CONFORMANCE TEST REPORT
FOR
FCC 47 CFR, Part 15 Subpart C

Report No.: 15-06-MAS-065-03

Client:	Lightspeed Technologies Inc.
Product:	955 Access
Model:	955
FCC ID:	ORV-LS955
Manufacturer/supplier:	REOR ELECTRONICS CO., LTD.
Date test item received:	2015/06/09
Date test campaign completed:	2015/07/16
Date of issue:	2015/07/16

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Total number of pages of this test report: 79 pages
Total number of pages of photos: External photos 3 pages
Internal photos 3 pages
Setup photos 3 pages

Test Engineer	Checked By	Approved By
Phillip Luo	Falcon Shi	Win-po Tsai

ELECTRONICS TESTING CENTER, TAIWAN
No.8, Lane 29, Wenming Rd. Guishan Dist.
Taoyuan City 33383, Taiwan, R.O.C.

TEL: (03) 3276170~4
INT: +886-3-3276170~4
FAX: (03) 3276188
INT: +886-3-3276188

Client	: Lightspeed Technologies Inc.
Address	: 11509 SW Herman Road., Tualatin, OR 97062 USA
Manufacturer	: REOR ELECTRONICS CO., LTD.
Address	: 5F., No. 122, Ciaohe Rd., Jhonghe Dist., New Taipei City 23558, Taiwan.
EUT	: 955 Access
Trade name	: LIGHTSPEED
Model No.	: 955
Power Source	: Adapter : DSA-60PFB-24 Input: 100-240VAC, 50/60Hz, 1.5A Output: +24V ⎓ 2.5A
Regulations applied	: FCC 47 CFR, Part 15 Subpart C

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⑤ FCC Registration Number: 91095, 392735, 278818
⑥ Industry Canada Site Registration Number: IC 2949A-2

NVLAP Lab Code 200133-0

Table of Contents Page

1 GENER955 INFORMATION

1.1 Product Description

a) Type of EUT : 955 Access
b) Trade Name : LIGHTSPEED
c) Model No. : 955
d) FCC ID : ORV-LS955

1.2 Characteristics of Device

The DECT technology allows both digital audio and digital control content to be bidirectionally transported between the MCA, Pods, and the 955 Access (955). The transfer of control data means that the MCA can be used essentially as a remotely positioned control panel for the 955 Access (955). The control functions comprise remote volume control for the 955 Access (955) audio output as well as remote power control

955 Access (955) works within any classroom configuration and at long distances. Just as importantly, it operates on a bandwidth that virtually eliminates interference with other classroom technology. And it scales to all your classrooms, instructional strategies and technologies

1.3 Test Methodology

All testing were performed according to the procedures in ANSI C63.10 (2009) and FCC CFR 47 Part 2 and Part 15 and KDB 558074 D01 v03r03.

1.4 Test Facility

The semi-anechoic chamber and conducted measurement facility used to collect the radiated and conducted data are located inside the Building at No.8, Lane 29, Wenming Rd. Guishan Dist. Taoyuan City 33383, Taiwan, R.O.C.
This site has been accreditation as a FCC filing site.

1.5 Test Summary

Requirement	FCC Paragraph #	Test Pass
Antenna Requirement	15.203	☒
Conducted Emission	15.207	☒
Emission Bandwidth	15.247 (a)(2)	☒
Output Power Requirement	15.247 (b)	☒
Power Density Requirement	15.247 (e)	☒
Spurious Emissions	15.247 (d)	☒
Radiated Emission	15.247 (d)	☒

Note: The test setup and measurement method for conductive output power measurements shown in this test report is different to the "Peak Output Power" test. Certain measurement uncertainty of peak power may be expected with the use of different power detection method or measuring equipment. Therefore, the conductive output power measurement results provided in this test report may be different to the specification of the device under test.

2 PROVISIONS APPLICABLE

2.1 Definition

Unintentional radiator:
A device that intentionally generates and radio frequency energy for use within the device, or that sends radio frequency signals by conduction to associated equipment via connecting wiring, but which is not intended to emit RF energy by radiation or induction.

Class A Digital Device:
A digital device which is marketed for use in commercial or business environment; exclusive of a device which is market for use by the general public, or which is intended to be used in the home.

Class B Digital Device :
A digital device which is marketed for use in a residential environment notwithstanding use in a commercial, business of industrial environment. Example of such devices that are marketed for the general public.

Note : A manufacturer may also qualify a device intended to be marketed in a commercial, business, or industrial environment as a Class B digital device, and in fact is encouraged to do so, provided the device complies with the technical specifications for a Class B Digital Device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B Digital Device, Regardless of its intended use.

Intentional radiator:
A device that intentionally generates and emits radio frequency energy by radiation or induction.

2.2 Requirement for Compliance

(1) Conducted Emission Requirement

For unintentional device, according to §15.107(a) Line Conducted Emission Limits is as following:

Frequency MHz	Quasi Peak dB μV	Average dB μV
0.15 - 0.5	66-56*	56-46*
0.5 - 5.0	56	46
5.0 - 30.0	60	50

*Decreases with the logarithm of the frequency.

For intentional device, according to §15.207(a) Line Conducted Emission Limits is same as above table.

(2) Radiated Emission Requirement

For unintentional device, according to §15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency MHz	Distance Meters	Radiated dB μV/m	Radiated μV/m
30 - 88	3	40.0	100
88 - 216	3	43.5	150
216 - 960	3	46.0	200
above 960	3	54.0	500

For intentional radiator device, according to §15.209(a), the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table::

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

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

(3) Antenna Requirement

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

(4) Bandwidth Requirement

According to 15.247 (a)(2), systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

(5) Output Power Requirement

For systems using digital modulation , according to 15.247(b), the maximum peak output power of the intentional radiator shall not exceed 1 Watt. If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(6) Spurious Emissions Measurement

According to 15.247 (d) , in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

(7) Power Density Requirement

According to 15.247 (e) , for digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission..

2.3 Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below :

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42-16.423	399.9-410	4.5-5.25
0.495 - 0.505 **	16.69475 - 16.69525	608-614	5.35-5.46
2.1735 - 2.1905	16.80425 - 16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475 - 156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2655-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

** : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

2.4 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device :

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2.5 User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual.

The Federal Communications Commission Radio Frequency Interference Statement includes the following paragraph.

This equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

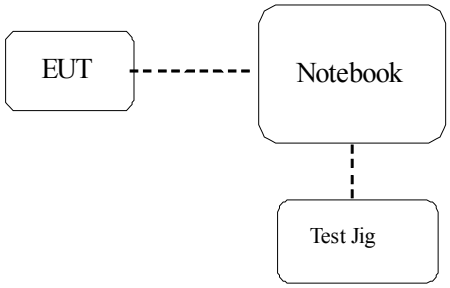
-- Consult the dealer or an experienced radio / TV technician for help.

3. SYSTEM TEST CONFIGURATION

3.1 Devices for Tested System

Device	Manufacture	Model No.	Cable Description
* 955 Access	REOR ELECTRONICS CO., LTD.	955	3.6m*1, Unshielded Power Line/Adapter
Notebook	HP	6570b	2.8m*1, Unshielded Power Line/Adapter 1.2m*1 Unshielded Signal Line(USB Cable)
Test Jig	N/A	N/A	10cm*1 Unshielded Signal Line

Remark: 1. "*" means equipment under test.



A HP notebook performs the control test mode. The notebook removes away after the control command is ready.

2.

Test Software:	SmartRF studio7.link (T1)
Power Level:	4.5dBm for Ch Low, Mid, High

3.2 Dscription of Test modes

There are three channels have been tested as following:

Channel	Frequency (MHz)
Low = 1	2405
Middle = 8	2440
High = 16	2480

3.2.2 Test Mode Description

3.2.2.1 Modulation Type

Test Mode	Modulation	Note
A	IEEE 802.15.4 ZigBee	-

3.2.2.2 Test Mode and Worse Case Determination

Item	Test Item	Test Mode	Test Frequency (MHz)
1	Conducted Emission	A	-
2	Emission Bandwidth	A	L，M，H
3	Output Power Requirement	A	L，M，H
4	Power Density Requirement	A	L，M，H
5	Spurious Emissions	A	L，M，H
6	Radiated Emission	A	L，M，H
6.1	Radiated Emission (below 1GHz)	A	M (Worse Case)
6.2	Radiated Emission (above 1GHz)	A	L，M，H

Note: The worse case is chosen by channel middle which emission has no difference with others'.

4 CONDUCTED EMISSION MEASUREMENT

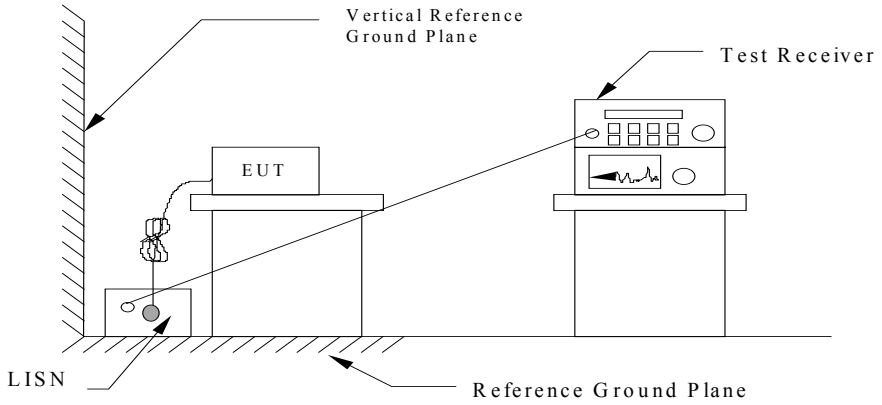
4.1 Standard Applicable

For unintentional and intentional device, Line Conducted Emission Limits are in accordance to §15.107(a) and §15.207(a) respectively. Both Limits are identical specification.

4.2 Measurement Procedure

1. The testing follows FCC KDB 558074 D01 v03r03.
2. Setup the configuration per figure 1.
3. A preliminary scan with a spectrum monitor is performed to identify the frequency of emission that has the highest amplitude relative to the limit by operating the EUT in selected modes of operation, typical cable positions, and with a typical system configuration.
4. Record the 6 highest emissions relative to the limit.
5. Measure each frequency obtained from step 3 by a test receiver set on quasi peak detector function, and then record the accuracy frequency and emission level. If all emissions measured in the specified band are attenuated more than 20 dB from the limit, this step would be ignored, and the peak detector function would be used.
6. Confirm the highest three emissions with variation of the EUT cable configuration and record the final data.
7. Repeat all above procedures on measuring each operation mode of EUT.

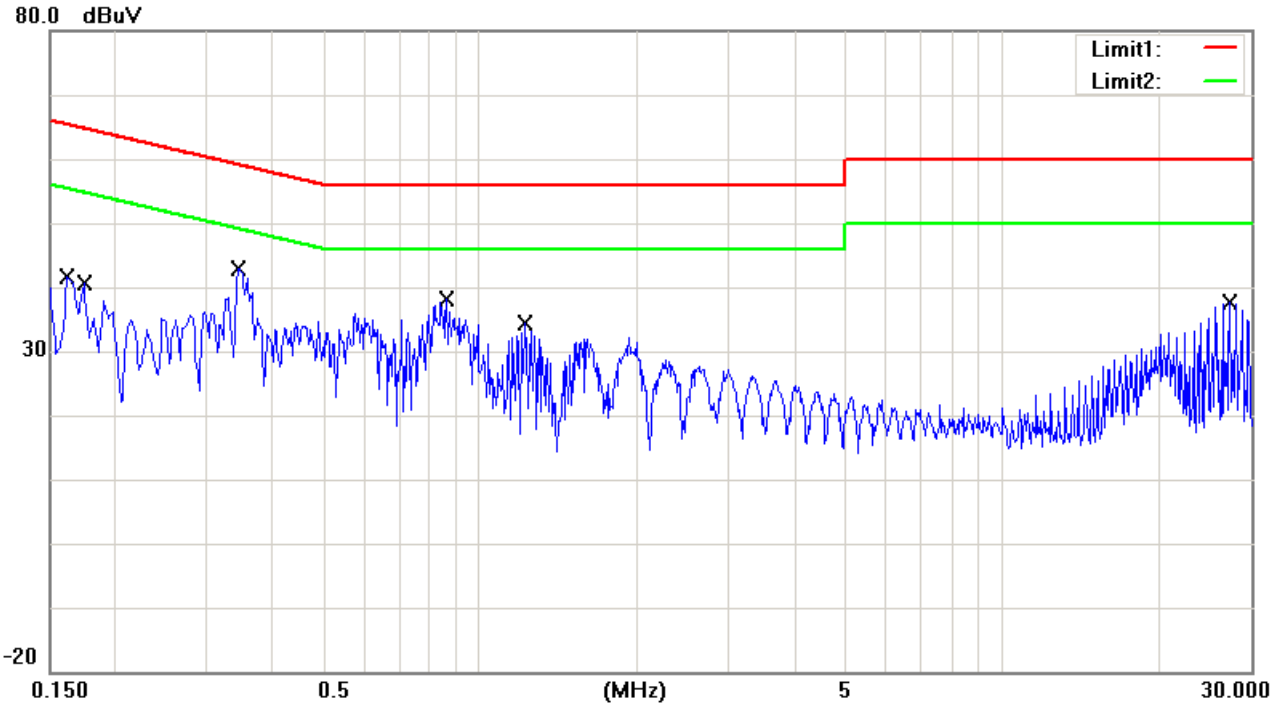
Figure 1 : Conducted emissions measurement configuration



4.3 Conducted Emission Data

File: 955 Access **Data:** #2 **Date:** 2015/7/16 **Temperature:** 24 ℃

Time: AM 09:06:07 **Humidity:** 63 %



Condition: **Phase:** L1

EUT:

Model:

Test Mode:

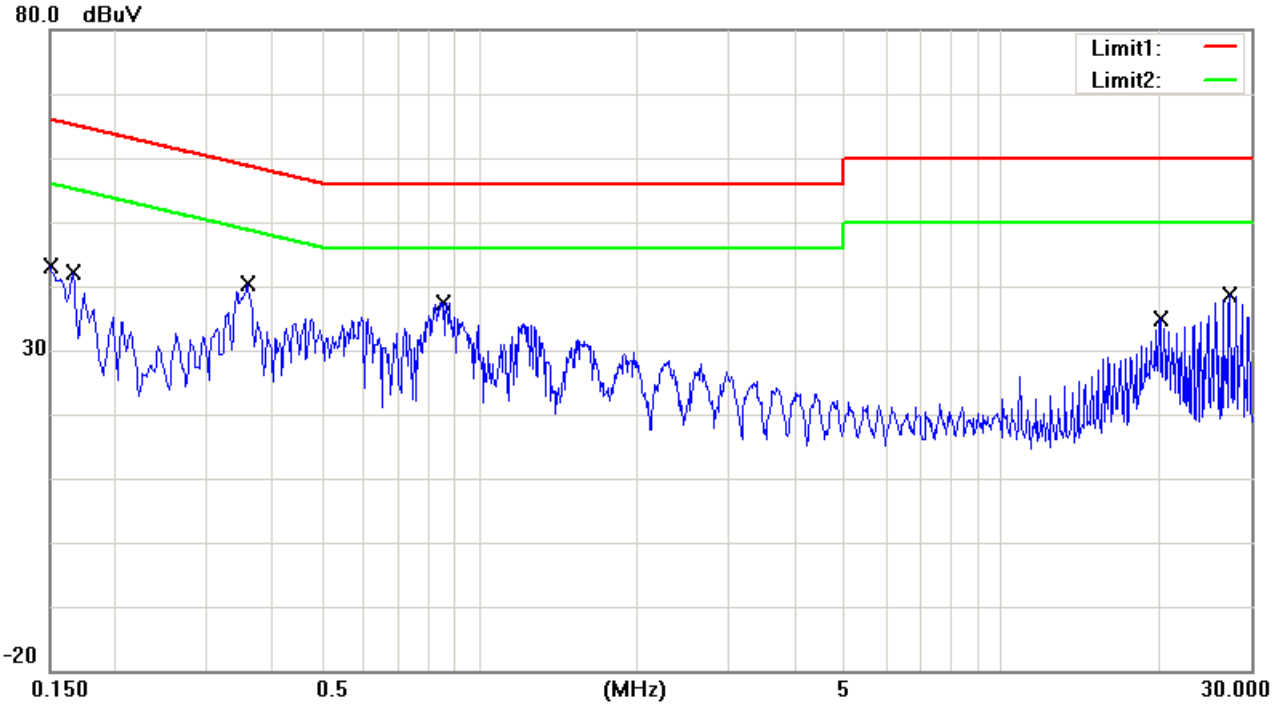
Note:

No.	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
	(MHz)	(dBuV)		dB	(dBuV)	(dBuV)	(dB)
1	0.1620	31.90	QP	9.65	41.55	65.36	-23.81
2	0.1740	30.85	QP	9.65	40.50	64.77	-24.27
3	0.3460	33.19	QP	9.65	42.84	59.06	-16.22
4	0.8620	28.38	QP	9.67	38.05	56.00	-17.95
5	1.2220	24.73	QP	9.67	34.40	56.00	-21.60
6	27.2820	27.85	QP	9.89	37.74	60.00	-22.26

Note: 1. Place of measurement: EMC LAB. of the ETC.
2. "***" means the value was too low to be measured.
3. If the data table appeared symbol of "----" means the Q.P. value is under the limit of AVG. so, the AVG. value doesn't need to be measured.
4. "#" means the noise was too low, so record the peak value.
5. The estimated measurement uncertainty of the result measurement is ±2.5dB.

File: **955 Access** **Data:** **#1** **Date:** **2015/7/16** **Temperature:** **24 ℃**

Time: **AM 09:04:38** **Humidity:** **63 %**



Condition: **Phase:** **N**

EUT:

Model:

Test Mode:

Note:

No.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected dB	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	0.1500	33.48	QP	9.64	43.12	66.00	-22.88
2	0.1660	32.37	QP	9.64	42.01	65.16	-23.15
3	0.3580	30.69	QP	9.64	40.33	58.77	-18.44
4	0.8500	27.77	QP	9.66	37.43	56.00	-18.57
5	20.0620	24.85	QP	10.02	34.87	60.00	-25.13
6	27.2940	28.53	QP	10.02	38.55	60.00	-21.45

Note: 1. Place of measurement: EMC LAB. of the ETC.
2. "***" means the value was too low to be measured.
3. If the data table appeared symbol of "----" means the Q.P. value is under the limit of AVG. so, the AVG. value doesn't need to be measured.
4. "#" means the noise was too low, so record the peak value.
5. The estimated measurement uncertainty of the result measurement is ±2.5dB.

4.4 Result Data Calculation

The result data is calculated by adding the LISN Factor to the measured reading. The basic equation with a sample calculation is as follows:

RESULT = READING + LISN FACTOR (Included Cable Loss)

4.5 Conducted Measurement EquiPMent

The following test equiPMent are used during the conducted test.

Equipment	Manufacturer	Model No.
EMI Test Receiver	R&S	ESCI
V-LISN	R&S	ENV216

5 ANTENNA REQUIREMENT

5.1 Standard Applicable

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to §15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.2 Antenna Construction and Directional Gain

The antennas is a Monopole antenna.

Antenna Type	Monopole
Peak Antenna Gain	-2 dBi

The directional gain of antenna doesn't greater than 6 dBi, the power won't be reduced.

6 EMISSION BANDWIDTH MEASUREMENT

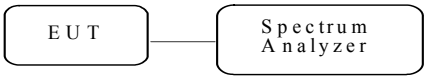
6.1 Standard Applicable

According to 15.247(a)(2), system using digital modulation techniques, the minimum 6dB bandwidth shall be at least 500 kHz.

6.2 Measurement Procedure

1. The testing follows FCC KDB 558074 D01 v03r03.
2. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
3. Position the EUT as shown in figure 2. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
4. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth.
5. Repeat above procedures until all frequencies measured were complete.

Figure 2: Emission bandwidth measurement configuration.



6.3 Measurement Equipment

Equipment	Manufacturer	Model No.
Spectrum Analyzer	Agilent	E4446A

6.4 Measurement Data

Test Date: Jul. 13, 2015 Temperature: 22℃ Humidity: 60%

Channel	6dB Bandwidth (MHz)	FCC Limit (kHz)	Chart
L	1.62	500	Page 21-22
M	1.62	500	Page 23-24
H	1.61	500	Page 25-26

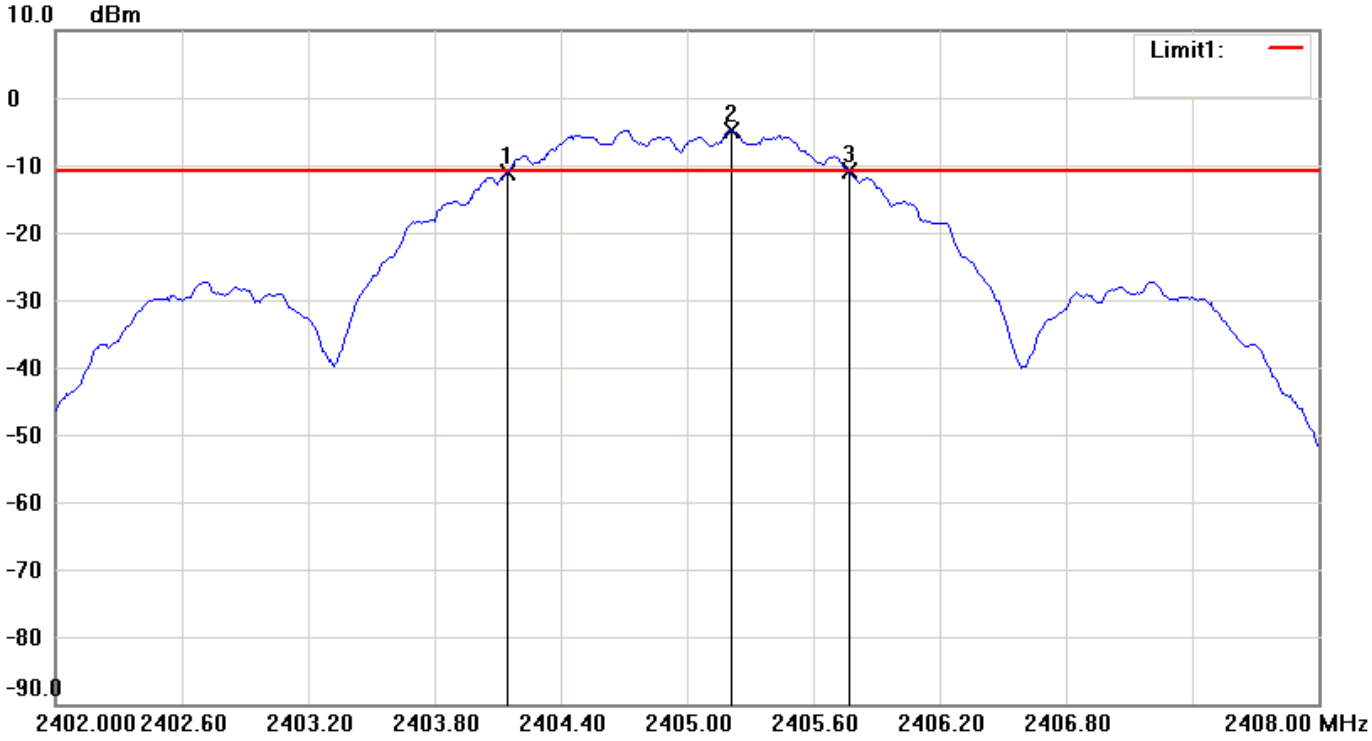
Note:

1. Please refer to page 21 to page 26 for chart

2. The estimated measurement uncertainty of the result measurement is 8.25×10^{-7} (1GHz≦f ≦18GHz)

File: **955 Access** **Data:** **#45** **Date:** **2015/7/13** **Temperature:** **22 ℃**

Time: **PM 01:24:31** **Humidity:** **60 %**



Condition: **-10.83dBm** **RF Conducted**

EUT: **Sweep Time: 500ms** **Att.: 10dB**

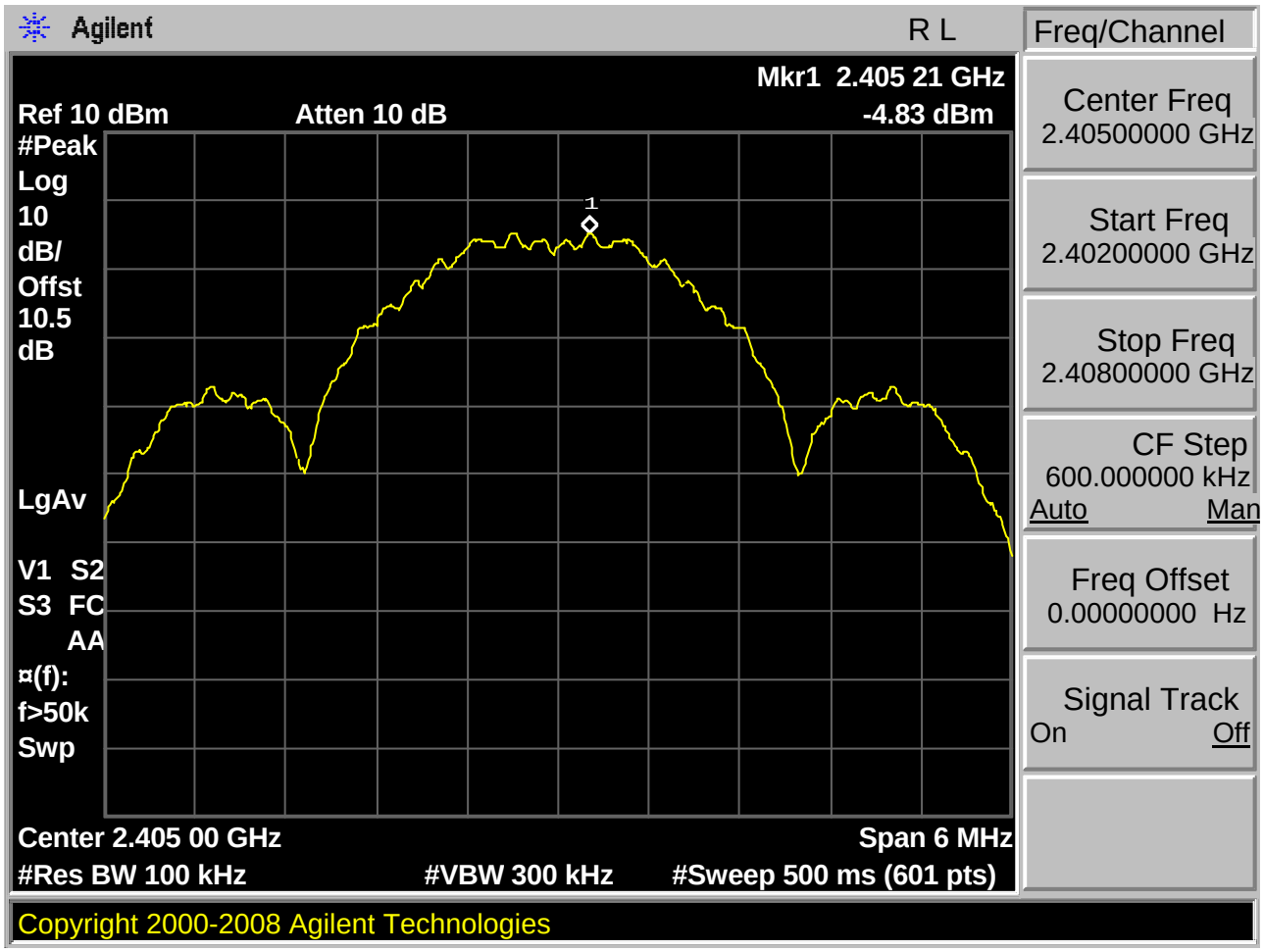
Model: **RBW: 100 KHz** **VBW: 300 KHz**

