

FCC Test Report

Product Name : OBU
Model No. : IWCU OBU 5.0
FCC ID. : N3X-IWCUOBU5

Applicant : Industrial Technology Research Institute
Address : No. 195, Sec. 4, Chung Hsing Rd., Chutung, Hsinchu,
31040Taiwan, R.O.C.

Date of Receipt : 2014/12/17
Issued Date : 2015/01/21
Report No. : 14C0467R-RFUSP22V00
Report Version : V1.0



The test results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of Corporation.

Test Report Certification

Issued Date : 2015/01/21

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Product Name : OBU

Applicant : Industrial Technology Research Institute

Address : No. 195, Sec. 4, Chung Hsing Rd., Chutung, Hsinchu,
31040Taiwan, R.O.C.

Manufacturer : Industrial Technology Research Institute

Model No. : IWCU OBU 5.0

FCC ID. : N3X-IWCUOBU5

EUT Voltage : Mode 1: AC 100-240V, 50/60Hz
Mode 2: DC 12V

Trade Name :  ITRI Industrial Technology,
Research Institute,  DSRC

Applicable Standard : 47 CFR FCC Part 95

Test Result : Complied

The test results relate only to the samples tested.

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Roy Wang

(Roy Wang / Director)

Laboratory Information

We, **QuieTek Corporation**, are an independent RF consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted (audited or listed) by the following related bodies in compliance with ISO 17025 specified testing scopes:

Taiwan R.O.C.	:	TAF, Accreditation Number: 3024
USA	:	FCC, Registration Number: 365520
Canada	:	IC, Submission No: 150981

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site:<http://www.quietek.com/tw/ctg/cts/accreditations.htm>

The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site :
<http://www.quietek.com/>

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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1. General Information

1.1. EUT Description

Product Name	OBU
Trade Name	 ITRI Industrial Technology, Research Institute ,  CITT Center for Telematics Technology DSRC
Model No.	IWCU OBU 5.0
Frequency Range	5860-5920MHz / 7 Channels
Type of Modulation	802.11p(10MHz space)
Antenna Gain	5dBi
Antenna Type	Dipole Antenna

1.2. Test Mode

has verified the construction and function in typical operation. The preliminary tests were performed in different data rate, and to find the worst condition, which was shown in this test report. The following table is the final test mode.

TX	Mode 1: Transmit (Power by Adapter) Mode 2: Transmit (Power by Battery)
----	--

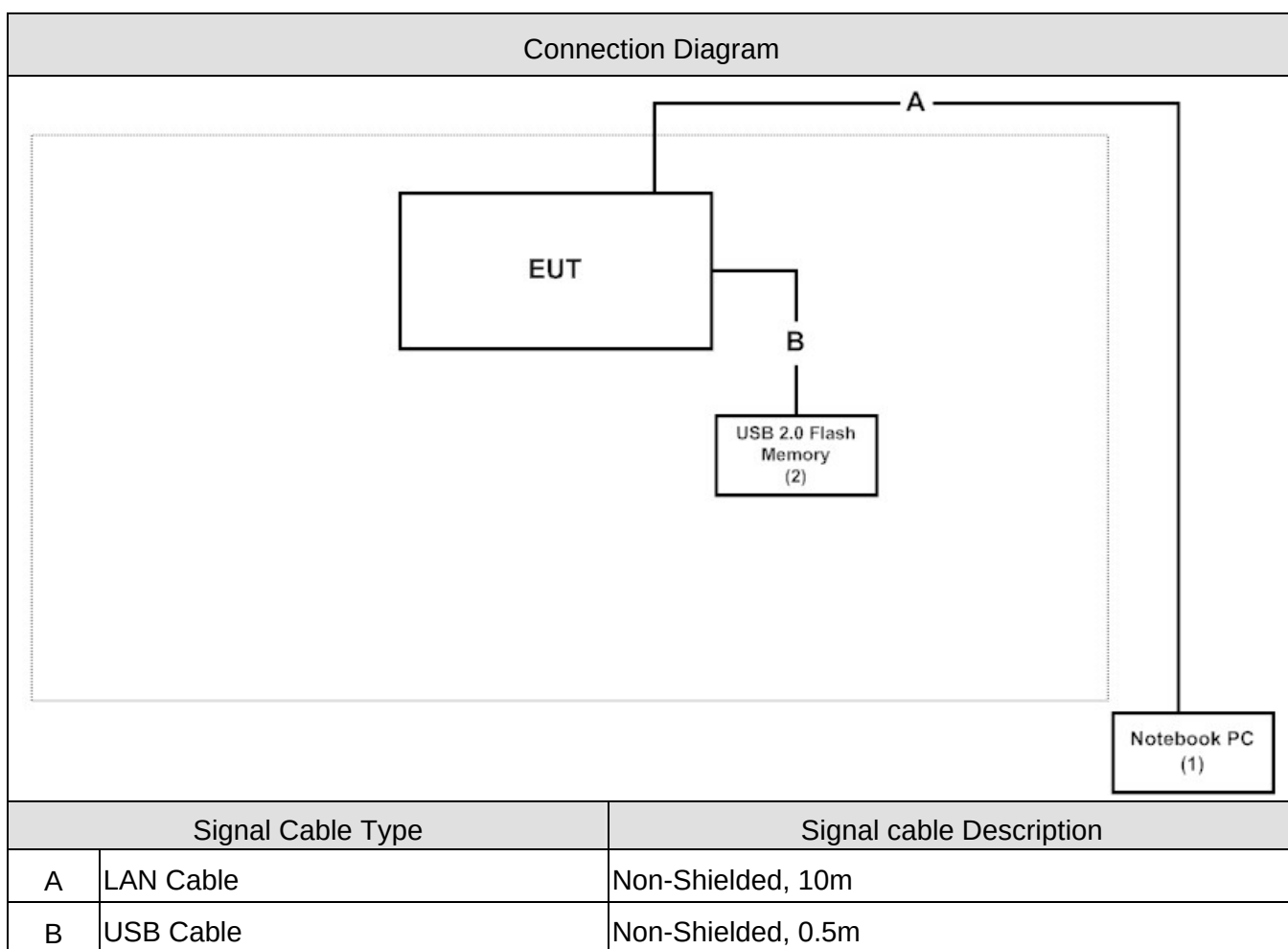
Test Items	Channel	Mode	Result
Emission Bandwidth	172/178/184	1	Complies
Maximum Transmitter power	172/178/184	1	Complies
Transmit Spectrum Mask	172/178/184	1	Complies
Transmitter Conducted Unwanted Emission	172/178/184	1	Complies
Transmitter Radiated Unwanted Emission	172/178/184	1/2	Complies
Frequency Stability	172/178/184	1	Complies

1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1 Notebook PC	ACER	MS2296	LUSCV0213911503 32C2000	DoC	Non-Shielded, 2.5m one ferrite core bonded
2 USB 2.0 Flash Memory	Apacer	AH223	N/A	DoC	--

1.4. Configuration of tested System



1.5. EUT Exercise Software

1	Setup the EUT as shown in Section 1.4.
2	Execute the TX command on the EUT.
3	Configure the test channel
4	Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	Emission Bandwidth	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	Maximum Transmitter power	15 - 35	25
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	Transmit Spectrum Mask	15 - 35	25
Humidity (%RH)		25 - 75	65
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	Transmitter Conducted Unwanted Emission	15 - 35	24
Humidity (%RH)		25 - 75	49
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	Transmitter Radiated Unwanted Emission	15 - 35	25
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	Frequency Stability	15 - 35	25
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000

2. Emission Bandwidth

2.1. Test Equipment

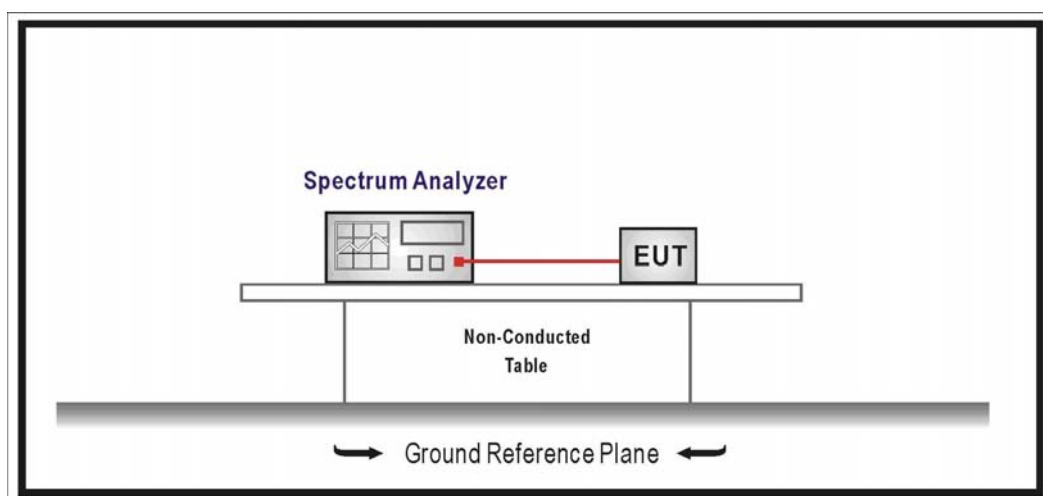
The following test equipments are used during the test:

Emission Bandwidth / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2015/07/14

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

2.2. Test Setup



2.3. Limits

The 99% Occupied bandwidth is the frequency bandwidth of the signal power at the 99% channel power of occupied bandwidth when resolution bandwidth should be approximately 1% to 5% of the occupied bandwidth (OBW) . These measurements shall also be performed at normal test onditions .

2.4. Test Procedure

Refer as ANSI/TIA-603-D , Clause 1.3.4.4..

2.5. Uncertainty

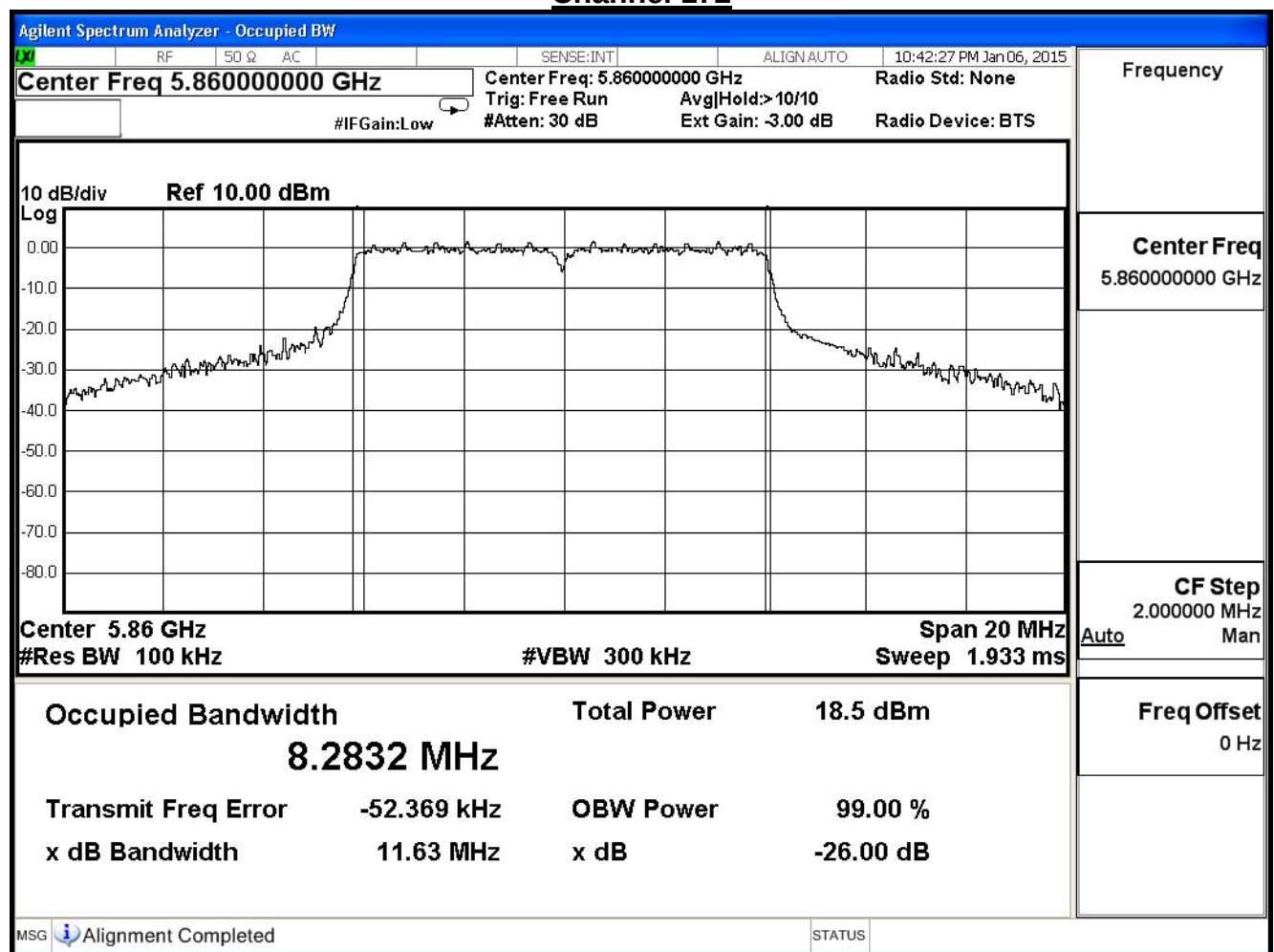
The measurement uncertainty is defined as $\pm 150\text{Hz}$

