FCC Radio Test Report

FCC ID: SGPG0102

This report concerns (check one): ■ **Original Grant** □ **Class II Change**

Issued Date	:	Apr. 26, 2012
Project No.	:	1204C173
Equipment	:	Dongle
Model Name	:	G01UF; G03UF
Applicant	:	Shenzhen Delux Industry Co., Ltd.
Address	:	Delux Industrial Park, Lanzhu Street, New Pingshan District, Shenzhen City, China

Tested by:
Neutron Engineering Inc. EMC Laboratory

Date of Receipt: Apr. 18, 2012

Date of Test:
Apr. 18, 2012 ~ Apr. 25, 2012

Testing Engineer : David Mao
(David Mao)

Technical Manager : Leo Hung
(Leo Hung)

Authorized Signatory : Steven Lu
(Steven Lu)

Neutron Engineering Inc.

No.3,Jinshagang 1st Road, ShiXia, Dalang Town, Dong Guan, China.
TEL : (0769) 8318-3000 FAX : (0769) 8319-6000

Declaration

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

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

Neutron's reports must not be used by the client to claim product endorsement by the authorities or any agency of the Government.

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

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

Limitation

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

Table of Contents **Page**

1 . CERTIFICATION 5

2 . SUMMARY OF TEST RESULTS 6

2.1 TEST FACILITY 7

2.2 MEASUREMENT UNCERTAINTY 7

3 . GENERAL INFORMATION 8

3.1 GENERAL DESCRIPTION OF EUT 8

3.2 DESCRIPTION OF TEST MODES 10

3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED 11

3.4 DESCRIPTION OF SUPPORT UNITS 12

4 . EMC EMISSION TEST 13

4.1 CONDUCTED EMISSION MEASUREMENT 13

4.1.1 POWER LINE CONDUCTED EMISSION LIMITS 13

4.1.2 MEASUREMENT INSTRUMENTS LIST 13

4.1.3 TEST PROCEDURE 14

4.1.4 DEVIATION FROM TEST STANDARD 14

4.1.5 TEST SETUP 14

4.1.6 EUT OPERATING CONDITIONS 14

4.1.7 TEST RESULTS 15

4.2 RADIATED EMISSION MEASUREMENT 17

4.2.1 RADIATED EMISSION LIMITS 17

4.2.2 MEASUREMENT INSTRUMENTS LIST 18

4.2.3 TEST PROCEDURE 20

4.2.4 DEVIATION FROM TEST STANDARD 20

4.2.5 TEST SETUP 21

4.2.6 EUT OPERATING CONDITIONS 21

4.2.7 TEST RESULTS (BETWEEN 30 – 1000 MHz) 22

4.2.8 TEST RESULTS (ABOVE 1000 MHz) 24

5 . BANDWIDTH TEST 36

5.1 MEASUREMENT INSTRUMENTS LIST 36

5.2 TEST PROCEDURE 36

5.3 DEVIATION FROM STANDARD 36

5.4 TEST SETUP 36

5.5 EUT OPERATION CONDITIONS 36

5.6 TEST RESULTS 37

6 . ANTENNA CONDUCTED SPURIOUS EMISSION 39

6.1 APPLIED PROCEDURES / LIMIT 39

6.1.1 MEASUREMENT INSTRUMENTS LIST 39

Table of Contents **Page**

6.1.2 TEST PROCEDURE 39
6.1.3 DEVIATION FROM STANDARD 39
6.1.4 TEST SETUP 39
6.1.5 EUT OPERATION CONDITIONS 39
6.1.6 TEST RESULTS 40

7 . EUT TEST PHOTO 45

1. CERTIFICATION

Equipment: Dongle
Brand Name : DELUX
Model Name.: G01UF; G03UF
Applicant: Shenzhen Delux Industry Co., Ltd.
Date of Test: Apr. 18, 2012 ~ Apr. 25, 2012
Test Item: ENGINEERING SAMPLE
Standards: FCC Part15, Subpart C(15.249)/ ANSI C63.4 : 2009

The above equipment has been tested and found compliance with the requirement of the relative standards by Neutron Engineering Inc. EMC Laboratory.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FCCP-1-1204C173) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of NVLAP and TAF according to the ISO-17025 quality assessment standard and technical standard(s).

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15, Subpart C (15.249)			
StandardSection FCC	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.209	Radiated Emission	PASS	
15.249	Radiated Spurious Emission	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **DG-C01/DG-CB03** at the location of No.3,Jinshagang 1st Road, ShiXia, Dalang Town,Dong Guan, China.523792
Neutron's test firm number for FCC 319330

2.2 MEASUREMENT UNCERTAINTY

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

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

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U，(dB)	NOTE
DG-C01	CISPR	150 KHz ~ 30MHz	1.94	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U，(dB)	NOTE
DG-CB03	CISPR	30MHz ~ 200MHz	V	2.48	
		30MHz ~ 200MHz	H	2.16	
		200MHz ~ 1,000MHz	V	2.50	
		200MHz ~ 1,000MHz	H	2.66	
		1GHz~18GHz	V	3.12	
		1GHz~18GHz	H	3.68	

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Dongle
Brand Name	DELUX
Model Name.	G01UF; G03UF
OEM Brand/Model Name	N/A
Model Difference	Difference is model name.
Product Description	The EUT is a Dongle. Product Type: Low Power Communication Device Operation Frequency: 2403~2478 MHz Modulation Type: GFSK Data rate: 1Mbps Number of Channel: 20CH .Please see Note 2. (please see page 9) Antenna Designation: Printed antenna Antenna Gain(Peak): -0.71 dBi Output Power: 68.43 dBuV/m (AV Max.) Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.
Channel List	Please refer to the Note 2.
Power Source	DC Voltage supplied from Host System.
Power Rating	I/P AC 120V/60Hz DC 5V

Note:

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

2.

Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	**2403**	06	2415	11	2445	16	2466
02	2404	07	2416	**12**	**2453**	17	2474
03	2405	08	2424	13	2456	18	2475
04	2406	09	2436	14	2464	19	2476
05	2413	10	2444	15	2465	**20**	**2478**

Hopping Channel List			
Group 1	**Group 2**	**Group 3**	**Group 4**
2403	2404	2405	2406
2478	2474	2475	2476
2453	2444	2445	2436
2413	2424	2415	2456
2466	2464	2465	2416

3.

Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Printed	N/A	-0.71

3.2 DESCRIPTION OF TEST MODES

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

Pretest Mode	Description
Mode 1	CH Lower – 2403MHz
Mode 2	CH Middle – 2453MHz
Mode 3	CH Highest -2478MHz
Mode 4	Wireless

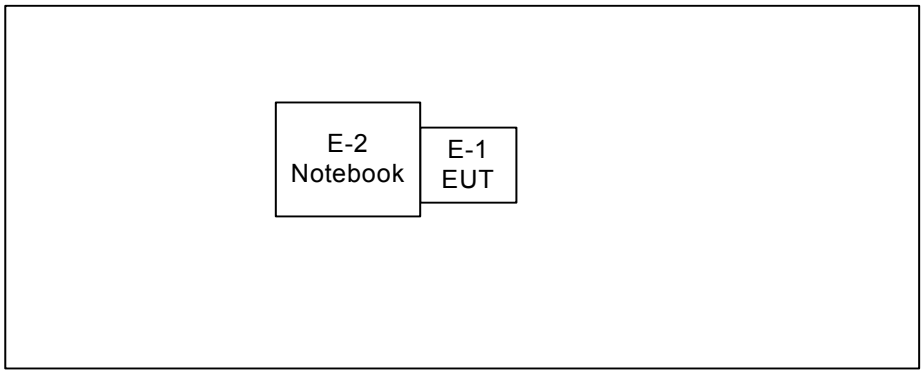
For Conducted Test	
Final Test Mode	Description
Mode 4	Wireless

For Radiated Test	
Final Test Mode	Description
Mode 1	CH Lower – 2403MHz
Mode 2	CH Middle – 2453MHz
Mode 3	CH Highest -2478MHz

Note:
(1) The measurements are performed at the highest, middle, lowest available channels.

3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiatied: Normal



3.4 DESCRIPTION OF SUPPORT UNITS

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

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	Dongle	DELUX	G01UF	SGPG0102	N/A	EUT
E-2	Notebook	HP	HP NB 331	DOC	N/A	

Item	Shielded Type	Ferrite Core	Length	Note

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in m in『Length』column.

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

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

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

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

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

4.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	EMCO	3816/2	00052765	May.26.2012
2	LISN	R&S	ENV216	100087	May.26.2012
3	Test Cable	N/A	C_17	N/A	Mar.30.2013
4	EMI TEST RECEIVER	R&S	ESCS30	826547/022	May.26.2012
5	50Ω Terminator	SHX	TF2-3G-A	08122902	May.26.2012

Remark: ” N/A” denotes No Model Name. , Serial No. or No Calibration specified.

The following table is the setting of the receiver

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

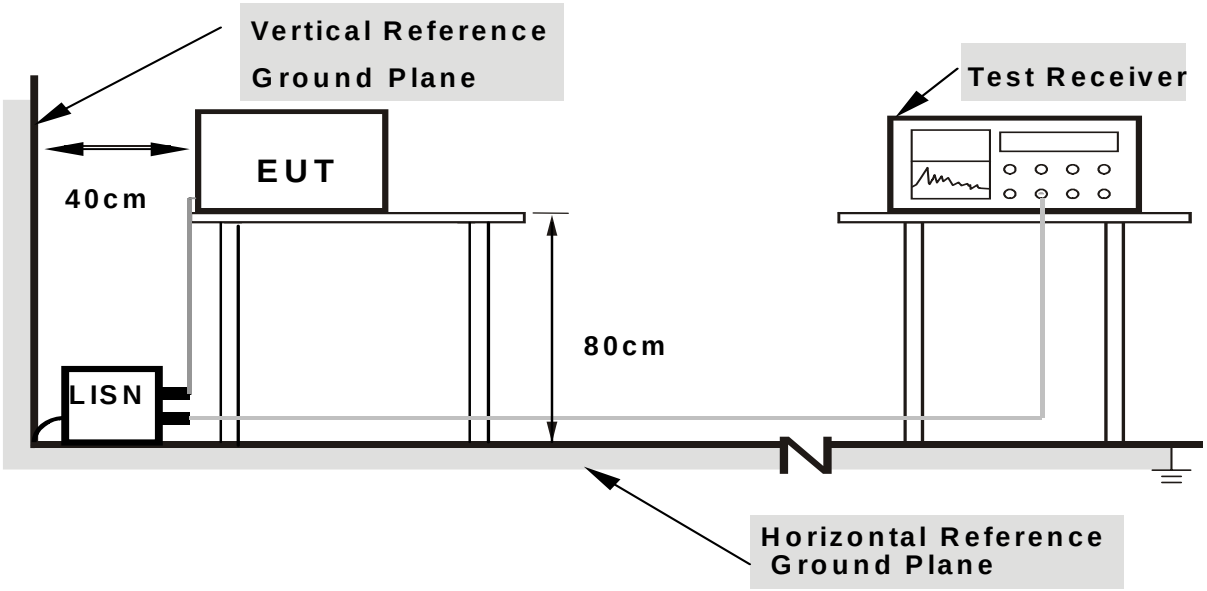
4.1.3 TEST PROCEDURE

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

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



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

4.1.6 EUT OPERATING CONDITIONS

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

4.1.7 TEST RESULTS

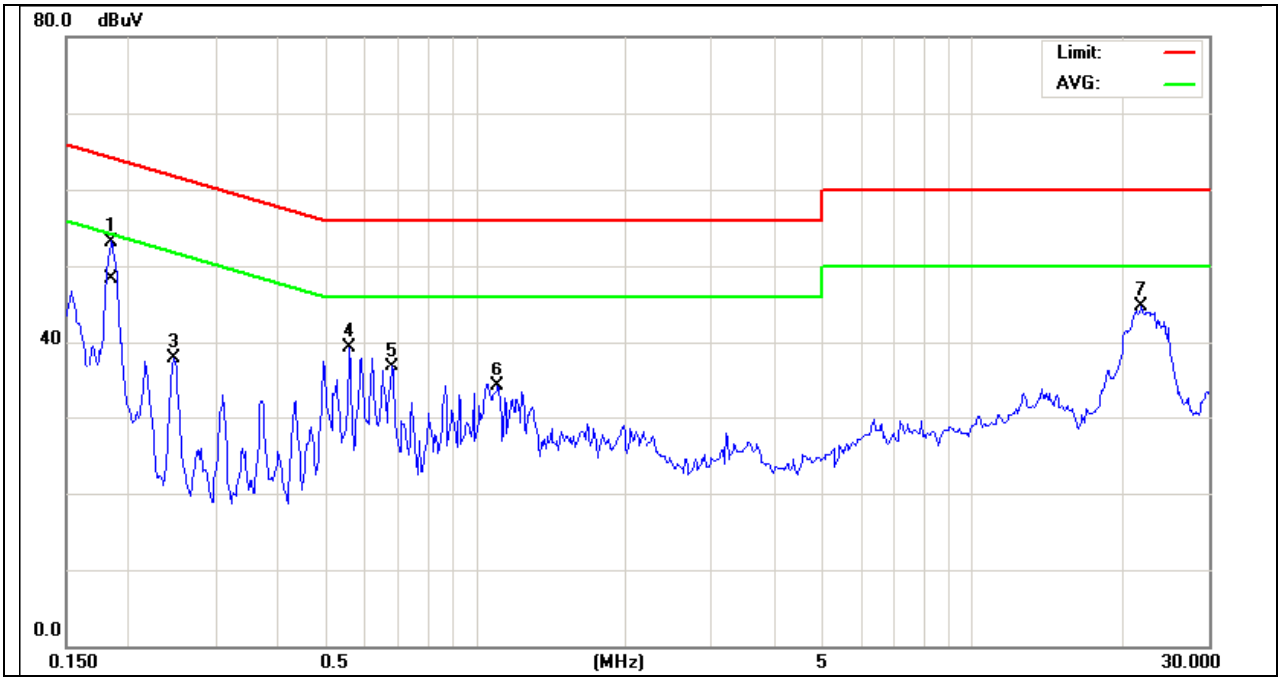
EUT：	Dongle	Model Name. ：	G01UF
Temperature：	25 ℃	Relative Humidity：	55%
Pressure：	1010hPa	Test Power ：	AC 120V/60Hz
Test Mode ：	Wireless		

Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.18	Line	53.20	48.38	64.29	54.29	-5.91	(AV)
0.25	Line	37.85	*	61.87	51.87	-24.02	(QP)
0.56	Line	39.32	*	56.00	46.00	-16.68	(QP)
0.68	Line	36.69	*	56.00	46.00	-19.31	(QP)
1.11	Line	34.05	*	56.00	46.00	-21.95	(QP)
21.95	Line	44.64	*	60.00	50.00	-15.36	(QP)

Remark

(1) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform。In this case, a " * " marked in AVG Mode column of Interference Voltage Measured。

(2) Measuring frequency range from 150KHz to 30MHz。



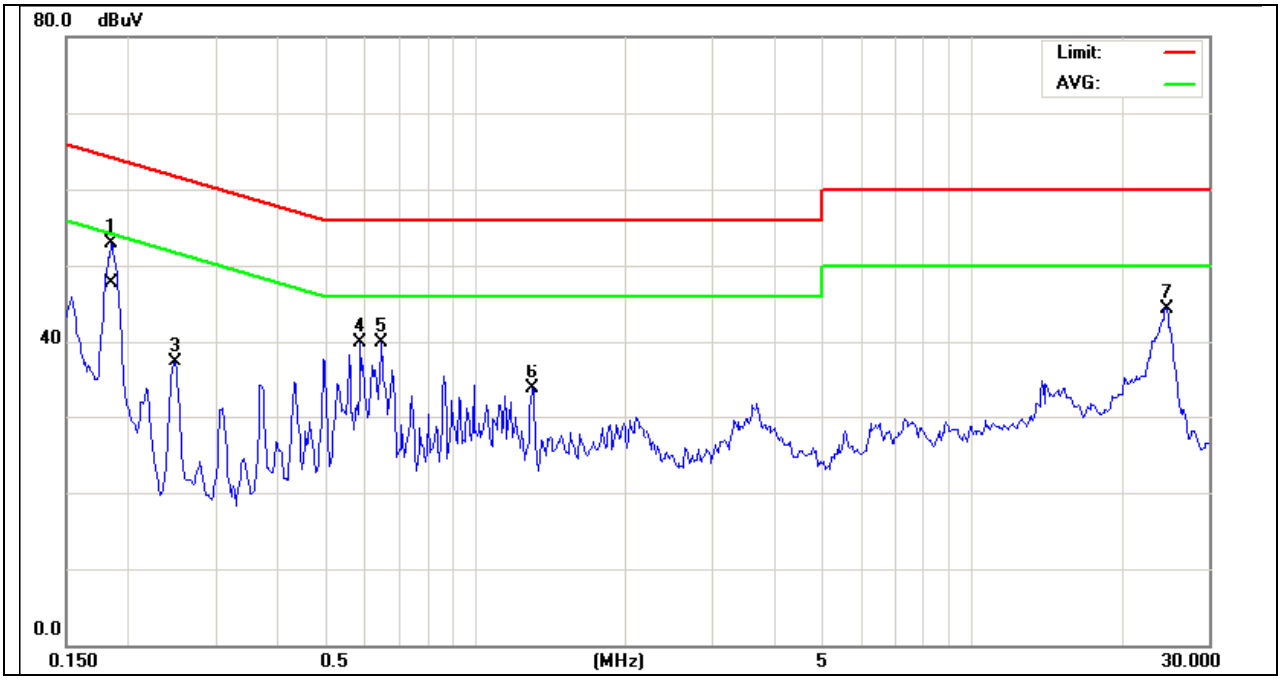
EUT：	Dongle	Model Name. ：	G01UF
Temperature：	25 ℃	Relative Humidity：	55%
Pressure：	1010hPa	Test Power ：	AC 120V/60Hz
Test Mode ：	Wireless		

Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.18	Neutral	52.95	47.68	64.29	54.29	-6.61	(AV)
0.25	Neutral	37.33	*	61.82	51.82	-24.49	(QP)
0.59	Neutral	39.95	*	56.00	46.00	-16.05	(QP)
0.64	Neutral	39.93	*	56.00	46.00	-16.07	(QP)
1.30	Neutral	33.66	*	56.00	46.00	-22.34	(QP)
24.66	Neutral	44.32	*	60.00	50.00	-15.68	(QP)

Remark

(1) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform。In this case, a " * " marked in AVG Mode column of Interference Voltage Measured。

(2) Measuring frequency range from 150KHz to 30MHz。



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS (FCC 15.209)

Frequencies (MHz)	Field Strength (micorvolts/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

Harmonic emissions limits comply with below 54 dBuV/m at 3m. Other emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section 15.209(a) limit in the table below has to be followed.

Note:

(1) The tighter limit applies at the band edges.

(2) Emission level (dBuV/m)=20log Emission level (uV/m).

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC 15.209)

FREQUENCY (MHz)	(dBuV/m) (at 3m)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC Part 15.249)

FCC Part15 (15.249) , Subpart C	
Limit	Frequency Range (MHz)
Field strength of fundamental 50000 μV/m (94 dBμV/m) @ 3 m	2400-2483.5
Field strength of harmonics 500 μV/m (54 dBμV/m) @ 3 m	Above 2483.5

4.2.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarbeck	VULB9160	9160-3232	Jun .04.2012
2	Amplifier	HP	8447D	2944A09673	May.26.2012
3	Test Receiver	R&S	ESCI	100382	May.26.2012
4	Test Cable	N/A	C-01_CB03	N/A	Jul.01.2012
5	Antenna	ETS	3115	00075789	May.26.2012
6	Amplifier	Agilent	8449B	3008A02274	May.26.2012
7	Spectrum	Agilent	E4408B	US39240143	Nov.25.2012
8	Test Cable	HUBER+SUHNER	C-45	N/A	May.04.2012
9	Controller	CT	SC100	N/A	N/A
10	Triple Loop Antenna	Schwarzbeck	HXYZ9170	9170-110	May.26.2012
11	Active Loop Antenna	R&S	HFH2-Z2	830749/020	May.26.2012

Remark: ” N/A” denotes No Model Name. / Serial No. and No Calibration specified.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, Average=PK-duty cycle

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz for PK/AVG detector
Start ~ Stop Frequency	90kHz~110kHz for QP detector
Start ~ Stop Frequency	110kHz~490kHz for PK/AVG detector
Start ~ Stop Frequency	490kHz~30MHz for QP detector
Start ~ Stop Frequency	30MHz~1000MHz for QP detector

DUTY CYCLE: TX 2478MHz (1Mbps)

Dwell time=ON/ON+OFF

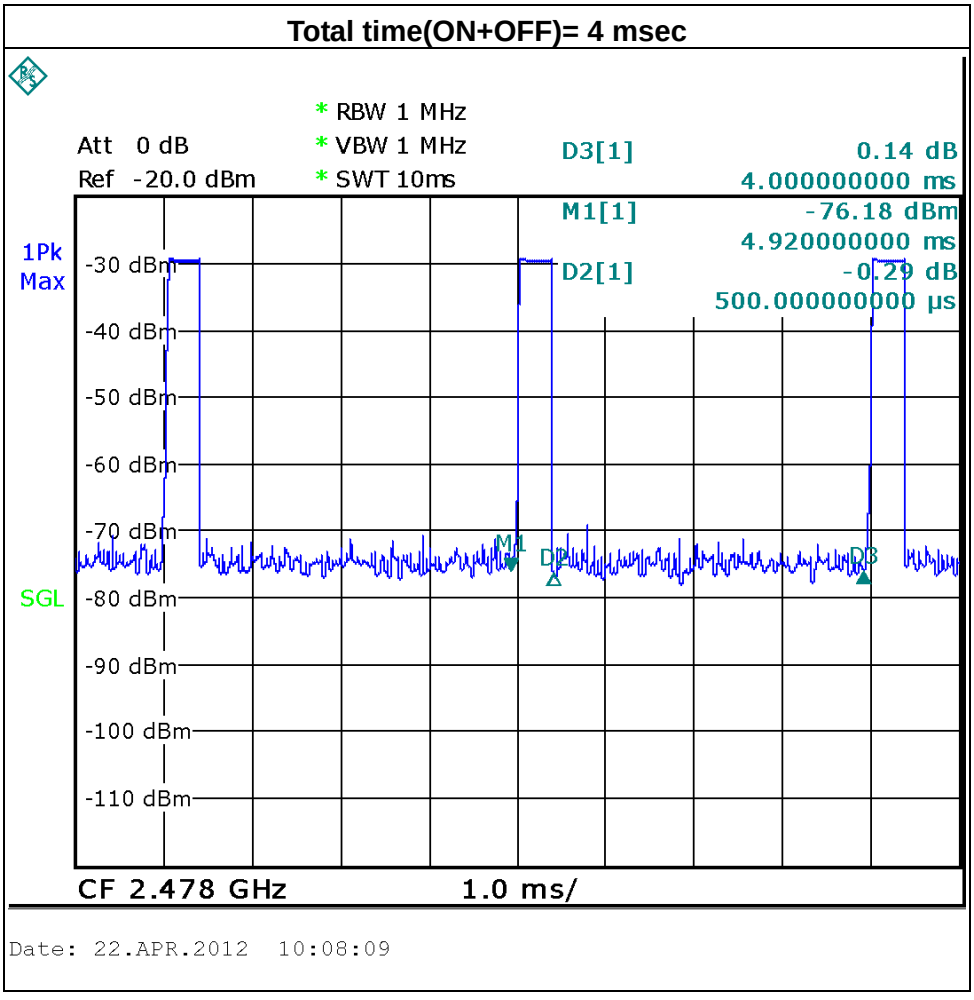
ON: 0.5msec

ON+OFF: (total time):4msec

Dwell time: 12.5%

AV=PK+20 log(Dwell time)

AV=PK-18.06



4.2.3 TEST PROCEDURE

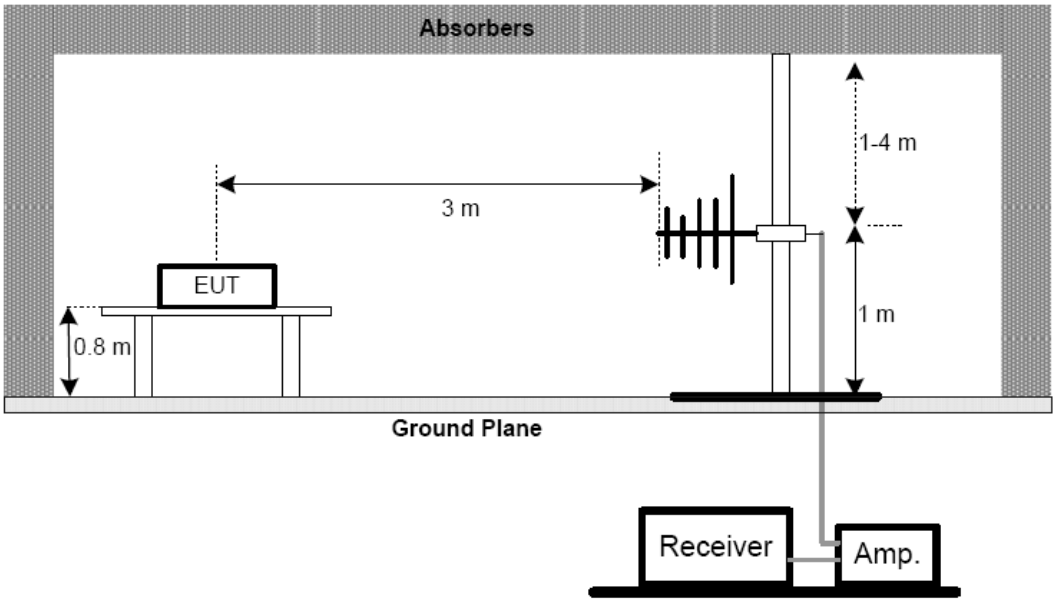
a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a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

