

APPLICATION FOR CERTIFICATION

On Behalf of

FUTABA Corporation

Wireless Modem with Serial Interface

Model No. : FDQ02T

FCC ID : AZP-FDQ02T2

IC: 2914-FDQ02T2

Brand : Futaba

Prepared for : FUTABA Corporation
1080 Yabutsuka Chosei-son Chosei-gun
Chiba, 299-4395 Japan.

Prepared by : AUDIX Technology Corporation
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Date of Report : 2014. 11. 27

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TEST REPORT CERTIFICATION

Applicant : FUTABA Corporation
Manufacturer : FUTABA Corporation
EUT Description : Wireless Modem with Serial Interface
FCC ID : **AZP-FDQ02T2**
IC : **2914-FDQ02T2**
(A) Model No. : FDQ02T
(B) Serial No. : N/A
(C) Brand : Futaba
(D) Power Supply : DC 3.5 ~ 7V
(E) Test Voltage : DC 6V (Via DC Power Supply)

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C, Oct. 2013
Industry Canada Rules and Regulations RSS-Gen (Issue 4), November 2014 and
RSS-210 (Issue 8), December 2010
(Canada RSS-210 §Annex 8)
And ANSI C63.4:2003

(FCC CFR 47 Part 15C, §15.205 and §15.207 and §15.209 and §15.247)

The device described above was tested by AUDIX Technology Corporation to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 subpart B and C and Canada RSS-Gen, RSS-210 limits.

The measurement results are contained in this test report and AUDIX Technology Corporation is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the requirements of FCC and Industry Canada RSS-Gen, RSS-210 standards.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX Technology Corporation.

Date of Test: 2014. 10. 22 ~ 11. 17

Date of Report: 2014. 11. 27

Producer: 
(Tina Huang/Administrator)

Signatory: 
(Ben Cheng/Manager)

1. DESCRIPTION OF REVISION HISTORY

Edition No.	Date of Revision	Revision Summary	Report Number
0	2014. 11. 27	Original Report.	EM-F140738

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Product	Wireless Modem with Serial Interface									
Model Number	FDQ02T									
Serial Number	N/A									
Brand Name	Futaba									
Applicant	FUTABA Corporation 1080 Yabutsuka Chosei-son Chosei-gun Chiba, 299-4395 Japan.									
Manufacturer	FUTABA Corporation 1080 Yabutsuka Chosei-son Chosei-gun Chiba, 299-4395 Japan.									
FCC ID	AZP-FDQ02T2									
IC	2914-FDQ02T2									
Radio Technology	DSSS Modulation									
Fundamental Range	2405.376 ~ 2475.008MHz									
Frequency Channel	22 Channels									
Antenna	Type A: DAI-ICHI DENPA KOGYO CO., LTD TK-1619A , Gain: 2.14dBi, Dipole Antenna Type B: SANSEI Electronic co., Ltd ANTB18-096 , Gain: 2.14dBi, Dipole Antenna Type C: ANTENEX Inc. TRAB24003 , Gain: 3dBi, Phantom Antenna									
Tested Frequency	<table border="1"> <thead> <tr> <th>Channel No.</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>CH 02</td> <td>2405.376MHz</td> </tr> <tr> <td>CH 36</td> <td>2440.192MHz</td> </tr> <tr> <td>CH 70</td> <td>2475.008MHz</td> </tr> </tbody> </table>		Channel No.	Frequency	CH 02	2405.376MHz	CH 36	2440.192MHz	CH 70	2475.008MHz
Channel No.	Frequency									
CH 02	2405.376MHz									
CH 36	2440.192MHz									
CH 70	2475.008MHz									
Date of Receipt of Sample	2014. 10. 03									
Date of Test	2014. 10. 22 ~ 11. 17									

2.2. Tested Supporting System Details

2.2.1. Support Peripheral Units

No.	Product	Brand	Model No.	Serial No.	Approval
1.	Notebook PC	DELL	P20G	P20G001	By DoC
2.	Dc Power Supply	TOP WARD	3303A	721773	N/A
3.	Test Jig	Futaba	N/A	N/A	N/A

2.2.2. Cable Lists

No.	Cable Description Of The Above Support Units
1.	AC Adapter ACBEL, M/N AA90PM111, Power Cord : I/P: Non-Shielded, Detachable, 1.8m O/P: Shielded, Undetachable, 1.8m, Bonded a ferrite core
2.	DC Power Cord*2: Non-Shielded, Detachable, 0.6m AC Power Cord: Non-Shielded, Undetachable, 1.8m
3.	JIG Cable: Non-Shielded, Detachable, 0.3m *2 BUS Cable: Non-Shielded, Detachable, 0.1m

2.3. Description of Test Facility

Name of Firm : **AUDIX Technology Corporation**
EMC Department
 No. 53-11, Dingfu, Linkou Dist.,
 New Taipei City 244, Taiwan

Test Location & Facility : **No. 8 Shielded Room**
No. 1 Semi-Anechoic Chamber
 No. 53-11, Dingfu, Linkou Dist.,
 New Taipei City 244, Taiwan
 May 11, 2012 File on
 Federal Communication Commission
 Registration Number: 90993

NVLAP Lab. Code : 200077-0

TAF Accreditation No : 1724

2.4. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty
Conduction Test	150kHz~30MHz	±3.43dB
Radiation Test (Distance: 3m)	30MHz~300MHz	± 3.64dB
	300MHz~1000MHz	± 4.70dB
	Above 1GHz	± 2.94dB

Remark : Uncertainty = $ku_c(y)$

Test Item	Uncertainty
6dB Bandwidth	± 0.05kHz
Maximum peak output power	± 0.33dBm
Band edges	± 0.13dB
Power spectral density	± 0.13dB
Emission Limitations	± 0.13dB

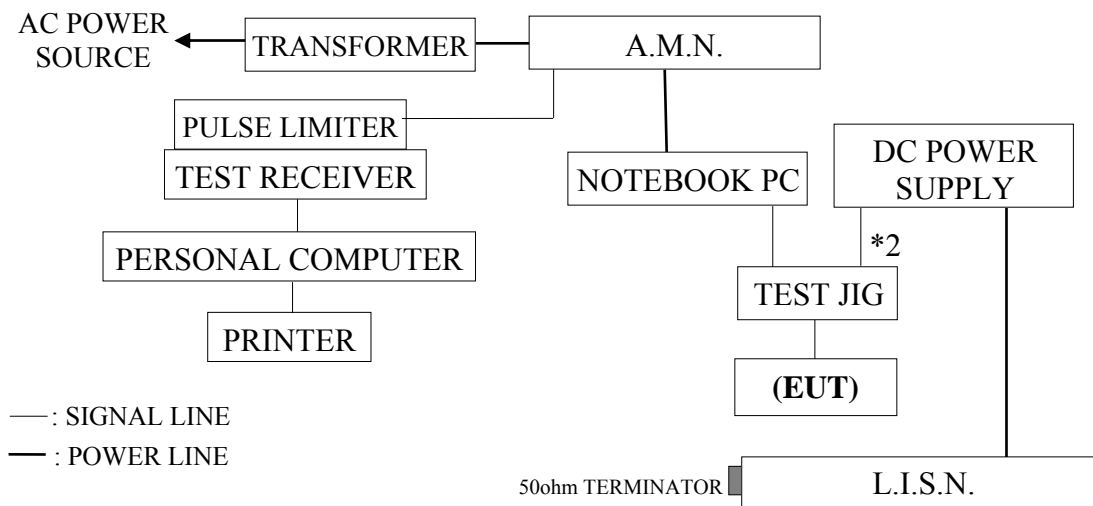
3. CONDUCTED EMISSION MEASUREMENT

3.1. Test Equipments

The following test equipments were used during the conducted emission measurement : (No. 8 Shielded Room)

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Test Receiver	R&S	ESR3	101774	2014. 02. 19	1 Year
2	A.M.N.	R&S	ESH2-Z5	100366	2014. 03. 21	1 Year
3	L.I.S.N.	Kyoritsu	KNW-407	8-855-9	2013. 12. 26	1 Year
4	Pulse Limiter	R&S	ESH3-Z2	100354	2014. 01. 18	1 Year

3.2. Block Diagram of Test Setup



EUT: WIRELESS MODEM WITH SERIAL INTERFACE

3.3. Powerline Conducted Emission Limit §15.207, Class B, RSS-Gen §8.8/Table 3]

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dB μ V	56 ~ 46 dB μ V
500kHz ~ 5MHz	56 dB μ V	46 dB μ V
5MHz ~ 30MHz	60 dB μ V	50 dB μ V

Remark 1.: If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits and measurement with the average detector is unnecessary.

2.: The lower limit applies at the band edges.

3.4. Operating Condition of EUT

- 3.4.1. Setup the EUT and simulator as shown on 3.2.
- 3.4.2. Turn on the power of all equipment.
- 3.4.3. The Notebook PC was running test software “Futaba term” to set EUT on transmitting and receiving during all testing.

3.5. Test Procedure

The EUT (link Notebook PC) was placed on the table which was above the ground by 80cm and Notebook PC’s adapter’s power cord connected to the AC mains through an Artificial Mains Network (A.M.N.). This provided a 50 ohm coupling impedance for the measuring equipment. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions simulators of the interface cables should be manipulated according to ANSI C63.4-2003, RSS-Gen and RSS-210 regulation during conducted measurement.

The bandwidth of the R&S Test Receiver ESR3 was set at 9kHz.

The frequency range from 150kHz to 30MHz was checked.

All the final readings from Test Receiver were measured with the Quasi-Peak detector and Average detector. (Remark: If the Average limit is met when using a Quasi-Peak detector, the Average detector is unnecessary.)

3.6. Conducted Emission Measurement Results

PASSED.

(All the emissions not reported below are too low against the prescribed limits.)

EUT was performed during this section testing and all the test results are attached in next pages.

EUT : Wireless Modem with Serial Interface

M/N : FDQ02T

Test Date : 2014. 10. 22

Temperature : 27

Humidity : 64%

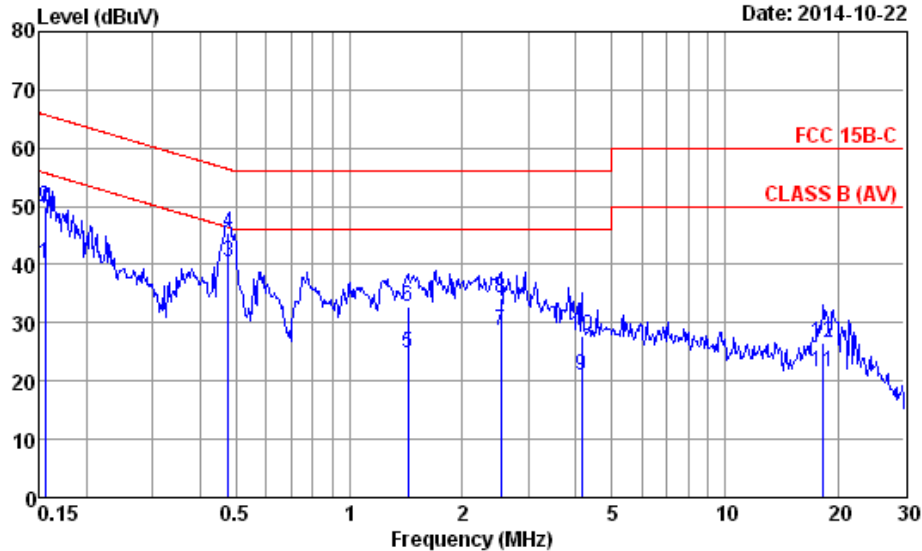
The details are as follows :

Mode	Reference Test Data	
	Neutral	Line
1.	# 4	# 3



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 Email: emc@audixtech.com

Data: 4 File: D:\test data\REPORT\2014\1M1410XXX\1M1410011-C-D.EM6 (4)



Site no. : No.8 Shielded Room Data no. : 4
 Condition : ESH2-Z5 366 Phase : NEUTRAL
 Limit : FCC 15B-C
 Env. / Ins. : 27°C / 64% ESR3 (1774) Engineer : John
 EUT : FDQ02T
 Power Rating : 120Vac/60Hz
 Test Mode : Operating

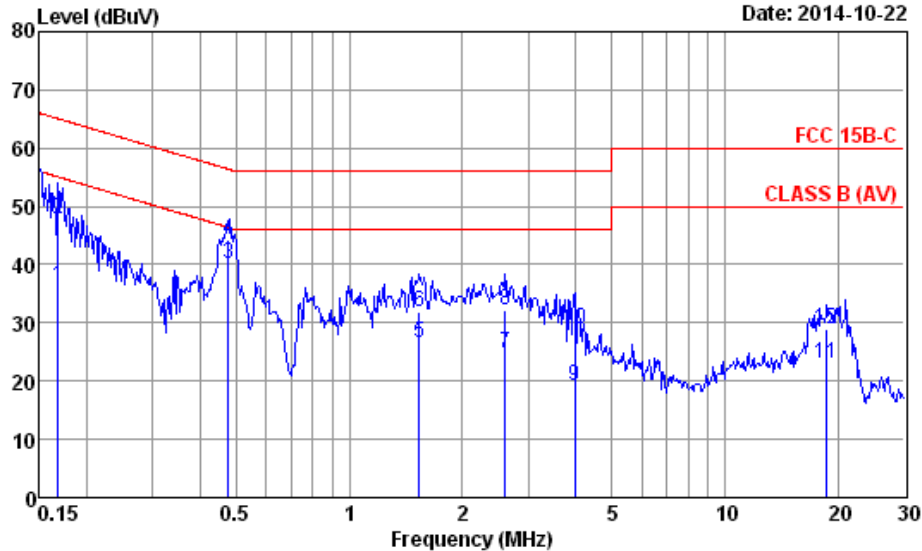
	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dB μ V)	Emission Level (dB μ V)	Limits (dB μ V)	Margin (dB)	Remark
1	0.155	0.21	0.03	9.85	30.16	40.25	55.74	15.49	Average
2	0.155	0.21	0.03	9.85	39.82	49.91	65.74	15.83	QP
3	0.476	0.23	0.03	9.85	30.28	40.39	46.41	6.02	Average
4	0.476	0.23	0.03	9.85	35.23	45.34	56.41	11.07	QP
5	1.433	0.24	0.06	9.85	14.58	24.73	46.00	21.27	Average
6	1.433	0.24	0.06	9.85	22.65	32.80	56.00	23.20	QP
7	2.527	0.28	0.09	9.85	18.51	28.73	46.00	17.27	Average
8	2.527	0.28	0.09	9.85	23.94	34.16	56.00	21.84	QP
9	4.158	0.34	0.12	9.86	10.54	20.86	46.00	25.14	Average
10	4.158	0.34	0.12	9.86	17.50	27.82	56.00	28.18	QP
11	18.232	0.76	0.24	9.92	10.60	21.52	50.00	28.48	Average
12	18.232	0.76	0.24	9.92	15.69	26.61	60.00	33.39	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.
 2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.



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 Email: emc@audixtech.com

Data: 3 File: D:\test data\REPORT\2014\1M1410XXX\1M1410011-C-D.EM6 (4)



Site no. : No.8 Shielded Room Data no. : 3
 Condition : ESH2-Z5 366 Phase : LINE
 Limit : FCC 15B-C
 Env. / Ins. : 27°C / 64% ESR3 (1774) Engineer : John
 EUT : FDQ02T
 Power Rating : 120Vac/60Hz
 Test Mode : Operating

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.168	0.18	0.03	9.85	26.27	36.33	55.08	18.75	Average
2	0.168	0.18	0.03	9.85	37.68	47.74	65.08	17.34	QP
3	0.476	0.20	0.03	9.85	29.96	40.04	46.41	6.37	Average
4	0.476	0.20	0.03	9.85	34.28	44.36	56.41	12.05	QP
5	1.535	0.23	0.06	9.85	16.55	26.69	46.00	19.31	Average
6	1.535	0.23	0.06	9.85	21.77	31.91	56.00	24.09	QP
7	2.594	0.26	0.09	9.85	14.61	24.81	46.00	21.19	Average
8	2.594	0.26	0.09	9.85	21.96	32.16	56.00	23.84	QP
9	3.985	0.29	0.12	9.86	8.99	19.26	46.00	26.74	Average
10	3.985	0.29	0.12	9.86	18.67	28.94	56.00	27.06	QP
11	18.622	0.66	0.24	9.92	12.24	23.06	50.00	26.94	Average
12	18.622	0.66	0.24	9.92	17.99	28.81	60.00	31.19	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.
 2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

4. RADIATED EMISSION MEASUREMENT

4.1. Test Equipments

The following test equipments were used during the radiated emission measurement:

4.1.1. For Frequency Range 30MHz~1000MHz (at Semi-Anechoic Chamber)

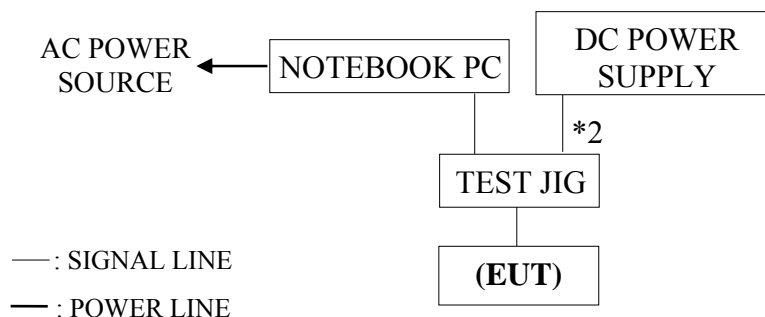
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Spectrum Analyzer	Agilent	N9010A-503	MY52220119	2014. 06. 25	1 Year
2	Test Receiver	R & S	ESCS30	100338	2014. 06. 24	1 Year
3	Amplifier	HP	8447D	2944A06305	2014. 02. 19	1 Year
4	Bilog Antenna	TESEQ	CBL6112D	33821	2014. 08. 02	1 Year

4.1.2. For Frequency Above 1GHz (at Semi-Anechoic Chamber)

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Spectrum Analyzer	Agilent	N9030A-544	US51350140	2014. 06. 25	1 Year
2	Test Receiver	R & S	ESCS30	100338	2014. 06. 24	1 Year
3	Amplifier	Agilent	8449B	3008A02676	2014. 02. 21	1 Year
4	2.4GHz Notch Filter	K&L	7NSL10-2441 .5E130.5-00	1	2014. 06. 12	1 Year
5	3G High Pass Filter	Microwave Circuits	H3G018G1	484796	2014. 06. 12	1 Year
6	Horn Antenna	EMCO	3115	9609-4927	2014. 06. 17	1 Year
7	Horn Antenna	EMCO	3116	2653	2014. 10. 10	1 Year

