Radio Test Report

FCC ID: ZYJ23010235

This report concerns (check one) : ■ **Original Grant** □ **Class I Change**

Issued Date	:	Sep. 16, 2011
Project No.	:	R1105010
Equipment	:	Wireless Microphone
Model Name	:	MIC-20W
Applicant	:	EVEREST DISPLAY INC.
Address	:	4F, No. 1 Li-hsin Rd., VI, Science Park, Hsinchu, Taiwan.

Tested by: Neutron Engineering Inc. EMC Laboratory
Date of Receipt: May 11, 2011
Date of Test: May 11, 2011 ~ Aug. 30, 2011

Testing Engineer : Gary Chou
(Gary Chou)

Technical Manager : Jeff Yang
(Jeff Yang)

Authorized Signatory : Andy Chiu
(Andy Chiu)

Neutron Engineering Inc.
B1, No. 37, Lane 365, YangGuang St.,
NeiHu District 114, Taipei, Taiwan.
TEL: +886-2-2657-3299
FAX: +886-2-2657-3331

NVLAP Lab Code: 200145-0 ilac-MRA TAF Testing Laboratory 0659

Declaration

Neutron represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**) of **R.O.C**., or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

Neutron's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **Neutron** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **Neutron** issued reports.

Neutron's reports must not be used by the client to claim product endorsement by the authorities or any agency of the Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and **Neutron-self**, extracts from the test report shall not be reproduced except in full with **Neutron**'s authorized written approval.

Neutron's laboratory quality assurance procedures are in compliance with the **ISO Guide 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Table of Contents Page

Table of Contents

1. CERTIFICATION

Equipment : Wireless Microphone
Brand Name : BOXLIGHT
Model Name : MIC-20W
Applicant : EVEREST DISPLAY INC.
Date of Test : May 11, 2011 ~ Aug. 30, 2011
Standards : FCC Part15, Subpart C / ANCI C63.4 : 2003

The above equipment has been tested and found compliance with the requirement of the relative standards by Neutron Engineering Inc. EMC Laboratory.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FCCP-1-R1105010) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of NVLAP and TAF according to the ISO-17025 quality assessment standard and technical standard(s).

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15, Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247 (c)	Antenna conducted Spurious Emission	PASS	
15.247 (a)(2)	6dB Bandwidth	PASS	
15.247 (b)	Peak Output Power	PASS	
15.247 (c)	Radiated Spurious Emission	PASS	
15.247 (d)	Power Spectral Density	PASS	
15.203	Antenna Requirement	PASS	
1.1307 1.1310 2.1091 2.1093	RF Exposure Compliance	PASS	

NOTE:

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

2.1 TEST FACILITY

The test facilities used to collect the test data in this report:

C01: (VCCI RN: C-2918; T-1666; FCC RN: 95335; FCC DN: TW1010)
No.132-1, Lane 329, Sec. 2, Palian Road, Shijr City, Taipei, Taiwan.

CB08: (VCCI RN: G-91; FCC RN: 614388; FCC DN: TW1054;
IC Assigned Code: 4428C-1)
1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

2.2 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**%.
The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2.
A. Conducted Measurement :

Test Site	Method	Measurement Frequency Ra ge	U，(dB)	NOTE
C01	ANSI	150 kHz ~ 30 MHz	1.94	

B. Radiated Measurement :

Test Site	Item	Measurement Frequency Range		Uncertainty	NOT
CB08	Radiated Emission at 3m	Horizontal Polarization	30 - 00MHz	3.35 dB	
			200 - 1000MHz	3.11 dB	
			1 - 18GHz	3. 7 dB	
			18 - 40GHz	4.01 dB	
		Vertical Polarization	30 - 200MHz	3.22 dB	
			200 - 1000MHz	3.24 dB	
			1 - 18GHz	4.05 dB	
			18 - 40GHz	4.04 dB	

Our calculated Measurement Instrumentation Uncertainty is shown in the tables above. These are our U_{lab} values in CISPR 16-4-2 terminology.
Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called U_{CISPR}, as follows:

Conducted Disturbance (mains port) – 150 kHz – 30 MHz : 3.6 dB
Radiated Disturbance (electric field strength on an open area test site or alternative test site) – 30 MHz – 1000 MHz : 5.2 dB

It can be seen that our U_{lab} values are smaller than U_{CISPR}.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Wireless Microphone
Brand Name	BOXLIGHT
Model Name	MIC-20W
OEM Brand/Model Name	N/A
Model Difference	N/A
Product Description	The EUT is a Wireless Microphone. Operation Frequency: 2409~2476 MHz Modulation Type: GFSK Bit Rate of Transmitter: 2 Mbps Number Of Channel Please see Note 2. Antenna Designation: Please see Note 3. Antenna Gain(Peak) Please see Note 3. Output Power: 13.12 dBm (Max.) Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.
Power Source	Battery supplied.
Power Rating	DC 3.7V
Products Cove ed	Please refer to the User's Manual
Connecting I/O Port(s)	1 * BATTERY:
EUT Modification(s)	N/A

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2.

Channel List			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2409	24	2455
02	2411	25	2457
03	2413	26	2459
04	2415	27	2461
05	2417	28	2463
06	2419	29	2464
07	2421	30	2465
08	2423	31	2466
09	2425	32	2467
10	2427	33	2468
11	2429	34	2469
12	2431	35	2471
13	2433	36	2472
14	2435	37	2473
15	2437	38	2474
16	2439	39	2475
17	2441	40	2476
18	2443		
19	2445		
20	2447		
21	2449		
22	2451		
23	2453		

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Ant. On PCB	N/A	-4.24

3.2 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 Test Mode	Description
Mode 1	2409MHz
Mode 2	2447MHz
Mode 3	2476MHz

For Conducted Test	
Final Test Mode	Description
Mode 1	2447MHz

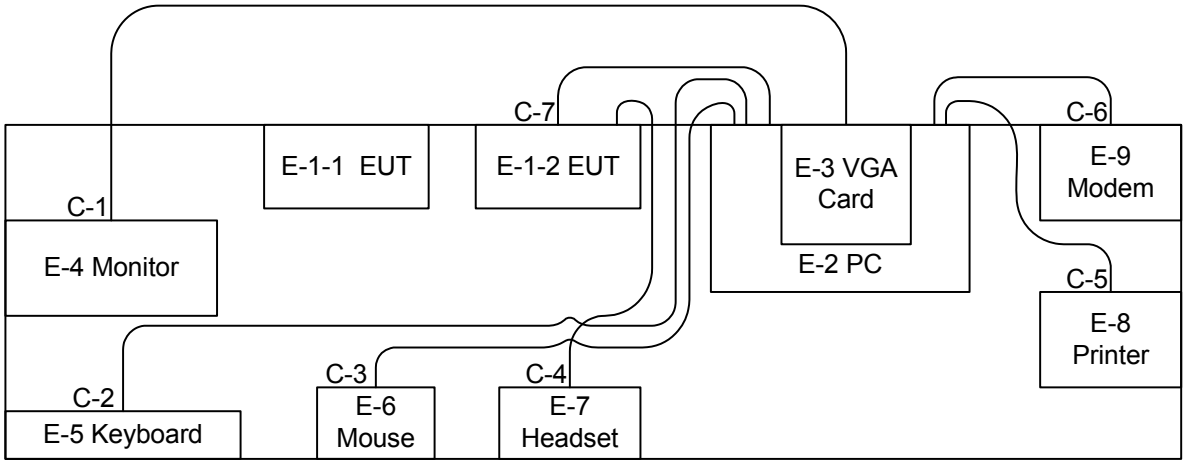
For Radiated Test	
Final Test Mode	Description
Mode 1	2409MHz
Mode 2	2447MHz
Mode 3	2476MHz

3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product

Test software Version	N/A		
Frequency (MHz)	2409 MHz	2447 MHz	2476 MHz
	Def.	Def.	Def.

3.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED (CONDUCTED)



C-1 D-SUB Cable
C-2 PS/2 Cable
C-3 PS/2 Cable
C-4 Audio Cable x 2 (In & Out)
C-5 Parallel Cable
C-6 RS232 Cable
C-7 USB Cable (DC Power)

3.5 DESCRIPTION OF SUPPORT UNITS (CONDUCTED)

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.

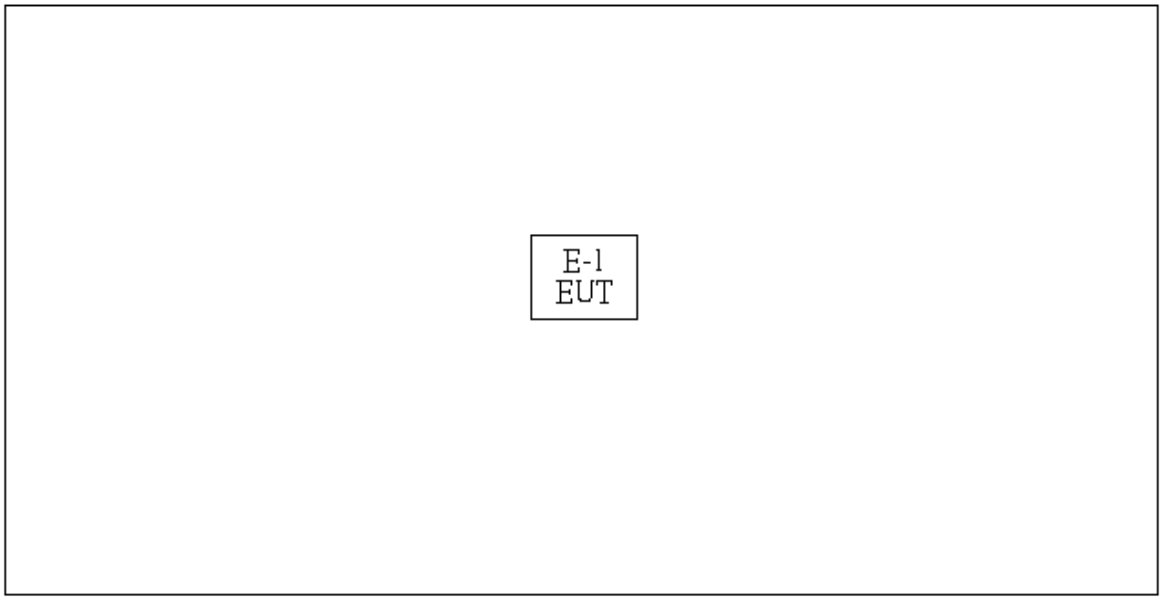
Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1-2	Wireless Microphone	BOXLIGHT	MIC-20W	ZYJ23010235	N/A	
E-1-1	Projectomate Speaker System	BOXLIGHT	CH-20W		N/A	
E-2	PC	HP	HP Compaq dx7300 MT	DOC	SGH71505LH	
E-3	VGA Card	ASUS	EAH4670/DI/512M/A	DOC	8BC0AI284/03	
E-4	24" LCD Monitor	DELL	2408WFPb	DOC	071863-11	
E-5	PS/2 K/B	Logitech	Y-SJ17(ACK260A)	DOC	SYU44664880	
E-6	PS/2 Mouse	Logitech	M-SBF69	DOC	HCA44601156	
E-7	Headset	i-Acon	HOH-323-BK	N/A	N/A	
E-8	Modem	Intel	PCFM6501	EJMPCFM6501	306925-002	
E-9	Printer	SII	DPU-414	DOC	1045105A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	YES	YES	1.8M	
C-2	YES	NO	1.5M	
C-3	YES	NO	1.7M	
C-4	NO	NO	1.7M	
C-5	YES	NO	1.7M	
C-6	YES	NO	1.7M	
C-7	YES	NO	0.6M	

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.

3.6 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED (OTHER)


E-1
EUT

3.7 DESCRIPTION OF SUPPORT UNITS (OTHER)

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.	FCC ID	Series No.	Note
E-1	Wireless Microphone	BOXLIGHT	MIC-20W	ZYJ23010235	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note
N/A	-	-	-	

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.

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

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

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 4
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

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.

(3) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)
Margin Level = Measurement Value – Limit Value

4.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	EMCO	3816/2	00042991	Feb. 16, 2012
2	Test Cable	TIMES	LMR-400	SR03_C_01&02	Aug. 20, 2011
3	Pulse Limiter	Electro-Metrics	EM-7600	112647	Dec. 13, 2011
4	EMI Test Receiver	R&S	ESCI	100082	Mar. 15, 2012
5	50Ω BNC TYPE Terminator	N/A	N/A	01	May 24, 2012
6	50Ω BNC TYPE Terminator	N/A	N/A	03	May 24, 2012
7	LISN	EMCO	4825/2	00028234	Jul. 22, 2011

Remark: ” N/A” denotes No Model Name , Serial No. or No Calibration specified.

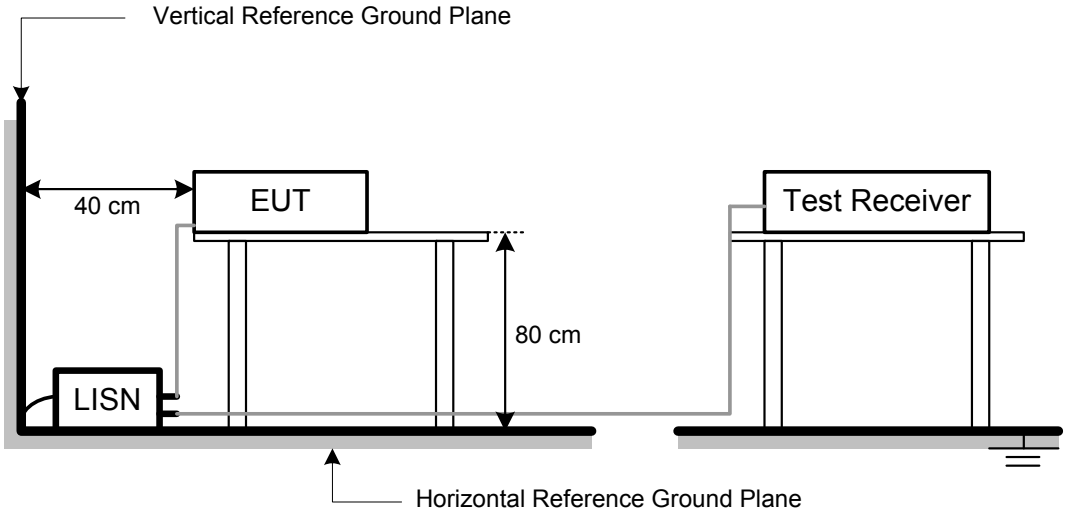
4.1.3 TEST PROCEDURE

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.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



4.1.6 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

4.1.7 TEST RESULTS

EUT：	Wireless Microphone	Model Name :	MIC-20W
Temperature：	24 °C	Relative Humidity :	48%
Test Voltage：	AC 120V/60Hz (For PC System)		
Test Mode：	2447 MHz		

