FCC Co-Location Test Report

FCC ID	:	**2AAS9-BW1257**
Equipment	:	**Tri-Band Wi-Fi AC3000 Indoor Access Point**
Model No.	:	**BW1257**
Brand Name	:	**BROWAN**
Applicant	:	**BROWAN COMMUNICATIONS Co., Ltd.**
Address	:	**No.15-1, Zhoughua Rd, Hsinchu Industrial Park, Hukou, Hsinchu, Taiwan, R.O.C. 333**
Standard	:	**47 CFR FCC Part 15.247** **47 CFR FCC Part 15.407**
Received Date	:	**Dec. 18, 2018**
Tested Date	:	**Dec. 28 ~ Apr. 03, 2019**

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
FR8D1801CO	Rev. 01	Initial issue	Jun. 19, 2019

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.247(d) 15.407(b) 15.209	Radiated Emissions	[dBuV/m at 3m]: 67.83MHz 38.99 (Margin -1.01dB) - QP	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 values of gain for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of the gain.

1 General Description

1.1 Information

1.1.1 Specification of the Equipment under Test (EUT)

WLAN	
Operating Frequency	802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n/ac: 5180 MHz ~ 5240 MHz, 5745 ~ 5825 MHz
Modulation Type	802.11b: DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n/ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
BT	
Operating Frequency	2402 MHz ~ 2480 MHz
Modulaton Type	Bluetooth 4.1 LE: GFSK Bluetooth BR V4.1 (1Mbps): GFSK Bluetooth EDR V4.1 (2Mbps): π/4-DQPSK Bluetooth EDR V4.1 (3Mbps): 8-DPSK

1.1.2 Antenna Details

WIFI

Ant. No.	Type	Connector	Operating Frequencies (MHz) / Antenna Gain (dBi)		
			2400~2483.5	5150~5250	5725~5850
1	Dipole	R-SMA	3.4	3.3	4.3
2	Dipole	R-SMA	2.8	2.7	3.4

Note: The antenna with highest gain was selected for final testing in this test report.

BT

Ant. No.	Type	Connector	Gain (dBi)	Remarks
1	Dipole	R-SMA	3.4	---
2	Dipole	R-SMA	2.8	---

Note: The antenna with highest gain was selected for final testing in this test report.

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	12Vdc from adapter 55Vdc from POE

Note: The POE power supplies are not bundled in market.

1.2 The Equipment List

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Tested Date	Apr. 02 ~ Apr. 03, 2019				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101063	Apr. 16, 2018	Apr. 15, 2019
Power Meter	Anritsu	ML2495A	1241002	Oct. 09, 2018	Oct. 08, 2019
Power Sensor	Anritsu	MA2411B	1207366	Oct. 09, 2018	Oct. 08, 2019
DC POWER SOURCE	GW INSTEK	GPC-6030D	EM892433	Oct. 25, 2018	Oct. 24, 2019
AC POWER SOURCE	APC	AFC-500W	F312060012	Nov. 29, 2018	Nov. 28, 2019
Measurement Software	Sporton	SENSE-15247_DTS	V5.9	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber 3 / (03CH03-WS)				
Tested Date	Mar. 19, 2019				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101499	Jan. 07, 2019	Jan. 06, 2020
Receiver	R&S	ESR3	101658	Dec. 11, 2018	Dec. 10, 2019
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-685	Apr. 19, 2018	Apr. 18, 2019
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Jan. 07, 2019	Jan. 06, 2020
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 15, 2018	Nov. 14, 2019
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 09, 2018	Nov. 08, 2019
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 08, 2018	Oct. 07, 2019
Preamplifier	EMC	EMC02325	980187	Aug. 24, 2018	Aug. 23, 2019
Preamplifier	Agilent	83017A	MY53270014	Aug. 09, 2018	Aug. 08, 2019
Preamplifier	EMC	EMC184045B	980192	Aug. 09, 2018	Aug. 08, 2019
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/**4**	Oct. 01, 2018	Sep. 30, 2019
RF cable-8M	EMC	EMC104-SM-SM-8000	181107	Oct. 01, 2018	Sep. 30, 2019
RF cable-1M	HUBER+SUHNER	SUCOFLEX104	MY22624/4	Oct. 01, 2018	Sep. 30, 2019
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-001	Oct. 01, 2018	Sep. 30, 2019
LF cable-3M	EMC	EMC8D-NM-NM-3000	131103	Oct. 01, 2018	Sep. 30, 2019
LF cable-13M	EMC	EMC8D-NM-NM-13000	131104	Oct. 01, 2018	Sep. 30, 2019
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber 3 / (03CH03-WS)				
Tested Date	Dec. 28, 2018				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&**S**	FSV40	101499	Jan. 03, 2018	Jan. 02, 2019
Receiver	R&S	ESR3	101658	Dec. 11, 2018	Dec. 10, 2019
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-685	Apr. 19, 2018	Apr. 18, 2019
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Jan. 18, 2018	Jan. 17, 2019
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 15, 2018	Nov. 14, 2019
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 09, 2018	Nov. 08, 2019
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 08, 2018	Oct. 07, 2019
Preamplifier	EMC	EMC02325	980187	Aug. 24, 2018	Aug. 23, 2019
Preamplifier	Agilent	83017A	MY53270014	Aug. 09, 2018	Aug. 08, 2019
Preamplifier	EMC	EMC184045B	980192	Aug. 09, 2018	Aug. 08, 2019
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/**4**	Oct. 01, 2018	Sep. 30, 2019
RF cable-8M	EMC	EMC104-SM-SM-8000	181107	Oct. 01, 2018	Sep. 30, 2019
RF cable-1M	HUBER+SUHNER	SUCOFLEX104	MY22624/4	Oct. 01, 2018	Sep. 30, 2019
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-001	Oct. 01, 2018	Sep. 30, 2019
LF cable-3M	EMC	EMC8D-NM-NM-3000	131103	Oct. 01, 2018	Sep. 30, 2019
LF cable-13M	EMC	EMC8D-NM-NM-13000	131104	Oct. 01, 2018	Sep. 30, 2019
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.3 Test Standards

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

47 CFR FCC Part 15.247
47 CFR FCC Part 15.407
ANSI C63.10-2013
FCC KDB 558074 D01 15.247 Meas Guidance v05r02
FCC KDB 662911 D01 Multiple Transmitter Output v02r01
FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01
FCC KDB 412172 D01 Determining ERP and EIRP v01r01

1.4 Deviation from Test Standard and Measurement Procedure

None

1.5 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**
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
Radiated Emissions	03CH03-WS	24°C / 61-65%	Roger Lu Akun Chung
Conducted Emissions	TH01-WS	21°C / 63%	Roger Lu

- 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	Modulation Mode	Test Channel	Data Rate (Mbps)	Test Configuration
Radiated Emissions ≤1GHz	2.4G 11b + 5G 11a + 5G 11a BLE + 5G 11a + 5G 11a BT EDR + 5G 11a + 5G 11a	CH06 + CH48 + CH157 CH39 + CH48 + CH157 CH78 + CH48 + CH157	1 + 6 + 6 1 + 6 + 6 1 + 6 + 6	1, 2 3, 4 5, 6
Radiated Emissions >1GHz	2.4G 11b + 5G 11a + 5G 11a BLE + 5G 11a + 5G 11a BT EDR + 5G 11a + 5G 11a	CH06 + CH48 + CH157 CH39 + CH48 + CH157 CH78 + CH48 + CH157	1 + 6 + 6 1 + 6 + 6 1 + 6 + 6	2 4 6
Antenna Port Conducted Emissions	2.4G 11b + 5G 11a BLE + 5 G 11a BT EDR + 5G 11a	Ch06 + Ch48 CH39 + CH157 CH78 + CH157	1 + 6 1 + 6 1 + 6	7 8 9

