



FCC RADIO TEST REPORT

FCC ID:2ALT-X-IOTW15A28-1

Product : IoT Wearable A15-1

Trade Mark : TrekStor

Model Name : IOTW15A28-1

Serial Model : N/A

Report No. : NTEK-2017NT03212116F4

Prepared for

TrekStor GmbH

Berliner Ring 7, 64625 Bensheim, Germany

Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.

1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street

Bao'an District, Shenzhen 518126 P.R. China

Tel.: +86-755-6115 6588 Fax.: +86-755-6115 6599

Website: <http://www.ntek.org.cn>

TEST RESULT CERTIFICATION**Applicant's name** : TrekStor GmbH

Address : Berliner Ring 7, 64625 Bensheim, Germany

Manufacturer's Name : Bluebank Communication Technology Co.Ltd

Address : No. 13-2, Jiang Ying Road, Nan An District, Chongqing, P.R. China

Product description

Product name..... : IoT Wearable A15-1

Model and/or type reference : IOTW15A28-1

Serial Model : N/A

Standards : FCC Part15.225: Apr 11.2017

Test procedure..... ANSI C63.10-2013

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of NTEK, this document may be altered or revised by NTEK, personnel only, and shall be noted in the revision of the document.

Date of Test..... :

Date (s) of performance of tests..... : 21 Mar. 2017 ~ 12 Apr. 2017

Date of Issue..... : 12 Apr. 2017

Test Result..... : **Pass**

Testing Engineer :



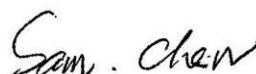
(Allen Liu)

Technical Manager :



(Jason Chen)

Authorized Signatory :



(Sam Chen)

Table of Contents	Page
1 . SUMMARY OF TEST RESULTS	4
1.1 TEST FACILITY	5
1.2 MEASUREMENT UNCERTAINTY	5
2 . GENERAL INFORMATION	6
2.1 GENERAL DESCRIPTION OF EUT	6
2.2 DESCRIPTION OF TEST MODES	7
2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	8
2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)	9
2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS	10
3 . ANTENNA REQUIREMENT	11
3.1 STANDARD REQUIREMENT	11
3.2 EUT ANTENNA	11
4 . EMC EMISSION TEST	12
4.1 CONDUCTED EMISSION MEASUREMENT	12
4.1.1 POWER LINE CONDUCTED EMISSION LIMITS	12
4.1.2 TEST PROCEDURE	13
4.1.3 DEVIATION FROM TEST STANDARD	13
4.1.4 TEST SETUP	13
4.2 RADIATED EMISSION MEASUREMENT	18
4.2.1 RADIATED EMISSION LIMITS	18
4.2.2 TEST PROCEDURE	19
4.2.3 DEVIATION FROM TEST STANDARD	19
4.2.4 TEST SETUP	20
4.2.5 TEST RESULTS (BELOW 30MHZ)	21
4.2.6 TEST RESULTS (BETWEEN 30 – 1000 MHZ)	23
5 . BANDWIDTH TEST	25
5.1 TEST PROCEDURE	25
5.2 DEVIATION FROM STANDARD	25
5.3 TEST SETUP	25
5.4 TEST RESULTS	26
6. FREQUENCY TOLERANCE	27
7. EUT TEST PHOTO	29
APPENDIX-PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS	

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15, Subpart C (15.225)			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	Pass	
15.205(a) 15.209 15.225	Radiated Spurious Emission	Pass	
15.225	20dB Bandwidth	Pass	
15.225	Frequency Tolerance	Pass	
15.203	Antenna Requirement	Pass	

NOTE:

(1) " N/A" denotes test is not applicable in this Test Report.

1.1 TEST FACILITY

NTEK Testing Technology Co., Ltd

Add. : 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen 518126 P.R. China.

FCC Registration No.:238937; IC Registration No.:9270A-1

CNAS Registration No.:L5516

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power,conducted	$\pm 0.16\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	IoT Wearable A15-1	
Trade Mark	TrekStor	
Model Name	IOTW15A28-1	
Serial Model	N/A	
Model Difference	N/A	
Product Description	The EUT is a IoT Wearable A15-1	
	Operation Frequency:	13.56MHz
	Modulation Type:	ASK
	Number Of Channel	1CH.
	Antenna Designation:	FPCB Antenna
	Antenna Gain(Peak)	1.0 dBi
Adapter	N/A	
Battery	DC 3.8V, 450mAh	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	FPCB Antenna	N/A	1.0	Antenna

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

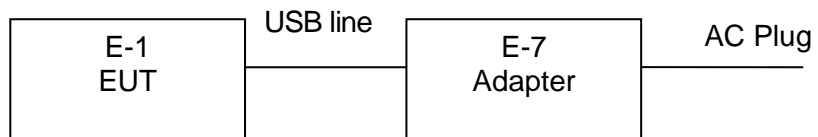
Pretest Mode	Description
Mode 1	TX

For Conducted Emission	
Final Test Mode	Description
Mode 1	TX

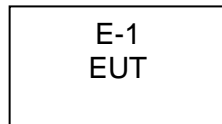
For Radiated Emission	
Final Test Mode	Description
Mode 1	TX

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

CE Test



Radiated Spurious Emission Test



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	IoT Wearable A15-1	TrekStor	IOTW15A28-1	2ALTX-IOTW15A28-1	EUT
E-2	Adapter	N/A	HJ-0501000B3-EU	N/A	Peripherals

Item	Shielded Type	Ferrite Core	Length	Note
USB Line	NO	YES	1.0m	

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	MY45108040	2016.07.06	2017.07.05	1 year
2	Test Receiver	R&S	ESPI	101318	2016.06.07	2017.06.06	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2016.07.06	2017.07.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2016.06.07	2017.06.06	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2016.06.07	2017.06.06	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	2016.07.06	2017.07.05	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2016.07.06	2017.07.05	1 year
8	Amplifier	EM	EM-30180	060538	2015.12.22	2016.12.21	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2016.06.08	2017.06.07	1 year
10	Power Meter	R&S	NRVS	100696	2016.07.06	2017.07.05	1 year
11	Power Sensor	R&S	URV5-Z4	0395.1619.05	2016.07.06	2017.07.05	1 year

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2016.07.06	2017.07.05	1 year
2	LISN	R&S	ENV216	101313	2016.08.24	2017.08.23	1 year
3	LISN	EMCO	3816/2	00042990	2016.08.24	2017.08.23	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2016.06.07	2017.06.06	1 year
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	2016.06.07	2017.06.06	1 year
6	Absorbing clamp	R&S	MOS-21	100423	2016.06.08	2017.06.07	1 year

3. ANTENNA REQUIREMENT

3.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: 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.