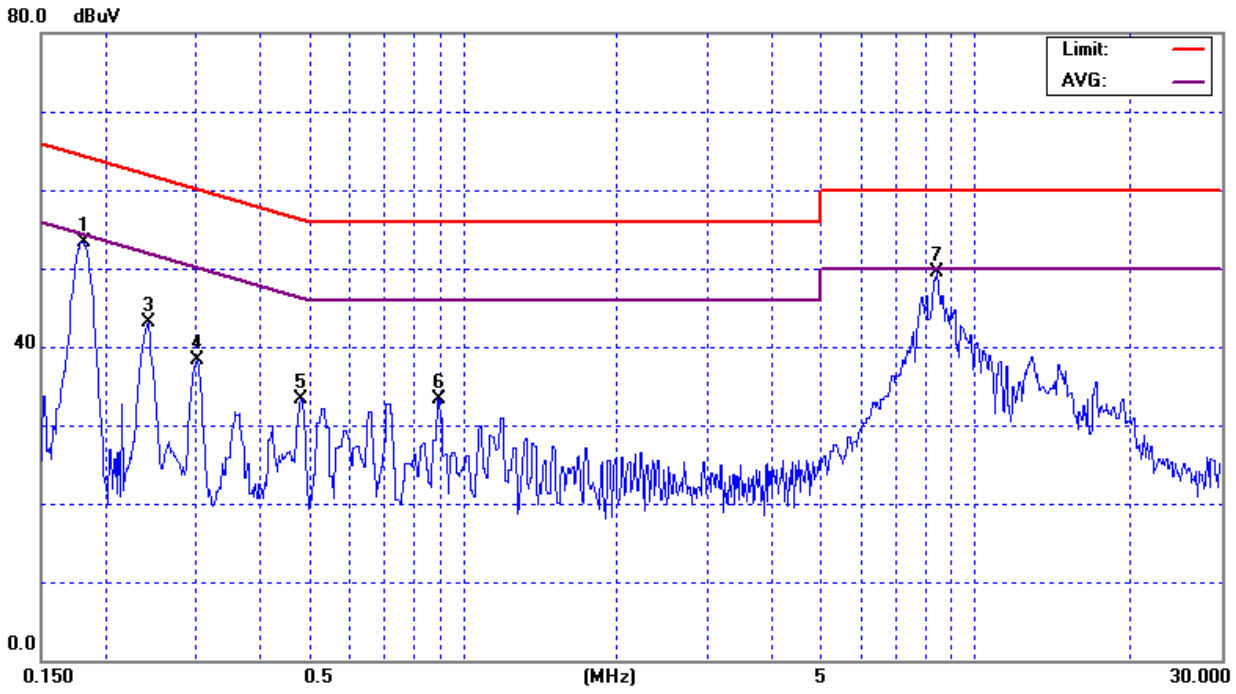
Freq.	Terminal	Reading Level(dBuV)		Correct	Measurement(dBuV)		Limit(dBuV)		Margin	Note
(MHz)	L/N	QP-Mode	AV-Mode	Factor(dB)	QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dB)	
0.1808	Line	43.78	38.50	9.62	53.40	48.12	64.45	54.45	-6.33	(AV)
0.2424	Line	33.56	*	9.62	43.18	*	62.01	52.01	-18.83	(QP)
0.3026	Line	28.63	*	9.62	38.25	*	60.17	50.17	-21.92	(QP)
0.4825	Line	23.75	*	9.61	33.36	*	56.30	46.30	-22.94	(QP)
0.8960	Line	23.73	*	9.61	33.34	*	56.00	46.00	-22.66	(QP)
8.4500	Line	39.79	31.81	9.81	49.60	41.62	60.00	50.00	-8.38	(AV)

Remark

(1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9 kHz; SPA setting in RBW=10 kHz, VBW =10 kHz, Swp. Time = 0.2 sec./ MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10 kHz, VBW=10 kHz, Swp. Time =0.2 sec./ MHz.

(2) All readings are QP Mode value unless otherwise stated AVG in column of Note. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a " * " marked in AVG Mode column of Interference Voltage Measured.

(3) In the "Note" column, QP means the margin value of QP is higher than Average and the "Margin" column shows the margin value of QP; AV means the margin value of Average is higher than QP and the "Margin" column shows the margin value of Average.



EUT：	Wireless Microphone	Model Name :	MIC-20W
Temperature：	24°C	Relative Humidity :	48%
Test Voltage：	AC 120V/60Hz (For PC System)		
Test Mode：	2447 MHz		

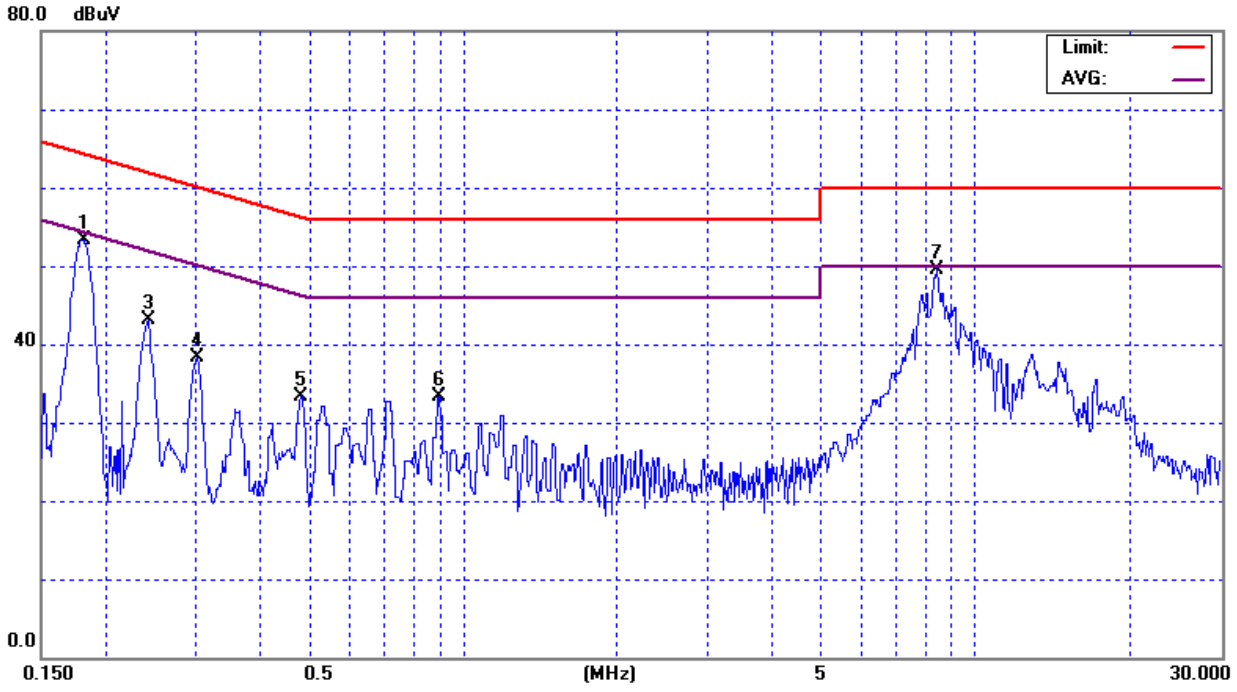
Freq.	Terminal	Reading Level(dBuV)		Correct	Measurement(dBuV)		Limit(dBuV)		Margin	Note
(MHz)	L/N	QP-Mode	AV-Mode	Factor(dB)	QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dB)	
0.1808	Line	43.78	38.50	9.62	53.40	48.12	64.45	54.45	-6.33	(AV)
0.2424	Line	33.56	*	9.62	43.18	*	62.01	52.01	-18.83	(QP)
0.3026	Line	28.63	*	9.62	38.25	*	60.17	50.17	-21.92	(QP)
0.4825	Line	23.75	*	9.61	33.36	*	56.30	46.30	-22.94	(QP)
0.8960	Line	23.73	*	9.61	33.34	*	56.00	46.00	-22.66	(QP)
8.4500	Line	39.79	31.81	9.81	49.60	41.62	60.00	50.00	-8.38	(AV)

Remark

(1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9 kHz; SPA setting in RBW=10 kHz, VBW =10 kHz, Swp. Time = 0.2 sec./ MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10 kHz, VBW=10 kHz, Swp. Time =0.2 sec./ MHz.

(2) All readings are QP Mode value unless otherwise stated AVG in column of Note. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a " * " marked in AVG Mode column of Interference Voltage Measured.

(3) In the "Note" column, QP means the margin value of QP is higher than Average and the "Margin" column shows the margin value of QP; AV means the margin value of Average is higher than QP and the "Margin" column shows the margin value of Average.



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on15.205(a), then the 15.209(a) limit in the table below 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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80	60	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15B.

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

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

(4) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain(if use)
Margin Level = Measurement Value – Limit Value

4.2.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Aug. 31, 2011
2	Horn Antenna	Schwarzbeck	BBHA 9120	D-325	Dec. 08, 2011
3	Microwave Pre_amplifier	Agilent	8449B	3008A01714	Apr. 18, 2012
4	Microflex Cable	N/A	N/A	1m	May. 18, 2012
5	Microflex Cable	AISI	S104-SMAP-1	10m	Aug. 21, 2012
6	Microflex Cable	N/A	N/A	3m	Aug. 21, 2012
7	Test Cable	N/A	LMR-400	966_12m	Jun. 16, 2012
8	Test Cable	N/A	LMR-400	966_3m	Jun. 16, 2012
9	Pre-Amplifier	EMC	EMC-330	980001	Jun. 02, 2012
10	Log-Bicon Antenna	Schwarzbeck	VULB9168-352	9168-352	Jun. 16, 2012

Remark: ” N/A” denotes No Model Name / Serial No. and No Calibration specified.

4.2.3 TEST PROCEDURE

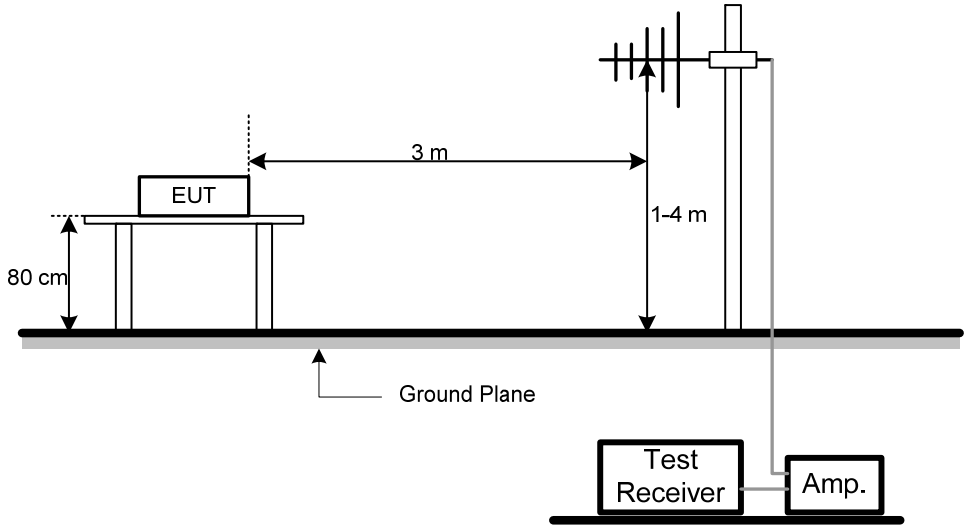
a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m Semi-anechoic chamber. The table was rotated 360 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; 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.
g. The testing follows the guidelines in ANSI C63.4-2003 and FCC Public Notice DA 00-705 Measurement Guidelines. In case the emission is fail due to the used RBW / VBW is too wide, marker-delta method of FCC Public Notice DA 00-705 will be followed.

4.2.4 DEVIATION FROM TEST STANDARD

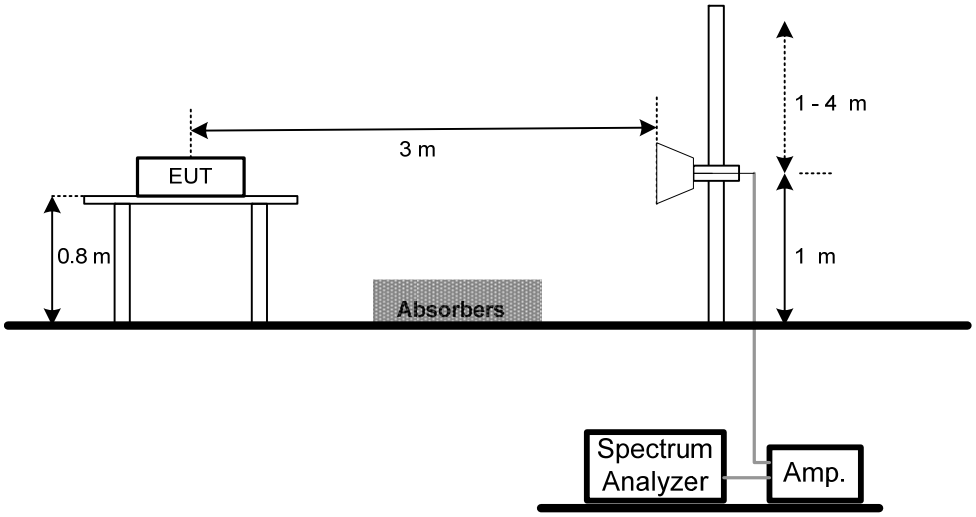
No deviation

4.2.5 TEST SETUP

Radiated Emission Test Set-Up Frequency 30 - 1000MHz



Radiated Emission Test Set-Up Frequency Above 1 GHz



4.2.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **4.1.6** Unless otherwise a special operating condition is specified in the follows during the testing.

4.2.7 TEST RESULTS-BETWEEN 30MHZ - 1000MHZ - TX

EUT：	Wireless Microphone	Model Name ：	MIC-20W
Temperature：	26°C	Relative Humidity：	60%
Test Voltage：	DC 3.7V		
Test Mode ：	2447MHz		

Freq. (MHz)	Polarization H/V	Reading Level (dBuV)	Correct Factor(dB)	Measurement (dBuV/m)	Limit(Quasi-Peak) (dBuV/m)	Margin (dB)	Note
45.5200	V	30.59	-12.22	18.37	40.00	- 21.63	
159.9798	V	29.47	-13.18	16.29	43.50	- 27.21	
357.8599	V	28.77	-11.15	17.62	46.00	- 28.38	
487.8399	V	28.23	-8.16	20.07	46.00	- 25.93	
600.3599	V	28.12	-6.02	22.10	46.00	- 23.90	
751.6799	V	27.79	-3.43	24.36	46.00	- 21.64	

Remark：

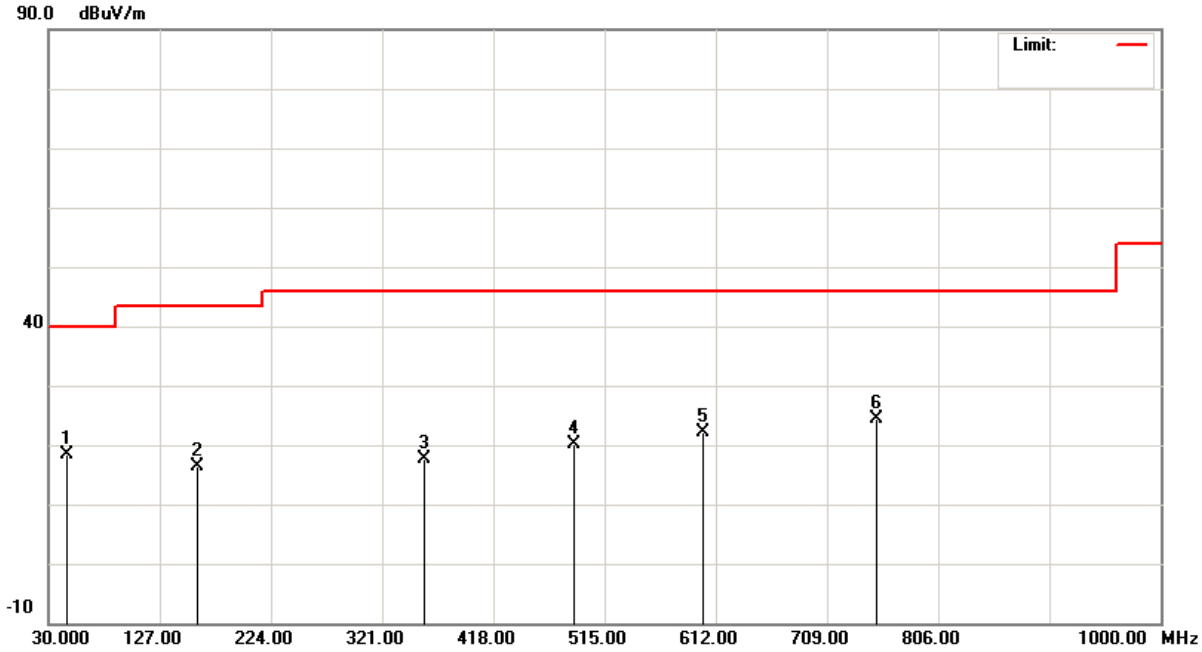
(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.

