

### 11.3. LIMITS AND MEASUREMENT RESULT

15.209 Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note: All modes were tested For restricted band radiated emission,  
the test records reported below are the worst result compared to other modes.

### 11.4. TEST RESULT

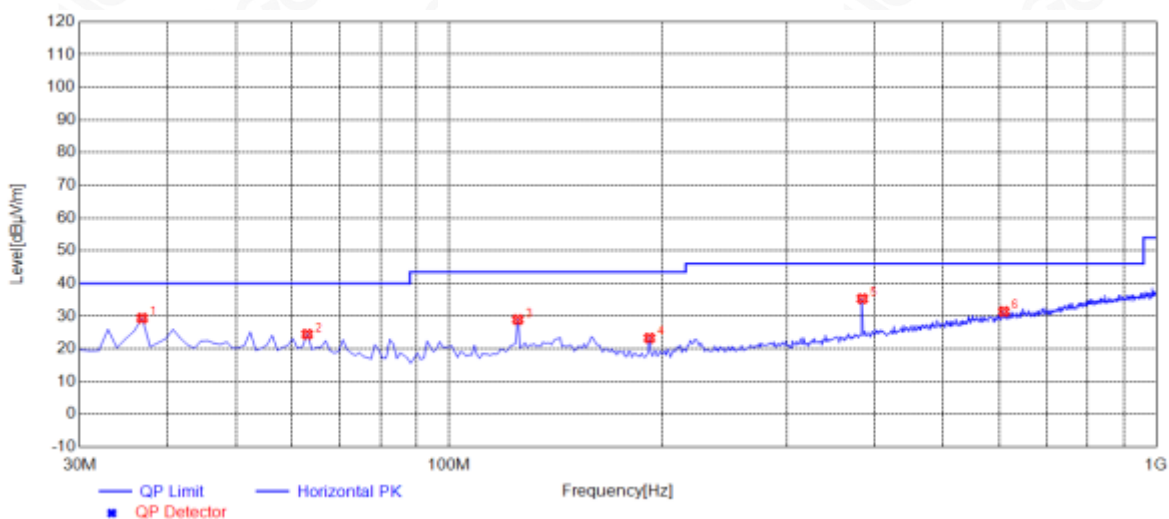
#### RADIATED EMISSION BELOW 30MHZ

No emission found between lowest internal used/generated frequencies to 30MHz.



### RADIATED EMISSION BELOW 1GHZ-Antenna 3

EUT	BMD-345	Model Name	BMD-345
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

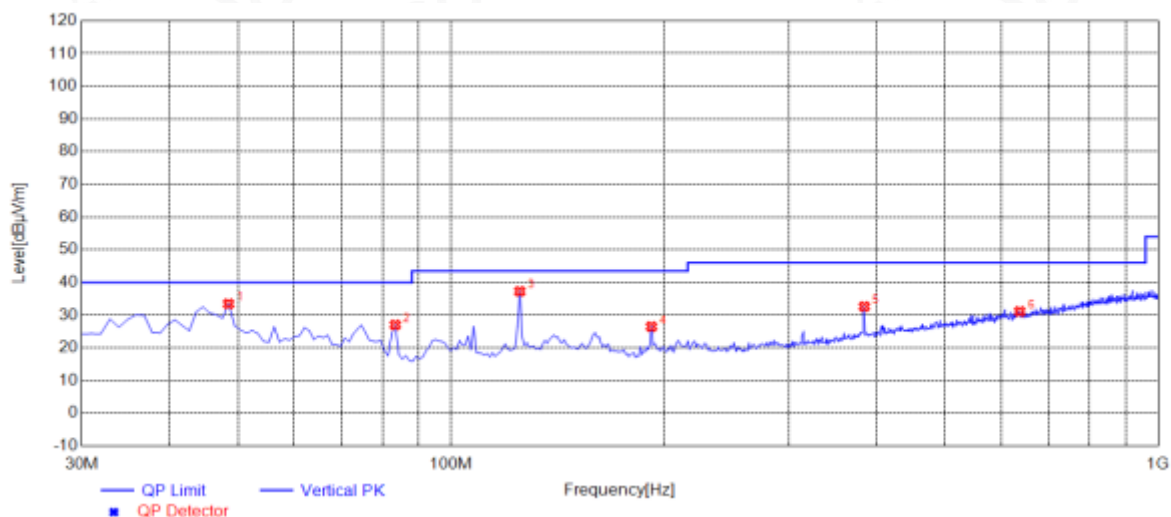


NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	36.7900	29.39	14.16	40.00	10.61	100	357	Horizontal
2	62.9800	24.48	13.42	40.00	15.52	100	274	Horizontal
3	125.0600	28.94	13.81	43.50	14.56	100	360	Horizontal
4	191.9900	23.31	12.43	43.50	20.19	100	96	Horizontal
5	384.0500	35.35	19.23	46.00	10.65	100	267	Horizontal
6	609.0900	31.43	24.46	46.00	14.57	100	219	Horizontal

**RESULT: PASS**



EUT	BMD-345	Model Name	BMD-345
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical



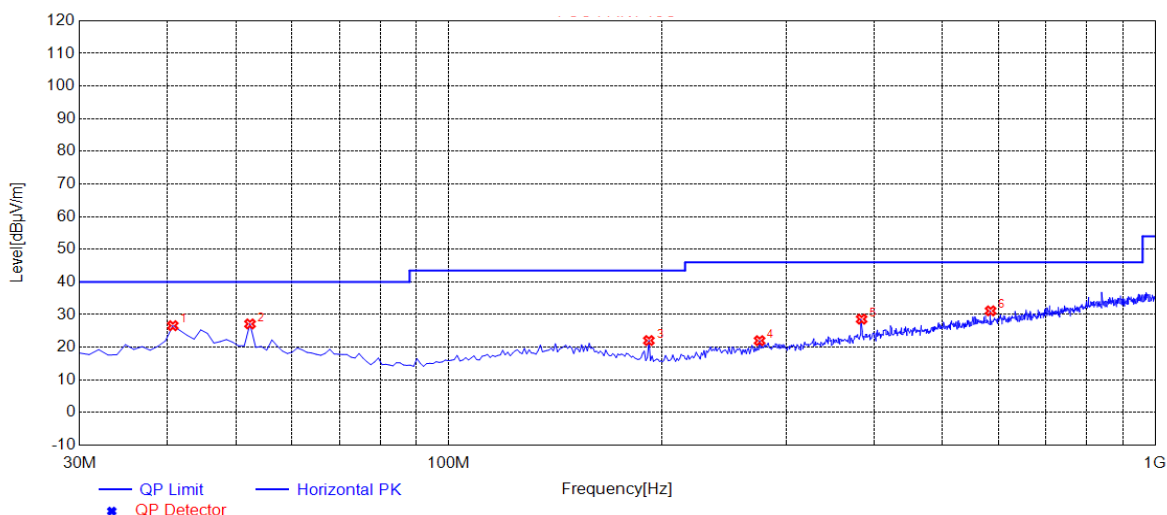
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	48.4300	33.47	14.71	40.00	6.53	100	18	Vertical
2	83.3500	27.02	10.18	40.00	12.98	100	184	Vertical
3	125.0600	37.29	13.81	43.50	6.21	100	121	Vertical
4	191.9900	26.49	12.43	43.50	17.01	100	163	Vertical
5	384.0500	32.63	19.23	46.00	13.37	100	211	Vertical
6	637.2200	31.13	24.92	46.00	14.87	100	305	Vertical

RESULT: PASS



### RADIATED EMISSION BELOW 1GHZ-Antenna 1

EUT	BMD-345	Model Name	BMD-345
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