NOTE:

1. The EUT had been tested by following test configurations.
   1) Configuration 1 : Adapter mode, Wi-Fi 2.4 GHz + 5.15 ~ 5.25 GHz + 5.725 ~ 5.85 GHz
   2) Configuration 2 : POE mode, Wi-Fi 2.4 GHz + 5.15 ~ 5.25 GHz + 5.725 ~ 5.85 GHz
   3) Configuration 3 : Adapter mode, Bluetooth LE + Wi-Fi 5.15 ~ 5.25 GHz + 5.725 ~ 5.85 GHz
   4) Configuration 4 : POE mode, Bluetooth LE + Wi-Fi 5.15 ~ 5.25 GHz + 5.725 ~ 5.85 GHz
   5) Configuration 5 : Adapter mode, Bluetooth EDR + Wi-Fi 5.15 ~ 5.25 GHz + 5.725 ~ 5.85 GHz
   6) Configuration 6 : POE mode, Bluetooth EDR + Wi-Fi 5.15 ~ 5.25 GHz + 5.725 ~ 5.85 GHz
   7) Configuration 7 : POE mode, Wi-Fi 2.4 GHz + 5.15 ~ 5.25 GHz
   8) Configuration 8 : POE mode, Bluetooth LE + Wi-Fi 5.725 ~ 5.85 GHz
   9) Configuration 9 : POE mode, Bluetooth EDR + Wi-Fi 5.725 ~ 5.85 GHz

3 Transmitter Test Results

3.1 Unwanted Emissions into Restricted Frequency Bands

3.1.1 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.

3.1.2 Test Procedures

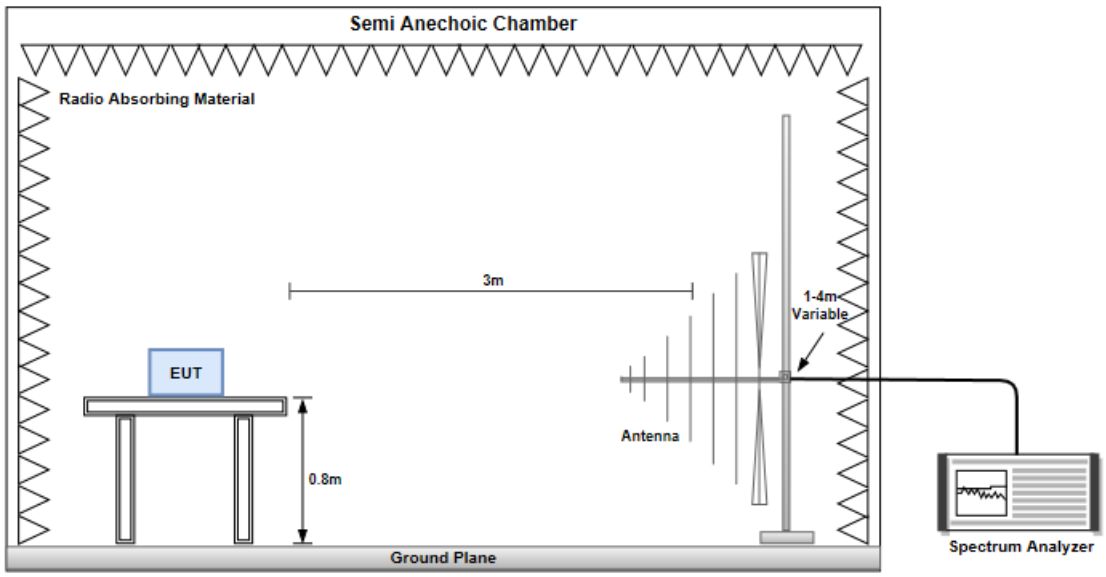
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

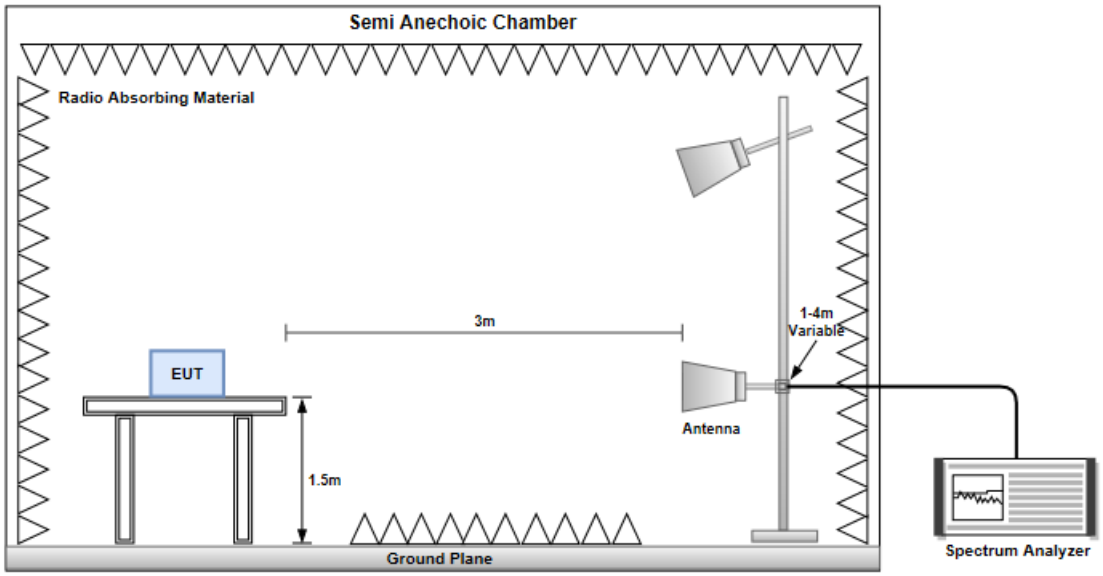
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.1.3 Test Setup

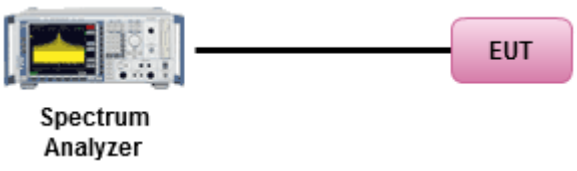
Radiated Emissions below 1 GHz



Radiated Emissions above 1 GHz

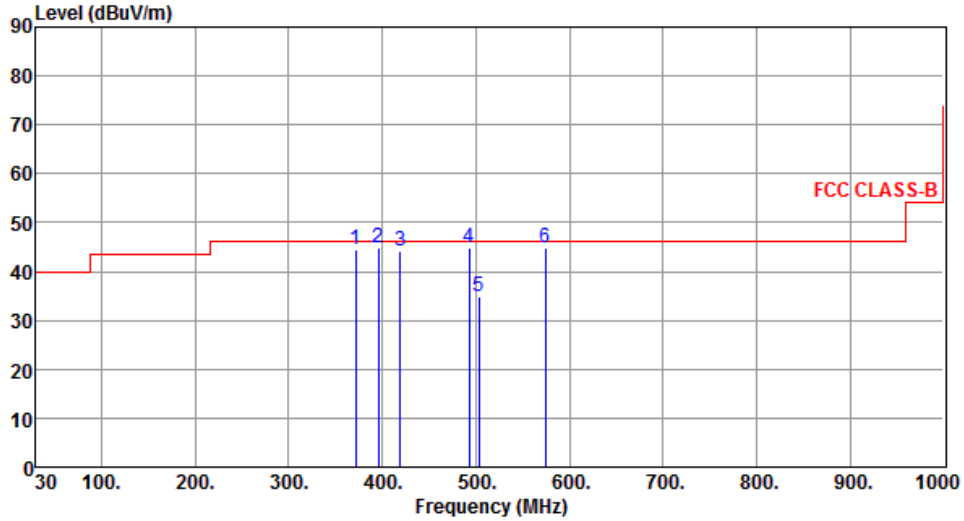


Transmitter Conducted Unwanted Emissions (30MHz~40GHz)