Test Mode:

Note: **Channel -6dB EBW**

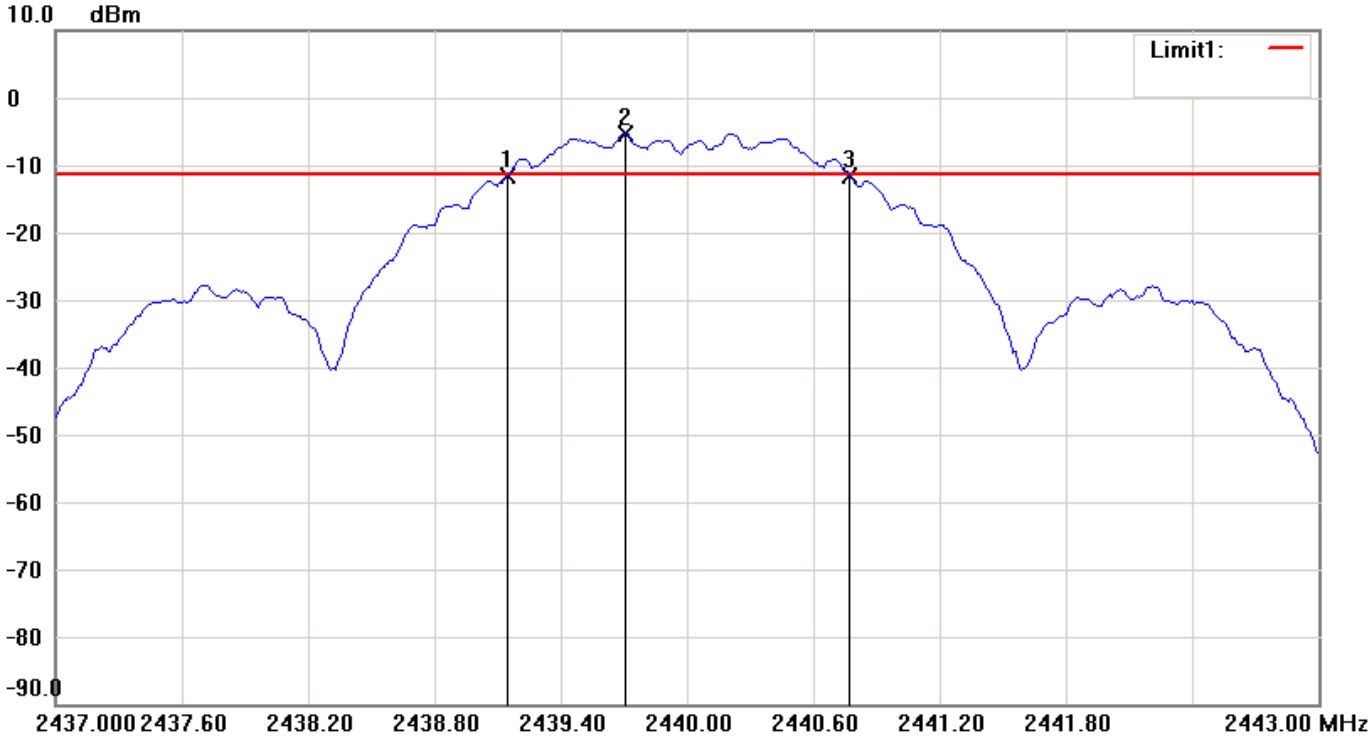
No.	Frequency(MHz)	Level(dBm)
1	2404.15000	-11.00
2	2405.21000	-4.83
3	2405.77000	-10.97

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	1.62	0.03


Agilent
R L
Freq/Channel
Mkr1 2.405 21 GHz
-4.83 dBm
Ref 10 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
10.5
dB
LgAv
V1 S2
S3 FC
AA
¤(f):
f>50k
Swp
Center 2.405 00 GHz
Span 6 MHz
#Res BW 100 kHz
#VBW 300 kHz
#Sweep 500 ms (601 pts)
Center Freq
2.40500000 GHz
Start Freq
2.40200000 GHz
Stop Freq
2.40800000 GHz
CF Step
600.000000 kHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

File: **955 Access** **Data:** **#51** **Date:** **2015/7/13** **Temperature:** **22 ℃**

Time: **PM 01:41:11** **Humidity:** **60 %**



Condition: **-11.3dBm** **RF Conducted**

EUT: **Sweep Time: 500ms** **Att.: 10dB**

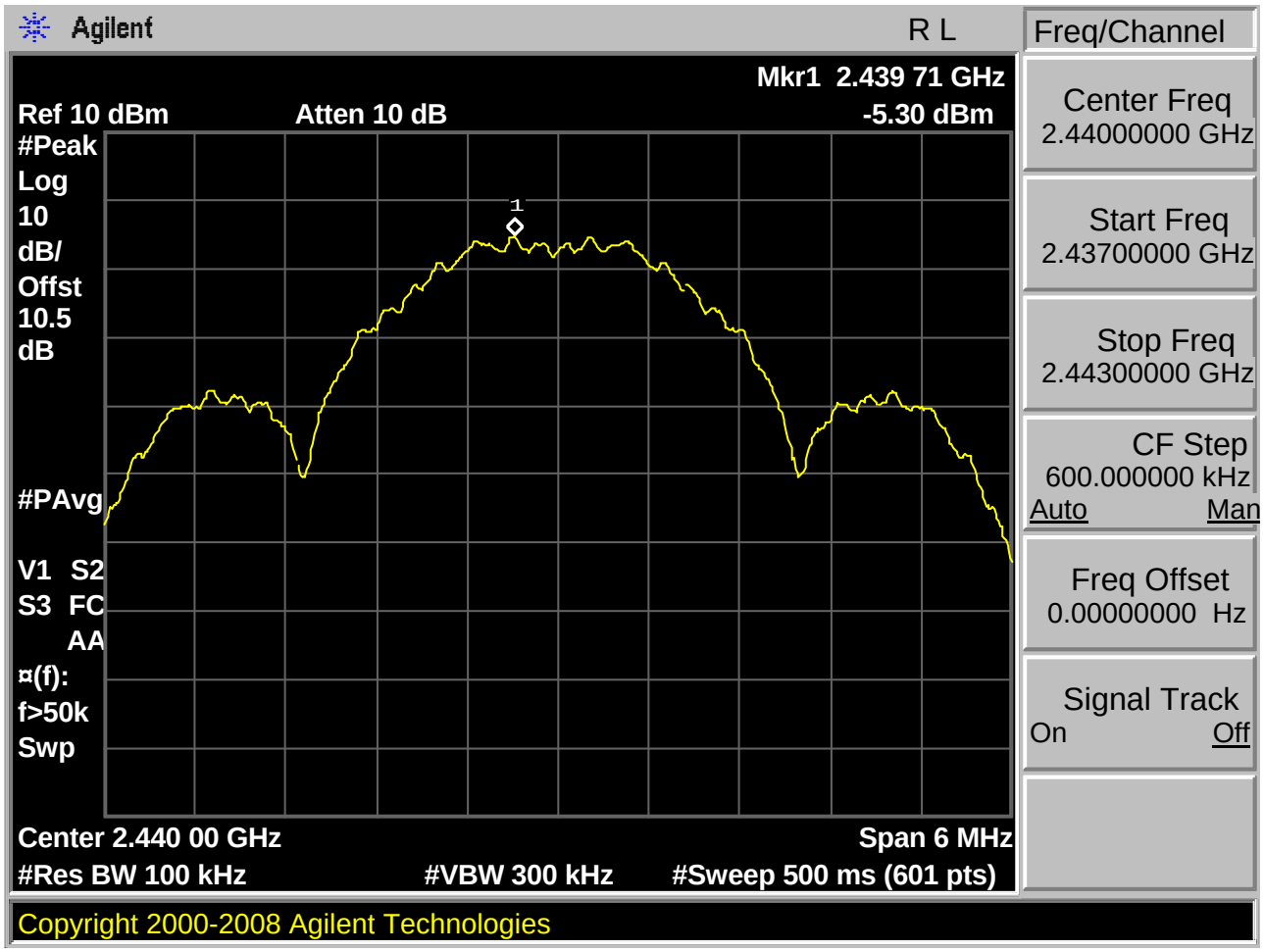
Model: **RBW: 100 KHz** **VBW: 300 KHz**

Test Mode:

Note: **Channel Mid-6dB EBW**

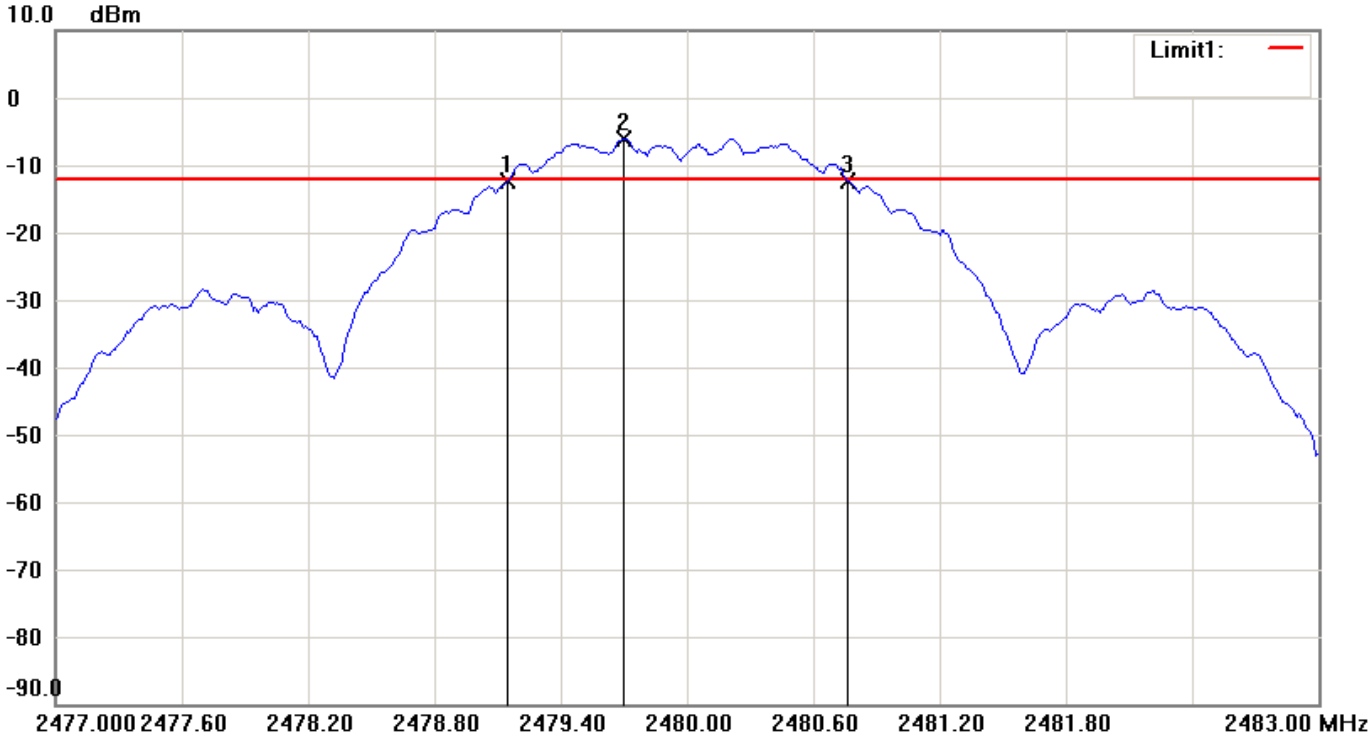
No.	Frequency(MHz)	Level(dBm)
1	2439.15000	-11.54
2	2439.71000	-5.30
3	2440.77000	-11.59

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	1.62	-0.05


Agilent
R L
Freq/Channel
Mkr1 2.439 71 GHz
-5.30 dBm
Ref 10 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
10.5
dB
#PAvg
V1 S2
S3 FC
AA
¤(f):
f>50k
Swp
Center 2.440 00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 6 MHz
#Sweep 500 ms (601 pts)
Center Freq
2.44000000 GHz
Start Freq
2.43700000 GHz
Stop Freq
2.44300000 GHz
CF Step
600.000000 kHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

File: **955 Access** **Data:** **#56** **Date:** **2015/7/13** **Temperature:** **22 ℃**

Time: **PM 01:50:13** **Humidity:** **60 %**



Condition: **-12.1dBm** **RF Conducted**

EUT: **Sweep Time: 500ms** **Att.: 10dB**

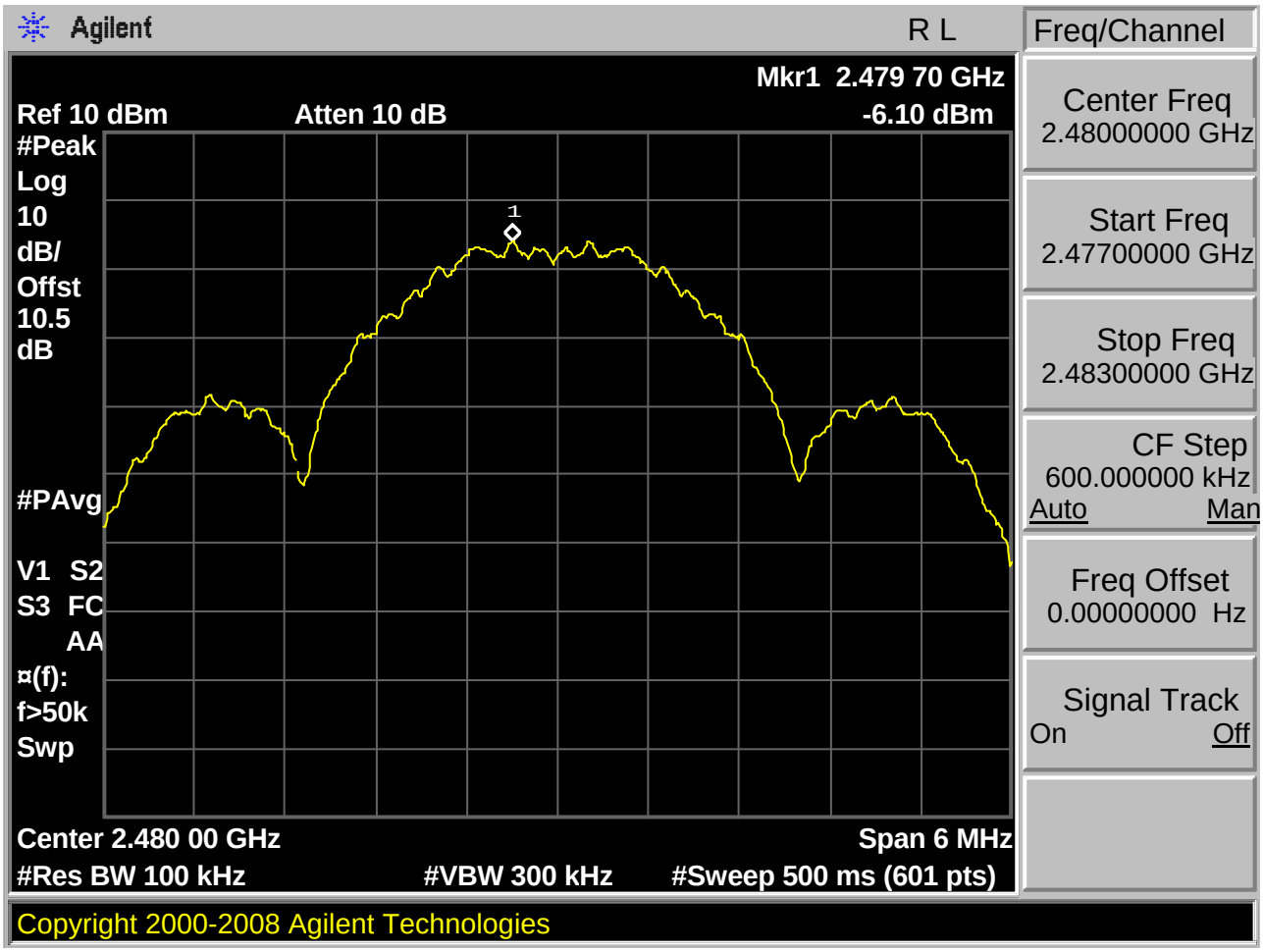
Model: **RBW: 100 KHz** **VBW: 300 KHz**

Test Mode:

Note: **channel High -6dB EBW**

No.	Frequency(MHz)	Level(dBm)
1	2479.15000	-12.43
2	2479.70000	-6.10
3	2480.76000	-12.32

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	1.61	0.11


Agilent
R L
Freq/Channel
Mkr1 2.479 70 GHz
Ref 10 dBm
Atten 10 dB
-6.10 dBm
#Peak
Log
10
dB/
Offst
10.5
dB
#PAvg
V1 S2
S3 FC
AA
¤(f):
f>50k
Swp
Center 2.480 00 GHz
Span 6 MHz
#Res BW 100 kHz
#VBW 300 kHz
#Sweep 500 ms (601 pts)
Center Freq
2.48000000 GHz
Start Freq
2.47700000 GHz
Stop Freq
2.48300000 GHz
CF Step
600.000000 kHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

7 OUTPUT POWER MEASUREMENT

7.1 Standard Applicable

For direct sequence system, according to 15.247(b), the maximum peak output power of the transmitter shall not exceed 1 Watt. If transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

7.2 Measurement Procedure

1. The testing follows FCC KDB 558074 D01 v03r03.
2. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
3. Position the EUT as shown in figure 2. 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.
4. Measure the highest value appearing on power meter and record the level to calculate result data.
5. Repeat above procedures until all frequencies measured were complete.

7.3 Measurement Equipment

Equipment	Manufacturer	Model No.
Power Meter	Agilent	N1912A
Wideband Power Sensor	Agilent	N1922A

7.4 Measurement Data

Test Date: Jul. 13, 2015 Temperature: 22℃ Humidity: 60%

Channel	Maximum Peak Output Power (dBm)	FCC Limit (dBm)	Chart
L	-1.02	30.0	-
M	-1.48	30.0	-
H	-2.26	30.0	-

Note:

The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦18GHz)

8 POWER DENSITY MEASUREMENT

8.1 Standard Applicable

According to 15.247(e), for direct sequence systems, the transmitted power density averaged over any 1 second interval shall not be greater than 8 dBm in any 3 kHz bandwidth within these bands.

8.2 Measurement Procedure

1. The testing follows FCC KDB 558074 D01 v03r03.
2. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
3. Position the EUT as shown in figure 1. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set EUT to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
4. Adjust the center frequency of spectrum analyzer on highest level appearing on spectral display within a 300 kHz frequency span.
5. Set the spectrum analyzer on a 3 kHz resolution bandwidth and 10 kHz video bandwidth as well as max. hold function, then record the measurement result.
6. Repeat above procedures until all measured frequencies were complete.

8.3 Measurement Equipment

Equipment	Manufacturer	Model No.
Spectrum Analyzer	Agilent	E4446A

8.4 Measurement Data

Test Date: Jul. 13, 2015 Temperature: 22℃ Humidity: 60%

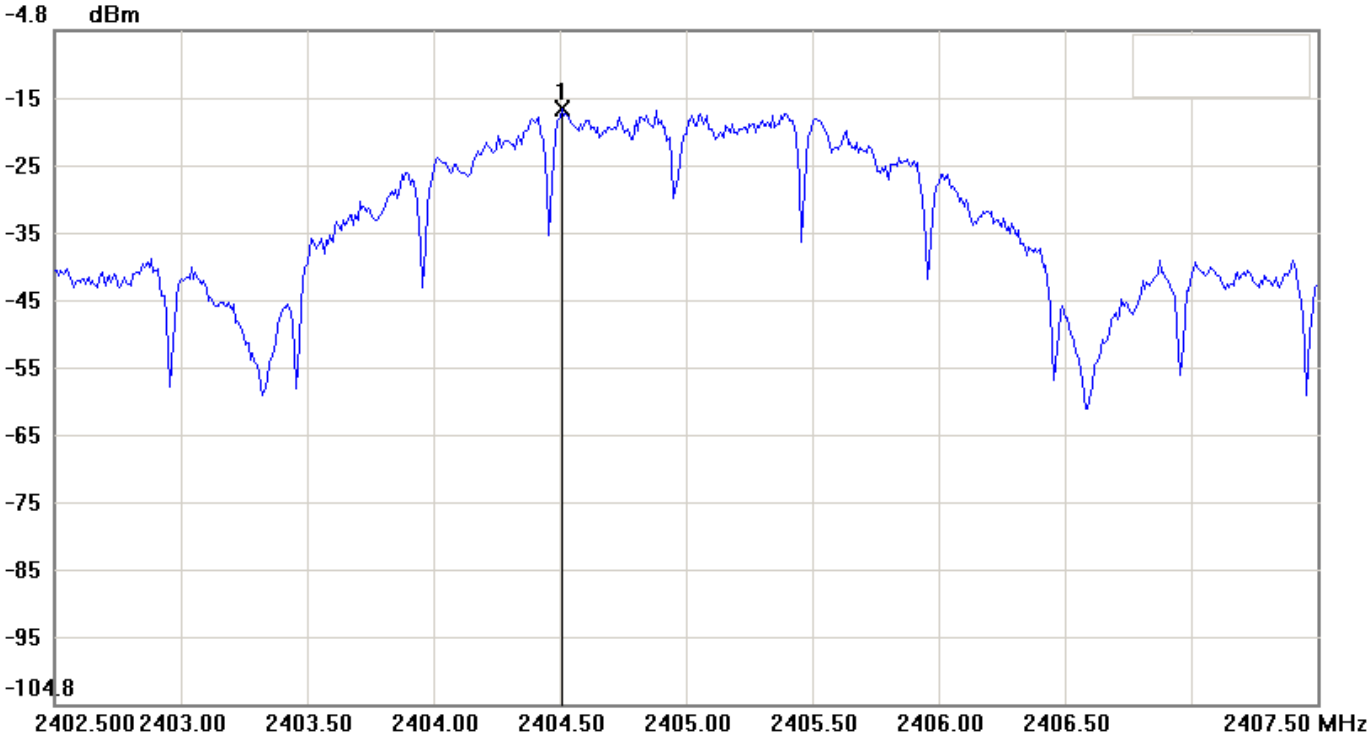
Channel	Peak Power Spectral Density (dBm)	FCC Limit (dBm)	Chart
L	-16.43	8	Page 31-32
M	-16.37	8	Page 33-34
H	-17.25	8	Page 35-36

Note:

1. *Please refer to page 31 to page 36 for chart*
2. *The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦ 18GHz)*

File: **955 Access** **Data:** **#48** **Date:** **2015/7/13** **Temperature:** **22 ℃**

Time: **PM 01:31:18** **Humidity:** **60 %**



Condition: **RF Conducted**

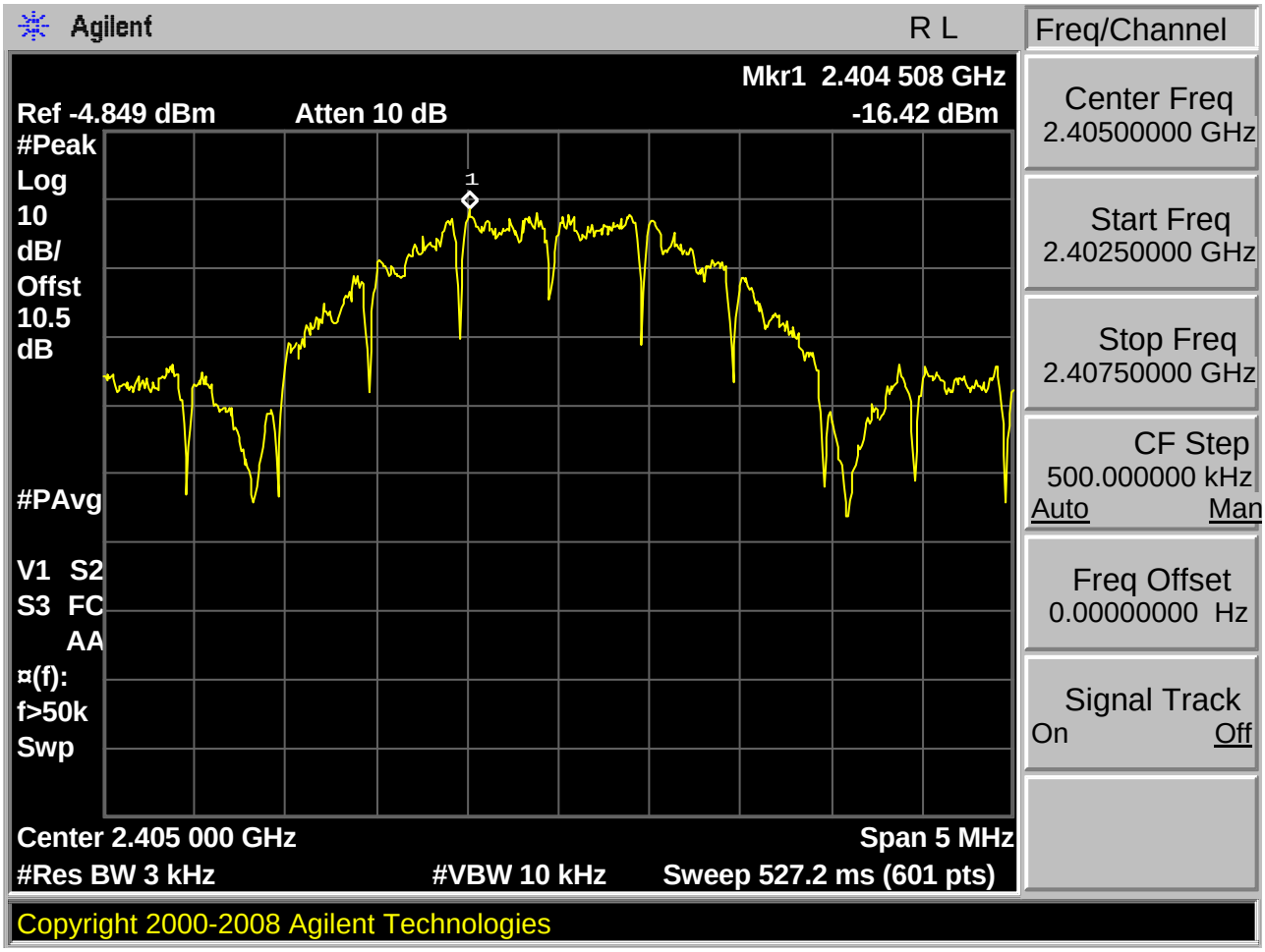
EUT: **Sweep Time: 527.2ms** **Att.: 10dB**

Model: **RBW: 3 KHz** **VBW: 10 KHz**

Test Mode:

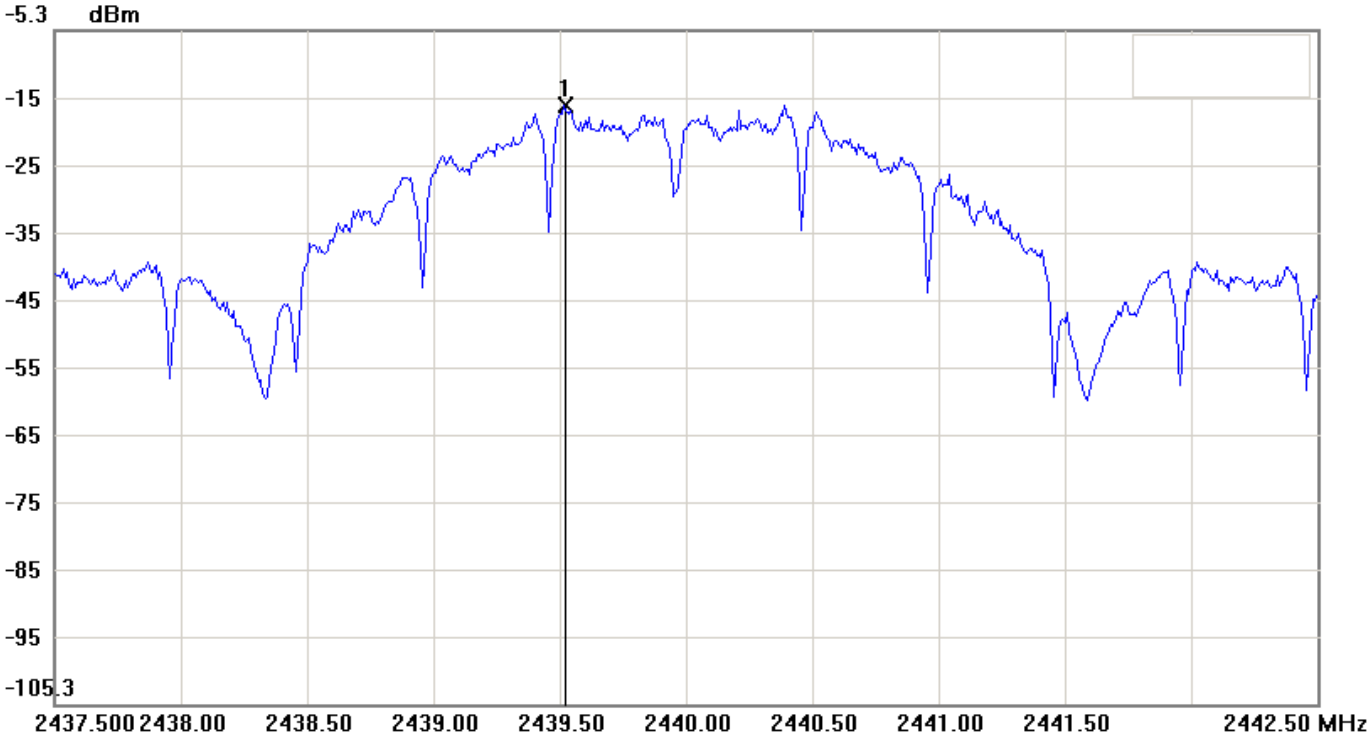
Note: **Channel LOW-Power Density (PK)**

No.	Frequency(MHz)	Level(dBm)
1	2404.50830	-16.43


Agilent
R L
Freq/Channel
Mkr1 2.404 508 GHz
Ref -4.849 dBm
Atten 10 dB
-16.42 dBm
#Peak
Log
10
dB/
Offst
10.5
dB
#PAvg
V1 S2
S3 FC
AA
¤(f):
f>50k
Swp
Center 2.405 000 GHz
Span 5 MHz
#Res BW 3 kHz
#VBW 10 kHz
Sweep 527.2 ms (601 pts)
Center Freq
2.40500000 GHz
Start Freq
2.40250000 GHz
Stop Freq
2.40750000 GHz
CF Step
500.000000 kHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

File: **955 Access** **Data:** **#54** **Date:** **2015/7/13** **Temperature:** **22 ℃**

Time: **PM 01:47:56** **Humidity:** **60 %**



Condition: **RF Conducted**

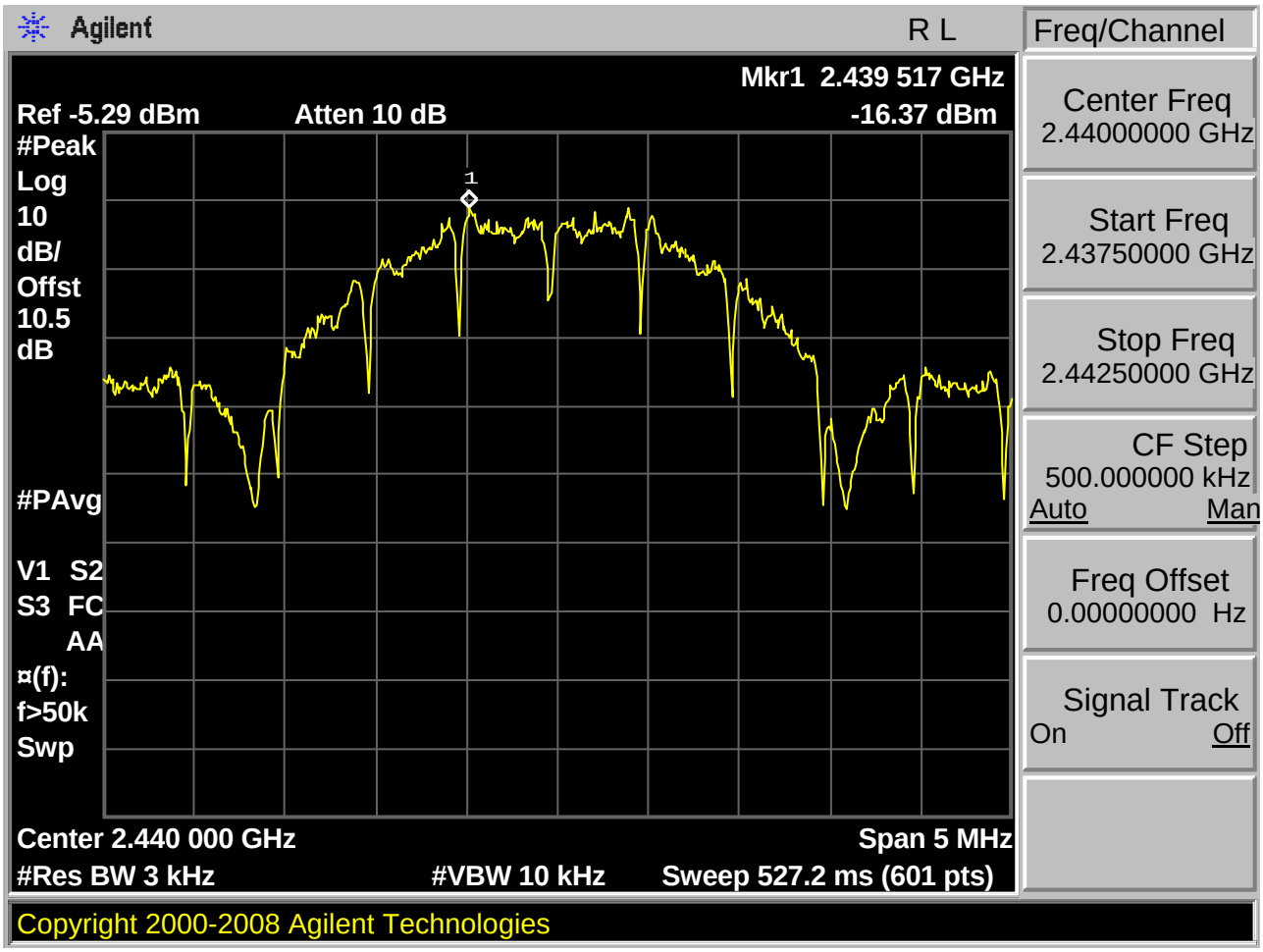
EUT: **Sweep Time: 527.2ms** **Att.: 10dB**

Model: **RBW: 3 KHz** **VBW: 10 KHz**

Test Mode:

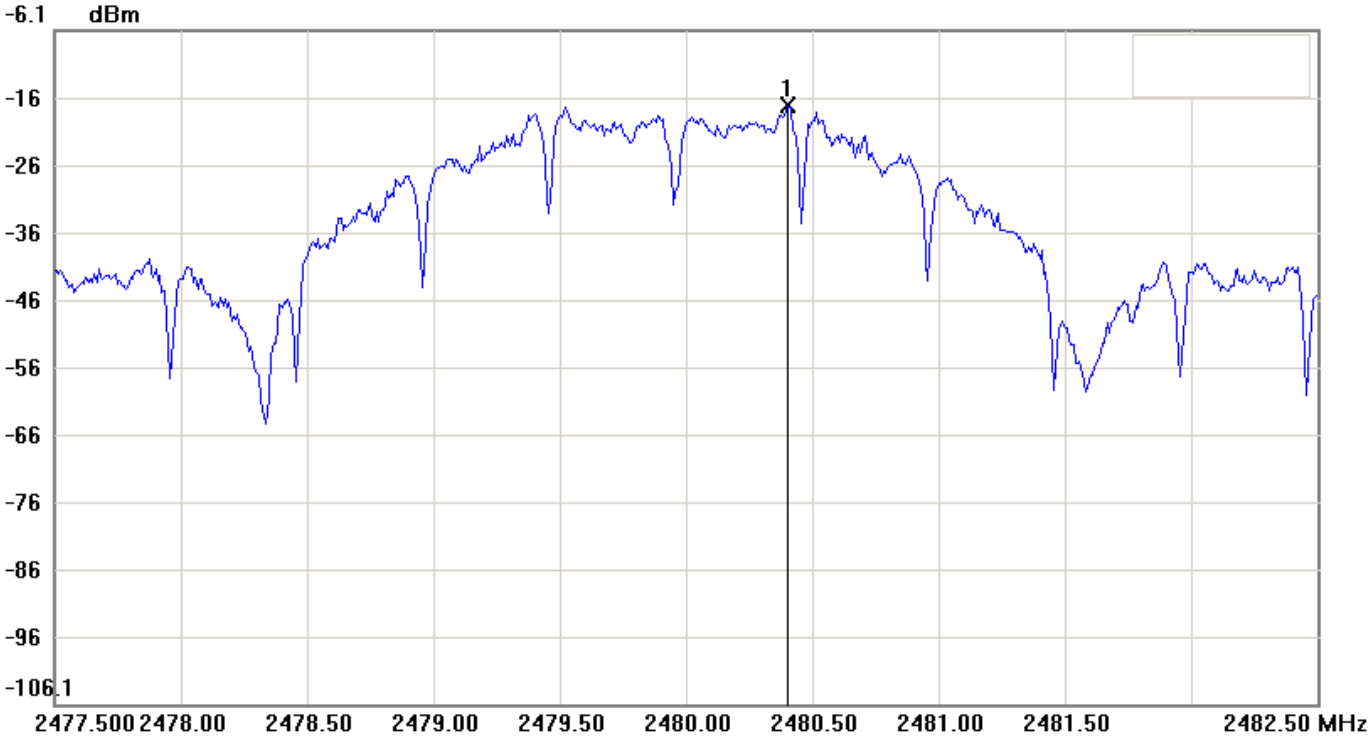
Note: **Channel Mid-Power Density (PK)**

No.	Frequency(MHz)	Level(dBm)
1	2439.51670	-16.37


Agilent
R L
Freq/Channel
Mkr1 2.439 517 GHz
Ref -5.29 dBm
Atten 10 dB
-16.37 dBm
#Peak
Log
10
dB/
Offst
10.5
dB
#PAvg
V1 S2
S3 FC
AA
¤(f):
f>50k
Swp
Center 2.440 000 GHz
Span 5 MHz
#Res BW 3 kHz
#VBW 10 kHz
Sweep 527.2 ms (601 pts)
Center Freq
2.44000000 GHz
Start Freq
2.43750000 GHz
Stop Freq
2.44250000 GHz
CF Step
500.000000 kHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

File: **955 Access** **Data:** **#59** **Date:** **2015/7/13** **Temperature:** **22 ℃**

Time: **PM 01:56:57** **Humidity:** **60 %**



Condition: **RF Conducted**

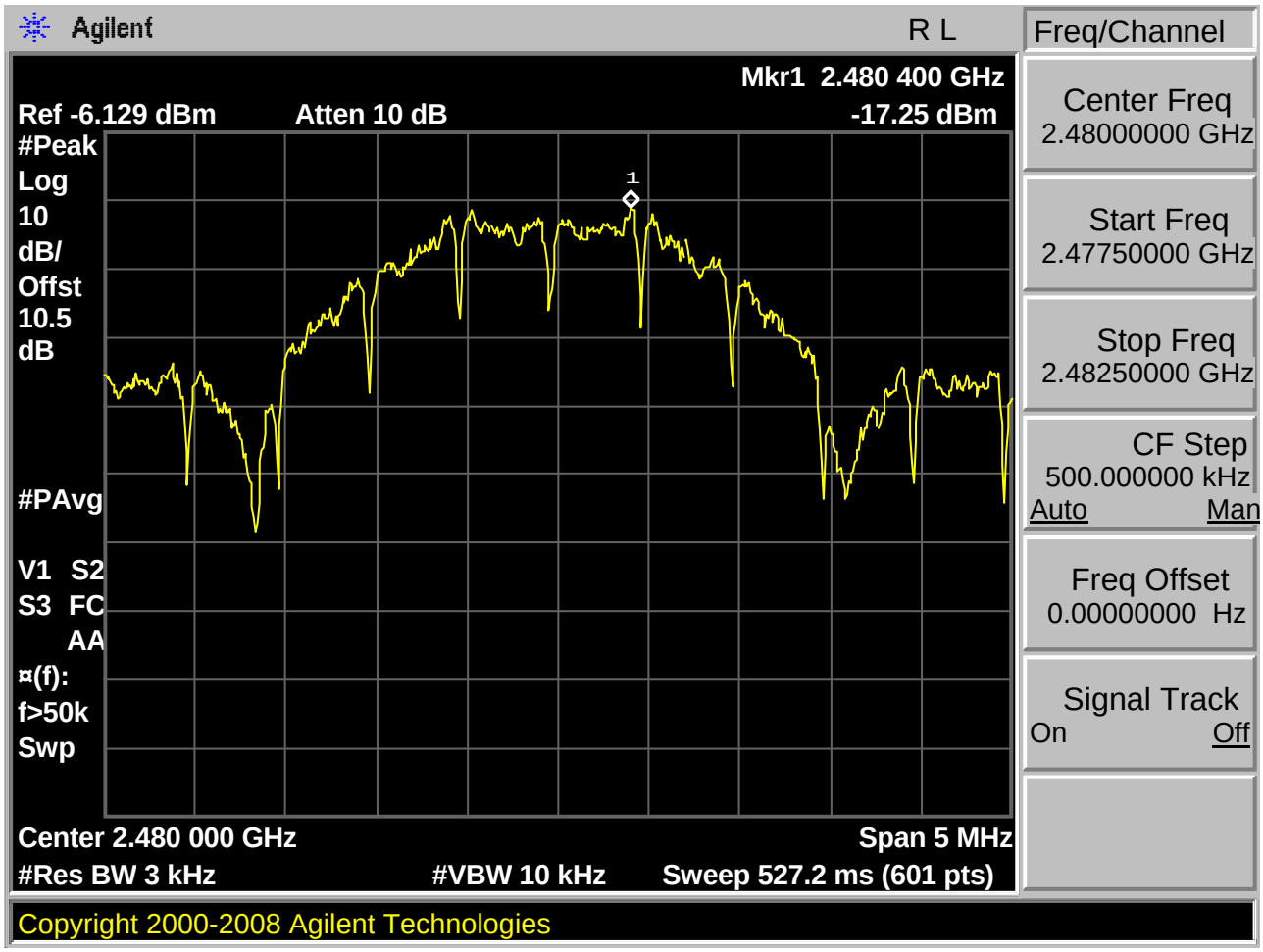
EUT: **Sweep Time: 527.2ms** **Att.: 10dB**

Model: **RBW: 3 KHz** **VBW: 10 KHz**

Test Mode:

Note: **Channel High-Power Density (PK)**

No.	Frequency(MHz)	Level(dBm)
1	2480.40000	-17.25


Agilent
R L
Freq/Channel
Mkr1 2.480 400 GHz
Ref -6.129 dBm
Atten 10 dB
-17.25 dBm
#Peak
Log
10
dB/
Offst
10.5
dB
#PAvg
V1 S2
S3 FC
AA
¤(f):
f>50k
Swp
Center 2.480 000 GHz
Span 5 MHz
#Res BW 3 kHz
#VBW 10 kHz
Sweep 527.2 ms (601 pts)
Center Freq
2.48000000 GHz
Start Freq
2.47750000 GHz
Stop Freq
2.48250000 GHz
CF Step
500.000000 kHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
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9 SPURIOUS EMISSION - RF CONDUCTED MEASUREMENT

9.1 Standard Applicable

According to 15.247 (d) , in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

9.2 Measurement Procedure

1. The testing follows FCC KDB 558074 D01 v03r03.
2. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
3. Position the EUT as shown in figure 1. 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.
4. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge.
5. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
6. Repeat above procedures until all measured frequencies were complete.

9.3 Measurement Equipment

Equipment	Manufacturer	Model No.
Spectrum Analyzer	Agilent	E4446A

9.4 Measurement Data

Test Date: Jul. 13, 2015 Temperature: 22℃ Humidity: 60%

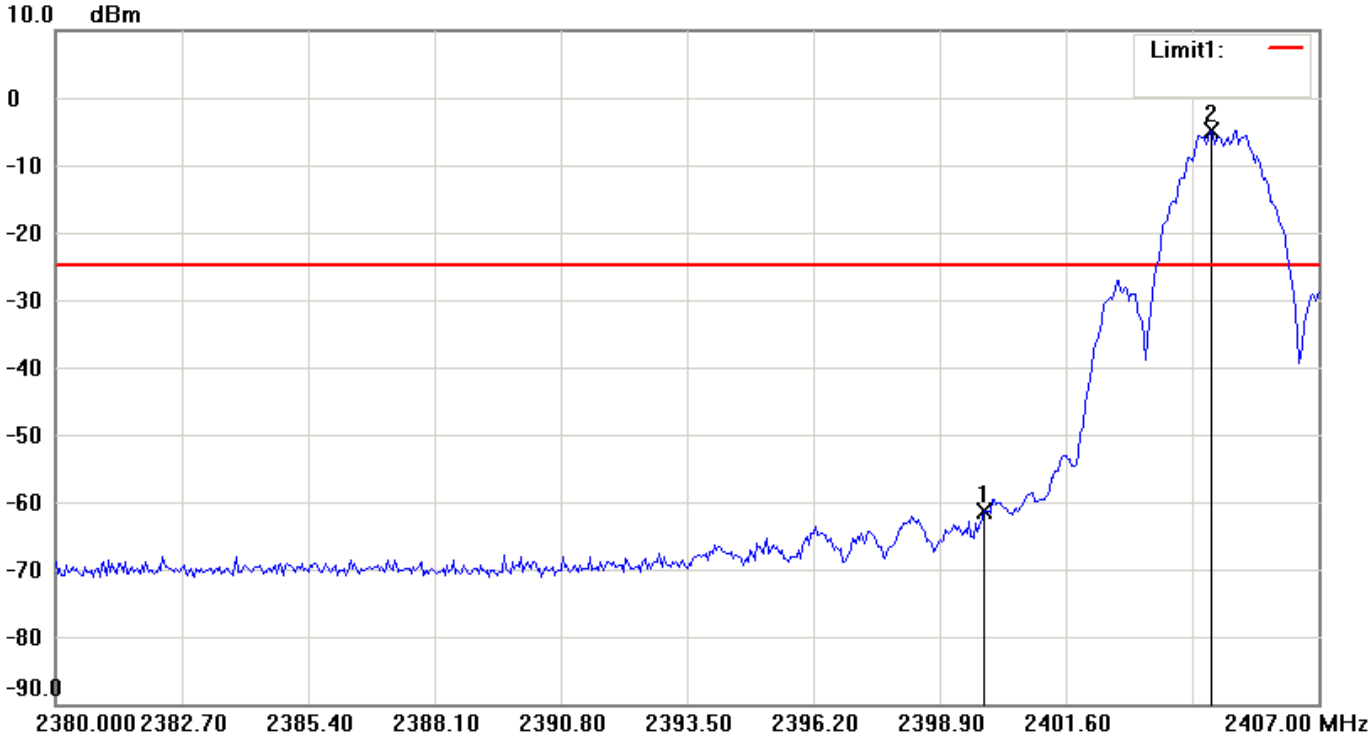
Channel	Frequency(MHz)	Chart
L	2405	Page 39,40, Page 43,44,45,46,47
M	2440	Page 48,49,50,51,52
H	2480	Page 41,42, Page 53,54,55,56,57

Frequency Band: 2400 MHz ~ 2483.5 MHz
All out-of –band conducted emissions were more than 20dB below the carrier.

Note: 1. Please refer to page 39 to page 57 for chart
2. An external attenuator is used as part of the test system for these measurements, the attenuation introduced by the external attenuator has not been explicitly compensated in the measured power level as it is irrelevant to these specific measurement results.

File: **955 Access** **Data:** **#49** **Date:** **2015/7/13** **Temperature:** **22 ℃**

Time: **PM 01:31:58** **Humidity:** **60 %**



Condition: **-24.84dBm** **RF Conducted**

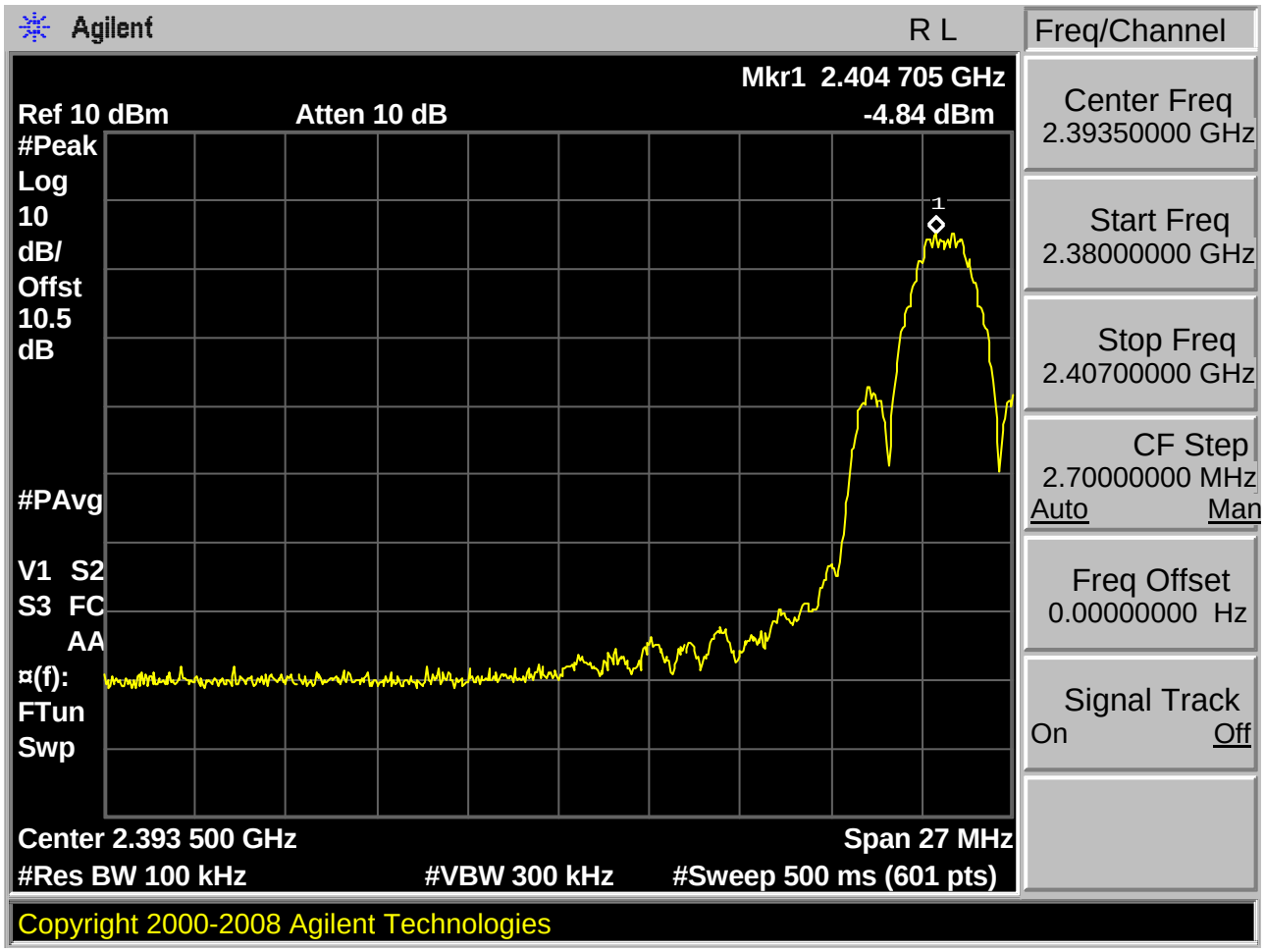
EUT: **Sweep Time: 500ms** **Att.: 10dB**

Model: **RBW: 100 KHz** **VBW: 300 KHz**

Test Mode:

Note: **Channel LOW-Bandedge**

No.	Frequency(MHz)	Level(dBm)
1	2399.84500	-61.34
2	2404.70500	-4.84


Agilent
R L
Freq/Channel
Mkr1 2.404 705 GHz
Ref 10 dBm
Atten 10 dB
-4.84 dBm
#Peak
Log
10
dB/
Offst
10.5
dB
#PAvg
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 2.393 500 GHz
Span 27 MHz
#Res BW 100 kHz
#VBW 300 kHz
#Sweep 500 ms (601 pts)
Center Freq
2.39350000 GHz
Start Freq
2.38000000 GHz
Stop Freq
2.40700000 GHz
CF Step
2.70000000 MHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

File: **955 Access** **Data:** **#60** **Date:** **2015/7/13** **Temperature:** **22 ℃**

Time: **PM 01:57:36** **Humidity:** **60 %**

Condition: **-26.1dBm** **RF Conducted**

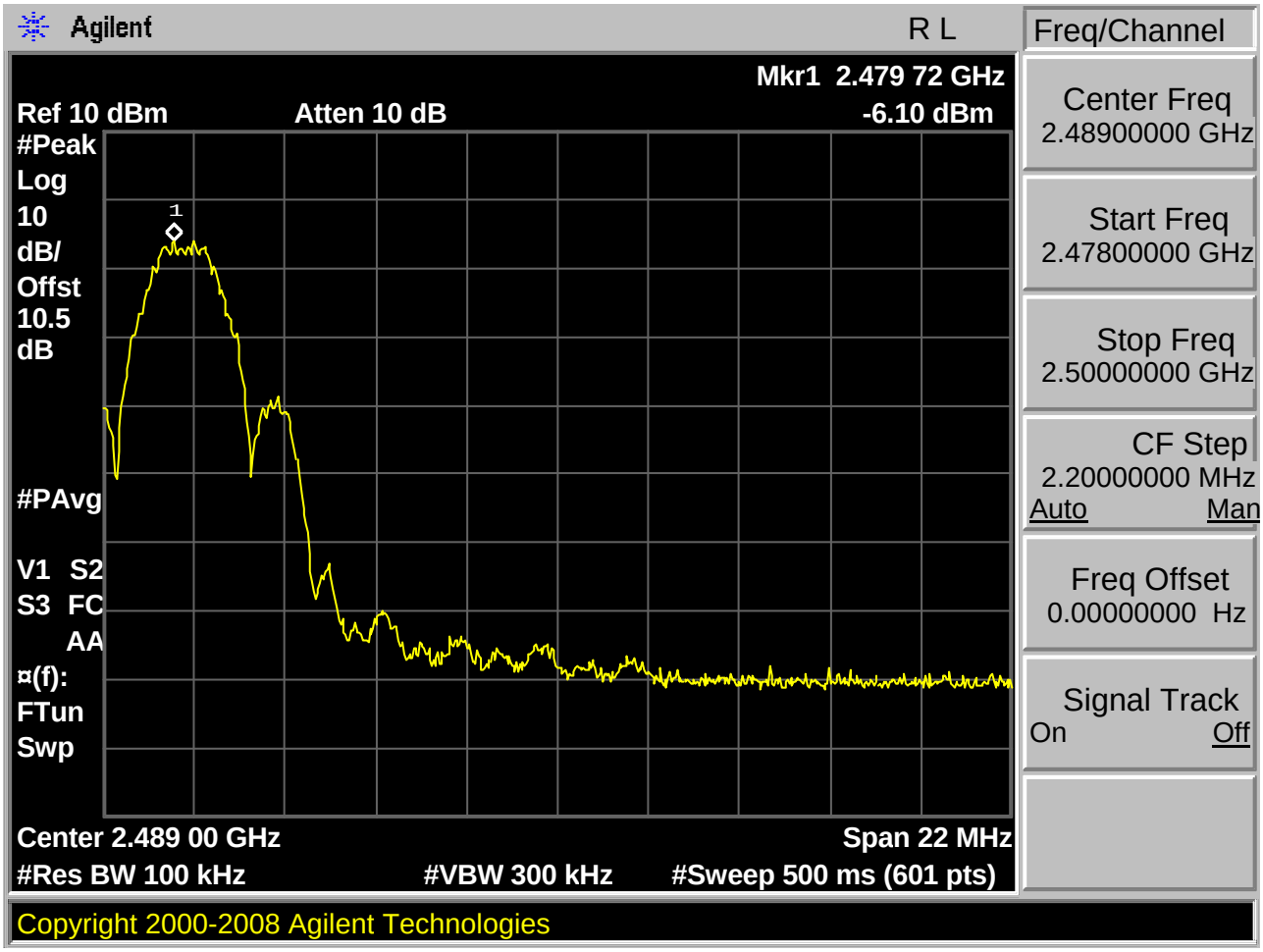
EUT: **Sweep Time: 500ms** **Att.: 10dB**

