S T S L A B

FCC TEST REPORT

Report No: STS1712021W02

Issued for

MEAZON ELECTRONIC SYSTEMS S.A.

N.E.O PATRON ATHINON 57, 26442, PATRA, Greece

Product Name:	JANUS GATEWAY
Brand Name:	MEAZON
Model Name:	JANUS GATEWAY
Series Model:	N/A
FCC ID:	2AJUUJG
Test Standard:	FCC Part 15.249

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TEST RESULT CERTIFICATION

Applicant's name : MEAZON ELECTRONIC SYSTEMS S.A.

Address : N.E.O PATRON ATHINON 57, 26442, PATRA, Greece

Manufacture's Name : MEAZON ELECTRONIC SYSTEMS S.A.

Address : N.E.O PATRON ATHINON 57, 26442, PATRA, Greece

Product description

Product Name .....: JANUS GATEWAY

Brand Name .....: MEAZON

Model Name.....: JANUS GATEWAY

Series Model .....: N/A

Test Standards.....: FCC Part15.249

Test procedure : ANSI C63.10-2013

This device described above has been tested by STS, 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 of performance of tests : 06 Dec. 2017 ~20 Dec. 2017

Date of Issue : 21 Dec. 2017

Test Result : **Pass**

Testing Engineer : Sean She

(Sean she)

Technical Manager : Hakim. hou

(Hakim.hou)

Authorized Signatory : Vita Li

(Vita Li)

TESTING CONSULTING SOLUTION CERTIFICATION STS APPROVAL

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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	21 Dec. 2017	STS1712021W02	ALL	Initial Issue

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part 15.249 , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	Pass	
15.203	Antenna Requirement	Pass	
15.249	Radiated Spurious Emission	Pass	
15.205	Radiated Band Edge Emission	Pass	
15.249	20dB Bandwidth	Pass	

NOTE:

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

(2)All tests are according to ANSI C63.10-2013

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1.1 TEST FACTORY

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CNAS Registration No.: L7649; FCC Registration No.: 625569
IC Registration No.: 12108A; A2LA Certificate No.: 4338.01;

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 (9KHz-150KHz)	±2.88dB
2	Conducted Emission (150KHz-30MHz)	±2.67dB
3	RF power,conducted	±0.71dB
4	Spurious emissions,conducted	±0.63dB
5	All emissions,radiated (9KHz-30MHz)	±3.02dB
6	All emissions,radiated (30MHz-200MHz)	±3.80dB
7	All emissions,radiated (200MHz-1000MHz)	±3.97dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

<table>
<tr><td>Product Name</td><td>JANUS GATEWAY</td></tr>
<tr><td>Trade Name</td><td>MEAZON</td></tr>
<tr><td>Model Name</td><td>JANUS GATEWAY</td></tr>
<tr><td>Series Model</td><td>N/A</td></tr>
<tr><td>Model Difference</td><td>N/A</td></tr>
<tr><td>Product Description</td><td>The EUT is a JANUS GATEWAY

<table><tr><td>Operation Frequency:</td><td>2405-2480MHz</td></tr><tr><td>Modulation Type:</td><td>DSSS</td></tr><tr><td>Antenna Designation:</td><td>Dipole Antenna</td></tr><tr><td>Antenna Gain(Peak):</td><td>2 dBi</td></tr></table>
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.</td></tr>
<tr><td>Channel List</td><td>Please refer to the Note 2.</td></tr>
<tr><td>Adapter</td><td>Input: AC100-240V, 0.4A, 50/60 Hz
Output: DC5V, 2A</td></tr>
<tr><td>Hardware Version</td><td>HW V1.2</td></tr>
<tr><td>Software Version</td><td>1402000E</td></tr>
</table>

Note:

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

2.

Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2405	9	2445
02	2410	10	2450
03	2415	11	2455
04	2420	12	2460
05	2425	13	2465
06	2430	14	2470
07	2435	15	2475
08	2440	16	2480

3. Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	MEAZON	JANUS GATEWAY	Dipole Antenna	NA	2	Antenna

The EUT antenna is Dipole Antenna. No antenna other than that furnished by the responsible party shall be used with the device.

2.2 DESCRIPTION OF TEST MODES

For conducted test items and radiated spurious emissions
Each of these EUT operation mode(s) or test configuration mode(s) mentioned below was evaluated respectively..

Pretest Mode	Description	Data/Modulation
Mode 1	TX CH01	1 MHz/DSSS
Mode 2	TX CH08	1 MHz/DSSS
Mode 3	TX CH16	1 MHz/DSSS

Note:

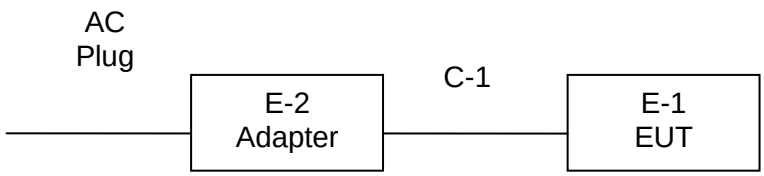
(1) All above mode have been measurement, only worst data was reported.

(2) We have be tested for all avaiable U.S. voltage and frequencies(For 120V,50/60Hz and 240V, 50/60Hz) for which the device is capable of operation, and the worst case of 120V,50/60Hz is shown in the report

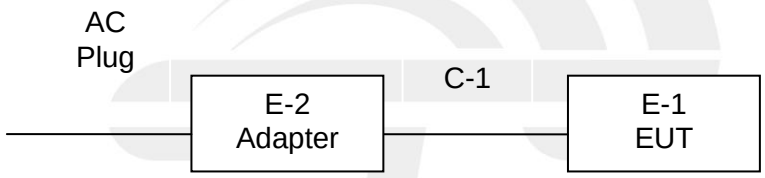
2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

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 power parameters

Radiated Spurious Emission Test



conduction Test Set



2.4 DESCRIPTION OF SUPPORT UNITS

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.	Serial No.	Note
E-2	Adapter	N/A	MX15W-0502000UX	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note
C-1	USB Cable (FTP)	NO	100cm	EUT

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
EMI Test Receiver	R&S	ESW	101535	2017.06.01	2018.05.31
Bilog Antenna	TESEQ	CBL6111D	34678	2017.03.24	2018.03.23
Horn Antenna	Schwarzbeck	BBHA 9120D (1201)	9120D-1343	2017.03.06	2018.03.05
Operational Manual Passive Loop (9K--30MHz)	ETS	6512	00165355	2017.03.06	2018.03.05
Pre-mplifier (0.1M-3GHz)	EM	EM330	60538	2017.03.12	2018.03.11
PreAmplifier	Agilent	8449B	60538	2017.10.15	2018.10.14
USB RF power sensor	DARE	RPR3006W	15I00041SNO03	2017.10.15	2018.10.14
Semi-anechoic chamber	Changling	966	N/A	2017.10.15	2018.10.14

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2017.10.15	2018.10.14
LISN	R&S	ENV216	101242	2017.10.15	2018.10.14
conduction Cable	EM	C01	N/A	2017.03.12	2018.03.11
Temperature & Humitidy	Mieo	HH660	N/A	2017.10.15	2018.10.14

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

Operating frequency band. In case the emission fall within the restricted band specified on Part 15.249 limit in the table below has to be followed.

