FCC Test Report

(Co-Located)

Report No.:	RFBGSN-WTW-P20070580-10
FCC ID:	2AX8C-3544
Test Model:	FL44TE
Received Date:	Jul. 29, 2020
Test Date:	Nov. 25, 2020
Issued Date:	Dec. 01, 2020
Applicant:	Amazon.com Services LLC
Address:	410 Terry Ave N Seattle, WA 98109 650 694 8333
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN
FCC Registration / Designation Number:	788550 / TW0003

Testing Laboratory
2021

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RFBGSN-WTW-P20070580-10	Original Release	Dec. 01, 2020

1 Certificate of Conformity

Product:	Fleet Edge
Brand:	N/A
Test Model:	FL44TE
Sample Status:	Engineering Sample
Applicant:	Amazon.com Services LLC
Test Date:	Nov. 25, 2020
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.247) 47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10:2013 FCC Part 24, Subpart E

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : Gina Liu , **Date:** Dec. 01, 2020

Gina Liu / Specialist

Approved by : , **Date:** Dec. 01, 2020

Dylan Chiou / Senior Project Engineer

2 Summary of Test Results

Applied Standard:	47 CFR FCC Part 15, Subpart C (Section 15.247) 47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10:2013 FCC Part 24, Subpart E		
FCC Clause	Test Item	Result	Remarks
15.205 / 15.209 / 15.247(d)	Radiated Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -1.02dB at 2483.5 MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -5.5 dB at 11570 MHz.
2.1053 24.238	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -6.69 dB at 36.79 MHz.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.04 dB
	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~ 1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Fleet Edge		
Brand	N/A		
Test Model	FL44TE		
Sample Status	Engineering sample		
Power Supply rating	12 Vdc		
Modulation Type	WLAN	CCK, DQPSK, DBPSK for DSSS 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM	
	BT EDR	GFSK, π/4-DQPSK, 8DPSK	
	BT LE	GFSK	
	WCDMA	QPSK	
	LTE	QPSK, 16QAM	
Transfer Rate	WLAN	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0 Mbps 802.11b: 11.0 / 5.5 / 2.0 / 1.0 Mbps 802.11g: 54.0 / 48.0 / 36.0 / 24.0 / 18.0 / 12.0 / 9.0 / 6.0 Mbps 802.11n: up to 300.0 Mbps 802.11ac: up to 1733.3 Mbps	
	BT EDR	1/2/3 Mbps	
	BT LE	1 Mbps & 2 Mbps	
Operating Frequency	WLAN	2.4GHz: 2412 ~ 2472MHz 5.0GHz: 5180 ~ 5250 MHz, 5250 ~ 5320 MHz, 5500 ~ 5720 MHz, 5745 ~5825 MHz	
	BT EDR	2402 ~ 2480 MHz	
	BT LE	2402 ~ 2480 MHz	
	WCDMA II	1852.4 ~ 1907.6 MHz	
	LTE Band 2	Channel Bandwidth: 1.4 MHz	1850.7 ~ 1909.3 MHz
	LTE Band 2	Channel Bandwidth: 3 MHz	1851.5 ~ 1908.5 MHz
	LTE Band 2	Channel Bandwidth: 5 MHz	1852.5 ~ 1907.5 MHz
	LTE Band 2	Channel Bandwidth: 10 MHz	1855.0 ~ 1905.0 MHz
	LTE Band 2	Channel Bandwidth: 15 MHz	1857.5 ~ 1902.5 MHz
	LTE Band 2	Channel Bandwidth: 20 MHz	1860.0 ~ 1900.0 MHz
Number of Channel	WLAN	2412 ~ 2462MHz: 13 for 802.11b, 802.11g, 802.11n (HT20) 9 for 802.11n (HT40) 5180 ~ 5250 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80) 1 for 802.11ac (VHT160) 5250 ~ 5320 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80) 5500 ~ 5720 MHz: 11 for 802.11a 12 for 802.11n (HT20) 6 for 802.11n (HT40) 3 for 802.11ac (VHT80) 1 for 802.11ac (VHT160)	

		5745 ~ 5825 MHz: 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80)
	BT EDR	79
	BT LE	40
Output Power	WLAN	276.22 mW for 2412 ~ 2462MHz 179.498 mW for 5180 ~ 5250 MHz 178.669 mW for 5250 ~ 5320 MHz 216.543 mW for 5500 ~ 5720 MHz 260.644 mW for 5745 ~ 5825 MHz
	BT EDR	9.954 mW
	BT LE	LE 4.0: 4.498 mW LE 5.0: 4.487 mW
Antenna Type	Refer to Note as below	
Antenna Connector	N/A	
Accessory Device	Refer to Note as below	
Cable Supplied	N/A	

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

Modulation Mode	Tx Function
802.11a	1TX
802.11b	1TX
802.11g	1TX
802.11n (HT20)	2TX
802.11n (HT40)	2TX
802.11ac (VHT20)	2TX
802.11ac (VHT40)	2TX
802.11ac (VHT80)	2TX
802.11ac (VHT160)	2TX

* The modulation and bandwidth are similar for 802.11n mode for HT20 / HT40 and 802.11ac mode for VHT20 / VHT40, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

2. The EUT contains following accessory devices.

Product	Brand	Model	Description
BT/WLAN Module	Intel	9560NGW	802.11 a/b/g/n/ac Wireless LAN + Bluetooth 5
WWAN Module	Quectel	EM06-A	WCDMA, LTE

3. The antenna information is listed as below.

Antenna information				Peak gain w/ cable loss (dBi)				
Brand	Type	Antenna Part number	Ant.	BT/WLAN 2.4 GHz	WLAN 5.15~5.35 GHz	WLAN 5.47~5.725 GHz	WLAN 5.725~5.85 GHz	WCDMA 2 / LTE 2
TAOGLAS	Multiband	MA491.A.BICG.005.gb	0	-1.85	-4.8	-4.8	-4.8	-0.4
			1	-3.05	-3.5	-3.5	-3.5	-0.1

4. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.
5. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or User's Manual.

3.2 Description of Test Modes

WLAN 2.4G:

13 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432	12	2467
6	2437	13	2472
7	2442		

9 channels are provided for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	2422	8	2447
4	2427	9	2452
5	2432	10	2457
6	2437	11	2462
7	2442		

For 5180 ~ 5250 MHz

4 channels are provided for 802.11a, 802.11n (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
40	5200	48	5240

2 channels are provided for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
42	5210

1 channel is provided for 802.11ac (VHT160):

Channel	Frequency (MHz)
50	5250

For 5250 ~ 5320 MHz

4 channels are provided for 802.11a, 802.11n (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	60	5300
56	5280	64	5320

2 channels are provided for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
54	5270	62	5310

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
58	5290

For 5500 ~ 5720 MHz

11 channels are provided for 802.11a:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	124	5620
104	5520	128	5640
108	5540	132	5660
112	5560	136	5680
116	5580	140	5700
120	5600		

12 channels are provided for 802.11n (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	124	5620
104	5520	128	5640
108	5540	132	5660
112	5560	136	5680
116	5580	140	5700
120	5600	144	5720

6 channels are provided for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
102	5510	126	5630
110	5550	134	5670
118	5590	142	5710

3 channels are provided for 802.11ac (VHT80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
106	5530	138	5690
122	5610		

1 channel is provided for 802.11ac (VHT160):

Channel	Frequency (MHz)
114	5570

For 5745 ~ 5825 MHz:

5 channels are provided for 802.11a, 802.11n (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	161	5805
153	5765	165	5825
157	5785		

2 channels are provided for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
155	5775

BT EDR

79 channels are provided to this EUT:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461		

BT LE:

40 channels are provided provided to this EUT:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to		Description
	RE≥1G	RE<1G	
-	√	√	-

Where RE≥1G: Radiated Emission above 1GHz & Bandedge Measurement RE<1G: Radiated Emission below 1GHz

Note: For radiated emission test items chosen the worst maximum power was selected.
Note: "-"means no effect.

