RADIO TEST REPORT
FCC ID: 2AJ3O-U4

Product： IN-EAR MONITOR WIRELESS SYSTEM

Trade Mark： 

Model Name： U4

Family Model： N/A

Report No.： S19100902902001

Prepared for

SHENZHEN FZONE TECHNOLOGY CO.,LTD

2nd floor, Building12, Xicheng Industrial Area, Xixiang Town,
Baoan District, Shenzhen, Guangdong,China

Prepared by

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TEST RESULT CERTIFICATION

Applicant's name ..... :	SHENZHEN FZONE TECHNOLOGY CO.,LTD
Address ..... :	2nd floor, Building12, Xicheng Industrial Area, Xixiang Town, Baoan District, Shenzhen, Guangdong,China
Manufacturer's Name..... :	SHENZHEN FZONE TECHNOLOGY CO.,LTD
Address ..... :	2nd floor, Building12, Xicheng Industrial Area, Xixiang Town, Baoan District, Shenzhen, Guangdong,China

Product description

Product name..... :	IN-EAR MONITOR WIRELESS SYSTEM
Model and/or type reference :	U4
Family Model..... :	N/A
Rating(s)..... :	DC 3.7V powered by Battery or DC 5V powered by USB port
Standards ..... :	FCC Part15.249
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.

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Date of Test ..... :	
Date (s) of performance of tests..... :	12 Oct. 2019 ~ 07 Nov. 2019
Date of Issue..... :	11 Nov. 2019
Test Result..... :	**Pass**

Testing Engineer : Mary Hu

(Mary Hu)

Technical Manager : Jason Chen

(Jason Chen)

Authorized Signatory : Sam Chen

(Sam Chen)

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15, Subpart C (15.249)			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	Pass	
15.203	Antenna Requirement	Pass	
15.249 15.209	Radiated Spurious Emission	Pass	
15.249(2)	Frequency Tolerance	Pass	
15.249(a)	Fundamental Measurement	Pass	
15.205	Band Edge Emission	Pass	
15.249	Occupied Bandwidth	Pass	

1.1 TEST FACILITY

Shenzhen 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 FRN Registration No.:463705; IC Registration No.:9270A-1
CNAS Registration No.:L5516

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**，where expended 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	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	IN-EAR MONITOR WIRELESS SYSTEM
Trade Mark	
Model Name	U4
Family Model	N/A
Model Difference	N/A
Product Description	The EUT is a IN-EAR MONITOR WIRELESS SYSTEM Operation Frequency: 2402MHz-2482MHz Modulation Type: FSK Antenna Designation: Metal Antenna Antenna Gain(Peak) 2 dBi Based on the application, features, or specification exhibited in User's Manual. More details of EUT technical specification, please refer to the User's Manual.
Channel List	Please refer to the Note 2.
Rating	DC 3.7V powered by Battery or DC 5V powered by USB port
Adapter	N/A
Battery	TX: DC 3.7V, 860mAh, 3.18Wh
HW Version	V0.2
SW Version	V0.2

Note:

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

2.

Channel No.	Frequency	Frequency	Frequency
1	2402MHz	2480MHz	2482MHz
2	2408MHz	2472MHz	2474MHz
3	2416MHz	2464MHz	2466MHz
4	2434MHz	2440MHz	2442MHz
5	2427MHz	2448MHz	2450MHz
6	2422MHz	2456MHz	2458MHz

3.

Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	Metal Antenna	N/A	2	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 2402MHz
Mode 2	TX 2448MHz
Mode 3	TX 2482MHz
Mode 4	Normal link

For Radiated Spurious Emission	
Pretest Mode	Description
Mode 1	TX 2402MHz
Mode 2	TX 2448MHz
Mode 3	TX 2482MHz

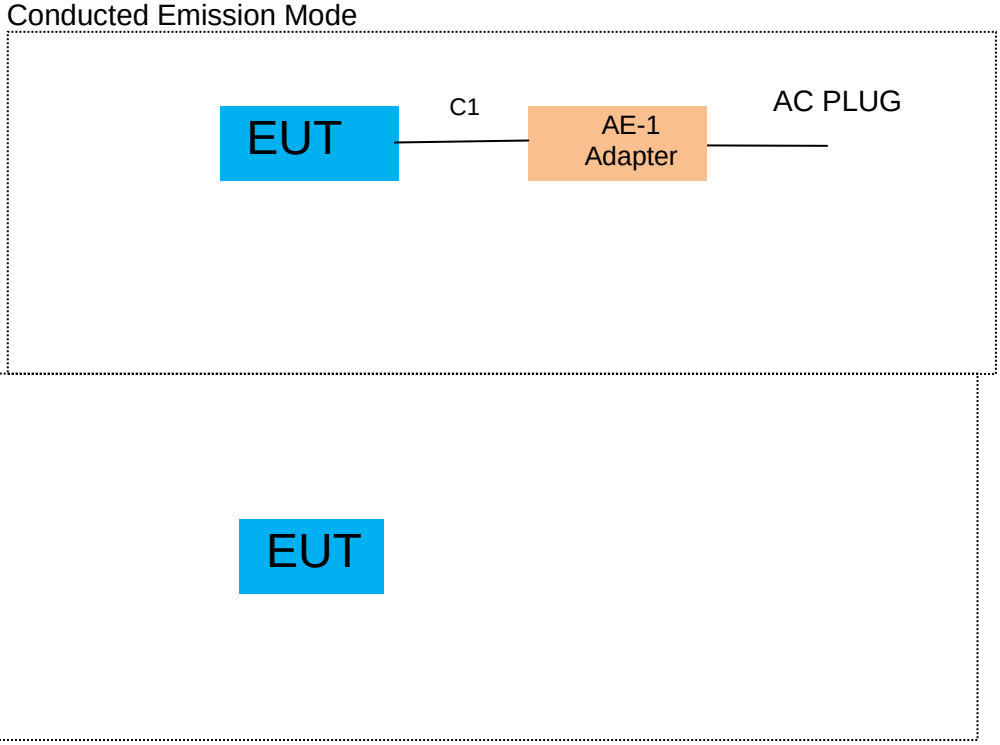
For Conducted Emission	
Final Test Mode	Description
Mode 1	TX 2402MHz
Mode 2	TX 2448MHz
Mode 3	TX 2482MHz
Mode 4	Normal link

Note:

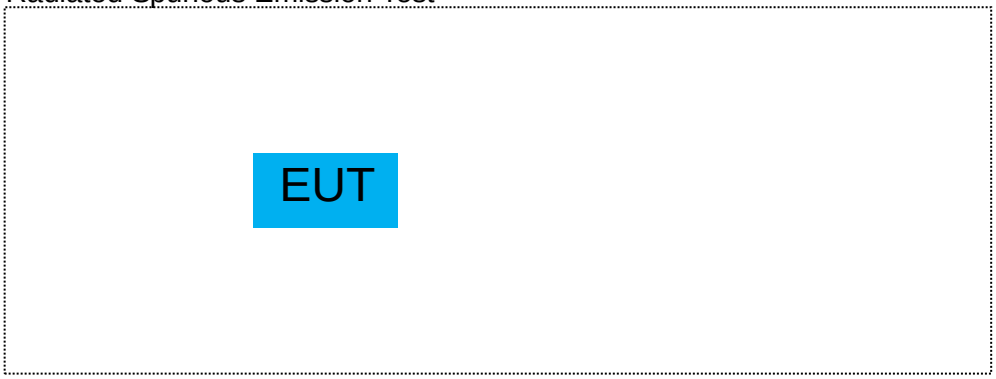
(1) The measurements are performed at the highest, middle, lowest available channels.

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission Mode



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	Mfr/Brand	Model/Type No.	Series No.	Note
AE-1	Adapter	N/A	N/A	N/A	Peripherals

Item	Cable Type	Shielded Type	Ferrite Core	Length	Note

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

	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Aglient	E4407B	MY45108040	2019.05.13	2020.05.12	1 year
2	Spectrum Analyzer	Agilent	N9020A	MY49100060	2019.08.28	2020.08.27	1 year
3	Spectrum Analyzer	Agilent	E4440A	MY41000130	2019.05.13	2020.05.12	1 year
4	Spectrum Analyzer	R&S	FSV40	101417	2019.08.28	2020.08.27	1 year
5	Test Receiver	R&S	ESPI7	101318	2019.05.13	2020.05.12	1 year
6	Bilog Antenna	TESEQ	CBL6111D	31216	2019.04.15	2020.04.14	1 year
7	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2018.05.19	2020.05.18	2 year
8	Horn Antenna	EM	EM-AH-10180	2011071402	2019.04.15	2020.04.14	1 year
9	Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	803	2018.12.11	2019.12.10	1 year
10	Amplifier	EMC	EMC051835SE	980246	2019.08.06	2020.08.05	1 year
11	Active Loop Antenna	SCHWARZBECK	FMZB 1519 B	055	2018.12.11	2019.12.10	1 year
12	Power Meter	DARE	RPR3006W	15I00041SNO84	2019.08.06	2020.08.05	1 year
13	Test Cable (9KHz-30MHz)	N/A	R-01	N/A	2017.04.21	2020.04.20	3 year
14	Test Cable (30MHz-1GHz)	N/A	R-02	N/A	2017.04.21	2020.04.20	3 year
15	High Test Cable(1G-40GHz)	N/A	R-03	N/A	2017.04.21	2020.04.20	3 year
16	High Test Cable(1G-40GHz)	N/A	R-04	N/A	2017.04.21	2020.04.20	3 year
17	Filter	TRILTHIC	2400MHz	29	2017.04.19	2020.04.18	3 year
18	temporary antenna connector (Note)	NTS	R001	N/A	N/A	N/A	N/A

Note:
We will use the temporary antenna connector (soldered on the PCB board) When conducted test
And this temporary antenna connector is listed within the instrument list

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	2019.05.13	2020.05.12	1 year
2	LISN	R&S	ENV216	101313	2019.04.15	2020.04.14	1 year
3	LISN	SCHWARZBECK	NNLK 8129	8129245	2019.05.13	2020.05.12	1 year
4	50Ω Coaxial Switch	ANRITSU CORP	MP59B	6200983704	2018.05.19	2020.05.18	1 year
5	Test Cable (9KHz-30MHz)	N/A	C01	N/A	2017.04.21	2020.04.20	3 year
6	Test Cable (9KHz-30MHz)	N/A	C02	N/A	2017.04.21	2020.04.20	3 year
7	Test Cable (9KHz-30MHz)	N/A	C03	N/A	2017.04.21	2020.04.20	3 year

Note: Each piece of equipment is scheduled for calibration once a year except the Test Cable which is scheduled for calibration every 3 years.

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 Metal antenna(Gain:2dBi). It comply with the standard requirement.

