FCC Test Report

FCC ID	:	**P27-XIONESCM2**
Equipment	:	**XiOne-SC (B)**
Model No.	:	**SCXIxxBEIxCO; SCXIxxBEI** **(Refer to item 1.1.1 for more details.)**
Brand Name	:	**Comcast Xfinity; Cox; Shaw** **(Refer to item 1.1.1 for more details.)**
Applicant	:	**Sercomm Corporation**
Address	:	**8F, 3-1, YuanQu St., NanKang, Taipei, 11503, Taiwan**
Standard	:	**47 CFR FCC Part 15.247**
Received Date	:	**Jun. 03, 2021**
Tested Date	:	**Jun. 15 ~ Jul. 01, 2021**

We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by: **Approved by:**

Along Chen / Assistant Manager **Gary Chang / Manager**

Testing Laboratory
2732

Table of Contents

Release Record

Report No.	Version	Description	Issued Date
FR161001	Rev. 01	Initial issue	Jul. 26, 2021

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 6.153MHz 49.31 (Margin -10.69dB) - QP	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 555.64MHz 42.74 (Margin -3.26dB) - PK	Pass
15.247(b)(3)	Maximum Output Power	Max Power [dBm]: 6.86	Pass
15.247(a)(2)	6dB Bandwidth	Meet the requirement of limit	Pass
15.247(e)	Power Spectral Density	Meet the requirement of limit	Pass
15.203	Antenna Requirement	Meet the requirement of limit	Pass

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Information

1.1.1 Product Details

The following models are provided to this EUT.

Brand Name	Model Name	Product Name	Description
Comcast Xfinity; Cox; Shaw	SCXIxxBEIxCO; SCXIxxBEI	XiOne-SC (B)	Where "x" may be any alphanumeric for External Body Color.

- All models are electrically identical, different model names are for marketing purpose.
- The above models, model **SCXI11BEI** was selected as a representative one for the final test and only its data was recorded in this report.

1.1.2 Specification of the Equipment under Test (EUT)

RF General Information				
Frequency Range (MHz)	**Mode**	**Ch. Frequency (MHz)**	**Channel Number**	**Data Rate**
2425~2475	RF4CE	2425~2475	15-25 [3]	250kbps
Note 1: RF4CE uses 16-OQPSK modulation.				

1.1.3 Antenna Details

Ant. No.	Type	Connector	Gain (dBi)	Remarks
1	Printing	No	0.02	---

1.1.4 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	5.0Vdc from AC adapter

1.1.5 Accessories

Accessories		
No.	**Equipment**	**Description**
1	AC adapter	Brand: LEADER Model: ML08-7050150-A1 I/P: 100-120V~ 50/60Hz, 0.25A O/P: 5.0Vdc, 1.5A Power Line: 1.8m non-shielded without core
2	AC adapter	Brand: NetBit Model: NBC08A050150HU I/P: 100-120V~ 50/60Hz, 0.2A O/P: 5.0Vdc, 1.5A Power Line: 1.81m non-shielded without core
3	AC adapter	Brand: AcBel Model: WAK010 I/P: 100-120V~ 60Hz, 0.25A O/P: 5.0Vdc, 1.5A Power Line: 1.78m non-shielded without core

1.1.6 Channel List

Channel No.	Frequency (MHz)
15	2425
20	2450
25	2475

1.1.7 Test Tool and Duty Cycle

Test Tool	Tera Term, V4.66	
Duty Cycle and Duty Factor	**Duty Cycle (%)**	**Duty Factor (dB)**
	100.00	0.00

1.1.8 Power Index of Test Tool

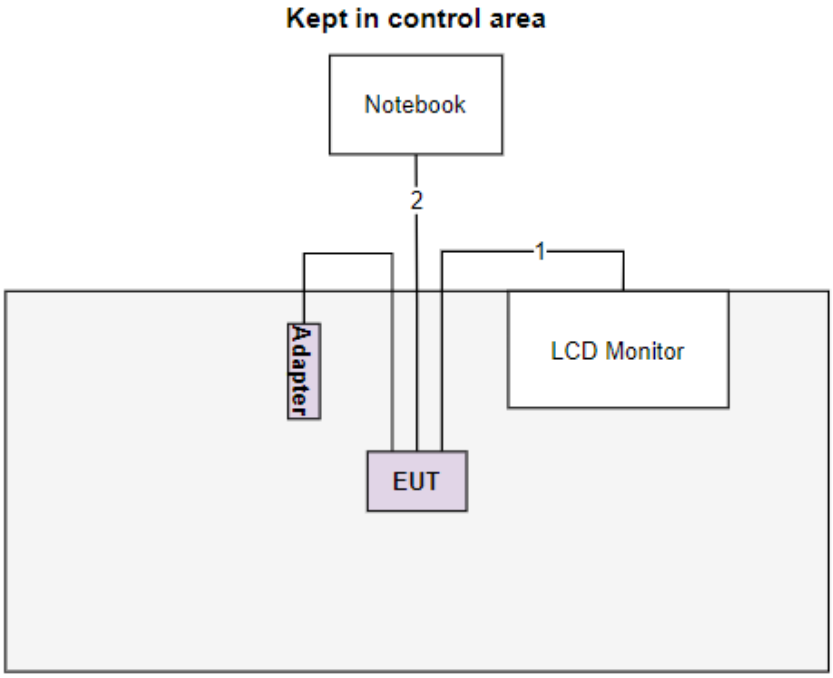
Modulation Mode	Test Frequency (MHz)	Power Index
16-OQPSK	2425	7
16-OQPSK	2450	7
16-OQPSK	2475	7

1.2 Local Support Equipment List

Support Equipment List					
No.	**Equipment**	**Brand**	**Model**	**FCC ID**	**Remarks**
1	Notebook	DELL	Latitude E5470	DoC	---
2	LCD Monitor	DELL	S2817Q	---	---

1.3 Test Setup Chart

Test Setup Diagram



No.	Signal cable / Length (m)
1	HDMI, 1.5m non-shielded.
2	RJ45, 10m non-shielded.

1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Jun. 23, 2021				
Instrument	**Brand**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Receiver	R&S	ESR3	101658	Feb. 08, 2021	Feb. 07, 2022
LISN	R&S	ENV216	101579	Mar. 17, 2021	Mar. 16, 2022
LISN (Support Unit)	SCHWARZBECK	Schwarzbeck 8127	8127-666	Dec. 29, 2020	Dec. 28, 2021
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Oct. 21, 2020	Oct. 20, 2021
50 ohm terminal (Support Unit)	NA	50	04	May 25, 2021	May 24, 2022
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission below 1GHz				
Test Site	966 chamber1 / (03CH01-WS)				
Tested Date	Jun. 15 ~ Jun. 16, 2021				
Instrument	**Brand**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Receiver	R&S	ESR3	101658	Feb. 08, 2021	Feb. 07, 2022
Spectrum Analyzer	R&S	FSV40	101498	Dec. 04, 2020	Dec. 03, 2021
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 17, 2020	Nov. 16, 2021
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jul. 10, 2020	Jul. 09, 2021
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 11, 2020	Dec. 10, 2021
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 06, 2020	Nov. 05, 2021
Preamplifier	EMC	EMC02325	980225	Jul. 03, 2020	Jul. 02, 2021
Preamplifier	Agilent	83017A	MY39501308	Sep. 26, 2020	Sep. 25, 2021
Preamplifier	EMC	EMC184045B	980192	Jul. 21, 2020	Jul. 20, 2021
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 06, 2020	Oct. 05, 2021
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Oct. 06, 2020	Oct. 05, 2021
LF cable 11M	EMC	EMCCFD400-NW-NW-11000	200801	Oct. 06, 2020	Oct. 05, 2021
LF cable 1M	EMC	EMCCFD400-NM-NM-1000	160502	Oct. 06, 2020	Oct. 05, 2021
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Oct. 06, 2020	Oct. 05, 2021
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Oct. 06, 2020	Oct. 05, 2021
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Tested Date	Jul. 01, 2021				
Instrument	**Brand**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101063	Apr. 19, 2021	Apr. 18, 2022
Power Meter	Anritsu	ML2495A	1241002	Nov. 04, 2020	Nov. 03, 2021
Power Sensor	Anritsu	MA2411B	1207366	Nov. 04, 2020	Nov. 03, 2021
Measurement Software	-	SENSE-15247_DTS	V5.10	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

According to the specification of EUT, the EUT must comply with following standards and KDB documents.

