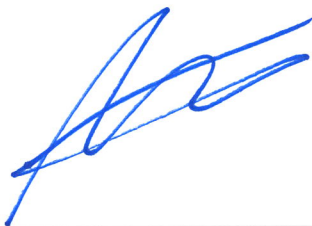
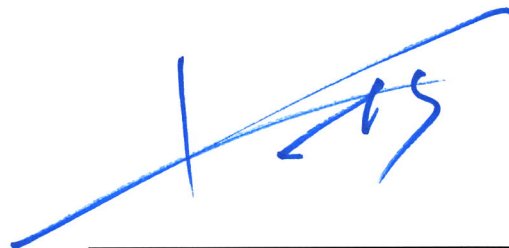


# RF TEST REPORT

Report No. : N155R-050  
Applicant : Fit.Life Inc.  
FCC ID : 2AEQS-FM1113  
Device Category : Data transmission equipment  
Test item description : FITMETER BLE  
Trade Mark/Brand name : -  
Additional model name : -  
Manufacturer : Fit.Life Inc.  
Test Device Serial No. : Identification  
Frequency Range : 2402 MHz ~ 2480 MHz  
Max. RF Output Power : 2.23 dBm - Conducted  
Test Standards : FCC Part 15.247 Subpart C ; ANSI C-63.4-2003  
Data of issue : May 14. 2015  
Test result : **Complied**



Tested by Park Jinho  
(+ signature) / Project Engineer



Reviewed by KIM Ilshin,  
(+ signature) / Senior Engineer

## >>TABLE OF CONTENTS<<

<b>1. General Information</b>	3
<b>2. Information's about Test Item</b>	4
<b>3. Test Report</b>	5
<b>3.1 Test Summary</b>	5
<b>3.2 TRANSMITTER MEASUREMENTS</b>	
3.2.1 6dB BANDWIDTH	6
3.2.2 PEAK OUTPUT POWER	9
3.2.3 POWER SPECTRAL DENSITY	12
3.2.4 BAND – EDGE & SPURIOUS	15
3.2.5 FIELD STRENGTH OF HARMONICS	20
3.2.6 AC CONDUCTED EMISSIONS	24

## APPENDIX

<b>Attachment</b> TEST EQUIPMENT USED FOR TESTS	27
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## 1. General information's

### 1-1 Test Performed

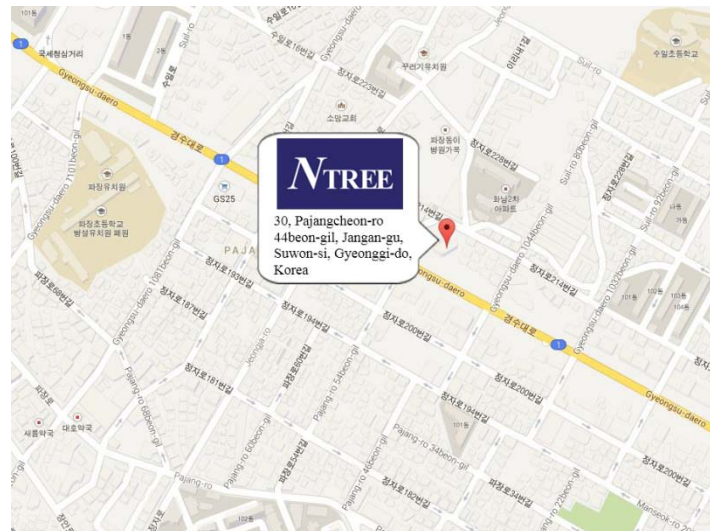
Laboratory : **NTREE Co., Ltd.**

Address : 30,Pajangcheon-ro 44beon-gil,Jangan-gu, Suwon-si, Gyeonggi-do, 440-852, Korea

Telephone : +82-31-893-1000

Facsimile : +82-31-893-0111

### SITE MAP



## 2. Information's about test item

### 2-1 Applicant information

Company name : Fit.Life Inc.  
 Address : #405, R&DB Center 105, Gwanggyo-ro, Yeongtong-gu, Suwon, Gyeonggi-do, 443-270, Korea  
 Telephone / Facsimile : +82-31-888-5144 / +82-31-888-5145  
 Contact name : Yoosuk Jung

### 2-2 Equipment Under Test (EUT) description

Test item particulars : FITMETER BLE  
 FCC ID : 2AEQS-FM1113  
 Model name : FM1113  
 Additional model name : FM1123,FM1133,FM1143,FM1153,FM1163,FM1173,FM1183,FM1193  
 Serial number : Identification  
 Antenna type : PCB antenna Max Gain 1.0 dBi  
 Date (s) of performance of tests: : 2015-05-06 to 2015-05-11  
 Date of receipt of test item : 2015-04-27  
 EUT condition : Pre-production, not damaged  
 Number of channel : 40  
 EUT Power Source : DC 3.7V by Battery  
 Type of Modulation : GFSK  
 Firmware version : -  
 Note : -

### 2-3 Tested frequency

	LOW	MID	HIGH
Frequency (MHz)	2402	2440	2480

### 2-4 Ancillary Equipment

Equipment	Model No.	Serial No.	Manufacturer
-	-	-	-

### 3. Test Summary

#### 3.1 Summary of Transmitter Requirements

FCC Part Section(s)	Parameter	Limit	Test Condition	Status (note 1)
15.247(a)	6 dB Bandwidth	> 500kHz	Conducted	C
15.247(b)	Transmitter Peak Output Power	< 1Watt		C
15.247(d)	Transmitter Power Spectral Density	< 8dBm @ 3kHz		C
15.247(d)	Band Edge & Spurious	> 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 Fit.Life Inc. FCC ID: 2AEQS-FM1113 unit complies with the requirement of §15.203.

Antenna used in this product is Integral type

The sample was tested according to the following specification:

FCC Parts 15.247; ANSI C-63.4-2003

## 3.2 Transmitter requirements

### 3.2.1 6 dB Bandwidth

#### Procedure:

The bandwidth at 6dB 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 6dB 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 = 10 MHz

VBW = 100 kHz (VBW ≥ RBW)

Sweep = auto

Trace = max hold

Detector function = peak

#### Measurement Data:

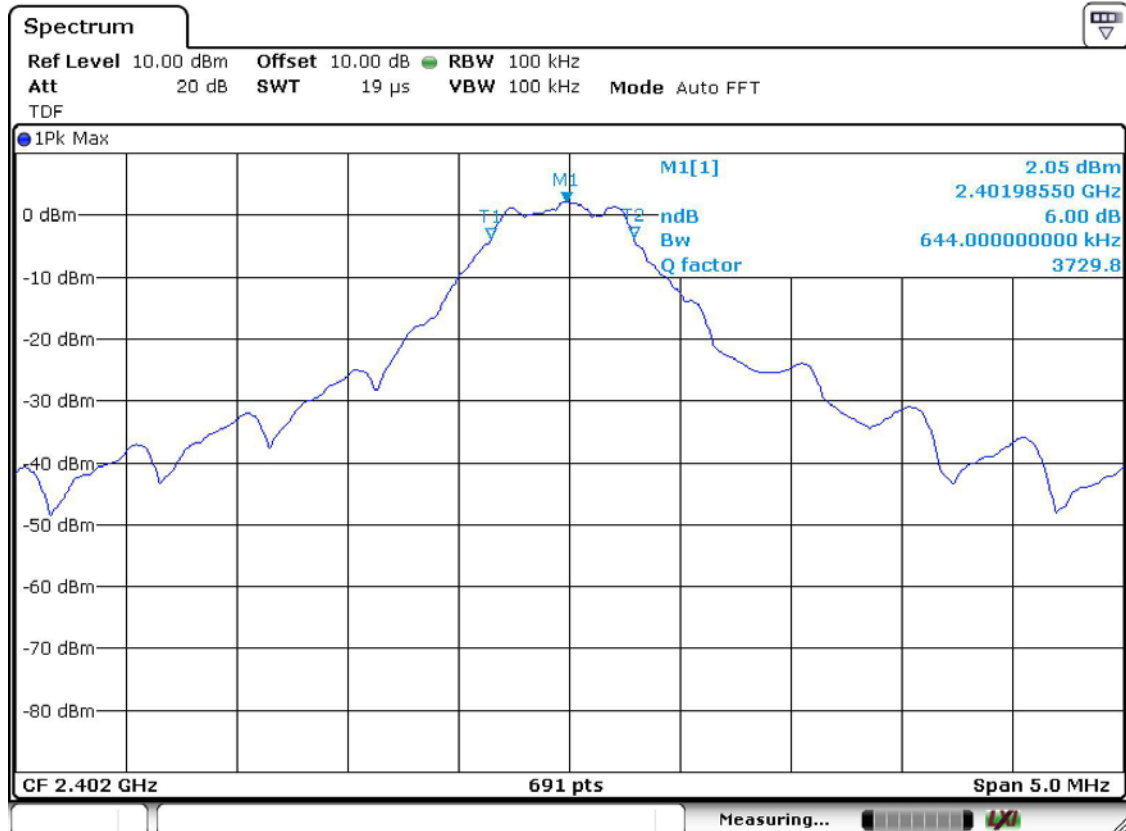
Frequency (MHz)	Test Results	
	Measured Bandwidth (MHz)	Result
2402	0.644	Complies
2440	0.651	Complies
2480	0.658	Complies

- See next pages for actual measured spectrum plots.