Model: **RBW: 100 KHz** **VBW: 300 KHz**

Test Mode:

Note: **Channel High-Bandedge**

No.	Frequency(MHz)	Level(dBm)
1	2479.72330	-6.10
2	2483.50000	-53.95

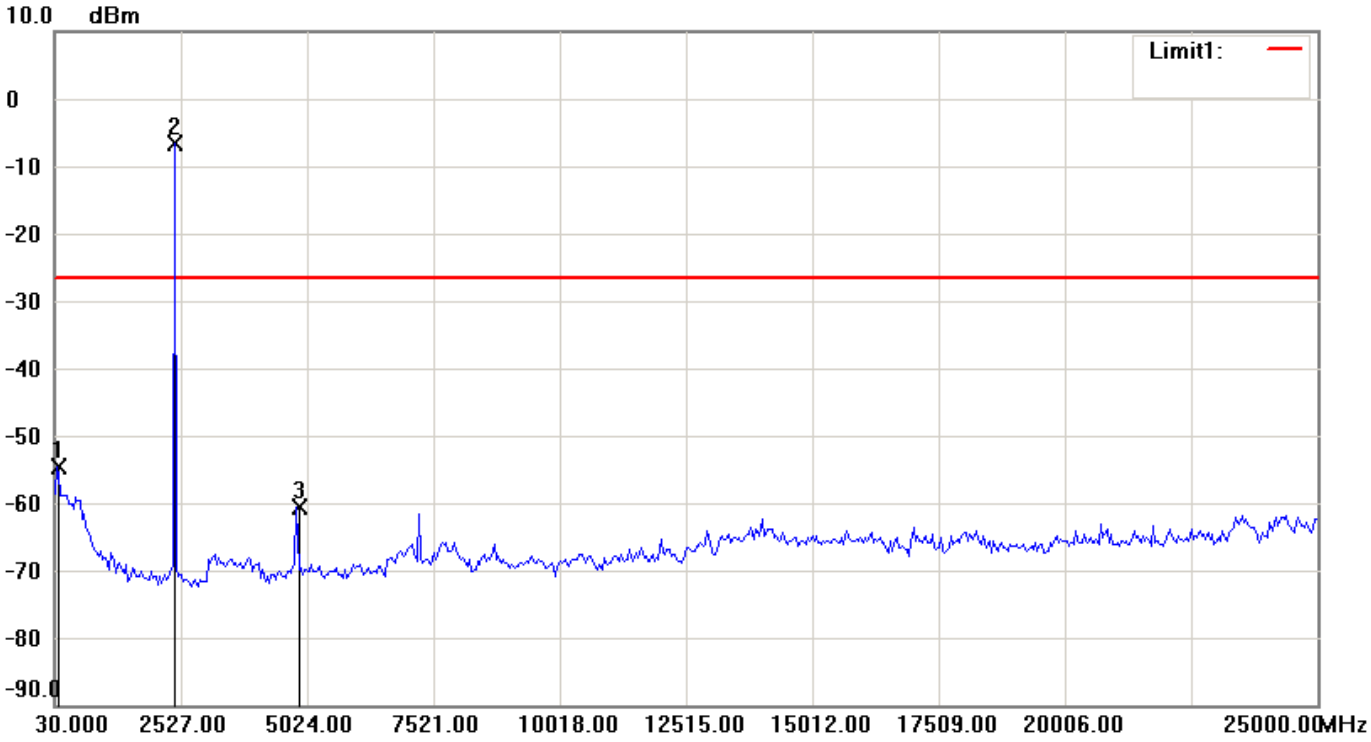

Agilent
R L
Freq/Channel
Mkr1 2.479 72 GHz
Ref 10 dBm
Atten 10 dB
-6.10 dBm
#Peak
Log
10
dB/
Offst
10.5
dB
#PAvg
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 2.489 00 GHz
Span 22 MHz
#Res BW 100 kHz
#VBW 300 kHz
#Sweep 500 ms (601 pts)
Center Freq
2.48900000 GHz
Start Freq
2.47800000 GHz
Stop Freq
2.50000000 GHz
CF Step
2.20000000 MHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

Channal Low:

30MHz-25GHz

File: **955 Access** **Data:** **#46** **Date:** **2015/7/13** **Temperature:** **22 ℃**

Time: **PM 01:25:43** **Humidity:** **60 %**



Condition: **-26.69dBm** **RF Conducted**

EUT: **Sweep Time: 2386.4ms Att.: 10dB**

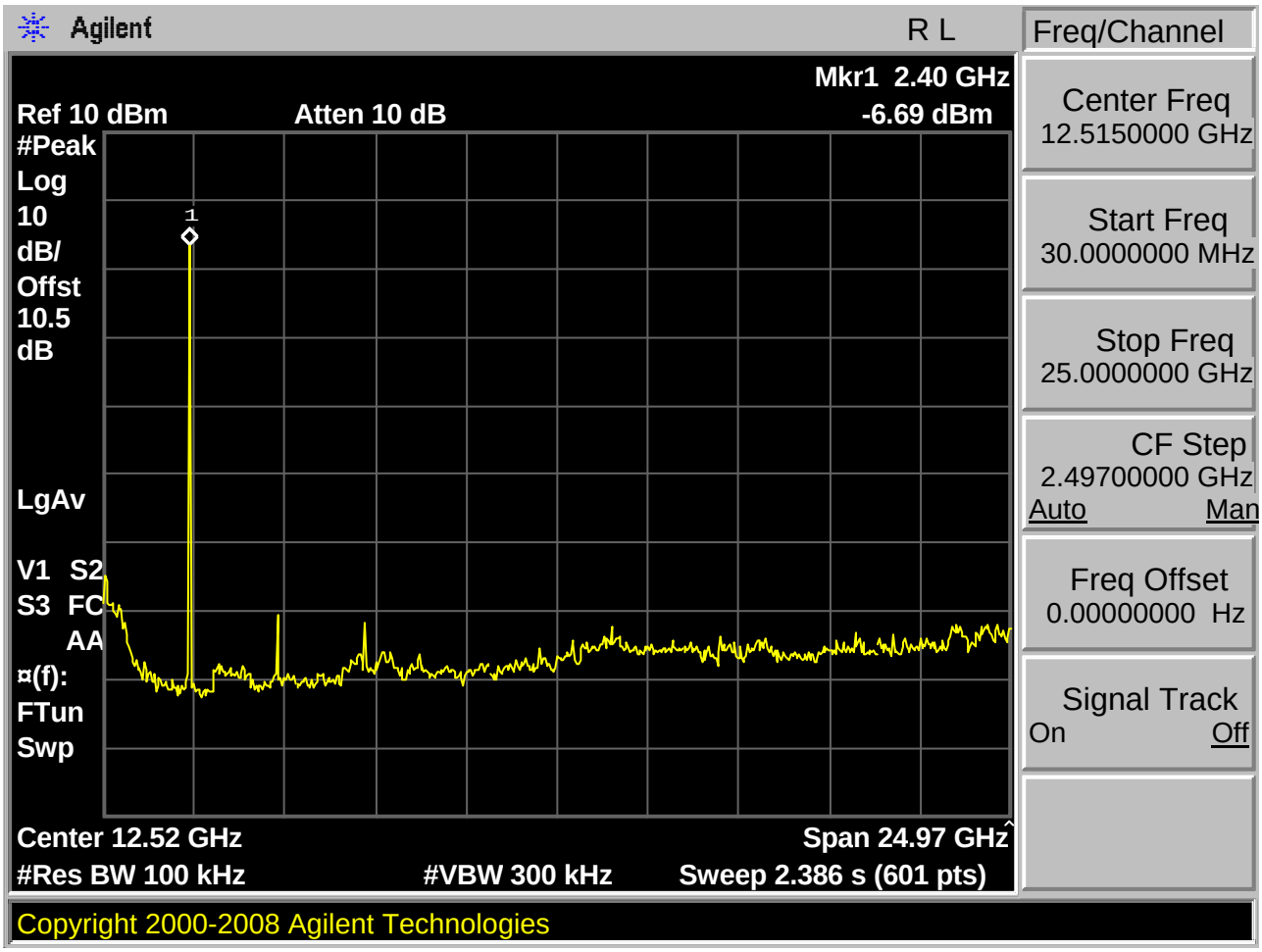
Model: **RBW: 100 KHz VBW: 300 KHz**

Test Mode:

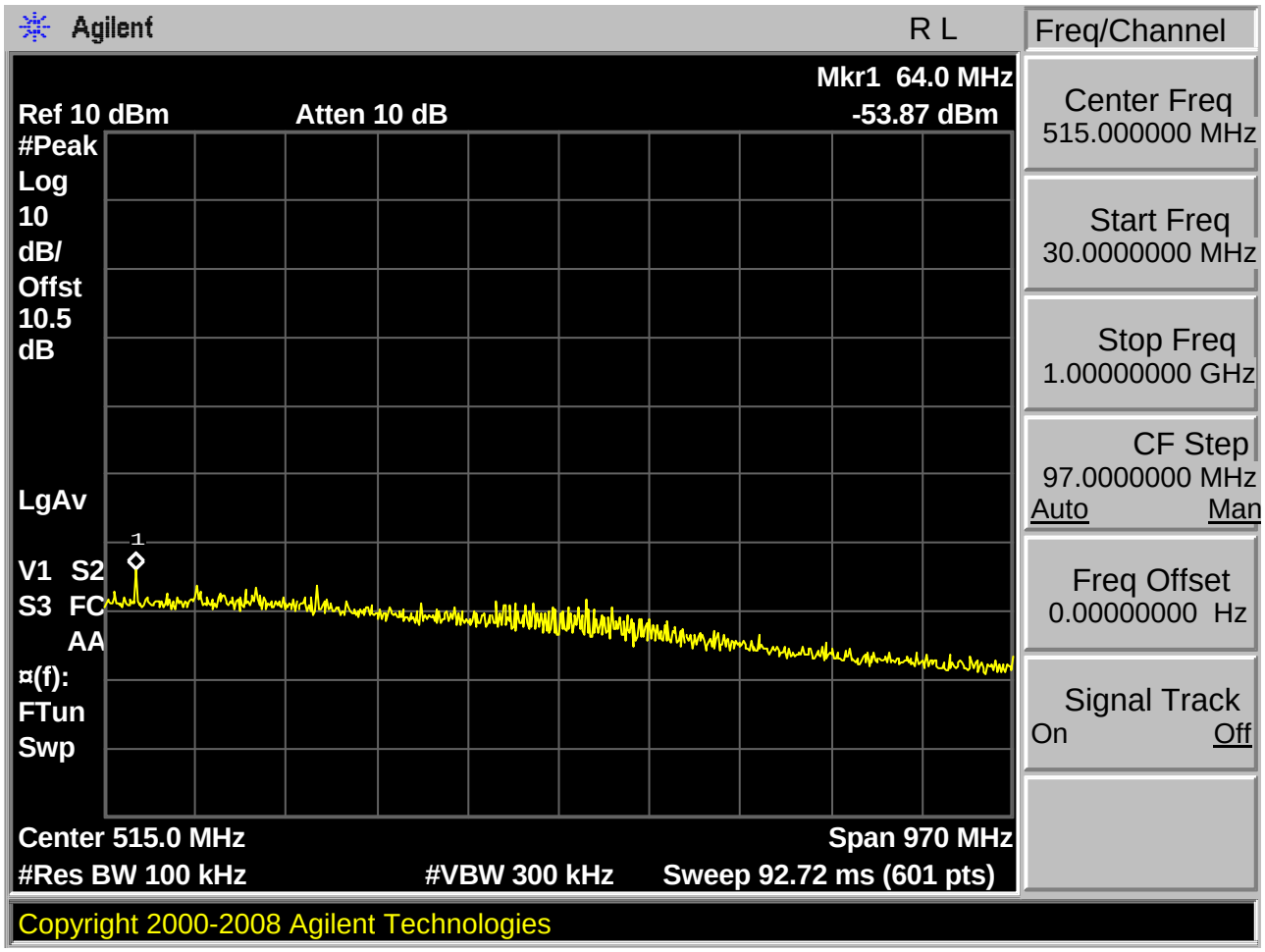
Note: **Channel LOW-Conducted Spurious**

No.	Frequency(MHz)	Level(dBm)
1	71.6167	-54.69
2	2402.15000	-6.69
3	4815.91670	-60.55

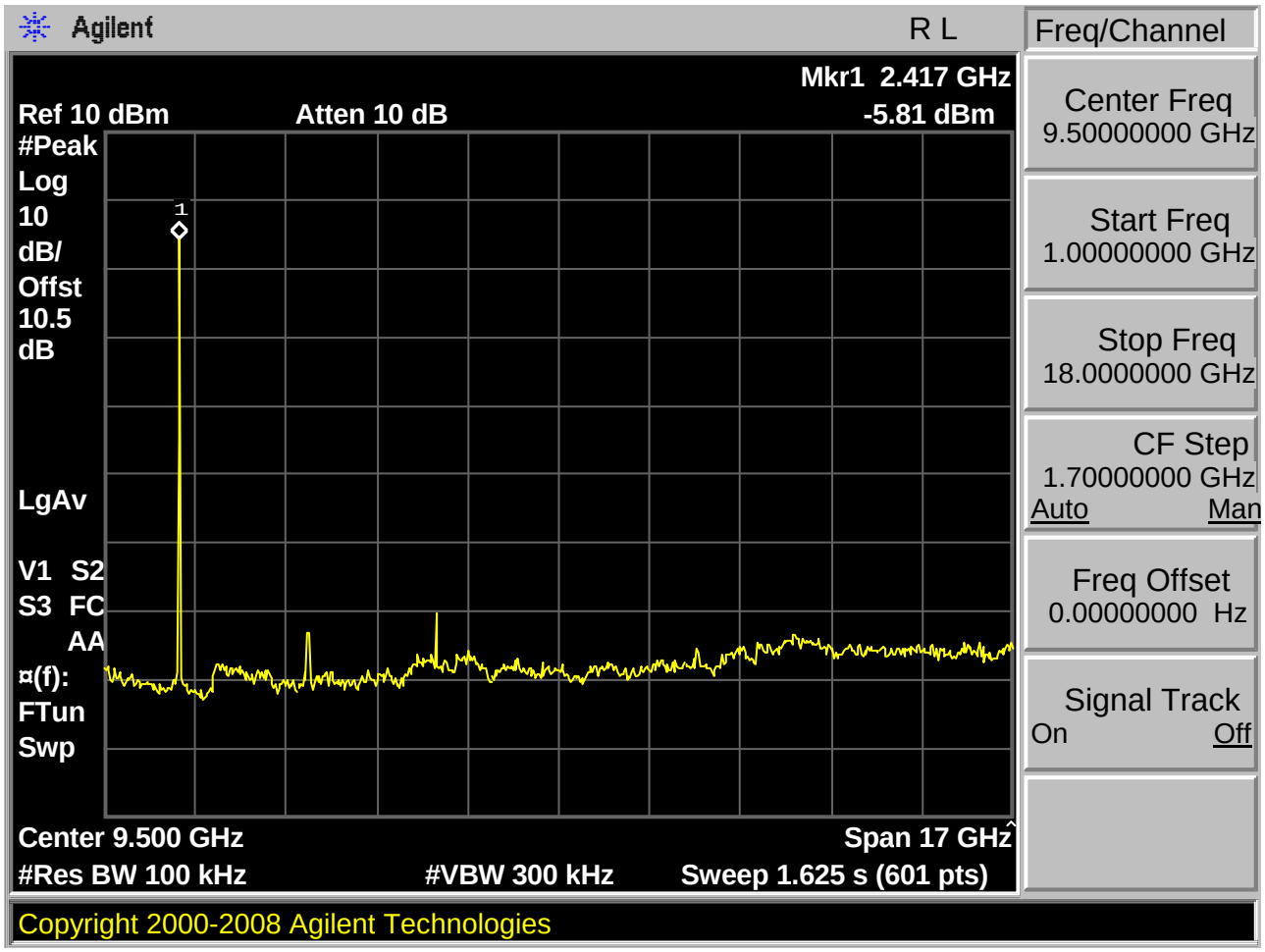
30MHz-25GHz


Agilent
R L
Freq/Channel
Mkr1 2.40 GHz
-6.69 dBm
Ref 10 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
10.5
dB
LgAv
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center Freq
12.5150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
25.0000000 GHz
CF Step
2.49700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Center 12.52 GHz
Span 24.97 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 2.386 s (601 pts)
Copyright 2000-2008 Agilent Technologies

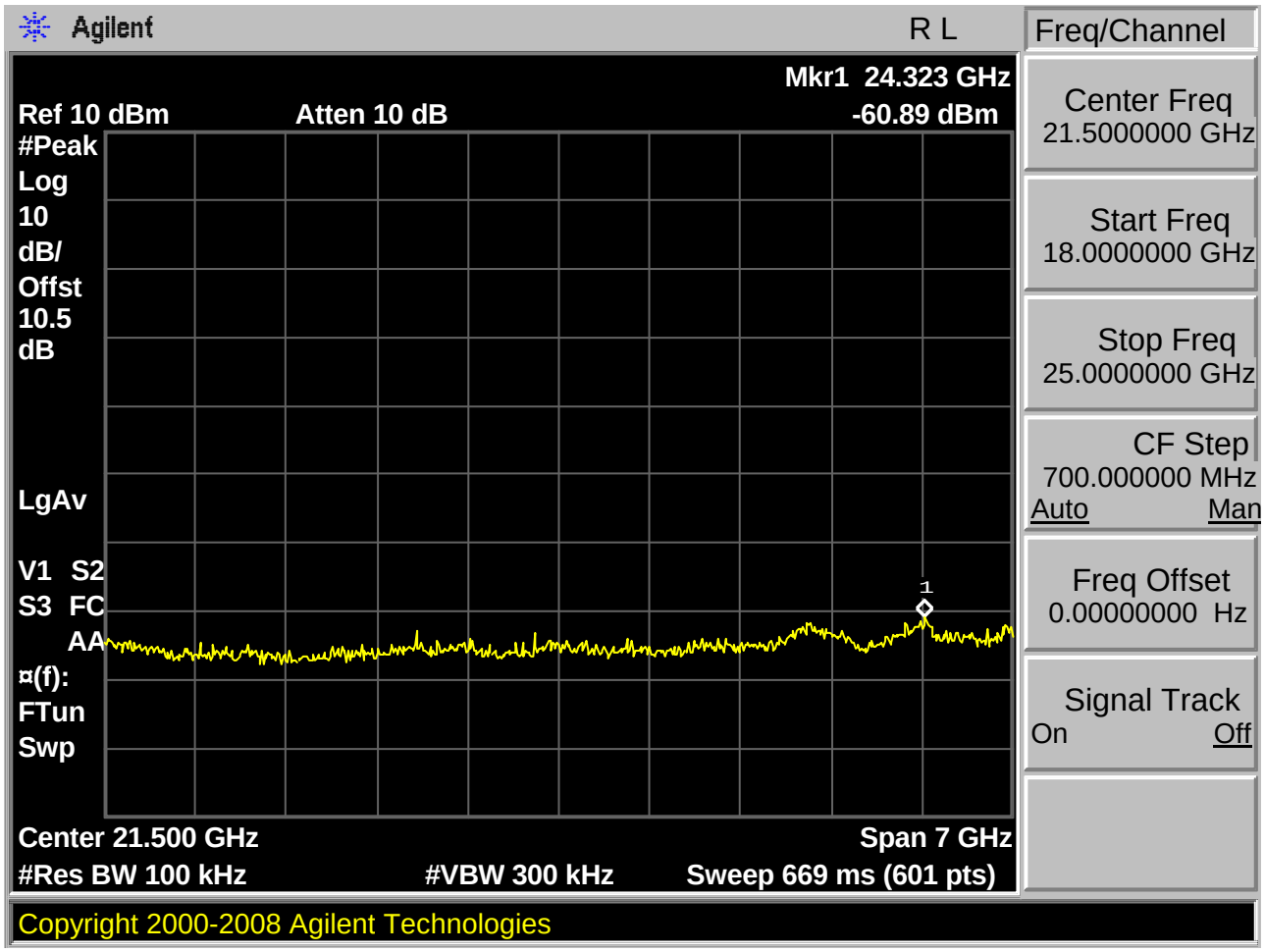
30MHz-1GHz


Agilent
R L
Freq/Channel
Mkr1 64.0 MHz
Ref 10 dBm
Atten 10 dB
-53.87 dBm
#Peak
Log
10
dB/
Offst
10.5
dB
LgAv
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 515.0 MHz
Span 970 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 92.72 ms (601 pts)
Center Freq
515.000000 MHz
Start Freq
30.0000000 MHz
Stop Freq
1.00000000 GHz
CF Step
97.0000000 MHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

1GHz-18GHz


Agilent
R L
Freq/Channel
Mkr1 2.417 GHz
-5.81 dBm
Ref 10 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
10.5
dB
LgAv
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 9.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 17 GHz
Sweep 1.625 s (601 pts)
Center Freq
9.50000000 GHz
Start Freq
1.00000000 GHz
Stop Freq
18.0000000 GHz
CF Step
1.70000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

18GHz-25GHz

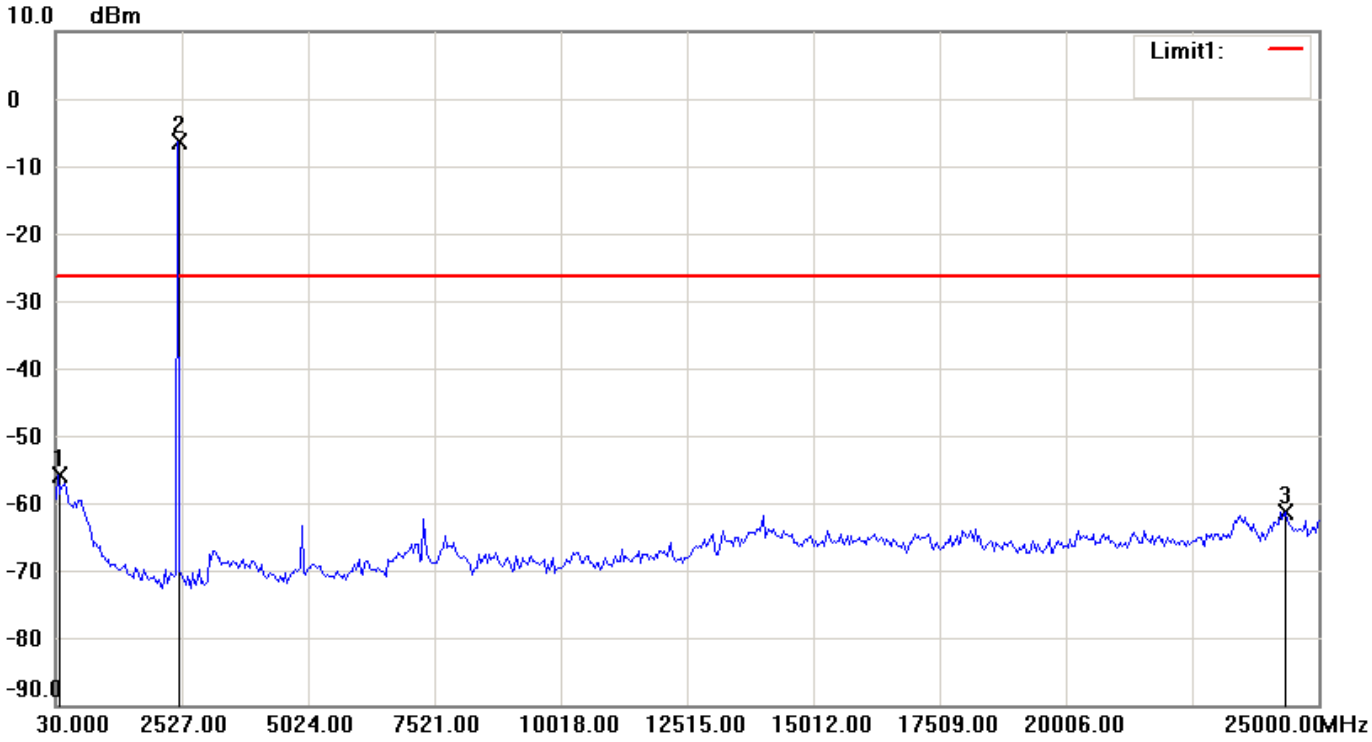

Agilent
R L
Freq/Channel
Mkr1 24.323 GHz
Ref 10 dBm
Atten 10 dB
-60.89 dBm
#Peak
Log
10
dB/
Offst
10.5
dB
LgAv
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 21.500 GHz
Span 7 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 669 ms (601 pts)
Center Freq
21.5000000 GHz
Start Freq
18.0000000 GHz
Stop Freq
25.0000000 GHz
CF Step
700.000000 MHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

Channel Mid:

30MHz-25GHz

File: **955 Access** **Data:** **#52** **Date:** **2015/7/13** **Temperature:** **22 ℃**

