FCC C2PC Test Report

FCC ID	:	**MXF-WMDS183**
Equipment	:	**LoRa RF Board**
Model No.	:	**WMDS-183**
Brand Name	:	**Gemtek**
Applicant	:	**Gemtek Technology Co., Ltd.**
Address	:	**No.15-1 Zhoughua Rd, Hsinchu Industrial Park, Hukou, Hsinchu, Taiwan, R.O.C**
Standard	:	**47 CFR FCC Part 15.247**
Received Date	:	**Sep. 12, 2018**
Tested Date	:	**Sep. 18 ~ Nov. 06, 2018**

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.

Reviewed by: **Approved by:**

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

Testing Laboratory 2732

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Release Record

Report No.	Version	Description	Issued Date
FR782401-04	Rev. 01	Initial issue	Nov. 21, 2018

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.295MHz 40.25 (Margin -10.14dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 102.48MHz 39.99 (Margin -3.51dB) - PK	Pass

1 General Description

1.1 Information

This report is prepared for FCC class II change.
This report is issued as a supplementary report to original ICC report no. FR782401. The difference is adding a host as section 1.1.2

In this report, conducted emission and radiated emission tests had been re-tested and only its data was presented in the following sections.

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 Information of Host

Brand Name	machineQ
Product name	8-Channel LoRa Gateway
Model name	HXQX1AP0S
Certified module (installed in the system)	FCC ID: XMR201605EC25A

1.1.2.1 Antenna of Host

For LoRa

Ant. No.	Brand	Type	Gain (dBi)	Connector	Remark
1	LoRa antenna (External)	Dipole	0.96	SMA	Lora Antenna
2	LoRa antenna (Internal)	Monopole	-1.65	UFL	Lora Antenna

For LTE / WCDMA

Ant. No.	Type	Connector	Gain (dBi)	Operating Band
1	PIFA	UFL	4.49	LTE Band 2 / WCDMA Band II
			3.59	LTE Band 4 / WCDMA Band IV
			2.05	LTE Band 12 / WCDMA Band V

1.1.2.2 Power Supply Type of Host

Power Supply Type	12Vdc from adapter

1.1.2.3 Accessories of Host

Accessories		
No.	**Equipment**	**Description**
1	AC adapter	Brand: machineQ Model: WB-24J12FU Power Rating: I/P: 100-240Vac, 50-60Hz, 0.7A Max O/P: 12Vdc, 2A Power Line: 1.2m non-shielded without core
2	AC adapter	Brand: PHIHONG Model: PSAC24A-120L6 Power Rating: I/P: 100-240Vac, 50-60Hz, 51-73VA O/P: 12Vdc, 2A Power Line: 1.2m non-shielded without core
3	RJ45 cable	1m shielded without core

1.1.3 Channel List

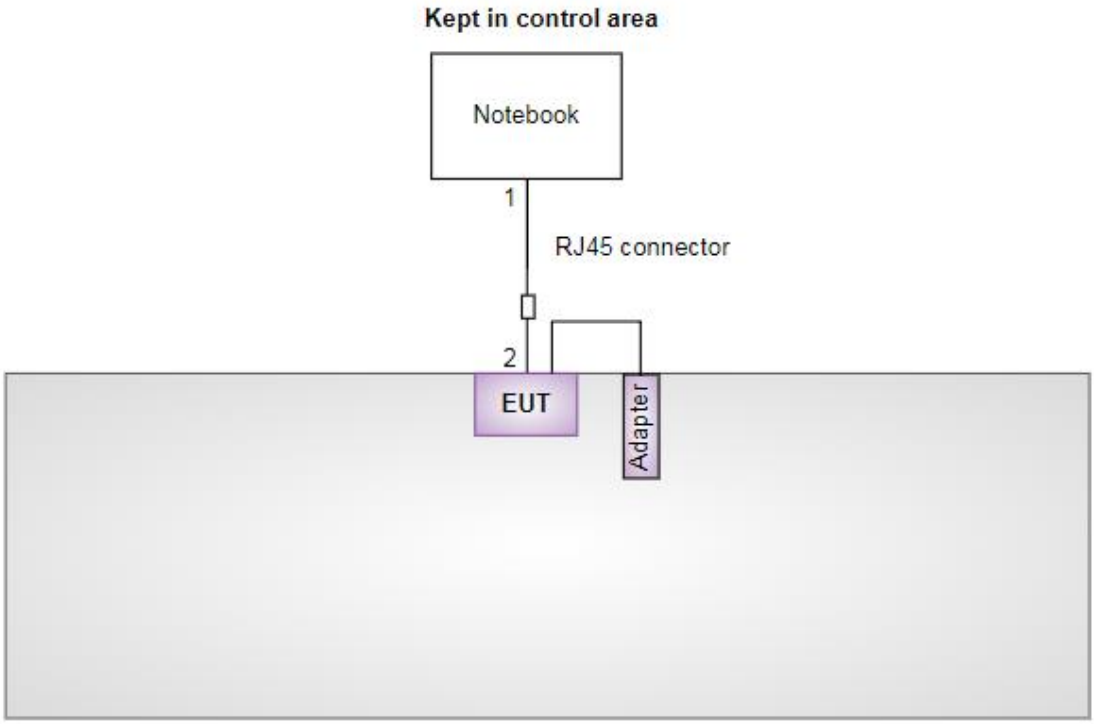
Channel	Frequency(MHz)
1	923.3
2	923.9
3	924.5
4	925.1
5	925.7
6	926.3
7	926.9
8	927.5

