

# TEST REPORT



**CTK Co., Ltd.**  
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Report No.:  
CTK-2017-01641  
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## 1. Client

- Name : Suntech International Ltd.
- Address : B-1506, Great Valley, 32, 9-Gil, Digital-Ro, Geumcheon-Gu, Seoul, KOREA
- Date of Receipt : 2017-07-21

## 2. Manufacturer

- Name : Suntech International Ltd.
- Address : B-1506, Great Valley, 32, 9-Gil, Digital-Ro, Geumcheon-Gu, Seoul, KOREA

## 3. Use of Report : For FCC / ISED Certification

## 4. Test Sample / Model: SigFox IOT Device / ST730

## 5. Date of Test : 2017-08-18 to 2017-09-07

## 6. Test Standard(method) used : FCC 47 CFR part 15 subpart C 15.247 ISED RSS-247

## 7. Testing Environment: Temp.: (25 ± 5) °C, Humidity: (45 ± 3) % R.H.

## 8. Test Results : Compliance

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full.

Affirmation	Tested by Ji-Hye Kim: (Signature)	Technical Manager Won-Jae, Hwang: (Signature)
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2017-09-08

Republic of KOREA **CTK Co., Ltd.**



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## REPORT REVISION HISTORY

Date	Revision	Page No
2017-09-08	Issued (CTK-2017-01641)	all

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## 1.0 General Product Description





FCC ID	WA2-ST730
Certification Number ISED	21484-ST730
Equipment model name	ST730
Serial number	Prototype
EUT condition	Pre-production, not damaged
Frequency Range	902.1375 MHz – 904.6625 MHz
Max. RF Output Power	22.232 dBm
Number of channels	54 Channels (9 Macro channels x 6 Micro channels)
Type of Modulation	DBPSK
Modulation Technique	FHSS
Power Source	DC 3.7 V (Battery)
Antenna Type	PCB Antenna
Antenna Gain	-0.01 dBi
Hardware Rev	Rev 03
Software Rev	VT16

## 2.0 Facility and Accreditations

### 2.1 Test Facility

The measurement facility is located at (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

### 2.2 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Registration Number	Logo
USA	FCC	FCC Part 15 & 18 EMI (Electromagnetic Interference / Emission)	KR0025 (805871)	
CANADA	ISED	ISED EMI (3/10m test site)	8737A-2	
JAPAN	VCCI	VCCI V-3 EMI (Electromagnetic Interference / Emission)	C-986 T-1843 R-3627 G-387	
KOREA	MSIP	EMI (Electromagnetic Interference / Emission) EMS (Electromagnetic Susceptibility / Immunity)	KR0025	

### 2.3 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.



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### 3.0 Test Specifications

#### 3.1 Standards

FCC Part Section(s)	Requirement(s)	Limit	Status (Note 1)	Test Condition
15.247(a)	Carrier Frequency Separation	< 25 kHz	C	Conducted
15.247(a)	Number of Hopping Frequencies	> 50	C	
15.247(a)	20 dB Bandwidth	N/A	C	
15.247	Dwell Time	< 0.4 s	C	
15.247(b)	Transmitter Output Power	< 1 Watt	C	
15.247(d)	Conducted Spurious emission	> 20 dBc	C	
15.247(d)	Band Edge	> 20 dBc	C	
15.209	Field Strength of Harmonics	15.209(a)	C	Radiated
15.207	AC Conducted Emissions	15.207(a)	C	Line Conducted
<i>Note 1:</i> C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable				
<i>Note 2:</i> The data in this test report are traceable to the national or international standards.				

ISED Part Section(s)	Requirement(s)	Limit	Status (Note 1)	Test Condition
RSS-247 Issue 2 5.1(c)	Carrier Frequency Separation	< 25 kHz	C	Conducted
RSS-247 Issue 2 5.1(c)	Number of Hopping Frequencies	> 50	C	
RSS-247 Issue 2 5.1	20 dB Bandwidth	N/A	C	
RSS-247 Issue 2 5.1(c)	Dwell Time	< 0.4 s	C	
RSS-247 Issue 2 5.4(a)	Transmitter Output Power	< 1 Watt	C	
RSS-247 Issue 2 5.5	Conducted Spurious emission	> 20 dBc	C	
RSS-247 Issue 2 5.5	Band Edge	> 20 dBc	C	
RSS-Gen 6.13	Field Strength of Harmonics	RSS-247 5.5	C	Radiated
RSS-Gen 5	Receiver Spurious Emissions	RSS-Gen 7.1.2	C	
RSS-Gen 8.8	AC Conducted Emissions	RSS-Gen 8.8	C	Line Conducted
<i>Note 1:</i> C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable				
<i>Note 2:</i> The data in this test report are traceable to the national or international standards.				

The sample was tested according to the following specification:  
 FCC Part 15.247, ANSI C63.10-2013, RSS-247 Issue 2



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### 3.2 Mode of operation during the test

The EUT is operated in a manner representative of the typical of the equipments.  
During at testing, system components were manipulated within the confines of typical usage to maximize each emission.  
All modulation modes were tests. The results are only attached worst cases.

#### Test mode

Test Item	Modulation	Data Rate
Carrier Frequency Separation Number of Hopping Frequencies 20 dB Bandwidth Dwell Time Transmitter Output Power Conducted Spurious emission Band Edge Field Strength of Harmonics Receiver Spurious Emissions	FHSS	-
AC Conducted Emissions	Nomal Mode	Auto

#### Test Frequency

Lowest channel	Middle channel	Highest channel
902.1375 MHz	903.4125 MHz	904.6625 MHz

### 3.3 Device Modifications

The following modifications were necessary for compliance:

Not applicable



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### 3.4 Peripheral Devices

Device	Manufacturer	Model No.	Serial No.
Note Computer	Toshiba Corporation	PSAA8K-IGF03	X6207068Q
AC/DC Adapter	DELTA ELECTRONICS, LTD.	SADP-70PB B	-

### 3.5 Maximum Measurement Uncertainty

The value of the measurement uncertainty for the measurement of each parameter.  
Coverage factor  $k = 2$ , Confidence levels of 95 %

Description	Uncertainty
Conducted RF Output Power	$\pm 1.5$ dB
Power Spectral Density	$\pm 1.5$ dB
Occupied Bandwidth	$\pm 0.1$ MHz
Unwanted Emission(conducted)	$\pm 3.0$ dB
Radiated Emissions ( $f \leq 1$ GHz)	$\pm 4.0$ dB
Radiated Emissions ( $f > 1$ GHz)	$\pm 5.0$ dB

### 3.6 Test Software

Conducted Test	-
Radiated Test	TOYO EMI software EP5RE Ver. 5.1.0
Line Conducted Test	ESCI7, ESCI3 : EMC32 Ver. 8.50.0 ESR7 : EMC32 Ver. 8.53.0



## 4.0 Technical Characteristic Test

### 4.1 Requirements

#### 4.1.1 Carrier Frequency Separation

##### Test Procedures(ANSI C63.10-2013 7.8.2)

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna terminal, while EUT has its hopping function enabled. After the trace being stable, the reading value between the peaks of the adjacent channels using the marker-delta function was recorded as the measurement results.

##### Test Settings :

- a) Span = 100 kHz (wide enough to capture the peaks of two adjacent channels)
- b) RBW = 9.1 kHz (Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel)
- c) VBW = 91 kHz ( $\geq$  RBW)
- d) Sweep = auto
- e) Detector function = peak
- f) Trace = max hold

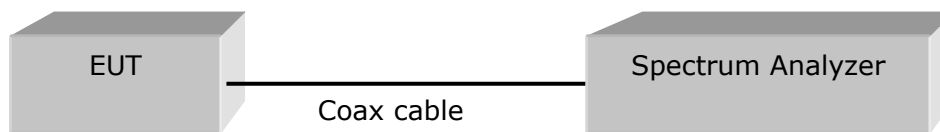


Figure 1 : Measurement setup for the carrier frequency separation

##### Minimum Standard :

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Carrier Frequency Separation > 25 kHz

---

##### Test Data :

Adjacent Hopping Channel Separation (kHz)	Minimum Bandwidth (kHz)	Result
31.4	25	Complies

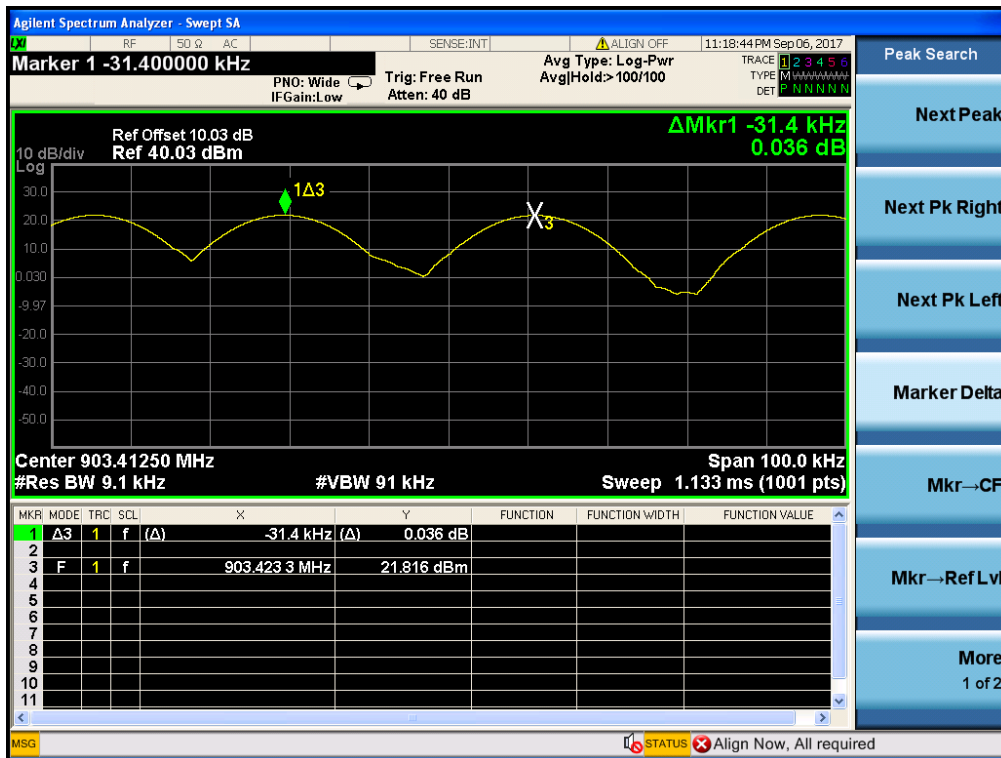
See next pages for actual measured spectrum plots.