3.3 CONDUCTED EMISSION MEASUREMENT

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

Frequency(MHz)	Conducted Emission Limit	
	Quasi-peak	Average
0.15-0.5	66-56*	56-46*
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. *Decreases with the logarithm of the frequency
2. The lower limit shall apply at the transition frequencies
3. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

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

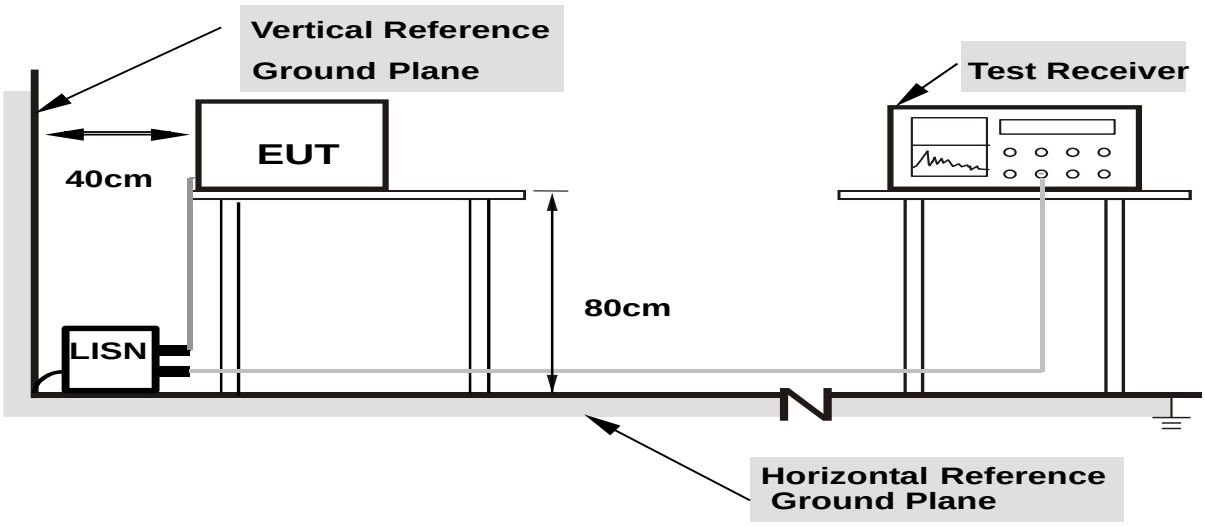
3.3.2 TEST PROCEDURE

a. The EUT was placed 0.4 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.
Margin=Measure-ment-Limits, Measure-ment=Reading level+Correct Factor

3.3.3 DEVIATION FROM TEST STANDARD

No deviation

3.3.4 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

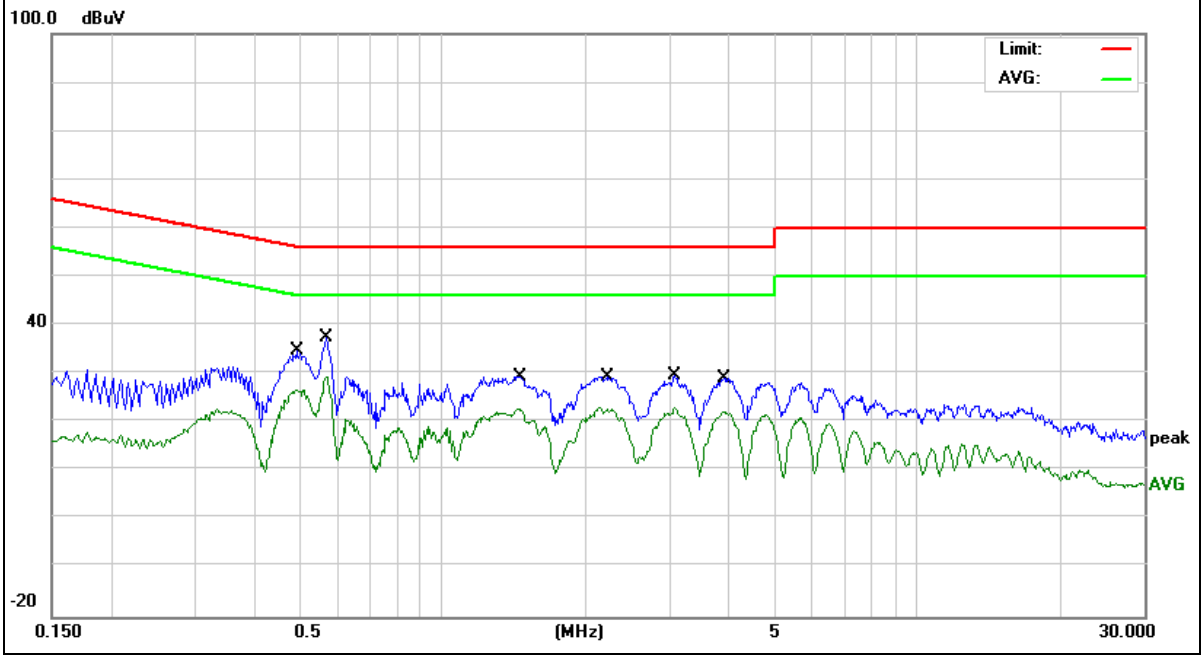
3.2.5 TEST RESULT

EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name ：	U4
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	DC 5V from Adapter AC 120V/60Hz	Test Mode：	Mode 4

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.4940	24.96	9.74	34.70	56.10	-21.40	QP
0.4940	17.05	9.74	26.79	46.10	-19.31	AVG
0.5700	27.60	9.74	37.34	56.00	-18.66	QP
0.5700	19.53	9.74	29.27	46.00	-16.73	AVG
1.4500	19.68	9.76	29.44	56.00	-26.56	QP
1.4500	12.99	9.76	22.75	46.00	-23.25	AVG
2.2260	19.70	9.78	29.48	56.00	-26.52	QP
2.2260	13.27	9.78	23.05	46.00	-22.95	AVG
3.0900	19.67	9.83	29.50	56.00	-26.50	QP
3.0900	13.11	9.83	22.94	46.00	-23.06	AVG
3.9140	19.28	9.85	29.13	56.00	-26.87	QP
3.9140	12.28	9.85	22.13	46.00	-23.87	AVG

Remark:

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

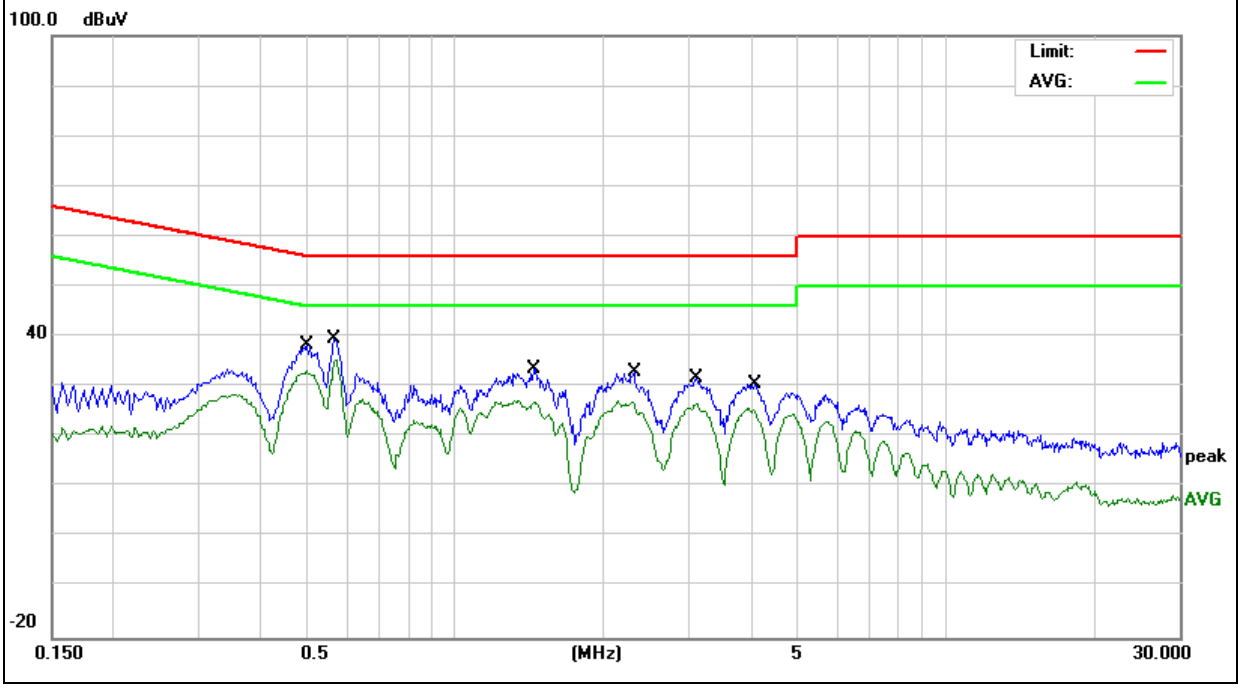


EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name ：	U4
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	DC 5V from Adapter AC 120V/60Hz	Test Mode：	Mode 4

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.4980	28.47	9.75	38.22	56.03	-17.81	QP
0.4980	23.53	9.75	33.28	46.03	-12.75	AVG
0.5660	29.80	9.75	39.55	56.00	-16.45	QP
0.5660	25.64	9.75	35.39	46.00	-10.61	AVG
1.4460	23.88	9.77	33.65	56.00	-22.35	QP
1.4460	17.42	9.77	27.19	46.00	-18.81	AVG
2.3140	23.02	9.81	32.83	56.00	-23.17	QP
2.3140	17.53	9.81	27.34	46.00	-18.66	AVG
3.1020	21.78	9.88	31.66	56.00	-24.34	QP
3.1020	16.84	9.88	26.72	46.00	-19.28	AVG
4.0739	20.70	9.92	30.62	56.00	-25.38	QP
4.0739	15.88	9.92	25.80	46.00	-20.20	AVG

Remark:

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

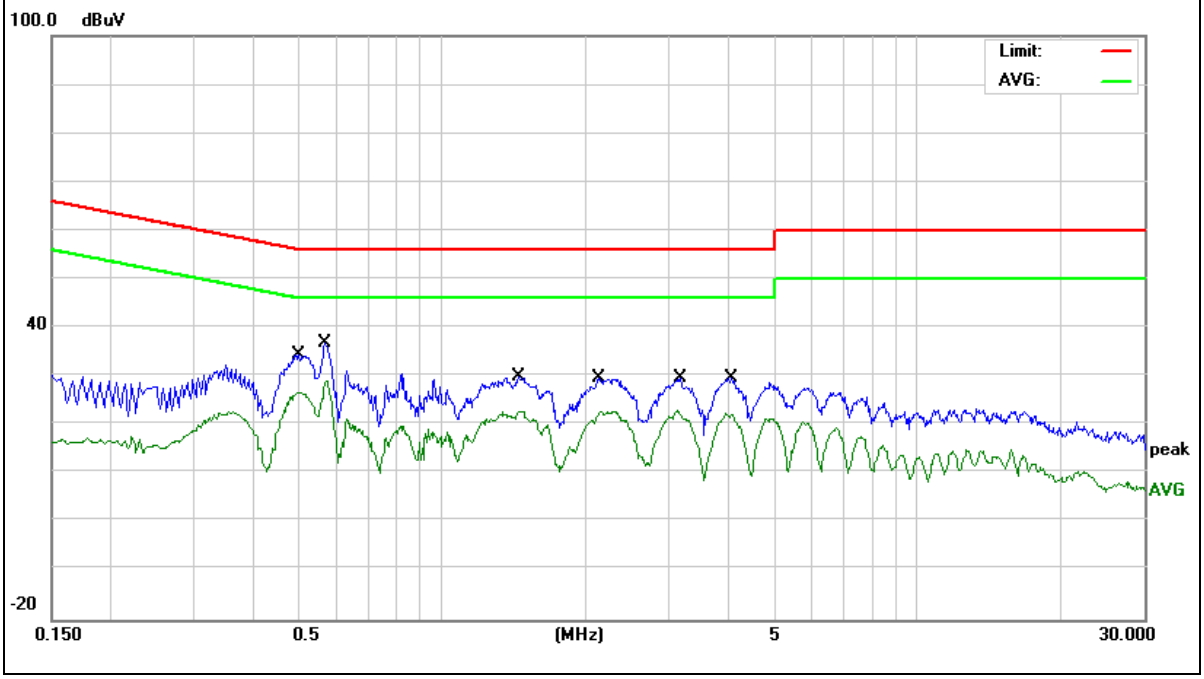


EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name ：	U4
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	DC 5V from Adapter AC 240V/60Hz	Test Mode：	Mode 4