3.2 EUT ANTENNA

The EUT antenna is permanent attached antenna. It comply with the standard requirement.

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5			66 - 56 *	56 - 46 *	CISPR
0.50 -5.0			56.00	46.00	CISPR
5.0 -30.0			60.00	50.00	CISPR

0.15 -0.5			66 - 56 *	56 - 46 *	LP002.
0.50 -5.0			56.00	46.00	LP002.
5.0 -30.0			60.00	50.00	LP002.

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

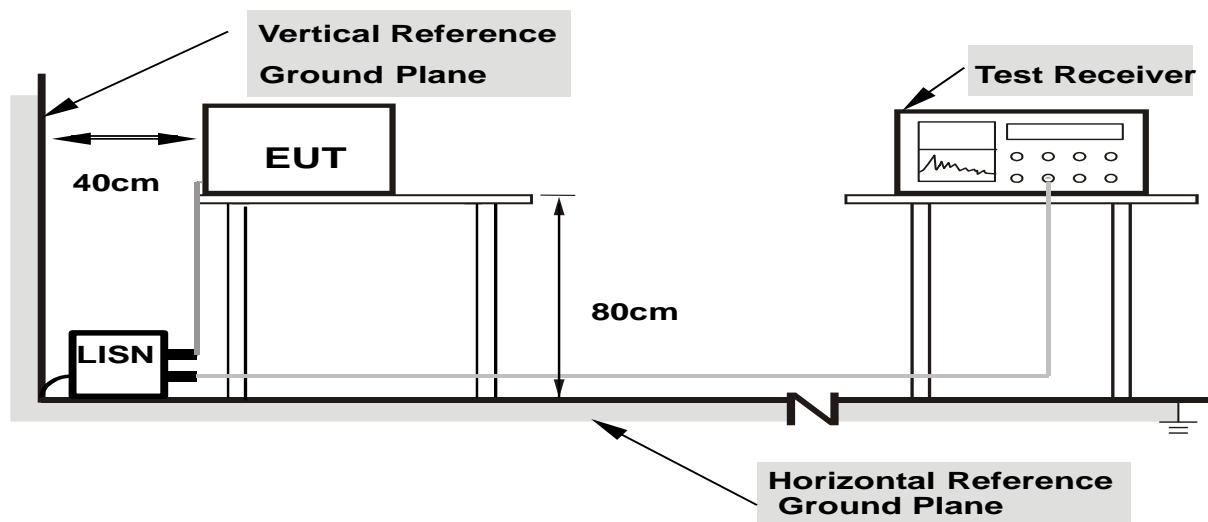
4.1.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation

4.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

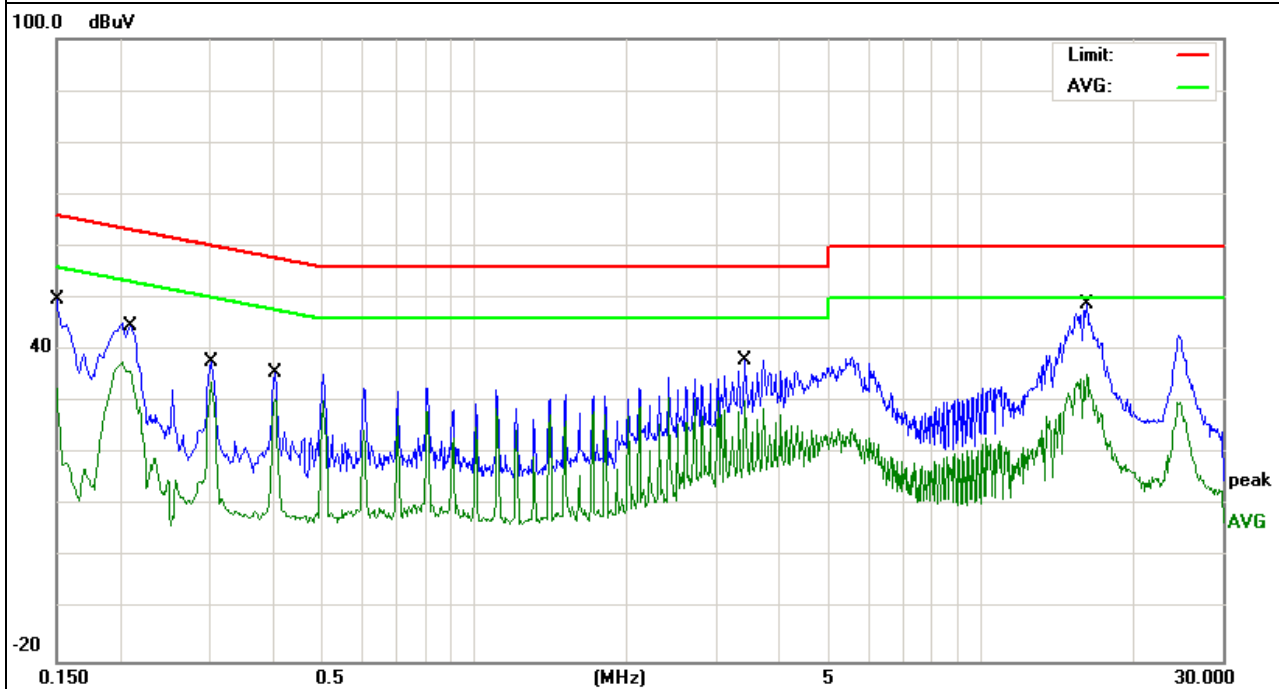
4.1.5 TEST RESULT

EUT :	IoT Wearable A15-1	Model Name :	IOTW15A28-1
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5V from adapter AC 120V/60Hz	Test Mode :	Mode 1

Frequency (MHz)	Reading Level (dBμV)	Correct Factor (dB)	Measure-ment (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.1499	39.61	10.16	49.77	66	-16.23	QP
0.1499	16.43	10.16	26.59	56	-29.41	AVG
0.2116	33.73	10.13	43.86	63.14	-19.28	QP
0.2116	20.02	10.13	30.15	53.14	-22.99	AVG
0.3019	27.56	10.12	37.68	60.19	-22.51	QP
0.3019	17.11	10.12	27.23	50.19	-22.96	AVG
0.406	25.57	10.15	35.72	57.73	-22.01	QP
0.406	16.33	10.15	26.48	47.73	-21.25	AVG
3.426	27.99	10.21	38.2	56	-17.8	QP
3.426	13.15	10.21	23.36	46	-22.64	AVG
16.1497	38.51	10.35	48.86	60	-11.14	QP
16.1497	19.23	10.35	29.58	50	-20.42	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