(4) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission 。

(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



EUT：	Wireless Microphone	Model Name ：	MIC-20W
Temperature：	26°C	Relative Humidity：	60%
Test Voltage：	DC 3.7V		
Test Mode ：	2447MHz		

Freq. (MHz)	Polarization H/V	Reading Level (dBuV)	Correct Factor(dB)	Measurement (dBuV/m)	Limit(Quasi-Peak) (dBuV/m)	Margin (dB)	Note
43.5800	H	30.18	-12.27	17.91	40.00	- 22.09	
158.0399	H	28.24	-13.15	15.09	43.50	- 28.41	
299.6600	H	29.83	-12.59	17.24	46.00	- 28.76	
497.5400	H	27.86	-8.01	19.85	46.00	- 26.15	
683.7800	H	26.83	-4.73	22.10	46.00	- 23.90	
778.8400	H	28.27	-3.09	25.18	46.00	- 20.82	

Remark：

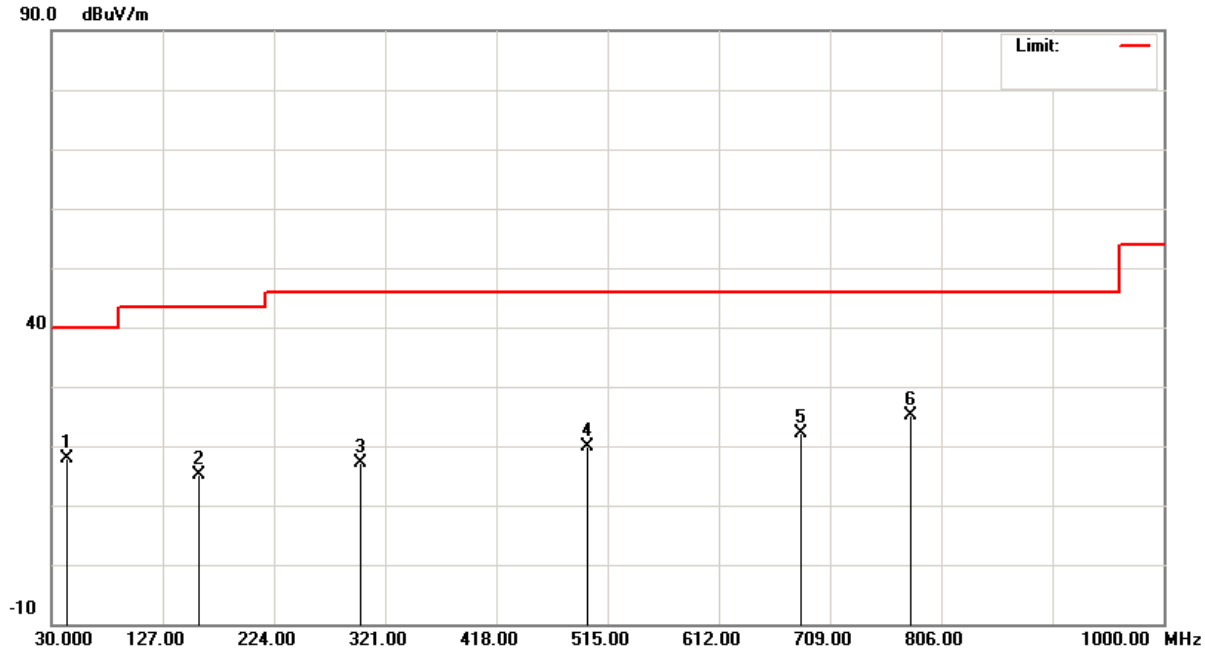
(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.

(4) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission 。

(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



4.2.8 TEST RESULTS - ABOVE 1000MHZ- TX

EUT：	Wireless Microphone	Model Name ：	MIC-20W
Temperature：	26°C	Relative Humidity：	60%
Test Voltage：	DC 3.7V	Orthogonal Axes:	X
Test Mode ：	2409MHz		

Type F/H/E	Freq. (MHz)	Polarization H/V	Reading Level(dBuV) Peak	Reading Level(dBuV) AV	Correct Factor(dB)	Measurement(dBuV/m) Peak	Measurement(dBuV/m) AV	Limit(dBuV/m) Peak	Limit(dBuV/m) AV	Margin (dB)	Note
E	2390.000	V	37.06	11.50	30.89	67.95	42.39	74.00	54.00	- 6.05	Peak
F	2409.000	V	76.02	19.86	30.97	106.99	50.83				
H	4818.010	V	58.62	34.21	2.68	61.30	36.89	74.00	54.00	- 12.70	Peak
H	7227.070	V	53.20	33.08	8.29	61.49	41.37	74.00	54.00	- 12.51	Peak

Remark：

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

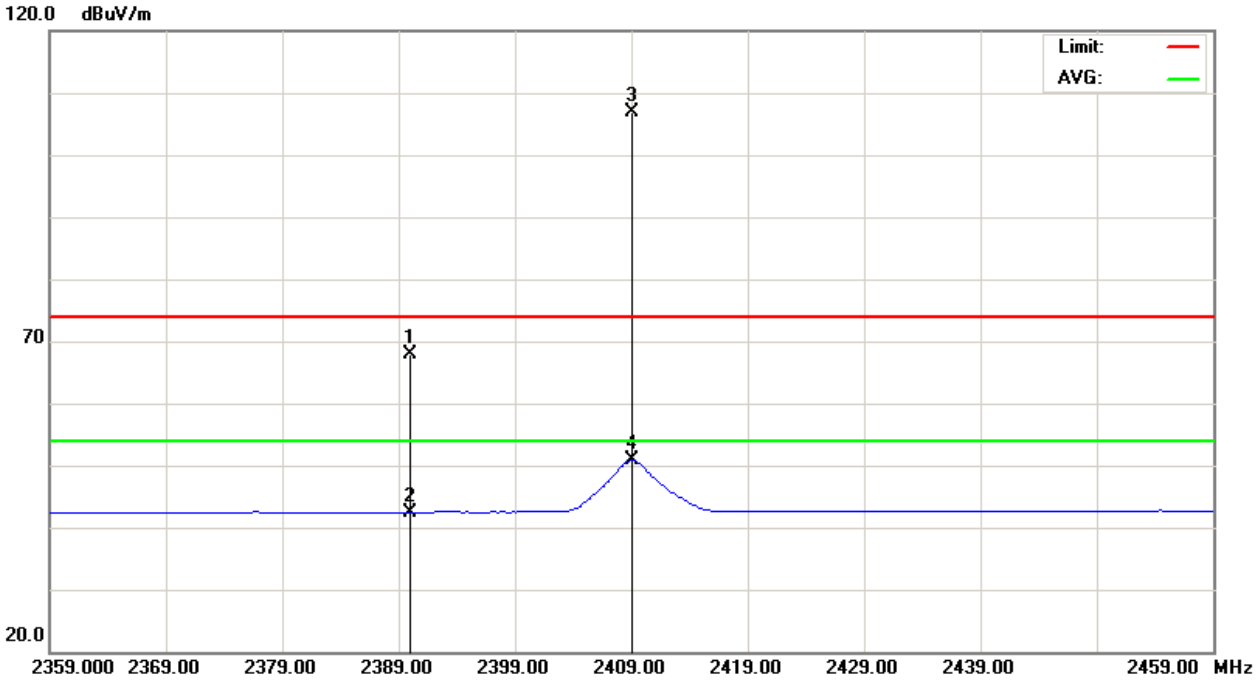
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

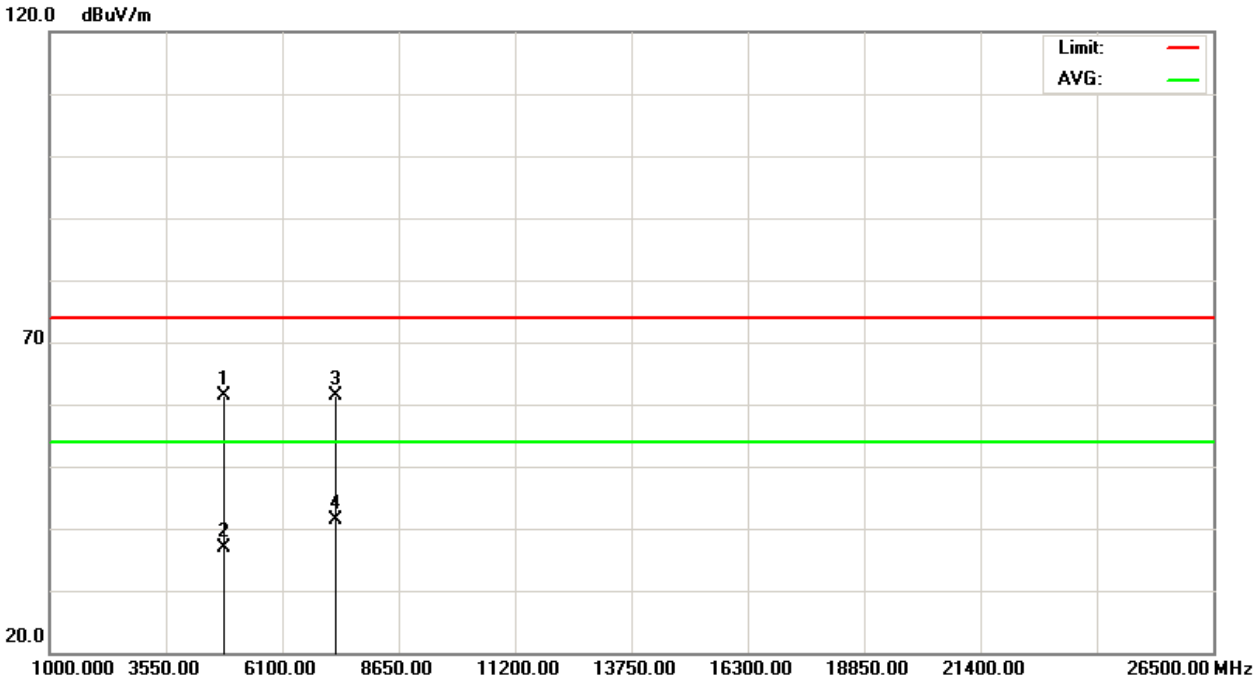
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis：X
2409MHz(Above 1000 MHz, Vertical)





EUT：	Wireless Microphone	Model Name ：	MIC-20W
Temperature：	26°C	Relative Humidity：	60%
Test Voltage：	DC 3.7V	Orthogonal Axes:	X
Test Mode ：	2409MHz		

Type F/H/E	Freq. (MHz)	Polarization H/V	Reading Level(dBuV) Peak	Reading Level(dBuV) AV	Correct Factor(dB)	Measurement(dBuV/m) Peak	Measurement(dBuV/m) AV	Limit(dBuV/m) Peak	Limit(dBuV/m) AV	Margin (dB)	Note
E	2390.000	H	40.59	11.53	30.89	71.48	42.42	74.00	54.00	- 2.52	Peak
F	2409.200	H	78.82	20.27	30.97	109.79	51.24				
H	4818.010	H	54.65	33.37	2.68	57.33	36.05	74.00	54.00	- 16.67	Peak
H	7226.910	H	48.10	32.16	8.29	56.39	40.45	74.00	54.00	- 13.55	AV

Remark：

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

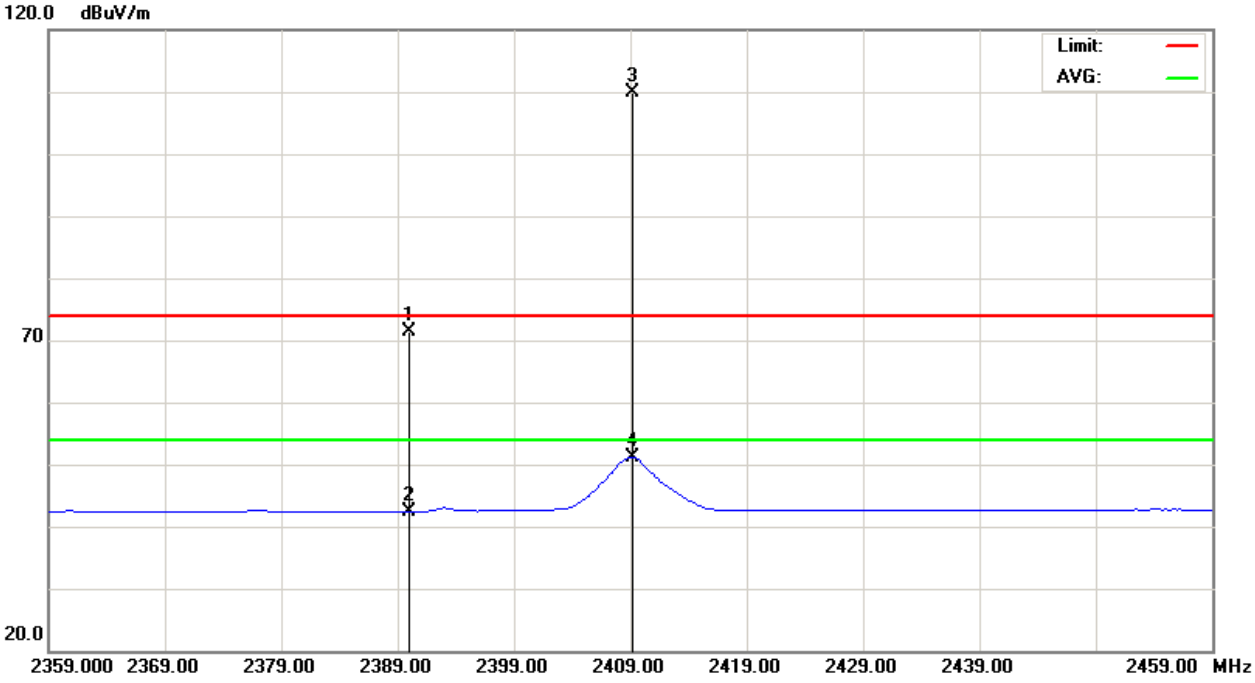
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

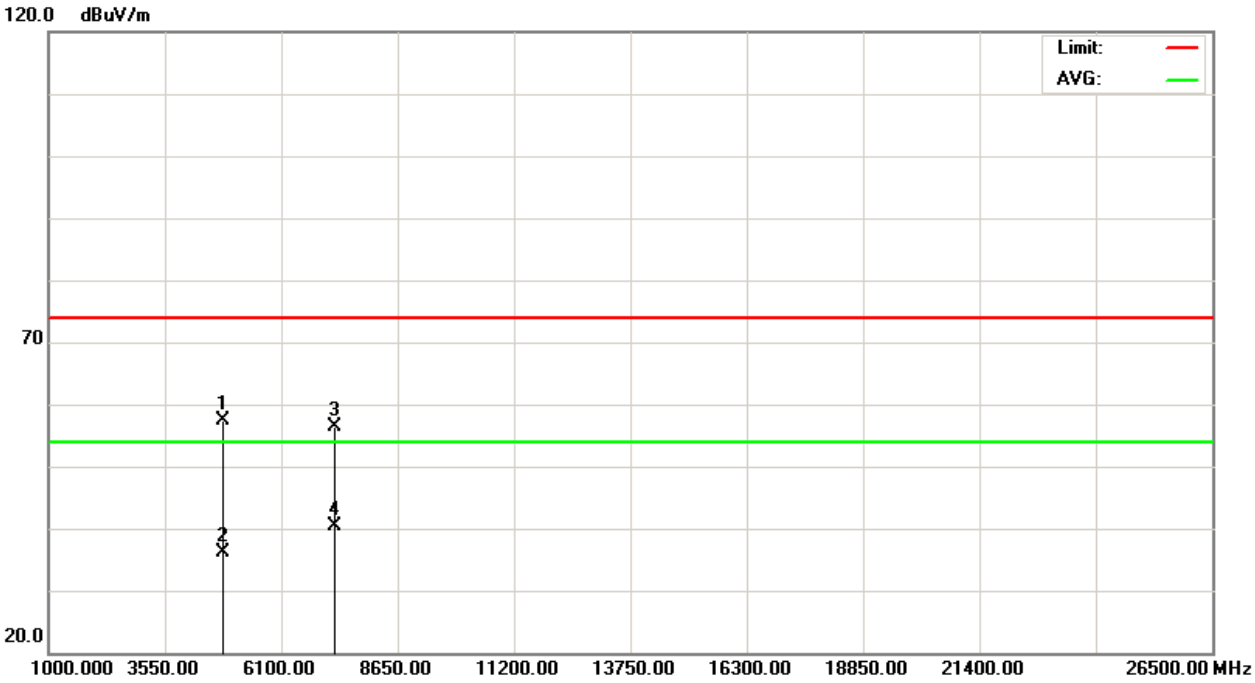
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis：X
2409MHz(Above 1000 MHz, Horizontal)