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.4980	24.71	9.74	34.45	56.03	-21.58	QP
0.4980	17.01	9.74	26.75	46.03	-19.28	AVG
0.5660	27.02	9.74	36.76	56.00	-19.24	QP
0.5660	19.28	9.74	29.02	46.00	-16.98	AVG
1.4460	20.29	9.76	30.05	56.00	-25.95	QP
1.4460	13.12	9.76	22.88	46.00	-23.12	AVG
2.1260	19.94	9.78	29.72	56.00	-26.28	QP
2.1260	13.05	9.78	22.83	46.00	-23.17	AVG
3.1660	19.86	9.83	29.69	56.00	-26.31	QP
3.1660	13.08	9.83	22.91	46.00	-23.09	AVG
4.0579	19.81	9.85	29.66	56.00	-26.34	QP
4.0579	12.49	9.85	22.34	46.00	-23.66	AVG

Remark:

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

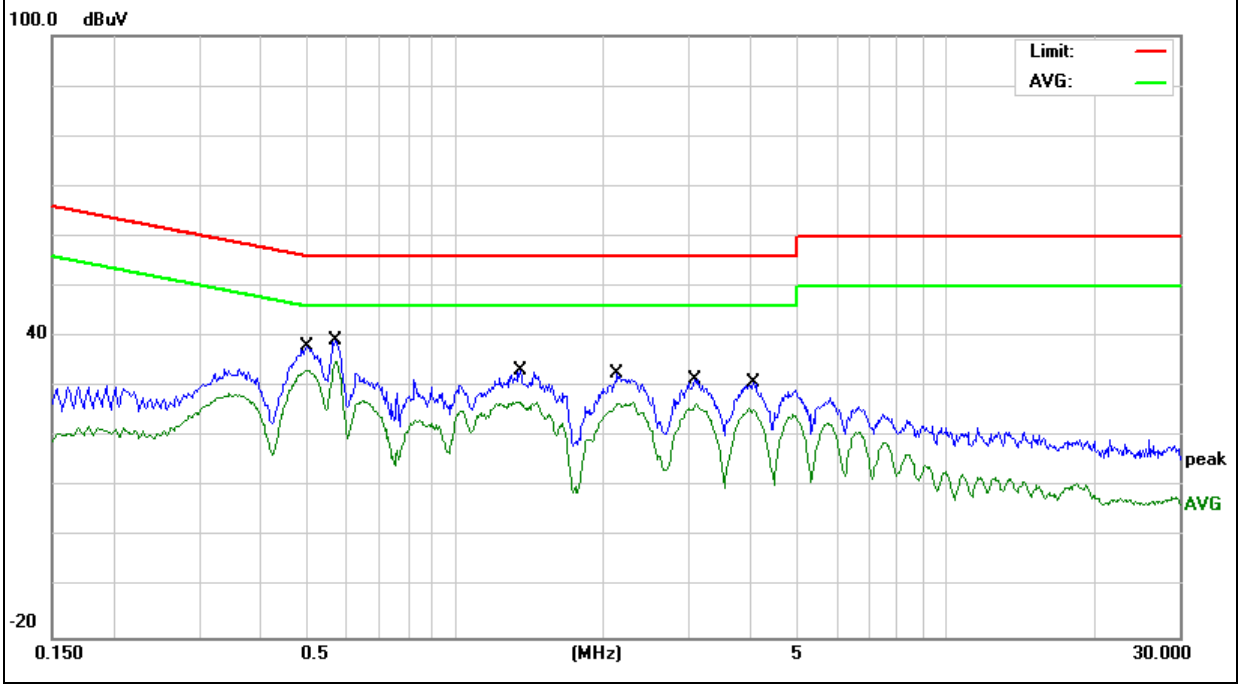


EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name ：	U4
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	DC 5V from Adapter AC 240V/60Hz	Test Mode：	Mode 4

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.4979	28.21	9.75	37.96	56.03	-18.07	QP
0.4979	23.46	9.75	33.21	46.03	-12.82	AVG
0.5699	29.56	9.75	39.31	56.00	-16.69	QP
0.5699	25.20	9.75	34.95	46.00	-11.05	AVG
1.3540	23.41	9.76	33.17	56.00	-22.83	QP
1.3540	17.15	9.76	26.91	46.00	-19.09	AVG
2.1419	22.79	9.80	32.59	56.00	-23.41	QP
2.1419	17.15	9.80	26.95	46.00	-19.05	AVG
3.0819	21.67	9.87	31.54	56.00	-24.46	QP
3.0819	16.71	9.87	26.58	46.00	-19.42	AVG
4.0658	20.91	9.92	30.83	56.00	-25.17	QP
4.0658	15.71	9.92	25.63	46.00	-20.37	AVG

Remark:

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



3.4 RADIATED EMISSION MEASUREMENT

3.4.1 Radiated Emission Limits (FCC 15.209)

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
Frequency (MHz)	Limit (dBuV)	
30~88	40	3
88~216	43.5	3
216~960	46	3
960 -10000	54.00	3
*902 - 928	94.00	3

Note:

(1) The tighter limit applies at the band edges.

(2) Emission level (dBuV/m)=20log Emission level (uV/m).

(3) *Note: This is the limit for the fundamental frequency.

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC 15.249)

Frequency of Emission (MHz)	Field Strength of fundamental ((millivolts /meter)	Field Strength of Harmonics (microvolts/meter)
2400-2483.5	50	500

Notes:

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

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

3.4.2 TEST PROCEDURE

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz and 1.5m for above 1GHz; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. 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.
e. 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.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

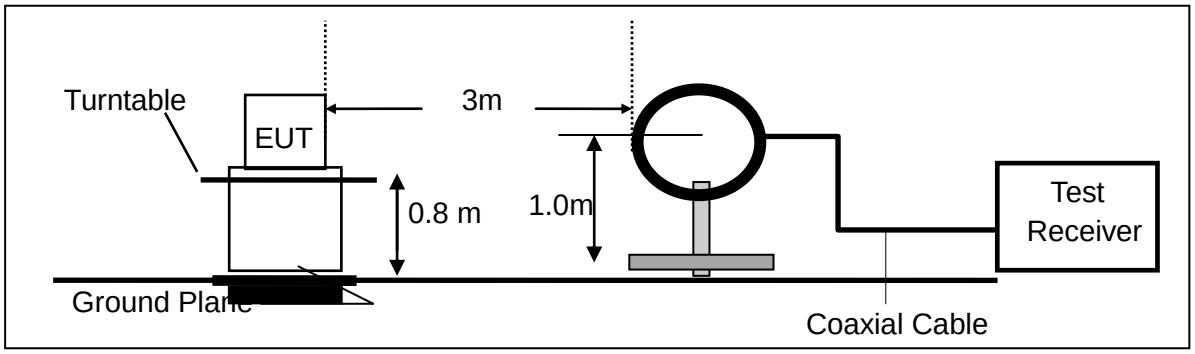
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.4.3 DEVIATION FROM TEST STANDARD

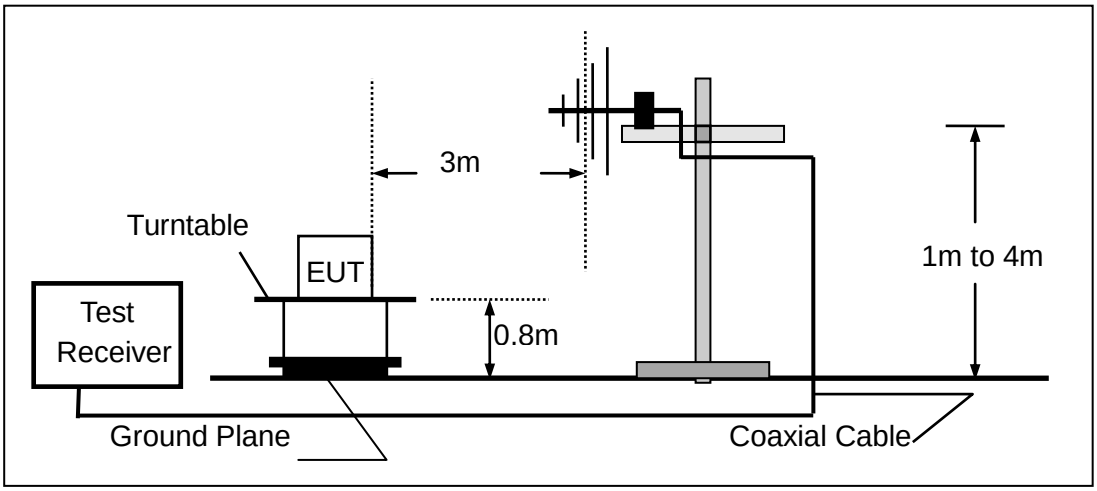
No deviation

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

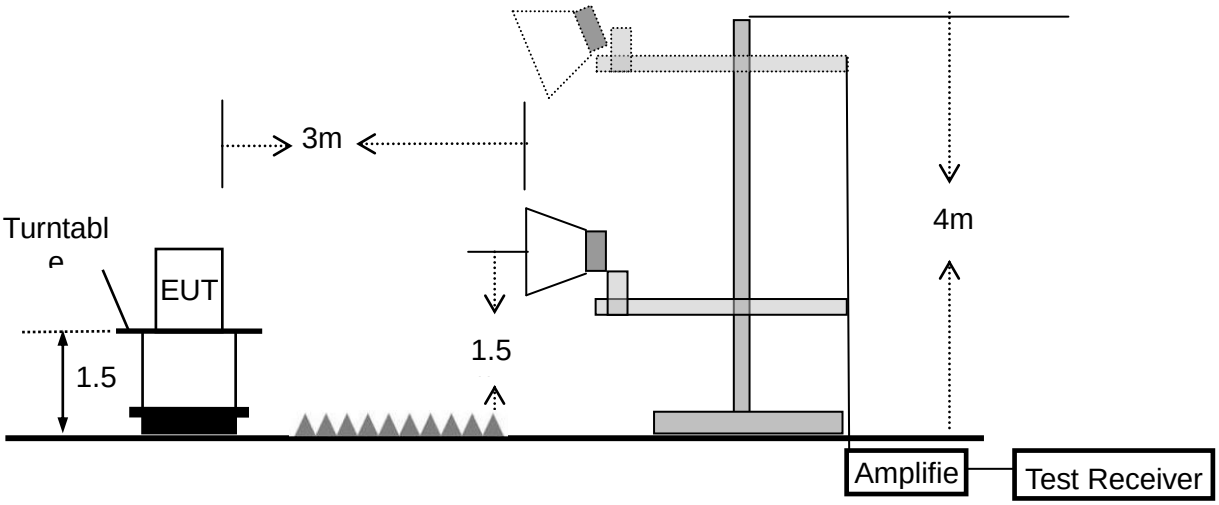
(a)



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



（C）Radiated Emission Test-Up Frequency Above 1GHz



3.4.4 TEST RESULTS (BELOW 30MHz)

EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name. ：	U4
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Remark:1. Emission level in dBuV/m=20 log (uV/m)