2.6. Test Result

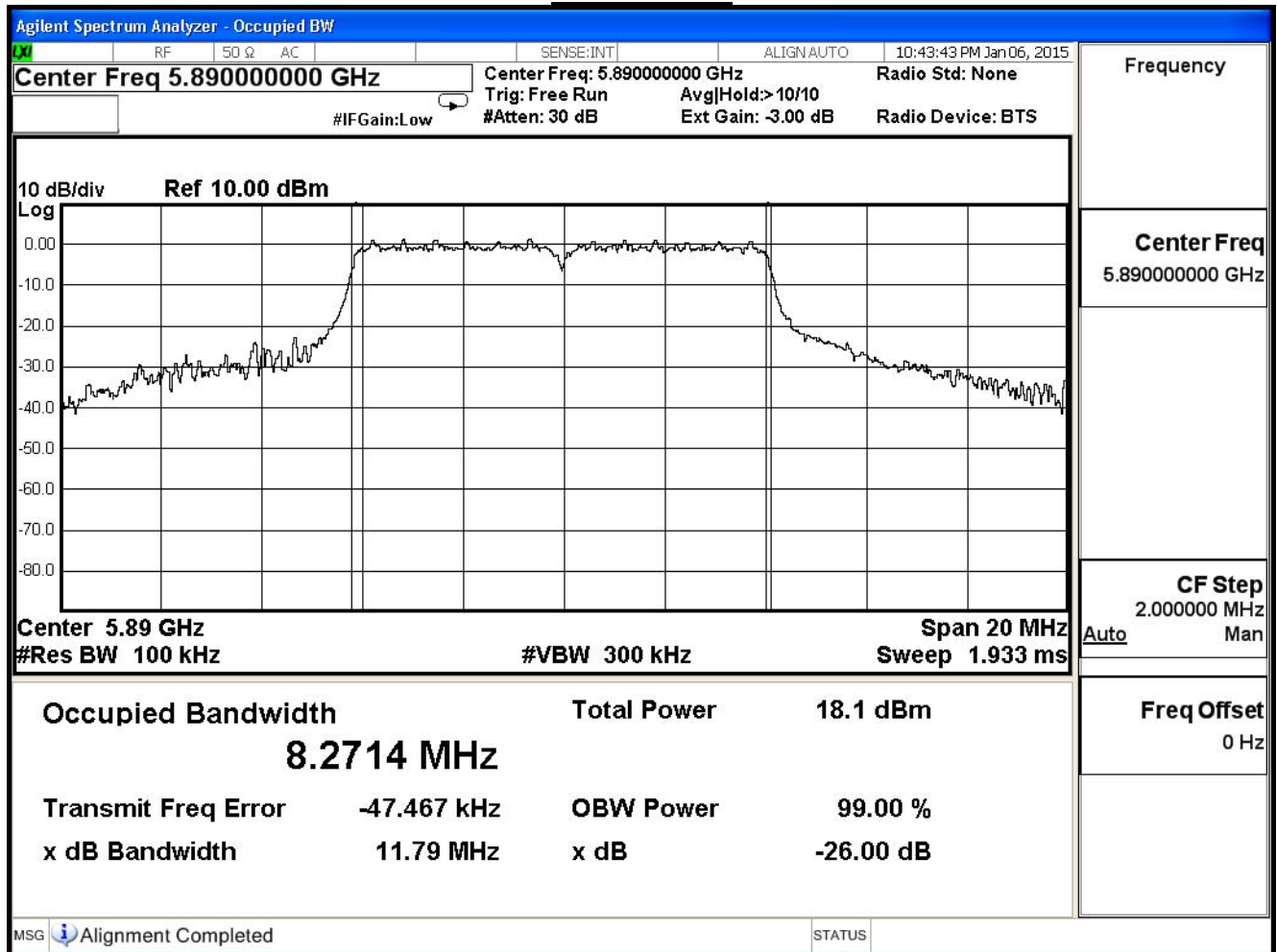
Product	OBU		
Test Item	Emission Bandwidth		
Test Mode	Mode 1: Transmit (Power by Adapter)		
Date of Test	2015/01/06	Test Site	SR7

IEEE 802.11p (ANT 0), Antenna Gain: 5 dBi				
Channel No.	Frequency (MHz)	Measurement Level (MHz)	Required Limit (MHz)	Result
172	5860	8.2832	--	Pass
178	5890	8.2714	--	Pass
184	5920	8.2755	--	Pass

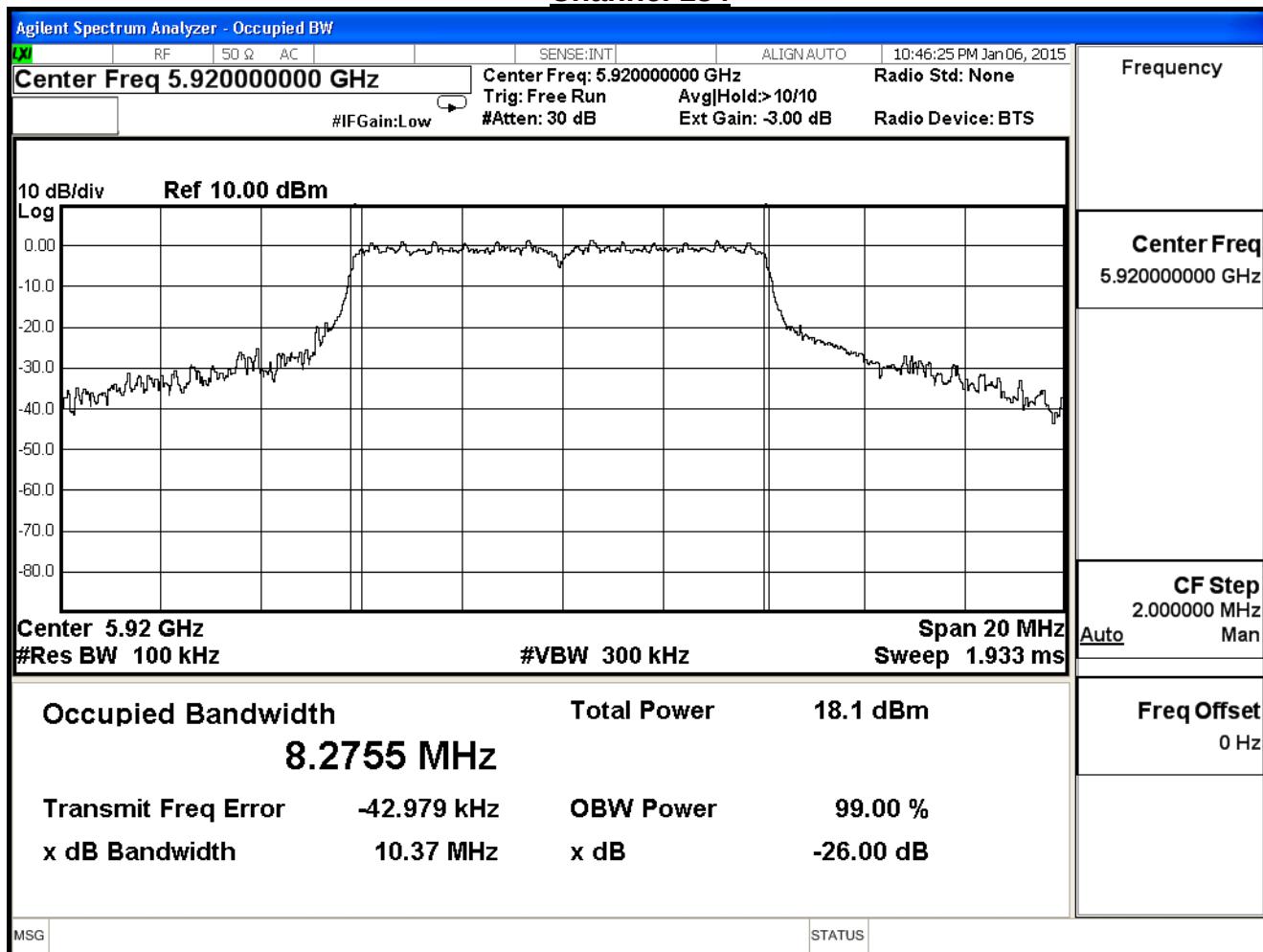
Channel 172



Channel 178



Channel 184



3. Maximum Transmitter Power

3.1. Test Equipment

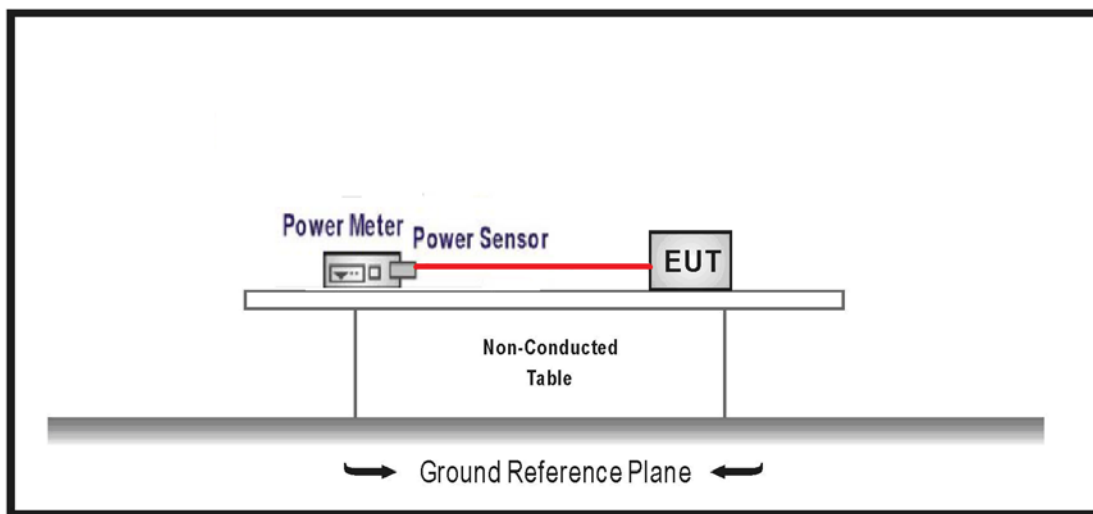
The following test equipments are used during the radiated emission tests:

Maximun Transmitter Power / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Power Meter	Agilent	N1911A	MY45101353	2015/10/31

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

3.2. Test Setup



3.3. Limits

5850~5925MHz			
Channel No.	Frequency Range (MHz)	Max. EIRP (dBm)	Channel Use
170	5850-5855	33	Reserved
172	5855-5865	33	Service Channel
174	5865-5875	33	Service Channel
175	5865-5885	23	Service Channel
176	5875-5885	33	Service Channel
178	5885-5895	33/44.8	Control Channel
180	5895-5905	23	Service Channel
181	5895-5915	23	Service Channel
182	5905-5915	23	Service Channel
184	5915-5925	33/40	Service Channel

3.4. Test Procedure

Refer as ANSI/TIA-603-D, Clause 3.2.1.

