ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C AND CANADA RSS-210 REQUIREMENT

OF

Product Name:	**2.4GHz Wireless Dongle**
Brand Name:	**N/A**
Model No.:	**C75**
Model Difference:	**N/A**
FCC ID:	**P5A-CL0033**
IC:	**9468A-000C75**
Report No.:	**ER/2015/10098**
Issue Date:	**Feb 13, 2015**
FCC Rule Part:	**§15.249**
IC Rule Part:	**RSS-210 issue 8: 2010, Annex 2.9**
Prepared for:	**ARESON Technology Corp. 11F, No.646, Sec.5, Chongxin Rd., SanChong Dist., New Taipei City 241,Taiwan (R.O.C.)**
Prepared by:	**SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803**

Testing Laboratory
0513

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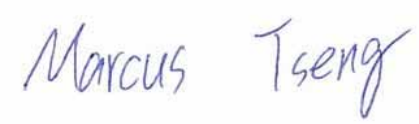
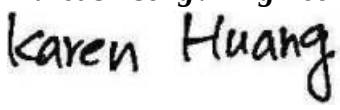
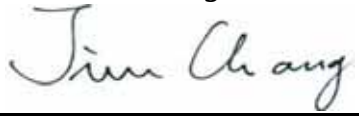
VERIFICATION OF COMPLIANCE

Applicant:	ARESON Technology Corp. 11F, No.646, Sec.5, Chongxin Rd., SanChong Dist., New Taipei City 241,Taiwan (R.O.C.)
Product Name:	2.4GHz Wireless Dongle
FCC ID: **IC:**	P5A-CL0033 9468A-000C75
Brand Name:	N/A
Model No.:	C75
Model Difference:	N/A
File Number:	ER/2015/10098
Date of test:	Jan 30, 2015 ~ Feb 13, 2015
Date of EUT Received:	Feb. 13, 2015

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory
The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.
The test results of this report relate only to the tested sample identified in this report.

Test By:		***Date:***	Feb 13, 2015
	Marcus Tseng / Engineer		
Prepared By:		***Date:***	Feb 13, 2015
	Karen Huang / Clerk		
Approved By:		***Date:***	Feb 13, 2015
	Jim Chang / Asst. Manager		

Revision History

Report Number	Revision	Description	Issue Date
ER/2015/10098	Rev.00	Initial creation of document	Feb 13, 2015

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1. Product Description

Product Name:	2.4GHz Wireless Dongle
Brand Name:	N/A
Model No.:	C75
Model Difference:	N/A
Hardware Version	ver C
Software Version	00
Operation Frequency:	2405~2477MHz
Channel number:	16 channels
Channel Spacing:	1MHz
Modulation Type:	GFSK
Power Supply	5Vdc from USB port
Antenna Designation:	Internal Antenna, Antenna Gain: 5.23dBi Model No.: Meadline 2 type antenna Supplier: ARESON Technology Corp.

1.2. Product Feature of Equipment Under Test

The equipment under Test (Hereafter Called: EUT) is Vehicle Mount Computer supporting, 2.4G GFSK modulation features, and below is details of information

Product Feature	
Product Name:	2.4GHz Wireless Dongle
Brand Name:	N/A
Model No.:	C75
Model Difference:	N/A
FCC ID:	P5A-CL0033
IC :	9468A-000C75
Operation Frequency:	2405~2477MHz
Modulation Type:	GFSK

Note: The above EUT information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description

This submittal(s) (test report) is intended for **FCC ID**: **P5A-CL0033** filing to comply with Section 15.249 of the FCC Part 15, Subpart C Rules and **IC: 9468A-000C75** filing to comply with Industry Canada RSS-210 issue 8: 2010 Annex 2.9.

1.3. Test Methodology of Applied Standards

FCC Part 15, Subpart C §15.249

Canada RSS-210 issue 8: 2010 Annex 8

Canada RSS-Gen issue 4: 2014

ANSI C63.10:2013

Note:

1. All test items have been performed and record as per the above standards.
2. The composite system is compliance with FCC Subpart B is authorized under the certification procedure.
3. The EUT was placed 1.5m height for frequency above 1GHz in accordance with ANSI C63. 10 :2013

1.4. Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan. (TAF code 0513)

FCC Registration Numbers are: 990257
Canada Registration Number: 4620A-4

1.5. Special Accessories

There are no special accessories used while test was conducted.

1.6. Equipment Modifications

There was no modification incorporated into the EUT.

2. SYSTEM TEST CONFIGURATION

2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application..

2.2. EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

2.3. Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz,. The CISPR Quasi-Peak and Average detector mode is employed according to §15.107. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna

2.4. Limitation

(1) Conducted Emission

According to section 15.207(a) and RSS-Gen §7.2.2 Conducted Emission Limits is as following.

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 – 0.5	66 - 56	56 - 46
0.5 – 5	56	46
5 - 30	60	50

(2) Radiated Emission 15.249(a) and RSS-210 issue 8,§A2.9(a)

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following.

Frequency (MHz)	Field strength of Fundamental	Field strength of Harmonics	Distance (m)
902 - 928	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
2400 – 2483.5	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
5725 – 5875	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3

(3) Radiated Emission15.249 (d) and RSS-210 issue 8,§A2.9(b)

Emission Radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in Section 15.209 and RSS-210 issue 8,§A2.9(a) as below, whichever is the lesser attenuation.

Frequency (MHz)	Field strength μV/m	Distance (m)	Field strength at 3m dBμV/m
1.705-30	30	30	69.54
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

(4) Radiated Emission 15.249(e) and RSS-210 issue 8

For frequencies above 1000MHz, the above field strength limits are based on average limits. The peak filed strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20dB under any condition of modulation.

Remark:
1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of ξ 15.205
4. Emission spurious frequency which appearing within the Restricted Bands specified in provision of ξ15.205, then the general radiated emission limits in ξ 15.209 apply.

2.5. Configuration of Tested System

Fig. 2-1 Radiated & Conducted Emission Configuration

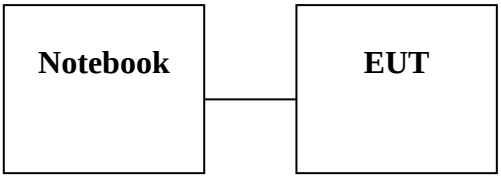


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	Test software	N/A	N/A	N/A	N/A	N/A
2.	Notebook	Lenovo	L420	LR-7HXZA	Shielded	Un-shielded

Note: All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.

