

# RF Test Report

## Wireless microphones

**Report No.** : FCCCBNW-WAY-P24040289R1  
**Customer** : TJ Media Co., Ltd.  
**Address** : 640-8, Deungchon-Dong, Gangseo-Gu, Seoul South Korea 157-030  
**Use of Report** : Certification  
**Model Name** : TKR-372MP PRO PLUS  
**FCC ID** : TO8-TKR-372MPPRO  
**Date of Test** : 2024.04.30 to 2024.06.05  
**Test Method Used** : FCC 47 CFR PART 15 Subpart C (Section §15.236)  
KDB206256 D01v02r01,  
ANSI C63.10-2013  
**Testing Environment** : Refer to the Test Condition

**Test Result** :  Pass  Fail

**ISSUED BY:** BV CPS ADT Korea Ltd., EMC/RF Laboratory

**ADDRESS:** Innoplex No.2 106, Sinwon-ro 306, Yeongtong-gu, Suwon-si, Gyeonggi-do, Korea 16675

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**2024. 06. 28**

**BV CPS ADT Korea Ltd.**

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**BUREAU**  
**VERITAS**

## RELEASE CONTROL RECORD

REPORT NO.	REASON FOR CHANGE	DATE ISSUED
FCCCBNW-WAY-P24040289	Original release	2024.06.17
FCCCBNW-WAY-P24040289R1	Update the date of test & test result	2024.06.28

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## 1 Summary of Test Results

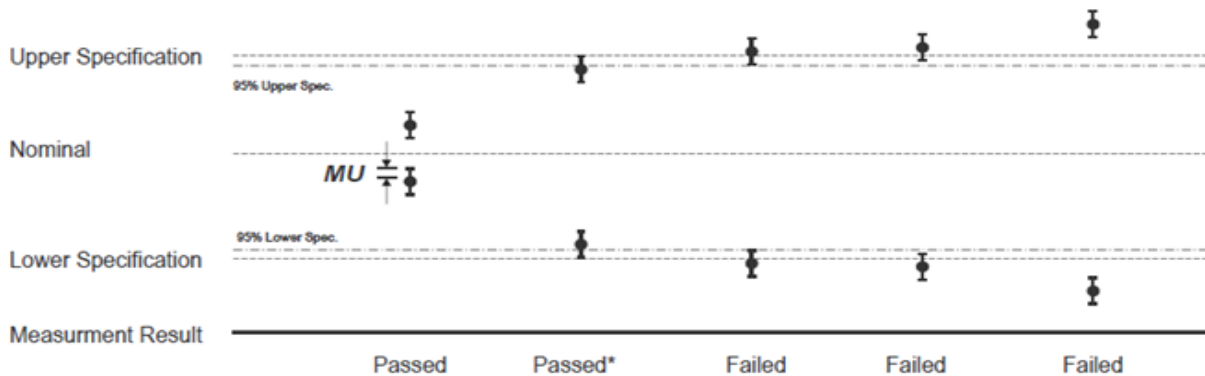
The EUT has been tested according to the following specifications

Applied Standard : FCC Part 15, Subpart C 15.236					
FCC Part Section(s)	Test Description	Limit	Test Condition	Test Result	Reference
15.236(d)	Maximum Radiated Power	(1) In the bands allocated and assigned for broadcast television and in the 600 MHz service band: 50 mW EIRP	Conducted	PASS	Section 3.2
15.236(f)(2)	Occupied Bandwidth	< 200 kHz		PASS	Section 3.3
15.236(g)	Necessary Bandwidth	ETSI EN 300 422-1 V1.4.2 (2011-08) § 8.3.1.2		PASS	Section 3.4
15.247(f)(3)	Frequency Stability	< ±0.005%		PASS	Section 3.5
15.236(g)	Radiated Spurious Emission	ETSI EN 300 422-1 V1.4.2 (2011-08) § 8.4.3	Radiated	PASS	Section 3.6
15.207	AC Conducted Emissions (150 kHz – 30 MHz)	< FCC 15.207 limits	AC Line Conducted	NA <sup>Note3)</sup>	Section 3.7
15.203	Antenna Requirement	FCC 15.203	-	PASS	Section 3.1

### NOTES

- 1) The general test methods used to test on this devices are ANSI C63.10 / ETSI EN 300 422-1.
- 2) Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- 3) Devices which only employ battery power for operation.

## 1.1 Decision Rules for Statement of Conformity



**QUA-52 Decision Rule(QA Document) was applied.**

**Step 1) :** Reference Check, Daily Check, Peripheral device Check

**Step 2) :** Re-test Procedure (Repeat the test maximum 3 times, Different Test Engineer)

- 1) If the original test results are subject to retesting and the judgement is unclear, the retest is carried out.
- 2) If the result of the first retest is the same as the initial test, the judgement is made based on the value.
- 3) If the result of the first retest differ from the results of the initial test, the second re-test is carried out.
- 4) After completion of the second retest, the average of the three test results is determined as the final result. However, if the deviation of the three test values is more than 5 % of the reference value, the technical manager should review the reproducibility of the test from the beginning.

## 1.2 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2

Measurement Items	Frequency Range	Expanded Uncertainty $U = kUc (k = 2)$
Radiated Spurious Emissions	9 kHz – 30 MHz	2.00
	30 MHz – 1 GHz	4.22
	1 GHz – 18 GHz	5.40
	18 GHz – 26.5 GHz	5.08
Measurement Items		Expanded Uncertainty $U = kUc (k = 2)$
Conducted	Maximum Output Power	1.20
	Spurious Emissions	1.36

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of  $k = 2$ .