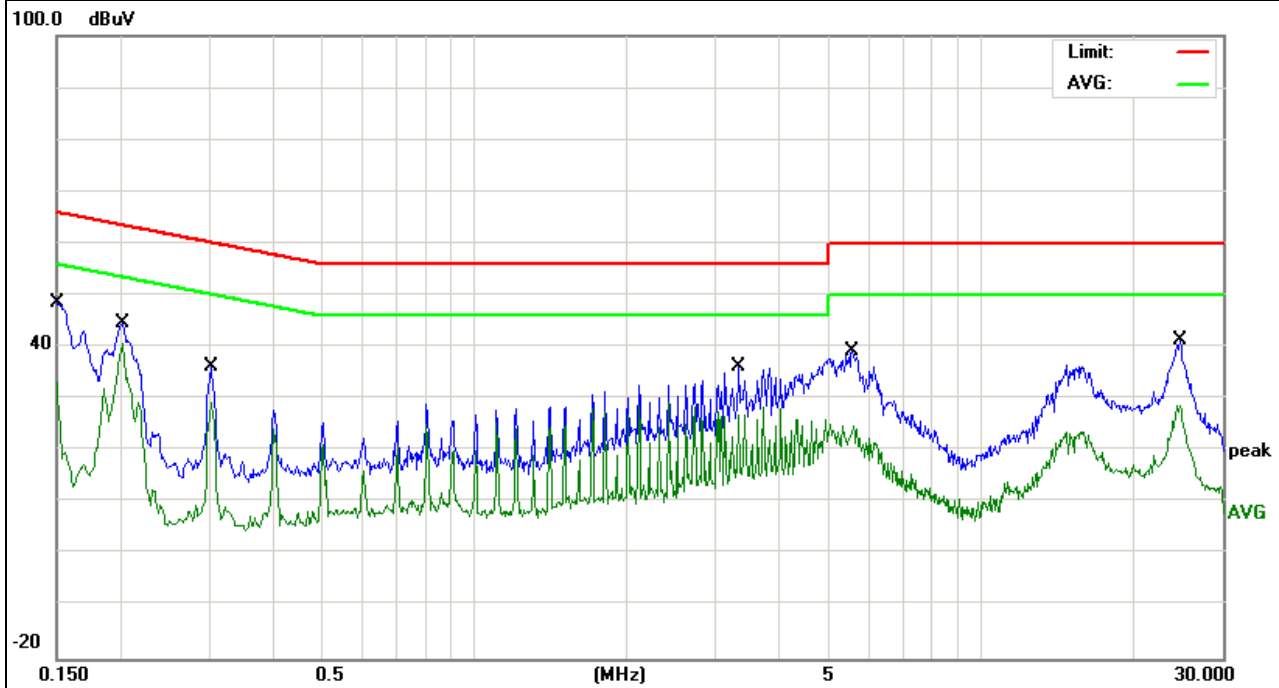


EUT :	IoT Wearable A15-1	Model Name :	IOTW15A28-1
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5V from adapter AC 120V/60Hz	Test Mode :	Mode 1

Frequency (MHz)	Reading Level (dBμV)	Correct Factor (dB)	Measure-ment (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.1499	38.3	10.14	48.44	66	-17.56	QP
0.1499	18.97	10.14	29.11	56	-26.89	AVG
0.202	34.62	10.12	44.74	63.52	-18.78	QP
0.202	17.23	10.12	27.35	53.52	-26.17	AVG
0.3019	26.17	10.11	36.28	60.19	-23.91	QP
0.3019	16.38	10.11	26.49	50.19	-23.7	AVG
3.33	26.11	10.21	36.32	56	-19.68	QP
3.33	18.33	10.21	28.54	46	-17.46	AVG
5.5696	29.03	10.24	39.27	60	-20.73	QP
5.5696	16.88	10.24	27.12	50	-22.88	AVG
24.6818	30.85	10.37	41.22	60	-18.78	QP
24.6818	15.99	10.37	26.36	50	-23.64	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

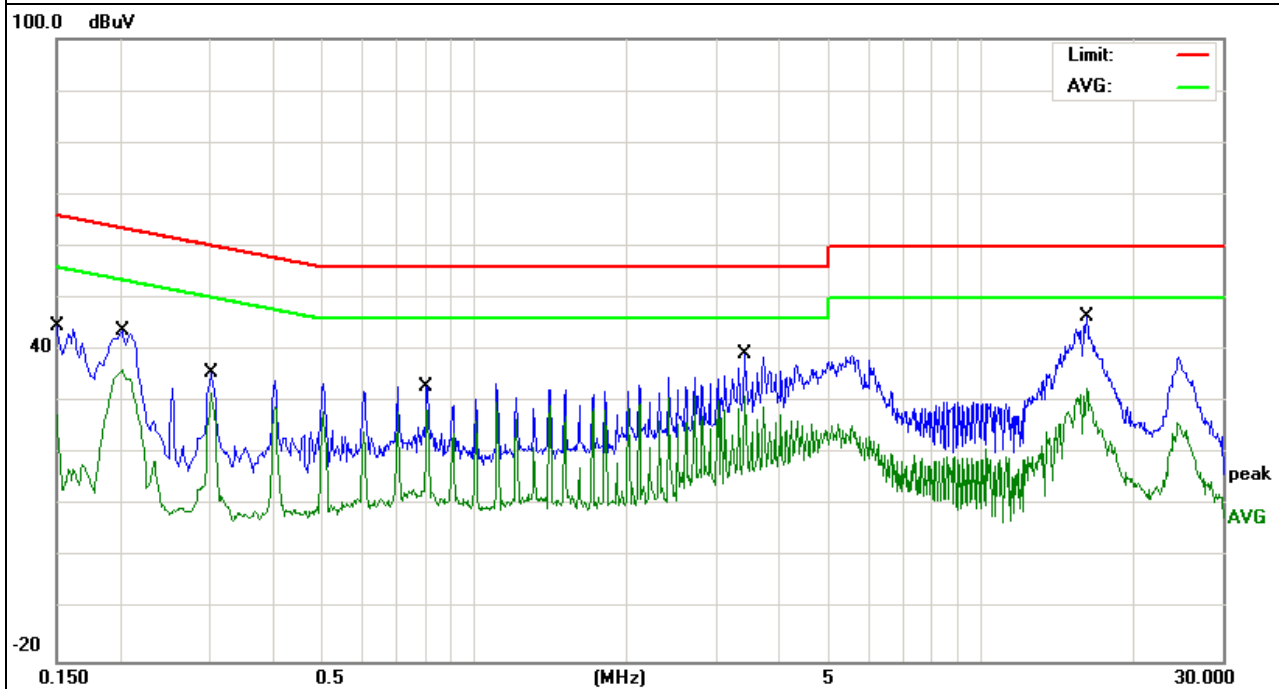


EUT :	IoT Wearable A15-1	Model Name :	IOTW15A28-1
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5V from adapter AC 240V/60Hz	Test Mode :	Mode 1