47 CFR FCC Part 15.247
ANSI C63.10-2013

1.6 Reference Guidance

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

1.7 Deviation from Test Standard and Measurement Procedure

None

1.8 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

Measurement Uncertainty	
Parameters	**Uncertainty**
Bandwidth	±34.130 Hz
Conducted power	±0.808 dB
Power density	±0.583 dB
Conducted emission	±2.715 dB
AC conducted emission	±2.92 dB
Radiated emission ≤ 1GHz	±3.41 dB
Radiated emission > 1GHz	±4.59 dB

2 Test Configuration

2.1 Testing Facility

Test Laboratory	International Certification Corporation
Test Site	CO01-WS, 03CH01-WS, TH01-WS
Address of Test Site	No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- ISED#: 10807A
- CAB identifier: TW2732

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate	Test Configuration
Conducted Emissions	16-OQPSK	2425	250kbps	---
Radiated Emissions ≤1GHz	16-OQPSK	2425	250kbps	---
Radiated Emissions >1GHz Maximum Output Power 6dB bandwidth Power spectral density	16-OQPSK	2425 / 2450 / 2475	250kbps	---

NOTE:
1. Three adapters (LEADER, NetBit & AcBel) had been covered during the pretest and found that **LEADER** adapter was the worst case and was selected for final testing.

3 Transmitter Test Results

3.1 Conducted Emissions

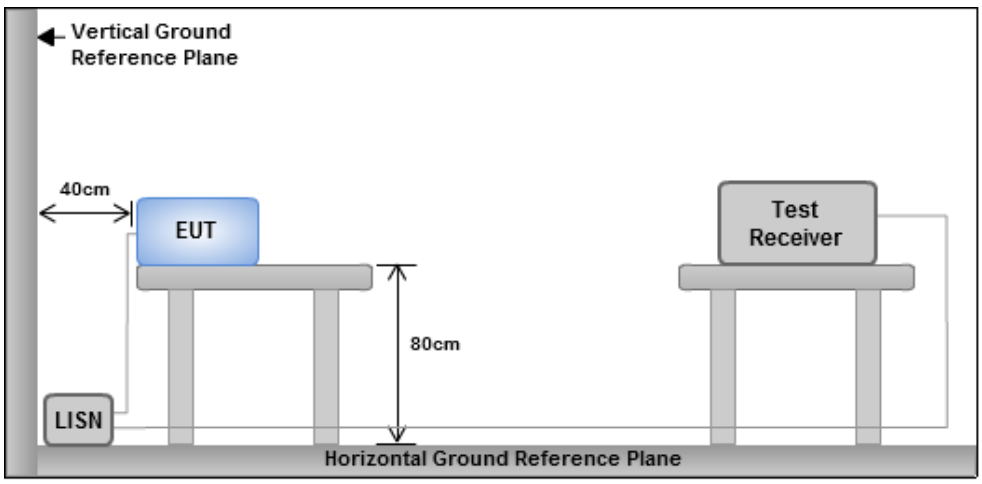
3.1.1 Limit of Conducted Emissions

Conducted Emissions Limit		
Frequency Emission (MHz)	**Quasi-Peak**	**Average**
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

3.1.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V / 60Hz.

3.1.3 Test Setup



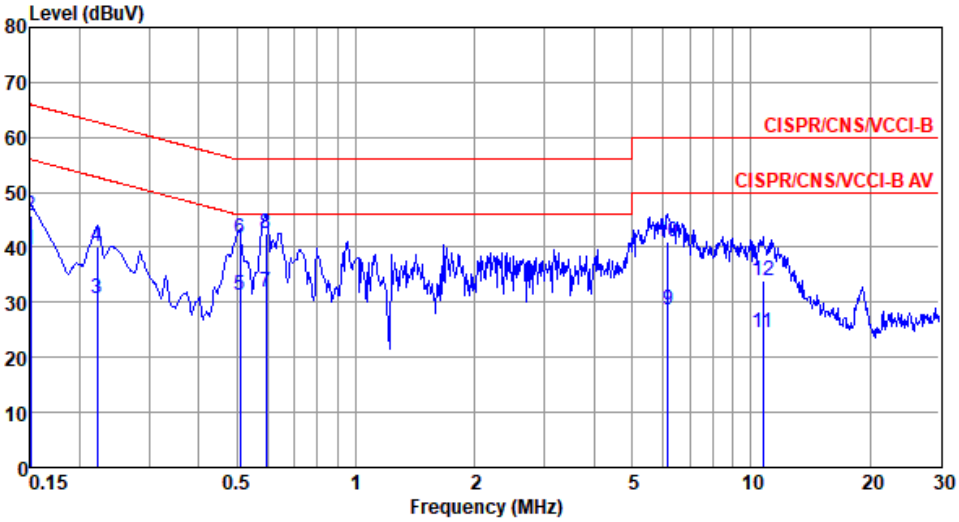
Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.4 Test Result of Conducted Emissions