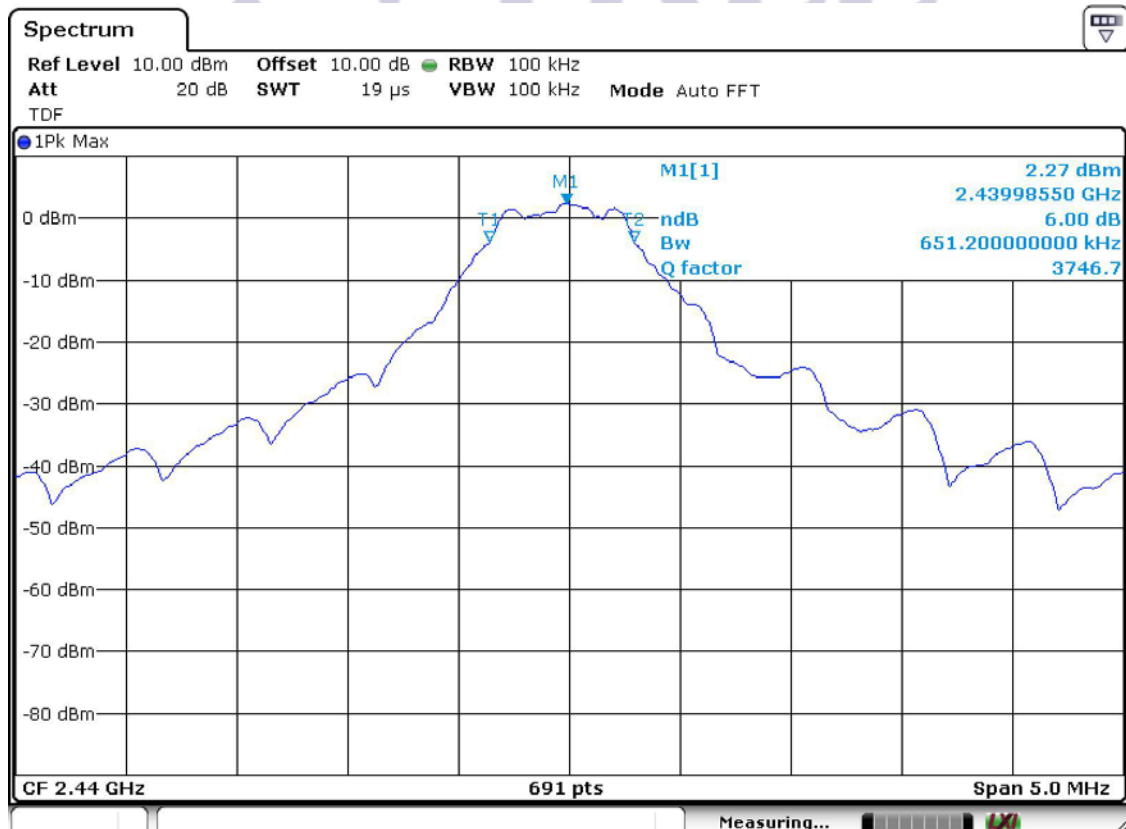
#### Minimum Standard:

6 dB Bandwidth > 500kHz

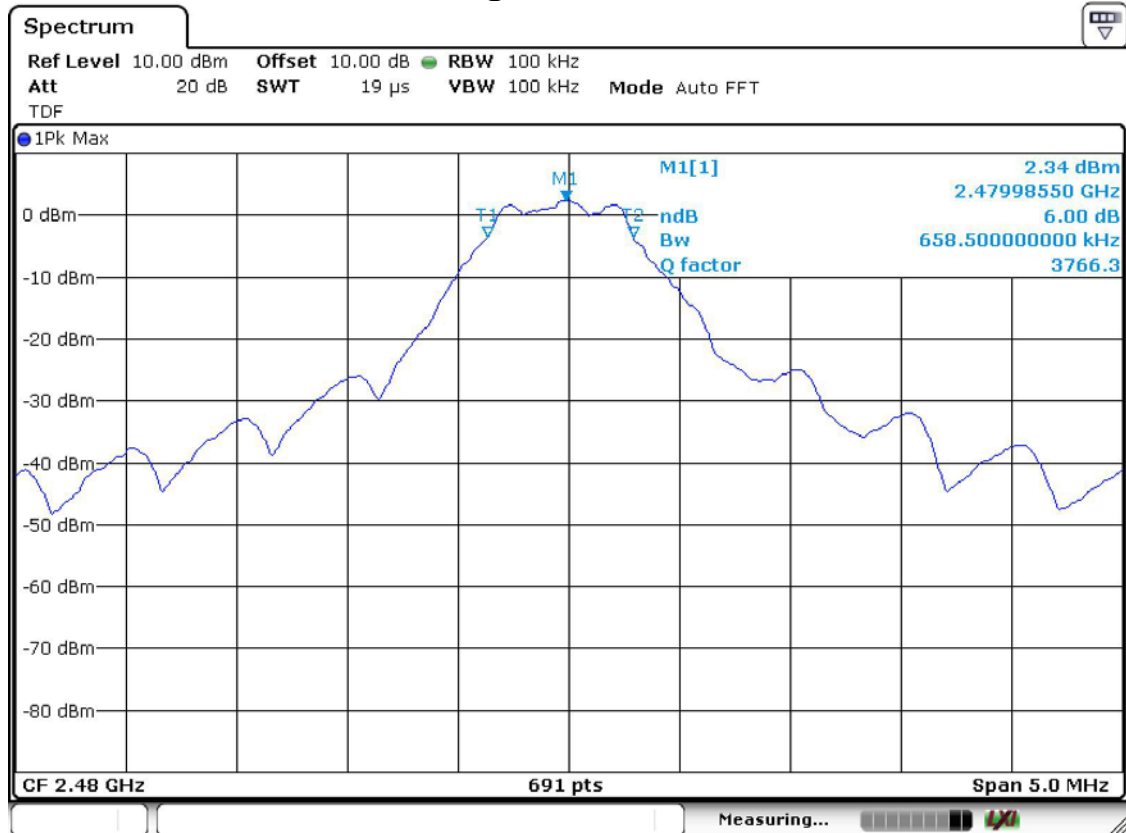
## Low Channel



## Mid 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 ≥ RBW)

Sweep = auto

Detector function = peak

#### Measurement Data:

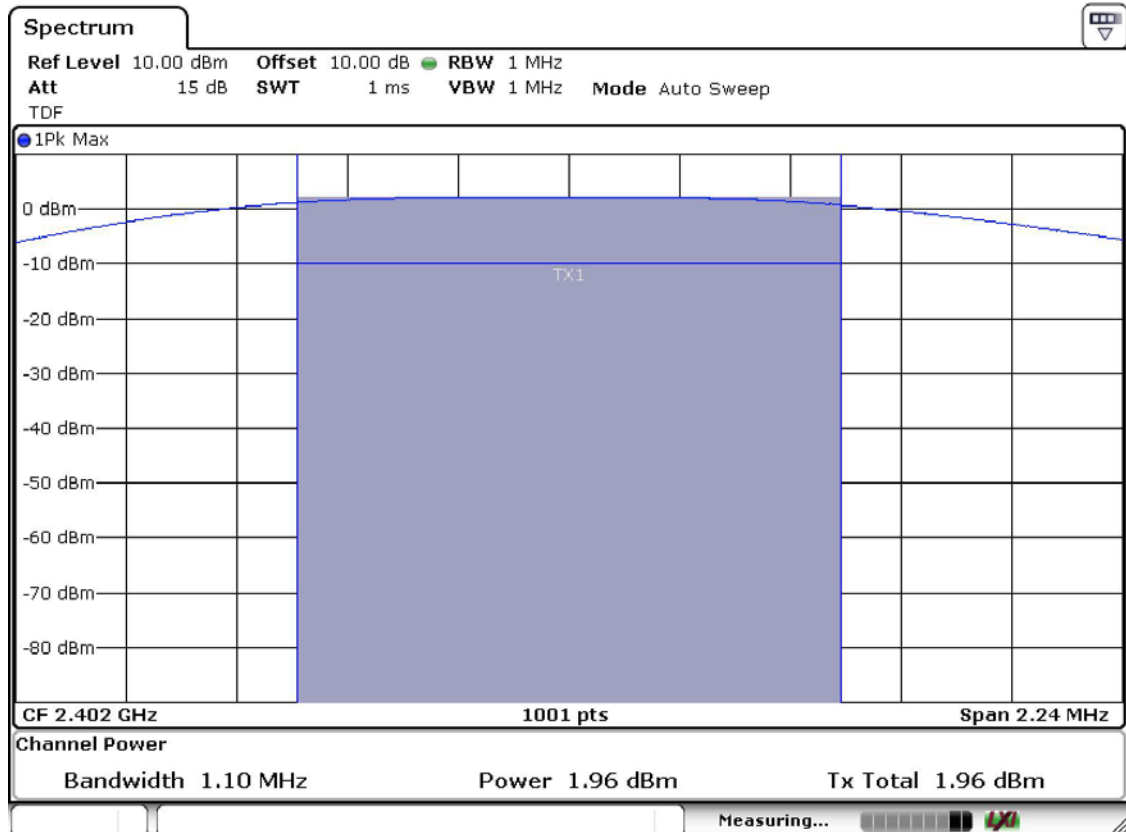
Frequency (MHz)	Test Results		
	dBm	mW	Result
2405	1.96	1.57	Complies
2440	2.16	1.64	Complies
2480	2.23	1.67	Complies

- See next pages for actual measured spectrum plots.

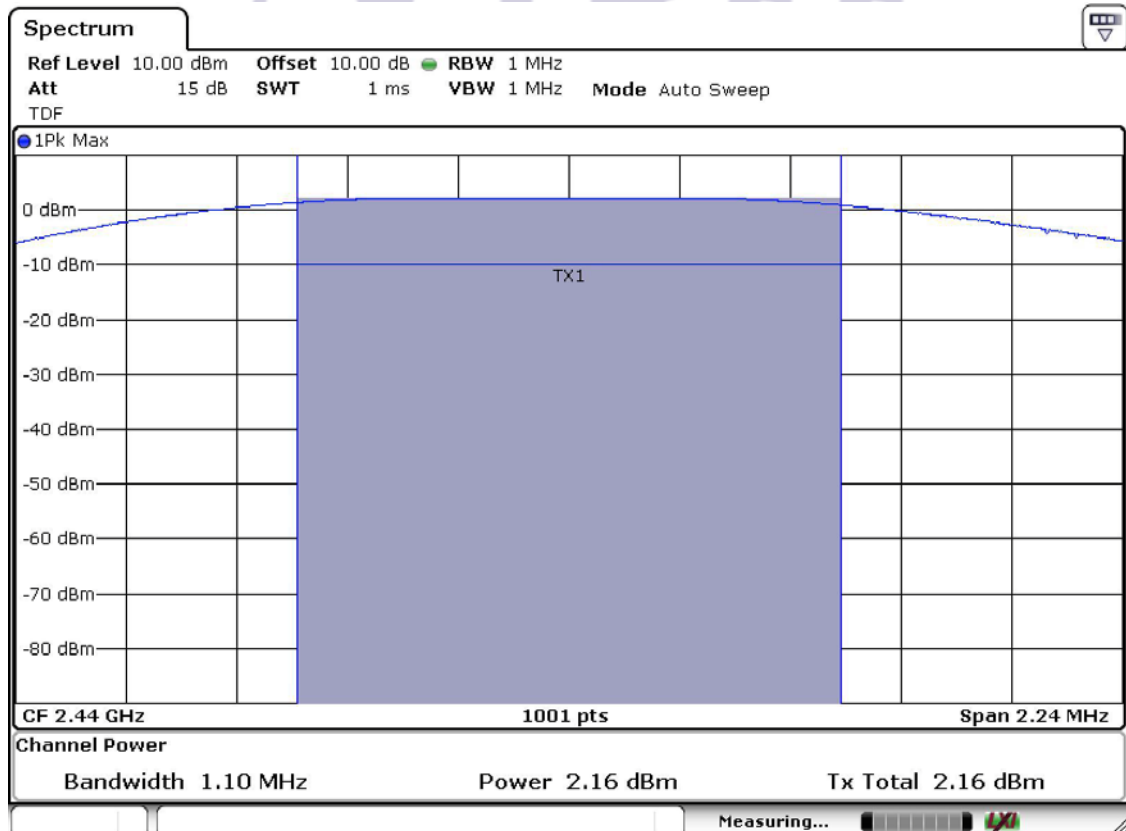
#### Minimum Standard:

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

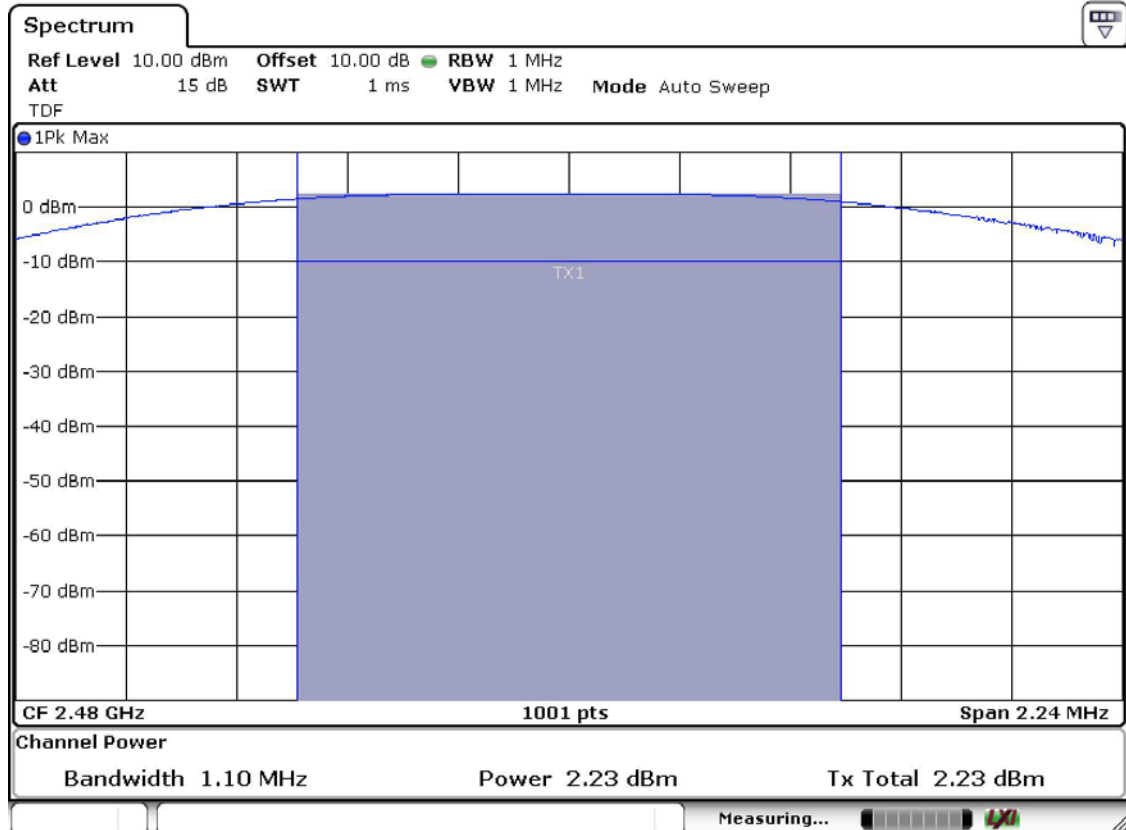
## Low Channel



## Mid 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 = 10 kHz

Sweep = 100 sec

Detector function = peak

Trace = max hold

#### Measurement Data:

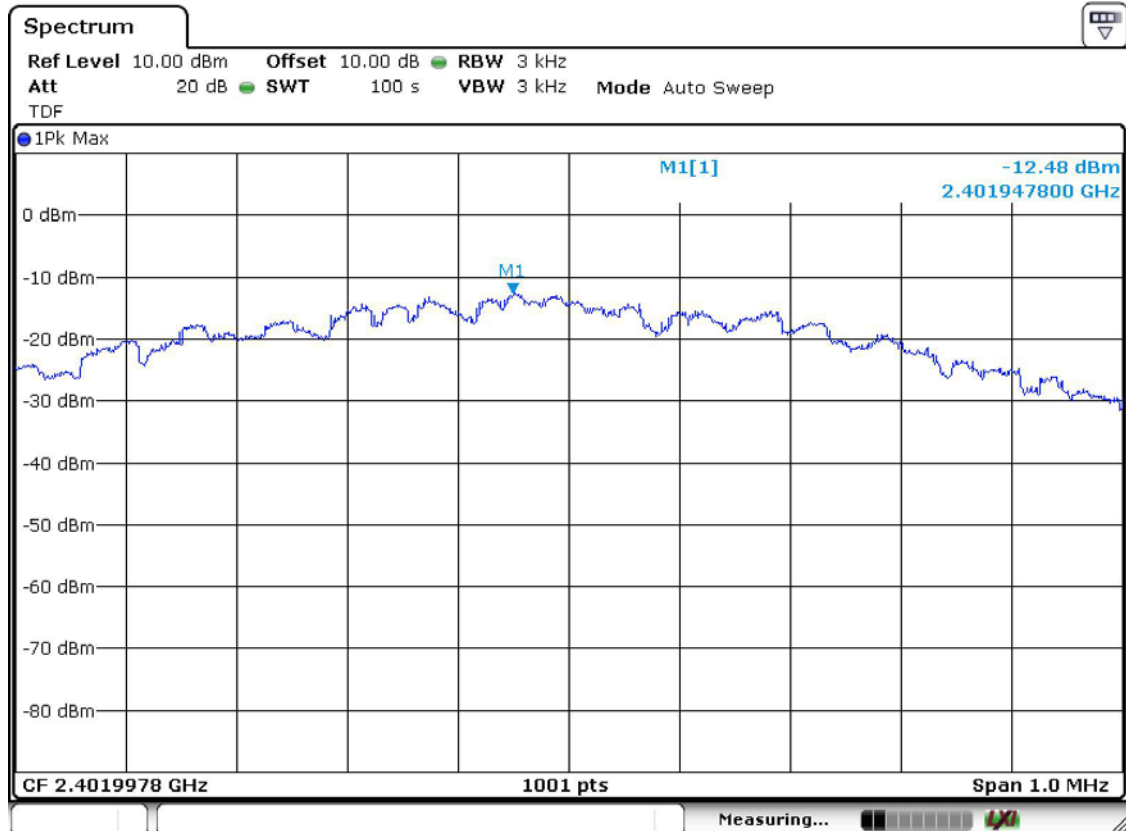
Frequency (MHz)	Test Results	
	dBm	Result
2402	-12.48	Complies
2440	-12.42	Complies
2480	-12.08	Complies

- See next pages for actual measured spectrum plots.

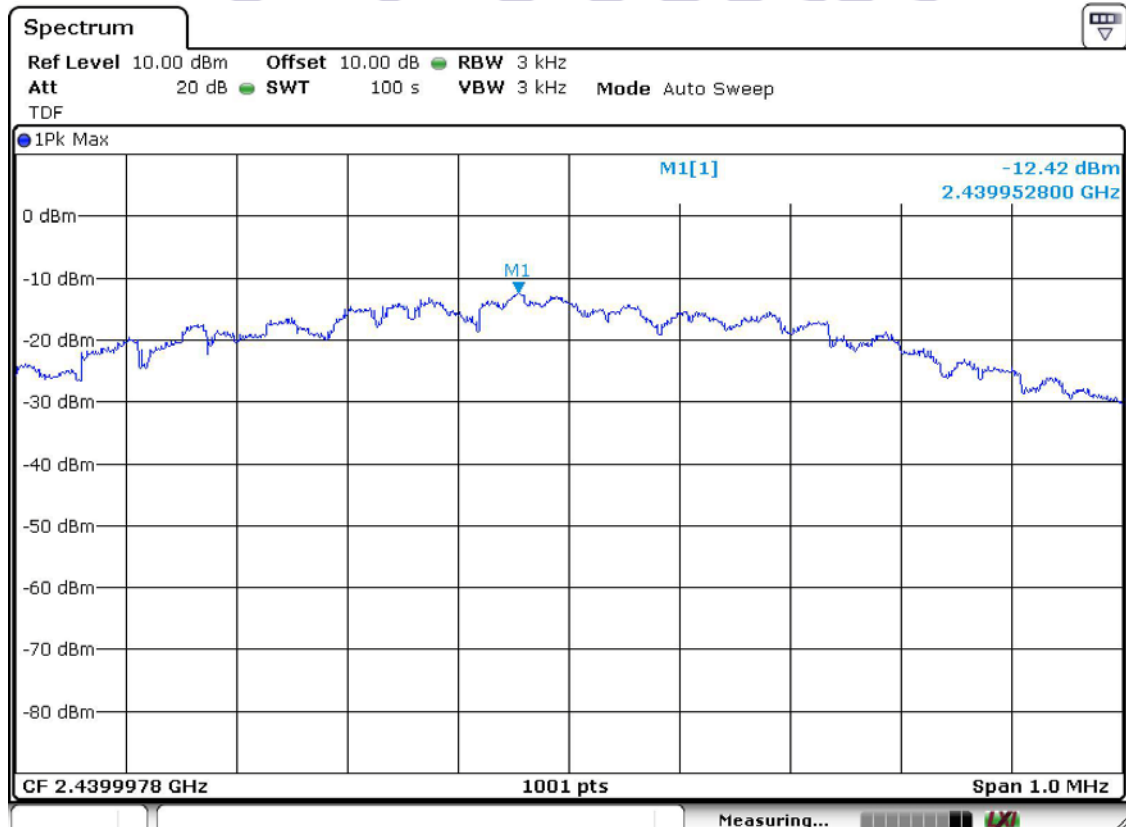
#### Minimum Standard:

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

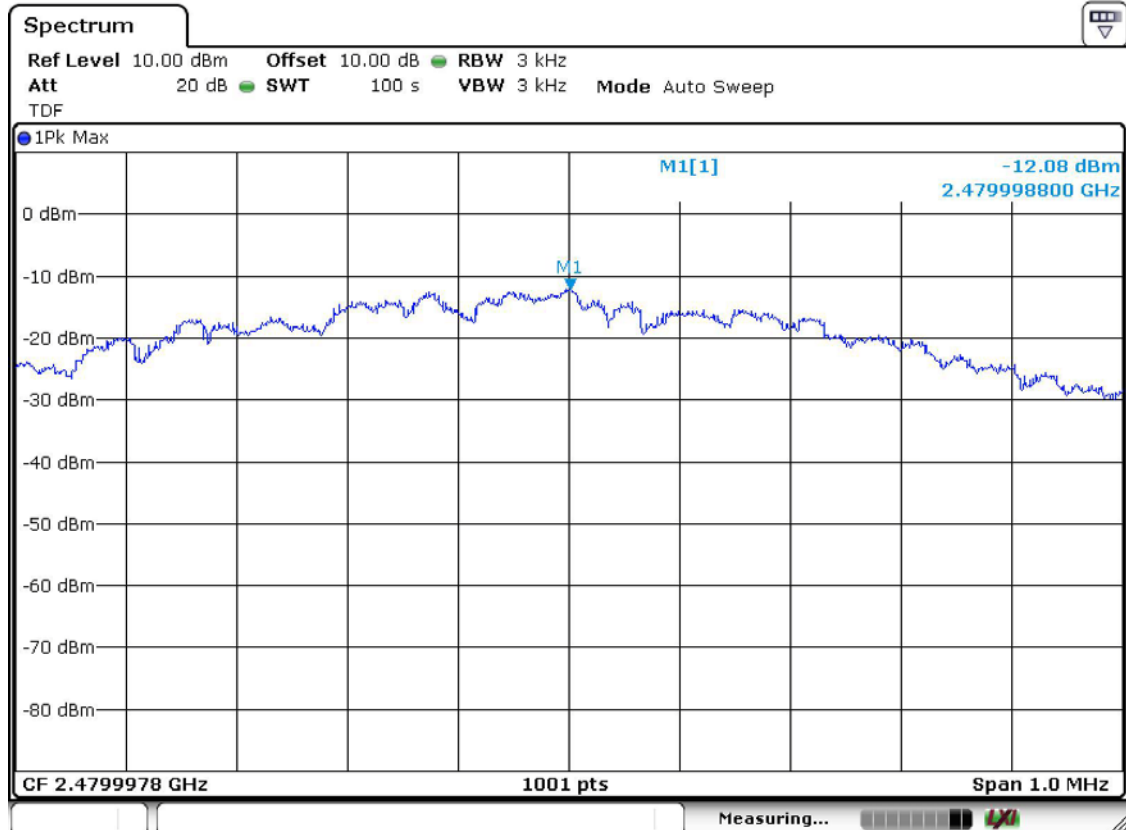
## Power Density Measurement Low Channel