3.5. Uncertainty

The measurement uncertainty is defined as $\pm 1.27\text{dB}$

3.6. Test Result

Product	OBU		
Test Item	Maximum Transmitter Power		
Test Mode	Mode 1: Transmit (Power by Adapter)		
Date of Test	2015/01/07	Test Site	SR7

IEEE 802.11p (ANT 0), Antenna Gain: 5 dBi					
Channel No.	Frequency (MHz)	Cond. Power Level(dBm)	EIRP Measure Level(dBm)	Cond. Power Limit(dBm)	EIRP Power Limit (dBm)
172	5860	21.28	26.28	28.8	33
178	5890	21.27	26.27	28.8	33
180	5900	16.95	21.95	20.0	23
182	5910	16.97	21.97	20.0	23
184	5920	21.20	26.20	28.8	33

Test Result	PASS
-------------	------

4. Transmit Spectrum Mask

4.1. Test Equipment

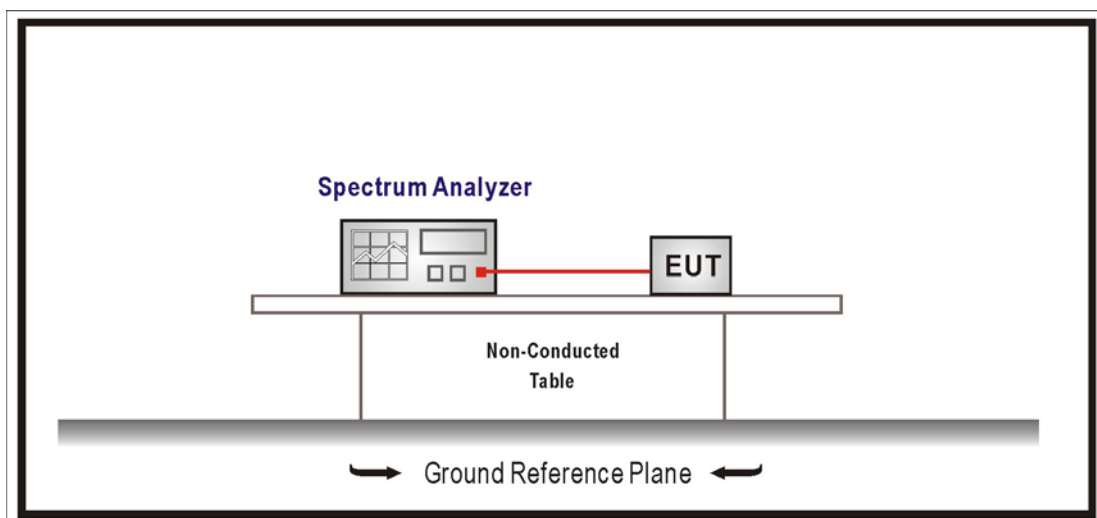
The following test equipments are used during the radiated emission tests:

Transmit Spectrum Mask / SR7

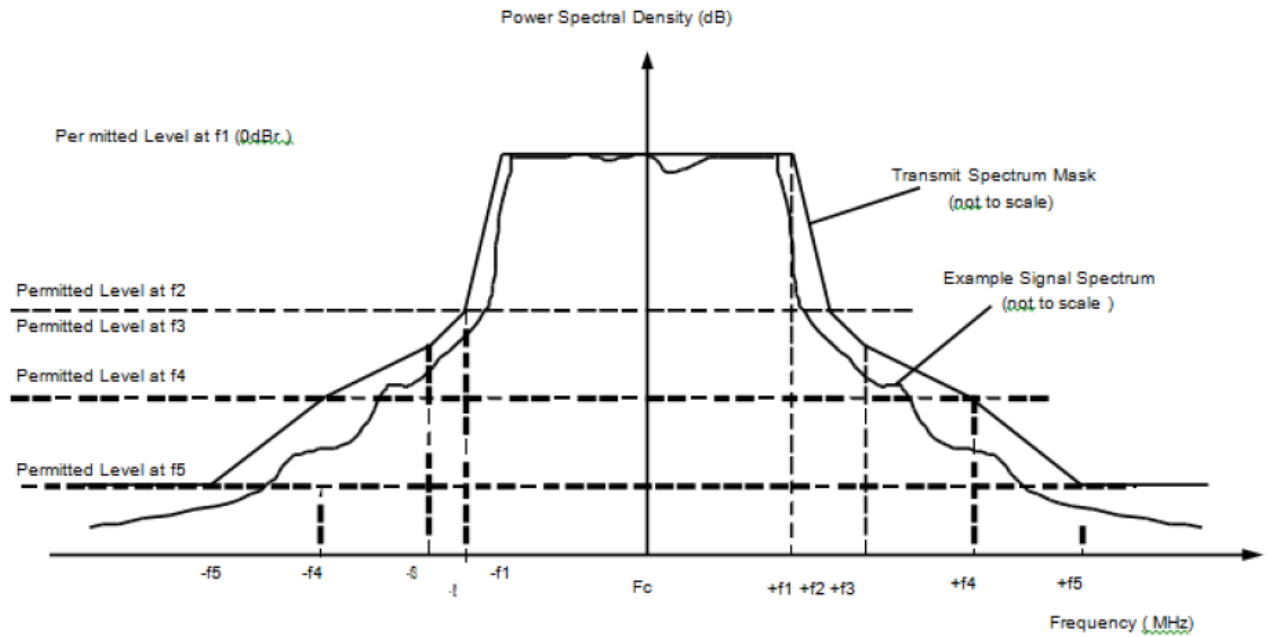
Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2015/07/14

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

4.2. Test Setup



4.3. Limits



4.4. Test Procedure

The measurements of transmit spectral density are made using RBW=100KHz,VBW=30KHz

4.5. Uncertainty

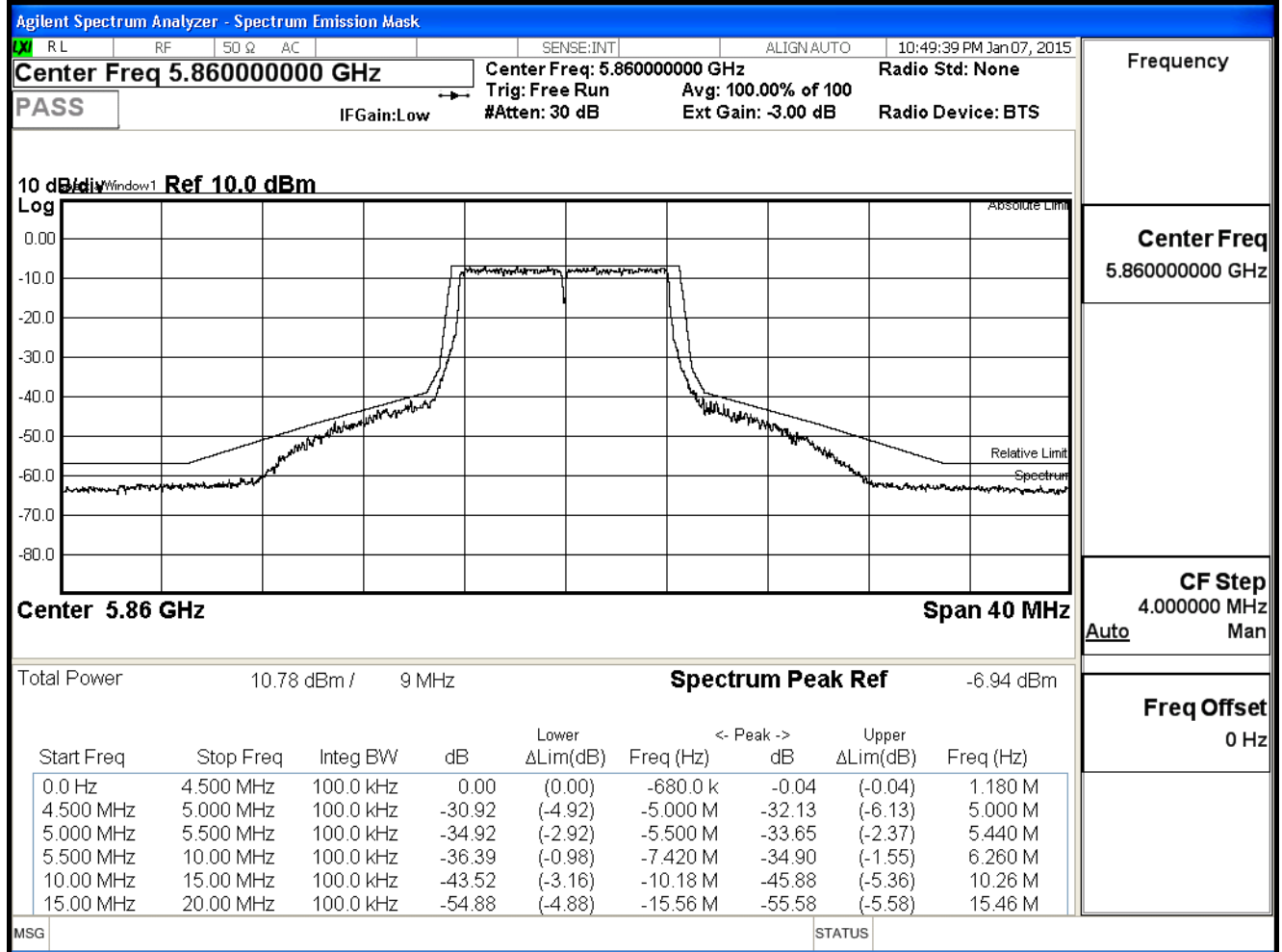
The measurement uncertainty is defined as ± 1.27 dB

4.6. Test Result

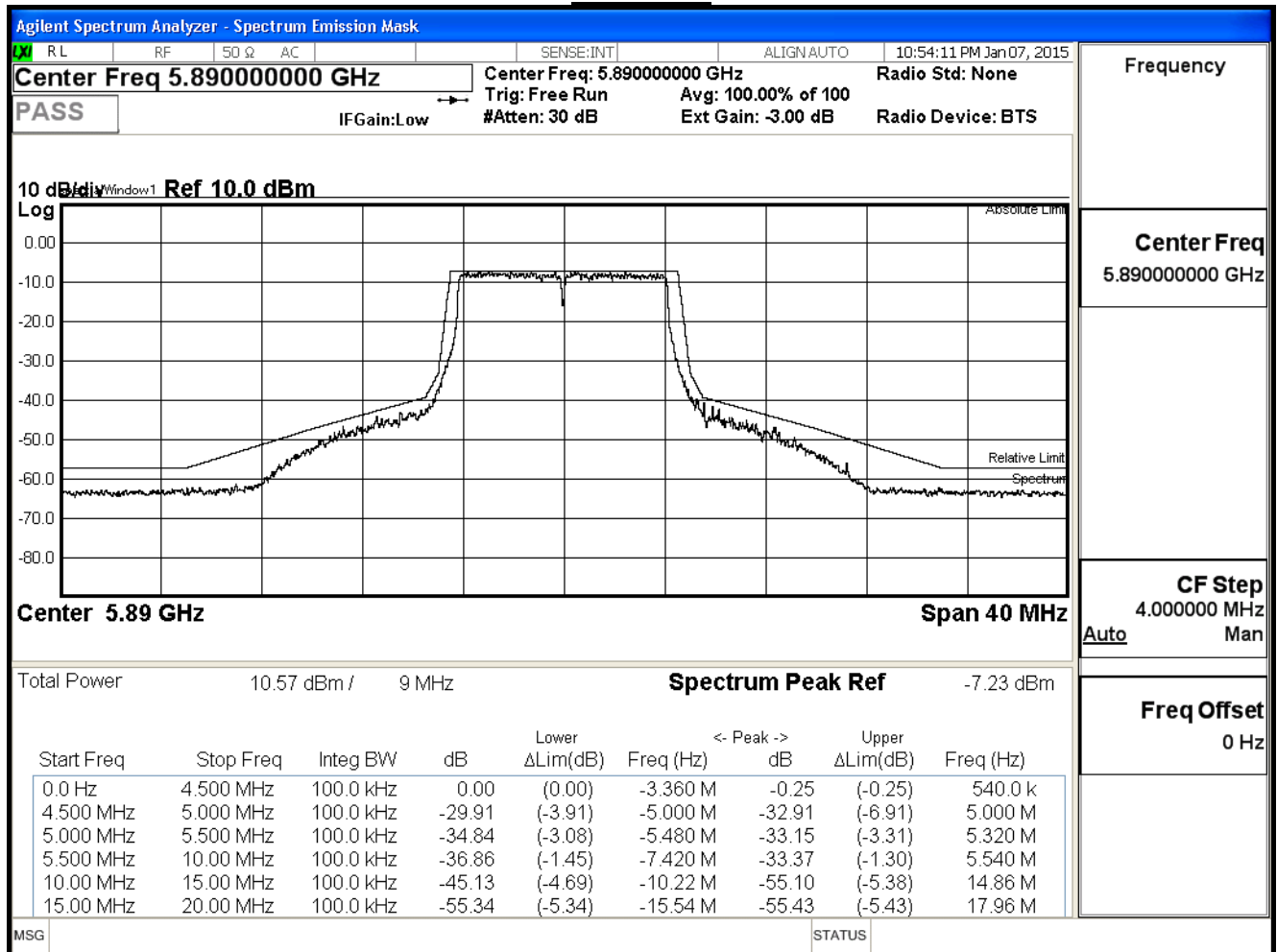
Product	OBU		
Test Item	Transmit Spectrum Mask		
Test Mode	Mode 1: Transmit (Power by Adapter)		
Date of Test	2015/01/07	Test Site	SR7

Channel	Frequency (MHz)	Result
172	5860	Pass
178	5890	Pass
180	5900	Pass
182	5910	Pass
184	5920	Pass