## 2 General Information

### 2.1 General Description of EUT

<b>Equipment Class</b>	Wireless Microphone (DWM)
<b>Product name</b>	MIC Karaoke
<b>FCC ID</b>	TO8-TKR-372MPPRO
<b>Model</b>	TKR-372MP PRO PLUS
<b>Additional model name</b>	-
<b>Power Supply</b>	DC 3.0 V (Battery 1.5 V x 2)
<b>Modulation Type</b>	FM
<b>Operating Frequency</b>	502.0 MHz to 521.5 MHz
<b>Output Power</b>	9.33 dBm
<b>Antenna Type</b>	Helical Antenna
<b>Antenna Gain</b>	502.0 MHz : 1.234 dBi 511.1 MHz : 0.731 dBi 521.5 MHz : 2.950 dBi
<b>H/W Version</b>	Ver 1.0
<b>S/W Version</b>	Ver 12

**NOTE 1:** For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

**NOTE 2:** For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

### 2.2 Tested sample and Tested companion device information

Type	Model	Note
Test sample (Conducted)	TKR-372MP PRO PLUS	S/N: GY2004-00063
Test sample (Radiated)	TKR-372MP PRO PLUS	S/N: GY2004-00027

## 2.3 Description of Test Mode

The EUT has been tested with all modes of operating conditions to determine the worst case emission characteristics.

Test Mode		Tested Frequency (MHz)		
TM 1	Wireless Microphone	502.0	511.1	521.5

## 2.4 Tested Frequency Channel Information

Channel	Tested Frequency (MHz)	
	RF1 Frequency	RF2 Frequency
1	502.0	512.4
2	503.3	513.7
3	504.6	515.0
4	505.9	516.3
5	507.2	517.6
6	508.5	518.9
7	509.8	520.2
8	511.1	521.5

## 2.5 INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards.

## 2.6 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

## 2.7 General Description of Applied Standards

Generally the tests were performed according to the specifications of the standard, it must comply with the requirements of the following standards.

**FCC CFR 47 Part 15, Subpart C (§15.236)**  
**KDB 206256 D01 Wireless Microphones v02r01**  
**ANSI C63.10-2013**

All test items in this test report have been performed and recorded as per the above standards.





## 2.8 Test Equipment

Test Equipment is traceable to the National Institute of Standards and Technology (NIST). Measurement antenna used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date
Signal Analyzer	Keysight Technologies	N9030B	MY57142476	2024-11-22
Signal Analyzer	Keysight Technologies	N9020B	MY62150135	2025-05-22
Signal Analyzer	R&S	FSV30	103017	2024-11-22
Power Sensor	R&S	NRP-Z211	102377	2024-11-22
Power Meter	R&S	NRX	103577	2024-11-22
Function Generator	Agilent	33220A	MY44024913	2025-05-22
Temperature & Humidity Chamber	Espec	PL-2J	15015910	2025-05-21
DC Power Supply	Agilent	6674A	MY41003717	2024-11-22
DC Power Supply	Keysight	U8002A	MY59020015	2024-11-22
True-RMS Digital Multimeter	Fluke	177	43240434	2025-05-21
Trilog Antenna (with 6 dB ATT.)	Schwarzbeck	VULB 9163	01100	2025-02-08
Horn Antenna	TA Engineering	TA-DRG118	TAEDRG20220407	2024-07-25
Horn Antenna	TA Engineering	TAE1018-24-27A	01	2024-12-06
Horn Antenna	Q-PAR	QWH-DL-2-18-S-HG-R	27679	2024-07-27
Horn Antenna	TA Engineering	WR42-23A	220412	2024-07-26
Horn Antenna	TA Engineering	WR28-20A	220412	2024-07-26
Amplifier	Mini Circuits	ZFL-1000H+	2232002150	2025-05-25
Amplifier	B&Z Technologies	BZRU-01001800-232054-302323	27457-27462	2025-05-25
Band Reject Filter	MICRO-TRONICS	BRM50702	G574	2025-05-22
High Pass Filter	Wt Microwave	WT-A1699-HS	WT190313-6-5	2024-11-22
Attenuator	Mini-Circuits	VAT-10W2+	1622	2024-11-22
RSE Chamber	Daihan Sheild	-	22-03-001	-
Signal Generator	R&S	SMB100A	MY41006053	2025-05-21
Humidity Barometer TEMP Meter	LUTRON	MHB-382SD	AJ.38459	2024-11-22

## 3 Test Results

### 3.1 Antenna Requirement

**Except from §15.203 of the FCC Rules/Regulations:**

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of the section.

- The antenna(s) of the EUT are Permanently attached.
- There are no provisions for connection to an external antenna.

**Result**

The EUT complies with the requirement of §15.203

## 3.2 Maximum Radiated Power

### 3.2.1 Regulation

§15.236(d) :

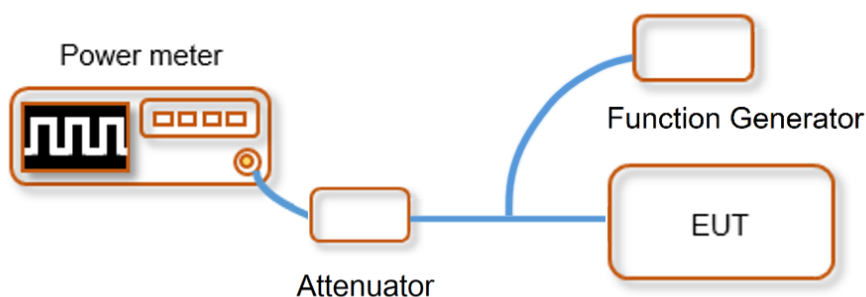
(1) In the bands allocated and assigned for broadcast television and in the 600 MHz service band: **50 mW EIRP**

### 3.2.2 Test Procedure

Method AVGPM-G is a measurement using a gated RF average power meter.