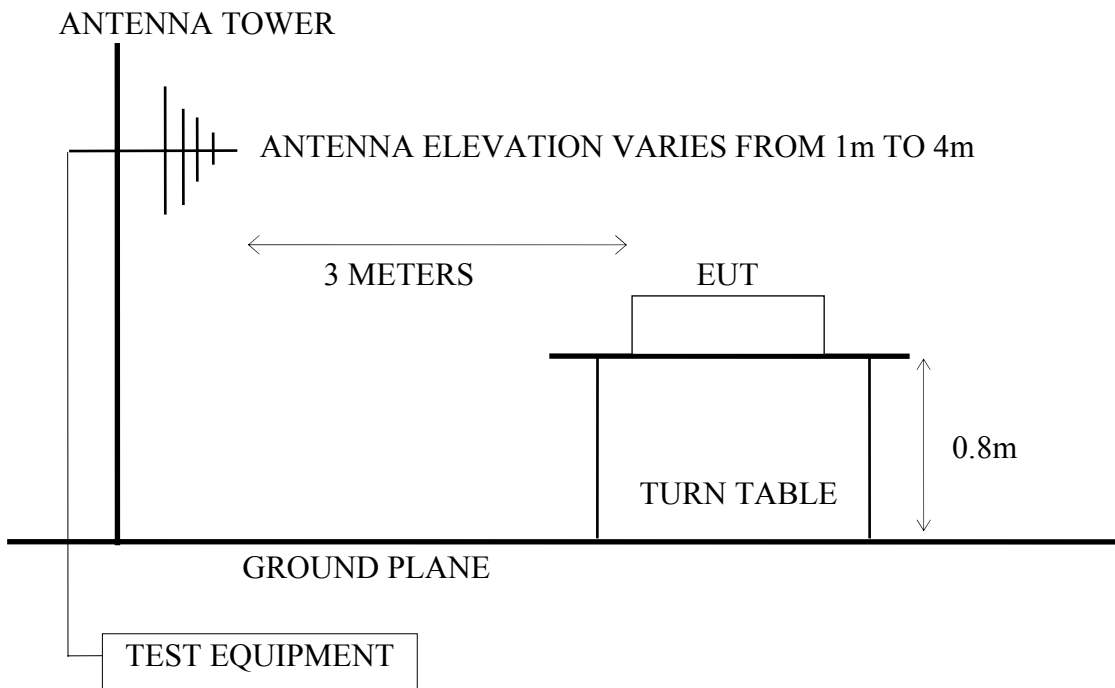
4.2. Test Setup

4.2.1. Block Diagram of connection between EUT and simulators

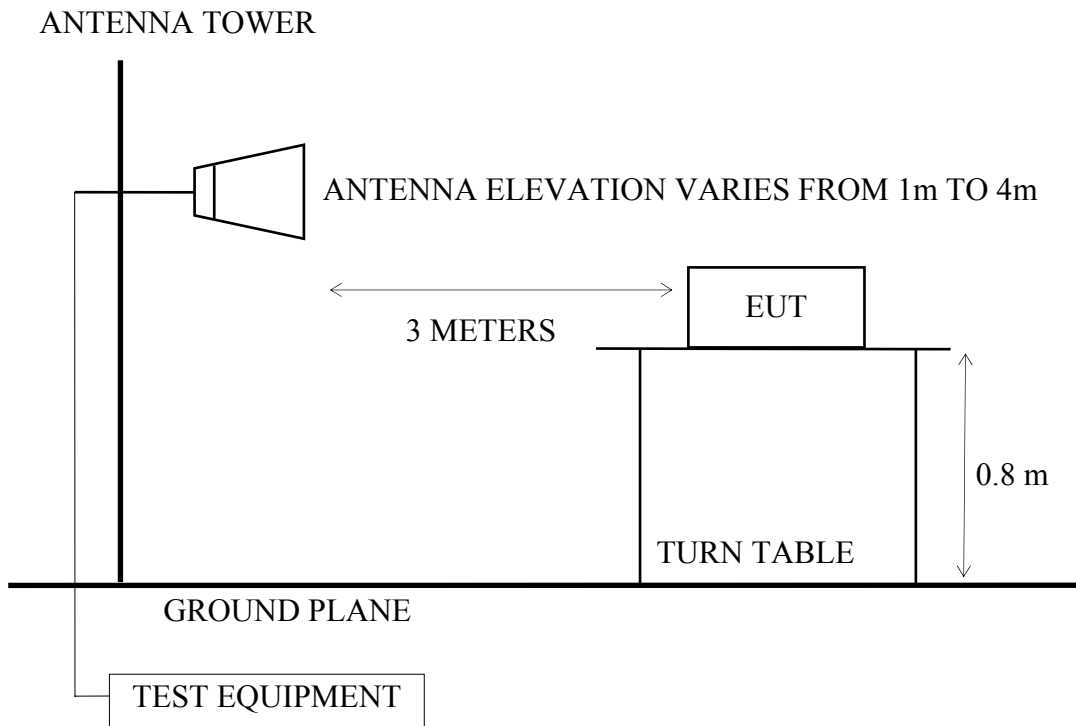


EUT: WIRELESS MODEM WITH SERIAL INTERFACE

4.2.2. Semi-Anechoic Chamber (3m) Setup Diagram for 30-1000MHz



4.2.3. Semi-Anechoic Chamber (3m) Setup Diagram for above 1GHz



4.3. Radiated Emission Limits (§15.209, RSS-Gen §8.9/Table 4)

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMITS	
		$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0
Above 1000	3	74.0 $\text{dB}\mu\text{V/m}$ (Peak) 54.0 $\text{dB}\mu\text{V/m}$ (Average)	

- Remark :
- (1) Emission level ($\text{dB}\mu\text{V/m}$) = 20 log Emission level ($\mu\text{V/m}$)
 - (2) The tighter limit applies at the edge between two frequency bands.
 - (3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
 - (4) The limits in this table are based on CFR 47 Part 15.205(a)(b) and Part 15.209 (a).
 - (5) The over 1GHz limit, FCC limit is used based on CFR 47 Part 15.35(b) and Part 15.205(b) & Part 15.209(e) and Part 15.207(c).

4.4. Operating Condition of EUT

- 4.4.1. Set up the EUT as shown on 4.2.
- 4.4.2. To turn on the power of all equipments.
- 4.4.3. The Notebook PC was running test software “Futaba term” to set EUT on transmitting and receiving during all testing.
- 4.4.4. The EUT set to continuously transmit signals at 2405.376MHz, 2440.192MHz and 2475.008MHz during all test time.

4.5. Test Procedure

The EUT and its simulators were placed on a turn table which was 0.8 meter above the ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. EUT was set 3 meters away from the receiving antenna which was mounted on an antenna tower. The antenna moved up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna such as calibrated biconical and log-periodical antenna or horn antenna were used as a receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4-2003, RSS-Gen and RSS-210 regulation.

The bandwidth of the R&S Test Receiver ESCS30 was set at 120kHz. (For 30MHz to 1000MHz)

The resolution bandwidth and video bandwidth of test spectrum analyzer is 1MHz for peak detection (PK) at frequency above 1GHz.

The resolution bandwidth of test spectrum analyzer is 1MHz and the video bandwidth is 10Hz for average detection (AV) at frequency above 1GHz.

The frequency range from 30MHz to 25GHz (Up to 10th harmonics from fundamental frequency) was checked. 30MHz to 1000MHz was measured with Quasi-Peak detector. Pursuant to ANSI 63.4: 4.2, peak detector is an alternate option for frequency from 30MHz to 1000MHz.

Above 1GHz was measured with peak and average detector. For frequency from 1GHz to 4GHz and 5.5GHz to 25GHz, we checked it in 1 meter distance and with a shorter cable 2 meter instead of original's. There is no signal exist.

Pursuant to ANSI C63.4 8.3.1.2, when peak value complies with the average limit, we didn't perform measurement in average detector.

4.6. Test Results

PASSED.

(All emissions not reported below are too low against the prescribed limits.)

EUT : Wireless Modem with Serial Interface M/N : FDQ02T

Test Date : 2014. 11. 17 Temperature : 26 Humidity : 43%

For Frequency Range 30MHz~1000MHz:

The EUT with following test modes were performed during this section testing and all the test results are listed in section 4.6.1.

Mode	Antenna Type	Channel No.	Frequency	Test Mode	Reference Test Data	
					Horizontal	Vertical
1.	A	CH 02	2405.376MHz	Transmit	# 2	# 1
2.		CH 36	2440.192MHz		# 2	# 1
3.		CH 70	2475.008MHz		# 2	# 1

Mode	Antenna Type	Channel No.	Frequency	Test Mode	Reference Test Data	
					Horizontal	Vertical
4.	B	CH 02	2405.376MHz	Transmit	# 2	# 1
5.		CH 36	2440.192MHz		# 2	# 1
6.		CH 70	2475.008MHz		# 2	# 1

Mode	Antenna Type	Channel No.	Frequency	Test Mode	Reference Test Data	
					Horizontal	Vertical
7.	C	CH 02	2405.376MHz	Transmit	# 2	# 1
8.		CH 36	2440.192MHz		# 2	# 1
9.		CH 70	2475.008MHz		# 2	# 1

* Above all final readings were measured with Peak detector.

For Frequency above 1GHz:

The EUT with following test modes was performed during this section testing and all the test results are listed in section 4.6.2.

Mode	Antenna Type	Channel No.	Frequency	Test Mode	Test Frequency Range
1.	A	CH 02	2405.376MHz	Transmit	1000-2680MHz
2.					2680-4000MHz
3.					4000-5500MHz*
4.					5500-7500MHz
5.					7500-18000MHz
6.					18000-25000MHz
7.		CH 36	2440.192MHz	Transmit	1000-2680MHz
8.					2680-4000MHz
9.					4000-5500MHz*
10.					5500-7500MHz
11.					7500-18000MHz
12.					18000-25000MHz
13.		CH 70	2475.008MHz	Transmit	1000-2680MHz
14.					2680-4000MHz
15.					4000-5500MHz*
16.					5500-7500MHz
17.					7500-18000MHz
18.					18000-25000MHz

Mode	Antenna Type	Channel No.	Frequency	Test Mode	Test Frequency Range
19.	B	CH 02	2405.376MHz	Transmit	1000-2680MHz
20.					2680-4000MHz
21.					4000-5500MHz*
22.					5500-7500MHz
23.					7500-18000MHz
24.					18000-25000MHz
25.		CH 36	2440.192MHz	Transmit	1000-2680MHz
26.					2680-4000MHz
27.					4000-5500MHz*
28.					5500-7500MHz
29.					7500-18000MHz
30.					18000-25000MHz
31.		CH 70	2475.008MHz	Transmit	1000-2680MHz
32.					2680-4000MHz
33.					4000-5500MHz*
34.					5500-7500MHz
35.					7500-18000MHz
36.					18000-25000MHz

Mode	Antenna Type	Channel No.	Frequency	Test Mode	Test Frequency Range
37.	C	CH 02	2405.376MHz	Transmit	1000-2680MHz
38.					2680-4000MHz
39.					4000-5500MHz*
40.					5500-7500MHz
41.					7500-18000MHz
42.					18000-25000MHz
43.		CH 36	2440.192MHz	Transmit	1000-2680MHz
44.					2680-4000MHz
45.					4000-5500MHz*
46.					5500-7500MHz
47.					7500-18000MHz
48.					18000-25000MHz
49.		CH 70	2475.008MHz	Transmit	1000-2680MHz
50.					2680-4000MHz
51.					4000-5500MHz*
52.					5500-7500MHz
53.					7500-18000MHz
54.					18000-25000MHz

Note: 1. Above all final readings were measured with Peak and Average detector.
 2. The emissions (up to 25GHz) not reported are too low to be measured.
 3. "*" means there is spurious emission falling the frequency band and be measures.

For Restricted Bands:

The EUT was tested in restricted bands and all the test results are listed in section 4.6.3. (The restricted bands defined in part 15.205(a))

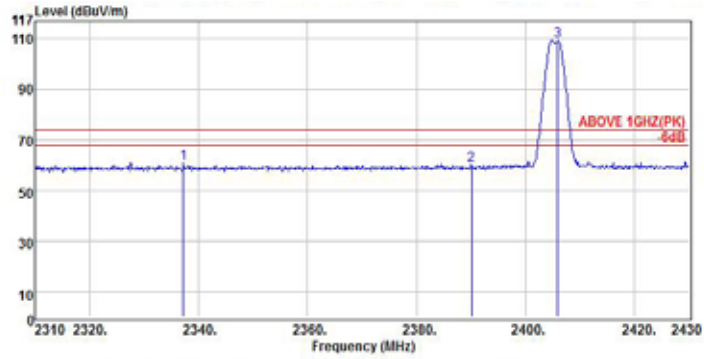
Mode	Antenna Type	Channel	Frequency	Test Mode	Reference Test Data No.	
					Horizontal	Vertical
1.	A	CH 02	2405.376MHz	Transmit	# 3, # 4	# 1, # 2
2.		CH 70	2475.008MHz		# 7, # 8	# 5, # 6

Mode	Antenna Type	Channel	Frequency	Test Mode	Reference Test Data No.	
					Horizontal	Vertical
3.	B	CH 02	2405.376MHz	Transmit	# 3, # 4	# 1, # 2
4.		CH 70	2475.008MHz		# 7, # 8	# 5, # 6

Mode	Antenna Type	Channel	Frequency	Test Mode	Reference Test Data No.	
					Horizontal	Vertical
5.	C	CH 02	2405.376MHz	Transmit	# 3, # 4	# 1, # 2
6.		CH 70	2475.008MHz		# 7, # 8	# 5, # 6

4.6.3. Restricted Bands Measurement Results

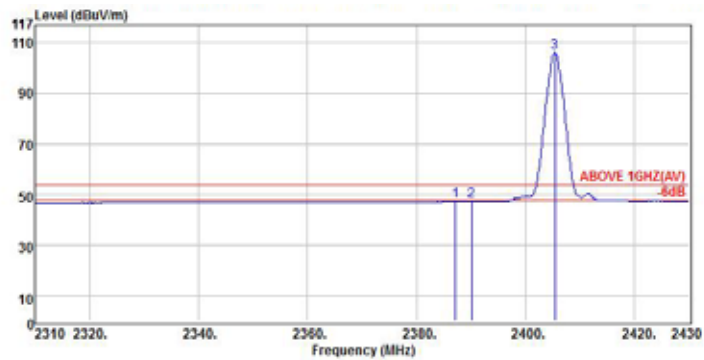
Date of Test : 2014. 11. 17 Temperature : 26
 EUT : Wireless Modem with Serial Interface Humidity : 43%
 Test Mode : Type A, Transmit, Channel 02, Frequency: 2405.376MHz



Site no. : Audix NO.1 Chamber Data no. : 3
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(PK)
 Env. / Ins. : 26°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE A Tx2405.376MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2337.24	28.15	5.16	27.56	60.97	74.00	13.13	Peak
2	2390.04	28.20	5.24	26.40	59.84	74.00	14.16	Peak
3	2405.88	28.22	5.26	75.78	109.26	74.00	-35.26	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : Audix NO.1 Chamber Data no. : 4
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(AV)
 Env. / Ins. : 26°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE A Tx2405.376MHz

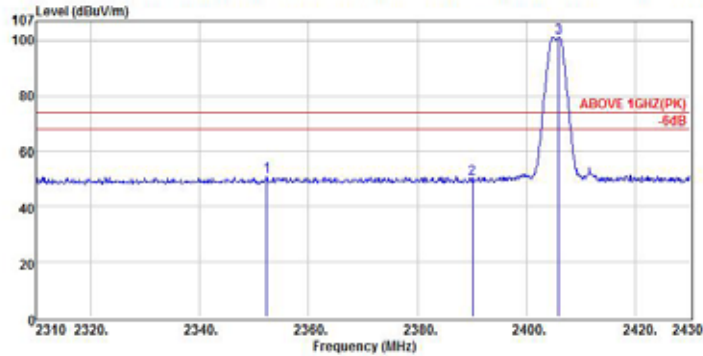
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2337.16	28.20	5.23	13.99	47.42	54.00	6.58	Average
2	2390.04	28.20	5.24	13.88	47.32	54.00	6.68	Average
3	2405.40	28.22	5.26	72.74	108.22	54.00	-52.22	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : 2014. 11. 17 Temperature : 26

EUT : Wireless Modem with Serial Interface Humidity : 43%

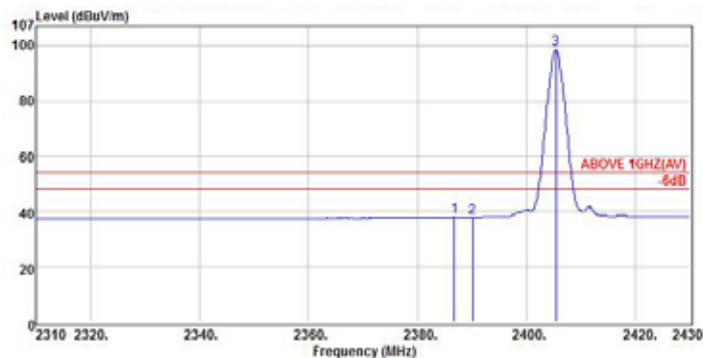
Test Mode : Type A, Transmit, Channel 02, Frequency: 2405.376MHz



Site no. : Audix NO.1 Chamber Data no. : 1
 Dis. / Ant. : 3m 3115(4327) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(PK)
 Env. / Ins. : 25°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE A Tx2405.376MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2352.36	28.16	5.19	17.44	50.79	74.00	23.21	Peak
2	2390.04	28.20	5.24	16.85	50.29	74.00	23.71	Peak
3	2405.88	28.22	5.26	67.65	101.13	74.00	-27.13	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : Audix NO.1 Chamber Data no. : 2
 Dis. / Ant. : 3m 3115(4327) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(AV)
 Env. / Ins. : 25°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE A Tx2405.376MHz

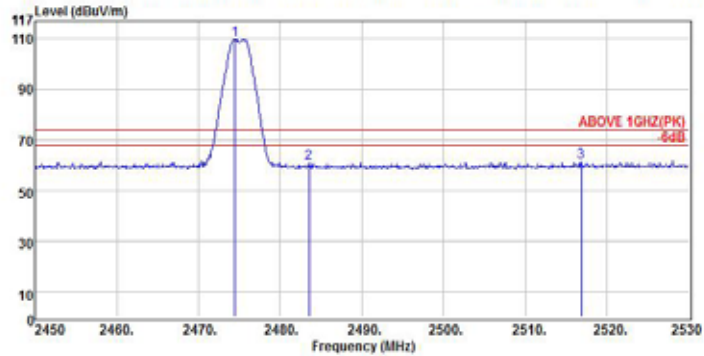
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2396.80	28.20	5.23	4.57	38.00	54.00	16.00	Average
2	2390.04	28.20	5.24	4.39	37.83	54.00	16.17	Average
3	2405.40	28.22	5.26	64.97	98.45	54.00	-44.45	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : 2014. 11. 17 Temperature : 26