4.2.4 DEVIATION FROM TEST STANDARD

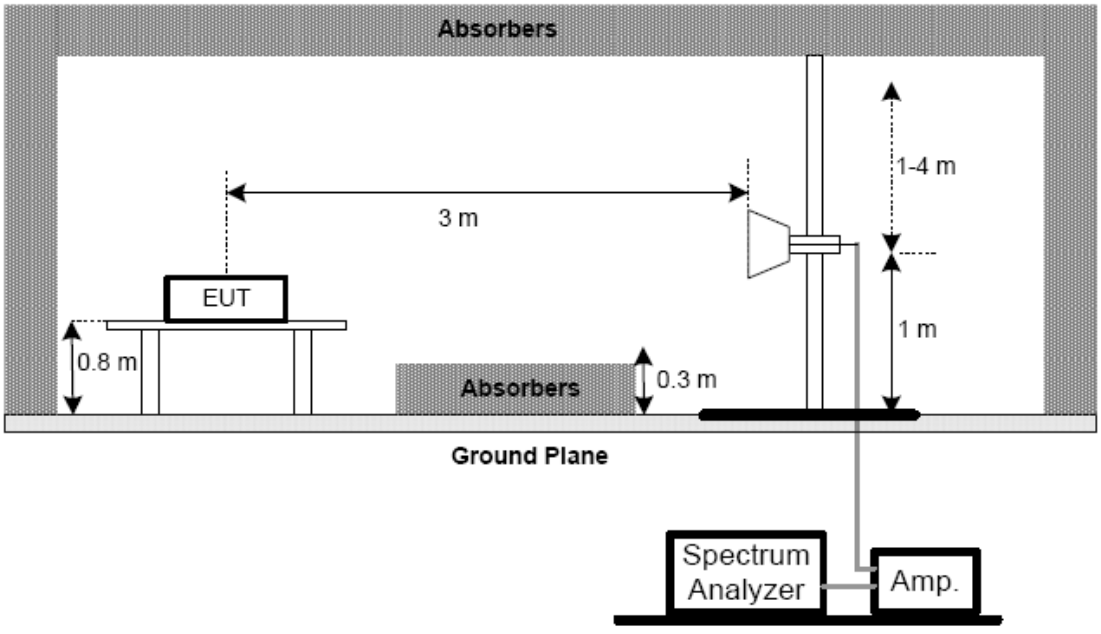
No deviation

4.2.5 TEST SETUP

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



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



4.2.6 EUT OPERATING CONDITIONS

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

4.2.7 TEST RESULTS (BETWEEN 30 – 1000 MHz)

EUT：	Dongle	Model Name. ：	G01UF
Temperature：	25℃	Relative Humidity：	58 %
Pressure：	1009 hPa	Test Power ：	AC 120V/60Hz
Test Mode ：	TX Mode 2403MHz		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
66.38	V	45.36	-17.89	27.47	40.00	- 12.53	
112.45	V	46.00	-18.34	27.66	43.50	- 15.84	
384.05	V	35.23	-9.60	25.63	46.00	- 20.37	
524.70	V	35.35	-6.44	28.91	46.00	- 17.09	
730.83	V	36.72	-2.80	33.92	46.00	- 12.08	
873.90	V	34.69	-0.50	34.19	46.00	- 11.81	

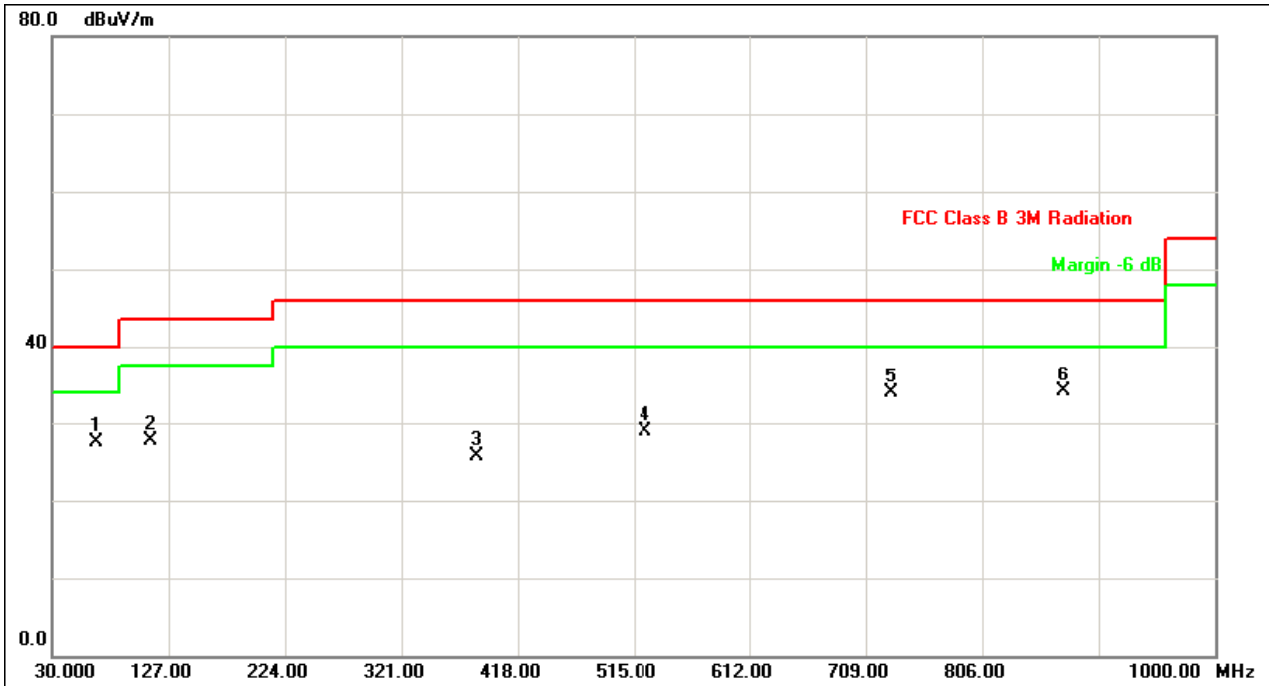
Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; " H" denotes spurious frequency. "E" denotes band edge frequency.

(3) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission 。

(4) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



EUT：	Dongle	Model Name. ：	G01UF
Temperature：	25℃	Relative Humidity：	58 %
Pressure：	1009 hPa	Test Power ：	AC 120V/60Hz
Test Mode ：	TX Mode 2403MHz		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
80.93	H	42.48	-19.07	23.41	40.00	- 16.59	
165.80	H	45.63	-17.45	28.18	43.50	- 15.32	
337.98	H	38.50	-11.14	27.36	46.00	- 18.64	
466.50	H	37.84	-7.87	29.97	46.00	- 16.03	
650.80	H	34.40	-3.34	31.06	46.00	- 14.94	
835.10	H	33.27	-1.17	32.10	46.00	- 13.90	

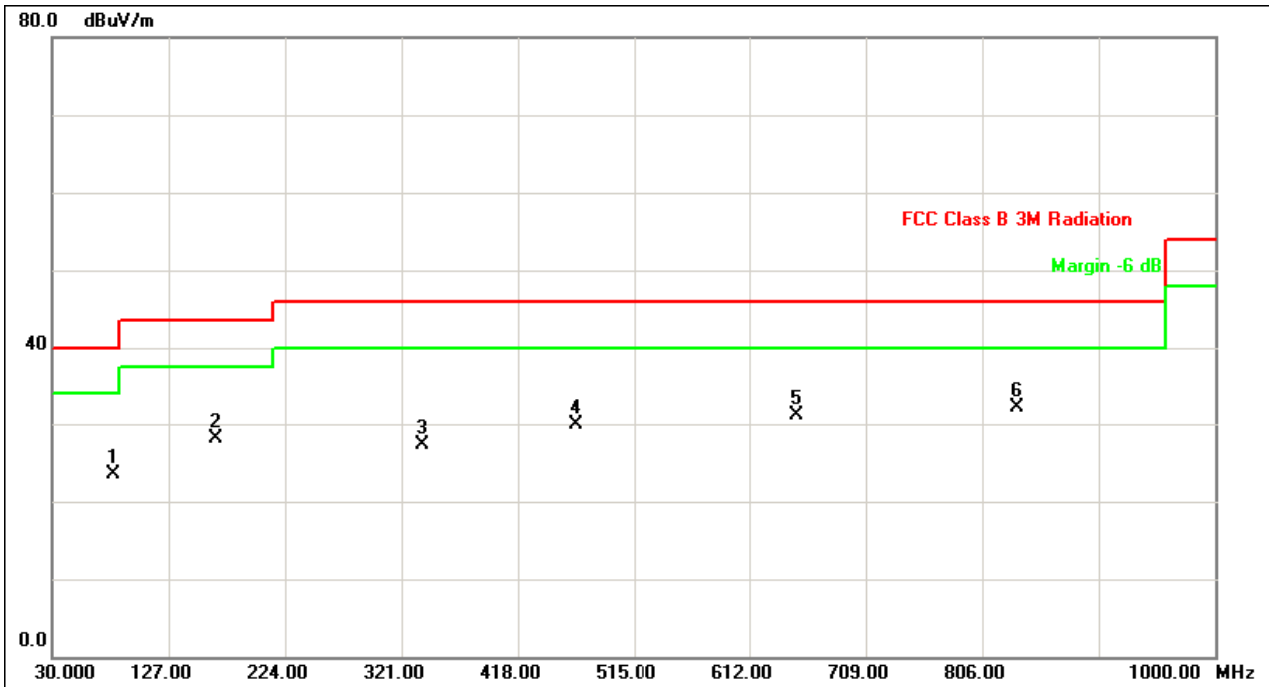
Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; " H" denotes spurious frequency. "E" denotes band edge frequency.

(3) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission 。

(4) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



4.2.8 TEST RESULTS (ABOVE 1000 MHz)

EUT：	Dongle	Model Name. ：	G01UF
Temperature：	25℃	Relative Humidity：	51%
Pressure：	1009 hPa	Test Power ：	AC 120V/60Hz
Test Mode ：	TX 2403MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.00	V	22.50	3.09	31.91	54.41	35.00	74.00	54.00	X/E
2400.00	V	27.73	9.67	31.90	59.63	41.57	74.00	54.00	X/E
2402.75	**V**	**54.19**	**34.78**	**31.89**	**86.08**	**66.67**	**114.00**	**94.00**	**X/F**
4805.84	V	40.82	21.41	5.22	46.04	26.63	74.00	54.00	X/H

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

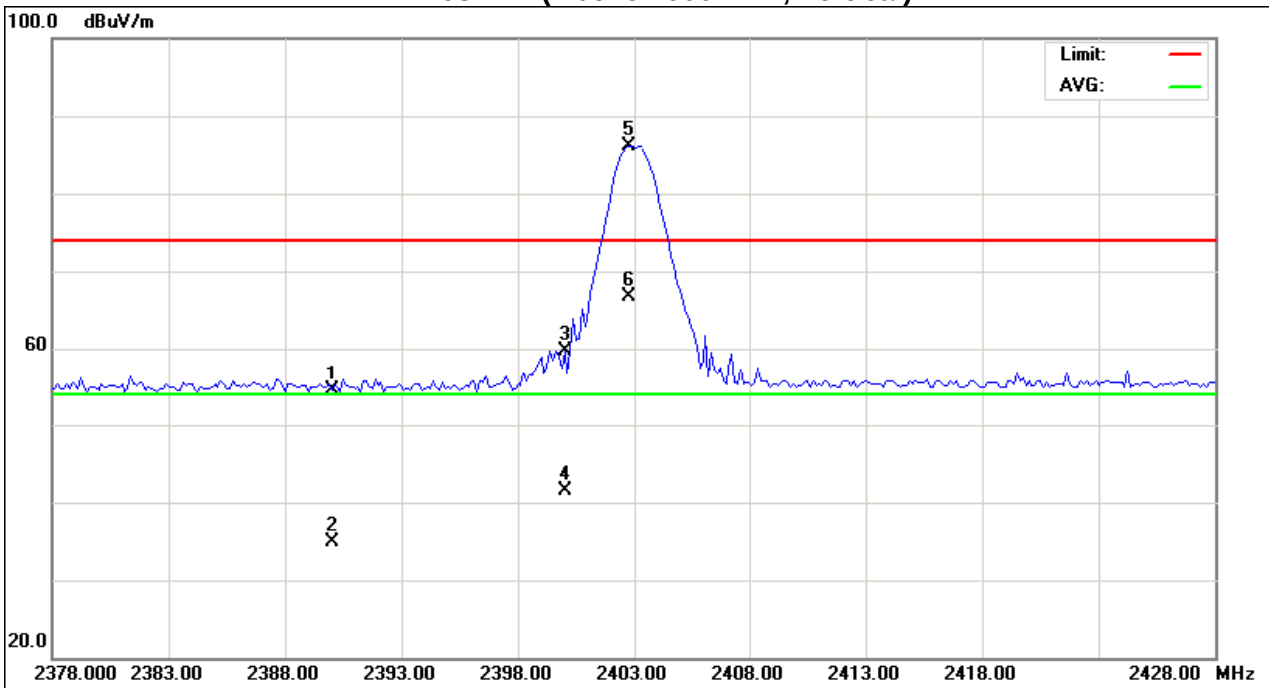
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