Alternatively, measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Because the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

### 3.2.3 Test Setup



### 3.2.4 Test Result

[Test Data of Maximum Radiated Power]

Limit: 50 mW EIRP

Test Mode	Tested Frequency [MHz]	Peak Output Power [dBm]	Antenna Gain [dBi]	EIRP [dBm]	EIRP [mW]
TM 1	502.0	9.330	1.234	10.56	11.39
	511.1	9.290	0.731	10.02	10.05
	521.5	9.210	2.950	12.16	16.44

Note: EIRP = Peak Output Power + Antenna Gain

## 3.3 Occupied Bandwidth

### 3.3.1 Regulation

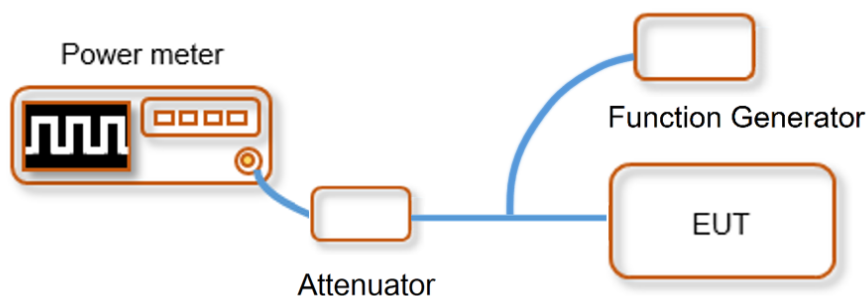
§15.236(f)(2) : One or more adjacent 25 kHz segments within the assignable frequencies may be combined to form a channel whose maximum bandwidth shall not exceed 200 kHz. The operating bandwidth shall **not exceed 200 kHz**.

### 3.3.2 Test Procedure

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

- a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
- c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than  $[10 \log (OBW/RBW)]$  below the reference level. Specific guidance is given in 4.1.5.2.
- d) Step a) through step c) might require iteration to adjust within the specified range.
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
- h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

### 3.3.3 Test Setup



### 3.3.4 Test Result

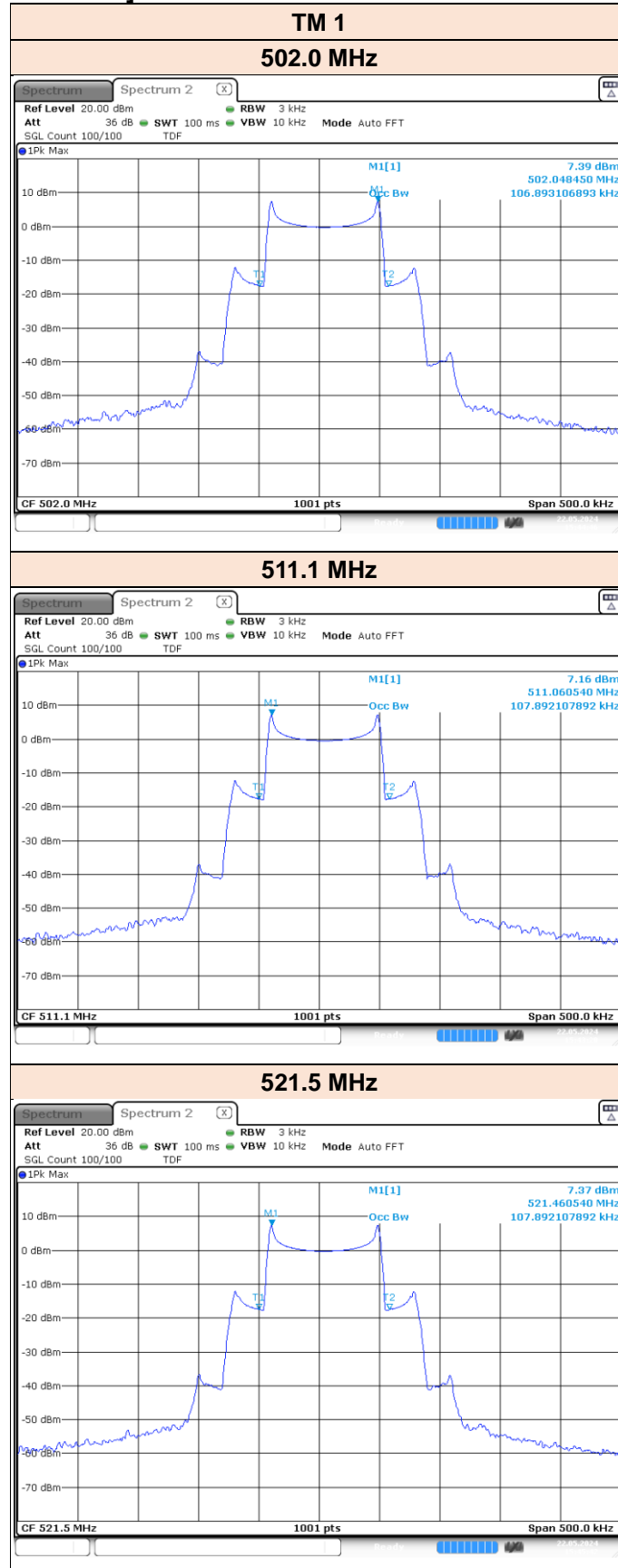
[Test Data of Occupied Bandwidth]

Limit: 200 kHz

Test Mode	Tested Frequency [MHz]	-26dB Bandwidth [kHz]	Occupied Bandwidth [kHz]
TM 1	502.0	155.570	106.893
	511.1	156.300	107.892
	521.5	156.300	107.892



[Test Plot of Occupied Bandwidth]



## 3.4 Necessary Bandwidth

### 3.4.1 Regulation

§15.236(g) : Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in § 8.3 of ETSI EN 300 422-1 V1.4.2 (2011-08), Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range; Part 1: Technical characteristics and methods of measurement. Emissions outside of this band shall comply with the limits specified in section 8.4 of ETSI EN 300 422-1 V1.4.2 (2011-08).

