

### **FCC TEST REPORT**

Test report No.: EMC- FCC- R0047

FCC ID: ZFVAMT-303

Type of equipment: USN TAG

Model Name: AMT-303

Brand Name: -

Applicant: ARTSYSTEM Co.,Ltd.

FCC Rule Part(s): FCC Part 15 Subpart C

Section 15.203, Section 15.209 Section 15.207, Section 15.249

Frequency Range: 2405 MHz ~ 2480 MHz

Test result: Complied

The above equipment was tested by EMC compliance Testing Laboratory for compliance with the requirements of FCC Rules and Regulations.

The results of testing in this report apply to the product/system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Date of test: March 24, 2011 ~ April 6, 2011

Issued date: April 7, 2011

Tested by:

KIM. CHANG MIN

**Approved by:** 

YOO, SUNG YOUNG

Page: 1 of 21



### [ Contents ]

1. Client information	3
2. Laboratory information	
3. Description of E.U.T	5
3.1 Basic description	5
3.2 General description	5
3.3 Test frequency	6
3.4 Test Voltage	6
4. Summary of test results	7
4.1 Standards & results	7
4.2 Uncertainty	7
5. Test results	8
5.1 Antenna Requirement	8
5.2 SPURIOUS EMISSION, BAND EDGE, AND RESTRICTED BANDS	
5.9 Conducted Emission (N/A)	20
6. Test equipment used for test	

**Appendix 1 Test setup photos** 

Appendix 2 External photos of EUT

**Appendix 3 Internal photos of EUT** 

Appendix 4 Block diagram

**Appendix 5 Schematics** 

**Appendix 6 User manual** 

Appendix 7 Part list

Appendix 8 Layout diagram

**Appendix 9 Antenna Specification** 



### 1. Client information

**Applicant:** ARTSYSTEM Co., Ltd.

**Address:** 501 IT Bldg., 573-13, Bokhyeon-dong, Buk-gu,

Daegu-City, 702-832, Korea

**Telephone number:** +82-53-958-6615 **Facsimile number:** +82-53-958-6616

**Contact person:** Hyunjun Cho/ hjcho@artsystem.co.kr

**Manufacturer:** ARTSYSTEM Co., Ltd.

**Address:** 501 IT Bldg., 573-13, Bokhyeon-dong, Buk-gu,

Daegu-City, 702-832, Korea



### 2. Laboratory information

#### **Address**

EMC Compliance Ltd.