EUT：	Wireless Microphone	Model Name ：	MIC-20W
Temperature：	26°C	Relative Humidity：	60%
Test Voltage：	DC 3.7V	Orthogonal Axes:	X
Test Mode ：	2447MHz		

Type F/H/E	Freq. (MHz)	Polarization H/V	Reading Level(dBuV) Peak	Reading Level(dBuV) AV	Correct Factor(dB)	Measurement(dBuV/m) Peak	Measurement(dBuV/m) AV	Limit(dBuV/m) Peak	Limit(dBuV/m) AV	Margin (dB)	Note
F	2447.000	V	75.68	19.99	31.13	106.81	51.12				
H	4894.010	V	55.80	33.35	2.93	58.73	36.28	74.00	54.00	- 15.27	Peak
H	7341.170	V	50.11	32.59	8.45	58.56	41.04	74.00	54.00	- 12.96	AV

Remark：

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

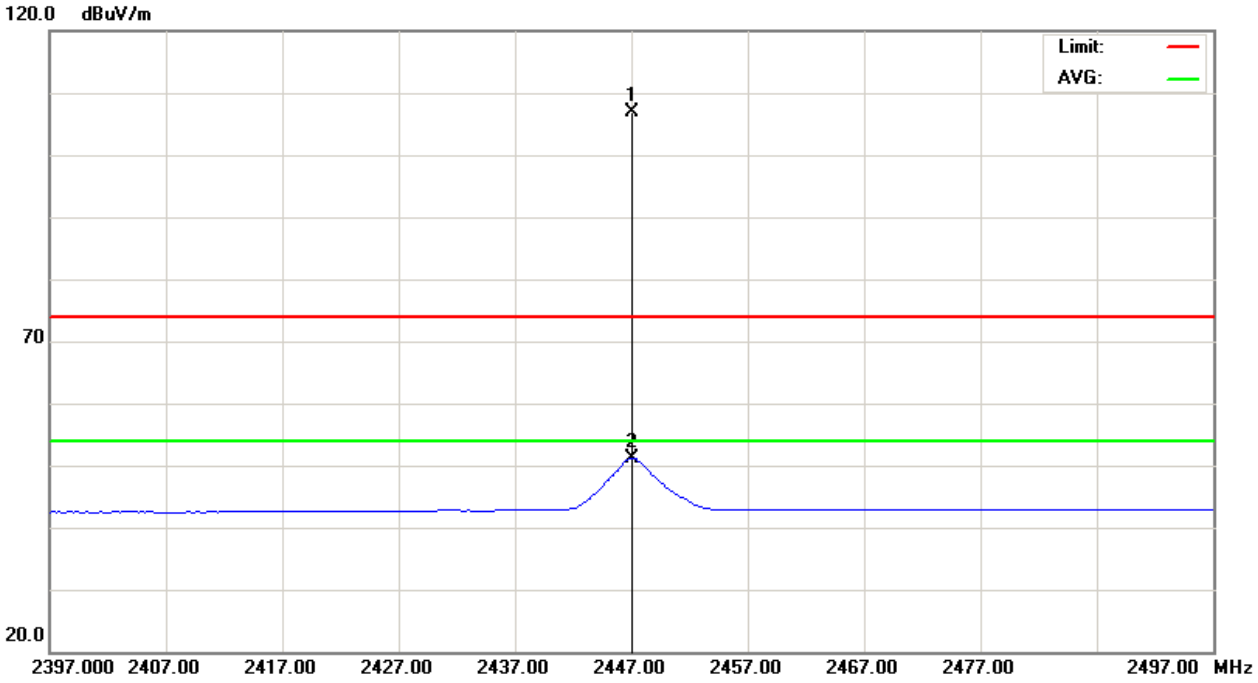
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

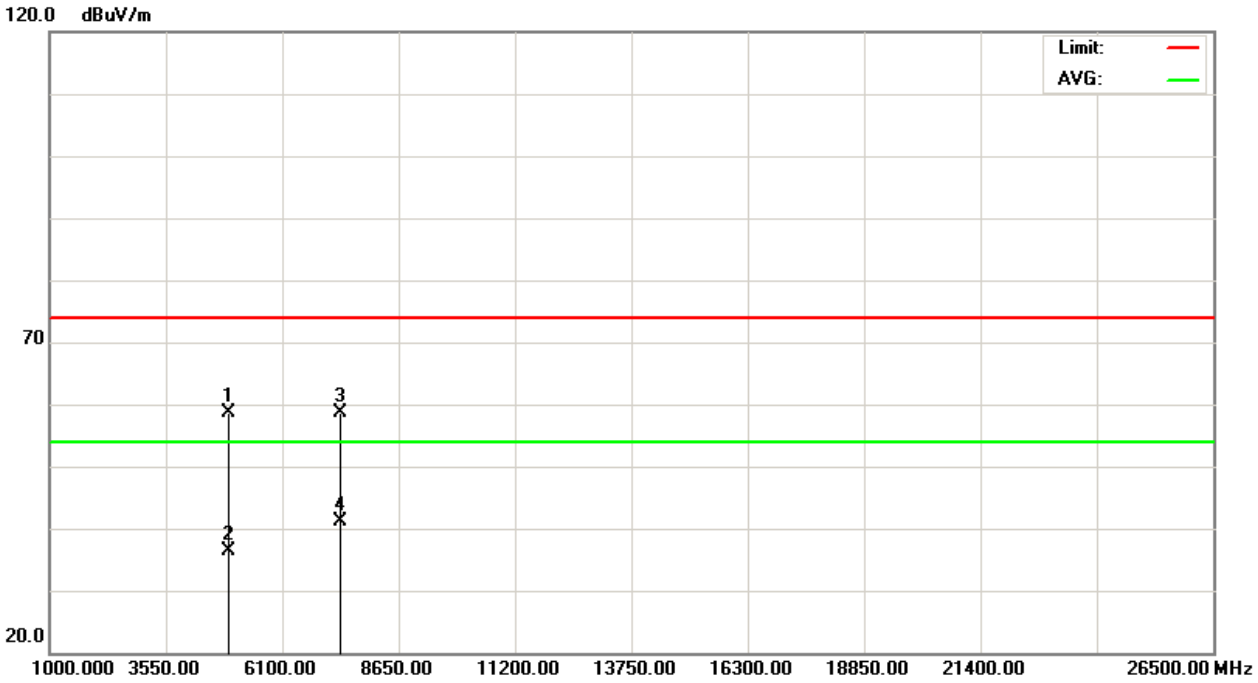
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis：X
2447MHz (Above 1000 MHz, Vertical)





EUT：	Wireless Microphone	Model Name ：	MIC-20W
Temperature：	26°C	Relative Humidity :	60%
Test Voltage :	DC 3.7V	Orthogonal Axes:	X
Test Mode ：	2447MHz		

Type F/H/E	Freq. (MHz)	Polarization H/V	Reading Level(dBuV) Peak	Reading Level(dBuV) AV	Correct Factor(dB)	Measurement(dBuV/m) Peak	Measurement(dBuV/m) AV	Limit(dBuV/m) Peak	Limit(dBuV/m) AV	Margin (dB)	Note
F	2447.000	H	77.41	20.21	31.13	108.54	51.34				
H	4894.050	H	52.97	32.86	2.93	55.90	35.79	74.00	54.00	- 18.10	Peak
H	7341.230	H	50.75	32.68	8.45	59.20	41.13	74.00	54.00	- 12.87	AV

Remark：

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

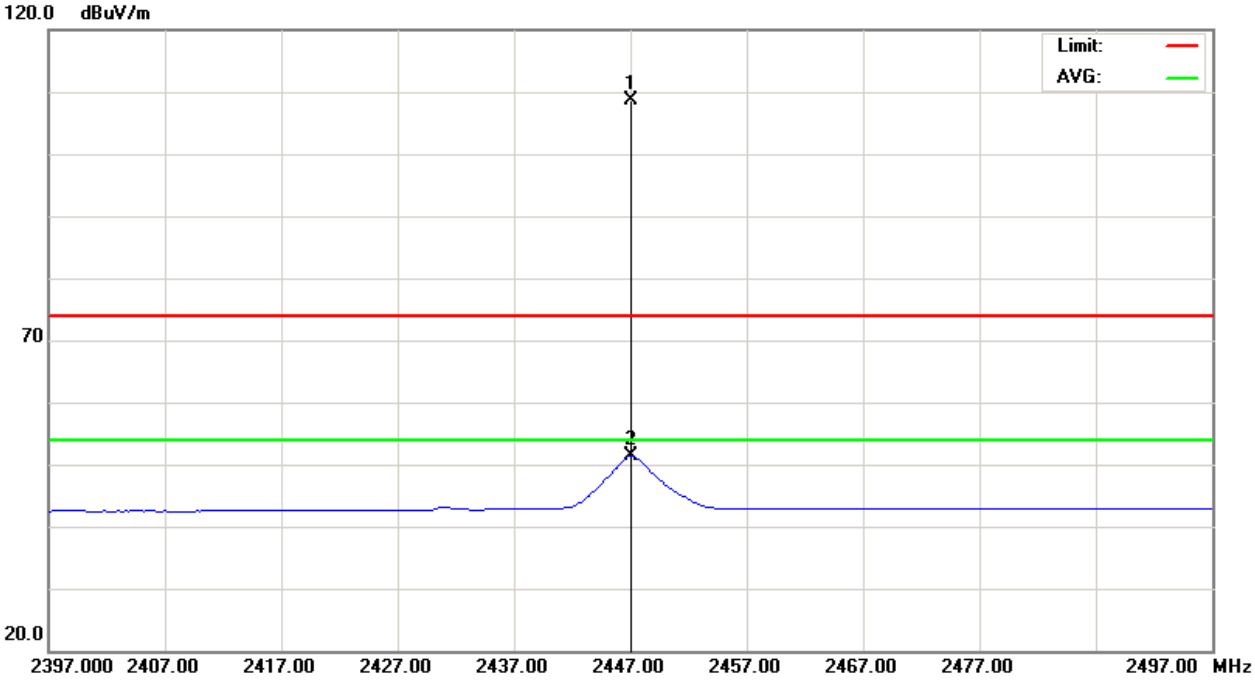
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

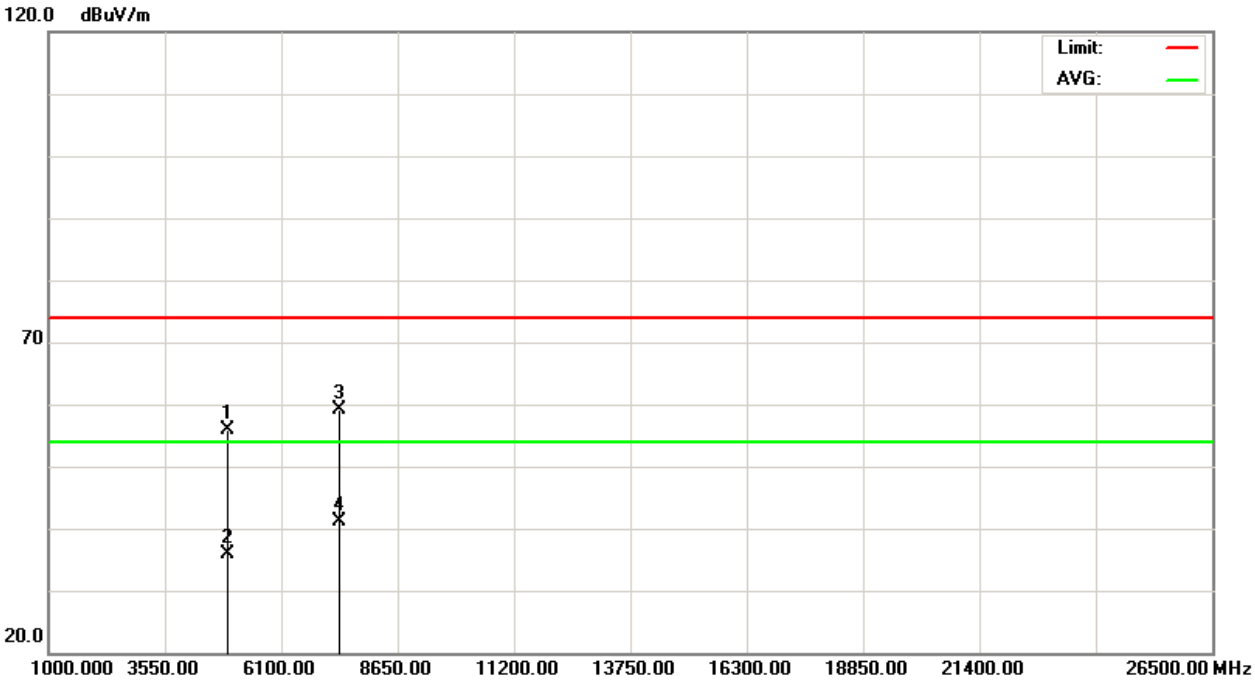
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis：X
2447MHz (Above 1000 MHz, Horizontal)





EUT：	Wireless Microphone	Model Name ：	MIC-20W
Temperature：	26°C	Relative Humidity：	60%
Test Voltage：	DC 3.7V	Orthogonal Axes:	X
Test Mode ：	2476MHz		

Type F/H/E	Freq. (MHz)	Polarization H/V	Reading Level(dBuV) Peak	Reading Level(dBuV) AV	Correct Factor(dB)	Measurement(dBuV/m) Peak	Measurement(dBuV/m) AV	Limit(dBuV/m) Peak	Limit(dBuV/m) AV	Margin (dB)	Note
F	2476.000	V	76.73	20.19	31.25	107.98	51.44				
E	2483.500	V	44.95	11.75	31.28	76.23	43.03	74.00	54.00	2.23	FAIL
H	4952.210	V	52.59	32.99	3.12	55.71	36.11	74.00	54.00	- 17.89	AV
H	7428.130	V	46.49	32.14	8.57	55.06	40.71	74.00	54.00	- 13.29	AV

Remark：

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

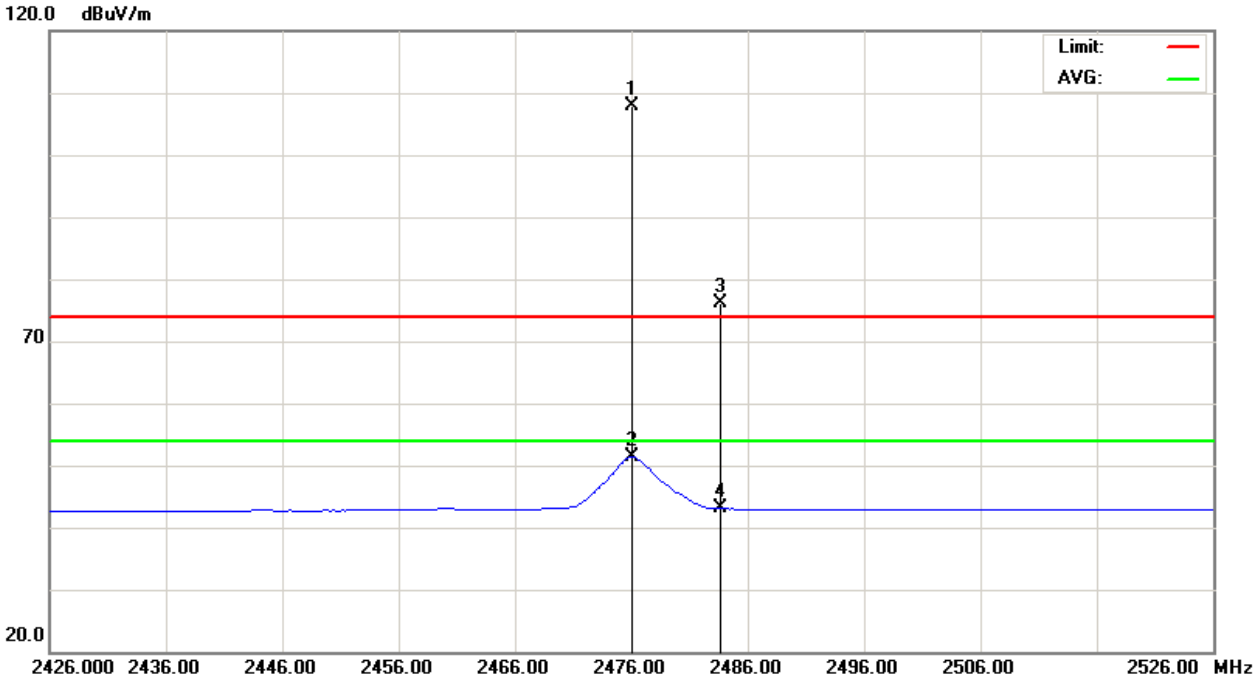
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