Time: **PM 01:42:20** **Humidity:** **60 %**



Condition: **-26.43dBm** **RF Conducted**

EUT: **Sweep Time: 2386.4ms Att.: 10dB**

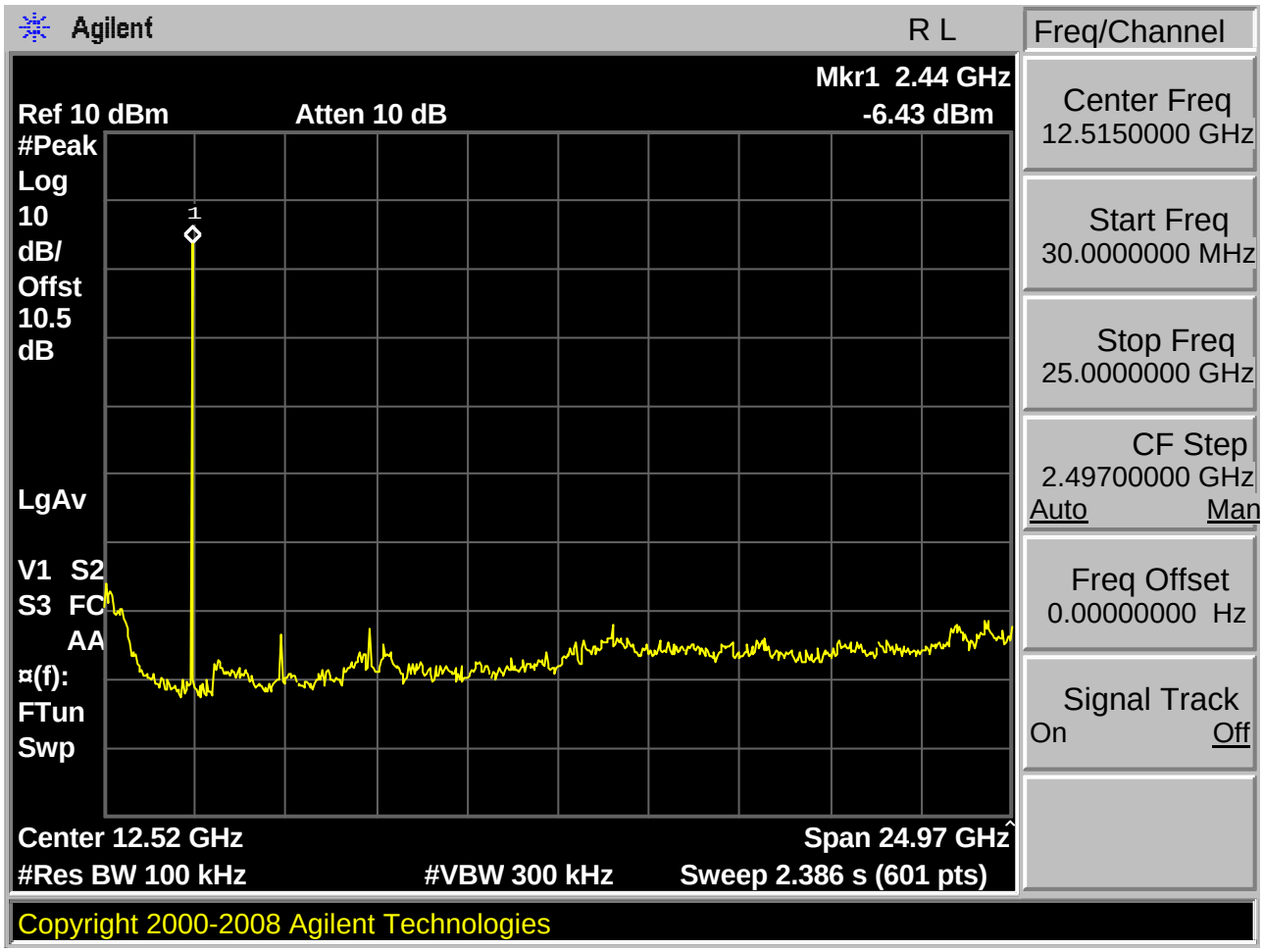
Model: **RBW: 100 KHz VBW: 300 KHz**

Test Mode:

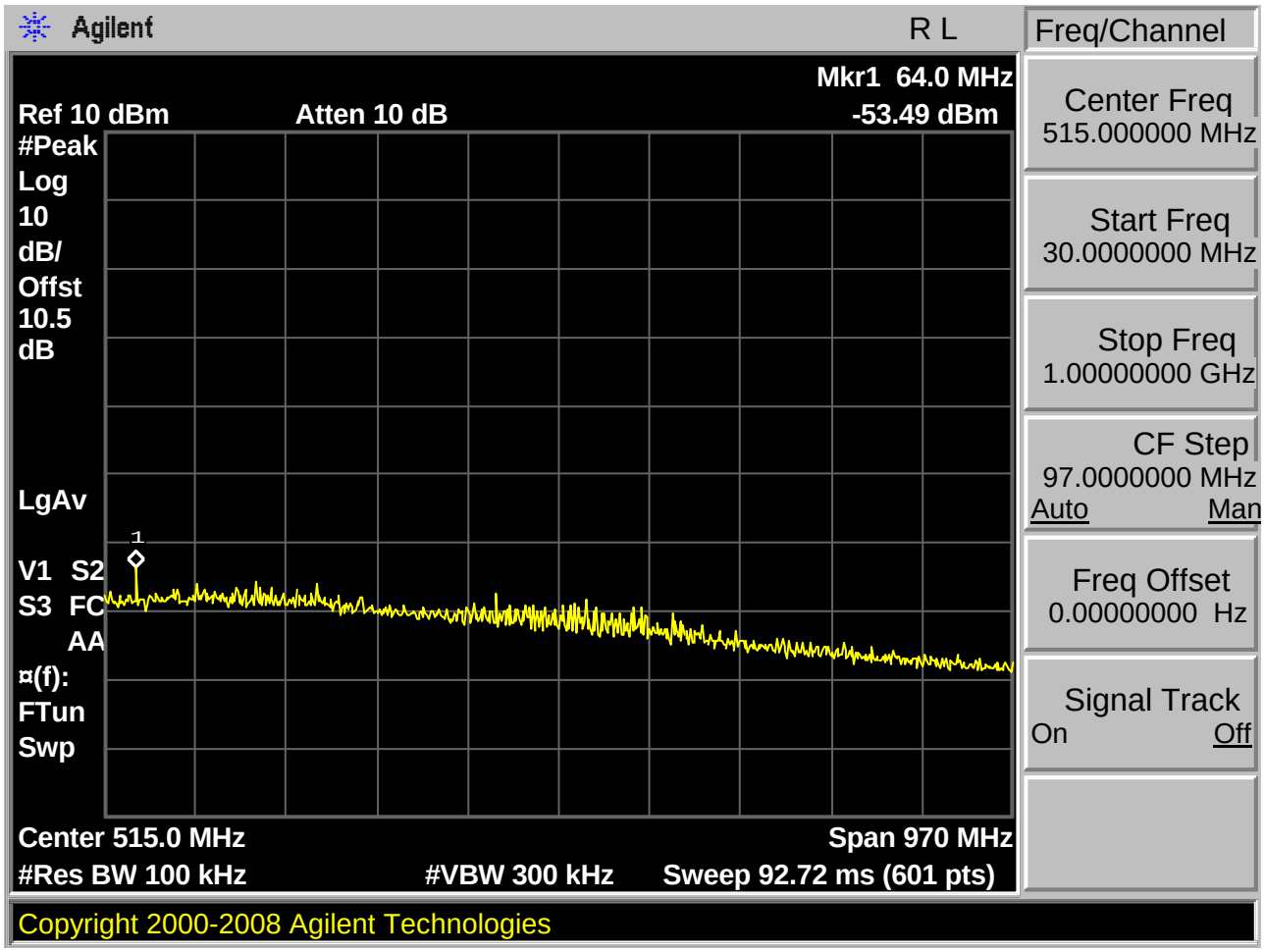
Note: **Channel Mid-Conducted Spurious**

No.	Frequency(MHz)	Level(dBm)
1	71.6167	-55.78
2	2443.76670	-6.43
3	24334.13330	-61.35

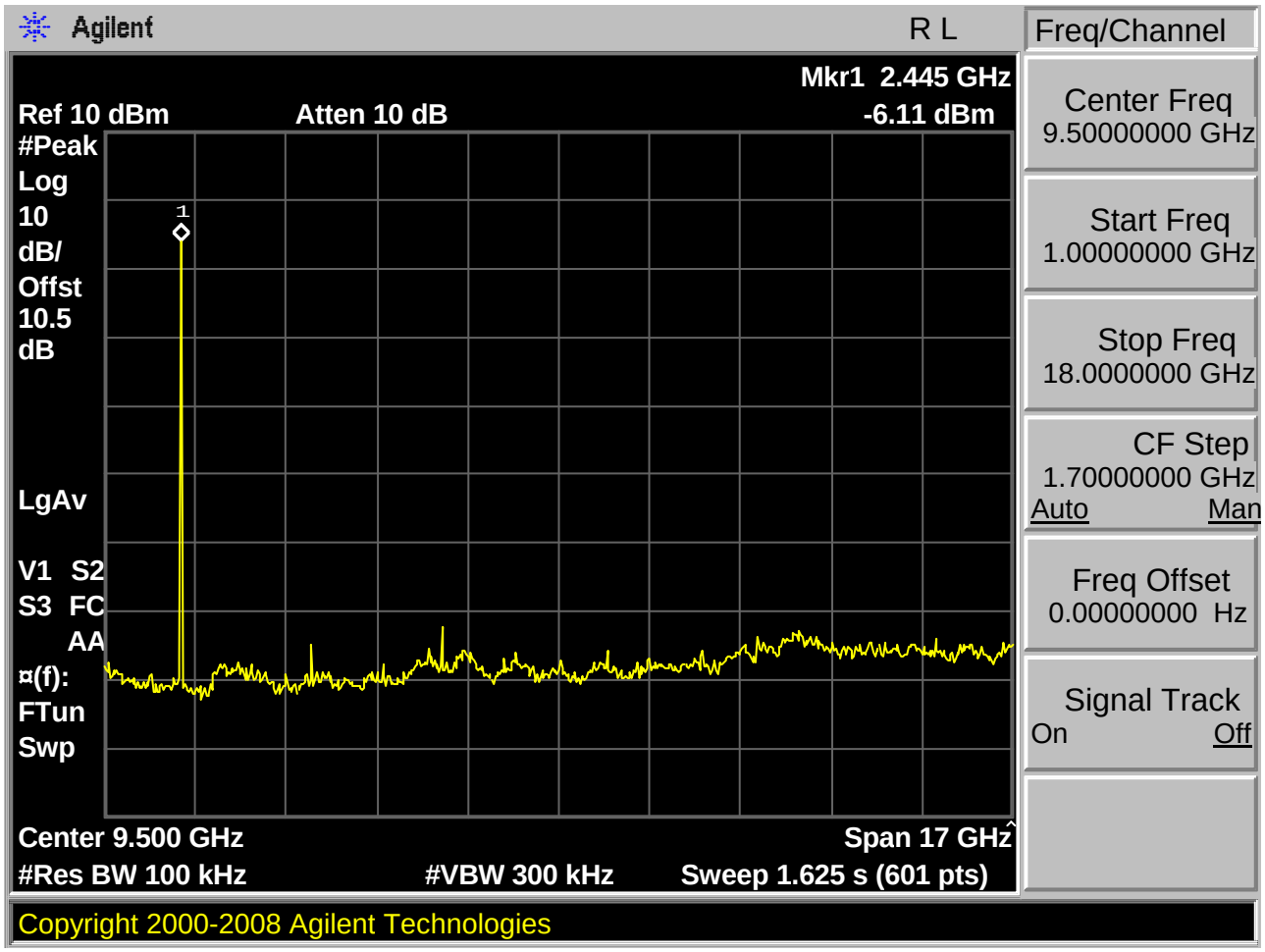
30MHz-25GHz


Agilent
R L
Freq/Channel
Mkr1 2.44 GHz
-6.43 dBm
Ref 10 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
10.5
dB
LgAv
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center Freq
12.5150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
25.0000000 GHz
CF Step
2.49700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Center 12.52 GHz
Span 24.97 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 2.386 s (601 pts)
Copyright 2000-2008 Agilent Technologies

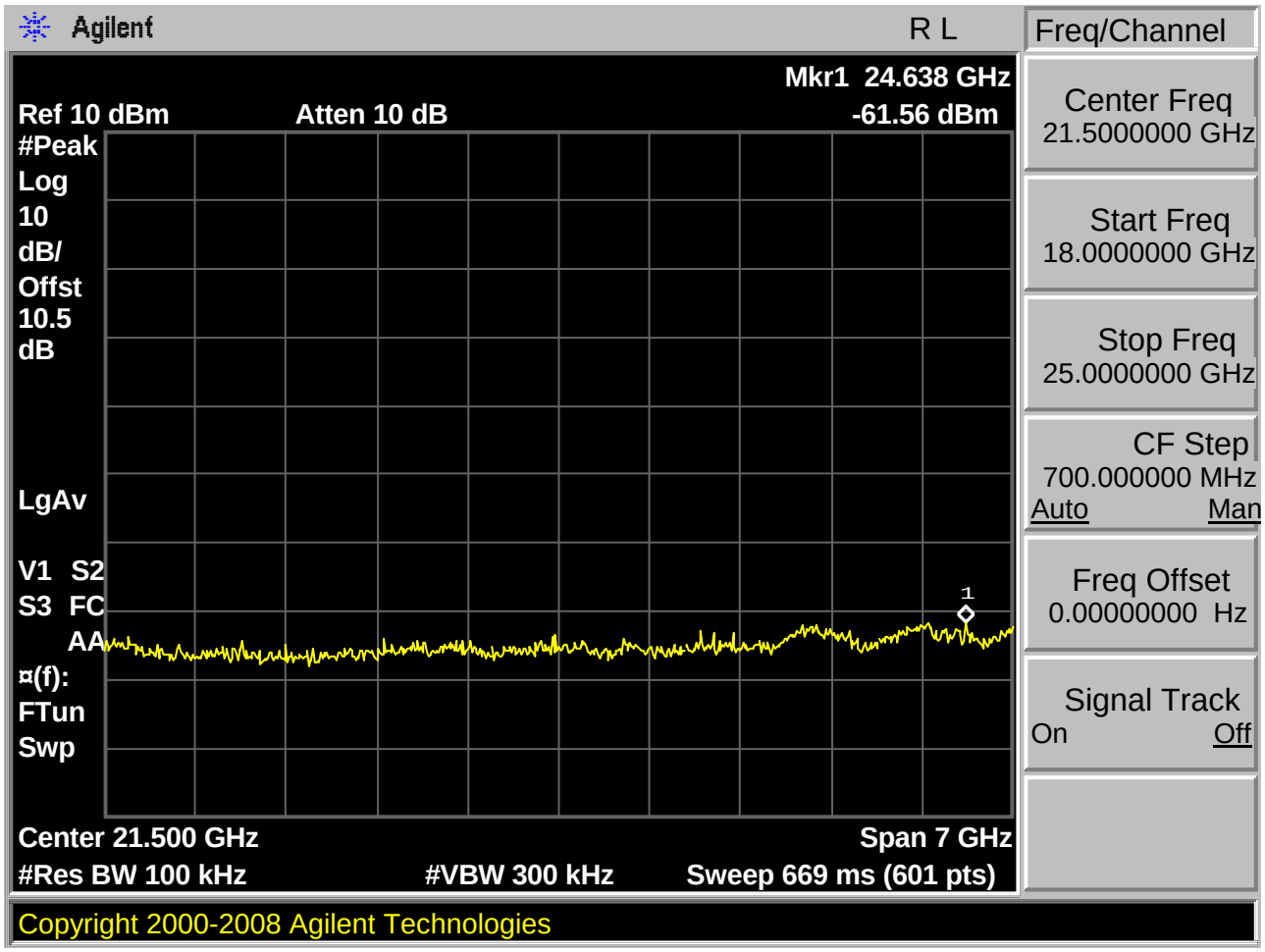
30MHz-1GHz


Agilent
R L
Freq/Channel
Mkr1 64.0 MHz
-53.49 dBm
Ref 10 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
10.5
dB
LgAv
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 515.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Span 970 MHz
Sweep 92.72 ms (601 pts)
Center Freq
515.000000 MHz
Start Freq
30.0000000 MHz
Stop Freq
1.00000000 GHz
CF Step
97.0000000 MHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

1GHz-18GHz


Agilent
R L
Freq/Channel
Mkr1 2.445 GHz
Ref 10 dBm
Atten 10 dB
-6.11 dBm
#Peak
Log
10
dB/
Offst
10.5
dB
1
LgAv
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 9.500 GHz
Span 17 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 1.625 s (601 pts)
Center Freq
9.50000000 GHz
Start Freq
1.00000000 GHz
Stop Freq
18.0000000 GHz
CF Step
1.70000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

18GHz-25GHz

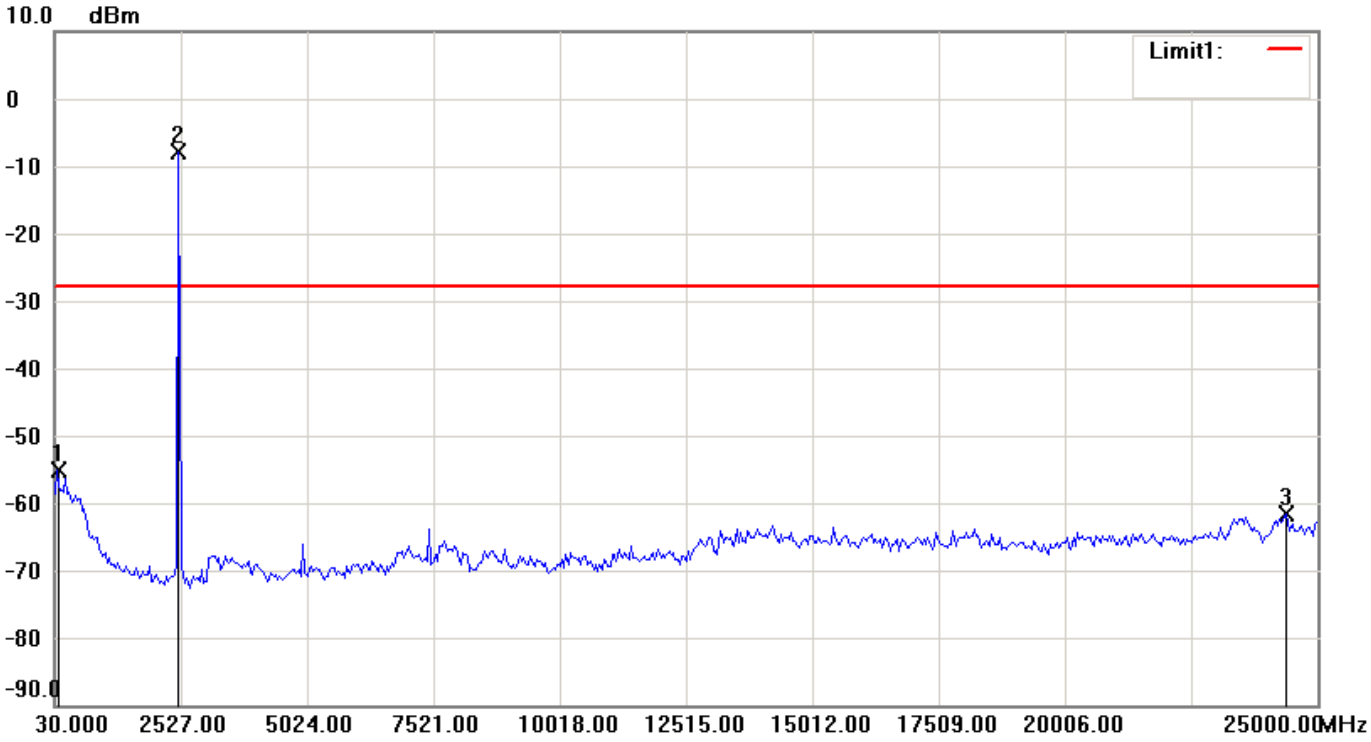

Agilent
R L
Freq/Channel
Mkr1 24.638 GHz
Ref 10 dBm
Atten 10 dB
-61.56 dBm
#Peak
Log
10
dB/
Offst
10.5
dB
LgAv
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 21.500 GHz
Span 7 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 669 ms (601 pts)
Center Freq
21.5000000 GHz
Start Freq
18.0000000 GHz
Stop Freq
25.0000000 GHz
CF Step
700.000000 MHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

Channel High:

30MHz-25GHz

File: **955 Access** **Data:** **#57** **Date:** **2015/7/13** **Temperature:** **22 ℃**

Time: **PM 01:51:22** **Humidity:** **60 %**



Condition: **-27.83dBm** **RF Conducted**

EUT: **Sweep Time: 2386.4ms** **Att.: 10dB**

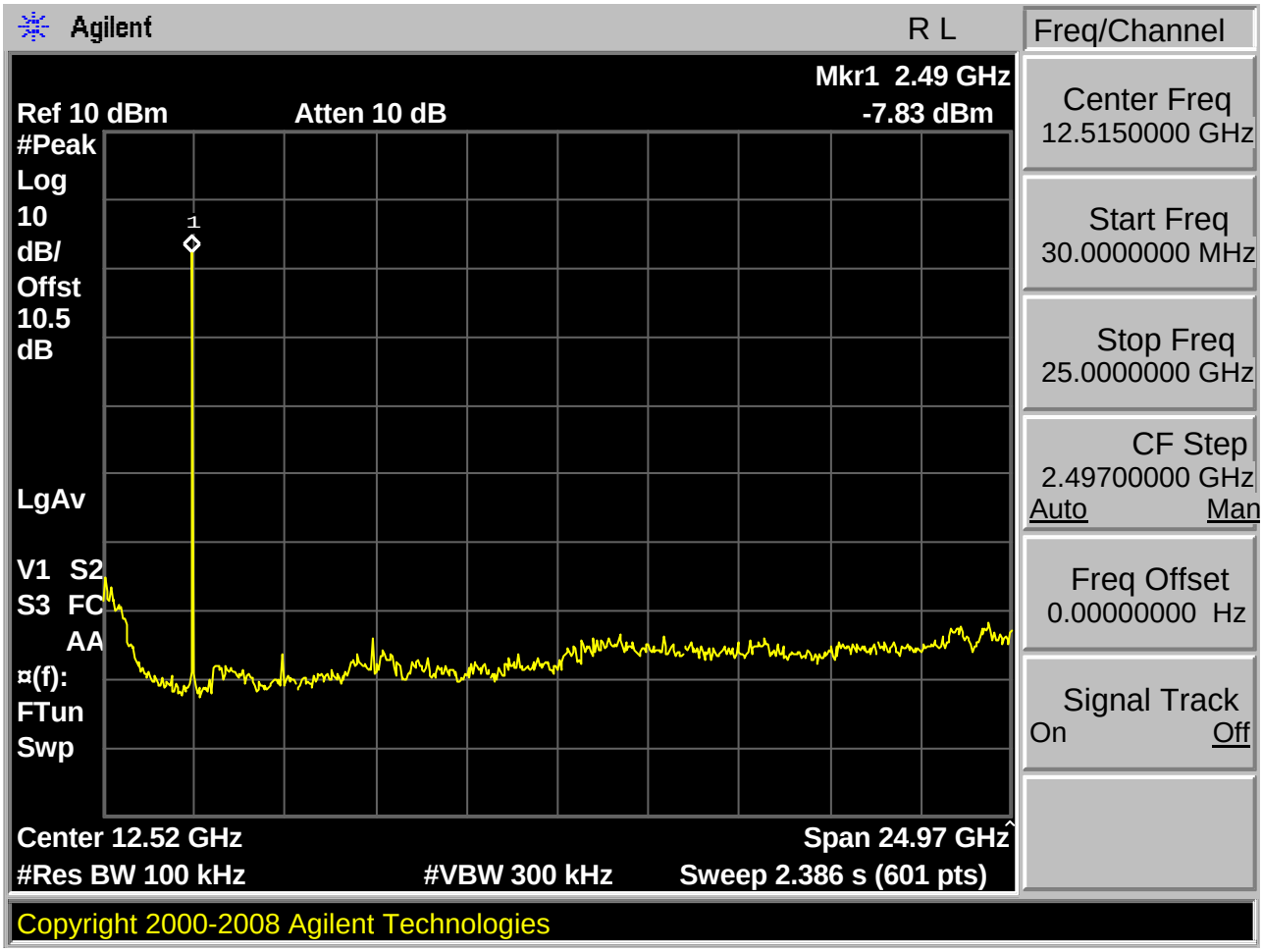
Model: **RBW: 100 KHz** **VBW: 300 KHz**

Test Mode:

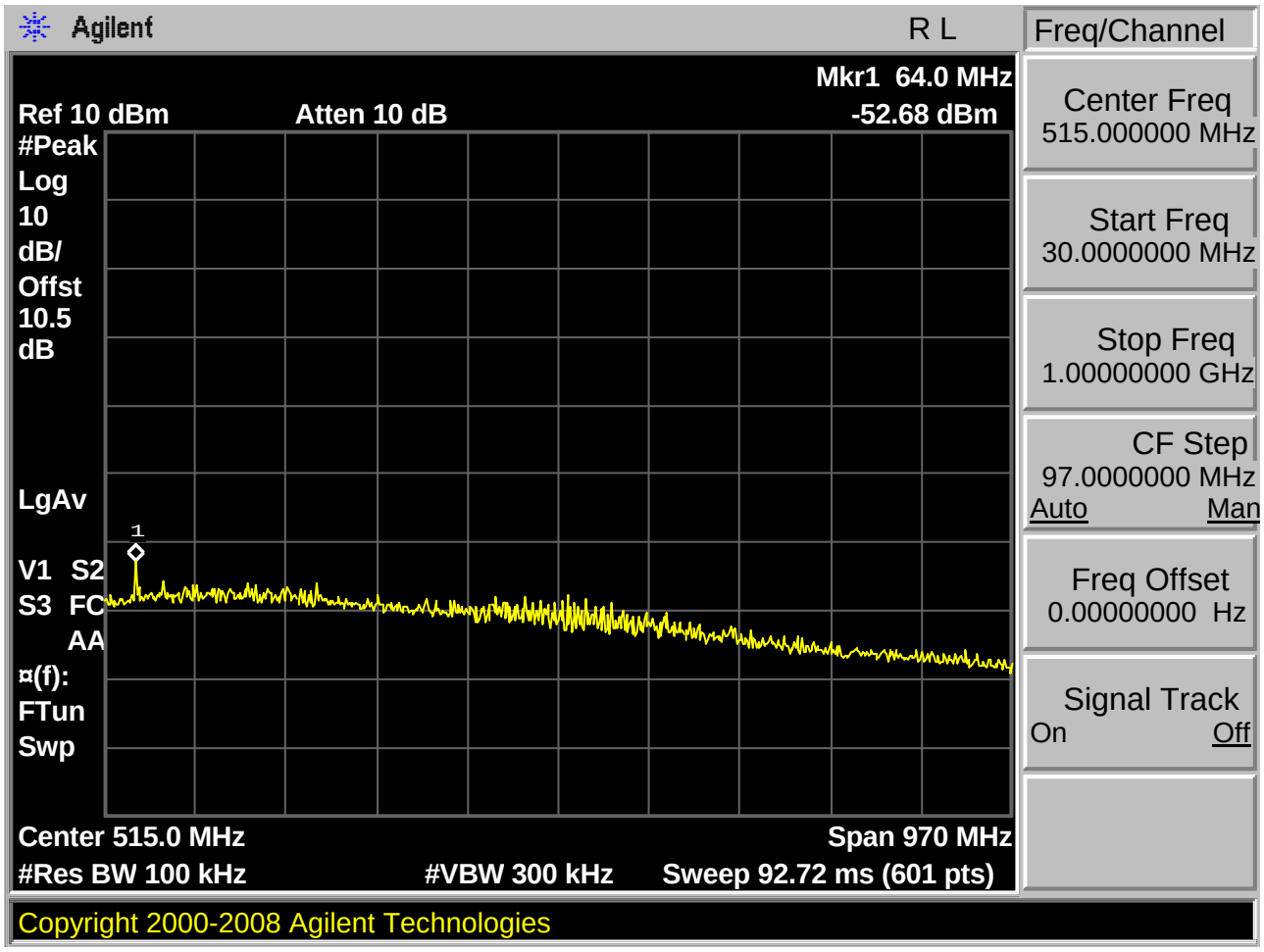
Note: **channel High-Conducted Spurious**

No.	Frequency(MHz)	Level(dBm)
1	71.6167	-55.06
2	2485.38330	-7.83
3	24375.75000	-61.61