82-1, JEIL-RI, YANGJI-MYUN, CHURINGU, YONGIN-CITY, KYUNGGI-DO,

KOREA 449-825

Telephone Number: 82 31 336 9919 Facsimile Number: 82 31 336 4767

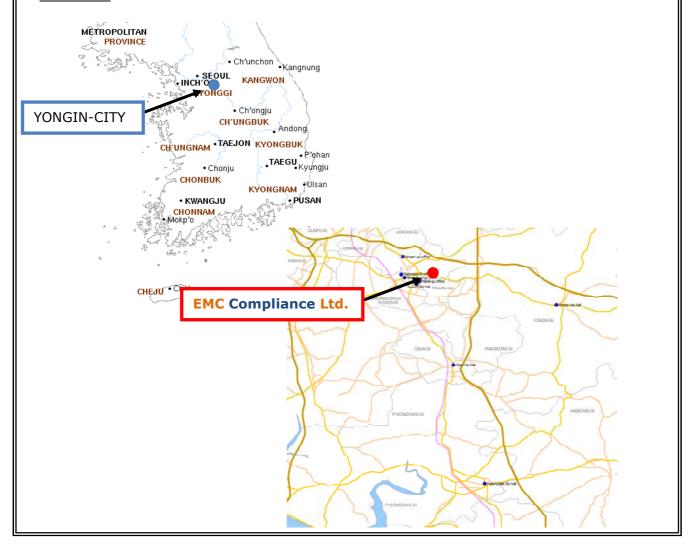
#### Certificate

CBTL Testing Laboratory, KOLAS NO.: 231

FCC Filing No.: KR0040

VCCI Registration No.: C-1713, R-1606, T-258

#### SITE MAP





### 3. Description of E.U.T.

### 3.1 Basic description

Applicant :	ARTSYSTEM Co.,Ltd.			
Address of Applicant: 501 IT Bldg., 573-13, Bokhyeon-dong, Buk-gu, Daegu-Cit 702-832, Korea				
Manufacturer:	ARTSYSTEM Co.,Ltd.			
Address of Manufacturer:	501 IT Bldg., 573-13, Bokhyeon-dong, Buk-gu, Daegu-City, 702-832, Korea			
Type of equipment:	USN TAG			
Basic Model:	AMT-303			
Brand name:	-			
Serial number:	Proto Type			

### 3.2 General description

Frequency Range	2405 MHz ~ 2480 MHz			
Type of Modulation	OQPSK			
Number of Channels	16 channels (channel spacing: 5 MHz)			
Type of Antenna	Chip antenna			
Antenna Gain	3.5 dBi			
Transmit Power	Under 6 dBm (declared by the applicant)			
Power supply	DC 5.0 V or AA 1.5V Alkaline battery 2EA			
LCD	TN Segment LCD(25×50) -Duty:1/4, Bias: 1/3, -Display:positive			
Interface	<ul> <li>LED Lamp push Button 4EA(Worker)</li> <li>LED Lamp push Button 1EA(OK)</li> <li>Push Button 3EA(+,-,SET)</li> </ul>			
Operating temperature	-20 ℃ ~ 55 ℃*			
Dimension	104 x 50 x 26 (mm)			
Weight	140g			



### 3.3 Test frequency

	Frequency
Low frequency	2405 MHz
Middle frequency	2440 MHz
High frequency	2480 MHz

### 3.4 Test Voltage

mode	Voltage
Norminal voltage	DC 5 V
Norminal voltage	DC 3 V (battery 2EA)



### 4. Summary of test results

### 4.1 Standards & results

Rule Reference	Parameter	Report Section	Test Result
15.203, 15.247(b)(4)	Antenna Requirement	5.1	С
15.249(a), (c), (d) 15.209(a)	Spurious Emission, Band Edge, and Restricted bands	5.7	С
15.207(a)	Conducted Emissions	5.9	NA*

Note: C=complies

NC= Not complies NT=Not tested NA=Not Applicable

### 4.2 Uncertainty

Measurement Item	Combined Standard Uncertainty Uc	Expanded Uncertainty U = KUc (K = 2)
Conducted RF power	± 1.106 dB	± 3.120 dB
Radiated disturbance	+2.280dB / - 2.278 dB	+4.560dB / - 4.556 dB
Conducted disturbance	+1.883 dB / - 1.676 dB	+3.766dB / - 3.352 dB

<sup>\*</sup>The test is not applicable since the EUT is not the device that is designed to be connected to the public utility(AC) power line.



### 5. Test results

### 5.1 Antenna Requirement

### 5.1.1 Regulation

According to §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. 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 this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### 5.1.2 Result

### -Complied

The transmitter has an CHIP antenna. The directional gain of the antenna is 3.5 dBi.



#### 5.2 SPURIOUS EMISSION, BAND EDGE, AND RESTRICTED BANDS

### 5.2.1 Regulation

According to §15.249(a), Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

	Fundamental	Field strength	Field strength			
		of Fundamental	of Harmonics			
	Frequency	(millivolt/meter)	(microvolts/meter)			
	902-928 MHz	50	500			
	2400-2483.5MHz	50	500			
	5725-5875 MHz	50	500			
	24.0-24.25 GHz	250	2500			

According to §15.249(c), Field strength limits are specified at a distance of 3 meters.

According to §15.249(d), 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.

According to §15.209(a), Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

\*\* The emission limits shown in the above table are based on measurement instrumentation employing a CISPR quasi-peak detector and above 1000 MHz are based on the average value of measured emissions.