FREQUENCY (MHz)	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	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.

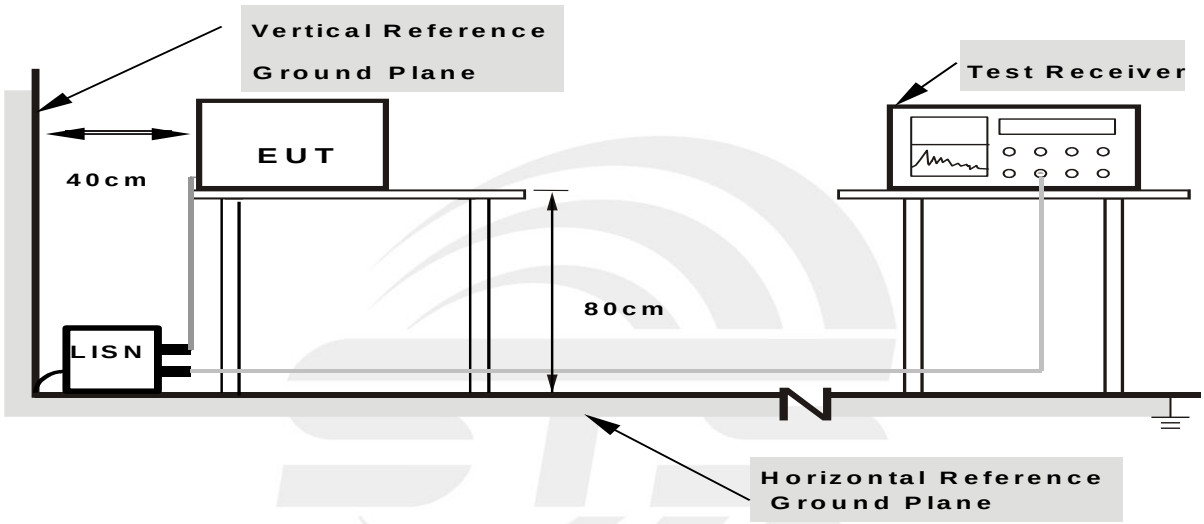
The following table is the setting of the receiver

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

3.1.2 TEST PROCEDURE

a. The EUT was 0.8 meters from the horizontal ground plane and 0.4 meters from the vertical 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.

3.1.3 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

3.1.4 EUT OPERATING CONDITIONS

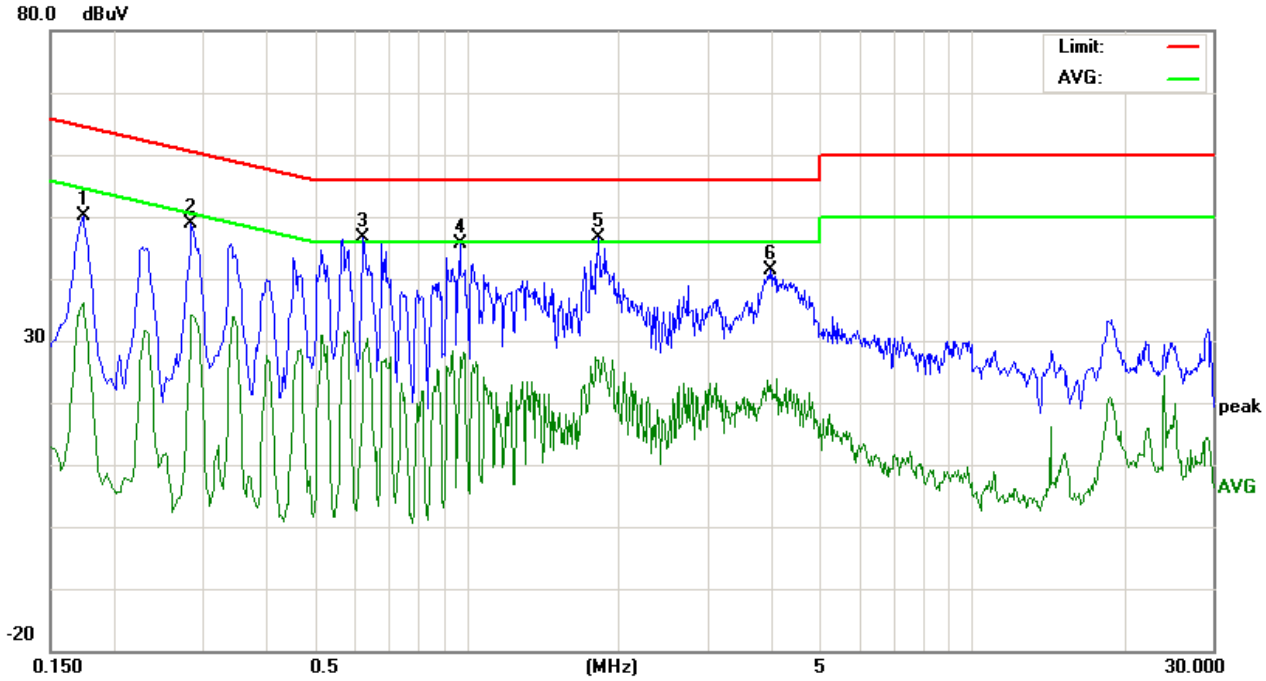
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.1.5 TEST RESULTS

Temperature:	26 ℃	Relative Humidity:	60%
Pressure:	1010hPa	Phase:	L
Test Voltage:	AC 120V/60Hz	Test Mode:	Mode 1

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG	dB	Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1739	39.94		25.98	10.19	50.13		36.17	64.77	54.77	-14.64	-18.60	P	
2	0.2859	38.64		23.79	10.28	48.92		34.07	60.64	50.64	-11.72	-16.57	P	
3	0.6260	36.24		17.54	10.32	46.56		27.86	56.00	46.00	-9.44	-18.14	P	
4	0.9699	35.15		17.04	10.38	45.53		27.42	56.00	46.00	-10.47	-18.58	P	
5	1.8220	36.37		16.47	10.28	46.65		26.75	56.00	46.00	-9.35	-19.25	P	
6	3.9980	30.86		12.49	10.43	41.29		22.92	56.00	46.00	-14.71	-23.08	P	