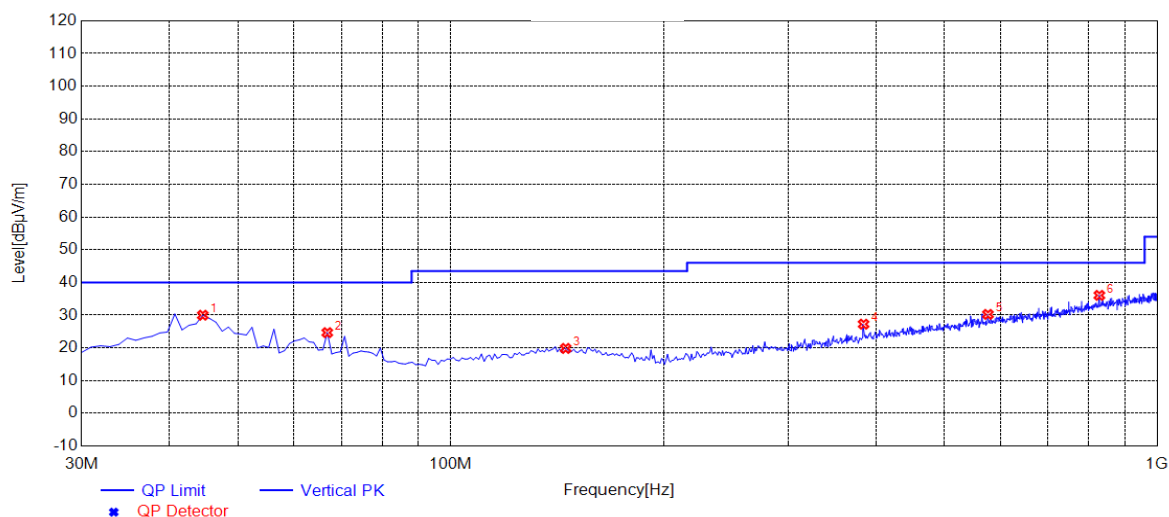


NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	40.6700	26.60	14.91	40.00	13.40	100	290	Horizontal
2	52.3100	27.14	14.49	40.00	12.86	100	120	Horizontal
3	191.9900	22.05	12.43	43.50	21.45	100	230	Horizontal
4	275.4100	22.01	15.88	46.00	23.99	100	10	Horizontal
5	384.0500	28.61	19.23	46.00	17.39	100	210	Horizontal
6	584.8400	31.14	24.01	46.00	14.86	100	50	Horizontal

RESULT: PASS



EUT	BMD-345	Model Name	BMD-345
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical



NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	44.5500	29.99	14.82	40.00	10.01	100	130	Vertical
2	66.8600	24.67	12.76	40.00	15.33	100	210	Vertical
3	145.4300	19.85	14.88	43.50	23.65	100	100	Vertical
4	384.0500	27.26	19.23	46.00	18.74	100	180	Vertical
5	576.1100	30.25	23.81	46.00	15.75	100	190	Vertical
6	828.3100	36.07	28.93	46.00	9.93	100	250	Vertical

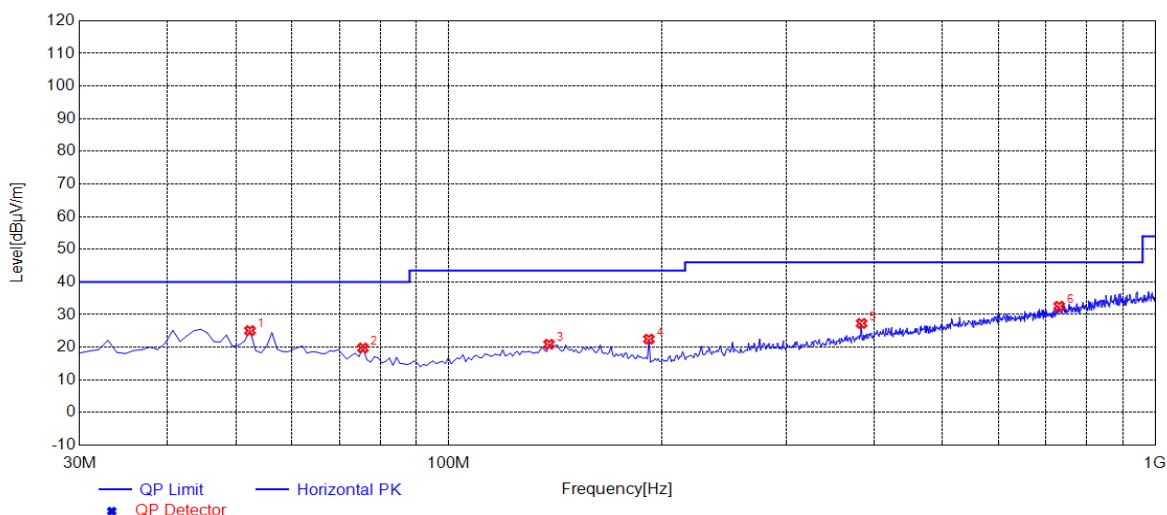
RESULT: PASS





### RADIATED EMISSION BELOW 1GHZ-Antenna 2

EUT	BMD-345	Model Name	BMD-345
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

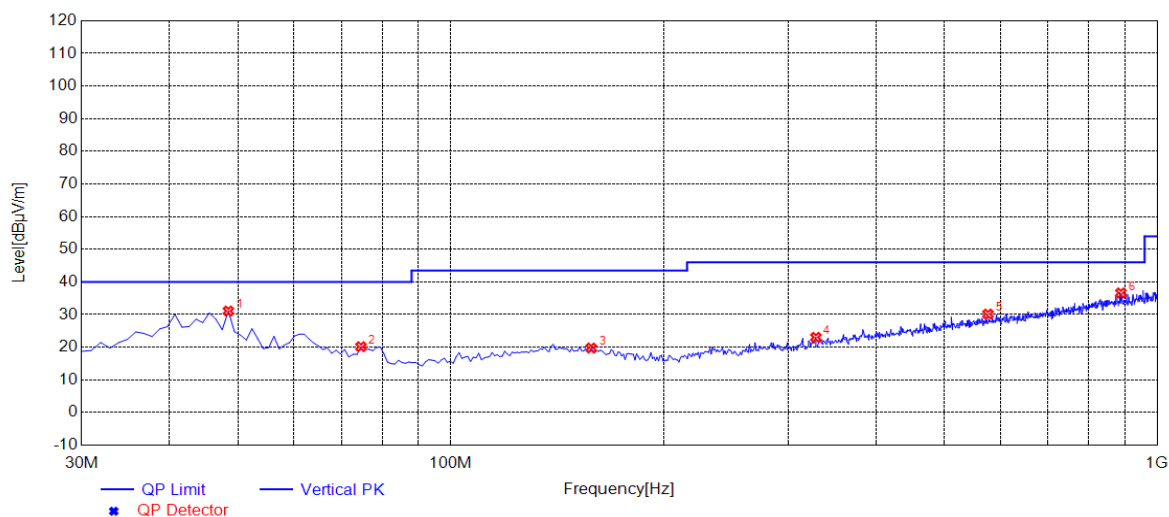


NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	52.3100	25.09	14.49	40.00	14.91	100	20	Horizontal
2	75.5900	19.78	11.07	40.00	20.22	100	270	Horizontal
3	138.6400	20.92	14.78	43.50	22.58	100	40	Horizontal
4	191.9900	22.50	12.43	43.50	21.00	100	230	Horizontal
5	384.0500	27.32	19.23	46.00	18.68	100	160	Horizontal
6	731.3100	32.57	26.75	46.00	13.43	100	40	Horizontal

**RESULT: PASS**



EUT	BMD-345	Model Name	BMD-345
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical



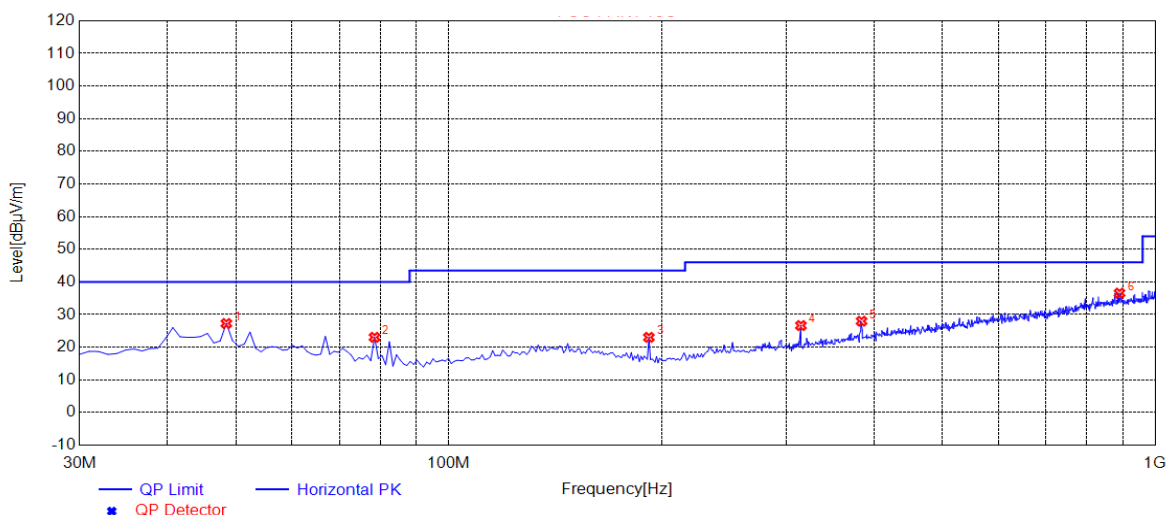
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	48.4300	31.10	14.71	40.00	8.90	100	20	Vertical
2	74.6200	20.17	11.27	40.00	19.83	100	120	Vertical
3	158.0400	19.76	14.93	43.50	23.74	100	290	Vertical
4	328.7600	23.04	17.02	46.00	22.96	100	280	Vertical
5	576.1100	30.17	23.81	46.00	15.83	100	260	Vertical
6	888.4500	36.64	29.96	46.00	9.36	100	70	Vertical

RESULT: PASS



### RADIATED EMISSION BELOW 1GHZ-Antenna 4

EUT	BMD-345	Model Name	BMD-345
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal



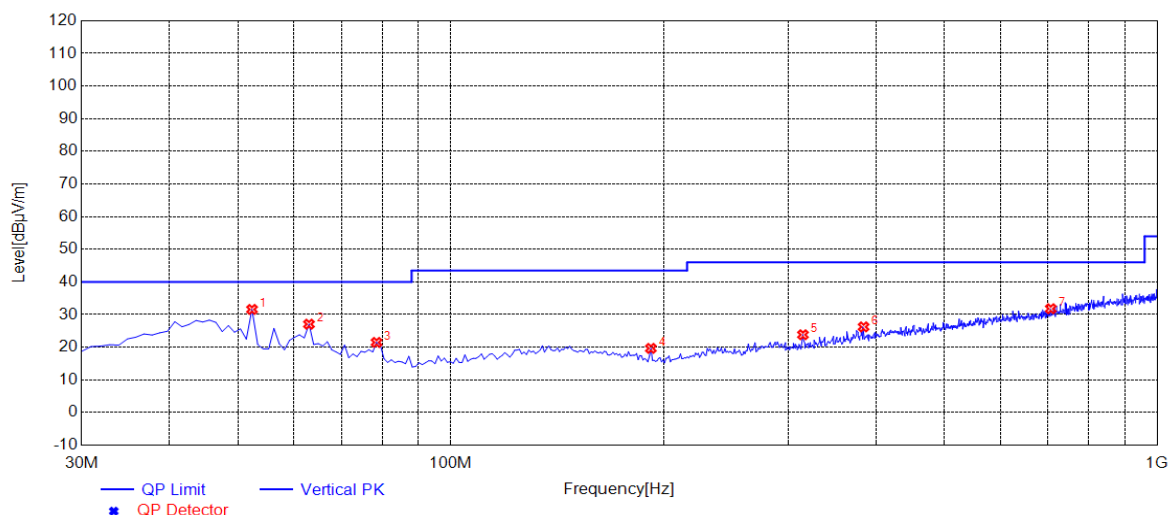
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	48.4300	27.29	14.71	40.00	12.71	100	240	Horizontal
2	78.5000	23.05	10.46	40.00	16.95	100	130	Horizontal
3	191.9900	23.03	12.43	43.50	20.47	100	230	Horizontal
4	315.1800	26.65	16.48	46.00	19.35	100	130	Horizontal
5	384.0500	27.99	19.23	46.00	18.01	100	320	Horizontal
6	890.3900	36.59	29.98	46.00	9.41	100	310	Horizontal

RESULT: PASS





EUT	BMD-345	Model Name	BMD-345
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical



NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	52.3100	31.59	14.49	40.00	8.41	100	350	Vertical
2	62.9800	27.07	13.42	40.00	12.93	100	190	Vertical
3	78.5000	21.49	10.46	40.00	18.51	100	20	Vertical
4	191.9900	19.66	12.43	43.50	23.84	100	300	Vertical
5	315.1800	23.83	16.48	46.00	22.17	100	230	Vertical
6	384.0500	26.24	19.23	46.00	19.76	100	200	Vertical
7	707.0600	31.80	26.10	46.00	14.20	100	300	Vertical

# **RESULT: PASS**

## **Note:**

- Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.
- All test modes had been tested. The mode 1 is the worst case and recorded in the report.



### RADIATED EMISSION ABOVE 1GHZ

<b>EUT</b>	BMD-345	<b>Model Name</b>	BMD-345
<b>Temperature</b>	25° C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	Mode 1	<b>Antenna</b>	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4804.000	54.12	0.08	54.2	74	-19.8	peak
4804.000	46.57	0.08	46.65	54	-7.35	AVG
7206.000	49.35	2.21	51.56	74	-22.44	peak
7206.000	40.79	2.21	43	54	-11	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

<b>EUT</b>	BMD-345	<b>Model Name</b>	BMD-345
<b>Temperature</b>	25° C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	Mode 1	<b>Antenna</b>	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4804.000	53.48	0.08	53.56	74	-20.44	peak
4804.000	44.19	0.08	44.27	54	-9.73	AVG
7206.000	47.62	2.21	49.83	74	-24.17	peak
7206.000	40.43	2.21	42.64	54	-11.36	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.



<b>EUT</b>	BMD-345	<b>Model Name</b>	BMD-345
<b>Temperature</b>	25° C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	Mode 2	<b>Antenna</b>	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4880.000	52.86	0.14	53	74	-21	peak
4880.000	43.47	0.14	43.61	54	-10.39	AVG
7320.000	46.91	2.36	49.27	74	-24.73	peak
7320.000	39.32	2.36	41.68	54	-12.32	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

<b>EUT</b>	BMD-345	<b>Model Name</b>	BMD-345
<b>Temperature</b>	25° C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	Mode 2	<b>Antenna</b>	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4880.000	51.29	0.14	51.43	74	-22.57	peak
4880.000	42.78	0.14	42.92	54	-11.08	AVG
7320.000	46.56	2.36	48.92	74	-25.08	peak
7320.000	37.42	2.36	39.78	54	-14.22	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.