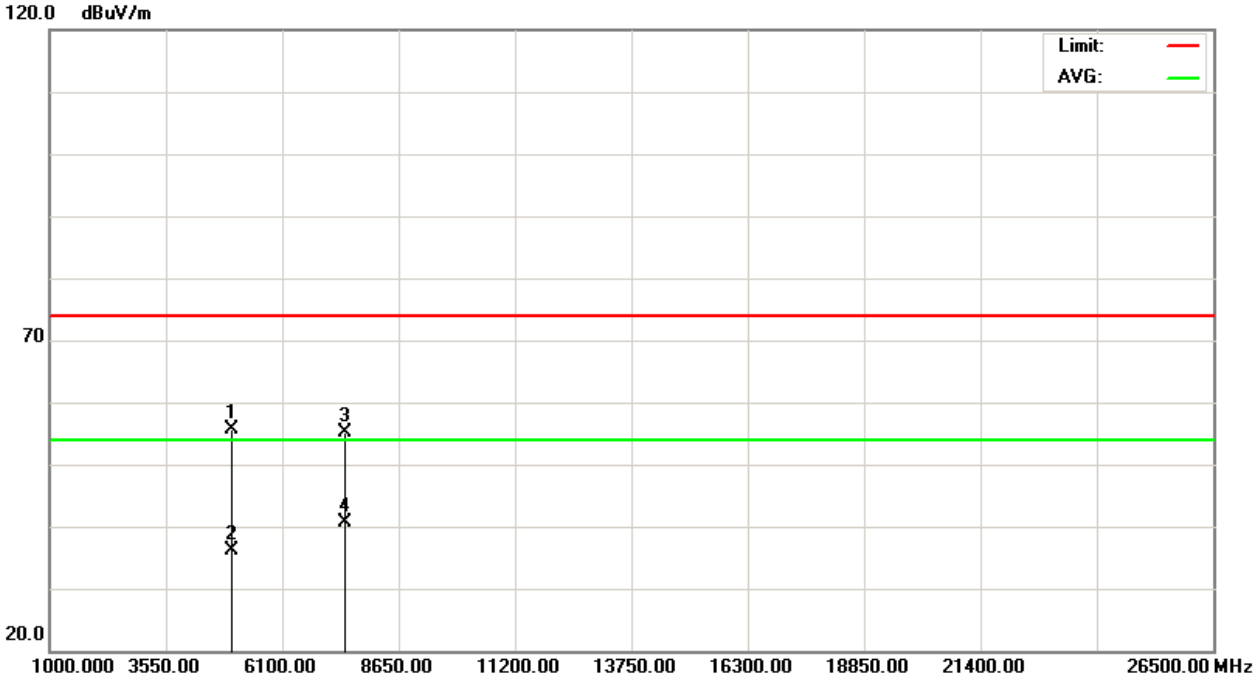
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis：X
2476MHz(Above 1000 MHz, Vertical)





EUT：	Wireless Microphone	Model Name ：	MIC-20W
Temperature：	26°C	Relative Humidity：	60%
Test Voltage：	DC 3.7V	Orthogonal Axes:	X
Test Mode ：	2476MHz		

Type F/H/E	Freq. (MHz)	Polarization H/V	Reading Level(dBuV) Peak	Reading Level(dBuV) AV	Correct Factor(dB)	Measurement(dBuV/m) Peak	Measurement(dBuV/m) AV	Limit(dBuV/m) Peak	Limit(dBuV/m) AV	Margin (dB)	Note
F	2476.000	H	78.10	20.00	31.25	109.35	51.25				
E	2483.500	H	46.15	11.80	31.28	77.43	43.08	74.00	54.00	3.43	FAIL
H	4952.090	H	50.06	32.34	3.12	53.18	35.46	74.00	54.00	- 18.54	AV
H	7428.070	H	47.45	32.22	8.57	56.02	40.79	74.00	54.00	- 13.21	AV

Remark：

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

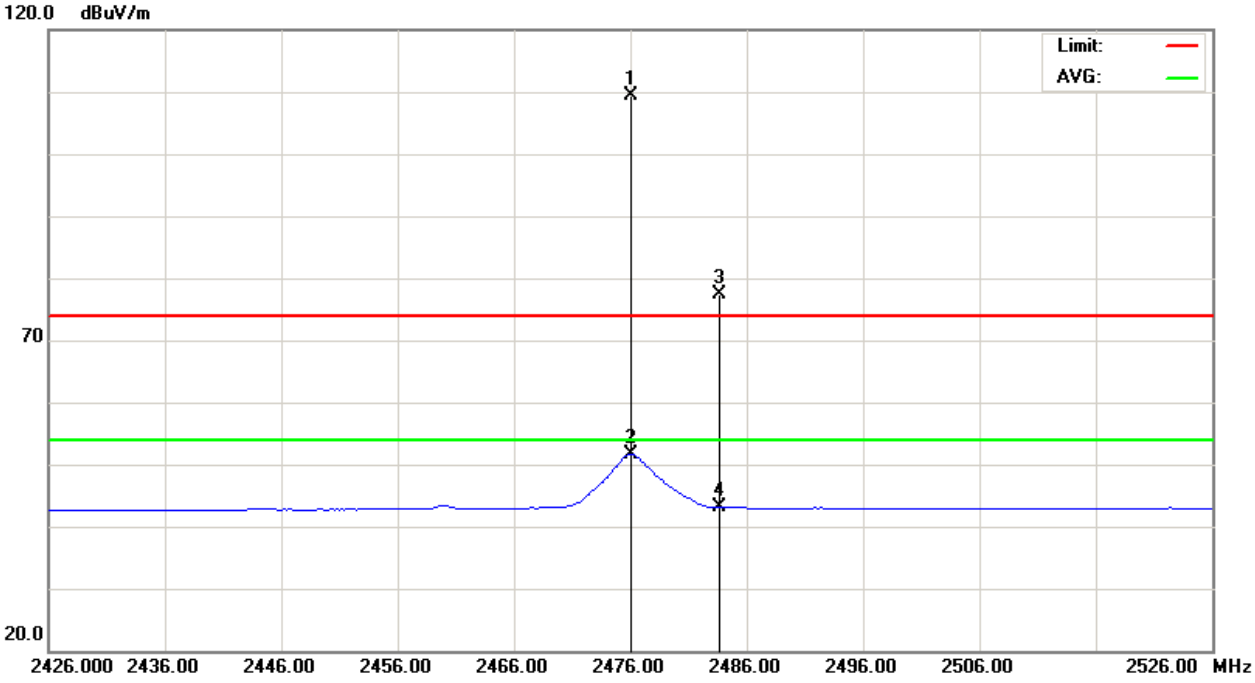
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

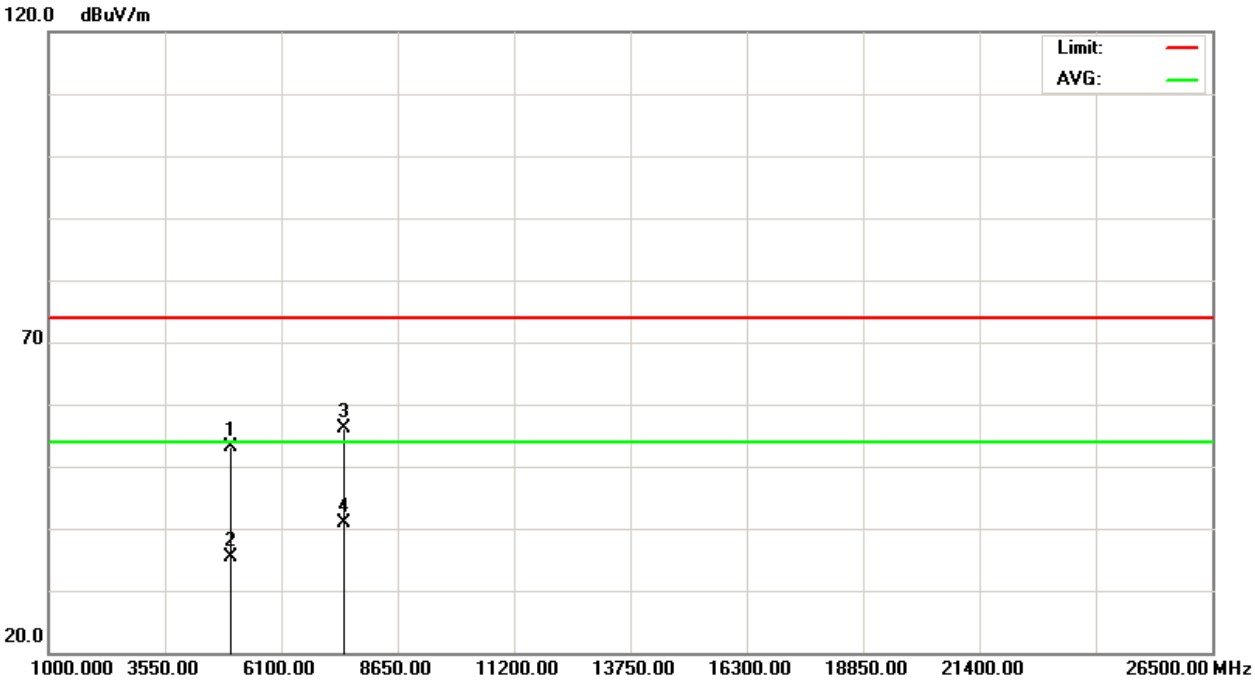
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis：X
2476MHz(Above 1000 MHz, Horizontal)





4.2.9 TEST RESULTS-RESTRICTED BANDS REQUIREMENTS

EUT：	Wireless Microphone	Model Name ：	MIC-20W
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	DC 3.7V	Orthogonal Axes:	X
Test Mode ：	2409MHz/ 2476MHz (Vertical)		
Note：	The emission of the carrier radiated field strength is measured for CH01/CH40 (Peak and AV) as following: 1. The transmitter was setup to transmit at the lowest channel (CH01). Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel (CH40). Then the field strength was measured at 2483.5-2500 MHz.		

Freq. (MHz)	Polarization H/V	Reading Level(dBuV) Peak	Reading Level(dBuV) AV	Correct Factor(dB)	Measurement(dBuV/m) Peak	Measurement(dBuV/m) AV	Limit(dBuV/m) Peak	Limit(dBuV/m) AV	Margin (dB)	Note
2390.000	V	37.06	11.50	30.89	67.95	42.39	74.00	54.00	- 6.05	Peak
2483.500	V	44.95	11.75	31.28	76.23	43.03	74.00	54.00	2.23	FAIL

Remark：

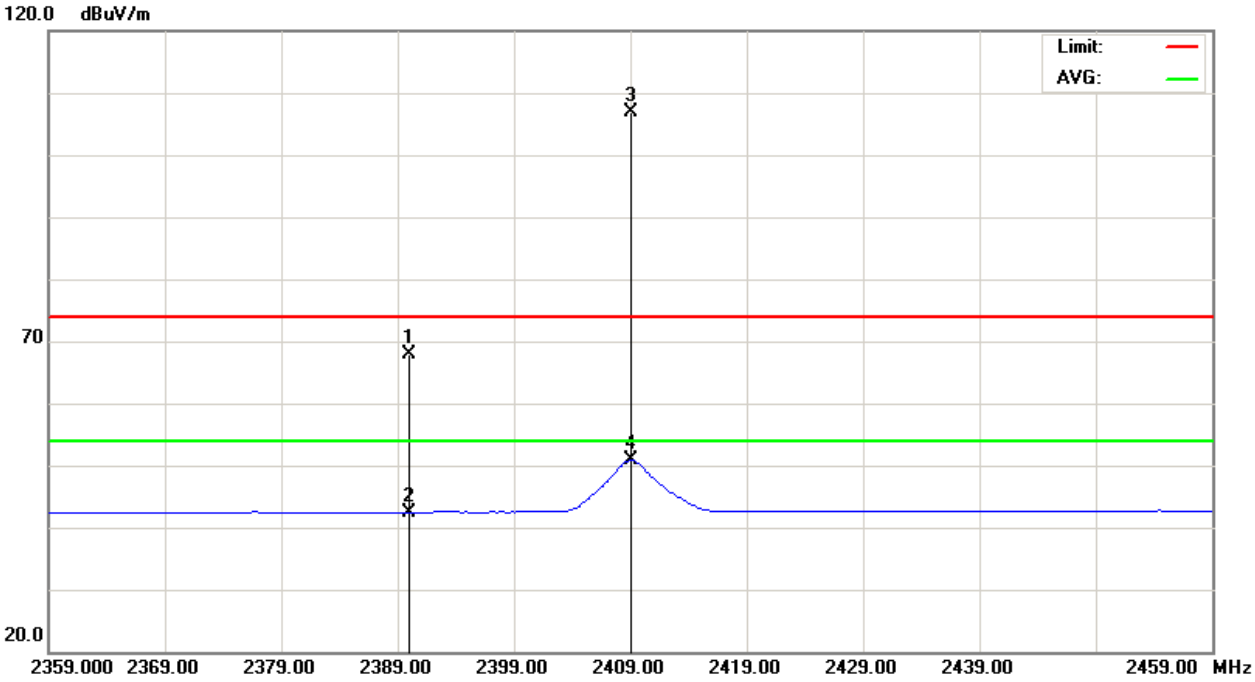
(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

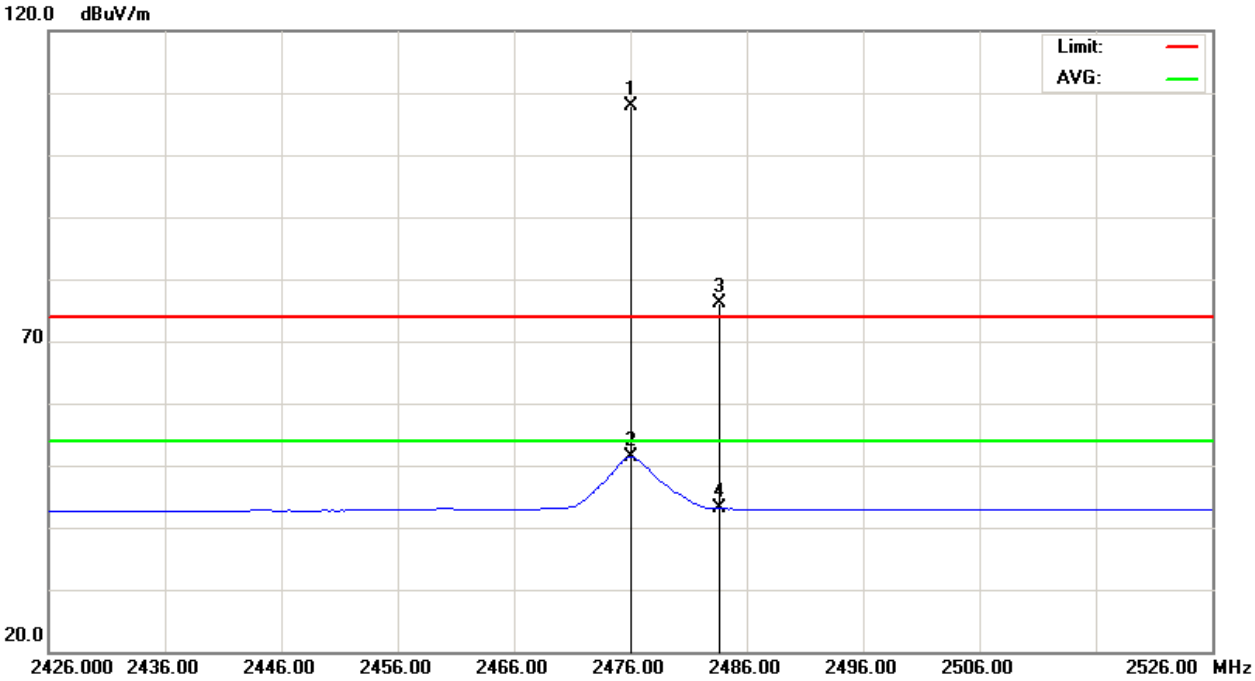
(3) EUT Orthogonal Axes：

"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

2409MHz (Restricted Bands Requirements, Vertical)



2476MHz (Restricted Bands Requirements, Horizontal)



EUT：	Wireless Microphone	Model Name ：	MIC-20W
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	DC 3.7V	Orthogonal Axes:	X
Test Mode ：	2409MHz/ 2476MHz (Horizontal)		
Note：	The emission of the carrier radiated field strength is measured for CH01/CH40 (Peak and AV) as following: 1. The transmitter was setup to transmit at the lowest channel (CH01). Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel (CH40). Then the field strength was measured at 2483.5-2500 MHz.		

