FCC Test Report

FCC ID	:	**2AQ68GEE810U-915U**
Equipment	:	**Enterprise Gateway**
Model No.	:	**GEE810U-915U**
Brand Name	:	**UfiSpace**
Applicant	:	**Hon Lin Technology Co Ltd.**
Address	:	**11th Fl 32 Jihu Rd Neihu District Taipei 114 TAIWAN**
Standard	:	**47 CFR FCC Part 15.247**
Received Date	:	**Dec. 03, 2020**
Tested Date	:	**Apr. 18 ~ Apr. 30, 2020**

We, International Certification Corp., 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.
The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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
FR882101-02	Rev. 01	Initial issue	Jun. 18, 2020

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.365MHz 37.99 (Margin -10.62dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 7386.40MHz 50.46 (Margin -3.54dB) - AV	Pass
15.247(b)(3)	Maximum Output Power	Max Power [dBm]: 23.19	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 Specification of the Equipment under Test (EUT)

RF General Information					
Frequency Range (MHz)	Ch. Freq. (MHz)	Channel Number	Data Rate (bit/sec)	Spread Factor	Channel Bandwidth (kHz)
902 ~ 928	923.3 ~ 927.5	1 ~ 8 [8]	980 ~ 21900	12 ~ 7	500
Note 1: RF output power specifies that Maximum Conducted (Average) Output Power. Note 2: The device uses CSS modulation.					

1.1.2 Antenna Details

Ant. No.	Brand	Model	Type	Connector	Gain (dBi)
1	FIT	ANTP2M6-CZZ61-EH	Dipole	I-Pex	1.49

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	12Vdc from adapter

1.1.4 Accessories

Accessories		
No.	Equipment	Description
1	AC adapter	Brand: DVE Model: DSA-30PFL-12 FCA 120250 Power Rating: I/P: 100-240Vac, 50/60Hz, 0.8A O/P: 12Vdc, 2.5A Power Line: 1.47m non-shielded without core

1.1.5 Channel List

Channel	Frequency(MHz)
1	923.3
2	923.9
3	924.5
4	925.1
5	925.7
6	926.3
7	926.9
8	927.5

1.1.6 Test Tool and Duty Cycle

Test Tool	Putty, version: 0.6	
Duty Cycle and Duty Factor	Duty Cycle (%)	Duty Factor (dB)
	100%	0

1.1.7 Power Index of Test Tool

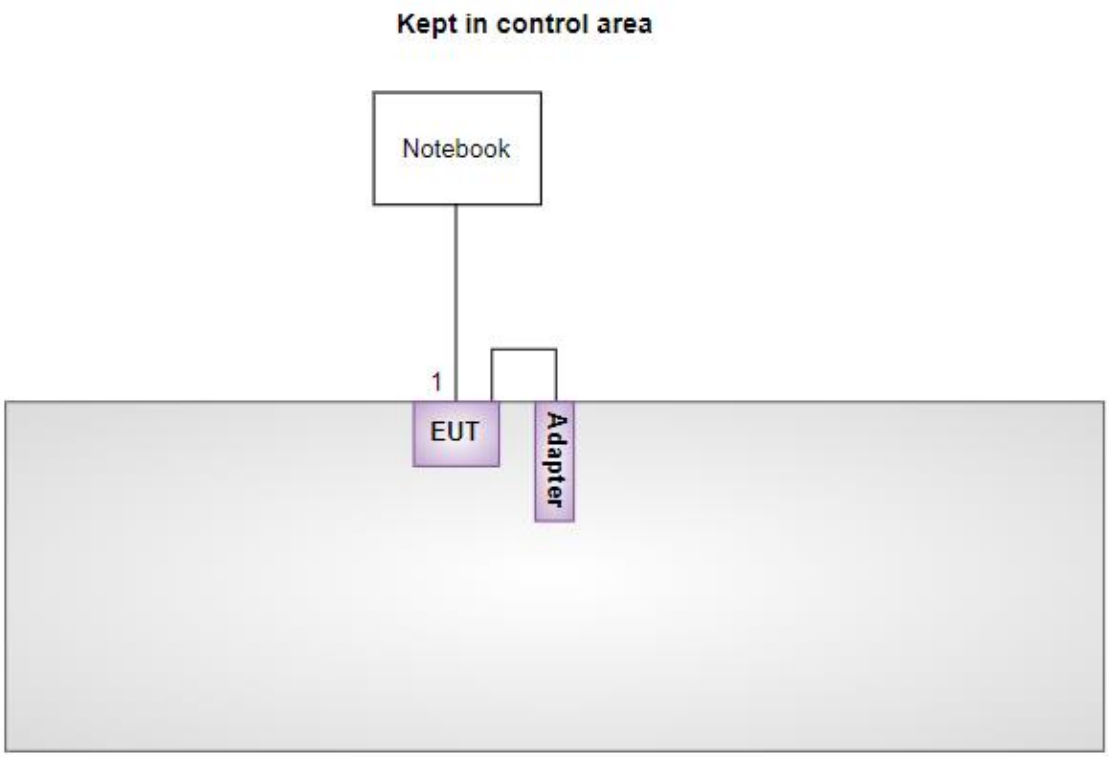
Modulation Mode	Test Frequency (MHz)	
	923.3	927.5
CSS	--dig 0 --mix 15 --pa 3	--dig 0 --mix 15 --pa 3

1.2 Local Support Equipment List

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

1.3 Test Setup Chart

Test Setup Diagram



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

1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Apr. 30, 2020				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Receiver	R&S	ESR3	101658	Dec. 12, 2019	Dec. 11, 2020
LISN	R&S	ENV216	101579	Mar. 12, 2020	Mar. 11, 2021
LISN (Support Unit)	SCHWARZBECK	Schwarzbeck 8127	8127-666	Dec. 20, 2019	Dec. 19, 2020
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Oct. 22, 2019	Oct. 21, 2020
50 ohm terminal (Support Unit)	NA	50	04	May 28, 2019	May 27, 2020
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber1 / (03CH03-0WS)				
Tested Date	Apr. 18, 2020				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101499	Jan. 09, 2020	Jan. 08, 2021
Receiver	R&S	ESR3	101657	Feb. 14, 2020	Feb. 13, 2021
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jul. 12, 2019	Jul. 11, 2020
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Dec. 27, 2019	Dec. 26, 2020
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 15, 2019	Nov. 14, 2020
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 13, 2019	Nov. 12, 2020
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 07, 2019	Oct. 06, 2020
Preamplifier	EMC	EMC02325	980187	Aug. 14, 2019	Aug. 13, 2020
Preamplifier	Agilent	83017A	MY53270014	Aug. 07, 2019	Aug. 06, 2020
Preamplifier	EMC	EMC184045B	980192	Aug. 01, 2019	Jul. 31, 2020
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/**4**	Sep. 27, 2019	Sep. 26, 2020
RF cable-8M	EMC	EMC104-SM-SM-8000	181107	Sep. 27, 2019	Sep. 26, 2020
RF cable-1M	HUBER+SUHNER	SUCOFLEX104	MY22624/4	Sep. 27, 2019	Sep. 26, 2020
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-001	Sep. 27, 2019	Sep. 26, 2020
LF cable-3M	EMC	EMC8D-NM-NM-3000	131103	Sep. 27, 2019	Sep. 26, 2020
LF cable-13M	EMC	EMC8D-NM-NM-13000	131104	Sep. 27, 2019	Sep. 26, 2020
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	Apr. 29, 2020				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&**S**	FSV40	101499	Jan. 09, 2020	Jan. 08, 2021
Power Meter	Anritsu	ML2495A	1241002	Oct. 23, 2019	Oct. 22, 2020
Power Sensor	Anritsu	MA2411B	1207366	Oct. 23, 2019	Oct. 22, 2020
DC POWER SOURCE	GW INSTEK	GPC-6030D	GES855395	Oct. 29, 2019	Oct. 28, 2020
AC POWER SOURCE	APC	AFC-500W	F312060012	Dec. 02, 2019	Dec. 01, 2020
Measurement Software	Sporton	Sporton_1	1.3.30	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
FCC KDB 558074 D01 15.247 Meas Guidance v05r02