Frequency (MHz)	Reading Level (dBμV)	Correct Factor (dB)	Measure-ment (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.1499	34.61	10.16	44.77	66	-21.23	QP
0.1499	19.17	10.16	29.33	56	-26.67	AVG
0.202	33.68	10.13	43.81	63.52	-19.71	QP
0.202	17.45	10.13	27.58	53.52	-25.94	AVG
0.3019	25.56	10.12	35.68	60.19	-24.51	QP
0.3019	16.22	10.12	26.34	50.19	-23.85	AVG
0.8059	22.89	10.2	33.09	56	-22.91	QP
0.8059	14.25	10.2	24.45	46	-21.55	AVG
3.426	28.99	10.21	39.2	56	-16.8	QP
3.426	16.15	10.21	26.36	46	-19.64	AVG
16.1496	36.01	10.35	46.36	60	-13.64	QP
16.1496	15.52	10.35	25.87	50	-24.13	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

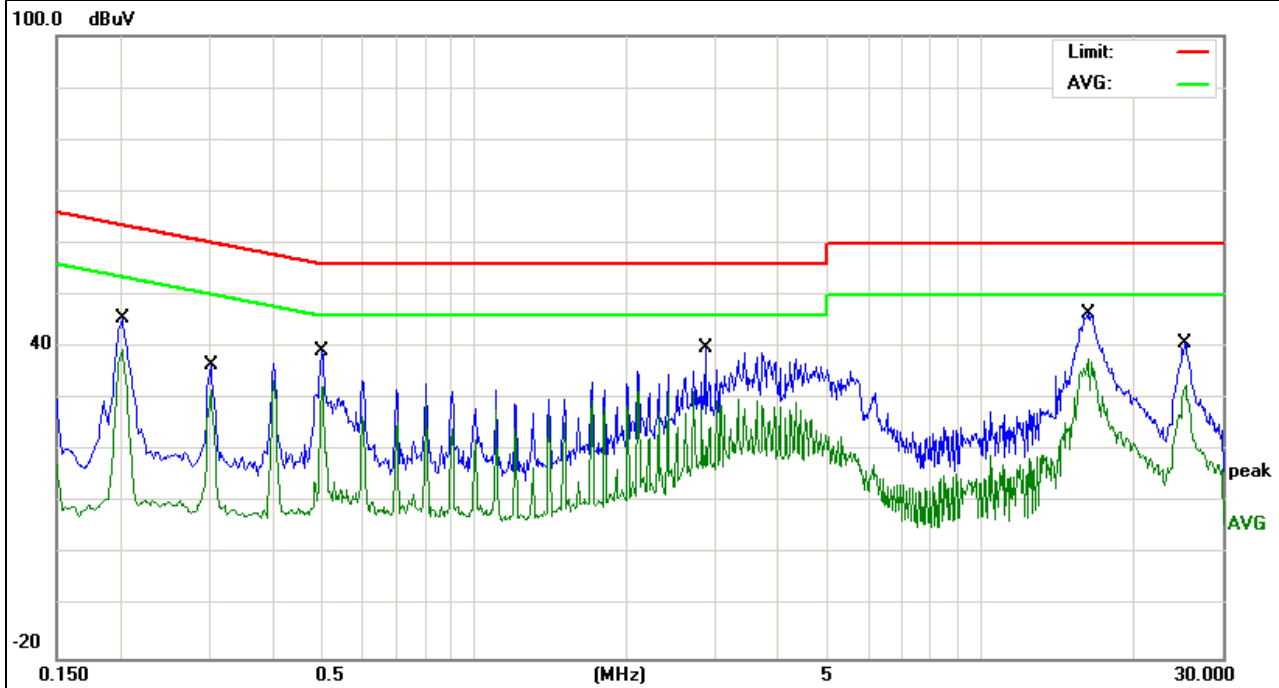


EUT :	IoT Wearable A15-1	Model Name :	IOTW15A28-1
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5V from adapter AC 240V/60Hz	Test Mode :	Mode 1

Frequency (MHz)	Reading Level (dBμV)	Correct Factor (dB)	Measure-ment (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.202	35.28	10.12	45.4	63.52	-18.12	QP
0.202	17.32	10.12	27.44	53.52	-26.08	AVG
0.3019	26.49	10.11	36.6	60.19	-23.59	QP
0.3019	16.58	10.11	26.69	50.19	-23.5	AVG
0.502	28.97	10.16	39.13	56	-16.87	QP
0.502	17.95	10.16	28.11	46	-17.89	AVG
2.862	29.76	10.22	39.98	56	-16.02	QP
2.862	15.46	10.22	25.68	46	-20.32	AVG
16.2896	36.17	10.32	46.49	60	-13.51	QP
16.2896	17.02	10.32	27.34	50	-22.66	AVG
25.234	30.42	10.37	40.79	60	-19.21	QP
25.234	17.75	10.37	28.12	50	-21.88	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 Radiated Emission Limits (FCC 15.209)

Frequencies (MHz)	Field Strength (microvolts/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:

- (1) The tighter limit applies at the band edges.
- (2) Emission level (dBuV/m)=20log Emission level (uV/m).