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### Carrier Frequency Separation



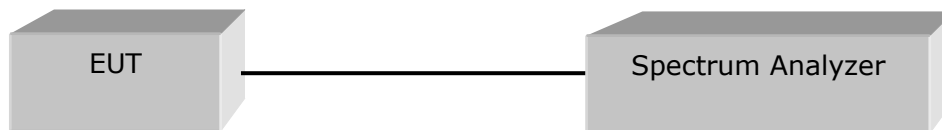
## 4.1.2 Number of Hopping Frequencies

### Test Procedures(ANSI C63.10-2013 7.8.3)

The number of hopping frequencies was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

#### Test Settings:

- a) RBW = 30 kHz (To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller)
- b) VBW = 91 kHz ( $\geq$  RBW)
- c) Sweep = auto
- d) Detector function = peak
- e) Trace = max hold



#### Minimum Standard :

Number of Hopping Frequencies > 50

#### Test Data :

Number of Macro Channels	Number of micro channels in one single macro channel	Total channels	Result
9	6	54	Complies

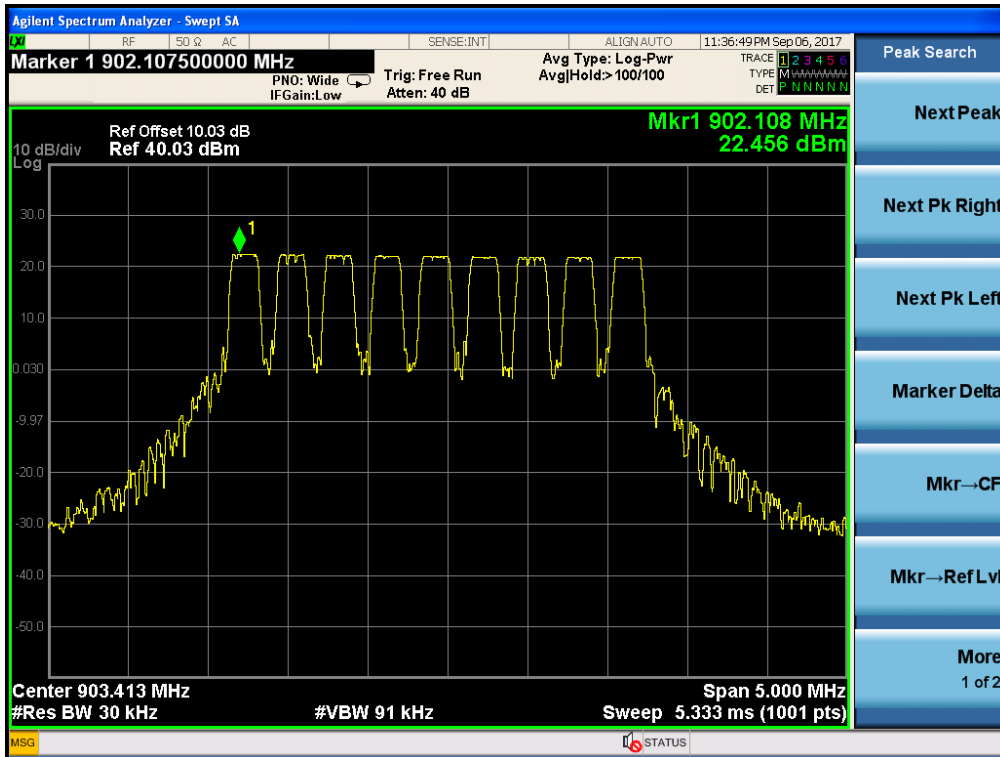
See next pages for actual measured spectrum plots.



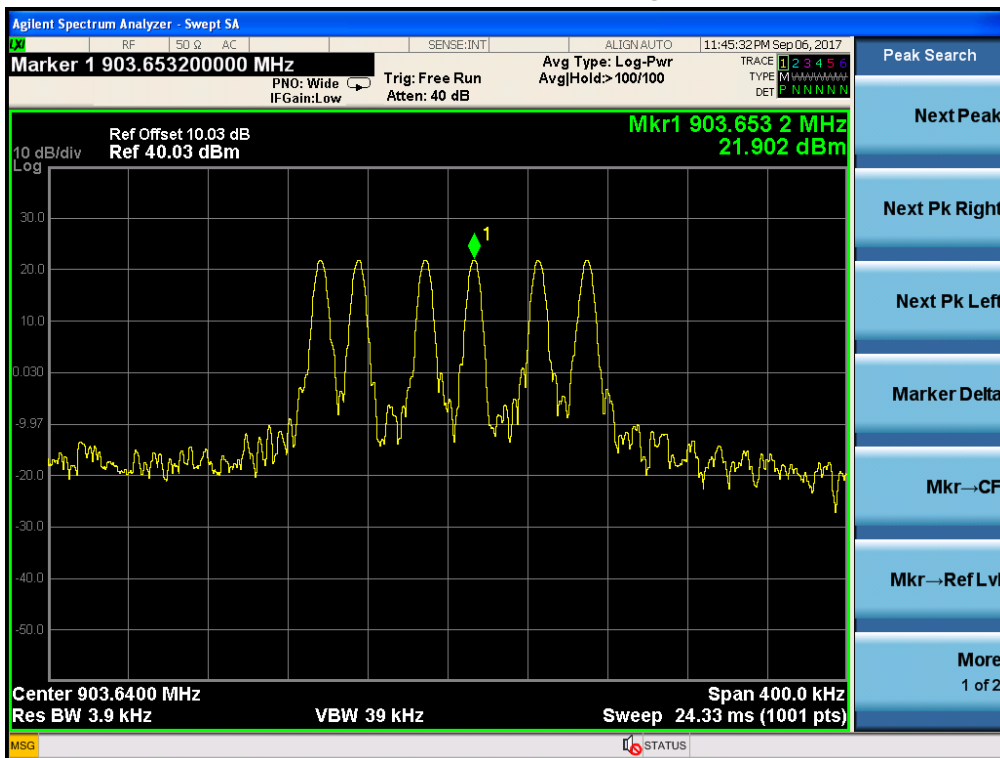
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### Number of Macro Channels



### Number of micro channels in one single macro channel



### 4.1.3 20 dB bandwidth

#### Test Procedures(ANSI C63.10-2013 6.9.2)

Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

#### Test Procedures(ANSI C63.10-2013 6.9.3)

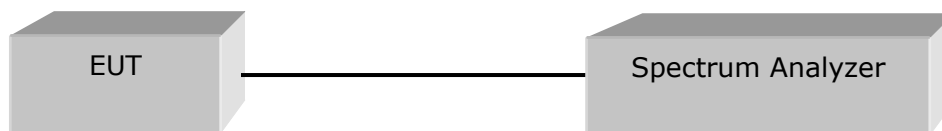
The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

Use the 99% power bandwidth function of the instrument and report the measured bandwidth.

#### Test Settings :

Center frequency = the highest, middle and the lowest channels

- a) Span = 25 kHz (between 2 times and 5 times the OBW)
- b) RBW = 300 Hz (1% to 5% of the OBW)
- c) VBW = 1 kHz (approximately 3 times RBW)
- d) Sweep = auto
- e) Detector function = peak
- f) Trace = max hold



#### Limit :

N/A



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### Test Data (20 dB bandwidth)

Frequency (MHz)	Measured Bandwidth (MHz)	Result
902.1375	21.49	Complies
903.4125	21.47	Complies
904.6625	21.42	Complies

### Test Data (Occupied Bandwidth)

Frequency (MHz)	Measured Bandwidth (MHz)	Result
902.1375	20.67	Complies
903.4125	20.68	Complies
904.6625	20.61	Complies

See next pages for actual measured spectrum plots.



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**20 dB Bandwidth, Occupied Bandwidth**



#### 4.1.4 Time of Occupancy (Dwell Time)

##### Test Procedures(ANSI C63.10-2013 7.8.4)

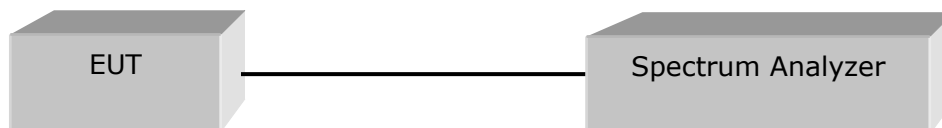
The dwell time was measured with a spectrum analyzer connected to the antenna terminal, while EUT has its hopping function enabled.

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in test setup without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Adjust the center frequency of spectrum analyzer on any frequency be measured and set spectrum analyzer to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
4. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
5. Repeat above procedures until all frequencies measured were complete.