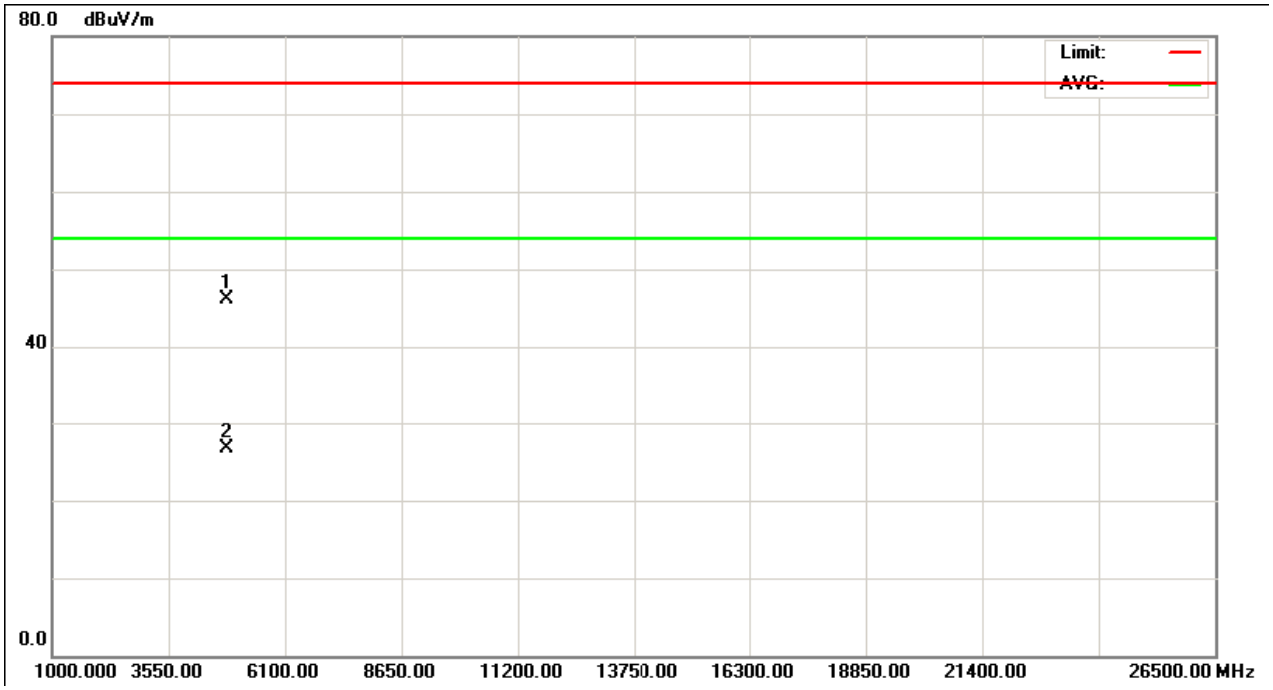
(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

(8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ，Final AV=PK-18.06

Orthogonal Axis：X
TX 2403MHz (Above 1000 MHz, Vertical)





EUT：	Dongle	Model Name. ：	G01UF
Temperature：	25℃	Relative Humidity：	51%
Pressure：	1009 hPa	Test Power ：	AC 120V/60Hz
Test Mode ：	TX 2403MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.00	H	22.98	3.57	31.91	54.89	35.48	74.00	54.00	X/E
2400.00	H	33.51	15.45	31.90	65.41	47.35	74.00	54.00	X/E
2402.75	**H**	**55.95**	**36.54**	**31.89**	**87.84**	**68.43**	**114.00**	**94.00**	**X/F**
4806.32	H	41.86	22.45	5.23	47.09	27.68	74.00	54.00	X/H

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

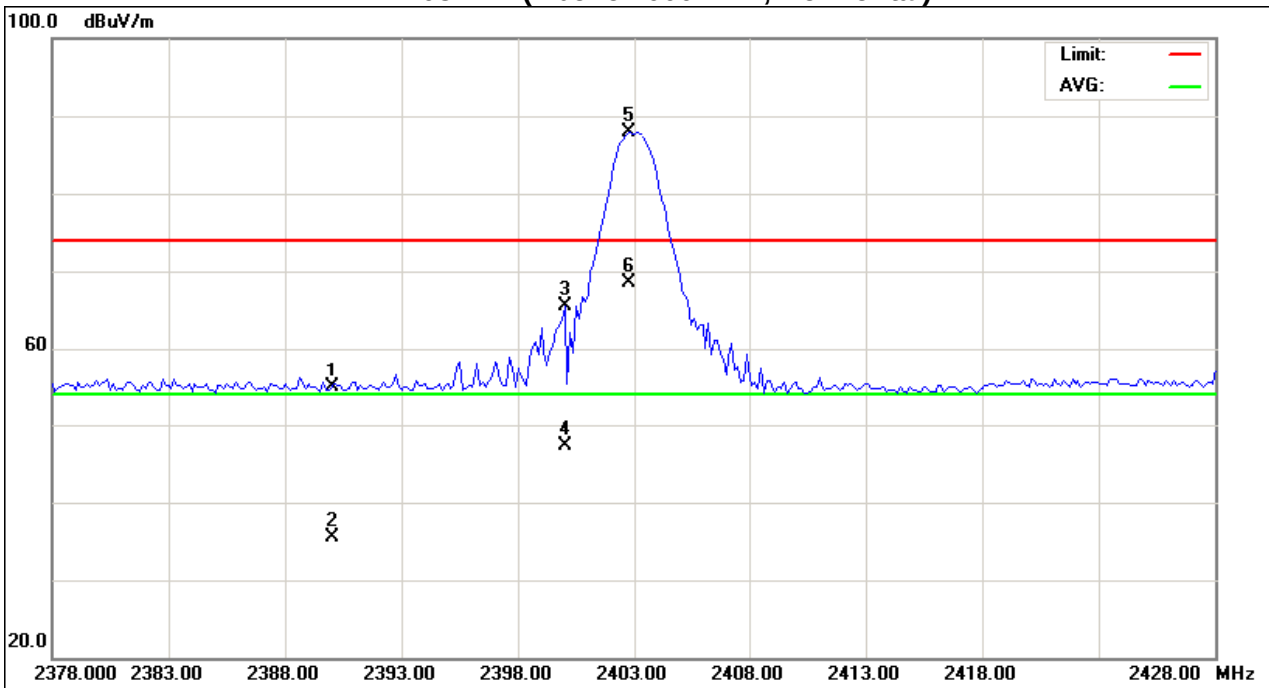
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

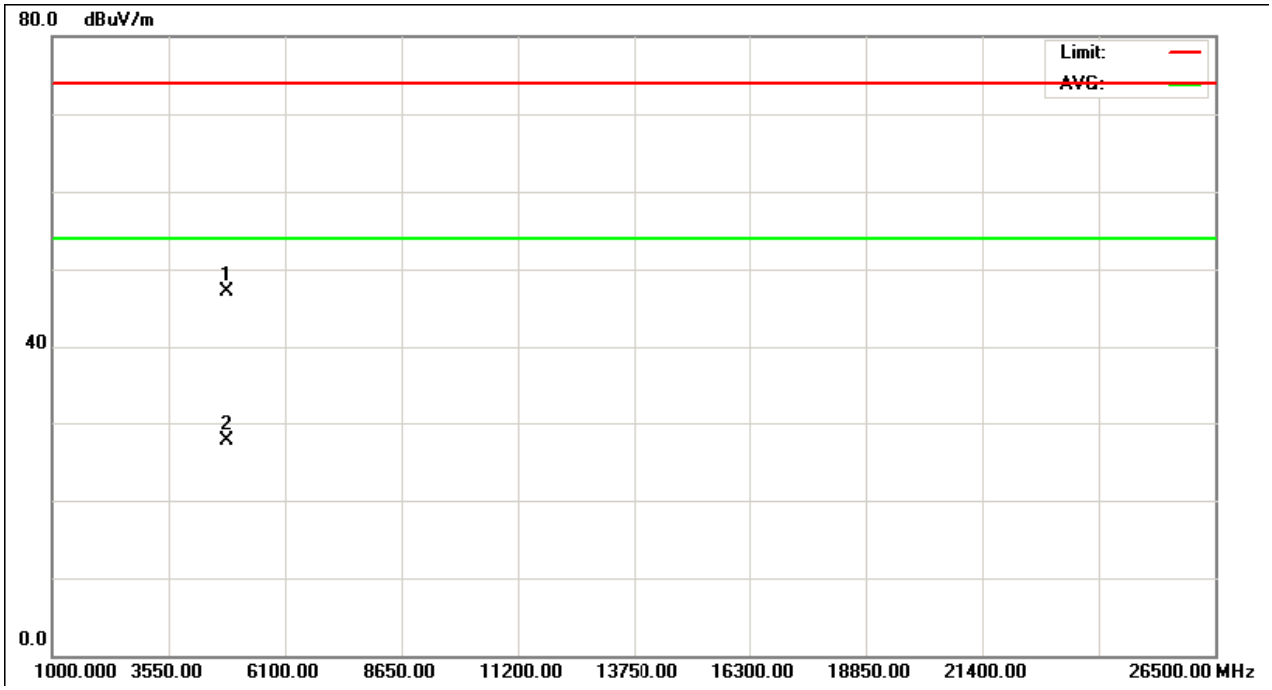
(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

(8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ，Final AV=PK-18.06

Orthogonal Axis：X
TX 2403MHz (Above 1000 MHz, Horizontal)





EUT：	Dongle	Model Name. ：	G01UF
Temperature：	25℃	Relative Humidity：	58 %
Pressure：	1009 hPa	Test Power ：	AC 120V/60Hz
Test Mode ：	TX 2453MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2453.25	**V**	**51.53**	**32.12**	**31.83**	**83.36**	**63.95**	**114.00**	**94.00**	**X/F**
4905.83	V	38.21	18.80	5.59	43.80	24.39	74.00	54.00	X/H

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

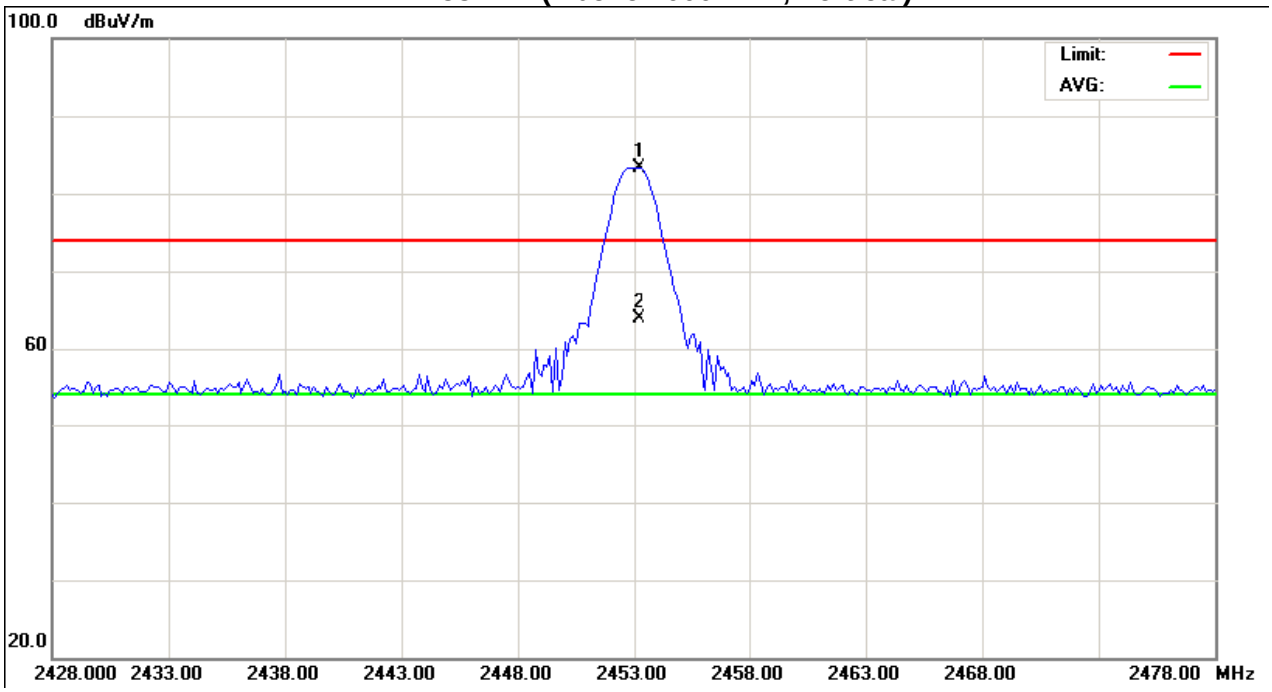
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