EUT : Wireless Modem with Serial Interface Humidity : 43%

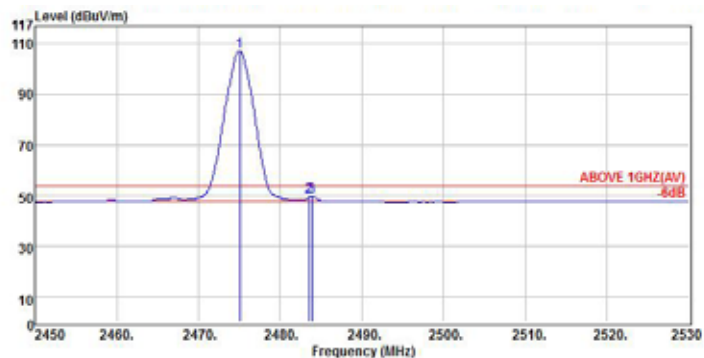
Test Mode : Type A, Transmit, Channel 70, Frequency: 2475.008MHz



Site no. : Audix NO.1 Chamber Data no. : 7
 Dis. / Ant. : 3m 3115(4327) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(PK) Engineer : Sam
 Env. / Ins. : 25°C / 43% N9010A
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE A Tx2475.008MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μV)	Emission Level (dB μV/m)	Limits (dB μV/m)	Margin (dB)	Remark
1	2474.48	28.27	5.35	76.19	109.90	74.00	-35.80	Peak
2	2483.52	28.29	5.37	27.10	60.76	74.00	13.24	Peak
3	2516.80	28.35	5.42	27.39	81.16	74.00	12.84	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : Audix NO.1 Chamber Data no. : 8
 Dis. / Ant. : 3m 3115(4327) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(AV) Engineer : Sam
 Env. / Ins. : 25°C / 43% N9010A
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE A Tx2475.008MHz

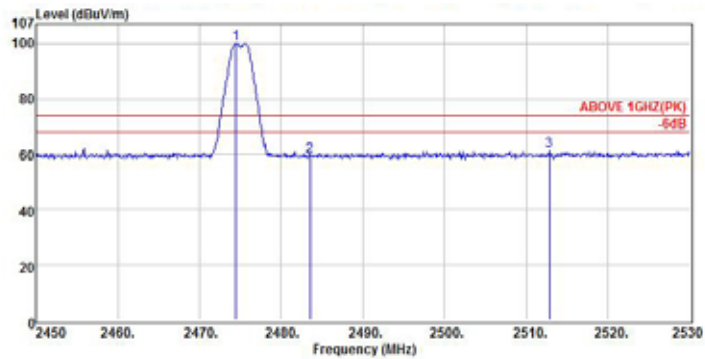
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μV)	Emission Level (dB μV/m)	Limits (dB μV/m)	Margin (dB)	Remark
1	2475.04	28.29	5.36	73.56	107.20	54.00	-53.20	Average
2	2483.52	28.29	5.37	15.74	49.40	54.00	4.60	Average
3	2483.92	28.29	5.37	18.08	49.74	54.00	4.26	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : 2014. 11. 17 Temperature : 26

EUT : Wireless Modem with Serial Interface Humidity : 43%

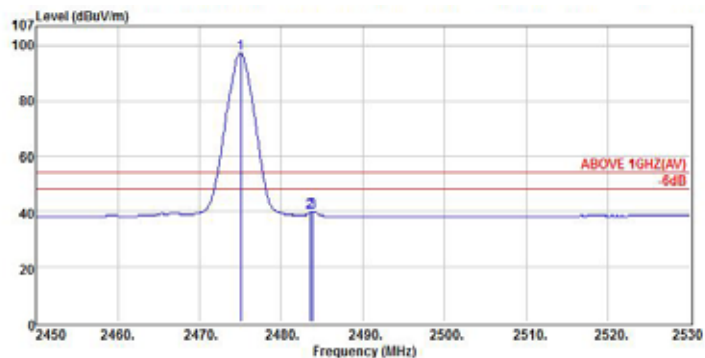
Test Mode : Type A, Transmit, Channel 70, Frequency: 2475.008MHz



Site no. : Audix NO.1 Chamber Data no. : 5
 Dis. / Ant. : 3m 3115(4827) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(PK)
 Env. / Ins. : 25°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE A Tx2475.008MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
1	2474.48	28.27	5.35	66.35	99.97	74.00	-25.97	Peak
2	2483.52	28.29	5.37	25.73	59.39	74.00	14.61	Peak
3	2512.80	28.35	5.42	27.34	81.11	74.00	12.89	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

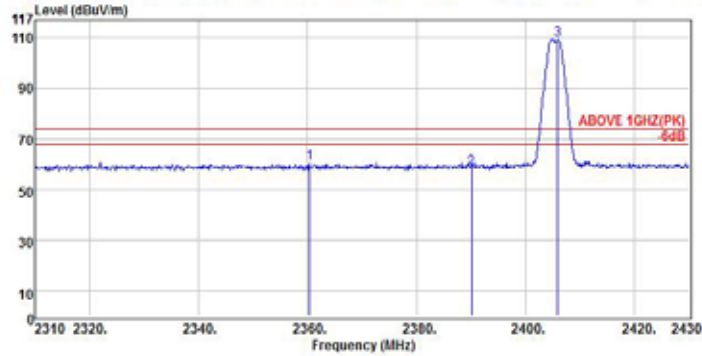


Site no. : Audix NO.1 Chamber Data no. : 6
 Dis. / Ant. : 3m 3115(4827) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(AV)
 Env. / Ins. : 25°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE A Tx2475.008MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
1	2475.04	28.29	5.36	63.49	97.12	54.00	-43.12	Average
2	2483.52	28.29	5.37	5.94	39.80	54.00	14.40	Average
3	2483.84	28.29	5.37	8.26	39.92	54.00	14.08	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

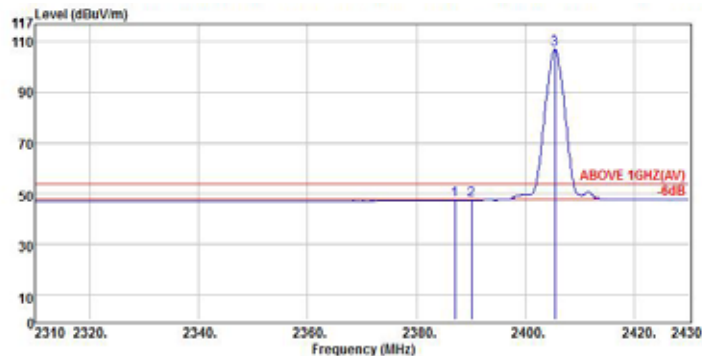
Date of Test : 2014. 11. 17 Temperature : 26
 EUT : Wireless Modem with Serial Interface Humidity : 43%
 Test Mode : Type B, Transmit, Channel 02, Frequency: 2405.376MHz



Site no. : Audix NO.1 Chamber Data no. : 3
 Dis. / Ant. : 3m 3115(4827) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(PK)
 Env. / Ins. : 28°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE B Tx2405.376MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μV)	Emission Level (dB μV/m)	Limits (dB μV/m)	Margin (dB)	Remark
1	2380.40	28.17	5.20	27.16	80.53	74.00	13.47	Peak
2	2390.04	28.20	5.24	25.08	58.50	74.00	15.50	Peak
3	2405.88	28.22	5.28	75.90	109.38	74.00	-35.38	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : Audix NO.1 Chamber Data no. : 4
 Dis. / Ant. : 3m 3115(4827) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(AV)
 Env. / Ins. : 28°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE B Tx2405.376MHz

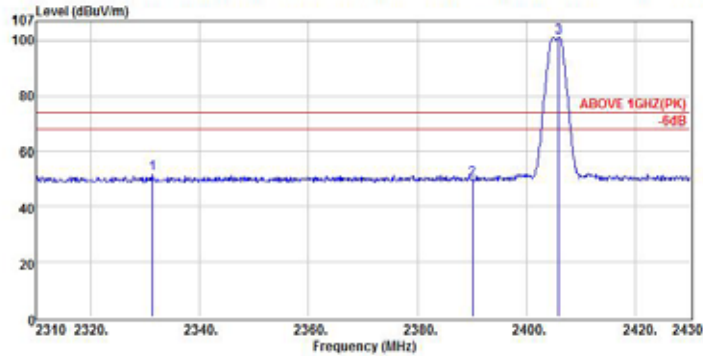
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μV)	Emission Level (dB μV/m)	Limits (dB μV/m)	Margin (dB)	Remark
1	2387.04	28.20	5.23	14.16	47.59	54.00	6.41	Average
2	2390.04	28.20	5.24	18.98	47.42	54.00	6.58	Average
3	2405.40	28.22	5.28	73.54	107.02	54.00	-53.02	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : 2014. 11. 17 Temperature : 26

EUT : Wireless Modem with Serial Interface Humidity : 43%

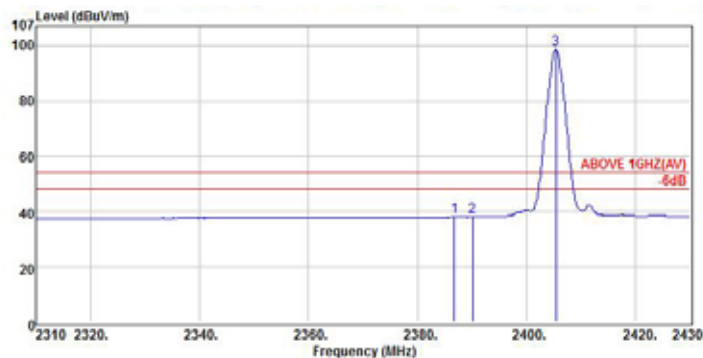
Test Mode : Type B, Transmit, Channel 02, Frequency: 2405.376MHz



Site no. : Audix NO.1 Chamber Data no. : 1
 Dis. / Ant. : 3m 3115(4327) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(PK)
 Env. / Ins. : 25°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE B Tx2405.376MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2331.36	28.14	5.16	18.30	51.60	74.00	22.40	Peak
2	2390.04	28.20	5.24	16.42	49.86	74.00	24.14	Peak
3	2405.88	28.22	5.26	67.70	101.18	74.00	-27.18	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : Audix NO.1 Chamber Data no. : 2
 Dis. / Ant. : 3m 3115(4327) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(AV)
 Env. / Ins. : 25°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE B Tx2405.376MHz

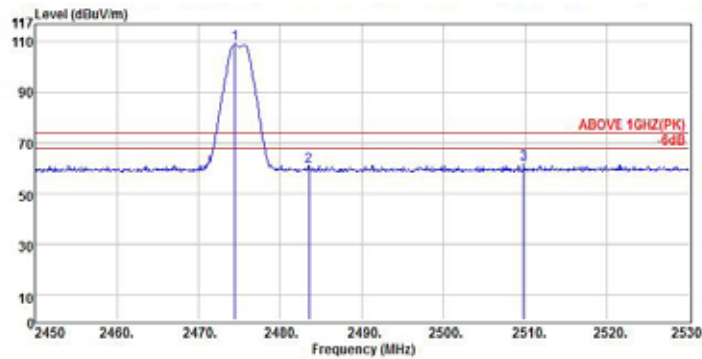
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2396.80	28.20	5.23	4.76	38.19	54.00	15.81	Average
2	2390.04	28.20	5.24	4.58	38.02	54.00	15.98	Average
3	2405.40	28.22	5.26	65.01	98.49	54.00	-44.49	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : 2014. 11. 17 Temperature : 26

EUT : Wireless Modem with Serial Interface Humidity : 43%

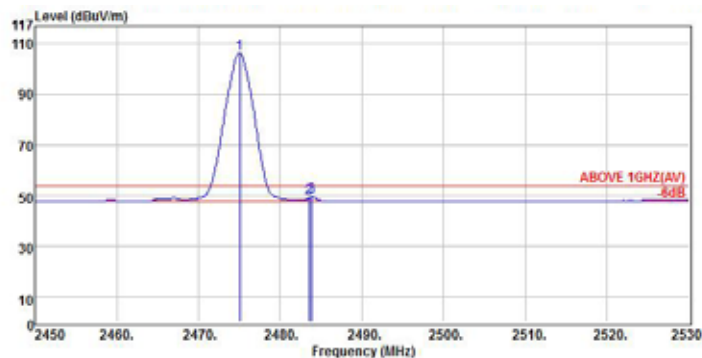
Test Mode : Type B, Transmit, Channel 70, Frequency: 2475.008MHz



Site no. : Audix NO.1 Chamber Data no. : 7
 Dis. / Ant. : 3m 3115(4327) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(PK)
 Env. / Ins. : 25°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE B Tx2475.008MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2474.48	28.27	5.35	75.43	109.05	74.00	-35.05	Peak
2	2483.52	28.29	5.37	27.33	60.99	74.00	13.01	Peak
3	2509.78	28.33	5.41	27.81	61.55	74.00	12.45	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : Audix NO.1 Chamber Data no. : 8
 Dis. / Ant. : 3m 3115(4327) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(AV)
 Env. / Ins. : 25°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE B Tx2475.008MHz

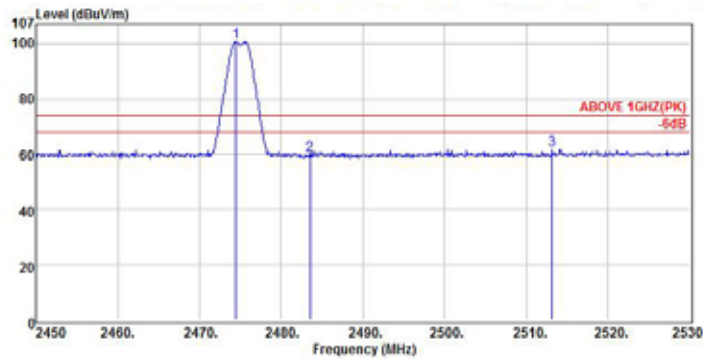
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2475.04	28.29	5.36	72.66	106.30	54.00	-52.30	Average
2	2483.52	28.29	5.37	15.50	49.16	54.00	4.84	Average
3	2483.84	28.29	5.37	15.78	49.44	54.00	4.56	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : 2014. 11. 17 Temperature : 26

EUT : Wireless Modem with Serial Interface Humidity : 43%

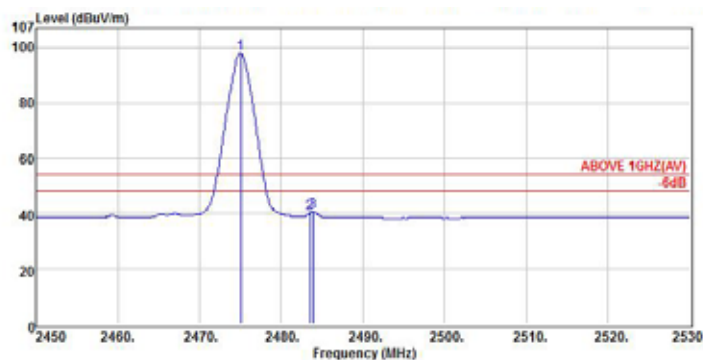
Test Mode : Type B, Transmit, Channel 70, Frequency: 2475.008MHz



Site no. : Audix NO.1 Chamber Data no. : 5
 Dis. / Ant. : 3m 3115(4327) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(PK)
 Env. / Ins. : 25°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE B Tx2475.008MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2474.48	28.27	5.35	66.92	100.54	74.00	-26.54	Peak
2	2483.52	28.29	5.37	26.01	59.67	74.00	14.33	Peak
3	2513.12	28.35	5.42	28.06	61.83	74.00	12.17	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

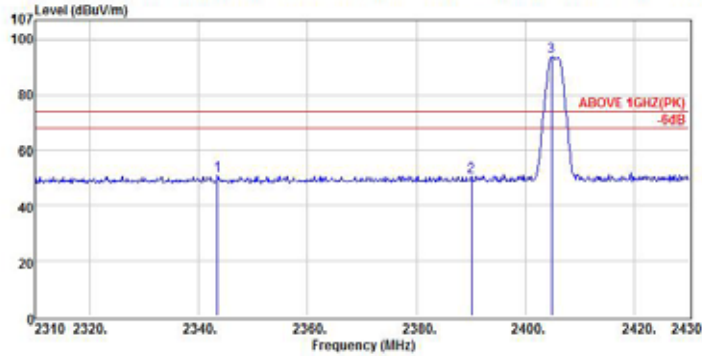


Site no. : Audix NO.1 Chamber Data no. : 6
 Dis. / Ant. : 3m 3115(4327) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(AV)
 Env. / Ins. : 25°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE B Tx2475.008MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2475.04	28.29	5.36	64.26	97.90	54.00	-43.90	Average
2	2483.52	28.29	5.37	6.60	40.26	54.00	13.74	Average
3	2483.92	28.29	5.37	6.99	40.65	54.00	13.35	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

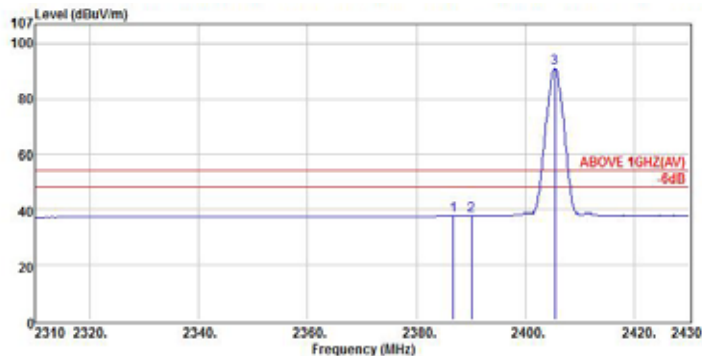
Date of Test : 2014. 11. 17 Temperature : 26
 EUT : Wireless Modem with Serial Interface Humidity : 43%
 Test Mode : Type C, Transmit, Channel 02, Frequency: 2405.376MHz



Site no. : Audix NO.1 Chamber Data no. : 3
 Dis. / Ant. : 3m 3115(4827) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(PK)
 Env. / Ins. : 28°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE C Tx2405.376MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μV)	Emission Level (dB μV/m)	Limits (dB μV/m)	Margin (dB)	Remark
1	2343.48	28.18	5.17	17.41	50.74	74.00	23.26	Peak
2	2380.04	28.20	5.24	17.22	50.88	74.00	23.34	Peak
3	2404.80	28.22	5.28	60.38	93.86	74.00	-19.88	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : Audix NO.1 Chamber Data no. : 4
 Dis. / Ant. : 3m 3115(4827) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(AV)
 Env. / Ins. : 28°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE C Tx2405.376MHz

