


# FCC Radio Test Report


## FCC ID: 2AFG6-KYS

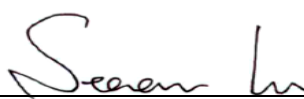
This report concerns (check one): ☒ Original Grant ☐ Class II Change

**Project No.** : 1509C105  
**Equipment** : Module  
**Model Name** : KYS.SR03  
**Applicant** : Guangzhou Shirui Electronics Co.,Ltd  
**Address** : 192 Kezhu Road, Sciencetech Park, Guangzhou  
Economic & Technology Development District,  
Guangzhou,Guangdong, China

**Date of Receipt** : Sep. 02, 2015  
**Date of Test** : Sep. 02, 2015 ~ Oct. 27, 2015  
**Issued Date** : Oct. 28, 2015  
**Tested by** : BTL Inc.

**Testing Engineer** :   
(Niklaus Lai)

**Technical Manager** :   
(David Mao)

**Authorized Signatory** :   
(Steven Lu)

# **B T L I N C .**

No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan,  
Guangdong, China.

TEL: +86-769-8318-3000 FAX: +86-769-8319-6000

### **Declaration**

**BTL** represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**) of **R.O.C.**, or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

**BTL's** reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

**BTL's** 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.

This report is the confidential property of the client. As a mutual protection to the clients, the public and **BTL-self**, extracts from the test report shall not be reproduced except in full with **BTL's** authorized written approval.

**BTL's** laboratory quality assurance procedures are in compliance with the **ISO Guide 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

### **Limitation**

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

## Table of Contents

1. CERTIFICATION	6
2. SUMMARY OF TEST RESULTS	7
2.1 TEST FACILITY	8
2.2 MEASUREMENT UNCERTAINTY	8
3. GENERAL INFORMATION	9
3.1 GENERAL DESCRIPTION OF EUT	9
3.2 DESCRIPTION OF TEST MODES	10
3.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	11
4. EMC EMISSION TEST	12
4.1 CONDUCTED EMISSION MEASUREMENT	12
4.1.2 TEST PROCEDURE	12
4.1.3 DEVIATION FROM TEST STANDARD	12
4.1.4 TEST SETUP	13
4.1.5 EUT OPERATING CONDITIONS	13
4.1.5 EUT TEST CONDITIONS	13
4.1.6 TEST RESULTS	13
4.2 RADIATED EMISSION TEST	14
4.2.1 LIMIT	14
4.2.2 TEST PROCEDURE	15
4.2.3 DEVIATION FROM TEST STANDARD	15
4.2.4 TEST SETUP	16
4.2.5 EUT OPERATING CONDITIONS	16
4.2.6 EUT TEST CONDITIONS	16
4.2.7 TEST RESULTS (BELOW 30MHZ) - FCC PART 15.209	17
4.2.8 TEST RESULTS - (30-1000MHZ) - FCC PART 15.209	17
4.2.9 TEST RESULTS- FCC PART 15.225	17
4.3 FREQUENCY STABILITY MEASUREMENT	18
4.3.1 LIMIT	18
4.3.2 TEST PROCEDURE	18
4.3.3 DEVIATION FROM TEST STANDARD	18
4.3.4 EUT OPERATING CONDITIONS	18
4.3.5 EUT TEST CONDITIONS	18
4.3.6 TEST RESULTS	18
5. 20DB SPECTRUM BANDWIDTH MEASUREMENT	19
5.1. LIMIT OF 20dB BANDWIDTH MEASUREMENT	19
5.2.TEST PROCEDURES	19
5.3. TEST SETUP LAYOUT	19
5.4. TEST DEVIATION	19
5.5. EUT OPERATION DURING TEST	19
5.6. TEST RESULT	19

## **Table of Contents**

6. MEASUREMENT INSTRUMENTS LIST	20
7. EUT TEST PHOTO	21
ATTACHMENT A - CONDUCTED EMISSION	24
ATTACHMENT B - RADIATED EMISSION (9KHZ-30MHZ)	27
ATTACHMENT C - RADIATED EMISSION (30MHZ TO 1000MHZ)	29
ATTACHMENT D - RADIATED EMISSION (FCC PART 15.225)	32
ATTACHMENT E - FREQUENCY STABILITY MEASUREMENT	34
ATTACHMENT F - 20DB SPECTRUM BANDWIDTH MEASUREMENT	36

### REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCCP-1-1509C105	Original Issue.	Oct. 28, 2015

## 1. CERTIFICATION

Equipment : Module  
Brand Name : N/A  
Model Name : KYS.SR03  
Applicant : Guangzhou Shirui Electronics Co.,Ltd  
Manufacturer : Guangzhou Shirui Electronics Co.,Ltd  
Address : 192 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology  
Development District, Guangzhou,Guangdong, China  
Date of Test : Sep. 02, 2015 ~ Oct. 27, 2015  
Test Sample : Engineering Sample  
Standard(s) : FCC Part 15, Subpart C: 15.225 / ANSI C63.10-2013

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-1-1509C105) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

## 2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part 15, Subpart C: 15.225			
Standard(s) Section	Test Item	Judgment	Remark
15.207	Conducted emission	PASS	
15.35 / 15.205 / 15.209 / 15.225	Radiated emission	PASS	
15.225(e)	Frequency Stability	PASS	
15.203	Antenna Requirement	PASS	
	20dB Occupied Bandwidth Measurement	PASS	

NOTE:

(1) "N/A" denotes test is not applicable in this test report.