3.1.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

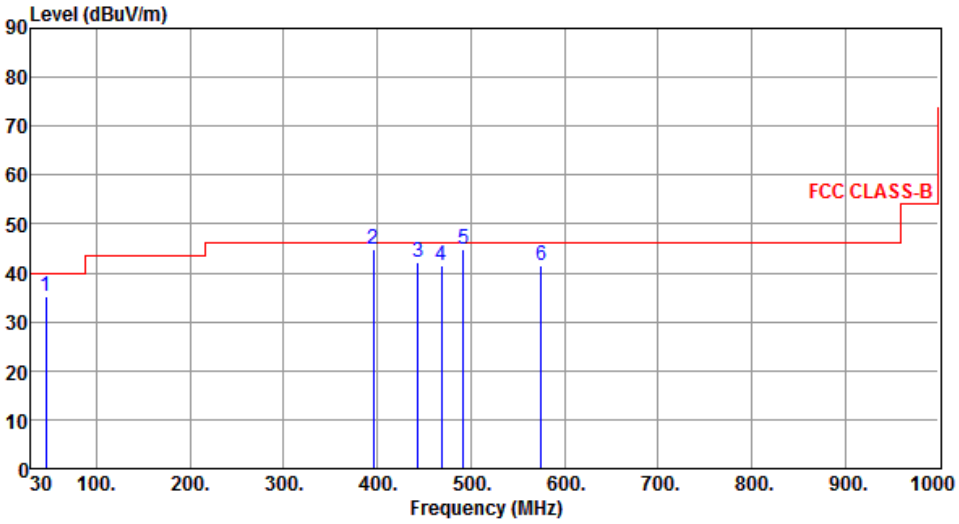
Modulation	2.4G 11b + 5G 11a + 5G 11a	**Test Channel**	CH06+CH48+ CH157
Polarization	Horizontal	**Test Configuration**	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	372.00	44.49	46.00	-1.51	50.20	-5.71	QP	100	122
2	396.00	44.94	46.00	-1.06	49.98	-5.04	QP	100	124
3	418.97	44.01	46.00	-1.99	48.44	-4.43	QP	100	122
4	492.69	44.83	46.00	-1.17	47.76	-2.93	QP	174	126
5	503.36	34.95	46.00	-11.05	37.68	-2.73	QP	186	61
6	574.74	44.79	46.00	-1.21	45.85	-1.06	QP	141	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).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

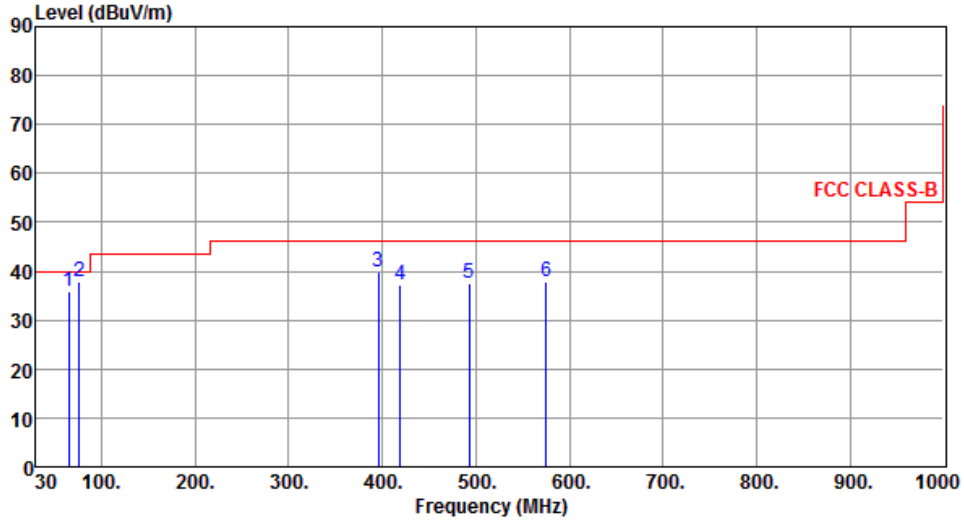
Modulation	2.4G 11b + 5G 11a + 5G 11a	**Test Channel**	CH06+CH48+ CH157
Polarization	Vertical	**Test Configuration**	1



	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	35.08	40.00	-4.92	43.17	-8.09	QP	100	120
2	396.02	44.98	46.00	-1.02	50.02	-5.04	QP	111	182
3	443.22	42.29	46.00	-3.71	46.10	-3.81	Peak	---	---
4	468.44	41.66	46.00	-4.34	44.98	-3.32	QP	100	124
5	492.00	44.88	46.00	-1.12	47.82	-2.94	QP	100	122
6	575.14	41.61	46.00	-4.39	42.66	-1.05	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.

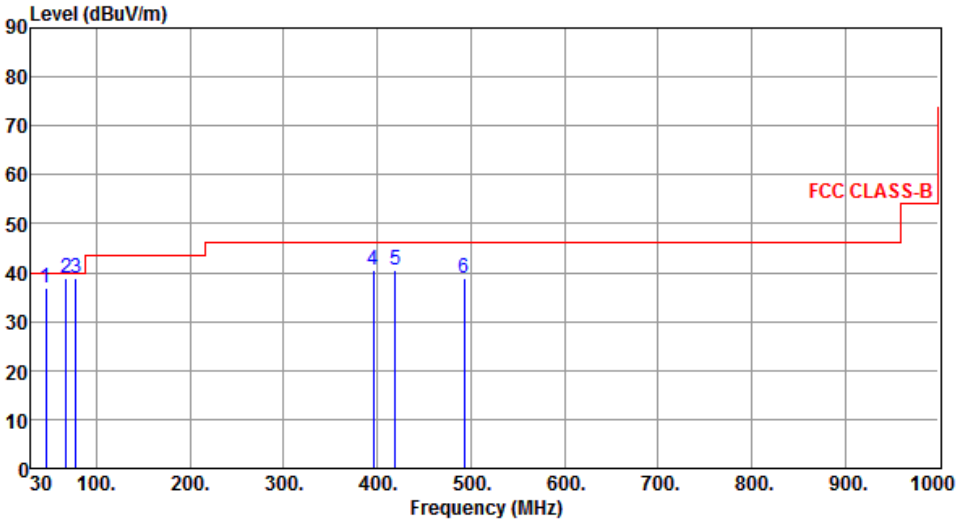
Modulation	2.4G 11b + 5G 11a + 5G 11a	**Test Channel**	CH06+CH48+ CH157
Polarization	Horizontal	**Test Configuration**	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	64.92	35.78	40.00	-4.22	45.35	-9.57	QP	100	57
2	76.56	37.77	40.00	-2.23	49.83	-12.06	QP	133	153
3	395.69	39.98	46.00	-6.02	45.02	-5.04	Peak	---	---
4	418.97	37.16	46.00	-8.84	41.59	-4.43	Peak	---	---
5	492.69	37.39	46.00	-8.61	40.32	-2.93	Peak	---	---
6	575.14	37.86	46.00	-8.14	38.91	-1.05	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.