Modulation	16-OQPSK	Test Freq. (MHz)	2425
Power Phase	Line		

Test by : Joe Liao Temperature: 24°C Humidity: 63%

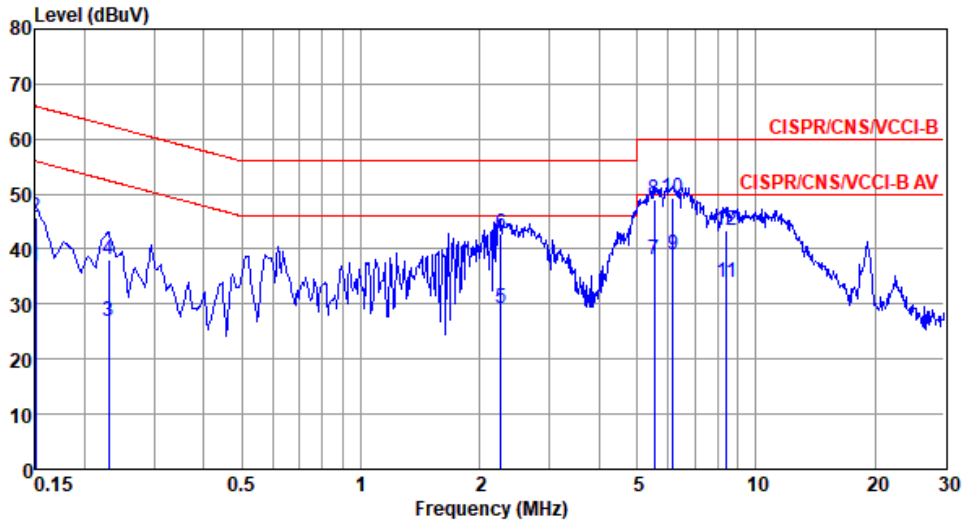


	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.150	39.59	56.00	-16.41	29.71	9.83	0.05	Average
2	0.150	45.81	66.00	-20.19	35.93	9.83	0.05	QP
3	0.222	30.55	52.74	-22.19	20.64	9.85	0.06	Average
4	0.222	40.09	62.74	-22.65	30.18	9.85	0.06	QP
5	0.510	31.22	46.00	-14.78	21.21	9.92	0.09	Average
6	0.510	41.49	56.00	-14.51	31.48	9.92	0.09	QP
7	0.592	31.81	46.00	-14.19	21.78	9.93	0.10	Average
8*	0.592	42.45	56.00	-13.55	32.42	9.93	0.10	QP
9	6.153	28.52	50.00	-21.48	18.11	10.07	0.34	Average
10	6.153	41.00	60.00	-19.00	30.59	10.07	0.34	QP
11	10.733	24.52	50.00	-25.48	13.97	10.12	0.43	Average
12	10.733	33.84	60.00	-26.16	23.29	10.12	0.43	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Modulation	16-OQPSK	Test Freq. (MHz)	2425
Power Phase	Neutral		

Test by : Joe Liao Temperature: 24°C Humidity: 63%



	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.150	37.01	56.00	-18.99	27.14	9.82	0.05	Average
2	0.150	45.75	66.00	-20.25	35.88	9.82	0.05	QP
3	0.230	27.00	52.44	-25.44	17.11	9.83	0.06	Average
4	0.230	37.95	62.44	-24.49	28.06	9.83	0.06	QP
5	2.261	29.33	46.00	-16.67	19.18	9.95	0.20	Average
6	2.261	42.69	56.00	-13.31	32.54	9.95	0.20	QP
7	5.535	38.00	50.00	-12.00	27.66	10.01	0.33	Average
8	5.535	49.06	60.00	-10.94	38.72	10.01	0.33	QP
9	6.153	38.94	50.00	-11.06	28.58	10.02	0.34	Average
10*	6.153	49.31	60.00	-10.69	38.95	10.02	0.34	QP
11	8.412	33.83	50.00	-16.17	23.38	10.07	0.38	Average
12	8.412	43.33	60.00	-16.67	32.88	10.07	0.38	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

3.2 6dB and Occupied Bandwidth

3.2.1 Limit of 6dB Bandwidth

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

3.2.2 Test Procedures

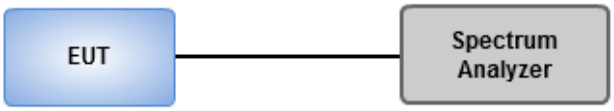
6dB Bandwidth

1. Set resolution bandwidth (RBW) = 100 kHz, Video bandwidth = 300 kHz.
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6dB relative to the maximum level measured in the fundamental emission.

Occupied Bandwidth

1. Set resolution bandwidth (RBW) = 1 MHz, Video bandwidth = 3 MHz.
2. Detector = Sample, Trace mode = max hold.
3 Sweep = auto couple, Allow the trace to stabilize.
4. Use the OBW measurement function of spectrum analyzer to measure the occupied bandwidth.

3.2.3 Test Setup



3.2.4 Test Result of 6dB and Occupied Bandwidth

Ambient Condition	24°C / 65%	Tested By	Aska Huang

Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
RF4CE	1.612M	2.388M	2M39D1D	1.395M	2.352M

Max-N dB = Maximum 6dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;

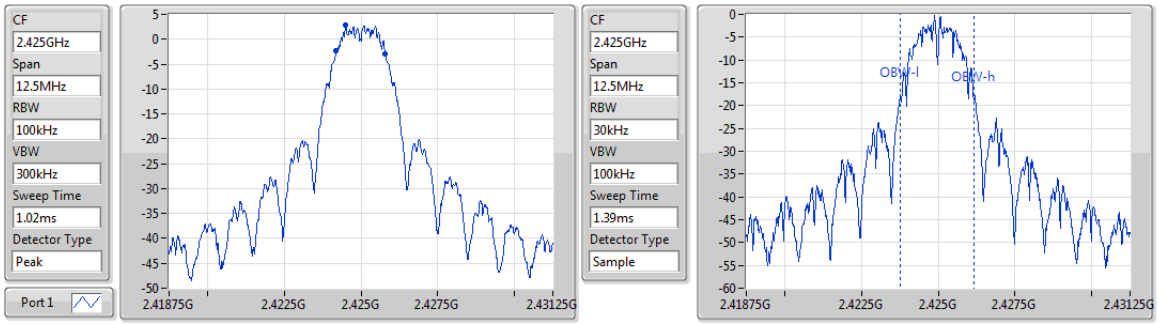
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
RF4CE	-	-	-	-
2425MHz	Pass	500k	1.612M	2.388M
2450MHz	Pass	500k	1.576M	2.352M
2475MHz	Pass	500k	1.395M	2.37M

Port X-N dB = Port **X** 6dB down bandwidth; **Port X-OBW** = Port **X** 99% occupied bandwidth;

RF4CE **EBW**

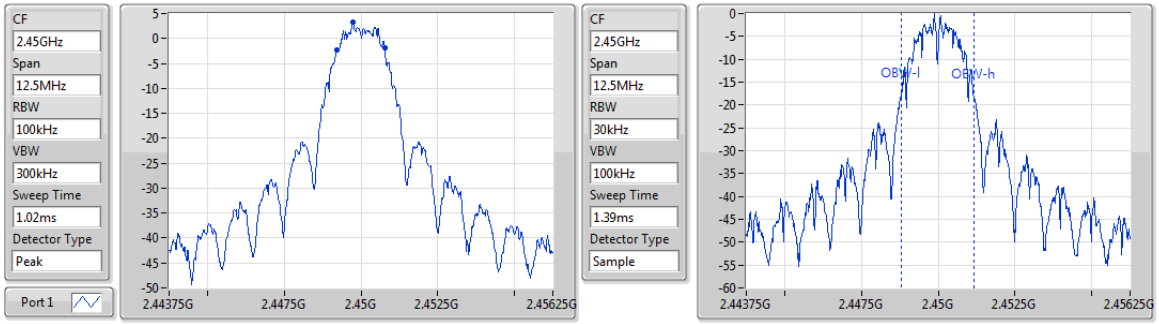
2425MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.612M	2.424185G	2.425797G	2.388M	2.42377G	2.426158G	500k	1

RF4CE **EBW**

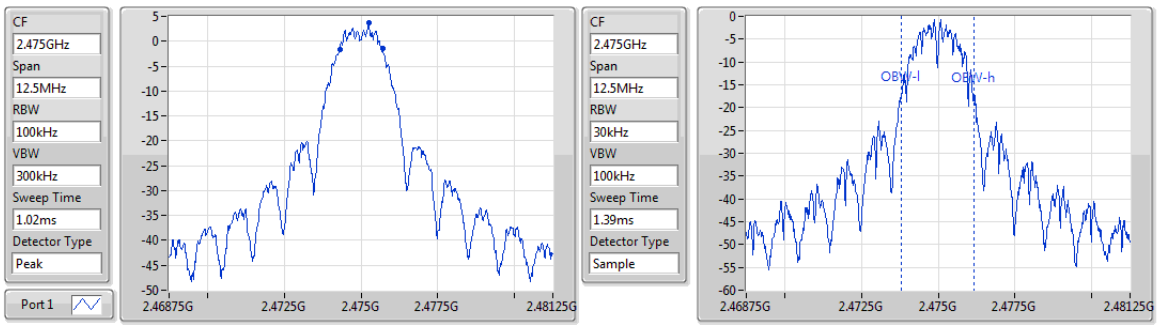
2450MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.576M	2.449203G	2.450779G	2.352M	2.448806G	2.451158G	500k	1

RF4CE **EBW**

2475MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.395M	2.474312G	2.475707G	2.37M	2.473788G	2.476158G	500k	1

3.3 RF Output Power

3.3.1 Limit of RF Output Power

Conducted power shall not exceed 1Watt.