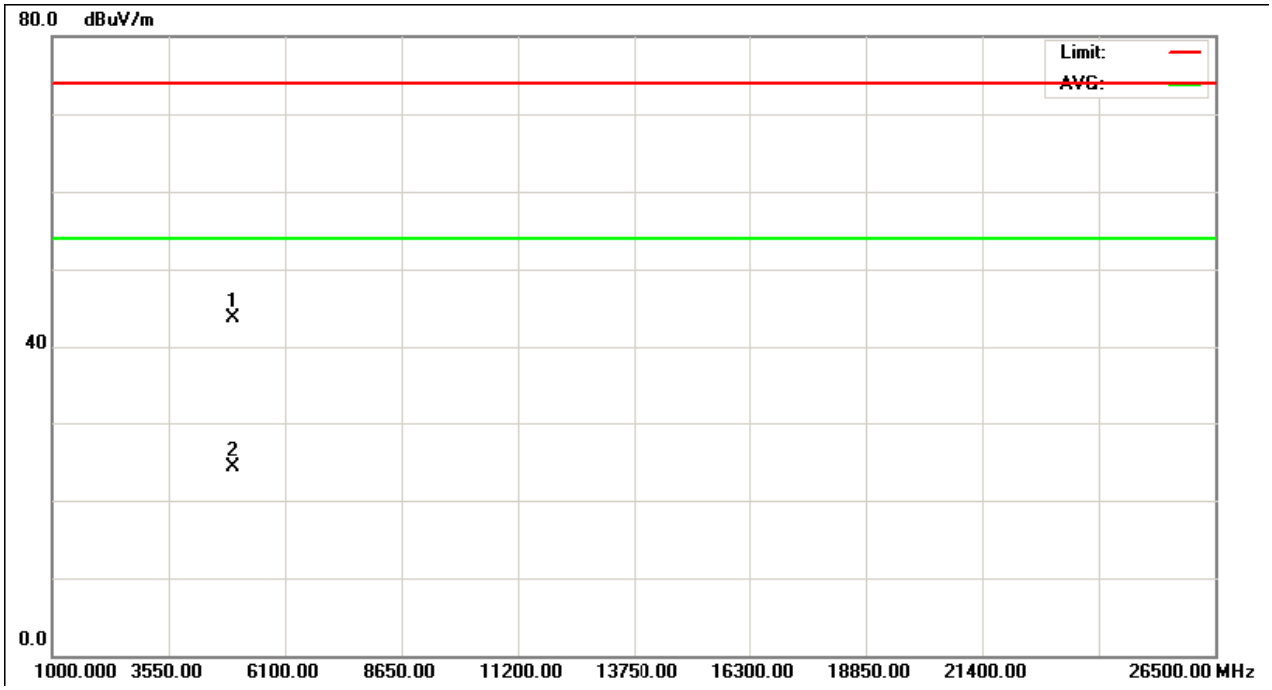
(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

(8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ，Final AV=PK-18.06

Orthogonal Axis：X
TX 2453MHz (Above 1000 MHz, Vertical)





EUT：	Dongle	Model Name. ：	G01UF
Temperature：	25℃	Relative Humidity：	58 %
Pressure：	1009 hPa	Test Power ：	AC 120V/60Hz
Test Mode ：	TX 2453MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2453.13	**H**	**52.63**	**33.22**	**31.83**	**84.46**	**65.05**	**114.00**	**94.00**	**X/F**
4906.24	H	39.31	19.90	5.59	44.90	25.49	74.00	54.00	X/H

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

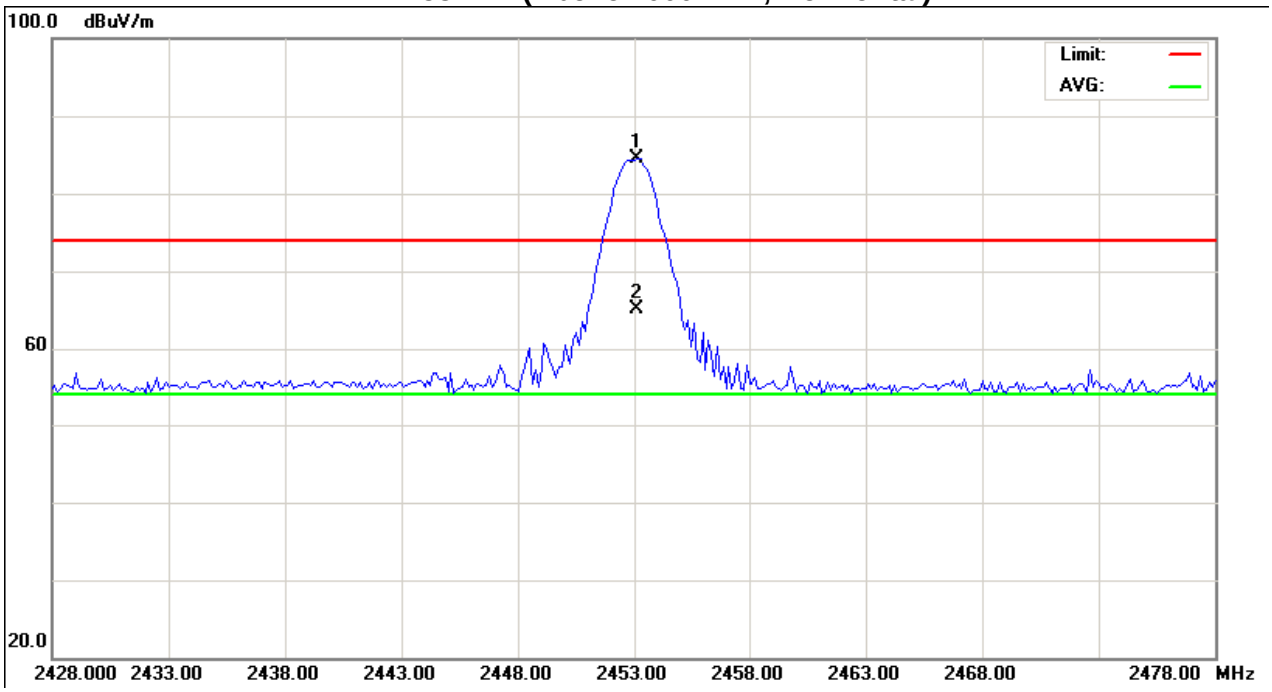
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

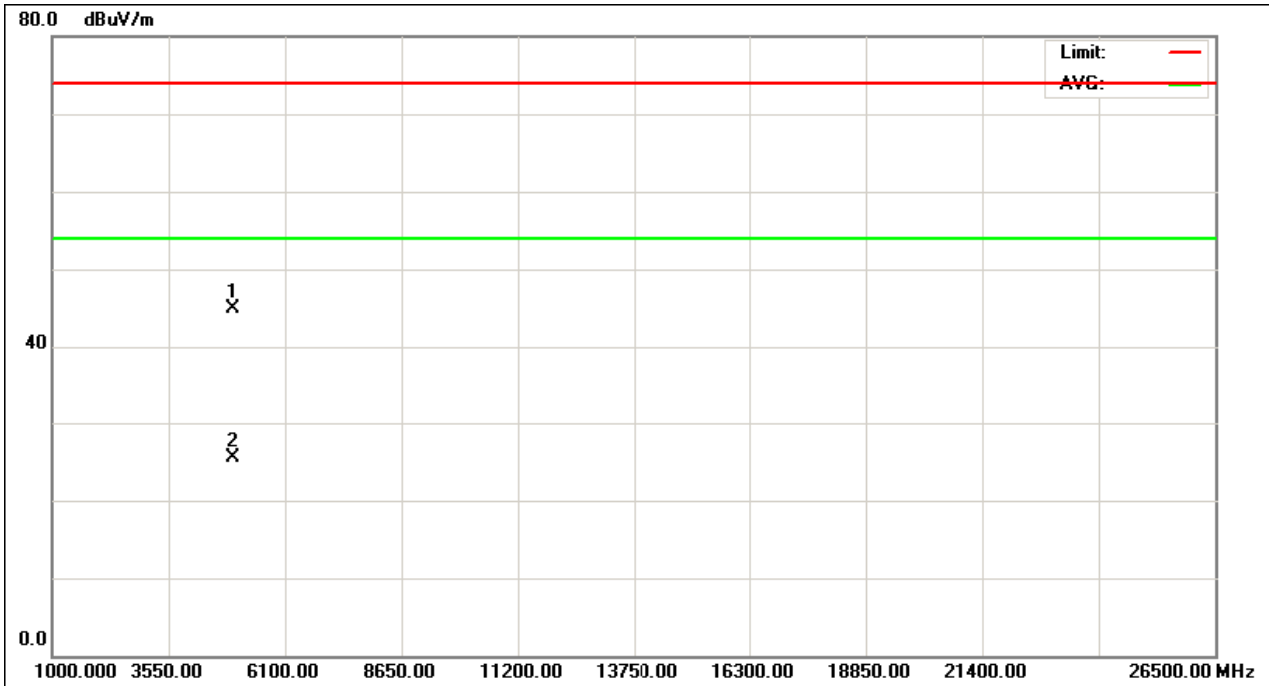
(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

(8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ，Final AV=PK-18.06

Orthogonal Axis：X
TX 2453MHz (Above 1000 MHz, Horizontal)





EUT：	Dongle	Model Name. ：	G01UF
Temperature：	25℃	Relative Humidity：	58 %
Pressure：	1009 hPa	Test Power ：	AC 120V/60Hz
Test Mode ：	TX 2478MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2477.63	**V**	**53.38**	**33.97**	**31.80**	**85.18**	**65.77**	**114.00**	**94.00**	**X/F**
2483.50	V	22.36	2.95	31.80	54.16	34.75	74.00	54.00	X/E
4956.08	V	39.99	20.58	5.77	45.76	26.35	74.00	54.00	X/H

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

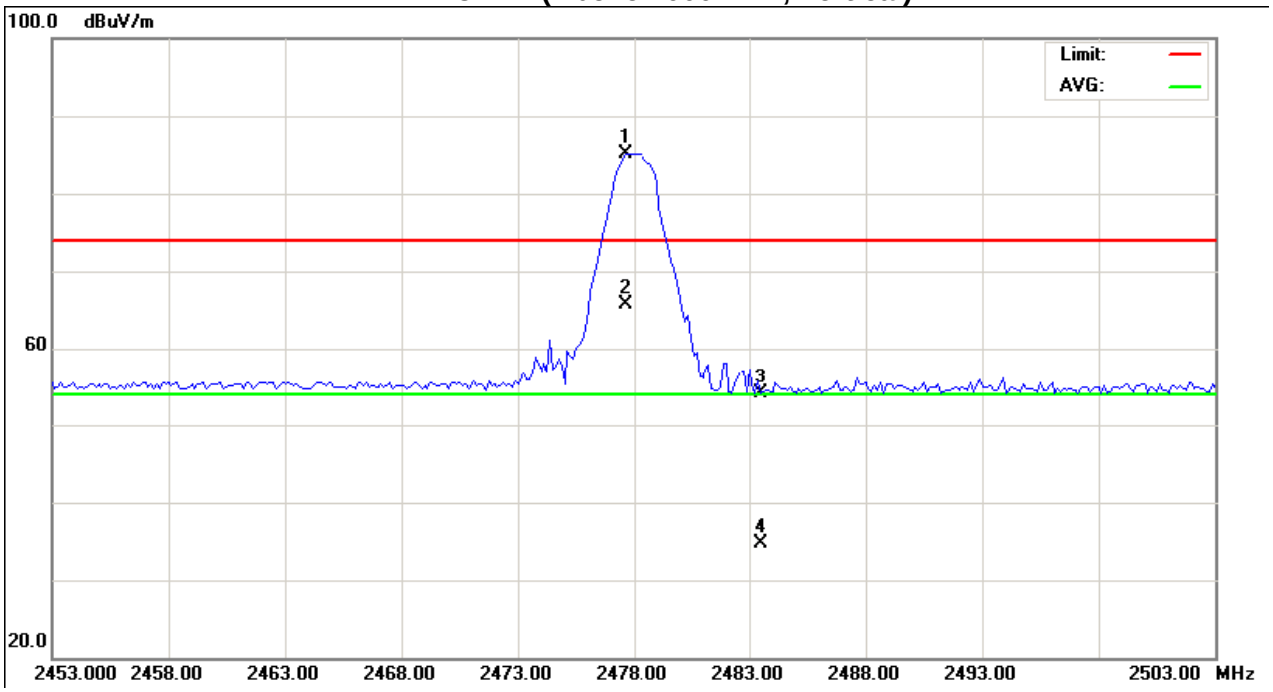
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