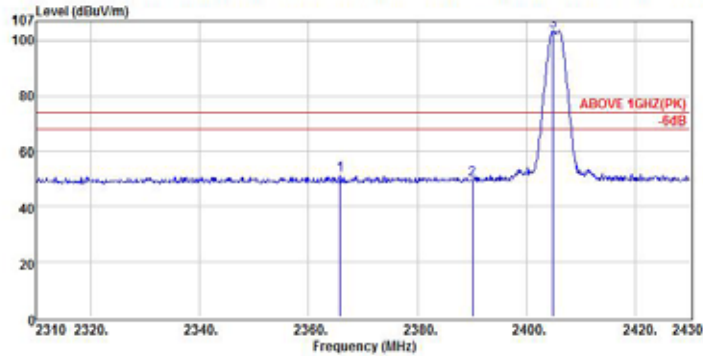
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μV)	Emission Level (dB μV/m)	Limits (dB μV/m)	Margin (dB)	Remark
1	2386.80	28.20	5.23	4.27	37.70	54.00	16.30	Average
2	2380.04	28.20	5.24	4.21	37.85	54.00	16.35	Average
3	2405.40	28.22	5.28	57.53	91.08	54.00	-37.08	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : 2014. 11. 17 Temperature : 26

EUT : Wireless Modem with Serial Interface Humidity : 43%

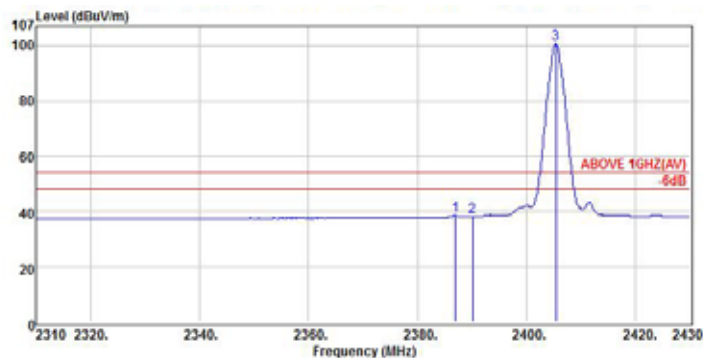
Test Mode : Type C, Transmit, Channel 02, Frequency: 2405.376MHz



Site no. : Audix NO.1 Chamber Data no. : 1
 Dis. / Ant. : 3m 3115(4327) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(PK)
 Env. / Ins. : 25°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE C Tx2405.376MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2365.80	28.18	5.20	17.79	51.17	74.00	22.83	Peak
2	2390.04	28.20	5.24	16.47	49.91	74.00	24.09	Peak
3	2404.92	28.22	5.26	69.89	103.37	74.00	-29.37	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : Audix NO.1 Chamber Data no. : 2
 Dis. / Ant. : 3m 3115(4327) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(AV)
 Env. / Ins. : 25°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE C Tx2405.376MHz

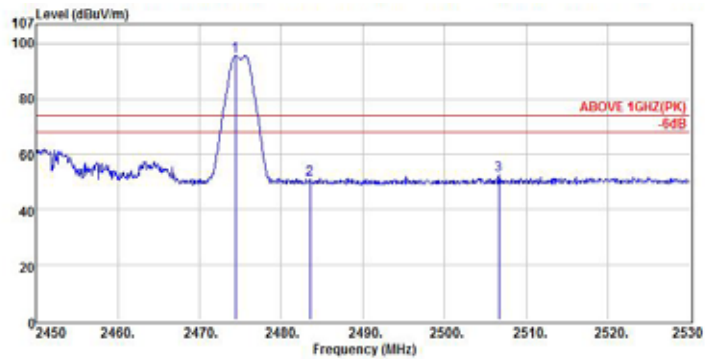
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2396.92	28.20	5.23	5.04	38.47	54.00	15.53	Average
2	2390.04	28.20	5.24	4.65	38.09	54.00	15.91	Average
3	2405.40	28.22	5.26	68.99	100.47	54.00	-46.47	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : 2014. 11. 17 Temperature : 26

EUT : Wireless Modem with Serial Interface Humidity : 43%

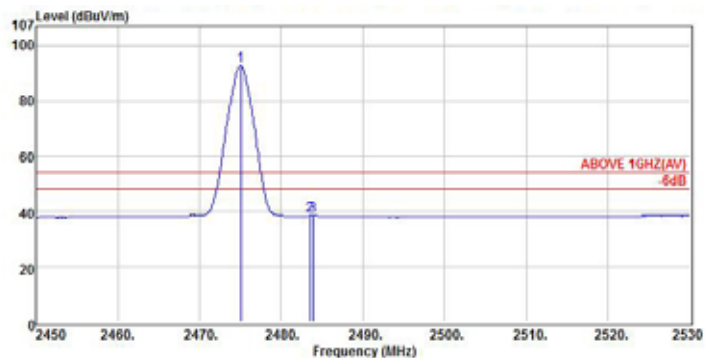
Test Mode : Type C, Transmit, Channel 70, Frequency: 2475.008MHz



Site no. : Audix NO.1 Chamber Data no. : 7
 Dis. / Ant. : 3m 3115(4327) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(PK)
 Env. / Ins. : 25°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE C Tx2475.008MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μV)	Emission Level (dB μV/m)	Limits (dB μV/m)	Margin (dB)	Remark
1	2474.40	28.27	5.35	61.79	95.41	74.00	-21.41	Peak
2	2483.52	28.29	5.37	17.25	50.91	74.00	23.09	Peak
3	2506.64	28.33	5.41	18.84	52.58	74.00	21.42	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : Audix NO.1 Chamber Data no. : 8
 Dis. / Ant. : 3m 3115(4327) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(AV)
 Env. / Ins. : 25°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE C Tx2475.008MHz

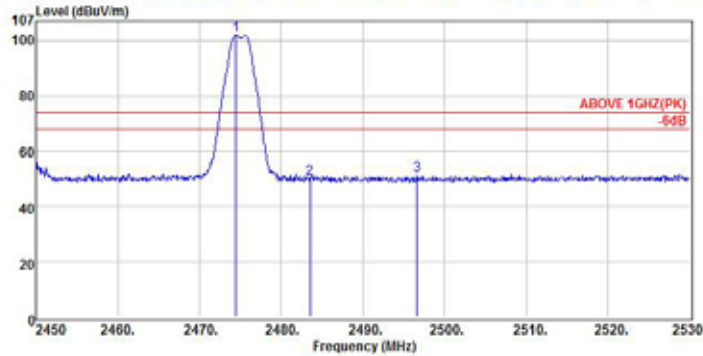
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μV)	Emission Level (dB μV/m)	Limits (dB μV/m)	Margin (dB)	Remark
1	2475.04	28.29	5.36	59.91	92.55	54.00	-38.55	Average
2	2483.52	28.29	5.37	4.89	38.55	54.00	15.45	Average
3	2483.92	28.29	5.37	4.96	38.62	54.00	15.38	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : 2014. 11. 17 Temperature : 26

EUT : Wireless Modem with Serial Interface Humidity : 43%

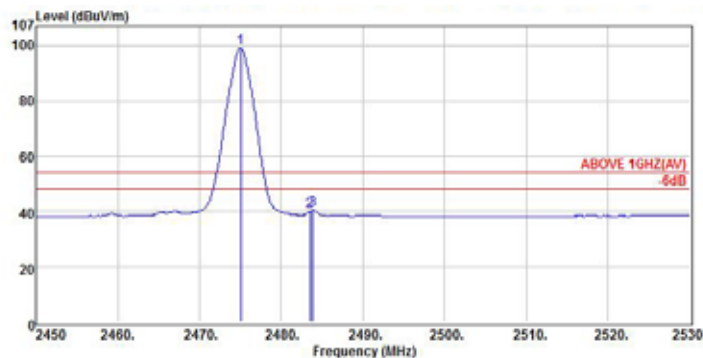
Test Mode : Type C, Transmit, Channel 70, Frequency: 2475.008MHz



Site no. : Audix NO.1 Chamber Data no. : 5
 Dis. / Ant. : 3m 3115(4327) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(PK)
 Env. / Ins. : 25°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE C Tx2475.008MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2474.48	28.27	5.35	68.37	101.99	74.00	-27.99	Peak
2	2483.52	28.29	5.37	16.51	50.17	74.00	23.83	Peak
3	2496.64	28.30	5.38	17.44	51.12	74.00	22.88	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : Audix NO.1 Chamber Data no. : 6
 Dis. / Ant. : 3m 3115(4327) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(AV)
 Env. / Ins. : 25°C / 43% N9010A Engineer : Sam
 EUT : FDQ02T
 Power Rating : DC 8V
 Test Mode : TYPE C Tx2475.008MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2475.04	28.29	5.36	65.34	98.98	54.00	-44.98	Average
2	2483.52	28.29	5.37	6.44	40.10	54.00	13.90	Average
3	2483.84	28.29	5.37	6.79	40.45	54.00	13.55	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 2. The emission levels that are 20dB below the official limit are not reported.

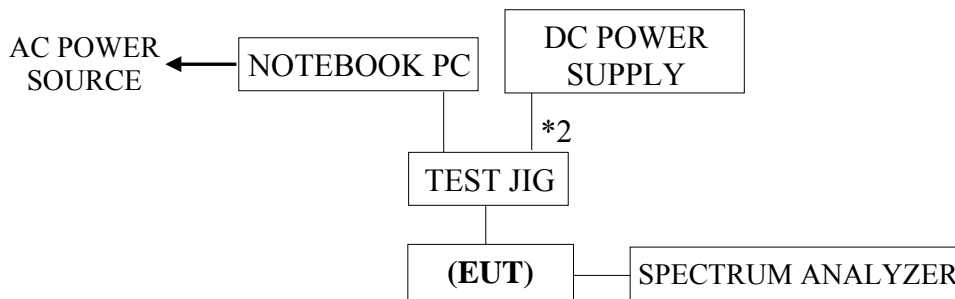
5. 6dB BANDWIDTH MEASUREMENT

5.1. Test Equipment

The following test equipment was used during the Emission Bandwidth measurement:

Item	Equipment	Manufacturer	Model	Serial Number	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	R&S	FSV30	101181	2014. 03. 14	1 Year

5.2. Block Diagram of Test Setup



EUT: WIRELESS MODEM WITH SERIAL INTERFACE

5.3. Specification Limits [§15.247(a)(2), RSS-210 §A8.2 (a)]

The minimum 6dB bandwidth shall be at least 500kHz.

5.4. Operating Condition of EUT

Test program “Futaba term” is used for enabling the EUT transmitting continuing.

5.5. Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer using 100kHz RBW and ≥ 300 kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

The measurement guideline was according to KDB 558074 D01 DTS Meas Guidance is v03r02.

The measurement guideline was according to RSS-Gen.

5.6. Test Results

PASSED. All the test results are attached in next pages.

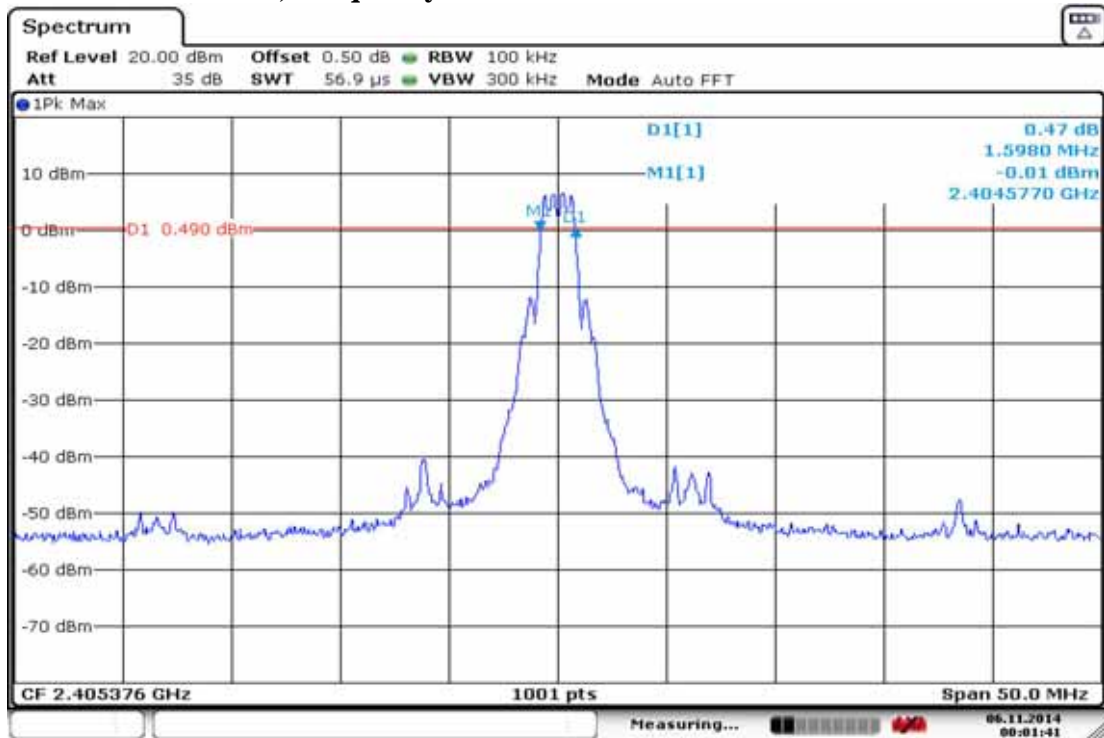
Test Date : 2014. 11. 06 Temperature : 26 Humidity : 40%

Test Date : 2014. 11. 07 Temperature : 25 Humidity : 40%

Mode	Channel No.	Frequency	6dB Bandwidth
1.	CH 02	2405.376MHz	1.5980MHz
2.	CH 36	2440.192MHz	1.5980MHz
3.	CH 70	2475.008MHz	1.5980MHz

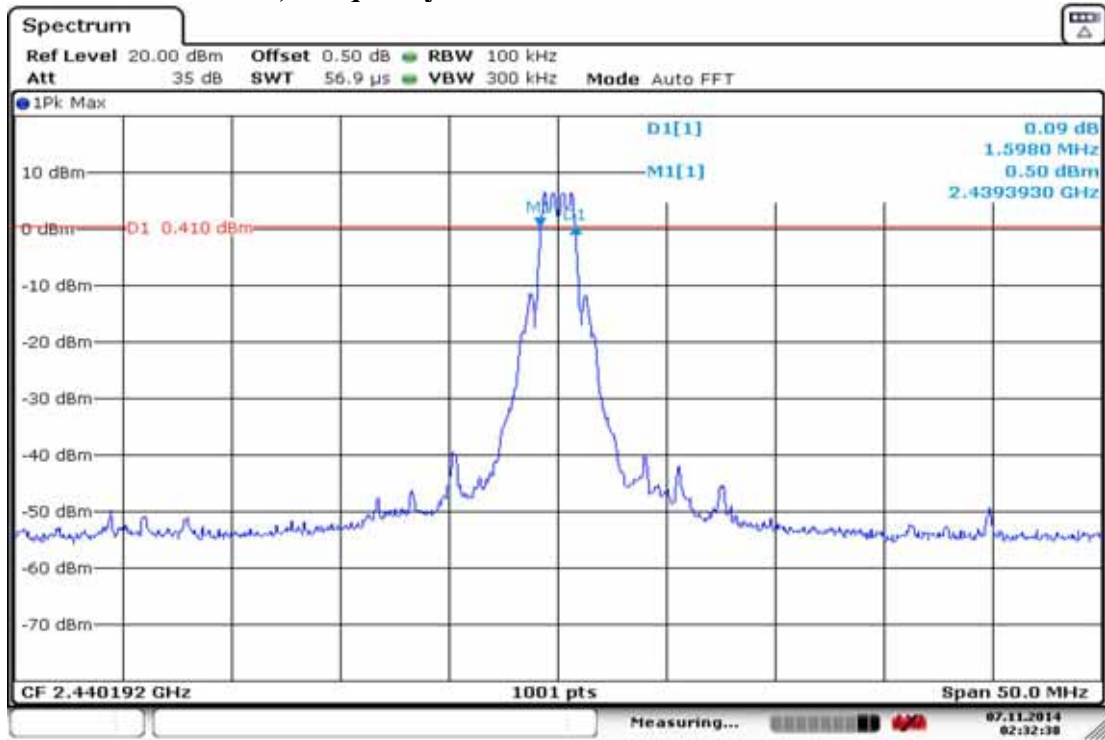
[Limit: least 500kHz]

Channel 02, Frequency: 2405.376MHz



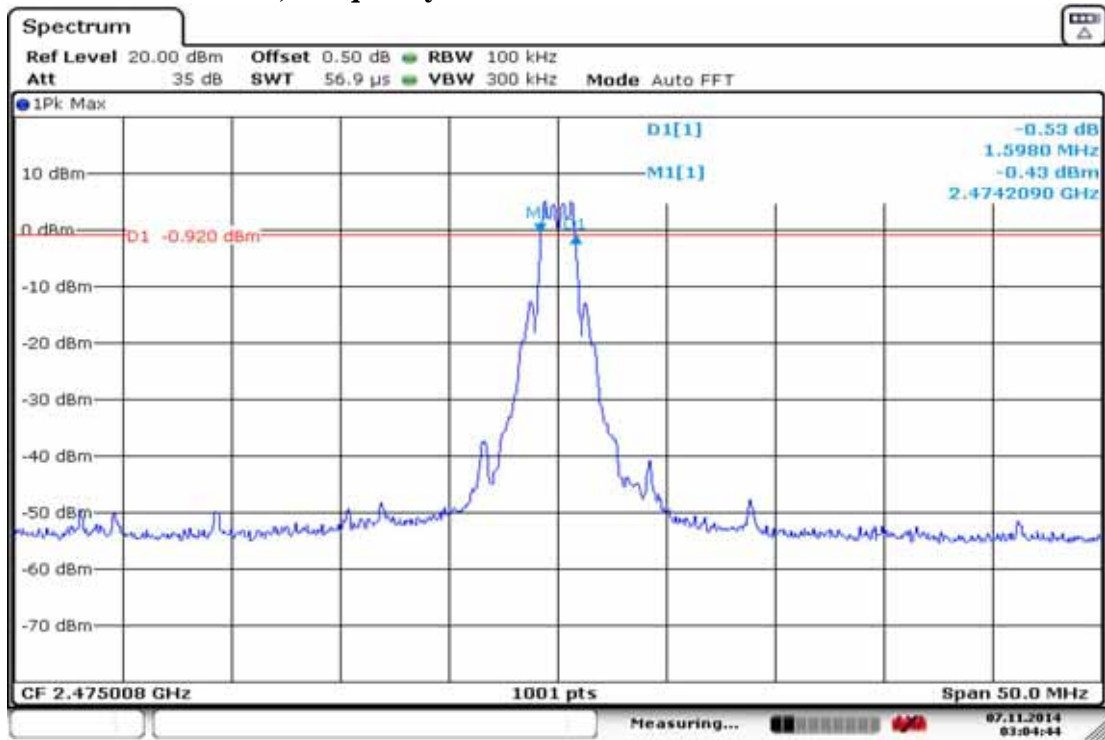
Date: 6.NOV.2014 00:01:41

Channel 36, Frequency: 2440.192MHz



Date: 7.NOV.2014 02:32:38

Channel 70, Frequency: 2475.008MHz



Date: 7.NOV.2014 03:04:44

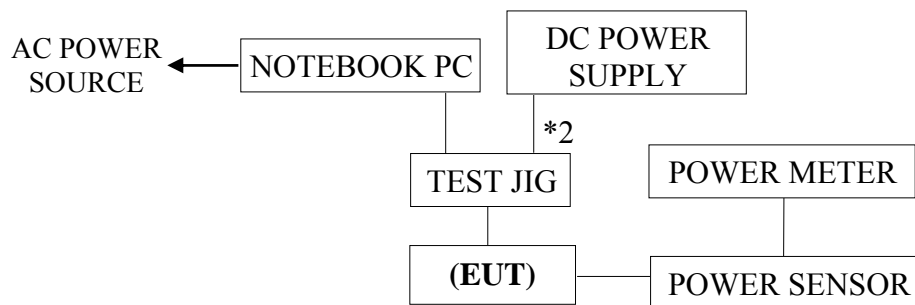
6. MAXIMUM PEAK OUTPUT POWER MEASUREMENT

6.1. Test Equipment

The following test equipment was used during the maximum peak output power measurement:

Item	Equipment	Manufacturer	Model	Serial Number	Cal. Date	Cal. Interval
1.	Power Meter	Anritsu	ML2495A	1145008	2013. 10. 23	1 Year
2.	Power Sensor	Anritsu	MA2411B	1126096	2013. 10. 23	1 Year

6.2. Block Diagram of Test Setup



EUT: WIRELESS MODEM WITH SERIAL INTERFACE

6.3. Specification Limits [§15.247(b)-(3), RSS-210 §A8.4 (4)]

The Limits of maximum Peak Output Power for digital modulation in 2400-2483.5MHz is : 1Watt. (30dBm)

6.4. Operating Condition of EUT

Test program “Futaba term” is used for enabling the EUT transmitting continuing.

