



243 Jubug-Ri, Yangji-Myeon, Yongin-Si, Gyeonggi-Do, Korea 17159
Tel: +82-31-323-6008 Fax: +82-31-323-6010
<http://www.ltalab.com>

Dates of Tests: September 10 ~ September 28, 2017
Test Report S/N: LR500111710H
Test Site : LTA CO., LTD.

CERTIFICATION OF COMPLIANCE

FCC ID.

2ANM8IDAP1A

APPLICANT

INDI TAG Co.,Ltd.

Equipment Class	:	Digital Transmission System (DTS)
Manufacturing Description	:	Zigbee AP
Manufacturer	:	INDI TAG Co.,Ltd.
Model name	:	IDAP1A
Test Device Serial No.:	:	Identical prototype
Rule Part(s)	:	FCC Part 15.247 Subpart C ; ANSI C-63.4-2014
Frequency Range	:	2405 MHz ~ 2480 MHz
Max. Output Power	:	Max 19.82 dBm – Conducted(Port 1) Max 19.10 dBm – Conducted(Port 2)
Data of issue	:	September 30, 2017

This test report is issued under the authority of:

Yong-Cheol, Wang / Manager

The test was supervised by:

Jae-hum, Yeon / Test Engineer

This test result only responds to the tested sample. It is not allowed to copy this report even partly without the allowance of the test laboratory. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.



NVLAP LAB Code.: 200723-0

TABLE OF CONTENTS

1. GENERAL INFORMATION	3
2. INFORMATION ABOUT TEST ITEM	4
3. TEST REPORT	6
3.1 SUMMARY OF TESTS	6
3.2 TECHNICAL CHARACTERISTICS TEST	7
3.2.1 6 dB BANDWIDTH	7
3.2.2 PEAK OUTPUT POWER	13
3.2.3 POWER SPECTRAL DENSITY	18
3.2.4 BAND EDGE	23
3.2.5 CONDUCTED SPURIOUS EMISSIONS	27
3.2.6 RADIATED SPURIOUS EMISSIONS	32
3.2.7 AC CONDUCTED EMISSIONS	54
 APPENDIX	
APPENDIX TEST EQUIPMENT USED FOR TESTS	61

1. General information

1-1 Test Performed

Company name : LTA Co., Ltd.
 Address : 243, Jubug-ri, Yangji-Myeon, Youngin-Si, Kyunggi-Do, Korea. 17159
 Web site : <http://www.ltalab.com>
 E-mail : chahn@ltalab.com
 Telephone : +82-31-323-6008
 Facsimile : +82-31-323-6010

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the “General requirements for the competents of calibration and testing laboratory”.

1-2 Accredited agencies

LTA Co., Ltd. is approved to perform EMC testing by the following agencies:

Agency	Country	Accreditation No.	Validity	Reference
NVLAP	U.S.A	200723-0	Updating	ECT accredited Lab.
RRA	KOREA	KR0049	-	EMC accredited Lab.
FCC	U.S.A	649054	2019-04-13	FCC CAB
VCCI	JAPAN	R2133(10 m), C2307	Updating	VCCI registration
VCCI	JAPAN	T-2009	2017-12-23	VCCI registration
VCCI	JAPAN	G-563	2018-12-13	VCCI registration
IC	CANADA	5799A-1	2019-11-07	IC filing
KOLAS	KOREA	NO.551	2021-08-20	KOLAS accredited Lab.

2. Information about test item

2-1 Client & Manufacturer

Company name : INDI TAG Co., Ltd.
Address : Nambusunhwan-ro 347-gil Seocho-gu, Seoul, Korea
Tel / Fax : TEL No : +82-2-3272-0068

2-3 Equipment Under Test (EUT)

Trade name : INDI TAG Co.,Ltd.
Model name : IDAP1A
Serial number : Identical prototype
Date of receipt : September 10, 2017
EUT condition : Pre-production, not damaged
Antenna type : Dipole antenna - Max Gain 3.21 dBi
Frequency Range : 2405 MHz ~ 2480 MHz
RF output power : Max 19.82 dBm – Conducted(Port 1)
: Max 19.10 dBm – Conducted(Port 2)
Number of channels : 16
Type of Modulation : Direct Sequence Spread Spectrum(DSSS)
Power Source : 5 V by adapter
Firmware Version : V1.0.0

2-3 Tested frequency

Zigbee	LOW	MID	HIGH
Frequency (MHz)	2405	2440	2480

2-4 Ancillary Equipment

Equipment	Model No.	Serial No.	Manufacturer
Notebook	CR720	MS-1736	MSI

3. Test Report

3.1 Summary of tests

FCC Part Section(s)	Parameter	Limit	Test Condition	Status (note 1)
15.247(a)	6 dB Bandwidth	> 500 kHz	Conducted	C
15.247(b)	Transmitter Peak Output Power	< 1 Watt		C
15.247(d)	Transmitter Power Spectral Density	< 8 dBm @ 3 kHz		C
15.247(d)	Band Edge	> 20 dBc		C
15.209	Field Strength of Harmonics	Emission	Radiated	C
15.207	AC Conducted Emissions	Emissions	Conducted	C
15.203	Antenna requirement	-	-	C

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: The data in this test report are traceable to the national or international standards.

→ Antenna Requirement

The INDI TAG Co.,Ltd. FCC ID: 2ANM8IDAP1A unit complies with the requirement of §15.203.

The antenna type is Dipole Antenna

The sample was tested according to the following specification:

*FCC Parts 15.247; ANSI C-63.4-2014

*FCC KDB Publication No. 558074 v03r05

*FCC TCB Workshop 2012, April

3.2 Technical Characteristics Test

3.2.1 6 dB Bandwidth

Procedure:

The bandwidth at 6 dB below the highest in-band spectral density was measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate frequencies.

After the trace being stable, Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 6 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 6 dB bandwidth of the emission.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

RBW = 100 kHz

Span = 5 MHz

VBW = 100 kHz (VBW $\geq$ RBW)

Sweep = auto

Trace = max hold

Detector function = peak

Measurement Data(Port 1) : **Complies**

Frequency (MHz)	Test Results	
	Measured Bandwidth (MHz)	Result
2405	1.606	Complies
2440	1.606	Complies
2480	1.606	Complies

- See next pages for actual measured spectrum plots.

Measurement Data(Port 2) : **Complies**

Frequency (MHz)	Test Results	
	Measured Bandwidth (MHz)	Result
2405	1.599	Complies
2440	1.606	Complies
2480	1.599	Complies

- See next pages for actual measured spectrum plots.

Minimum Standard:

6 dB Bandwidth > 500 kHz

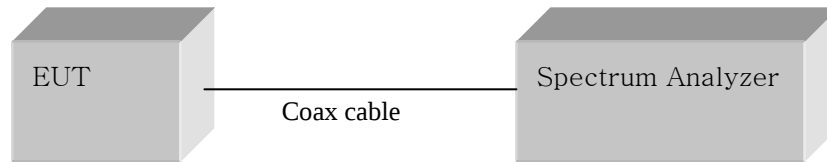
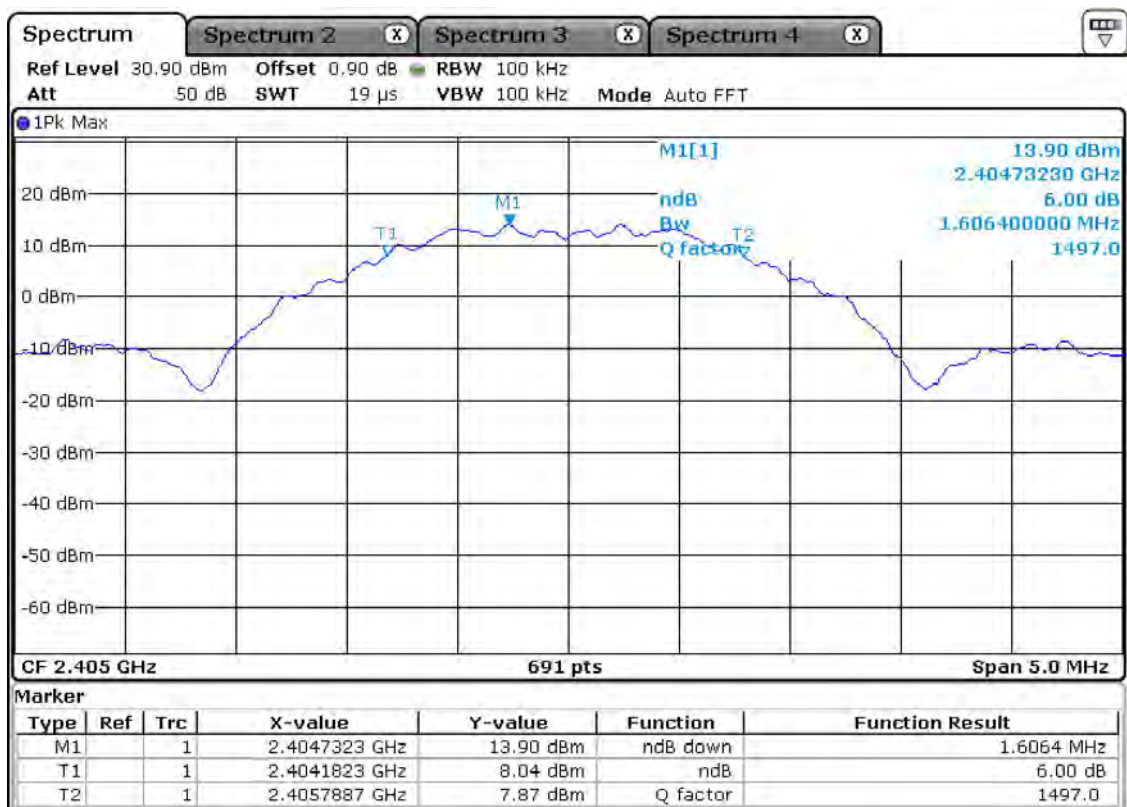
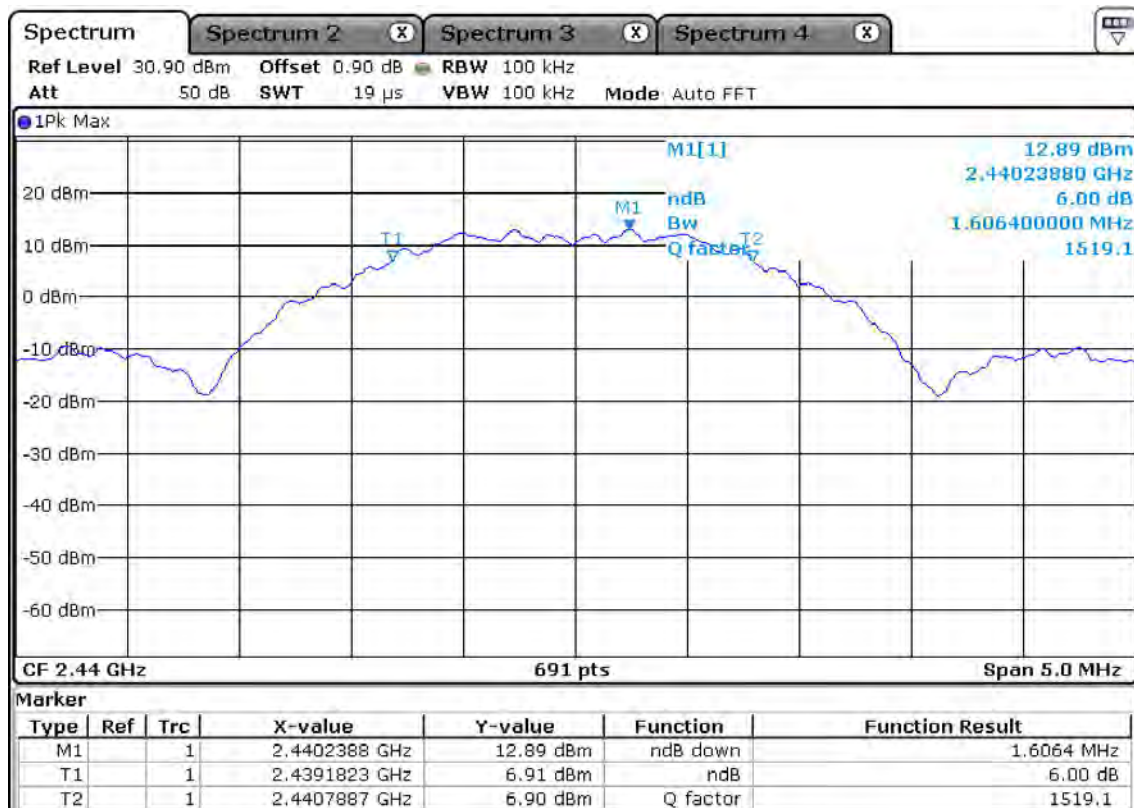
Measurement Setup

Figure 1: Measurement setup for the carrier frequency separation

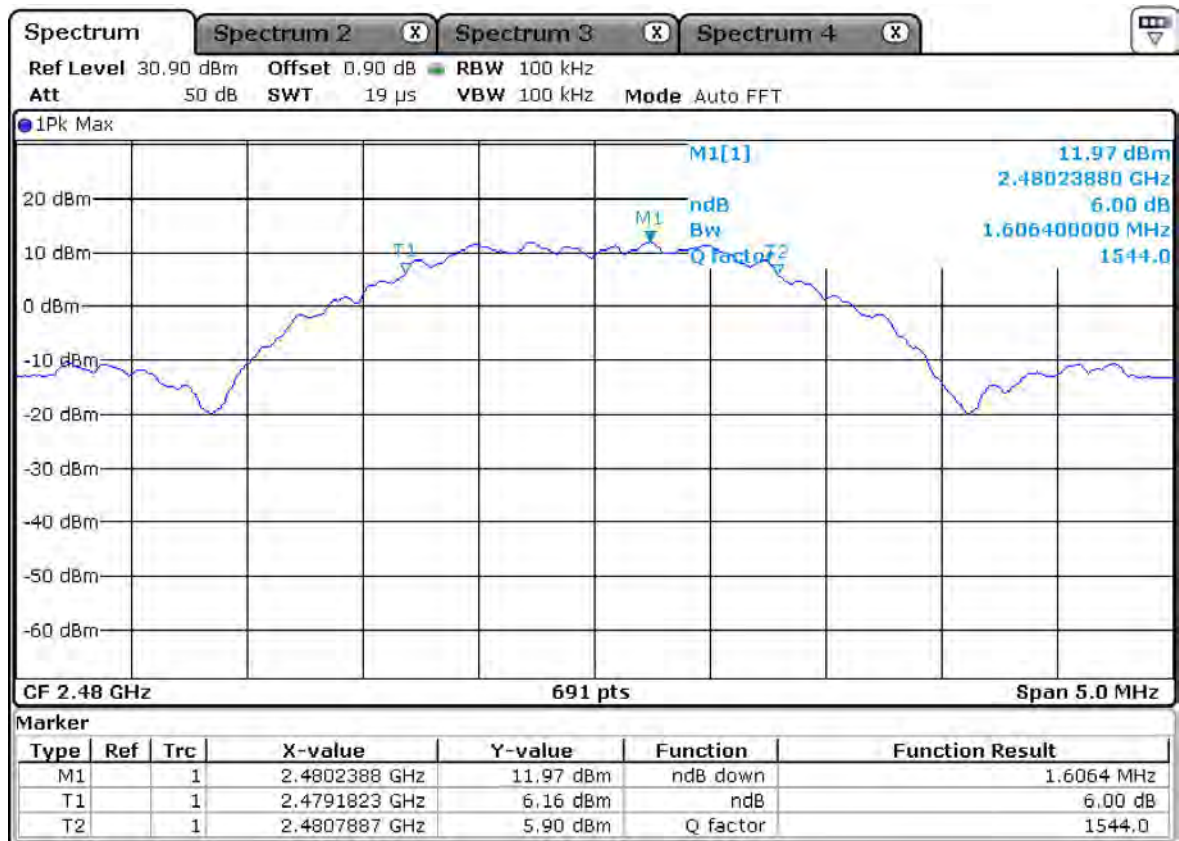
Port 1 Low Channel



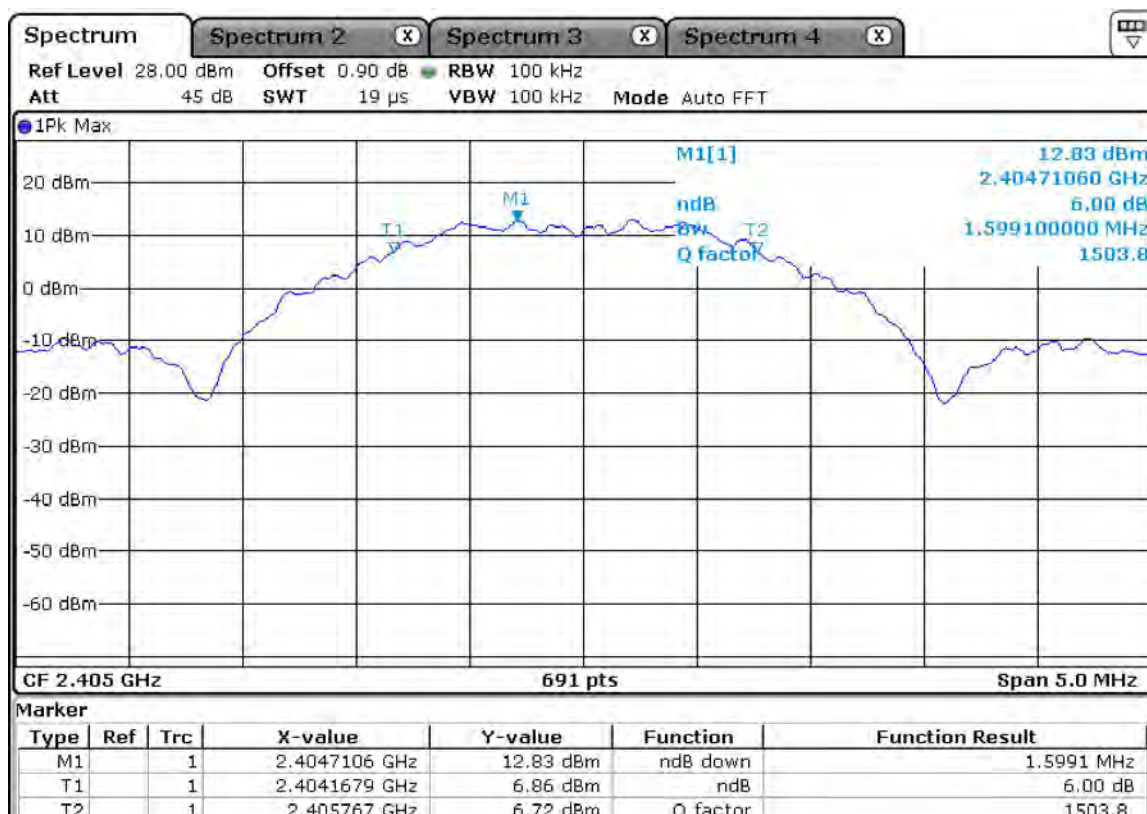
Middle Channel



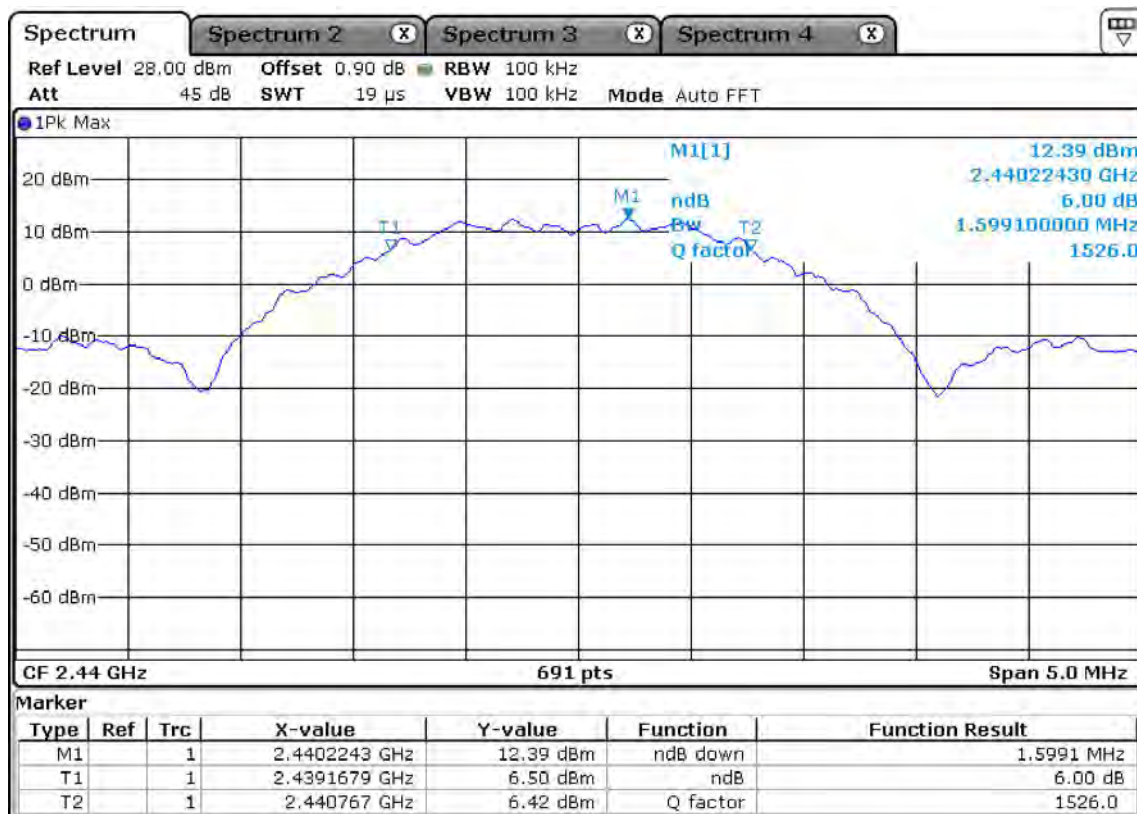
High Channel



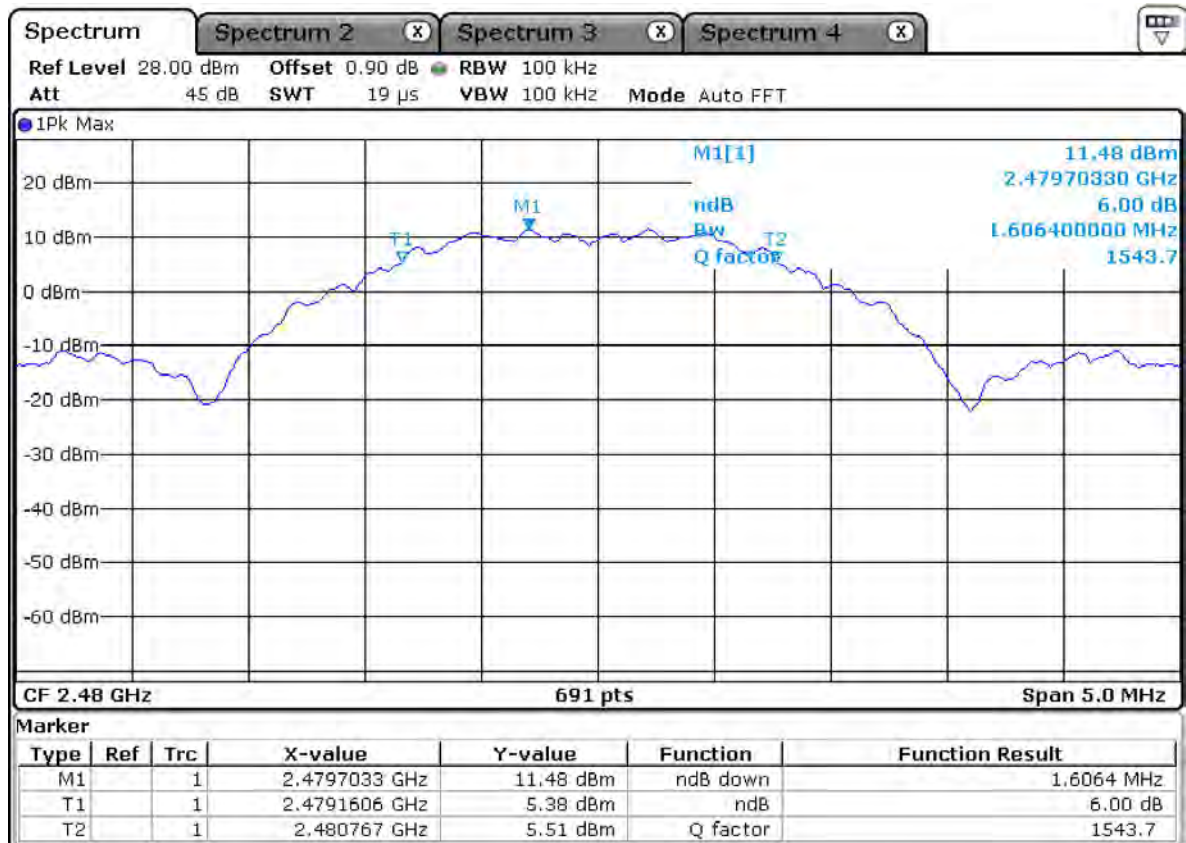
Port 2 Low Channel



Middle Channel



High Channel



3.2.2 Peak Output Power Measurement

Procedure:

The maximum peak output power was measured with the spectrum analyzer connected to the antenna output of the EUT. The spectrum analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99% bandwidth. The EUT was operating in transmit mode at the appropriate center frequency.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

RBW = 1MHz

Span = auto

VBW = 1MHz (VBW $\geq$ RBW)

Sweep = auto

Detector function = peak

Measurement Data (Port 1) : **Complies**

Frequency (MHz)	Test Results		
	dBm	W	Result
2405	19.82	0.0959	Complies
2440	19.03	0.0800	Complies
2480	18.17	0.0656	Complies

- See next pages for actual measured spectrum plots.

Measurement Data (Port 2) : **Complies**

Frequency (MHz)	Test Results		
	dBm	W	Result
2405	19.10	0.0813	Complies
2440	18.50	0.0708	Complies
2480	17.70	0.0589	Complies

- See next pages for actual measured spectrum plots.

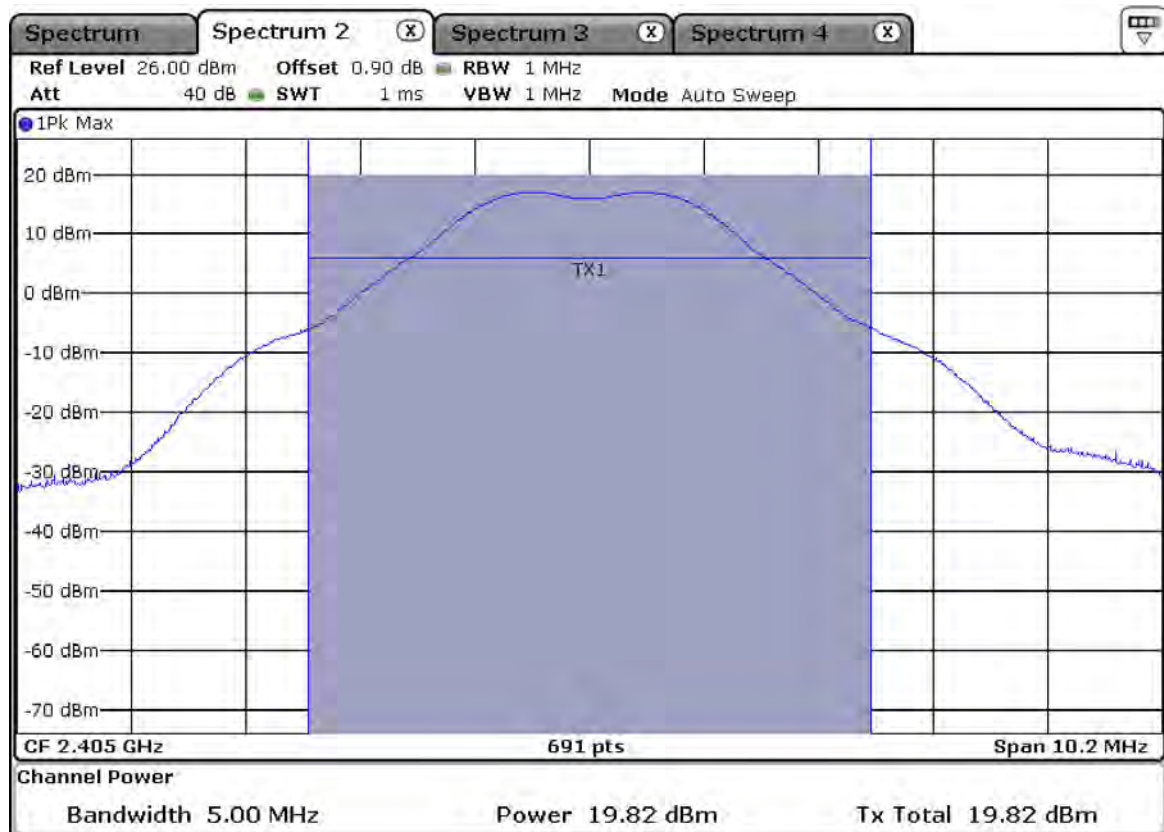
Minimum Standard:

Peak output power	< 1 W
-------------------	-------

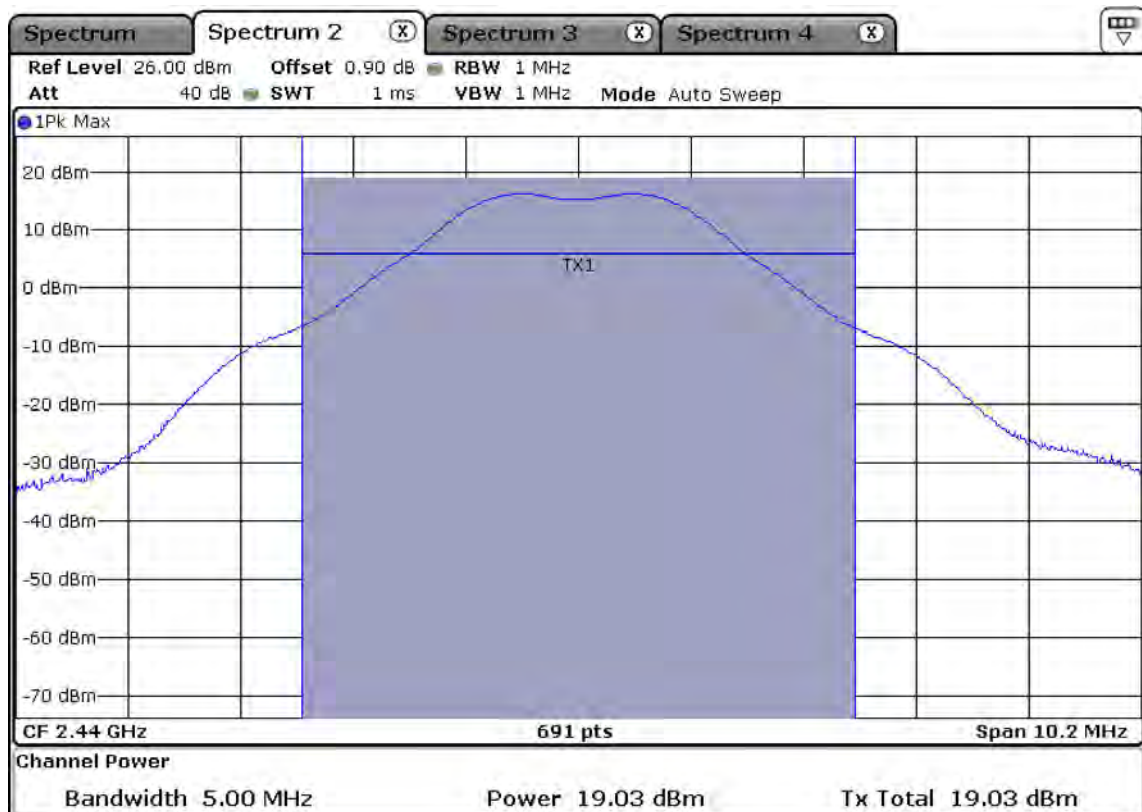
Measurement Setup

Same as the Chapter 3.2.1 (Figure 1)

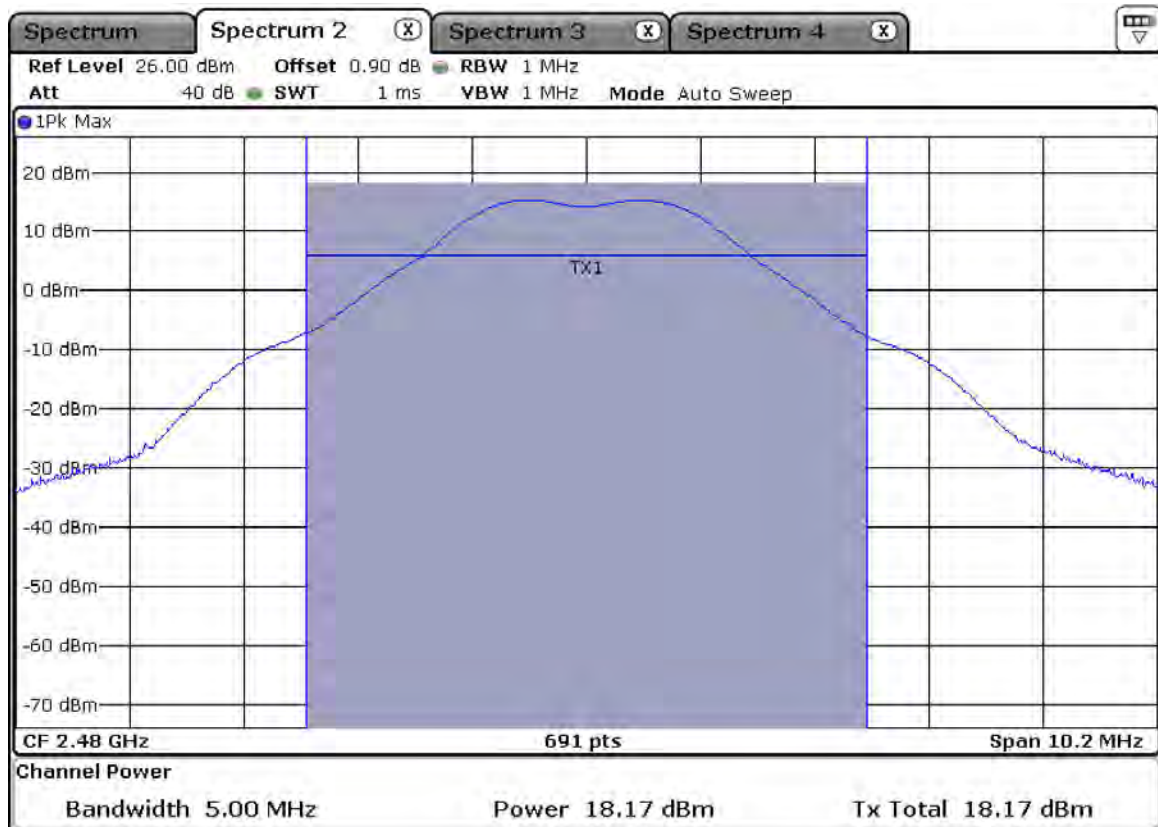
Port 1 Low Channel



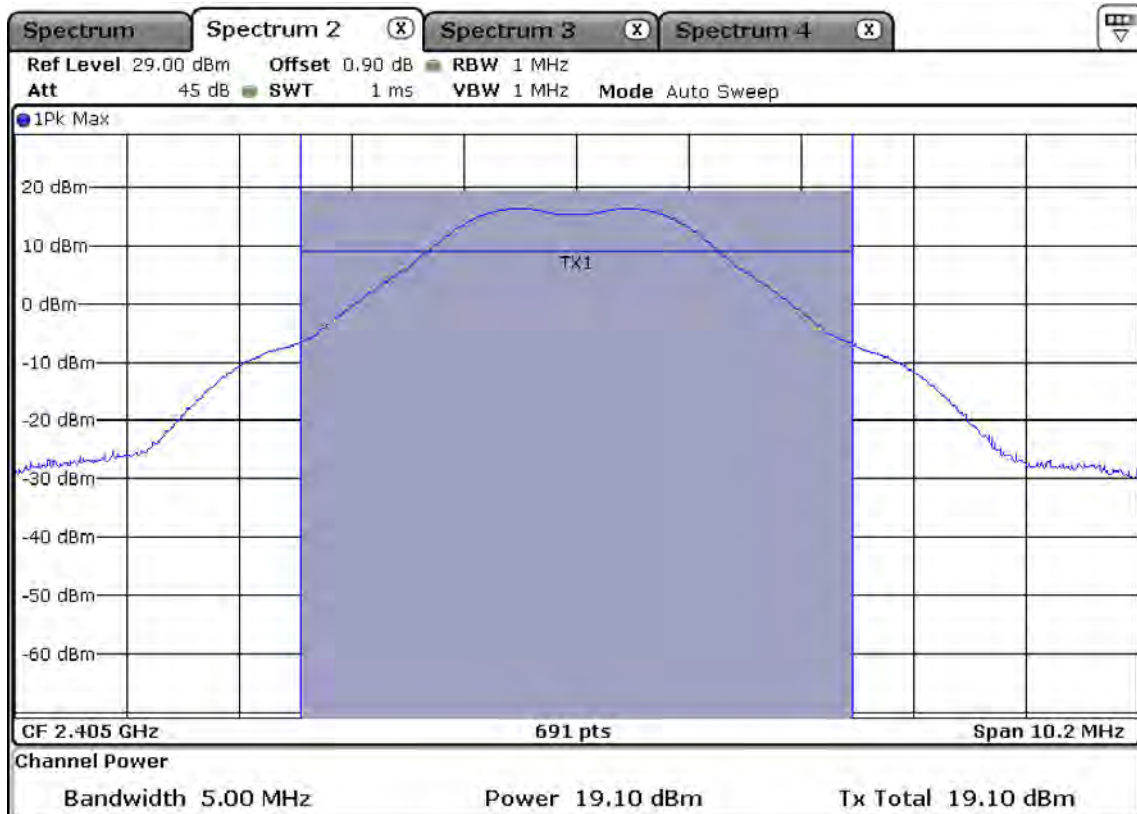
Middle Channel



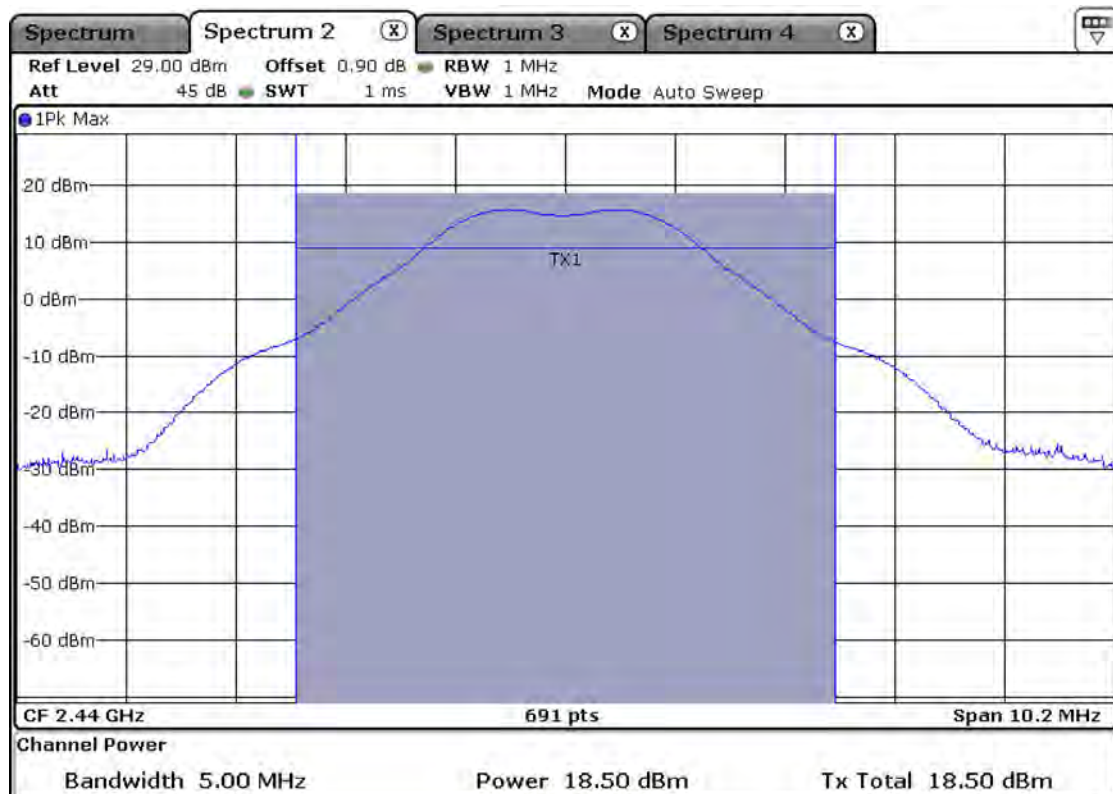
High Channel



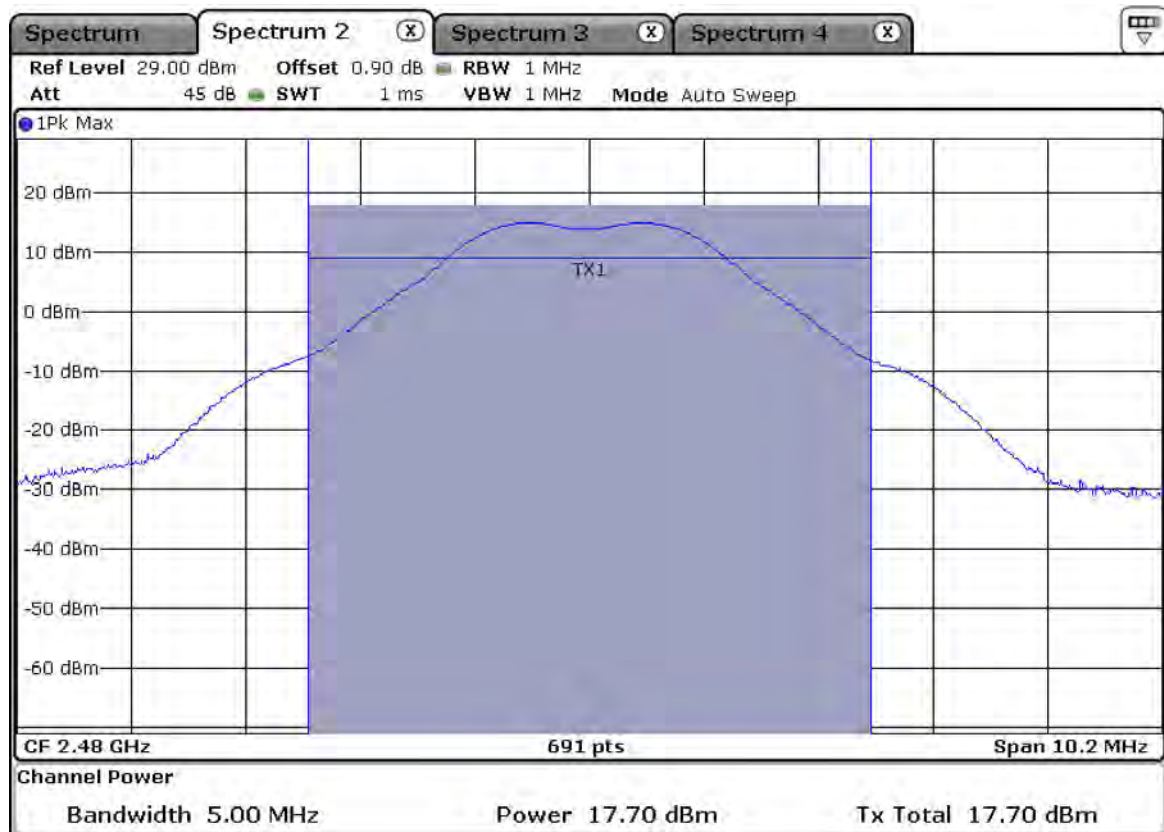
Port 2 Low Channel



Middle Channel



High Channel



3.2.3 Power Spectral Density

Procedure:

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

The spectrum analyzer is set to:

RBW = 3 kHz

Span = 300 kHz

VBW = 3 kHz

Sweep = auto

Detector function = peak

Trace = max hold

Measurement Data (Port 1) : **Complies**

Frequency (MHz)	Test Results	
	dBm @ 3kHz	Result
2405	2.28	Complies
2440	1.28	Complies
2480	0.80	Complies

- See next pages for actual measured spectrum plots.

Measurement Data (Port 2) : **Complies**

Frequency (MHz)	Test Results	
	dBm @ 3kHz	Result
2405	1.56	Complies
2440	0.41	Complies
2480	-0.42	Complies

- See next pages for actual measured spectrum plots.