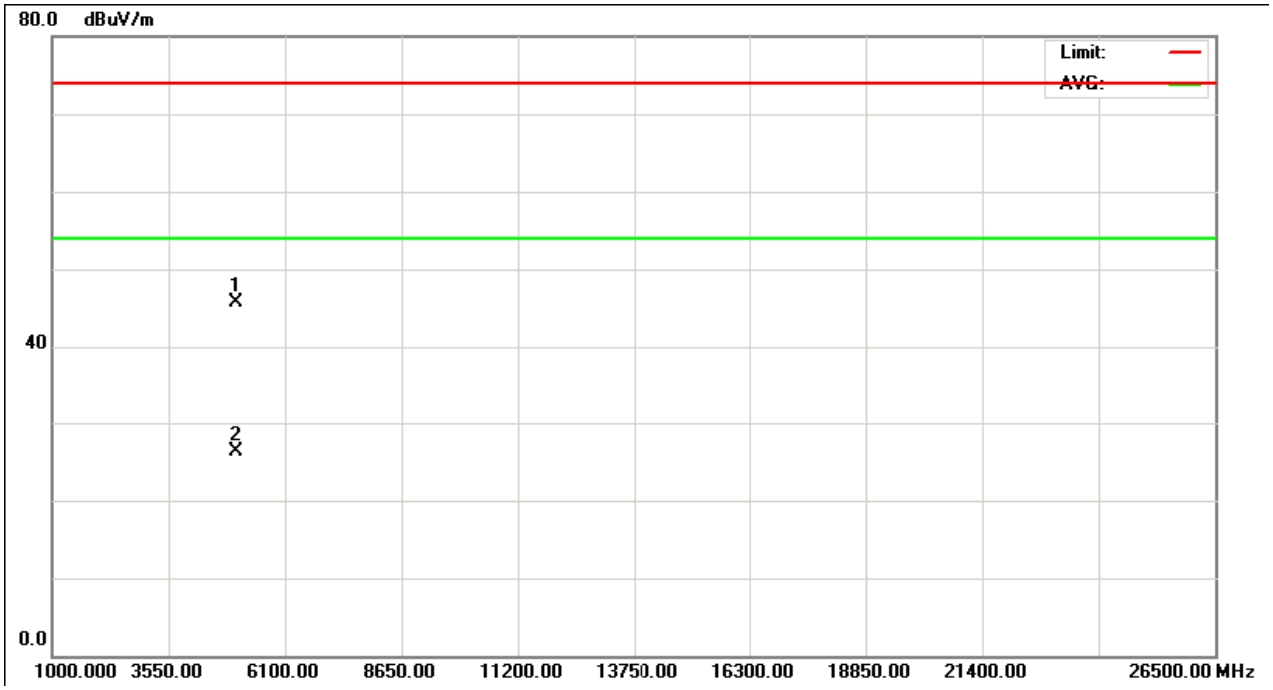
(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

(8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ，Final AV=PK-18.06

Orthogonal Axis：X
TX 2478MHz (Above 1000 MHz, Vertical)





EUT：	Dongle	Model Name. ：	G01UF
Temperature：	25℃	Relative Humidity：	58 %
Pressure：	1009 hPa	Test Power ：	AC 120V/60Hz
Test Mode ：	TX 2478MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2478.13	**H**	**54.47**	**35.06**	**31.80**	**86.27**	**66.86**	**114.00**	**94.00**	**X/F**
2483.50	H	22.59	3.18	31.80	54.39	34.98	74.00	54.00	X/E
4956.20	H	40.21	20.80	5.77	45.98	26.57	74.00	54.00	X/H

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

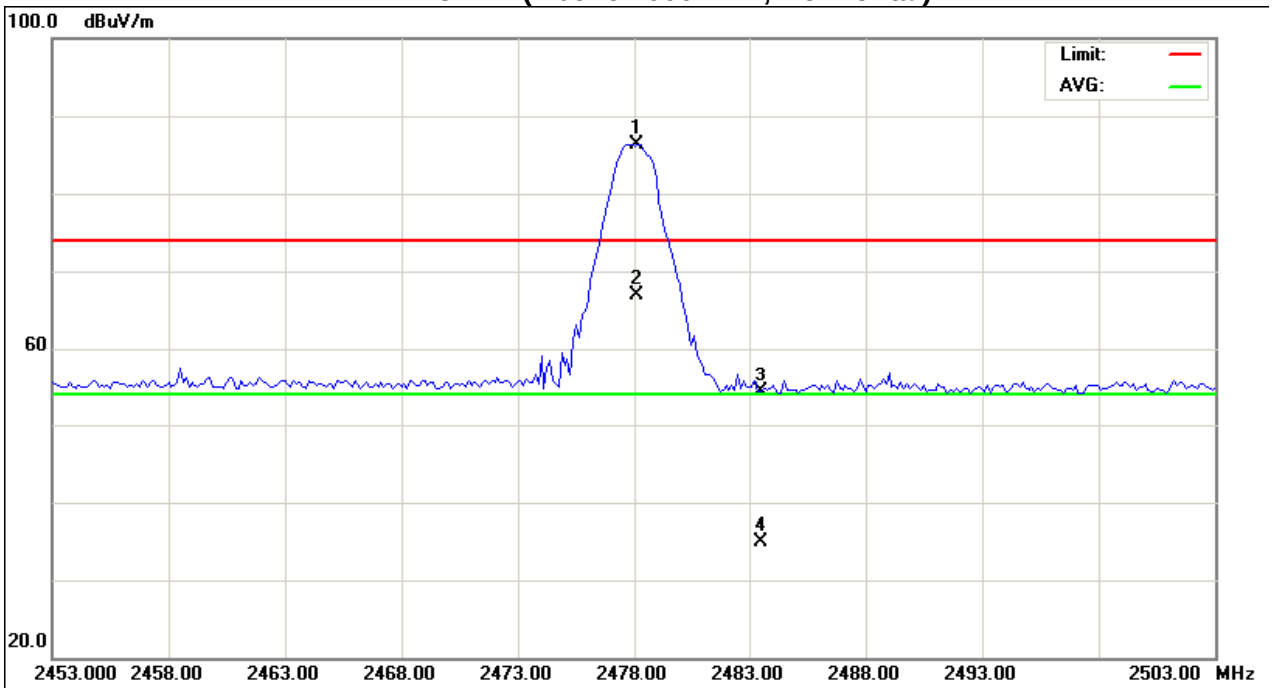
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

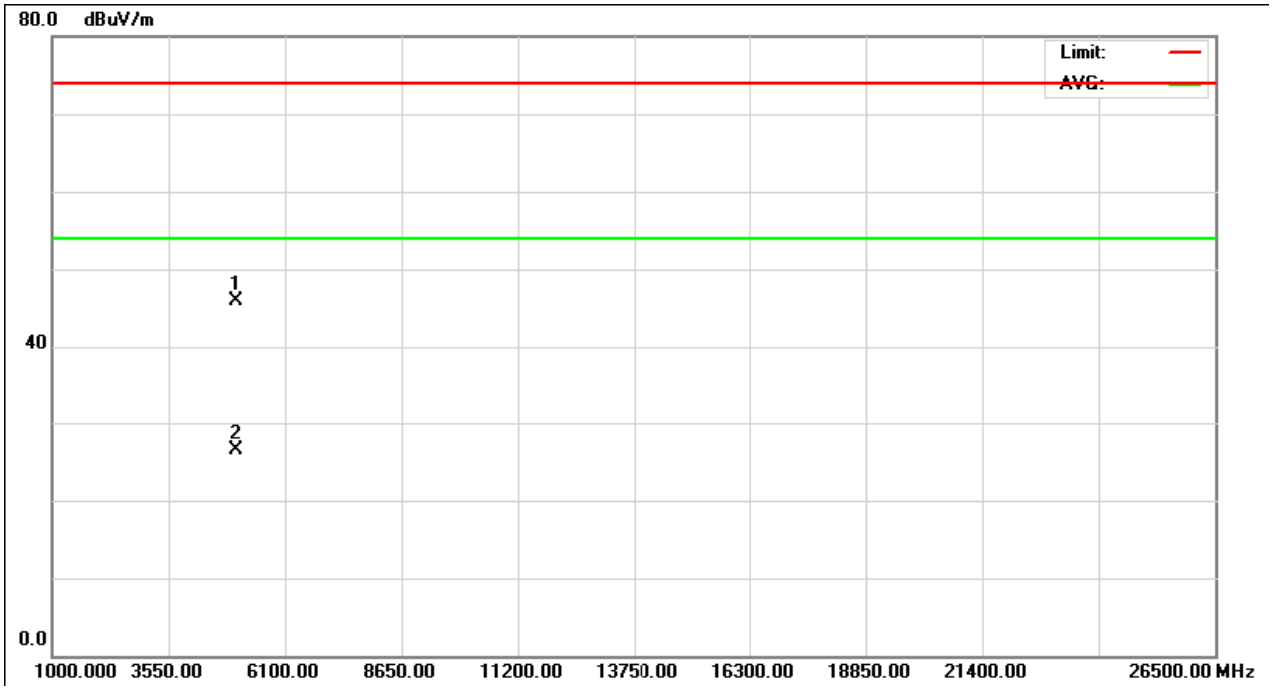
(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

(8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ，Final AV=PK-18.06

Orthogonal Axis：X
TX 2478MHz (Above 1000 MHz, Horizontal)





5. BANDWIDTH TEST

5.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov.25.2012

Remark: ” N/A” denotes No Model Name. , Serial No. or No Calibration specified.

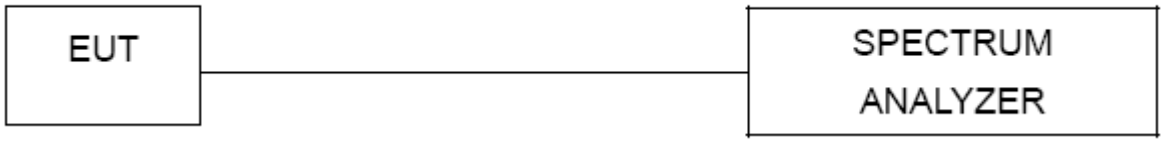
5.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = 2.5 ms.

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



5.5 EUT OPERATION CONDITIONS

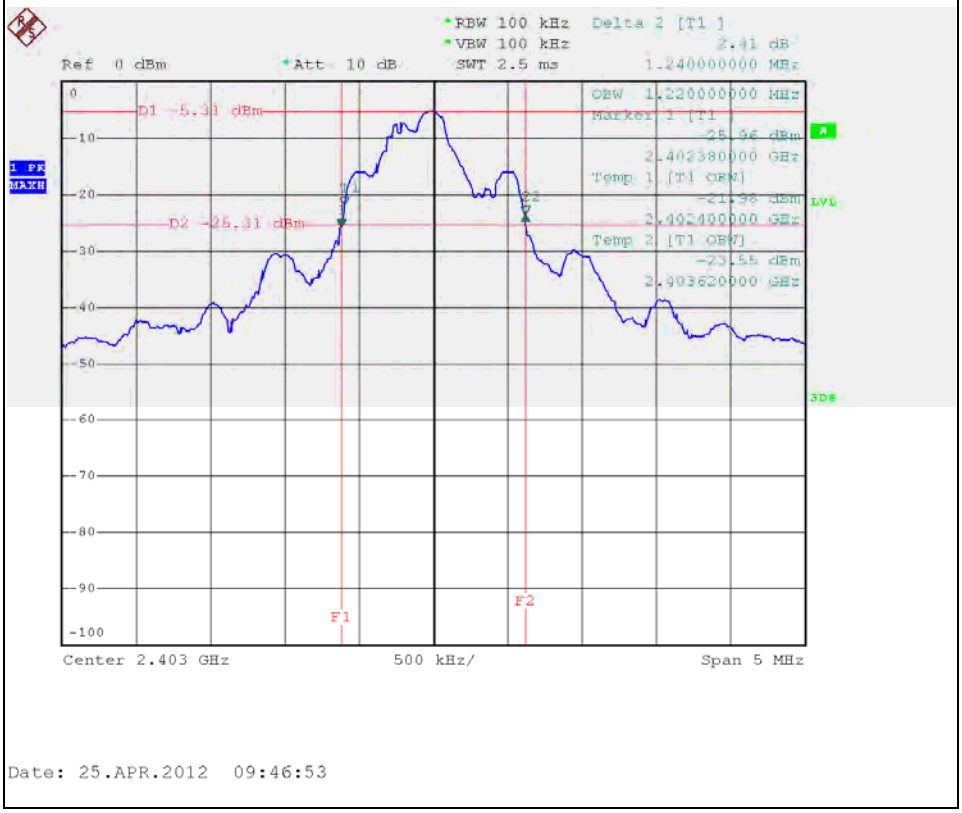
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