Antenna gain <= 6dBi, no any corresponding reduction is in output power limit.

3.3.2 Test Procedures

A broadband RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

3.3.3 Test Setup

3.3.4 Test Result of Maximum Output Power

Ambient Condition	24°C / 65%	Tested By	Aska Huang

Summary of Peak Conducted Output Power

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
RF4CE	6.86	0.00485

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Total Power (dBm)	Power Limit (dBm)
RF4CE	-	-	-	-	-
2425MHz	Pass	0.02	6.86	6.86	30.00
2450MHz	Pass	0.02	6.68	6.68	30.00
2475MHz	Pass	0.02	6.41	6.41	30.00

DG = Directional Gain; **Port X** = Port X output power

Summary of Conducted (Average) Output Power

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
RF4CE	6.83	0.00482

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Total Power (dBm)	Power Limit (dBm)
RF4CE	-	-	-	-	-
2425MHz	Pass	0.02	6.83	6.83	-
2450MHz	Pass	0.02	6.65	6.65	-
2475MHz	Pass	0.02	6.38	6.38	-

DG = Directional Gain; **Port X** = Port X output power
Note : Conducted average output power is for reference only

3.4 Power Spectral Density

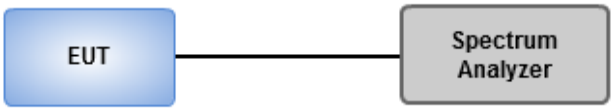
3.4.1 Limit of Power Spectral Density

Power spectral density shall not be greater than 8 dBm in any 3 kHz band.

3.4.2 Test Procedures

1. Set the RBW = 3 kHz, VBW = 10 kHz.
2. Detector = Peak, Sweep time = auto couple.
3. Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

3.4.3 Test Setup



3.4.4 Test Result of Power Spectral Density

Ambient Condition	24°C / 65%	Tested By	Aska Huang

Summary

Mode	PD (dBm/3kHz)
2.4-2.4835GHz	-
RF4CE	-9.11

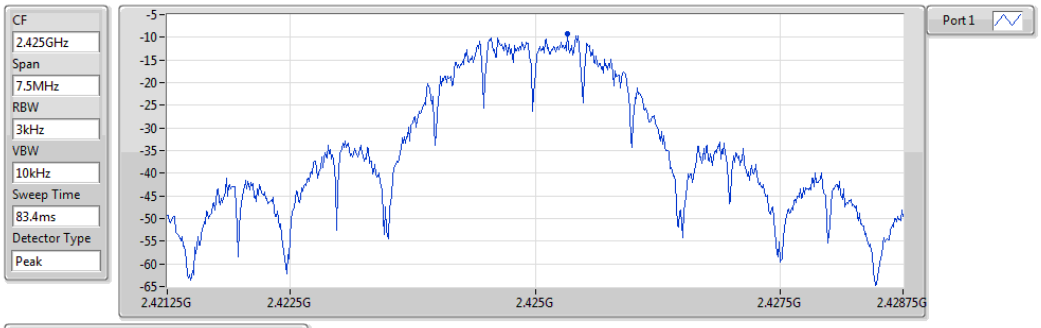
Result

Mode	Result	DG (dBi)	Port 1 (dBm/3kHz)	PD (dBm/3kHz)	PD Limit (dBm/3kHz)
RF4CE	-	-	-	-	-
2425MHz	Pass	0.02	-9.11	-9.11	8.00
2450MHz	Pass	0.02	-9.30	-9.30	8.00
2475MHz	Pass	0.02	-9.31	-9.31	8.00

DG = Directional Gain;
PD = Maximum power density; **Port X** = Port X power density;

RF4CE **PSD**

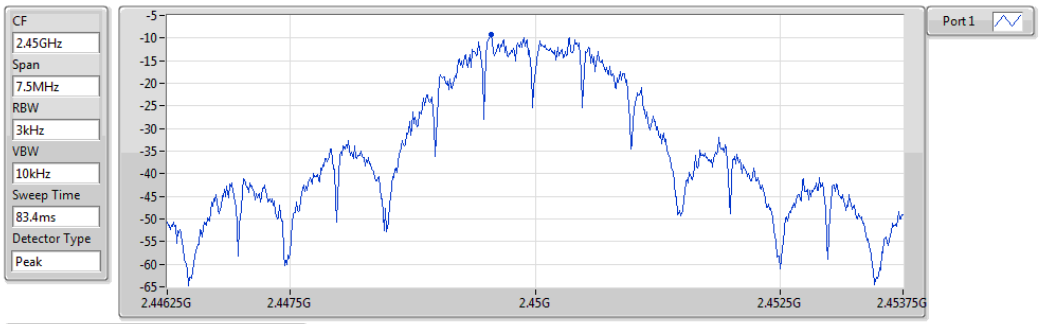
2425MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-9.11	-9.11	-9.11

RF4CE **PSD**

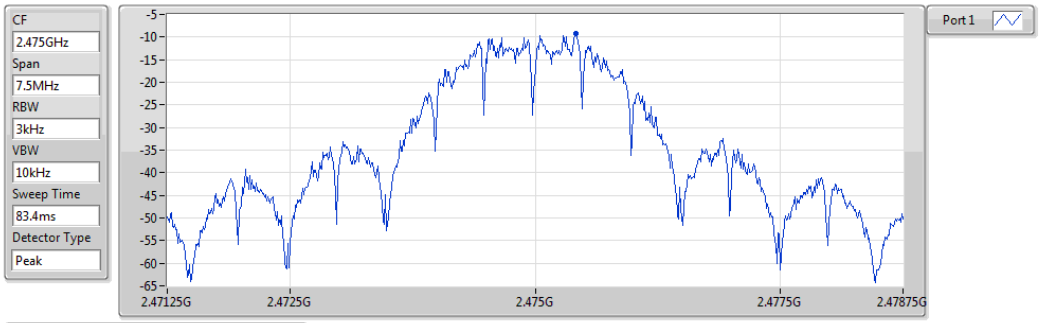
2450MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-9.30	-9.30	-9.30

RF4CE **PSD**

2475MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-9.31	-9.31	-9.31

3.5 Unwanted Emissions into Restricted Frequency Bands

3.5.1 Limit of Unwanted Emissions into Restricted Frequency Bands

Restricted Band Emissions Limit			
Frequency Range (MHz)	**Field Strength (uV/m)**	**Field Strength (dBuV/m)**	**Measure Distance (m)**
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1:
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit
Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