### 3.4.2 Test Procedure

#### Necessary Bandwidth (BN) for Analogue Systems

The arrangement of test equipment as shown in figure B.1 shall be used. Note that the noise meter conforms to (quasi peak) without weighting filter (flat).

With the Low Frequency (LF) audio signal generator set to 500 Hz, the audio input level to the EUT shall be adjusted to 8 dB below the limiting threshold (-8 dB (lim)) as declared by the manufacturer.

The corresponding audio output level from the demodulator shall be measured and recorded.

The input impedance of the noise meter shall be sufficiently high to avoid more than 0,1 dB change in input level when the meter is switched between input and output.

The audio input level shall be increased by 20 dB, i.e. to +12 dB (lim), and the corresponding change in output level shall be measured.

It shall be checked that the audio output level has increased by  $\leq 10$  dB.

If this condition is not met, the initial audio input level shall be increased from -8 dB (lim) in 1 dB steps until the above condition is fulfilled, and the input level recorded in the test report. This level replaces the value derived from the manufacturer's declaration and is defined as -8 dB (lim).

Measure the input level at the transmitter required to give +12 dB (lim).

The LF generator shall be replaced with the weighted noise source to ITU-R Recommendation BS.559-2 [1], band-limited to 15 kHz as described in IEC 60244 -13 [2], and the level shall be adjusted such that the measured input to the transmitter corresponds to +12 dB (lim).

If the transmitter incorporates any ancillary coding or signalling channels (e.g. pilot-tones), these shall be enabled prior to any spectral measurements.

If the transmitter incorporates more than one audio input, e.g. stereo systems, the second and subsequent channels shall be simultaneously driven from the same noise source, attenuated to a level of -6 dB (lim).

The transmitter RF output spectrum shall be measured, using a spectrum analyser with the following settings:

- centre frequency:	fc: Transmitter (Tx) nominal frequency;
- dispersion (Span):	fc - 1 MHz to fc + 1 MHz;
- Resolution BandWidth (RBW):	1 kHz;
- Video BandWidth (VBW):	1 kHz;
- detector:	Peak hold.



## Necessary Bandwidth (BN) for Digital Systems

NOTE 1: This parameter also includes the limits for spectral components within the out-of-band region. Principal Spectrum Mask measuring method for digital transmitters:

- Spectrum mask below 1 GHz, see figure 4, for the spectrum mask above 1 GHz, see figure 5.

The transmitter shall be modulated with the test signals defined in clause 7.1.2. In any case the mask shall not be exceeded.

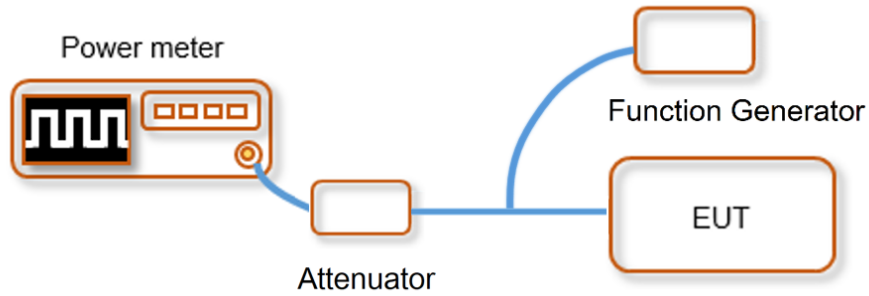
- Step 1: Measure the "Carrier Power" with the spectrum analyzer setup:
  - Center Frequency =  $f_c$
  - Span = Zero span
  - Detector = RMS
  - Trace Mode = Average
  - RBW&VBW =  $5 \times B$
  - Sweep time  $\geq 2$  s
- Step 2: Measure the "Maximum Relative Level (dBc) at Specified Carrier Offsets" with the following spectrum analyzer setup:
  - Center Frequency =  $f_c$
  - Span  $\geq 5 \times B$
  - Detector = RMS
  - Trace Mode = Peak Hold
  - RBW&VBW = 1 kHz
  - Sweep time  $\geq 2$  s
- Step 3: Measure the "transmitter wide band noise floor":

The measurement of transmitter broad band noise floor shall be carried out according to clause 8.3.1.1.