<b>EUT</b>	BMD-345	<b>Model Name</b>	BMD-345
<b>Temperature</b>	25° C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	Mode 3	<b>Antenna</b>	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4956.000	51.21	0.22	51.43	74	-22.57	peak
4956.000	42.01	0.22	42.23	54	-11.77	AVG
7434.000	45.83	2.64	48.47	74	-25.53	peak
7434.000	36.84	2.64	39.48	54	-14.52	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

<b>EUT</b>	BMD-345	<b>Model Name</b>	BMD-345
<b>Temperature</b>	25° C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	Mode 3	<b>Antenna</b>	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4956.000	50.45	0.22	50.67	74	-23.33	peak
4956.000	40.28	0.22	40.5	54	-13.5	AVG
7434.000	45.37	2.64	48.01	74	-25.99	peak
7434.000	36.49	2.64	39.13	54	-14.87	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.





<b>EUT</b>	BMD-345	<b>Model Name</b>	BMD-345
<b>Temperature</b>	25° C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	Mode 4	<b>Antenna</b>	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4960.000	51.37	0.22	51.59	74	-22.41	peak
4960.000	42.56	0.22	42.78	54	-11.22	AVG
7440.000	45.19	2.64	47.83	74	-26.17	peak
7440.000	37.02	2.64	39.66	54	-14.34	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

<b>EUT</b>	BMD-345	<b>Model Name</b>	BMD-345
<b>Temperature</b>	25° C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	Mode 4	<b>Antenna</b>	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4960.000	49.63	0.22	49.85	74	-24.15	peak
4960.000	40.81	0.22	41.03	54	-12.97	AVG
7440.000	45.37	2.64	48.01	74	-25.99	peak
7440.000	36.49	2.64	39.13	54	-14.87	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

**RESULT: PASS**

**Note:**

Other emissions from 1G to 25 GHz are considered as ambient noise. No recording in the test report.

Factor = Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.

The "Factor" value can be calculated automatically by software of measurement system.





### TEST RESULT FOR RESTRICTED BANDS REQUIREMENTS

EUT	BMD-345	Model Name	BMD-345
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

PK



AV



RESULT: PASS



EUT	BMD-345	Model Name	BMD-345
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

PK



AV



RESULT: PASS



EUT	BMD-345	Model Name	BMD-345
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

PK



AV



RESULT: PASS



EUT	BMD-345	Model Name	BMD-345
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

PK



AV



RESULT: PASS





EUT	BMD-345	Model Name	BMD-345
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 4	Antenna	Horizontal

PK



AV



RESULT: PASS



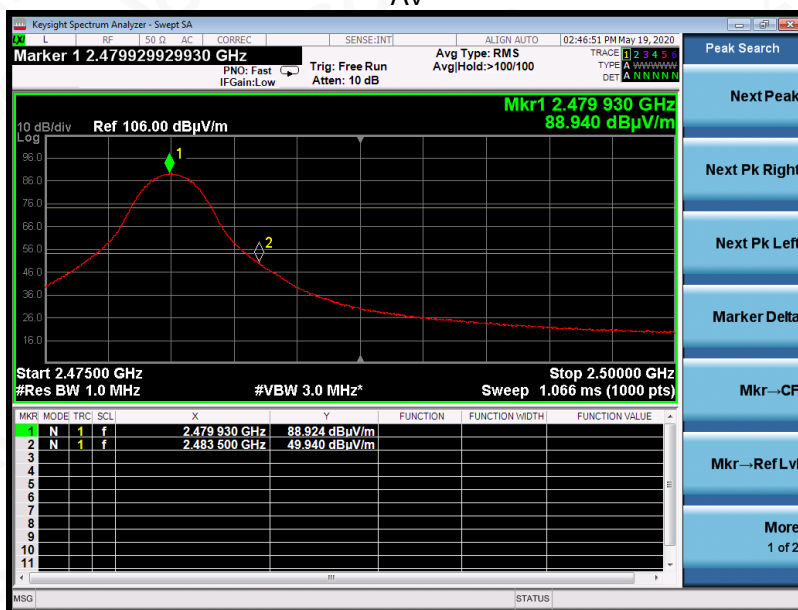


EUT	BMD-345	Model Name	BMD-345
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 4	Antenna	Vertical

PK



AV



**RESULT: PASS**

**Note:**

1. The factor had been edited in the "Input Correction" of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB(μV) to represent the Amplitude. Use the F dB(μV/m) to represent the Field Strength. So A=F.
2. All external antennas had been tested. The external antenna 3 is the worst case and recorded in the report.



## 12. FCC LINE CONDUCTED EMISSION TEST

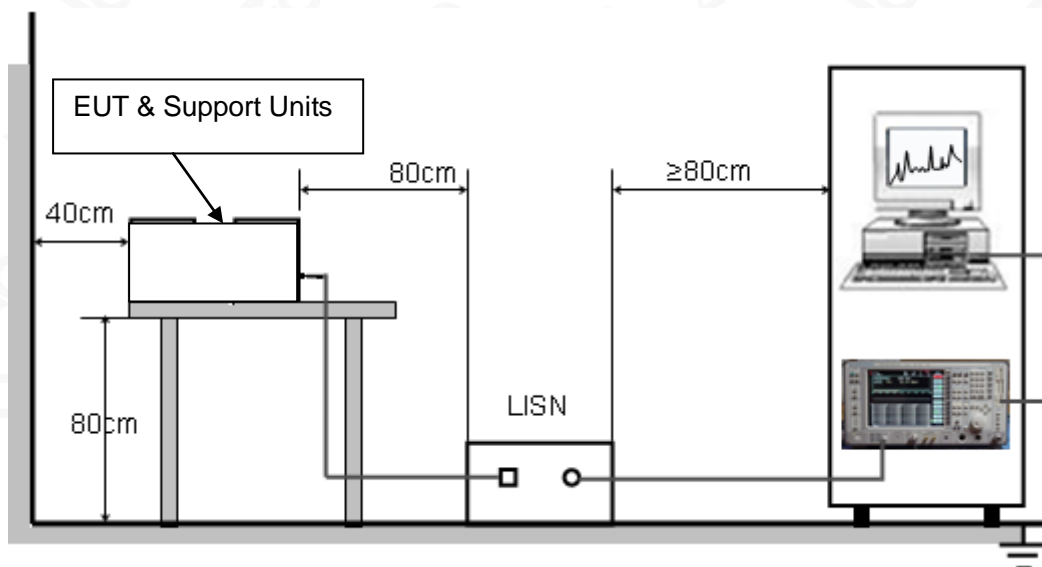
### 12.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.( dBuV)	Average( dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

### 12.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



### 12.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipments received AC120V/60Hz power from a LISN, if any.
5. The EUT received DC 3.6V power from control board which received AC120V/60Hz power by a LISN..
6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

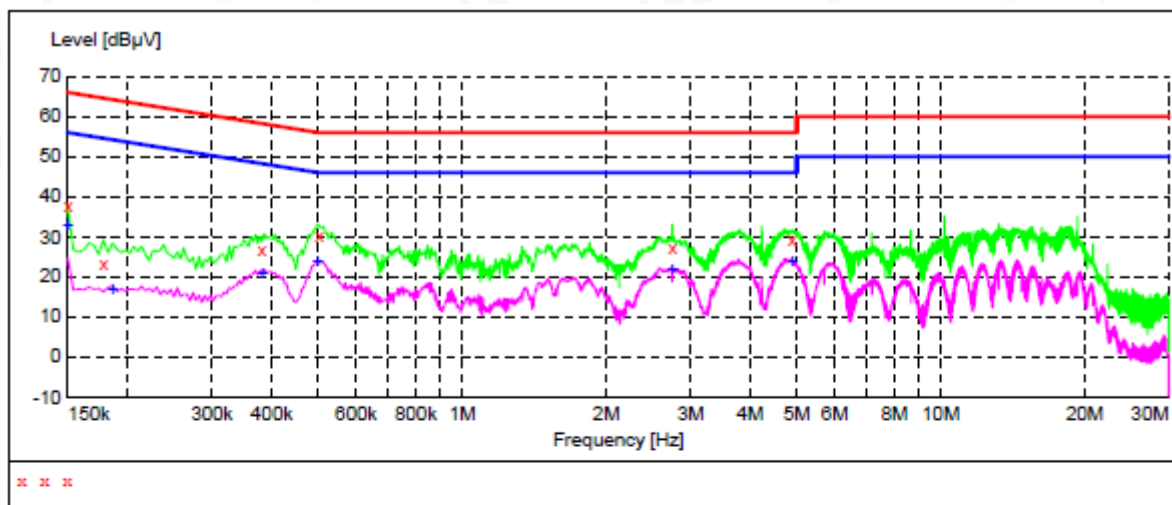
### 12.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case condition(s) was reported on the Summary Data page.



