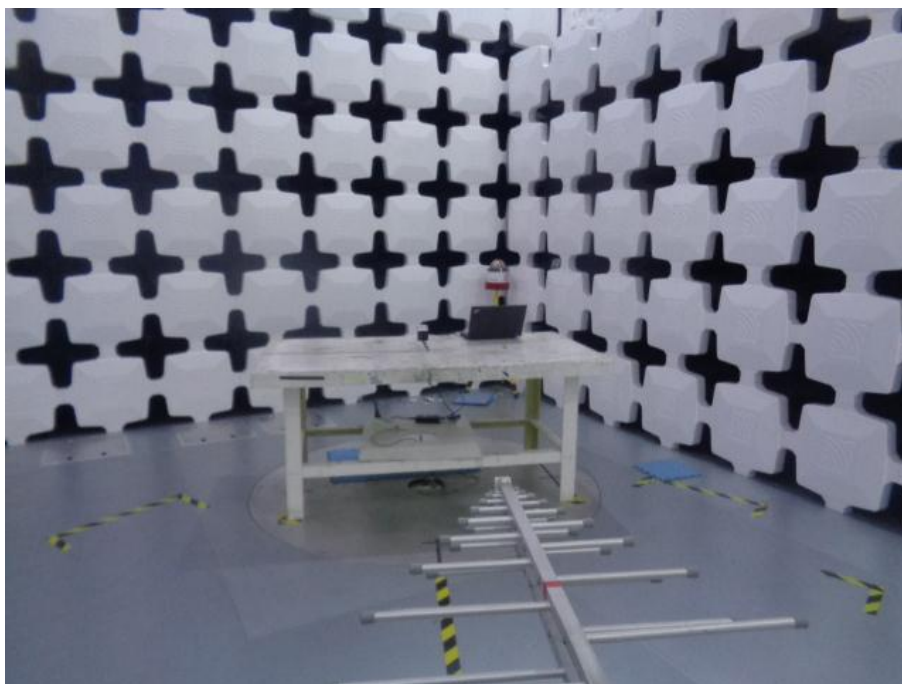
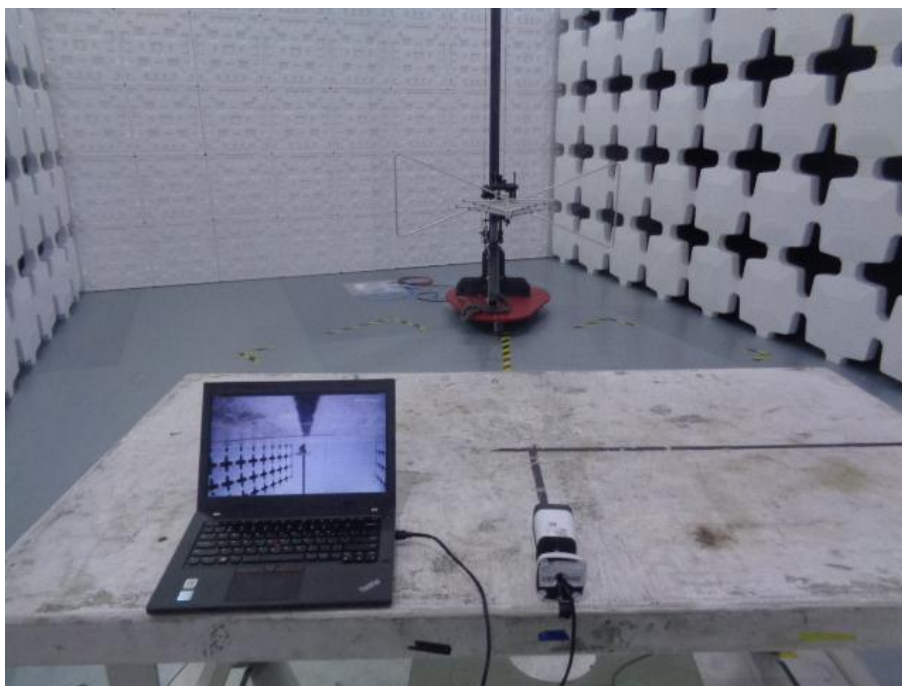
Suspected List									
NO.	Freq. [MHz]	Readaddi ng [dBμ V/m]	Level [dB μV/m]	Limit [d BμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	1272.	31.93	25.2	54.00	28.80	100	146	Horizontal	AV
2	1333.	39.05	32.72	74.00	41.28	100	280	Horizontal	PK
3	1581.	36.79	30.97	54.00	23.03	100	96	Horizontal	AV
4	1581.	44.39	38.57	74.00	35.43	100	96	Horizontal	PK
5	2106.	29.94	27.66	54.00	26.34	100	96	Horizontal	AV
6	2149.	37.01	35.04	74.00	38.96	200	160	Horizontal	PK
7	2625.	31.38	30.01	54.00	23.99	200	108	Horizontal	AV
8	2636.	38.73	37.39	74.00	36.61	200	108	Horizontal	PK
9	3136.	29.43	28.97	54.00	25.03	100	96	Horizontal	AV
10	3181.	37.20	36.73	74.00	37.27	200	279	Horizontal	PK
11	3680.	36.78	37.52	74.00	36.48	200	182	Horizontal	PK
12	3803.	28.70	29.74	54.00	24.26	100	355	Horizontal	AV