Freq.	Polarization	Reading Level(dBuV)		Correct	Measurement(dBuV/m)		Limit(dBuV/m)		Margin	Note
(MHz)	H/V	Peak	AV	Factor(dB)	Peak	AV	Peak	AV	(dB)	
2390.000	H	40.59	11.53	30.89	71.48	42.42	74.00	54.00	- 2.52	Peak
2483.500	H	46.15	11.80	31.28	77.43	43.08	74.00	54.00	3.43	FAIL

Remark：

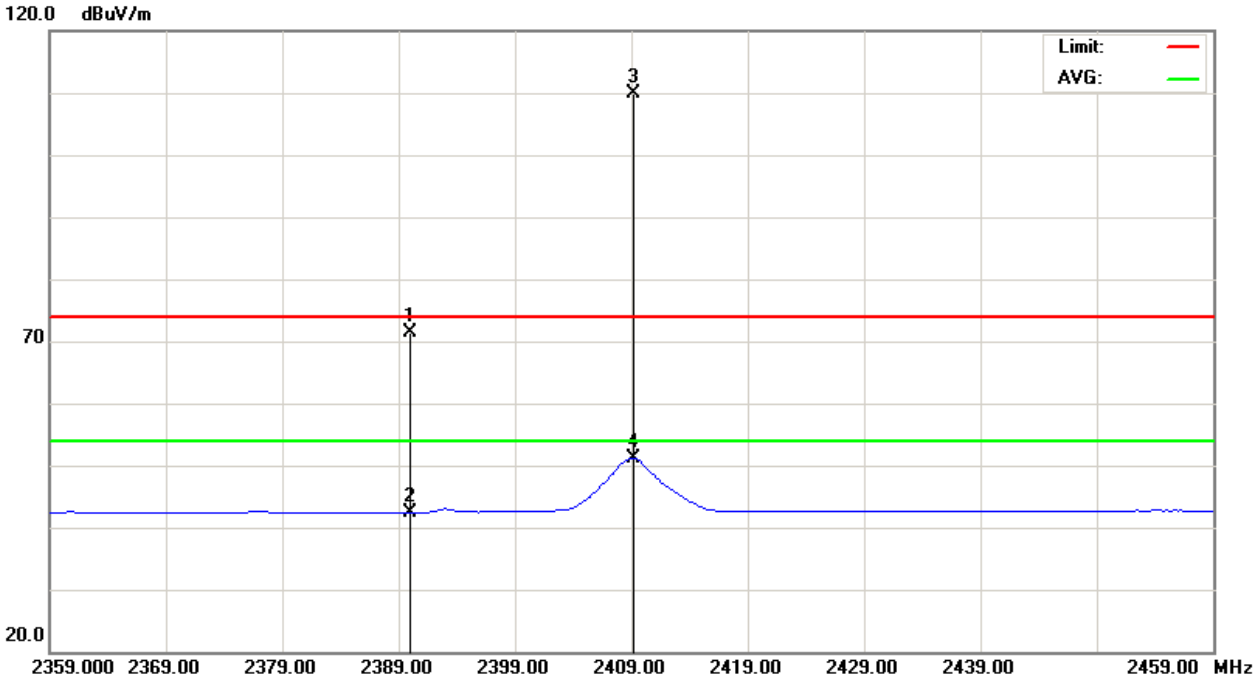
(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

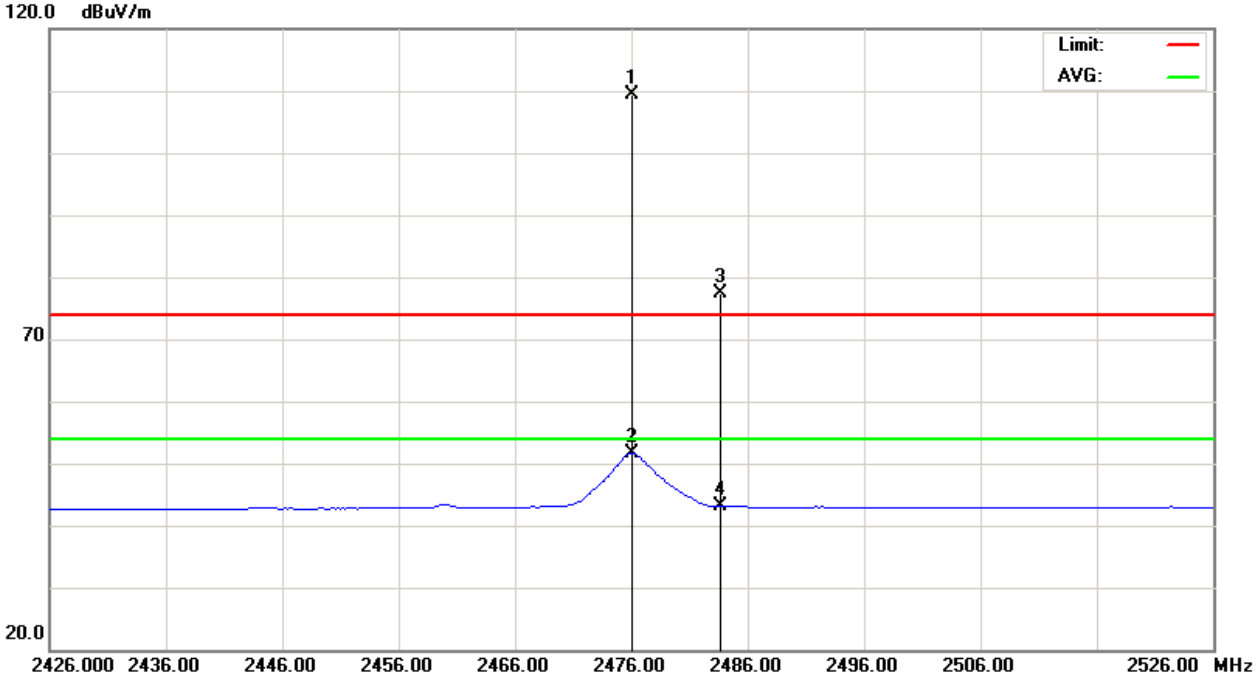
(3) EUT Orthogonal Axes：

"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

2409MHz (Restricted Bands Requirements, Horizontal)



2476MHz (Restricted Bands Requirements, Horizontal)



5. BANDWITH TEST

5.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart C			
Test Item	Limit	Frequency Range (MHz)	Result
Bandwidth	>= 500KHz (6dB bandwidth)	2400-2483.5	PASS

5.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Aug. 31, 2011

Remark: ” N/A” denotes No Model Name , Serial No. or No Calibration specified.

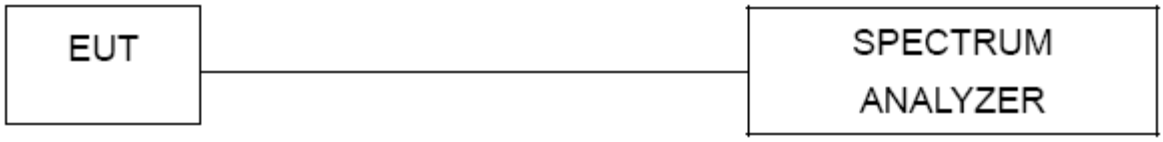
5.1.2 TEST PROCEDURE

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=100KHz, Sweep time = Auto.

5.1.3 DEVIATION FROM STANDARD

No deviation.

5.1.4 TEST SETUP



5.1.5 EUT OPERATION CONDITIONS

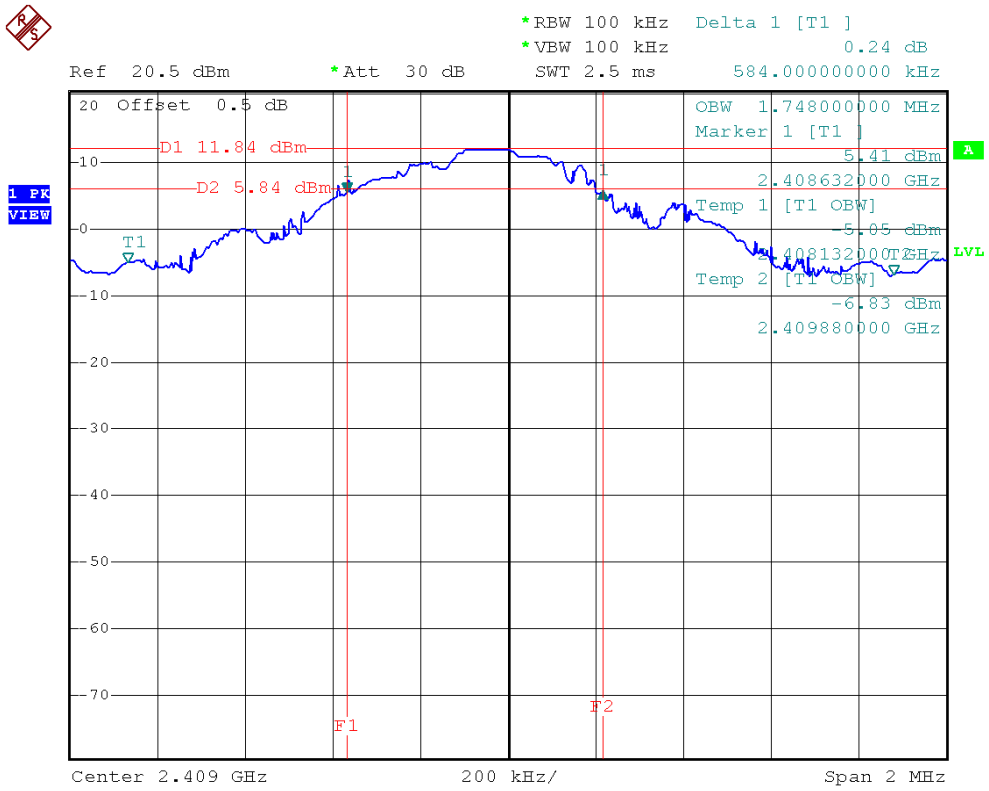
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

5.1.6 TEST RESULTS

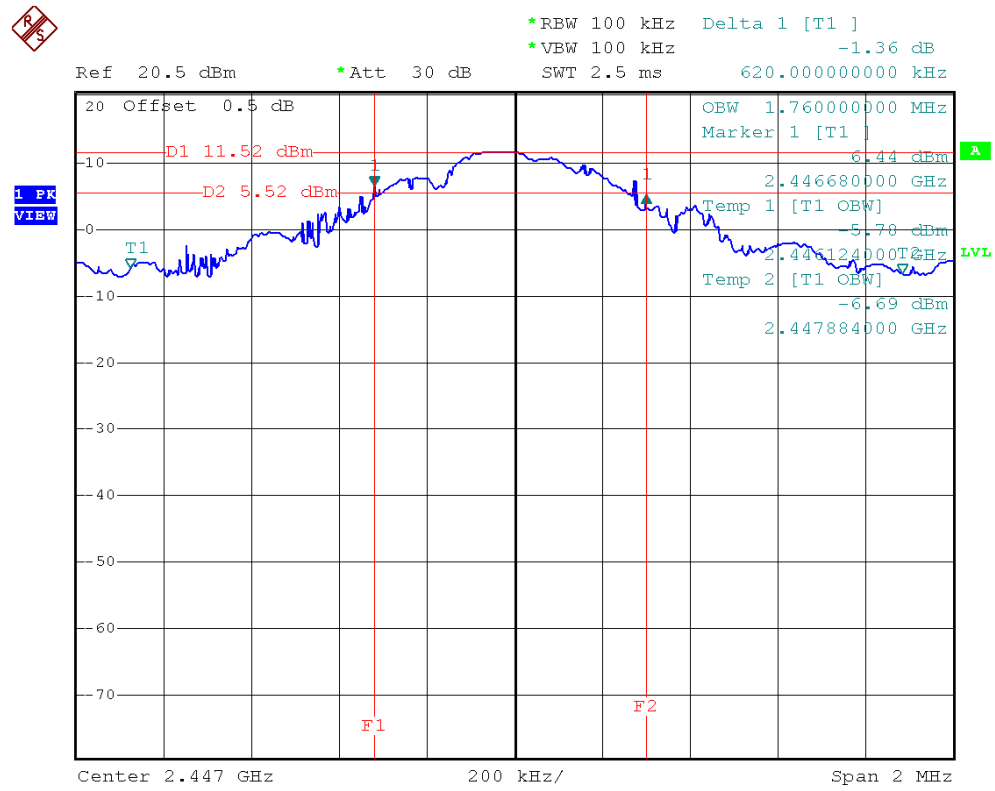
EUT：	Wireless Microphone	Model Name ：	MIC-20W
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	DC 3.7V		
Test Mode ：	2409MHz/ 2447MHz/ 2476MHz		

Test Channel	Frequency (MHz)	Bandwidth (MHz)	99% Occupied BW (MHz)	LIMIT (MHz)
CH01	2409	0.58	1.74	>=500KHz
CH20	2447	0.62	1.76	>=500KHz
CH40	2476	0.64	1.53	>=500KHz