2. Measurement was performed at an antenna to the closed point of EUT distance of meters.

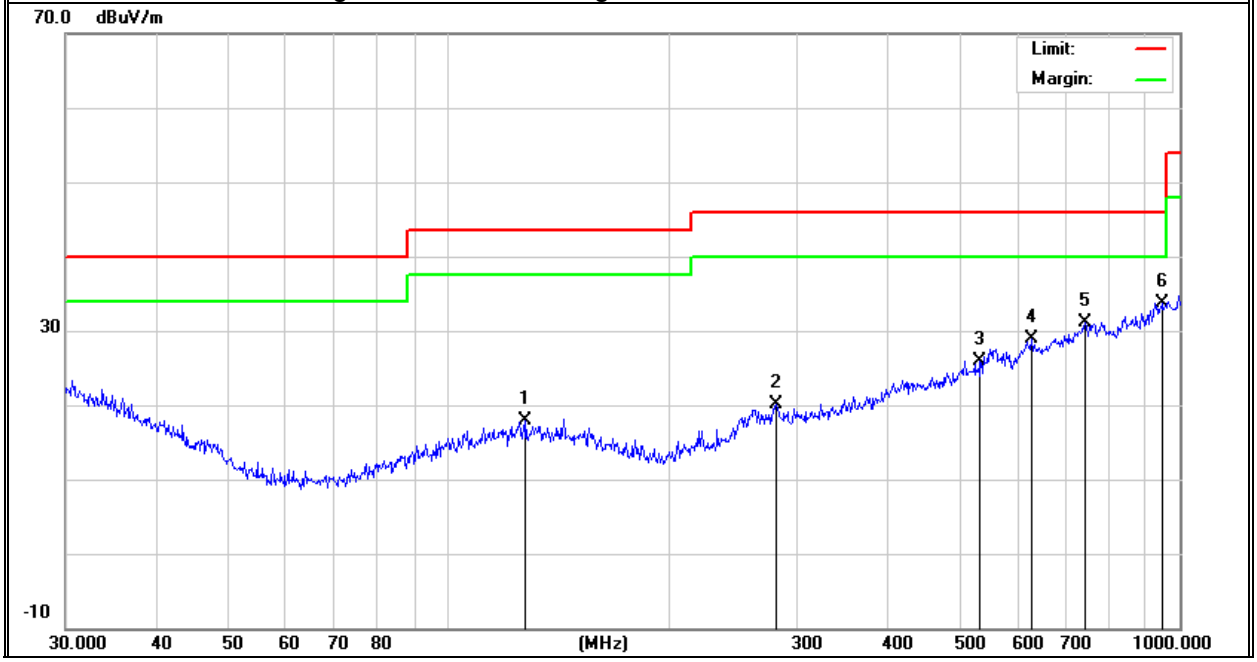
3. For Frequency 9kHz~30MHz:
Distance extrapolation factor =40log(Specific distance/ test distance)(dB);
Limit line=Specific limits(dBuV) + distance extrapolation factor.
For Frequency above 30MHz:
Distance extrapolation factor =20log(Specific distance/ test distance)(dB);
Limit line=Specific limits(dBuV) + distance extrapolation factor.

3.4.5 TEST RESULTS (BELOW 1000 MHz)

EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name ：	U4
Temperature：	25 ℃	Relative Humidity：	51%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Model 4	Polarization：	Vertical

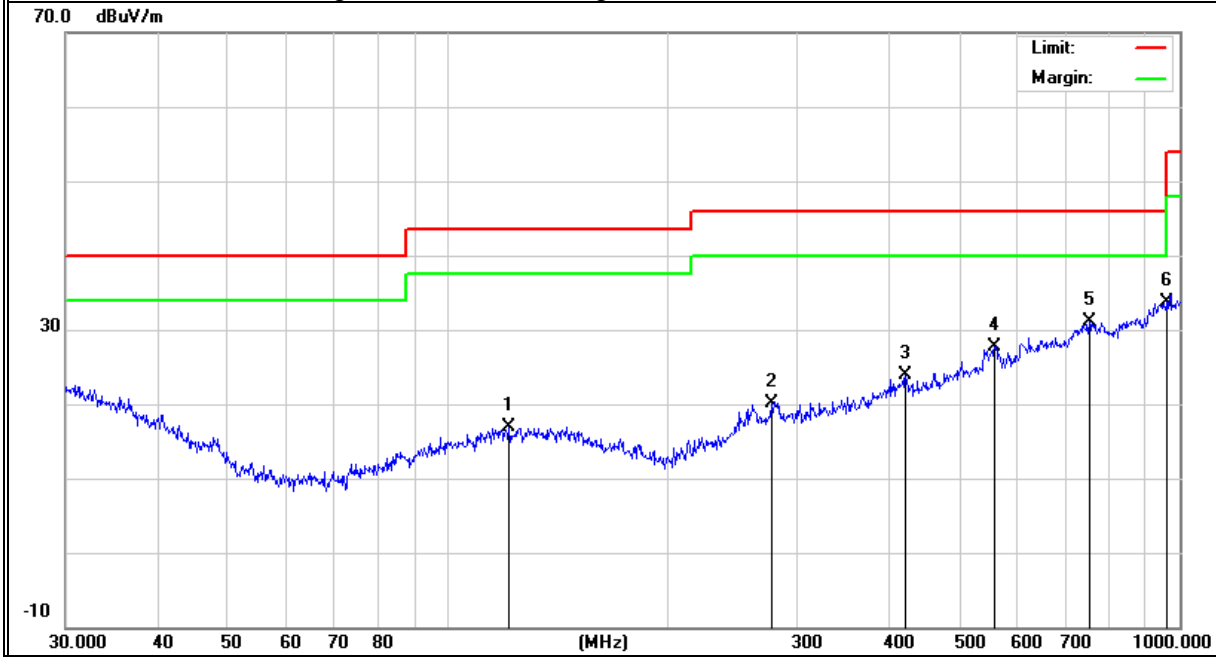
Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
V	127.6645	5.45	12.51	17.96	43.50	-25.54	QP
V	281.0075	4.46	15.58	20.04	46.00	-25.96	QP
V	533.8321	5.15	20.77	25.92	46.00	-20.08	QP
V	627.2738	6.45	22.41	28.86	46.00	-17.14	QP
V	742.2586	5.96	25.08	31.04	46.00	-14.96	QP
V	948.7609	5.64	28.13	33.77	46.00	-12.23	QP

Remark:
Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
H	121.1230	4.50	12.34	16.84	43.50	-26.66	QP
H	277.0935	5.26	14.85	20.11	46.00	-25.89	QP
H	422.0577	5.44	18.47	23.91	46.00	-22.09	QP
H	558.7300	5.41	22.29	27.70	46.00	-18.30	QP
H	752.7432	6.05	24.98	31.03	46.00	-14.97	QP
H	958.7943	5.60	28.17	33.77	46.00	-12.23	QP

Remark:
Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit

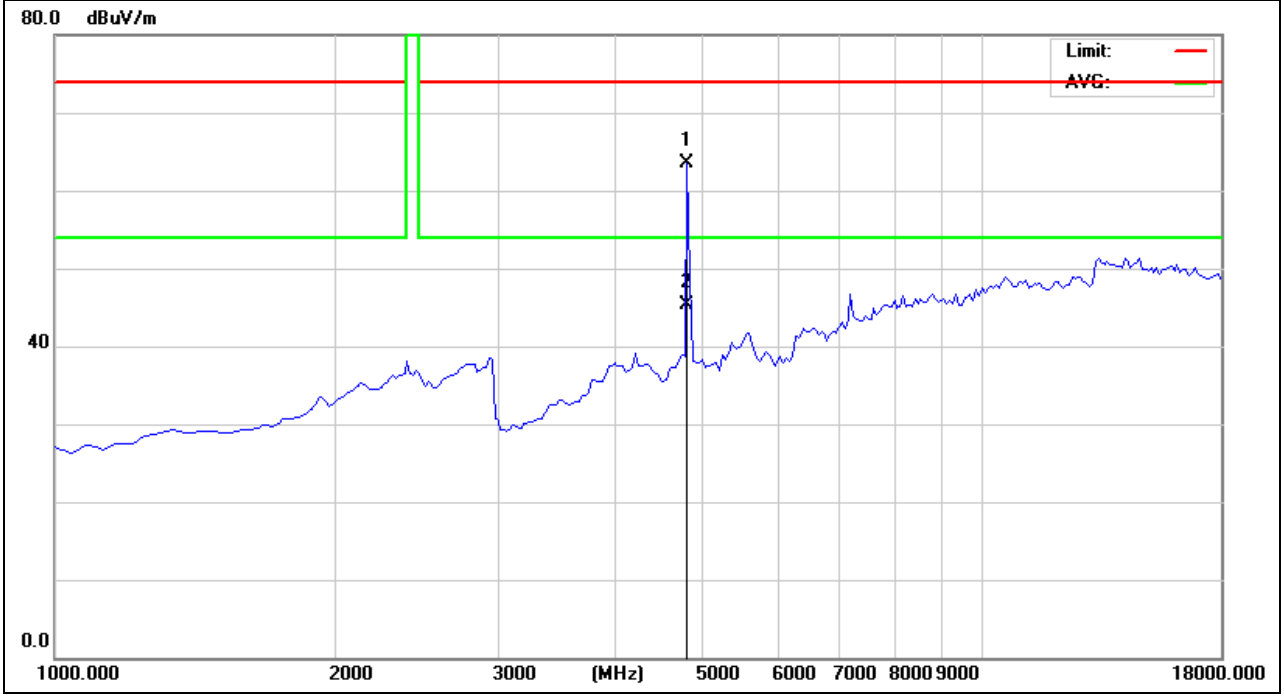


3.4.6 TEST RESULTS (ABOVE 1000 MHZ)

EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name ：	U4
Temperature：	25 ℃	Relative Humidity：	51%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX 2402MHz	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4804.000	57.36	6.20	63.56	74.00	-10.44	peak
4804.000	39.06	6.20	45.26	54.00	-8.74	AVG

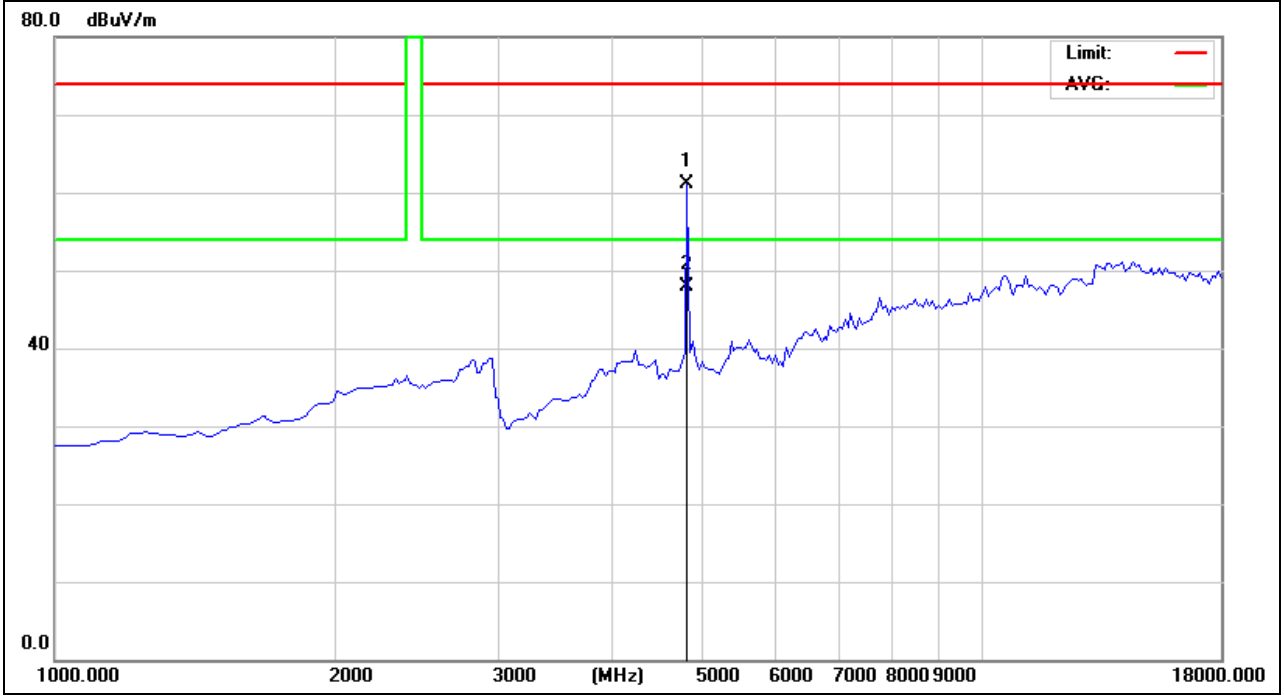
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
No emission above 18GHz.



EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name ：	U4
Temperature：	25 ℃	Relative Humidity：	51%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX 2402MHz	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4804.000	54.96	6.20	61.16	74.00	-12.84	peak
4804.000	41.80	6.20	48.00	54.00	-6.00	AVG

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
No emission above 18GHz.

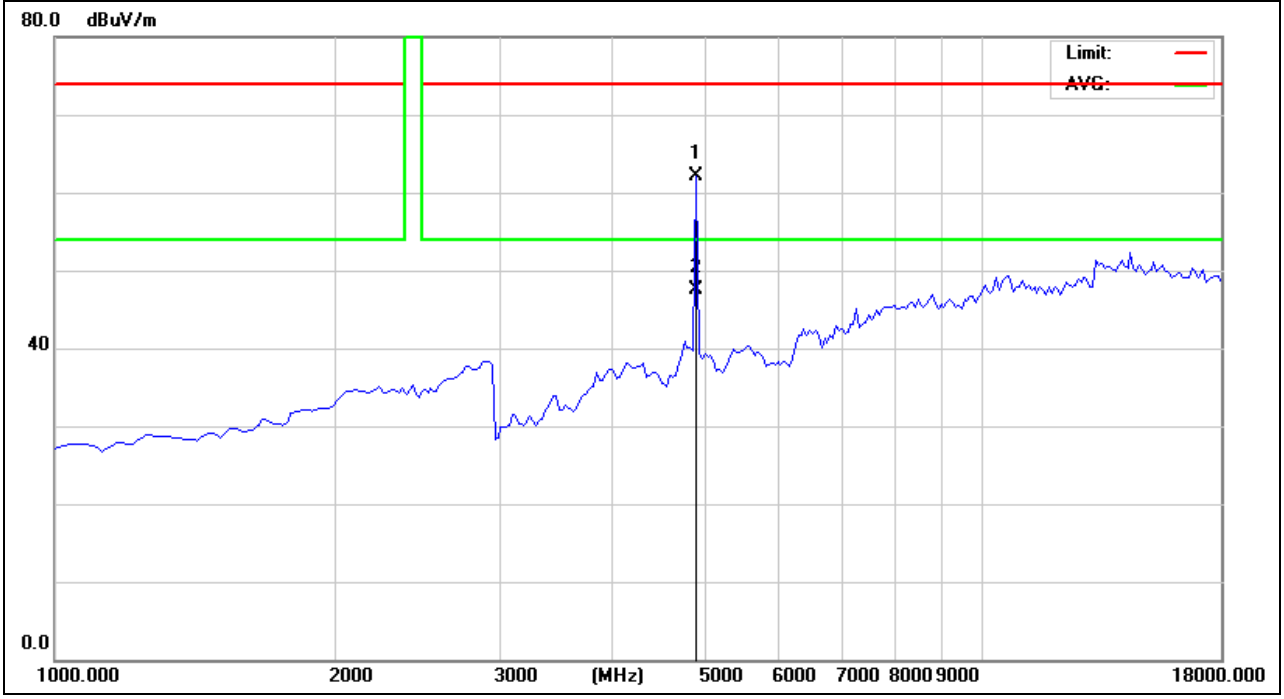


Note: EUT Pre-scan X/Y/Z orientation, only worst case is presented in the report(X orientation).

EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name ：	U4
Temperature：	25 ℃	Relative Humidity：	51%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX 2448MHz	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4896.000	56.40	5.72	62.12	74.00	-11.88	peak
4896.000	41.84	5.72	47.56	54.00	-6.44	AVG

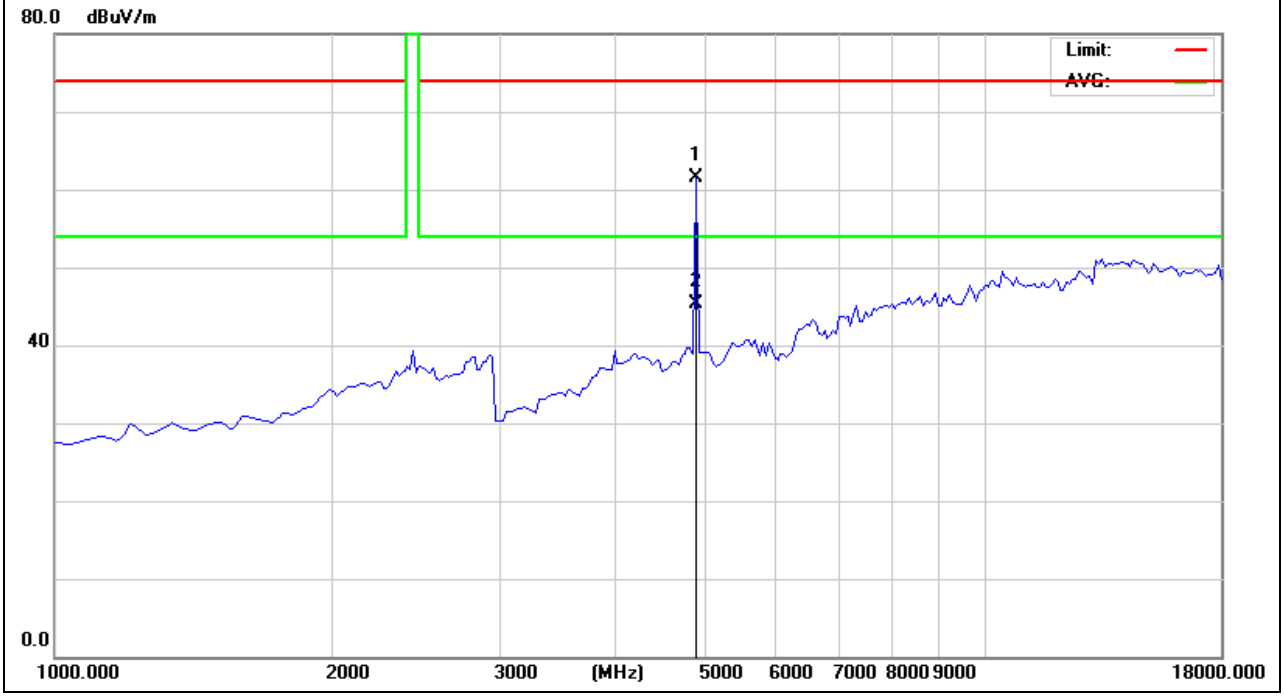
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
No emission above 18GHz.



EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name ：	U4
Temperature：	25 ℃	Relative Humidity：	51%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX 2448MHz	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4896.000	55.87	5.72	61.59	74.00	-12.41	peak
4896.000	39.64	5.72	45.36	54.00	-8.64	AVG

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
No emission above 18GHz.

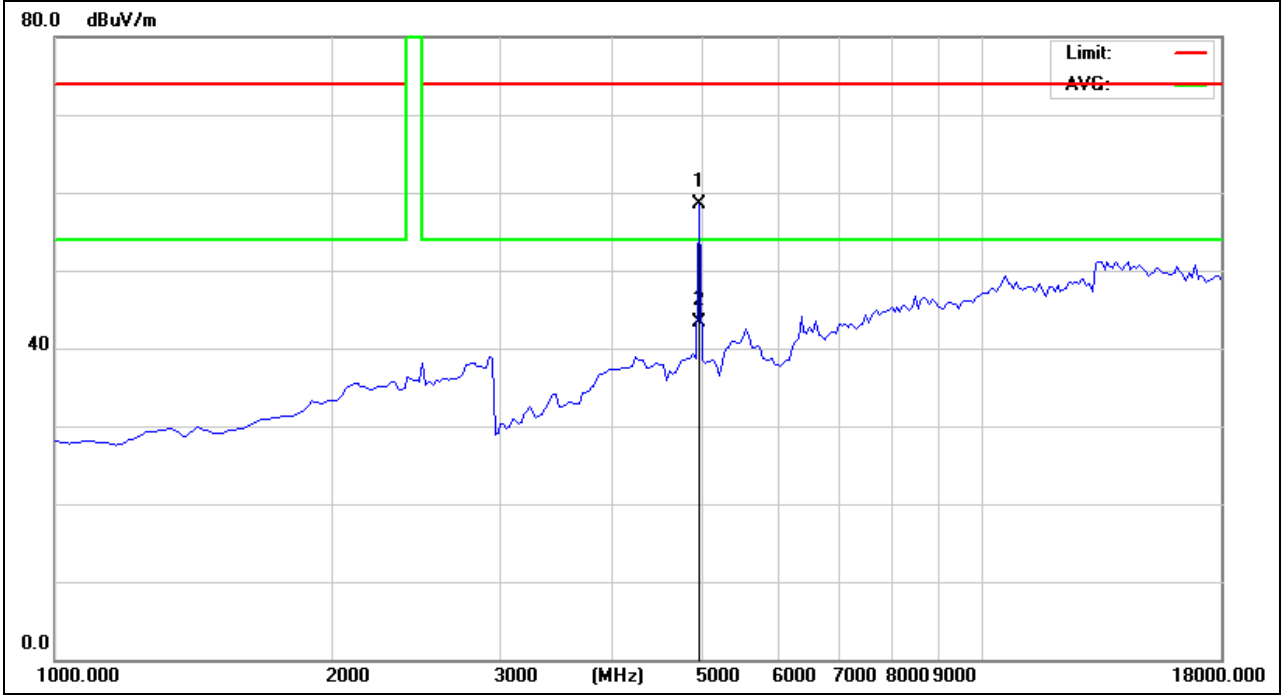


Note: EUT Pre-scan X/Y/Z orientation, only worst case is presented in the report(X orientation).

EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name ：	U4
Temperature：	25 ℃	Relative Humidity：	51%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX 2482MHz	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4964.000	55.20	5.49	60.69	74.00	-13.31	peak
4964.000	39.77	5.49	45.26	54.00	-8.74	AVG

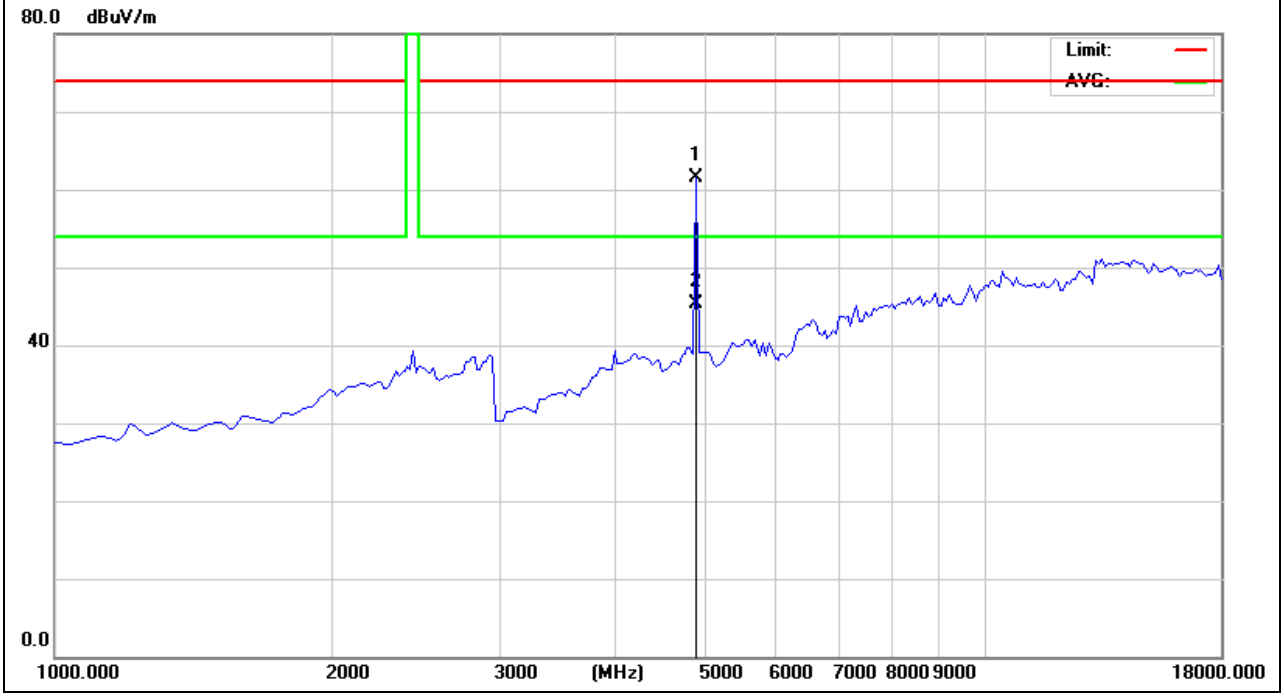
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
No emission above 18GHz.



EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name ：	U4
Temperature：	25 ℃	Relative Humidity：	51%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX 2482MHz	Polarization：	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4964.000	53.03	5.49	58.52	74.00	-15.48	peak
4964.000	37.77	5.49	43.26	54.00	-10.74	AVG

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
No emission above 18GHz.



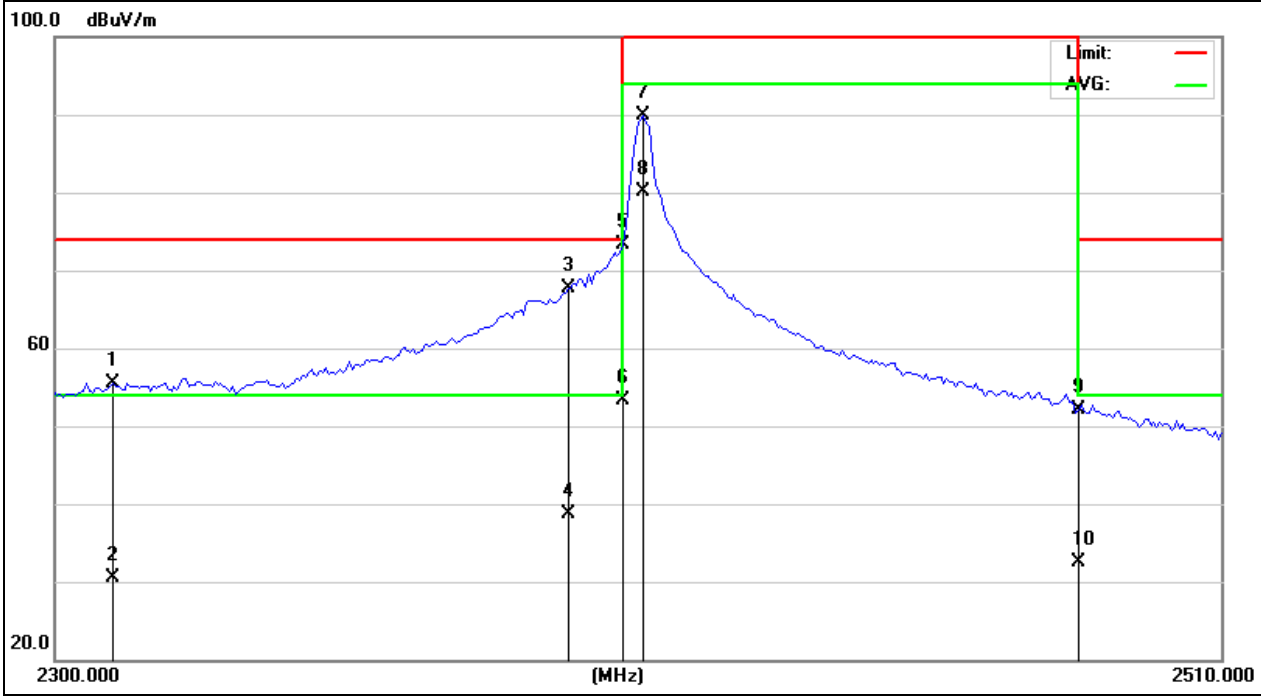
Note: EUT Pre-scan X/Y/Z orientation, only worst case is presented in the report(X orientation).

3.4.7 TEST RESULTS (RESTRICTED BANDS REQUIREMENTS)

EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name ：	U4
Temperature：	25 ℃	Relative Humidity：	51%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX 2402MHz	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2310.000	50.71	4.87	55.58	74.00	-18.42	peak
2310.000	25.69	4.87	30.56	54.00	-23.44	AVG
2390.000	63.04	4.57	67.61	74.00	-6.39	peak
2390.000	34.08	4.57	38.65	54.00	-15.35	AVG
2400.000	68.77	4.53	73.30	74.00	-0.70	peak
2400.000	48.73	4.53	53.26	54.00	-0.74	AVG
2402.000	85.41	4.55	89.96	114.0	-24.04	peak
2402.000	75.47	4.55	80.02	94.00	-13.98	AVG
2483.500	47.40	4.77	52.17	74.00	-21.83	peak
2483.500	27.69	4.77	32.46	54.00	-21.54	AVG

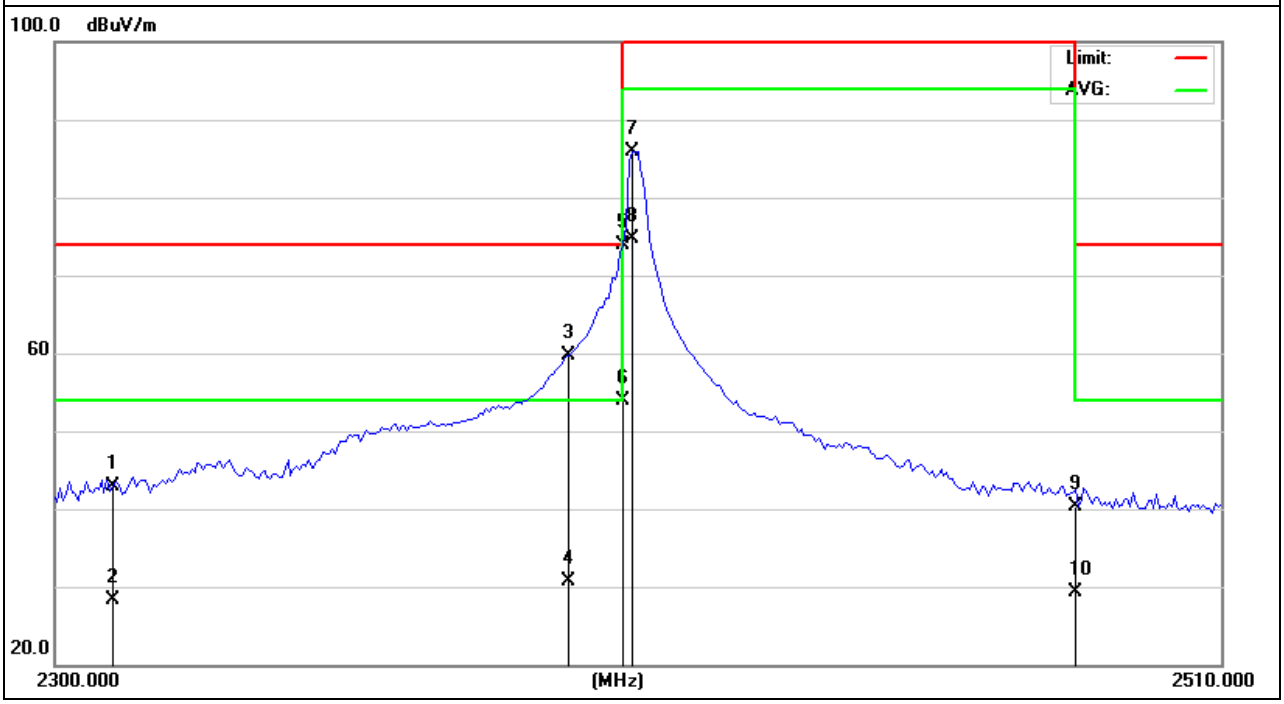
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name ：	U4
Temperature：	25 ℃	Relative Humidity：	51%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX 2402MHz	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2310.000	37.96	4.87	42.83	74.00	-31.17	peak
2310.000	23.34	4.87	28.21	54.00	-25.79	AVG
2390.000	55.07	4.57	59.64	74.00	-14.36	peak
2390.000	26.08	4.57	30.65	54.00	-23.35	AVG
2400.000	69.17	4.53	73.70	74.00	-0.30	peak
2400.000	49.03	4.53	53.56	54.00	-0.44	AVG
2402.000	81.43	4.53	85.96	114.0	-28.04	peak
2402.000	70.12	4.53	74.65	94.00	-19.35	AVG
2483.500	35.60	4.77	40.37	74.00	-33.63	peak
2483.500	24.50	4.77	29.27	54.00	-24.73	AVG

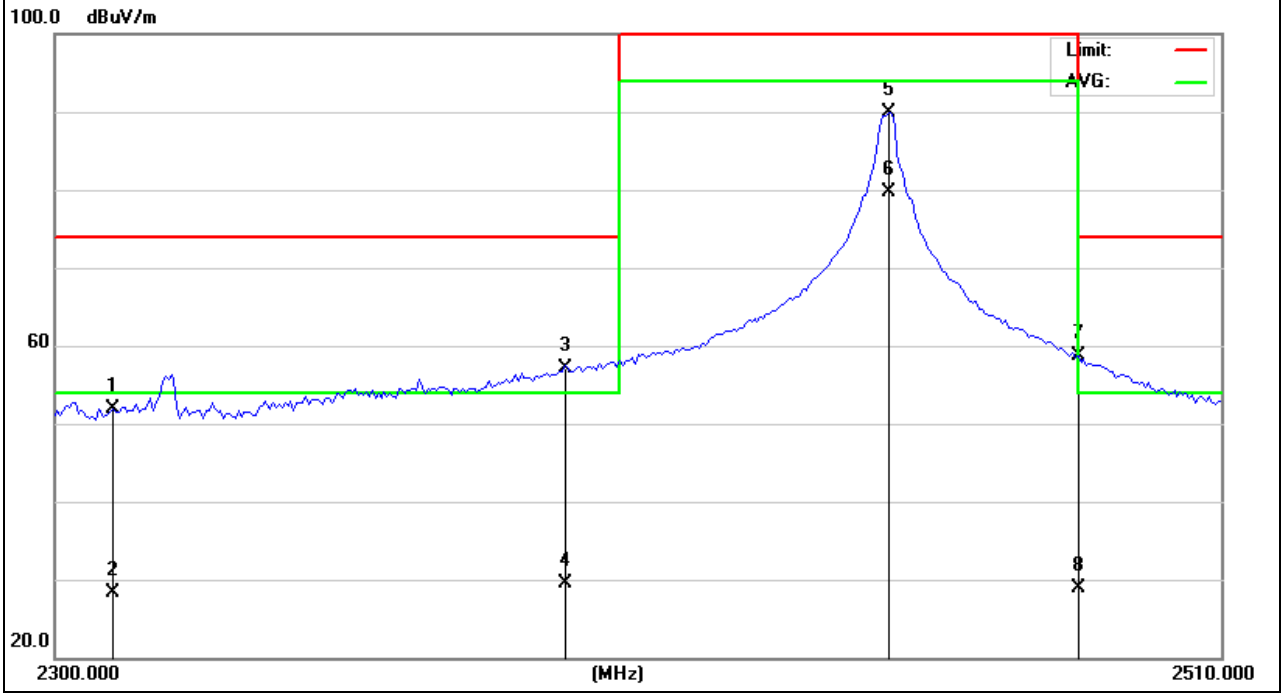
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name ：	U4
Temperature：	25 ℃	Relative Humidity：	51%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX 2448MHz	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2310.000	46.95	4.87	51.82	74.00	-22.18	peak
2310.000	23.39	4.87	28.26	54.00	-25.74	AVG
2390.000	52.44	4.57	57.01	74.00	-16.99	peak
2390.000	25.00	4.57	29.57	54.00	-24.43	AVG
2448.000	85.21	4.67	89.88	114.0	-24.12	peak
2448.000	75.02	4.67	79.69	94.00	-14.31	AVG
2483.500	53.92	4.77	58.69	74.00	-15.31	peak
2483.500	24.08	4.77	28.85	54.00	-25.15	AVG