## 12.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

Line Conducted Emission Test Line 1-L



### MEASUREMENT RESULT

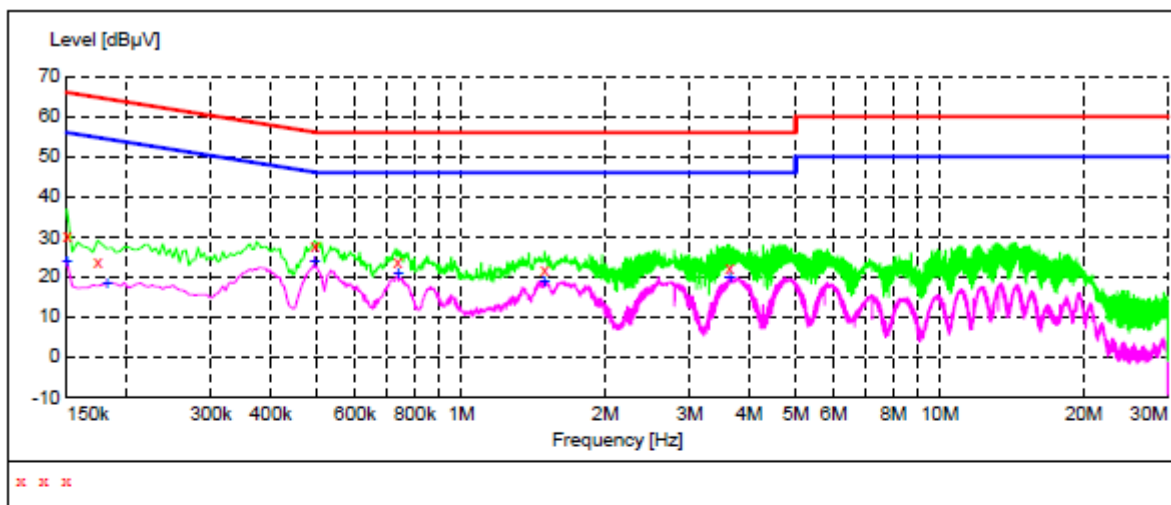
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line
0.150000	37.90	11.3	66	28.1	QP	L1
0.178000	23.10	11.3	65	41.5	QP	L1
0.382000	27.00	11.3	58	31.2	QP	L1
0.502000	30.20	11.3	56	25.8	QP	L1
2.750000	27.20	11.4	56	28.8	QP	L1
4.890000	29.30	11.4	56	26.7	QP	L1

### MEASUREMENT RESULT

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line
0.150000	33.00	11.3	56	23.0	AV	L1
0.186000	16.80	11.3	54	37.4	AV	L1
0.382000	21.00	11.3	48	27.2	AV	L1
0.498000	23.50	11.3	46	22.5	AV	L1
2.746000	21.90	11.4	46	24.1	AV	L1
4.894000	24.00	11.4	46	22.0	AV	L1



### Line Conducted Emission Test Line 2-N



#### MEASUREMENT RESULT

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line
0.150000	30.30	11.3	66	35.7	QP	N
0.174000	23.90	11.3	65	40.9	QP	N
0.494000	27.50	11.3	56	28.6	QP	N
0.738000	23.50	11.3	56	32.5	QP	N
1.494000	21.80	11.3	56	34.2	QP	N
3.642000	22.40	11.4	56	33.6	QP	N

#### MEASUREMENT RESULT

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line
0.150000	23.60	11.3	56	32.4	AV	N
0.182000	18.40	11.3	54	36.0	AV	N
0.494000	24.00	11.3	46	22.1	AV	N
0.738000	20.60	11.3	46	25.4	AV	N
1.490000	18.80	11.3	46	27.2	AV	N
3.642000	19.90	11.4	46	26.1	AV	N

#### RESULT: PASS

Note: All the test modes had been tested, the mode 1 was the worst case. Only the data of the worst case would be record in this test report.





**APPENDIX A: PHOTOGRAPHS OF TEST SETUP****RADIATED EMISSION TEST SETUP BELOW 1GHZ****RADIATED EMISSION TEST SETUP ABOVE 1GHZ**