## Mid Channel



## High Channel



### 3.2.4 Band - edge & Spurious

**Procedure:**

The bandwidth at 20dB 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 = 50 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 = 1MHz, Sweep=Auto

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

Measurement Distance: 3m

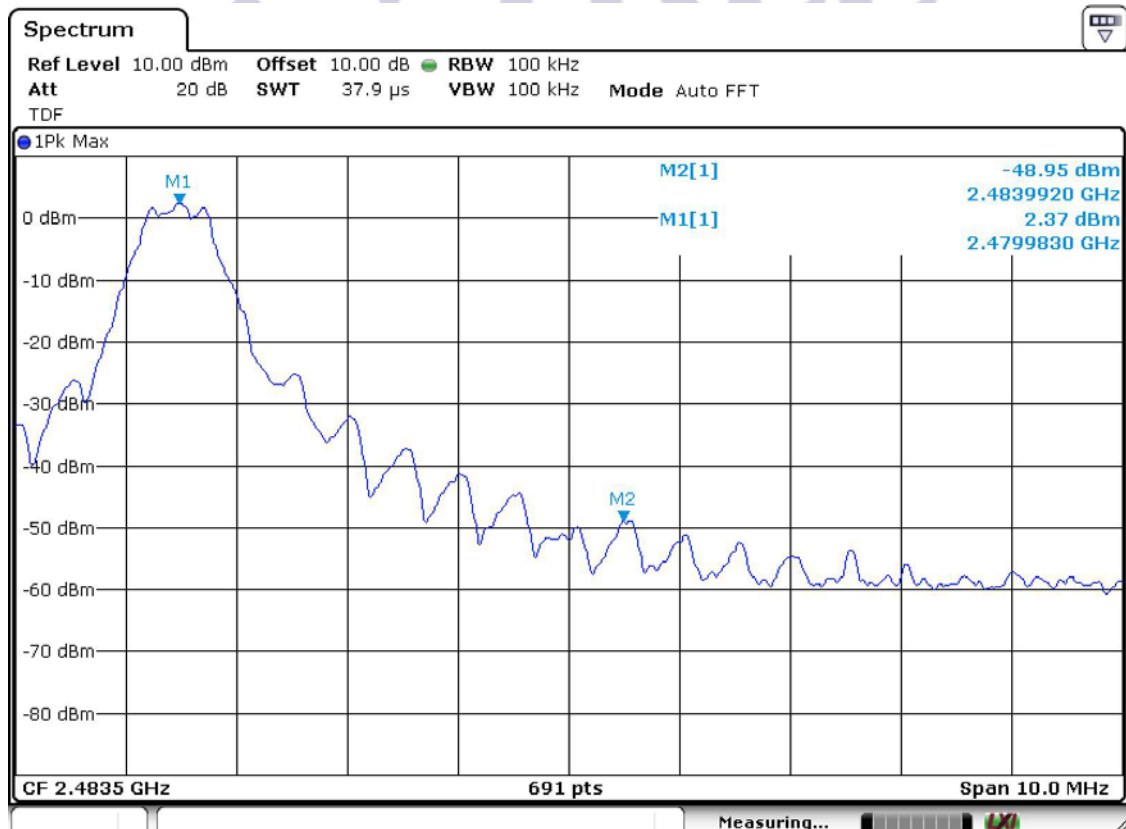
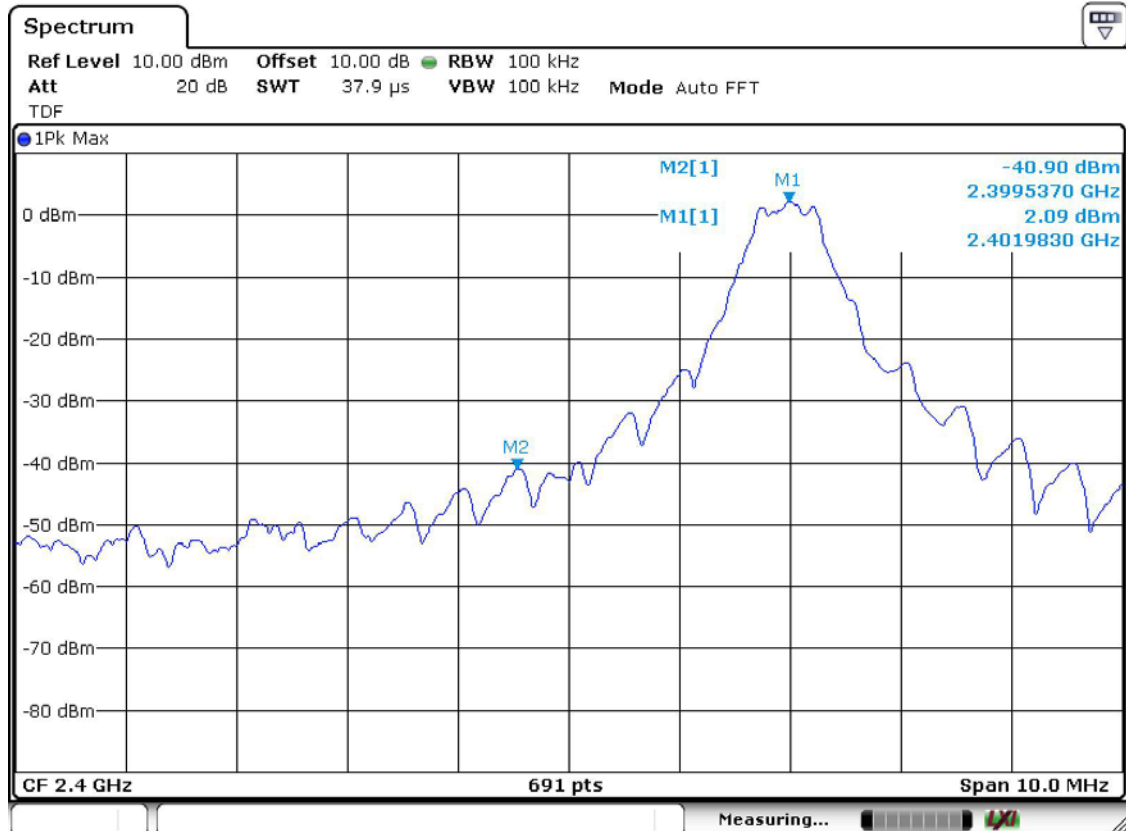
Polarization: Horizontal / Vertical

**Measurement Data: Complies**

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

<b>Minimum Standard:</b>	> 20 dBc
--------------------------	----------

## Band-edge



**Band-edges in the restricted band 2310-2390 MHz measurement**

Frequency  [MHz]	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	
2390	45.59	62.94	V	26.55	52.29	3.12	54.0	74.0	23.0	40.3	31.0	33.7