1.2 Local Support Equipment List

Support Equipment List					
No.	**Equipment**	**Brand**	**Model**	**FCC ID**	**Remarks**
1	Notebook	DELL	Latitude E6430	DoC	---

1.3 Test Setup Chart

Test Setup Diagram



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

1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Sep. 18, 2018				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Receiver	R&S	ESR3	101657	Jan. 05, 2018	Jan. 04, 2019
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 13, 2017	Nov. 12, 2018
RF Cable-CON	EMC	EMCCFD300-BM-BM-6000	50821	Dec. 18, 2017	Dec. 17, 2018
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 / (03CH01-WS)				
Tested Date	Nov. 05 ~ Nov. 06, 2018				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101498	Dec. 04, 2017	Dec. 03, 2018
Receiver	R&S	ESR3	101658	Nov. 20, 2017	Nov. 19, 2018
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jul. 18, 2018	Jul. 17, 2019
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 20, 2017	Dec. 19, 2018
Preamplifier	EMC	EMC02325	980225	Jul. 20, 2018	Jul. 19, 2019
Preamplifier	Agilent	83017A	MY39501308	Oct. 04, 2018	Oct. 03, 2019
Preamplifier	EMC	EMC184045B	980192	Aug. 09, 2018	Aug. 08, 2019
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16140/4	May 09, 2018	May 08, 2019
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 07, 2017	Dec. 06, 2018
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 07, 2017	Dec. 06, 2018
LF cable 1M	EMC	EMCCFD400-NM-NM-1000	16052	Dec. 07, 2017	Dec. 06, 2018
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Dec. 07, 2017	Dec. 06, 2018
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-002	Dec. 07, 2017	Dec. 06, 2018
Measurement Software	AUDIX	e3	6.120210g	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 v05

1.6 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	±34.134 Hz
Conducted power	±0.808 dB
Power density	±0.463 dB
Conducted emission	±2.670 dB
AC conducted emission	±2.90 dB
Radiated emission ≤ 1GHz	±3.66 dB
Radiated emission > 1GHz	±5.63 dB

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	25°C / 58%	Alex Tsai
Radiated Emissions	03CH01-WS	23-25°C / 63%	Roger Lu Aska Huang

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- IC site registration No.: 10807A-1

2.2 The Worst Test Modes and Channel Details

Test item	Test Frequency (MHz)	Channel Bandwidth (kHz)	Modulation / SF	Test Configuration
Conducted Emissions	923.3 / 927.5	500	CSS / 12	---
Radiated Emissions	923.3 / 927.5	500	CSS / 12	---

NOTE:

1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **X-plane** results were found as the worst case and were shown in this report.
2. Two adapters (machineQ and PHIHONG) had been covered during the pretest, and found that **PHIHONG adapter** was the worst case and was selected for final test.
3. External antenna is not tested since antenna type is same as original filling antenna and gain is lower.

3 Transmitter Test Results

3.1 Conducted Emissions

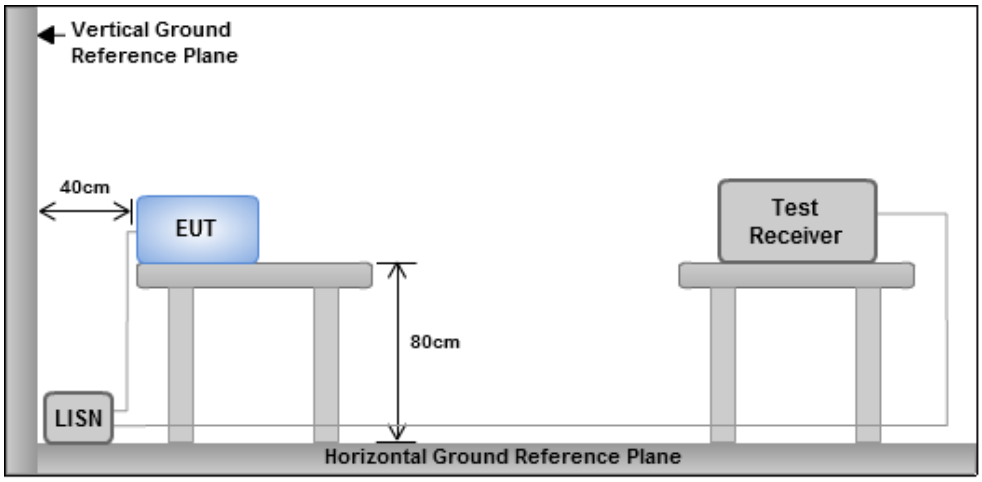
3.1.1 Limit of Conducted Emissions

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.