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC 15.225)

- (a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters, equal to 124dBuV/m at 3 meters.
- (b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters, equal to 90.5dBuV/m at 3 meters.
- (c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters, equal to 80.5dBuV/m at 3 meters..
- (d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.2.2 TEST PROCEDURE

- The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz And above 1GHz,
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m meter. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

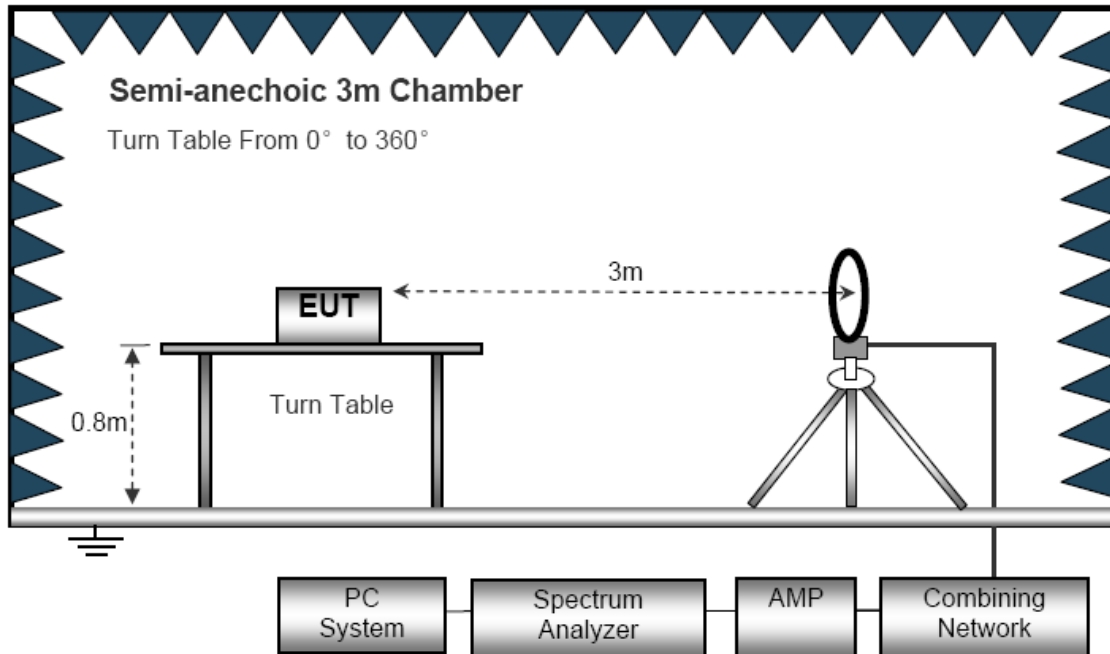
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

4.2.3 DEVIATION FROM TEST STANDARD

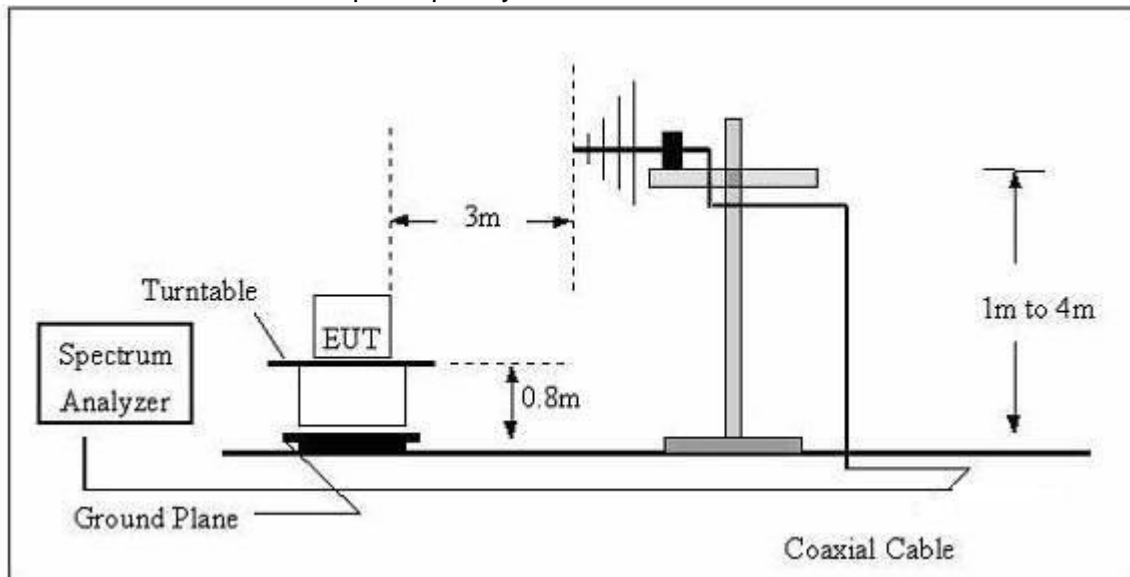
No deviation

4.2.4 TEST SETUP

(A) Radiated Emission Test-Up Frequency Below 30MHz



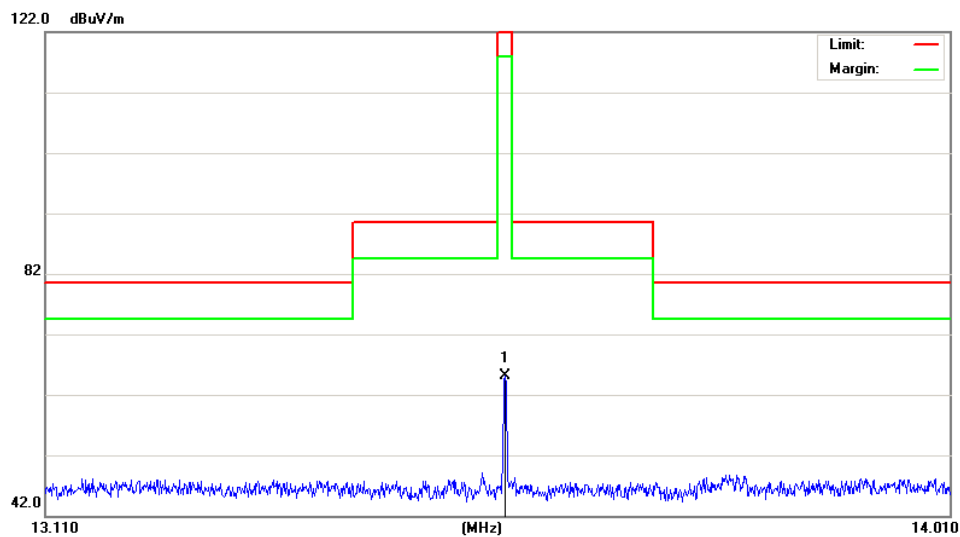
(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