Minimum Standard:

Power Spectral Density	< 8 dBm @ 3 kHz BW
------------------------	--------------------

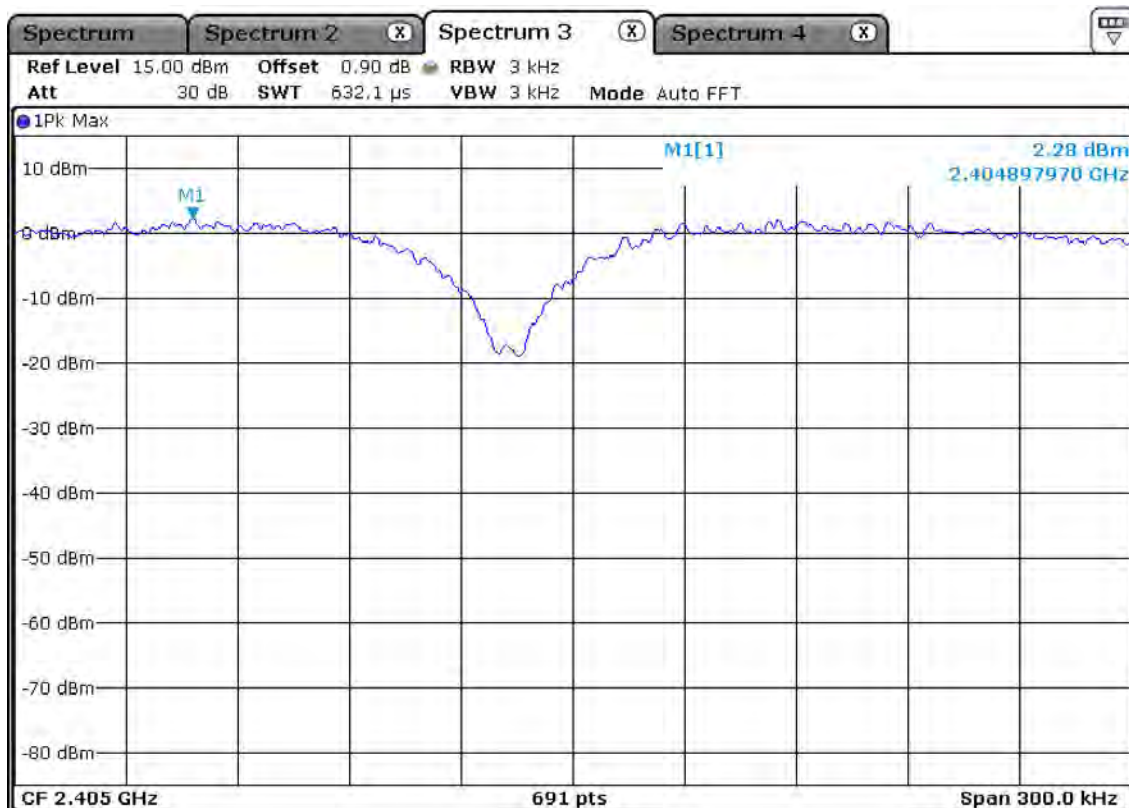
Measurement Setup

Same as the Chapter 3.2.1 (Figure 1)

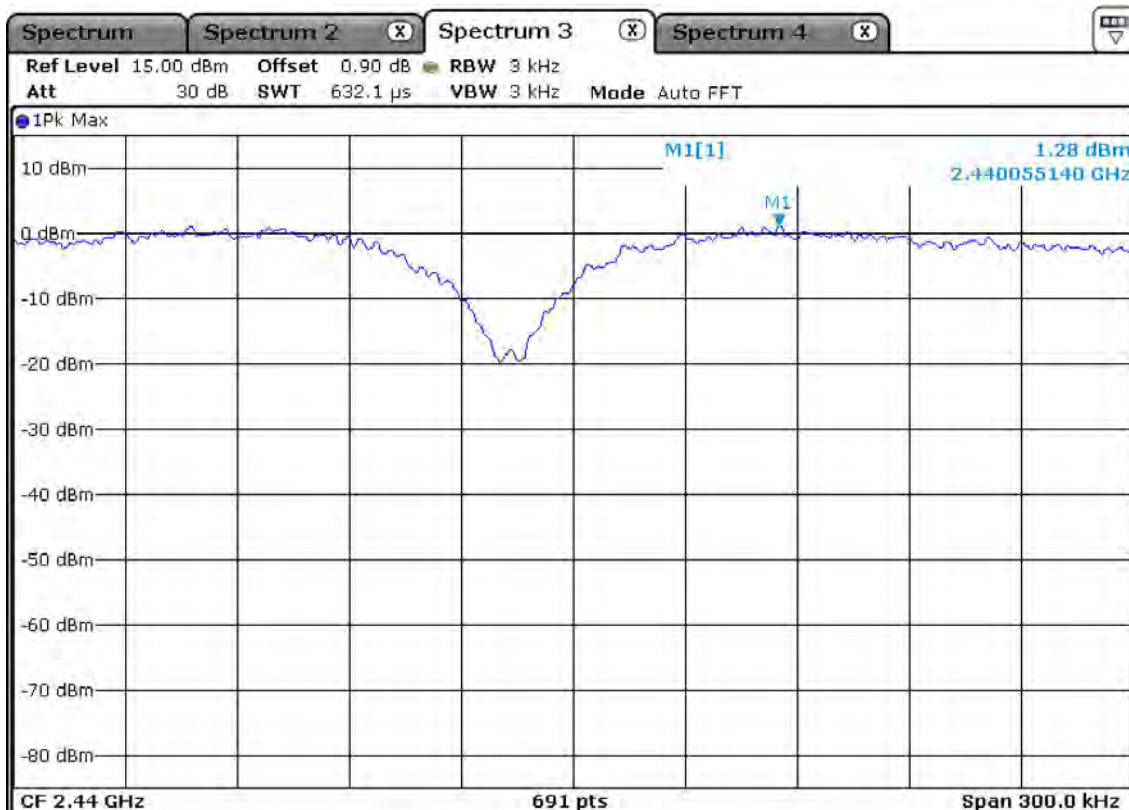
Power Density Measurement

Port 1

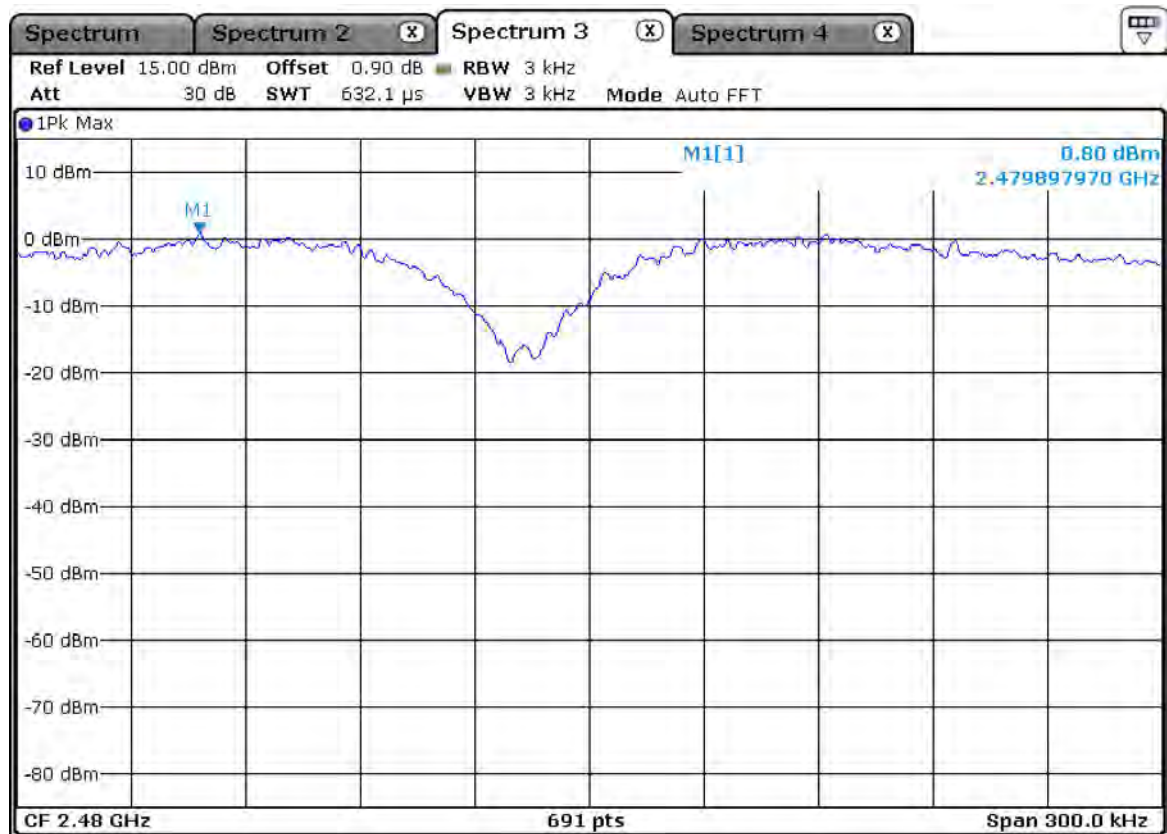
Low Channel



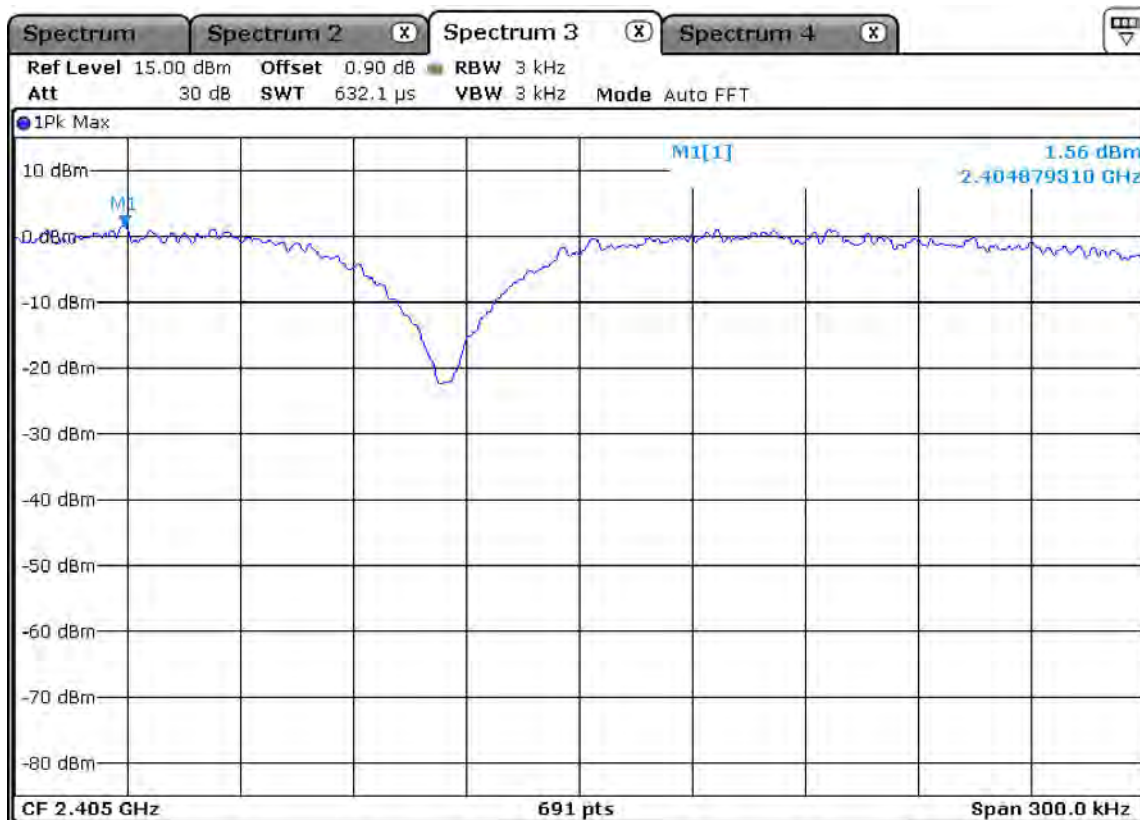
Middle Channel



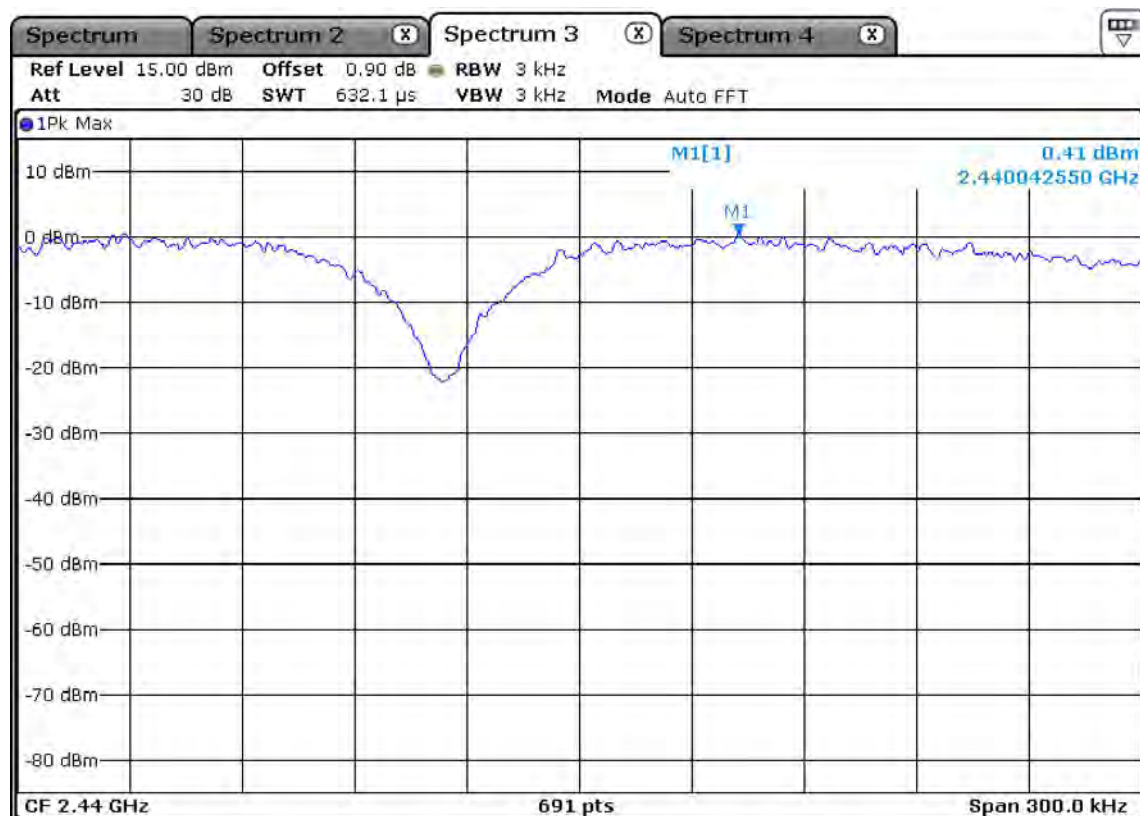
High Channel



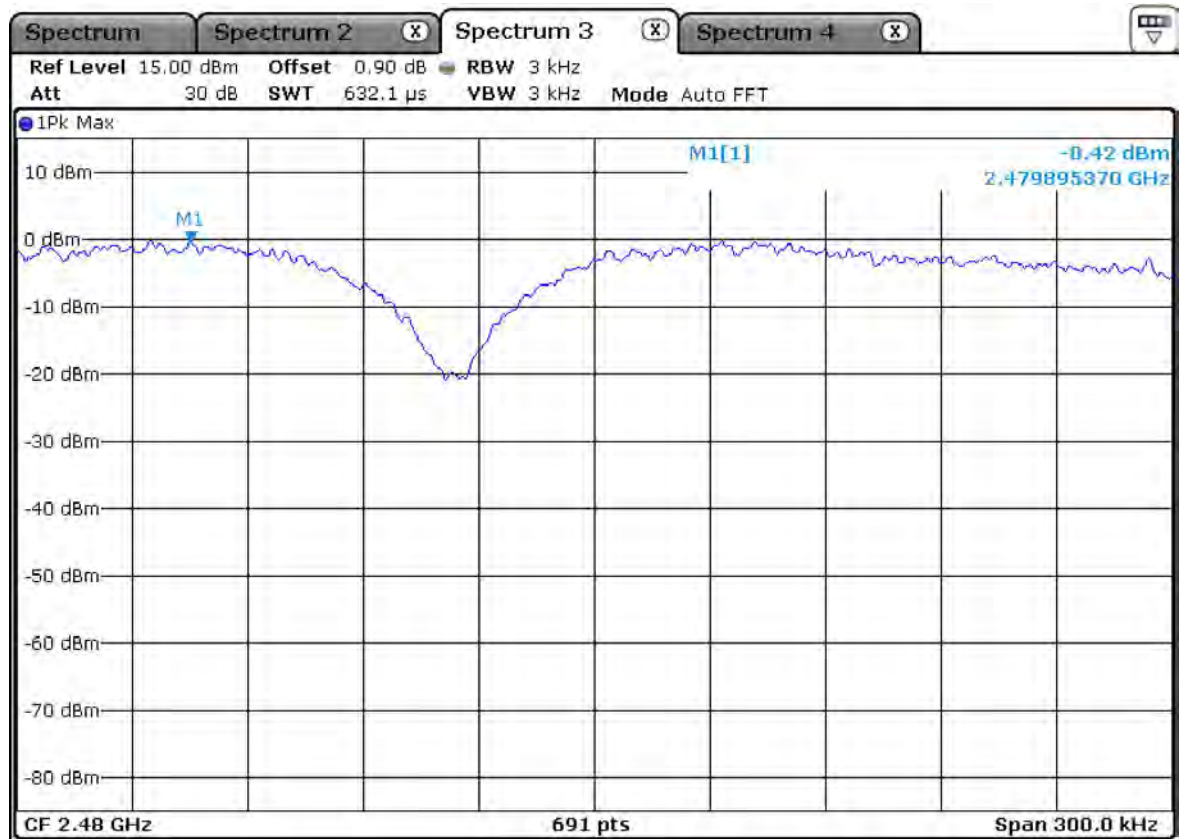
Port 2 Low Channel



Middle Channel



High Channel



3.2.4 Band - edge

Procedure:

The bandwidth at 20 dB down from the highest inband spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate frequencies.

After the trace being stable, Use the marker-to-peak function to measure 20 dB down both sides of the intentional emission.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

RBW = 100 kHz

VBW = 100 kHz

Span = 40 MHz

Detector function = peak

Trace = max hold

Sweep = auto

Radiated emissions which fall in the restricted bands, as defined in 15.205(a), must also comply with the radiated emission limits specified in 15.209(a)

The spectrum analyzer is set to:

Center frequency = the highest, the lowest channels

PEAK:

RBW = VBW = 1 MHz, Sweep=Auto

Average:

RBW = 1 MHz, VBW=10 Hz, Sweep=Auto

Measurement Distance:

3 m

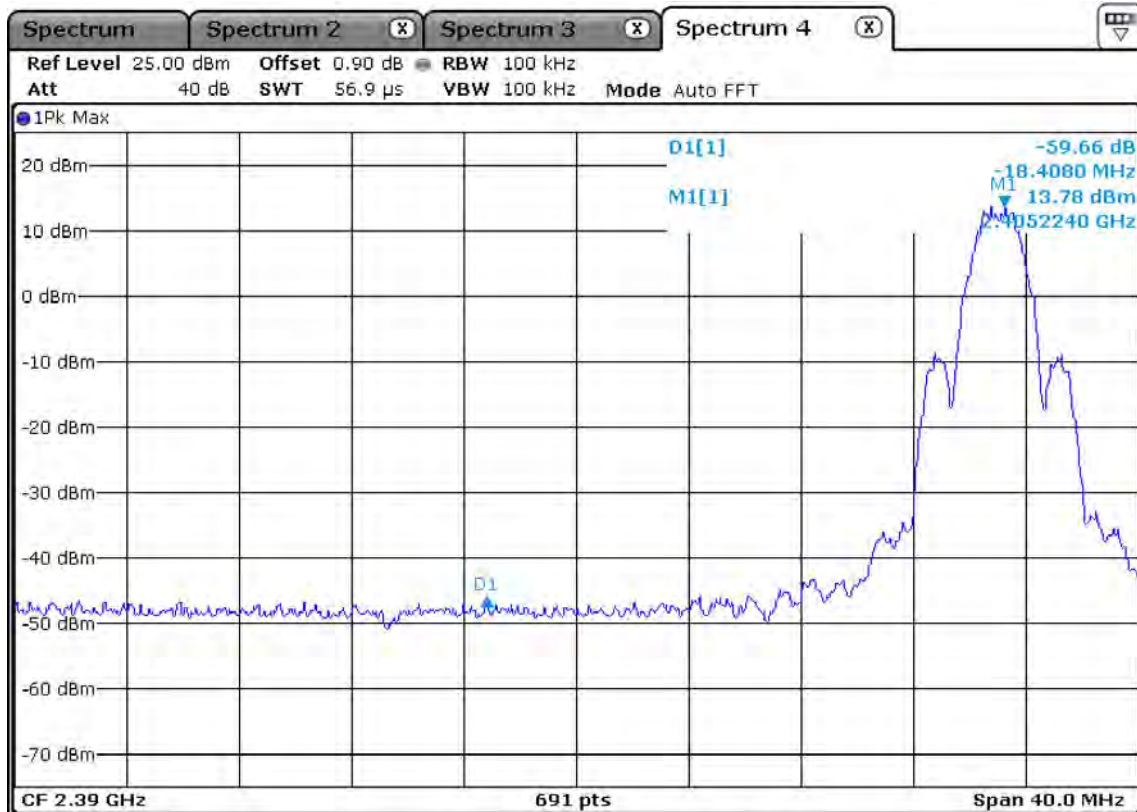
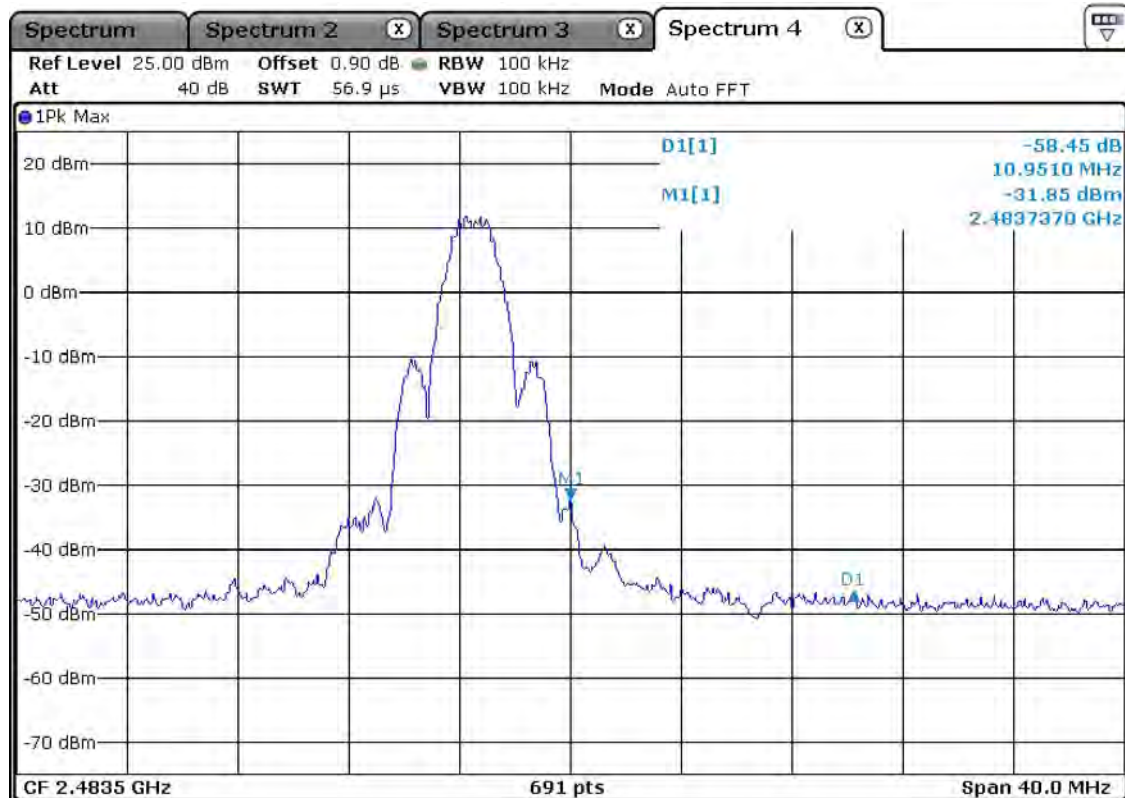
Polarization:

Horizontal / Vertical

Measurement Data: Complies

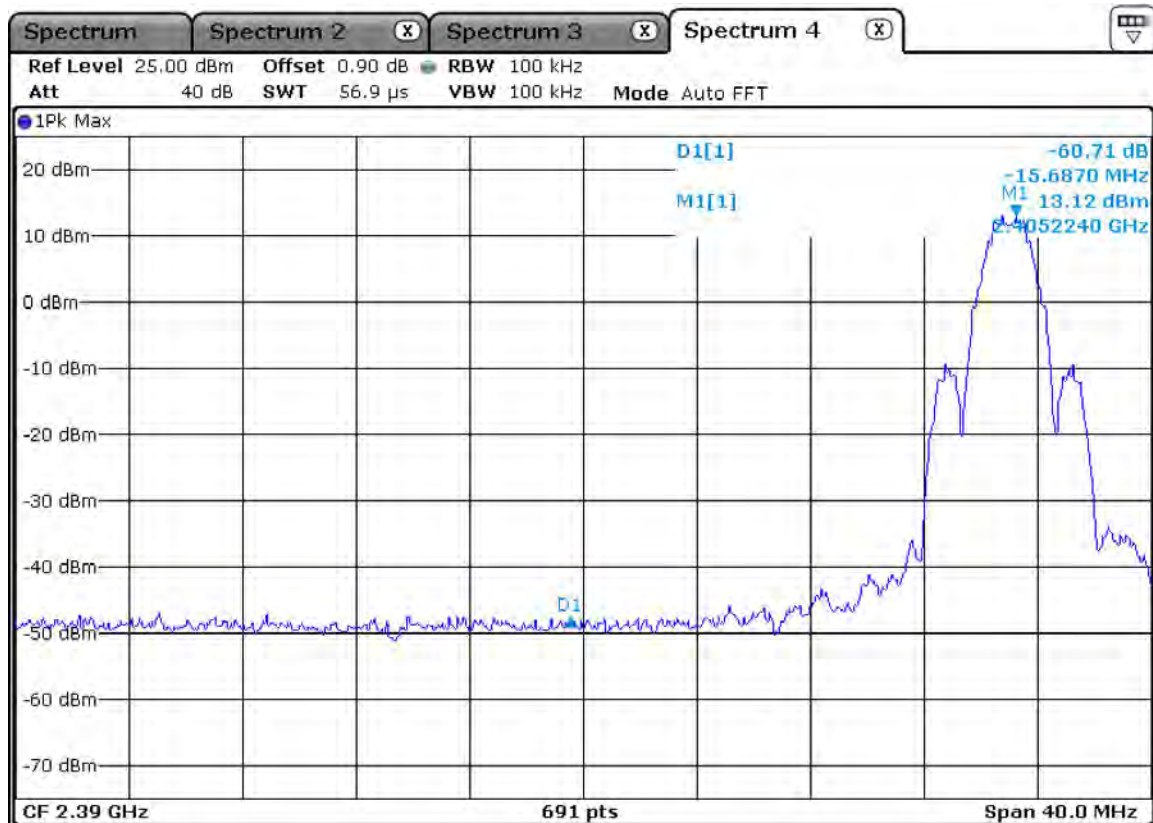
- All conducted emission in any 100 kHz bandwidth outside of the spread spectrum band was at least 20 dB lower than the highest inband spectral density. Therefore the applying equipment meets the requirement.
- See next pages for actual measured spectrum plots.

Minimum Standard:	> 20 dBc
--------------------------	----------

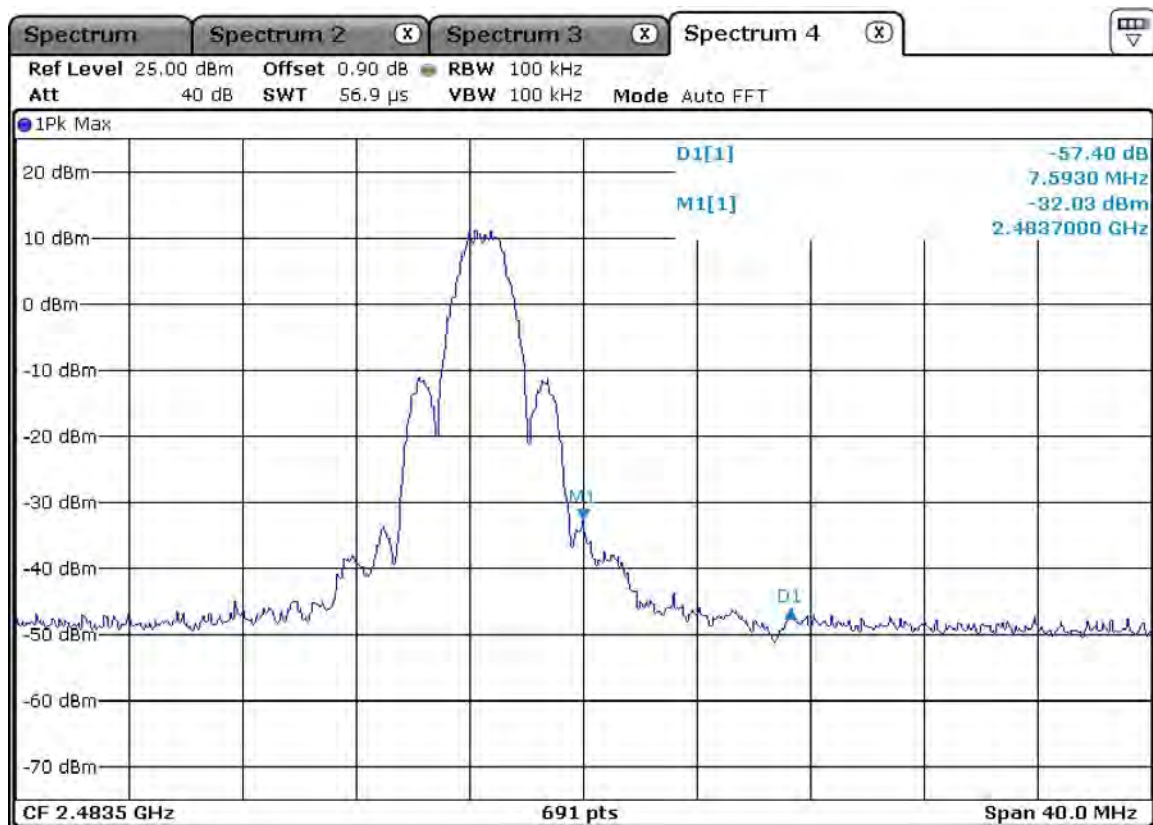
Band edge**Port 1****Lower edge****Upper edge**

Port 1

Lower edge



Upper edge



Radiated Band-edges in the restricted band 2310-2390 MHz measurement(Port 1)

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor		Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV / Peak			Antenna	Amp. Gain + Cable Loss	AV / Peak	AV / Peak	AV / Peak	AV / Peak		
2387.3	31.1	45.3	H	28.2	26.3	54	74	33	47.2	21	26.8

Radiated Band-edges in the restricted band 2310-2390 MHz measurement(Port 2)

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor		Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV / Peak			Antenna	Amp. Gain + Cable Loss	AV / Peak	AV / Peak	AV / Peak	AV / Peak		
2382.6	33.5	46.2	H	28.2	26.3	54	74	35.4	48.1	18.6	25.9

Radiated Band-edges in the restricted band 2483.5-2500 MHz measurement(Port 1)

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor		Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV / Peak			Antenna	Amp. Gain + Cable Loss	AV / Peak	AV / Peak	AV / Peak			
2484.1	34.2	46.1	H	28.2	26.3	54	74	36.1	48	17.9	26

Note : This EUT was tested in 3 orthogonal positions and the worst-case data was presented

Radiated Band-edges in the restricted band 2483.5-2500 MHz measurement(Port 2)

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor		Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV / Peak			Antenna	Amp. Gain + Cable Loss	AV / Peak		AV / Peak		AV / Peak	
2488.3	35.1	45.9	H	28.2	26.3	54	74	37	47.8	17	26.2

Note : This EUT was tested in 3 orthogonal positions and the worst-case data was presented

3.2.5 Conducted Spurious Emissions

Procedure:

The test follows KDB558074. The conducted spurious emissions were measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels..

After the trace being stable, set the marker on the peak of any spurious emission recorded.

The spectrum analyzer is set to:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions

RBW = 100 kHz

Sweep = auto

VBW = 100 kHz

Detector function = peak

Trace = max hold

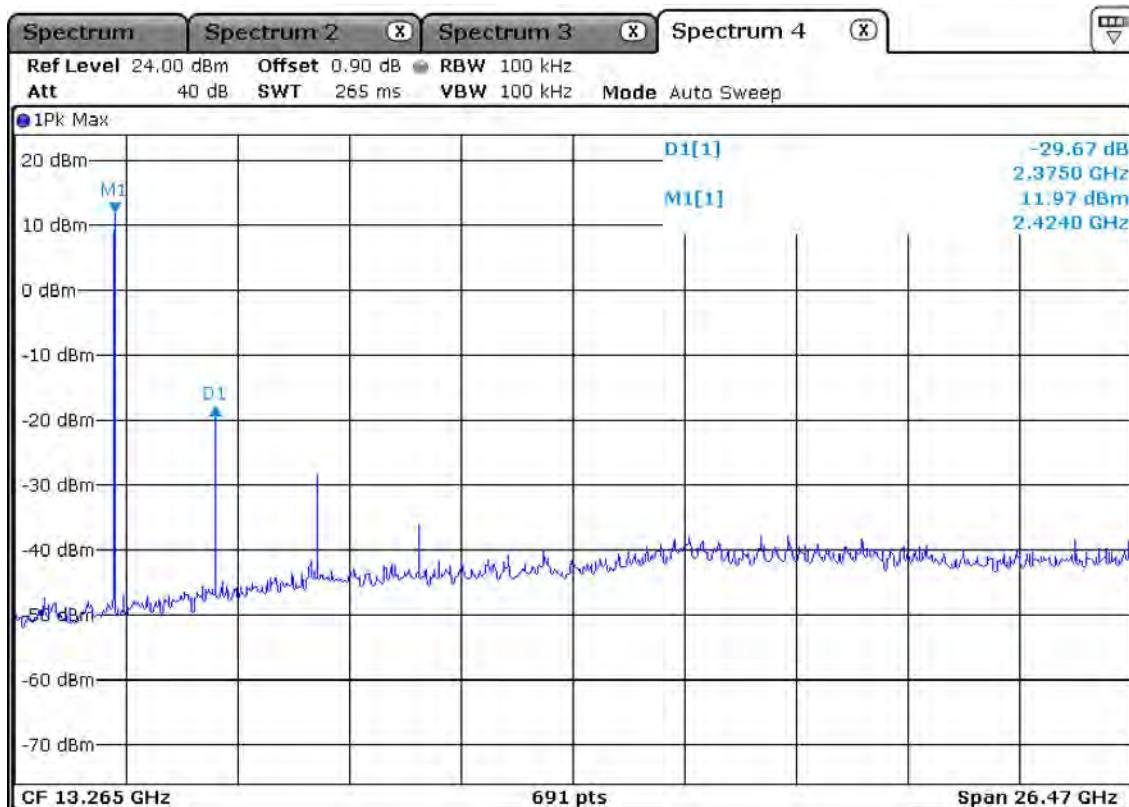
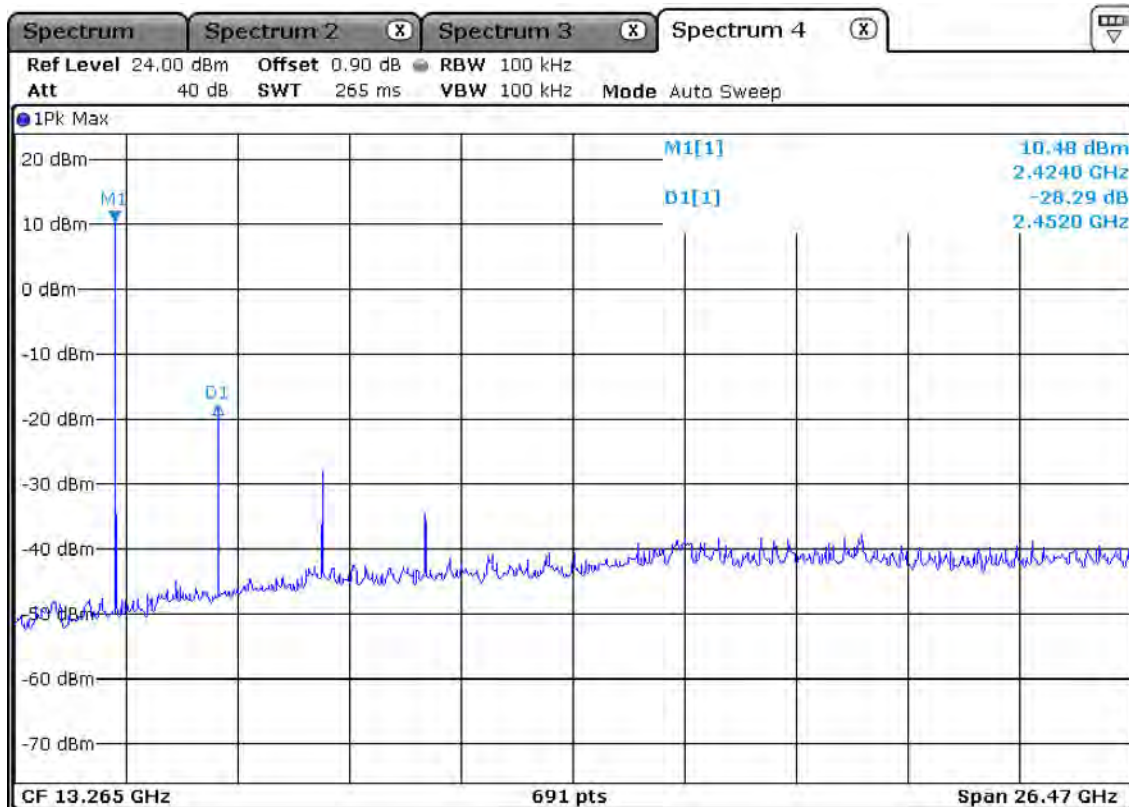
Measurement Data: **Complies**

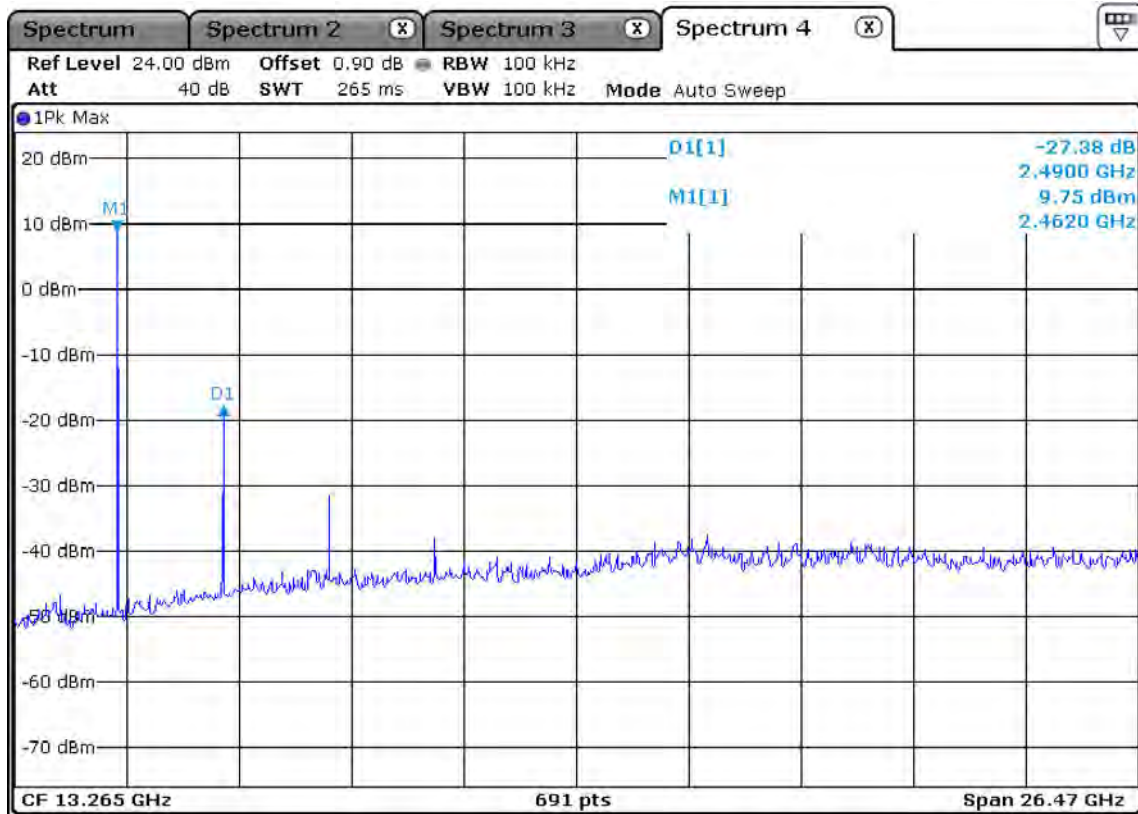
- All conducted emission in any 100 kHz bandwidth outside of the spread spectrum band was at least 20 dB lower than the highest inband spectral density. Therefore the applying equipment meets the requirement.
- See next pages for actual measured spectrum plots.