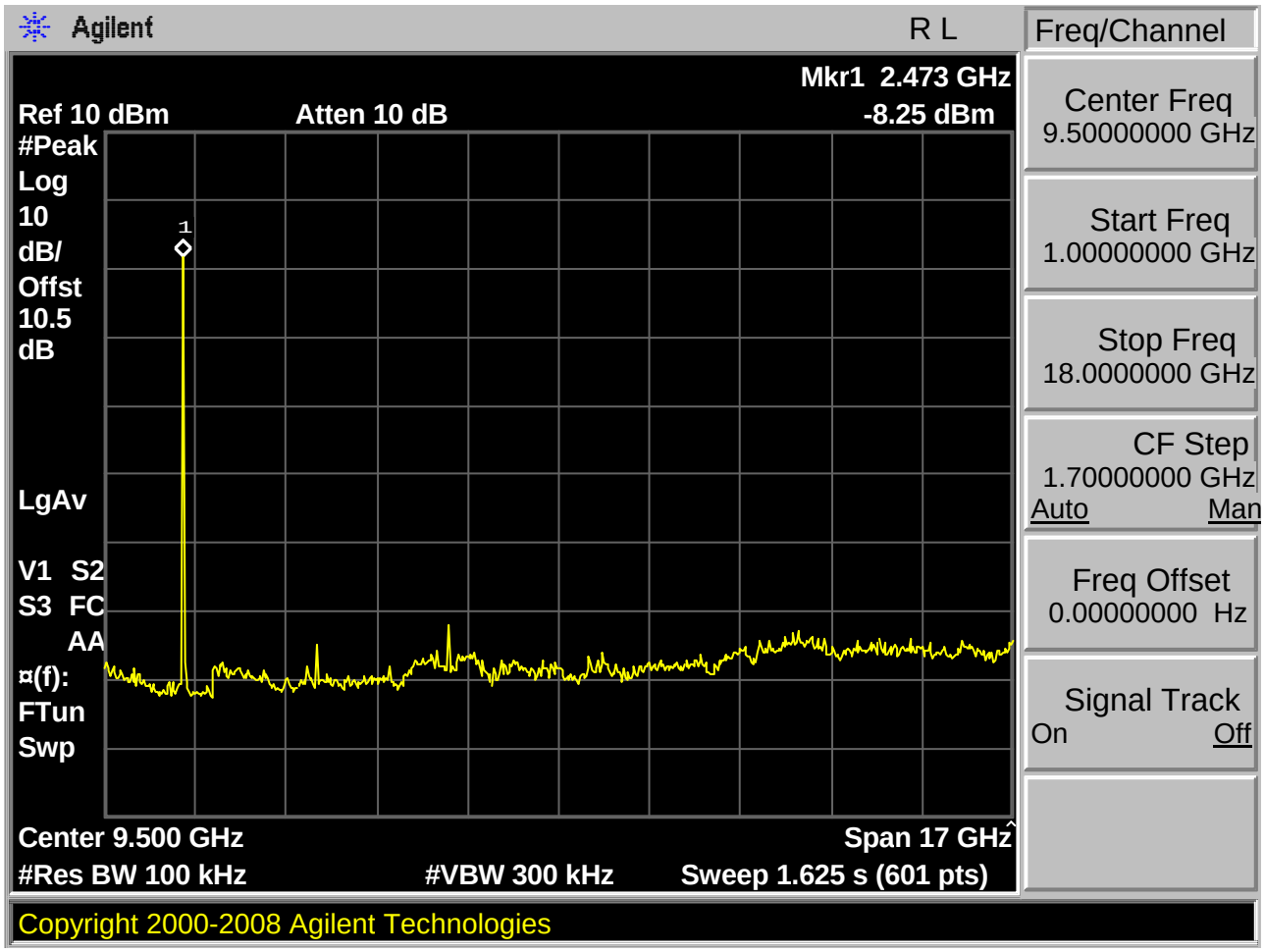
30MHz-25GHz


Agilent
R L
Freq/Channel
Mkr1 2.49 GHz
-7.83 dBm
Ref 10 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
10.5
dB
LgAv
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 12.52 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 24.97 GHz
Sweep 2.386 s (601 pts)
Center Freq
12.5150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
25.0000000 GHz
CF Step
2.49700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

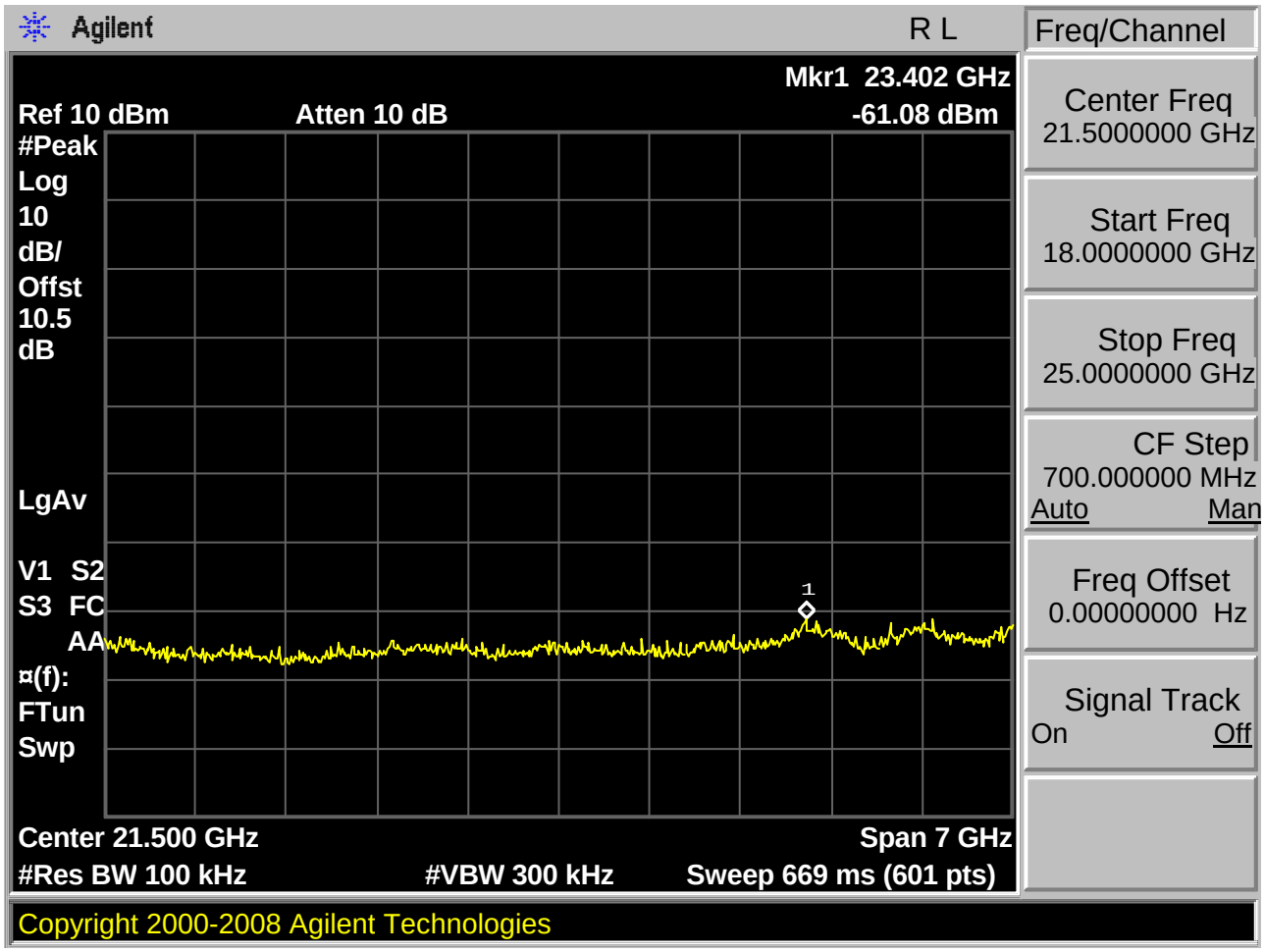
30MHz-1GHz


Agilent
R L
Freq/Channel
Mkr1 64.0 MHz
Ref 10 dBm
Atten 10 dB
-52.68 dBm
#Peak
Log
10
dB/
Offst
10.5
dB
LgAv
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 515.0 MHz
Span 970 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 92.72 ms (601 pts)
Center Freq
515.000000 MHz
Start Freq
30.0000000 MHz
Stop Freq
1.00000000 GHz
CF Step
97.0000000 MHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

1GHz-18GHz


Agilent
R L
Freq/Channel
Mkr1 2.473 GHz
Ref 10 dBm
Atten 10 dB
-8.25 dBm
#Peak
Log
10
dB/
Offst
10.5
dB
LgAv
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 9.500 GHz
Span 17 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 1.625 s (601 pts)
Center Freq
9.50000000 GHz
Start Freq
1.00000000 GHz
Stop Freq
18.0000000 GHz
CF Step
1.70000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

18GHz-25GHz


Agilent
R L
Freq/Channel
Mkr1 23.402 GHz
Ref 10 dBm
Atten 10 dB
-61.08 dBm
#Peak
Log
10
dB/
Offst
10.5
dB
LgAv
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 21.500 GHz
Span 7 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 669 ms (601 pts)
Center Freq
21.5000000 GHz
Start Freq
18.0000000 GHz
Stop Freq
25.0000000 GHz
CF Step
700.000000 MHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

10 RADIATED EMISSION MEASUREMENT

10.1 Standard Applicable

For unintentional radiator, the radiated emission shall comply with §15.109(a).

For intentional radiators, according to §15.247 (a), operation under this provision is limited to frequency hopping and direct sequence spread spectrum, and the out band emission shall be comply with §15.247 (d)

10.2 Measurement Procedure

The testing follows FCC KDB 558074 D01 v03r03.

A.Preliminary Measurement For Portable Devices.

For portable devices, the following procedure was performed to determine the maximum emission axis of EUT:

1. With the receiving antenna is H polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
2. With the receiving antennna is V polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
3. Compare the results derived from above two steps. So, the axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.
4. The maximum noise level was recorded and set-up photos were based on the worst axis.

B. Final Measurement

1. Setup the configuration per figure 1 and 2 for frequencies measured below and above 1 GHz respectively. Turn on EUT and make sure that it is in continuous operating function.
2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a semi-anechoic chamber to determine the accurate frequencies of higher emissions and then each selected frequency is precisely measured. As the same purpose, for emission measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.
3. For emission measured below and above 1 GHz, set the spectrum analyzer on a 120 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.
4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 ° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.

Figure 3 : Frequencies measured below 1 GHz configuration

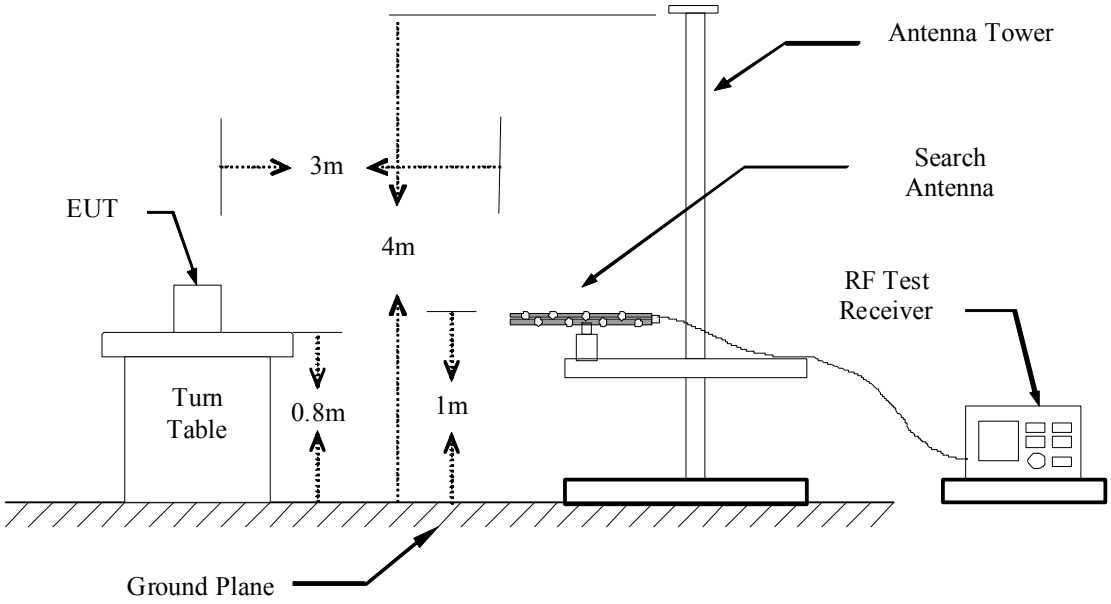
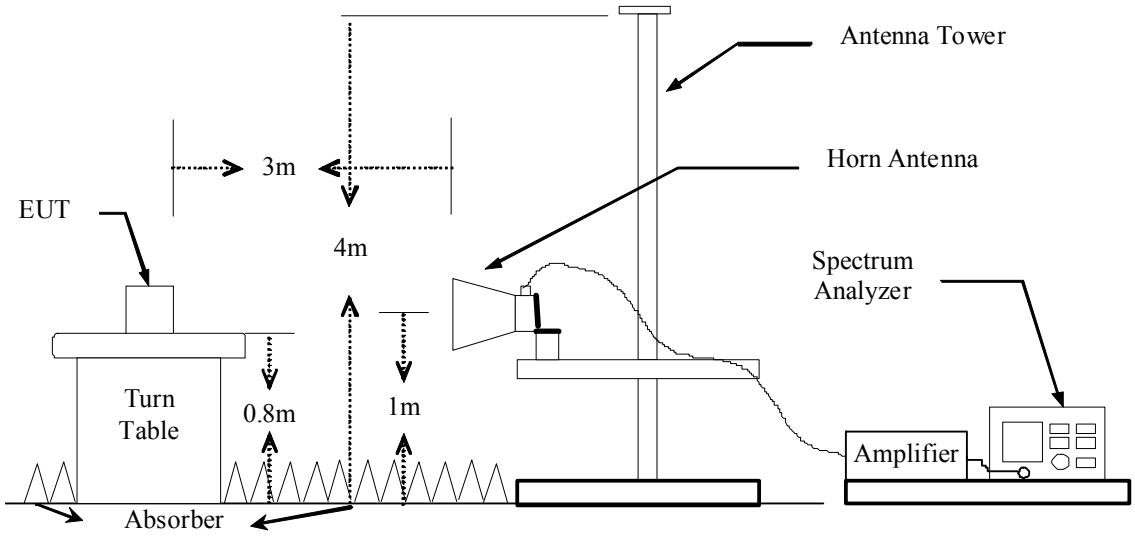


Figure 4 : Frequencies measured above 1 GHz configuration



10.3 Measuring Instrument

The following instrument are used for radiated emissions measurement :

Equipment	Manufacturer	Model No.
EMI Test Receiver	Rohde & Schwarz	ESIB7
Spectrum Analyzer	R&S	FSU46
Horn Antenna	EMCO	3115
BiLog Antenna	Schaffner	CBL6112B
Horn Antenna	EMCO	3116
Preamplifier	Hewlett-Packard	8449B
Loop Antenna	EMCO	6512
PRE-Amplifier	EMCI	PA303N

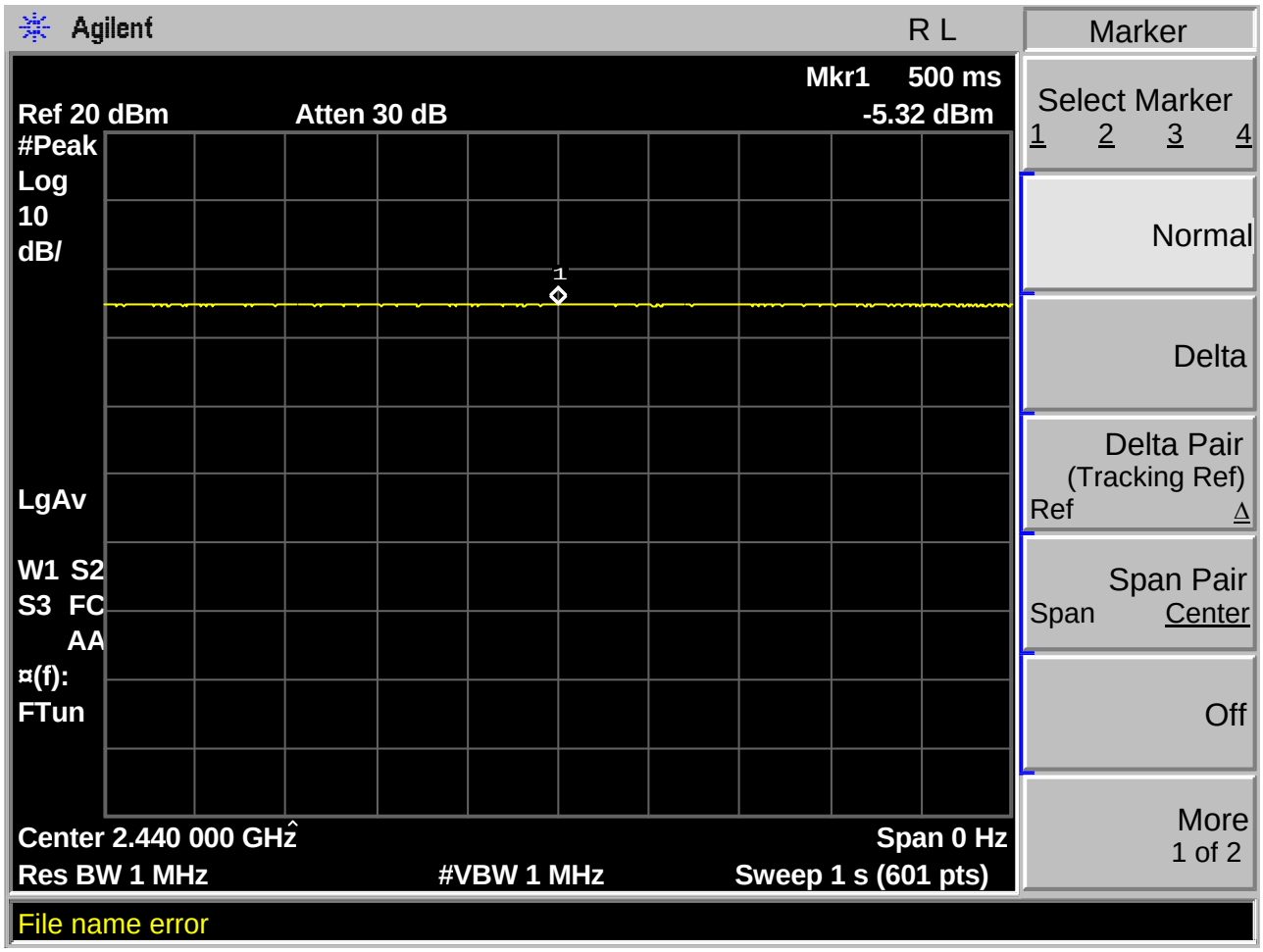
Measuring instrument setup in measured frequency band when specified detector function is used :

Frequency Band (MHz)	Instrument	Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	RF Test Receiver	Quasi-Peak	120 kHz	300 kHz
	Spectrum Analyzer	Peak	120 kHz	300 kHz
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz
	Spectrum Analyzer	Average	1 MHz	VBW_avg (Note)

Note:For average measurement

Condition	VBW_avg
Duty cycle is no less than 98 percent	10 Hz
Duty cycle is less than 98 percent, T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation	$\geq \frac{1}{T}$
Current use	10Hz

Duty Cycle Plot



10.4 Radiated Emission Data

10.4.1 Harmonic

10.4.1.1 Operation Mode: Tx

Test Date: Jul. 14, 2015 Temperature: 21℃ Humidity: 50%

a) Channel L

Fundamental Frequency: 2405 MHz

Frequency	Ant Pol	Reading (dBuV/m)@3m		Correct Factor	Result (dBuV/m)@3m		Limit (dBuV/m)@3m		Margin (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
4810.0000	H	---	---	-2.39	---	---	74.0	54.0	---
4810.0000	V	---	---	-2.39	---	---	74.0	54.0	---
7215.0000	H	---	---	0.54	---	---	74.0	54.0	---
7215.0000	V	---	---	0.54	---	---	74.0	54.0	---
9620.0000	H	---	---	2.29	---	---	74.0	54.0	---
9620.0000	V	---	---	2.29	---	---	74.0	54.0	---
12025.0000	H	---	---	4.87	---	---	74.0	54.0	---
12025.0000	V	---	---	4.87	---	---	74.0	54.0	---
14430.0000	H	---	---	9.34	---	---	74.0	54.0	---
14430.0000	V	---	---	9.34	---	---	74.0	54.0	---

Note :

1. Item of margin shown in above table refer to average limit.
2. Remark "---" means that the emissions level is too low to be measured.
3. If the peak result is under the average limit, that is deemed to meet the average limit.
4. If there is only peak result, item "Margin" referred to "peak result – average limit".
5. The radiation emissions have been measured to beyond the tenth harmonic of the fundamental frequency and show the significant frequencies, other means the value is too low to be detected.

b) Channel M

Fundamental Frequency: 2440 MHz

Frequency	Ant Pol	Reading (dBuV/m)@3m		Correct Factor	Result (dBuV/m)@3m		Limit (dBuV/m)@3m		Margin (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
4880.0000	H	---	---	-2.25	---	---	74.0	54.0	---
4880.0000	V	---	---	-2.25	---	---	74.0	54.0	---
7320.0000	H	---	---	0.79	---	---	74.0	54.0	---
7320.0000	V	---	---	0.79	---	---	74.0	54.0	---
9760.0000	H	---	---	2.39	---	---	74.0	54.0	---
9760.0000	V	---	---	2.39	---	---	74.0	54.0	---
12200.0000	H	---	---	5.07	---	---	74.0	54.0	---
12200.0000	V	---	---	5.07	---	---	74.0	54.0	---
14640.0000	H	---	---	8.52	---	---	74.0	54.0	---
14640.0000	V	---	---	8.52	---	---	74.0	54.0	---

Note :

1. Item of margin shown in above table refer to average limit.
2. Remark "---" means that the emissions level is too low to be measured.
3. If the peak result is under the average limit, that is deemed to meet the average limit.
4. If there is only peak result, item "Margin" referred to "peak result – average limit".
5. The radiation emissions have been measured to beyond the tenth harmonic of the fundamental frequency and show the significant frequencies, other means the value is too low to be detected.

c) Channel H

Fundamental Frequency: 2480 MHz

Frequency	Ant Pol	Reading (dBuV/m)@3m		Correct Factor	Result (dBuV/m)@3m		Limit (dBuV/m)@3m		Margin (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
4960.0000	H	---	---	-2.10	---	---	74.0	54.0	---
4960.0000	V	---	---	-2.10	---	---	74.0	54.0	---
7440.0000	H	---	---	1.08	---	---	74.0	54.0	---
7440.0000	V	---	---	1.08	---	---	74.0	54.0	---
9920.0000	H	---	---	2.50	---	---	74.0	54.0	---
9920.0000	V	---	---	2.50	---	---	74.0	54.0	---
12400.0000	H	---	---	5.31	---	---	74.0	54.0	---
12400.0000	V	---	---	5.31	---	---	74.0	54.0	---
14880.0000	H	---	---	7.35	---	---	74.0	54.0	---
14880.0000	V	---	---	7.35	---	---	74.0	54.0	---

Note :

1. Item of margin shown in above table refer to average limit.
2. Remark "---" means that the emissions level is too low to be measured.
3. If the peak result is under the average limit, that is deemed to meet the average limit.
4. If there is only peak result, item "Margin" referred to "peak result – average limit".
5. The radiation emissions have been measured to beyond the tenth harmonic of the fundamental frequency and show the significant frequencies, other means the value is too low to be detected.