Position: Vertical

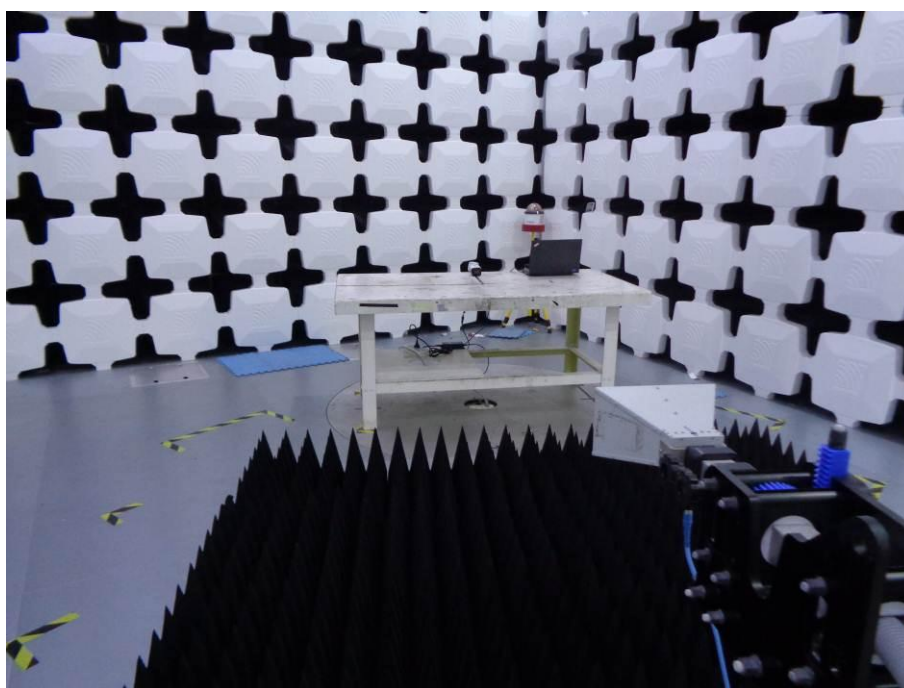
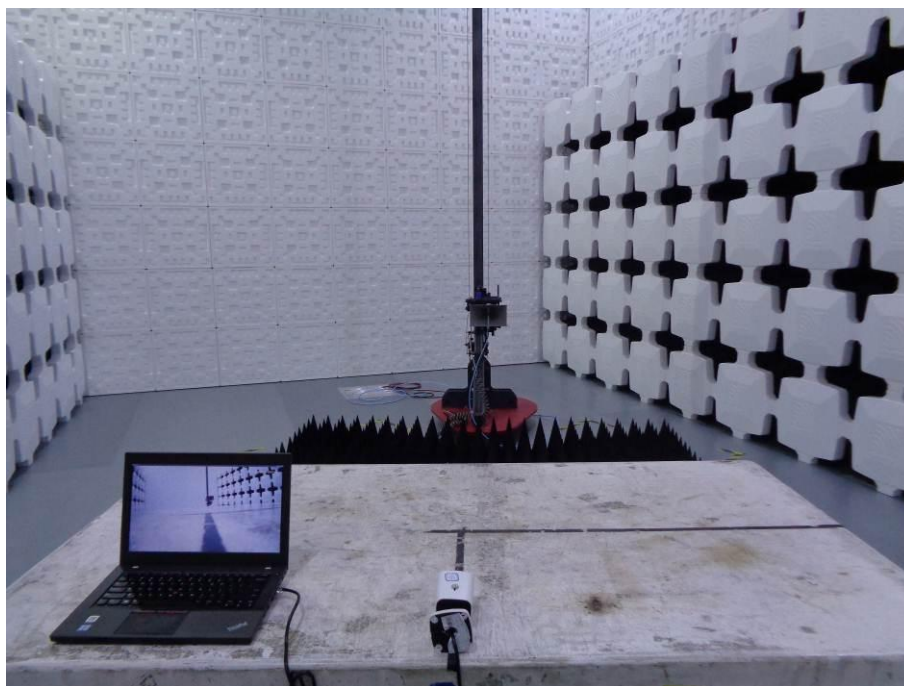


Suspected List									
NO.	Freq. [MHz]	Readi ng [dBμ V/m]	Level [dB μV/m]	Limit [d BμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	1295.	38.96	32.46	74.00	41.54	100	267	Vertical	PK
2	1296.	32.45	25.96	54.00	28.04	100	200	Vertical	AV
3	1576.	33.27	27.43	54.00	26.57	100	170	Vertical	AV
4	1578.	40.22	34.38	74.00	39.62	100	170	Vertical	PK
5	1970.	34.59	30.69	54.00	23.31	100	170	Vertical	AV
6	1970.	39.44	35.54	74.00	38.46	100	170	Vertical	PK
7	2104.	32.38	30.08	54.00	23.92	100	170	Vertical	AV
8	2106.	39.03	36.75	74.00	37.25	100	170	Vertical	PK
9	2624.	33.04	31.68	54.00	22.32	100	193	Vertical	AV
10	2630.	41.56	40.2	74.00	33.80	100	170	Vertical	PK
11	3465.	29.73	29.63	54.00	24.37	100	355	Vertical	AV
12	3560.	36.65	37.03	74.00	36.97	100	245	Vertical	PK

5.7. Test Photographs (30MHz ~ 1000MHz)



5.8. Test Photographs (1000MHz ~ 6000MHz)



6. Photographs of EUT







--- END ---