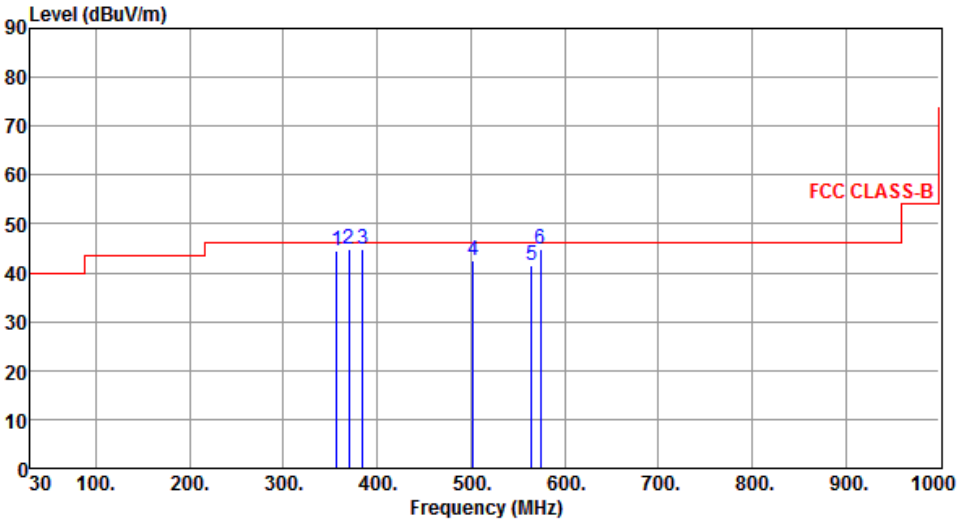
Modulation	2.4G 11b + 5G 11a + 5G 11a	**Test Channel**	CH06+CH48+ CH157
Polarization	Vertical	**Test Configuration**	2



	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	36.82	40.00	-3.18	44.91	-8.09	QP	100	95
2	67.83	38.99	40.00	-1.01	49.10	-10.11	QP	100	1
3	78.18	38.88	40.00	-1.12	51.30	-12.42	QP	161	181
4	395.69	40.53	46.00	-5.47	45.57	-5.04	Peak	---	---
5	418.97	40.65	46.00	-5.35	45.08	-4.43	Peak	---	---
6	492.69	38.92	46.00	-7.08	41.85	-2.93	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.

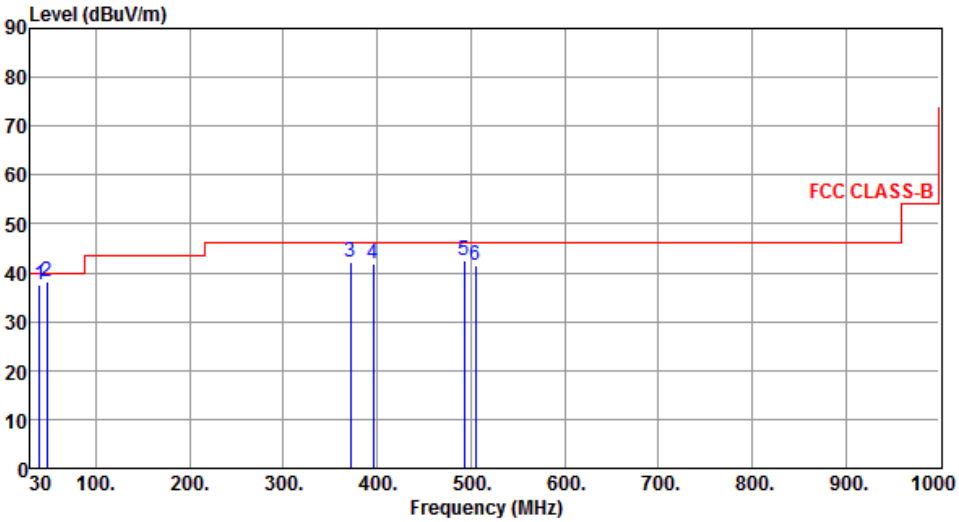
Modulation	BLE + 5G 11a + 5G 11a	**Test Channel**	CH39+CH48+ CH157
Polarization	Horizontal	**Test Configuration**	3



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	356.53	44.43	46.00	-1.57	50.57	-6.14	QP	100	219
2	370.01	44.95	46.00	-1.05	50.71	-5.76	QP	100	122
3	384.63	44.90	46.00	-1.10	50.25	-5.35	QP	100	124
4	502.43	42.63	46.00	-3.37	45.39	-2.76	Peak	---	---
5	564.38	41.37	46.00	-4.63	42.74	-1.37	QP	151	143
6	574.75	44.76	46.00	-1.24	45.82	-1.06	QP	142	138

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.

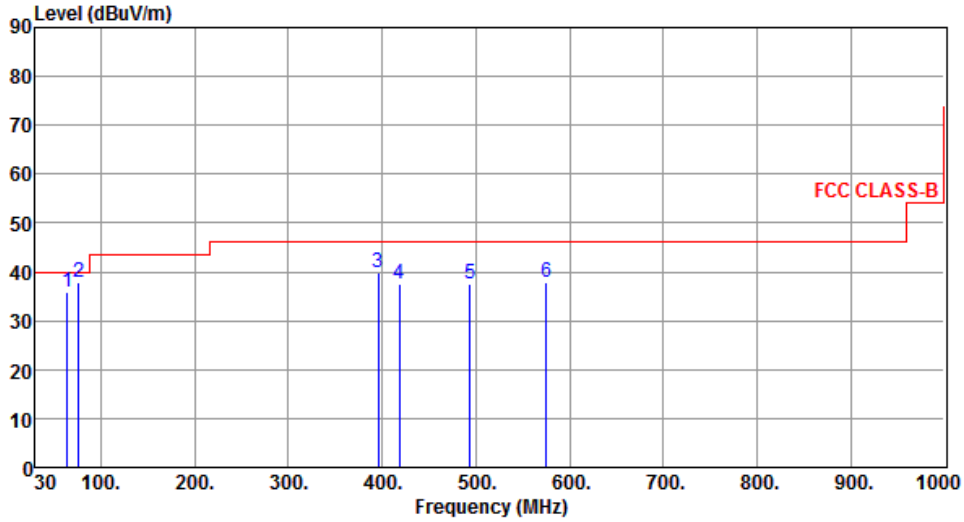
Modulation	BLE + 5G 11a + 5G 11a	Test Channel	CH39+CH48+ CH157
Polarization	Vertical	Test Configuration	3



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	40.22	37.38	40.00	-2.62	45.83	-8.45	QP	100	105
2	47.23	38.13	40.00	-1.87	46.14	-8.01	QP	100	105
3	371.28	42.02	46.00	-3.98	47.75	-5.73	Peak	---	---
4	395.48	41.76	46.00	-4.24	46.81	-5.05	Peak	---	---
5	492.77	42.44	46.00	-3.56	45.37	-2.93	Peak	---	---
6	505.22	41.63	46.00	-4.37	44.33	-2.70	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.