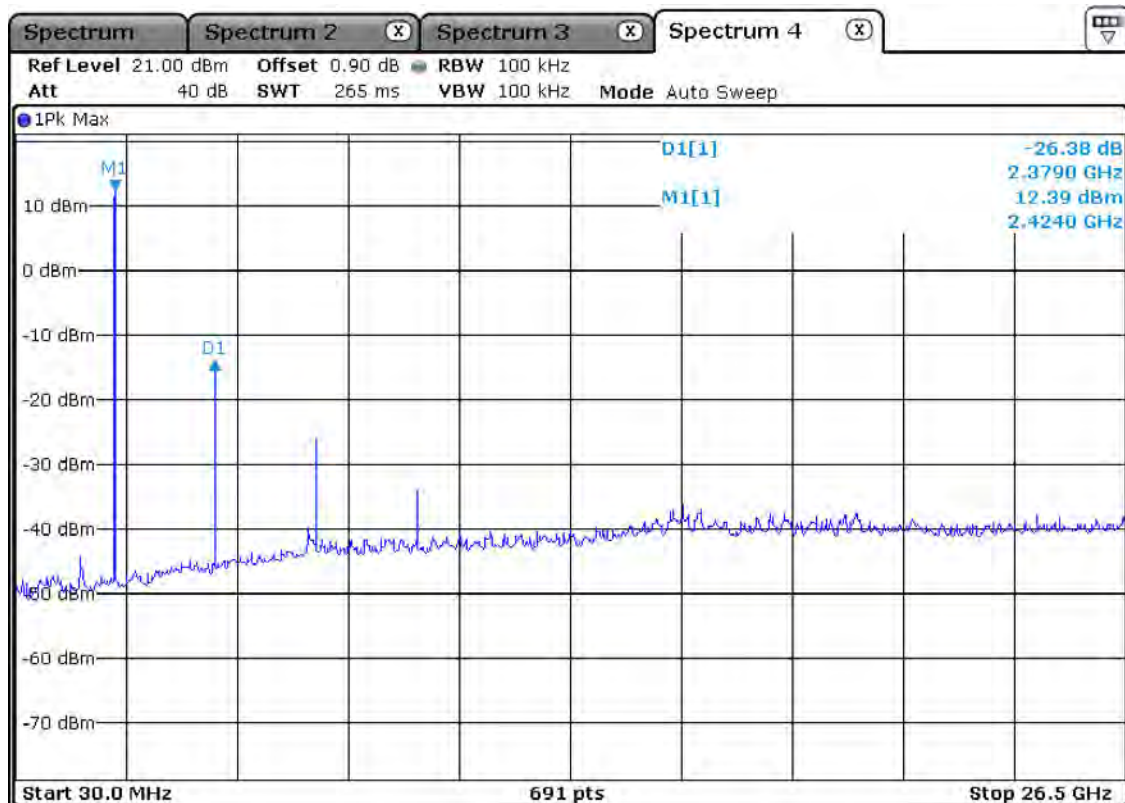
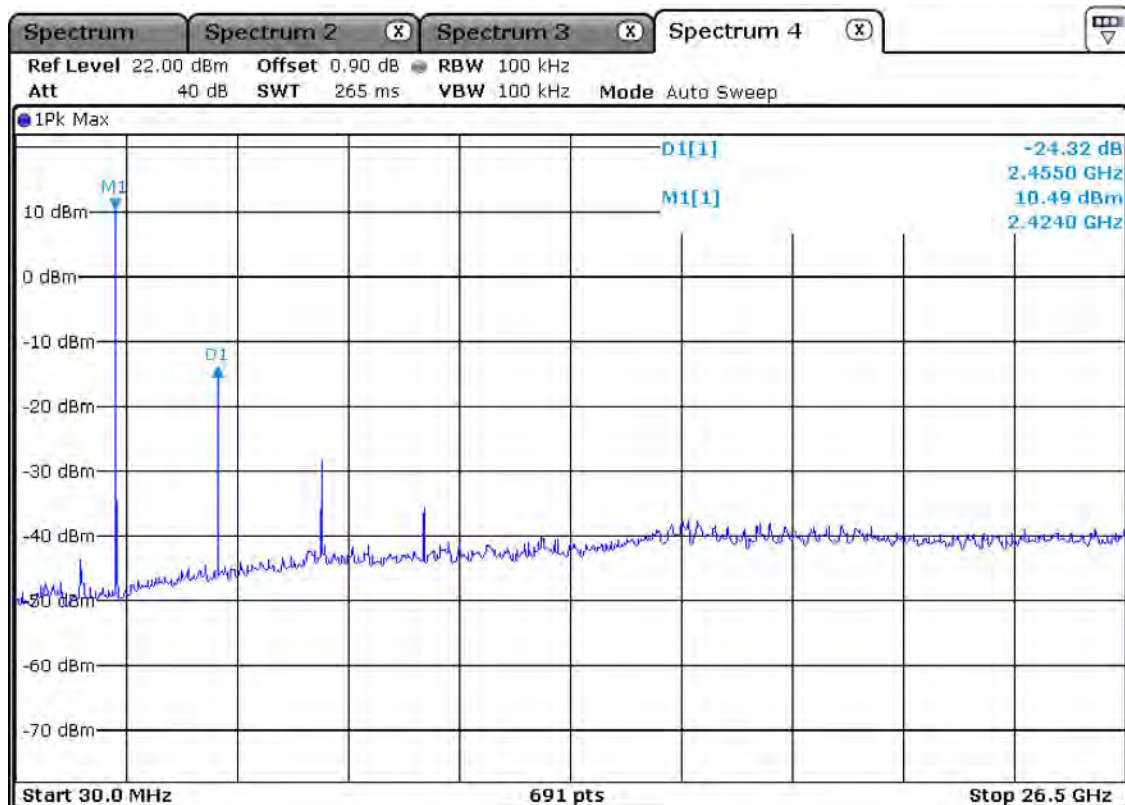
Minimum Standard:	> 20 dBc
--------------------------	----------

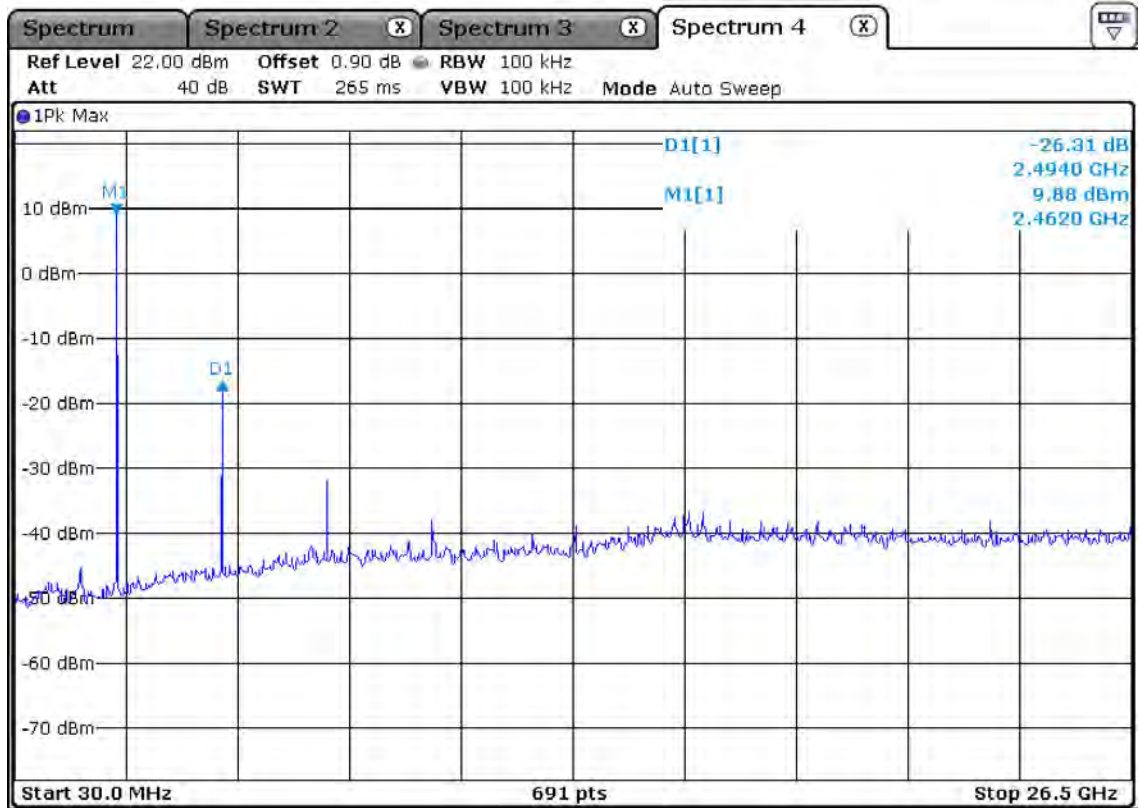
Measurement Setup

Same as the Chapter 3.2.1 (Figure 1)

Unwanted Emission – Low Channel**Port 1****Frequency Range = 30 MHz ~ 26.5 GHz****Middle Channel**

High Channel

Unwanted Emission – Low Channel**Port 2****Frequency Range = 30 MHz ~ 26.5 GHz****Middle Channel**

High Channel

3.2.6 Radiated Spurious Emissions

Procedure:

The EUT was placed on a 0.8m high wooden table inside a shielded enclosure. An antenna was placed near the EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed in OATS. Measurements were performed with the EUT oriented in 3 orthogonal axis and rotated 360 degrees to determine worst-case orientation for maximum emissions.

The spectrum analyzer is set to:

Center frequency = the worst channel

Frequency Range = 9 kHz ~ 10th harmonic.

RBW = 100 kHz (30 MHz ~ 1 GHz)

= 1 MHz (1 GHz ~ 10th harmonic)

Span = 100 MHz

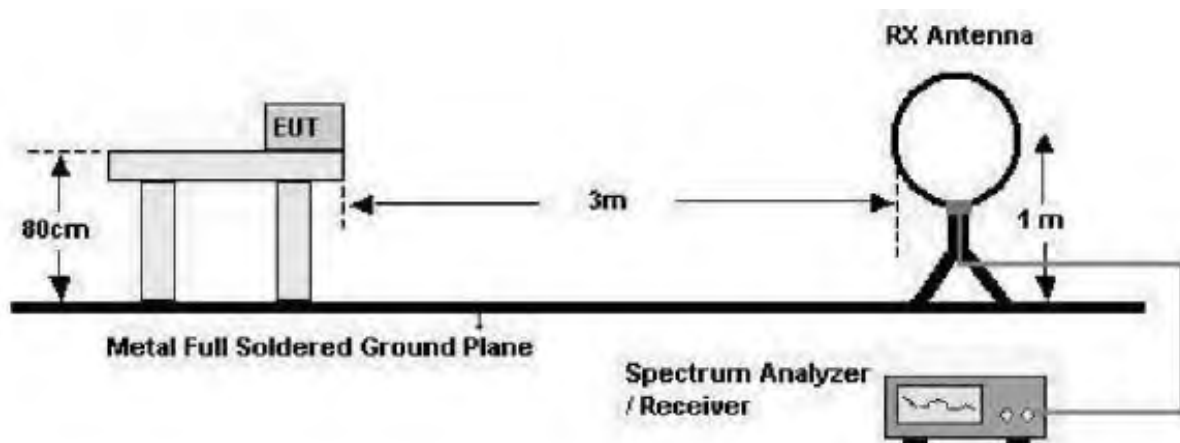
Trace = max hold

VBW $\geq$ RBW

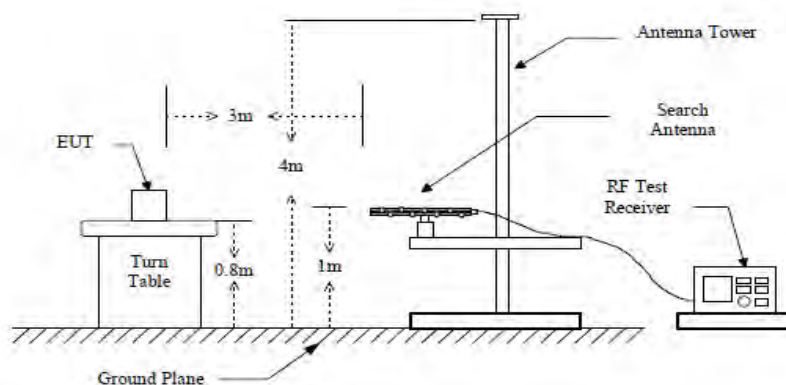
Detector function = peak

Sweep = auto

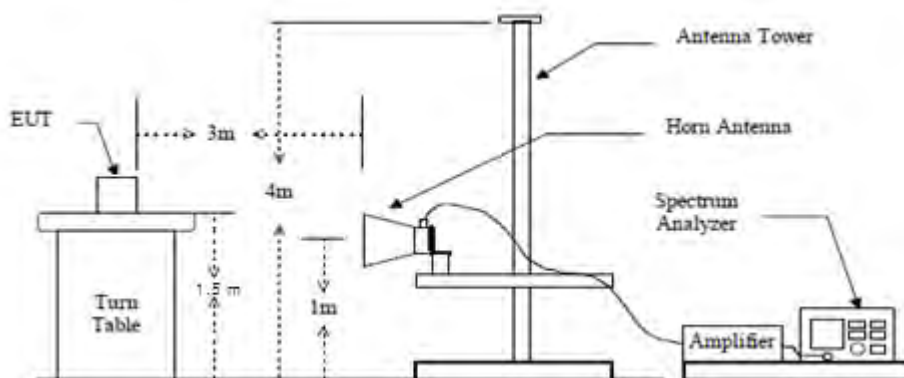
below 30 MHz



below 1 GHz (30 MHz to 1 GHz)



above 1 GHz



Measurement Data: Complies

- See next pages for actual measured data.
- No other emissions were detected at a level greater than 20 dB below limit include from 9 kHz to 30 MHz.

Minimum Standard: FCC Part 15.209(a)

Frequency (MHz)	Limit (uV/m) @ 3 m
0.009 ~ 0.490	2400/F(kHz) (@ 300 m)
0.490 ~ 1.705	24000/F(kHz) (@ 30 m)
1.705 ~ 30	30(@ 30 m)
30 ~ 88	100 **
88 ~ 216	150 **
216 ~ 960	200 **
Above 960	500

** Except as provided in 15.209(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. 15.231 and 15.241.

Measurement Data : (Above 1 GHz)(Port 1)

Frequency	Reading		Pol.	Correction		Limits		Result		Margin	
	[dBuV / m]			Factor		[dBuV / m]		[dBuV / m]		[dB]	
	AV / Peak			Antenna	Amp.Gain+Cable	AV /Peak		AV /Peak		AV / Peak	
2995.3	24.3	30.7	V	27.84	20.06	54	74	32.08	38.48	21.92	35.52
2984.2	25.1	30.4	H	27.84	20.2	54	74	32.74	38.04	21.26	35.96
2948.3	24.7	30.8	V	27.84	20.66	54	74	31.88	37.98	22.12	36.02

- No other emissions were detected at a level greater than 20 dB below limit.

Measurement Data : (Above 1 GHz)(Port 2)

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor		Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV / Peak			Antenna	Amp.Gain+Cable	AV/Peak		AV/Peak		AV / Peak	
5554.7	12.6	18	V	33.16	13.35	54	74	32.41	37.81	21.59	36.19
2988.4	26.3	31	H	27.84	20.15	54	74	33.99	38.69	20.01	35.31
5486.6	13.5	18.6	H	32.66	13.09	54	74	33.07	38.17	20.93	35.83

- No other emissions were detected at a level greater than 20 dB below limit.

Measurement Data : (Below 1 GHz)(Port 1)

Frequency	Reading		Pol.	Correction		Limits		Result		Margin	
	[dBuV / m]			Factor		[dBuV / m]		[dBuV / m]		[dB]	
	AV / Peak			Antenna	Amp.Gain+Cable	AV/Peak		AV/Peak		AV / Peak	
38.73	50.94	54.37	V	11.32	25.67	54	74	36.59	40.02	17.41	33.98
34.85	51.73	56.41	V	10.77	25.52	54	74	36.98	41.66	17.02	32.34
38.73	50.92	54.16	V	11.32	25.67	54	74	36.57	39.81	17.43	34.19

- No other emissions were detected at a level greater than 20 dB below limit.

Measurement Data : (Below 1 GHz)(Port 2)

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor		Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV / Peak			Antenna	Amp.Gain+Cable	AV/Peak		AV/Peak		AV / Peak	
36.76	46.51	51.78	V	11.32	25.87	54	74	31.96	37.23	22.04	36.77
35.82	45.18	50.68	V	11.32	25.96	54	74	30.54	36.04	23.46	37.96
36.79	44.48	50.25	V	11.32	25.87	54	74	29.93	35.7	24.07	38.3

- No other emissions were detected at a level greater than 20 dB below limit.

Measurement Data: (9 kHz – 30 MHz)(Port 1)

Frequency	Reading	Pol.	Correction	Limits	Result	Margin
[MHz]	[dBuV / m]		Factor	[dBuV / m]	[dBuV / m]	[dB]
Peak	Antenna +Cable-Amp.Gain		Peak	Peak	Peak	Peak
*No emissions were detected at a level greater than 20 dB below limit.						

*No emissions were detected at a level greater than 20 dB below limit.

Measurement Data: (9 kHz – 30 MHz)(Port2)

Frequency	Reading	Pol.	Correction	Limits	Result	Margin
[MHz]	[dBuV / m]		Factor	[dBuV / m]	[dBuV / m]	[dB]
Peak	Antenna +Cable-Amp.Gain		Peak	Peak	Peak	Peak
*No emissions were detected at a level greater than 20 dB below limit.						

*No emissions were detected at a level greater than 20 dB below limit.

Radiated Emissions (Below 1 GHz) – 2.4 GHz Zigbee(Low) mode, Vertical-Port 1

4, Songjuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

EUT/Model No.: IDAP1A

Temp/Humi: 24 / 58

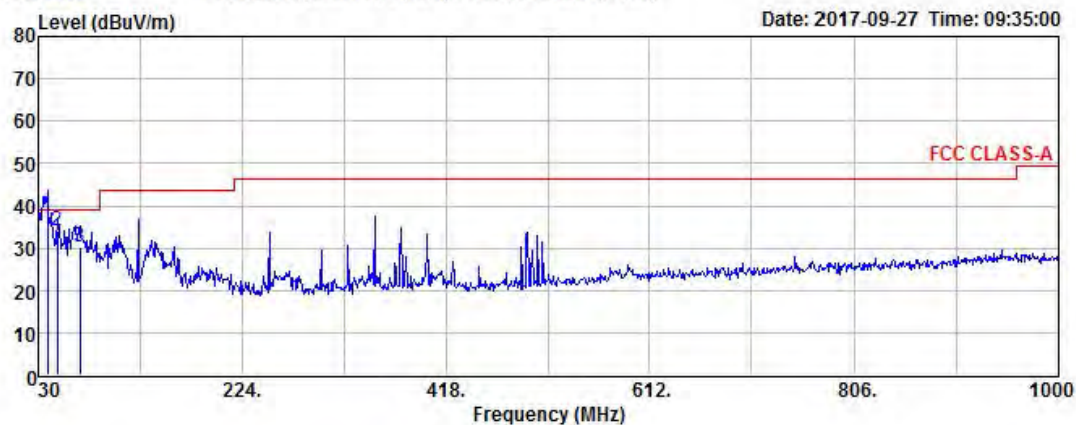
Test Mode : Wireless mode (LOW)

Tested by: LEE H W

Data: 1587

File: C:\Program Files (x86)\e3\1709-1.EM6 (1680)

Date: 2017-09-27 Time: 09:35:00



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
38.73	50.94	-14.35	36.59	39.00	2.41	231	155	VERTICAL
48.43	47.88	-13.82	34.06	39.00	4.94	275	328	VERTICAL
69.77	45.91	-15.75	30.16	39.00	8.84	291	211	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 2.4GHz Zigbee(Middle) mode, Vertical-Port 1

4, Songjiuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

EUT/Model No.: IDAP1A

Temp/Humi: 24 / 58

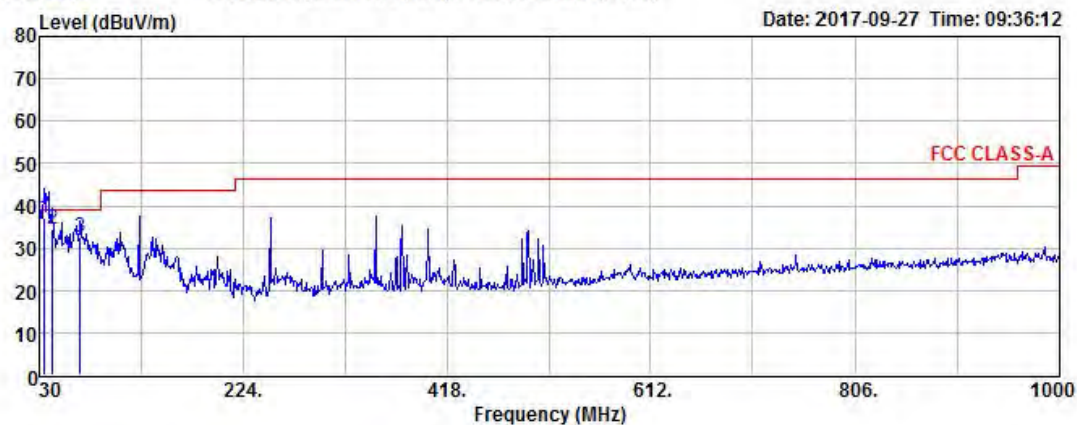
Test Mode : Wireless mode (MID)

Tested by: LEE H W

Data: 1589

File: C:\Program Files (x86)\e3\1709-1.EM6 (1680)

Date: 2017-09-27 Time: 09:36:12



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
34.85	51.73	-14.75	36.98	39.00	2.02	201	153	VERTICAL
42.61	48.47	-14.03	34.44	39.00	4.56	230	144	VERTICAL
68.80	48.00	-15.64	32.36	39.00	6.64	133	187	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 2.4GHz Zigbee(High) mode, Vertical-Port 1

4, Songjuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

EUT/Model No.: IDAP1A

Temp/Humi: 24 / 58

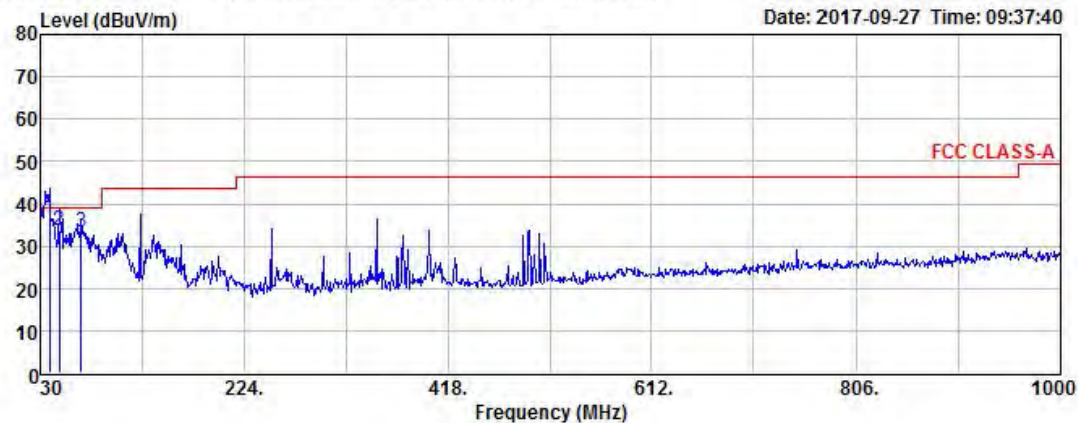
Test Mode : Wireless mode (HIGH)

Tested by: LEE H W

Data: 1591

File: C:\Program Files (x86)\e3\1709-1.EM6 (1680)

Date: 2017-09-27 Time: 09:37:40



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
38.73	50.92	-14.35	36.57	39.00	2.43	135	84	VERTICAL
48.43	47.38	-13.82	33.56	39.00	5.44	290	317	VERTICAL
68.80	48.99	-15.64	33.35	39.00	5.65	244	152	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 2.4 GHz Zigbee(Low) mode, Horizontal-Port 1

4, Songjuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

EUT/Model No.: IDAP1A

Temp/Humi: 24 / 58

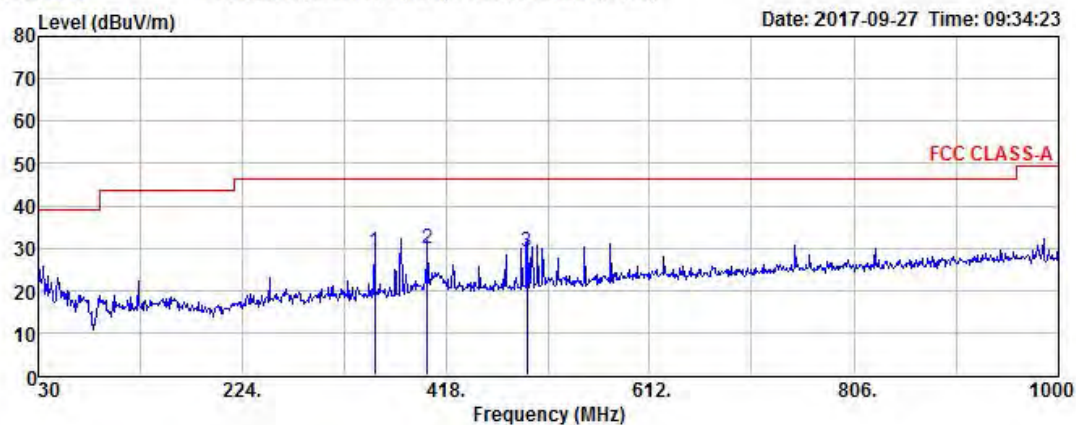
Test Mode : Wireless mode (LOW)