3.5.2 Test Procedures

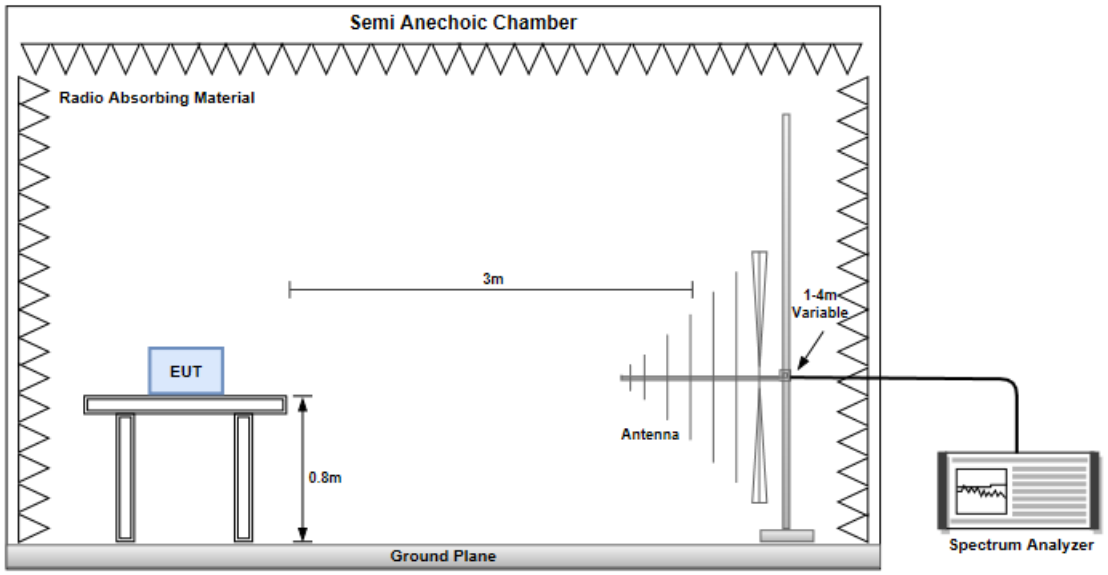
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

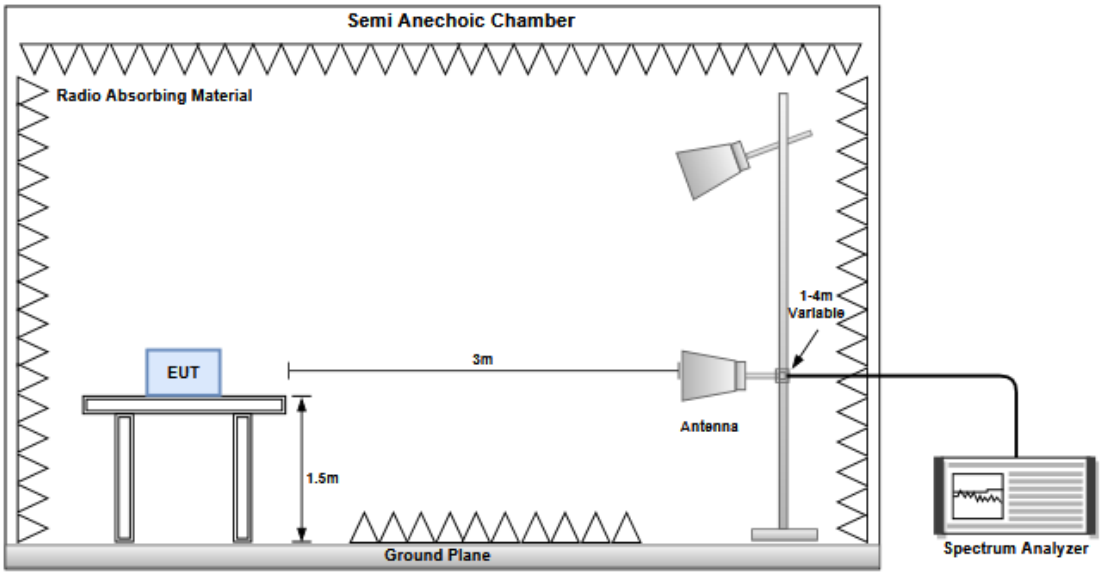
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

3.5.3 Test Setup

Radiated Emissions below 1 GHz



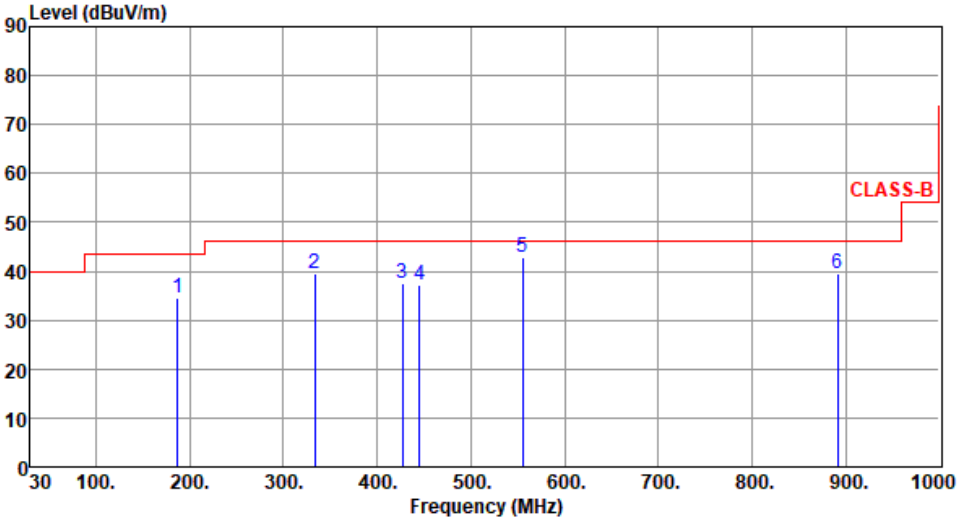
Radiated Emissions above 1 GHz



3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	16-OQPSK	Test Freq. (MHz)	2425
Polarization	Horizontal		

Test By :Roger Lu Temperature(℃):24 Humidity(%):68

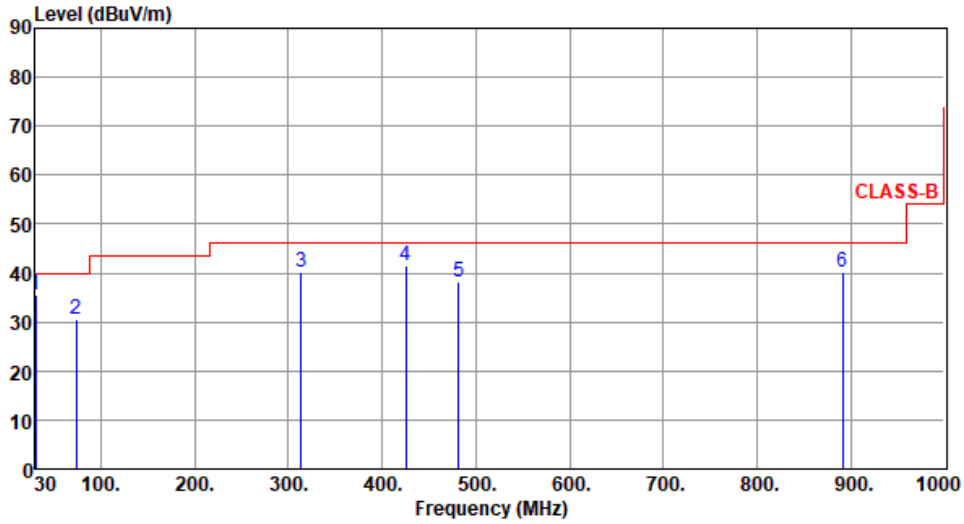


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	187.45	34.56	43.50	-8.94	45.72	-11.16	Peak	---	---
2	333.59	39.44	46.00	-6.56	46.55	-7.11	Peak	---	---
3	426.65	37.46	46.00	-8.54	42.41	-4.95	Peak	---	---
4	445.28	37.15	46.00	-8.85	41.68	-4.53	Peak	---	---
5	555.64	42.74	46.00	-3.26	44.95	-2.21	Peak	---	---
6	891.46	39.41	46.00	-6.59	35.71	3.70	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	16-OQPSK	Test Freq. (MHz)	2425
Polarization	Vertical		