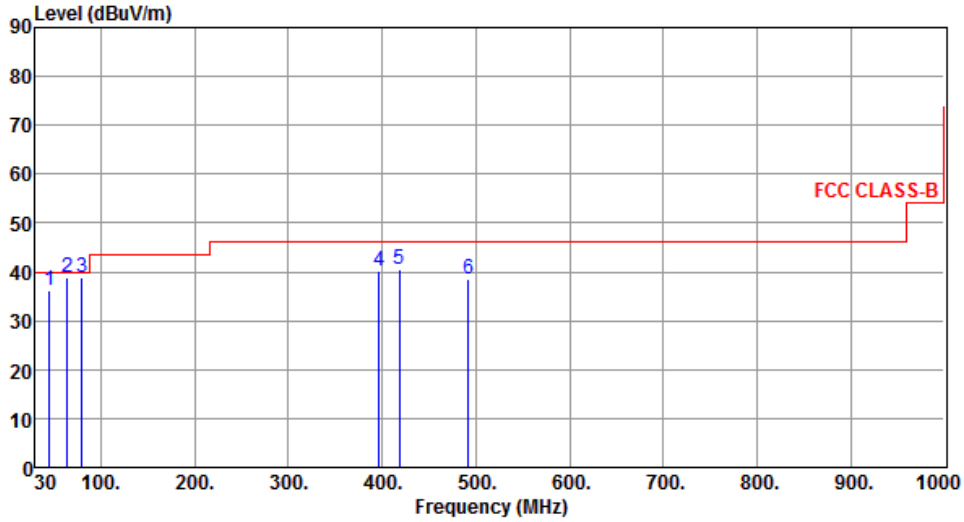
Modulation	BLE + 5G 11a + 5G 11a	**Test Channel**	CH39+CH48+ CH157
Polarization	Horizontal	**Test Configuration**	4



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	64.25	35.77	40.00	-4.23	45.21	-9.44	QP	100	59
2	76.31	37.83	40.00	-2.17	49.84	-12.01	QP	135	151
3	396.22	39.93	46.00	-6.07	44.95	-5.02	Peak	---	---
4	418.44	37.44	46.00	-8.56	41.88	-4.44	Peak	---	---
5	493.43	37.66	46.00	-8.34	40.57	-2.91	Peak	---	---
6	575.44	37.96	46.00	-8.04	39.00	-1.04	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.

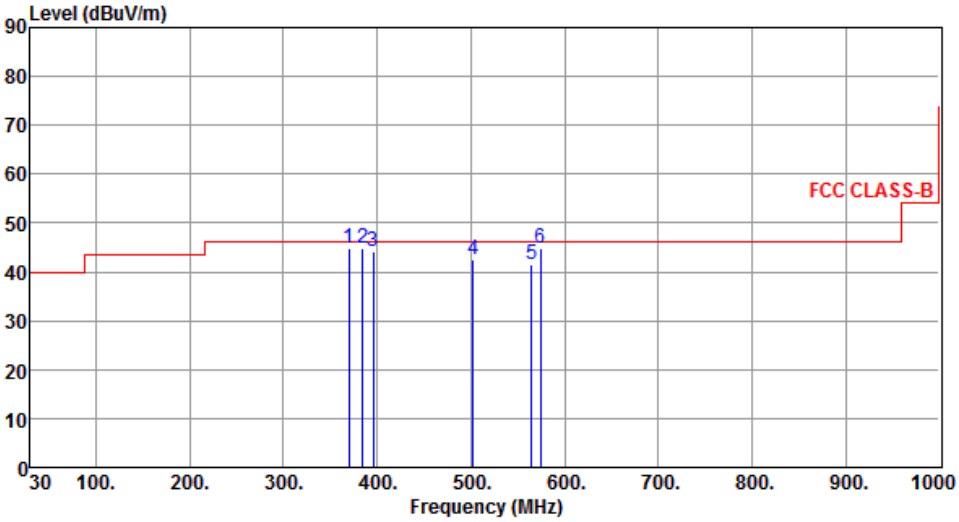
Modulation	BLE + 5G 11a + 5G 11a	Test Channel	CH39+CH48+ CH157
Polarization	Vertical	Test Configuration	4



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	45.43	36.31	40.00	-3.69	44.40	-8.09	QP	100	97
2	64.45	38.93	40.00	-1.07	48.42	-9.49	QP	100	5
3	79.43	38.96	40.00	-1.04	51.65	-12.69	QP	158	183
4	396.44	40.24	46.00	-5.76	45.26	-5.02	Peak	---	---
5	418.36	40.44	46.00	-5.56	44.89	-4.45	Peak	---	---
6	491.76	38.64	46.00	-7.36	41.58	-2.94	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.

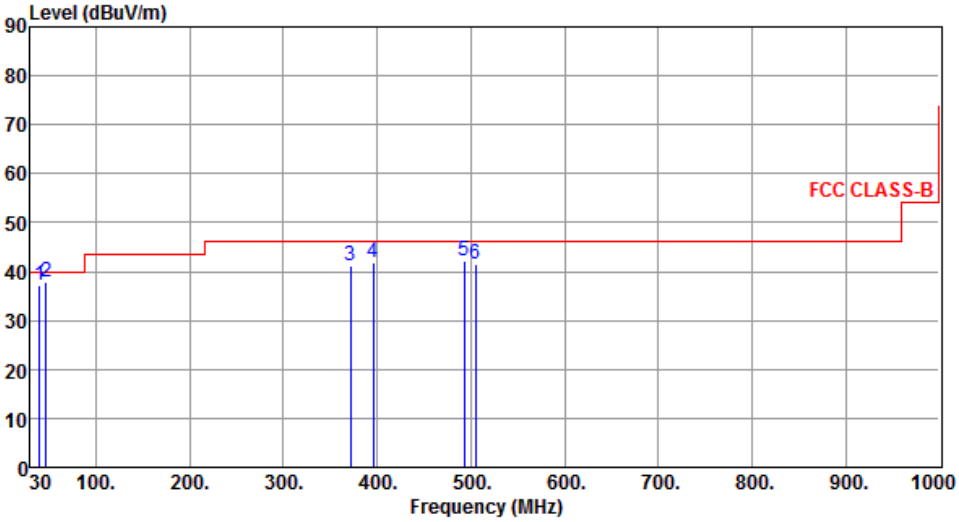
Modulation	BT EDR + 5G 11a + 5G 11a	**Test Channel**	CH78+CH48+ CH157
Polarization	Horizontal	**Test Configuration**	5



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	370.00	44.97	46.00	-1.03	50.73	-5.76	QP	100	123
2	384.77	44.92	46.00	-1.08	50.27	-5.35	QP	100	123
3	395.69	44.23	46.00	-1.77	49.27	-5.04	QP	100	222
4	502.39	42.55	46.00	-3.45	45.31	-2.76	Peak	---	---
5	564.47	41.49	46.00	-4.51	42.85	-1.36	QP	153	141
6	574.74	44.89	46.00	-1.11	45.95	-1.06	QP	143	140

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.