**Band-edges in the restricted band 2483.5-2500 MHz measurement**

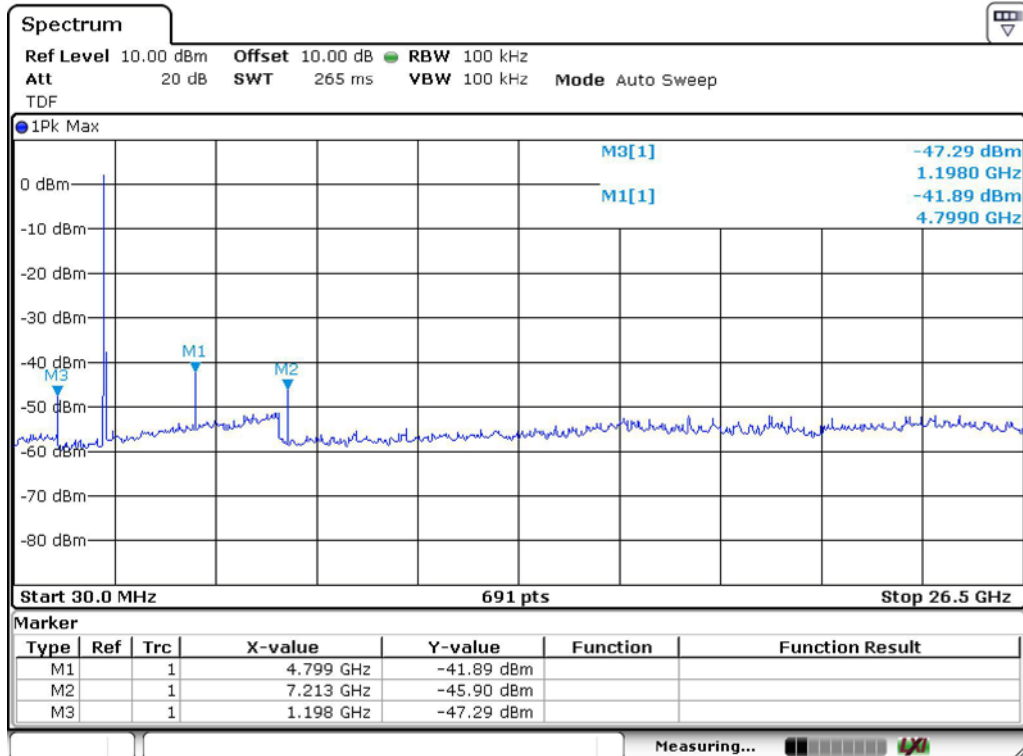
Frequency  [MHz]	Reading  [dBuV/m]		Pol.	Correction  Factor			Limits  [dBuV/m]		Result  [dBuV/m]		Margin  [dB]	
	AV / Peak			Antenna	Amp. Gain	Cable	AV / Peak		AV / Peak		AV / Peak	
2483.5	47.20	67.28	V	26.65	52.34	3.17	54.0	74.0	24.7	44.8	29.3	29.2

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

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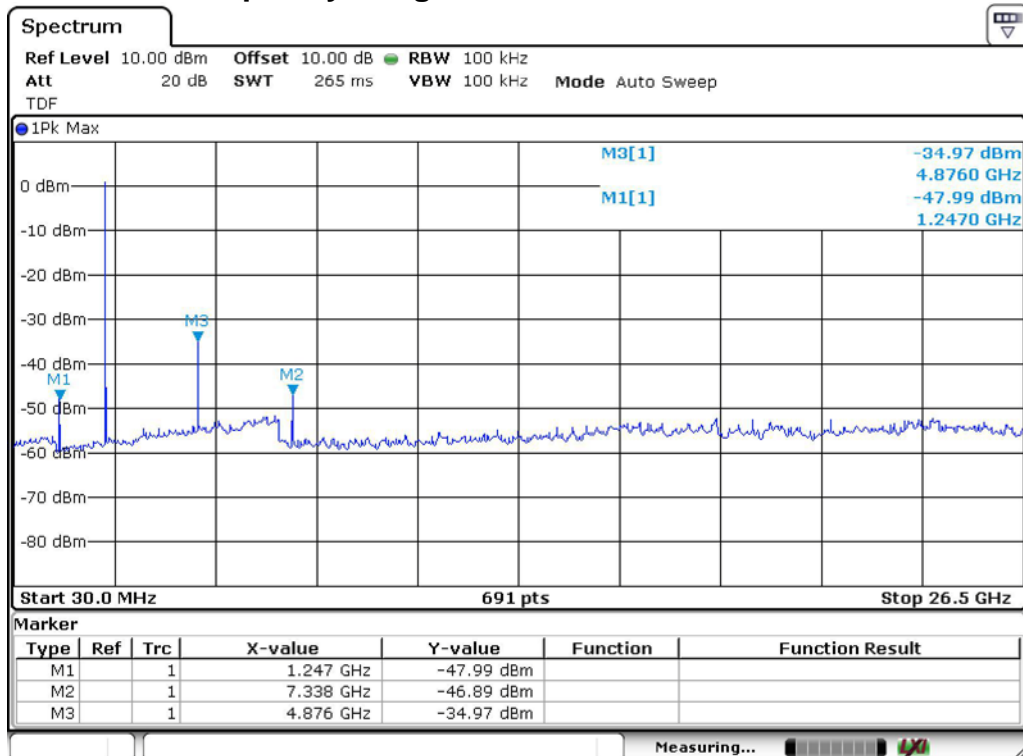
### Low channel

Frequency Range = 30 MHz ~ 10<sup>th</sup> harmonic.



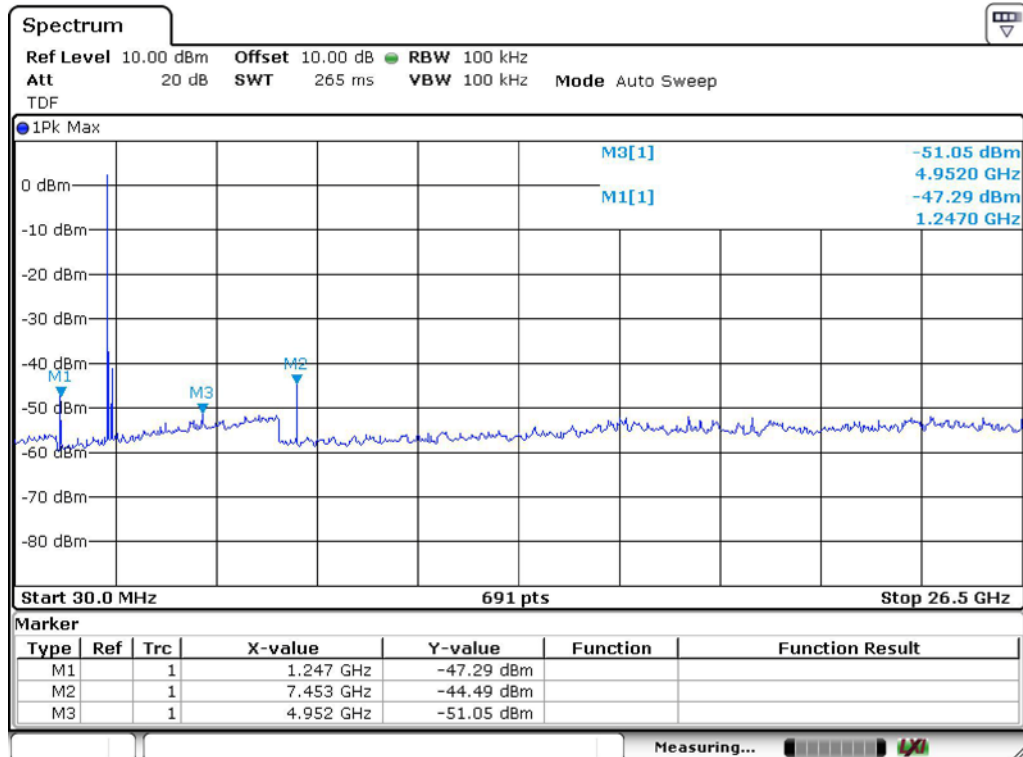
### Mid channel

Frequency Range = 30 MHz ~ 10<sup>th</sup> harmonic.



## High channel

Frequency Range = 30 MHz ~ 10<sup>th</sup> harmonic.



### 3.2.5 Field Strength of Harmonics

#### Procedure:

Radiated emissions from the EUT were measured according to the dictates of DA00-705. 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.

(a) In the frequency range of 9kHz to 30 MHz, magnetic field is measured with Loop Test Antenna. The Test Antenna is positioned with its plane vertical at 3m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.

(b) In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is carried from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested.

#### The spectrum analyzer is set to:

Center frequency = the worst channel

Frequency Range = 9KHz ~ 10<sup>th</sup> harmonic.