Test By :Roger Lu Temperature(℃):24 Humidity(%):68



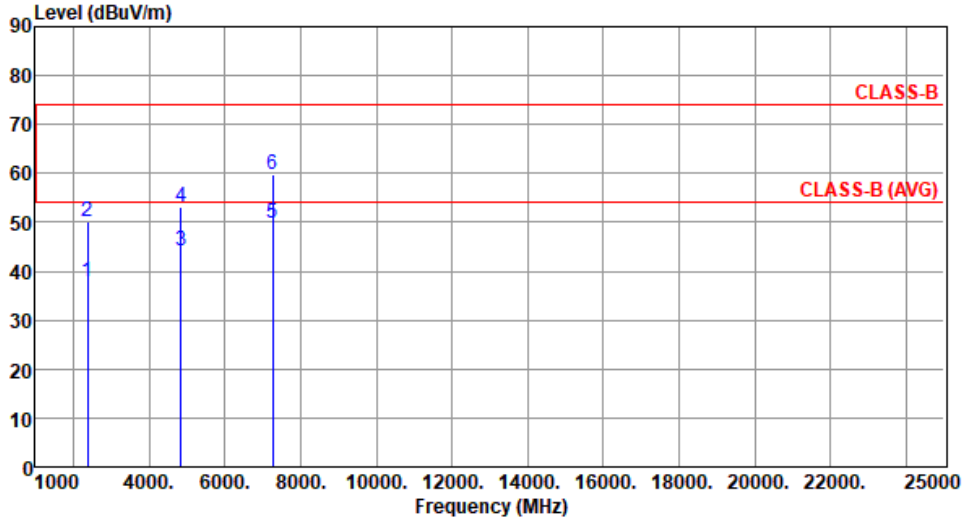
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	30.11	35.58	40.00	-4.42	45.09	-9.51	Peak	---	---
2	73.46	30.54	40.00	-9.46	42.27	-11.73	Peak	---	---
3	313.58	40.11	46.00	-5.89	47.71	-7.60	Peak	---	---
4	425.26	41.58	46.00	-4.42	46.59	-5.01	Peak	---	---
5	481.46	38.25	46.00	-7.75	41.90	-3.65	Peak	---	---
6	891.25	40.31	46.00	-5.69	36.62	3.69	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

3.5.5 Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation	16-OQPSK	**Test Freq. (MHz)**	2425
Polarization	Horizontal		

Test By :Roger Lu Temperature(℃):25 Humidity(%):62

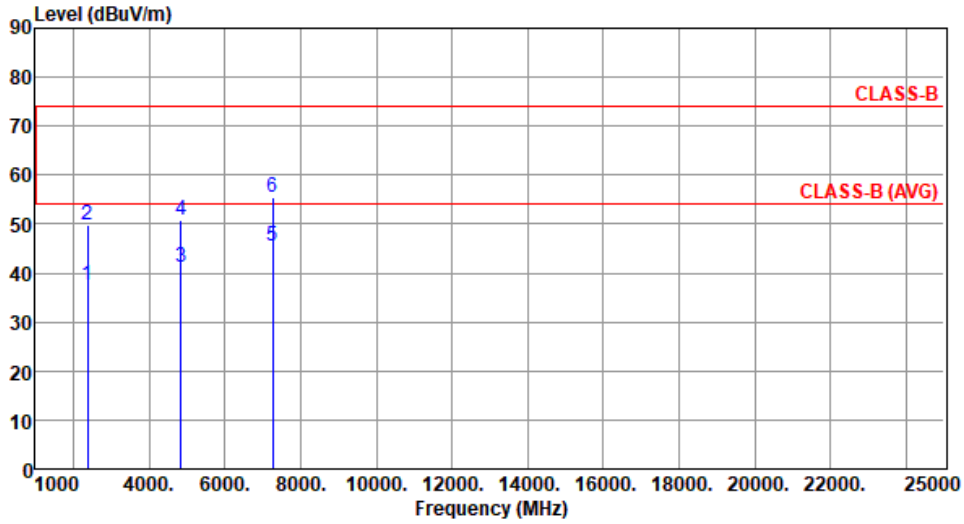


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	37.83	54.00	-16.17	40.62	-2.79	Average	155	206
2	2390.00	50.07	74.00	-23.93	52.86	-2.79	Peak	155	206
3	4850.00	44.09	54.00	-9.91	40.65	3.44	Average	100	136
4	4850.00	53.09	74.00	-20.91	49.65	3.44	Peak	100	136
5	7275.00	49.84	54.00	-4.16	40.85	8.99	Average	100	92
6	7275.00	59.64	74.00	-14.36	50.65	8.99	Peak	100	92

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	16-OQPSK	Test Freq. (MHz)	2425
Polarization	Vertical		

Test By :Roger Lu Temperature(℃):25 Humidity(%):62

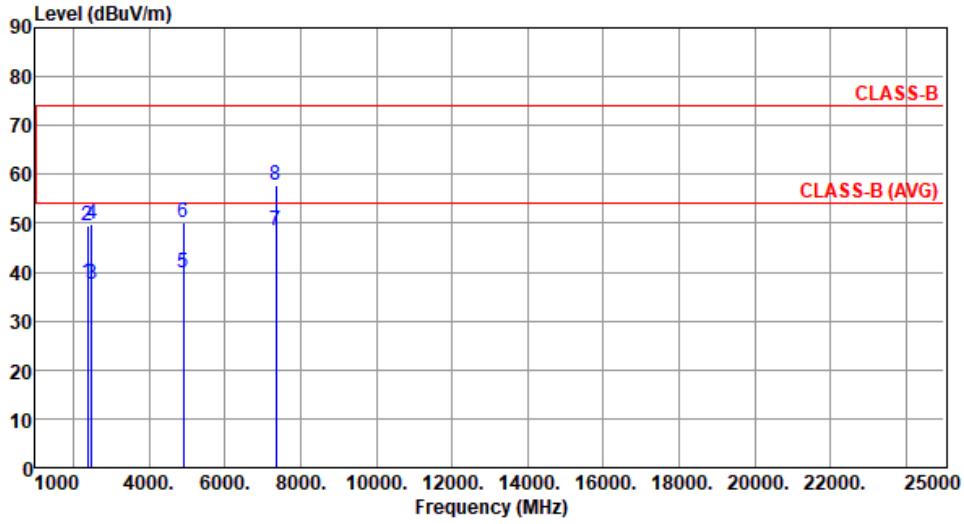


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	37.56	54.00	-16.44	40.35	-2.79	Average	100	35
2	2390.00	49.80	74.00	-24.20	52.59	-2.79	Peak	100	35
3	4850.00	41.05	54.00	-12.95	37.61	3.44	Average	316	82
4	4850.00	50.83	74.00	-23.17	47.39	3.44	Peak	316	82
5	7275.00	45.47	54.00	-8.53	36.48	8.99	Average	100	342
6	7275.00	55.39	74.00	-18.61	46.40	8.99	Peak	100	342