1.6 Deviation from Test Standard and Measurement Procedure

None

1.7 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. 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	±3.96 dB
Radiated emission > 1GHz	±4.51 dB

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	19°C / 61%	Alex Tsai
Radiated Emissions	03CH03-WS	25°C / 62%	Brad Wu
RF Conducted	TH01-WS	25°C / 67%	Aska Huang

- FCC Designation No.: TW0009
- FCC site registration No.: 207696
- ISED#: 10807A
- CAB identifier: TW2732

2.2 The Worst Test Modes and Channel Details

Test item	Test Frequency (MHz)	Channel Bandwidth (kHz)	Modulation / SF
Conducted Emissions Radiated Emissions ≤1GHz Radiated Emissions >1GHz Maximum Output Power 6dB Bandwidth Power Spectral Density	923.3 / 927.5	500	CSS / 12

3 Transmitter Test Results

3.1 Conducted Emissions

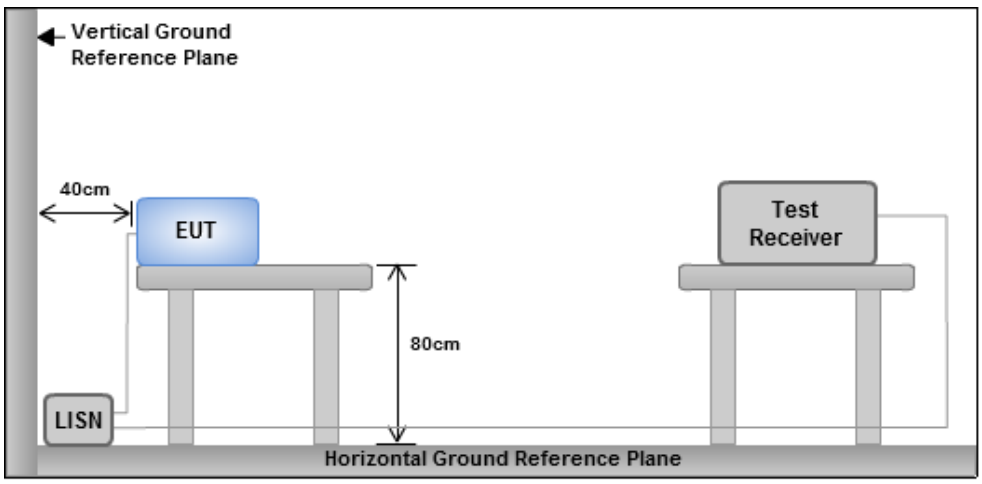
3.1.1 Limit of Conducted Emissions

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

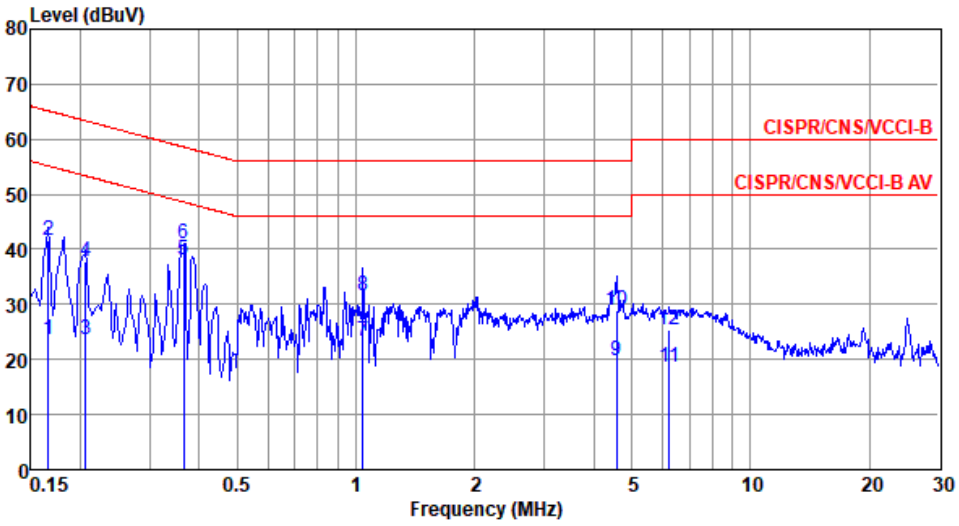


Note: 1. Support units were connected to second LISN.

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

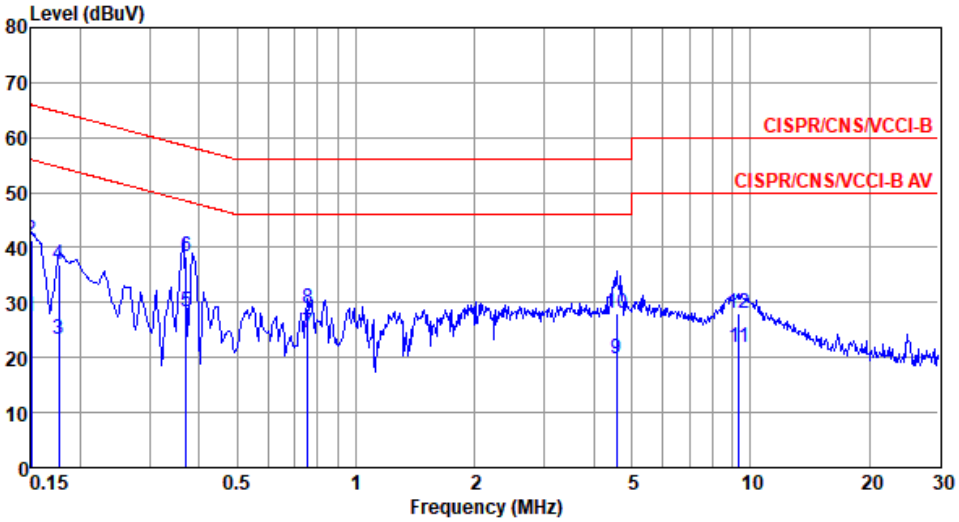
Modulation / SF	CSS / 12	Test Freq. (MHz)	923.3
Power Phase	Line		