According to §15.209(a), Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

	Field strength	Field strength
Frequency (MHz)	of Fundamental	of Harmonics
	(millivolt/meter)	(microvolts/meter)
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

<sup>\*\*</sup> Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., ections 15.231 and 15.241.



#### 5.2.2 Measurement Procedure

#### 1) Spurious Radiated Emissions:

- 1. The preliminary radiated measurements were performed to determine the frequency producing the maximum emissions in an anechoic chamber at a distance of 3 meters.
- 2. The EUT was placed on the top of the 0.8-meter height,  $1 \times 1.5$  meter non-metallic table. To find the maximum emission levels, the height of a measuring antenna was changed and the turntable was rotated  $360^{\circ}$ .
- 3. The antenna polarization was also changed from vertical to horizontal. The spectrum was scanned from 30 to 1000 MHz using the TRILOG broadband antenna, and from 1000 MHz to 18000 MHz using the horn antenna.
- 4. To obtain the final measurement data, the EUT was arranged on a turntable situated on a  $4 \times 4$  meter at the Open Area Test Site. The EUT was tested at a distance 3 meters.
- 5. Each frequency found during preliminary measurements was re-examined and investigated. The test-receiver system was set up to average, peak, and quasi-peak detector function with specified bandwidth.



#### 5.2.3 Test Result

### -complied

- 1. Band edge compliance of RF Radiated Emissions was shown in figure 1,2.
- 2. Measured value of the Field strength of spurious Emissions (Radiated)

#### 5.2.3.1 Test Result- DC 5V

- Low channel (2405 MHz)- DC 5V

Frequency	Receiver Bandwidth	Pol.	Reading	Factor	Result	Limit	Margin
[MHz]	[kHz]	[V/H]	[dB(µV)]	[dB]	$[dB(\mu V/m)]$	$[dB(\mu V/m)]$	[dB]
Quasi-Peak l	DATA. Emis	sions be	low 1GHz				
319.986	120	Н	32.9	-9.1	23.8	46.0	22.2
319.986	120	V	30.3	-9.1	21.1	46.0	24.8
Peak DATA.	Emissions a	above 10	SHz				
2340.88	1000	Н	53.4	-5.4	48.0	74.0	26.0
2340.88	1000	V	55.0	-5.4	49.6	74.0	24.4
2405.00	1000	Н	95.6	-5.1	90.5	114.0	23.5
2405.00	1000	V	99.0	-5.1	93.9	114.0	20.1
4810.00	1000	Н	53.9	3.2	57.1	74.0	16.9
4810.00	1000	V	53.8	3.2	57.0	74.0	17.0
7215.00	1000	Н	53.5	6.5	60.0	74.0	14.0
7215.00	1000	V	50.4	6.5	56.9	74.0	17.1
Average DAT	TA. Emissio	ns above	e 1GHz				
2340.88	1000	Н	46.5	-5.4	41.1	54.0	12.9
2340.88	1000	V	47.9	-5.4	42.5	54.0	11.5
2405.00	1000	Н	93.2	-5.1	88.1	94.0	5.9
2405.00	1000	V	96.2	-5.1	91.1	94.0	2.9 **
4810.00	1000	Н	45.5	3.2	48.7	54.0	5.3
4810.00	1000	V	43.5	3.2	46.7	54.0	7.3
7215.00	1000	Н	42.2	6.5	48.7	54.0	5.3