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	16-OQPSK	Test Freq. (MHz)	2450
Polarization	Horizontal		

Test By :Roger Lu Temperature(℃):25 Humidity(%):62

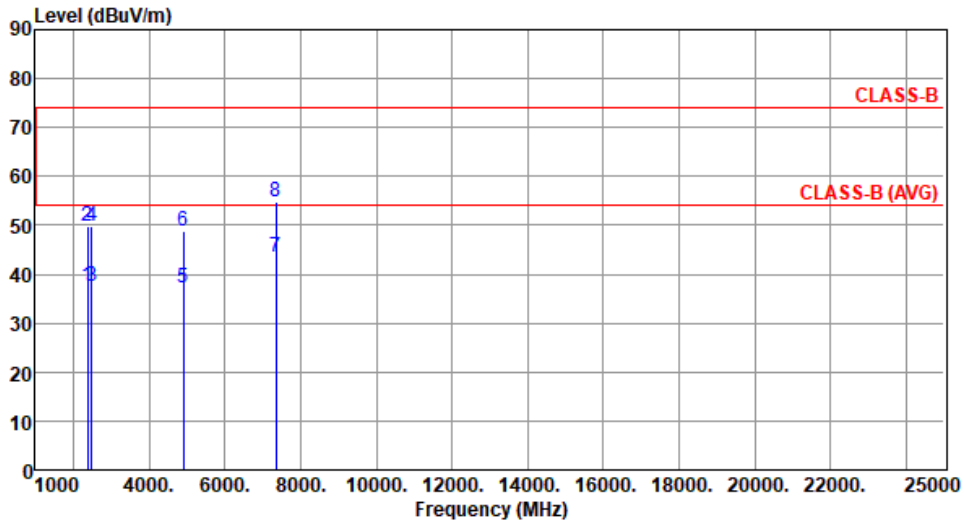


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	37.80	54.00	-16.20	40.59	-2.79	Average	149	205
2	2390.00	49.55	74.00	-24.45	52.34	-2.79	Peak	149	205
3	2483.50	37.55	54.00	-16.45	40.29	-2.74	Average	149	205
4	2483.50	49.85	74.00	-24.15	52.59	-2.74	Peak	149	205
5	4900.00	39.96	54.00	-14.04	36.48	3.48	Average	100	133
6	4900.00	50.06	74.00	-23.94	46.58	3.48	Peak	100	133
7	7350.00	48.44	54.00	-5.56	39.38	9.06	Average	100	95
8	7350.00	57.71	74.00	-16.29	48.65	9.06	Peak	100	95

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	16-OQPSK	Test Freq. (MHz)	2450
Polarization	Vertical		

Test By :Roger Lu Temperature(℃):25 Humidity(%):62

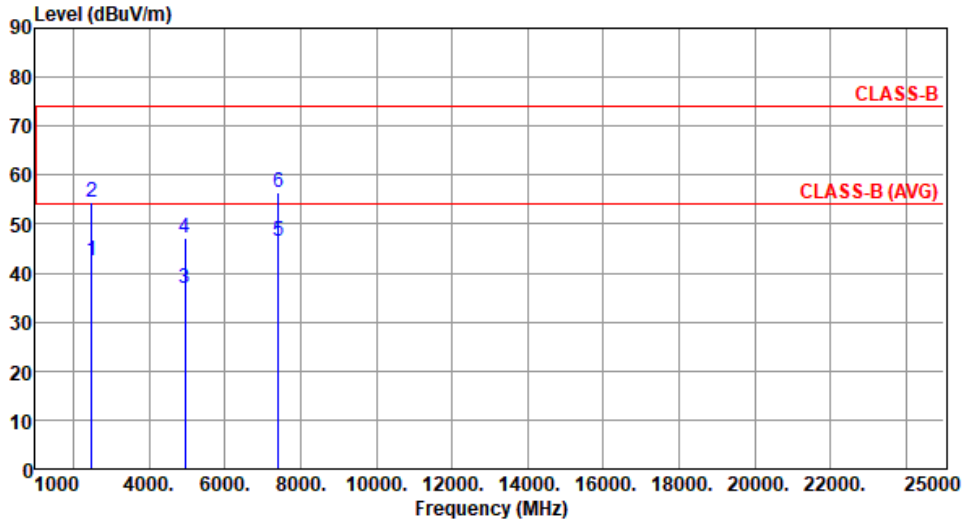


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	37.47	54.00	-16.53	40.26	-2.79	Average	100	30
2	2390.00	49.80	74.00	-24.20	52.59	-2.79	Peak	100	30
3	2483.50	37.54	54.00	-16.46	40.28	-2.74	Average	100	30
4	2483.50	49.72	74.00	-24.28	52.46	-2.74	Peak	100	30
5	4900.00	37.13	54.00	-16.87	33.65	3.48	Average	315	88
6	4900.00	48.74	74.00	-25.26	45.26	3.48	Peak	315	88
7	7350.00	43.64	54.00	-10.36	34.58	9.06	Average	100	345
8	7350.00	54.92	74.00	-19.08	45.86	9.06	Peak	100	345

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	16-OQPSK	Test Freq. (MHz)	2475
Polarization	Horizontal		

Test By :Roger Lu Temperature(℃):25 Humidity(%):62

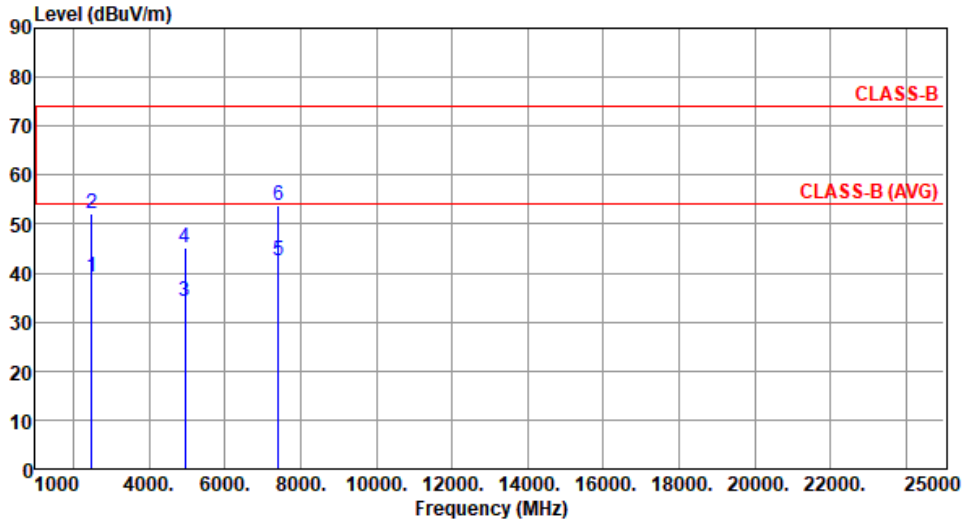


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	42.52	54.00	-11.48	45.26	-2.74	Average	145	206
2	2483.50	54.55	74.00	-19.45	57.29	-2.74	Peak	145	206
3	4950.00	37.00	54.00	-17.00	33.38	3.62	Average	100	138
4	4950.00	47.19	74.00	-26.81	43.57	3.62	Peak	100	138
5	7425.00	46.43	54.00	-7.57	37.47	8.96	Average	100	88
6	7425.00	56.56	74.00	-17.44	47.60	8.96	Peak	100	88