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.166	23.75	55.16	-31.41	13.89	9.64	0.05	Average
2	0.166	41.56	65.16	-23.60	31.70	9.64	0.05	QP
3	0.206	23.76	53.36	-29.60	13.88	9.63	0.06	Average
4	0.206	37.68	63.36	-25.68	27.80	9.63	0.06	QP
5*	0.365	37.99	48.61	-10.62	28.04	9.63	0.08	Average
6	0.365	40.95	58.61	-17.66	31.00	9.63	0.08	QP
7	1.043	23.41	46.00	-22.59	13.34	9.63	0.12	Average
8	1.043	31.73	56.00	-24.27	21.66	9.63	0.12	QP
9	4.574	19.90	46.00	-26.10	9.57	9.66	0.30	Average
10	4.574	28.83	56.00	-27.17	18.50	9.66	0.30	QP
11	6.219	18.52	50.00	-31.48	8.13	9.67	0.34	Average
12	6.219	25.36	60.00	-34.64	14.97	9.67	0.34	QP

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

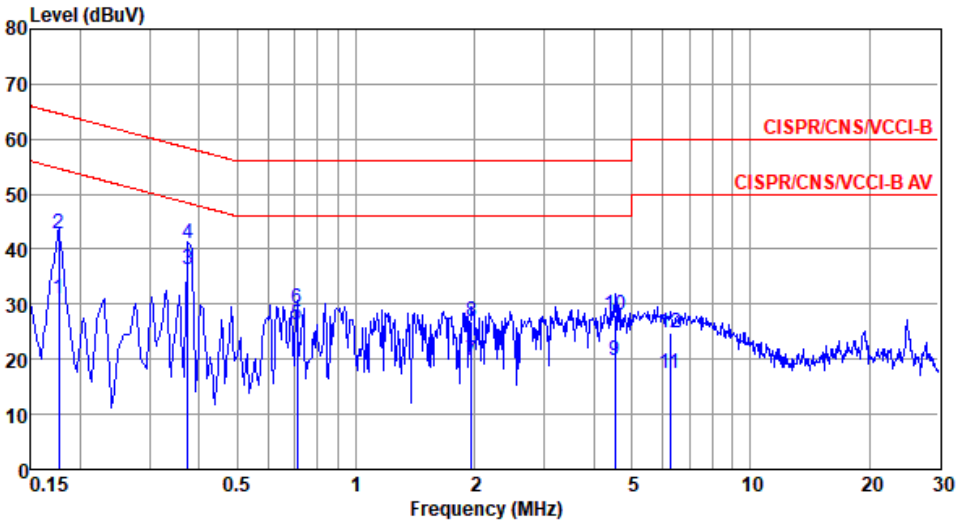
Modulation / SF	CSS / 12	Test Freq. (MHz)	923.3
Power Phase	Neutral		



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.150	27.52	56.00	-28.48	17.69	9.66	0.05	Average
2	0.150	41.36	66.00	-24.64	31.53	9.66	0.05	QP
3	0.177	23.40	54.64	-31.24	13.55	9.65	0.06	Average
4	0.177	37.04	64.64	-27.60	27.19	9.65	0.06	QP
5*	0.371	28.45	48.49	-20.04	18.55	9.65	0.08	Average
6	0.371	38.28	58.49	-20.21	28.38	9.65	0.08	QP
7	0.755	24.42	46.00	-21.58	14.47	9.65	0.11	Average
8	0.755	28.99	56.00	-27.01	19.04	9.65	0.11	QP
9	4.574	19.65	46.00	-26.35	9.40	9.68	0.30	Average
10	4.574	28.17	56.00	-27.83	17.92	9.68	0.30	QP
11	9.352	21.79	50.00	-28.21	11.35	9.73	0.38	Average
12	9.352	28.03	60.00	-31.97	17.59	9.73	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).

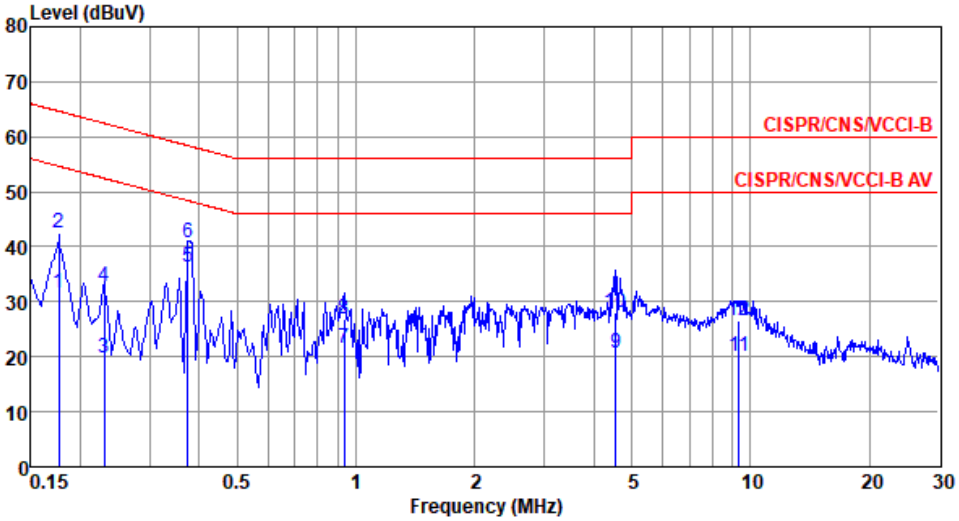
Modulation / SF	CSS / 12	Test Freq. (MHz)	927.5
Power Phase	Line		



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.177	31.07	54.64	-23.57	21.20	9.63	0.06	Average
2	0.177	42.67	64.64	-21.97	32.80	9.63	0.06	QP
3*	0.375	36.45	48.39	-11.94	26.50	9.63	0.08	Average
4	0.375	41.08	58.39	-17.31	31.13	9.63	0.08	QP
5	0.708	26.29	46.00	-19.71	16.27	9.63	0.10	Average
6	0.708	29.14	56.00	-26.86	19.12	9.63	0.10	QP
7	1.959	19.83	46.00	-26.17	9.67	9.64	0.18	Average
8	1.959	26.85	56.00	-29.15	16.69	9.64	0.18	QP
9	4.525	19.87	46.00	-26.13	9.54	9.66	0.30	Average
10	4.525	27.91	56.00	-28.09	17.58	9.66	0.30	QP
11	6.252	17.46	50.00	-32.54	7.07	9.67	0.34	Average
12	6.252	24.70	60.00	-35.30	14.31	9.67	0.34	QP