Tested by: LEE H W

Data: 1586

File: C:\Program Files (x86)\e3\1709-1.EM6 (1680)

Date: 2017-09-27 Time: 09:34:23



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
350.10	38.70	-9.59	29.11	46.40	17.29	168	222	HORIZONTAL
400.54	38.36	-8.49	29.87	46.40	16.53	102	277	HORIZONTAL
495.60	35.74	-6.73	29.01	46.40	17.39	213	87	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 2.4GHz Zigbee(Middle) mode, Horizontal-Port 1

4, Songjiuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

EUT/Model No.: IDAP1A

Temp/Humi: 24 / 58

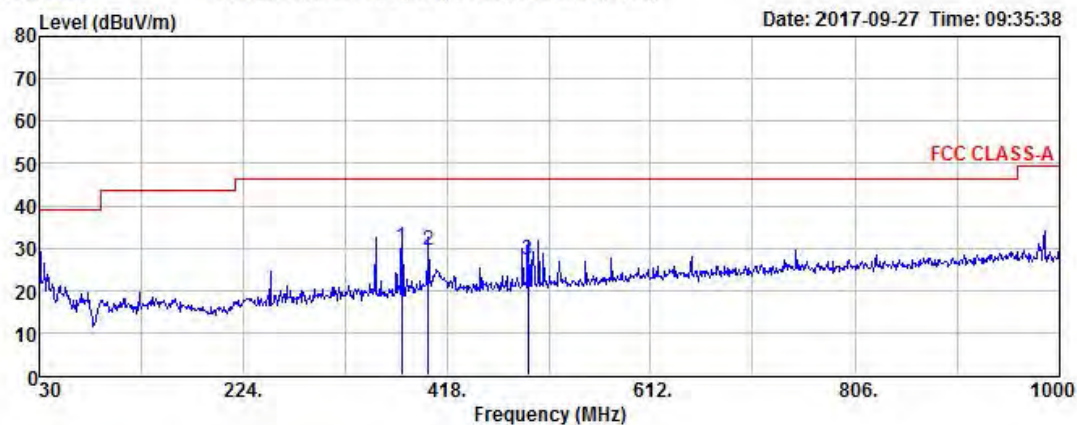
Test Mode : Wireless mode (MID)

Tested by: LEE H W

Data: 1588

File: C:\Program Files (x86)\e3\1709-1.EM6 (1680)

Date: 2017-09-27 Time: 09:35:38



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
375.32	38.99	-8.94	30.05	46.40	16.35	166	317	HORIZONTAL
400.54	37.97	-8.49	29.48	46.40	16.92	122	318	HORIZONTAL
495.60	34.05	-6.73	27.32	46.40	19.08	204	58	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 2.4GHz Zigbee(High) mode, Horizontal-Port 1

4, Songjuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

EUT/Model No.: IDAP1A

Temp/Humi: 24 / 58

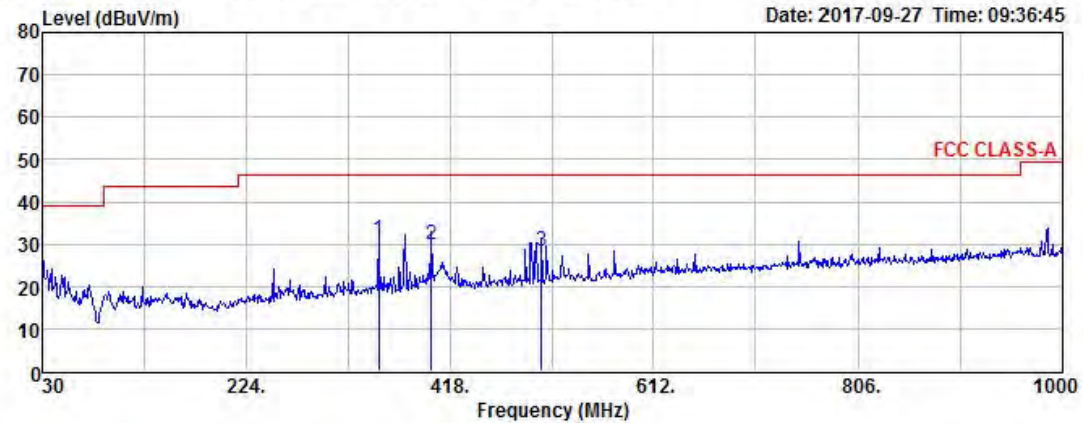
Test Mode : Wireless mode (HIGH)

Tested by: LEE H W

Data: 1590

File: C:\Program Files (x86)\e3\1709-1.EM6 (1680)

Date: 2017-09-27 Time: 09:36:45



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
350.10	40.41	-9.59	30.82	46.40	15.58	296	21	HORIZONTAL
400.54	38.49	-8.49	30.00	46.40	16.40	267	52	HORIZONTAL
505.30	34.93	-6.54	28.39	46.40	18.01	255	61	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 2.4 GHz Zigbee(Low) mode, Vertical-Port 2

4, Songjuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

EUT/Model No.: IDAP1A

Temp/Humi: 24 / 58

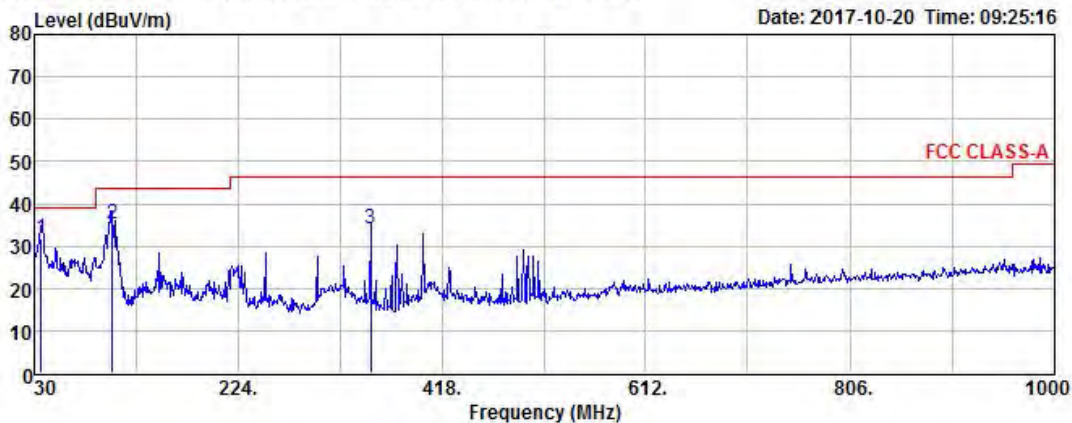
Test Mode : Wireless mode (LOW)

Tested by: LEE H W

Data: 867

File: C:\Program Files (x86)\e3\1710-1.EM6 (869)

Date: 2017-10-20 Time: 09:25:16



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
36.79	46.51	-14.55	31.96	39.00	7.04	103	357	VERTICAL
104.69	50.52	-15.42	35.10	43.50	8.40	199	52	VERTICAL
350.10	43.63	-9.59	34.04	46.40	12.36	160	55	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 2.4GHz Zigbee(Middle) mode, Vertical-Port 2

4, Songjiuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

EUT/Model No.: IDAP1A

Temp/Humi: 24 / 58

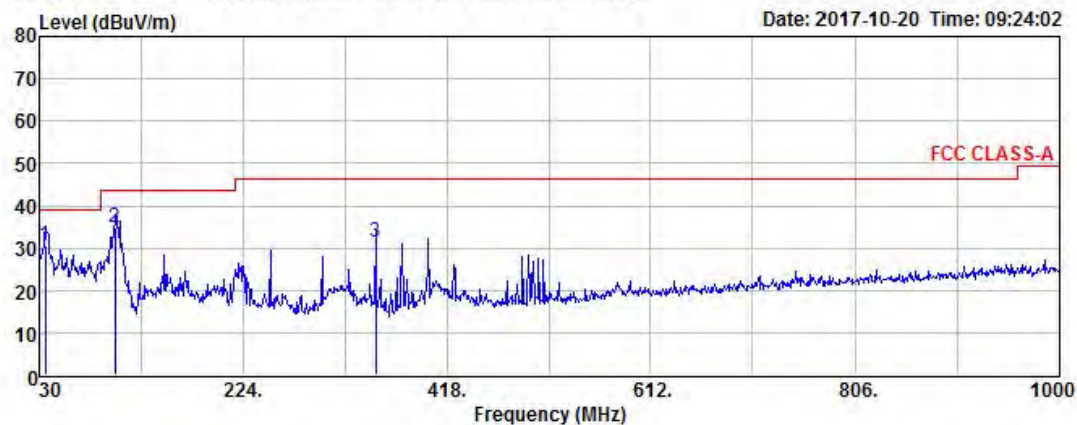
Test Mode : Wireless mode (MID)

Tested by: LEE H W

Data: 865

File: C:\Program Files (x86)\e3\1710-1.EM6 (869)

Date: 2017-10-20 Time: 09:24:02



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
35.82	45.18	-14.64	30.54	39.00	8.46	202	194	VERTICAL
101.78	51.04	-16.04	35.00	43.50	8.50	328	162	VERTICAL
350.10	40.88	-9.59	31.29	46.40	15.11	169	305	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 2.4GHz Zigbee(High) mode, Vertical-Port 2

4, Songjuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

EUT/Model No.: IDAP1A

Temp/Humi: 24 / 58

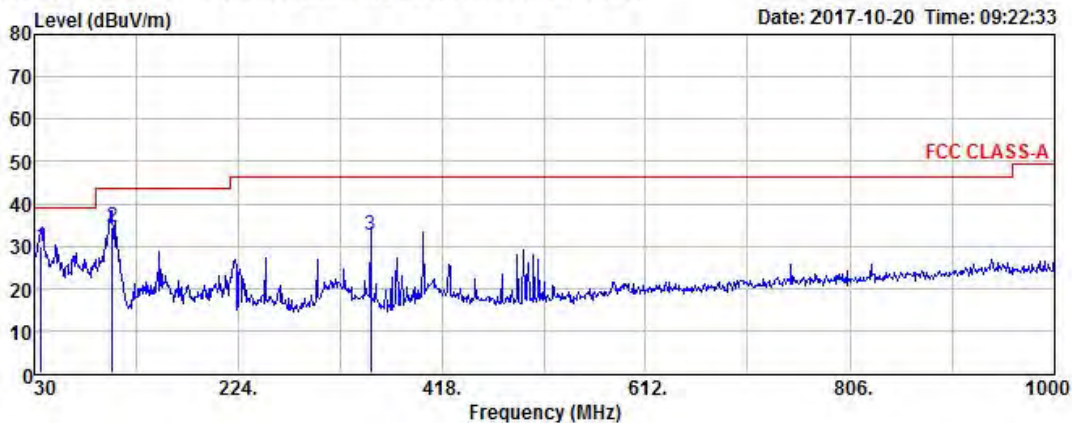
Test Mode : Wireless mode (HIGH)

Tested by: LEE H W

Data: 863

File: C:\Program Files (x86)\e3\1710-1.EM6 (869)

Date: 2017-10-20 Time: 09:22:33



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
36.79	44.48	-14.55	29.93	39.00	9.07	198	58	VERTICAL
104.69	49.82	-15.42	34.40	43.50	9.10	255	164	VERTICAL
350.10	42.15	-9.59	32.56	46.40	13.84	168	294	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 2.4 GHz Zigbee(Low) mode, Horizontal-Port 2

4, Songjuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

EUT/Model No.: IDAP1A

Temp/Humi: 24 / 58

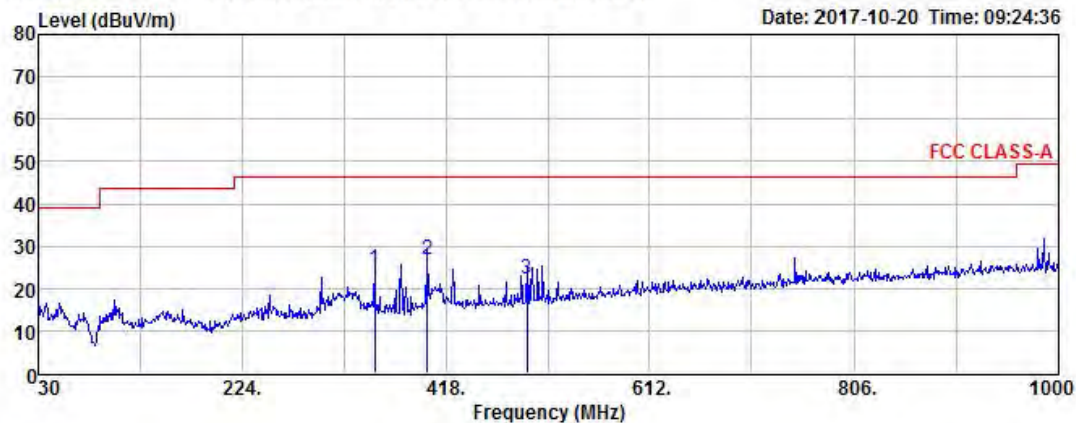
Test Mode : Wireless mode (LOW)

Tested by: LEE H W

Data: 866

File: C:\Program Files (x86)\e3\1710-1.EM6 (869)

Date: 2017-10-20 Time: 09:24:36



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
350.10	33.92	-9.59	24.33	46.40	22.07	291	130	HORIZONTAL
400.54	35.46	-8.49	26.97	46.40	19.43	164	207	HORIZONTAL
495.60	29.08	-6.73	22.35	46.40	24.05	104	338	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 2.4GHz Zigbee(Middle) mode, Horizontal-Port 2

4, Songjiuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

EUT/Model No.: IDAP1A

Temp/Humi: 24 / 58

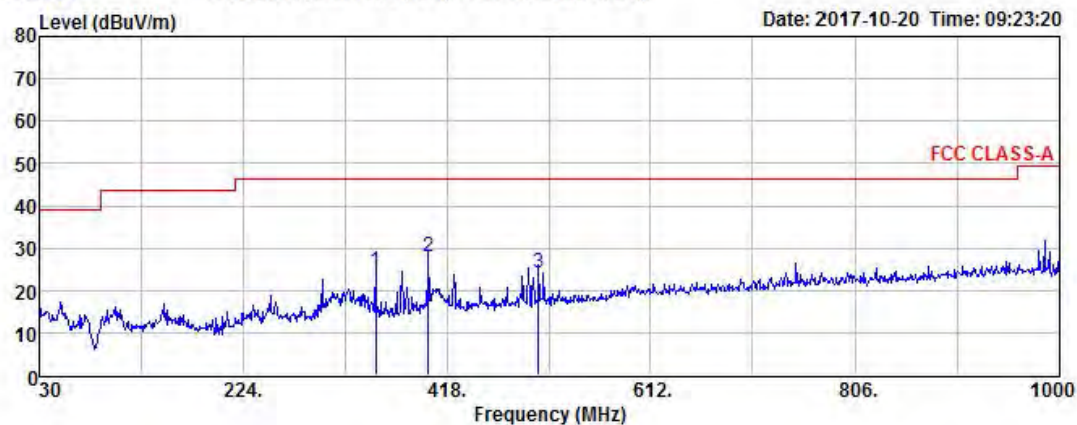
Test Mode : Wireless mode (MID)

Tested by: LEE H W

Data: 864

File: C:\Program Files (x86)\e3\1710-1.EM6 (869)

Date: 2017-10-20 Time: 09:23:20



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBUV/m	dBUV/m	dB	cm	deg	
350.10	34.23	-9.59	24.64	46.40	21.76	169	188	HORIZONTAL
400.54	36.41	-8.49	27.92	46.40	18.48	109	254	HORIZONTAL
505.30	30.56	-6.54	24.02	46.40	22.38	150	220	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 2.4GHz Zigbee(High) mode, Horizontal-Port 2

4, Songjuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

EUT/Model No.: IDAP1A

Temp/Humi: 24 / 58

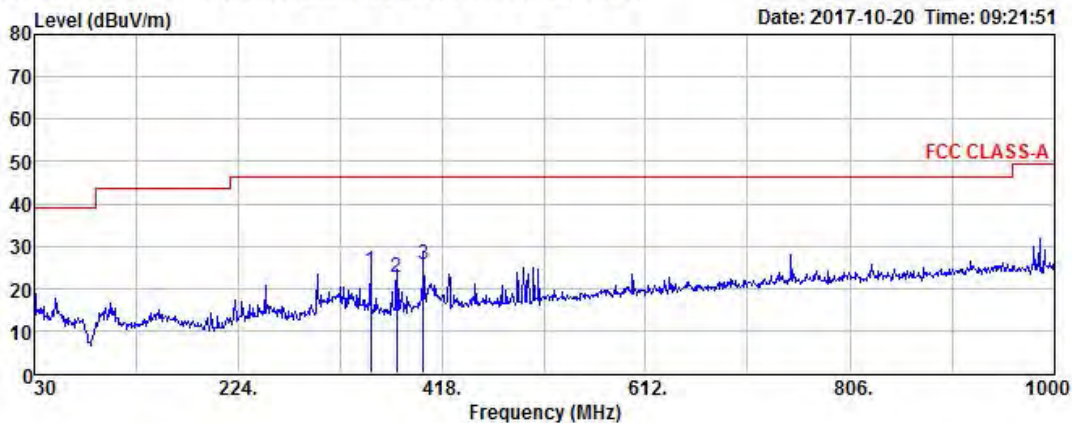
Test Mode : Wireless mode (HIGH)

Tested by: LEE H W

Data: 862

File: C:\Program Files (x86)\e3\1710-1.EM6 (869)

Date: 2017-10-20 Time: 09:21:51



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
350.10	33.61	-9.59	24.02	46.40	22.38	108	67	HORIZONTAL
375.32	31.60	-8.94	22.66	46.40	23.74	196	66	HORIZONTAL
400.54	34.07	-8.49	25.58	46.40	20.82	166	285	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Above 1 GHz) – 2.4 GHz Zigbee(Low) mode-Port 1

EMI Chamber of LTA CO.,LTD.
 4, Songjuro236Beon-gil, Yangji-myeon,
 Yongin-si, Gyeonggi-do, Korea Autho.by NVLAP
 Tel :+82-31-3236008,9 www.ltalab.com
 Fax:+82-31-3236010

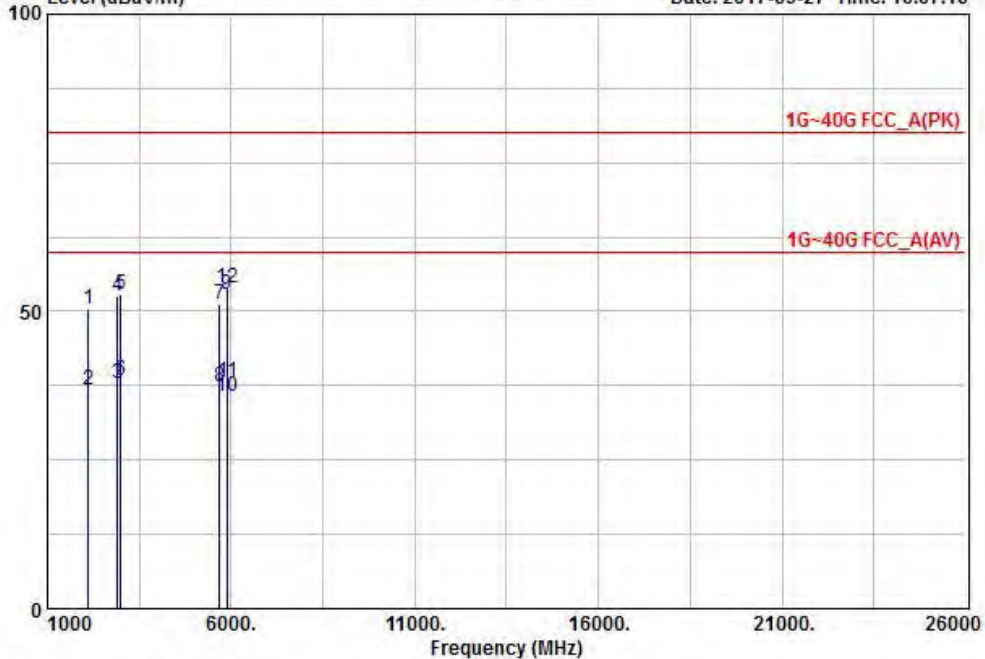
EUT/Model No.: IDAP1A

Test Mode: Wireless mode (LOW)

Tested by : LEE H W

Temp/Humi: 24 / 58

Data: 4 File: D:\LTA_e3\3_backup\1GHz 미상\2017\CH1_ABOVE 1GHz_1709-1.EMI (17)
 Level (dBuV/m) Date: 2017-09-27 Time: 10:07:10



Freq	Reading	C.F	Result	Limit	Margin	Polarity
MHz	dBuV	dB	PK dBuV/m	dBuV/m	dB	
1 2112.20	48.30	2.15	50.45	80.00	29.55	HORIZONTAL
2 2112.20	34.70	2.15	36.85	60.00	23.15	HORIZONTAL
3 2911.50	31.00	6.85	37.85	60.00	22.15	VERTICAL
4 2911.50	45.80	6.85	52.65	80.00	27.35	VERTICAL
5 2995.30	45.20	7.78	52.98	80.00	27.02	VERTICAL
6 2995.30	30.70	7.78	38.48	60.00	21.52	VERTICAL
7 5685.10	31.20	20.10	51.30	80.00	28.70	HORIZONTAL
8 5685.10	17.20	20.10	37.30	60.00	22.70	HORIZONTAL
9 5885.60	31.90	21.10	53.00	80.00	27.00	VERTICAL
10 5885.60	14.50	21.10	35.60	60.00	24.40	VERTICAL
11 5909.30	17.00	21.26	38.26	60.00	21.74	HORIZONTAL
12 5909.30	32.80	21.26	54.06	80.00	25.94	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
 Blue : Vertical Black : Horizontal

Radiated Emissions (Above 1 GHz) – 2.4 GHz Zigbee(Middle) mode-Port 1

EMI Chamber of LTA CO.,LTD.
4, Songjuro236Beon-gil, Yangji-myeon,
Yongin-si, Gyeonggi-do, Korea Autho.by NVLAP
Tel :+82-31-3236008,9 www.ltalab.com
Fax:+82-31-3236010