6.5. Test Procedure

The transmitter output was connected to the power sensor and record the reading of power meter.

The measurement guideline was according to KDB 558074 D01 DTS Meas Guidance is v03r02.

The measurement guideline was according to RSS-Gen.

6.6. Test Results

PASSED. All the test results are listed below.

Test Date : 2014. 11. 07 Temperature : 25 Humidity : 40%

Mode	Channel No.	Frequency	Peak Output Power
1.	CH 02	2405.376MHz	12.43dBm
2.	CH 36	2440.192MHz	12.81dBm
3.	CH 70	2475.008MHz	11.76dBm

[Limit: 1Watt. (30dBm)]

7. EMISSION LIMITATIONS MEASUREMENT

7.1. Test Equipment

The following test equipment was used during the emission limitations test :

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Spectrum Analyzer	Agilent	N9030A-526	MY53310269	2014. 09. 19	1 Year

7.2. Block Diagram of Test Setup

The same as section.5.2

7.3. Specification Limits [§15.247(c), RSS-210 A8.5]

7.3.1. In any 100kHz 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 20dB below that in the 100kHz 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 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)).(This test result attaching to §4.6.1.2 and §4.6.2.2)

7.3.2. The reference level for determining limit of emission limitations is according to the value measured indicated in plots at section 9.6.

7.4. Operating Condition of EUT

Test program “Futaba term” is used for enabling the EUT transmitting continuing.

7.5. Test Procedure

The RF output of EUT was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 100kHz RBW and 300kHz VBW.

The measurement guideline was according to KDB 558074 D01 DTS Meas Guidance is v03r02.

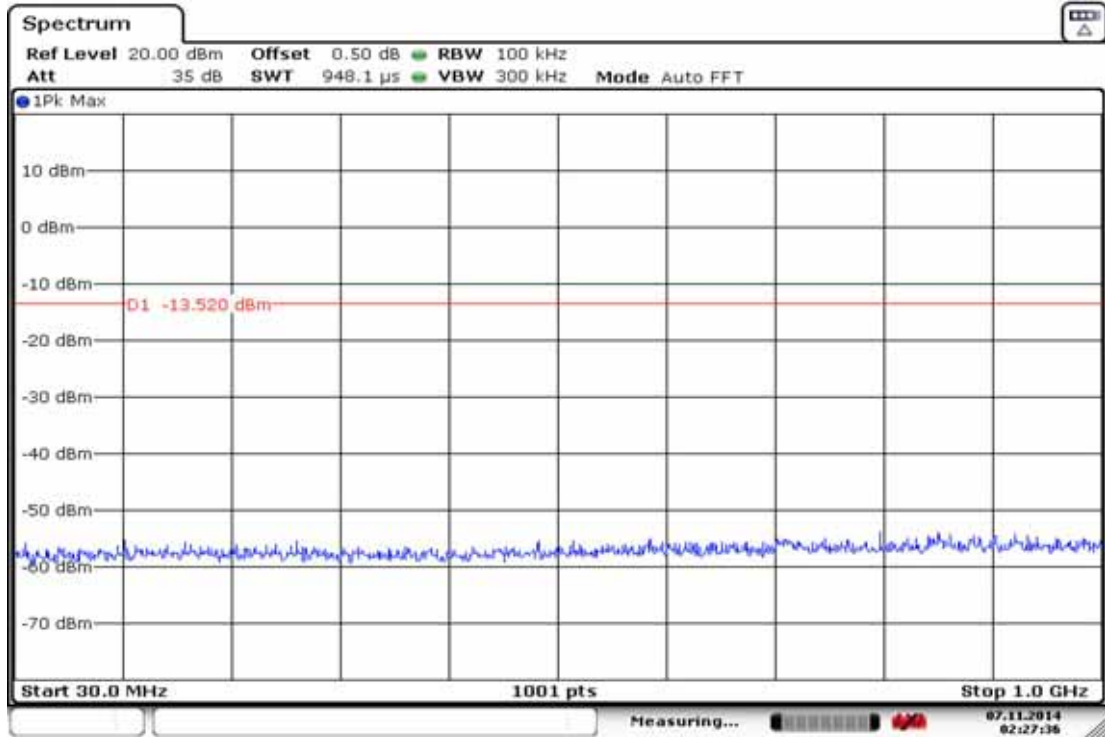
The measurement guideline was according to RSS-Gen.

7.6. Test Results

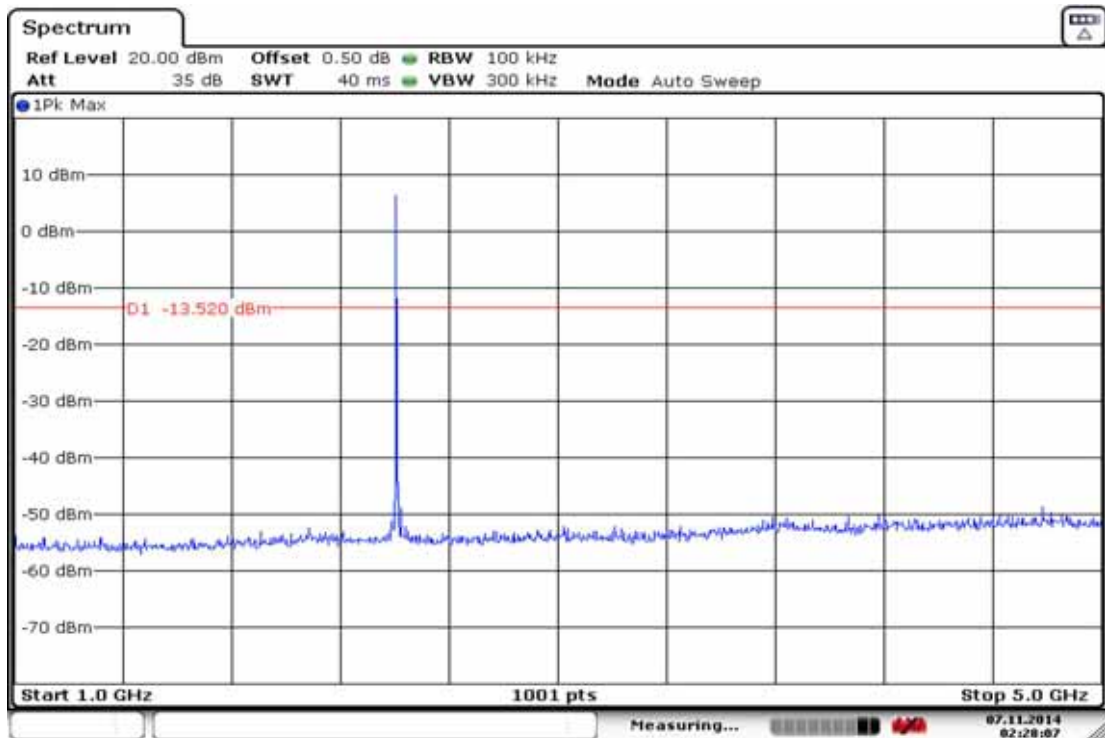
PASSED. The testing data was attached in the next pages.