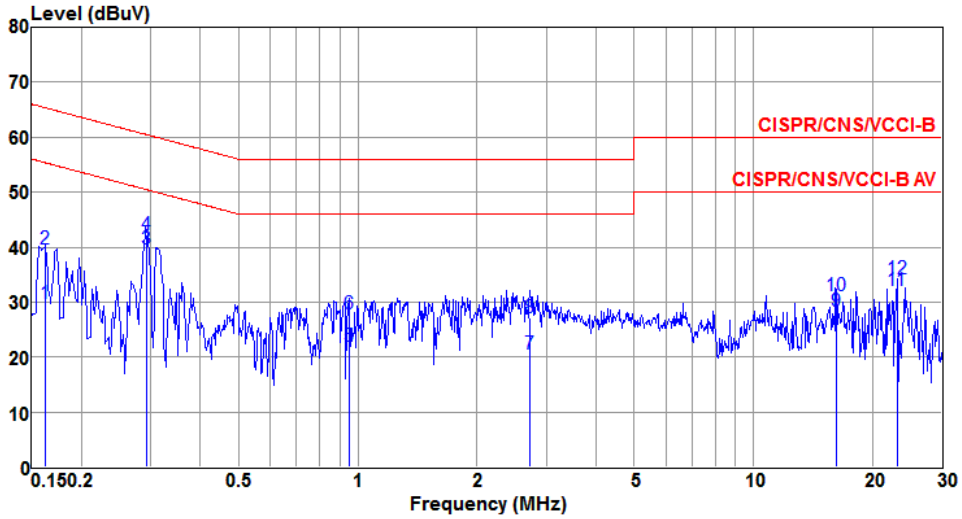
3.1.3 Test Setup



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

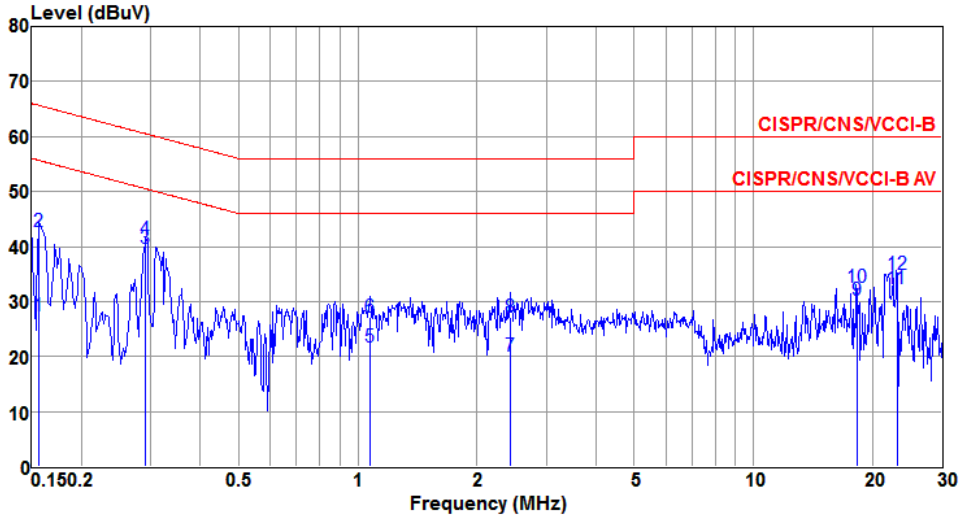
Modulation / SF	CSS / 12	Test Freq. (MHz)	923.3
Power Phase	Line		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.162	29.64	55.34	-25.70	29.34	0.28	0.02	Average
2	0.162	39.61	65.34	-25.73	39.31	0.28	0.02	QP
3@	0.293	39.75	50.43	-10.68	39.41	0.32	0.02	Average
4	0.293	42.16	60.43	-18.27	41.82	0.32	0.02	QP
5	0.948	21.88	46.00	-24.12	21.46	0.39	0.03	Average
6	0.948	27.90	56.00	-28.10	27.48	0.39	0.03	QP
7	2.721	20.63	46.00	-25.37	20.03	0.45	0.15	Average
8	2.721	27.24	56.00	-28.76	26.64	0.45	0.15	QP
9	16.228	28.34	50.00	-21.66	27.27	0.74	0.33	Average
10	16.228	31.17	60.00	-28.83	30.10	0.74	0.33	QP
11	23.128	32.03	50.00	-17.97	30.73	0.93	0.37	Average
12	23.128	34.24	60.00	-25.76	32.94	0.93	0.37	QP

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

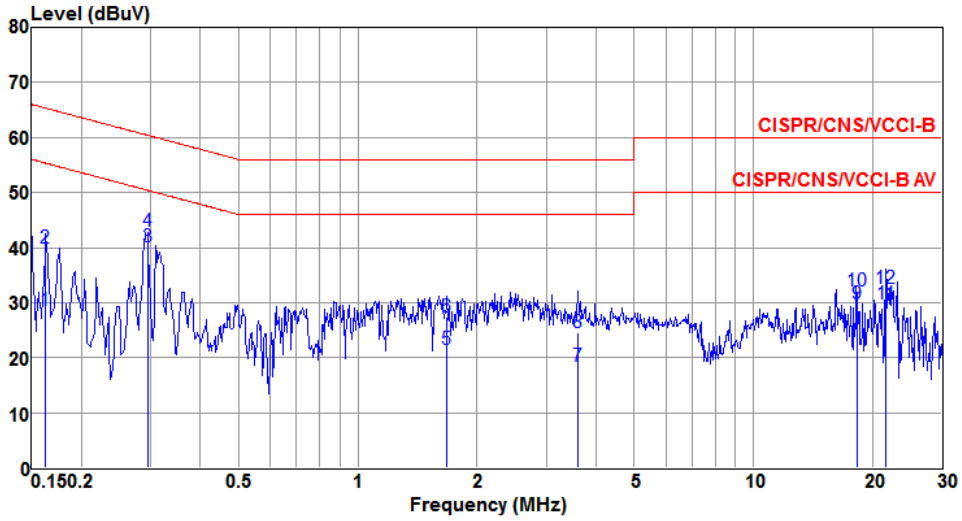
Modulation / SF	CSS / 12	Test Freq. (MHz)	923.3
Power Phase	Neutral		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.156	27.47	55.69	-28.22	27.32	0.14	0.01	Average
2	0.156	42.74	65.69	-22.95	42.59	0.14	0.01	QP
3@	0.291	39.74	50.50	-10.76	39.55	0.17	0.02	Average
4	0.291	41.32	60.50	-19.18	41.13	0.17	0.02	QP
5	1.077	21.82	46.00	-24.18	21.51	0.27	0.04	Average
6	1.077	27.20	56.00	-28.80	26.89	0.27	0.04	QP
7	2.422	20.04	46.00	-25.96	19.59	0.32	0.13	Average
8	2.422	27.13	56.00	-28.87	26.68	0.32	0.13	QP
9	18.243	30.15	50.00	-19.85	29.13	0.69	0.33	Average
10	18.243	32.59	60.00	-27.41	31.57	0.69	0.33	QP
11	23.128	32.42	50.00	-17.58	31.23	0.82	0.37	Average
12	23.128	34.91	60.00	-25.09	33.72	0.82	0.37	QP