## 2.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.

BTL's test firm number for FCC: 319330

## 2.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2.

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately **95 %**

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-C01	CISPR	150 kHz ~ 30MHz	3.16

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
DG-CB03	CISPR	9KHz~30MHz	V	3.79
		9KHz~30MHz	H	3.57
		30MHz ~ 200MHz	V	3.82
		30MHz ~ 200MHz	H	3.78
		200MHz ~ 1,000MHz	V	4.10
		200MHz ~ 1,000MHz	H	4.06

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.



### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

Equipment	Module	
Brand Name	N/A	
Model Name	KYS.SR03	
Model Difference	N/A	
Product Description	Operation Frequency:	13.56 MHz
	Antenna Designation:	Loop Antenna
Power Source	Supplied from System	
Power Rating	I/P: 100 - 240V~,50/60Hz ,3.0A	

**Note:**

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

### 3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

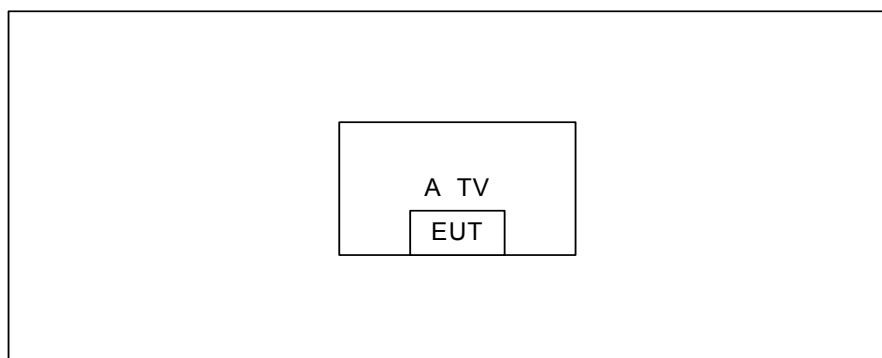
Pretest Mode	Description
Mode 1	TX Mode

For Conducted Emission	
Final Test Mode	Description
Mode 1	TX Mode

Radiated emission test	
Final Test Mode	Description
Mode 1	TX Mode

Frequency Stability test 20dB Occupied Bandwidth Measurement	
Final Test Mode	Description
Mode 1	TX Mode

### 3.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



### 3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID/IC	Series No.	Note
A	TV	Prowise	PW.1.12065. 0001	N/A	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
-	-	-	-	

## 4. EMC EMISSION TEST

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 POWER LINE CONDUCTED EMISSION LIMITS (Frequency Range 150KHz-30MHz)

Frequency (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Ave age	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.
- (3) The test result calculated as following:  
 Measurement Value = Reading Level + Correct Factor  
 Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)  
 Margin Level = Measurement Value - Limit Value

The following table is the setting of the receiver

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

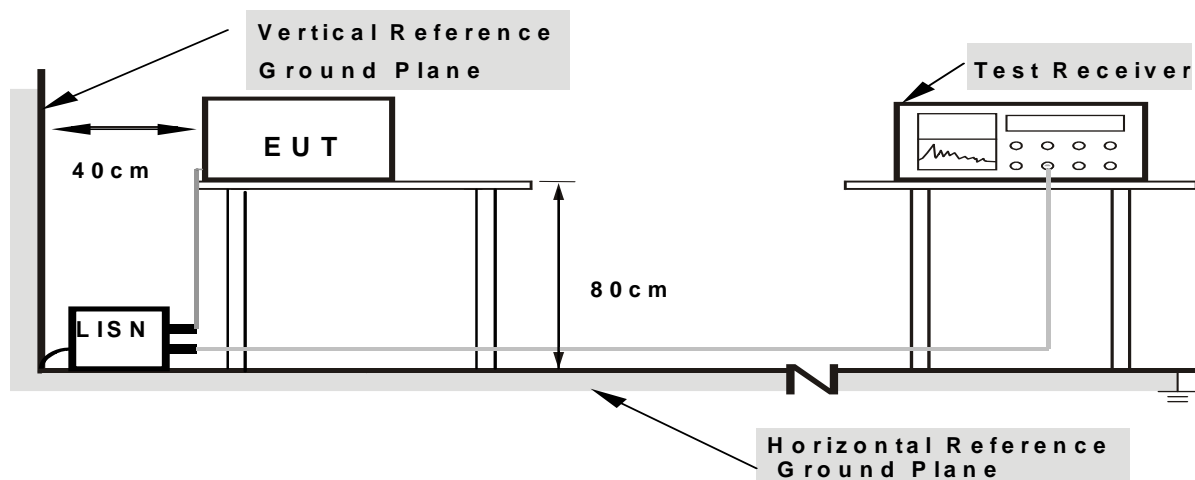
#### 4.1.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

#### 4.1.3 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.4 TEST SETUP



**Note:** 1.Support units were connected to second LISN .  
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

#### 4.1.5 EUT OPERATING CONDITIONS

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

The EUT was programmed to be in continuously transmitting mode.