RBW = 120 kHz ( 30MHz ~ 1 GHz )  
= 1 MHz ( 1 GHz ~ 10<sup>th</sup> harmonic )

Span = 100 MHz

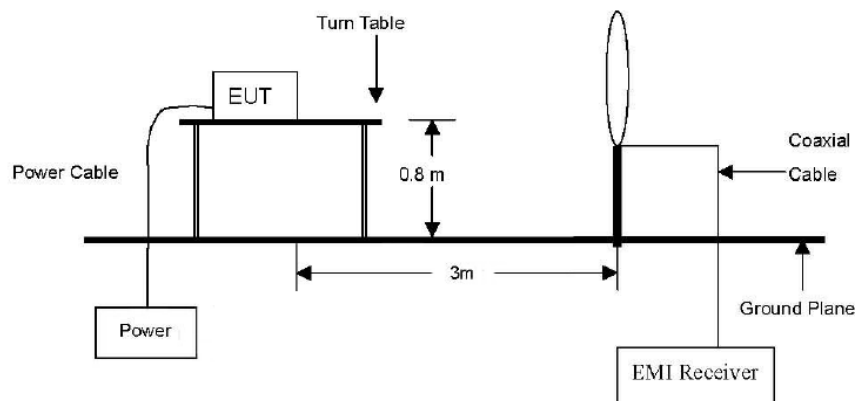
Trace = max hold

VBW ≥ RBW

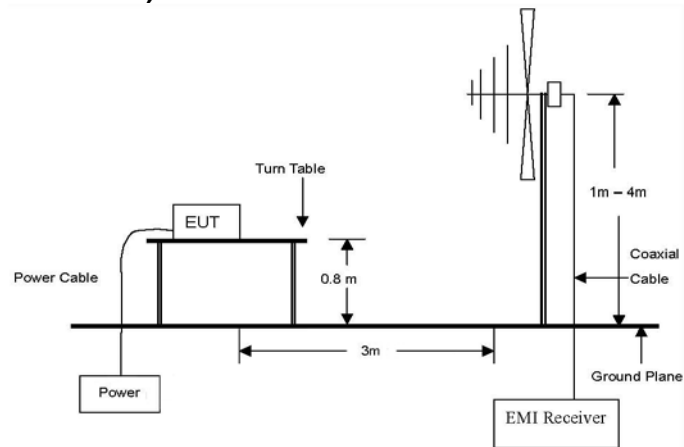
Detector function = peak

Sweep = auto

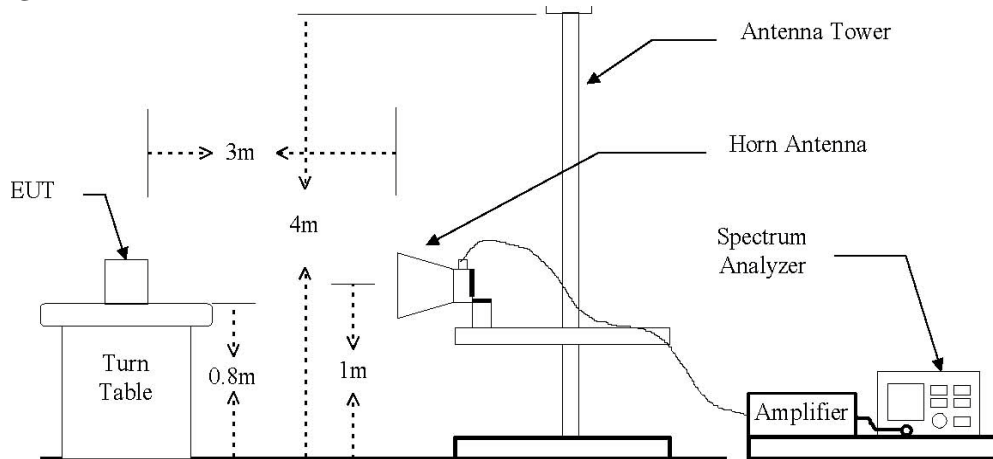
#### **below 30MHz**



**below 1GHz (30MHz to 1GHz)**



**above 1GHz**



**Measurement Data:**

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

**Minimum Standard: FCC Part 15.209(a)**

Frequency (MHz)	Limit (uV/m) @ 3m
0.009 ~ 0.490	2400/F(kHz) (@ 300m)
0.490 ~ 1.705	24000/F(kHz) (@ 30m)
1.705 ~ 30	30(@ 30m)
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, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

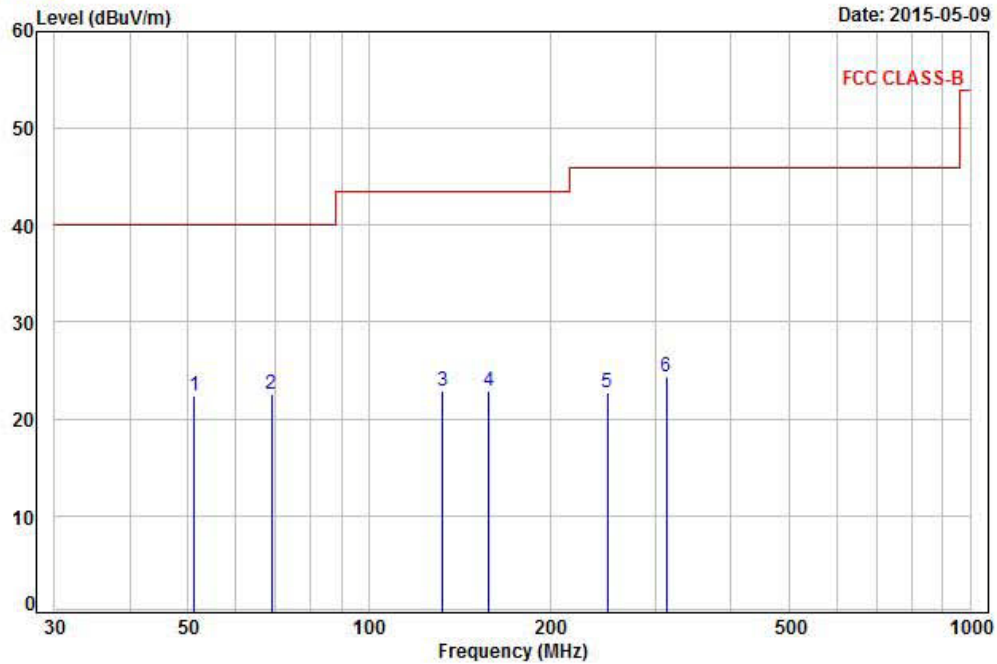
**Measurement Data:**

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	
4804	45.35	65.76	V	31.48	51.99	4.59	54.0	74.0	29.4	49.8	24.6	24.2
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	
4880	56.14	66.27	V	31.59	51.94	4.63	54.0	74.0	40.4	50.6	13.6	23.5
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	
4960	65.53	76.29	V	31.70	51.89	4.66	54.0	74.0	50.0	60.8	4.0	13.2

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

## Radiated Emissions

Data: 22



Condition : FCC CLASS-B 3m VULB 9168-578\_KOLAS\_20140410  
EUT : FM1113  
Test Mode : Charging + BT mode  
Temp. / Humi.: 20 / 45  
Tested by : Kim Ilshin

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	APos	TPos	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	deg	
1	51.30	49.04	-26.70	22.34	40.00	-17.66	QP	100	49	Vertical
2 q	68.87	50.51	-27.90	22.61	40.00	-17.39	QP	100	165	Vertical
3	132.69	50.06	-27.25	22.81	43.50	-20.69	QP	100	70	Vertical
4	158.11	49.15	-26.20	22.95	43.50	-20.55	QP	100	280	Vertical
5	249.43	50.27	-27.51	22.76	46.00	-23.24	QP	100	305	Vertical
6	312.18	49.82	-25.44	24.38	46.00	-21.62	QP	400	263	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:**

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

**Minimum Standard: FCC Part 15.207(a)/EN 55022**

Frequency Range	quasi-peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

\* Note: The limits will decrease with the frequency logarithmically within 0.15MHz to 0.5MHz