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

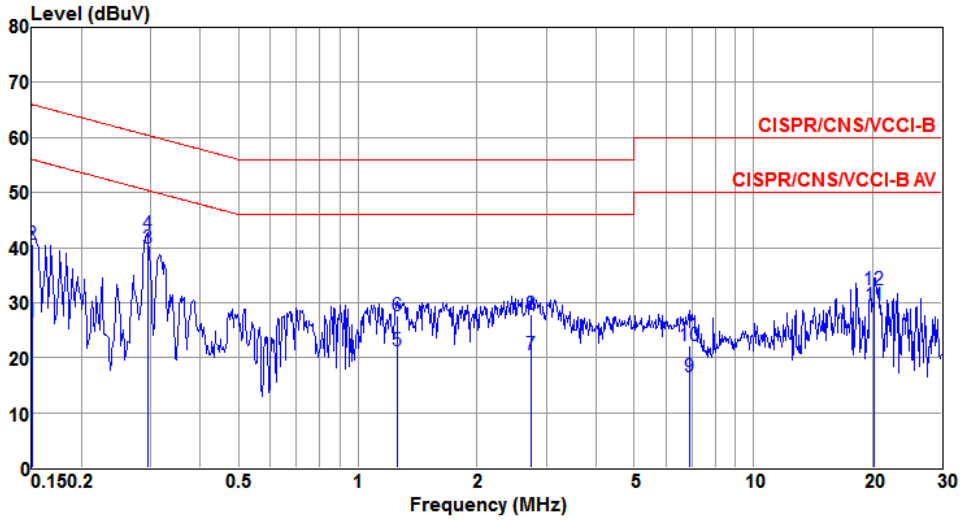
Modulation / SF	CSS / 12	Test Freq. (MHz)	927.5
Power Phase	Line		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.162	28.68	55.34	-26.66	28.38	0.28	0.02	Average
2	0.162	39.78	65.34	-25.56	39.48	0.28	0.02	QP
3@	0.295	40.25	50.39	-10.14	39.91	0.32	0.02	Average
4	0.295	43.05	60.39	-17.34	42.71	0.32	0.02	QP
5	1.680	21.50	46.00	-24.50	21.00	0.42	0.08	Average
6	1.680	27.43	56.00	-28.57	26.93	0.42	0.08	QP
7	3.603	18.47	46.00	-27.53	17.81	0.46	0.20	Average
8	3.603	24.65	56.00	-31.35	23.99	0.46	0.20	QP
9	18.243	29.63	50.00	-20.37	28.49	0.81	0.33	Average
10	18.243	32.19	60.00	-27.81	31.05	0.81	0.33	QP
11	21.663	29.75	50.00	-20.25	28.49	0.90	0.36	Average
12	21.663	32.55	60.00	-27.45	31.29	0.90	0.36	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 MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.150	26.47	56.00	-29.53	26.32	0.14	0.01	Average
2	0.150	40.69	66.00	-25.31	40.54	0.14	0.01	QP
3@	0.294	39.94	50.40	-10.46	39.75	0.17	0.02	Average
4	0.294	42.43	60.40	-17.97	42.24	0.17	0.02	QP
5	1.262	21.34	46.00	-24.66	21.01	0.28	0.05	Average
6	1.262	27.54	56.00	-28.46	27.21	0.28	0.05	QP
7	2.736	20.47	46.00	-25.53	19.99	0.33	0.15	Average
8	2.736	27.82	56.00	-28.18	27.34	0.33	0.15	QP
9	6.878	16.54	50.00	-33.46	15.85	0.41	0.28	Average
10	6.878	22.20	60.00	-37.80	21.51	0.41	0.28	QP
11	20.258	29.62	50.00	-20.38	28.52	0.76	0.34	Average
12	20.258	32.34	60.00	-27.66	31.24	0.76	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).

3.2 Unwanted Emissions into Restricted Frequency Bands

3.2.1 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.