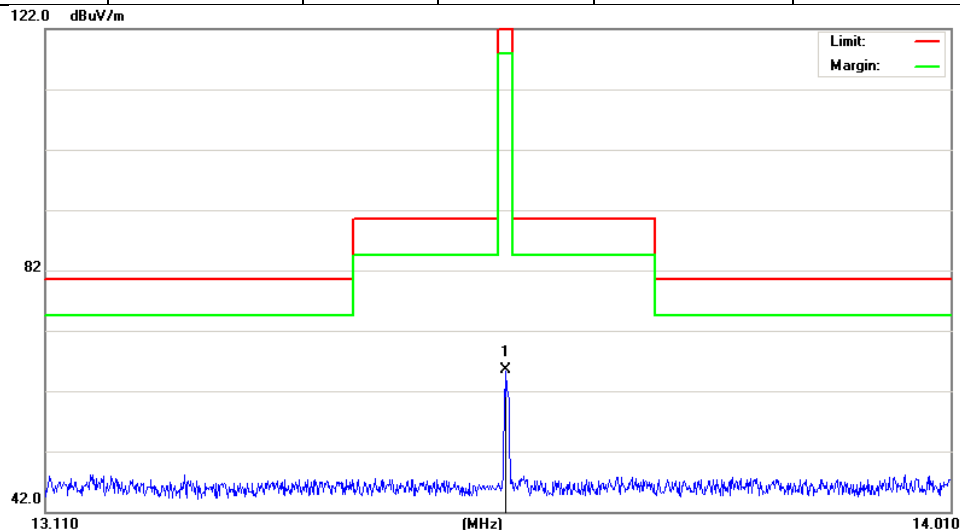
4.2.5 TEST RESULTS (BELOW 30MHz)

EUT :	IoT Wearable A15-1	Model Name. :	IOTW15A28-1
Temperature :	20 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Voltage :	DC 3.8V
Test Mode :	TX		

Freq.	Reading	Factor	Emission Level	Limit	Margin	Polar
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/@3m)	(dB)	
13.56	65.1	0	65.1	124.0 0	-58.9	H



Freq.	Reading	Factor	Emission Level	Limit	Margin	Polar
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/@3m)	(dB)	
13.5609	65.4	0	65.4	124.0 0	-58.6	V



Freq.	Reading	Factor	Emission Level	Extrapolation factor	Measurement results (calculated)	Limits	Margin
(MHz)	dB μ V@3m	(dB)	(dB μ V/m)	(dB)	dB μ V/m @300m&30m	dB μ V/m @300m	(dB)
27.11	18.65	13.14	31.79	40	-8.21	29.54	-37.75

Frequency Range	Frequency	Reading	Factor	Extrapolation factor	Measurement results (calculated)	Limits	Margin
(MHz)	(MHz)	dB μ V @3m	(dB)	(dB)	dB μ V/m &30m	dB μ V/m @30m	(dB)
13.110~13.41	13.294	35.25	21.55	40	16.8	40.5	-23.7
13.410~13.553	13.543	41.36	21.55	40	22.91	50.5	-27.59
13.553~13.567	13.521	65.45	21.55	40	47	84	-37
13.567~13.71	13.549	42.59	21.55	40	24.14	50.5	-26.36
13.710~14.01	13.812	33.48	21.55	40	15.03	40.5	-25.47

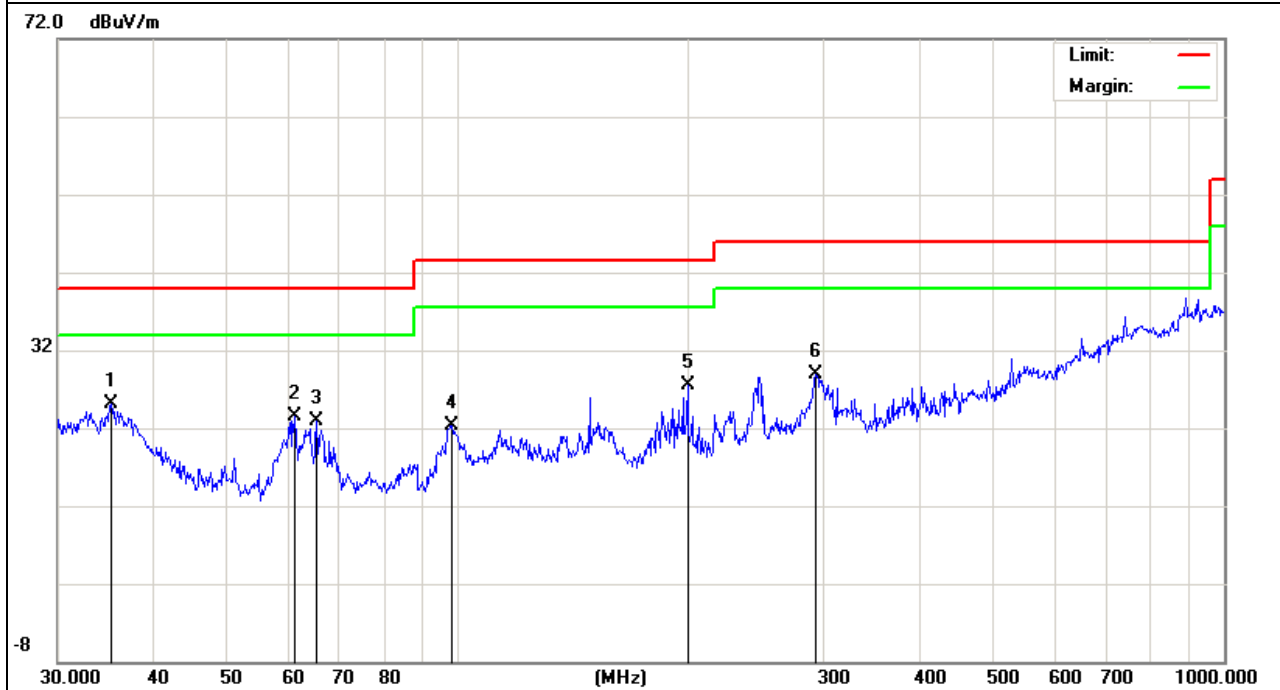
4.2.6 TEST RESULTS (BETWEEN 30 – 1000 MHZ)

EUT :	IoT Wearable A15-1	Model Name :	IOTW15A28-1
Temperature :	20 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Voltage :	DC 3.8V
Test Mode :	TX	Polarization :	Horizontal

Freq. (MHz)	Reading (dBμV/m)	Factor (dB)	Measurement (dBμV/m)	Limit (dBμV/m)	Over (dB)	Detector
35.25	7.98	17.11	25.09	40.00	-14.91	QP
61.13	17.20	6.37	23.57	40.00	-16.43	QP
65.34	16.49	6.41	22.90	40.00	-17.10	QP
98.14	10.59	11.73	22.32	43.50	-21.18	QP
199.29	17.26	10.28	27.54	43.50	-15.96	QP
293.08	12.82	16.11	28.93	46.00	-17.07	QP

Remark:

Factor = Antenna Factor + Cable Loss.