Radiated Emission Test (Above 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Freq. Range (MHz)	Available Channel	Tested Channel	Modulation Technology
-	802.11n (HT20) + BT + WCDMA II	2412 ~ 2472	1 to 13	6 + 78 + 9400	OFDM
		BT	0 to 78		GFSK
		1850 ~ 1910	9262 to 9538		WCDMA
-	802.11n (HT20) + BT + LTE Band 2	2412 ~ 2472	1 to 13	6 + 78 + 18700	OFDM
		BT	0 to 78		GFSK
		1850 ~ 1910	18700 to 19100		QPSK
-	802.11n (HT20) + BT + WCDMA II	5180 ~ 5240	36 to 48	48 + 78 + 9400	OFDM
		BT	0 to 78		GFSK
		1850 ~ 1910	9262 to 9538		WCDMA
-	802.11n (HT20) + BT + LTE Band 2	5180 ~ 5240	36 to 48	48 + 78 + 18700	OFDM
		BT	0 to 78		GFSK
		1850 ~ 1910	18700 to 19100		QPSK

Radiated Emission Test (Below 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Freq. Range (MHz)	Available Channel	Tested Channel	Modulation Technology
-	802.11n (HT20) + BT + WCDMA II	2412 ~ 2472	1 to 13	6 + 78 + 9400	OFDM
		BT	0 to 78		GFSK
		1850 ~ 1910	9262 to 9538		WCDMA
-	802.11n (HT20) + BT + LTE Band 2	2412 ~ 2472	1 to 13	6 + 78 + 18700	OFDM
		BT	0 to 78		GFSK
		1850 ~ 1910	18700 to 19100		QPSK
-	802.11n (HT20) + BT + WCDMA II	5180 ~ 5240	36 to 48	48 + 78 + 9400	OFDM
		BT	0 to 78		GFSK
		1850 ~ 1910	9262 to 9538		WCDMA
-	802.11n (HT20) + BT + LTE Band 2	5180 ~ 5240	36 to 48	48 + 78 + 18700	OFDM
		BT	0 to 78		GFSK
		1850 ~ 1910	18700 to 19100		QPSK

Test Condition:

Applicable to	Environmental Conditions	Input Power (System)	Tested by
RE≥1G	23 deg. C, 67% RH	120 Vac, 60 Hz	Tim Chen
RE<1G	23 deg. C, 67% RH	120 Vac, 60 Hz	Tim Chen

3.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

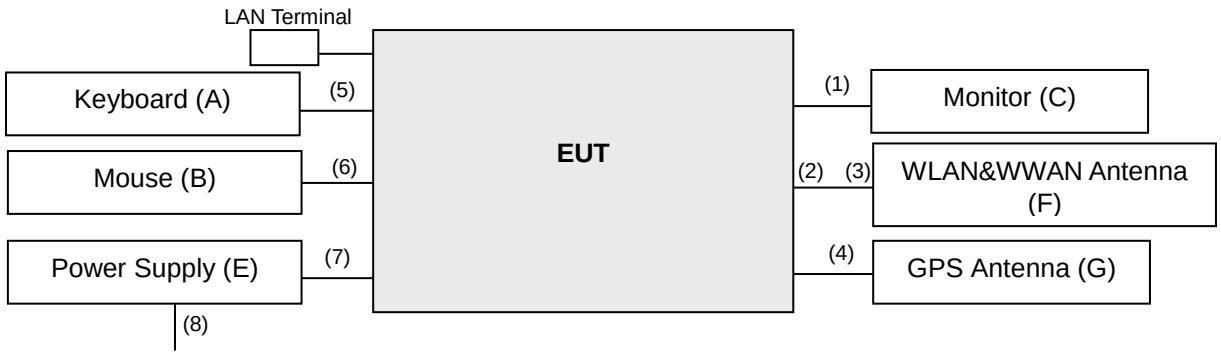
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Keyboard	DELL	RT7D50	CN-0J4624-37172-44T-000M	FCC DOC Approved	--
B	Mouse	DELL	MS111-L	N/A	N/A	--
C	Monitor	ViewSonic	VX2457-MHD	UG0182942333	N/A	--
D	Bluetooth Tester	R&S	CBT	100980	N/A	--
E	Power Supply	NA	NA	NA	NA	--
F	WLAN&WWAN Antenna	TAOGLAS	MA491.A.BICG.005.gb	NA	NA	Provided by client
G	GPS Antenna	NA	NA	NA	NA	Provided by client

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item D acted as a communication partner to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	HDMI Cable	1	2	N	0	-
2.	RF Cable	1	0.5	N	0	-
3.	RF Cable	1	0.5	N	0	-
4.	RF Cable	1	0.5	N	0	-
5.	USB Cable	1	2.4	N	0	-
6.	USB Cable	1	2.2	N	0	-
7.	DC power Cable	1	1.2	N	0	-
8.	Power cord	1	1.8	N	0	-

3.3.1 Configuration of System under Test



3.4 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards and references:

Test Standard:

FCC Part 15, Subpart C (15.247)

FCC Part 15, Subpart E (15.407)

FCC 47 CFR Part 2

FCC 47 CFR Part 24

ANSI C63.10-2013

ANSI 63.26-2015

All test items have been performed and recorded as per the above standards.

References Test Guidance:

KDB 558074 D01 Meas Guidance v05r02

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-E 2016

All test items have been performed as a reference to the above KDB test guidance.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

For WLAN & BT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

Limits of unwanted emission out of the restricted bands

Applicable To			Limit	
789033 D02 General UNII Test Procedure New Rules v02r01			Field Strength at 3m	
			PK: 74 (dBµV/m)	AV: 54 (dBµV/m)
Frequency Band	Applicable To		EIRP Limit	Equivalent Field Strength at 3m
5150~5250 MHz	15.407(b)(1)		PK: -27 (dBm/MHz)	PK: 68.2(dBµV/m)
5250~5350 MHz	15.407(b)(2)			
5470~5725 MHz	15.407(b)(3)			
5725~5850 MHz	☒	15.407(b)(4)(i)	PK: -27 (dBm/MHz) *1 PK: 10 (dBm/MHz) *2 PK: 15.6 (dBm/MHz) *3 PK: 27 (dBm/MHz) *4	PK: 68.2(dBµV/m) *1 PK: 105.2 (dBµV/m) *2 PK: 110.8(dBµV/m) *3 PK: 122.2 (dBµV/m) *4
	☐	15.407(b)(4)(ii)	Emission limits in section 15.247(d)	

*1 beyond 75 MHz or more above of the band edge.

*2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.

*3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.

*4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3}$$ µV/m, where P is the eirp (Watts).

For WCDMA & LTE

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit is equal to -13 dBm.

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY51210203	Mar. 18, 2020	Mar. 17, 2021
Spectrum Analyzer Agilent	N9010A	MY52220314	Dec. 12, 2019	Dec. 11, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 16, 2020	Apr. 15, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSV40	100980	Apr. 20, 2020	Apr. 19, 2021
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 24, 2019	Nov. 23, 2020
			Nov. 22, 2020	Nov. 21, 2021
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Nov. 06, 2020	Nov. 05, 2021
Fixed Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	Apr. 14, 2020	Apr. 13, 2021
Loop Antenna	EM-6879	269	Sep. 17, 2020	Sep. 16, 2021
Preamplifier EMCI	EMC001340	980201	Oct. 21, 2020	Oct. 20, 2021
Preamplifier EMCI	EMC 012645	980115	Oct. 07, 2020	Oct. 06, 2021
Preamplifier EMCI	EMC 184045	980116	Oct. 07, 2020	Oct. 06, 2021
Preamplifier EMCI	EMC 330H	980112	Oct. 07, 2020	Oct. 06, 2021
Power Meter Anritsu	ML2495A	1012010	Sep. 01, 2020	Aug. 31, 2021
Power Sensor Anritsu	MA2411B	1315050	Sep. 01, 2020	Aug. 31, 2021
RF Coaxial Cable EMCI	EMC104-SM-SM-8000	171005	Oct. 07, 2020	Oct. 06, 2021
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1000(140807)	Oct. 07, 2020	Oct. 06, 2021
RF Coaxial Cable WOKEN	8D-FB	Cable-Ch10-01	Oct. 07, 2020	Oct. 06, 2021
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA
Radio Communication Analyzer Anritsu	MT8821C	6201462755	Feb. 13, 2020	Feb. 12, 2021

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Chamber 10.

4.1.3 Test Procedures

For WLAN &BT

For Radiated emission below 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. For Bluetooth FHSS device measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz. For fundamental and harmonic signal measurement, according to ANSI C63.10 section 7.5, the average value = peak value + duty cycle correction factor. The duty cycle correction factor refer to Chapter 3.3 of the BV CPS report no: RFBGSN-WTW-P20070580-6.
3. For WLAN device measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz. The duty cycle refers to the original report.
4. All modes of operation were investigated and the worst-case emissions are reported.