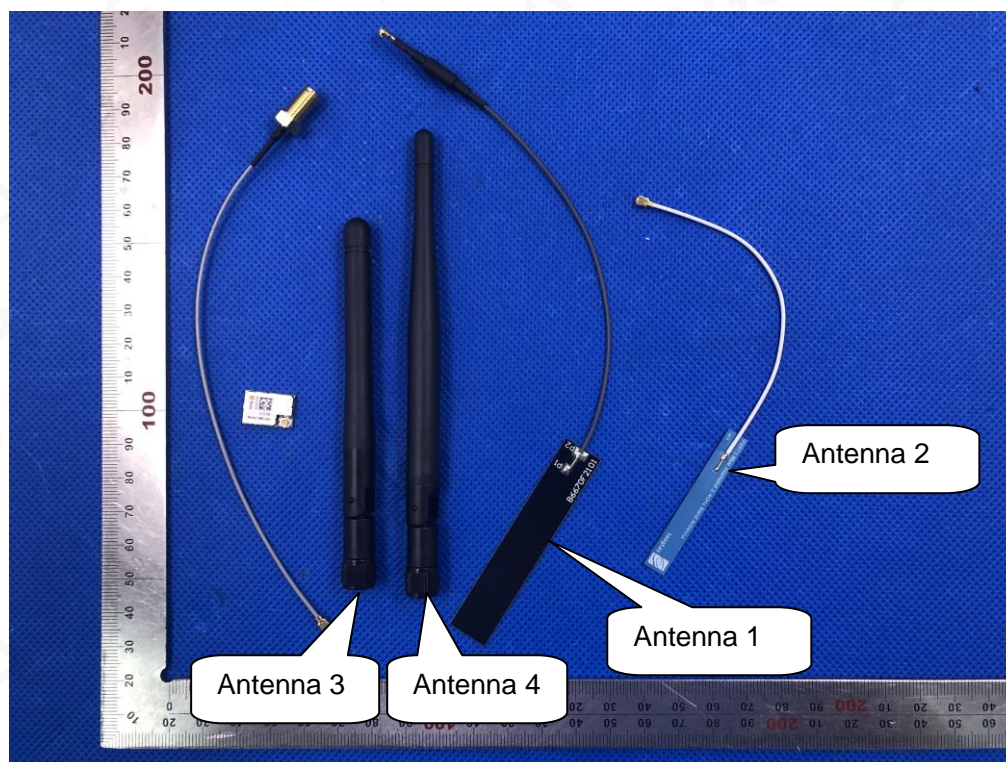
### CONDUCTED EMISSION TEST SETUP



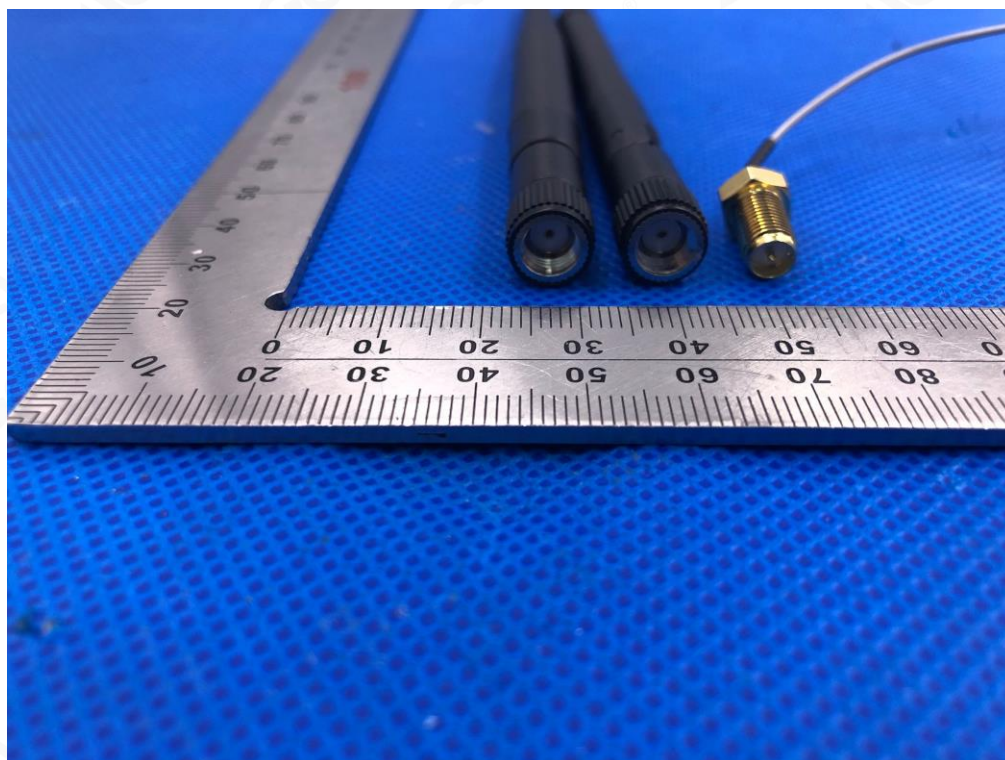


## APPENDIX B: PHOTOGRAPHS OF EUT

### ALL VIEW OF EUT

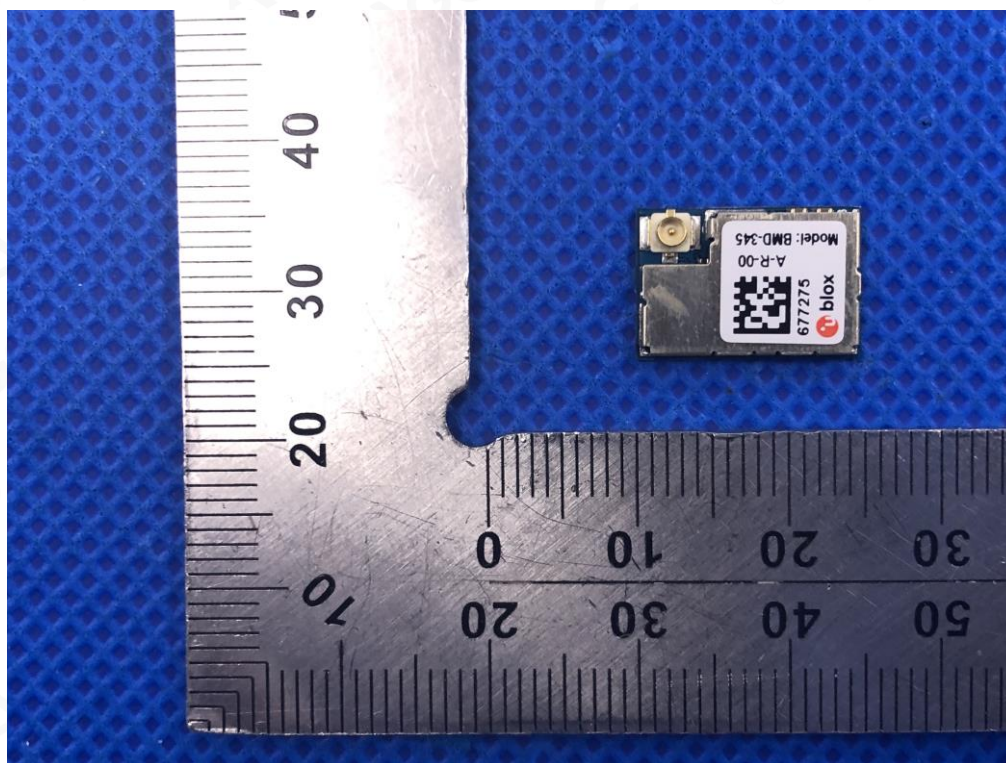