#### - Middle channel (2440 MHz)- DC 5V

Frequency	Receiver Bandwidth	Pol.	Reading	Factor	Result	Limit	Margin		
[MHz]	[kHz]	[V/H]	$[dB(\mu V)]$	[dB]	[dB(µV/m)]	$[dB(\mu V/m)]$	[dB]		
	Quasi-Peak DATA. Emissions below 1GHz								
319.99	120	Н	32.6	-9.1	23.5	46.0	22.5		
320.03	120	V	29.7	-9.1	20.6	46.0	25.4		
Peak DATA. I	Emissions a	bove 10	Hz						
2374.88	1000	Н	53.2	-5.2	48.0	74.0	26.0		
2374.88	1000	V	54.4	-5.2	49.2	74.0	24.8		
2440.00	1000	Н	99.1	-4.9	94.2	114.0	19.8		
2440.00	1000	V	96.5	-4.9	91.6	114.0	22.4		
2503.93	1000	Н	51.9	-4.6	47.3	74.0	26.7		
2503.93	1000	V	55.3	-4.6	50.7	74.0	23.3		
4880.00	1000	Н	51.1	3.5	54.6	74.0	19.4		
4880.00	1000	V	51.7	3.5	55.2	74.0	18.8		
7320.00	1000	Н	49.9	6.7	56.6	74.0	17.4		
7320.00	1000	V	49.1	6.7	55.8	74.0	18.2		
Average DAT	A. Emissio	ns above	1GHz						
2374.88	1000	Н	45.0	-5.2	39.8	54.0	14.2		
2374.88	1000	V	48.2	-5.2	43.0	54.0	11.0		
2440.00	1000	Н	95.8	-4.9	90.9	94.0	3.1**		
2440.00	1000	V	92.8	-4.9	87.9	94.0	6.1		
2503.93	1000	Н	44.8	-4.6	40.2	54.0	13.8		
2503.93	1000	V	41.8	-4.6	37.2	54.0	16.8		
4880.00	1000	Н	40.6	3.5	44.1	54.0	9.9		
4880.00	1000	V	45.1	3.5	48.6	54.0	5.4		
7320.00	1000	Н	40.7	6.7	47.4	54.0	6.6		
7320.00	1000	V	37.4	6.7	44.1	54.0	9.9		

#### - High channel (2480 MHz) - DC 5V

Frequency [MHz]	Receiver Bandwidth [kHz]	Pol. [V/H]	Reading [dB(µV)]	Factor [dB]	Result [dB(μV/m)]	Limit [dB(µV/m)]	Margin [dB]		
Quasi-Peak	Quasi-Peak DATA. Emissions below 1GHz								
51.83	120	V	32.5	-13.7	18.8	40.0	21.2		
320.03	120	Н	33.7	-9.1	24.6	46.0	21.4		
320.03	120	V	30.9	-9.1	21.8	46.0	24.2		
Peak DATA.	<b>Emissions</b>	above 1G	Hz						
2480.00	1000	Н	97.7	-4.7	93.0	114.0	21.0		
2480.00	1000	V	96.0	-4.7	91.3	114.0	22.7		
2542.75	1000	Н	53.0	-4.5	48.5	74.0	25.5		
2543.88	1000	V	52.4	-4.5	47.9	74.0	26.1		
2606.50	1000	Н	51.1	-4.2	46.9	74.0	27.1		
2606.50	1000	V	52.2	-4.2	48.0	74.0	26.0		
4958.88	1000	Н	49.6	3.9	53.5	74.0	20.5		
4960.00	1000	V	51.2	3.9	55.1	74.0	18.9		
7440.00	1000	Н	51.1	6.9	58.0	74.0	16.0		
7440.00	1000	V	52.3	6.9	59.2	74.0	14.8		
Average DA	ΓA. Emissio	ns above	1GHz			-			
2480.00	1000	Н	95.4	-4.7	90.7	94.0	3.3**		
2480.00	1000	V	92.8	-4.7	88.1	94.0	5.9		
2542.75	1000	Н	45.8	-4.5	41.3	54.0	12.7		
2543.88	1000	V	50.6	-4.5	46.1	54.0	7.9		
2606.50	1000	Н	43.4	-4.2	39.2	54.0	14.8		
2606.50	1000	V	40.8	-4.2	36.6	54.0	17.4		
4958.88	1000	Н	45.0	3.9	48.9	54.0	5.1		
4960.00	1000	V	43.6	3.9	47.5	54.0	6.5		
7440.00	1000	Н	40.5	6.9	47.4	54.0	6.6		
7440.00	1000	V	39.7	6.9	46.6	54.0	7.4		

Factor(dB) = ANT Factor+ Amp Gain + Cable Loss

Margin (dB) = Limit - Result

[Result = Reading - Factor]

- 1. H = Horizontal, V = Vertical Polarization
- 2. ATT = Attenuation (10dB pad and/or Insertion Loss of HPF), AF/CL = Antenna Factor and Cable Loss
- \* The spurious emission at the frequency does not fall in the restricted bands.