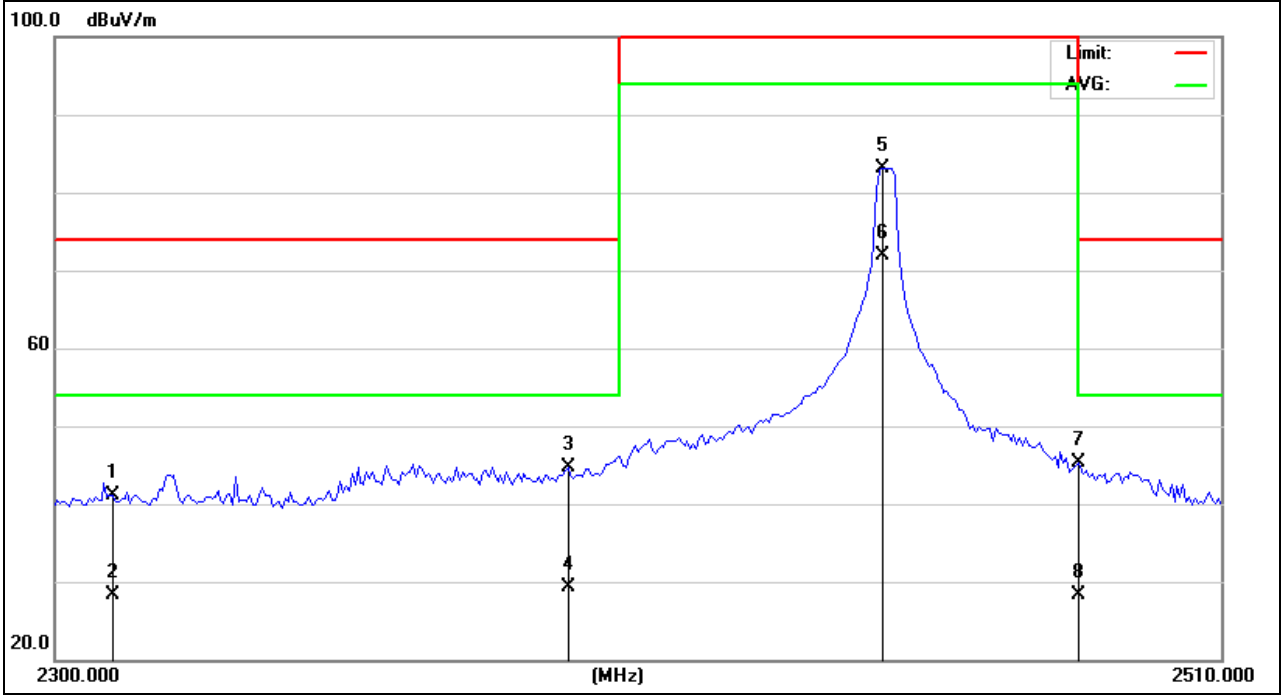
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name ：	U4
Temperature：	25 ℃	Relative Humidity：	51%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX 2448MHz	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2310.000	36.25	4.87	41.12	74.00	-32.88	peak
2310.000	23.37	4.87	28.24	54.00	-25.76	AVG
2390.000	40.07	4.57	44.64	74.00	-29.36	peak
2390.000	24.72	4.57	29.29	54.00	-24.71	AVG
2448.000	78.53	4.66	83.19	114.0	-30.81	peak
2448.000	67.30	4.66	71.96	94.00	-22.04	AVG
2483.500	40.55	4.77	45.32	74.00	-28.68	peak
2483.500	23.61	4.77	28.38	54.00	-25.62	AVG

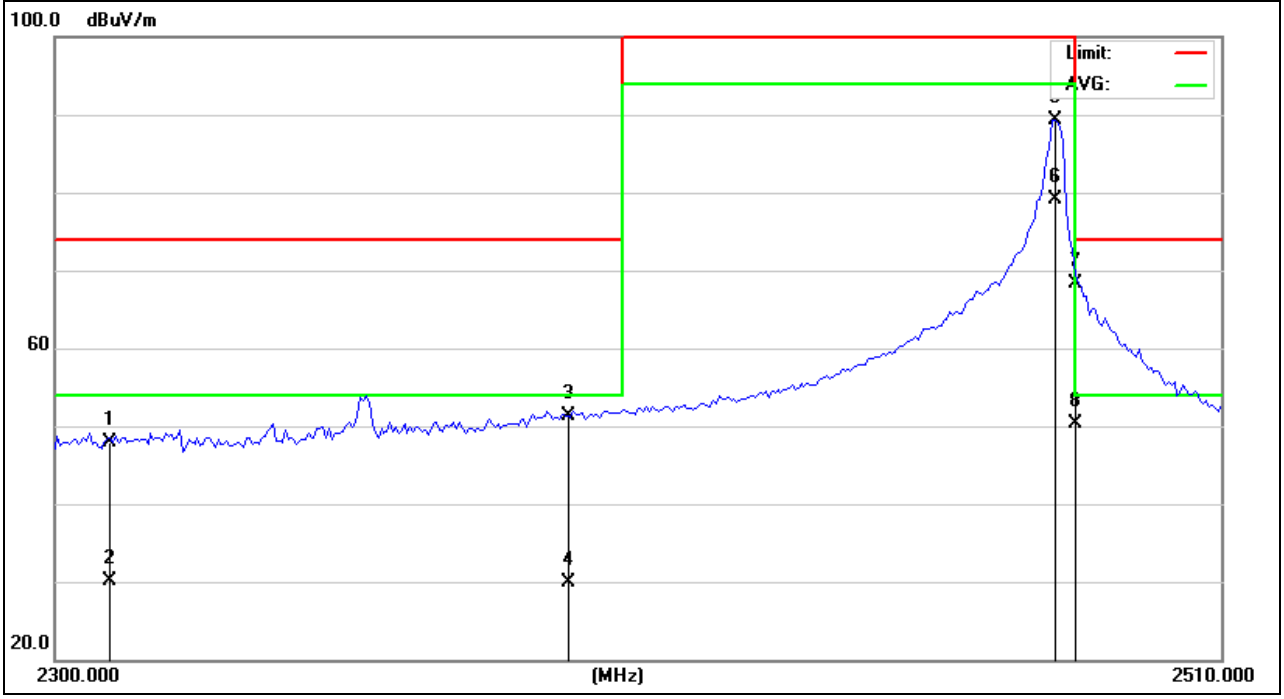
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name ：	U4
Temperature：	25 ℃	Relative Humidity：	51%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX 2482MHz	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2310.000	42.95	4.87	47.82	74.00	-26.18	peak
2310.000	25.28	4.87	30.15	54.00	-23.85	AVG
2390.000	46.81	4.57	51.38	74.00	-22.62	peak
2390.000	25.26	4.57	29.83	54.00	-24.17	AVG
2482.000	84.56	4.75	89.31	114.0	-24.69	peak
2482.000	74.27	4.75	79.02	94.00	-14.98	AVG
2483.500	63.62	4.77	68.39	74.00	-5.61	peak
2483.500	45.46	4.77	50.23	54.00	-3.77	AVG

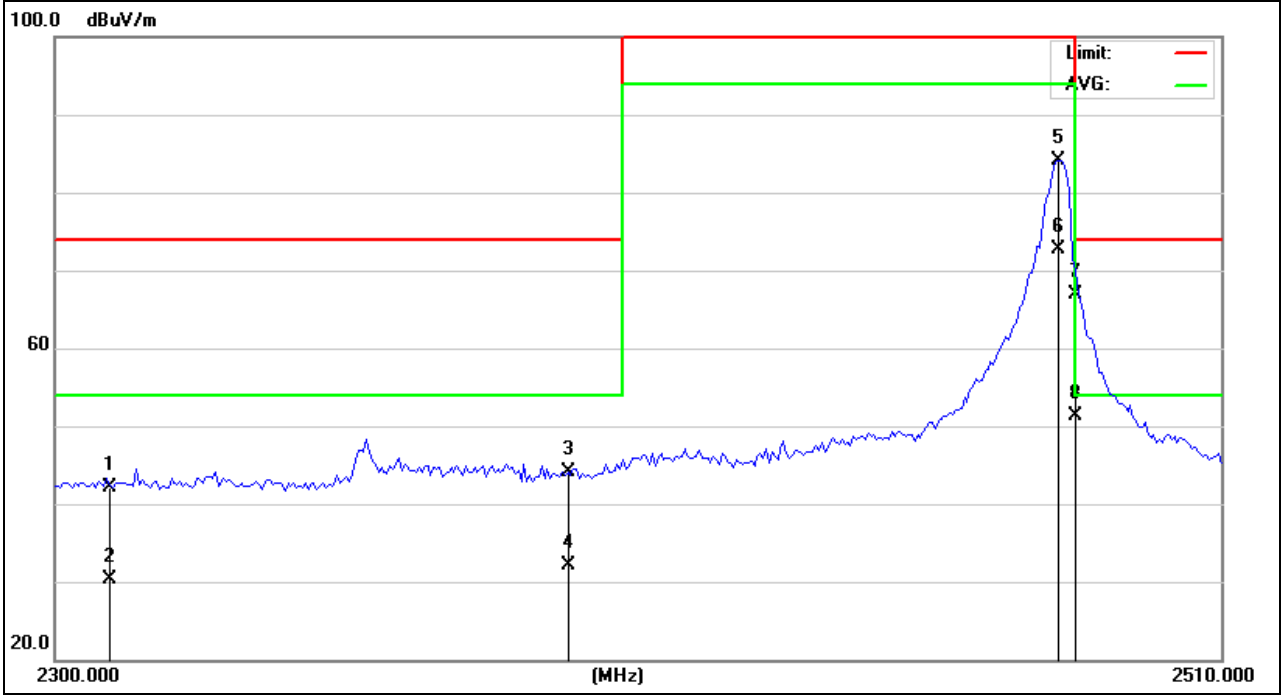
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name ：	U4
Temperature：	25 ℃	Relative Humidity：	51%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX 2482MHz	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2310.000	37.30	4.87	42.17	74.00	-31.83	peak
2310.000	25.40	4.87	30.27	54.00	-23.73	AVG
2390.000	39.49	4.57	44.06	74.00	-29.94	peak
2390.000	27.59	4.57	32.16	54.00	-21.84	AVG
2482.000	79.39	4.75	84.14	114.0	-29.86	peak
2482.000	67.90	4.75	72.65	94.00	-21.35	AVG
2483.500	62.19	4.77	66.96	74.00	-7.04	peak
2483.500	46.46	4.77	51.23	54.00	-2.77	AVG

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



4. FREQUENCY TOLERANCE

4.1 FREQUENCY TOLERANCE LIMITS

The frequency tolerance of the carrier signal shall be maintained within ±0.001% 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.