  - Start Frequency =  $f_c + 1,75B$  and  $f_c - 1$  MHz below 1 GHz, Start Frequency =  $f_c + B$  and  $f_c - 1$  MHz above 1 GHz.
  - Stop Frequency =  $f_c + 1$  MHz and  $f_c - 1,75 B$  below 1 GHz, Stop Frequency =  $f_c + 1$  MHz and  $f_c - B$  above 1 GHz.
  - Detector = RMS
  - Trace Mode = Average
  - RBW&VBW = 1 kHz
  - Sweep time  $\geq 2$  s

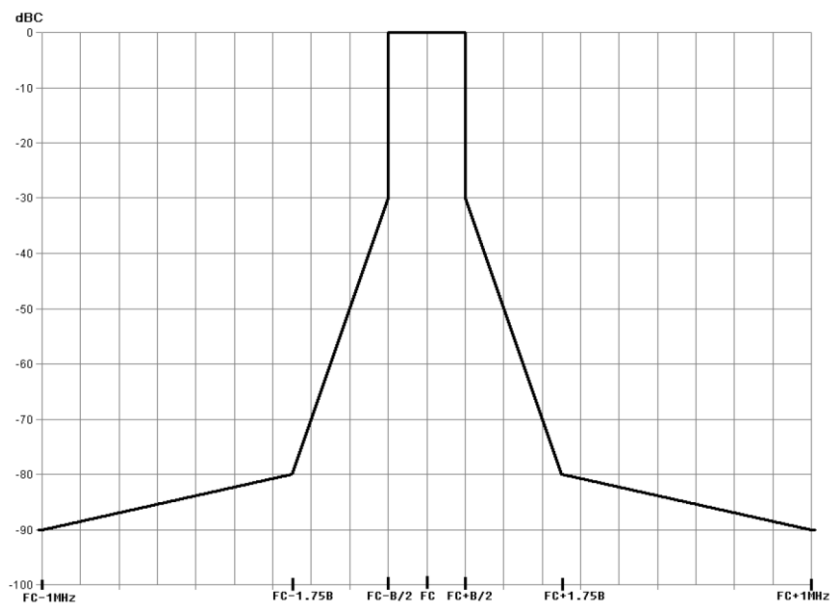
NOTE 2: Two spectrum ranges are to be measured!

### 3.4.3 Test Setup



### 3.4.4 Test Result

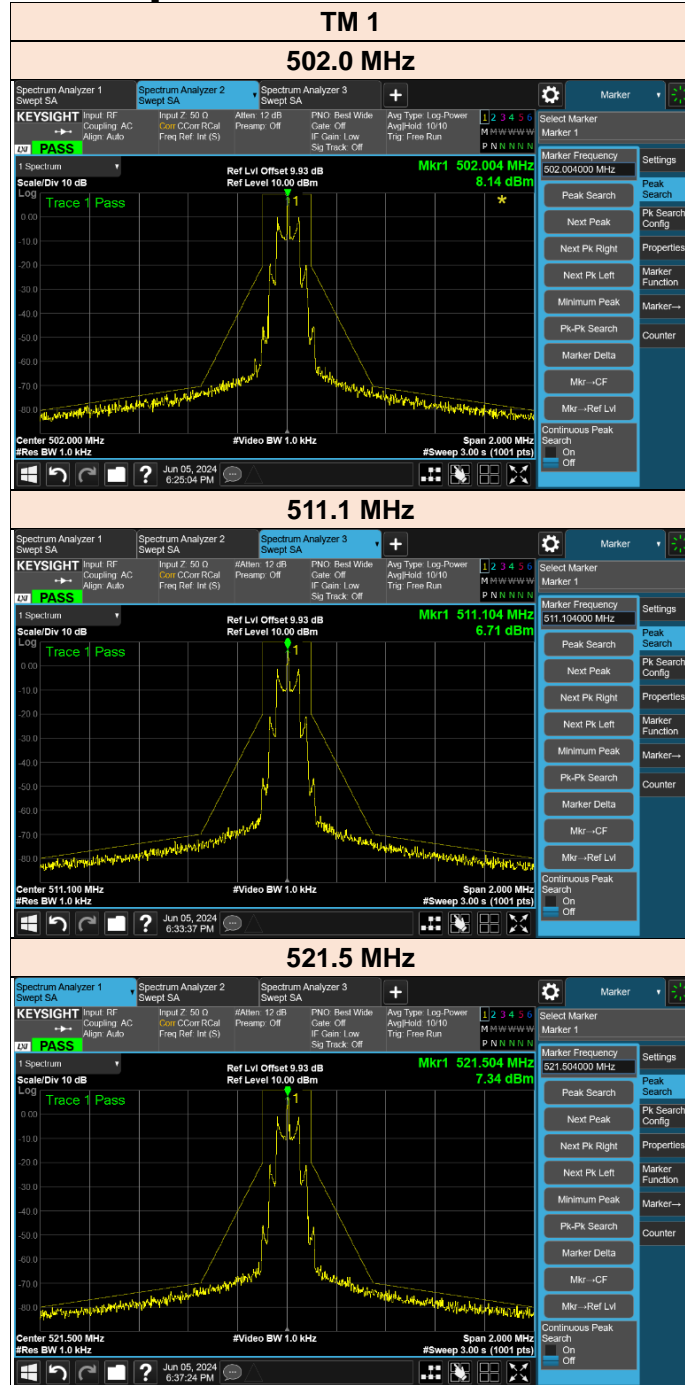
Limit:





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[Test Plot of Necessary Bandwidth]



## 3.5 Frequency Stability

### 3.5.1 Regulation

§15.236(f) : The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.005\%$  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. Battery operated equipment shall be tested using a new battery.

### 3.5.2 Test Procedure

#### Frequency stability with respect to ambient temperature

- a) Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT. If possible, a dummy load shall be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, then the EUT shall be placed in the center of the chamber with the antenna adjusted to the shortest length possible. Turn ON the EUT and tune it to one of the number of frequencies shown in 5.6.
- b) Couple the unlicensed wireless device output to the measuring instrument by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away), or by connecting a dummy load to the measuring instrument, through an attenuator if necessary.

NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory agency is the recommended measuring instrument.

- c) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).
- d) Turn the EUT OFF and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.
- e) Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.
- f) While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.
- g) Measure the frequency at each of frequencies specified in 5.6.
- h) Switch OFF the EUT but do not switch OFF the oscillator heater.
- i) Lower the chamber temperature by not more than 10 °C, and allow the temperature inside the chamber to stabilize.
- j) Repeat step f) through step i) down to the lowest specified temperature.