3.2.2 Test Procedures

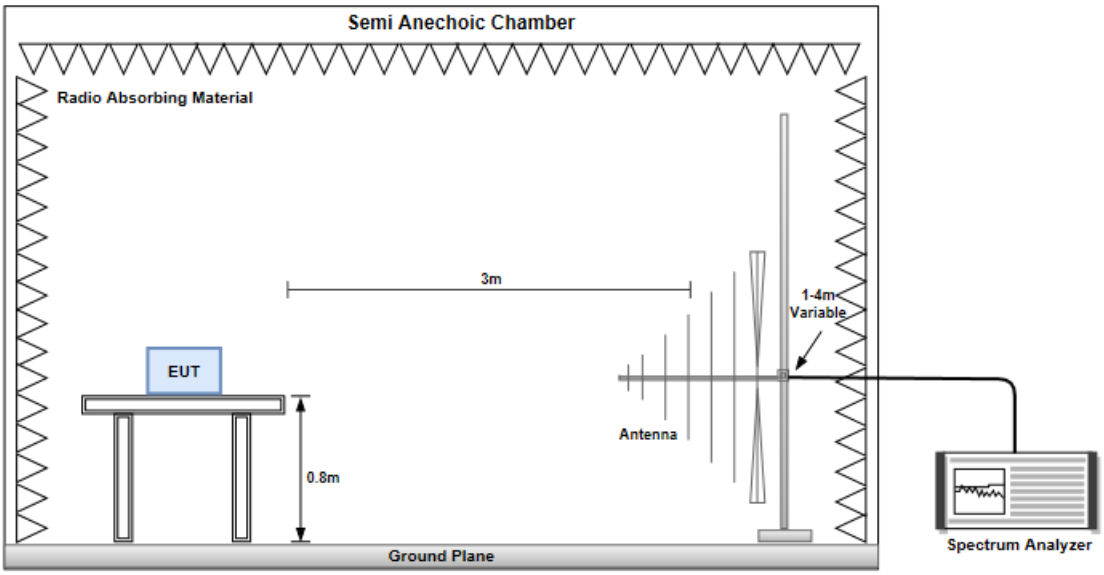
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

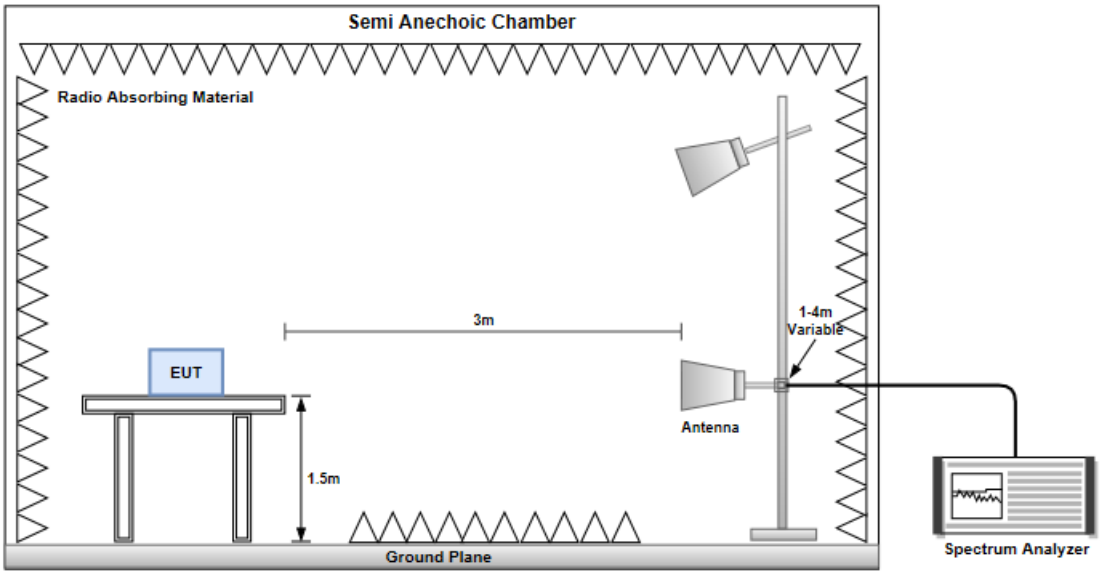
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.2.3 Test Setup