Test Date : 2014. 11. 07 Temperature : 25 Humidity : 40%

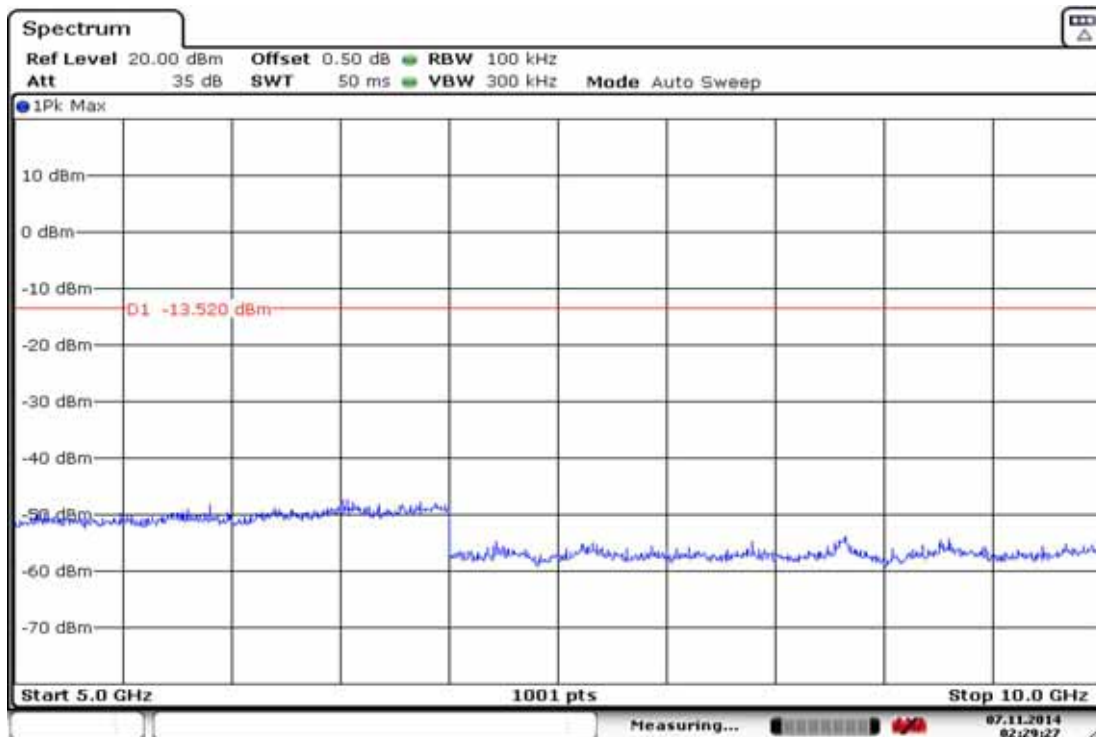
Channel 02, Frequency: 2405.376MHz



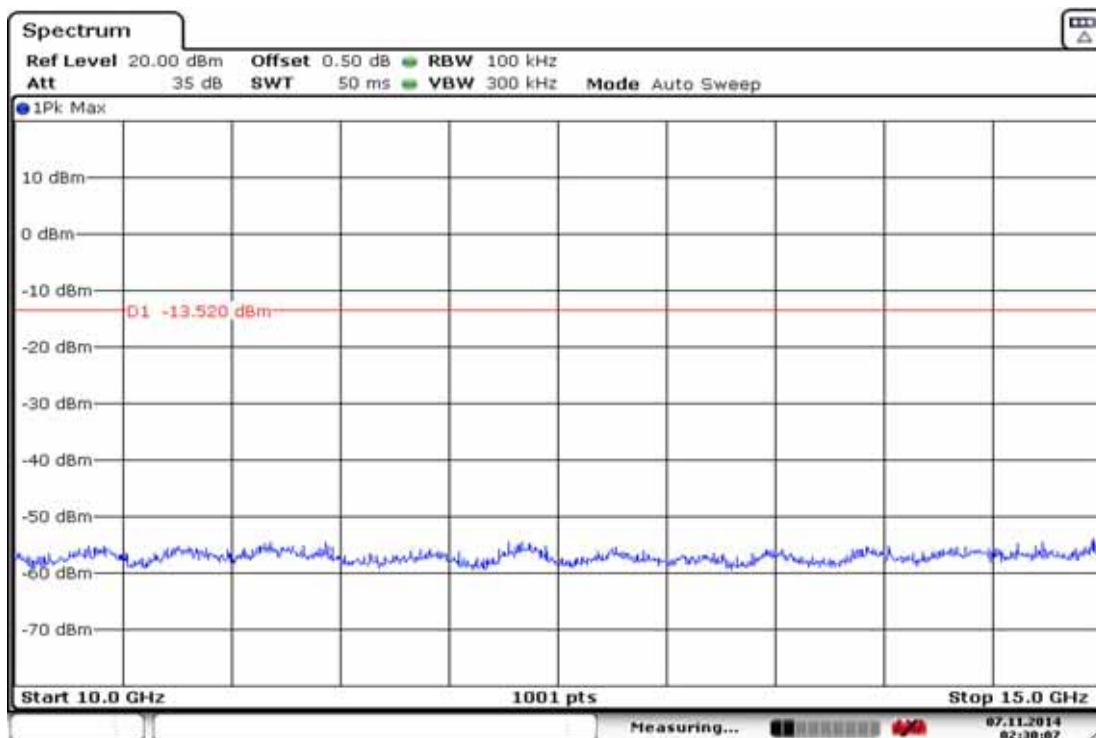
Date: 7.NOV.2014 02:27:36



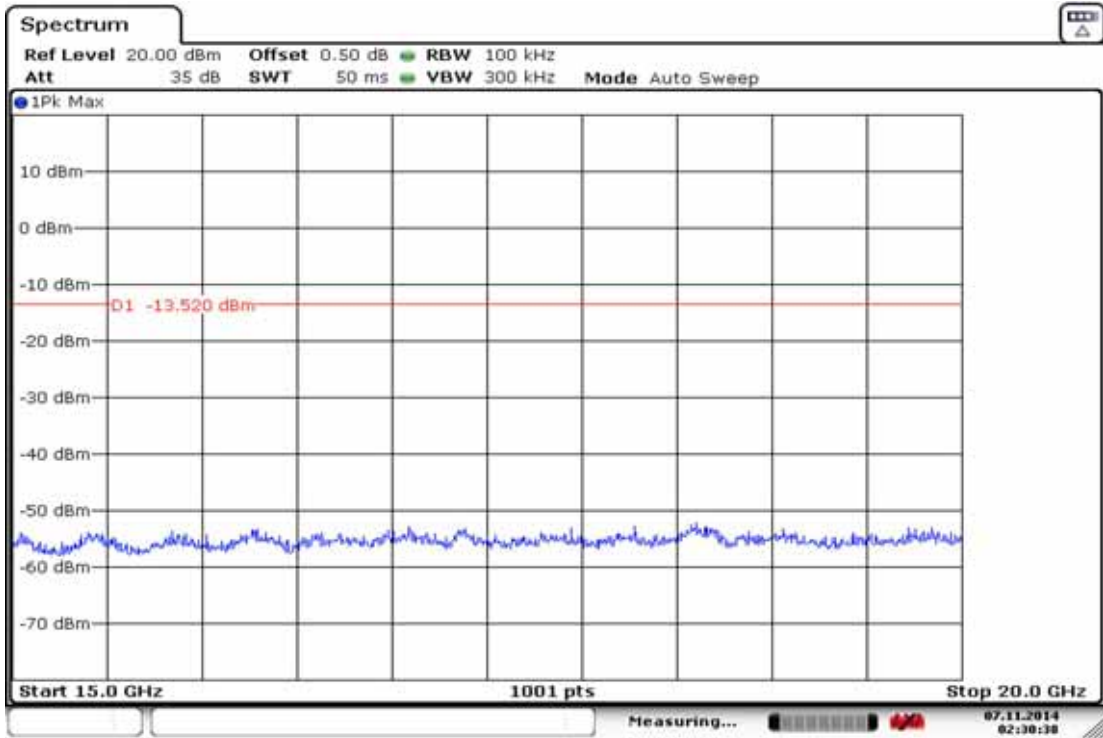
Date: 7.NOV.2014 02:28:07



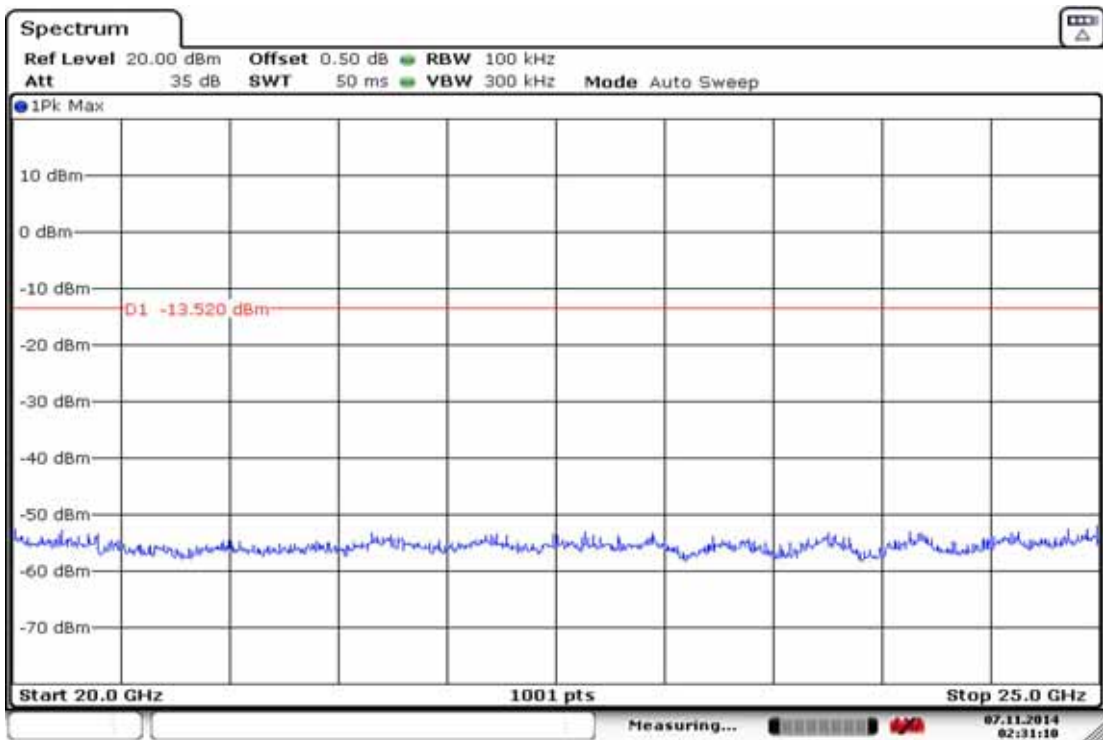
Date: 7.NOV.2014 02:29:28



Date: 7.NOV.2014 02:30:07

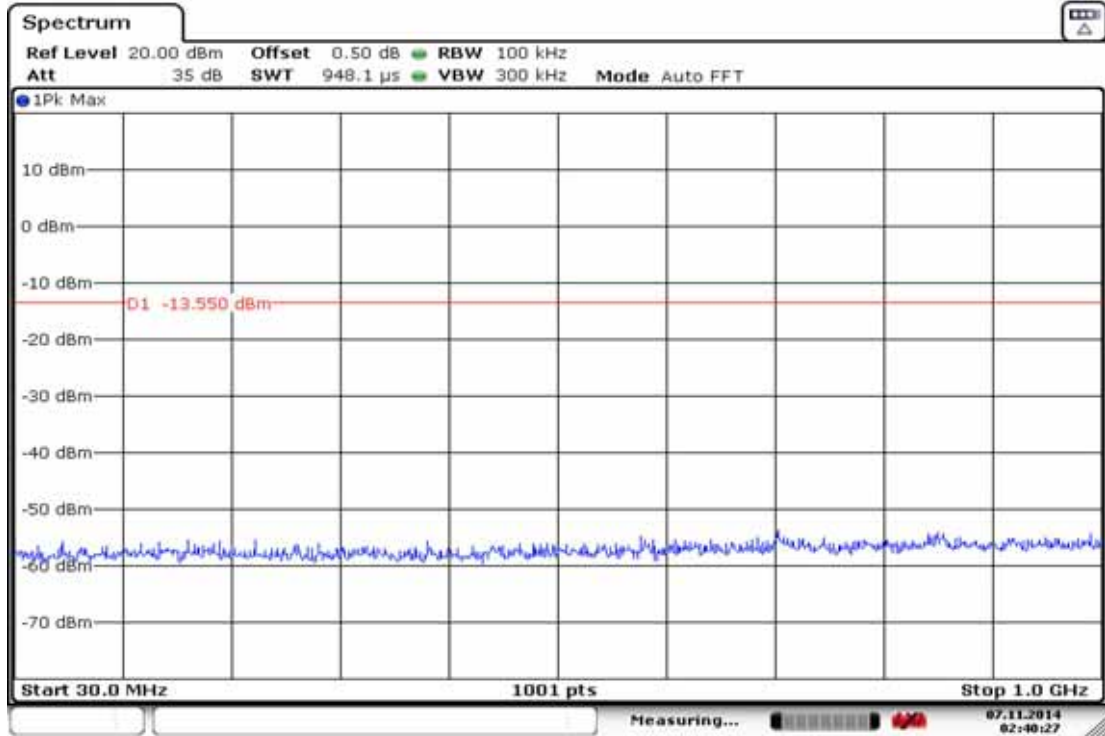


Date: 7.NOV.2014 02:30:38

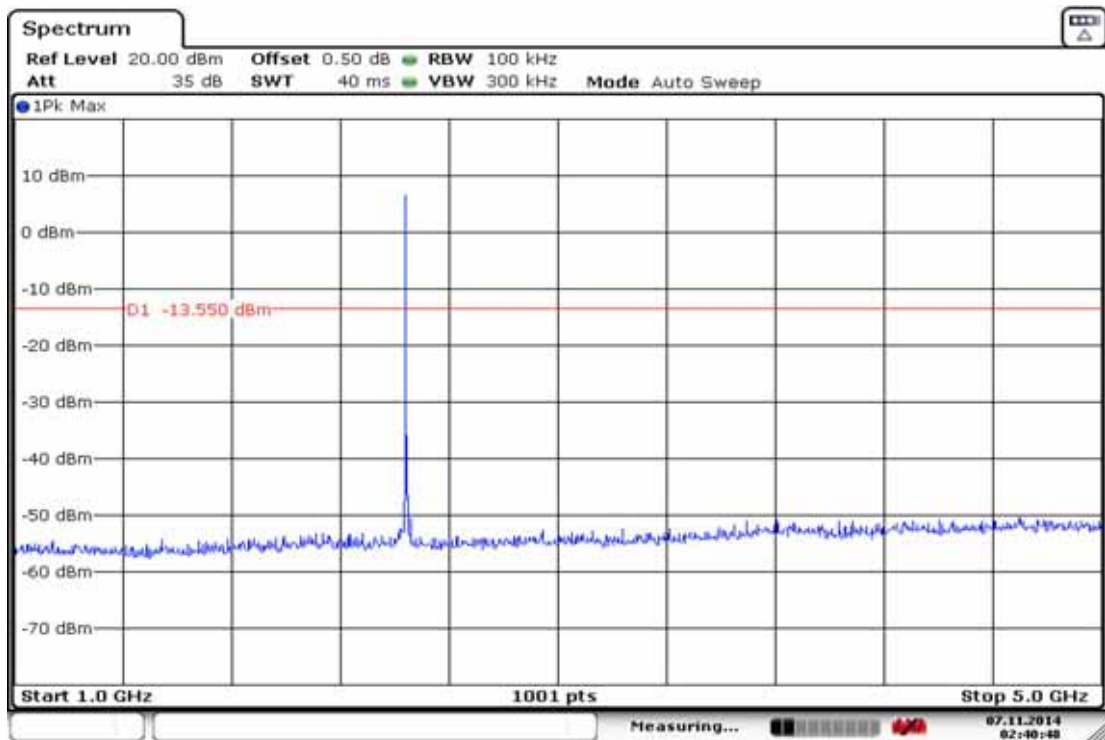


Date: 7.NOV.2014 02:31:10

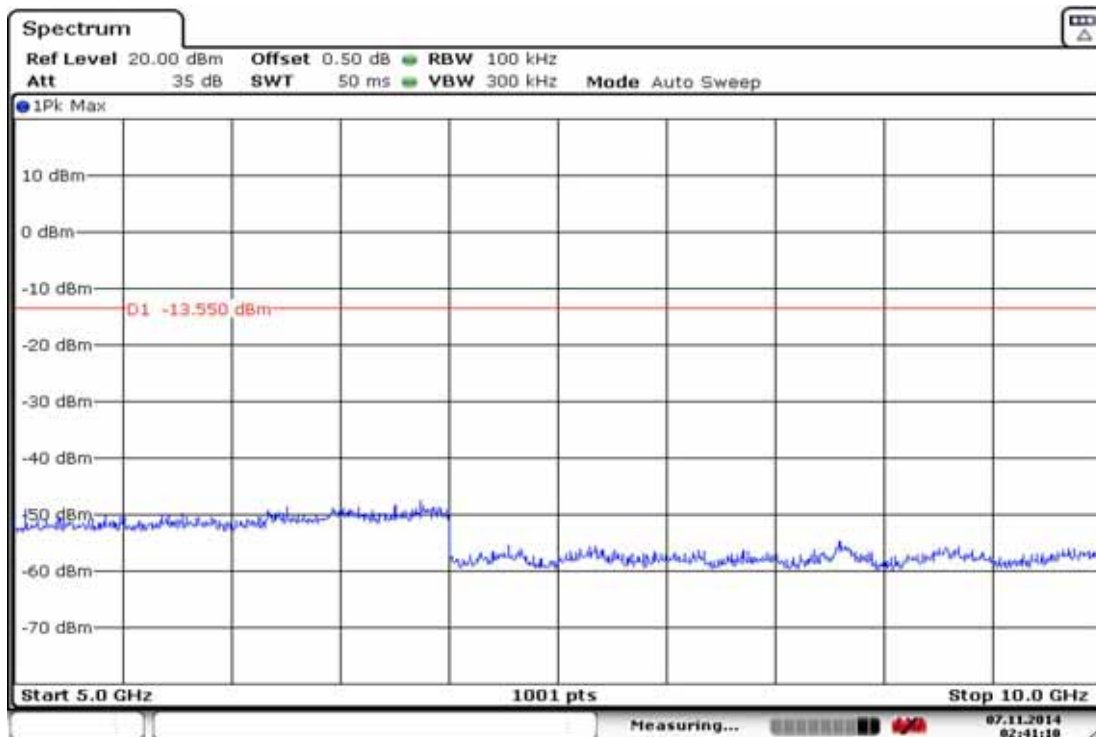
Channel 36, Frequency: 2440.192MHz



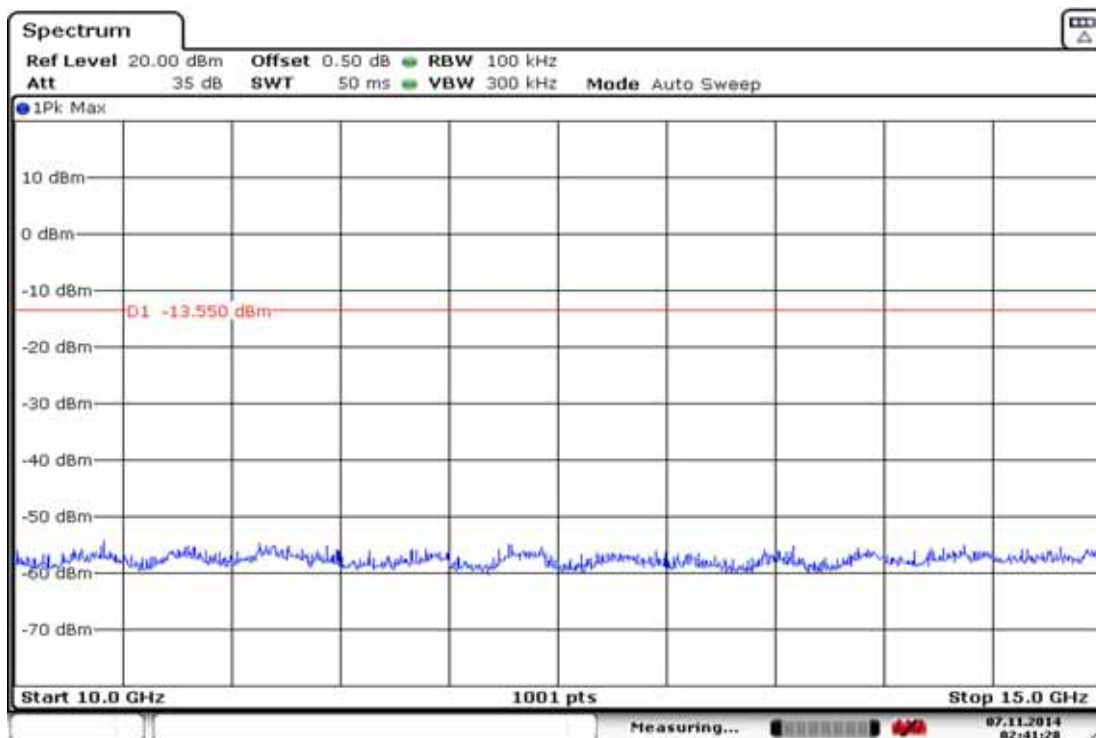
Date: 7.NOV.2014 02:40:27



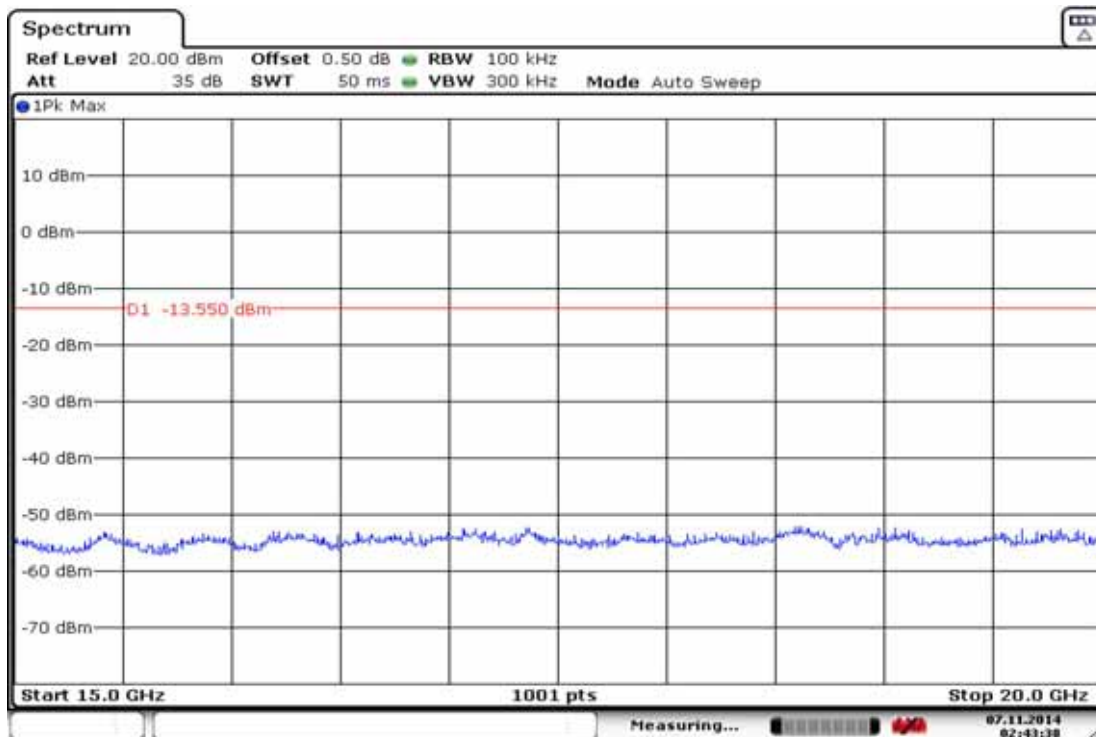
Date: 7.NOV.2014 02:40:48



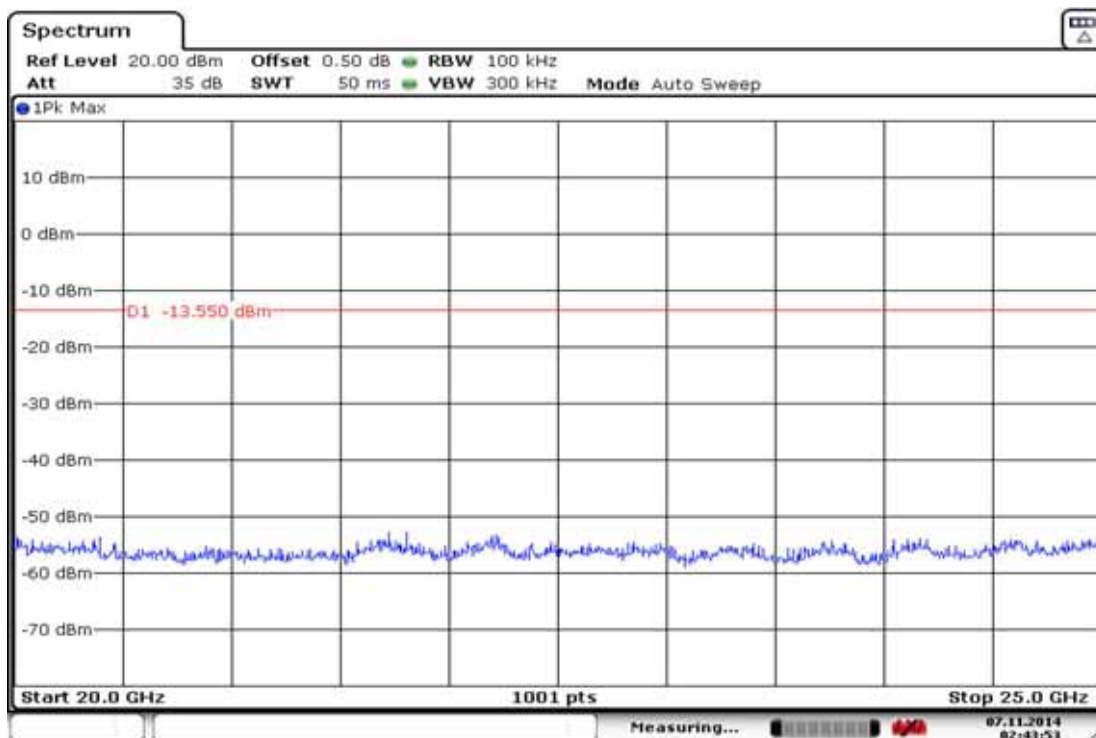
Date: 7.NOV.2014 02:41:10



Date: 7.NOV.2014 02:41:28

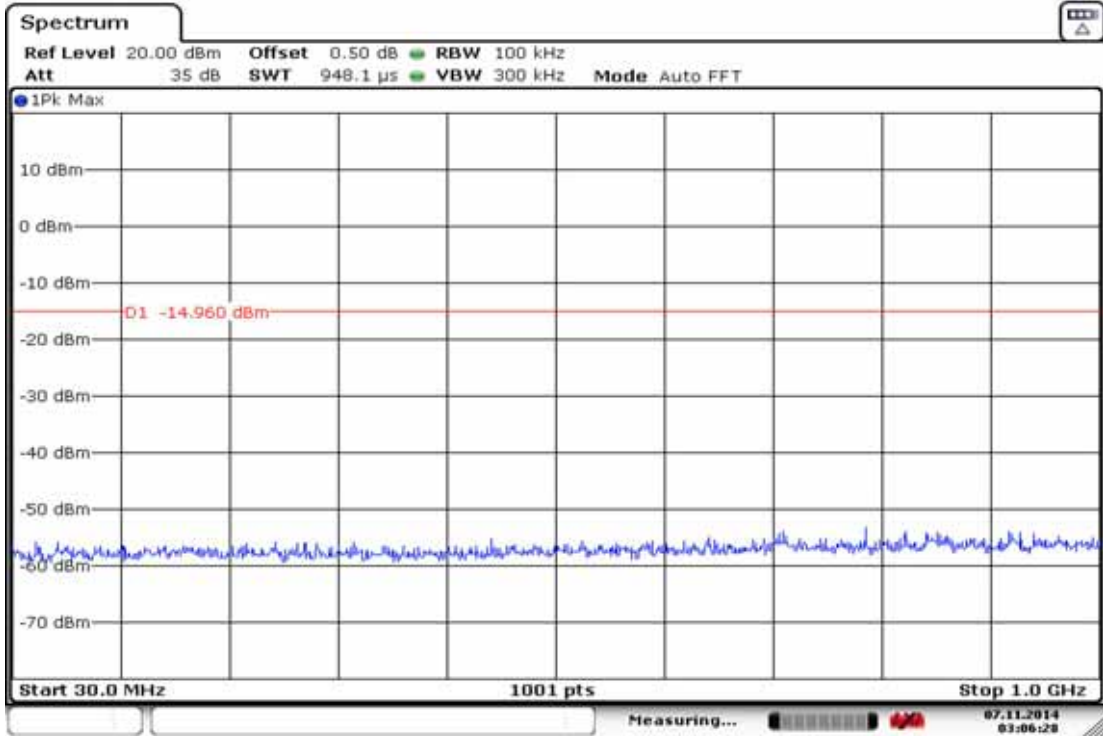


Date: 7.NOV.2014 02:43:38

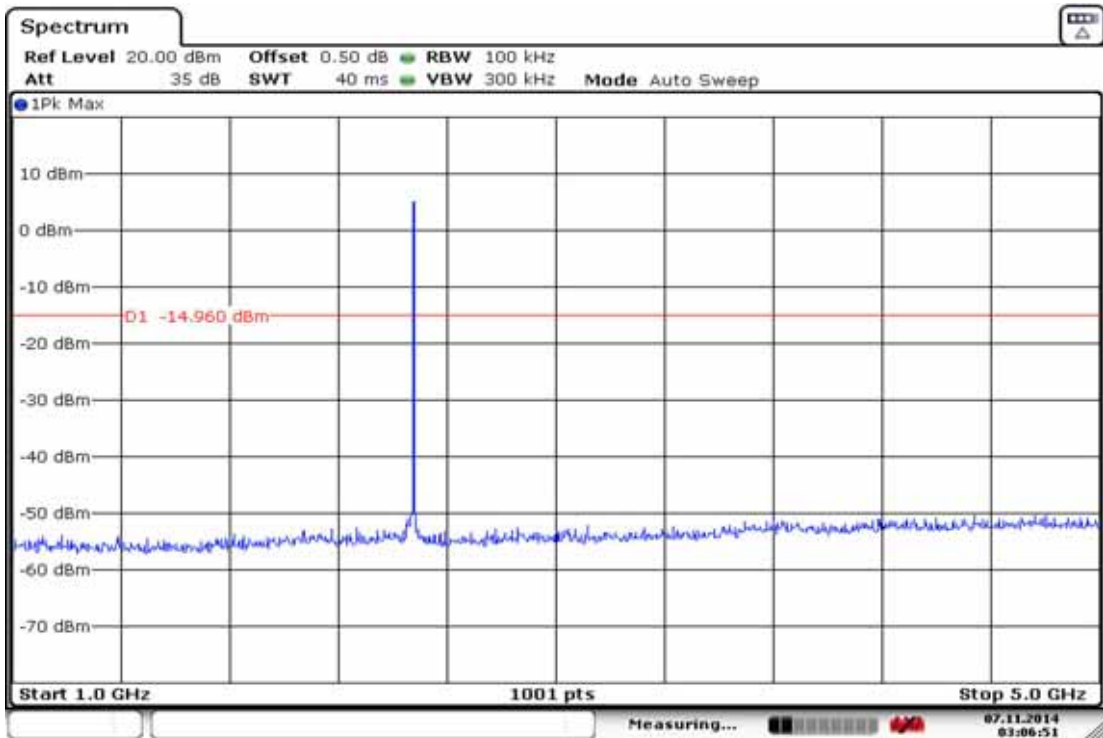


Date: 7.NOV.2014 02:43:53

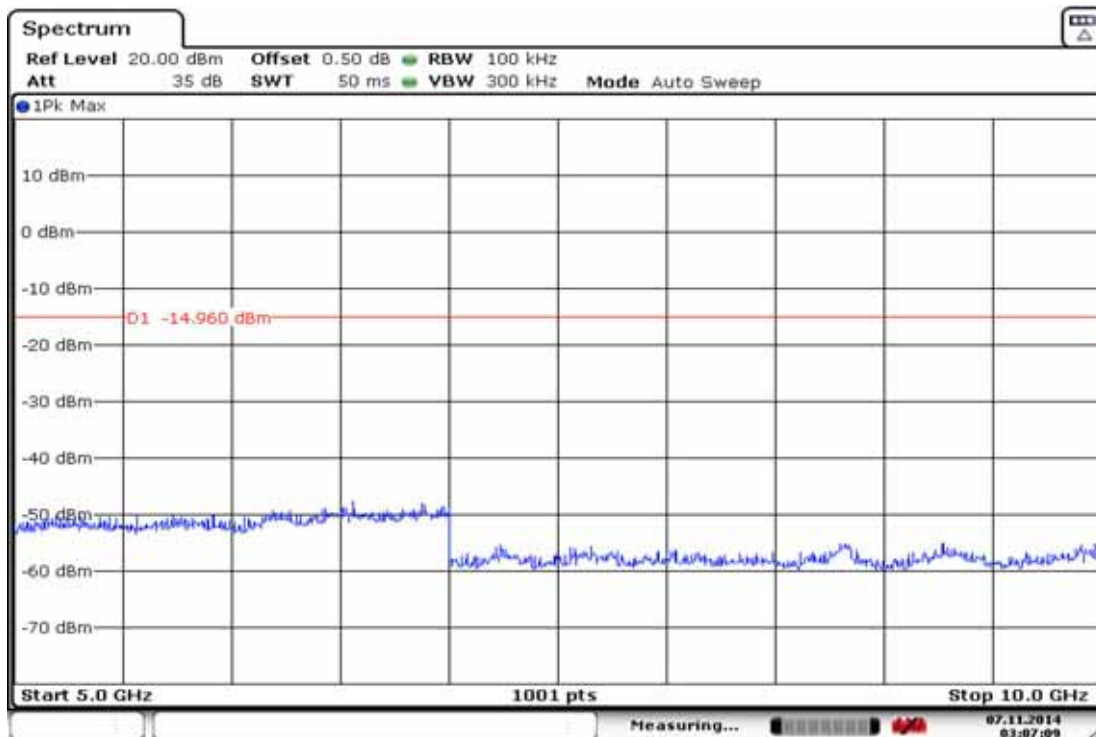
Channel 70, Frequency: 2475.008MHz



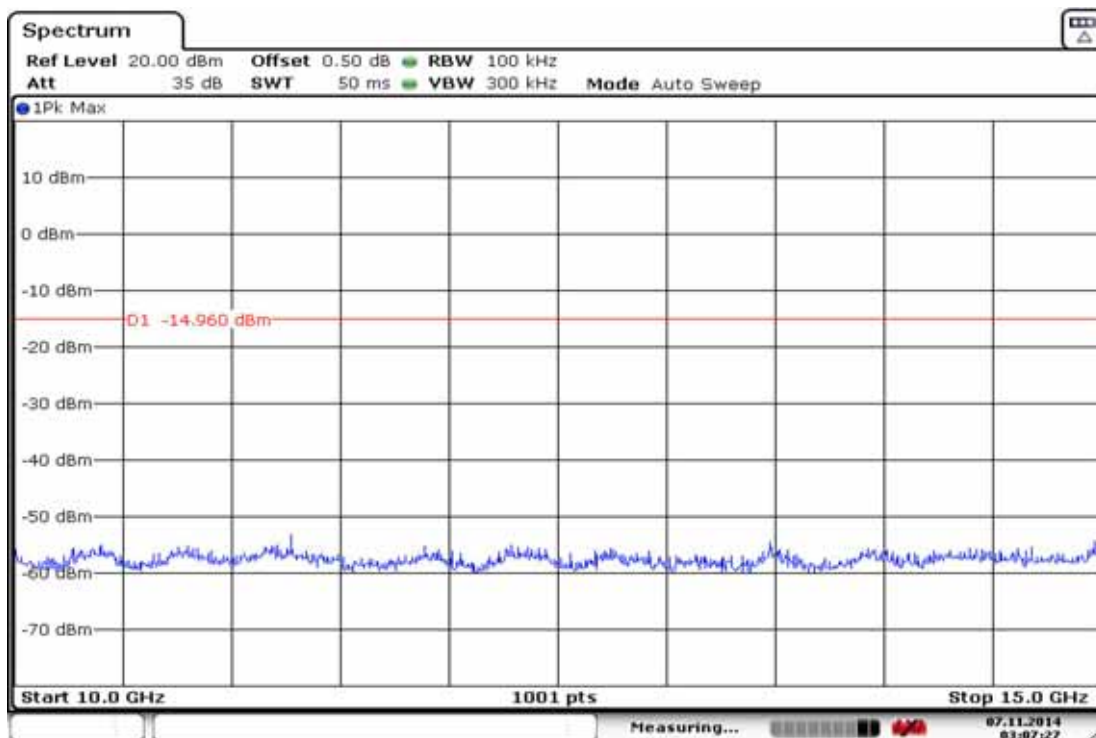
Date: 7.NOV.2014 03:06:28



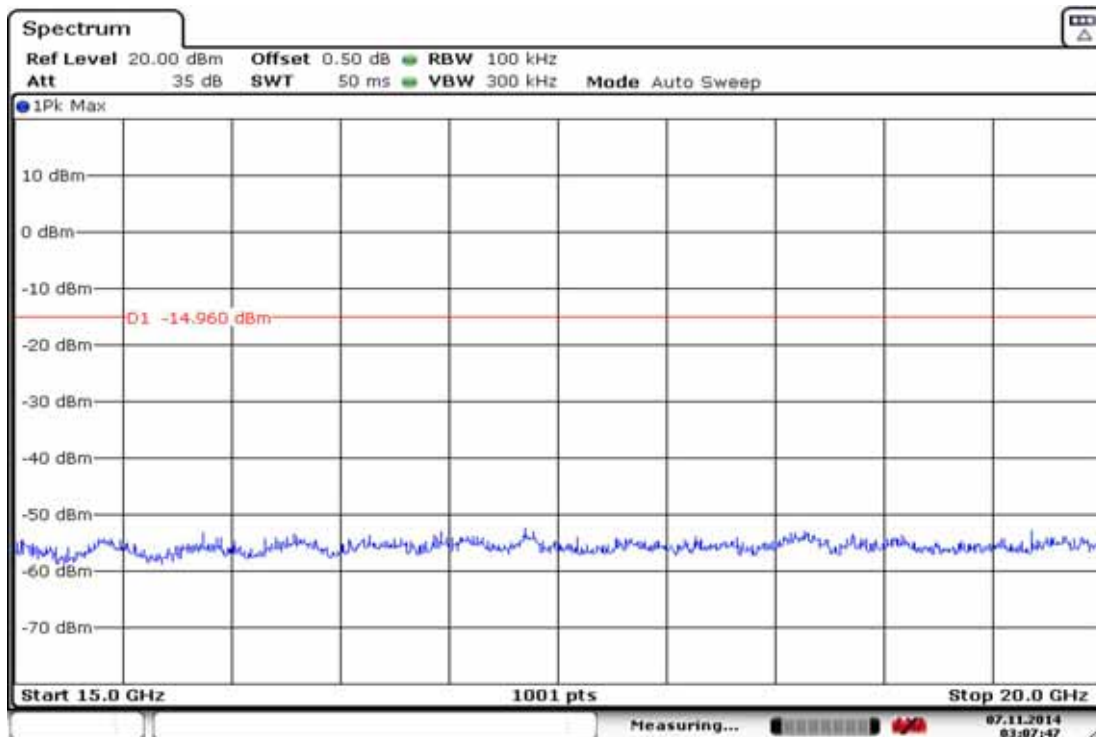
Date: 7.NOV.2014 03:06:51