#### 4.1.5 EUT TEST CONDITIONS

Temperature: 25°C

Relative Humidity: 55%

Test Voltage: AC 120V 60Hz

#### 4.1.6 TEST RESULTS

Please refer to the Attachment A.

#### Remark

- (1) All readings are QP Mode value unless otherwise stated AVG in column of 『Note』 . If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform in this case, a “\*” marked in AVG Mode column of Interference Voltage Measured.
- (2) Measuring frequency range from 150KHz to 30MHz.

## 4.2 RADIATED EMISSION TEST

### 4.2.1 LIMIT

FCC Part 15.209				
Frequency (MHz)	Field Strength Limitation		Field Strength Limitation at 3m Measurement Dist	
	(uV/m)	Dist	(uV/m)	(dBuV/m)
0.009 – 0.490	2400 / F(KHz)	300m	10000 * 2400/F(KHz)	20log 2400/F(KHz) + 80
0.490 – 1.705	24000 / F(KHz)	30m	100 * 24000/F(KHz)	20log 24000/F(KHz) + 40
1.705 – 30.00	30	30m	100* 30	20log 30 + 40
30.0 – 88.0	100	3m	100	20log 100
88.0 – 216.0	150	3m	150	20log 150
216.0 – 960.0	200	3m	200	20log 200
Above 960.0	500	3m	500	20log 500
FCC Part 15.225(a)/(b)/(c)				
Frequency (MHz)	Field Strength Limitation		Field Strength Limitation at 3m Measurement Dist	
	(uV/m)	Dist	(uV/m)	(dBuV/m)
13.553 – 13.567	15,848	30 m	15,848*100	124
13.567 – 13.710	334	30 m	334*100	90.5
13.110 – 13.410 13.710 – 14.010	106	30 m	106*100	80.5

Note

:

- (1) The tighter limit shall apply at the boundary between two frequency range.
- (2) Limitation expressed in dBuV/m is calculated by 20log Emission Level (uV/m).
- (3) If measurement is made at 3m distance, then F.S Limitation at 3m distance is adjusted by using the formula of  $L_{d1} = L_{d2} * (d_2/d_1)^2$ .

Example:

F.S Limit at 30m distance is 30uV/m , then F.S Limitation at 3m distance is adjusted as  $L_{d1} = L_1 = 30uV/m * (10)^2 = 100 * 30 uV/m$

- (4) The test result calculated as following:

Measurement Value = Reading Level + Correct Factor

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)

Margin Level = Measurement Value - Limit Value

#### 4.2.2 TEST PROCEDURE

- a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- b. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- c. The initial step in collecting radiated emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- d. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

**NOTE: (FCC PART 15.209)**

- a. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

**NOTE: (FCC PART 15.225)**

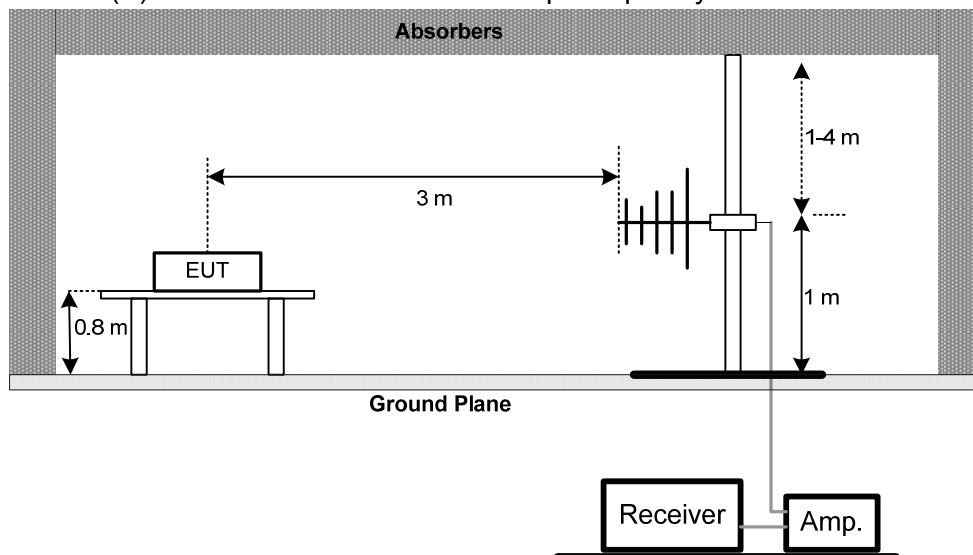
- a. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- b. The Log-Bicon Antenna will use to test frequency range from 30MHz to 1000MHz and the Loop Antenna will use to test frequency below 30MHz.