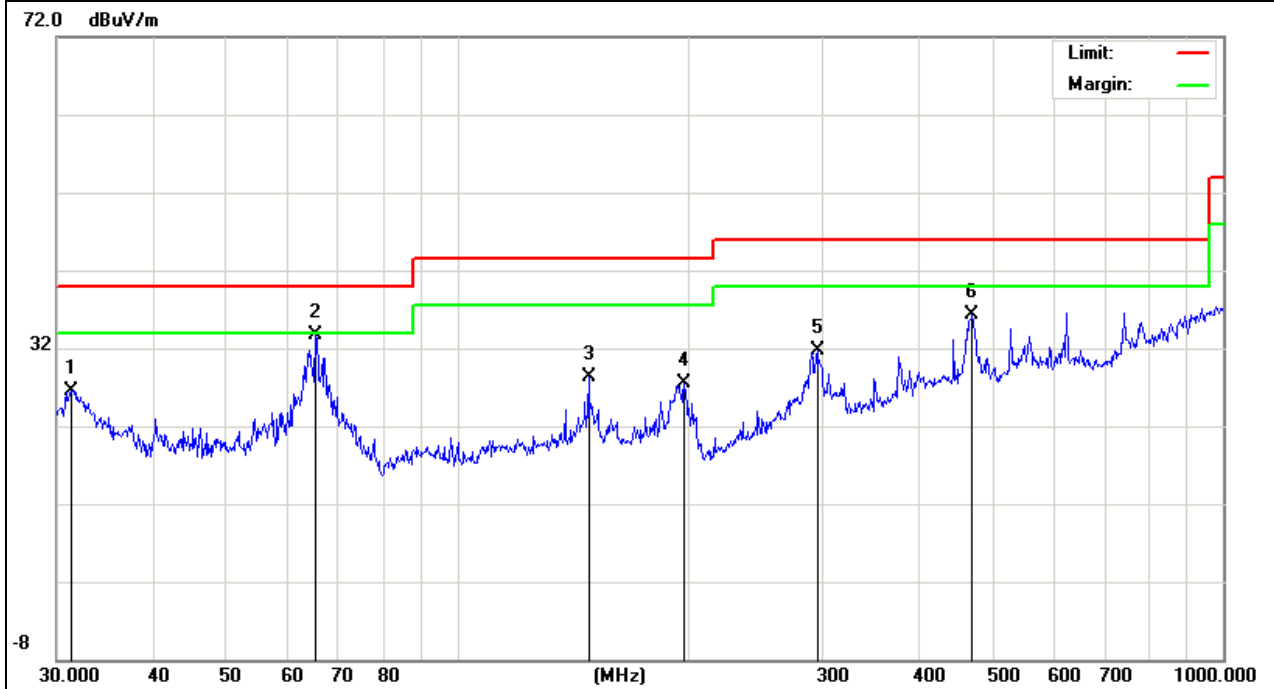


EUT :	IoT Wearable A15-1	Model Name :	IOTW15A28-1
Temperature :	20 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Voltage :	DC 3.8V
Test Mode :	TX	Polarization :	Vertical

Freq. (MHz)	Reading (dBμV/m)	Factor (dB)	Measurement (dBμV/m)	Limit (dBμV/m)	Over (dB)	Detector
31.40	7.37	19.13	26.50	40.00	-13.50	QP
65.34	27.38	6.41	33.79	40.00	-6.21	QP
148.44	15.22	13.04	28.26	43.50	-15.24	QP
197.89	17.18	10.31	27.49	43.50	-16.01	QP
295.15	15.58	16.16	31.74	46.00	-14.26	QP
470.52	15.23	21.09	36.32	46.00	-9.68	QP

Remark:

Factor = Antenna Factor + Cable Loss.



5. BANDWIDTH TEST

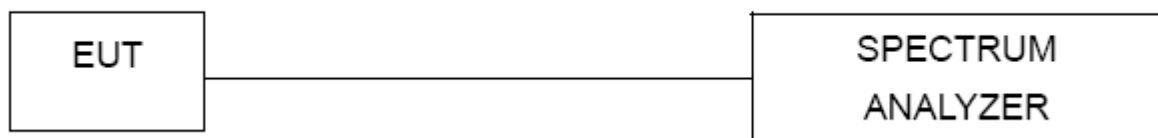
5.1 TEST PROCEDURE

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak mode.
2. 20dB Bandwidth the resolution bandwidth of 1 kHz and the video bandwidth of 1 kHz were used.
3. Measured the spectrum width with power higher than 20dB below carrier.

5.2 DEVIATION FROM STANDARD

FCC Part15.225

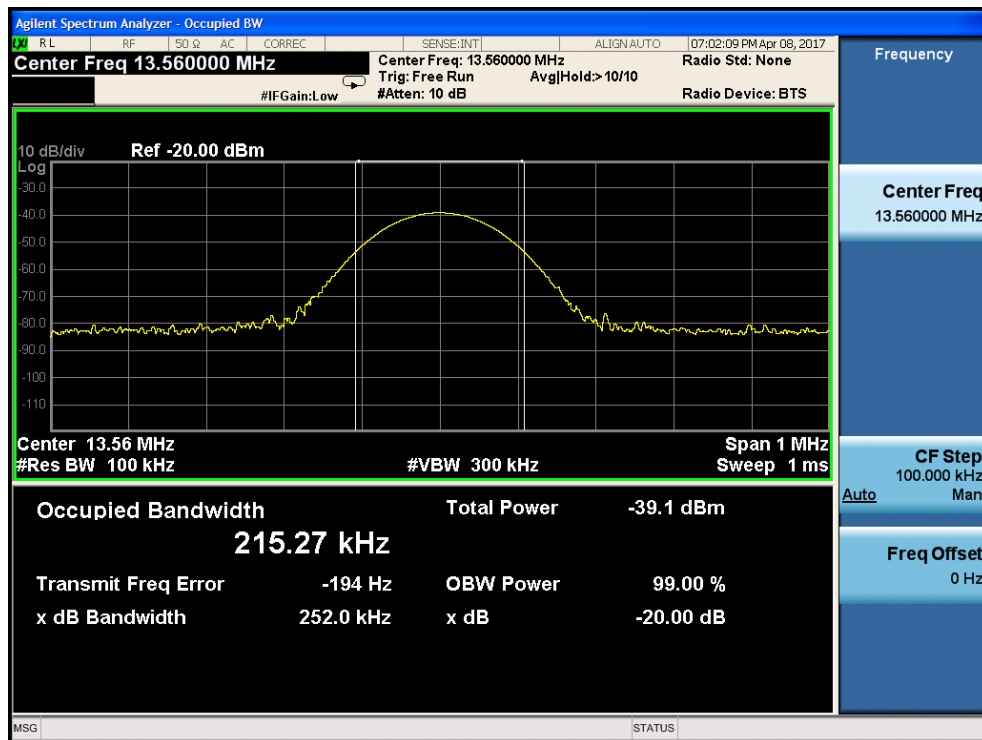
5.3 TEST SETUP



5.4 TEST RESULTS

EUT :	IoT Wearable A15-1	Model Name :	IOTW15A28-1
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1020 hPa	Test Power :	DC 3.8V
Test Mode :	TX CH 1		