3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§15.207/ RSS-Gen §7.2.2	Conducted Emission	N/A
§15.249(a)(d)(e) RSS-210 issue 8,§A2.9(a)(b)	Field Strength Measurement (TX and RX)	Compliant
§15.215(c)	20dB band width Measurement	Compliant
RSS-Gen §4.6.1	99% Power Bandwidth	Compliant

4. DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.
Test program used to control the EUT for staying in continuous transmitting and receive mode is programmed.

Channel low (2405MHz)、mid (2442MHz) and high (2477MHz) with highest data rate are chosen for full testing.

The field strength of radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) Transmitter for one channel, and the worst case E2 position was reported.

5. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
20dB Bandwidth	+/- 123.36 Hz
100 KHz Bandwidth Of Frequency Band Edges	+/- 1.55 dB
Temperature	+/- 0.8 °C
Humidity	+/- 4.7 %
DC / AC Power Source	DC= +/- 1%, AC= +/- 0.2%

Radiated Spurious Emission:

Measurement uncertainty (Polarization : **Vertical**)	30MHz - 180MHz: +/- 3.37dB
	180MHz -417MHz: +/- 3.19dB
	0.417GHz-1GHz: +/- 3.19dB
	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB

Measurement uncertainty (Polarization : **Horizontal**)	30MHz - 167MHz: +/- 4.22dB
	167MHz -500MHz: +/- 3.44dB
	0.5GHz-1GHz: +/- 3.39dB
	1GHz - 18GHz: +/- 4.08dB
	18GHz - 40GHz: +/- 4.08dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2

6. CONDUCTED EMISSIONS TEST

6.1 Measurement Procedure:

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

6.2 Test SET-UP (Block Diagram of Configuration)

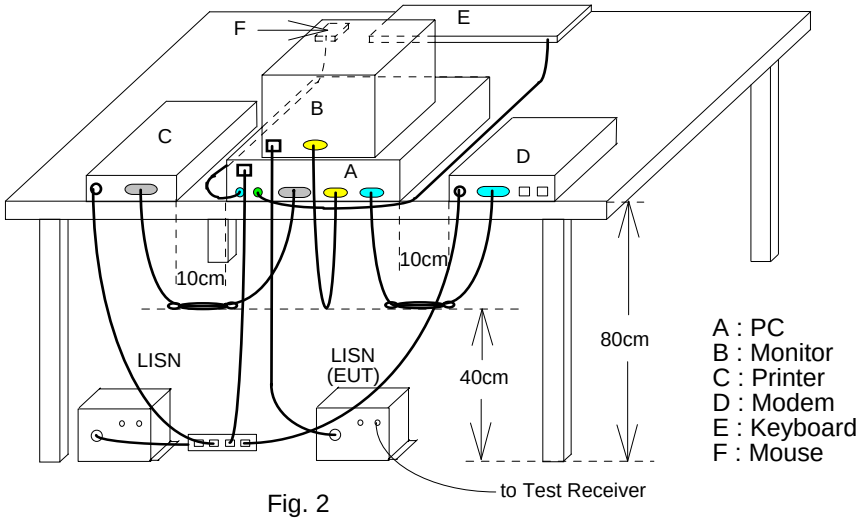


Fig. 2

6.3 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESCI7	100760	05/26/2014	05/25/2015
LISN	Rolf-Heine	NNB-2/16Z	99012	03/26/2014	03/25/2015
LISN	FCC	FCC-LISN-50/250-25-2-01	04034	03/19/2014	03/18/2015
Coaxial Cables	N/A	WK CE Cable	N/A	11/26/2014	11/25/2015

6.4 Measurement Result:

N/A, the EUT is powered by DC power supply.