4.2TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 10KHz, VBW≧RBW, Sweep time = Auto.

4.3 TEST SETUP

4.4 TEST RESULTS

EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name ：	U4
Temperature：	26 ℃	Relative Humidity：	53%
Pressure：	1020 hPa	Test Power ：	DC 3.7V
Test Mode ：	TX (2402MHz/2448MHz/2482MHz)		

2402MHz

Voltage (V)	Frequency(MHz)	Reading(MHz)	Frequency Tolerance(ppm)	LIMIT(ppm)
3.15	2402	2402.012	5.00	±10
3.7	2402	2402.008	3.33	±10
4.26	2402	2402.006	2.50	±10

Temperature (℃)	Frequency(MHz)	Reading(MHz)	Frequency Tolerance(ppm)	LIMIT(ppm)
-20	2402	2402.006	2.50	±10
-10	2402	2402.004	1.67	±10
0	2402	2402.004	1.67	±10
10	2402	2402.003	1.25	±10
20	2402	2402.006	2.50	±10
30	2402	2402.004	1.67	±10
40	2402	2402.006	2.50	±10
50	2402	2402.007	2.91	±10

2448MHz

Voltage (V)	Frequency(MHz)	Reading(MHz)	Frequency Tolerance(ppm)	LIMIT(ppm)
3.15	2448	2448.010	4.08	±10
3.7	2448	2448.009	3.68	±10
4.26	2448	2448.008	3.27	±10

Temperature (℃)	Frequency(MHz)	Reading(MHz)	Frequency Tolerance(ppm)	LIMIT(ppm)
-20	2448	2448.006	2.45	±10
-10	2448	2448.007	2.86	±10
0	2448	2448.003	1.23	±10
10	2448	2448.007	2.86	±10
20	2448	2448.004	1.63	±10
30	2448	2448.006	2.45	±10
40	2448	2448.007	2.86	±10
50	2448	2448.006	2.45	±10

2482MHz

Voltage (V)	Frequency(MHz)	Reading(MHz)	Frequency Tolerance(ppm)	LIMIT(ppm)
3.15	2482	2482.009	3.63	±10
3.7	2482	2482.005	2.01	±10
4.26	2482	2482.002	0.81	±10

Temperature (℃)	Frequency(MHz)	Reading(MHz)	Frequency Tolerance(ppm)	LIMIT(ppm)
-20	2482	2482.002	0.81	±10
-10	2482	2482.001	0.40	±10
0	2482	2482.002	0.81	±10
10	2482	2482.003	1.21	±10
20	2482	2482.004	1.61	±10
30	2482	2482.003	1.21	±10
40	2482	2482.002	0.81	±10
50	2482	2482.005	2.01	±10

5. BANDWIDTH TEST

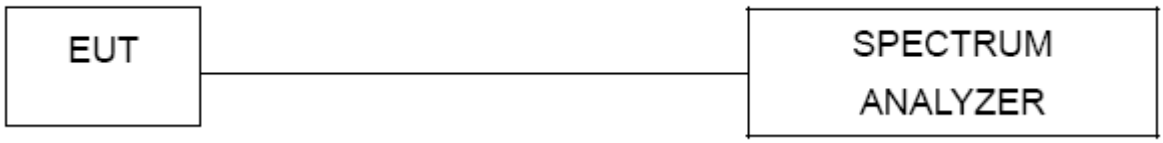
5.1 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 100KHz, VBW≧RBW, Sweep time = Auto.

5.1 DEVIATION FROM STANDARD

No deviation.

5.1 TEST SETUP

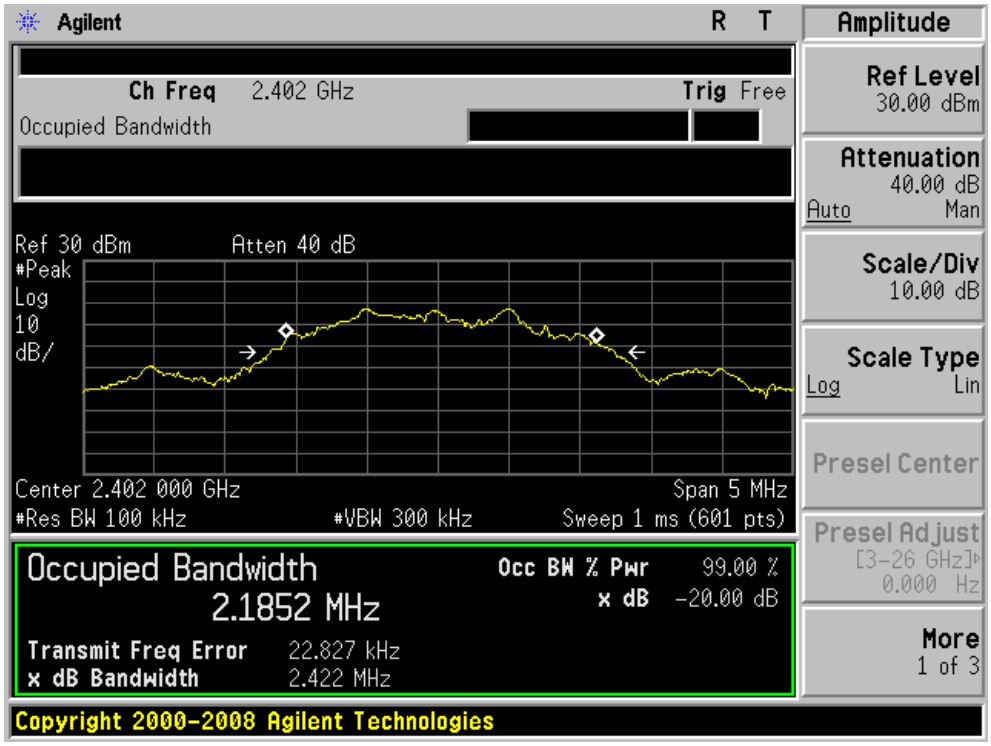


6. TEST RESULTS

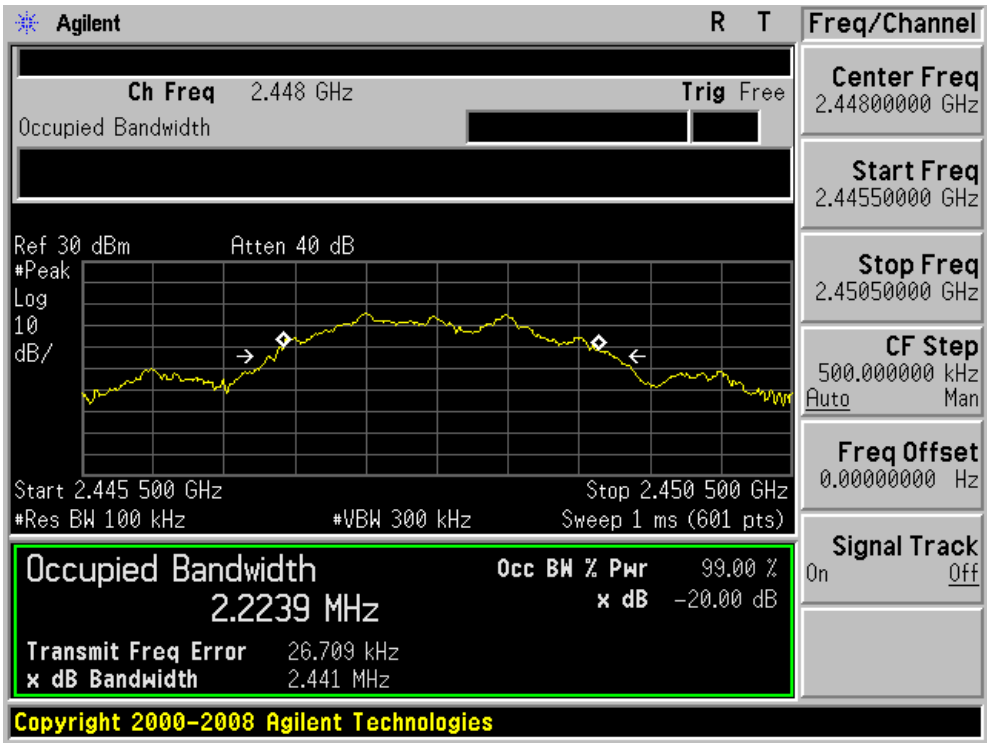
EUT：	IN-EAR MONITOR WIRELESS SYSTEM	Model Name ：	U4
Temperature：	26 ℃	Relative Humidity：	53%
Pressure：	1020 hPa	Test Power ：	DC 3.7V
Test Mode ：	TX(2402MHz/2448MHz/2482MHz)		

Test Frequency (MHz)	20 dBc Bandwidth (MHz)
2402	2.422
2448	2.441
2482	2.297

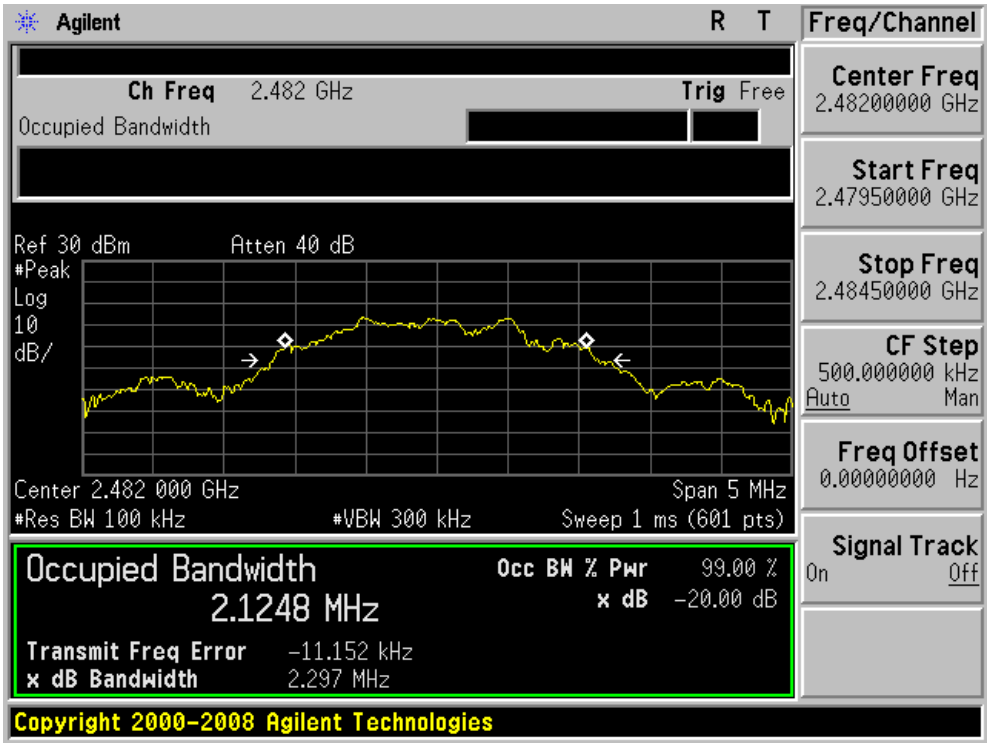
2402 MHz



20 dBc Bandwidth 2448MHz



20 dBc Bandwidth 2482MHz



END OF REPORT