### Frequency stability when varying supply voltage

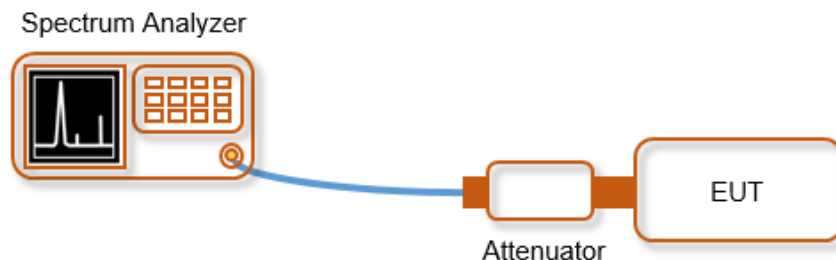
Unless otherwise specified, these tests shall be made at ambient room temperature (+15 °C to +25 °C). An antenna shall be connected to the antenna output terminals of the EUT if possible. If the EUT is equipped with or uses an adjustable-length antenna, then it shall be fully extended.

- a) Supply the EUT with nominal voltage or install a new or fully charged battery in the EUT. Turn ON the EUT and couple its output to a frequency counter or other frequency-measuring instrument.

NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory agency is the recommended measuring instrument.

- b) Tune the EUT to one of the number of frequencies required in 5.6. Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).
- c) Measure the frequency at each of the frequencies specified in 5.6.
- d) Repeat the above procedure at 85% and 115% of the nominal supply voltage as described in 5.13.

### 3.5.3 Test Setup





### 3.5.4 Test Result

#### [Test Data of Frequency Stability]

Test Mode	Tested Frequency [MHz]	Temperature [°C]	Voltage [VDC]	Measurement Frequency [MHz]	Frequency Error [kHz]	Limit [kHz]
TM 1	502.0	50	3.00	502.00280	2.800	±25.100
		40		502.00380	3.800	
		30		502.00440	4.400	
		10		502.00559	5.590	
		0		502.00599	5.990	
		-10		502.00579	5.790	
		-20		502.00579	5.790	
		20	3.00	502.00639	6.390	
			2.55	502.00679	6.790	
	3.45		502.00400	4.000		
	511.1	50	3.00	0.00280	2.800	±25.555
		40		0.00360	3.600	
		30		0.00440	4.400	
		10		0.00559	5.590	
		0		0.00579	5.790	
		-10		0.00579	5.790	
		-20		0.00579	5.790	
		20	3.00	0.00519	5.190	
			2.55	0.00460	4.600	
	3.45		0.00460	4.600		
	521.5	50	3.00	0.00280	2.800	±26.075
		40		0.00360	3.600	
		30		0.00460	4.600	
		10		0.00619	6.190	
0		0.00599		5.990		
-10		0.00599		5.990		
-20		0.00599		5.990		
20		3.00	0.00599	5.990		
		2.55	0.00440	4.400		
	3.45	0.00480	4.800			

## 3.6 Radiated Spurious Emission

### 3.6.1 Regulation

§15.236(g) : Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in § 8.3 of ETSI EN 300 422-1 V1.4.2 (2011-08), Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range; Part 1: Technical characteristics and methods of measurement. Emissions outside of this band shall comply with the limits specified in section 8.4 of ETSI EN 300 422-1 V1.4.2 (2011-08).

### 3.6.2 Test Procedure

On a test site, the sample shall be placed at the specified height on a non-conducting support. The transmitter shall be operated at the power as specified under clause 8.2, delivered to the antenna (see clause 5.1.1).

Radiation of any spurious components shall be detected by the test antenna and receiver, over the frequency range specified below, excluding the 250 % (out of band region) band of frequencies centred on the channel on which the transmitter is intended to operate.

NOTE: The 250 % (out of band region) exclusion is covered by measurements carried out in clauses 8.3.1 and 8.3.2.