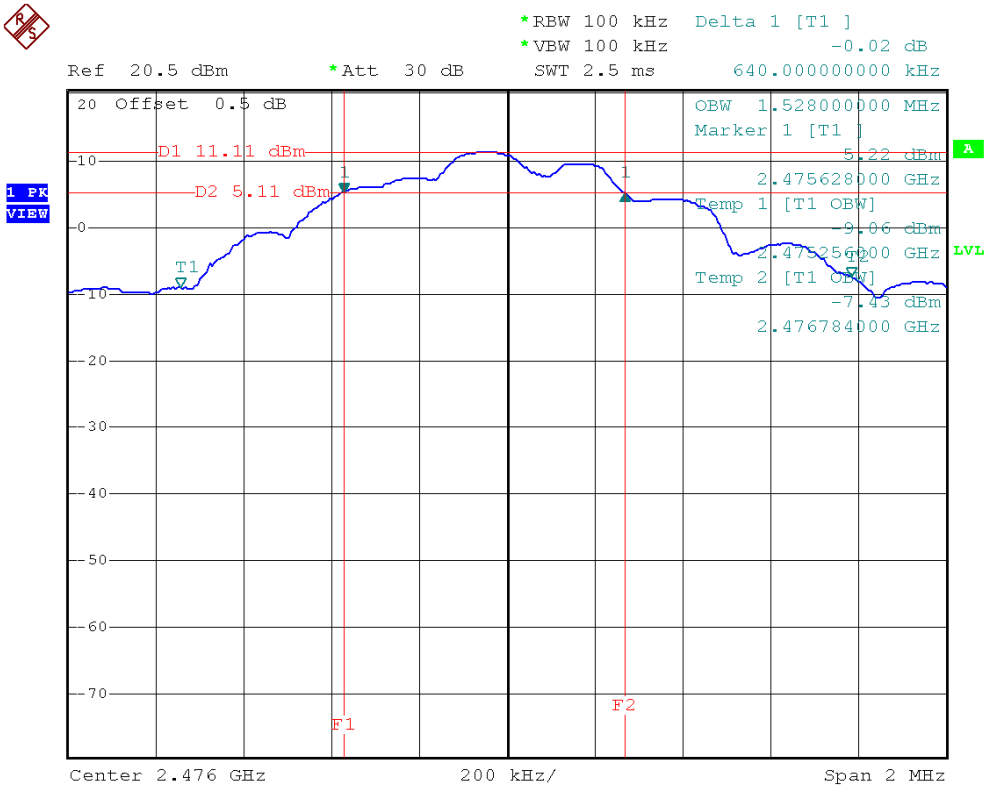
CH01



CH20


*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 ms
Delta 1 [T1]
-1.36 dB
620.000000000 kHz
Ref 20.5 dBm
*Att 30 dB
20 Offset 0.5 dB
D1 11.52 dBm
D2 5.52 dBm
OBW 1.760000000 MHz
Marker 1 [T1]
6.44 dBm
2.446680000 GHz
Temp 1 [T1 OBW]
-5.70 dBm
Temp 2 [T1 OBW]
-6.69 dBm
2.447884000 GHz
1 PK VIEW
A
LVL
T1
F1
F2
Center 2.447 GHz
200 kHz/
Span 2 MHz

CH40


*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 ms
Delta 1 [T1]
-0.02 dB
640.000000000 kHz
Ref 20.5 dBm
*Att 30 dB
20 Offset 0.5 dB
D1 11.11 dBm
D2 5.11 dBm
OBW 1.528000000 MHz
Marker 1 [T1]
5.22 dBm
2.475628000 GHz
Temp 1 [T1 OBW]
-9.06 dBm
Temp 2 [T1 OBW]
-7.43 dBm
2.476784000 GHz
1 PK VIEW
A
LVL
T1
F1
F2
Center 2.476 GHz
200 kHz/
Span 2 MHz

6. PEAK OUTPUT POWER TEST

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart C			
Test Item	Limit	Frequency Range (MHz)	Result
Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

6.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Power Meter	Anritsu	ML2487A	6K00004714	Feb. 17, 2012
2	Power Meter Sensor	Anritsu	MA2491A	34138	Feb. 17, 2012

Remark: ” N/A” denotes No Model Name , Serial No. or No Calibration specified.

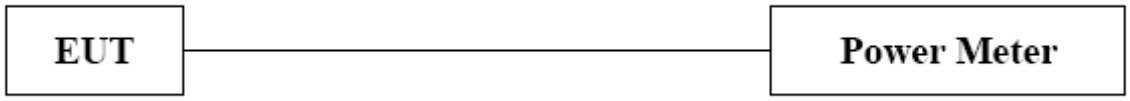
6.1.2 TEST PROCEDURE

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= 1MHz, VBW= 1MHz, Sweep time = Auto.

6.1.3 DEVIATION FROM STANDARD

No deviation.

6.1.4 TEST SETUP



6.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.6 TEST RESULTS

EUT：	Wireless Microphone	Model Name ：	MIC-20W
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	DC 3.7V		
Test Mode ：	2409MHz/ 2447MHz/ 2476MHz		

Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH01	2409	13.12	30	1
CH20	2447	12.55	30	1
CH40	2476	12.32	30	1

7. ANTENNA CONDUCTED SPURIOUS EMISSION

7.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart C			
Test Item	Limit	Frequency Range (MHz)	Result
Antenna conducted Spurious Emission	20dB less than the peak value of fundamental frequency	30-25000	PASS

7.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Aug. 31, 2011

Remark: ” N/A” denotes No Model Name , Serial No. or No Calibration specified.

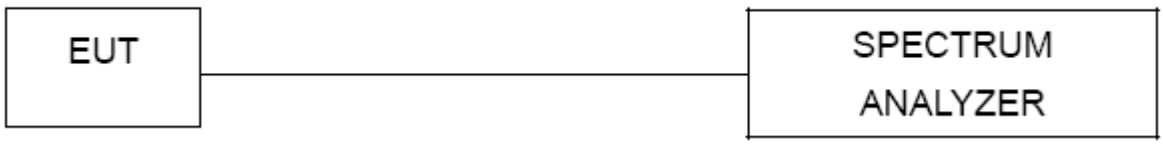
7.1.2 TEST PROCEDURE

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=100KHz, Sweep time = Auto.

7.1.3 DEVIATION FROM STANDARD

No deviation.

7.1.4 TEST SETUP



7.1.5 EUT OPERATION CONDITIONS

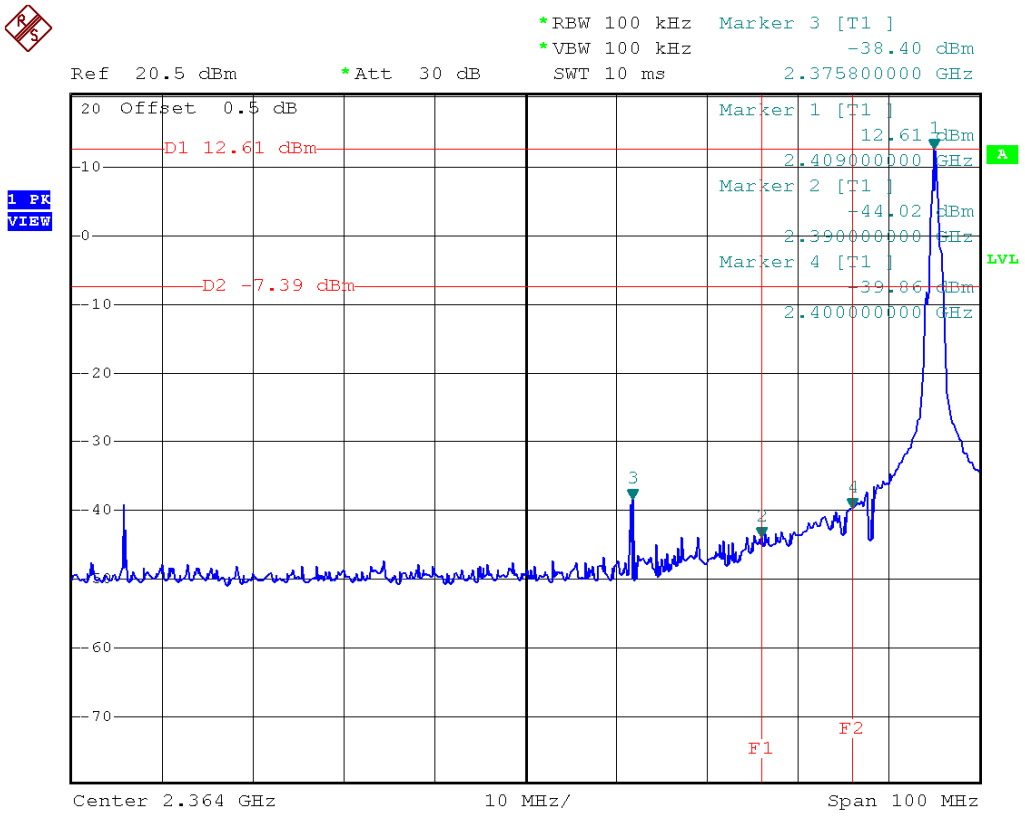
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

7.1.6 TEST RESULTS

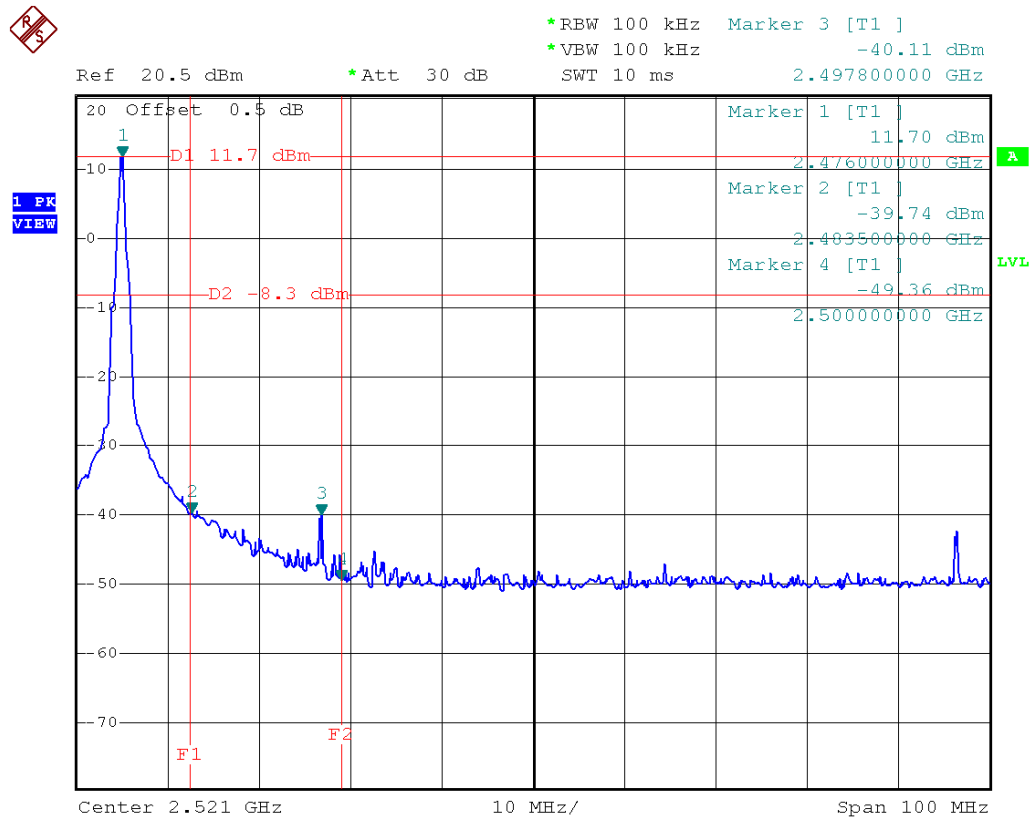
EUT：	Wireless Microphone	Model Name ：	MIC-20W
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	DC 3.7V		
Test Mode ：	2409MHz, 2476MHz		

Channel of Worst Data: CH1,CH40			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2375.8	-38.40	2497.8	-40.11
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest lever of the desired power.			

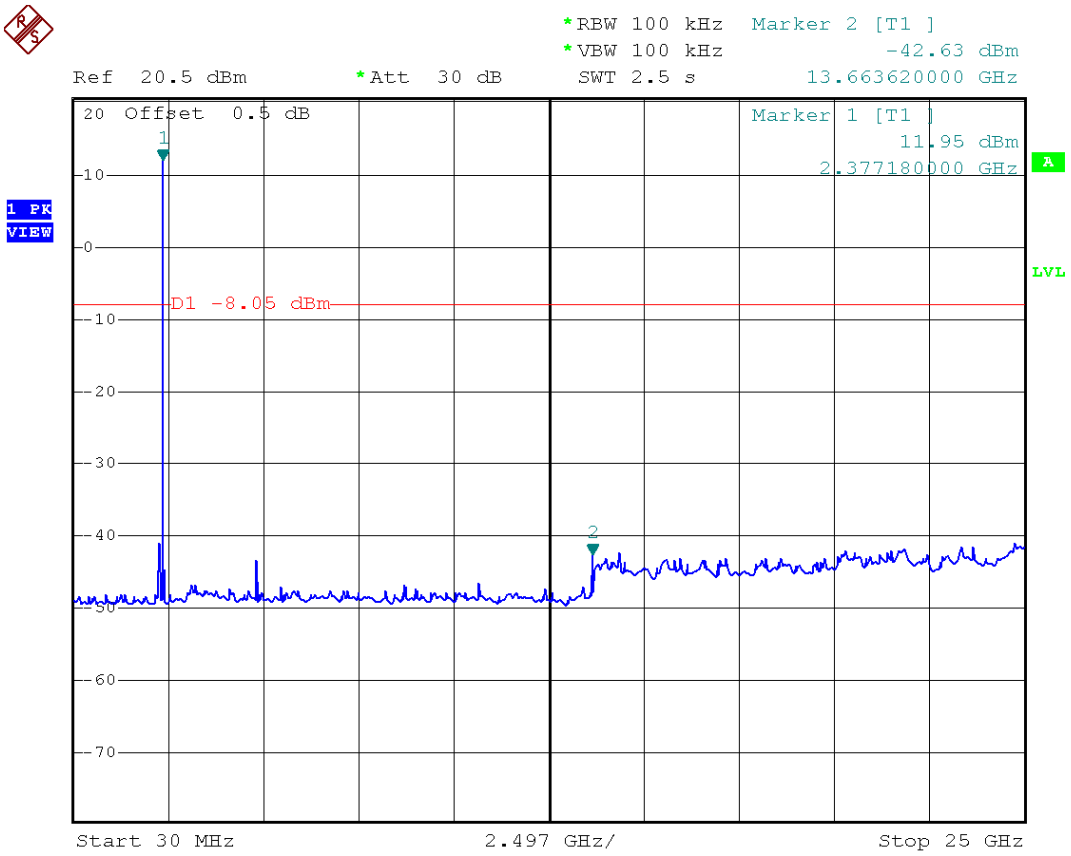
CH01


*RBW 100 kHz
*VBW 100 kHz
Ref 20.5 dBm
*Att 30 dB
SWT 10 ms
Marker 3 [T1]
-38.40 dBm
2.375800000 GHz
20 Offset 0.5 dB
D1 12.61 dBm
D2 -7.39 dBm
Marker 1 [T1]
12.61 dBm
2.409000000 GHz
Marker 2 [T1]
-44.02 dBm
2.390000000 GHz
Marker 4 [T1]
-39.86 dBm
2.400000000 GHz
1 PK VIEW
A
LVL
F1
F2
Center 2.364 GHz
10 MHz/
Span 100 MHz