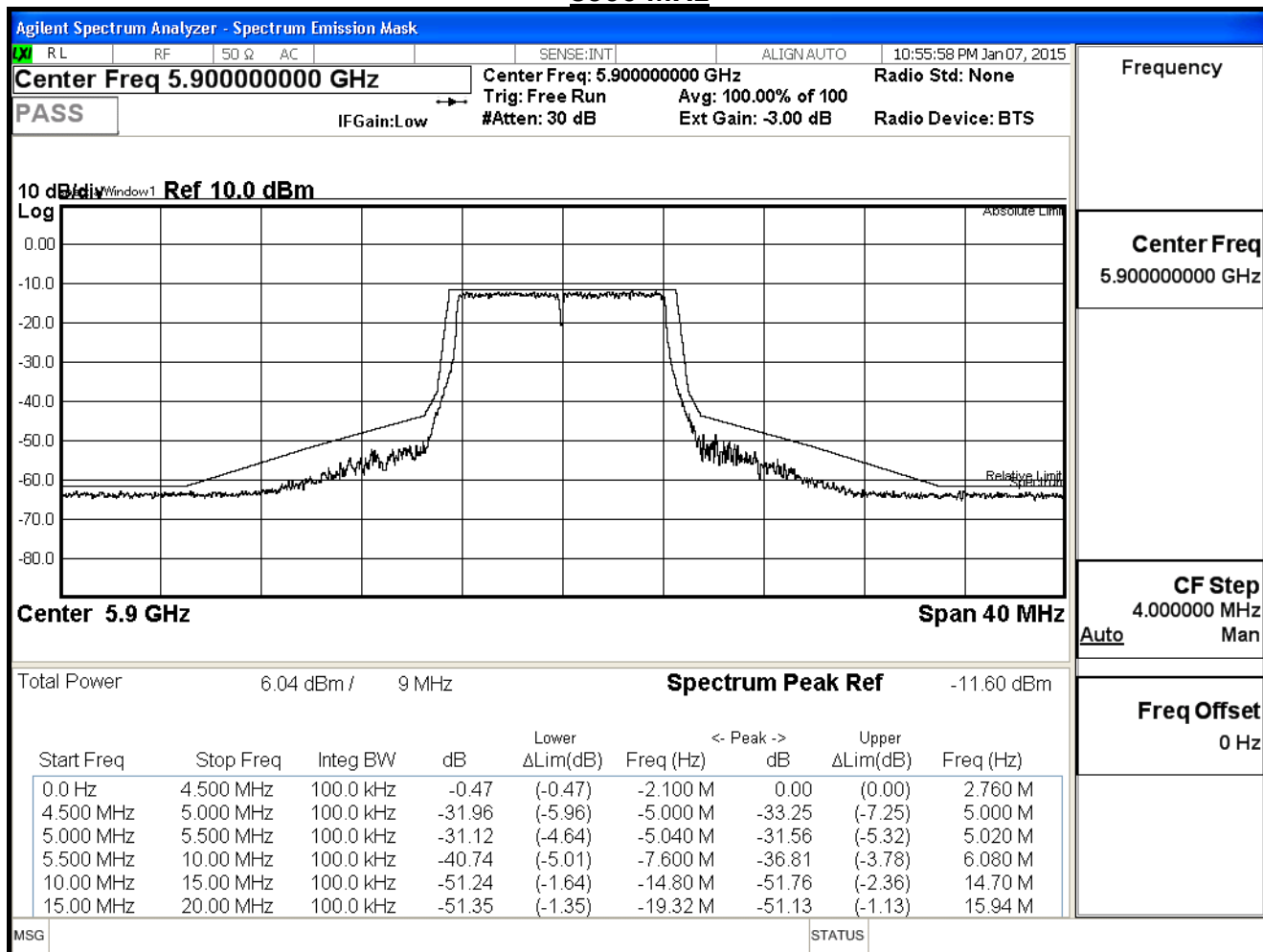
5860 MHz



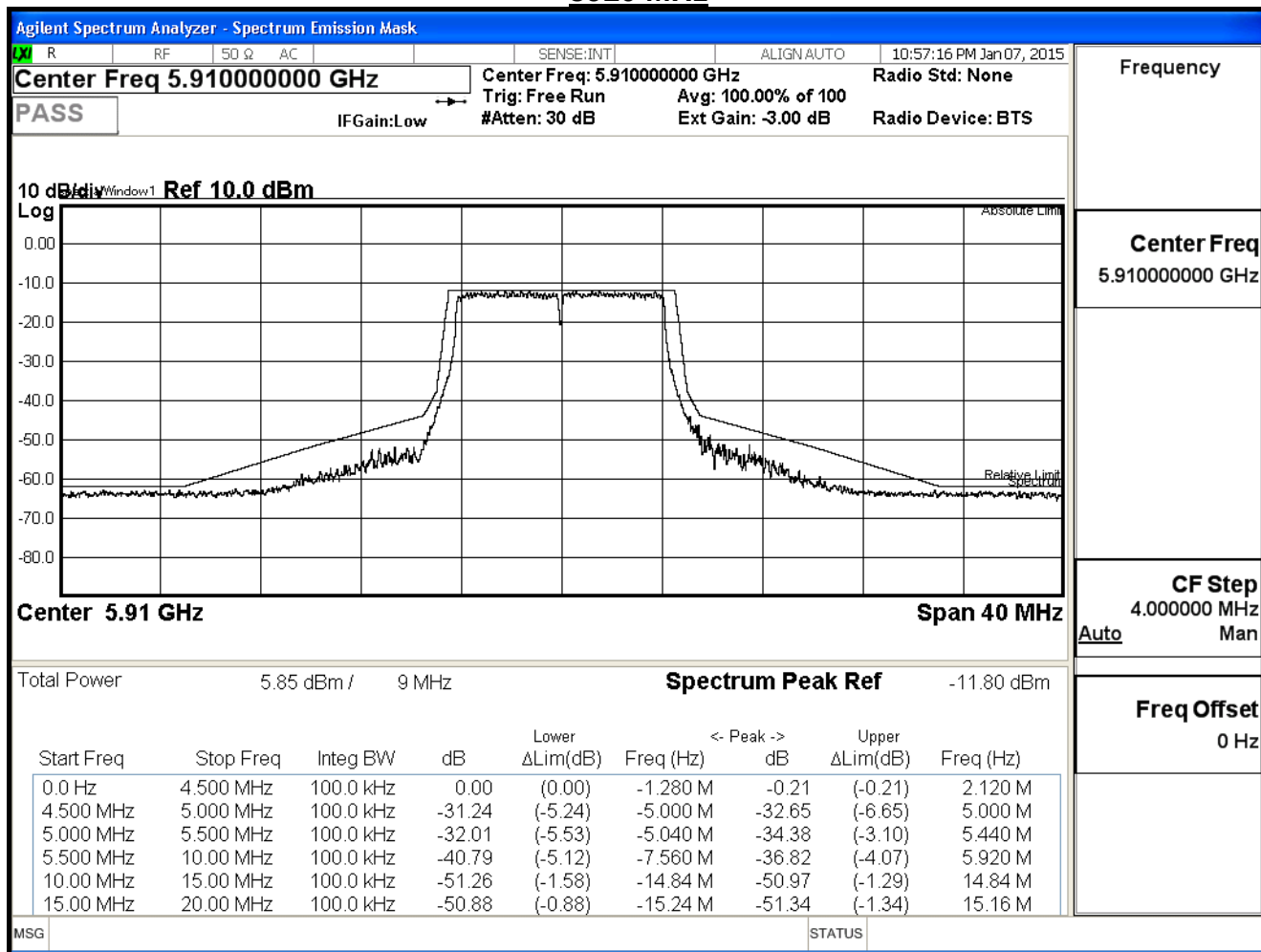
5890 MHz



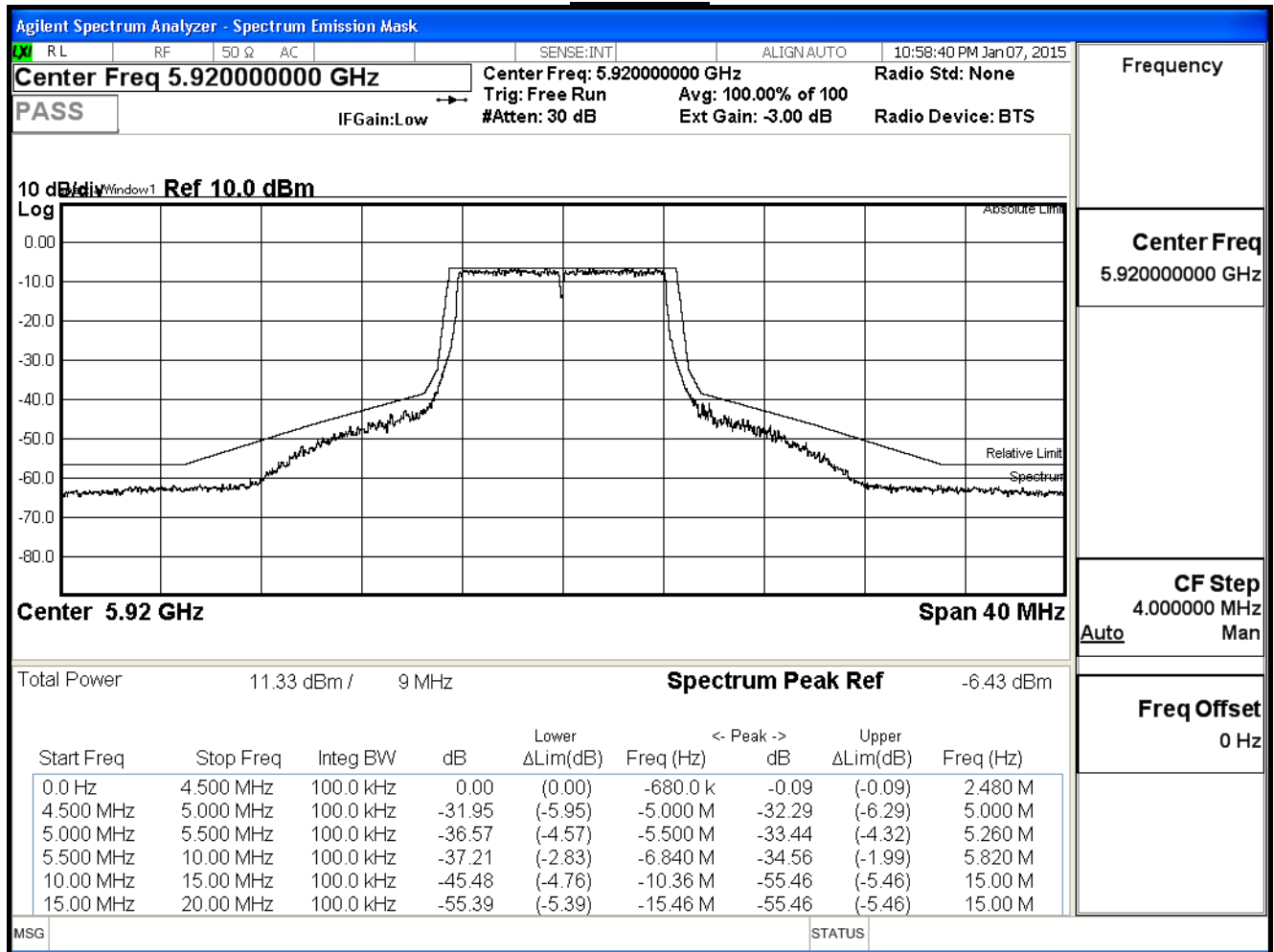
5900 MHz



5910 MHz



5920 MHz



5. Transmitter Conducted Unwanted Emission

5.1. Test Equipment

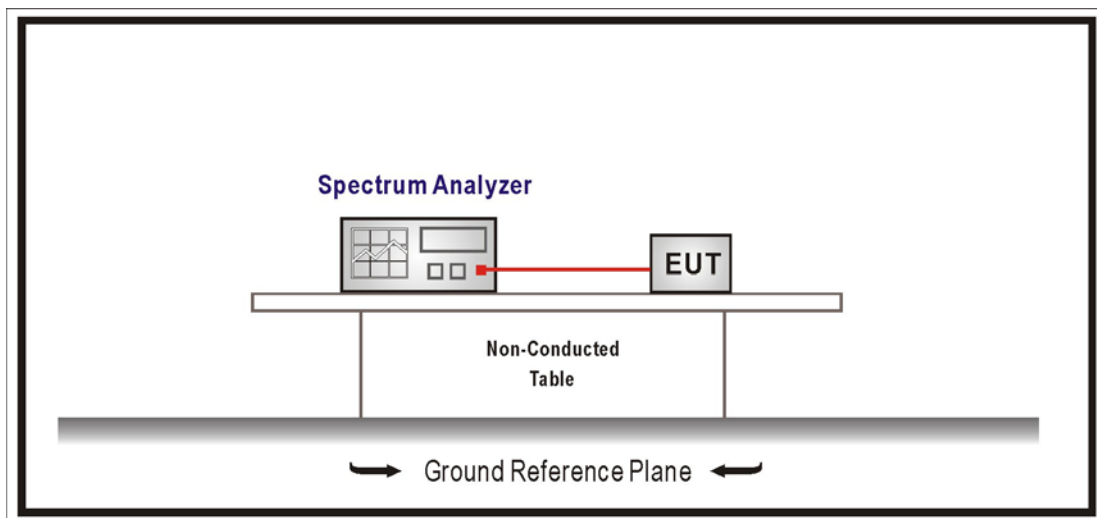
The following test equipments are used during the radiated emission test:

Transmitter Conducted Unwanted Emission / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSV 40	101049	2015/07/14

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

5.2. Test Setup



5.3. Limits

The power of any emission outside a license's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $[55 + 10 \log (P)]$ (-25dBm).

5.4. Test Procedure

Refer as ANSI/TIA-603-D-2010, clause 3.2.13.