### VIEW OF EUT(PORT)

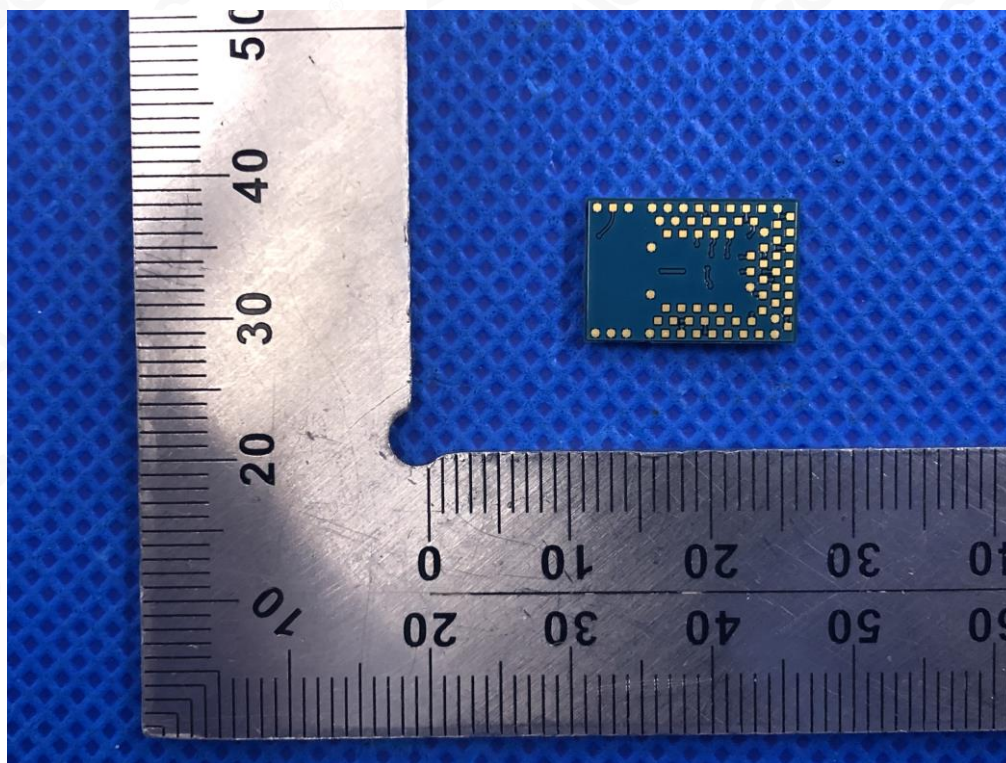




TOP VIEW OF EUT

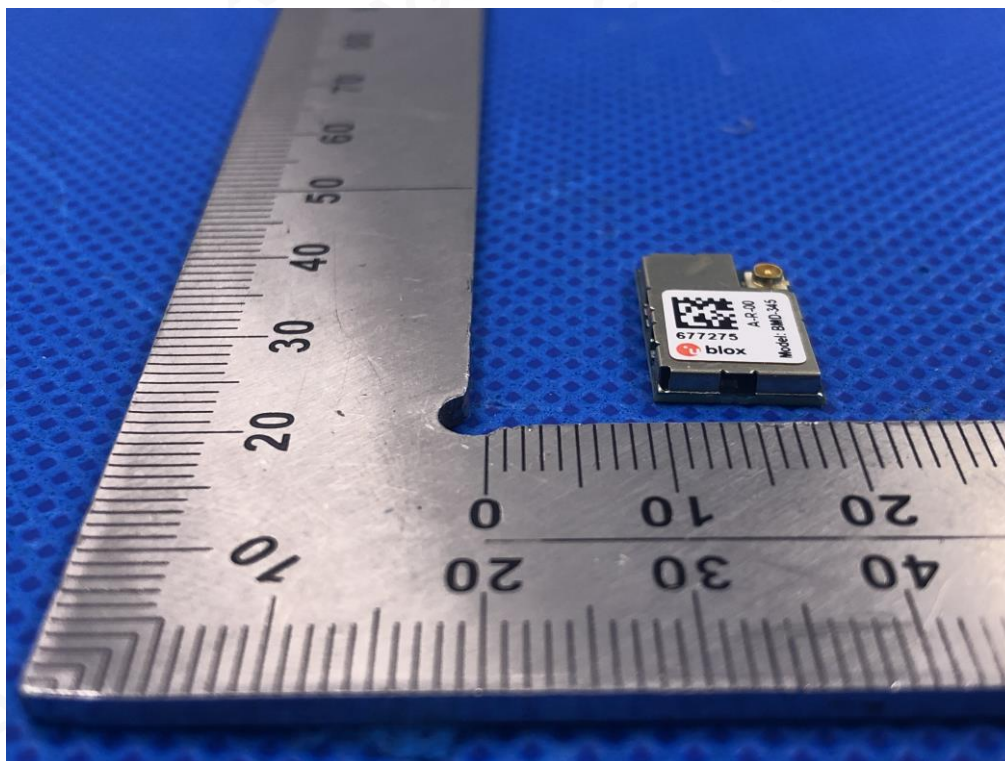


BOTTOM VIEW OF EUT

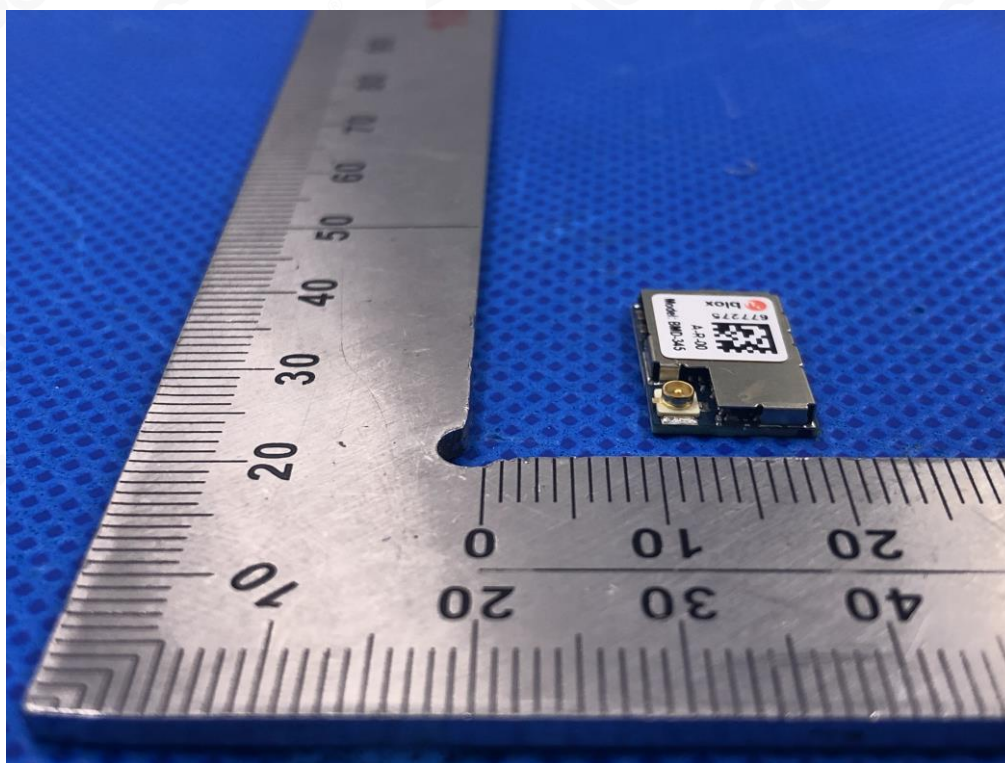




FRONT VIEW OF EUT

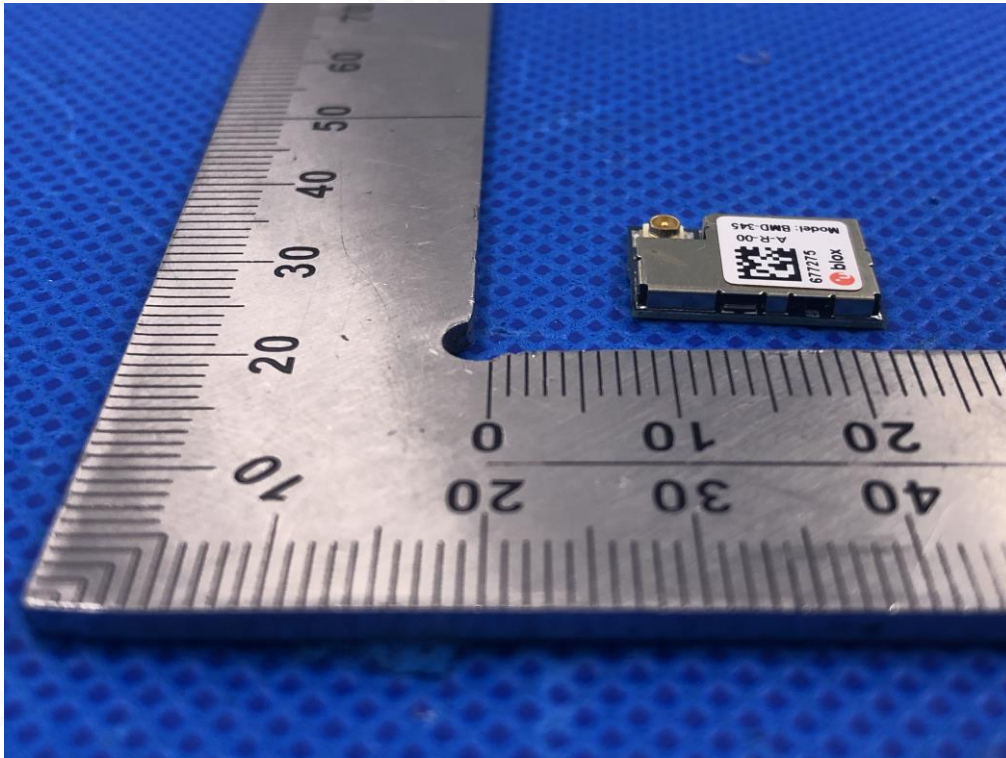


BACK VIEW OF EUT