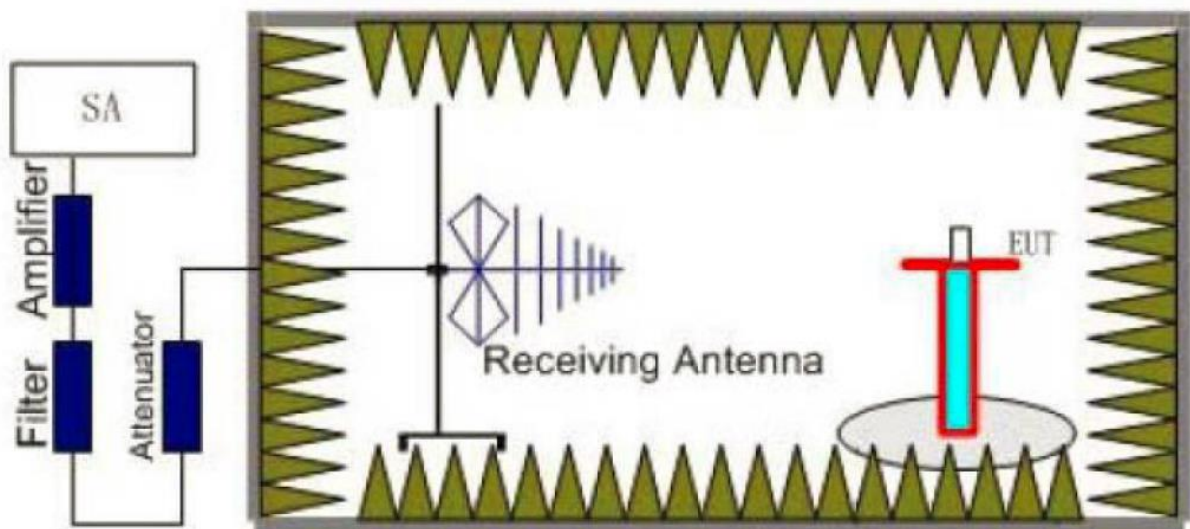
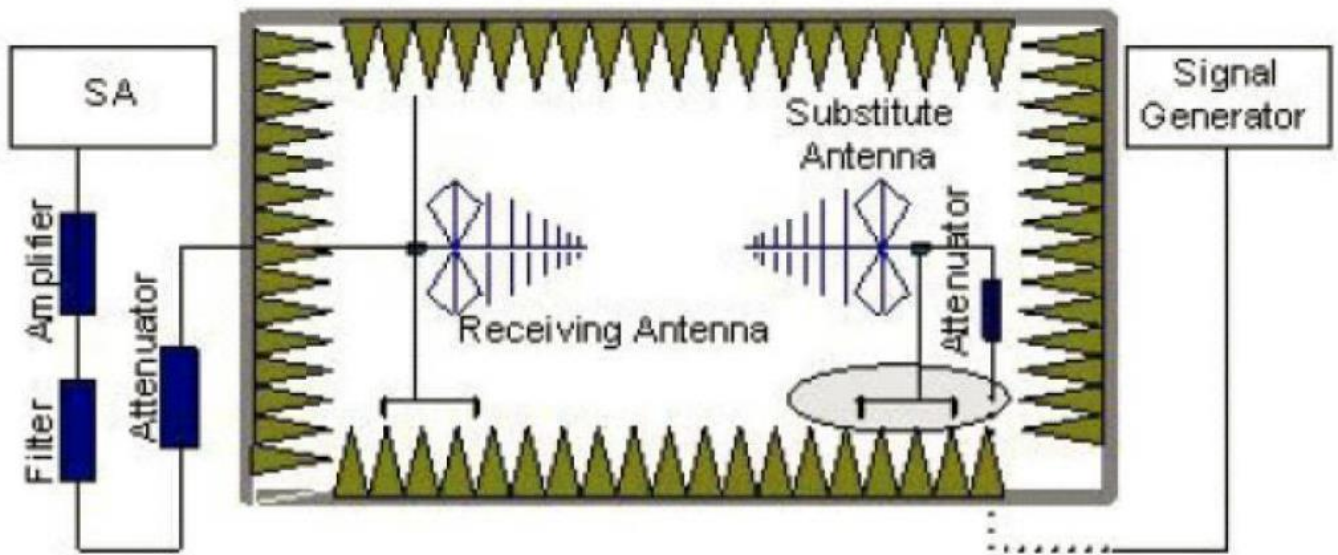
The measuring receiver, as defined in table 4, shall be tuned over the frequency range 25 MHz to 4 GHz for equipment operating on frequencies below 1 GHz or in the frequency range of 25 MHz to 12,75 GHz for equipment operating on frequencies above 1 GHz.

At each frequency at which a component is detected, the sample shall be rotated to obtain maximum response and the effective radiated power of that component determined by a substitution measurement.

The measurement shall be repeated with the test antenna in the orthogonal polarization plane.

If the transmitter allows for standby operation, the tests shall be repeated with the transmitter in standby mode.