5.5. Uncertainty

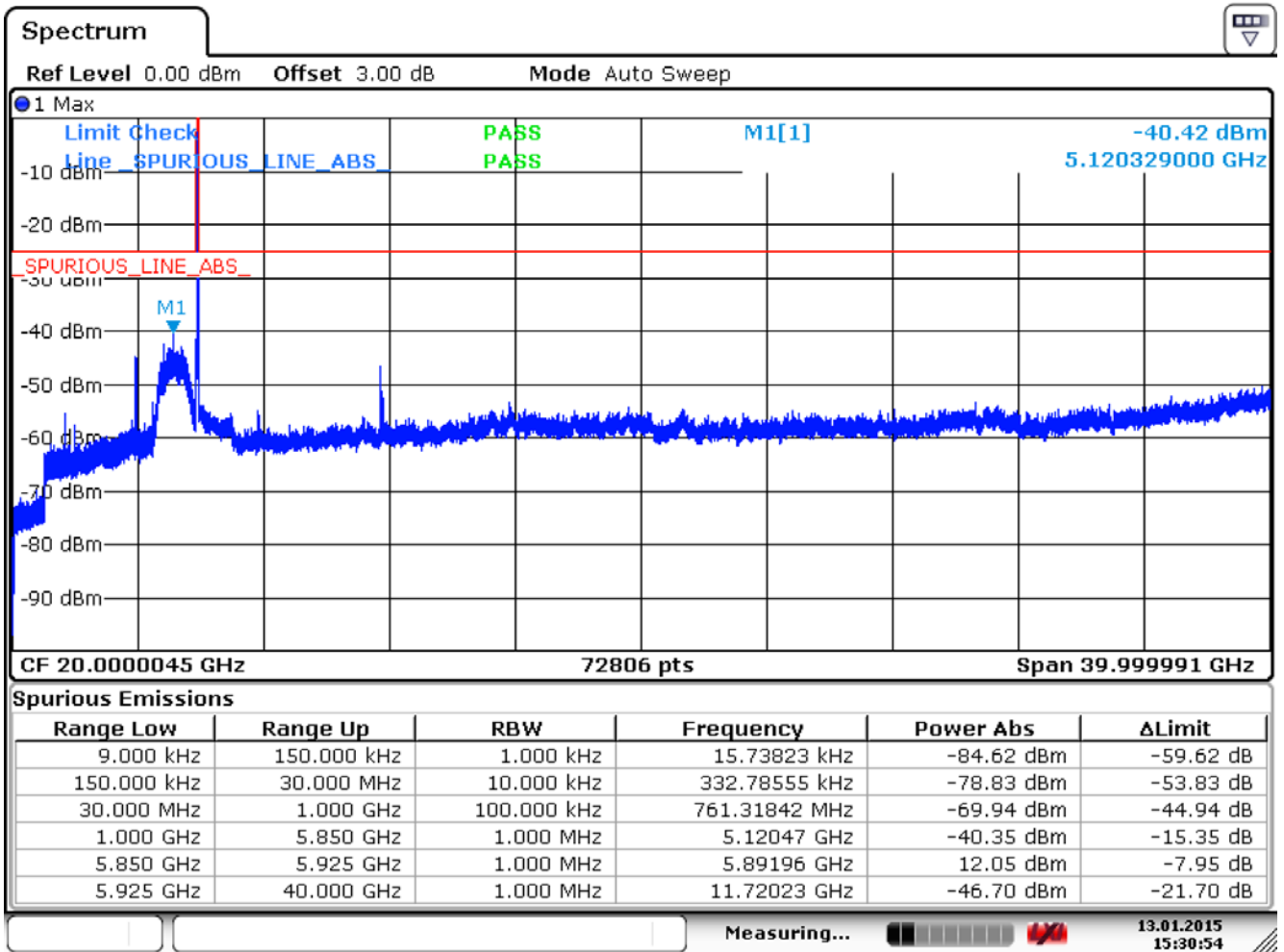
The measurement uncertainty is defined as ± 1.27 dB

5.6. Test Result

Product	OBU		
Test Item	Transmitter Conducted Unwanted Emission		
Test Mode	Mode 1: Transmit (Power by Adapter)		
Date of Test	2015/01/13	Test Site	SR7

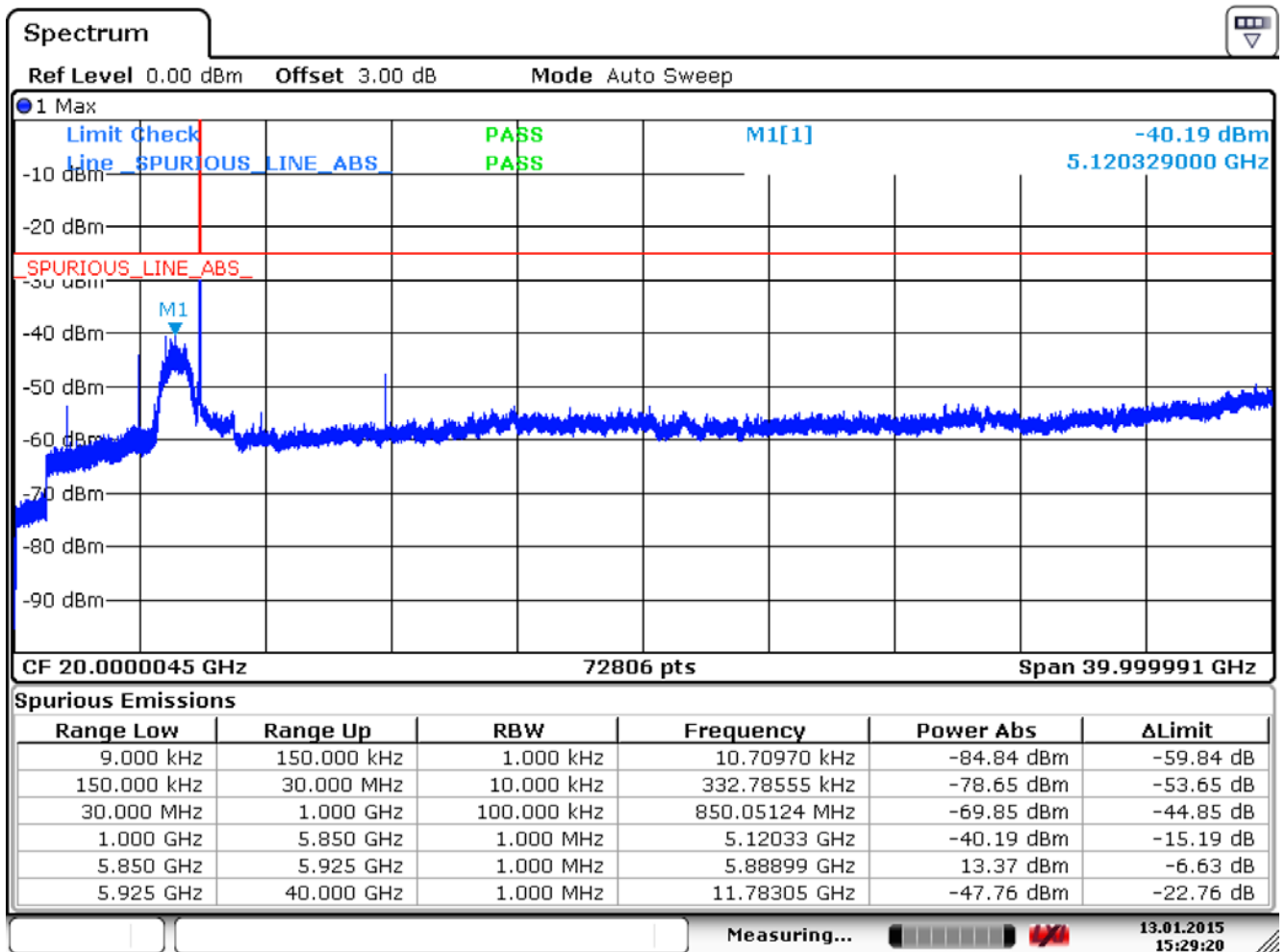
Channel	Frequency (MHz)	Unwanted Frequency (MHz)	Measurement (dBm)	Limit (dBm)
172	5860	5120.629	-40.54	≤ -25
178	5890	5120.329	-40.42	≤ -25
184	5920	5120.329	-40.19	≤ -25

5860MHz



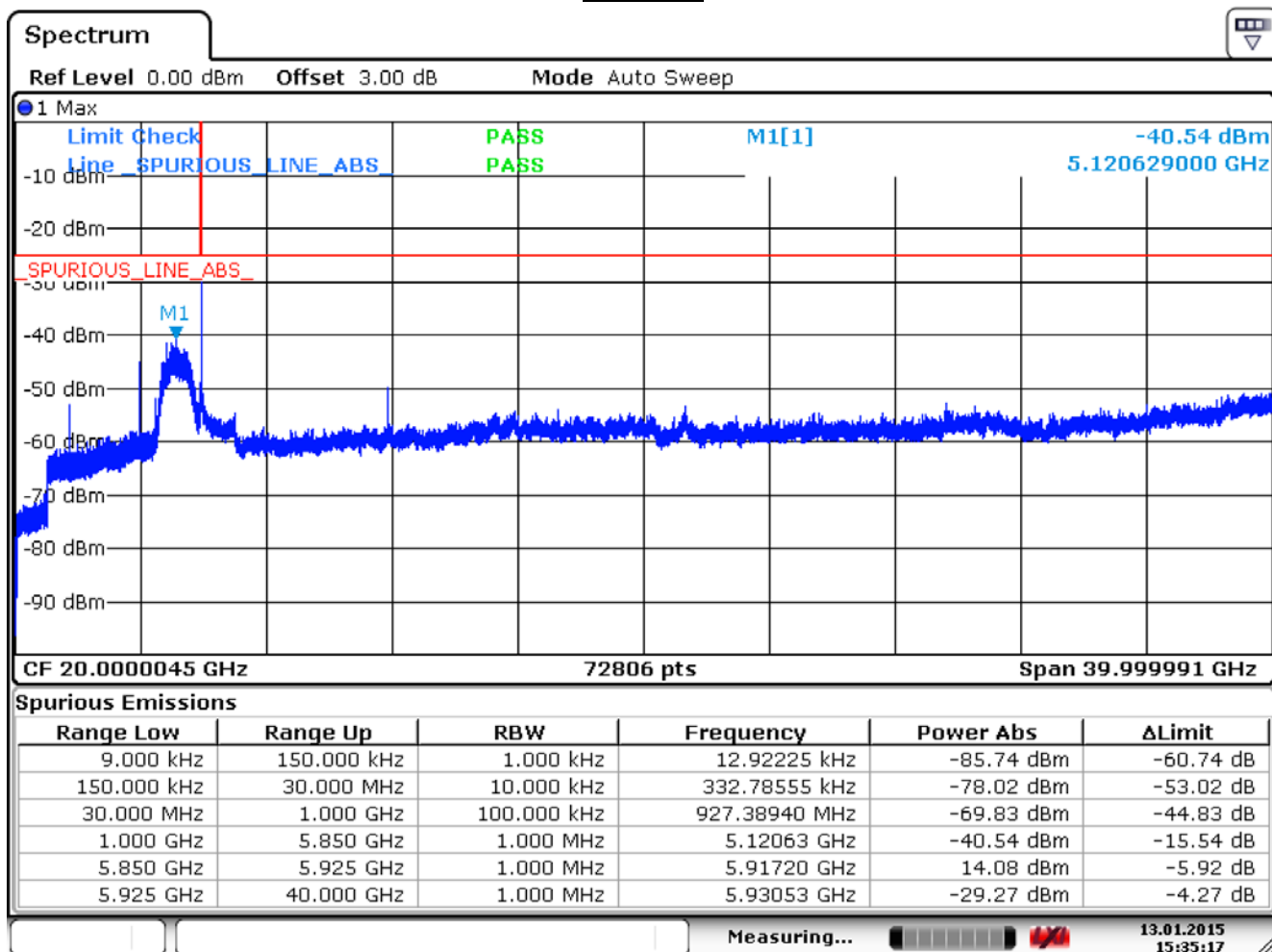
Date: 13.JAN.2015 15:30:54

5890MHz



Date: 13.JAN.2015 15:29:19

5920MHz



Date: 13.JAN.2015 15:35:17

6. Transmitter Radiated Unwanted Emission

6.1. Test Equipment

The following test equipments are used during the band edge tests:

Transmitter Radiated Unwanted Emission/ CB1

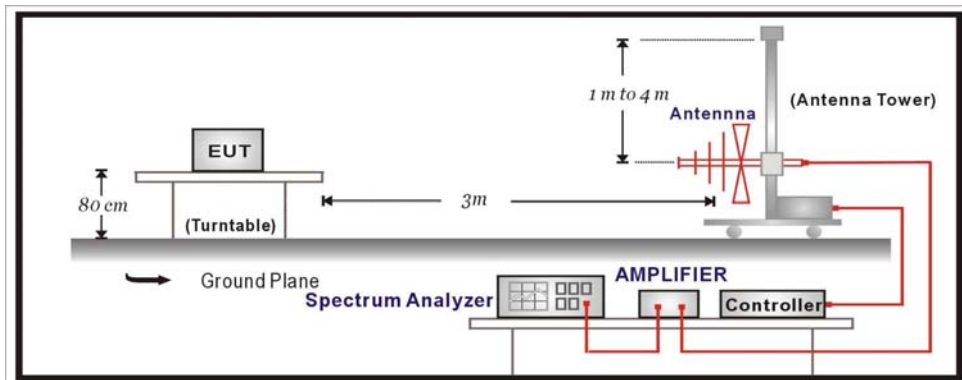
Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Bilog Antenna	SCHAFFNER	CBL6112B	2895	2015/08/14
Double Ridged Guide Horn Antenna	Schwarzback	BBHA 9120	D743	2015/02/12
Pre-Amplifier	Quietek	AMF-4D.	888003	2015/06/02
Pre-Amplifier	QuieTek	AP-025C	CHM-0706049	2015/02/06
k Type Cable	Huber Suhner	Sucoflex 102	25623/2	2015/02/10
Spectrum Analyzer	R&S	FSV 40	101049	2015/07/14
RF-communications Test set	HP	8920A	3614A08091	2015/04/27

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

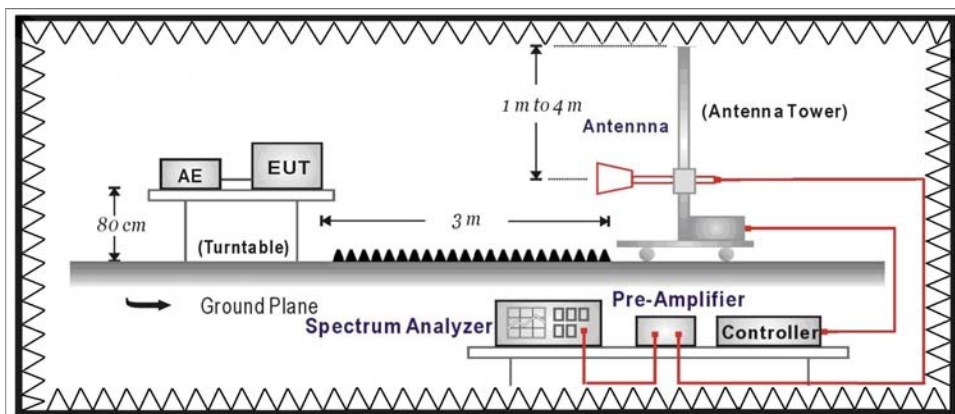
6.2. Test Setup

RF Radiated Measurement:

Under 1GHz Test Setup:



Above 1GHz Test Setup:



6.3. Limits

Refer as ASTM E2213-03 Clause 8.9.2

6.4. Test Procedure

Refer as ANSI/TIA-603-D-2010. Clause 3.2.12.