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

Modulation / SF	CSS / 12	**Test Freq. (MHz)**	927.5
Power Phase	Neutral		



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.177	31.63	54.64	-23.01	21.78	9.65	0.06	Average
2	0.177	42.53	64.64	-22.11	32.68	9.65	0.06	QP
3	0.230	19.92	52.44	-32.52	10.06	9.65	0.06	Average
4	0.230	32.83	62.44	-29.61	22.97	9.65	0.06	QP
5*	0.375	36.28	48.39	-12.11	26.38	9.65	0.08	Average
6	0.375	40.73	58.39	-17.66	30.83	9.65	0.08	QP
7	0.933	21.67	46.00	-24.33	11.70	9.65	0.12	Average
8	0.933	26.96	56.00	-29.04	16.99	9.65	0.12	QP
9	4.549	20.68	46.00	-25.32	10.43	9.68	0.30	Average
10	4.549	27.90	56.00	-28.10	17.65	9.68	0.30	QP
11	9.352	19.99	50.00	-30.01	9.55	9.73	0.38	Average
12	9.352	26.64	60.00	-33.36	16.20	9.73	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

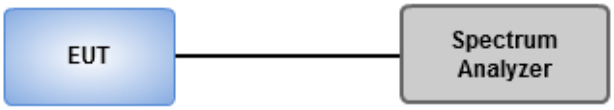
6dB Bandwidth

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) = 10kHz, Video bandwidth = 30kHz.
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.

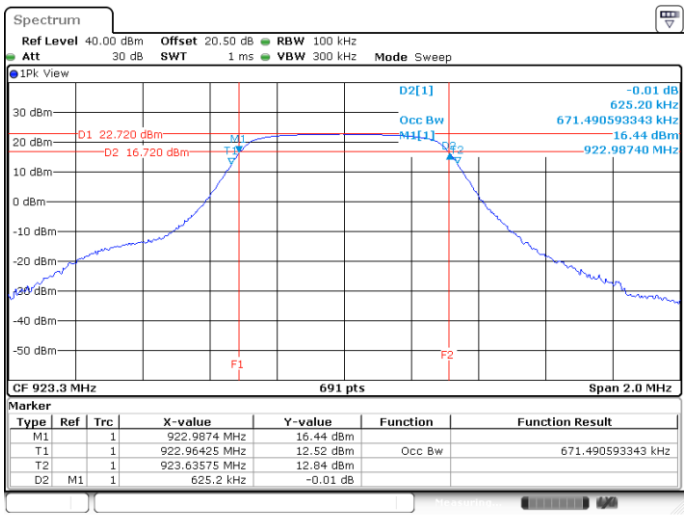
3.2.3 Test Setup



3.2.4 Test Result of 6dB and Occupied Bandwidth

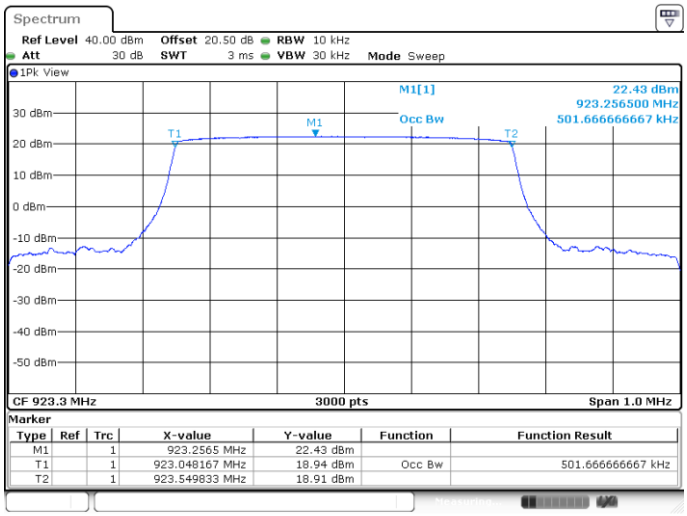
Modulation / SF	Freq. (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
CSS / 12	923.3	0.625	0.5
CSS / 12	927.5	0.622	0.5

Worst Plot



Modulation / SF	Freq. (MHz)	99% Occupied Bandwidth (MHz)
CSS / 12	923.3	0.502
CSS / 12	927.5	0.501

Worst Plot



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 Average 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

Modulation / SF	Freq. (MHz)	Output Power (mW)	Output Power (dBm)	Limit (dBm)
CSS / 12	923.3	200.4472	23.02	30
CSS / 12	927.5	208.4491	23.19	30

3.4 Power Spectral Density

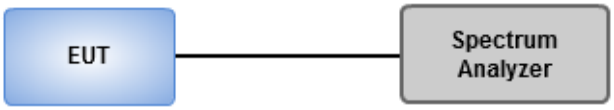
3.4.1 Limit of Power Spectral Density

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

3.4.2 Test Procedures

1. Set the RBW = 3kHz, VBW = 10 kHz.
2. Detector = RMS, Sweep time = auto couple.
3. Employ trace averaging (RMS) mode over a minimum of 100 traces
4. Use the peak marker function to determine the maximum amplitude level.

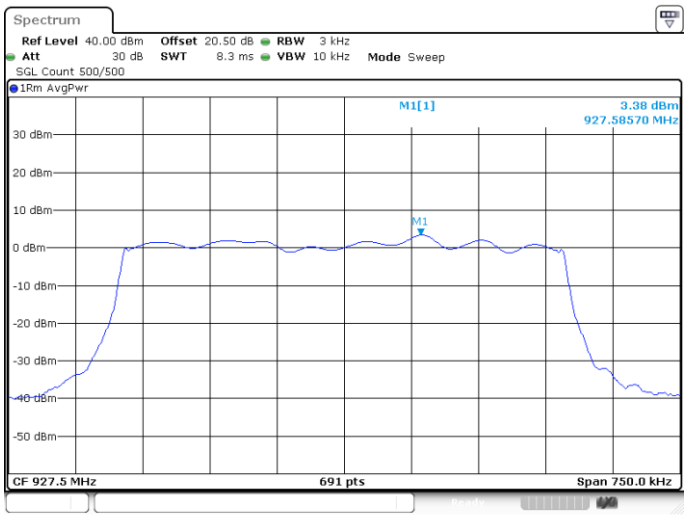
3.4.3 Test Setup



3.4.4 Test Result of Power Spectral Density

Modulation / SF	Freq. (MHz)	Total Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
CSS / 12	923.3	2.72	8.00
CSS / 12	927.5	3.38	8.00