For WCDMA & LTE

a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
b. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn. Correction Factor (includes EIRP and ERP unit conversion factor) = Antenna gain of substitution horn. – Tx cable loss. Measurement method refers to ANSI C63.26 section 5.5.3.2.
c. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15 dB.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz.
2. The emission levels were against the limit of frequency range 9 kHz ~ 30 MHz:

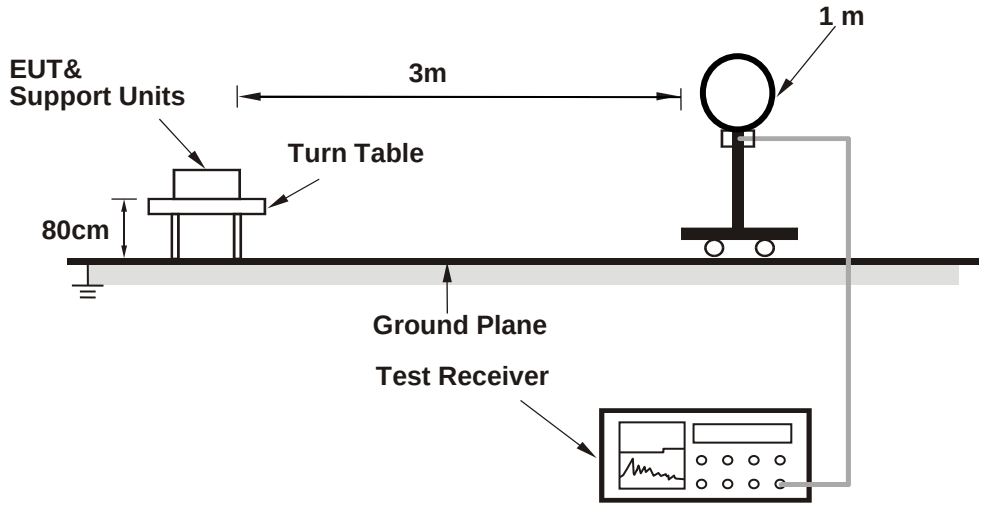
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

4.1.4 Deviation from Test Standard

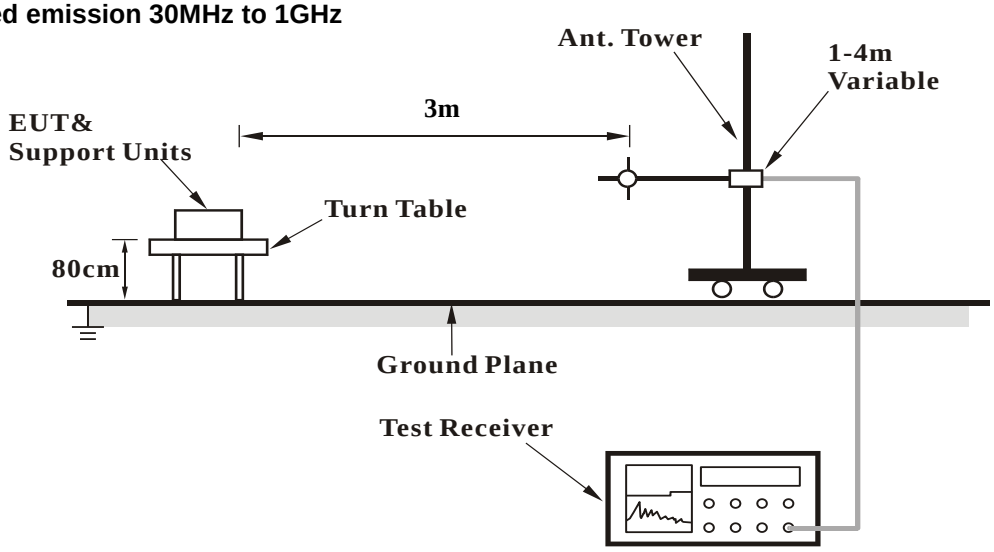
No deviation.

4.1.5 Test Setup

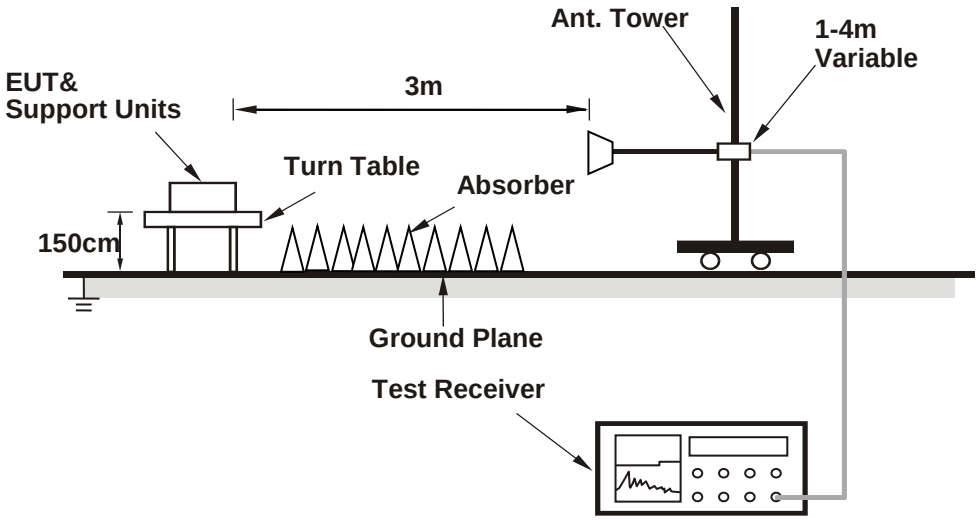
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

a. Placed the EUT on the testing table.
b. Prepared a notebook to act as a communication partner and placed it outside of testing area.
c. The communication partner connected with EUT via a RJ45 cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
d. The communication partner sent data to EUT by command "PING".

4.1.7 Test Results

Above 1GHz Data:

802.11n (HT20) + BT + WCDMA II

EUT Test Condition		Measurement Detail	
Channel	Ch 6 + Ch 78 + Ch 9400	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Tim Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	39.85	45.77	-5.92	54	-14.15	307	199	Average
2390	48.91	54.83	-5.92	74	-25.09	307	199	Peak
2437	96.55	102.44	-5.89	------	------	307	199	Average
2437	104.23	110.12	-5.89	------	------	307	199	Peak
2480	68.74	74.44	-5.7	------	------	116	208	Average
2480	99.47	105.17	-5.7	------	------	116	208	Peak
2483.5	42.25	47.95	-5.7	54	-11.75	116	208	Average
2483.5	50.92	56.62	-5.7	54	-3.08	307	199	Average
2483.5	69.38	75.08	-5.7	74	-4.62	307	199	Peak
2483.5	72.98	78.68	-5.7	74	-1.02	116	208	Peak
4874	34.17	49.73	-15.56	54	-19.83	114	205	Average
4874	41.97	57.53	-15.56	74	-32.03	114	205	Peak
4960	12.45	27.9	-15.45	54	-41.55	163	331	Average
4960	43.18	58.63	-15.45	74	-30.82	163	331	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	39.15	45.07	-5.92	54	-14.85	100	207	Average
2390	49.27	55.19	-5.92	74	-24.73	100	207	Peak
2437	94.37	100.26	-5.89	------	------	100	207	Average
2437	101.53	107.42	-5.89	------	------	100	207	Peak
2480	67.88	73.58	-5.7	------	------	100	211	Average
2480	98.61	104.31	-5.7	------	------	100	211	Peak
2483.5	41.9	47.6	-5.7	54	-12.1	100	211	Average
2483.5	50.4	56.1	-5.7	54	-3.6	100	207	Average
2483.5	70.85	76.55	-5.7	74	-3.15	100	207	Peak
2483.5	72.63	78.33	-5.7	74	-1.37	100	211	Peak
4874	34.48	50.04	-15.56	54	-19.52	102	168	Average
4874	41.71	57.27	-15.56	74	-32.29	102	168	Peak
4960	13.21	28.66	-15.45	54	-40.79	112	123	Average
4960	43.94	59.39	-15.45	74	-30.06	112	123	Peak