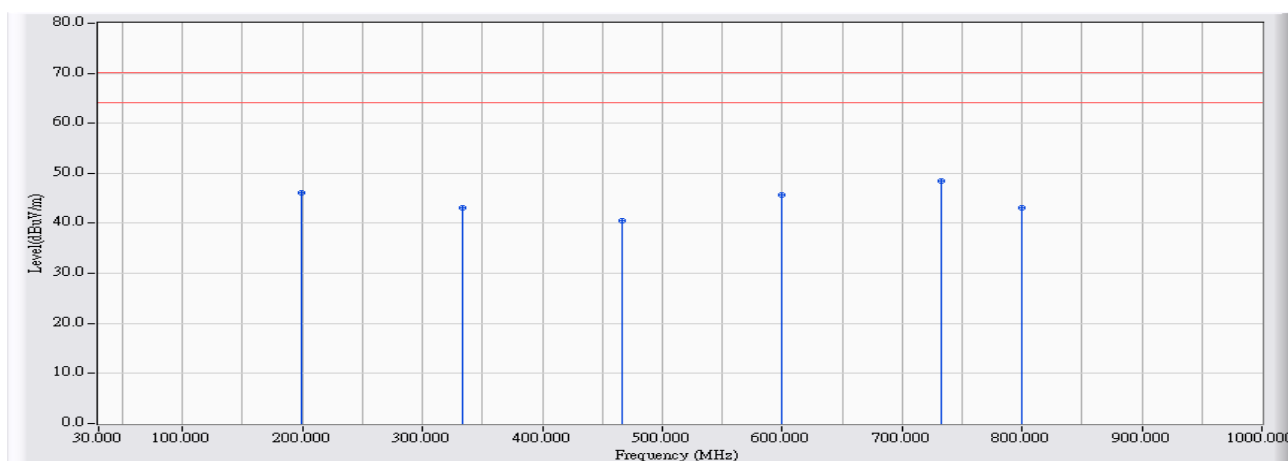
6.5. Uncertainty

The measurement uncertainty is defined as $\pm 3.65\text{dB}$

6.6. Test Result

30MHz-1GHz Spurious

Site : CB1	Time : 2015/01/16 - 13:42
Limit : FCC_Part95_H_03M_PK	Margin : 6
Probe : CB1_FCC_30M-1G-4_9161 - HORIZONTAL	Power : AC120V/60Hz
EUT : OBU	Note : Mode 1: Transmit (Power by Adapter)_5890MHz

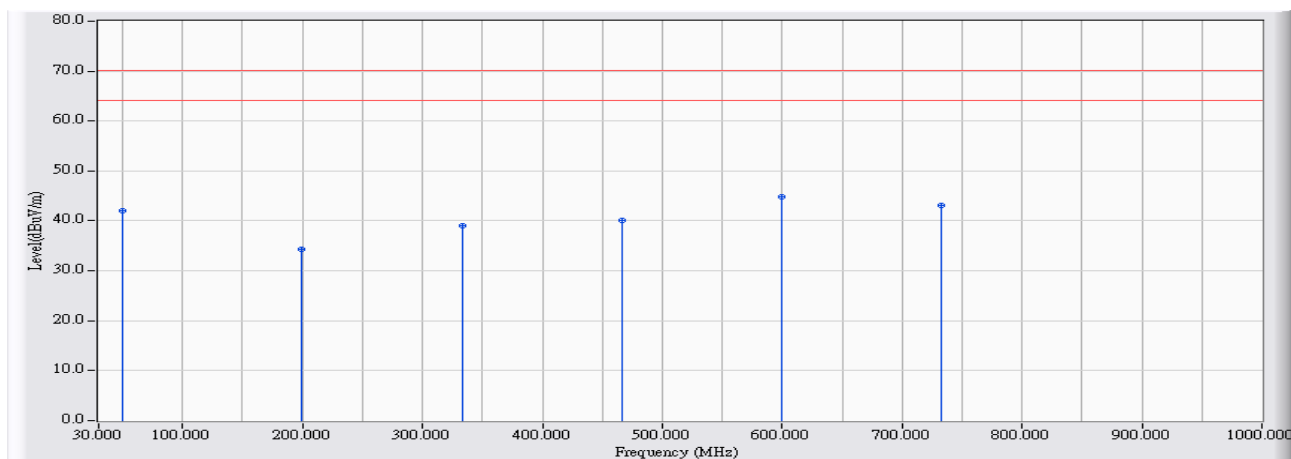


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		199.665	12.525	33.624	46.149	-24.051	70.200	PEAK
2		332.974	14.432	28.745	43.176	-27.024	70.200	PEAK
3		466.282	17.349	23.193	40.542	-29.658	70.200	PEAK
4		599.590	19.695	25.988	45.683	-24.517	70.200	PEAK
5	*	732.899	21.478	26.990	48.467	-21.733	70.200	PEAK
6		799.795	22.321	20.753	43.074	-27.126	70.200	PEAK

Note:

1. All Reading Levels are Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	Time : 2015/01/16 - 13:41
Limit : FCC_Part95_H_03M_PK	Margin : 6
Probe : CB1_FCC_30M-1G-4_9161 - VERTICAL	Power : AC120V/60Hz
EUT : OBU	Note : Mode 1: Transmit (Power by Adapter) _5890MHz

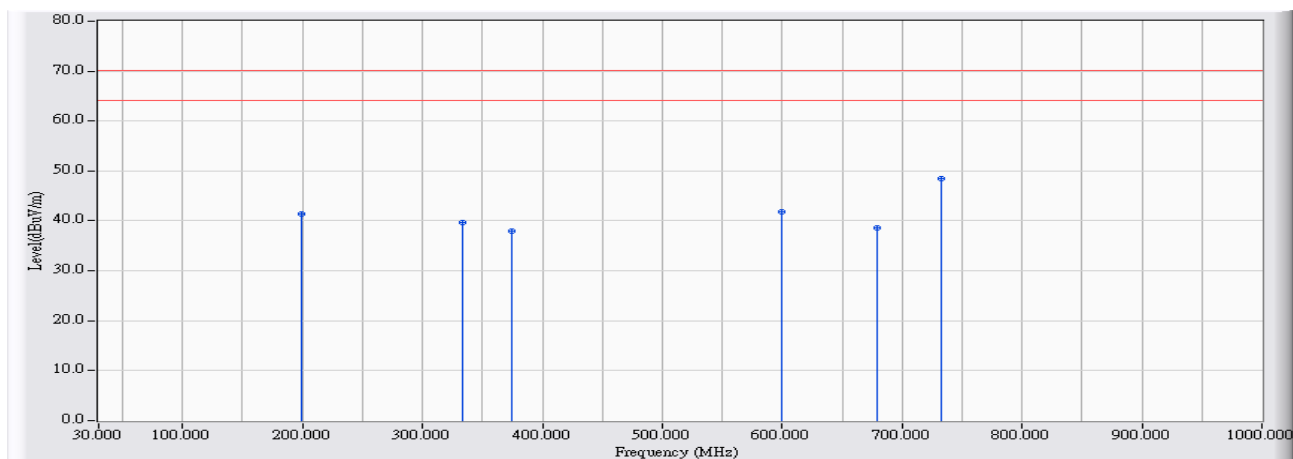


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		50.360	11.674	30.368	42.041	-28.159	70.200	PEAK
2		199.665	12.525	21.767	34.292	-35.908	70.200	PEAK
3		332.974	14.432	24.656	39.087	-31.113	70.200	PEAK
4		466.282	17.349	22.809	40.158	-30.042	70.200	PEAK
5	*	599.590	19.695	25.210	44.905	-25.295	70.200	PEAK
6		732.899	21.478	21.622	43.099	-27.101	70.200	PEAK

Note:

1. All Reading Levels are Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	Time : 2015/01/16 - 13:42
Limit : FCC_Part95_H_03M_PK	Margin : 6
Probe : CB1_FCC_30M-1G-4_9161 - HORIZONTAL	Power : DC 12V
EUT : OBU	Note : Mode 2: Transmit (Power by Battery)_5890MHz

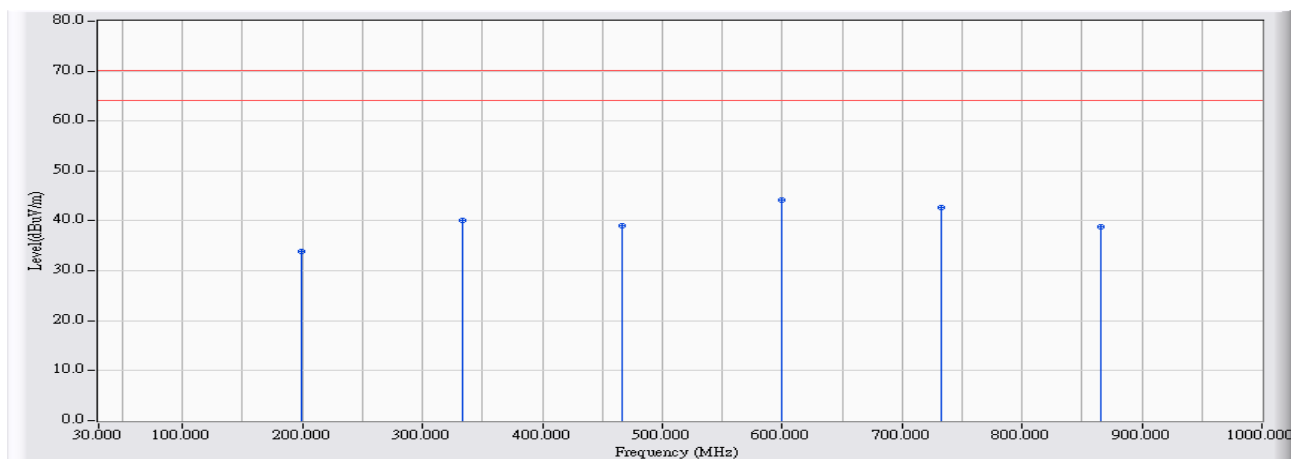


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		199.665	12.525	28.810	41.335	-28.865	70.200	PEAK
2		332.974	14.432	25.152	39.583	-30.617	70.200	PEAK
3		374.663	15.384	22.585	37.969	-32.231	70.200	PEAK
4		599.590	19.695	22.050	41.745	-28.455	70.200	PEAK
5		679.575	20.785	17.858	38.643	-31.557	70.200	PEAK
6	*	732.899	21.478	27.005	48.482	-21.718	70.200	PEAK

Note:

1. All Reading Levels are Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	Time : 2015/01/16 - 13:39
Limit : FCC_Part95_H_03M_PK	Margin : 6
Probe : CB1_FCC_30M-1G-4_9161 - VERTICAL	Power : DC 12V
EUT : OBU	Note : Mode 2: Transmit (Power by Battery)_5890MHz