Test Channel	Frequency (MHz)	20 dBc Bandwidth (kHz)
CH01	13.56	252.0



6. FREQUENCY TOLERANCE

6.1 Requirement:

Test Requirement: FCC Part15.225

Requirement:

Test Method: ANSI C63.4:2003

Requirement: The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

6.2 Test Procedure

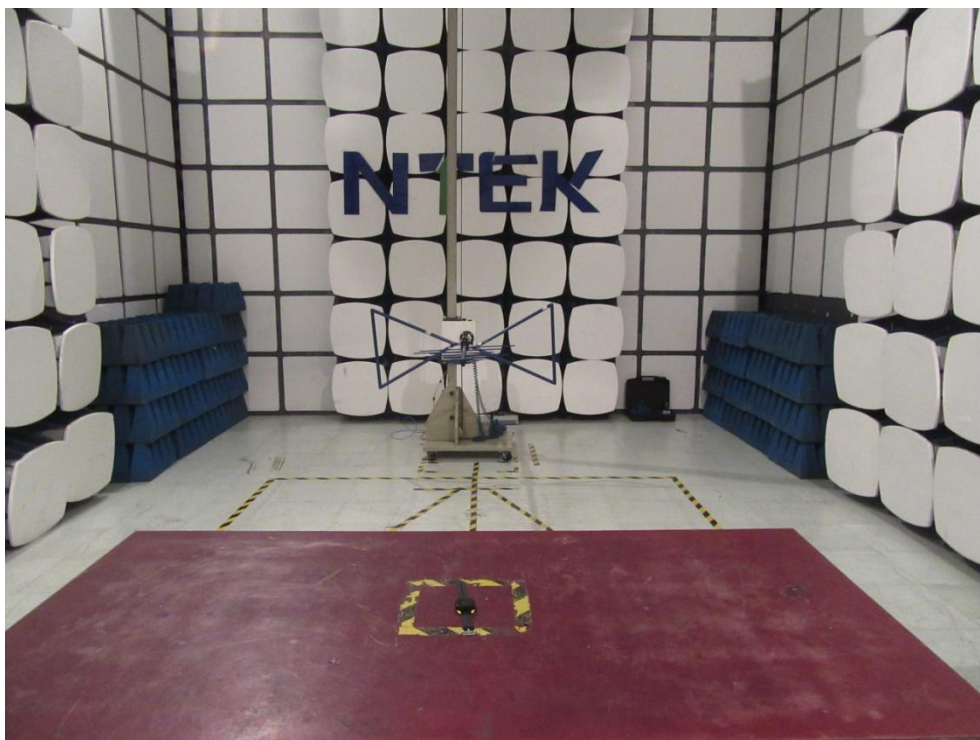
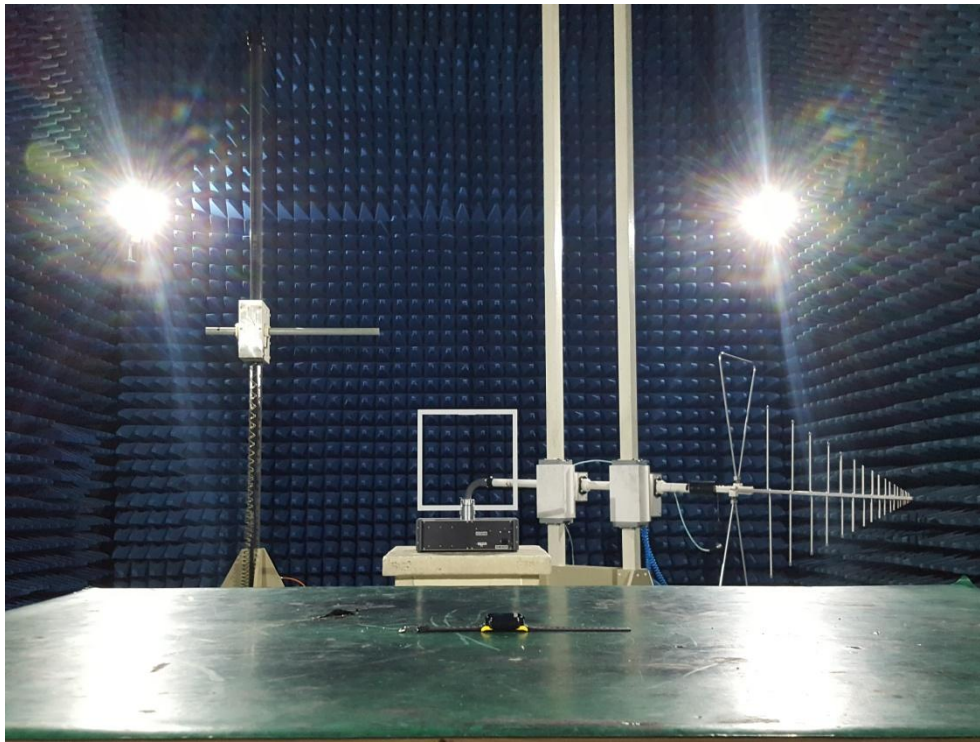
- 1.The EUT was placed on a turn table which is 0.8m above ground plane.
- 2.Set EUT as normal operation
- 3.Set SPA Center Frequency = fundamental frequency, RBW, VBW= 10kHz, Span =100kHz.
- 4.Set SPA Max hold. Mark peak.

Test Result

Power Supply	Temperature (°C)	Measured Frequency (MHz)	Frequency Error (MHz)	Result %	Part 15.225 Limit
DC 3.8V	-20	13.560195	0.000195	0.001438	+/- 0.01%
	20	13.560188	0.000188	0.001386	+/- 0.01%
	50	13.560225	0.000225	0.001659	+/- 0.01%
DC 4.4V	20	13.560344	0.000344	0.002537	+/- 0.01%
DC3.6V	20	13.560478	0.000478	0.003525	+/- 0.01%

7. EUT TEST PHOTO

Radiated Measurement Photos



Conducted Measurement Photos