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

802.11n (HT20) + BT + LTE Band 2

EUT Test Condition		Measurement Detail	
Channel	Ch 6 + Ch 78 + Ch 18700	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Tim Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	42.19	48.11	-5.92	54	-11.81	232	204	Average
2390	53.97	59.89	-5.92	74	-20.03	232	204	Peak
2437	97.53	103.42	-5.89	------	------	232	204	Average
2437	104.82	110.71	-5.89	------	------	232	204	Peak
2480	67.8	73.5	-5.7	------	------	100	197	Average
2480	98.53	104.23	-5.7	------	------	100	197	Peak
2483.5	40.89	46.59	-5.7	54	-13.11	100	197	Average
2483.5	50.83	56.53	-5.7	54	-3.17	232	204	Average
2483.5	71.62	77.32	-5.7	74	-2.38	100	197	Peak
2483.5	69.66	75.36	-5.7	74	-4.34	232	204	Peak
4874	34.67	50.23	-15.56	54	-19.33	196	145	Average
4874	41.91	57.47	-15.56	74	-32.09	196	145	Peak
4960	11.41	26.86	-15.45	54	-42.59	265	289	Average
4960	42.14	57.59	-15.45	74	-31.86	265	289	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2373.65	42.6	48.47	-5.87	54	-11.4	102	202	Average
2373.65	50.82	56.69	-5.87	74	-23.18	102	202	Peak
2437	93.16	99.05	-5.89	------	------	102	202	Average
2437	100.44	106.33	-5.89	------	------	102	202	Peak
2480	67.59	73.29	-5.7	------	------	108	320	Average
2480	98.32	104.02	-5.7	------	------	108	320	Peak
2483.5	41.43	47.13	-5.7	54	-12.57	108	320	Average
2483.5	46.43	52.13	-5.7	54	-7.57	102	202	Average
2483.5	72.16	77.86	-5.7	74	-1.84	108	320	Peak
2483.5	64.41	70.11	-5.7	74	-9.59	102	202	Peak
4874	35.32	50.88	-15.56	54	-18.68	156	87	Average
4874	42.41	57.97	-15.56	74	-31.59	156	87	Peak
4960	11.81	27.26	-15.45	54	-42.19	197	313	Average
4960	42.54	57.99	-15.45	74	-31.46	197	313	Peak

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

802.11n (HT20) + BT + WCDMA II

EUT Test Condition		Measurement Detail	
Channel	Ch 157 + Ch 78 + Ch 9400	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Tim Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2480	68	73.7	-5.7	------	------	220	206	Average
2480	98.73	104.43	-5.7	------	------	220	206	Peak
2483.5	19.86	25.56	-5.7	54	-34.14	220	206	Average
2483.5	50.59	56.29	-5.7	74	-23.41	220	206	Peak
4960	11.31	26.76	-15.45	54	-42.69	156	142	Average
4960	42.04	57.49	-15.45	74	-31.96	156	142	Peak
5785	98.85	97.93	0.92	------	------	114	192	Average
5785	105.78	104.86	0.92	68.2	37.58	114	192	Peak
11570	46.67	48.38	-1.71	54	-7.33	112	104	Average
11570	55.7	57.41	-1.71	74	-18.3	112	104	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2480	66.22	71.92	-5.7	------	------	106	214	Average
2480	96.95	102.65	-5.7	------	------	106	214	Peak
2483.5	18.2	23.9	-5.7	54	-35.8	106	214	Average
2483.5	48.93	54.63	-5.7	74	-25.07	106	214	Peak
4960	11.33	26.78	-15.45	54	-42.67	168	113	Average
4960	42.06	57.51	-15.45	74	-31.94	168	113	Peak
5785	93.68	92.76	0.92	------	------	112	205	Average
5785	100.09	99.17	0.92	68.2	31.89	112	205	Peak
11570	47.62	49.33	-1.71	54	-6.38	103	168	Average
11570	54.57	56.28	-1.71	74	-19.43	103	168	Peak

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

802.11n (HT20) + BT + LTE Band 2

EUT Test Condition		Measurement Detail	
Channel	Ch 157 + Ch 78 + Ch 18700	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Tim Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2480	68.22	73.92	-5.7	------	------	220	207	Average
2480	98.95	104.65	-5.7	------	------	220	207	Peak
2483.5	18.36	24.06	-5.7	54	-35.64	220	207	Average
2483.5	49.09	54.79	-5.7	74	-24.91	220	207	Peak
4960	11.49	26.94	-15.45	54	-42.51	167	224	Average
4960	42.22	57.67	-15.45	74	-31.78	167	224	Peak
5785	90.71	89.79	0.92	------	------	109	186	Average
5785	97.28	96.36	0.92	68.2	29.08	109	186	Peak
11570	48.5	50.21	-1.71	54	-5.5	151	124	Average
11570	55.39	57.1	-1.71	74	-18.61	151	124	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2480	67.53	73.23	-5.7	------	------	112	321	Average
2480	98.26	103.96	-5.7	------	------	112	321	Peak
2483.5	17.62	23.32	-5.7	54	-36.38	112	321	Average
2483.5	48.35	54.05	-5.7	74	-25.65	112	321	Peak
4960	11.59	27.04	-15.45	54	-42.41	102	144	Average
4960	42.32	57.77	-15.45	74	-31.68	102	144	Peak
5785	84.73	83.81	0.92	------	------	109	208	Average
5785	92.42	91.5	0.92	68.2	24.22	109	208	Peak
11570	48.1	49.81	-1.71	54	-5.9	252	114	Average
11570	55.76	57.47	-1.71	74	-18.24	252	114	Peak

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

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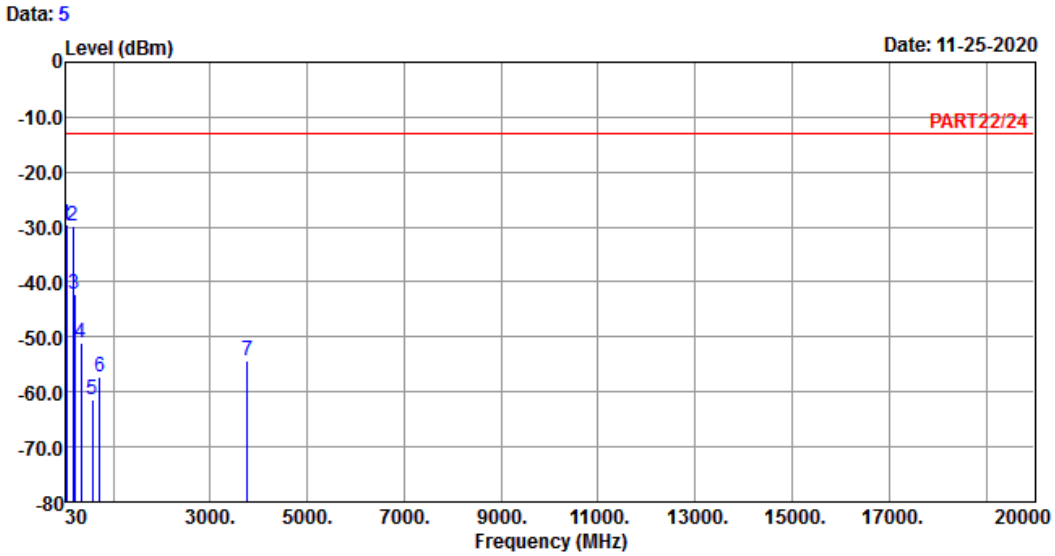
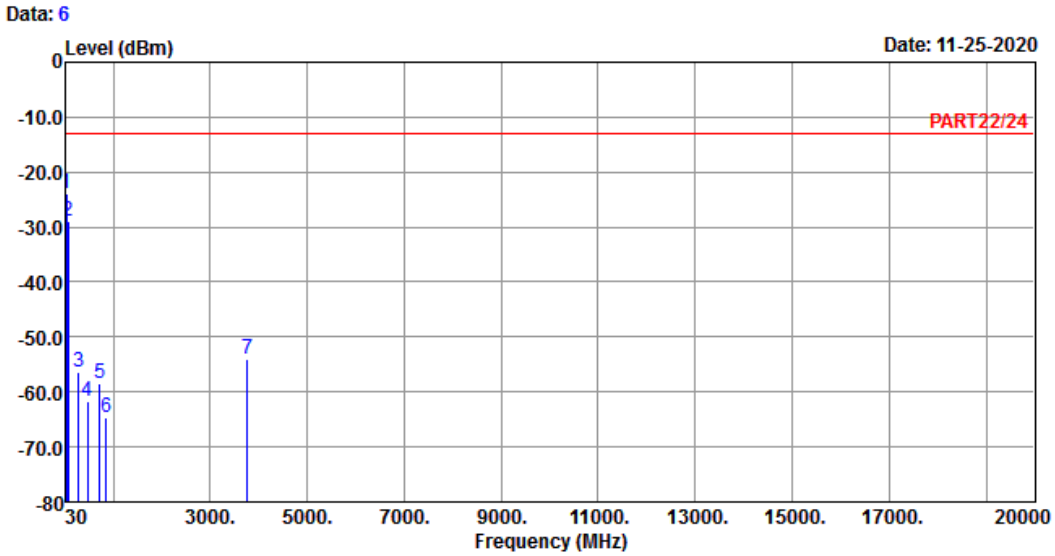


Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : 11N_HT20_TX_CH06+BT_TX_CH78+
: WCDMA B2 Link_M-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	34.85	-29.41	-27.34	-13.00	-2.07	-16.41	Peak
2	168.71	-29.69	-24.23	-13.00	-5.46	-16.69	Peak
3	207.51	-42.18	-34.47	-13.00	-7.71	-29.18	Peak
4	340.40	-51.06	-44.67	-13.00	-6.39	-38.06	Peak
5	572.23	-61.45	-59.53	-13.00	-1.92	-48.45	Peak
6	727.43	-57.38	-57.82	-13.00	0.44	-44.38	Peak
7	3760.00	-54.19	-47.54	-13.00	-6.65	-41.19	Peak



Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : 11N_HT20_TX_CH06+BT_TX_CH7
: WCDMA B2 Link_M-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	38.73	-24.02	-24.12	-13.00	0.10	-11.02	Peak
2	69.77	-28.80	-20.40	-13.00	-8.40	-15.80	Peak
3	281.23	-56.24	-49.61	-13.00	-6.63	-43.24	Peak
4	475.23	-61.72	-56.64	-13.00	-5.08	-48.72	Peak
5	728.40	-58.38	-58.84	-13.00	0.46	-45.38	Peak
6	848.68	-64.55	-64.85	-13.00	0.30	-51.55	Peak
7	3760.00	-54.06	-47.41	-13.00	-6.65	-41.06	Peak

802.11n (HT20) + BT + LTE Band 2

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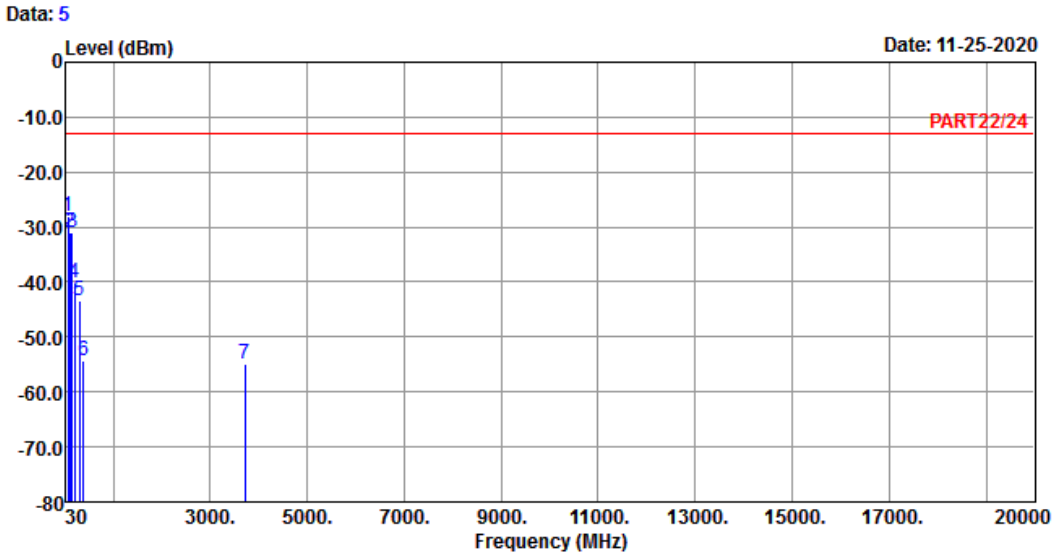
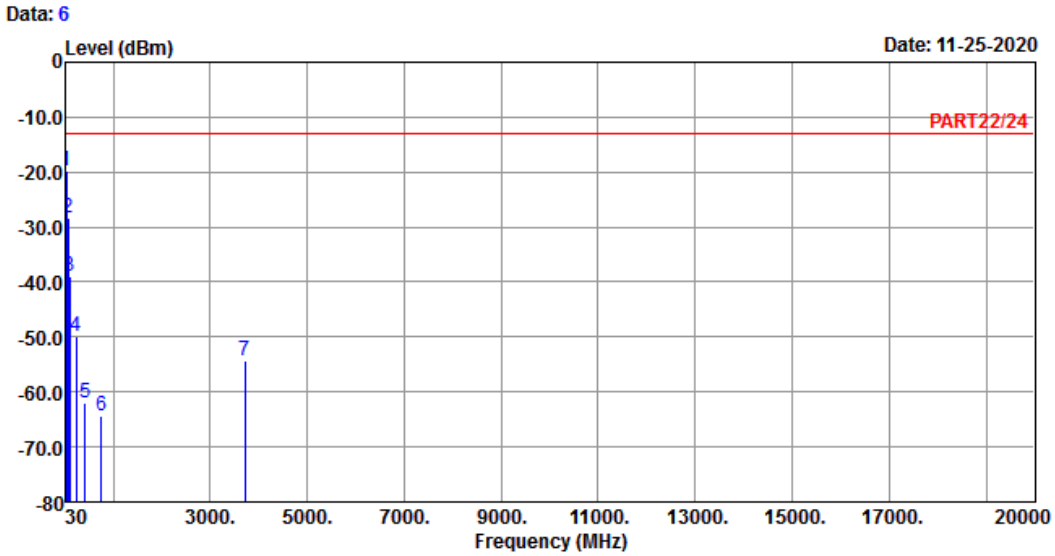


Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : 11N_HT20_TX_CH06+BT_TX_CH78+
: LTE Band 2 QPSK_20M Link_L-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	68.80	-28.07	-19.75	-13.00	-8.32	-15.07	Peak
2	108.57	-30.98	-20.63	-13.00	-10.35	-17.98	Peak
3	144.46	-31.12	-22.96	-13.00	-8.16	-18.12	Peak
4	210.42	-40.11	-32.52	-13.00	-7.59	-27.11	Peak
5	308.39	-43.49	-36.61	-13.00	-6.88	-30.49	Peak
6	378.23	-54.46	-48.39	-13.00	-6.07	-41.46	Peak
7	3720.00	-54.91	-48.09	-13.00	-6.82	-41.91	Peak



Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : 11N_HT20_TX_CH06+BT_TX_CH7
: LTE Band 2 QPSK_20M Link_L-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	36.79	-19.69	-18.70	-13.00	-0.99	-6.69	Peak
2	71.71	-28.26	-19.41	-13.00	-8.85	-15.26	Peak
3	101.78	-39.08	-28.56	-13.00	-10.52	-26.08	Peak
4	234.67	-49.93	-43.31	-13.00	-6.62	-36.93	Peak
5	422.85	-62.13	-56.37	-13.00	-5.76	-49.13	Peak
6	759.44	-64.27	-65.12	-13.00	0.85	-51.27	Peak
7	3720.00	-54.25	-47.43	-13.00	-6.82	-41.25	Peak