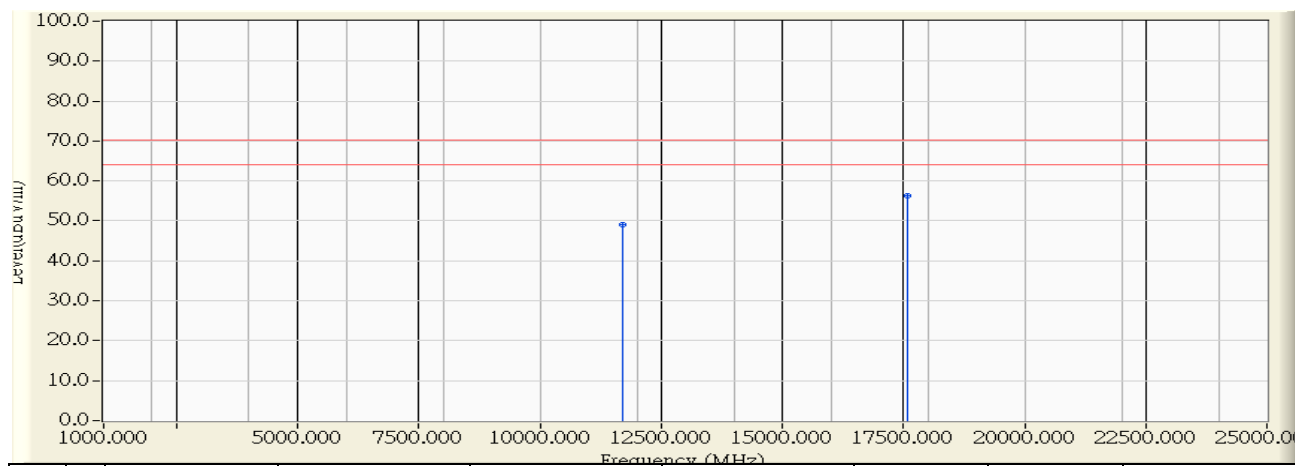
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		199.665	12.525	21.417	33.942	-36.258	70.200	PEAK
2		332.974	14.432	25.576	40.007	-30.193	70.200	PEAK
3		466.282	17.349	21.645	38.994	-31.206	70.200	PEAK
4	*	599.590	19.695	24.590	44.285	-25.915	70.200	PEAK
5		732.899	21.478	21.230	42.707	-27.493	70.200	PEAK
6		866.207	23.071	15.775	38.846	-31.354	70.200	PEAK

Note:

1. All Reading Levels are Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Harmonic & Spurious:

Site : CB1	Time : 2015/01/08 - 16:35
Limit : FCC Part95	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : AC120V/60Hz
EUT : OBU	Note : Mode 1: Transmit (Power by Adapter) _5860MHz

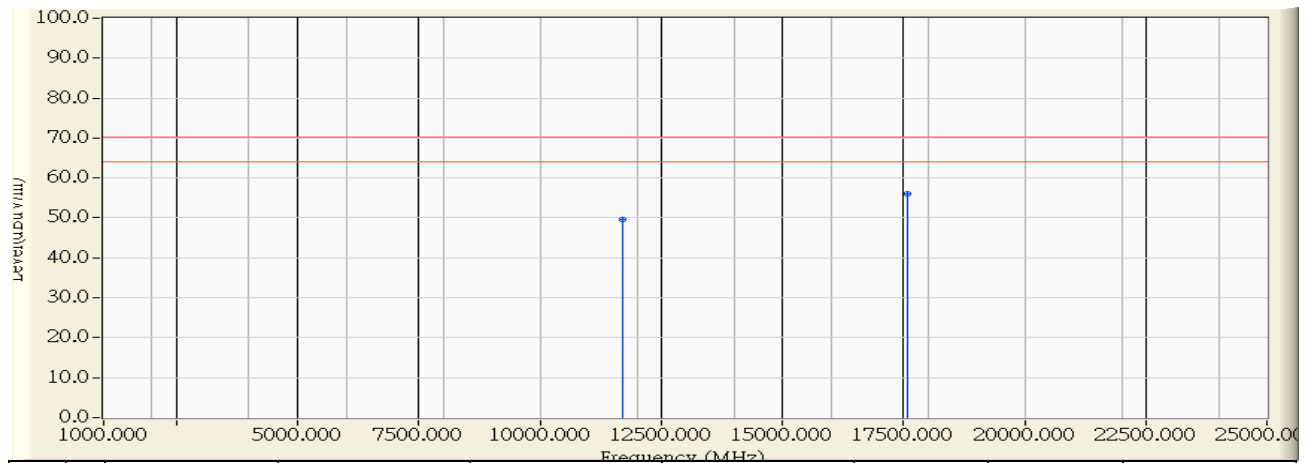


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11720.000	11.334	37.612	48.946	-21.254	70.200	PEAK
2	*	17580.000	18.009	38.391	56.400	-13.800	70.200	PEAK

Note:

1. All Reading Levels are Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	Time : 2015/01/08 - 16:28
Limit : FCC Part95	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : AC120V/60Hz
EUT : OBU	Note : Mode 1: Transmit (Power by Adapter) _5860MHz

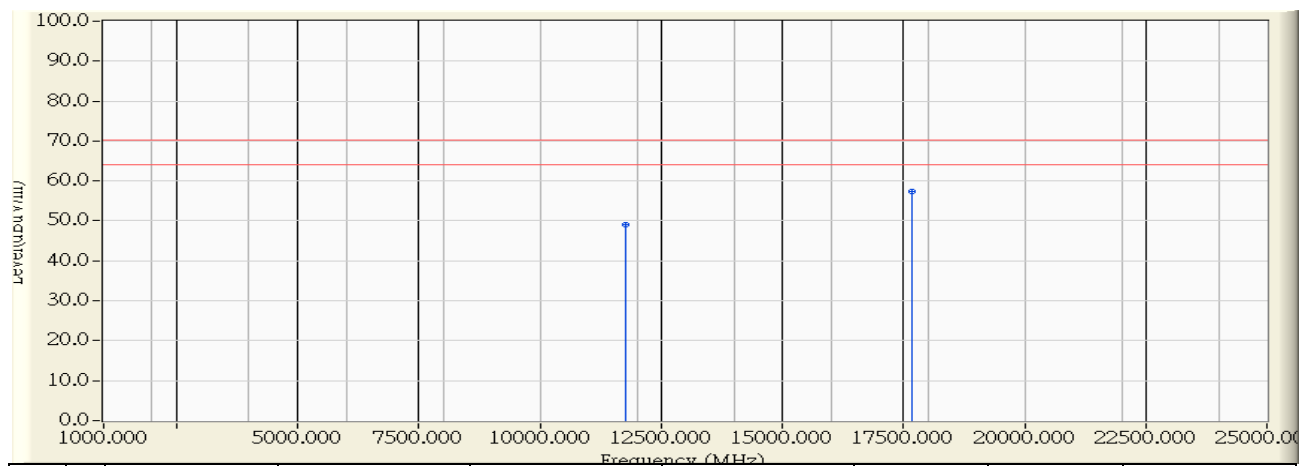


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11720.000	11.334	38.243	49.577	-20.623	70.200	PEAK
2	*	17580.000	18.009	38.022	56.031	-14.169	70.200	PEAK

Note:

1. All Reading Levels are Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	Time : 2015/01/08 - 16:38
Limit : FCC Part95	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : AC120V/60Hz
EUT : OBU	Note : Mode 1: Transmit (Power by Adapter) _5890MHz

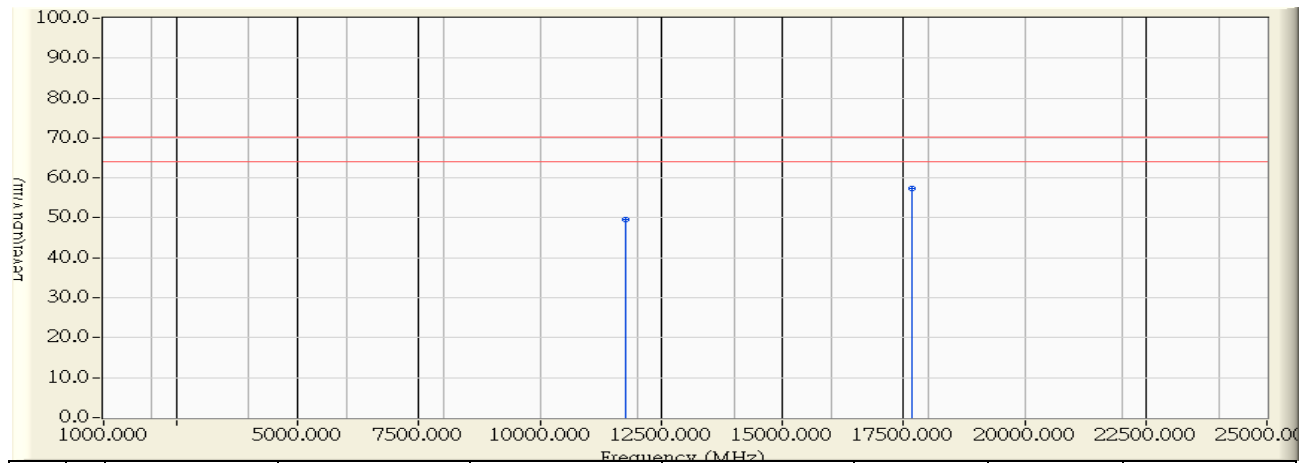


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11780.000	11.287	37.806	49.093	-21.107	70.200	PEAK
2	*	17670.000	19.089	38.151	57.240	-12.960	70.200	PEAK

Note:

1. All Reading Levels are Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	Time : 2015/01/08 - 16:41
Limit : FCC Part95	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : AC120V/60Hz
EUT : OBU	Note : Mode 1: Transmit (Power by Adapter) _5890MHz

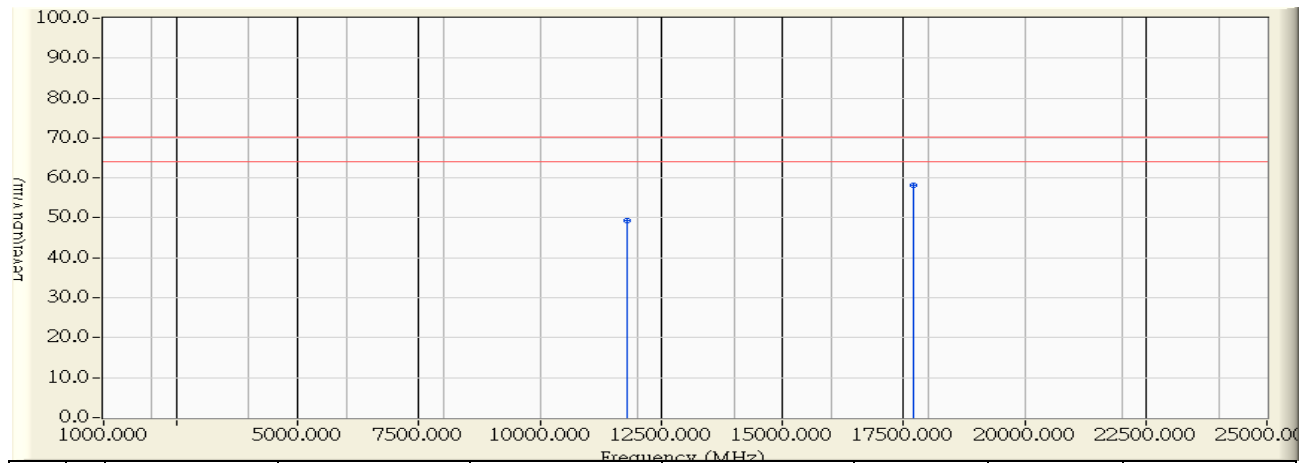


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11780.000	11.287	38.392	49.679	-20.521	70.200	PEAK
2	*	17670.000	19.089	38.354	57.443	-12.757	70.200	PEAK

Note:

1. All Reading Levels are Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	Time : 2015/01/08 - 16:48
Limit : FCC Part95	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : AC120V/60Hz
EUT : OBU	Note : Mode 1: Transmit (Power by Adapter) _5900MHz

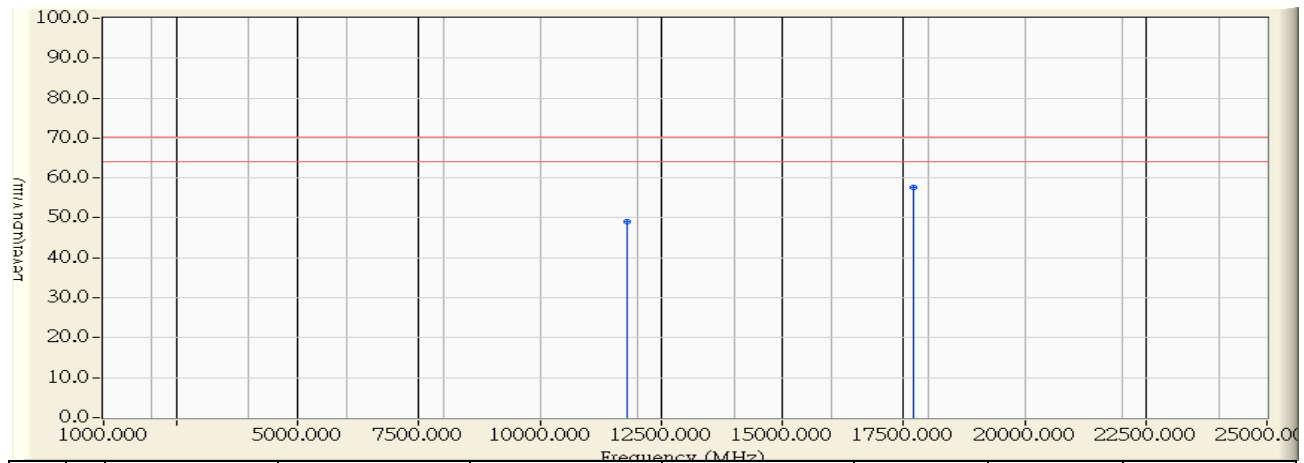


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11800.000	11.272	37.948	49.220	-20.980	70.200	PEAK
2	*	17700.000	19.449	38.781	58.230	-11.970	70.200	PEAK