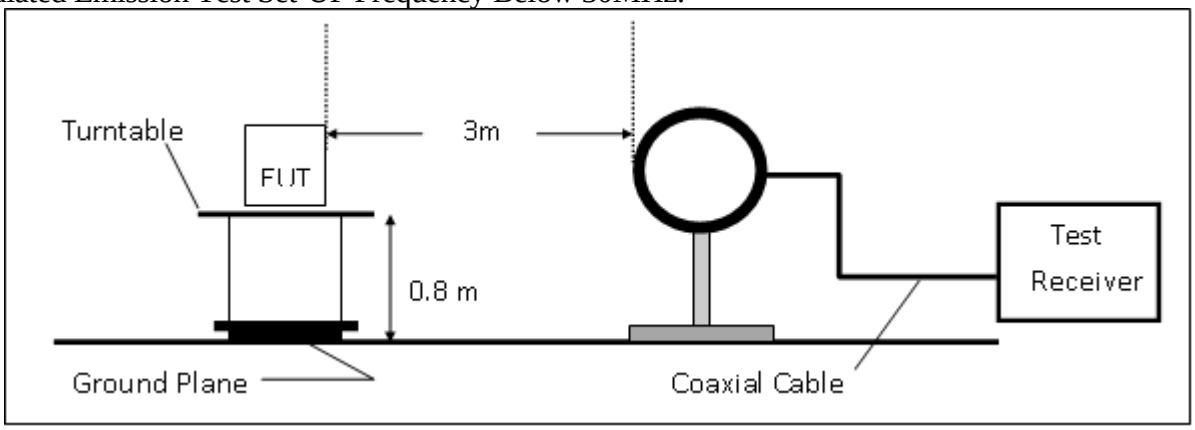
7. RADIATED EMISSION TEST

7.1 Measurement Procedure

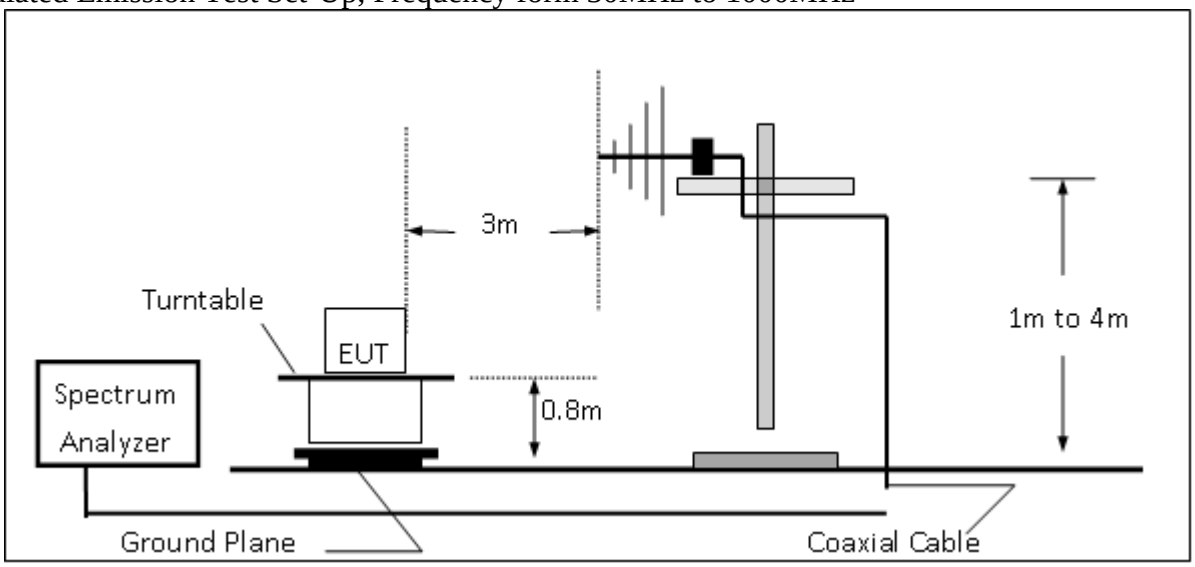
1. The EUT was placed on a turntable that is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

7.2 Test SET-UP (Block Diagram of Configuration)

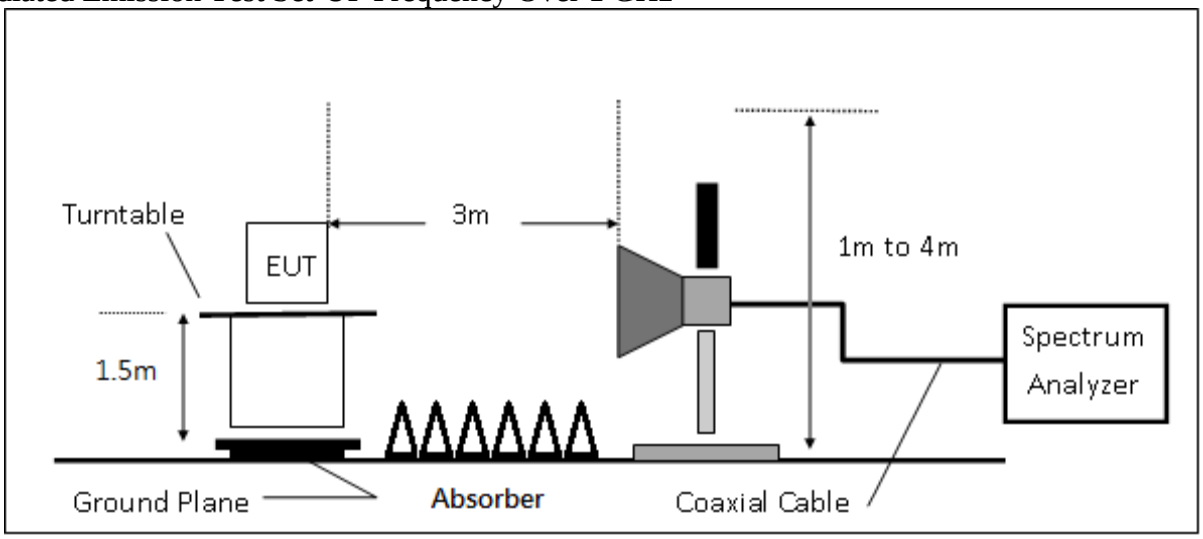
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



(B) Radiated Emission Test Set-Up, Frequency form 30MHz to 1000MHz



(C) Radiated Emission Test Set-UP Frequency Over 1 GHz



7.3 Measurement Equipment Used:

SGS SAC Chamber No.C (FCC)					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
EMI Test Receiver	R&S	ESCI7	100760	05/26/2014	05/25/2015
Spectrum Analyzer	Agilent	E4446A	MY51100003	05/19/2014	05/18/2015
EXA Spectrum Analyzer	Agilent	N9010A	MY50420195	12/22/2014	12/21/2015
Spectrum Analyzer	R&S	FSV-30	101398	10/07/2014	10/06/2015
Loop Antenna	ETS.LINDGREN	6502	00148045	07/03/2014	07/02/2015
Bilog Antenna	SCHWAZBECK	VULB9168	378	12/23/2014	12/22/2015
Horn antenna	ETS.LINDGREN	3117	123995	05/19/2014	05/18/2015
Horn Antenna	Schwarzbeck	BBHA9170	184	12/25/2014	12/24/2015
Pre-Amplifier	Agilent	8447D	2944A07676	01/02/2015	01/01/2016
Pre-Amplifier	Agilent	8449B	3008A00578	01/02/2015	01/01/2016
Pre-Amplifier	EMC Instruments Corp.	EMC184045	980135	01/02/2015	01/01/2016
Filter 2400-2483.5 MHz	EWT	EWT-14-0166	M2	01/02/2015	01/01/2016
Attenuator	Mini-Circuit	BW-S10W2+	004	01/02/2015	01/01/2016
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R
Controller	HD	HD100	N/A	N.C.R	N.C.R
Low Loss Cable	Huber Suhner	966_Rx	9	01/02/2015	01/01/2016
3m Site NSA	SGS	966 chamber	N/A	07/15/2014	07/14/2015

Note: N.C.R refers to Not Calibrated Required

7.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

7.5 Measurement Result

Radiated Spurious Emission Measurement Result (MAIN)

Operation Band	:2.4G	Test Date	:2015-02-03
Fundamental Frequency	:2405 MHz	Temp./Humi.	:21.6 deg_C/ 55 RH
Operation Mode	:LOW MAIN	Engineer	:Curry
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.
"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.
"---" : denotes Noise Floor.