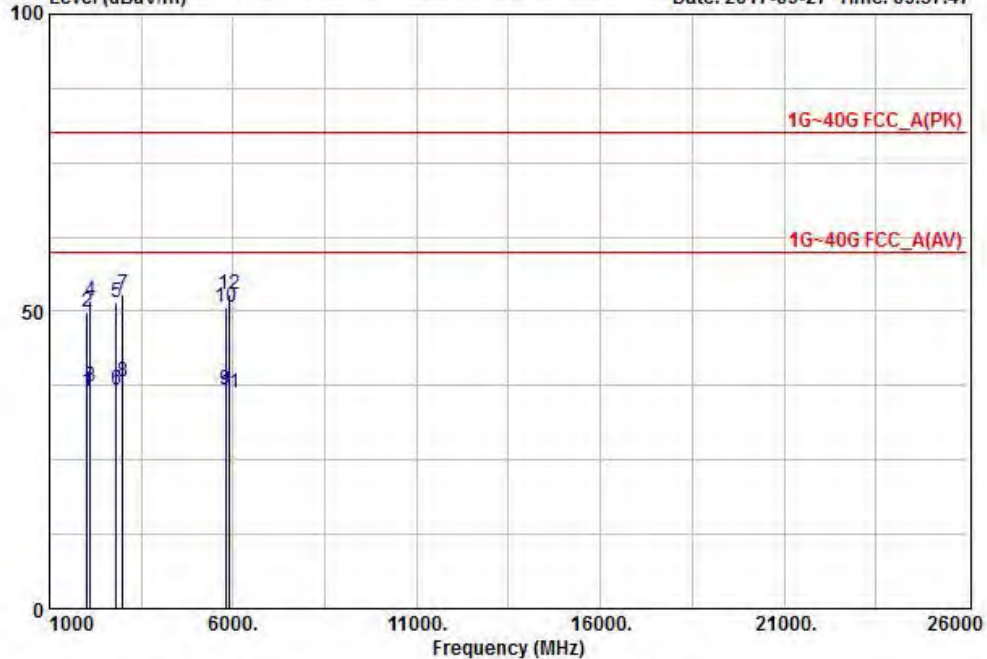
EUT/Model No.: IDAP1A

Test Mode: Wireless mode (MID)

Tested by : LEE H W

Temp/Humi: 24 / 58

Data: 3 File: D:\LTA_e3\3_backup\1GHz 이상\2017\CH1_ABOVE 1GHz_1709-1.EMI (17)
Level (dBuV/m) Date: 2017-09-27 Time: 09:57:47



	Freq	Reading	C.F	Result	Limit	Margin	Polarity
	MHz	dBuV	dB	PK dBuV/m	dBuV/m	dB	
1	2016.50	34.80	1.66	36.46	60.00	23.54	VERTICAL
2	2016.50	48.30	1.66	49.96	80.00	30.04	VERTICAL
3	2105.80	35.10	2.13	37.23	60.00	22.77	VERTICAL
4	2105.80	49.70	2.13	51.83	80.00	28.17	VERTICAL
5	2815.00	45.60	5.93	51.53	80.00	28.47	VERTICAL
6	2815.00	30.80	5.93	36.73	60.00	23.27	VERTICAL
7	2984.20	45.10	7.64	52.74	80.00	27.26	HORIZONTAL
8	2984.20	30.40	7.64	38.04	60.00	21.96	HORIZONTAL
9	5785.30	16.30	20.50	36.80	60.00	23.20	HORIZONTAL
10	5785.30	30.10	20.50	50.60	80.00	29.40	HORIZONTAL
11	5908.60	15.10	21.26	36.36	60.00	23.64	HORIZONTAL
12	5908.60	31.50	21.26	52.76	80.00	27.24	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
Blue : Vertical Black : Horizontal

Radiated Emissions (Above 1 GHz) – 2.4 GHz Zigbee(High) mode-Port 1

EMI Chamber of LTA CO.,LTD.
4, Songjuro236Beon-gil, Yangji-myeon,
Yongin-si, Gyeonggi-do, Korea Autho.by NVLAP
Tel :+82-31-3236008,9 www.ltalab.com
Fax:+82-31-3236010

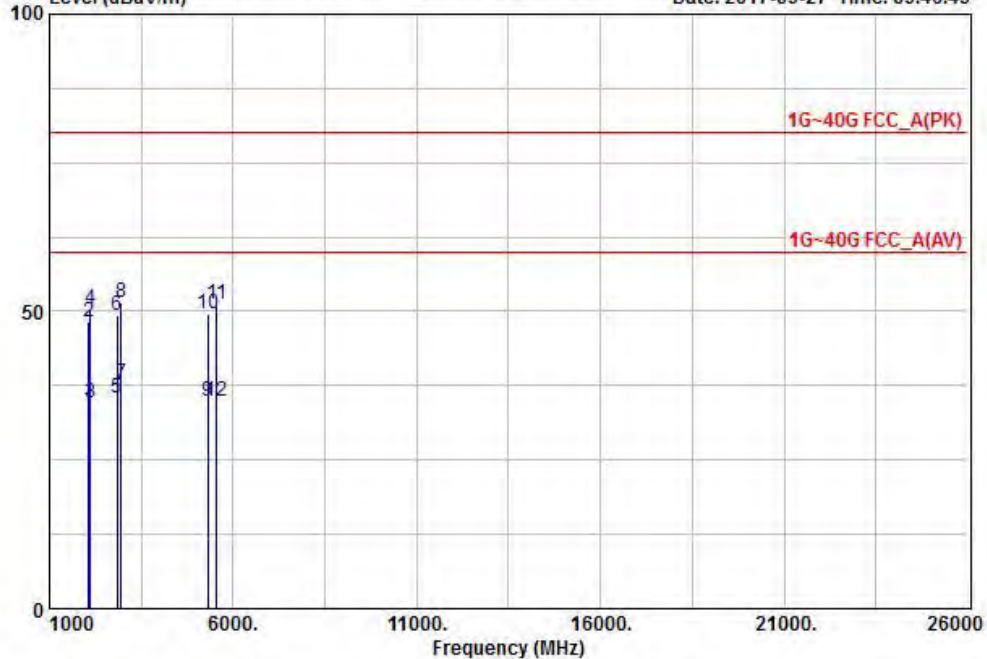
EUT/Model No. : IDAP1A

Test Mode: Wireless mode (HIGH)

Tested by : LEE H W

Temp/Humi: 24 / 58

Data: 2 File: D:\LTA_e3\3_backup\1GHz 이상\2017\CH1_ABOVE 1GHz_1709-1.EMI (17)
Level (dBuV/m) Date: 2017-09-27 Time: 09:46:49



Freq	Reading	C.F	Result	Limit	Margin	Polarity
MHz	dBuV	dB	PK dBuV/m	dBuV/m	dB	
1 2065.00	31.60	1.95	33.55	60.00	26.45	HORIZONTAL
2 2065.00	46.30	1.95	48.25	80.00	31.75	HORIZONTAL
3 2118.10	32.50	2.16	34.66	60.00	25.34	VERTICAL
4 2118.10	48.30	2.16	50.46	80.00	29.54	VERTICAL
5 2849.50	29.40	6.10	35.50	60.00	24.50	HORIZONTAL
6 2849.50	43.20	6.10	49.30	80.00	30.70	HORIZONTAL
7 2948.30	30.80	7.18	37.98	60.00	22.02	VERTICAL
8 2948.30	44.20	7.18	51.38	80.00	28.62	VERTICAL
9 5320.00	15.90	19.01	34.91	60.00	25.09	HORIZONTAL
10 5320.00	30.50	19.01	49.51	80.00	30.49	HORIZONTAL
11 5548.90	31.50	19.80	51.30	80.00	28.70	VERTICAL
12 5548.90	15.10	19.80	34.90	60.00	25.10	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
Blue : Vertical Black : Horizontal

Radiated Emissions (Above 1 GHz) – 2.4 GHz Zigbee(Low) mode-Port 2

EMI Chamber of LTA CO.,LTD.
 4, Songjuro236Beon-gil, Yangji-myeon,
 Yongin-si, Gyeonggi-do, Korea Autho.by NVLAP
 Tel :+82-31-3236008,9 www.ltalab.com
 Fax:+82-31-3236010

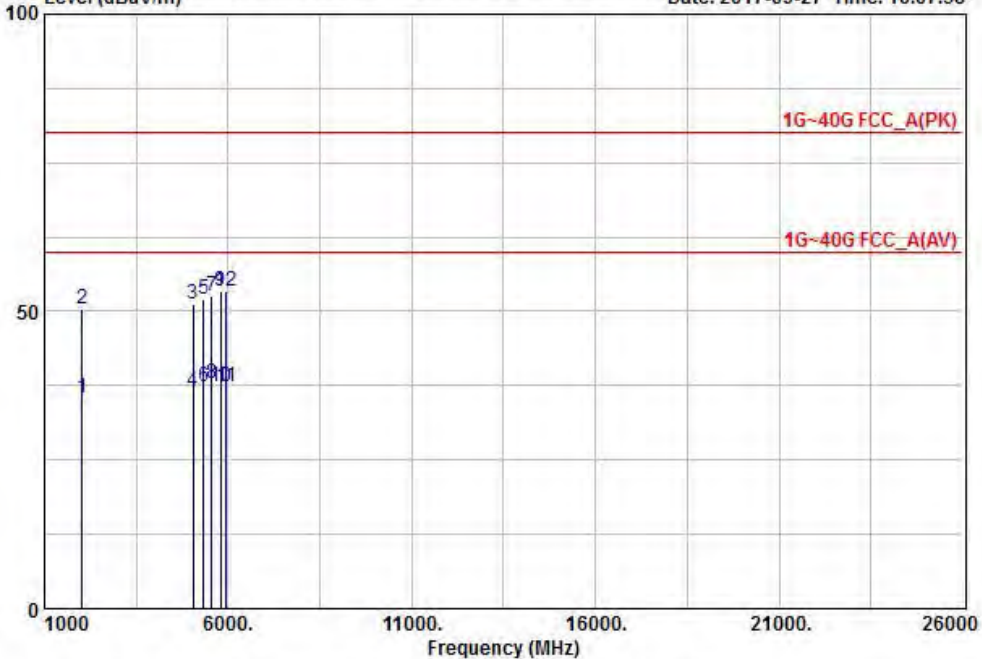
EUT/Model No.: IDAP1A

Test Mode: Wireless mode (LOW)

Tested by : LEE H W

Temp/Humi: 24 / 58

Data: 20 File: D:\LTA_e3\3_backup\1GHz 이상\2017\CH1_ABOVE 1GHz_1709-1.EMI (20) Date: 2017-09-27 Time: 10:07:58
 Level (dBuV/m)



Freq	Reading	C.F	Result	Limit	Margin	Polarity
MHz	dBuV	dB	PK dBuV/m	dBuV/m	dB	
1 2018.60	33.70	1.67	35.37	60.00	24.63	VERTICAL
2 2018.60	48.70	1.67	50.37	80.00	29.63	VERTICAL
3 5053.50	33.10	18.12	51.22	80.00	28.78	HORIZONTAL
4 5053.50	18.50	18.12	36.62	60.00	23.38	HORIZONTAL
5 5322.00	33.00	19.01	52.01	80.00	27.99	VERTICAL
6 5322.00	18.40	19.01	37.41	60.00	22.59	VERTICAL
7 5554.70	32.80	19.81	52.61	80.00	27.39	VERTICAL
8 5554.70	18.00	19.81	37.81	60.00	22.19	VERTICAL
9 5805.60	32.80	20.60	53.40	80.00	26.60	HORIZONTAL
10 5805.60	16.70	20.60	37.30	60.00	22.70	HORIZONTAL
11 5944.20	15.80	21.55	37.35	60.00	22.65	HORIZONTAL
12 5944.20	31.90	21.55	53.45	80.00	26.55	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
 Blue : Vertical Black : Horizontal

Radiated Emissions (Above 1 GHz) – 2.4 GHz Zigbee(Middle) mode-Port 2

EMI Chamber of LTA CO.,LTD.
4, Songjuro236Beon-gil, Yangji-myeon,
Yongin-si, Gyeonggi-do, Korea Autho.by NVLAP
Tel :+82-31-3236008,9 www.ltalab.com
Fax:+82-31-3236010

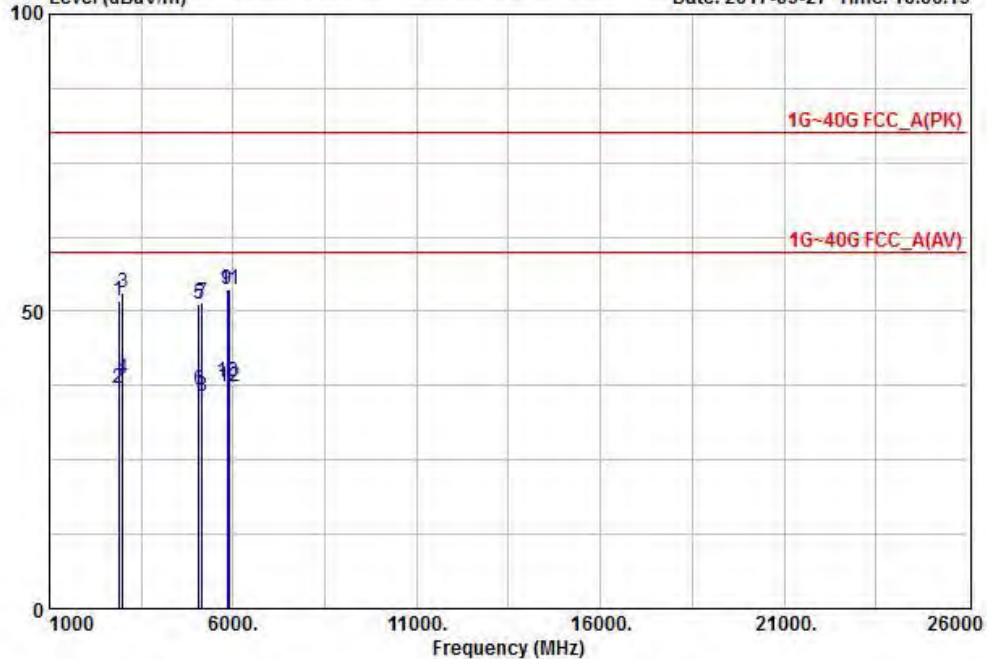
EUT/Model No. : IDAP1A

Test Mode: Wireless mode (MID)

Tested by : LEE H W

Temp/Humi: 24 / 58

Data: 19 File: D:\LTA_e3\3_backup\1GHz 이상\2017\CH1_ABOVE 1GHz_1709-1.EMI (20)
Level (dBuV/m) Date: 2017-09-27 Time: 10:06:19



Freq	Reading	C.F	Result	Limit	Margin	Polarity
MHz	dBuV	dB	PK dBuV/m	dBuV/m	dB	
1 2895.60	45.20	6.69	51.89	80.00	28.11	HORIZONTAL
2 2895.60	30.40	6.69	37.09	60.00	22.91	HORIZONTAL
3 2988.40	45.50	7.69	53.19	80.00	26.81	HORIZONTAL
4 2988.40	31.00	7.69	38.69	60.00	21.31	HORIZONTAL
5 5058.60	33.00	18.17	51.17	80.00	28.83	VERTICAL
6 5058.60	18.60	18.17	36.77	60.00	23.23	VERTICAL
7 5166.30	32.90	18.57	51.47	80.00	28.53	HORIZONTAL
8 5166.30	17.20	18.57	35.77	60.00	24.23	HORIZONTAL
9 5847.70	32.70	20.86	53.56	80.00	26.44	VERTICAL
10 5847.70	17.20	20.86	38.06	60.00	21.94	VERTICAL
11 5908.60	32.50	21.26	53.76	80.00	26.24	VERTICAL
12 5908.60	16.20	21.26	37.46	60.00	22.54	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
Blue : Vertical Black : Horizontal

Radiated Emissions (Above 1 GHz) – 2.4 GHz Zigbee(High) mode-Port 2

EMI Chamber of LTA CO.,LTD.
4, Songjuro236Beon-gil, Yangji-myeon,
Yongin-si, Gyeonggi-do, Korea Autho.by NVLAP
Tel :+82-31-3236008,9 www.ltalab.com
Fax:+82-31-3236010

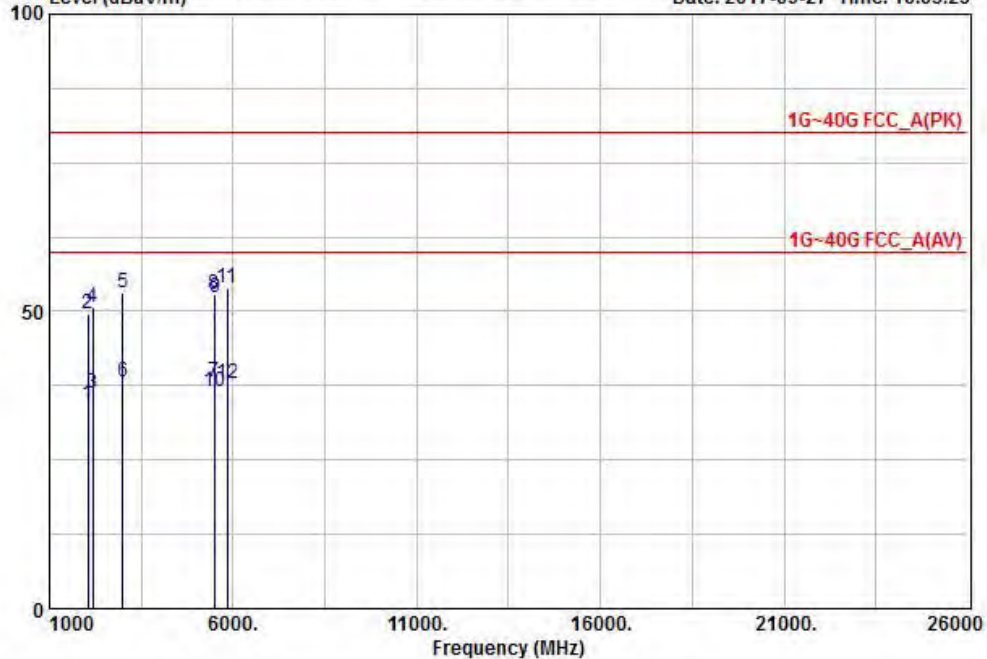
EUT/Model No.: IDAP1A

Test Mode: Wireless mode (HIGH)

Tested by : LEE H W

Temp/Humi: 24 / 58

Data: 18 File: D:\LTA_e3\3_backup\1GHz 이상\2017\CH1_ABOVE 1GHz_1709-1.EMI (20)
Level (dBuV/m) Date: 2017-09-27 Time: 10:03:23



Freq	Reading	C.F	Result	Limit	Margin	Polarity
MHz	dBuV	dB	PK dBuV/m	dBuV/m	dB	
1 2057.60	32.40	1.92	34.32	60.00	25.68	VERTICAL
2 2057.60	47.70	1.92	49.62	80.00	30.38	VERTICAL
3 2185.50	34.00	2.20	36.20	60.00	23.80	HORIZONTAL
4 2185.50	48.60	2.20	50.80	80.00	29.20	HORIZONTAL
5 2991.60	45.50	7.73	53.23	80.00	26.77	VERTICAL
6 2991.60	30.40	7.73	38.13	60.00	21.87	VERTICAL
7 5486.60	18.60	19.57	38.17	60.00	21.83	HORIZONTAL
8 5486.60	33.40	19.57	52.97	80.00	27.03	HORIZONTAL
9 5508.70	32.80	19.63	52.43	80.00	27.57	HORIZONTAL
10 5508.70	17.00	19.63	36.63	60.00	23.37	HORIZONTAL
11 5848.80	33.20	20.87	54.07	80.00	25.93	VERTICAL
12 5848.80	16.90	20.87	37.77	60.00	22.23	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
Blue : Vertical Black : Horizontal

3.2.6 AC Conducted Emissions

Procedure:

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. While the measurement, EUT had its hopping function disabled at the middle channels in line with Section 15.31(m). Emissions closest to the limit are measured in the quasi-peak mode (QP) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

Measurement Data: Complies

- See next pages for actual measured spectrum plots.
- No emissions were detected at a level greater than 20 dB below limit.