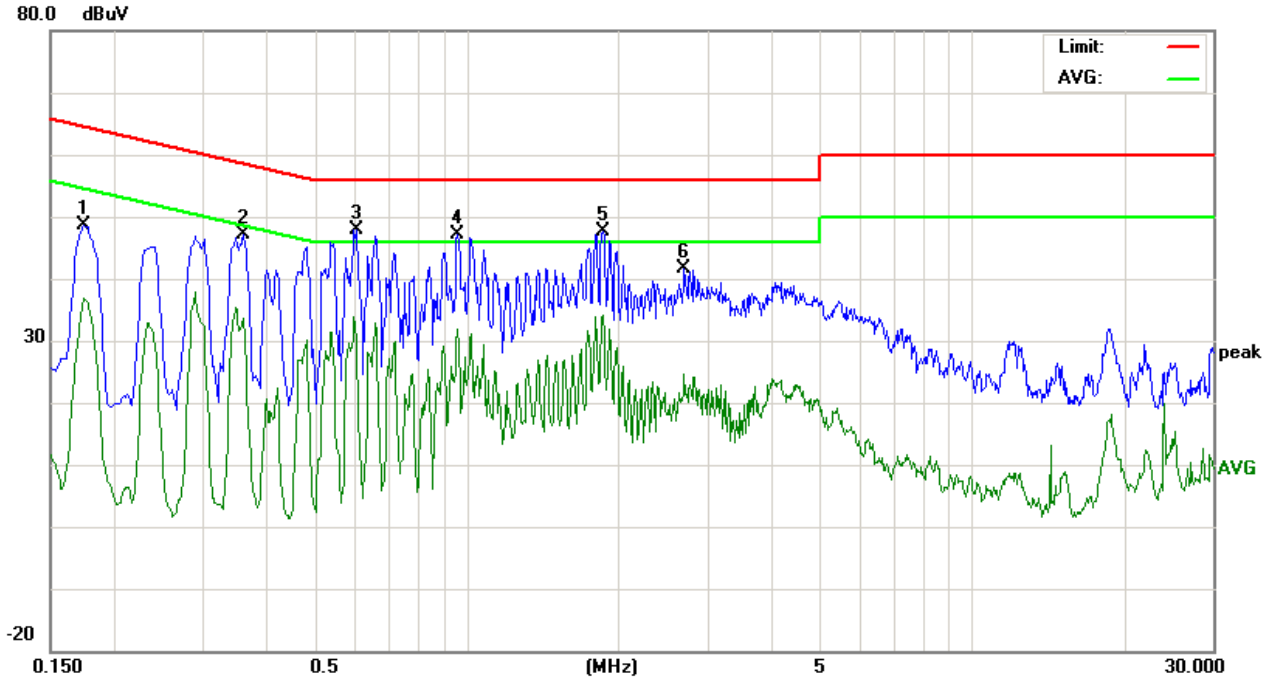
Remark:
1. Margin = Result (Result =Reading + Factor)–Limit



Temperature:	26 ℃	Relative Humidity:	60%
Pressure:	1010hPa	Phase:	N
Test Voltage:	AC 120V/60Hz	Test Mode:	Mode 1

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG	dB	Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1737	38.39		26.57	10.19	48.58		36.76	64.78	54.78	-16.20	-18.02	P	
2	0.3618	36.80		23.29	10.31	47.11		33.60	58.69	48.69	-11.58	-15.09	P	
3	0.6058	37.48		19.27	10.31	47.79		29.58	56.00	46.00	-8.21	-16.42	P	
4	0.9618	36.85		21.40	10.39	47.24		31.79	56.00	46.00	-8.76	-14.21	P	
5	1.8620	37.31		23.75	10.26	47.57		34.01	56.00	46.00	-8.43	-11.99	P	
6	2.7019	31.05		14.26	10.48	41.53		24.74	56.00	46.00	-14.47	-21.26	P	

Remark:
1. Margin = Result (Result =Reading + Factor)–Limit



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on Part 15.249 and the Part 15.209(a) limit in the table below has to be followed.

Standard 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
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3
Above 1000	Other:74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	3

Standard FCC 15.249

Frequency of Emission (MHz)	**Field Strength of fundamental (millivolts /meter)**	**Field Strength of Harmonics (microvolts/meter)**
900~928	50	500
2400~2483.5	50	500
5725~5875	50	500
24000~242500	250	2500

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
Detector	Peak/AV
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB (emission in restricted band)	>20BW
VB (emission in restricted band)	=3xRB

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for PK & AV
	90kHz~110kHz / RB 200Hz for QP
	110kHz~490kHz / RB 200Hz for PK & AV
	490kHz~30MHz / RB 9kHz for QP
	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

a. The measuring distance of 3m shall be used for measurements. The EUT was placed on the top of arotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation(Below 1GHz)

b. The measuring distance of 3m shall used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation(Above 1GHz)

c. The height of the test antenna shall vary between 1m to 4m.Both horizontal and vertical polarization Of the antenna are set to make the measurement.

d. The initial step in collecting radiated emission data is a receive peak detector mode. Pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

e. All readings are peak unless otherwise stated QP in column of Note. Peak denoted that the Peak reading compliance with the QP limits and then QP Mode measurement didn't perform (Below 1GHz)

f. All readings are Peak mode value unless otherwise stated AVG in column of Note. If the Peak mode measured value compliance with the Peak limits and lower than AVG Limits, the EUT shall be deemed to meet Peak & AVG limits and then only Peak mode was measured, but AVG mode didn't perform.(Above 1GHz)

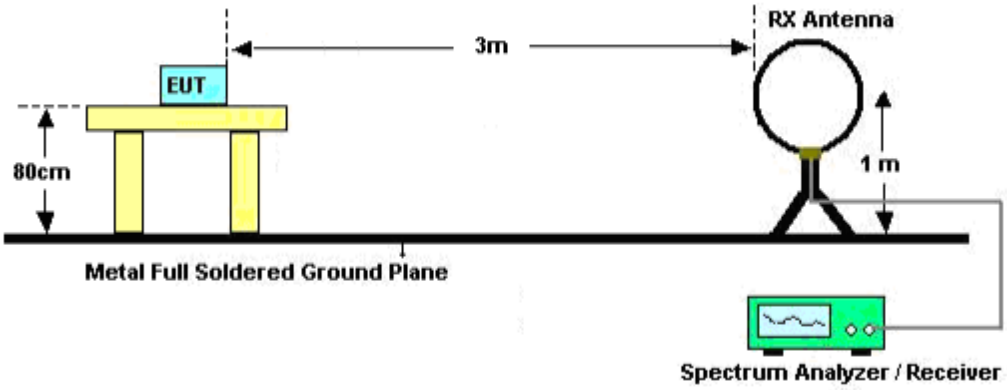
g. For the actual test configuration, please refer to the related Item –EUT Test Photos.
Note: Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