##### Test Settings:

Center frequency = the highest, middle and the lowest channels

- a) Span = zero
- b) RBW = 1 kHz ( $\leq$  channel spacing)
- c) VBW = 3 kHz ( $\geq$  RBW)
- d) Trace = max hold
- e) Detector = peak
- g) Sweep = as necessary to capture the entire dwell time per hopping channel



##### **Limit :**

---

Time of Occupancy < 0.4 s

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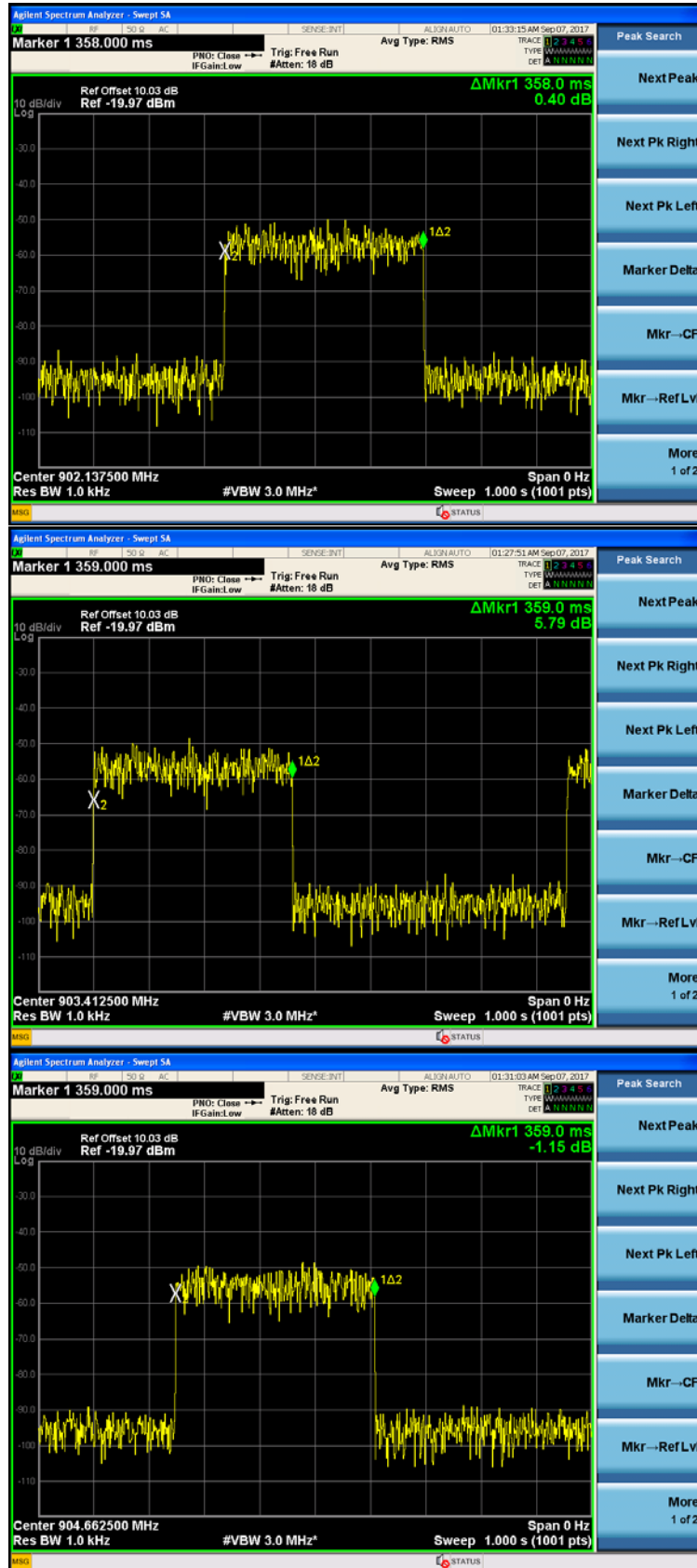
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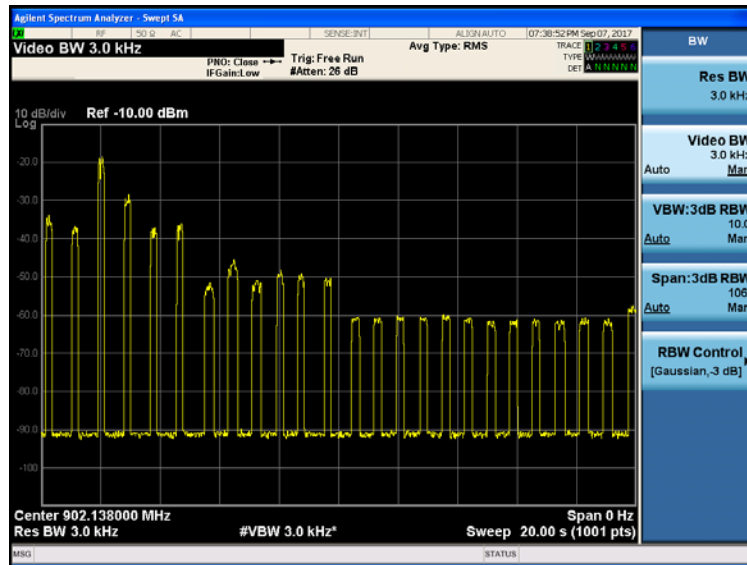
## Test Data

Channel	Frequency (MHz)	Length of Transmission Time (ms)	Test Results
			Result
Low	902.1375	358	Complies
Mid	903.4125	359	Complies
High	904.6625	359	Complies

See next pages for actual measured spectrum plots.

### Time of Occupancy





#### 4.1.5 Maximum peak Conducted Output Power

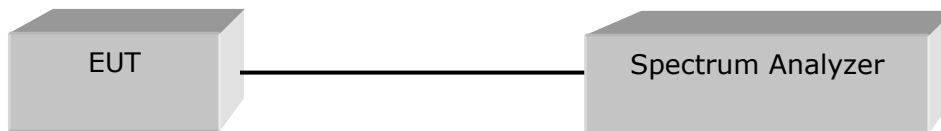
##### Test Procedures(ANSI C63.10-2013 7.8.5)

The maximum peak conducted output power was measured with a spectrum analyzer connected to the antenna terminal, while EUT has its hopping function disabled at the highest, middle and the lowest available channels.

##### Test Settings:

Center frequency = the highest, middle and the lowest channels

- a) Span = 1 MHz (approximately 5 times of the 20 dB bandwidth)
- b) RBW = 30 kHz (greater than the 20 dB bandwidth of the emission being measured)
- c) VBW = 100 kHz ( $\geq$  RBW)
- d) Detector = peak
- e) Trace = max hold
- f) Sweep = auto



##### **Limit :**

---

Maximum peak Conducted Output Power < 1 W

---

##### **Test Data**

Channel	Frequency (MHz)	Peak output power(dBm)	Peak output power(mW)	Result
Low	902.1375	22.232	167.19	Complies
Mid	903.4125	21.814	151.84	Complies
High	904.6625	21.621	145.24	Complies

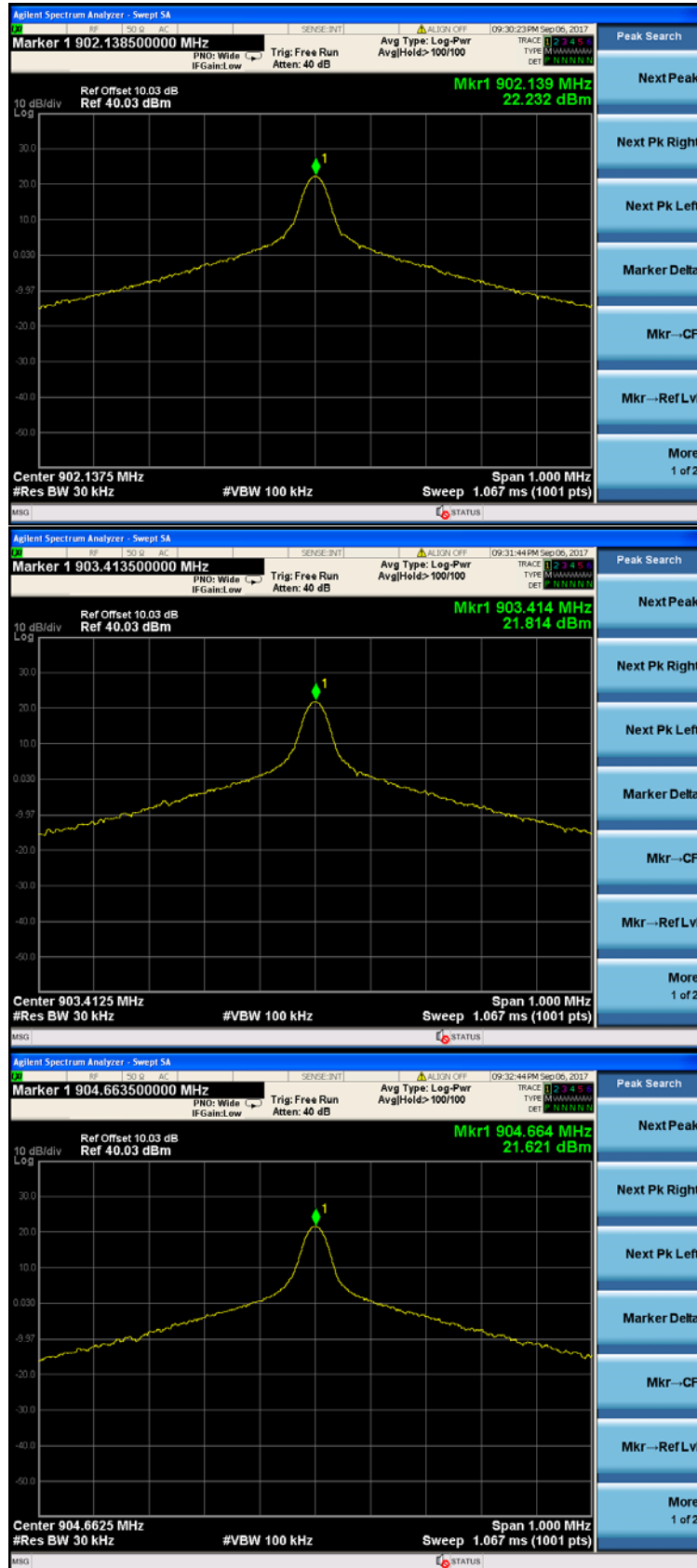
See next pages for actual measured spectrum plots.