Radiated Emissions below 1 GHz

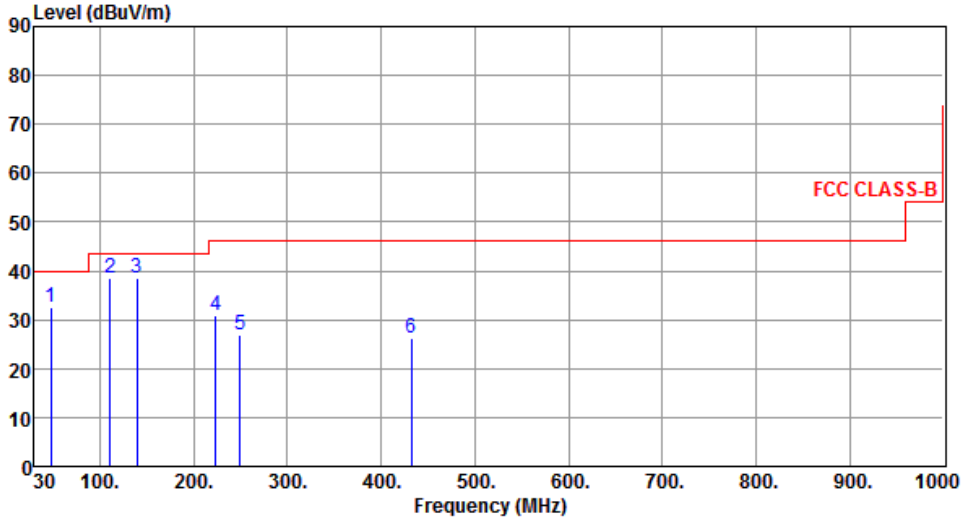


Radiated Emissions above 1 GHz



3.2.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

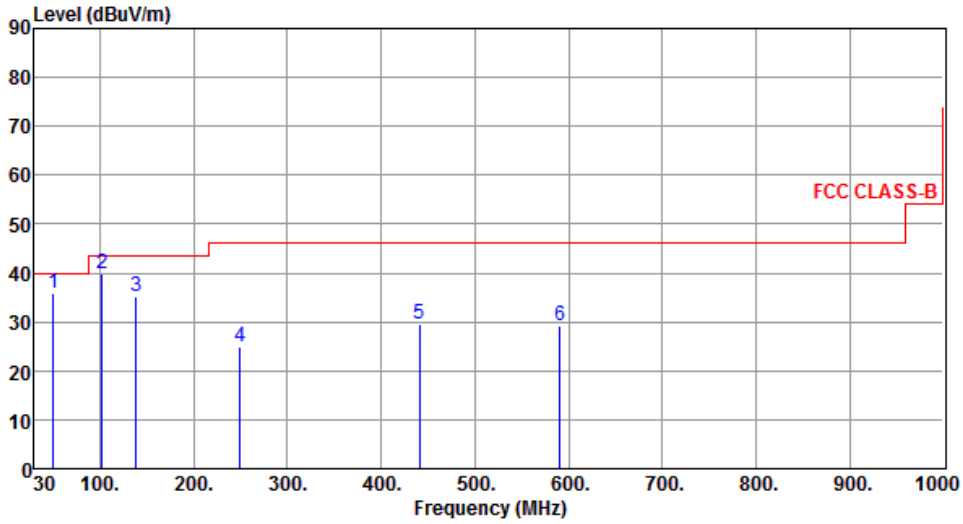
Modulation / SF	CSS / 12	**Test Freq. (MHz)**	923.3
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	47.52	32.45	40.00	-7.55	40.34	-7.89	Peak	---	---
2	111.31	38.52	43.50	-4.98	49.96	-11.44	Peak	---	---
3	139.56	38.51	43.50	-4.99	47.27	-8.76	Peak	---	---
4	223.41	30.75	46.00	-15.25	41.68	-10.93	Peak	---	---
5	249.55	26.82	46.00	-19.18	36.31	-9.49	Peak	---	---
6	432.16	26.31	46.00	-19.69	30.84	-4.53	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.

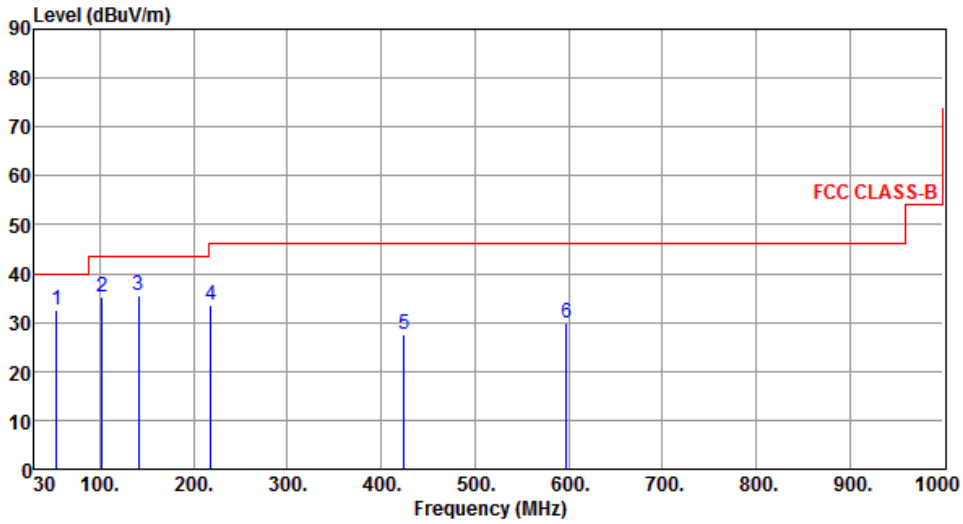
Modulation / SF	CSS / 12	Test Freq. (MHz)	923.3
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	50.22	35.98	40.00	-4.02	43.81	-7.83	Peak	---	---
2	102.48	39.99	43.50	-3.51	52.64	-12.65	Peak	---	---
3	138.57	35.21	43.50	-8.29	44.01	-8.80	Peak	---	---
4	249.52	24.96	46.00	-21.04	34.45	-9.49	Peak	---	---
5	440.54	29.52	46.00	-16.48	33.92	-4.40	Peak	---	---
6	590.41	29.38	46.00	-16.62	30.54	-1.16	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.