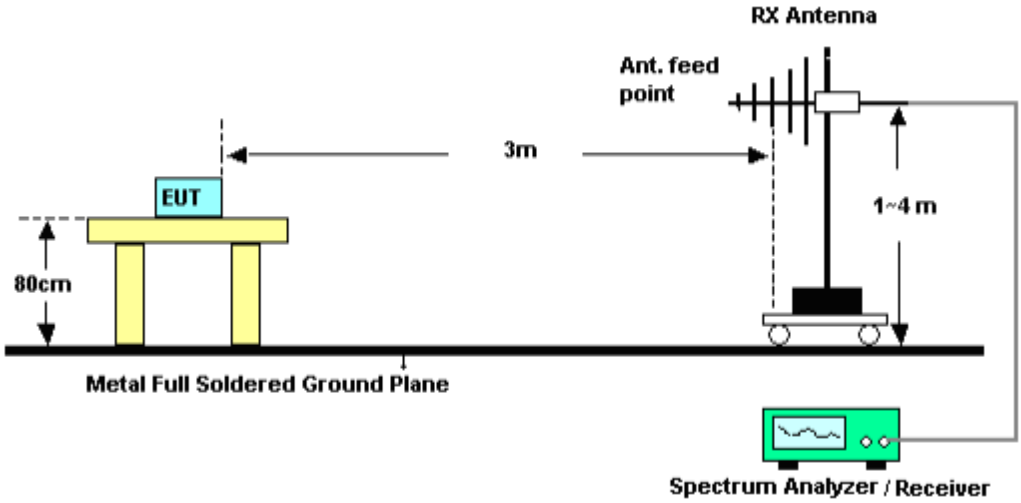
No deviation

3.2.4 TEST SETUP

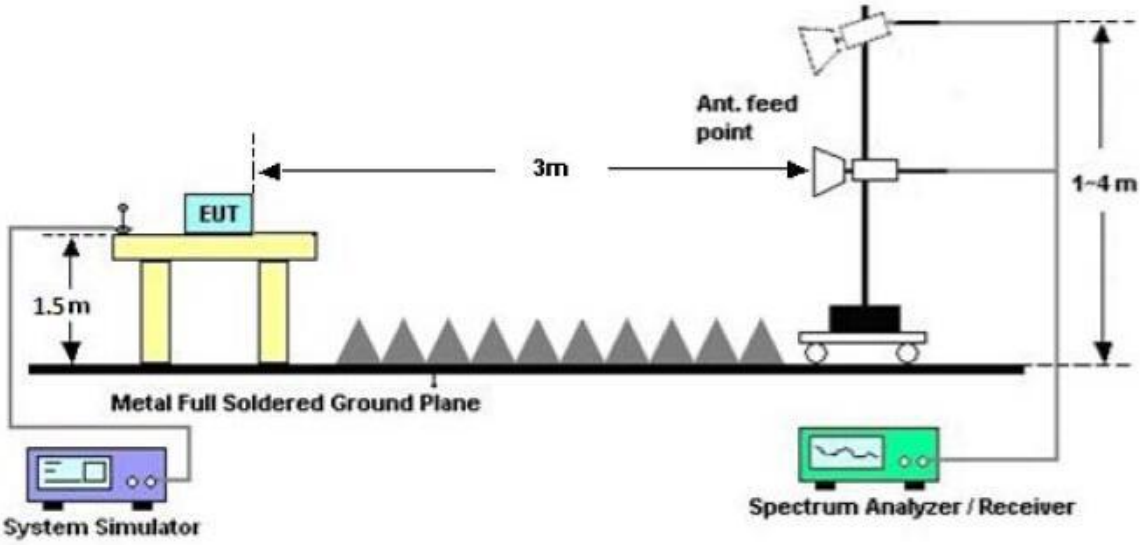
（A）Radiated Emission Test-Up Frequency Below 30MHz



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



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



3.2.5 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where

FS = Field Strength

CL = Cable Attenuation Factor (Cable Loss)

RA = Reading Amplitude

AG = Amplifier Gain

AF = Antenna Factor

For example

Frequency	FS	RA	AF	CL	AG	Factor
(MHz)	(dBμV/m)	(dBμV/m)	(dB)	(dB)	(dB)	(dB)
300	40	58.1	12.2	1.6	31.9	-18.1

Factor=AF+CL-AG

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3.2.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

Below 30 MHz

Temperature:	26 ℃	Relative Humidity:	60%
Pressure:	1010 hPa	Polarization:	---
Test Voltage:	AC 120V /60Hz		
Test Mode:	TX Mode		

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.

Distance extrapolation factor =40 log (specific distance/test distance)(dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.

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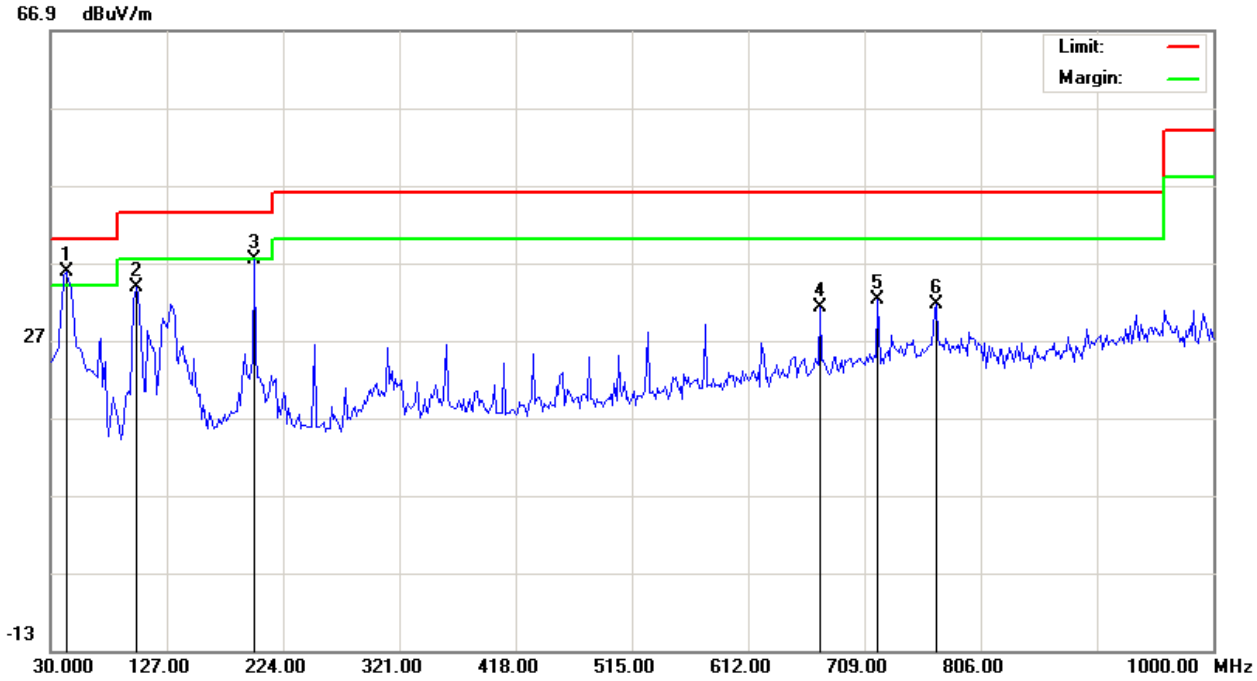
Between 30MHz – 1000 MHz Radiation Spurious

Temperature:	22.4 ℃	Relative Humidity:	52.5%
Pressure:	1010hPa	Phase:	Horizontal
Test Voltage:	AC 120V /60Hz	Test Mode:	Mode 1/2/3(Model 1 worst)

No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	42.9333	24.14	11.71	35.85	40.00	-4.15	peak			
2		101.1333	23.58	10.22	33.80	43.50	-9.70	peak			
3		199.7500	25.48	11.99	37.47	43.50	-6.03	peak			
4		671.8167	6.79	24.45	31.24	46.00	-14.76	peak			
5		720.3167	6.43	25.79	32.22	46.00	-13.78	peak			
6		768.8167	4.80	26.89	31.69	46.00	-14.31	peak			