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### Maximum peak Conducted Output Power



#### 4.1.6 Band-edge

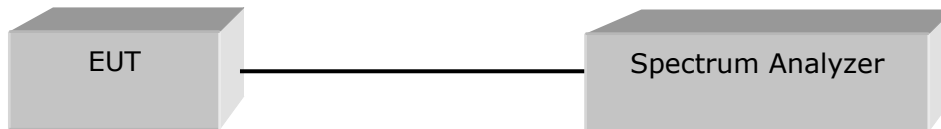
##### Test Procedures(ANSI C63.10-2013 7.8.6 / ANSI C63.10-2013 7.8.8)

The bandwidth at 20 dB down from the highest inband spectral density was measured with a spectrum analyzer connected to the antenna terminal, while EUT has its hopping function disabled at the highest, middle and the lowest available channels.

##### Test Settings:

Center frequency = the highest, middle and the lowest channels

- a) RBW = 100 kHz
- b) VBW = 300 kHz ( $\geq$  RBW)
- c) Span = -
- d) Detector = peak
- e) Trace = max hold
- f) Sweep = auto



##### **Limit :**

---

Band-edge > 20 dBc

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##### **Test Results**

All conducted emission in any 100 kHz bandwidth outside of the spectrum band was at least 20 dB lower than the highest level of the inband spectral density. Therefore the applying equipment meets the requirement.

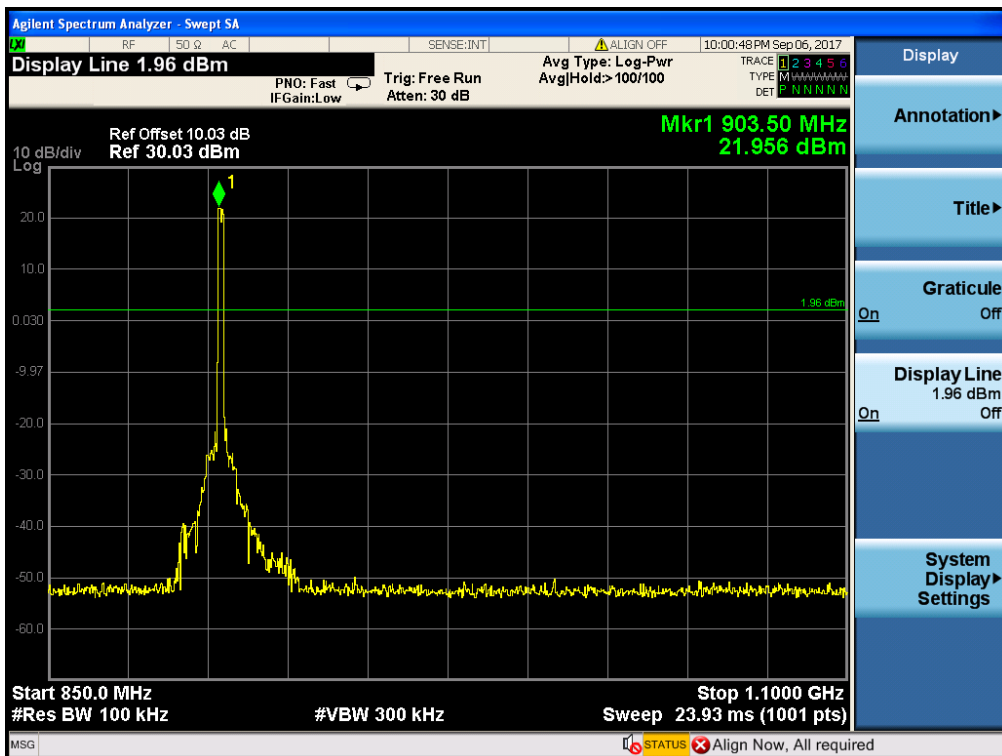
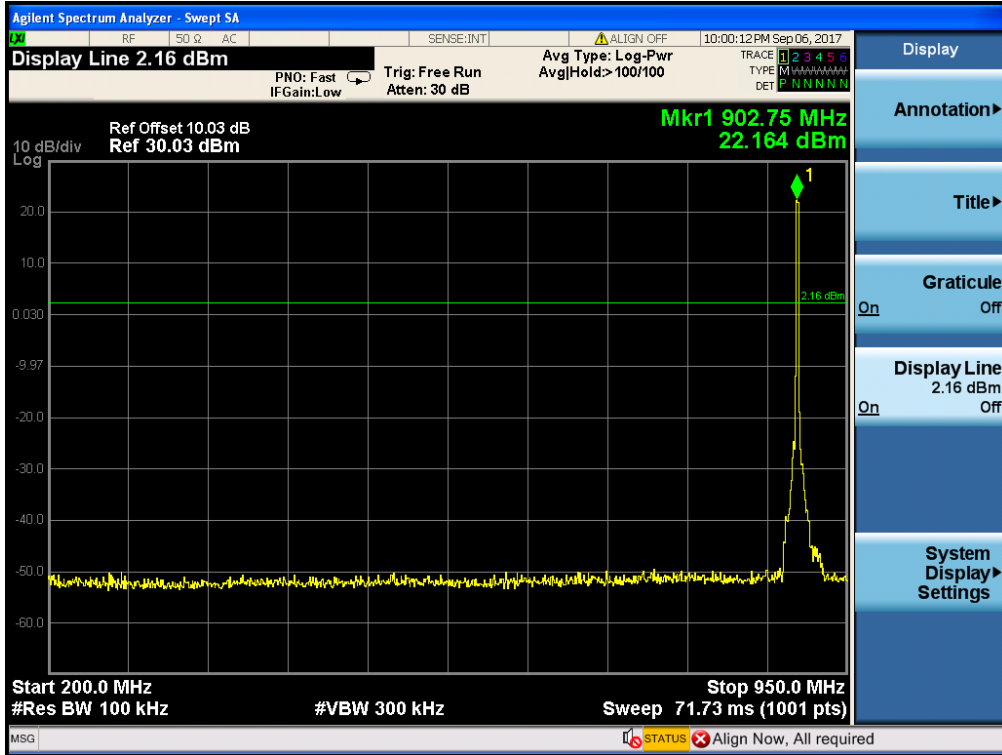
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### Band – edge (with Hopping)

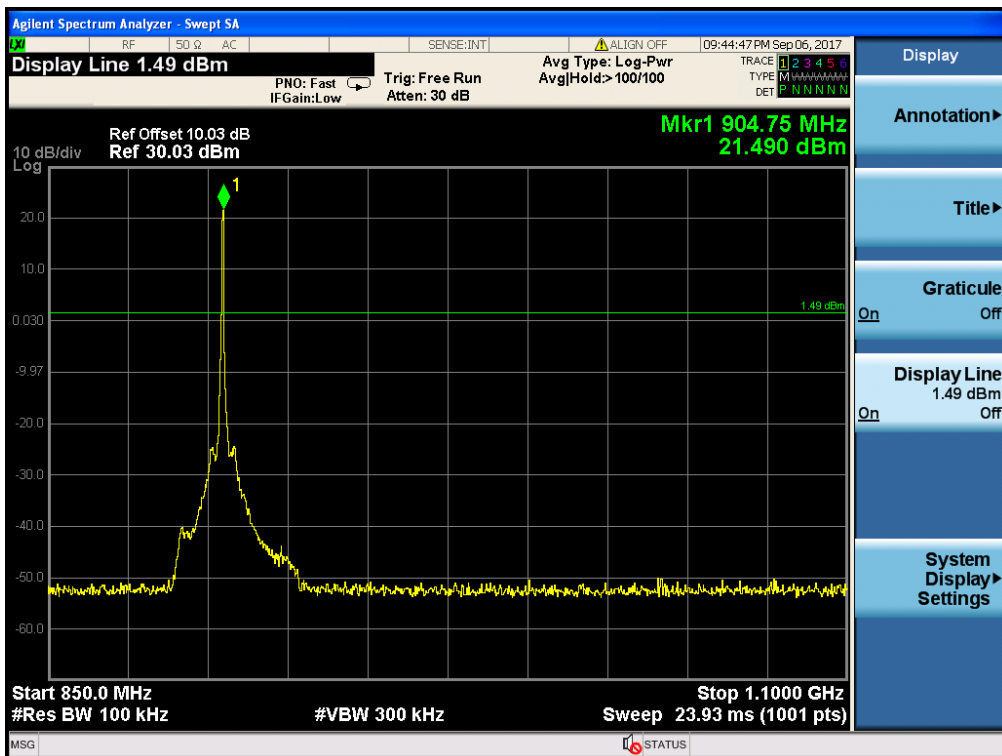
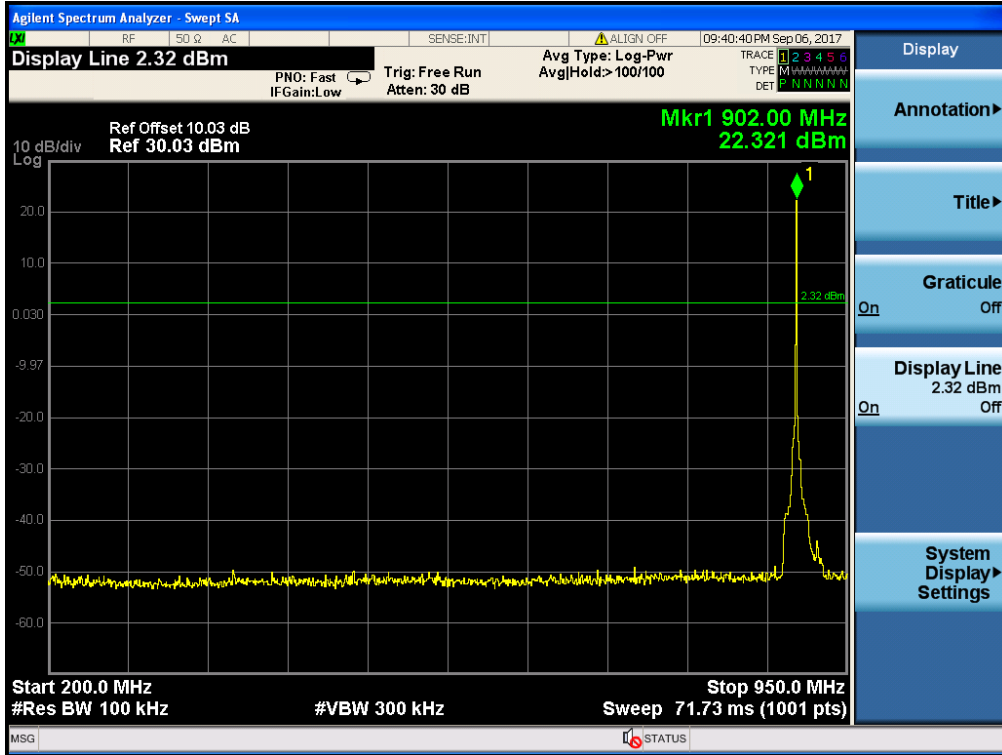