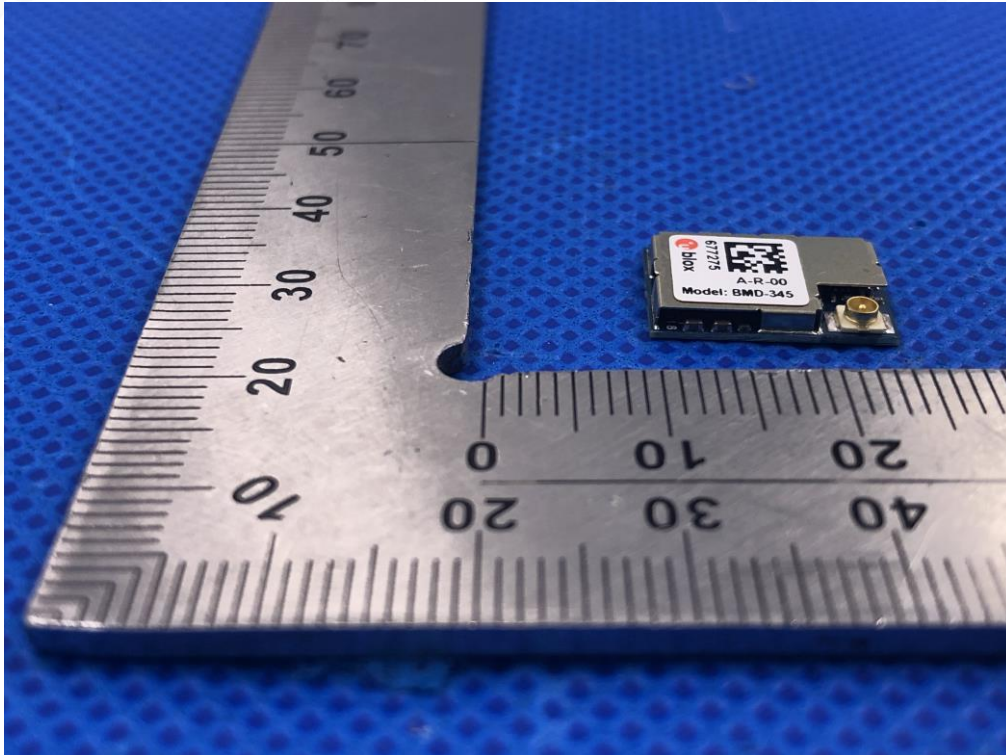




LEFT VIEW OF EUT

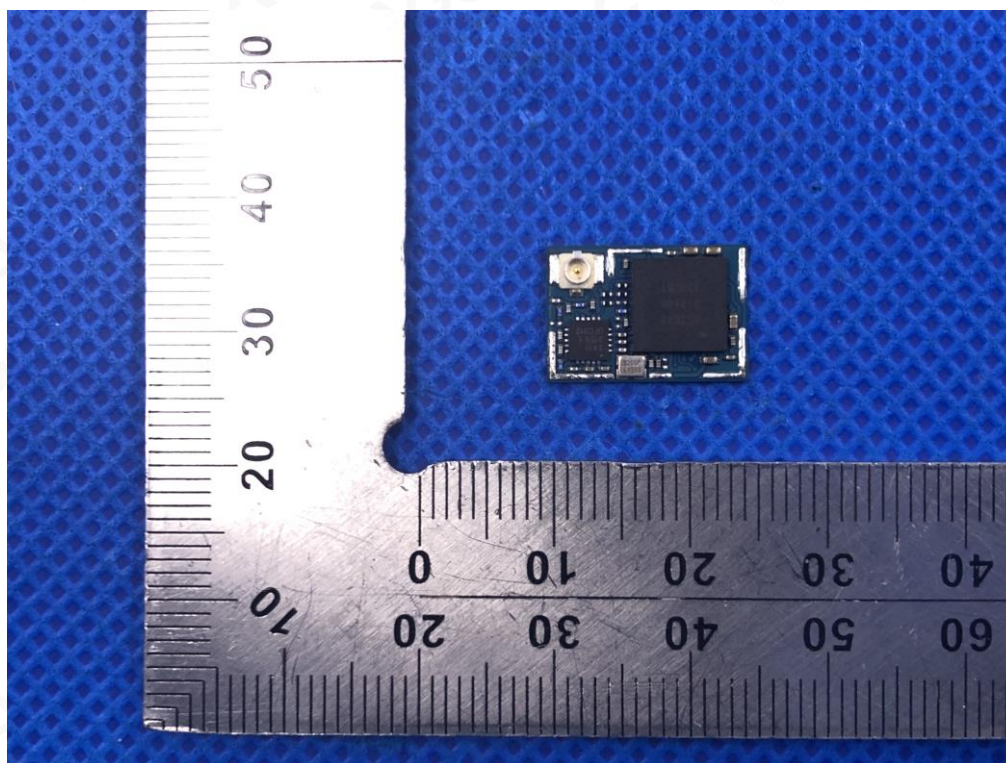


RIGHT VIEW OF EUT

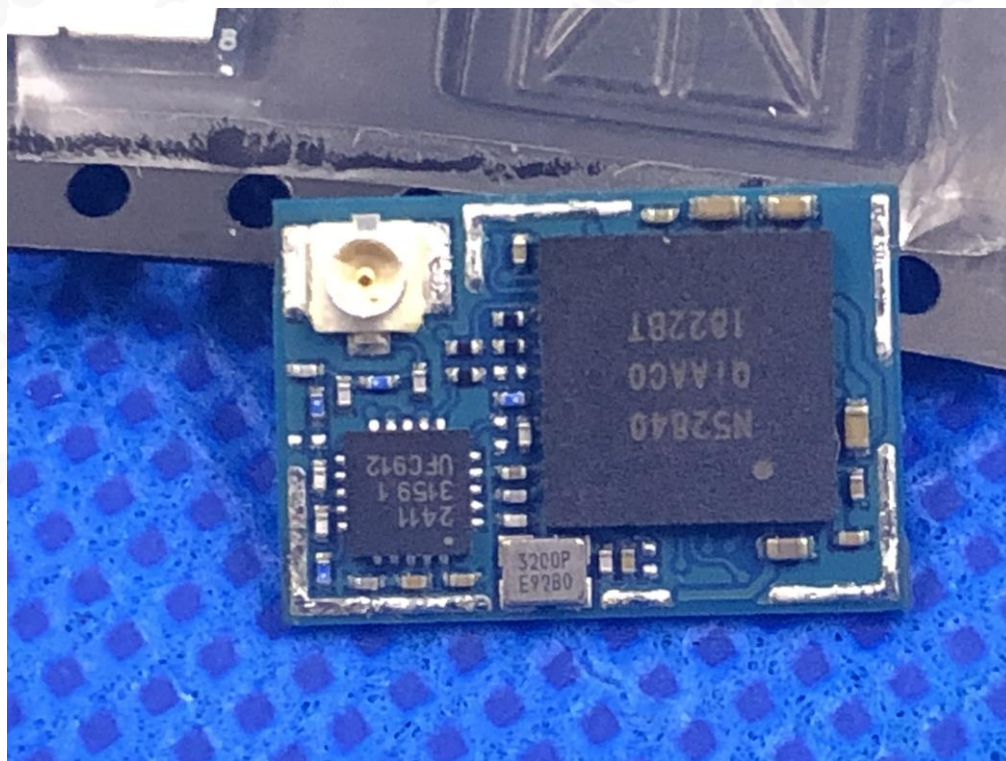




INTERNAL VIEW OF EUT-1



INTERNAL VIEW OF EUT-2



---END OF REPORT---