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV / m	dBμV / m	dB
2404.99	F	Average	74.53	5.25	79.78	94.00	-14.22
2404.99	F	Peak	84.74	5.25	89.99	114.00	-24.01

Operation Band	:2.4G	Test Date	:2015-02-03
Fundamental Frequency	:2405 MHz	Temp./Humi.	:21.6 deg_C/ 55 RH
Operation Mode	:LOW MAIN	Engineer	:Curry
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.
"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.
"---" : denotes Noise Floor.

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV / m	dBμV / m	dB
2405.01	F	Average	80.41	5.25	85.66	94.00	-8.34
2405.01	F	Peak	90.83	5.25	96.08	114.00	-17.92

Operation Band	:2.4G	Test Date	:2015-02-03
Fundamental Frequency	:2442 MHz	Temp./Humi.	:21.6 deg_C/ 55 RH
Operation Mode	:MID MAIN	Engineer	:Curry
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Actual FS(dBµV/m) = SPA. Reading level(dBµV) + Factor(dB)

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.
"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.
"---" : denotes Noise Floor.

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV / m	dBµV / m	dB
2441.99	F	Average	73.34	5.43	78.77	94.00	-15.23
2441.99	F	Peak	83.67	5.43	89.10	114.00	-24.90

Operation Band	:2.4G	Test Date	:2015-02-03
Fundamental Frequency	:2442 MHz	Temp./Humi.	:21.6 deg_C/ 55 RH
Operation Mode	:MID MAIN	Engineer	:Curry
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.
"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.
"---" : denotes Noise Floor.

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV / m	dBμV / m	dB
2441.99	F	Average	81.02	5.43	86.45	94.00	-7.55
2441.99	F	Peak	91.17	5.43	96.60	114.00	-17.40

Operation Band	:2.4G	Test Date	:2015-02-03
Fundamental Frequency	:2477 MHz	Temp./Humi.	:21.6 deg_C/ 55 RH
Operation Mode	:HIGH MAIN	Engineer	:Curry
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.
"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.
"---" : denotes Noise Floor.

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV / m	dBμV / m	dB
2476.99	F	Average	77.47	5.91	83.38	94.00	-10.62
2476.99	F	Peak	87.92	5.91	93.83	114.00	-20.17

Operation Band	:2.4G	Test Date	:2015-02-03
Fundamental Frequency	:2477 MHz	Temp./Humi.	:21.6 deg_C/ 55 RH
Operation Mode	:HIGH MAIN	Engineer	:Curry
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

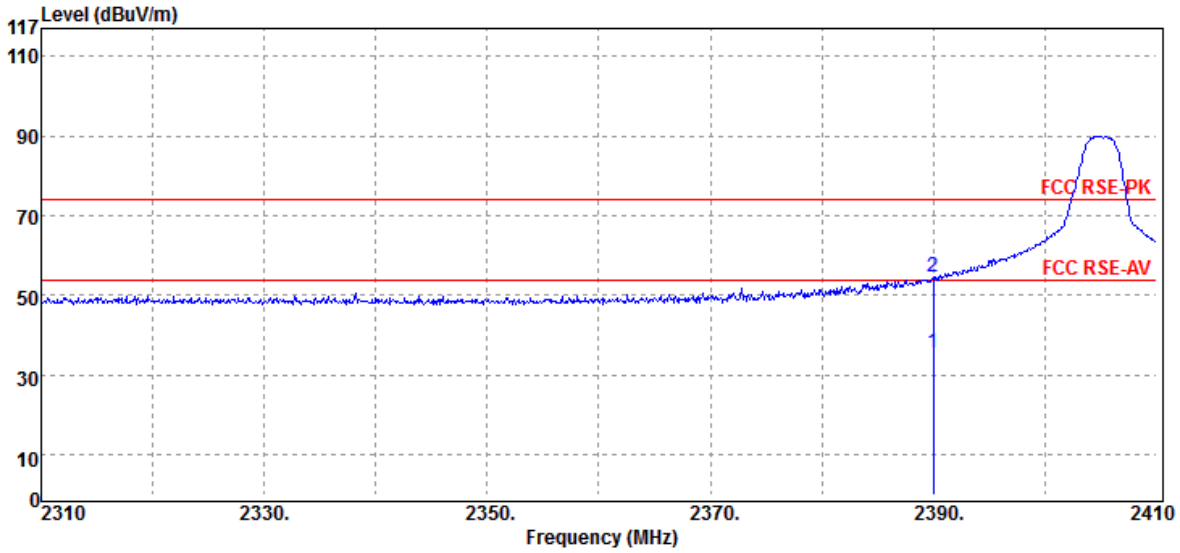
Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.
"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.
"---" : denotes Noise Floor.

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV / m	dBμV / m	dB
2476.96	F	Average	83.01	5.91	88.92	94.00	-5.08
2476.96	F	Peak	93.09	5.91	99.00	114.00	-15.00

Radiated Spurious Emission Measurement Result

Operation Band	:2.4G	Test Date	:2015-02-03
Fundamental Frequency	:2405 MHz	Temp./Humi.	:21.6 deg_C/ 55 RH
Operation Mode	:BANDEDGE LOW	Engineer	:Curry
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Actual FS(dBμV / m) = SPA. Reading level(dBμV) + Factor(dB)