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### Band – edge (without Hopping)



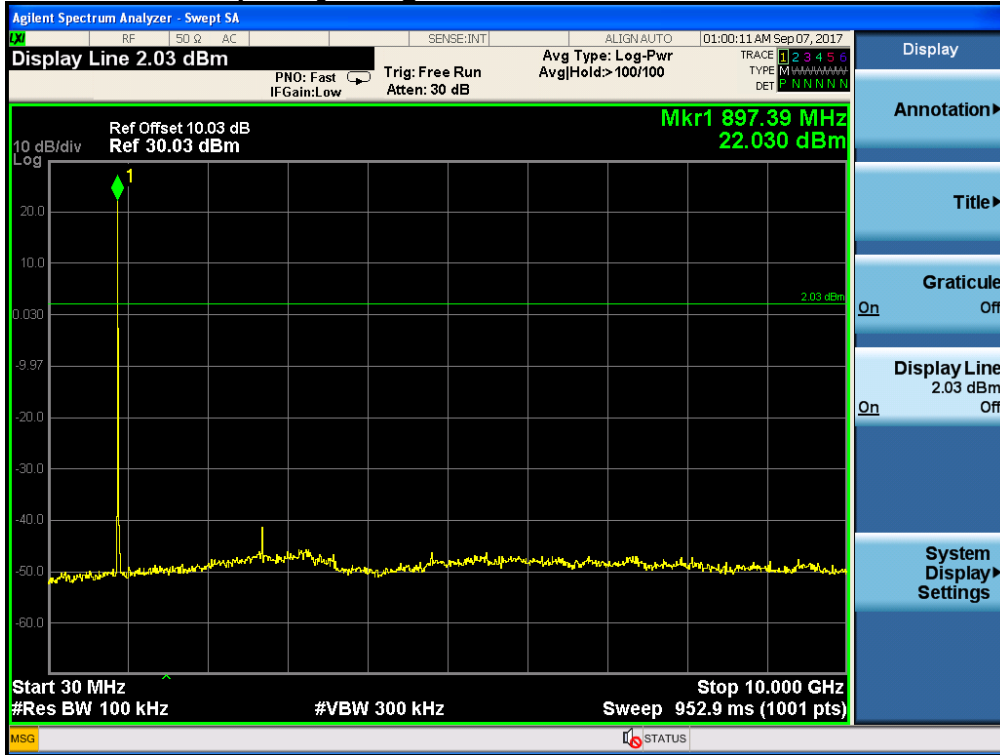




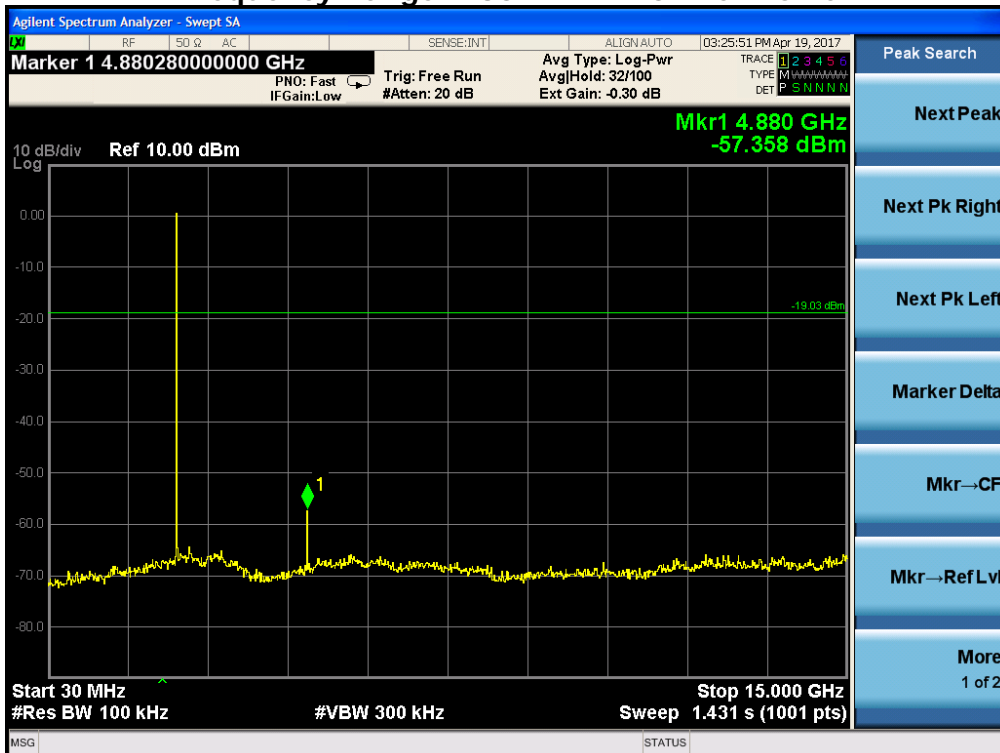
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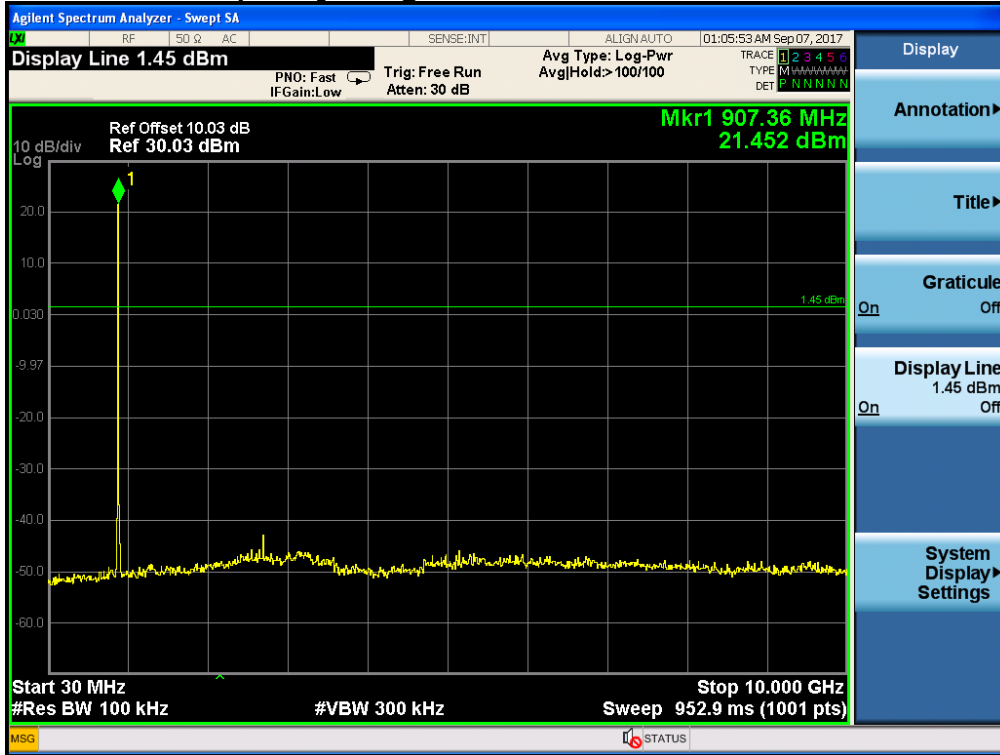
**Band – edge (at 20 dB blow) – Low channel**  
**Frequency Range = 30 MHz ~ 10<sup>th</sup> harmonic**