Minimum Standard: FCC Part 15.207(a)

Class B

Frequency Range	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

Conducted Emissions – 2.4 GHz Zigbee(LOW) mode + LINE

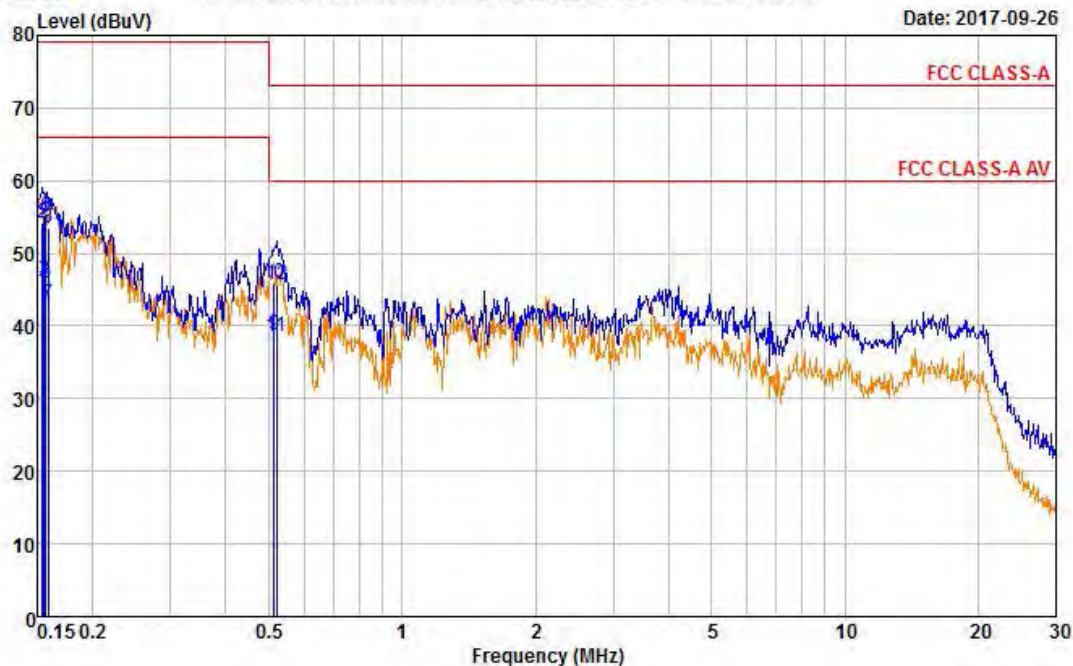
4, Songjuro 236 Beon-gil, Yangji-myeon
Cheoin-gu, Youngin-si, Gyeonggi-do
449-822 Korea
Tel:+82-31-3236008,9
Fax:+82-31-3236010

EUT / Model No. : IDAP1A	Phase : LINE
Test Mode : Wireless mode (LOW)	Test Power : 120 / 60
Temp. / Humi. : 23 / 53	Test Engineer : LEE H W

Data: 3979

File: D:\Conducted Data\2017\LTA_Conduction_2017_09.EM6 (4005)

Date: 2017-09-26



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV		QP	AV	QP	AV	QP	AV
	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dB
0.154	34.68	25.40	19.47	54.15	44.87	79.00	66.00	24.85	21.13
0.156	35.44	26.80	19.47	54.91	46.27	79.00	66.00	24.09	19.73
0.157	35.57	26.48	19.47	55.04	45.95	79.00	66.00	23.96	20.05
0.159	33.98	23.50	19.47	53.45	42.97	79.00	66.00	25.55	23.03
0.514	26.35	19.32	19.51	45.86	38.83	73.00	60.00	27.14	21.17
0.521	26.23	18.98	19.51	45.74	38.49	73.00	60.00	27.26	21.51

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions – 2.4 GHz Zigbee(LOW) mode + NEUTRAL

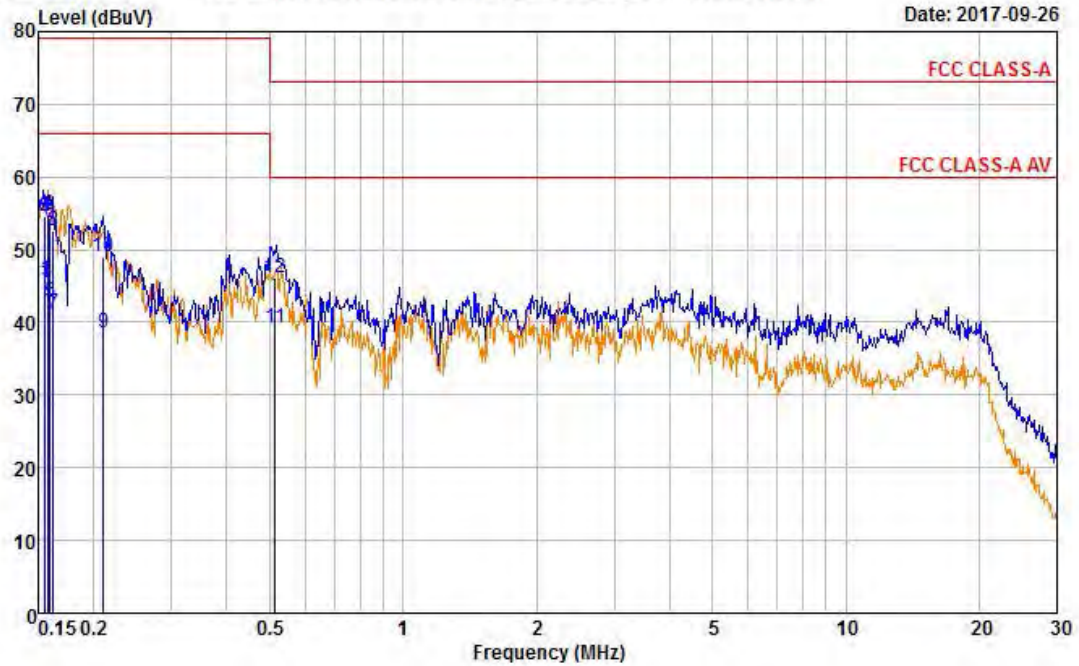
4, Songjuro 236 Beon-gil, Yangji-myeon
Cheoin-gu, Youngin-si, Gyeonggi-do
449-822 Korea
Tel: +82-31-3236008, 9
Fax: +82-31-3236010

EUT / Model No. : IDAP1A	Phase : NEUTRAL
Test Mode : Wireless mode (LOW)	Test Power : 120 / 60
Temp. / Humi. : 23 / 53	Test Engineer : LEE H W

Data: 3975

File: D:\Conducted Data\2017\LTA_Conduction_2017_09.EM6 (4005)

Date: 2017-09-26



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
	dBuV	dBuV		dBuV	dBuV	dBuV	dBuV	dB	dB
0.156	35.02	26.03	19.48	54.50	45.51	79.00	66.00	24.50	20.49
0.157	35.42	26.20	19.48	54.90	45.68	79.00	66.00	24.10	20.32
0.160	34.15	23.22	19.48	53.63	42.70	79.00	66.00	25.37	23.30
0.162	33.17	21.73	19.48	52.65	41.21	79.00	66.00	26.35	24.79
0.210	29.50	18.96	19.49	48.99	38.45	79.00	66.00	30.01	27.55
0.513	26.65	19.63	19.50	46.15	39.13	73.00	60.00	26.85	20.87

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions – 2.4 GHz Zigbee(Middle) mode + LINE

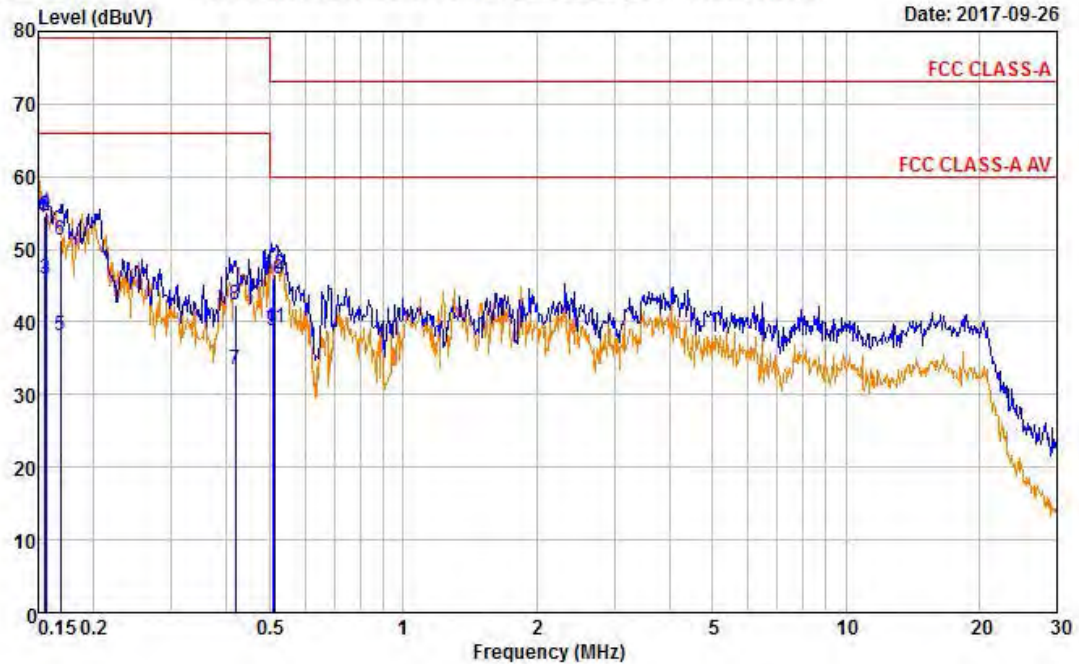
4, Songjuro 236 Beon-gil, Yangji-myeon
Cheoin-gu, Youngin-si, Gyeonggi-do
449-822 Korea
Tel:+82-31-3236008,9
Fax:+82-31-3236010

EUT / Model No. : IDAP1A	Phase : LINE
Test Mode : Wireless mode (MID)	Test Power : 120 / 60
Temp. / Humi. : 23 / 53	Test Engineer : LEE H W

Data: 3967

File: D:\Conducted Data\2017\LTA_Conduction_2017_09.EM6 (4005)

Date: 2017-09-26



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV		QP	AV	QP	AV	QP	AV
	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dB
0.155	35.16	25.69	19.47	54.63	45.16	79.00	66.00	24.37	20.84
0.169	35.64	26.32	19.47	55.11	45.79	79.00	66.00	23.89	20.21
0.418	22.74	13.83	19.50	42.24	33.33	79.00	66.00	36.76	32.67
0.508	26.32	19.30	19.51	45.83	38.81	73.00	60.00	27.17	21.19
0.514	27.08	19.77	19.51	46.59	39.28	73.00	60.00	26.41	20.72

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions – 2.4 GHz Zigbee(Middle) mode + NEUTRAL

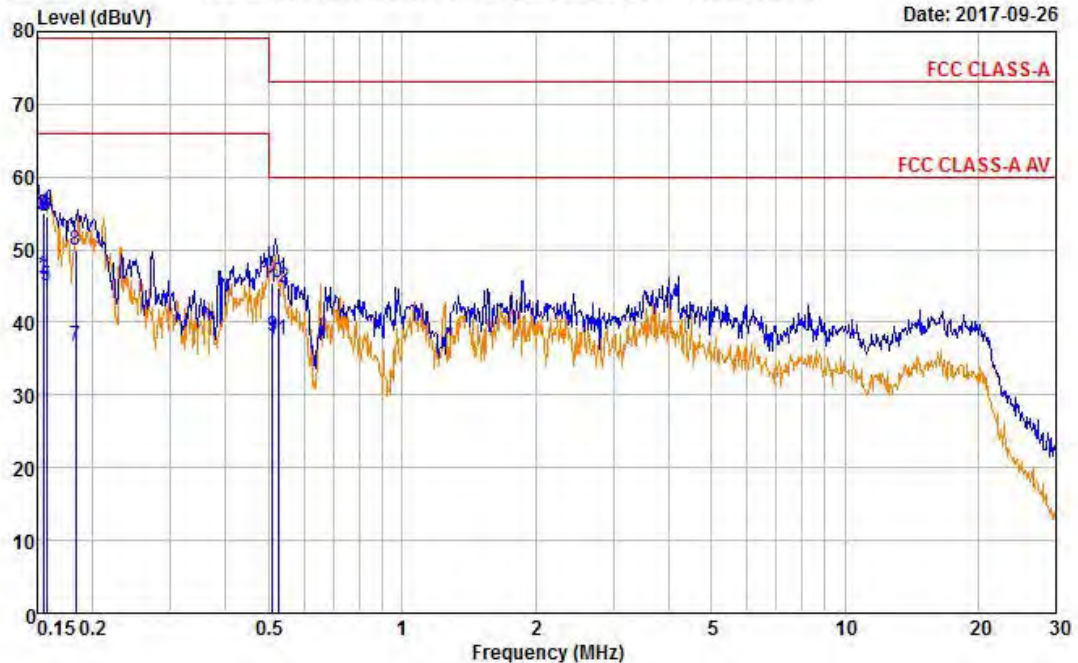
4, Songjuro 236 Beon-gil, Yangji-myeon
Cheoin-gu, Youngin-si, Gyeonggi-do
449-822 Korea
Tel: +82-31-3236008, 9
Fax: +82-31-3236010

EUT / Model No. : IDAP1A	Phase : NEUTRAL
Test Mode : Wireless mode (MID)	Test Power : 120 / 60
Temp. / Humi. : 23 / 53	Test Engineer : LEE H W

Data: 3971

File: D:\Conducted Data\2017\LTA_Conduction_2017_09.EM6 (4005)

Date: 2017-09-26



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
	dBuV	dBuV		dBuV	dBuV	dBuV	dBuV	dB	dB
0.155	35.36	27.15	19.48	54.84	46.63	79.00	66.00	24.16	19.37
0.156	35.58	26.43	19.48	55.06	45.91	79.00	66.00	23.94	20.09
0.157	35.17	25.64	19.48	54.65	45.12	79.00	66.00	24.35	20.88
0.184	30.41	17.38	19.48	49.89	36.86	79.00	66.00	29.11	29.14
0.511	25.95	18.69	19.50	45.45	38.19	73.00	60.00	27.55	21.81
0.526	25.38	18.10	19.50	44.88	37.60	73.00	60.00	28.12	22.40

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions – 2.4 GHz Zigbee(High) mode + LINE

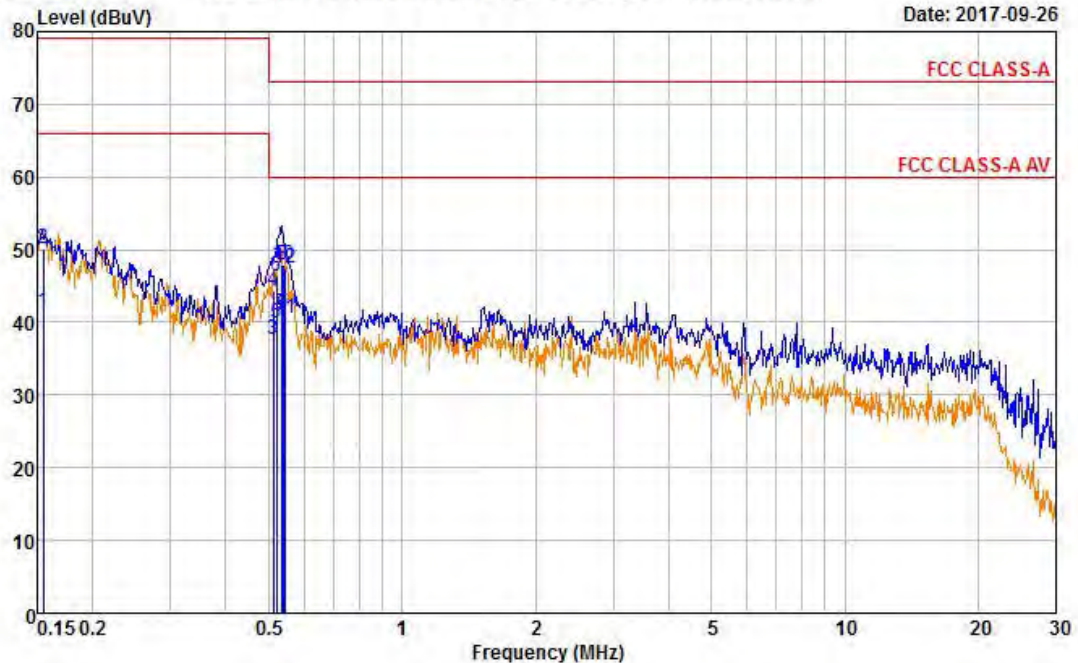
4, Songjuro 236 Beon-gil, Yangji-myeon
Cheoin-gu, Youngin-si, Gyeonggi-do
449-822 Korea
Tel:+82-31-3236008,9
Fax:+82-31-3236010

EUT / Model No. : IDAP1A	Phase : LINE
Test Mode : Wireless mode (HIGH)	Test Power : 120 / 60
Temp. / Humi. : 23 / 53	Test Engineer : LEE H W

Data: 3341

File: D:\Conducted Data\2017\LTA_Conduction_2017_09.EM6 (4005)

Date: 2017-09-26



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
	dBuV	dBuV		dBuV	dBuV	dBuV	dBuV	dB	dB
0.155	30.62	21.95	19.47	50.09	41.42	79.00	66.00	28.91	24.58
0.512	24.75	18.14	19.51	44.26	37.65	73.00	60.00	28.74	22.35
0.521	26.90	20.33	19.51	46.41	39.84	73.00	60.00	26.59	20.16
0.537	28.36	21.63	19.51	47.87	41.14	73.00	60.00	25.13	18.86
0.538	28.40	21.59	19.51	47.91	41.10	73.00	60.00	25.09	18.90
0.545	27.86	21.13	19.51	47.37	40.64	73.00	60.00	25.63	19.36

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted Emissions – 2.4 GHz Zigbee(High) mode + NEUTRAL

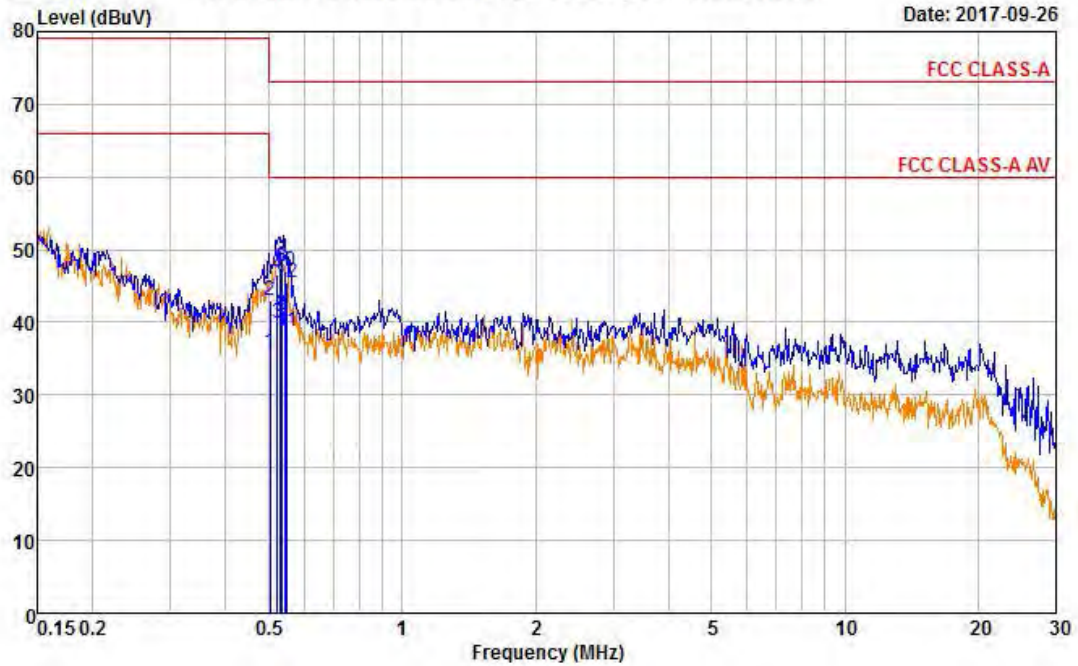
4, Songjuro 236 Beon-gil, Yangji-myeon
Cheoin-gu, Youngin-si, Gyeonggi-do
449-822 Korea
Tel: +82-31-3236008, 9
Fax: +82-31-3236010

EUT / Model No. : IDAP1A	Phase : NEUTRAL
Test Mode : Wireless mode (HIGH)	Test Power : 120 / 60
Temp. / Humi. : 23 / 53	Test Engineer : LEE H W

Data: 3337

File: D:\Conducted Data\2017\LTA_Conduction_2017_09.EM6 (4005)

Date: 2017-09-26



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
	dBuV	dBuV		dBuV	dBuV	dBuV	dBuV	dB	dB
0.503	23.45	16.33	19.50	42.95	35.83	73.00	60.00	30.05	24.17
0.523	27.12	20.47	19.50	46.62	39.97	73.00	60.00	26.38	20.03
0.532	27.88	21.33	19.50	47.38	40.83	73.00	60.00	25.62	19.17
0.537	28.22	21.40	19.50	47.72	40.90	73.00	60.00	25.28	19.10
0.544	27.44	20.81	19.50	46.94	40.31	73.00	60.00	26.06	19.69
0.550	26.01	19.31	19.50	45.51	38.81	73.00	60.00	27.49	21.19

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

APPENDIX

TEST EQUIPMENT USED FOR TESTS

	Use	Description	Model No.	Serial No.	Manufacturer	Interval	Last Cal. Date
1	■	Signal Analyzer (9 kHz ~ 30 GHz)	FSV30	100757	R&S	1 year	2017-09-07
2	■	Signal Generator (~3.2 GHz)	8648C	3623A02597	HP	1 year	2017-03-20
3		SYNTHESIZED CW GENERATOR	83711B	US34490456	HP	1 year	2017-03-20
4		Attenuator (3 dB)	8491A	37822	HP	1 year	2017-09-07
5		Attenuator (10 dB)	8491A	63196	HP	1 year	2017-09-07
6		EMI Test Receiver (~7 GHz)	ESCI7	100722	R&S	1 year	2017-09-07
7	■	RF Amplifier (~1.3 GHz)	8447D OPT 010	2944A07684	HP	1 year	2017-09-07
8	■	RF Amplifier (1~26.5 GHz)	8449B	3008A02126	HP	1 year	2017-03-21
9	■	Horn Antenna (1~18 GHz)	3115	00114105	ETS	2 year	2016-08-04
10		DRG Horn (Small)	3116B	81109	ETS-Lindgren	2 year	2016-05-03
11		DRG Horn (Small)	3116B	133350	ETS-Lindgren	2 year	2016-05-03
12	■	TRILOG Antenna	VULB 9160	9160-3237	SCHWARZBECK	2 year	2017-04-17
13		Temp.Humidity Data Logger	SK-L200TH II A	00801	SATO	1 year	2017-03-21
14		Splitter (SMA)	ZFSC-2-2500	SF617800326	Mini-Circuits	-	-
15	■	DC Power Supply	6674A	3637A01657	Agilent	-	-
16		Frequency Counter	5342A	2826A12411	HP	1 year	2017-03-21
17	■	Power Meter	EPM-441A	GB32481702	HP	1 year	2017-03-20
18	■	Power Sensor	8481A	3318A94972	HP	1 year	2016-12-30
19		Audio Analyzer	8903B	3729A18901	HP	1 year	2017-09-07
20		Modulation Analyzer	8901B	3749A05878	HP	1 year	2017-09-07
21	■	TEMP & HUMIDITY Chamber	YJ-500	LTAS06041	JinYoung Tech	1 year	2017-09-07
22		Stop Watch	HS-3	812Q08R	CASIO	2 year	2017-03-21
23		LISN	KNW-407	8-1430-1	Kyoritsu	1 year	2017-09-07
24		Two-Lime V-Network	ESH3-Z5	893045/017	R&S	1 year	2017-03-20
25		UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	106243	R&S	1 year	2017-03-20
26		Highpass Filter	WHKX1.5/15G-10SS	74	Wainwright Instruments	1 year	2017-03-20
27		Highpass Filter	WHKX3.0/18G-10SS	118	Wainwright Instruments	1 year	2017-03-20
28	■	OSP120 BASE UNIT	OSP120	101230	R&S	1 year	2017-03-21
29		Signal Generator(100 kHz ~ 40 GHz)	SMB100A03	177621	R&S	1 year	2017-03-23
30		Signal Analyzer (10 Hz ~ 40 GHz)	FSV40	101367	R&S	1 year	2017-03-21