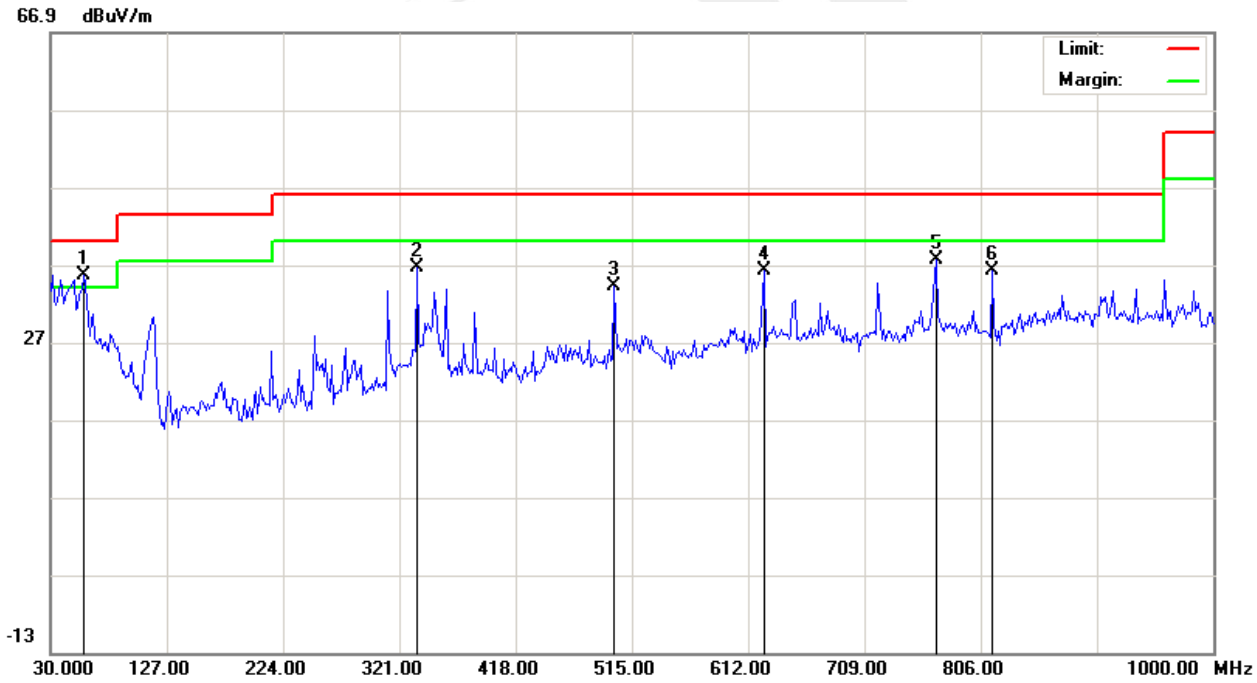
Remark:
1. All readings are Quasi-Peak .
2. Margin = Result (Result =Reading + Factor)–Limit



Temperature:	22.4 ℃	Relative Humidity:	52.5%
Pressure:	1010hPa	Phase:	Vertical
Test Voltage:	AC 120V /60Hz	Test Mode:	Mode 1/2/3(Model 1 worst)

No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	57.4831	27.40	8.17	35.57	40.00	-4.43	peak			
2		335.5500	18.80	17.78	36.58	46.00	-9.42	peak			
3		500.4499	12.98	21.14	34.12	46.00	-11.88	peak			
4		624.9333	12.96	23.29	36.25	46.00	-9.75	peak			
5		768.8165	10.76	26.89	37.65	46.00	-8.35	peak			
6		815.7000	8.96	27.32	36.28	46.00	-9.72	peak			

Remark:
1. All readings are Quasi-Peak.
2. Margin = Result (Result =Reading + Factor)–Limit



Fundamental frequency:

PK

Frequency (MHz)	Reading (dBμV/m)	Amplifier	Loss	Antenna Factor	Factor(dB) Corr.	Result (dBμV/m)	Limit (dBμV/m)	Margin(dB)	Polarization
	PEAK	（dB）	（dB）	（dB/m）		PEAK	PEAK	PEAK	
2405	92.468	44.40	6.03	27.60	-10.77	81.70	114	-32.30	Vertical
2405	90.503	44.40	6.03	27.60	-10.77	79.74	114	-34.26	Horizontal
2440	83.306	44.40	6.04	27.63	-10.73	72.58	114	-41.42	Vertical
2440	81.698	44.40	6.04	27.63	-10.73	70.97	114	-43.03	Horizontal
2474	88.008	44.40	6.06	27.66	-10.68	77.33	114	-36.67	Vertical
2474	85.537	44.40	6.06	27.66	-10.68	74.86	114	-39.14	Horizontal

AV

Frequency (MHz)	Reading (dBμV/m)	Amplifier	Loss	Antenna Factor	Factor(dB) Corr.	Result (dBμV/m)	Limit (dBμV/m)	Margin(dB)	Polarization
	AV	（dB）	（dB）	（dB/m）		AV	PEAK	PEAK	
2405	73.652	44.40	6.03	27.60	-10.77	62.89	94	-31.11	Vertical
2405	72.757	44.40	6.03	27.60	-10.77	61.99	94	-32.01	Horizontal
2440	66.186	44.40	6.04	27.63	-10.73	55.46	94	-38.54	Vertical
2440	63.447	44.40	6.04	27.63	-10.73	52.72	94	-41.28	Horizontal
2474	70.132	44.40	6.06	27.66	-10.68	59.46	94	-34.54	Vertical
2474	87.522	44.40	6.06	27.66	-10.68	76.85	94	-17.15	Horizontal

Note: RBW>20BW; VBW=3xRBW

Above 1G Radiation Spurious

Frequency (MHz)	Reading (dBμV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Corrected Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
Low Channel (2405 MHz)										
3264.72	48.35	44.70	6.70	28.20	-9.80	38.55	74.00	-35.45	PK	Vertical
3264.72	39.33	44.70	6.70	28.20	-9.80	29.53	54.00	-24.47	AV	Vertical
3264.78	48.91	44.70	6.70	28.20	-9.80	39.11	74.00	-34.89	PK	Horizontal
3264.78	38.70	44.70	6.70	28.20	-9.80	28.90	54.00	-25.10	AV	Horizontal
4810.33	58.87	44.20	9.04	31.60	-3.56	55.31	74.00	-18.69	PK	Vertical
4810.33	38.24	44.20	9.04	31.60	-3.56	34.68	54.00	-19.32	AV	Vertical
4810.45	58.16	44.20	9.04	31.60	-3.56	54.60	74.00	-19.40	PK	Horizontal
4810.45	38.42	44.20	9.04	31.60	-3.56	34.86	54.00	-19.14	AV	Horizontal
5359.63	45.03	44.20	9.86	32.00	-2.34	42.69	74.00	-31.31	PK	Vertical
5359.63	37.64	44.20	9.86	32.00	-2.34	35.30	54.00	-18.70	AV	Vertical
5359.84	46.24	44.20	9.86	32.00	-2.34	43.90	74.00	-30.10	PK	Horizontal
5359.84	38.29	44.20	9.86	32.00	-2.34	35.95	54.00	-18.05	AV	Horizontal
7215.89	51.31	43.50	11.40	35.50	3.40	54.71	74.00	-19.29	PK	Vertical
7215.89	32.72	43.50	11.40	35.50	3.40	36.12	54.00	-17.88	AV	Vertical
7215.89	51.50	43.50	11.40	35.50	3.40	54.90	74.00	-19.10	PK	Horizontal
7215.89	33.01	43.50	11.40	35.50	3.40	36.41	54.00	-17.59	AV	Horizontal
11035.94	39.78	43.60	14.30	39.50	10.20	49.98	74.00	-24.02	PK	Vertical
11035.94	30.49	43.60	14.30	39.50	10.20	40.69	54.00	-13.31	AV	Vertical
11036.10	39.96	43.60	14.30	39.50	10.20	50.16	74.00	-23.84	PK	Horizontal
11036.10	30.48	43.60	14.30	39.50	10.20	40.68	54.00	-13.32	AV	Horizontal
13299.14	40.63	42.60	15.90	38.90	12.20	52.83	74.00	-21.17	PK	Vertical
13299.14	28.54	42.60	15.90	38.90	12.20	40.74	54.00	-13.26	AV	Vertical
13299.29	39.84	42.60	15.90	38.90	12.20	52.04	74.00	-21.96	Pk	Horizontal
13299.29	28.80	42.60	15.90	38.90	12.20	41.00	54.00	-13.00	AV	Horizontal