Worst Plot



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

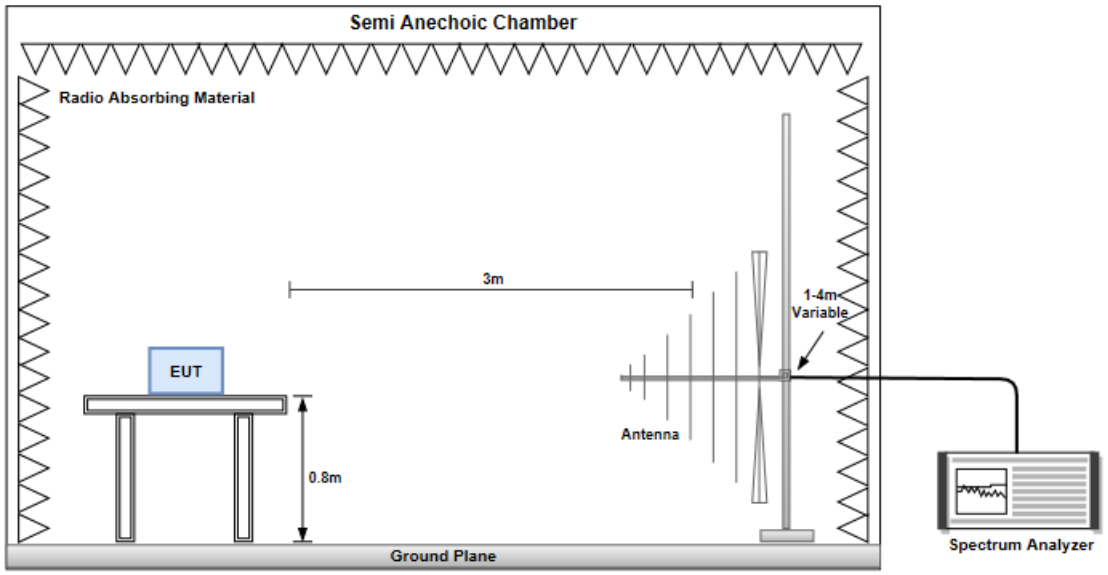
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission 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:

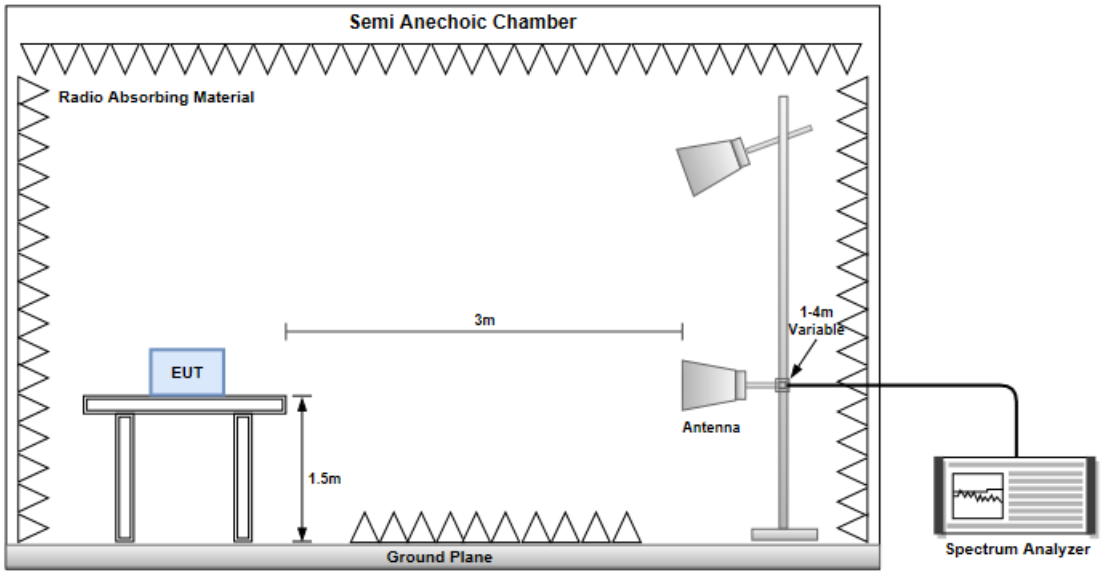
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.5.3 Test Setup

Radiated Emissions below 1 GHz

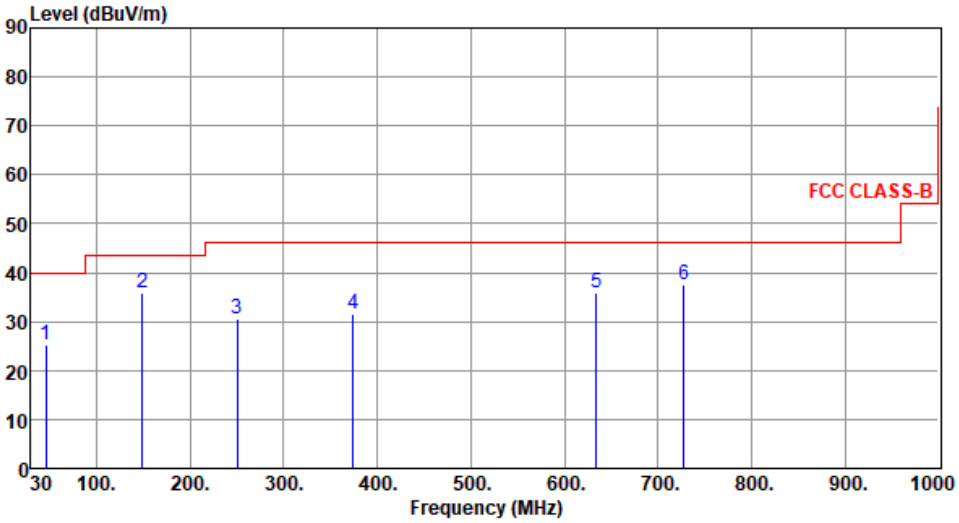


Radiated Emissions above 1 GHz



3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

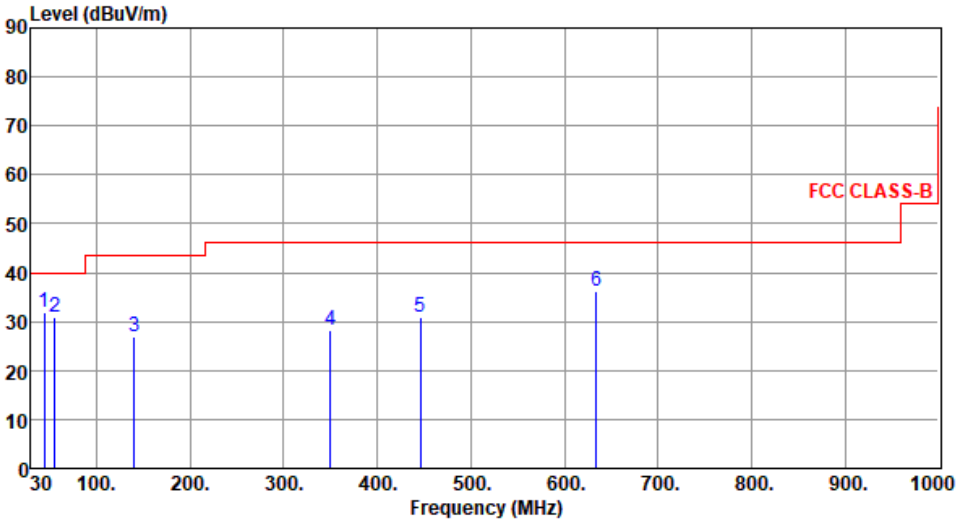
Modulation / SF	CSS / 12	Test Freq. (MHz)	923.3
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	45.52	25.27	40.00	-14.73	33.68	-8.41	Peak	---	---
2	149.31	35.97	43.50	-7.53	44.45	-8.48	Peak	---	---
3	250.19	30.43	46.00	-15.57	40.16	-9.73	Peak	---	---
4	374.35	31.48	46.00	-14.52	37.23	-5.75	Peak	---	---
5	634.31	35.98	46.00	-10.02	35.39	0.59	Peak	---	---
6	727.43	37.57	46.00	-8.43	35.58	1.99	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*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.