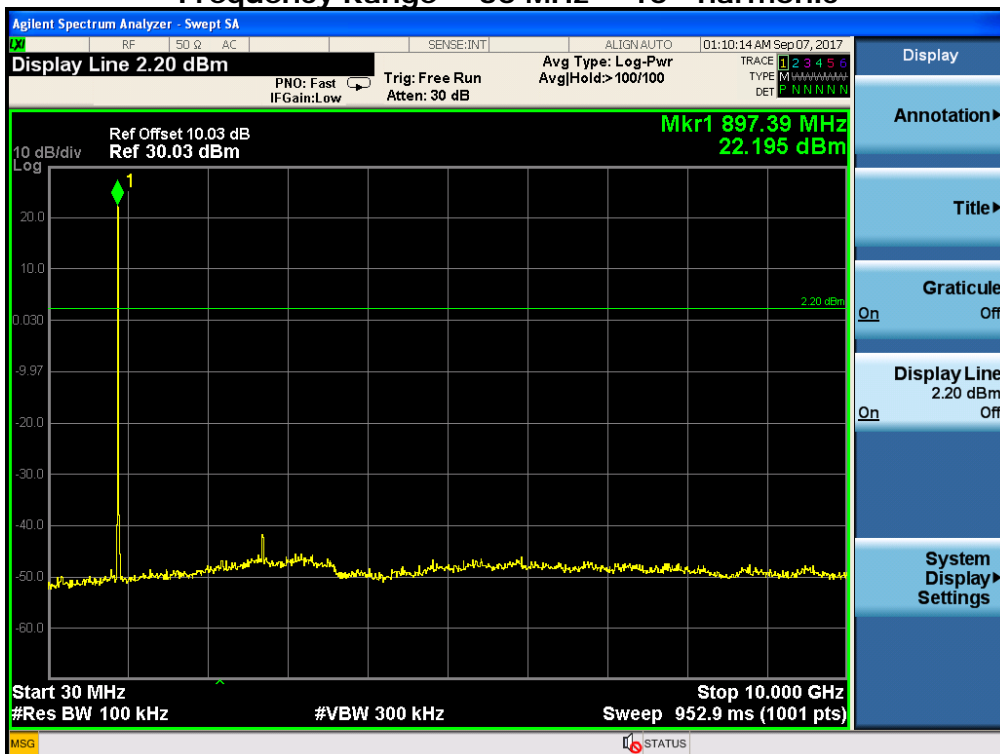
**Band – edge (at 20 dB blow) – Mid channel**  
**Frequency Range = 30 MHz ~ 10<sup>th</sup> harmonic**



**Band – edge (at 20 dB blow) – High channel  
Frequency Range = 30 MHz ~ 10<sup>th</sup> harmonic**



**Band – edge (at 20 dB blow) – with Hopping  
Frequency Range = 30 MHz ~ 10<sup>th</sup> harmonic**





#### 4.1.7 Field Strength of Emissions

Test Location

- 10 m SAC (test distance :  10 m,  3 m)  
 3 m SAC (test distance : 3 m)

Test Procedures

- 1) In the frequency range of 9 kHz to 30 MHz, magnetic field is measured with Loop Antenna. The Test Antenna is positioned with its plane vertical at 1m 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.
- 2) In the frequency range above 30 MHz, Bi-Log Test Antenna(30 MHz to 1 GHz) and Horn Test Antenna(above 1 GHz) 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 emissions levels at both horizontal and vertical polarizations should be tested.

Test Settings:

Frequency Range = 9 kHz ~ 10 GHz (900 MHz 10<sup>th</sup> harmonic)

- a) RBW = 1 MHz for  $f \geq 1$  GHz, 100 kHz for  $f < 1$  GHz, 9 kHz for  $f < 30$  MHz
- b) VBW  $\geq$  RBW
- c) Sweep time = auto couple

Limit

**- 15.209(a)**

Frequency(MHz)	Field Strength uV/m@3m	Field Strength dBuV/m@3m	Deasurement Distance (meters)
0.009-0.490	2 400/F(kHz)	-	300
0.490-1.705	24 000/F(kHz)	-	30
1.705-30	30	-	30
30-88	100**	40	3
88-216	150**	43.5	3
216-960	200**	46	3
Above 960	500	54	3

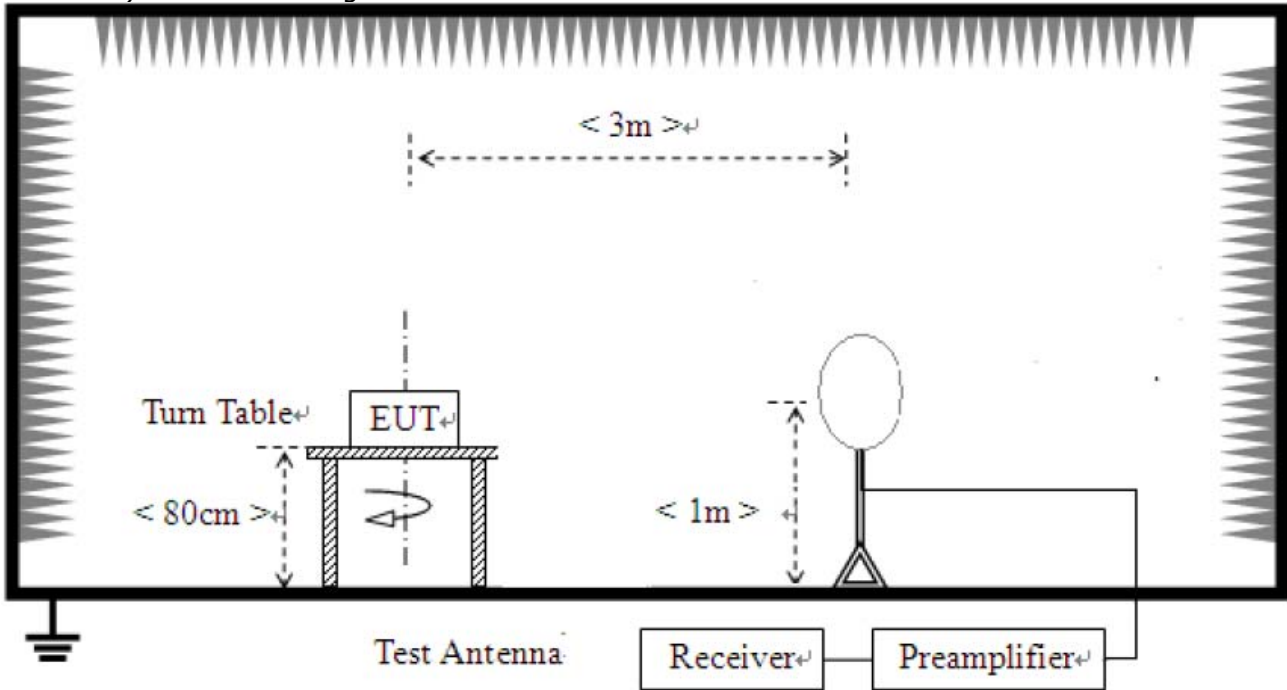
\*\* Except as provided in 15.209(g).fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72MHz, 76-88MHz, 174-216MHz, 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g.15.231 and 15.241.

Note :

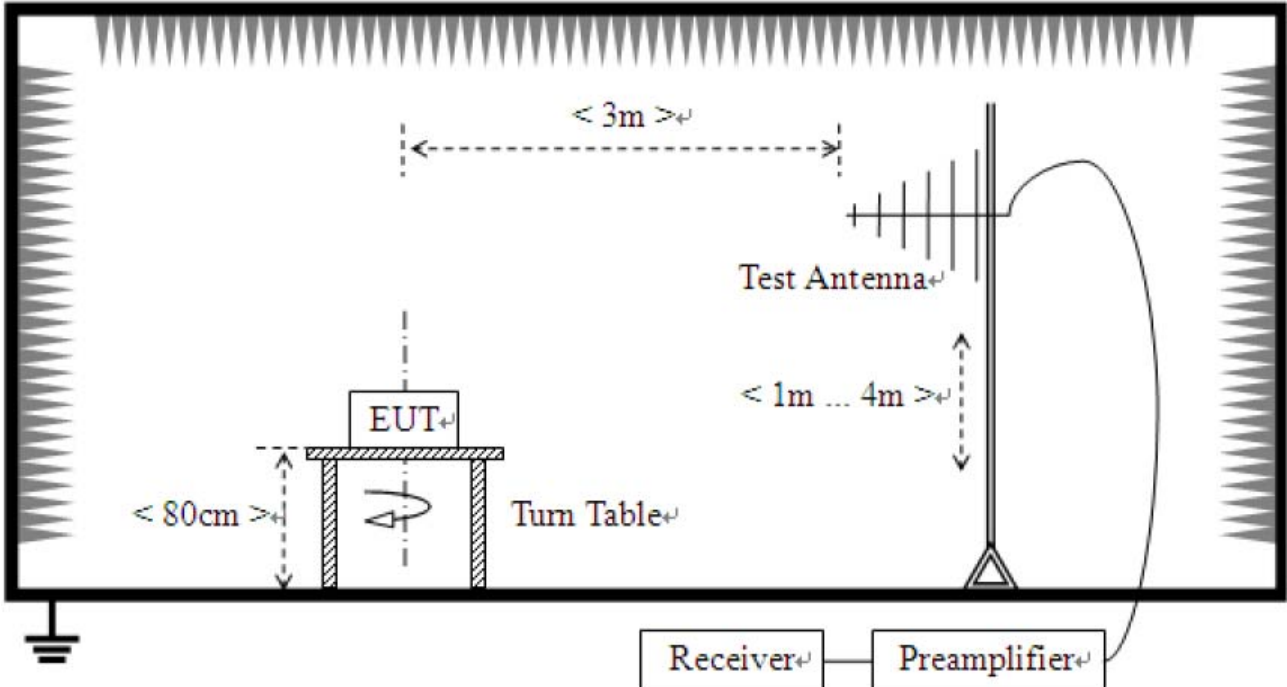
- 1) For above 1 GHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.
- 2) For above 1 GHz, limit field strength of harmonics : 54 dBuV/m@3m (AV) and 74 dBuV/m@3m (PK)