Frequency (MHz)	Reading (dBμV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Corrected Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
Middle Channel (2440 MHz)										
3264.85	48.31	44.70	6.70	28.20	-9.80	38.51	74.00	-35.49	PK	Vertical
3264.85	38.58	44.70	6.70	28.20	-9.80	28.78	54.00	-25.22	AV	Vertical
3264.64	48.50	44.70	6.70	28.20	-9.80	38.70	74.00	-35.30	PK	Horizontal
3264.64	38.91	44.70	6.70	28.20	-9.80	29.11	54.00	-24.89	AV	Horizontal
4880.40	58.25	44.20	9.04	31.60	-3.56	54.69	74.00	-19.31	PK	Vertical
4880.40	38.37	44.20	9.04	31.60	-3.56	34.81	54.00	-19.19	AV	Vertical
4880.52	59.41	44.20	9.04	31.60	-3.56	55.85	74.00	-18.15	PK	Horizontal
4880.52	39.21	44.20	9.04	31.60	-3.56	35.65	54.00	-18.35	AV	Horizontal
5359.66	46.34	44.20	9.86	32.00	-2.34	44.00	74.00	-30.00	PK	Vertical
5359.66	37.94	44.20	9.86	32.00	-2.34	35.60	54.00	-18.40	AV	Vertical
5359.61	45.40	44.20	9.86	32.00	-2.34	43.06	74.00	-30.94	PK	Horizontal
5359.61	38.37	44.20	9.86	32.00	-2.34	36.03	54.00	-17.97	AV	Horizontal
7320.74	51.42	43.50	11.40	35.50	3.40	54.82	74.00	-19.18	PK	Vertical
7320.74	32.91	43.50	11.40	35.50	3.40	36.31	54.00	-17.69	AV	Vertical
7320.74	50.80	43.50	11.40	35.50	3.40	54.20	74.00	-19.80	PK	Horizontal
7320.74	33.83	43.50	11.40	35.50	3.40	37.23	54.00	-16.77	AV	Horizontal
9759.74	40.43	43.60	14.30	39.50	10.20	50.63	74.00	-23.37	PK	Vertical
9759.74	30.74	43.60	14.30	39.50	10.20	40.94	54.00	-13.06	AV	Vertical
9760.08	41.19	43.60	14.30	39.50	10.20	51.39	74.00	-22.61	PK	Horizontal
9760.08	30.38	43.60	14.30	39.50	10.20	40.58	54.00	-13.42	AV	Horizontal
13299.36	40.08	42.60	15.90	38.90	12.20	52.28	74.00	-21.72	PK	Vertical
13299.36	28.54	42.60	15.90	38.90	12.20	40.74	54.00	-13.26	AV	Vertical
13299.41	40.21	42.60	15.90	38.90	12.20	52.41	74.00	-21.59	Pk	Horizontal
13299.41	28.71	42.60	15.90	38.90	12.20	40.91	54.00	-13.09	AV	Horizontal

Frequency (MHz)	Reading (dBμV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Corrected Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
High Channel (2474 MHz)										
3264.66	47.97	44.70	6.70	28.20	-9.80	38.17	74.00	-35.83	PK	Vertical
3264.66	38.75	44.70	6.70	28.20	-9.80	28.95	54.00	-25.05	AV	Vertical
3264.64	48.30	44.70	6.70	28.20	-9.80	38.50	74.00	-35.50	PK	Horizontal
3264.64	38.36	44.70	6.70	28.20	-9.80	28.56	54.00	-25.44	AV	Horizontal
4948.54	58.97	44.20	9.04	31.60	-3.56	55.41	74.00	-18.59	PK	Vertical
4948.54	38.72	44.20	9.04	31.60	-3.56	35.16	54.00	-18.84	AV	Vertical
4948.56	59.52	44.20	9.04	31.60	-3.56	55.96	74.00	-18.04	PK	Horizontal
4948.56	39.50	44.20	9.04	31.60	-3.56	35.94	54.00	-18.06	AV	Horizontal
5359.84	45.69	44.20	9.86	32.00	-2.34	43.35	74.00	-30.65	PK	Vertical
5359.84	38.01	44.20	9.86	32.00	-2.34	35.67	54.00	-18.33	AV	Vertical
5359.68	45.55	44.20	9.86	32.00	-2.34	43.21	74.00	-30.79	PK	Horizontal
5359.68	37.62	44.20	9.86	32.00	-2.34	35.28	54.00	-18.72	AV	Horizontal
7421.88	51.55	43.50	11.40	35.50	3.40	54.95	74.00	-19.05	PK	Vertical
7421.88	32.54	43.50	11.40	35.50	3.40	35.94	54.00	-18.06	AV	Vertical
7421.79	51.76	43.50	11.40	35.50	3.40	55.16	74.00	-18.84	PK	Horizontal
7421.79	33.66	43.50	11.40	35.50	3.40	37.06	54.00	-16.94	AV	Horizontal
9895.79	40.95	43.60	14.30	39.50	10.20	51.15	74.00	-22.85	PK	Vertical
9895.79	30.91	43.60	14.30	39.50	10.20	41.11	54.00	-12.89	AV	Vertical
9896.03	40.54	43.60	14.30	39.50	10.20	50.74	74.00	-23.26	PK	Horizontal
9896.03	30.36	43.60	14.30	39.50	10.20	40.56	54.00	-13.44	AV	Horizontal
13299.18	39.81	42.70	18.00	37.10	12.40	52.21	74.00	-21.79	PK	Vertical
13299.18	28.54	42.70	18.00	37.10	12.40	40.94	54.00	-13.06	AV	Vertical
13299.49	39.75	42.70	18.00	37.10	12.40	52.15	74.00	-21.85	PK	Horizontal
13299.49	29.14	42.70	18.00	37.10	12.40	41.54	54.00	-12.46	AV	Horizontal

Note:

1) Factor = Antenna Factor + Cable Loss – Pre-amplifier.
   Emission Level = Reading + Factor

2) The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.