Page: 14 of 21

NOTE: All emissions not reported were more than 20 dB below the specified limit or in the noise floor.

<sup>\*\*</sup> The measured result is within the test standard limit by a margin less than the measurement uncertainty; it is therefore not possible to state compliance based on the 95 % level of confidence. However, the result indicates that compliance is more probable than non-compliance.



#### 5.2.3.2 Test Result - DC 3V

#### - Low channel (2405 MHz)- DC 3V

Frequency	Receiver Bandwidth	Pol.	Reading	Factor	Result	Limit	Margin		
[MHz]	[kHz]	[V/H]	$[dB(\mu V)]$	[dB]	$[dB(\mu V/m)]$	$[dB(\mu V/m)]$	[dB]		
Quasi-Peak DATA. Emissions below 1GHz									
34.32	120	Н	22.2	-17.3	4.9	40.00	35.1		
36.31	120	V	25.8	-17.1	8.7	40.00	31.3		
148.31	120	V	21.7	-15	6.7	43.50	36.8		
351.99	120	V	22.3	-12.4	9.9	46.00	36.1		
Peak DATA. E	Emissions a	bove 10	Hz						
2341.22	1000	Н	52.4	-5.4	47.0	74.0	27.0		
2341.22	1000	V	53.1	-5.4	47.7	74.0	26.3		
2405.00	1000	Н	96.9	-5.1	91.8	114.0	22.2		
2405.00	1000	V	96.7	-5.1	91.6	114.0	22.4		
7215.00	1000	Н	52.8	6.5	59.3	74.0	14.7		
7215.00	1000	V	52.3	6.5	58.8	74.0	15.2		
. 547									
Average DAI	Average DATA. Emissions above 1GHz								
2341.22	1000	Н	45.3	-5.4	39.9	54.0	14.1		
2341.22	1000	V	47.7	-5.4	42.3	54.0	11.7		
2405.00	1000	Н	94.6	-5.1	89.5	94.0	4.5**		
2405.00	1000	V	95.7	-5.1	90.6	94.0	3.4**		
7215.00	1000	Н	42.1	6.5	48.6	54.0	5.4		
7215.00	1000	V	41.5	6.5	48.0	54.0	6.0		