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	16-OQPSK	Test Freq. (MHz)	2475
Polarization	Vertical		

Test By :Roger Lu Temperature(℃):25 Humidity(%):62



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	39.12	54.00	-14.88	41.86	-2.74	Average	100	36
2	2483.50	52.12	74.00	-21.88	54.86	-2.74	Peak	100	36
3	4950.00	34.15	54.00	-19.85	30.53	3.62	Average	344	85
4	4950.00	45.29	74.00	-28.71	41.67	3.62	Peak	344	85
5	7425.00	42.46	54.00	-11.54	33.50	8.96	Average	100	346
6	7425.00	53.86	74.00	-20.14	44.90	8.96	Peak	100	346

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

3.6 Emissions in Non-Restricted Frequency Bands

3.6.1 Emissions in Non-Restricted Frequency Bands Limit

Peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

3.6.2 Test Procedures

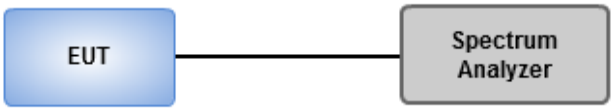
Reference level measurement

1. Set RBW=100 kHz, VBW = 300 kHz , Detector = Peak, Sweep time = Auto.
2. Trace = max hold, Allow Trace to fully stabilize.
3. Use the peak marker function to determine the maximum PSD level.

Emission level measurement

1. Set RBW=100 kHz, VBW = 300 kHz , Detector = Peak, Sweep time = Auto.
2. Trace = max hold, Allow Trace to fully stabilize.
3. Scan Frequency range is up to 25GHz.
4. Use the peak marker function to determine the maximum amplitude level.

3.6.3 Test Setup

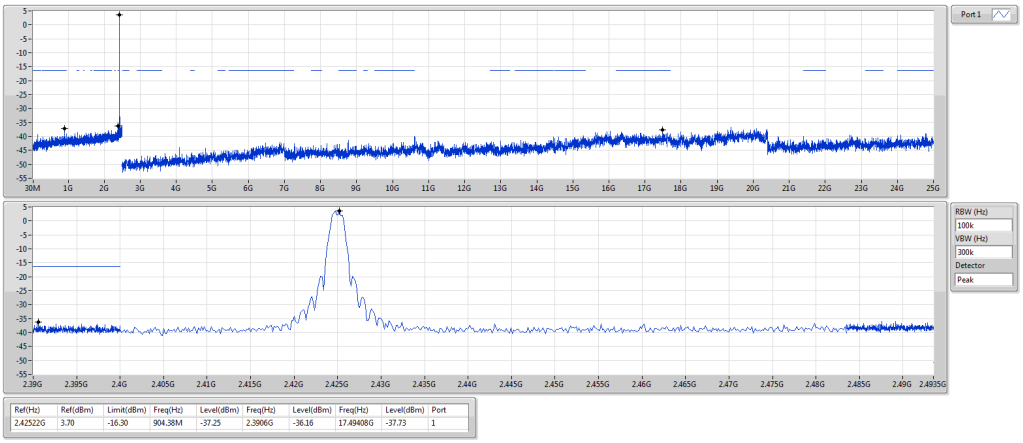


3.6.4 Unwanted Emissions into Non-Restricted Frequency Bands

Ambient Condition	24°C / 65%	Tested By	Aska Huang

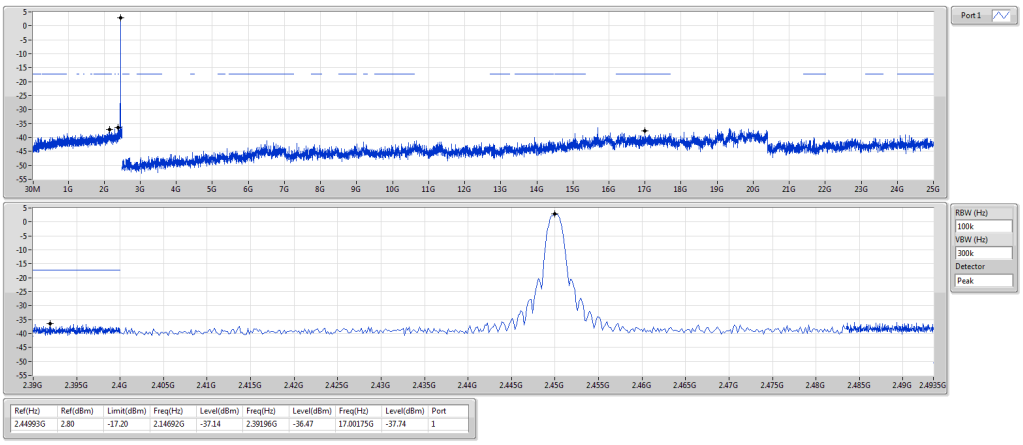
RF4CE CSE NdB

2425MHz



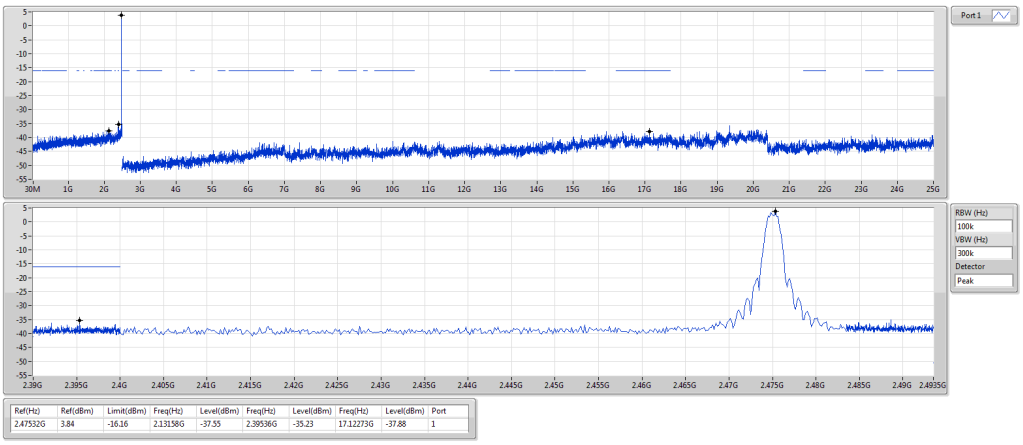
RF4CE CSE NdB

2450MHz



RF4CE CSE NdB

2475MHz



4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website http://www.icertifi.com.tw.

Linkou

Tel: 886-2-2601-1640

No.30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan (R.O.C.)

Kwei Shan

Tel: 886-3-271-8666

No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

No.2-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

Kwei Shan Site II

Tel: 886-3-271-8640

No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 333, Taiwan (R.O.C.)

If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666
Fax: 886-3-318-0345
Email: ICC_Service@icertifi.com.tw

==END==