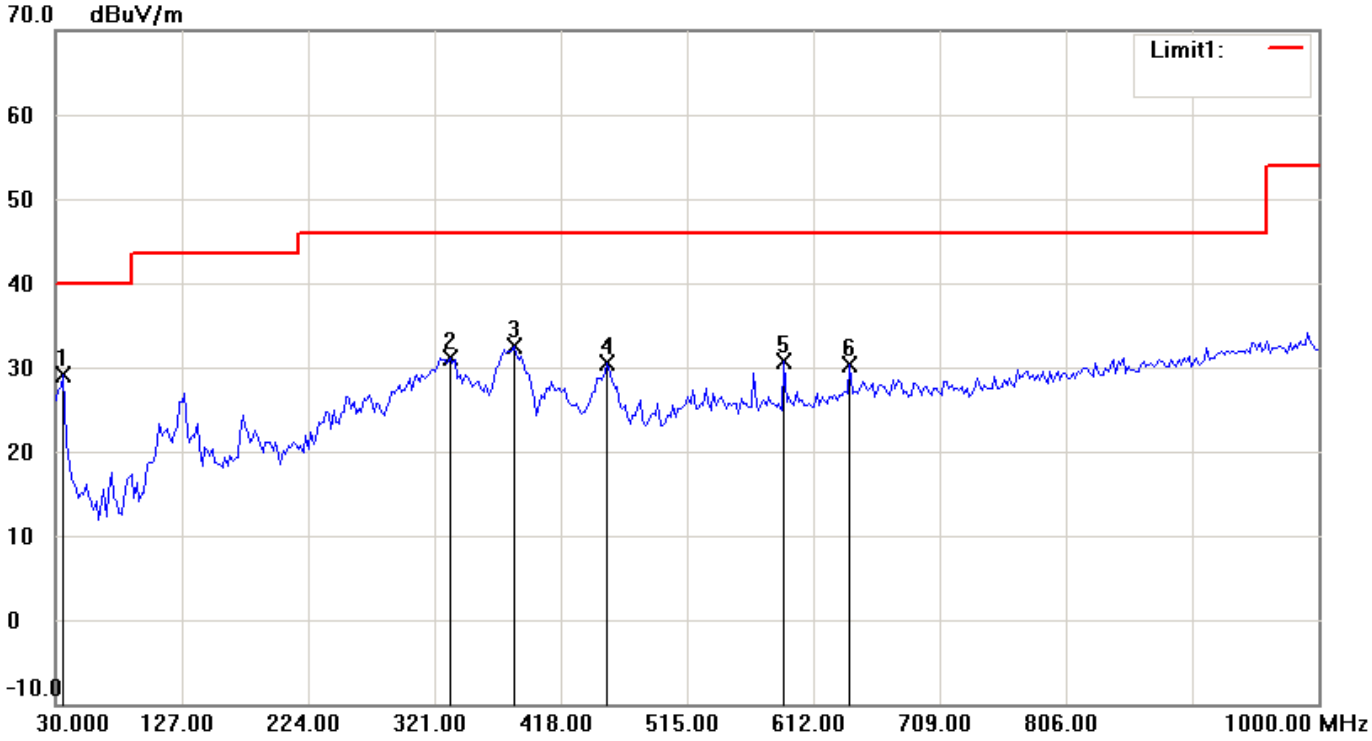
10.4.2 Spurious Emission

Operation Mode: Tx

10.4.2.1 30MHz to 1GHz

File: 955 Access FCC **Data:** #55 **Date:** 2015/7/14 **Temperature:** 21 ℃

Time: PM 04:08:48 **Humidity:** 50 %



Condition: FCC_30-1000MHz **Polarization:** Horizontal

EUT: **Distance:** 3m

Model:

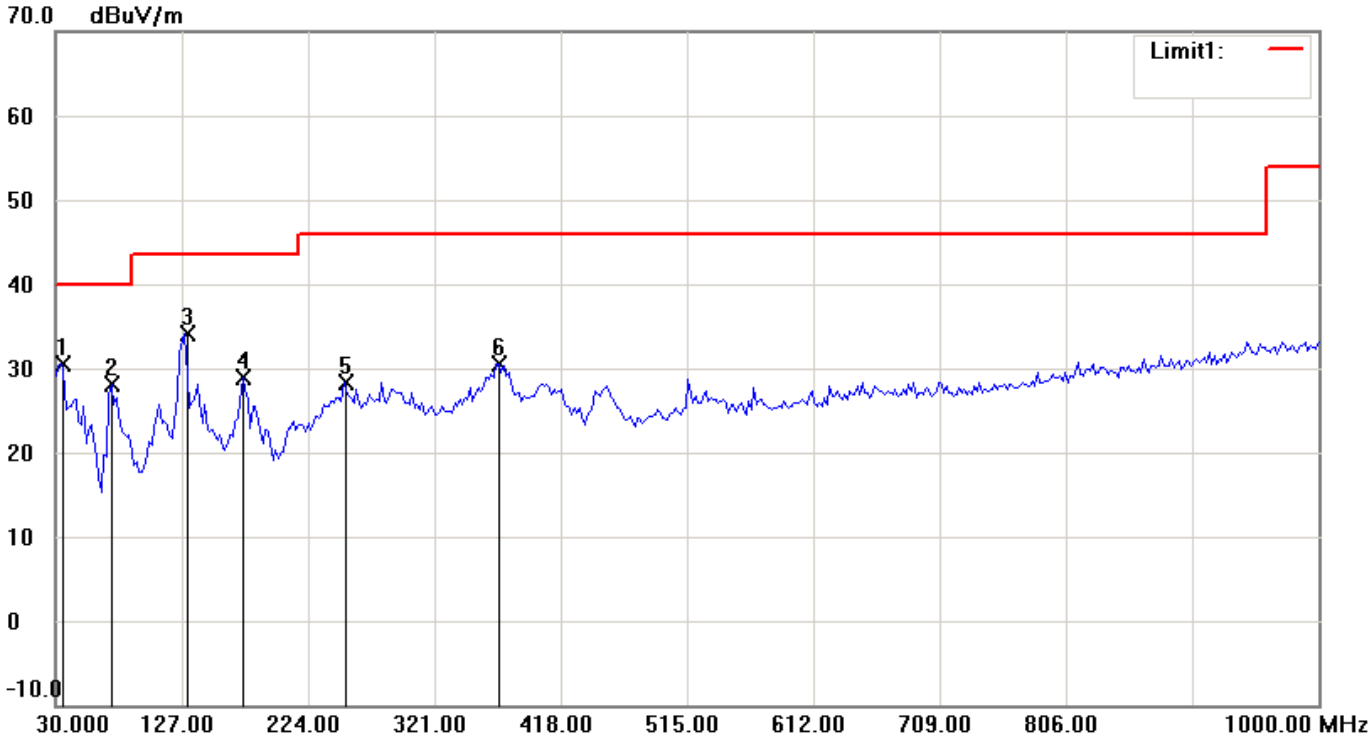
Test Mode:

Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	35.8316	11.72	peak	17.33	29.05	40.00	-10.95
2	333.2465	12.41	peak	18.78	31.19	46.00	-14.81
3	381.8437	12.50	peak	20.02	32.52	46.00	-13.48
4	453.7674	8.97	peak	21.58	30.55	46.00	-15.45
5	589.8396	7.21	peak	23.41	30.62	46.00	-15.38
6	640.3808	5.42	peak	24.96	30.38	46.00	-15.62

File: 955 Access FCC **Data:** #56 **Date:** 2015/7/14 **Temperature:** 21 ℃

Time: PM 04:13:20 **Humidity:** 50 %



Condition: FCC_30-1000MHz **Polarization:** Vertical

EUT: **Distance:** 3m

Model:

Test Mode:

Note:

No.	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
	(MHz)	(dBuV/m)		dB/m	(dBuV/m)	(dBuV/m)	(dB)
1	33.8878	12.18	peak	18.32	30.50	40.00	-9.50
2	72.7655	20.23	peak	7.81	28.04	40.00	-11.96
3	129.1383	20.70	peak	13.49	34.19	43.50	-9.31
4	173.8477	15.76	peak	13.19	28.95	43.50	-14.55
5	251.6032	11.80	peak	16.56	28.36	46.00	-17.64
6	370.1804	10.80	peak	19.72	30.52	46.00	-15.48

10.4.2.2 above 1GHz

10.4.2.2.1 Fundamental Frequency: 2405 MHz

Frequency	Ant Pol	Reading (dBuV/m)@3m		Correct Factor	Result (dBuV/m)@3m		Limit (dBuV/m)@3m		Margin (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
1031.4103	V	50.2	---	-14.03	36.2	---	74	54	-17.8
1038.1410	H	51.2	---	-14.00	37.2	---	74	54	-16.8
1168.2691	H	50.2	---	-13.46	36.7	---	74	54	-17.3
1601.2820	V	49.3	---	-11.54	37.8	---	74	54	-16.2
1623.7180	H	49.9	---	-11.42	38.5	---	74	54	-15.5
2682.4295	V	49.4	---	-7.26	42.1	---	74	54	-11.9
2707.2957	H	48.7	---	-7.17	41.5	---	74	54	-12.5

10.4.2.2.2 Fundamental Frequency: 2440 MHz

Frequency	Ant Pol	Reading (dBuV/m)@3m		Correct Factor	Result (dBuV/m)@3m		Limit (dBuV/m)@3m		Margin (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
1038.1410	H	51.4	---	-14.00	37.4	---	74	54	-16.6
1098.7180	H	50.2	---	-13.76	36.4	---	74	54	-17.6
1141.3461	V	50.4	---	-13.58	36.8	---	74	54	-17.2
1282.6922	V	50.0	---	-12.99	37.0	---	74	54	-17.0
1394.8717	H	51.1	---	-12.55	38.6	---	74	54	-15.4
1601.2820	V	49.8	---	-11.54	38.3	---	74	54	-15.7
2732.1620	V	48.8	---	-7.08	41.7	---	74	54	-12.3
3304.0841	H	48.5	---	-5.37	43.1	---	74	54	-10.9
6884.8150	H	48.3	---	-0.21	48.1	---	74	54	-5.9

10.4.2.2.3 Fundamental Frequency: 2480 MHz

Frequency	Ant Pol	Reading (dBuV/m)@3m		Correct Factor	Result (dBuV/m)@3m		Limit (dBuV/m)@3m		Margin (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
1017.9487	V	50.8	---	-14.08	36.7	---	74	54	-17.3
1040.3846	H	51.2	---	-14.00	37.2	---	74	54	-16.8
1394.8717	H	50.0	---	-12.55	37.5	---	74	54	-16.5
1401.6025	H	50.2	---	-12.51	37.7	---	74	54	-16.3
1601.2620	V	49.8	---	-11.54	38.3	---	74	54	-15.7
2319.2307	H	49.9	---	-8.42	41.5	---	74	54	-12.5
2707.2957	V	49.0	---	-7.17	41.8	---	74	54	-12.2
2732.1620	H	49.0	---	-7.08	41.9	---	74	54	-12.1
3428.4151	V	49.4	---	-5.07	44.3	---	74	54	-9.7

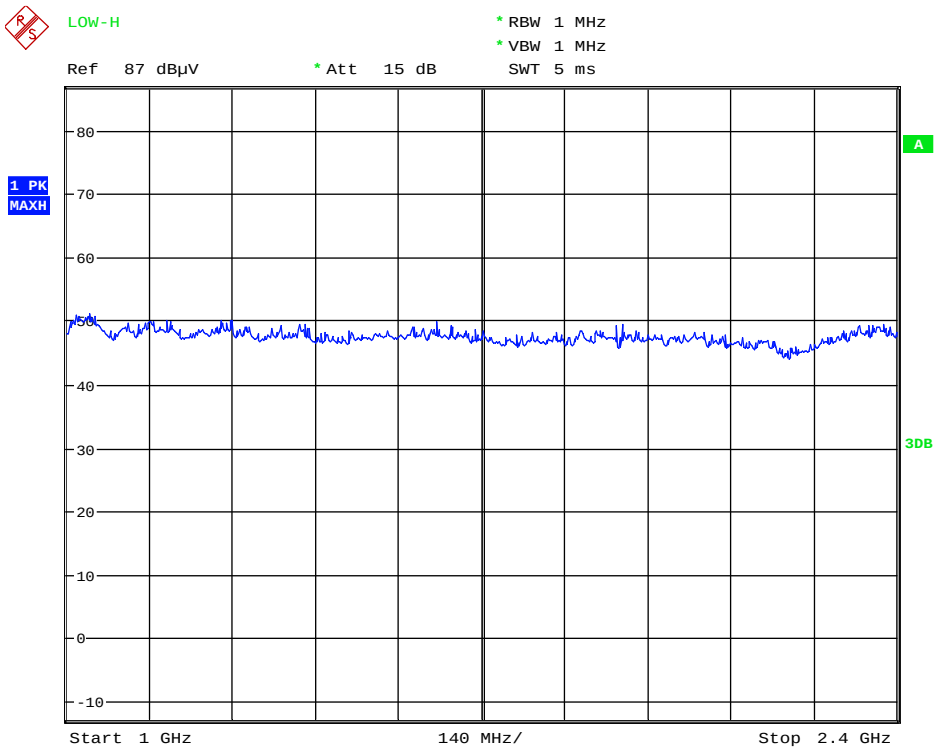
10.4.2.3 below 30MHz

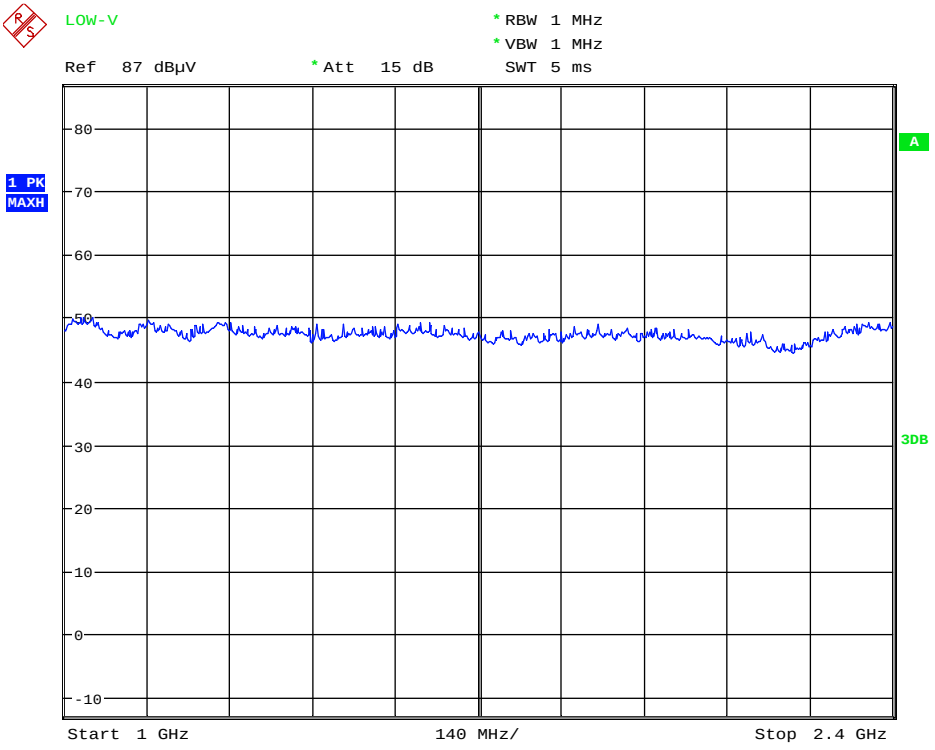
Frequency	Reading (dBuV/m)	Duty	Factor	Result @3m (dBuV/m)			Limit @3m (dBuV/m)	
(MHz)	Peak	(dB)	(dB)	Peak	QP	AVG	Peak	AVG
Radiated emission frequencies from 9 kHz to 30 MHz were too low to be measured.								

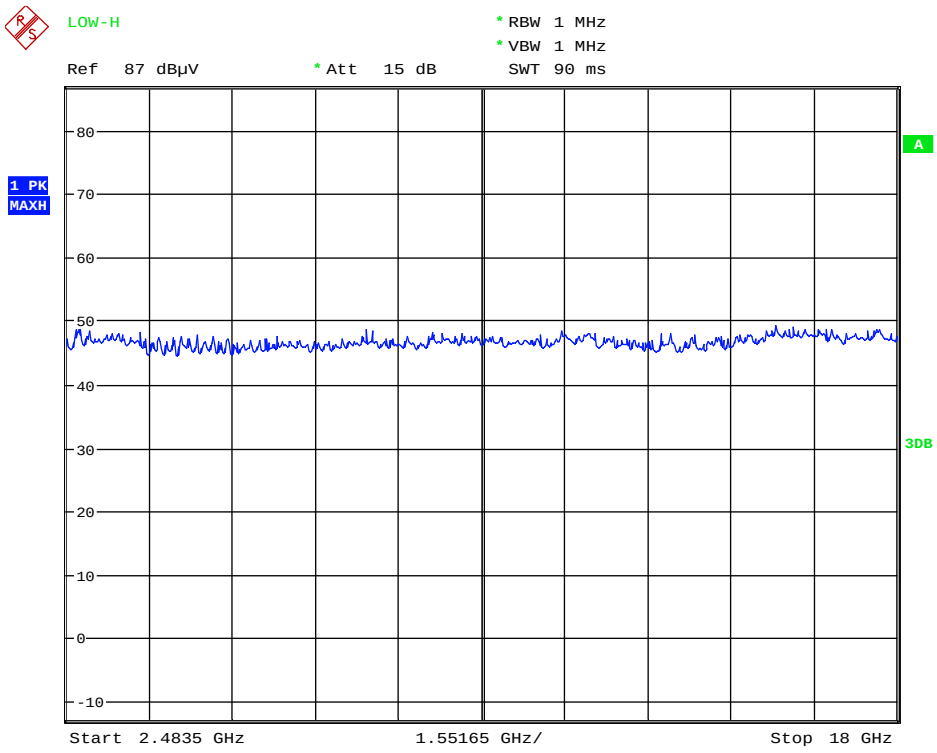
Note:

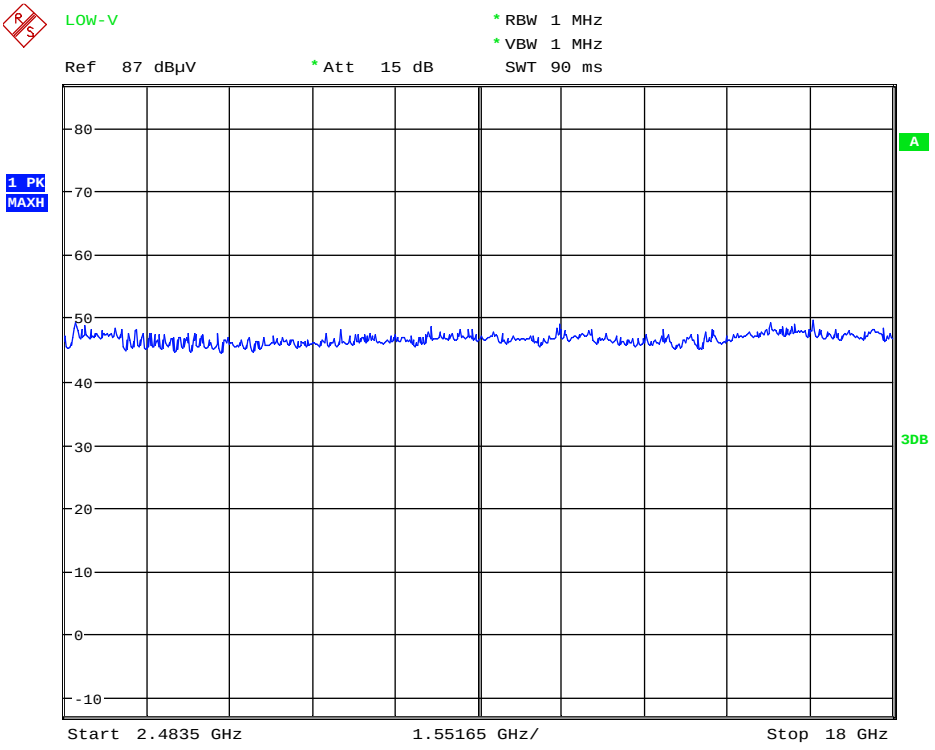
1. Place of Measurement: Measuring site of the ETC.
2. Item of margin shown in above table refer to average limit.
3. Remark "---" means that the emissions level is too low to be measured.
4. If the peak result is under the average limit, that is deemed to meet the average limit.
5. If there is only peak result, item "Margin" referred to "peak result – average limit".
6. The radiation emissions have been measured to beyond the tenth harmonic of the fundamental frequency and show the significant frequencies, other means the value is too low to be detected.
7. The estimated measurement uncertainty of the result measurement is
   ±4.6dB (30MHz≦f<300MHz).
   ±4.4dB (300MHz≦f<1000MHz).
   ±4.1dB (1GHz≦f≦18GHz).
   ±4.4dB (18GHz<f≦40GHz).
8. Please refer to page 69 to page 77 for char.

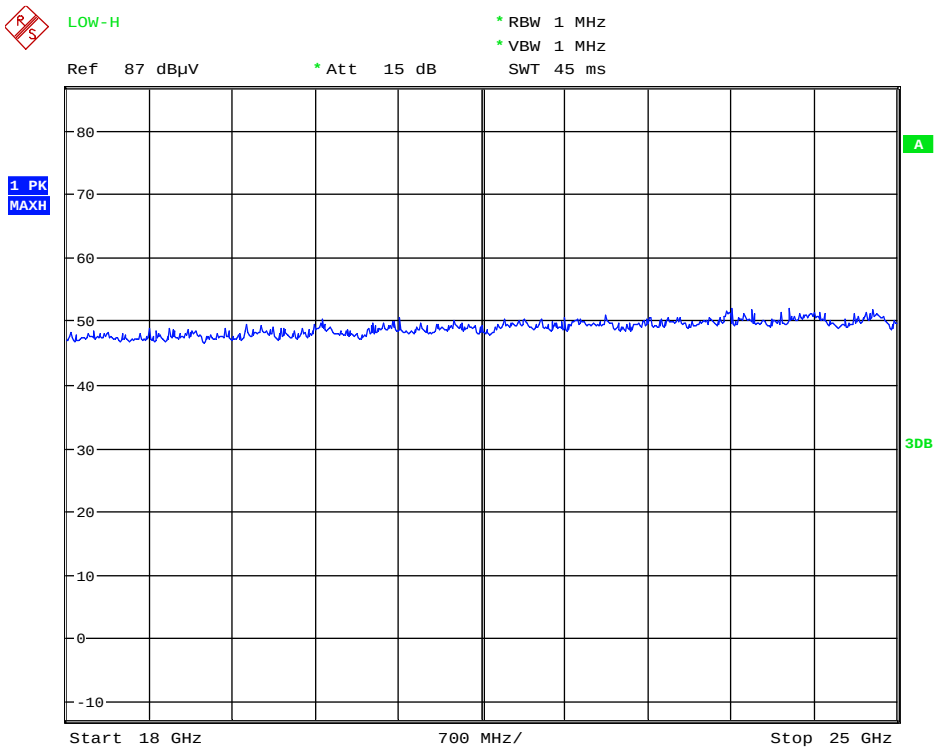
Channel Low

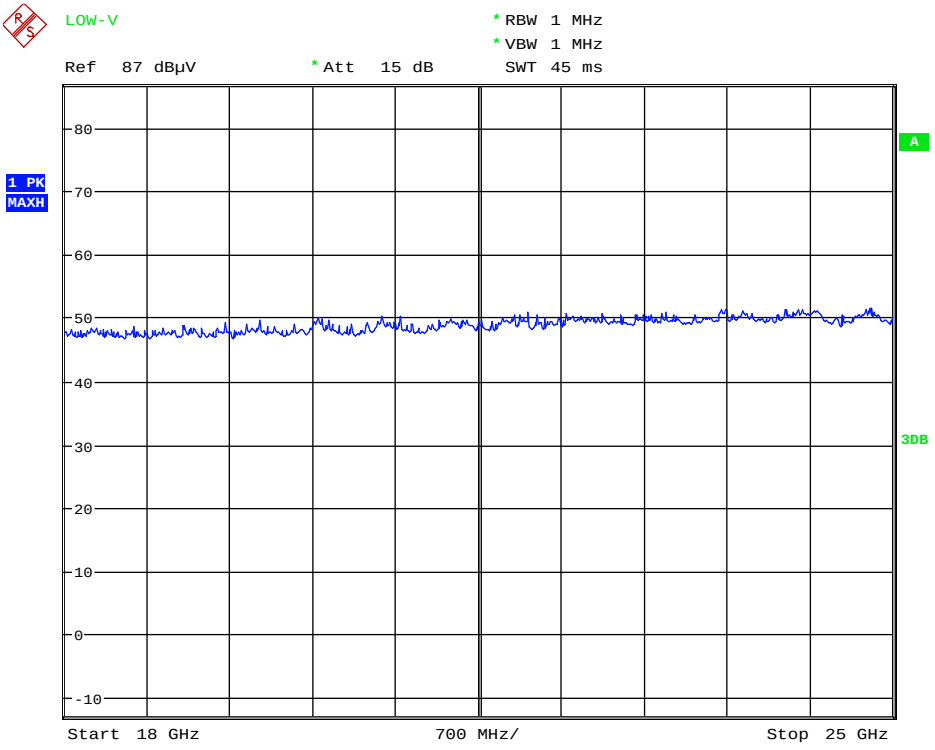

LOW-H
*RBW 1 MHz
*VBW 1 MHz
Ref 87 dBµV
*Att 15 dB
SWT 5 ms
1 PK
MAXH
A
3DB
80
70
60
50
40
30
20
10
0
-10
Start 1 GHz
140 MHz/
Stop 2.4 GHz


LOW-V
*RBW 1 MHz
*VBW 1 MHz
Ref 87 dBµV
*Att 15 dB
SWT 5 ms
1 PK
MAXH
A
3DB
80
70
60
50
40
30
20
10
0
-10
Start 1 GHz
140 MHz/
Stop 2.4 GHz

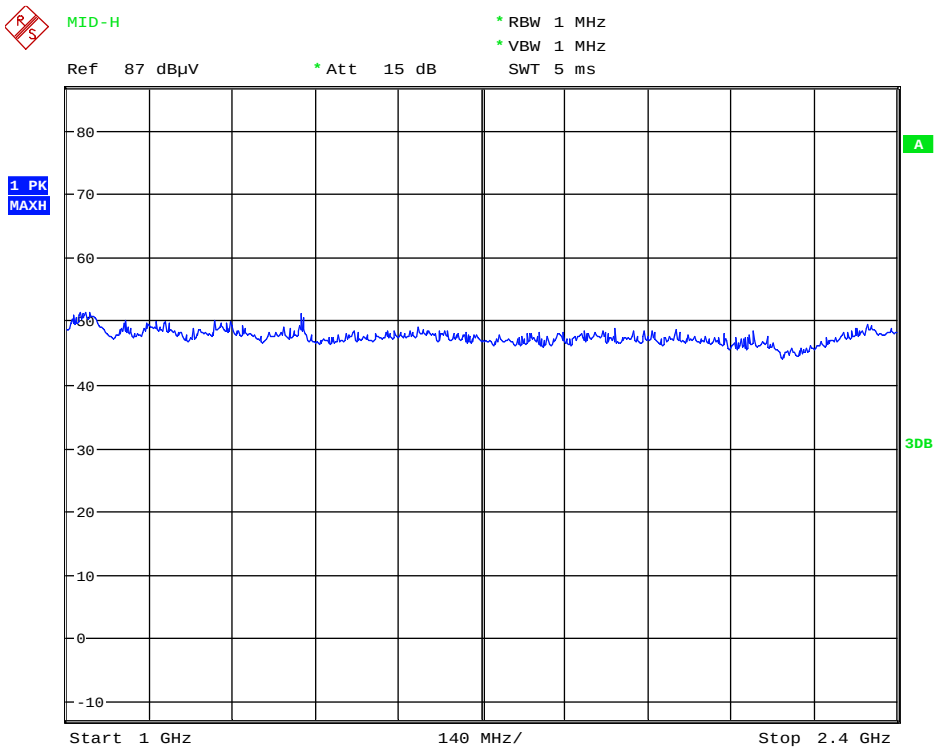

LOW-H
*RBW 1 MHz
*VBW 1 MHz
Ref 87 dBµV
*Att 15 dB
SWT 90 ms
1 PK
MAXH
A
3DB
80
70
60
50
40
30
20
10
0
-10
Start 2.4835 GHz
1.55165 GHz/
Stop 18 GHz

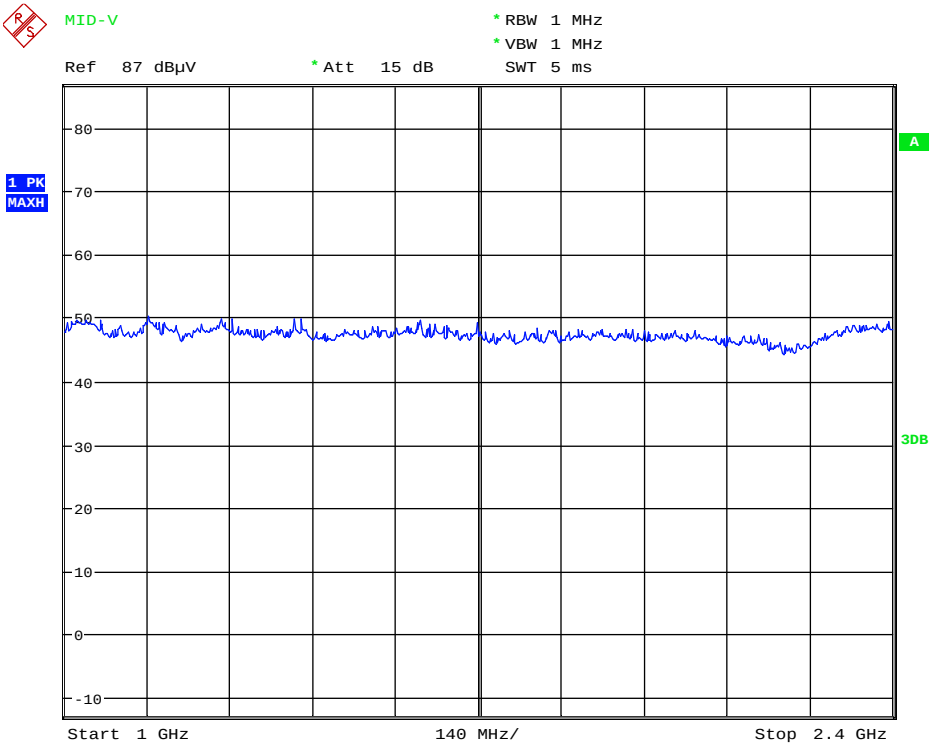

LOW-V
*RBW 1 MHz
*VBW 1 MHz
Ref 87 dBµV
*Att 15 dB
SWT 90 ms
1 PK
MAXH
A
3DB
80
70
60
50
40
30
20
10
0
-10
Start 2.4835 GHz
1.55165 GHz/
Stop 18 GHz