5.6 TEST RESULTS

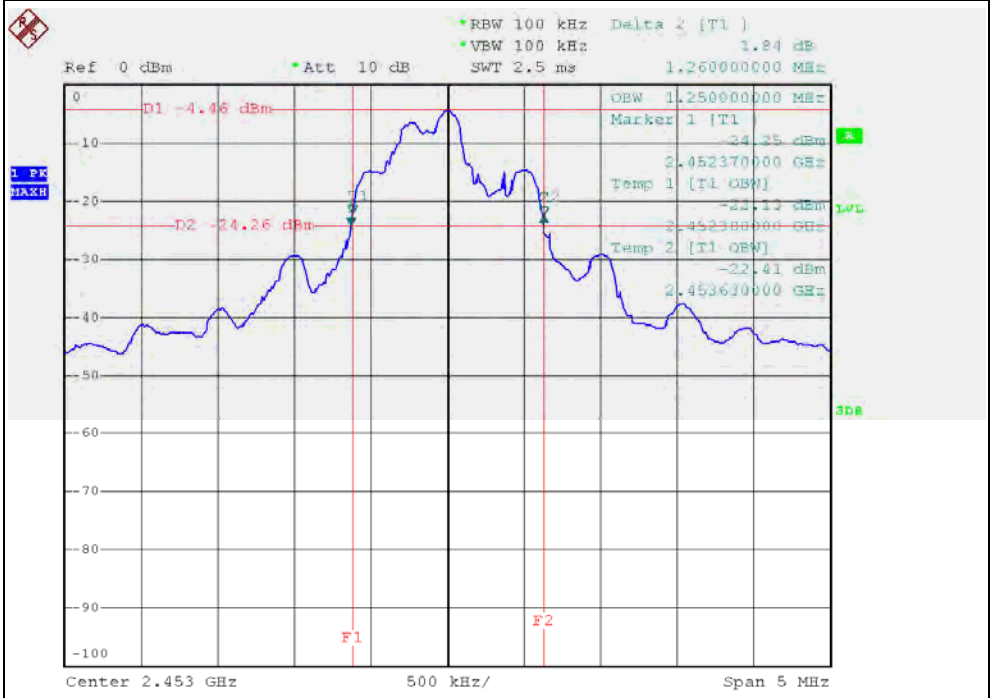
EUT：	Dongle	Model Name. ：	G01UF
Temperature：	25 ℃	Relative Humidity：	55 %
Pressure：	1009 hPa	Test Power ：	AC 120V/60Hz
Test Mode ：	TX CH 01/12/20		

Test Channel	Frequency (MHz)	20 dBc Bandwidth (MHz)
CH 01	2403	1.240
CH 12	2453	1.260
CH 20	2478	1.270

TX CH 01

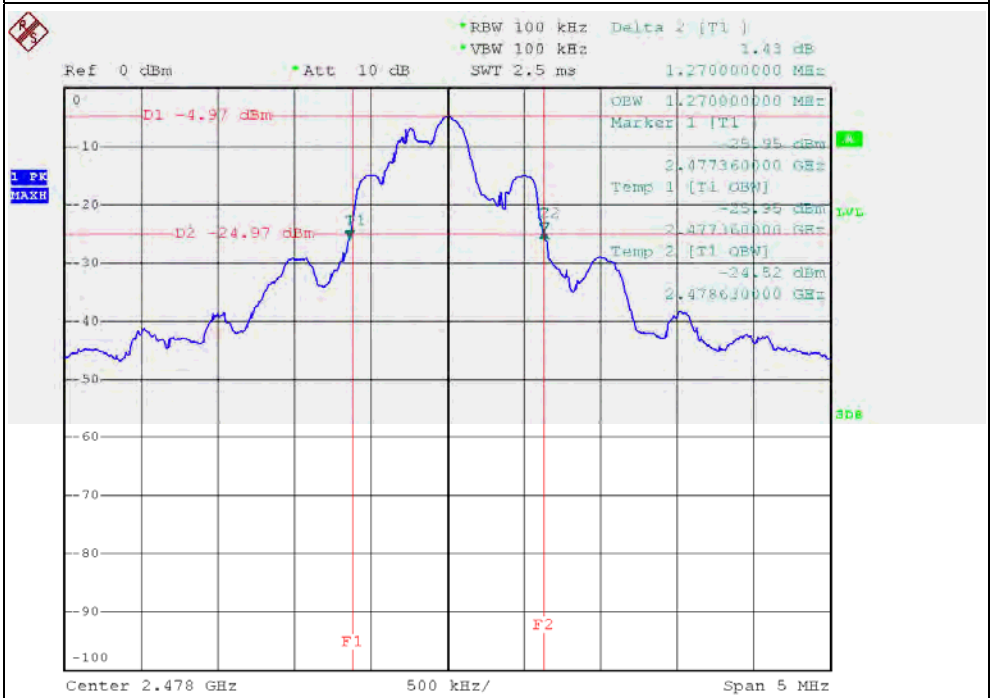


TX CH 12



Date: 25.APR.2012 09:58:07

TX CH 20



Date: 25.APR.2012 10:02:51

6. ANTENNA CONDUCTED SPURIOUS EMISSION

6.1 APPLIED PROCEDURES / LIMIT

50dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/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

6.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov.25.2012

Remark: ” N/A” denotes No Model Name. , Serial No. or No Calibration specified.

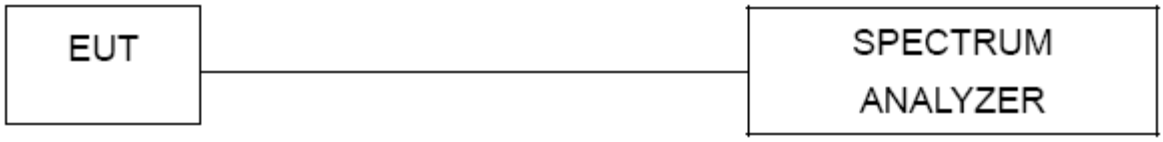
6.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = 10 ms.

6.1.3 DEVIATION FROM STANDARD

No deviation.

6.1.4 TEST SETUP



6.1.5 EUT OPERATION CONDITIONS

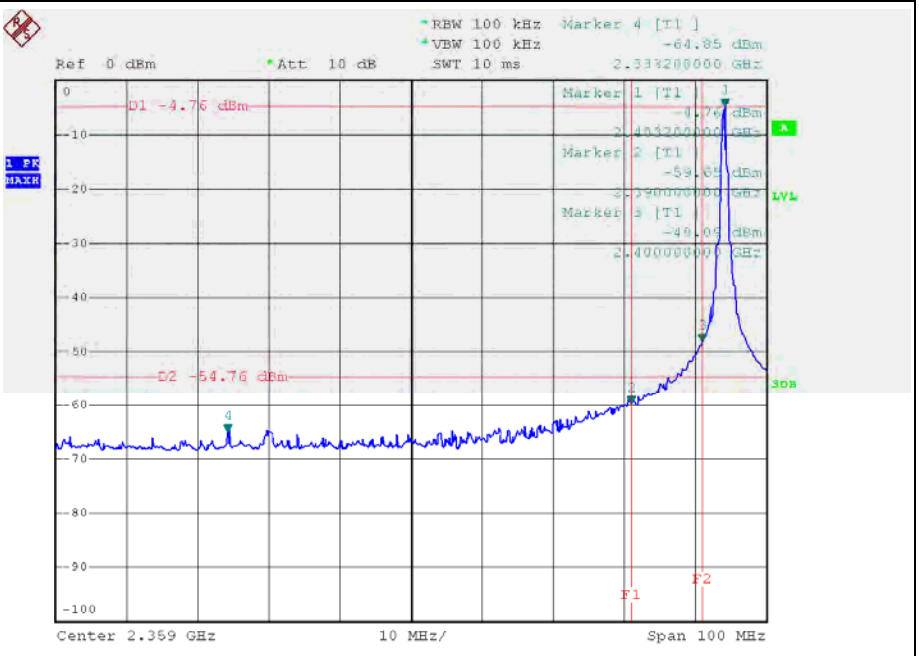
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.6 TEST RESULTS

EUT：	Dongle	Model Name. ：	G01UF
Temperature：	25 ℃	Relative Humidity：	55 %
Pressure：	1009 hPa	Test Power ：	AC 120V/60Hz
Test Mode ：	TX CH 01, CH 12, CH 20		

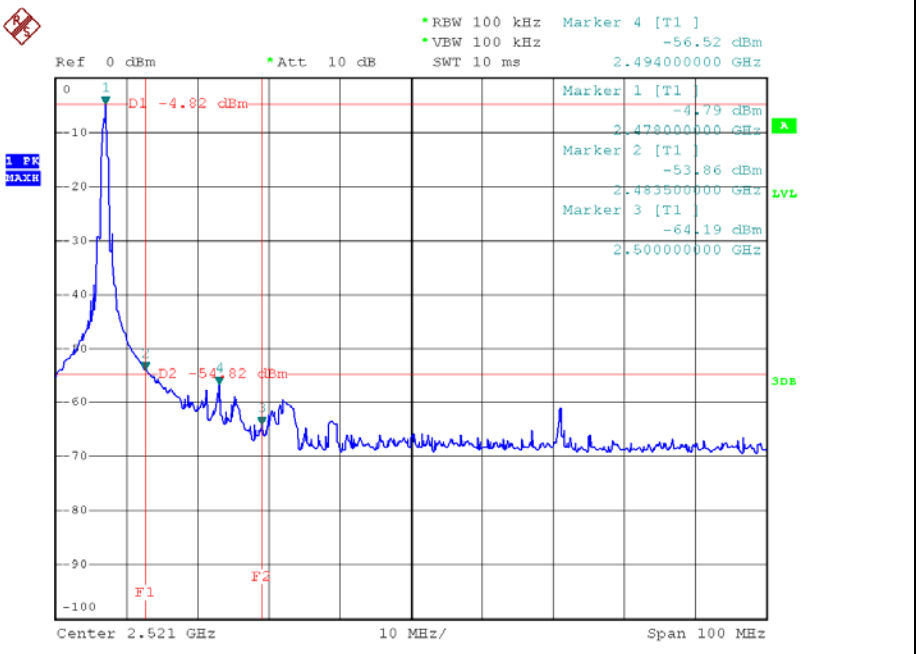
Channel of Worst Data: CH 01			
The max. radio frequency power in any 100kHz bandwidth within the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2400.00	-48.09	2483.50	-53.86
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 50dB below that in the 100kHz bandwidth within the band that contains the highest lever of the desired power.			

TX CH 01



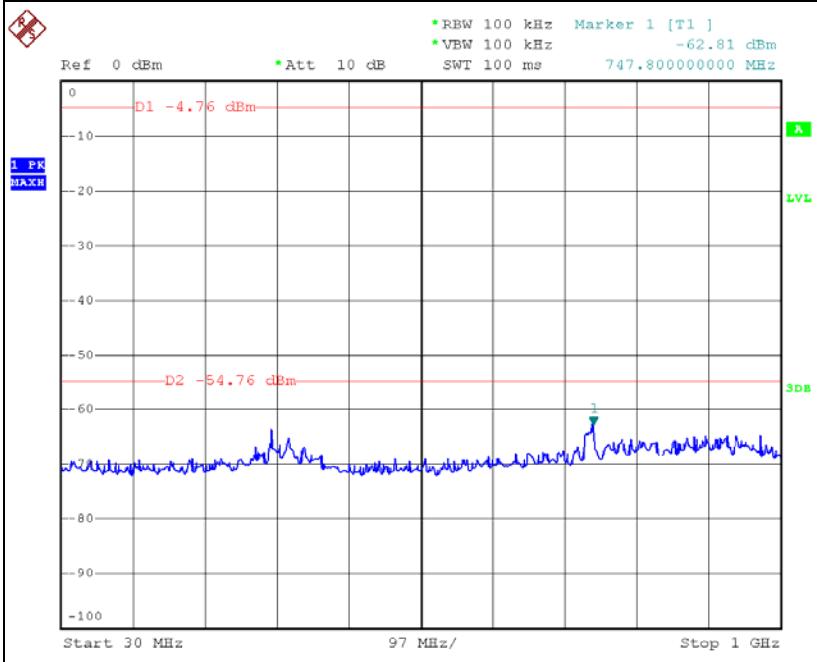
Date: 25.APR.2012 09:51:57

TX CH 20



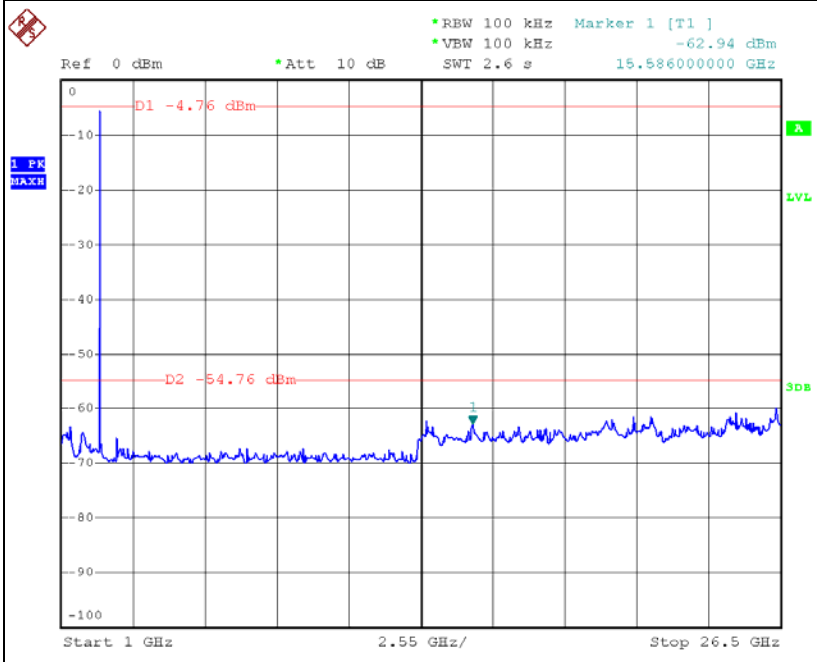
Date: 25.APR.2012 10:04:23

TX CH 01 (30MHz~1GHz)