#### - Middle channel (2440 MHz)- DC 3V

Receiver D. I. D. I. D. I. D. I. J.									
Frequency	Bandwidth	Pol.	Reading	Factor	Result	Limit	Margin		
[MHz]	[kHz]	[V/H]	$[dB(\mu V)]$	[dB]	[dB(µV/m)]	$[dB(\mu V/m)]$	[dB]		
·	Quasi-Peak DATA. Emissions below 1GHz								
120.09	120	V	22.2	-16.6	5.6	43.50	37.9		
151.01	120	V	25.7	-14.9	10.8	43.50	32.7		
348.67	120	V	21.3	-12.5	8.8	46.00	37.2		
352.04	120	Н	30.5	-12.4	18.1	46.00	27.9		
Peak DATA. E	Peak DATA. Emissions above 1GHz								
2375.09	1000	Н	51.3	-5.2	46.1	74.0	27.9		
2375.09	1000	V	54.2	-5.2	49.0	74.0	25.0		
2440.00	1000	Н	96.3	-4.9	91.4	114.0	22.6		
2440.00	1000	V	96.7	-4.9	91.8	114.0	22.2		
2504.43	1000	Н	52.1	-4.6	47.5	74.0	26.5		
2504.43	1000	V	53.3	-4.6	48.7	74.0	25.3		
4880.25	1000	Н	51.4	3.5	54.9	74.0	19.1		
4880.25	1000	V	52.9	3.5	56.4	74.0	17.6		
7320.00	1000	Н	50.5	6.7	57.2	74.0	16.8		
7320.00	1000	V	49.1	6.7	55.8	74.0	18.2		
Average DAT	Average DATA. Emissions above 1GHz								
2375.09	1000	Н	42.5	-5.2	37.3	54.0	16.7		
2375.09	1000	V	48.9	-5.2	43.7	54.0	10.3		
2440.00	1000	Н	93.9	-4.9	89.0	94.0	5.0		
2440.00	1000	V	94.3	-4.9	89.4	94.0	4.6		
2504.43	1000	Н	42.4	-4.6	37.8	54.0	16.2		
2504.43	1000	V	50.9	-4.6	46.3	54.0	7.7		
4880.25	1000	Н	43.4	3.5	46.9	54.0	7.1		
4880.25	1000	V	42.6	3.5	46.1	54.0	7.9		
7320.00	1000	Н	41.3	6.7	48.0	54.0	6.0		
7320.00	1000	V	38.3	6.7	45.0	54.0	9.0		



#### - High channel (2480 MHz) -DC 3V

Frequency	Receiver	Pol.	Reading	Factor	Result	Limit	Margin		
1 ,	Bandwidth			LIDI			•		
$[MHz] \hspace{0.2cm} [kHz] \hspace{0.2cm} [V/H] \hspace{0.2cm} [dB(\mu V)] \hspace{0.2cm} [dB] \hspace{0.2cm} [dB(\mu V/m)] \hspace{0.2cm} [dB(\mu V/m)] \hspace{0.2cm} [dB]$							[aB]		
Quasi-Peak DATA. Emissions below 1GHz									
34.49	120	V	23.3	-17.3	6.0	40.00	34.0		
319.99	120	Н	30.2	-13.5	16.7	46.00	29.3		
339.19	120	V	21.2	-12.8	8.4	46.00	37.6		
351.99	120	Н	32.2	-12.4	19.8	46.00	26.2		
Peak DATA. E	Peak DATA. Emissions above 1GHz								
2480.00	1000	Н	95.4	-4.7	90.7	114.0	23.3		
2480.00	1000	V	98.0	-4.7	93.3	114.0	20.7		
2544.29	1000	Н	58.8	-4.5	54.3	74.0	19.7		
2607.91	1000	V	56.4	-4.2	52.2	74.0	21.8		
4960.00	1000	Н	49.4	3.9	53.3	74.0	20.7		
4960.00	1000	V	56.7	3.9	60.6	74.0	13.4		
7440.00	1000	Н	51.3	6.9	58.2	74.0	15.8		
7440.00	1000	V	51.9	6.9	58.8	74.0	15.2		
Average DAT	Average DATA. Emissions above 1GHz								
2480.00	1000	Н	93.0	-4.7	88.3	94.0	5.7		
2480.00	1000	V	95.5	-4.7	90.8	94.0	3.2**		
2544.29	1000	Н	53.9	-4.5	49.4	54.0	4.6		
2607.91	1000	V	51.4	-4.2	47.2	54.0	6.8		
4960.00	1000	Н	43.3	3.9	47.2	54.0	6.8		
4960.00	1000	V	47.6	3.9	51.5	54.0	2.5**		
7440.00	1000	Н	41.6	6.9	48.5	54.0	5.5		
7440.00	1000	V	41.5	6.9	48.4	54.0	5.6		

Factor(dB) = ANT Factor+ Amp Gain + Cable Loss

Margin (dB) = Limit - Result [Result = Reading - Factor]

Page: 17 of 21

NOTE: All emissions not reported were more than 20 dB below the specified limit or in the noise floor.