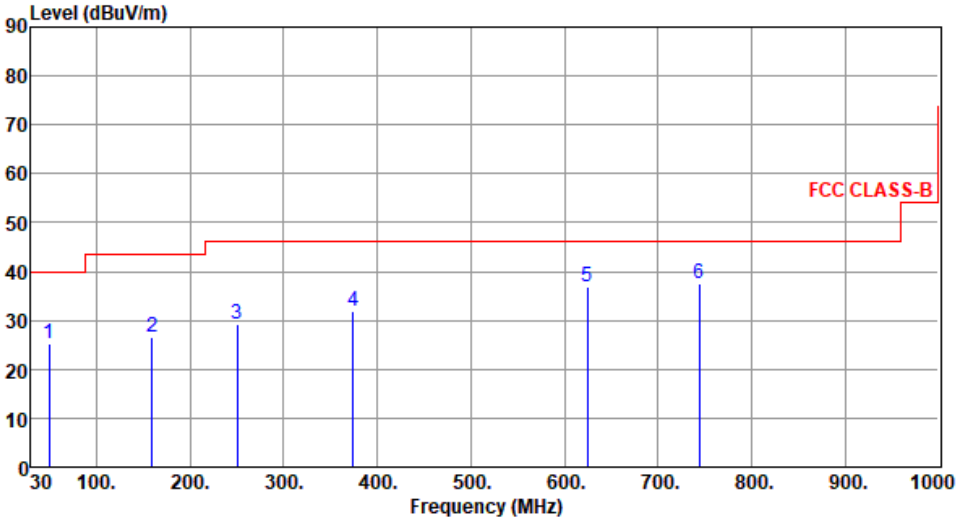
Modulation / SF	CSS / 12	**Test Freq. (MHz)**	923.3
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	44.55	32.03	40.00	-7.97	40.40	-8.37	Peak	---	---
2	55.22	30.88	40.00	-9.12	39.59	-8.71	Peak	---	---
3	140.58	26.77	43.50	-16.73	35.64	-8.87	Peak	---	---
4	350.10	28.14	46.00	-17.86	34.78	-6.64	Peak	---	---
5	446.13	30.80	46.00	-15.20	34.48	-3.68	Peak	---	---
6	634.31	36.13	46.00	-9.87	35.54	0.59	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*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.

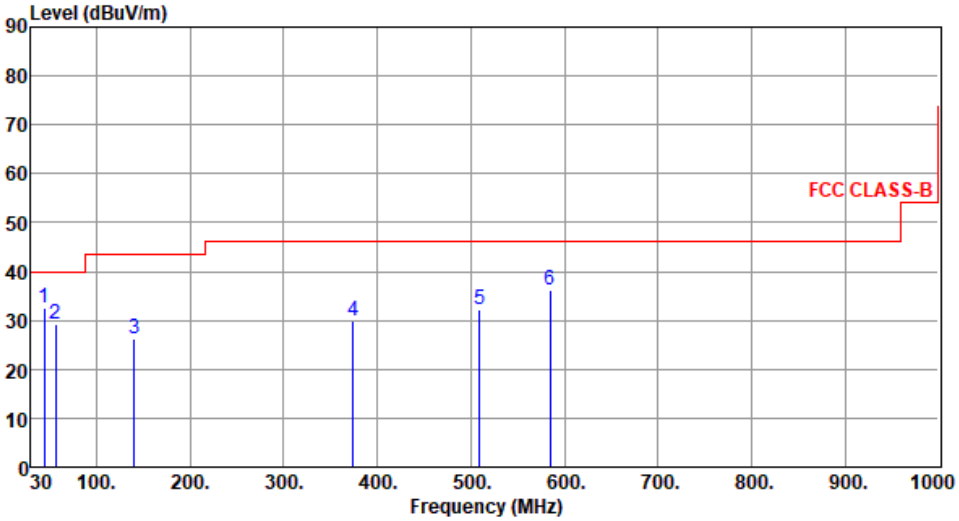
Modulation / SF	CSS / 12	Test Freq. (MHz)	927.5
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	49.40	25.33	40.00	-14.67	33.71	-8.38	Peak	---	---
2	159.01	26.58	43.50	-16.92	34.90	-8.32	Peak	---	---
3	250.19	29.25	46.00	-16.75	38.98	-9.73	Peak	---	---
4	374.35	31.82	46.00	-14.18	37.57	-5.75	Peak	---	---
5	624.61	36.96	46.00	-9.04	36.61	0.35	Peak	---	---
6	743.92	37.61	46.00	-8.39	34.83	2.78	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*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 / SF	CSS / 12	Test Freq. (MHz)	927.5
Polarization	Vertical		

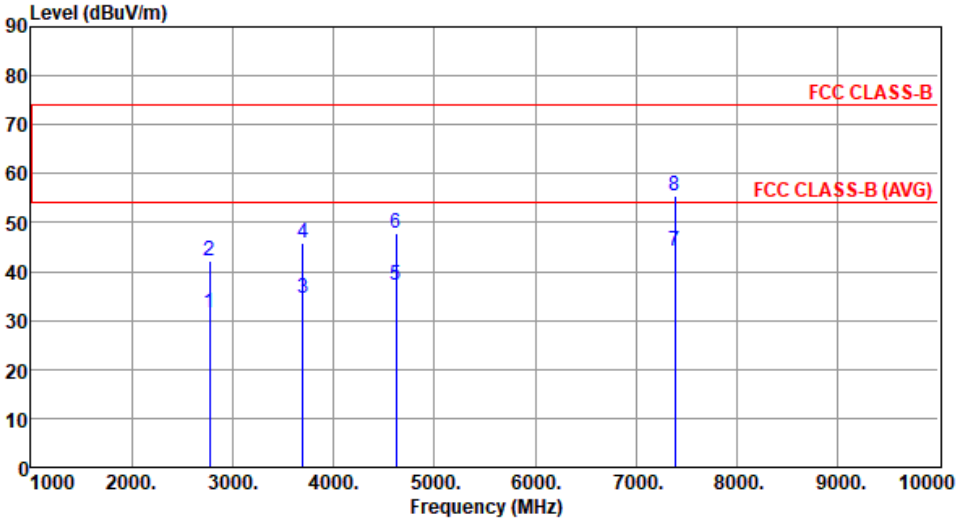


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	44.55	32.47	40.00	-7.53	40.84	-8.37	Peak	---	---
2	56.19	29.24	40.00	-10.76	37.89	-8.65	Peak	---	---
3	140.58	26.33	43.50	-17.17	35.20	-8.87	Peak	---	---
4	374.35	29.78	46.00	-16.22	35.53	-5.75	Peak	---	---
5	509.18	32.09	46.00	-13.91	34.50	-2.41	Peak	---	---
6	584.84	36.30	46.00	-9.70	36.96	-0.66	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*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)