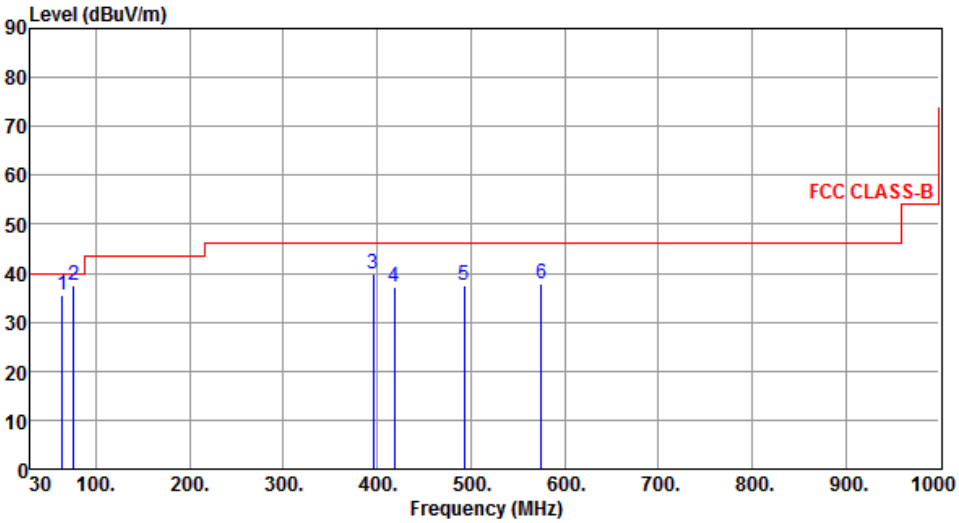
Modulation	BT EDR + 5G 11a + 5G 11a	**Test Channel**	CH78+CH48+ CH157
Polarization	Vertical	**Test Configuration**	5



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	40.02	37.08	40.00	-2.92	45.54	-8.46	QP	100	107
2	47.06	37.99	40.00	-2.01	46.01	-8.02	QP	100	108
3	371.44	41.20	46.00	-4.80	46.93	-5.73	Peak	---	---
4	395.69	41.86	46.00	-4.14	46.90	-5.04	Peak	---	---
5	492.69	42.32	46.00	-3.68	45.25	-2.93	Peak	---	---
6	505.30	41.58	46.00	-4.42	44.27	-2.69	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.

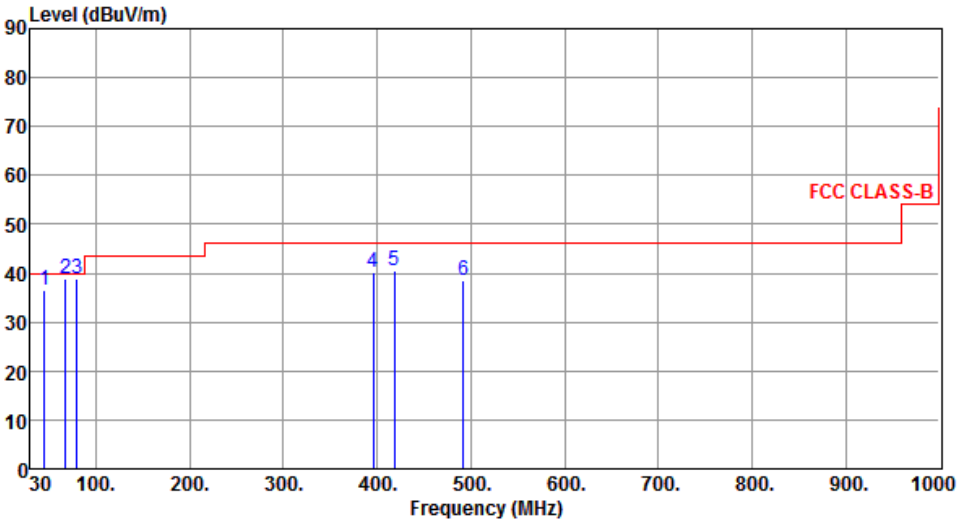
Modulation	BT EDR + 5G 11a + 5G 11a	**Test Channel**	CH78+CH48+ CH157
Polarization	Horizontal	**Test Configuration**	6



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	64.38	35.68	40.00	-4.32	45.15	-9.47	QP	100	62
2	76.22	37.68	40.00	-2.32	49.67	-11.99	QP	141	156
3	396.17	39.88	46.00	-6.12	44.91	-5.03	Peak	---	---
4	418.58	37.32	46.00	-8.68	41.76	-4.44	Peak	---	---
5	493.34	37.52	46.00	-8.48	40.43	-2.91	Peak	---	---
6	575.23	37.74	46.00	-8.26	38.78	-1.04	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	BT EDR + 5G 11a + 5G 11a	**Test Channel**	CH78+CH48+ CH157
Polarization	Vertical	**Test Configuration**	6

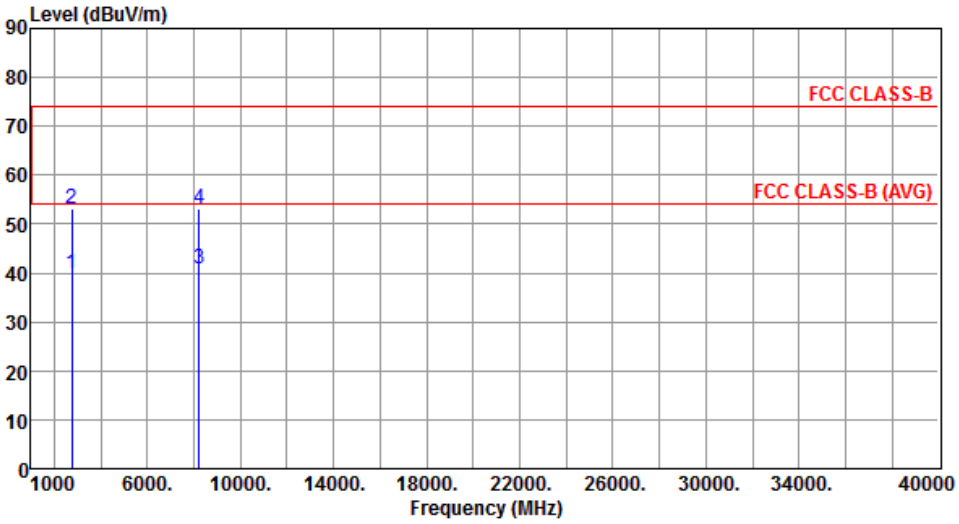


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	45.34	36.47	40.00	-3.53	44.57	-8.10	QP	100	99
2	67.47	38.98	40.00	-1.02	49.02	-10.04	QP	100	6
3	79.39	38.86	40.00	-1.14	51.55	-12.69	QP	162	188
4	396.24	40.33	46.00	-5.67	45.35	-5.02	Peak	---	---
5	418.25	40.36	46.00	-5.64	44.81	-4.45	Peak	---	---
6	491.89	38.39	46.00	-7.61	41.33	-2.94	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.

3.1.5 Transmitter Radiated Unwanted Emissions (Above 1GHz)

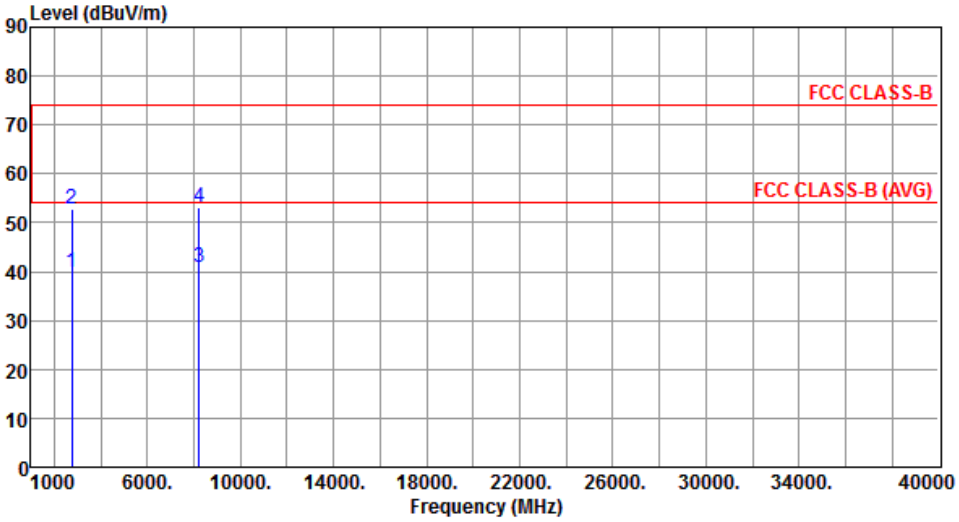
Modulation	2.4G 11b + 5G 11a + 5G 11a	Test Channel	CH06+CH48+ CH157
Polarization	Horizontal	Test Configuration	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2767.00	39.70	54.00	-14.30	39.99	-0.29	Average	100	90
2	2767.00	53.06	74.00	-20.94	53.35	-0.29	Peak	100	90
3	8222.00	40.88	54.00	-13.12	29.81	11.07	Average	100	60
4	8222.00	53.20	74.00	-20.80	42.13	11.07	Peak	100	60

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).