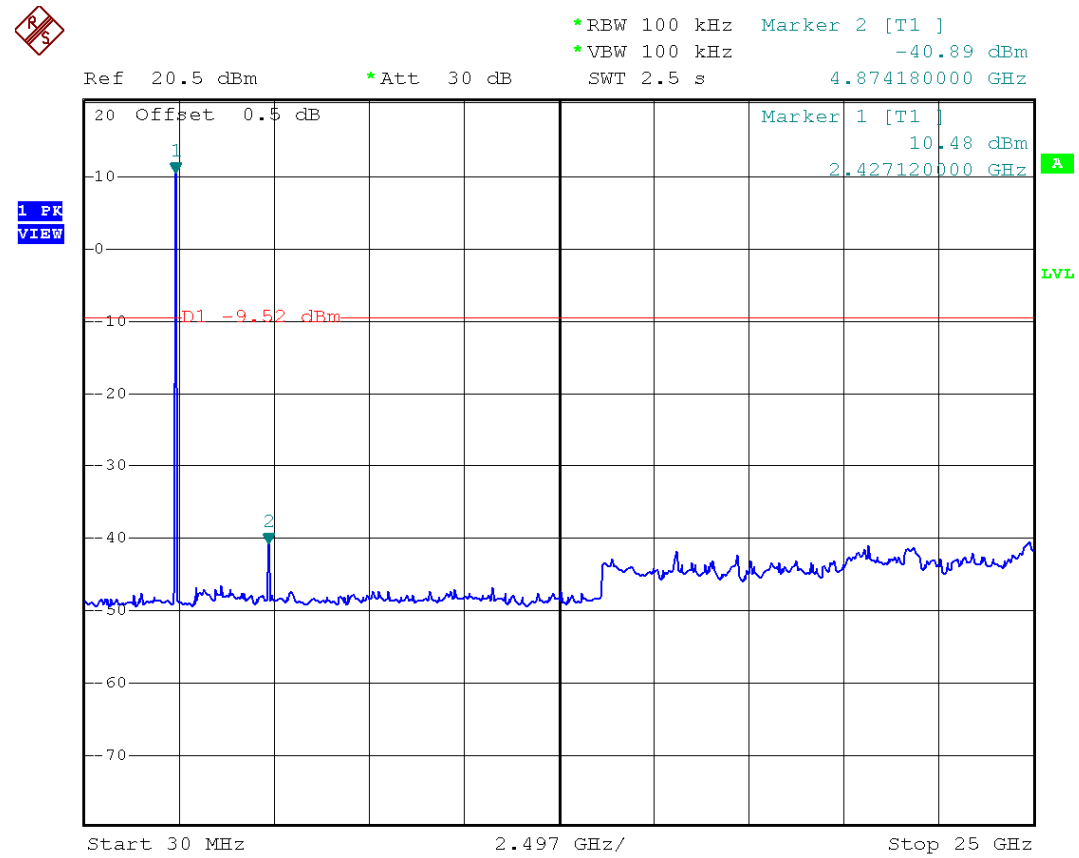
CH40


*RBW 100 kHz
*VBW 100 kHz
Ref 20.5 dBm
*Att 30 dB
SWT 10 ms
Marker 3 [T1]
-40.11 dBm
2.497800000 GHz
20 Offset 0.5 dB
D1 11.7 dBm
D2 -8.3 dBm
Marker 1 [T1]
11.70 dBm
2.476000000 GHz
Marker 2 [T1]
-39.74 dBm
2.403500000 GHz
Marker 4 [T1]
-49.36 dBm
2.500000000 GHz
1 PK VIEW
A
LVL
F1
F2
Center 2.521 GHz
10 MHz/
Span 100 MHz

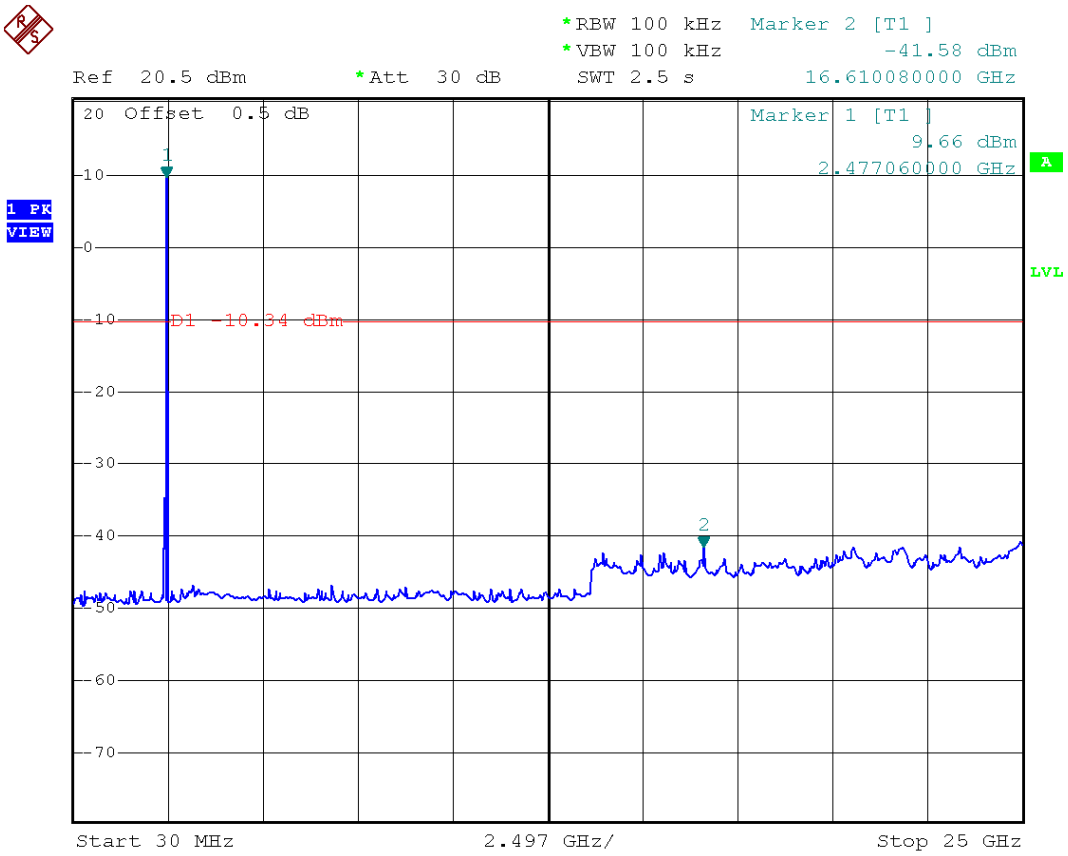
CH01


*RBW 100 kHz
*VBW 100 kHz
Marker 2 [T1]
-42.63 dBm
13.663620000 GHz
Ref 20.5 dBm
*Att 30 dB
SWT 2.5 s
20 Offset 0.5 dB
Marker 1 [T1]
11.95 dBm
2.377180000 GHz
1 PK
VIEW
A
LVL
D1 -8.05 dBm
10
0
-10
-20
-30
-40
-50
-60
-70
Start 30 MHz
2.497 GHz/
Stop 25 GHz

CH20


*RBW 100 kHz
*VBW 100 kHz
Marker 2 [T1]
-40.89 dBm
4.874180000 GHz
Ref 20.5 dBm
*Att 30 dB
SWT 2.5 s
20 Offset 0.5 dB
Marker 1 [T1]
10.48 dBm
2.427120000 GHz
1 PK
VIEW
A
LVL
D1 -9.52 dBm
10
0
-10
-20
-30
-40
-50
-60
-70
Start 30 MHz
2.497 GHz/
Stop 25 GHz

CH40


*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 2 [T1]
-41.58 dBm
16.610080000 GHz
Ref 20.5 dBm
*Att 30 dB
20 Offset 0.5 dB
Marker 1 [T1]
9.66 dBm
2.477060000 GHz
1 PK
VIEW
A
LVL
D1 -10.34 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz

8. POWER SPECTRAL DENSITY TEST

8.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart C			
Test Item	Limit	Frequency Range (MHz)	Result
Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

8.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Aug. 31, 2011

Remark: ” N/A” denotes No Model Name, Serial No. or No Calibration specified.

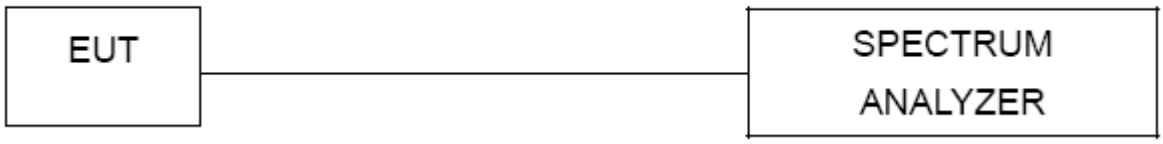
8.1.2 TEST PROCEDURE

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=3KHz, VBW=30KHz, Sweep time = 500s.

8.1.3 DEVIATION FROM STANDARD

No deviation.

8.1.4 TEST SETUP



8.1.5 EUT OPERATION CONDITIONS

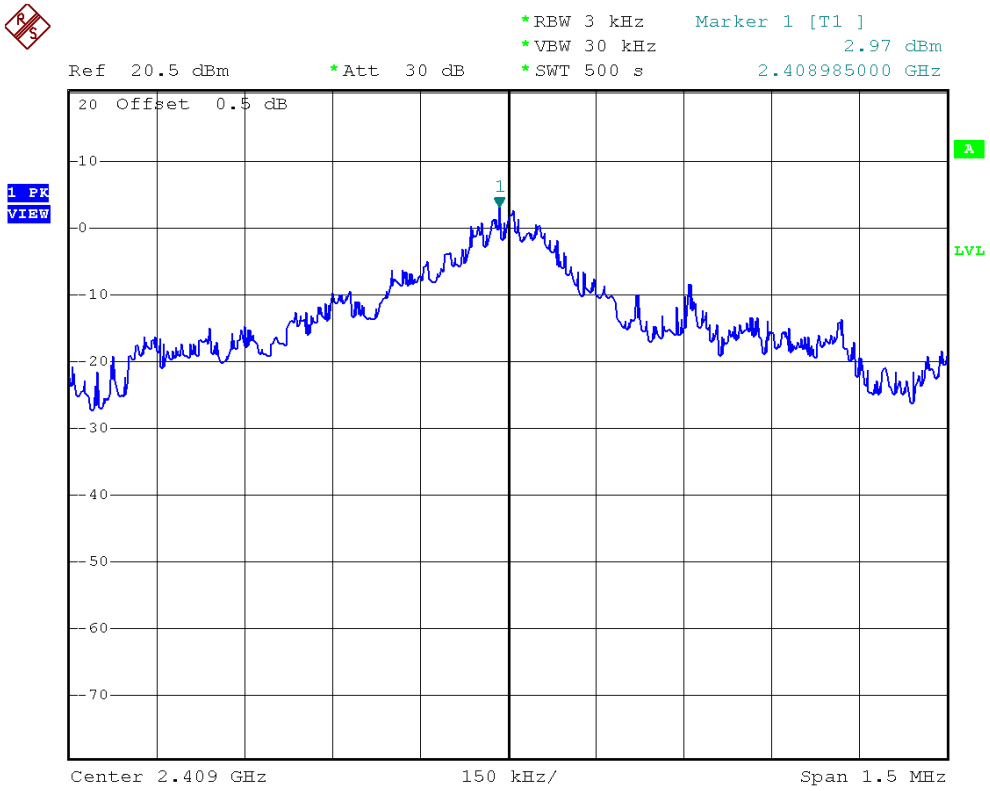
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

8.1.6 TEST RESULTS

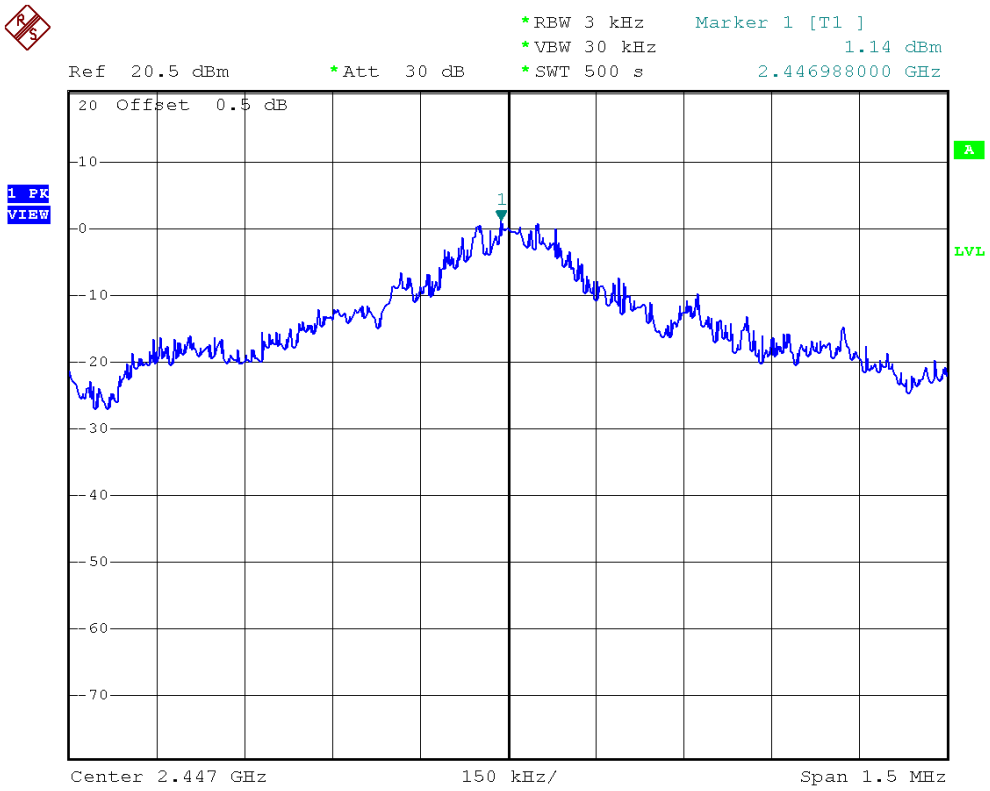
EUT：	Wireless Microphone	Model Name ：	MIC-20W
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	DC 3.7V		
Test Mode ：	2409MHz/ 2447MHz/ 2476MHz		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH01	2409	2.97	8
CH20	2447	1.14	8
CH40	2476	3.31	8

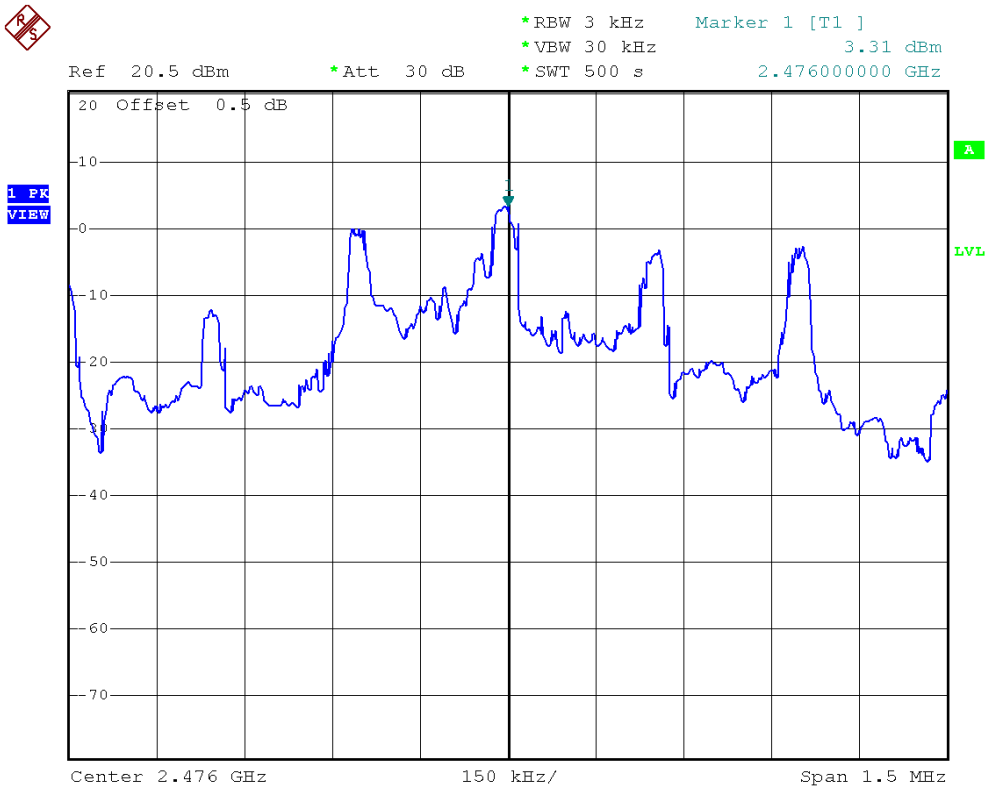
CH01



CH20


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
1.14 dBm
Ref 20.5 dBm
*Att 30 dB
*SWT 500 s
2.446988000 GHz
20 Offset 0.5 dB
1 PK VIEW
A
LVL
Center 2.447 GHz
150 kHz/
Span 1.5 MHz

CH40


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
3.31 dBm
Ref 20.5 dBm
*Att 30 dB
*SWT 500 s
2.476000000 GHz
20 Offset 0.5 dB
1 PK VIEW
A
LVL
Center 2.476 GHz
150 kHz/
Span 1.5 MHz