#### 4.2.3 DEVIATION FROM TEST STANDARD

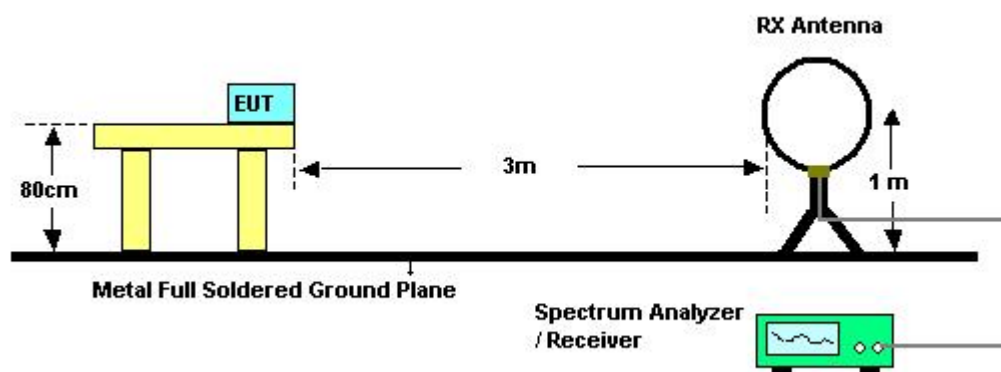
No deviation

#### 4.2.4 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) For radiated emissions below 30MHz



#### 4.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 unless otherwise a special operating condition is specified in the follows during the testing.

#### 4.2.6 EUT TEST CONDITIONS

Temperature: 25°C

Relative Humidity: 55%

Test Voltage: AC 120V 60Hz



#### **4.2.7 TEST RESULTS (BELOW 30MHZ) - FCC PART 15.209**

Please refer to the Attachment B.

#### **4.2.8 TEST RESULTS - (30-1000MHZ) - FCC PART 15.209**

Please refer to the Attachment C.

#### **4.2.9 TEST RESULTS- FCC PART 15.225**

Please refer to the Attachment D.

## 4.3 FREQUENCY STABILITY MEASUREMENT

### 4.3.1 LIMIT

FCC Part 15.225(e)
<p>The frequency tolerance of the carrier signal shall be maintained within +/-0.01% of the operating frequency over a temperature variation of - 20 degrees to + 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.</p> <p>For battery operated equipment, the equipment tests shall be performed using a new battery.</p>

### 4.3.2 TEST PROCEDURE

- The equipment under test was connected to an external AC power supply and the RF output was connected to a frequency counter via feed through attenuators. The EUT was placed inside the temperature chamber.  
After the temperature stabilized for approximately 20 minutes, the frequency of the output signal was recorded from the counter.
- At room temperature ( $25 \pm 5^{\circ}\text{C}$ ), an external variable AC power supply was connected to the EUT. The frequency of the transmitter was measured for 115%, 100% and 85% of the nominal operating input voltage.

### 4.3.3 DEVIATION FROM TEST STANDARD

No deviation

### 4.3.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 unless otherwise a special operating condition is specified in the follows during the testing.

### 4.3.5 EUT TEST CONDITIONS

Temperature:  $25^{\circ}\text{C}$   
 Relative Humidity: 55%  
 Test Voltage: AC 120V 60Hz

### 4.3.6 TEST RESULTS

Please refer to the Attachment E.

## **5. 20dB SPECTRUM BANDWIDTH MEASUREMENT**

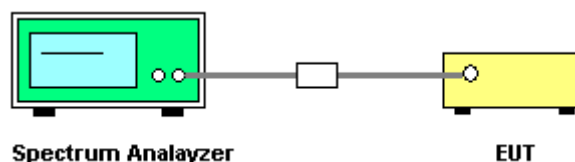
### **5.1. LIMIT OF 20dB BANDWIDTH MEASUREMENT**

The 20dB bandwidth shall be specified in operating frequency band.

### **5.2. TEST PROCEDURES**

The bandwidth of the fundamental frequency was measured by spectrum analyzer with 10kHz RBW and 10kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

### **5.3. TEST SETUP LAYOUT**



### **5.4. TEST DEVIATION**

There is no deviation with the original standard.

### **5.5. EUT OPERATION DURING TEST**

The EUT was programmed to be in continuously transmitting mode.

### **5.6. TEST RESULT**

Please refer to the Attachment F.

## 6. MEASUREMENT INSTRUMENTS LIST

Conducted Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Artificial-Mains Network	SCHWARZBECK	NSLK 8127	8127685	Dec. 05, 2015
2	LISN	R&S	ENV216	100526	Mar. 28, 2016
3	Test Cable	N/A	RG400 12m	N/A	Mar. 13, 2016
4	EMI Test Receiver	R&S	ESR3	101862	Jan. 02, 2016
5	50Ω Terminator	SHX	TF2-3G-A	08122901	Mar. 28, 2016
6	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarbeck	VULB9160	9160-3232	Mar. 28, 2016
2	Amplifier	HP	8447D	2944A09673	Nov. 17, 2015
3	Receiver	AGILENT	N9038A	MY52130039	Oct. 11, 2016
4	Test Cable	emci	LMR-400(30M Hz-1GHz)	C-01	Jun. 28, 2016
5	Controller	CT	SC100	N/A	N/A
6	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-0 1	N/A	N/A
7	Amplifier	Agilent	8449B	3008A02274	Nov. 02, 2015
8	Active Loop Antenna	R&S	HFH2-Z2	830749/020	Sep. 07, 2016

Frequency Stability Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Oct. 11, 2016
2	Const Temp. & Humidity Chamber	Giant Force	ITH-225-20-S	IAB0309-001	Dec.12, 2015

6dB Bandwidth Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Oct. 11, 2016

Remark: "N/A" denotes no model name, serial no. or calibration specified.

All calibration period of equipment list is one year.