<sup>1.</sup> H = Horizontal, V = Vertical Polarization

<sup>2.</sup> ATT = Attenuation (10dB pad and/or Insertion Loss of HPF), AF/CL = Antenna Factor and Cable Loss

<sup>\*</sup> The spurious emission at the frequency does not fall in the restricted bands.

<sup>\*\*</sup> The measured result is within the test standard limit by a margin less than the measurement uncertainty; it is therefore not possible to state compliance based on the 95 % level of confidence. However, the result indicates that compliance is more probable than non-compliance.

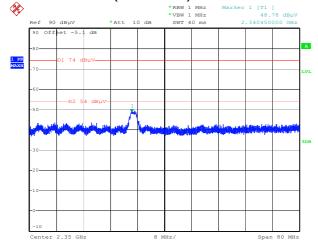


#### 5.2.4 Test Plot

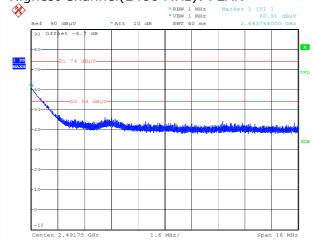
Figure 1. Plot of the Band Edge (Radiated)- DC 5V

Worst case pol: Horizontal

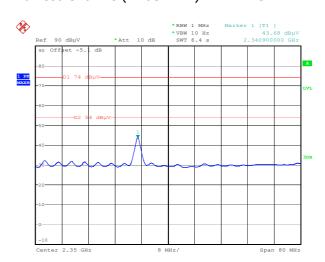
#### Lowest Channel(2405 MHz): PEAK



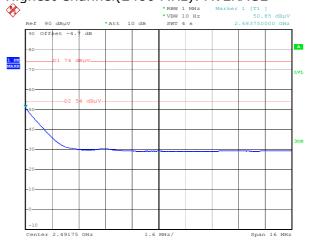
#### Highest Channel(2480 MHz): PEAK



#### Lowest Channel(2405 MHz): AVERAGE

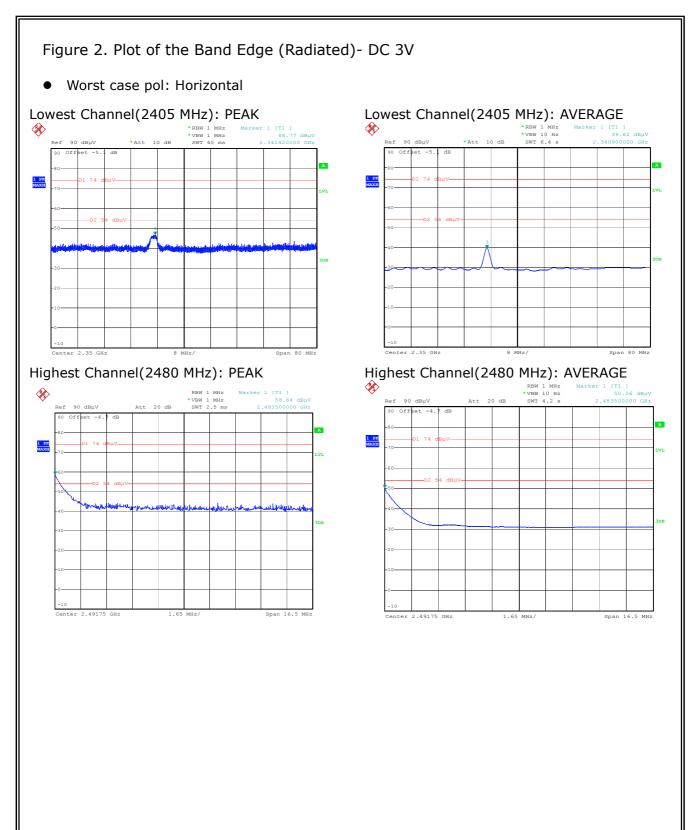


#### Highest Channel(2480 MHz): AVERAGE



Page: 18 of 21





Page: 19 of 21



### 5.9 Conducted Emission (N/A)

#### 5.9.1 Regulation

According to §15.207(a), 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  $50\mu\text{H}/50\Omega$  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	Conducted limit (dBµV)			
(MHz)	Qausi-peak	Average		
0.15 - 0.5	66 to 56 *	56 to 46 *		
0.5 - 5	56	46		
5 - 30	60	50		

<sup>\*</sup> Decreases with the logarithm of the frequency.