(Radiation Band edge)

Frequency (MHz)	Reading (dBμV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Corrected Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
DSSS										
2400.00	68.36	43.80	4.91	25.90	-12.99	55.37	74	-18.63	PK	Vertical
2400.00	53.13	43.80	4.91	25.90	-12.99	40.14	54	-13.86	AV	Vertical
2400.00	68.88	43.80	4.91	25.90	-12.99	55.89	74	-18.11	PK	Horizontal
2400.00	52.25	43.80	4.91	25.90	-12.99	39.26	54	-14.74	AV	Horizontal
2483.50	70.26	43.80	5.12	25.90	-12.78	57.48	74	-16.52	PK	Vertical
2483.50	53.40	43.80	5.12	25.90	-12.78	40.62	54	-13.38	AV	Vertical
2483.50	69.92	43.80	5.12	25.90	-12.78	57.14	74	-16.86	PK	Horizontal
2483.50	52.58	43.80	5.12	25.90	-12.78	39.80	54	-14.20	AV	Horizontal

Low measurement frequencies is range from 2310 to 2400 MHz, high measurement frequencies is range from 2483.5 to 2500 MHz.

Only show the worst point data of the emissions in the frequency 2310-2400 MHz and 2483.5-2500 MHz.

4. BANDWIDTH TEST

4.1 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= 30KHz, VBW≧RBW, Sweep time = Auto.

4.2 TEST SETUP

4.3 EUT OPERATION CONDITIONS

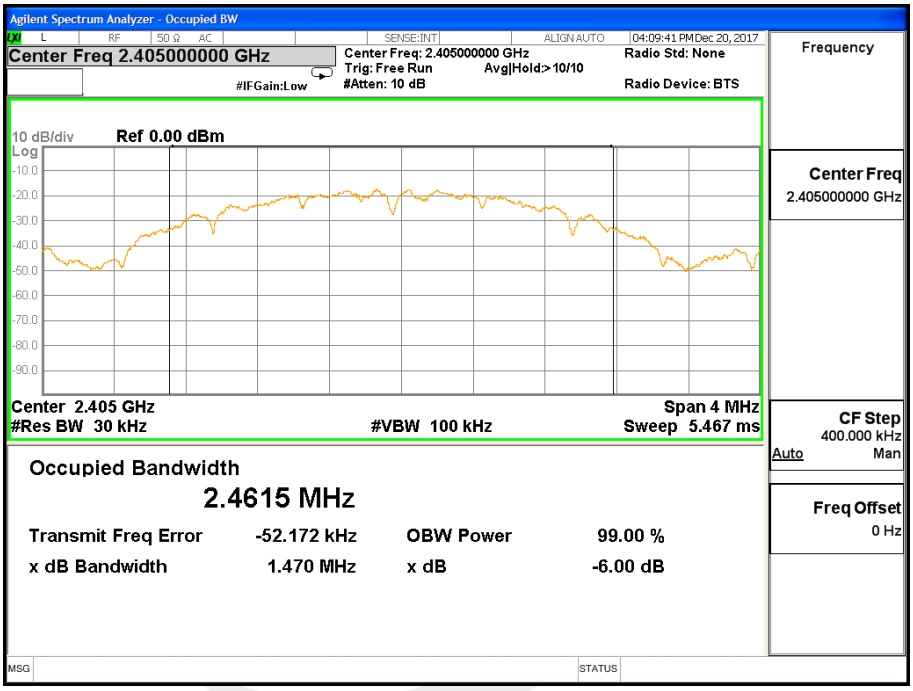
TX mode.

4.4 TEST RESULTS

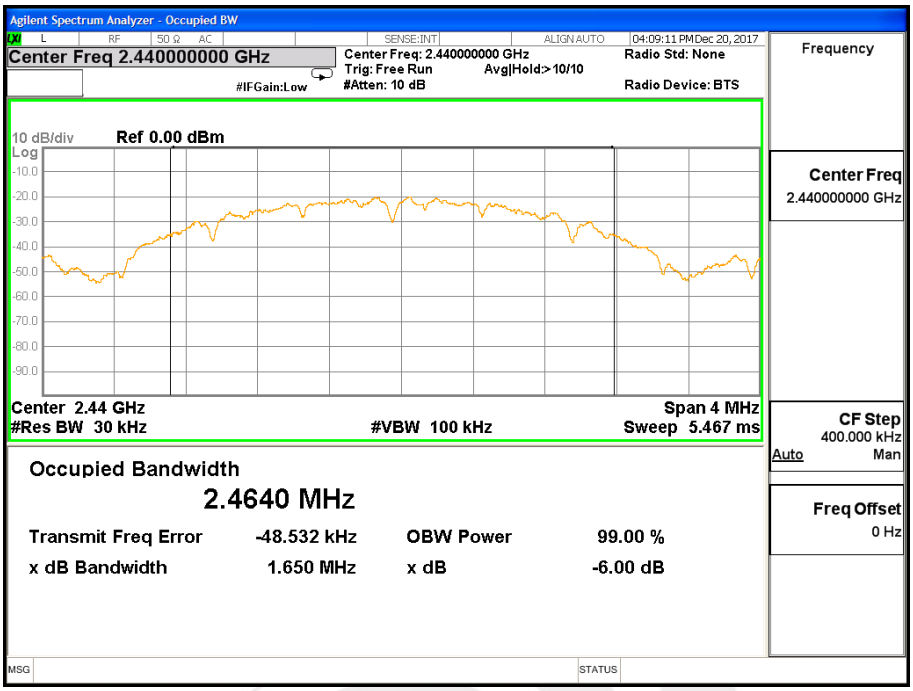
Temperature:	25 ℃	Relative Humidity:	50%
Pressure:	1012 hPa	Test Voltage:	DC 3V

Test Channel	Frequency (MHz)	6 dBc Bandwidth (MHz)	99% Bandwidth (MHz)
CH01	2405	1.470	2.4615
CH17	2440	1.650	2.4640
CH34	2480	1.664	2.4659