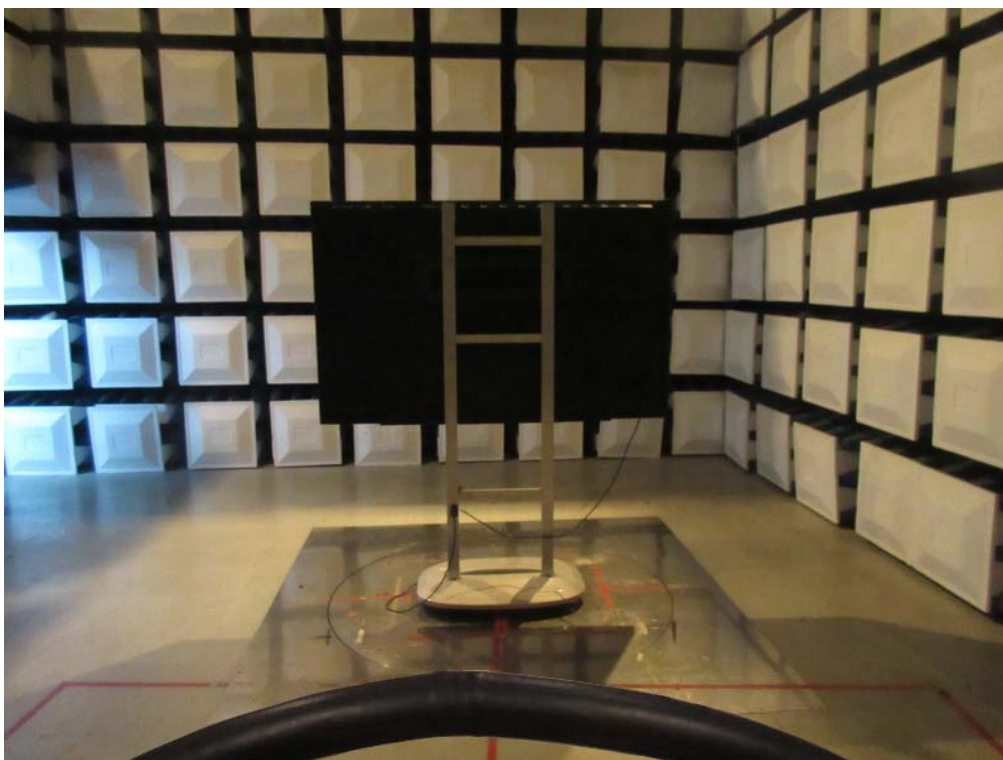
## 7. EUT TEST PHOTO

### Conducted Measurement Photos



## Radiated Measurement Photos

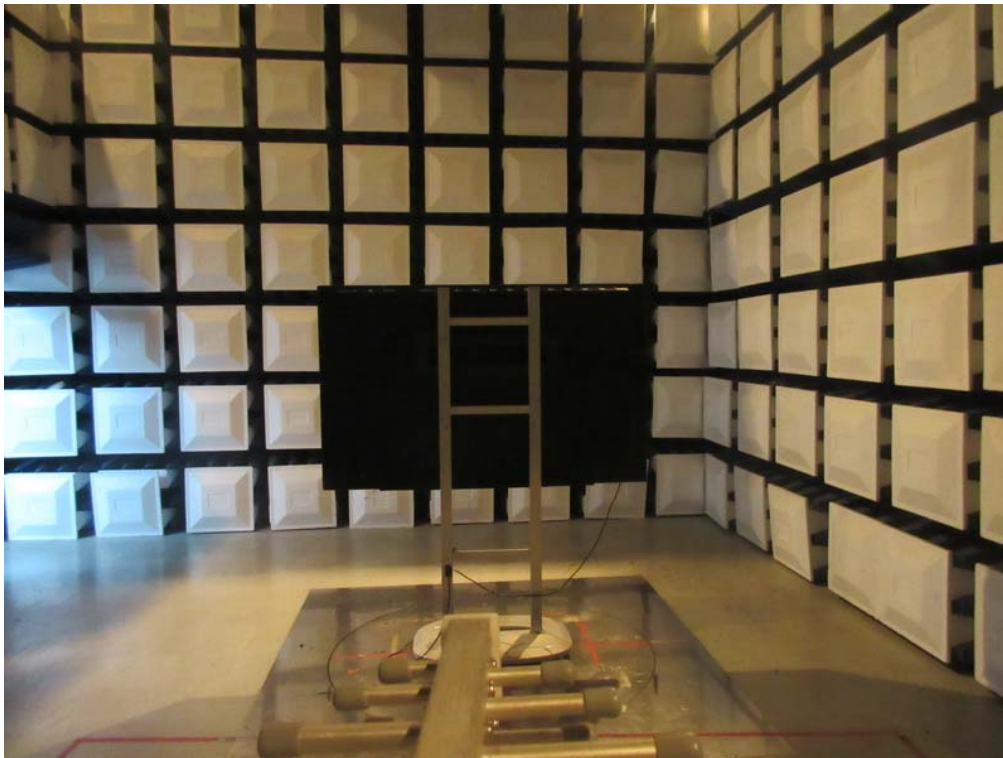
9KHz to 30MHz





## Radiated Measurement Photos

30MHz to 1000MHz

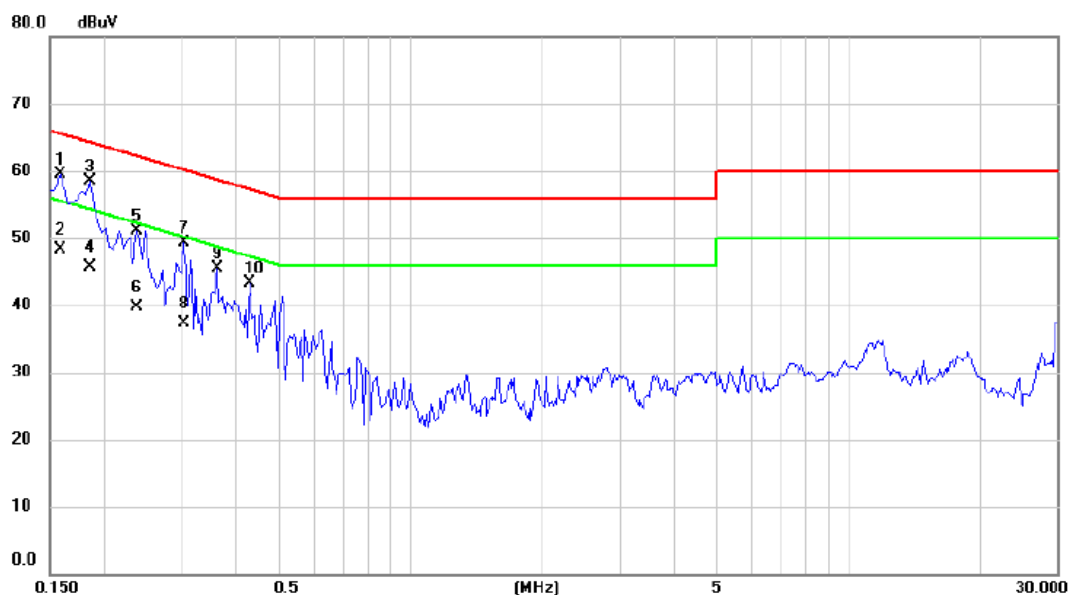


## **ATTACHMENT A - CONDUCTED EMISSION**



Test Mode:	TX Mode
------------	---------

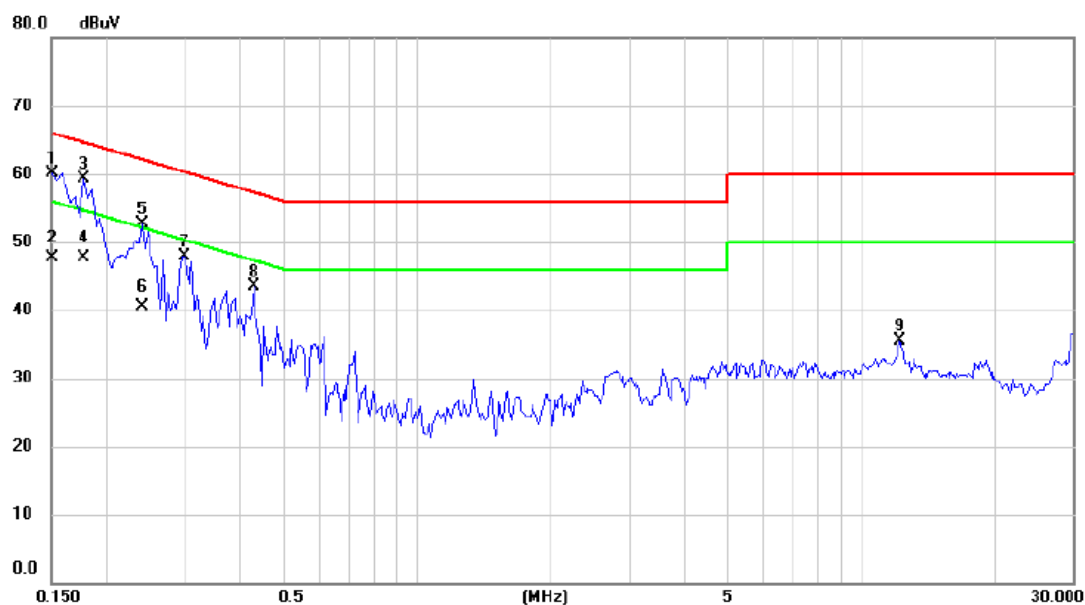
### Line



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1577	49.91	9.55	59.46	65.58	-6.12	peak	
2		0.1577	38.67	9.55	48.22	55.58	-7.36	AVG	
3	*	0.1850	48.87	9.56	58.43	64.26	-5.83	peak	
4		0.1850	36.16	9.56	45.72	54.26	-8.54	AVG	
5		0.2360	41.59	9.60	51.19	62.24	-11.05	peak	
6		0.2360	30.04	9.60	39.64	52.24	-12.60	AVG	
7		0.3023	39.69	9.64	49.33	60.18	-10.85	peak	
8		0.3023	27.69	9.64	37.33	50.18	-12.85	AVG	
9		0.3610	35.93	9.66	45.59	58.71	-13.12	peak	
10		0.4273	33.69	9.68	43.37	57.31	-13.94	peak	