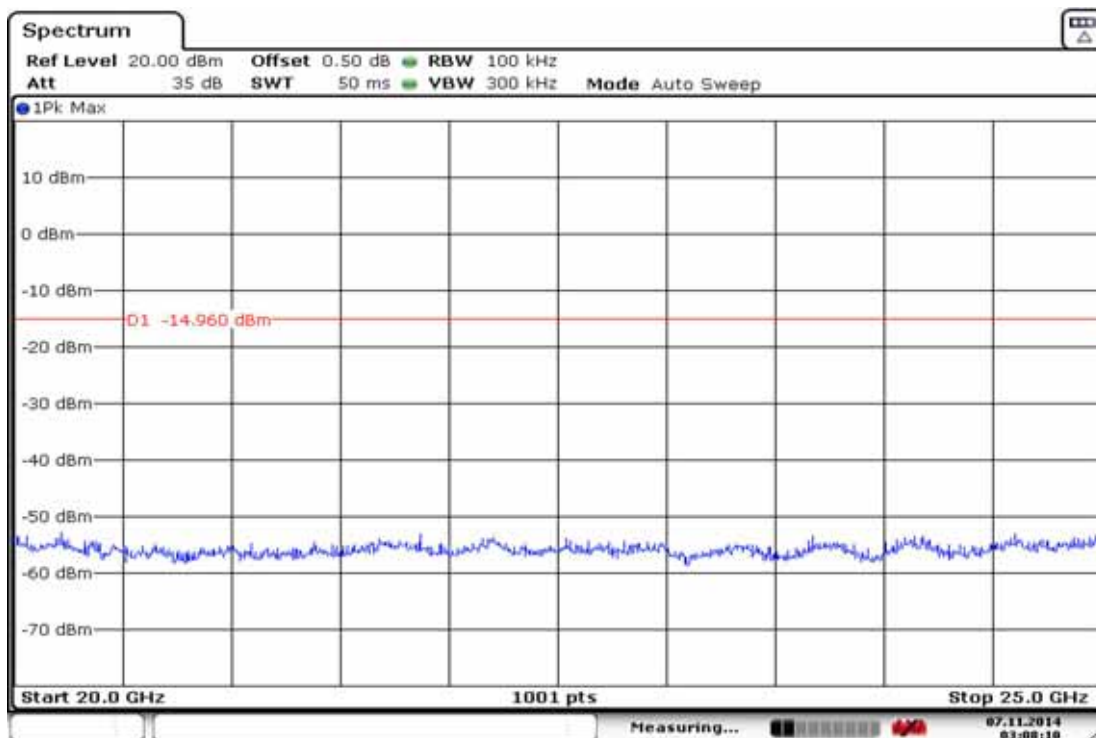
Date: 7.NOV.2014 03:07:09



Date: 7.NOV.2014 03:07:27



Date: 7.NOV.2014 03:07:47



Date: 7.NOV.2014 03:08:10

8. BAND EDGES MEASUREMENT

8.1. Test Equipment

The following test equipment was used during the band edges measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Spectrum Analyzer	Agilent	N9030A-526	MY53310269	2014. 09. 19	1 Year

8.2. Block Diagram of Test Setup

The same as section.4.2.

8.3. Specification Limits [§15.247(c), RSS-210 §A8.5]

8.3.1. The highest level should be at least 20 dB below that in the 100kHz bandwidth.

8.3.2. The reference level for determining limit of emission limitations is according to the value measured indicated in plots at section 8.6.

8.4. Operating Condition of EUT

Test program “Futaba term” is used for enabling the EUT transmitting continuing.

8.5. Test Procedure

The transmitter output was connected to the spectrum analyzer. Set both RBW=100 kHz and VBW to 300kHz with suitable frequency span including 100kHz bandwidth from band edge.

The measurement guideline was according to KDB 558074 D01 DTS Meas Guidance is v03r02.

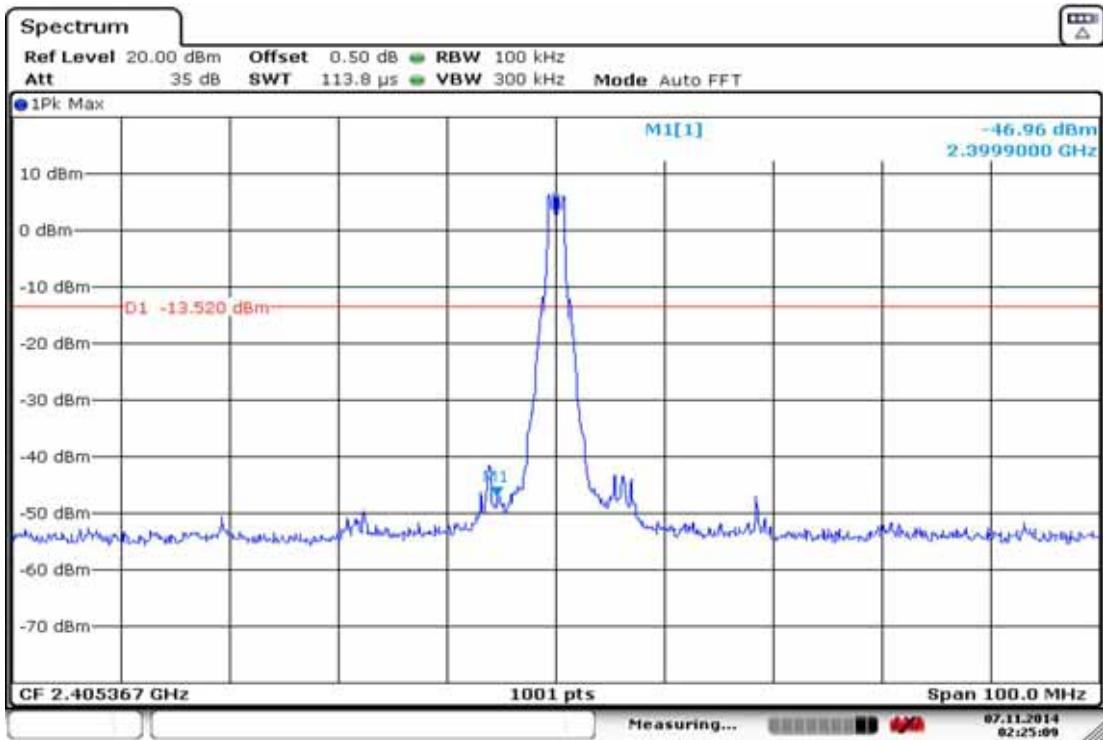
The measurement guideline was according to RSS-Gen.