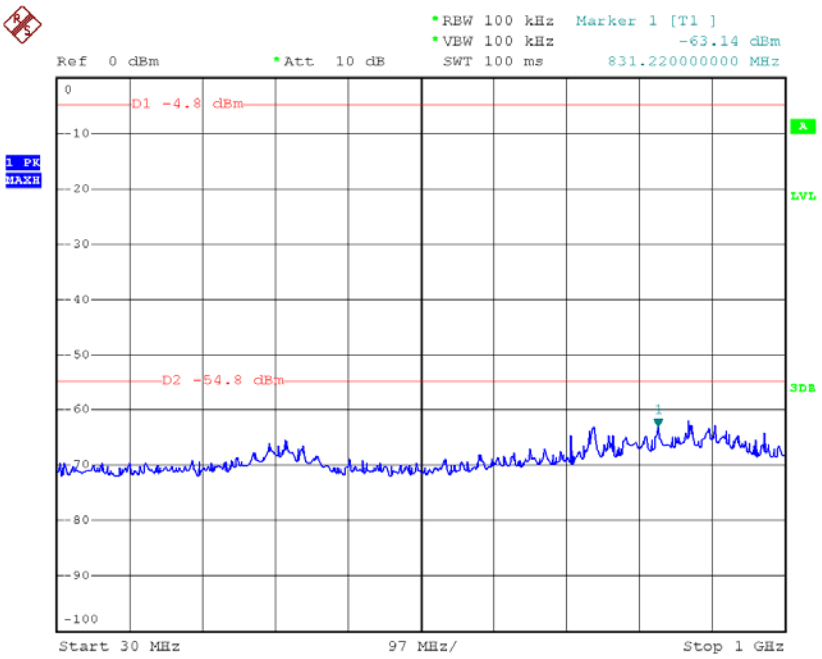
Date: 25.APR.2012 09:52:58

TX CH 01(1GHz～10th Harmonic)



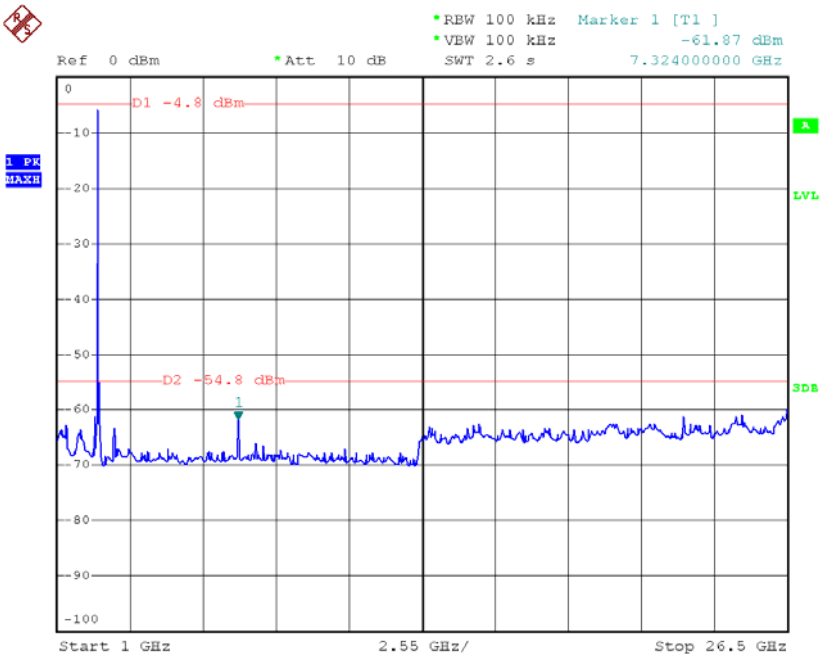
Date: 25.APR.2012 09:53:19

TX CH 12 (30MHz~1GHz)



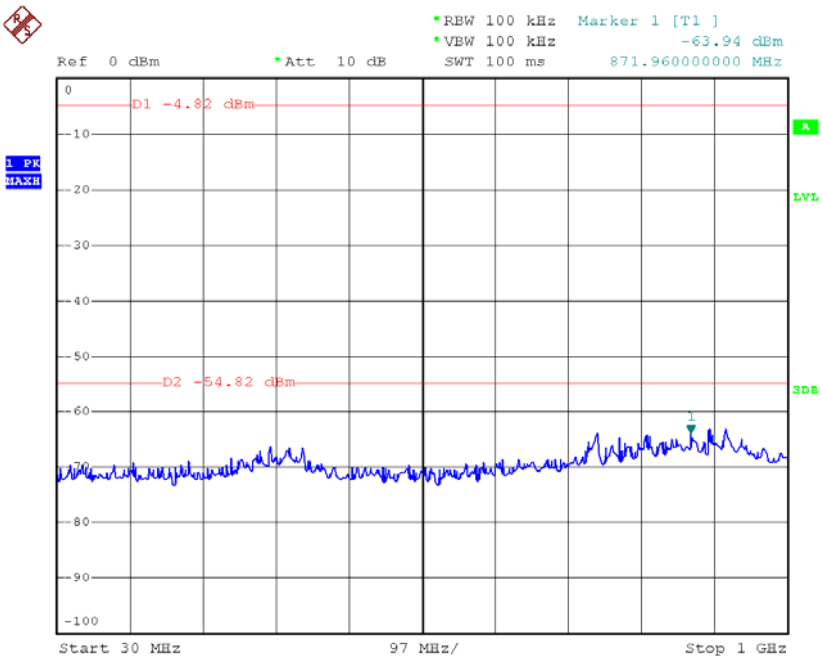
Date: 25.APR.2012 10:09:32

TX CH 12(1GHz～10th Harmonic)



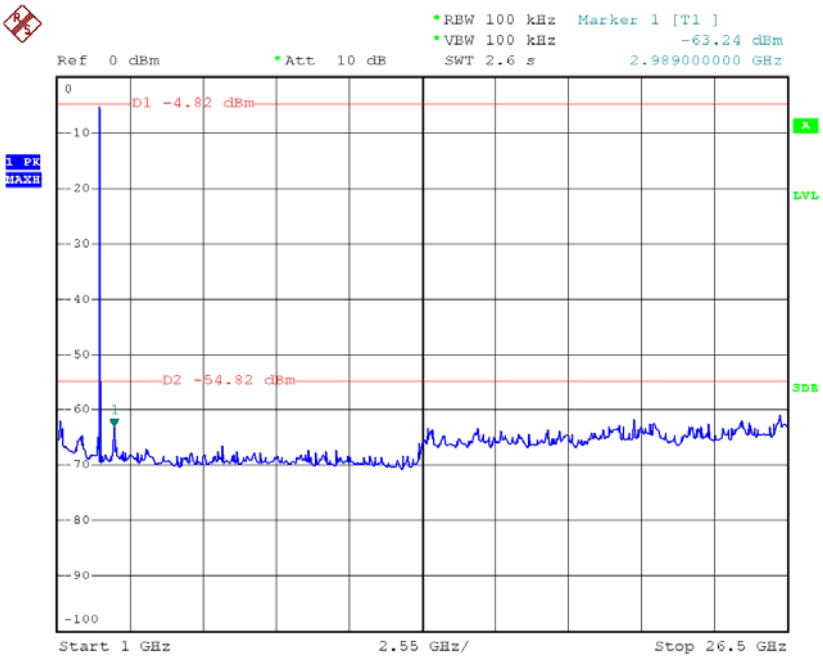
Date: 25.APR.2012 10:10:00

TX CH 20(30MHz~1GHz)



Date: 25.APR.2012 10:04:50

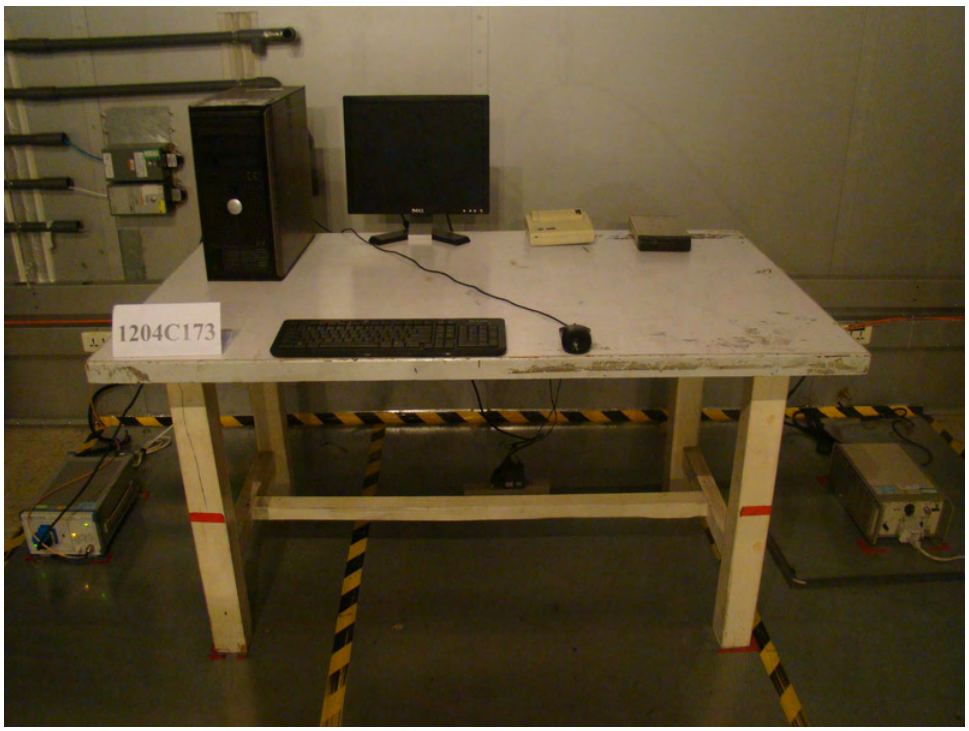
TX CH 20(1GHz～10th Harmonic)

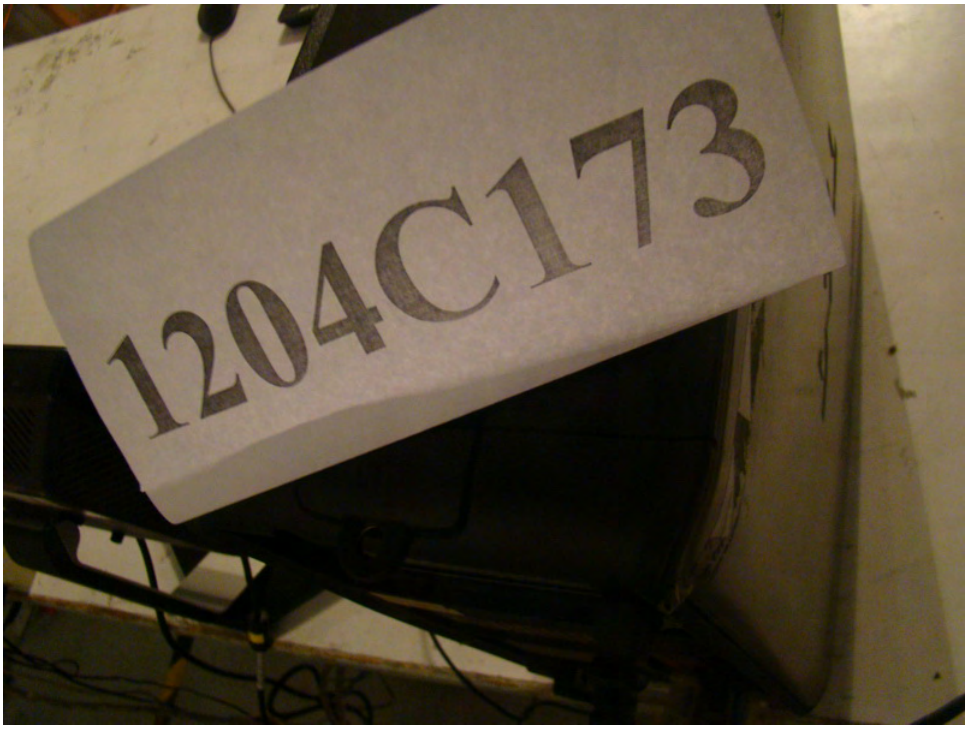


Date: 25.APR.2012 10:05:22

7. EUT TEST PHOTO

Conducted Measurement Photos





Radiated Measurement Photos