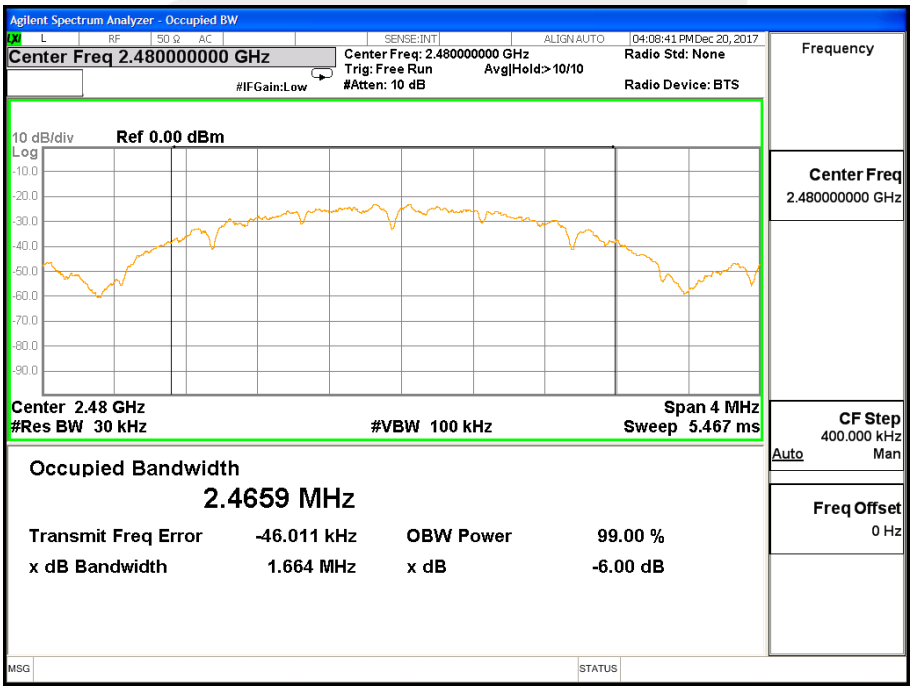
The Lowest Channel:2405MHz



The Middle Channel:2440MHz



The High Channel: 2474MHz



5. ANTENNA REQUIREMENT

5.1 STANDARD REQUIREMENT

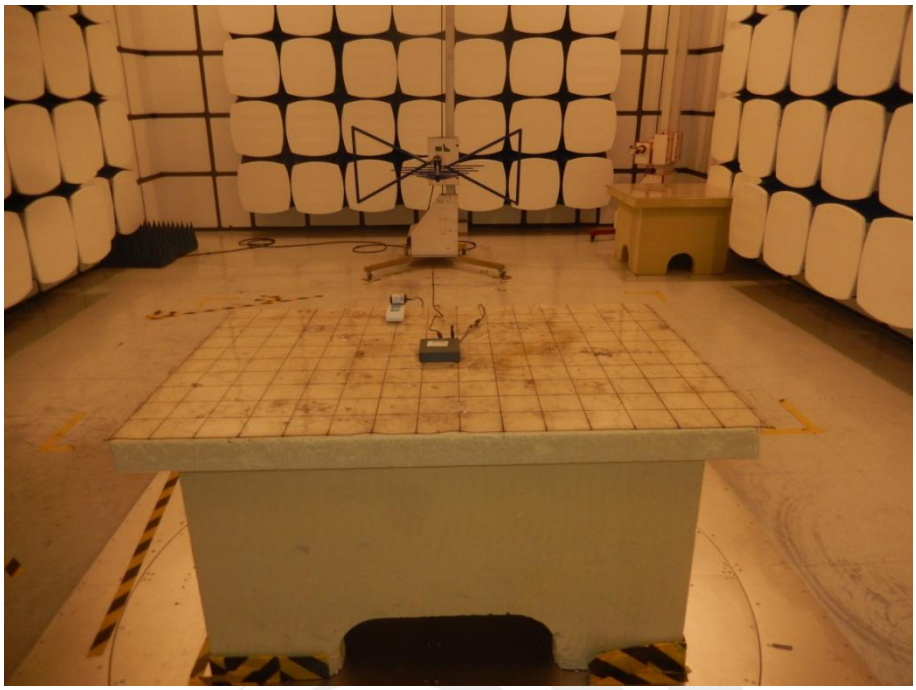
According to the FCC Part 15 Paragraph 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

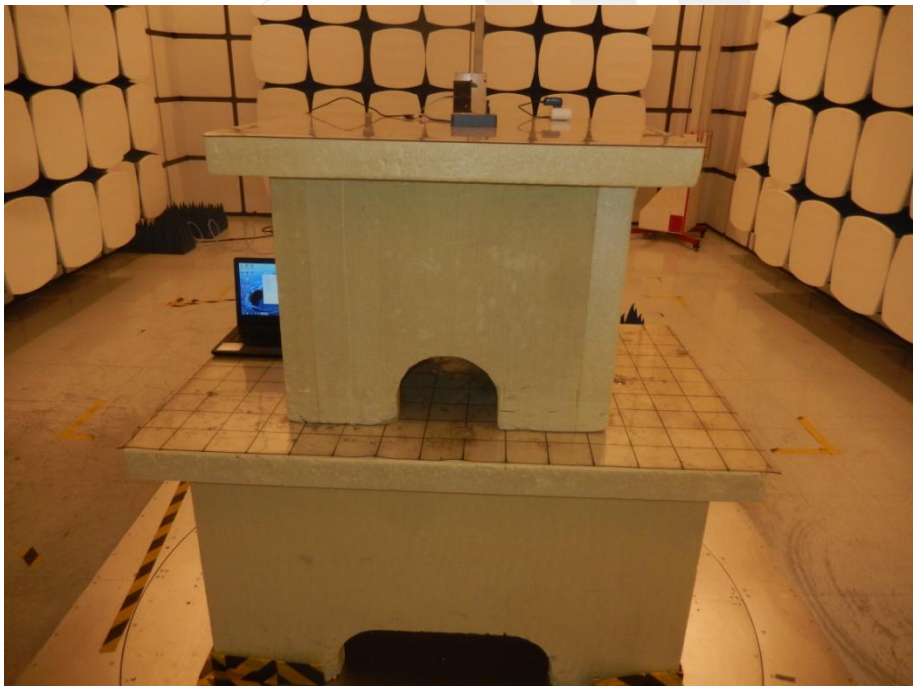
5.2 EUT ANTENNA

The EUT antenna is Dipole Antenna.It conforms to the standard requirements.

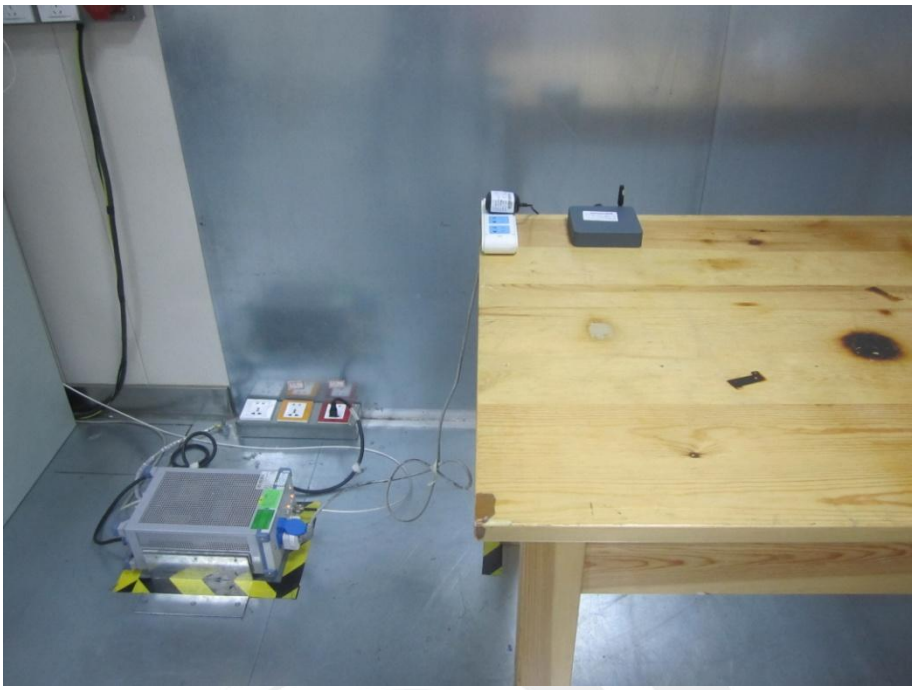
APPENDIX- PHOTOS OF TEST SETUP

Radiated Measurement Photos





Conducted Measurement Photos



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