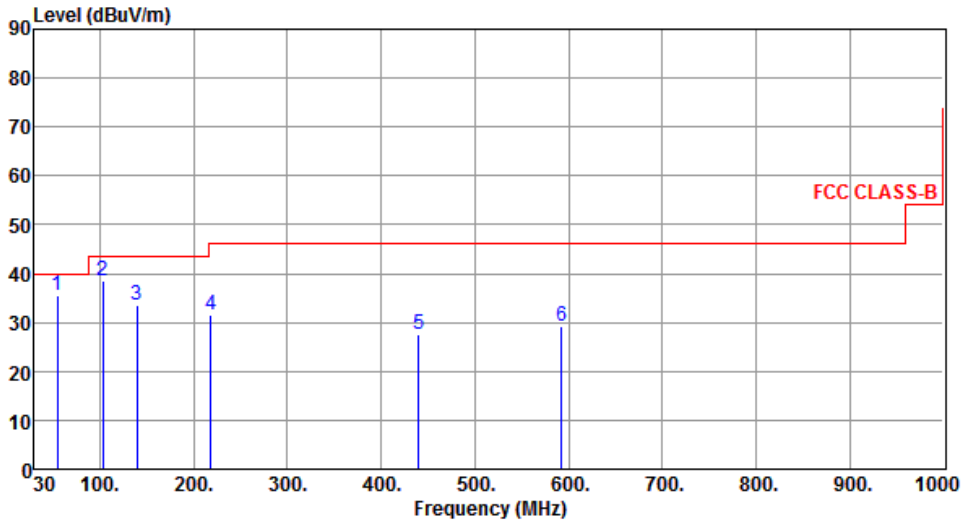
Modulation / SF	CSS / 12	Test Freq. (MHz)	927.5
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	53.55	32.71	40.00	-7.29	40.74	-8.03	Peak	---	---
2	102.48	35.24	43.50	-8.26	47.89	-12.65	Peak	---	---
3	141.28	35.62	43.50	-7.88	44.28	-8.66	Peak	---	---
4	218.53	33.65	46.00	-12.35	44.59	-10.94	Peak	---	---
5	424.76	27.55	46.00	-18.45	32.21	-4.66	Peak	---	---
6	597.68	29.85	46.00	-16.15	30.85	-1.00	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		

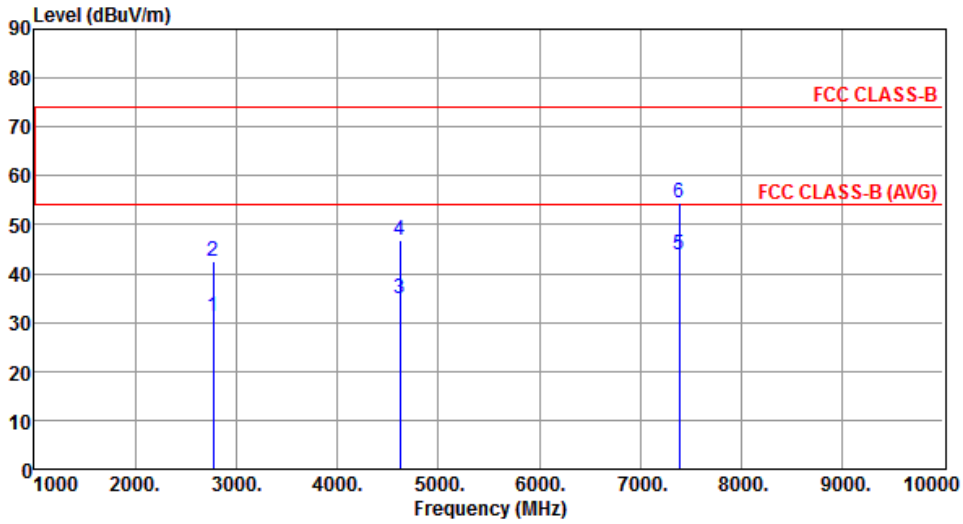


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	54.16	35.44	40.00	-4.56	43.56	-8.12	Peak	---	---
2	102.70	38.52	43.50	-4.98	51.15	-12.63	Peak	---	---
3	139.43	33.52	43.50	-9.98	42.28	-8.76	Peak	---	---
4	218.55	31.43	46.00	-14.57	42.37	-10.94	Peak	---	---
5	440.28	27.68	46.00	-18.32	32.08	-4.40	Peak	---	---
6	592.55	29.13	46.00	-16.87	30.25	-1.12	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.

3.2.5 Transmitter Radiated Unwanted Emissions (Above 1GHz)

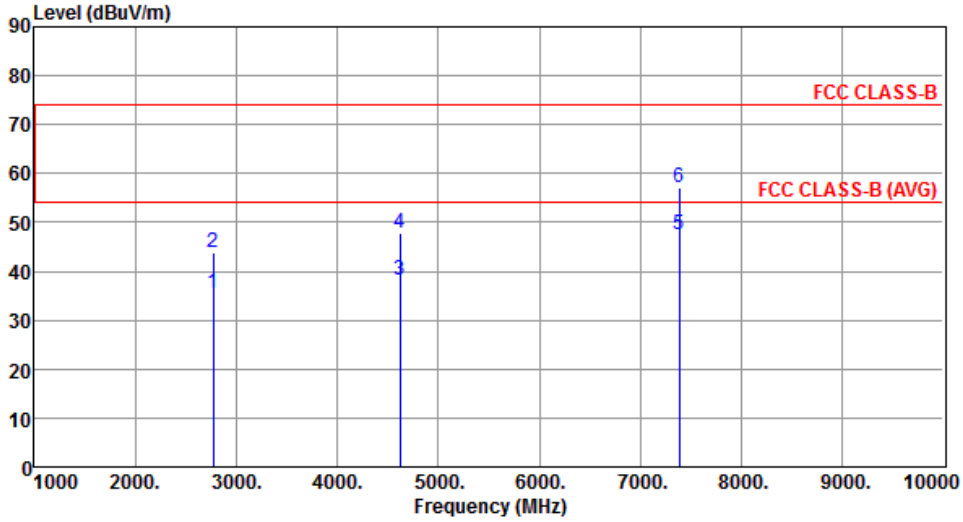
Modulation / SF	CSS / 12	Test Freq. (MHz)	923.3
Polarization	Horizontal		



	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	31.36	54.00	-22.64	33.27	-1.91	Average	100	220
2	2769.90	42.36	74.00	-31.64	44.27	-1.91	Peak	100	220
3	4616.50	34.82	54.00	-19.18	31.46	3.36	Average	100	212
4	4616.50	46.74	74.00	-27.26	43.38	3.36	Peak	100	212
5	7386.40	43.70	54.00	-10.30	34.93	8.77	Average	100	134
6	7386.40	54.41	74.00	-19.59	45.64	8.77	Peak	100	134

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).