802.11n (HT20) + BT + WCDMA II

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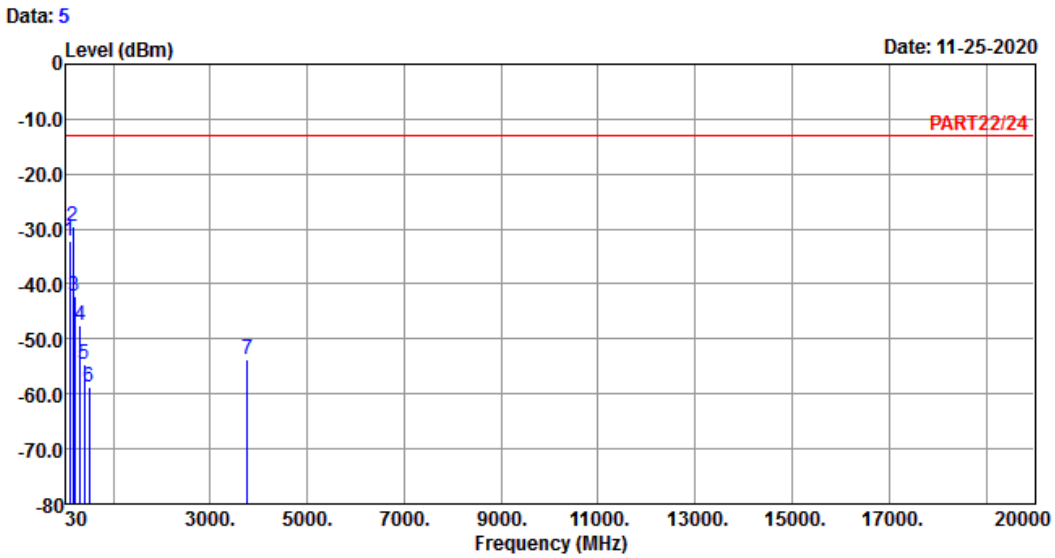
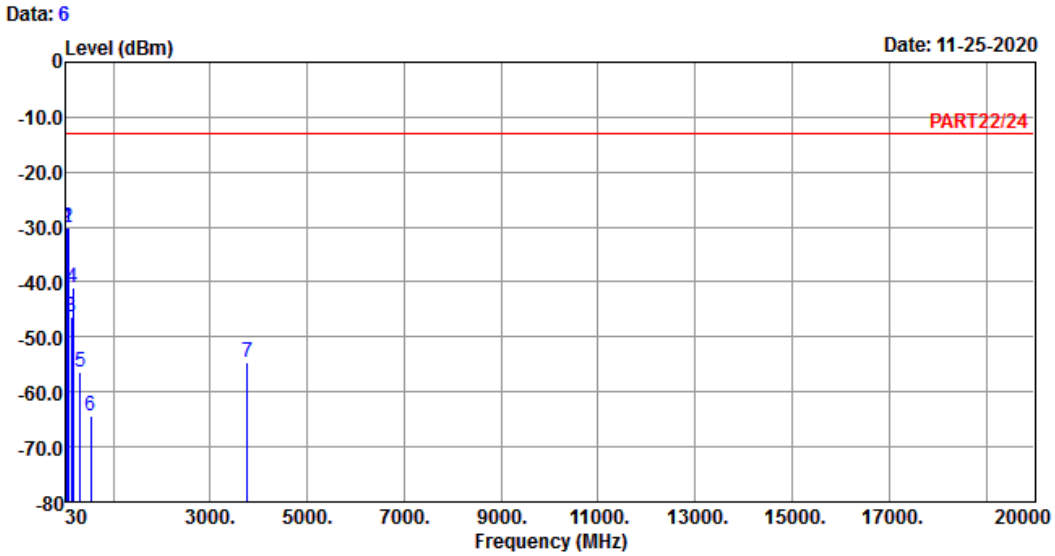


Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : 11N_HT20_TX_CH157+BT_TX_CH78+
: WCDMA B2 Link_M-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	96.93	-32.27	-21.54	-13.00	-10.73	-19.27	Peak
2 pp	169.68	-29.44	-23.91	-13.00	-5.53	-16.44	Peak
3	208.48	-42.33	-34.66	-13.00	-7.67	-29.33	Peak
4	320.03	-47.66	-40.96	-13.00	-6.70	-34.66	Peak
5	400.54	-54.66	-48.72	-13.00	-5.94	-41.66	Peak
6	505.30	-58.64	-54.20	-13.00	-4.44	-45.64	Peak
7	3760.00	-53.85	-47.20	-13.00	-6.65	-40.85	Peak



Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : 11N_HT20_TX_CH157+BT_TX_CH
: WCDMA B2 Link_M-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	46.49	-30.10	-27.10	-13.00	-3.00	-17.10	Peak
2 pp	67.83	-30.06	-21.81	-13.00	-8.25	-17.06	Peak
3	137.67	-46.41	-37.75	-13.00	-8.66	-33.41	Peak
4	175.50	-41.12	-34.57	-13.00	-6.55	-28.12	Peak
5	315.18	-56.43	-49.65	-13.00	-6.78	-43.43	Peak
6	545.07	-64.39	-61.37	-13.00	-3.02	-51.39	Peak
7	3760.00	-54.69	-48.04	-13.00	-6.65	-41.69	Peak

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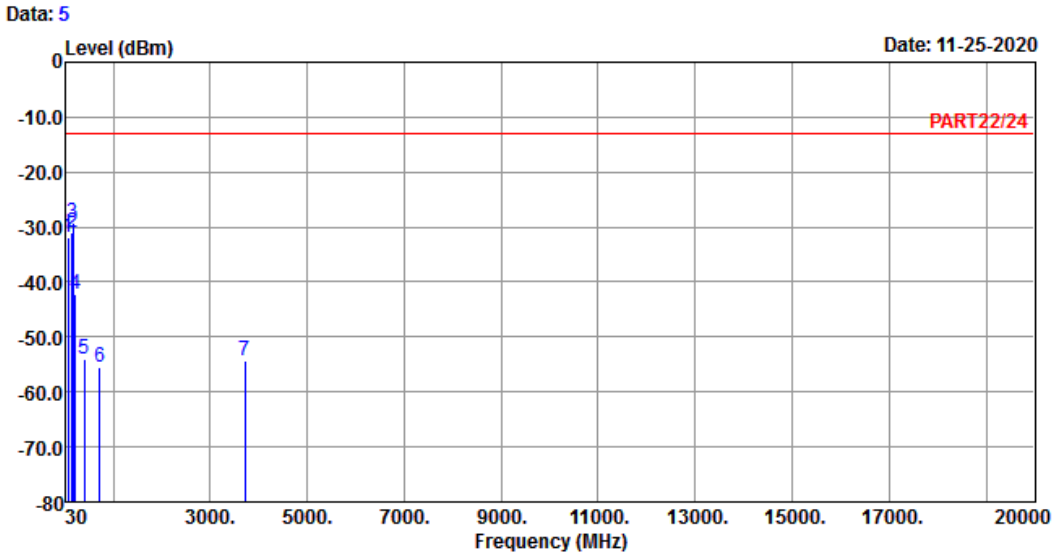
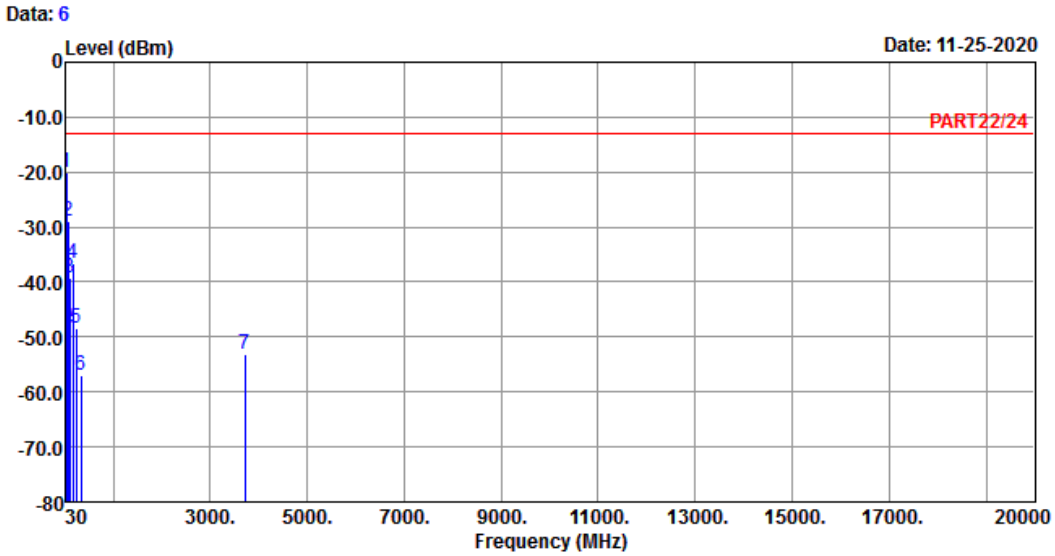


Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : 11N_HT20_TX_CH157+BT_TX_CH78+
: LTE Band 2 QPSK_20M Link_L-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	66.86	-31.88	-23.70	-13.00	-8.18	-18.88	Peak
2	144.46	-31.12	-22.96	-13.00	-8.16	-18.12	Peak
3 pp	170.65	-29.17	-23.47	-13.00	-5.70	-16.17	Peak
4	216.24	-42.11	-34.75	-13.00	-7.36	-29.11	Peak
5	402.48	-53.94	-48.01	-13.00	-5.93	-40.94	Peak
6	729.37	-55.61	-56.09	-13.00	0.48	-42.61	Peak
7	3720.00	-54.27	-47.45	-13.00	-6.82	-41.27	Peak



Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : 11N_HT20_TX_CH157+BT_TX_CH
: LTE Band 2 QPSK_20M Link_L-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	40.67	-20.00	-20.12	-13.00	0.12	-7.00	Peak
2	70.74	-28.83	-20.21	-13.00	-8.62	-15.83	Peak
3	102.75	-39.23	-28.74	-13.00	-10.49	-26.23	Peak
4	169.68	-36.66	-31.13	-13.00	-5.53	-23.66	Peak
5	231.76	-48.35	-41.62	-13.00	-6.73	-35.35	Peak
6	338.46	-57.01	-50.59	-13.00	-6.42	-44.01	Peak
7	3720.00	-53.23	-46.41	-13.00	-6.82	-40.23	Peak

Below 1GHz data

802.11n (HT20) + BT + WCDMA II

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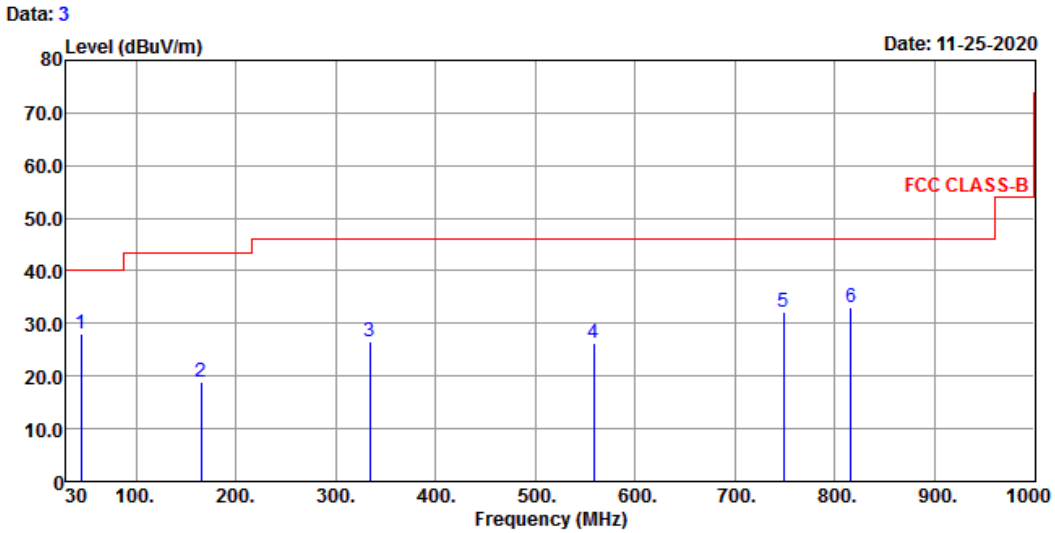
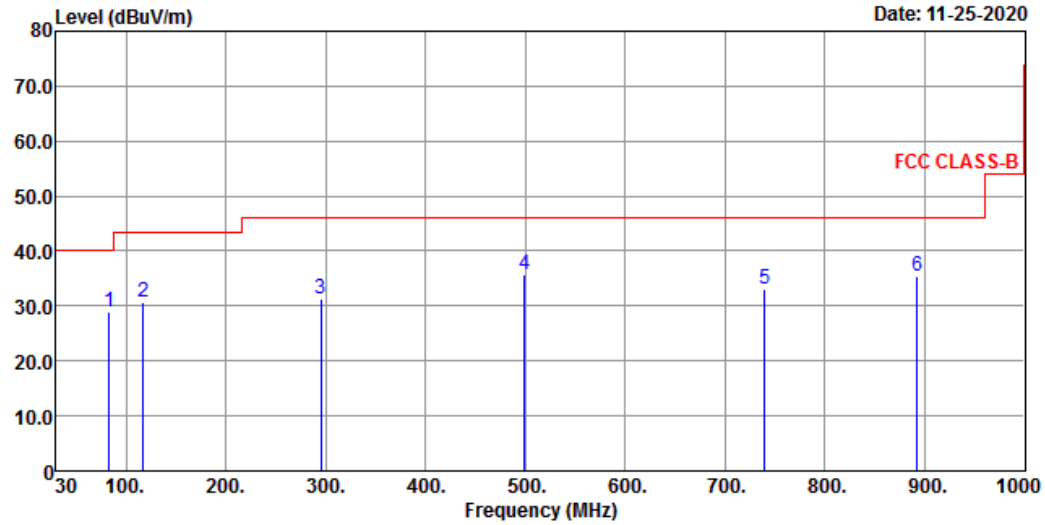


Site : 966 Chamber 5
Condition: FCC CLASS-B 3m HORIZONTAL
Remark : 11N_HT20_TX_CH06+BT_TX_CH78+
: WCDMA Band 2 Link_M-CH_LF
Tested by: Cyril Chen

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1 pp	44.55	28.01	39.88	-11.87	40.00	-11.99	129	347	QP
2	164.83	19.02	30.98	-11.96	43.50	-24.48	107	58	QP
3	334.58	26.65	36.62	-9.97	46.00	-19.35	173	262	QP
4	558.65	26.32	30.52	-4.20	46.00	-19.68	136	254	QP
5	748.77	32.15	31.19	0.96	46.00	-13.85	199	234	QP
6	815.70	33.17	31.12	2.05	46.00	-12.83	148	198	QP

Data: 4



Site : 966 Chamber 5
Condition: FCC CLASS-B 3m VERTICAL
Remark : 11N_HT20_TX_CH06+BT_TX_CH7
: WCDMA Band 2 Link_M-CH_LF
Tested by: Cyril Chen

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	83.35	29.06	46.22	-17.16	40.00	-10.94	109	68	QP
2	117.30	30.61	44.64	-14.03	43.50	-12.89	164	258	QP
3	294.81	31.16	42.49	-11.33	46.00	-14.84	135	235	QP
4 pp	499.48	35.72	41.18	-5.46	46.00	-10.28	177	244	QP
5	740.04	33.13	32.27	0.86	46.00	-12.87	191	162	QP
6	892.33	35.50	32.67	2.83	46.00	-10.50	126	185	QP

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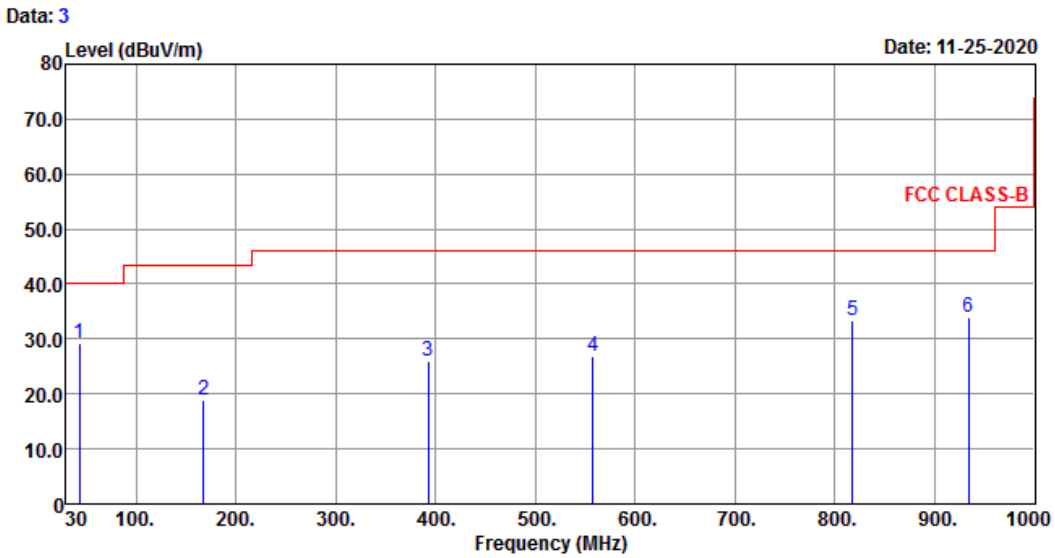
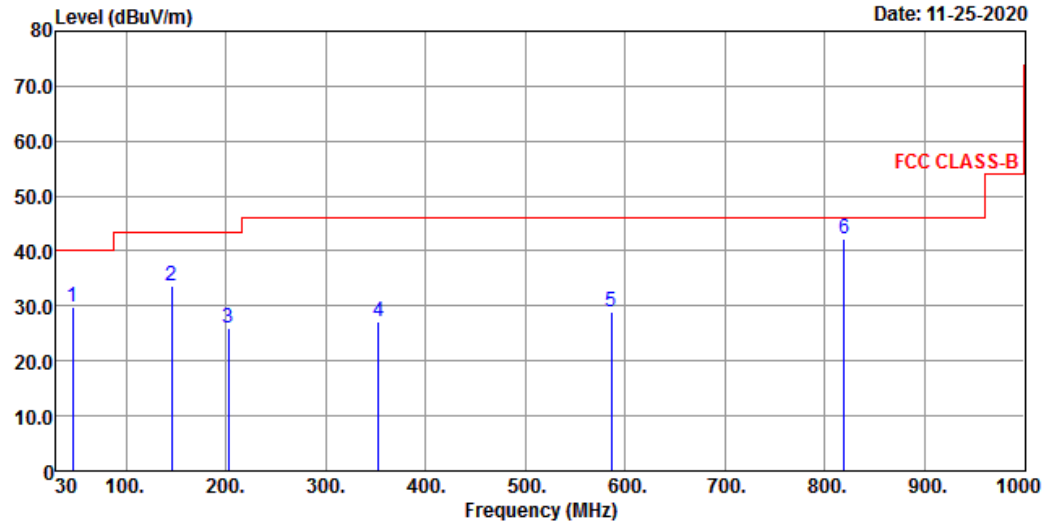