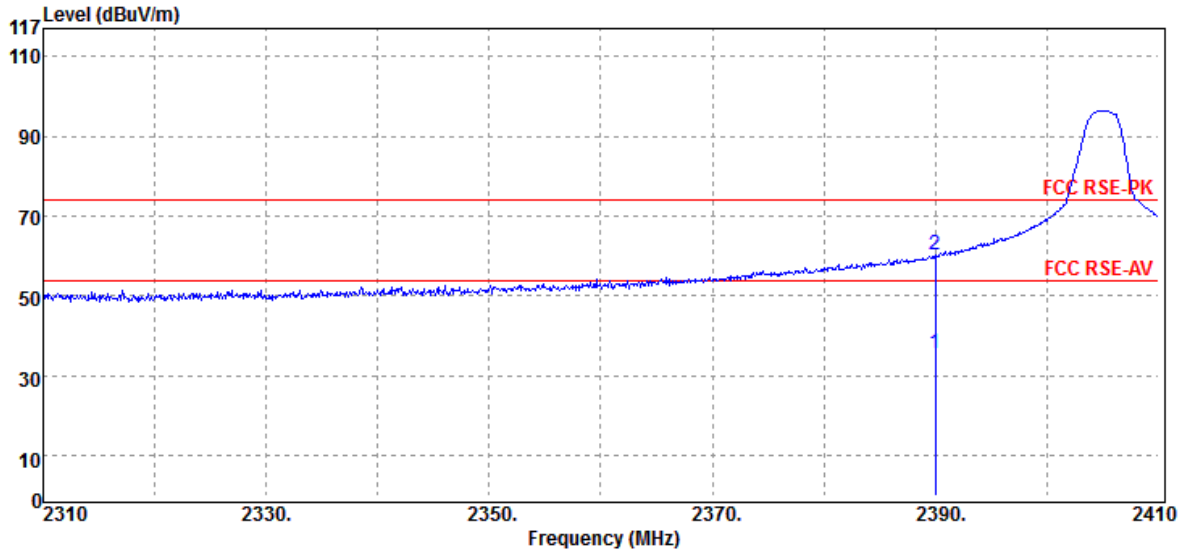
Factor(dB) = Antenna Factor(dBμV / m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.
"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.
"---" : denotes Noise Floor.

The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV / m	dB	dBμV / m	dBμV / m	dB
2390.00	E	Average	30.31	5.16	35.47	54.00	-18.53
2390.00	E	Peak	49.65	5.16	54.81	74.00	-19.19

Operation Band	:2.4G	Test Date	:2015-02-03
Fundamental Frequency	:2405 MHz	Temp./Humi.	:21.6 deg_C/ 55 RH
Operation Mode	:BANDEDGE LOW	Engineer	:Curry
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Actual FS(dBμV / m) = SPA. Reading level(dBμV) + Factor(dB)

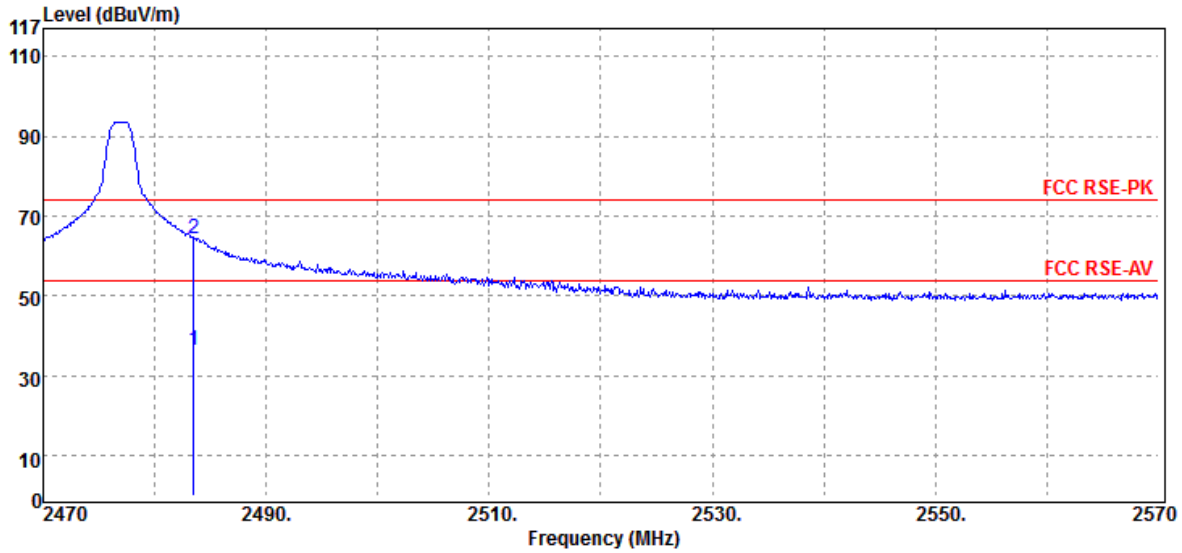
Factor(dB) = Antenna Factor(dBμV / m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.
"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.
"---" : denotes Noise Floor.

The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV / m	dB	dBμV / m	dBμV / m	dB
2390.00	E	Average	30.30	5.16	35.46	54.00	-18.54
2390.00	E	Peak	54.98	5.16	60.14	74.00	-13.86

Operation Band	:2.4G	Test Date	:2015-02-03
Fundamental Frequency	:2477 MHz	Temp./Humi.	:21.6 deg_C/ 55 RH
Operation Mode	:BANDEDGE HIGH	Engineer	:Curry
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Actual FS(dBμV / m) = SPA. Reading level(dBμV) + Factor(dB)

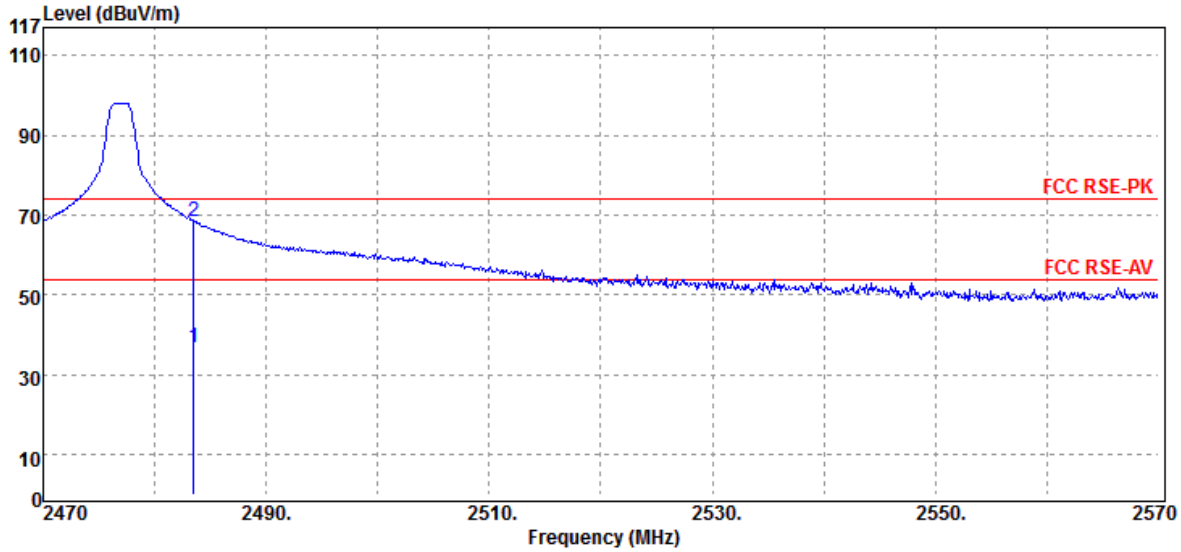
Factor(dB) = Antenna Factor(dBμV / m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.
"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.
"---" : denotes Noise Floor.