**Test Setup:**

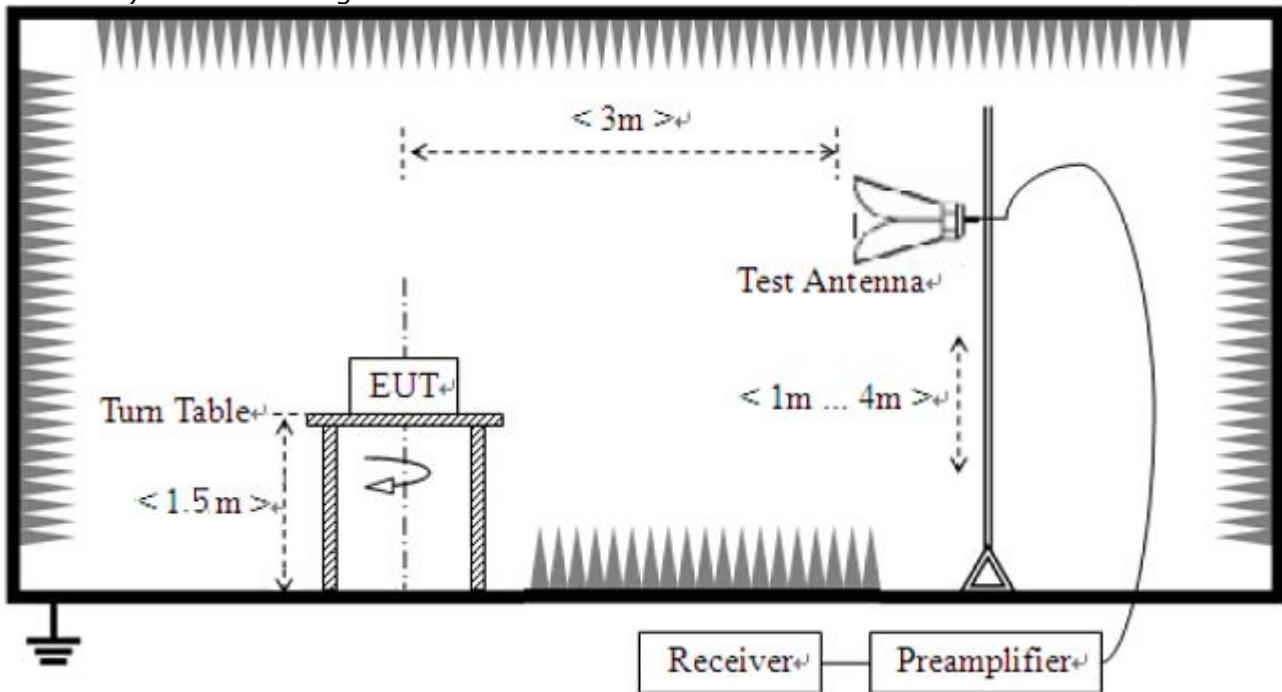
- 1) For field strength of emissions from 9 kHz to 30 MHz



- 2) For field strength of emissions from 30 MHz to 1 GHz



3) For field strength of emissions above 1 GHz



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## Test Results

### 1) 9 kHz to 30 MHz

EUT	SigFox IOT Device	Measurement Detail	
Model	ST730	Frequency Range	9 kHz - 30 MHz
Test mode	Nomal Mode	Detector function	Quasi-Peak

The requirements are:

Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
-	-	-	See note

**Note :**

The amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

Distance extrapolation factor =  $40 \log (\text{specific distance} / \text{test distance})$  (dB)



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## 2) 30 MHz to 1 GHz

Test mode : DBPSK

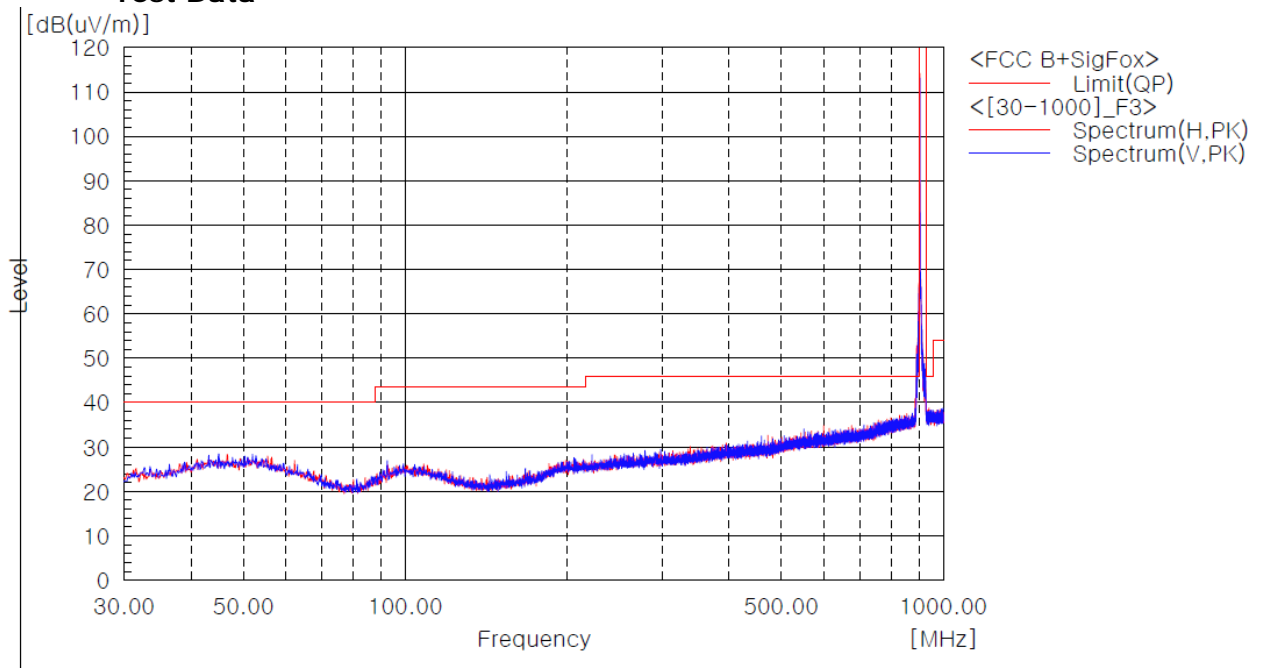
EUT	SigFox IOT Device	Measurement Detail	
Model	ST730	Frequency Range	Below 1 000 MHz
Configuration	DBPSK	Detector function	Quasi-Peak

The requirements are:

Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
No emissions were detected at a level greater than 20dB below limit.			

### Test Data



Final Result

No.	Frequency (P) [MHz]	c.f [dB(1/m)]	Angle [deg]	Remark
-----	------------------------	------------------	----------------	--------

\*\*SigFox 900MHz band is excluded from test result.

(Test Standard(method) used : FCC 47 CFR part 15 subpart C 15.205 Restricted bands of operation)

### Remark :

1. The field strength of spurious emission was measured in the following position: EUT and antenna stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in stand-up position(Z axis) and the worst case was recorded.



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**Test mode : Receiver**

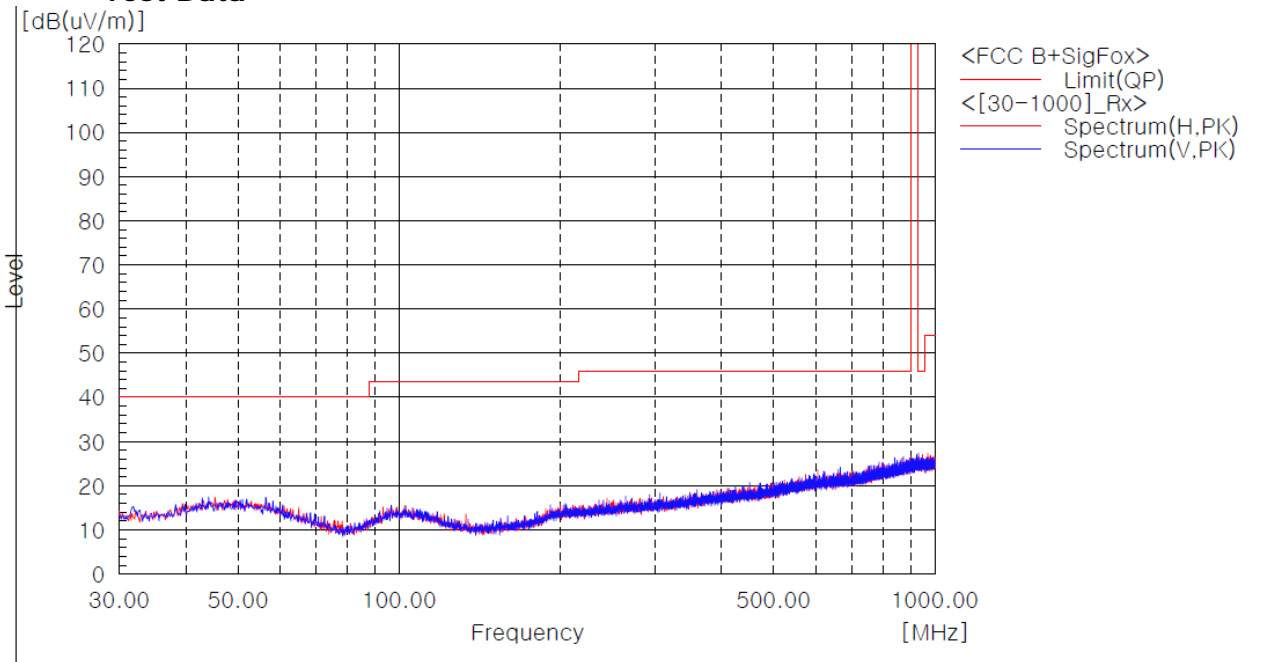
EUT	SigFox IOT Device	Measurement Detail	
Model	ST730	Frequency Range	Below 1 000 MHz
Configuration	Receiver	Detector function	Quasi-Peak

The requirements are:

Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
No emissions were detected at a level greater than 20dB below limit.			

**Test Data**



**Final Result**

No.	Frequency (P) [MHz]	c.f [dB(1/m)]	Angle [deg]	Remark
-----	------------------------	------------------	----------------	--------

**Remark :**

1. The field strength of spurious emission was measured in the following position: EUT and antenna stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in stand-up position(Z axis) and the worst case was recorded.