According to §15.107(a), for unintentional device, except for Class A digital devices, line conducted emission limits are the same as the above table.

#### 5.9.2 Measurement Procedure

- 1. The EUT was placed on a wooden table of size, 1 m by 1.5 m, raised 80 cm in which is located 40 cm away from the vertical wall and 1.5m away from the side wall of the shielded room.
- 2. Each current-carrying conductor of the EUT power cord was individually connected through a  $50\Omega/50\mu H$  LISN, which is an input transducer to a Spectrum Analyzer or an EMI/Field Intensity Meter, to the input power source.
- 3. Exploratory measurements were made to identify the frequency of the emission that had the highest amplitude relative to the limit by operating the EUT in a range of typical modes of operation, cable position, and with a typical system equipment configuration and arrangement. Based on the exploratory tests of the EUT, the one EUT cable configuration and arrangement and mode of operation that had produced the emission with the highest amplitude relative to the limit was selected for the final measurement.
- 4. The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment is the system) was then performed over the frequency range of 0.15 MHz to 30 MHz.
- 5. The measurements were made with the detector set to PEAK amplitude within a bandwidth of 10 kHz or to QUASI-PEAK and AVERAGE within a bandwidth of 9 kHz. The EUT was in transmitting mode during the measurements.



### 6. Test equipment used for test

Description	Manufacture	Model No.	Serial No.	Next Cal Date.
Temp & humidity chamber	taekwang	TK-04	TK001	11.12.11
Temp & humidity chamber	taekwang	TK-500	TK002	11.09.07
Power Meter	Agilent	E4416A	GB41292365	11.11.01
Frequency Counter	HP	5351B	3049A01295	11.11.01
Spectrum Analyzer	Agilent	E4407B	US39010142	11.11.01
Spectrum Analyzer	R&S	FSP40	100209	11.11.01
Signal Generator	HP	E4432B	GB39340611	11.11.01
Modulation Analyzer	HP	8901B	3538A05527	10.11.01
Audio Analyzer	HP	8903B	3729A19213	11.11.04
AC Power Supply	KIKUSUI	PCR2000W	GB001619	11.11.01
DC Power Supply	Tektronix	PS2520G	TW50517	12.02.18
DC Power Supply	Tektronix	PS2521G	TW53135	11.11.01
Dummy Load	BIRD	8141	7560	-
Dummy Load	BIRD	8401-025	799	-
EMI Test Receiver	R&S	ESCI	100001	11.08.17
Attenuator	HP	8494A	2631A09825	11.11.03
Attenuator	HP	8496A	3308A16640	11.11.03
Attenuator	R&S	RBS1000	D67079	11.11.03
Power sensor	Agilent	E9321A	US40390422	11.11.08
Power sensor	Agilent	E9325A	US40420186	11.11.08
LOOP Antenna	EMCO	EMCO6502	9205-2745	11.05.22
BILOG Antenna	Schwarzbeck	VULB 9168	375	11.11.30
HORN Antenna	ETS	3115	00062589	11.12.22
HORN Antenna	ETS	3116	00086632	11.12.17
Power Divider	HP	11636A	05441	11.08.25
Signal Generator	HP	E4432B	GB39340611	11.11.01
Power Divider	Weinschel	1580-1	NX375	11.09.27
Power Divider	Weinschel	1580-1	NX380	11.08.25
Power Divider	Weinschel	1594	671	11.09.02
Test Receiver	R&S	ESHS30	844827/011	11.08.16
LISN	R&S	ESH3-Z5	846125/024	11.08.04
LISN	PMM	L3-32	0120J20305	-