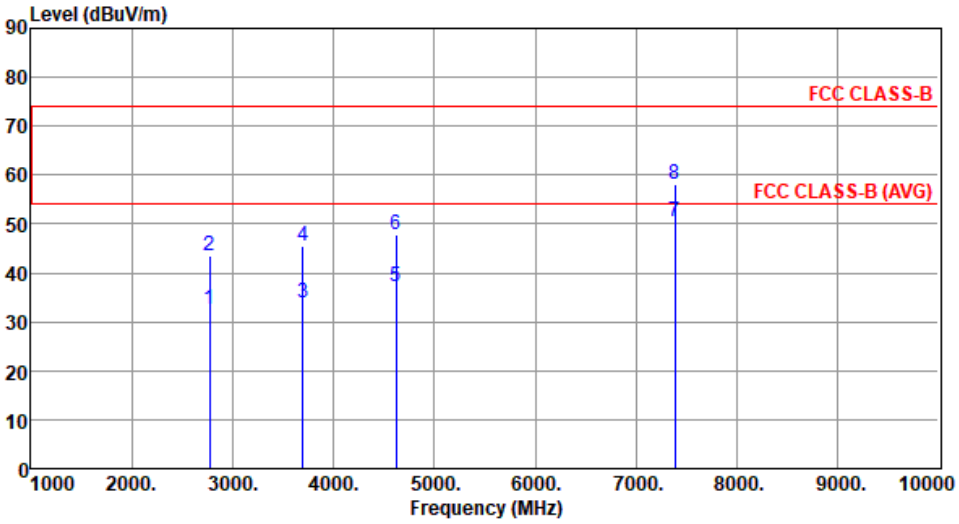
Modulation / SF	CSS / 12	Test Freq. (MHz)	923.3
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2769.90	31.64	54.00	-22.36	30.65	0.99	Average	115	24
2	2769.90	42.27	74.00	-31.73	41.28	0.99	Peak	115	24
3	3693.20	34.66	54.00	-19.34	31.25	3.41	Average	124	18
4	3693.20	45.80	74.00	-28.20	42.39	3.41	Peak	124	18
5	4616.50	37.25	54.00	-16.75	31.22	6.03	Average	114	9
6	4616.50	47.88	74.00	-26.12	41.85	6.03	Peak	114	9
7	7386.40	44.32	54.00	-9.68	32.51	11.81	Average	151	14
8	7386.40	55.43	74.00	-18.57	43.62	11.81	Peak	151	14

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

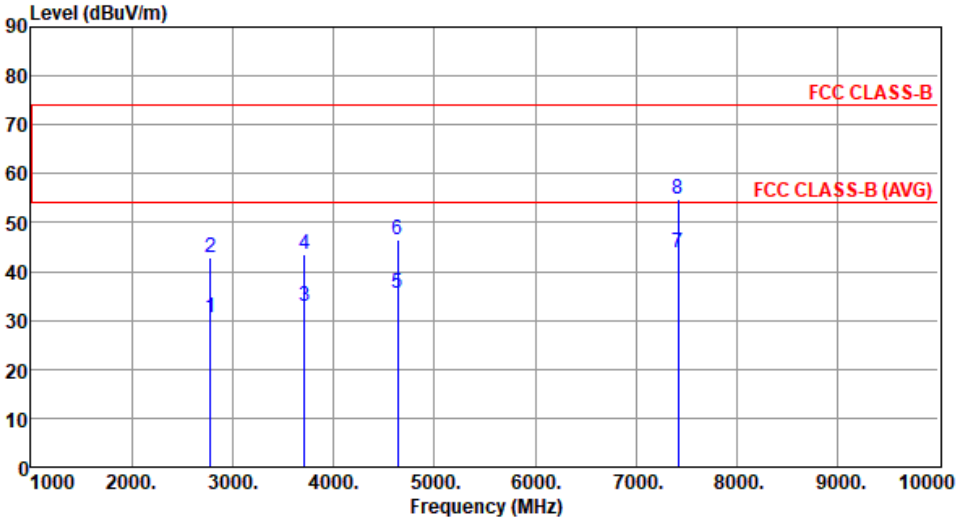
Modulation / SF	CSS / 12	Test Freq. (MHz)	923.3
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2769.90	32.44	54.00	-21.56	31.45	0.99	Average	253	2
2	2769.90	43.61	74.00	-30.39	42.62	0.99	Peak	253	2
3	3693.20	33.86	54.00	-20.14	30.45	3.41	Average	105	48
4	3693.20	45.53	74.00	-28.47	42.12	3.41	Peak	105	48
5	4616.50	37.19	54.00	-16.81	31.16	6.03	Average	114	26
6	4616.50	47.92	74.00	-26.08	41.89	6.03	Peak	114	26
7	7386.40	50.46	54.00	-3.54	38.65	11.81	Average	199	354
8	7386.40	58.14	74.00	-15.86	46.33	11.81	Peak	199	354

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

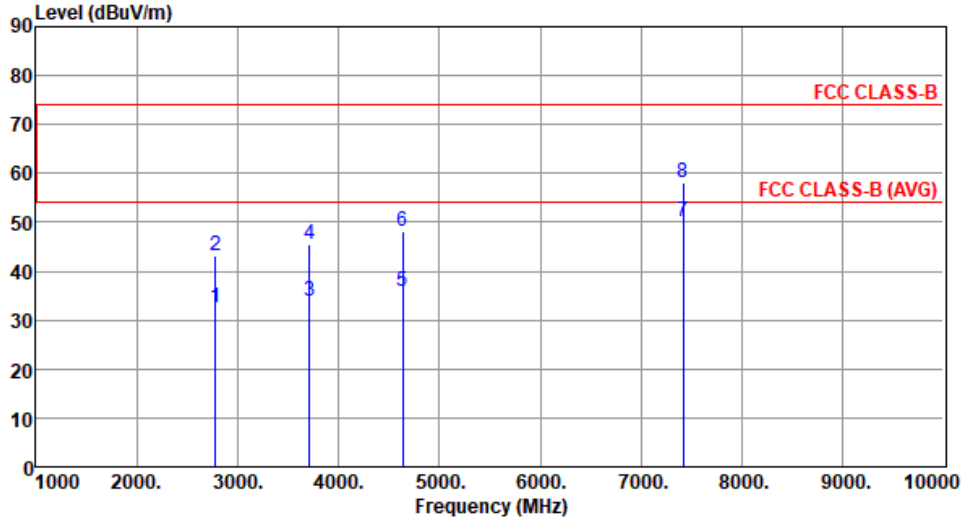
Modulation / SF	CSS / 12	Test Freq. (MHz)	927.5
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2782.50	30.54	54.00	-23.46	29.46	1.08	Average	155	24
2	2782.50	42.73	74.00	-31.27	41.65	1.08	Peak	155	24
3	3710.00	32.86	54.00	-21.14	29.41	3.45	Average	186	5
4	3710.00	43.40	74.00	-30.60	39.95	3.45	Peak	186	5
5	4637.50	35.55	54.00	-18.45	29.46	6.09	Average	200	12
6	4637.50	46.51	74.00	-27.49	40.42	6.09	Peak	200	12
7	7420.00	43.69	54.00	-10.31	31.89	11.80	Average	241	5
8	7420.00	54.92	74.00	-19.08	43.12	11.80	Peak	241	5