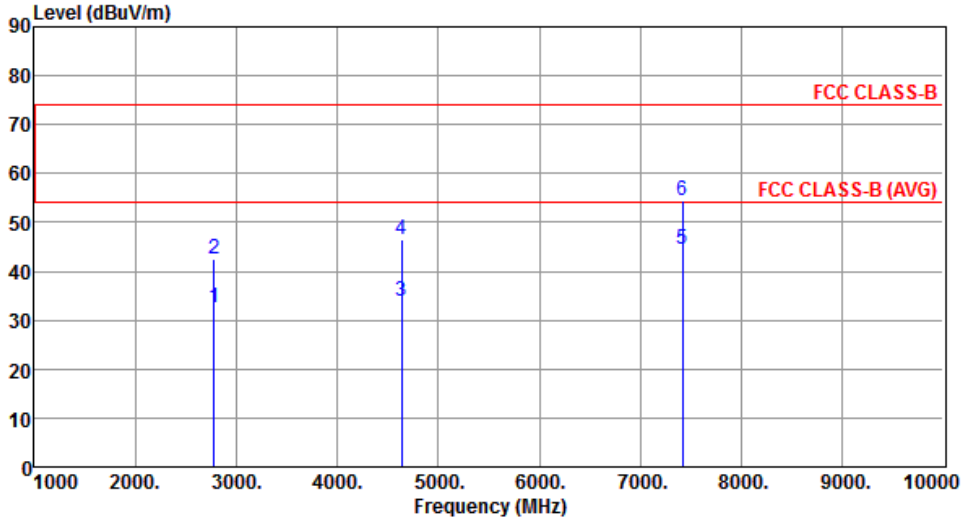
Modulation / SF	CSS / 12	Test Freq. (MHz)	923.3
Polarization	Vertical		



	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	35.38	54.00	-18.62	37.29	-1.91	Average	100	244
2	2769.90	43.95	74.00	-30.05	45.86	-1.91	Peak	100	244
3	4616.50	38.31	54.00	-15.69	34.95	3.36	Average	100	130
4	4616.50	47.69	74.00	-26.31	44.33	3.36	Peak	100	130
5	7386.40	47.46	54.00	-6.54	38.69	8.77	Average	100	100
6	7386.40	57.10	74.00	-16.90	48.33	8.77	Peak	100	100

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).

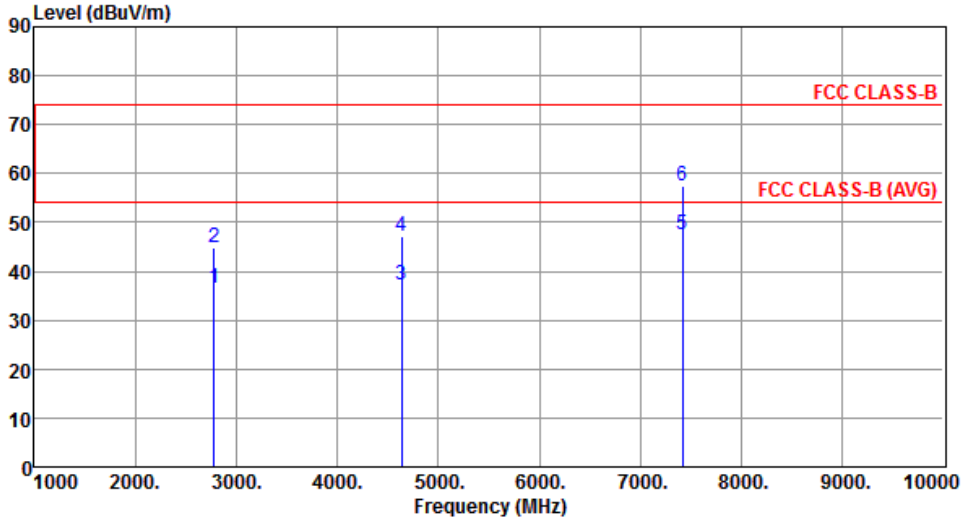
Modulation / SF	CSS / 12	Test Freq. (MHz)	927.5
Polarization	Horizontal		



	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	32.46	54.00	-21.54	34.32	-1.86	Average	100	219
2	2782.50	42.46	74.00	-31.54	44.32	-1.86	Peak	100	219
3	4637.50	33.83	54.00	-20.17	30.40	3.43	Average	100	220
4	4637.50	46.59	74.00	-27.41	43.16	3.43	Peak	100	220
5	7420.00	44.34	54.00	-9.66	35.53	8.81	Average	100	133
6	7420.00	54.59	74.00	-19.41	45.78	8.81	Peak	100	133

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	36.56	54.00	-17.44	38.42	-1.86	Average	100	245
2	2782.50	44.71	74.00	-29.29	46.57	-1.86	Peak	100	245
3	4637.50	37.21	54.00	-16.79	33.78	3.43	Average	100	125
4	4637.50	47.28	74.00	-26.72	43.85	3.43	Peak	100	125
5	7420.00	47.48	54.00	-6.52	38.67	8.81	Average	100	87
6	7420.00	57.51	74.00	-16.49	48.70	8.81	Peak	100	87

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).

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.

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