The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV / m	dB	dBμV / m	dBμV / m	dB
2483.50	E	Average	30.37	6.01	36.38	54.00	-17.62
2483.50	E	Peak	58.38	6.01	64.39	74.00	-9.61

Operation Band	:2.4G	Test Date	:2015-02-03
Fundamental Frequency	:2477 MHz	Temp./Humi.	:21.6 deg_C/ 55 RH
Operation Mode	:BANDEDGE HIGH	Engineer	:Curry
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Actual FS(dBμV / m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV / m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.
"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.
"---" : denotes Noise Floor.

The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV / m	dB	dBμV / m	dBμV / m	dB
2483.50	E	Average	30.65	6.01	36.66	54.00	-17.34
2483.50	E	Peak	62.58	6.01	68.59	74.00	-5.41

Operation Band	:2.4G	Test Date	:2015-02-03
Fundamental Frequency	:2405 MHz	Temp./Humi.	:21.6 deg_C/ 55 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.
"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.
"---" : denotes Noise Floor.

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV / m	dBμV / m	dB
36.79	S	Peak	46.56	-10.03	36.53	40.00	-3.47
260.86	S	Peak	42.08	-9.53	32.55	46.00	-13.45
324.88	S	Peak	42.84	-7.69	35.15	46.00	-10.85
487.84	S	Peak	29.44	-4.34	25.10	46.00	-20.90
664.38	S	Peak	31.22	-1.17	30.05	46.00	-15.95
989.33	S	Peak	29.31	3.41	32.72	54.00	-21.28
4810.00	H	Average	28.42	9.57	37.99	54.00	-16.01
4810.00	H	Peak	47.94	9.57	57.51	74.00	-16.49
7215.00	H	---					
9620.00	H	---					
12025.00	H	---					
14430.00	H	---					
16835.00	H	---					
19240.00	H	---					
21645.00	H	---					
24050.00	H	---					

Operation Band	:2.4G	Test Date	:2015-02-03
Fundamental Frequency	:2405 MHz	Temp./Humi.	:21.6 deg_C/ 55 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.
"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.
"---" : denotes Noise Floor.

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV / m	dBμV / m	dB
71.71	S	Peak	48.38	-11.95	36.43	40.00	-3.57
191.99	S	Peak	49.00	-11.65	37.35	43.50	-6.15
325.85	S	Peak	43.42	-7.70	35.72	46.00	-10.28
552.83	S	Peak	30.55	-4.02	26.53	46.00	-19.47
759.44	S	Peak	27.09	1.07	28.16	46.00	-17.84
955.38	S	Peak	27.27	3.52	30.79	46.00	-15.21
4810.00	H	Average	29.24	9.57	38.81	54.00	-15.19
4810.00	H	Peak	51.07	9.57	60.64	74.00	-13.36
7215.00	H	---					
9620.00	H	---					
12025.00	H	---					
14430.00	H	---					
16835.00	H	---					
19240.00	H	---					
21645.00	H	---					
24050.00	H	---					

Operation Band	:2.4G	Test Date	:2015-02-03
Fundamental Frequency	:2442 MHz	Temp./Humi.	:21.6 deg_C/ 55 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Actual FS(dBµV/m) = SPA. Reading level(dBµV) + Factor(dB)

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.
"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.
"---" : denotes Noise Floor.

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV / m	dBµV / m	dB
37.76	S	Peak	46.17	-9.95	36.22	40.00	-3.78
194.90	S	Peak	45.91	-11.71	34.20	43.50	-9.30
324.88	S	Peak	42.56	-7.69	34.87	46.00	-11.13
558.65	S	Peak	28.84	-3.85	24.99	46.00	-21.01
759.44	S	Peak	28.12	1.07	29.19	46.00	-16.81
956.35	S	Peak	27.68	3.56	31.24	46.00	-14.76
4884.00	H	Average	28.24	9.85	38.09	54.00	-15.91
4884.00	H	Peak	47.18	9.85	57.03	74.00	-16.97
7326.00	H	---					
9768.00	H	---					
12210.00	H	---					
14652.00	H	---					
17094.00	H	---					
19536.00	H	---					
21978.00	H	---					
24420.00	H	---					

Operation Band	:2.4G	Test Date	:2015-02-03
Fundamental Frequency	:2442 MHz	Temp./Humi.	:21.6 deg_C/ 55 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	: E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.
"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.
"---" : denotes Noise Floor.

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV / m	dBμV / m	dB
71.71	S	Peak	47.35	-11.95	35.40	40.00	-4.60
191.99	S	Peak	50.64	-11.65	38.99	43.50	-4.51
324.88	S	Peak	43.47	-7.69	35.78	46.00	-10.22
552.83	S	Peak	32.48	-4.02	28.46	46.00	-17.54
757.50	S	Peak	27.00	0.97	27.97	46.00	-18.03
862.26	S	Peak	29.01	2.22	31.23	46.00	-14.77
4884.00	H	Average	29.36	9.85	39.21	54.00	-14.79
4884.00	H	Peak	51.07	9.85	60.92	74.00	-13.08
7326.00	H	---					
9768.00	H	---					
12210.00	H	---					
14652.00	H	---					
17094.00	H	---					
19536.00	H	---					
21978.00	H	---					
24420.00	H	---					

Operation Band	:2.4G	Test Date	:2015-02-03
Fundamental Frequency	:2477 MHz	Temp./Humi.	:21.6 deg_C/ 55 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	: E2 Plane	Measurement Antenna Pol.	:VERTICAL

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.
"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.
"---" : denotes Noise Floor.