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

Modulation / SF	CSS / 12	Test Freq. (MHz)	927.5
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2782.50	32.71	54.00	-21.29	31.63	1.08	Average	218	2
2	2782.50	43.18	74.00	-30.82	42.10	1.08	Peak	218	2
3	3710.00	33.83	54.00	-20.17	30.38	3.45	Average	141	5
4	3710.00	45.41	74.00	-28.59	41.96	3.45	Peak	141	5
5	4637.50	35.95	54.00	-18.05	29.86	6.09	Average	153	11
6	4637.50	48.05	74.00	-25.95	41.96	6.09	Peak	153	11
7	7420.00	50.06	54.00	-3.94	38.26	11.80	Average	184	8
8	7420.00	58.19	74.00	-15.81	46.39	11.80	Peak	184	8

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*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 30 dB relative to the maximum in-band peak PSD level in 100 kHz

3.6.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.6.3 Test Procedures

Reference level measurement

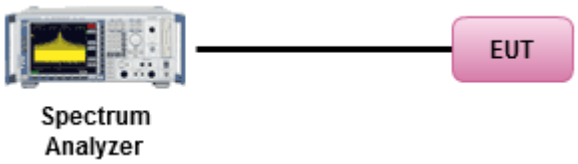
1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Use the peak marker function to determine the maximum PSD level

Emission level measurement

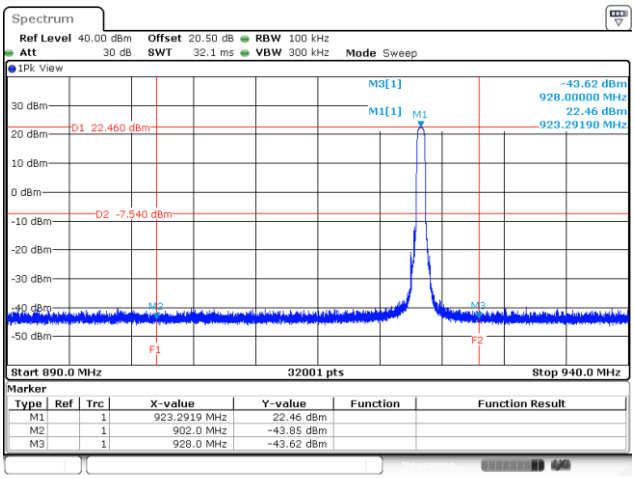
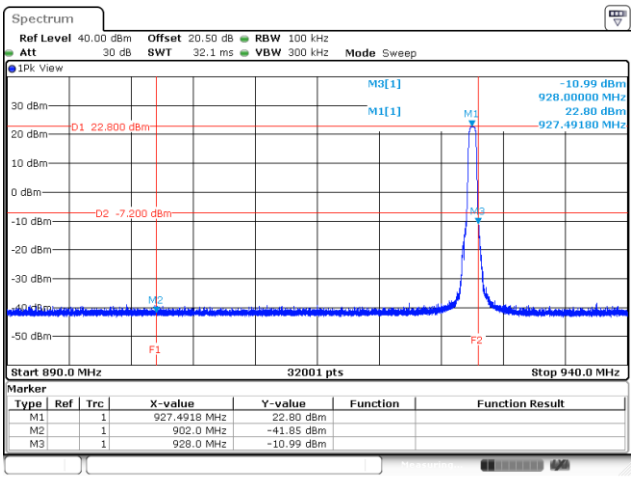
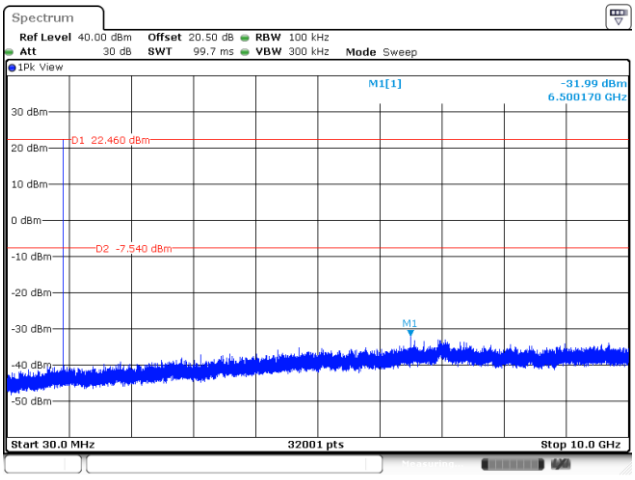
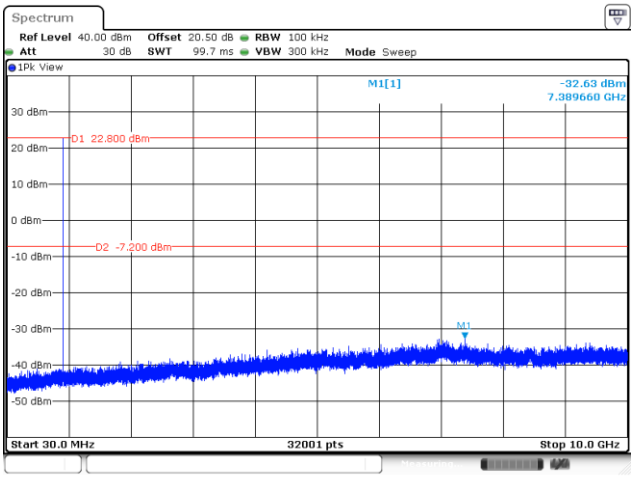
1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Scan Frequency range is up to 10GHz
4. Use the peak marker function to determine the maximum amplitude level

3.6.4 Test Setup

Transmitter Radiated Bandedge Emissions



3.6.5 Unwanted Emissions into Non-Restricted Frequency Bands

TX Freq 923.3MHz / 30MHz~10GHz (down 30dBc)	TX Freq 927.5MHz / 30MHz~10GHz (down 30dBc)
	
	

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 Corp (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	**Kwei Shan**	**Kwei Shan Site II**
Tel: 886-2-2601-1640	Tel: 886-3-271-8666	Tel: 886-3-271-8640
No. 30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan, R.O.C.	No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan District, Tao Yuan City 333, Taiwan, R.O.C.	No. 14-1, Lane 19, Wen San 3rd St., Kwei Shan District, 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: 886-3-318-0155
Email: ICC_Service@icertifi.com.tw

==END==