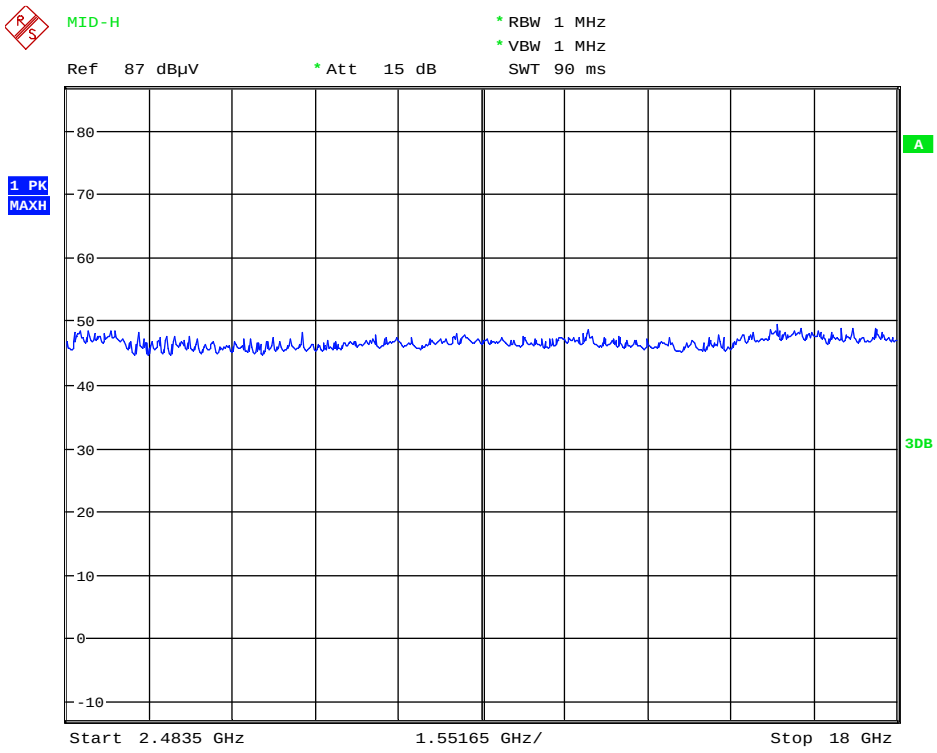

LOW-H
*RBW 1 MHz
*VBW 1 MHz
Ref 87 dBµV
*Att 15 dB
SWT 45 ms
1 PK
MAXH
A
3DB
80
70
60
50
40
30
20
10
0
-10
Start 18 GHz
700 MHz/
Stop 25 GHz

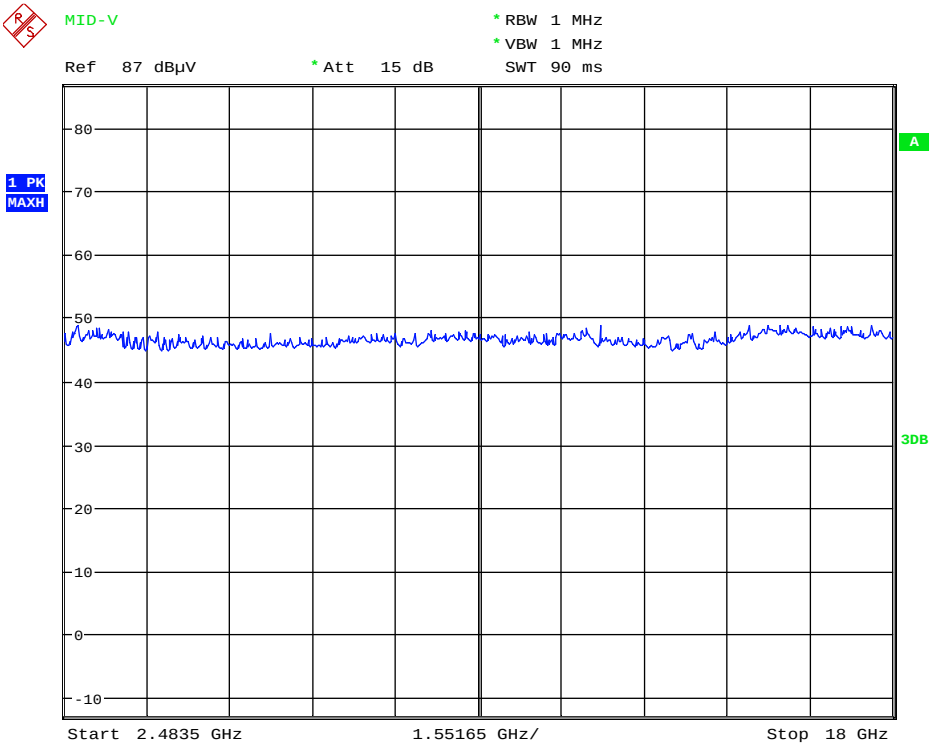

LOW-V
*RBW 1 MHz
*VBW 1 MHz
Ref 87 dBµV
*Att 15 dB
SWT 45 ms
1 PK
MAXH
A
3DB
80
70
60
50
40
30
20
10
0
-10
Start 18 GHz
700 MHz/
Stop 25 GHz

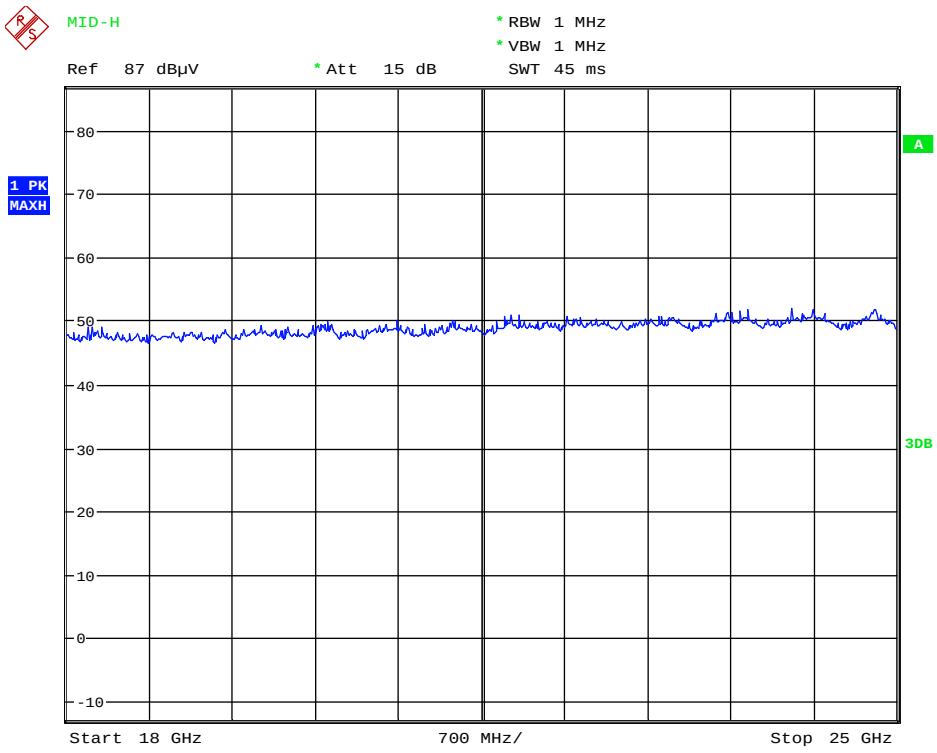
Channel Mid

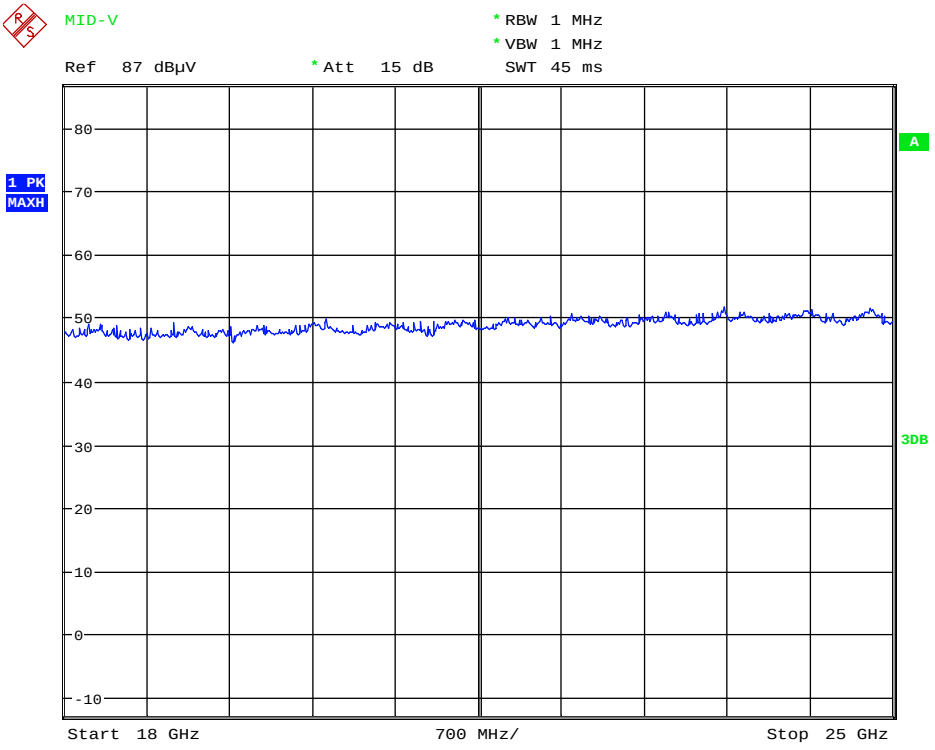

MID-H
*RBW 1 MHz
*VBW 1 MHz
Ref 87 dBµV
*Att 15 dB
SWT 5 ms
1 PK
MAXH
A
3DB
80
70
60
50
40
30
20
10
0
-10
Start 1 GHz
140 MHz/
Stop 2.4 GHz


MID-V
*RBW 1 MHz
*VBW 1 MHz
Ref 87 dBµV
*Att 15 dB
SWT 5 ms
1 PK
MAXH
A
3DB
80
70
60
50
40
30
20
10
0
-10
Start 1 GHz
140 MHz/
Stop 2.4 GHz

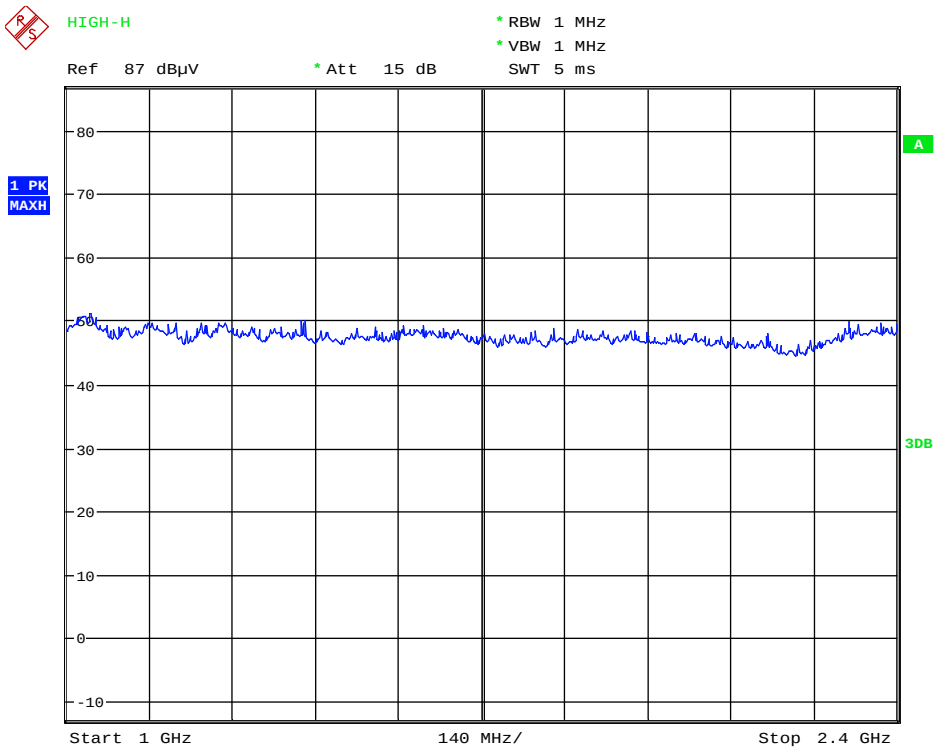

MID-H
*RBW 1 MHz
*VBW 1 MHz
Ref 87 dBµV
*Att 15 dB
SWT 90 ms
1 PK
MAXH
A
3DB
80
70
60
50
40
30
20
10
0
-10
Start 2.4835 GHz
1.55165 GHz/
Stop 18 GHz

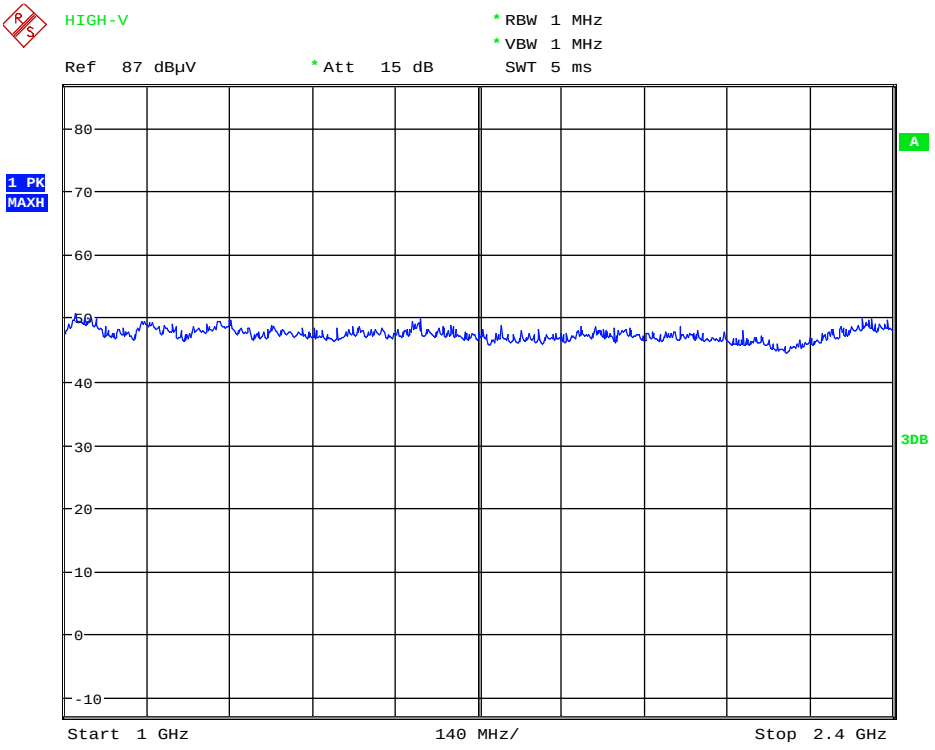

MID-V
*RBW 1 MHz
*VBW 1 MHz
Ref 87 dBµV
*Att 15 dB
SWT 90 ms
1 PK
MAXH
A
3DB
80
70
60
50
40
30
20
10
0
-10
Start 2.4835 GHz
1.55165 GHz/
Stop 18 GHz

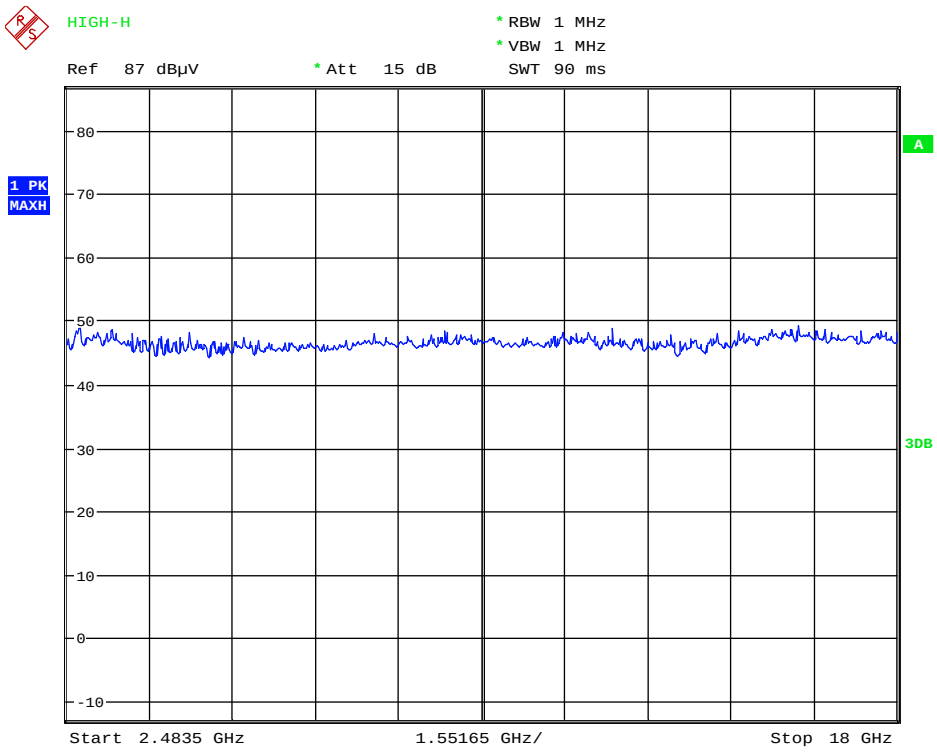

MID-H
*RBW 1 MHz
*VBW 1 MHz
Ref 87 dBµV
*Att 15 dB
SWT 45 ms
1 PK
MAXH
A
3DB
80
70
60
50
40
30
20
10
0
-10
Start 18 GHz
700 MHz/
Stop 25 GHz

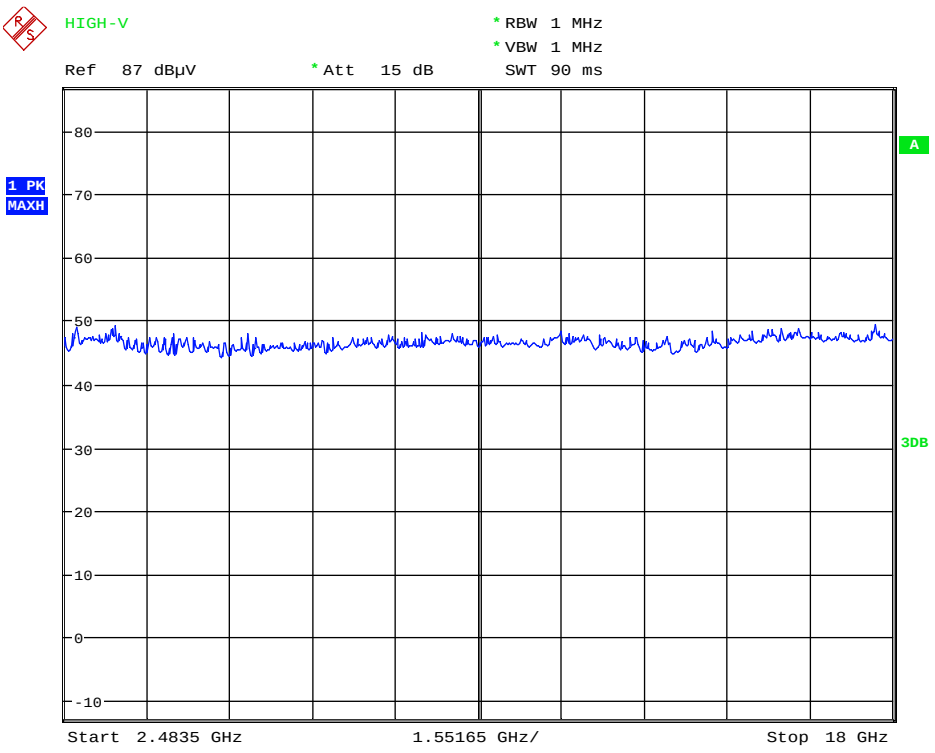

MID-V
*RBW 1 MHz
*VBW 1 MHz
Ref 87 dBµV
*Att 15 dB
SWT 45 ms
1 PK
MAXH
A
3DB
80
70
60
50
40
30
20
10
0
-10
Start 18 GHz
700 MHz/
Stop 25 GHz

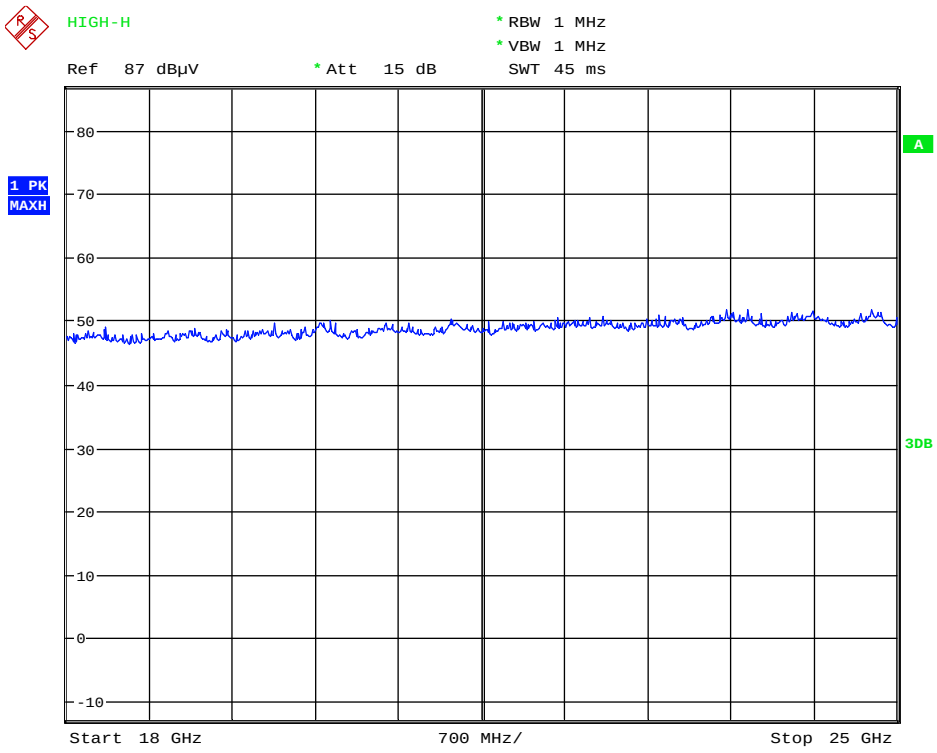
Channel High

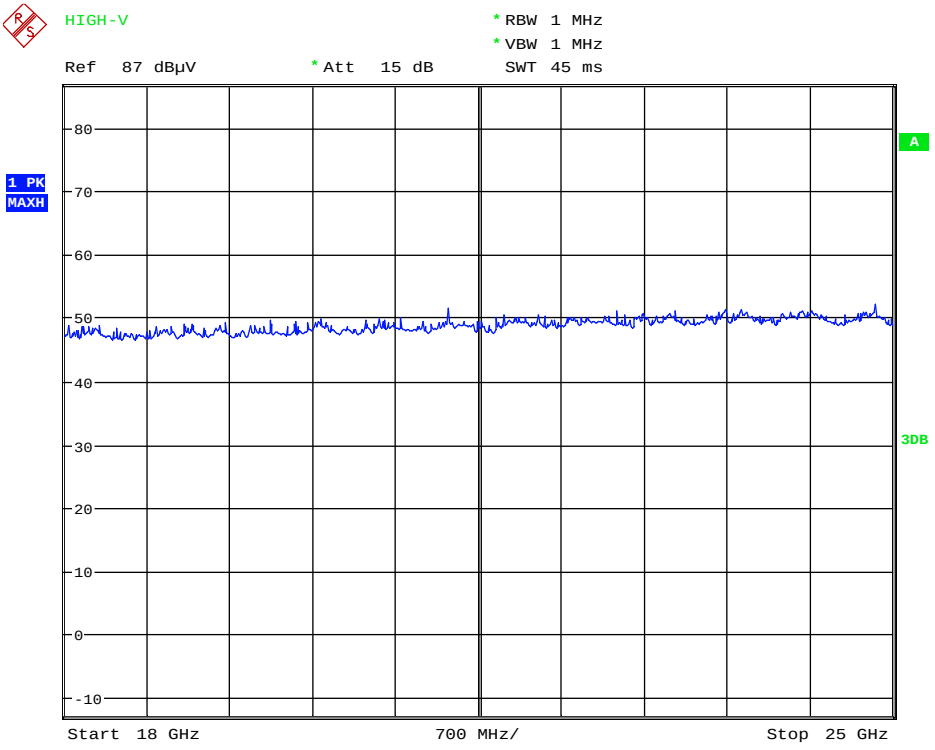





HIGH-H
*RBW 1 MHz
*VBW 1 MHz
Ref 87 dBµV
*Att 15 dB
SWT 90 ms
1 PK
MAXH
A
3DB
80
70
60
50
40
30
20
10
0
-10
Start 2.4835 GHz
1.55165 GHz/
Stop 18 GHz


HIGH-V
*RBW 1 MHz
*VBW 1 MHz
Ref 87 dBµV
*Att 15 dB
SWT 90 ms
1 PK
MAXH
A
3DB
80
70
60
50
40
30
20
10
0
-10
Start 2.4835 GHz
1.55165 GHz/
Stop 18 GHz


HIGH-H
*RBW 1 MHz
*VBW 1 MHz
Ref 87 dBµV
*Att 15 dB
SWT 45 ms
1 PK
MAXH
A
3DB
80
70
60
50
40
30
20
10
0
-10
Start 18 GHz
700 MHz/
Stop 25 GHz


HIGH-V
*RBW 1 MHz
*VBW 1 MHz
Ref 87 dBµV
*Att 15 dB
SWT 45 ms
1 PK
MAXH
A
3DB
80
70
60
50
40
30
20
10
0
-10
Start 18 GHz
700 MHz/
Stop 25 GHz

10.4.3 Radiated Measurement at Bandedge with Fundamental Frequencies and co-location

Test Date: Jul. 14, 2015 Temperature: 21℃ Humidity: 50%

Operation Mode: Tx

Operation Channel	Test Frequency	Reading @3m (dBuV/m)				Factor	Result		Limit @3m		Margin (worse)	
		H		V			(dBuV/m)		(dBuV/m)		(dB)	
	(MHz)	Peak	Ave	Peak	Ave	(dB)	Peak	Ave	Peak	Ave	Peak	Ave
CH Low	2390.000	27.0	14.0	27.2	14.1	29.8	57.0	43.9	74.0	54.0	-17.0	-10.1
CH High	2483.500	29.2	18.4	30.5	20.3	29.8	60.3	50.1	74.0	54.0	-13.7	-4.0

Note :
1. Remark "---" means that the emissions level is too low to be measured.
2. The result is the highest value of radiated emission from restrict band of 2310 ~ 2390 MHz and 2483.5 ~ 2500 MHz.

10.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor, High Pass Filter Loss(if used) and Cable Loss, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

where
Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

11. EQUIPMENTS LIST FOR TESTING

Equipment	Manufacturer	Model No.	S/N	Calibration Date	Next Cal. Due
EMI Test Receiver	R&S	ESCI	13054418-001	09/19/2014	09/18/2015
V-LISN	R&S	ENV216	13057719-001	05/13/2015	05/12/2016
Spectrum Analyzer	Agilent	E4446A	13052013-001	10/07/2014	10/06/2015
Power Meter	Agilent	N1922A	13053523-001	12/06/2014	12/05/2015
Peak Power Sensor	Agilent	N1912A	13050625-001	12/06/2014	12/05/2015
EMI Receiver	R&S	ESIB 7	13054414-001	01/17/2015	01/16/2016
Spectrum Analyzer	R&S	FSU46	13040904-001	01/17/2015	01/16/2016
Horn Antenna	EMCO	3115	13059201-001	07/22/2014	07/21/2015
BiLog Antenna	Schaffner	CBL6112B	2927	10/16/2014	10/15/2015
Hom Antenna	EMCO	3116	13059202-001	08/22/2014	08/21/2015
PRE-Amplifier	Agilent	8449B	13040709-001	11/21/2014	11/20/2015
Loop Antenna	EMCO	6512	13054104-001	07/01/2014	06/30/2015
PRE-Amplifier	ADVANTEST	BB525C	13052906-001	05/05/2015	05/04/2016