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV / m	dBμV / m	dB
71.71	S	Peak	47.63	-11.95	35.68	40.00	-4.32
191.99	S	Peak	50.95	-11.65	39.30	43.50	-4.20
324.88	S	Peak	43.34	-7.69	35.65	46.00	-10.35
552.83	S	Peak	30.62	-4.02	26.60	46.00	-19.40
755.56	S	Peak	27.41	0.80	28.21	46.00	-17.79
970.90	S	Peak	26.90	3.60	30.50	54.00	-23.50
4954.00	H	Average	27.51	9.86	37.37	54.00	-16.63
4954.00	H	Peak	45.31	9.86	55.17	74.00	-18.83
7431.00	H	---					
9908.00	H	---					
12385.00	H	---					
14862.00	H	---					
17339.00	H	---					
19816.00	H	---					
22293.00	H	---					
24770.00	H	---					

Operation Band	:2.4G	Test Date	:2015-02-03
Fundamental Frequency	:2477 MHz	Temp./Humi.	:21.6 deg_C/ 55 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	: E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.
"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.
"---" : denotes Noise Floor.

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV / m	dBμV / m	dB
71.71	S	Peak	47.71	-11.95	35.76	40.00	-4.24
194.90	S	Peak	48.87	-11.71	37.16	43.50	-6.34
324.88	S	Peak	43.10	-7.69	35.41	46.00	-10.59
551.86	S	Peak	31.35	-4.04	27.31	46.00	-18.69
753.62	S	Peak	27.40	0.64	28.04	46.00	-17.96
859.35	S	Peak	28.69	1.96	30.65	46.00	-15.35
4954.00	H	Average	33.06	9.86	42.92	54.00	-11.08
4954.00	H	Peak	50.73	9.86	60.59	74.00	-13.41
7431.00	H	---					
9908.00	H	---					
12385.00	H	---					
14862.00	H	---					
17339.00	H	---					
19816.00	H	---					
22293.00	H	---					
24770.00	H	---					

8. 20 dB BAND WIDTH MEASUREMENT

8.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set ETU normal operating mode.
3. Set SPA Center Frequency = fundamental frequency, RBW = 100kHz, VBW = 300kHz, Span =5MHz.
4. Set SPA Max hold. Mark peak, -20dB.

8.2 Test SET-UP (Block Diagram of Configuration)

Same as 7.2 Radiated Emission Measurement.

8.3 Measurement Equipment Used:

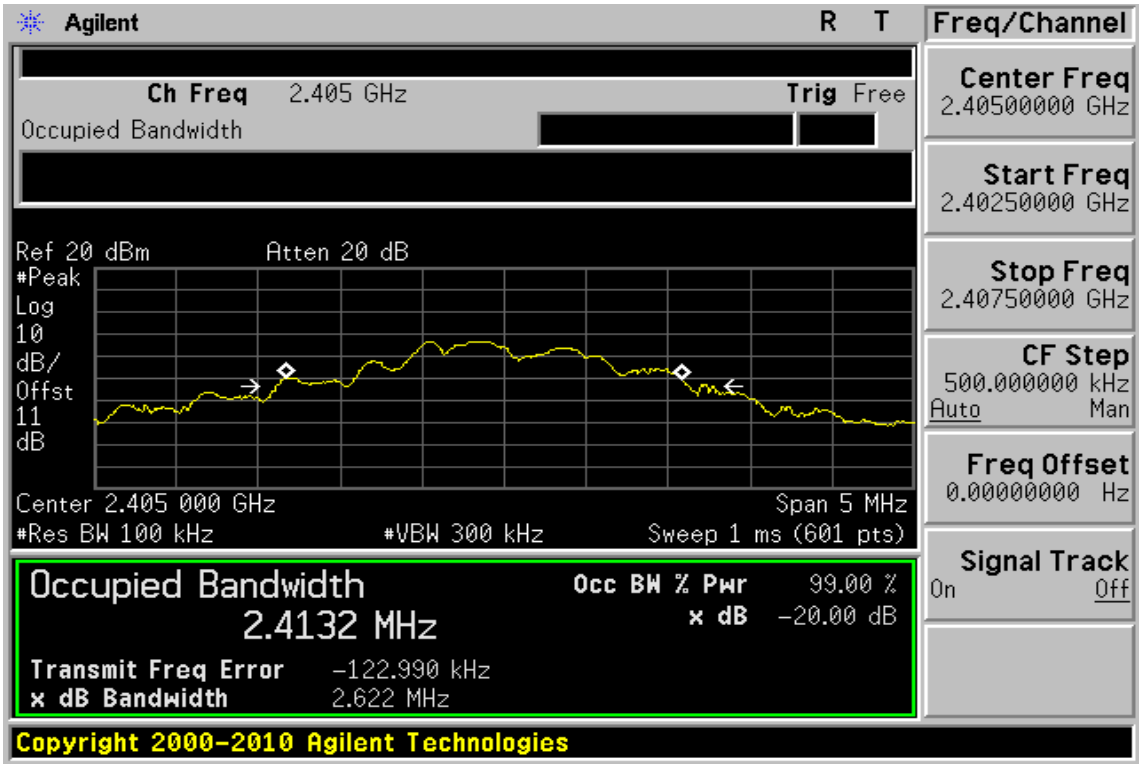
Same as 7.3 Radiated Emission Measurement.