## AC Conducted Emissions – Line

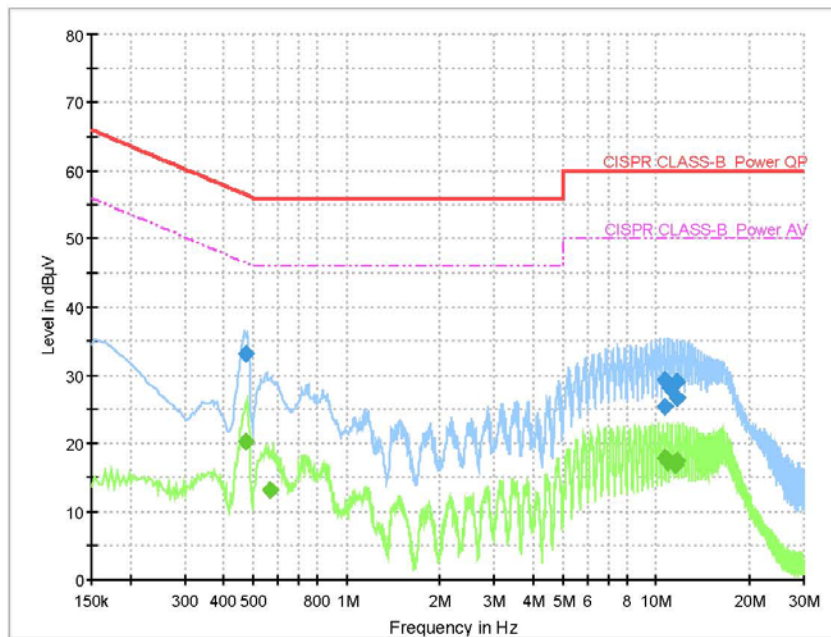
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5/12/2015

### Test Report

#### Common Information

Test Description: FM1113  
Test mode: Charging + BT mode  
Test Standard: FCC Part 15  
Environment Conditions: 120 Vac 60 Hz, Temp. 21 / Humi. 48  
Operator Name: KIM Ilshin  
Comment:



#### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.470100	33.03	---	56.51	23.48	1000.0	9.000	L1	9.6
0.474100	---	20.26	46.44	26.18	1000.0	9.000	L1	9.6
0.562700	---	13.09	46.00	32.91	1000.0	9.000	L1	9.6
10.608000	---	17.86	50.00	32.14	1000.0	9.000	L1	10.0
10.630500	29.27	---	60.00	30.73	1000.0	9.000	L1	10.0
10.672000	25.48	---	60.00	34.52	1000.0	9.000	L1	10.0
10.908000	---	17.12	50.00	32.88	1000.0	9.000	L1	10.0
10.984500	28.08	---	60.00	31.92	1000.0	9.000	L1	10.0
11.590000	---	16.68	50.00	33.32	1000.0	9.000	L1	10.0
11.606500	---	17.39	50.00	32.61	1000.0	9.000	L1	10.0
11.646500	29.10	---	60.00	30.90	1000.0	9.000	L1	10.0
11.676000	26.74	---	60.00	33.26	1000.0	9.000	L1	10.0

1 / 1

10:02:35 PM

## AC Conducted Emissions – Neutral

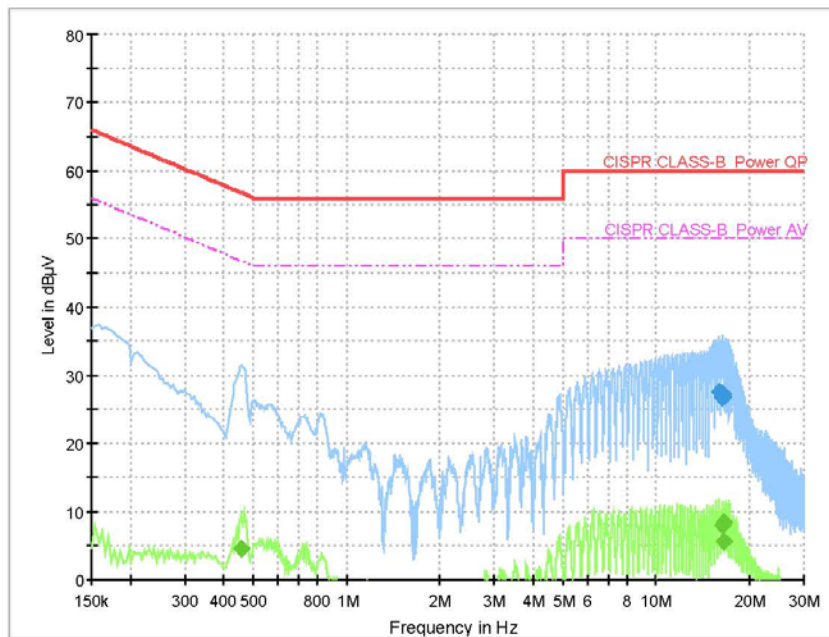
N

5/12/2015

### Test Report

#### Common Information

Test Description: FM1113  
Test mode: Charging + BT mode  
Test Standard: FCC Part 15  
Environment Conditions: 120 Vac 60 Hz, Temp. 21 / Humi. 48  
Operator Name: KIM Ilshin  
Comment:



#### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.458700	---	4.52	46.72	42.20	1000.0	9.000	N	9.6
16.001500	27.63	---	60.00	32.37	1000.0	9.000	N	10.1
16.315000	26.70	---	60.00	33.30	1000.0	9.000	N	10.1
16.331500	26.85	---	60.00	33.15	1000.0	9.000	N	10.1
16.347000	---	-2.80	50.00	52.80	1000.0	9.000	N	10.1
16.363000	26.94	---	60.00	33.06	1000.0	9.000	N	10.1
16.363500	26.94	---	60.00	33.06	1000.0	9.000	N	10.1
16.372000	27.41	---	60.00	32.59	1000.0	9.000	N	10.1
16.378500	---	8.01	50.00	41.99	1000.0	9.000	N	10.1
16.452000	---	8.49	50.00	41.51	1000.0	9.000	N	10.1
16.454000	---	5.56	50.00	44.44	1000.0	9.000	N	10.1
16.777000	---	-1.56	50.00	51.56	1000.0	9.000	N	10.1

1 / 1

10:14:11 PM

## APPENDIX

### TEST EQUIPMENT USED FOR TESTS

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TREE

	Description	Model No.	Serial No.	Manufacturer	Interval	Last Cal. Date
1	Signal Analyzer	FSV-40	100994	R&S	1 year	2015.03.30
2	Attenuator	8493C	5572	Hewlett-Packard	1 year	2015.03.25
3	Step atten	8496B	3308A19907	Hewlett-Packard	1 year	2015.03.25
4	Power Divider	11636A	05928	Hewlett-Packard	1 year	2015.03.25
5	Power Divider	1580-1	SB529	WEINSCHEL	1 year	2014.08.13
6	Power Divider	11636B	50293	Hewlett-Packard	1 year	2014.09.16
7	Digital Multi Meter	34401A	US36017450	Hewlett-Packard	1 year	2015.03.26
8	DC Power Supply	6622A	3307A02512	Hewlett-Packard	1 year	2015.03.26
9	Power Meter	E4416A	GB41291281	Agilent technologies	1 year	2015.03.25
10	Power Sensor	8481A	3318A98910	Agilent technologies	1 year	2015.03.25
11	Temp/Humi Chamber	TH-408GL	DY3114C01	Daeyang ETS	1 year	2015.03.26
12	Frequency Counter	53181A	KR91200591	Agilent technologies	1 year	2015.03.25
13	SIGNAL GENERATOR	SMB100A	177568	R&S	1 year	2015.03.25
14	VECTOR SIGNAL GENERATOR	SBMV100A	260354	R&S	1 year	2015.03.25
15	Slidac	DS-5023	N/A	Daegwang S.L.I	N/A	N/A
16	EMI Test Receiver	ESR7	101302	R&S	1 year	2015.03.25
17	Tri-Log Antenna	VULB9168	9168-577	Schwarzbeck	2 year	2014.04.10
18	Tri-Log Antenna	VULB9168	9168-578	Schwarzbeck	2 year	2014.04.04
19	Double Ridged Broadband Horn Antenna	BBHA 9120D	9120D-1244	Schwarzbeck	2 year	2014.04.10
20	Double Ridged Broadband Horn Antenna	BBHA 9120D	9120D-1245	Schwarzbeck	2 year	2014.05.12
21	Broadband Horn Antenna	BBHA 9170	BBHA9170 573	Schwarzbeck	2 year	2014.03.24
22	Broadband Horn Antenna	BBHA 9170	BBHA9170 574	Schwarzbeck	2 year	2014.03.24
23	Loop Antenna	FMZB1519	1519-046	Schwarzbeck	2 year	2014.04.08
24	Loop Antenna	FMZB1519	1519-051	Schwarzbeck	2 year	2014.04.08
25	Amplifier	TK-PA18S	140002	TESTEK	1 year	2015.03.25
26	POWER Module	OSP120	101213	R&S	1 year	2015.03.26