Note:

1. All Reading Levels are Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	Time : 2015/01/08 - 16:45
Limit : FCC Part95	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : AC120V/60Hz
EUT : OBU	Note : Mode 1: Transmit (Power by Adapter) _5900MHz

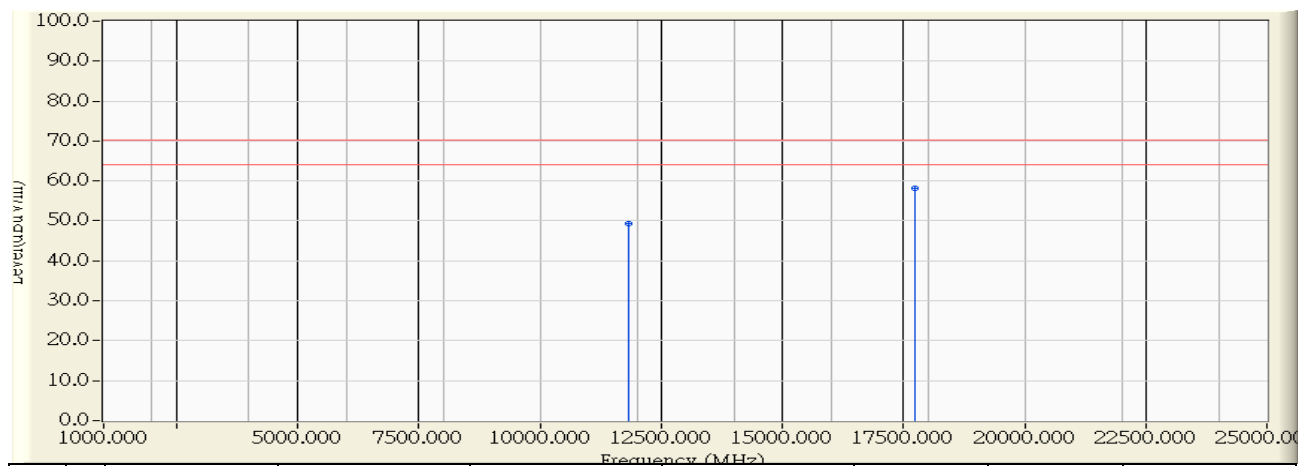


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11800.000	11.272	37.836	49.108	-21.092	70.200	PEAK
2	*	17700.000	19.449	38.287	57.736	-12.464	70.200	PEAK

Note:

1. All Reading Levels are Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	Time : 2015/01/08 - 17:11
Limit : FCC Part95	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : AC120V/60Hz
EUT : OBU	Note : Mode 1: Transmit (Power by Adapter) _5910MHz

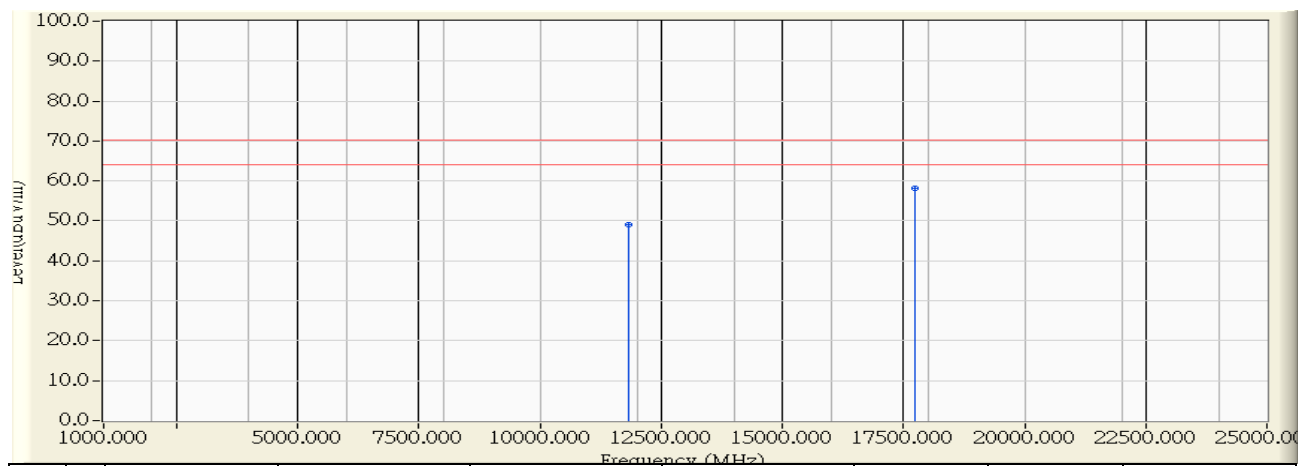


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11820.000	11.256	38.037	49.293	-20.907	70.200	PEAK
2	*	17730.000	19.809	38.467	58.276	-11.924	70.200	PEAK

Note:

1. All Reading Levels are Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	Time : 2015/01/08 - 17:16
Limit : FCC Part95	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : AC120V/60Hz
EUT : OBU	Note : Mode 1: Transmit (Power by Adapter) _5910MHz

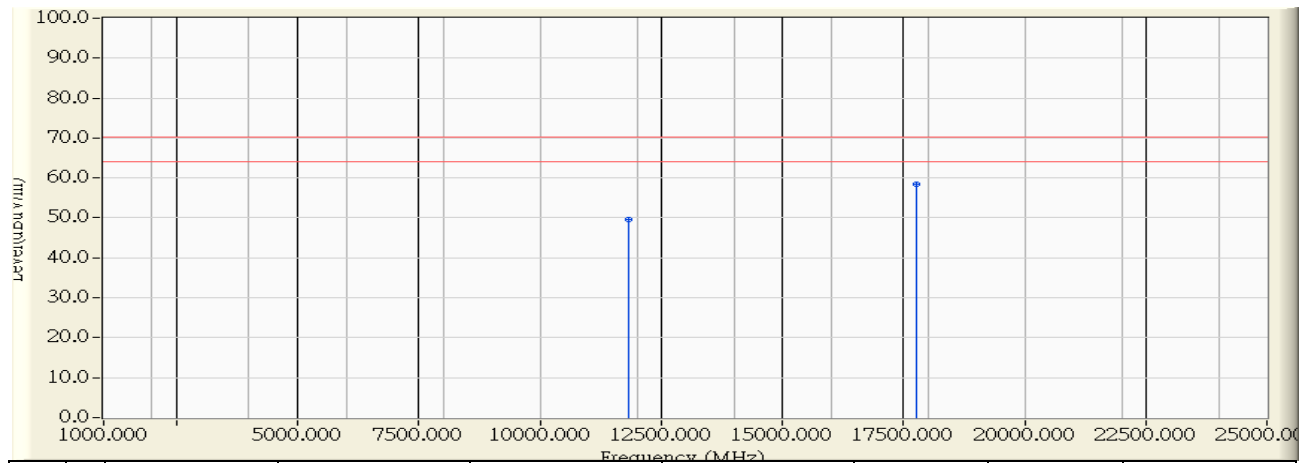


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11820.000	11.256	37.701	48.957	-21.243	70.200	PEAK
2	*	17730.000	19.809	38.369	58.178	-12.022	70.200	PEAK

Note:

1. All Reading Levels are Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	Time : 2015/01/08 - 17:23
Limit : FCC Part95	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : AC120V/60Hz
EUT : OBU	Note : Mode 1: Transmit (Power by Adapter) _5920MHz

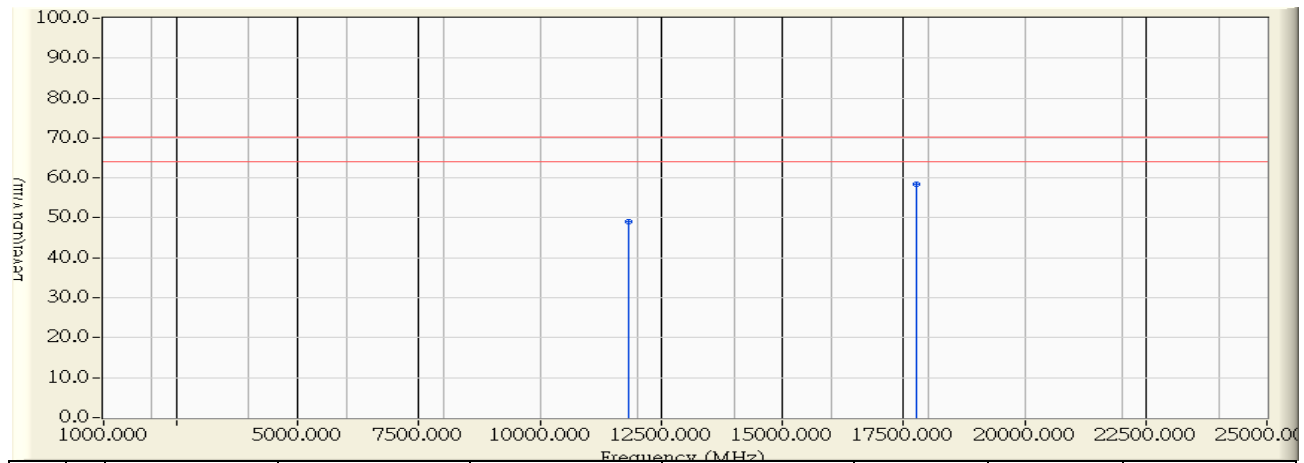


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11840.000	11.241	38.372	49.613	-20.587	70.200	PEAK
2	*	17760.000	20.169	38.348	58.517	-11.683	70.200	PEAK

Note:

1. All Reading Levels are Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	Time : 2015/01/08 - 17:20
Limit : FCC Part95	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : AC120V/60Hz
EUT : OBU	Note : Mode 1: Transmit (Power by Adapter) _5920MHz



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11840.000	11.241	37.716	48.957	-21.243	70.200	PEAK
2	*	17760.000	20.169	38.253	58.422	-11.778	70.200	PEAK

Note:

1. All Reading Levels are Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

7. Frequency Stability

7.1. Test Equipment

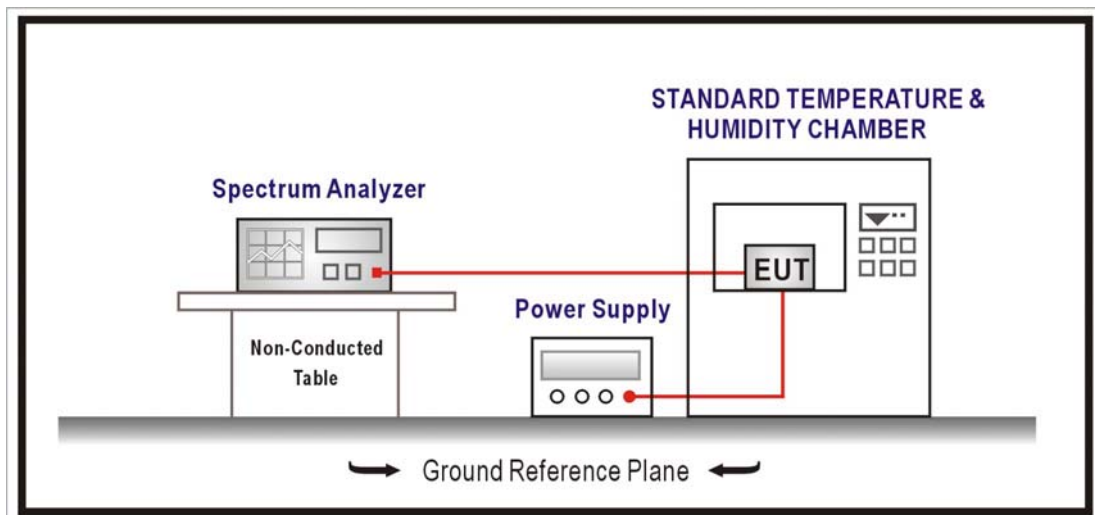
The following test equipments are used during the radiated emission tests:

Frequency Stability / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2015/07/14
Temperature & Humidity Chamber	WIT	TH-1S-B	1082101	2015/01/22

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

7.2. Test Setup



7.3. Limits

Temperature range requirements: -20 to +50° C.

Voltage Variation +, -15%

±10 PPM

7.4. Test Procedure

The frequency stability was measured per ANSI/TIA 603-D: 2010 clause 3.2.2

7.5. Uncertainty

The measurement uncertainty is defined as ± 150 Hz

7.6. Test Result

Product	OBU		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit (Power by Adapter)- 5890MHz		
Date of Test	2015/01/07	Test Site	SR7

Temperature Interval(°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Limit(ppm)
-20	120	5889.9582	-7.0932	10
-10		5889.9516	-8.2123	10
0		5889.9585	-7.0527	10
10		5889.9922	-1.3267	10
20		5889.9739	-4.4346	10
30		5889.9704	-5.0269	10
40		5889.9524	-8.0781	10
50		5889.9871	-2.1967	10

Temperature Interval(°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Limit(ppm)
25	102	5889.9560	-7.4719	10
	120	5889.9742	-4.3843	10
	138	5889.9603	-6.7366	10