8.4 Measurement Results:

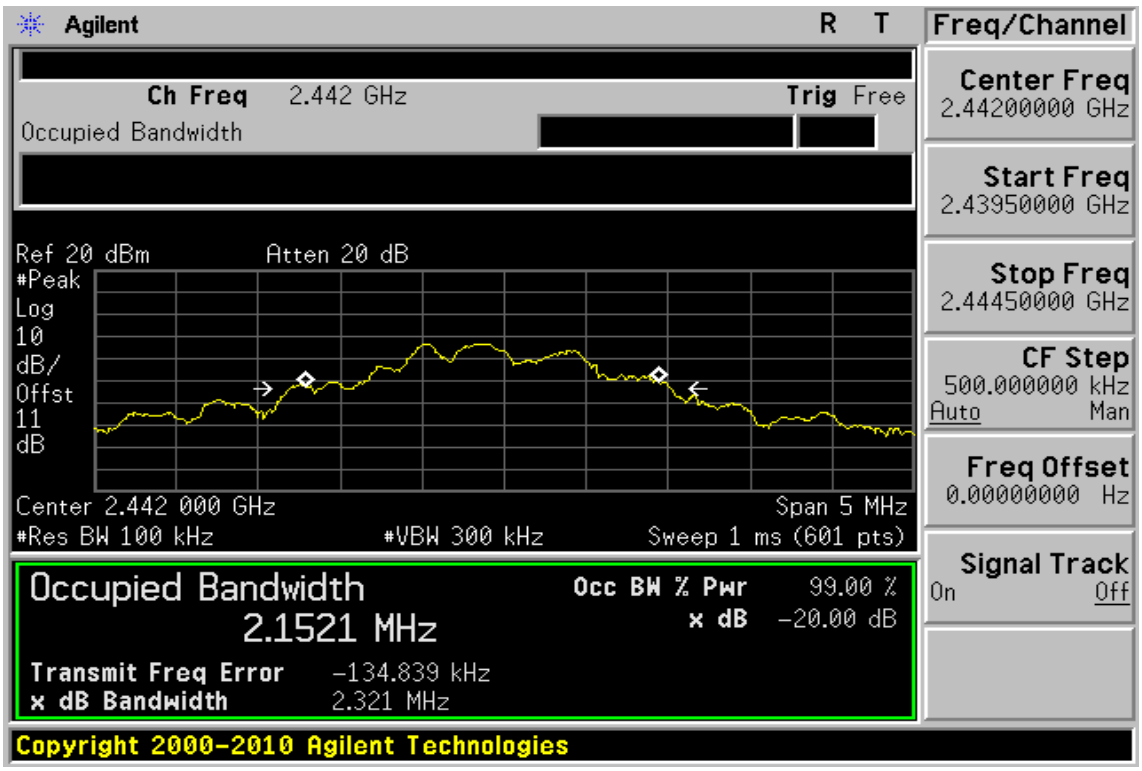
Frequency MHz	20dB Bandwidth (MHz)
2405	2.622
2442	2.321
2477	2.151

Please refer to next page data chart.

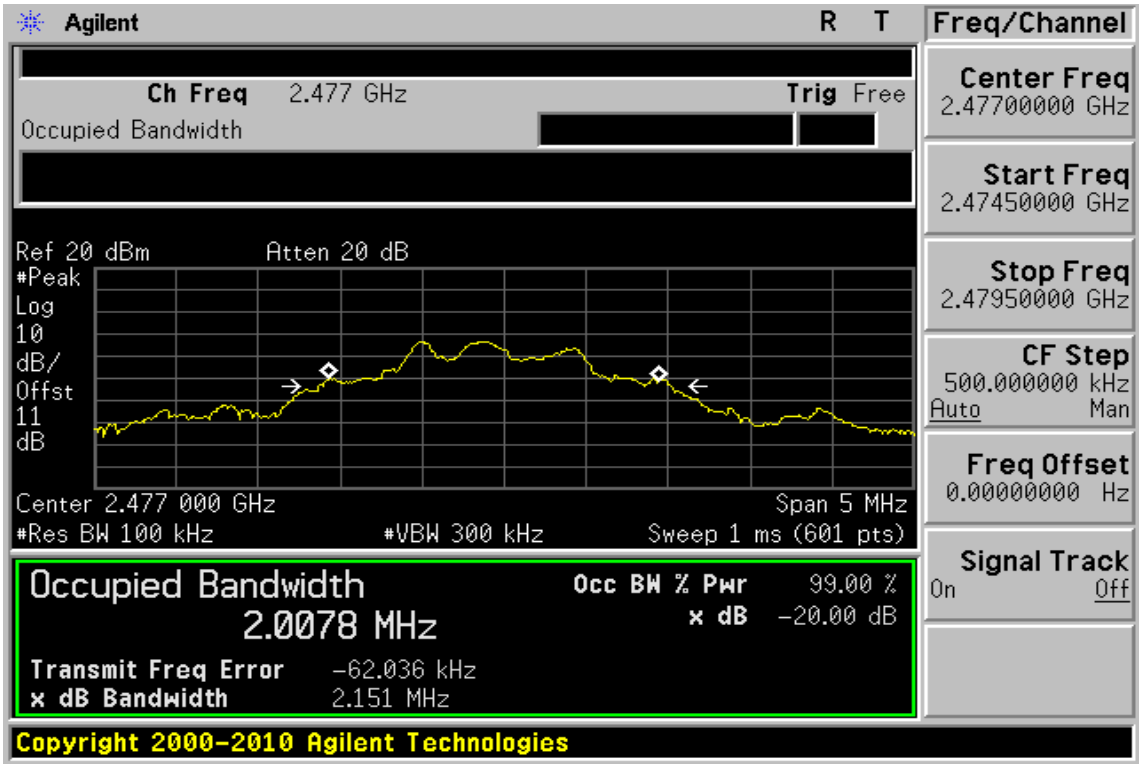
20dB Bandwidth Test Data CH-Low



20dB Bandwidth Test Data CH-Mid



20dB Bandwidth Test Data CH-High



9. 99% BAND WIDTH MEASUREMENT

9.1 Measurement Procedure

1 Place the EUT on the table and set it in transmitting mode.

2 Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

3 Set the spectrum analyzer as RBW=1% of the approximate emission bandwidth, VBW = 3 times RBW, Span= approximately 20dB below the peak level. Sweep=auto

4 Turn on the 99% bandwidth function, max reading..

5 Repeat above procedures until all frequency measured were complete.

9.2 Test SET-UP (Block Diagram of Configuration)

Same as 7.2 Radiated Emission Measurement.

9.3 Measurement Equipment Used:

Same as 7.3 Radiated Emission Measurement.

9.4 Measurement Results:

Frequency MHz	99%Bandwidth (MHz)
2405	2.413
2442	2.152
2477	2.008

~ End of Report ~