Test Mode:	TX Mode
------------	---------

### Neutral



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1500	50.59	9.49	60.08	66.00	-5.92	peak	
2		0.1500	38.16	9.49	47.65	56.00	-8.35	AVG	
3	*	0.1773	49.92	9.48	59.40	64.61	-5.21	peak	
4		0.1773	38.15	9.48	47.63	54.61	-6.98	AVG	
5		0.2398	43.25	9.51	52.76	62.10	-9.34	peak	
6		0.2398	31.09	9.51	40.60	52.10	-11.50	AVG	
7		0.2983	38.39	9.52	47.91	60.29	-12.38	peak	
8		0.4273	34.00	9.54	43.54	57.31	-13.77	peak	
9		12.2147	25.62	9.88	35.50	60.00	-24.50	peak	

## **ATTACHMENT B - RADIATED EMISSION (9KHZ-30MHZ)**

Test Mode: TX Mode

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Note
0.0094	0°	12.96	24.97	37.93	128.11	-90.18	AVG
0.0094	0°	14.68	24.97	39.65	148.11	-108.46	PEAK
0.0228	0°	6.08	24.12	30.20	120.45	-90.24	AVG
0.0228	0°	8.13	24.12	32.25	140.45	-108.19	PEAK
0.0319	0°	3.17	23.55	26.72	117.53	-90.81	AVG
0.0319	0°	6.08	23.55	29.63	137.53	-107.90	PEAK
0.0423	0°	1.12	22.89	24.01	115.08	-91.07	AVG
0.0423	0°	2.96	22.89	25.85	135.08	-109.23	PEAK
0.4916	0°	18.64	19.82	38.46	73.77	-35.31	QP
1.7157	0°	22.67	19.53	42.20	69.54	-27.34	QP

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Note
0.0094	90°	13.64	24.30	37.94	128.13	-90.19	AVG
0.0094	90°	15.29	24.30	39.59	148.13	-108.54	PEAK
0.0253	90°	7.16	23.96	31.12	119.54	-88.42	AVG
0.0253	90°	9.26	23.96	33.22	139.54	-106.32	PEAK
0.0311	90°	5.14	23.60	28.74	117.75	-89.01	AVG
0.0311	90°	6.09	23.60	29.69	137.75	-108.06	PEAK
0.0438	90°	1.13	22.79	23.92	114.77	-90.85	AVG
0.0438	90°	2.98	22.79	25.77	134.77	-109.00	PEAK
0.4917	90°	21.34	19.82	41.16	73.77	-32.61	QP
1.7162	90°	23.68	19.53	43.21	69.54	-26.33	QP

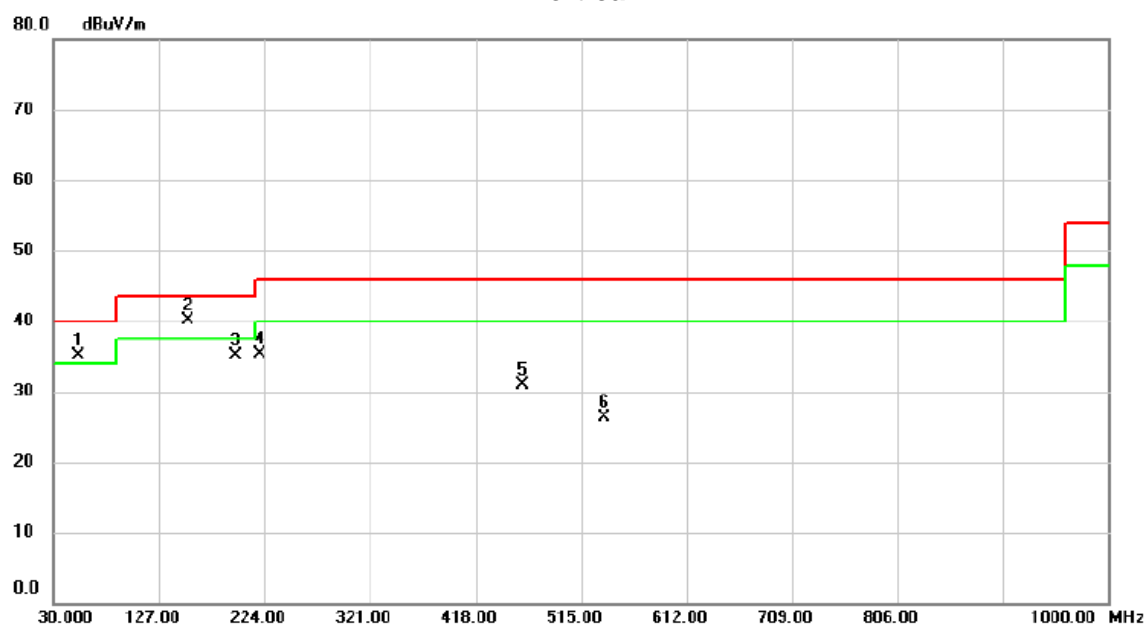
Remark:

- (1) The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported. °
- (2) Distance extrapolation factor =  $40 \log (\text{specific distance} / \text{test distance})$  (dB); °
- (3) Limit line = specific limits (dBuV) + distance extrapolation factor. °