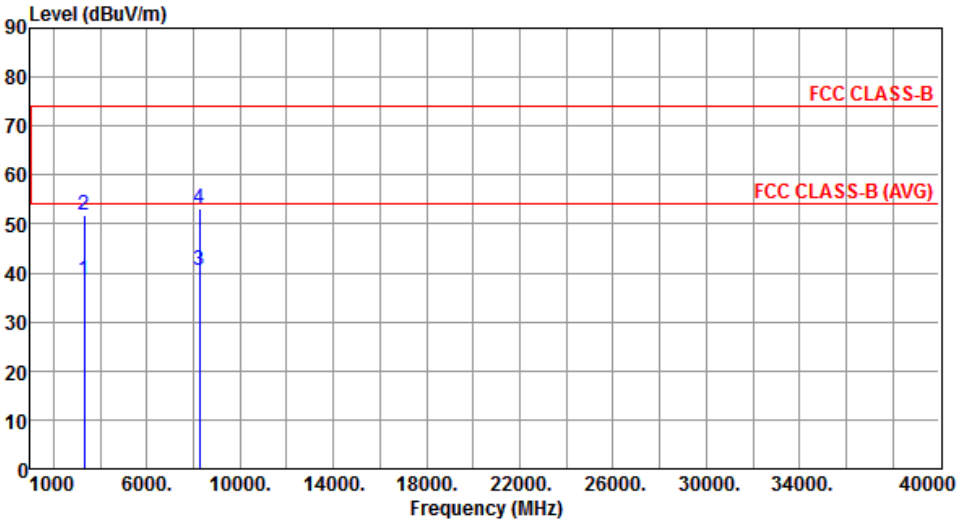
Modulation	2.4G 11b + 5G 11a + 5G 11a	**Test Channel**	CH06+CH48+ CH157
Polarization	Vertical	**Test Configuration**	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2767.00	39.79	54.00	-14.21	40.08	-0.29	Average	100	60
2	2767.00	52.85	74.00	-21.15	53.14	-0.29	Peak	100	60
3	8222.00	40.74	54.00	-13.26	29.67	11.07	Average	100	50
4	8222.00	53.14	74.00	-20.86	42.07	11.07	Peak	100	50

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).

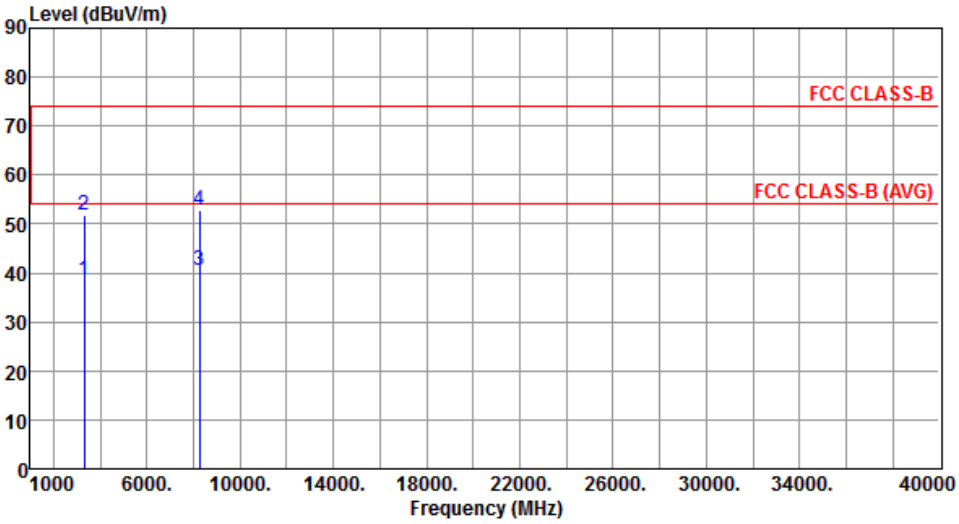
Modulation	BLE + 5G 11a + 5G 11a	**Test Channel**	CH39+CH48+ CH157
Polarization	Horizontal	**Test Configuration**	4



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	3305.00	38.44	54.00	-15.56	37.68	0.76	Average	100	88
2	3305.00	51.81	74.00	-22.19	51.05	0.76	Peak	100	88
3	8265.00	40.44	54.00	-13.56	29.44	11.00	Average	100	52
4	8265.00	53.13	74.00	-20.87	42.13	11.00	Peak	100	52

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).

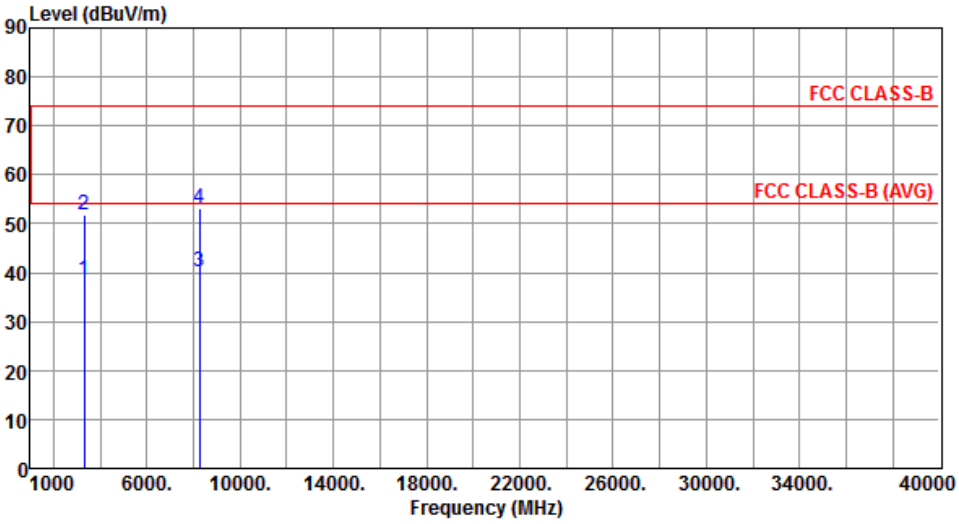
Modulation	BLE + 5G 11a + 5G 11a	**Test Channel**	CH39+CH48+ CH157
Polarization	Vertical	**Test Configuration**	4



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	3305.00	38.45	54.00	-15.55	37.69	0.76	Average	100	33
2	3305.00	51.79	74.00	-22.21	51.03	0.76	Peak	100	33
3	8265.00	40.42	54.00	-13.58	29.42	11.00	Average	100	25
4	8265.00	52.93	74.00	-21.07	41.93	11.00	Peak	100	25

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).