8.6. Test Results

PASSED. All the test results are attached in next pages.

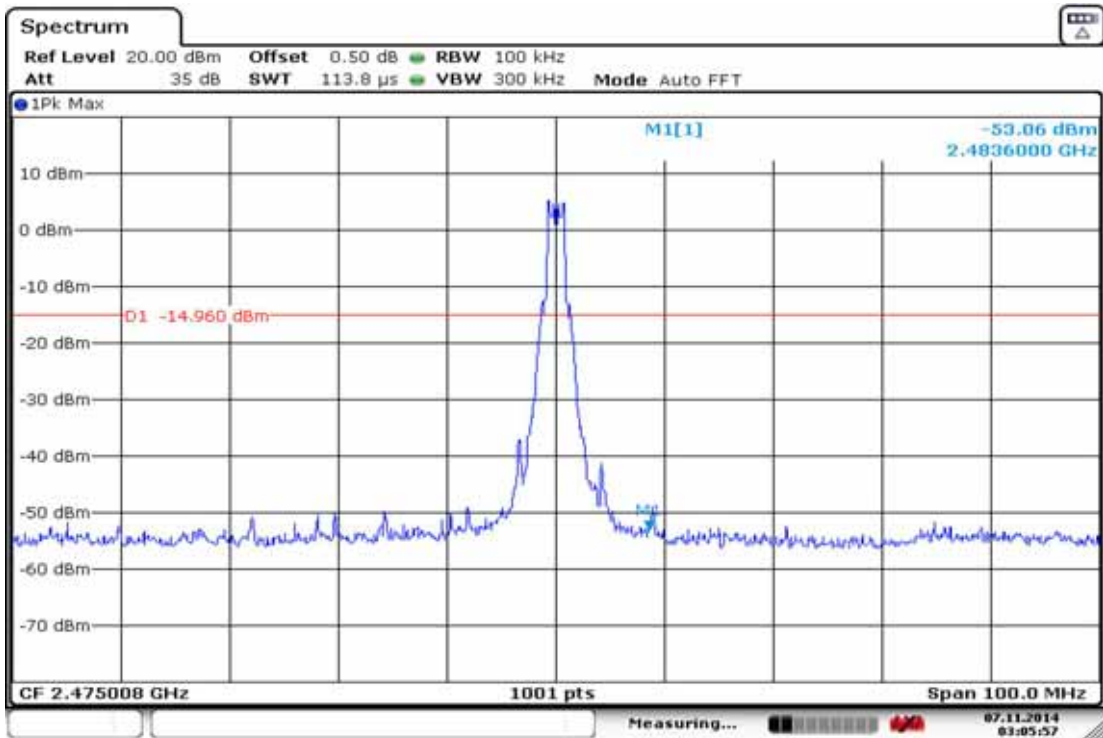
Test Date : 2014. 11. 07 Temperature : 25 Humidity : 40%

Below Band edge



Date: 7.NOV.2014 02:25:09

Upper Band edge



Date: 7.NOV.2014 03:05:57

9. POWER SPECTRAL DENSITY MEASUREMENT

9.1. Test Equipment

The following test equipment was used during the power spectral density measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Spectrum Analyzer	Agilent	N9030A-526	MY53310269	2014. 09. 19	1 Year

9.2. Block Diagram of Test Setup

The same as section.5.2.

9.3. Specification Limits [§15.247(d), RSS-210 §A8.2 (b)]

The peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band.

9.4. Operating Condition of EUT

Test program “Futaba term” is used for enabling the EUT transmitting continuing.

9.5. Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using 100kHz RBW and ≥ 300 kHz VBW, set sweep time = Auto.

The measurement guideline was according to KDB 558074 D01 DTS Meas Guidance is v03r02.

The measurement guideline was according to RSS-Gen.

9.6. Test Results

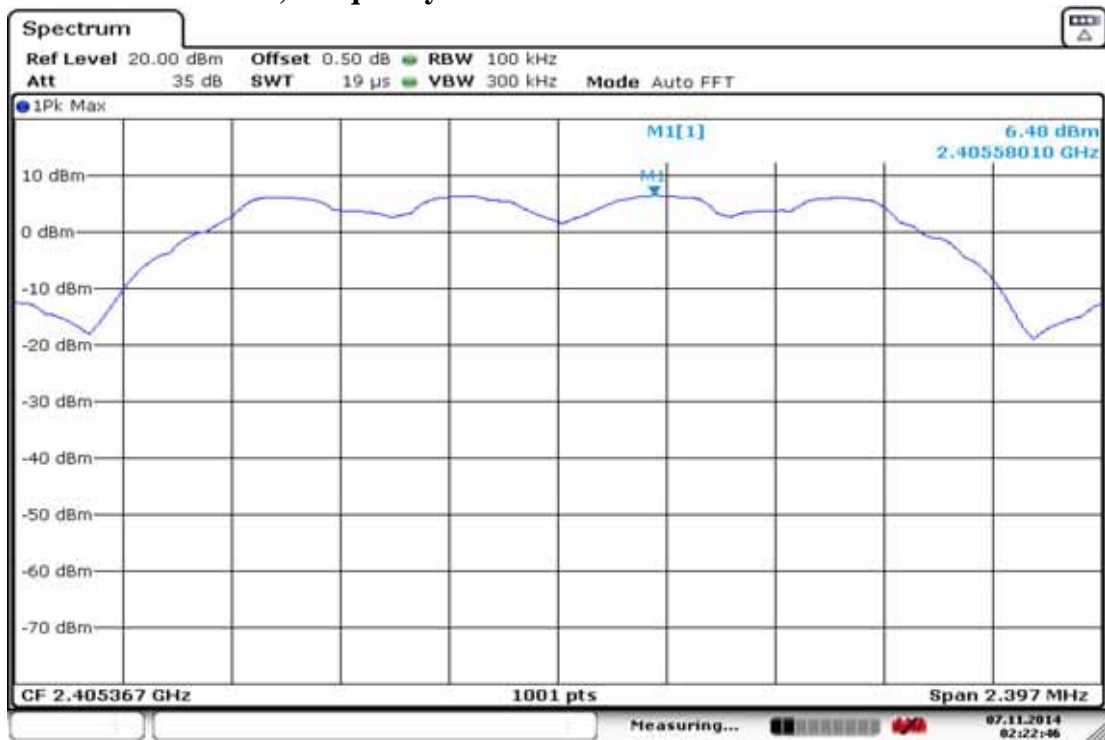
PASSED. All the test results are attached in next pages.

Test Date : 2014. 11. 07 Temperature : 25 Humidity : 40%

Mode	Channel No.	Frequency	Power Spectral Density
1.	CH 02	2405.376MHz	6.48dBm
2.	CH 36	2440.192MHz	6.45dBm
3.	CH 70	2475.008MHz	5.06dBm

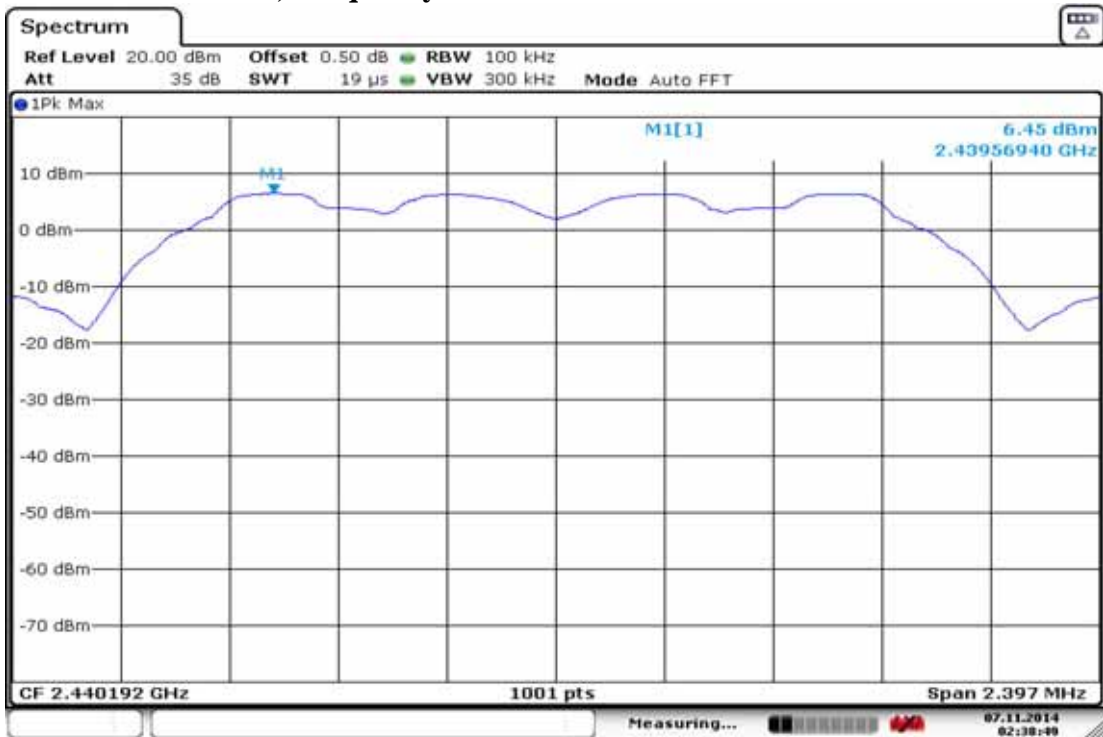
[Limit: 8dBm]

Channel 02, Frequency: 2405.376MHz



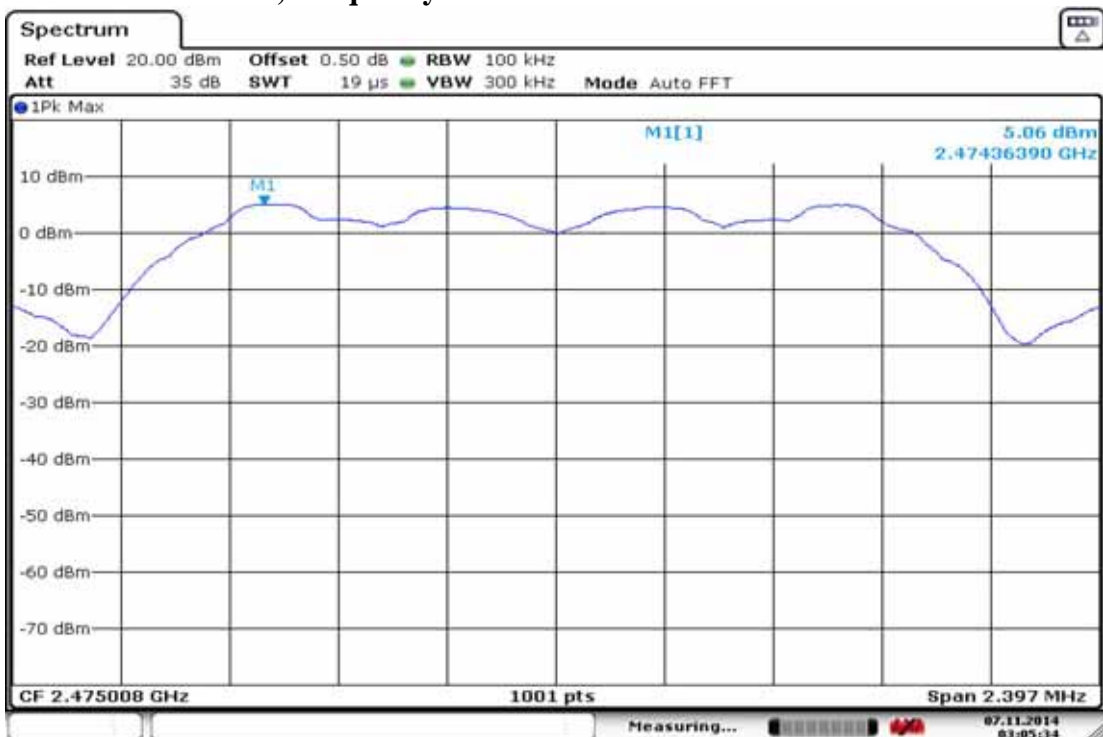
Date: 7.NOV.2014 02:22:46

Channel 36, Frequency: 2440.192MHz



Date: 7.NOV.2014 02:38:49

Channel 70, Frequency: 2475.008MHz



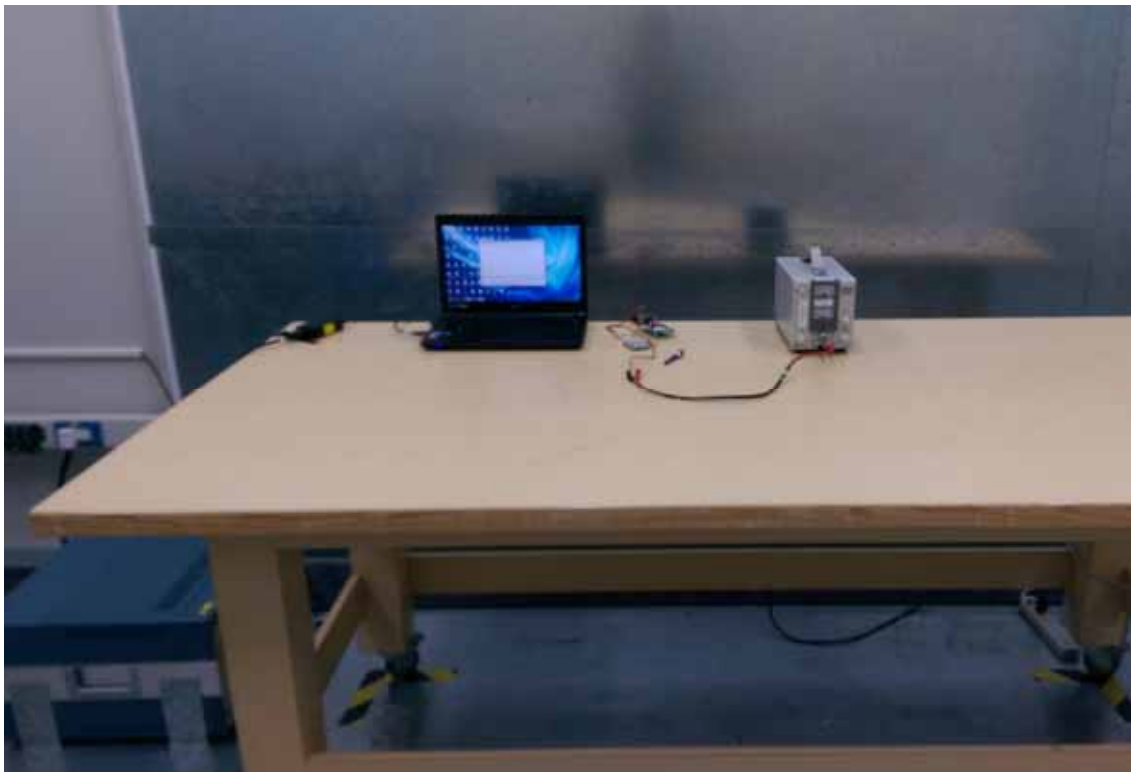
Date: 7.NOV.2014 03:05:34

10.DEVIATION TO TEST SPECIFICATIONS

【NONE】

11.PHOTOGRAPHS

11.1.Photos of Conducted Disturbance Measurement



FRONT VIEW OF CONDUCTED MEASUREMENT



BACK VIEW OF CONDUCTED MEASUREMENT

11.2.Photos of Radiated Measurement at Semi-Anechoic Chamber

11.2.1.Frequency Below 1GHz

Type A



Type B



Type C



11.2.2. Frequency Above 1GHz

Type A



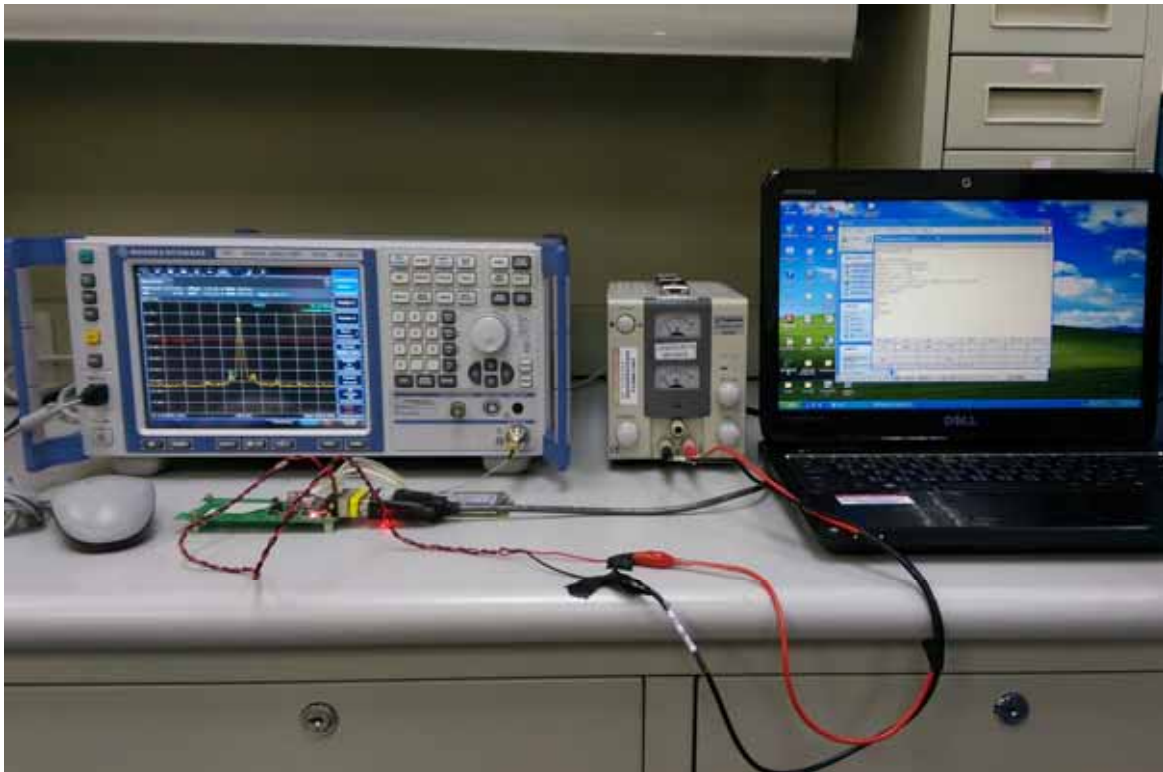
Type B



Type C



11.3. Photo of Section RF Conducted Measurement



11.4. Photo of Maximum Peak Output Power Measurement