### 3.6.3 Test Setup



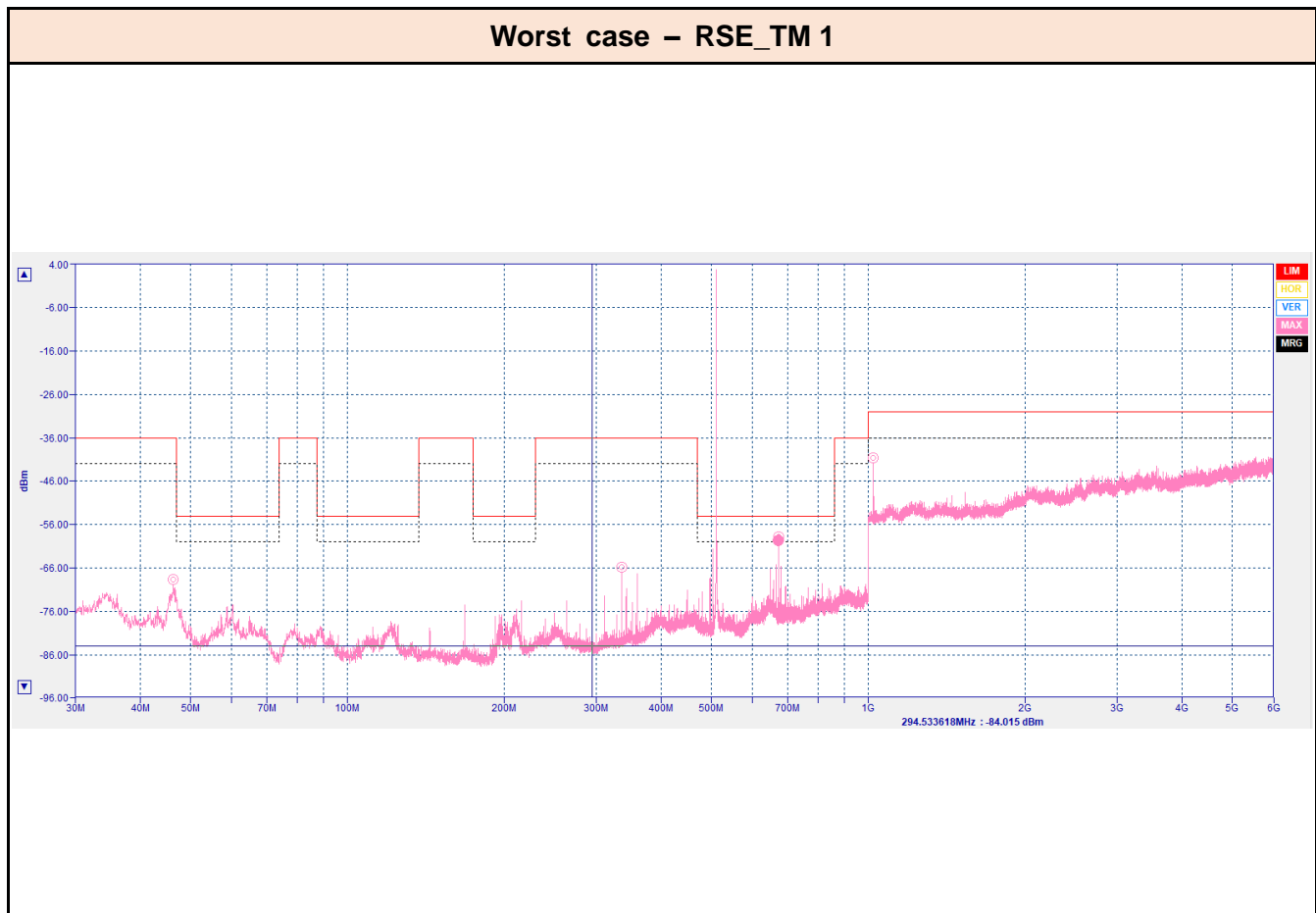


### 3.6.4 Test Result of Radiated Spurious Emission

#### Remarks

1. Result (dBm) = S/A Reading Value(dBm) + Total Factor(dB/m) + DCCF(dB)
2. Total Factor(dB/m) = T.F (dB/m) = Antenna Factor(dB/m) + Cable Loss(dB) – Pre-Amplifier Gain(dB)
3. Margin(dB) = Result (dBm) – Limit (dBm)
4. Measurement Distance = 3 m
5. DCCF = Duty Cycle Correction Factor.
6. No other spurious and harmonic emissions were found greater than listed emissions on above table

#### 3.6.4.1 Radiated Emissions



Tested Frequency [MHz]	Frequency [MHz]	Reading Value [dBm]	Pol [H/V]	EUT Axis	DCCF [dB]	T.F [dB/M]	Result [dBm]	Limit [dBm]	Margin [dB]
502.0	3 514.25	-22.27	V	X	0.00	16.22	-38.49	-30.00	8.49
	4 016.00	-20.93	V	X	0.00	16.85	-37.78	-30.00	7.78
511.1	671.99	-60.33	H	X	0.00	0.38	-60.71	-54.00	6.71
	-	-	-	-	-	-	-	-	-
521.5	672.00	-60.40	H	X	0.00	0.38	-60.78	-54.00	6.78
	3 129.25	-20.76	V	X	0.00	15.38	-36.14	-30.00	6.14

## 3.7 AC Conducted Emissions (150 kHz to 30 MHz)

### 3.7.1 Regulation

§15.207(a) : Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of emission (MHz)	Conducted limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

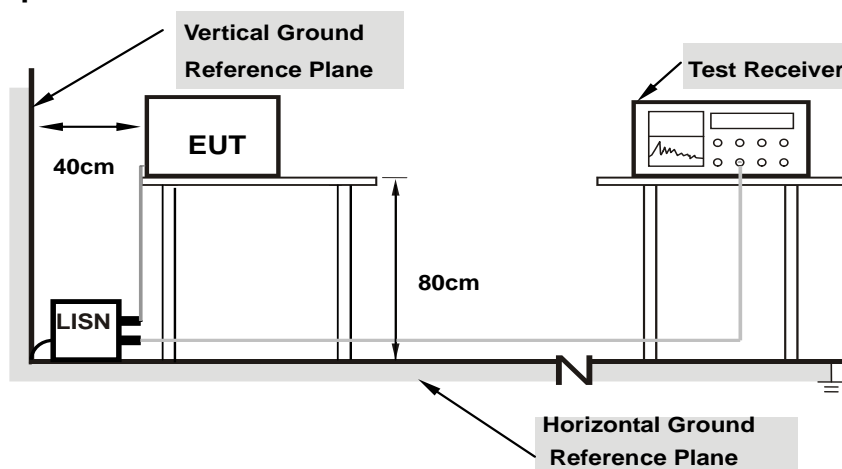
\* Decreases with the logarithm of the frequency.

### 3.7.2 Test Procedure

- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm / 50  $\mu$ H of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

**Remark :** The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz – 30 MHz.

### 3.7.3 Test Setup



### 3.7.4 Test Result

- N/A

The device was only powered by battery when operating.



## Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services Korea. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

**Test Firm Name : BV CPS ADT Korea Ltd.**

**Address : Innoplex No.2 106, Sinwon-ro 306, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675 KOREA**

**FCC**

**Designation Number : KR0158**

**Test Firm Registration Number : 666061**

**ISED**

**Designation Number : KR0158**

**Test Firm Registration Number : 25944**

If you have any comments, please feel free to contact us at the following:

**Email:** [Meyer.Shin@bureauveritas.com](mailto:Meyer.Shin@bureauveritas.com)

**Web Site:** [www.bureauveritas.co.kr/cps/eaw](http://www.bureauveritas.co.kr/cps/eaw)

The address and road map of all our labs can be found in our web site also.

**- End of report -**