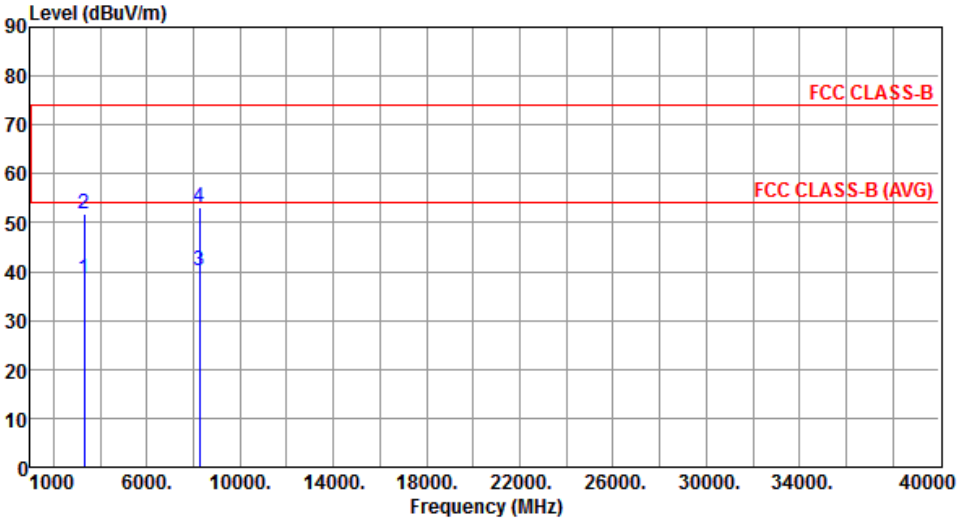
Modulation	BT EDR + 5G 11a + 5G 11a	**Test Channel**	CH78+CH48+ CH157
Polarization	Horizontal	**Test Configuration**	6



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	3305.00	38.63	54.00	-15.37	37.87	0.76	Average	100	90
2	3305.00	51.94	74.00	-22.06	51.18	0.76	Peak	100	90
3	8265.00	40.24	54.00	-13.76	29.24	11.00	Average	100	50
4	8265.00	53.03	74.00	-20.97	42.03	11.00	Peak	100	50

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	BT EDR + 5G 11a + 5G 11a	**Test Channel**	CH78+CH48+ CH157
Polarization	Vertical	**Test Configuration**	6



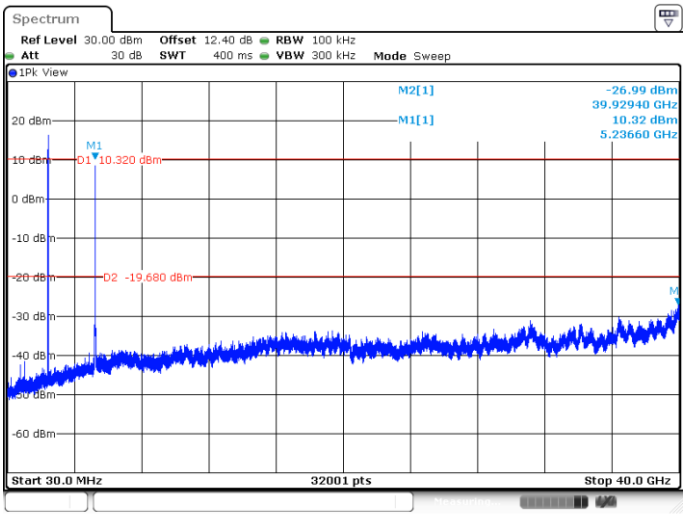
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	3305.00	38.66	54.00	-15.34	37.90	0.76	Average	100	30
2	3305.00	51.97	74.00	-22.03	51.21	0.76	Peak	100	30
3	8265.00	40.26	54.00	-13.74	29.26	11.00	Average	100	20
4	8265.00	53.09	74.00	-20.91	42.09	11.00	Peak	100	20

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).

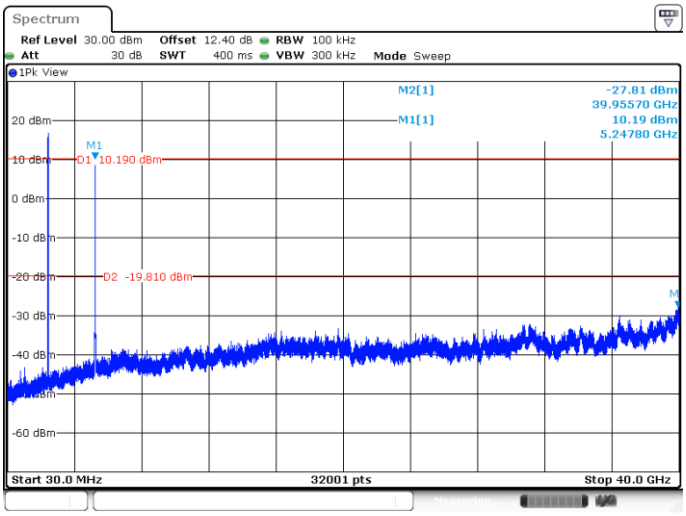
3.1.6 Conducted Emissions (30MHz~40GHz)

Test Configuration 7 (2.4G 11b + 5G 11a)

Conducted Emission Plot of Antenna port 0

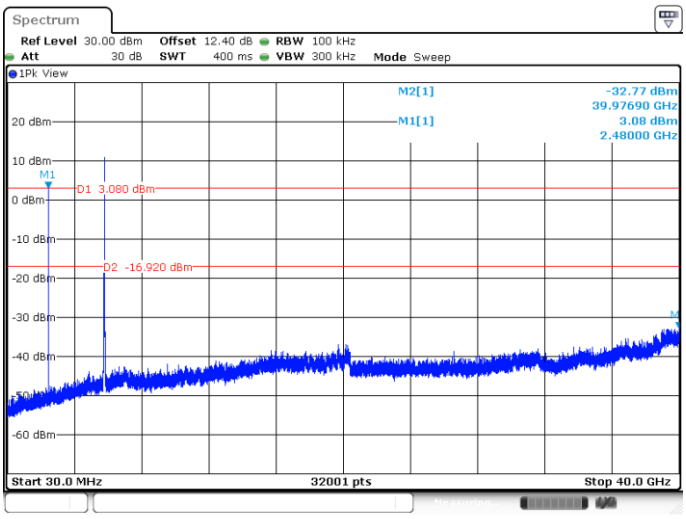


Conducted Emission Plot of Antenna port 1



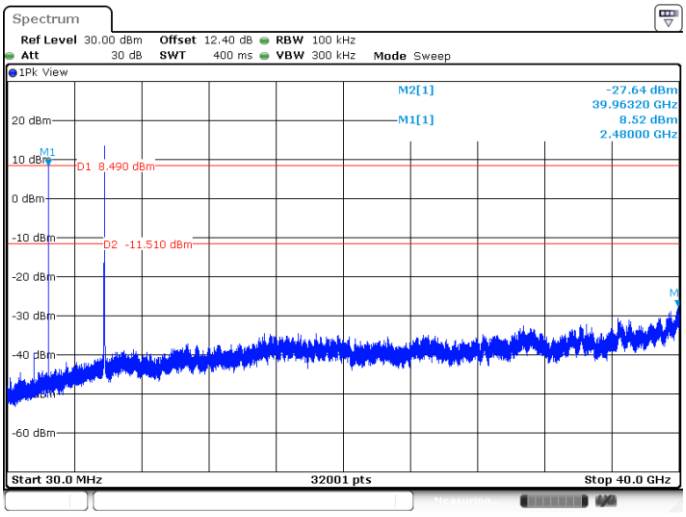
Test Configuration 8(BLE + 5 G 11a)

Conducted Emission Plot



Test Configuration 9(BT EDR + 5 G 11a)

Conducted Emission Plot



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

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