## **ATTACHMENT C - RADIATED EMISSION (30MHZ TO 1000MHZ)**

Test Mode: TX Mode

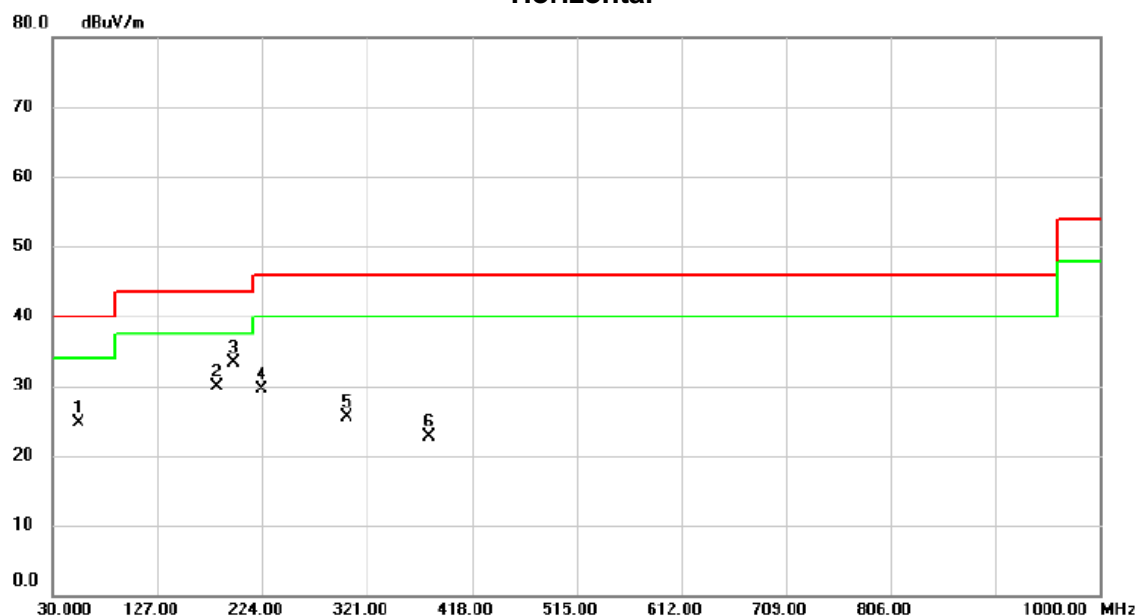
### Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	!	52.3100	48.87	-13.77	35.10	40.00	-4.90	peak	
2	*	153.1900	52.91	-12.82	40.09	43.50	-3.41	peak	
3		197.8100	50.14	-14.98	35.16	43.50	-8.34	peak	
4		219.1500	49.59	-14.35	35.24	46.00	-10.76	peak	
5		460.6800	39.31	-8.46	30.85	46.00	-15.15	peak	
6		536.3400	32.81	-6.46	26.35	46.00	-19.65	peak	

Test Mode: TX Mode

### Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		53.2800	38.34	-13.67	24.67	40.00	-15.33	peak	
2		181.3200	42.97	-13.13	29.84	43.50	-13.66	peak	
3	*	197.8100	48.25	-14.98	33.27	43.50	-10.23	peak	
4		223.0300	43.82	-14.32	29.50	46.00	-16.50	peak	
5		301.6000	36.06	-10.53	25.53	46.00	-20.47	peak	
6		378.2300	32.97	-10.20	22.77	46.00	-23.23	peak	

## **ATTACHMENT D - RADIATED EMISSION (FCC PART 15.225)**



Test Mode:	TX Mode
------------	---------

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits (dBuV/m)	Margin (dB)
13.560	0°	44.96	10.99	55.95	124.00	-68.05
27.130	0°	22.37	9.33	31.70	69.54	-37.84

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits (dBuV/m)	Margin (dB)
13.560	90°	40.16	10.99	51.15	124.00	-72.85
27.160	90°	19.04	9.33	28.37	69.54	-41.17

## **ATTACHMENT E - FREQUENCY STABILITY MEASUREMENT**

Test Mode:	TX Mode
------------	---------

Frequency Stability Versus Environmental Temperature						
	Temperature (°C)	Voltage (DC)	Frequency (MHz)	Frequency Error (kHz)	Limit (kHz)	Result
0 min	20	120V	13.56			
	50	120V	13.561	0.0001	+/- 1.356	PASS
2 min	-20	120V	13.5613	0.0012	+/- 1.356	PASS
	50	120V	13.5604	0.0023	+/- 1.356	PASS
5 min	-20	120V	13.5606	0.0008	+/- 1.356	PASS
	50	120V	13.5609	0.0006	+/- 1.356	PASS
10 min	-20	120V	13.5613	0.0017	+/- 1.356	PASS
	50	120V	13.5616	0.0013	+/- 1.356	PASS
	-20	120V	13.5611	0.0002	+/- 1.356	PASS

Frequency Stability Versus Input Voltage						
Temperature (°C)	Voltage (AC)		Frequency (MHz)	Frequency Error (kHz)	Limit (kHz)	Result
20	V-nom	120V	13.56			
20	V-min	118V	13.5605	0.012	+/- 1.356	PASS
20	V-max	132V	13.5613	0.023	+/- 1.356	PASS

## **ATTACHMENT F - 20dB SPECTRUM BANDWIDTH MEASUREMENT**

# Test Mode : TX Mode