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### 3) above 1 GHz

#### Test mode : DBPSK

EUT	SigFox IOT Device	Measurement Detail	
Model	ST730	Frequency Range	1 - 10 GHz
Mode	DBPSK	Detector function	Average / Peak

#### Remarks

We have tested three mode (X, Y, Z). The worst mode (Z axis) for final test.

The requirements are:

Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
1804.28	54.60	-	Peak

#### Ch. Low(902.1375 MHz)

Frequency [MHz]	(P)	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
1804.28	H	-	-	52.83	54.60	-	-
1804.28	V	-	-	49.33	51.85	-	-

#### Ch.Mid(903.4125 MHz)

Frequency [MHz]	(P)	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
1806.82	H	-	-	51.73	54.29	-	-
1806.82	V	-	-	48.88	51.77	-	-

#### Ch.High(904.6625 MHz)

Frequency [MHz]	(P)	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
1809.32	H	-	-	51.73	53.86	-	-
1809.32	V	-	-	49.02	51.62	-	-



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**Test mode : Receiver**

EUT	SigFox IOT Device	Measurement Detail	
Model	ST730	Frequency Range	1 - 10 GHz
Mode	Receiver	Detector function	Average / Peak

**Remarks**

We have tested three mode (X, Y, Z). The worst mode (Z axis) for final test.

The requirements are:

Complies

Frequency (MHz)	Measured Data (dBUV/m)	Margin (dB)	Remark
No emissions were detected at a level greater than 20dB below limit.			

**Ch. Low(902.1375 MHz)**

Frequency [MHz]	(P)	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
No emissions were detected at a level greater than 20dB below limit.							

**Ch.Mid(903.4125 MHz)**

Frequency [MHz]	(P)	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
No emissions were detected at a level greater than 20dB below limit.							

**Ch.High(904.6625 MHz)**

Frequency [MHz]	(P)	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
No emissions were detected at a level greater than 20dB below limit.							



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#### 4.1.8 AC Conducted Emissions

Test Location  
Shielded Room

Frequency Range of Measurement  
150 kHz to 30 MHz

Instrument Settings  
IF Band Width: 9 kHz

Test Procedures

The EUT was placed on a non-metallic table 0.8m above the metallic, grounded floor and 0.4m from the reference ground plane wall. The distance to other metallic surfaces was at least 0.8m.

Amplitude measurements were performed with a quasi-peak detector and an average detector.

Limit

- 15.207(a)

Frequency (MHz)	Conducted Limit (dBuV)	
	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.

Test Results

The requirements are:

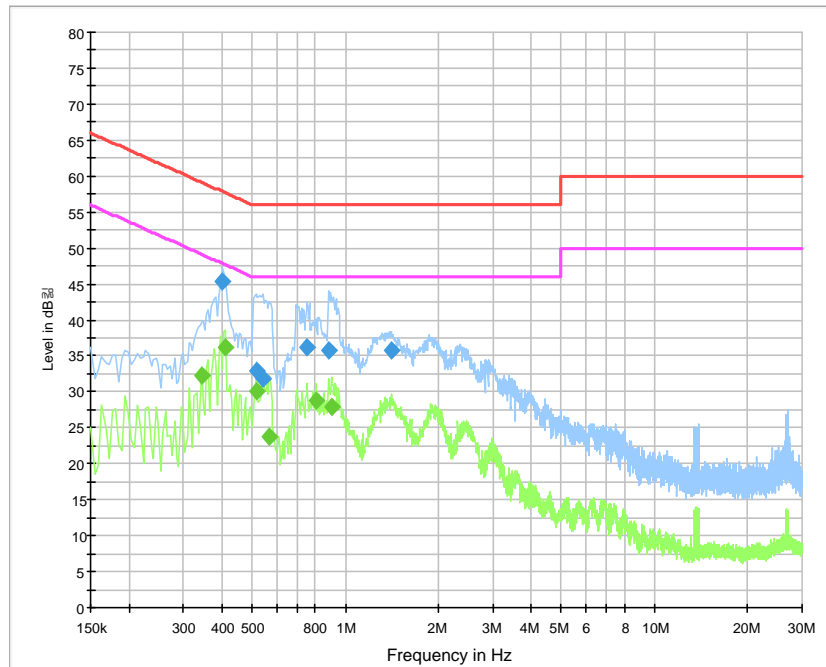
Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
0.411	36.2	11.4	Average

Test Data

[LINE]

Class B\_L1



Final Result 1

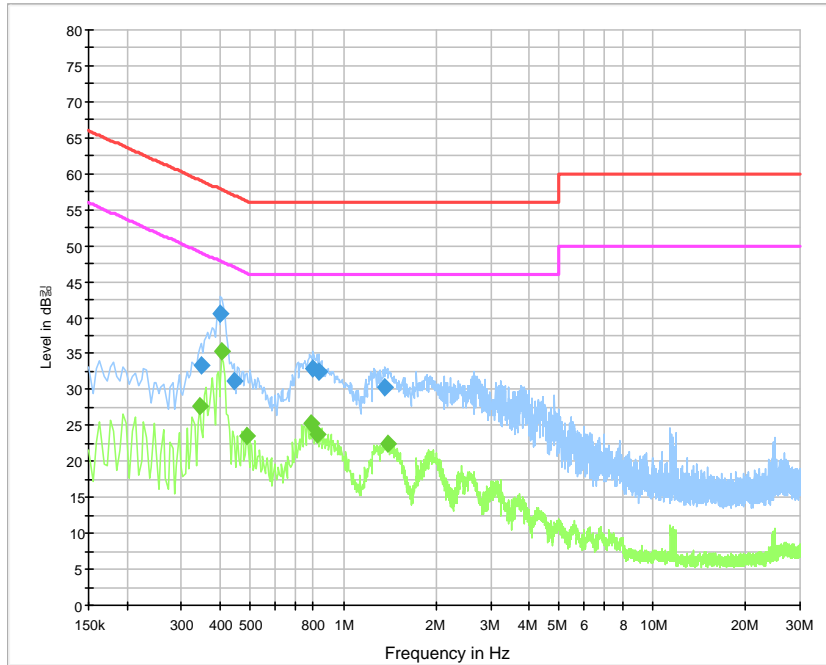
Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.402000	45.3	1000.0	9.000	On	L1	9.9	12.5	57.8
0.514500	32.9	1000.0	9.000	On	L1	9.9	23.2	56.0
0.541500	31.9	1000.0	9.000	On	L1	9.9	24.2	56.0
0.753000	36.2	1000.0	9.000	On	L1	9.8	19.8	56.0
0.879000	35.8	1000.0	9.000	On	L1	9.8	20.2	56.0
1.405500	35.7	1000.0	9.000	On	L1	9.7	20.3	56.0

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.343500	32.3	1000.0	9.000	On	L1	9.8	16.8	49.1
0.411000	36.2	1000.0	9.000	On	L1	9.9	11.4	47.6
0.514500	30.1	1000.0	9.000	On	L1	9.9	15.9	46.0
0.568500	23.8	1000.0	9.000	On	L1	9.9	22.2	46.0
0.802500	28.7	1000.0	9.000	On	L1	9.8	17.3	46.0
0.901500	27.9	1000.0	9.000	On	L1	9.8	18.1	46.0

[NEUTRAL]

Class B\_N



**Final Result 1**

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.348000	33.3	1000.0	9.000	On	N	9.8	25.7	59.0
0.402000	40.6	1000.0	9.000	On	N	9.9	17.2	57.8
0.442500	31.1	1000.0	9.000	On	N	9.9	25.9	57.0
0.798000	32.9	1000.0	9.000	On	N	9.8	23.1	56.0
0.834000	32.5	1000.0	9.000	On	N	9.8	23.5	56.0
1.365000	30.2	1000.0	9.000	On	N	9.7	25.8	56.0

**Final Result 2**

Frequency (MHz)	CAverage (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.343500	27.8	1000.0	9.000	On	N	9.8	21.4	49.1
0.406500	35.3	1000.0	9.000	On	N	9.9	12.4	47.7
0.487500	23.5	1000.0	9.000	On	N	9.9	22.7	46.2
0.784500	25.2	1000.0	9.000	On	N	9.8	20.8	46.0
0.820500	23.7	1000.0	9.000	On	N	9.8	22.3	46.0
1.392000	22.5	1000.0	9.000	On	N	9.7	23.5	46.0



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## APPENDIX A – Test Equipment Used For Tests

	Name of Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Signal Analyzer	Agilent	N9020A	MY48011598	2016-11-01	2017-11-01
2	Signal Generator	Rohde & Schwarz	SMB100A	175528	2016-11-01	2017-11-01
3	EMI Test Receiver	Rohde & Schwarz	ESCI7	100814	2016-11-01	2017-11-01
4	Bilog Antenna	Schaffner	CBL6111C	2551	2016-05-13	2018-05-13
5	Active Loop Antenna	SCHWARZBECK	FMZB 1513	1513-125	2016-05-16	2018-05-16
6	6dB Attenuator	R&S	DNF	272.4110.50-2	2016-11-01	2017-11-01
7	6dB Attenuator	R&S	DNF	272.4110.50-1	2017-02-03	2018-02-03
8	AMPLIFIER	SONOMA	310	291721	2017-02-02	2018-02-02
9	LISN	Rohde & Schwarz	ENV216	101760	2017-02-03	2018-02-03
10	Preamplifier	Agilent	8449B	3008A02011	2016-12-01	2017-12-01
11	Horn Antenna	ETS-Lindgren	3115	00078895	2017-04-25	2019-04-25
12	Horn Antenna	ETS-Lindgren	3116	00062916	2017-04-25	2019-04-25
13	Band Reject Filter	Wainwright Instruments GmbH	WRCG902/930 -894/938- 50/12SS	SN1	2017-02-06	2018-02-06

## APPENDIX B – EUT Photographs