Site : 966 Chamber 5
Condition: FCC CLASS-B 3m HORIZONTAL
Remark : 11N_HT20_TX_CH06+BT_TX_CH78+
: LTE Band 2 QPSK_20M Link_L-CH_LF
Tested by: Cyril Chen

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1 pp	43.58	29.34	41.26	-11.92	40.00	-10.66	172	84	QP
2	167.74	18.89	31.05	-12.16	43.50	-24.61	133	126	QP
3	392.78	25.94	34.46	-8.52	46.00	-20.06	189	254	QP
4	557.68	26.72	30.95	-4.23	46.00	-19.28	144	163	QP
5	817.64	33.36	31.25	2.11	46.00	-12.64	157	229	QP
6	934.04	33.88	30.45	3.43	46.00	-12.12	163	284	QP

Data: 4



Site : 966 Chamber 5
Condition: FCC CLASS-B 3m VERTICAL
Remark : 11N_HT20_TX_CH06+BT_TX_CH7
: LTE Band 2 QPSK_20M Link_L-CH_LF
Tested by: Cyril Chen

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	46.49	29.95	41.72	-11.77	40.00	-10.05	111	184	QP
2	145.43	33.60	45.40	-11.80	43.50	-9.90	138	120	QP
3	202.66	26.00	41.11	-15.11	43.50	-17.50	152	144	QP
4	353.01	27.07	36.74	-9.67	46.00	-18.93	147	63	QP
5	585.81	28.96	32.13	-3.17	46.00	-17.04	133	289	QP
6 pp	819.58	42.07	39.89	2.18	46.00	-3.93	157	211	QP

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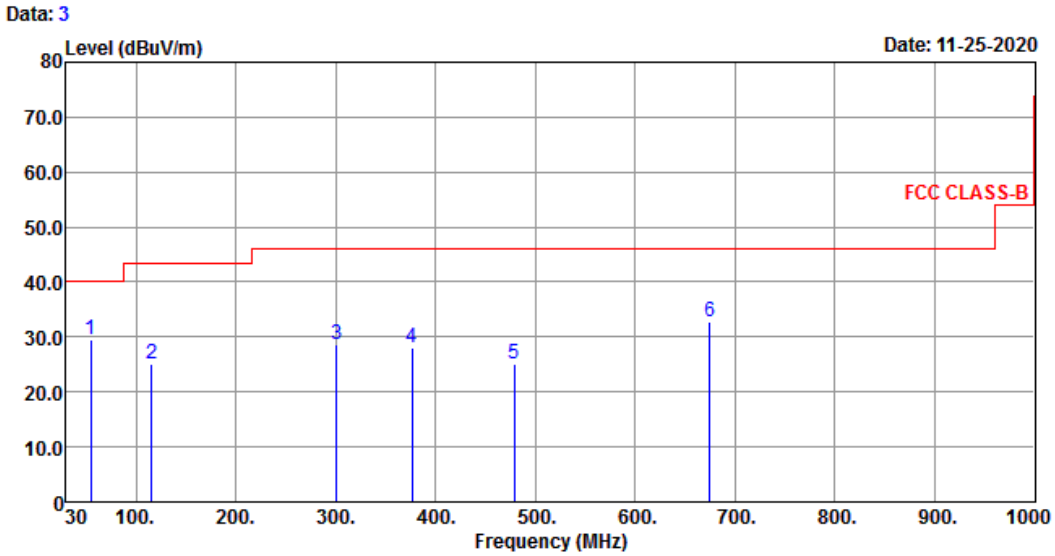
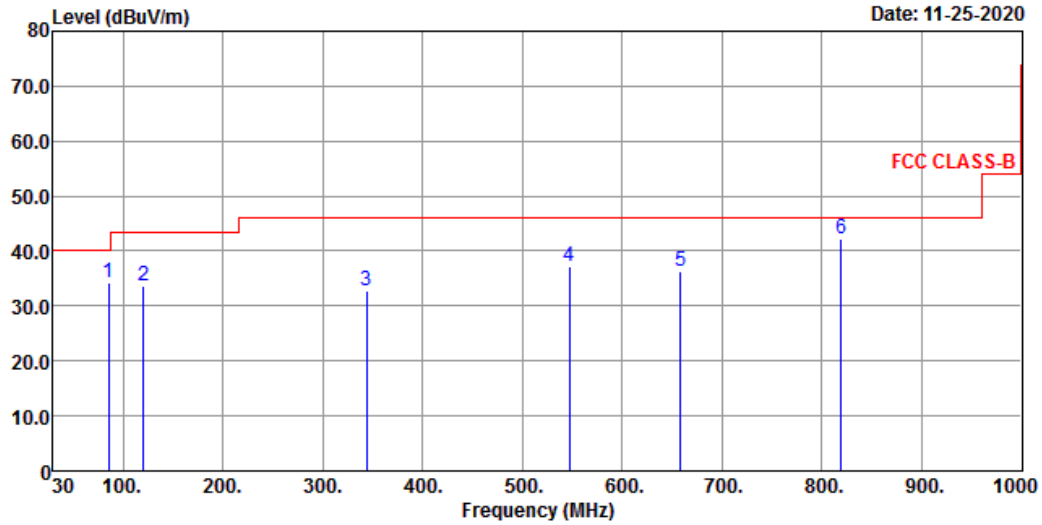


Site : 966 Chamber 5
Condition: FCC CLASS-B 3m HORIZONTAL
Remark : 11N_HT20_TX_CH157+BT_TX_CH78+
: WCDMA Band 2 Link_M-CH_LF
Tested by: Cyril Chen

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1 pp	54.25	29.51	41.49	-11.98	40.00	-10.49	128	124	QP
2	115.36	25.11	39.33	-14.22	43.50	-18.39	157	236	QP
3	300.63	28.68	39.84	-11.16	46.00	-17.32	144	315	QP
4	376.29	28.11	36.93	-8.82	46.00	-17.89	139	58	QP
5	479.11	25.09	30.92	-5.83	46.00	-20.91	155	247	QP
6	675.05	32.84	34.02	-1.18	46.00	-13.16	163	289	QP

Data: 4



Site : 966 Chamber 5
Condition: FCC CLASS-B 3m VERTICAL
Remark : 11N_HT20_TX_CH157+BT_TX_CH
: WCDMA Band 2 Link_M-CH_LF
Tested by: Cyril Chen

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	85.29	34.19	51.56	-17.37	40.00	-5.81	156	159	QP
2	120.21	33.61	47.39	-13.78	43.50	-9.89	147	138	QP
3	344.28	32.87	42.79	-9.92	46.00	-13.13	150	161	QP
4	547.01	37.14	41.69	-4.55	46.00	-8.86	138	294	QP
5	658.56	36.17	37.68	-1.51	46.00	-9.83	119	261	QP
6 pp	819.58	42.07	39.89	2.18	46.00	-3.93	186	222	QP

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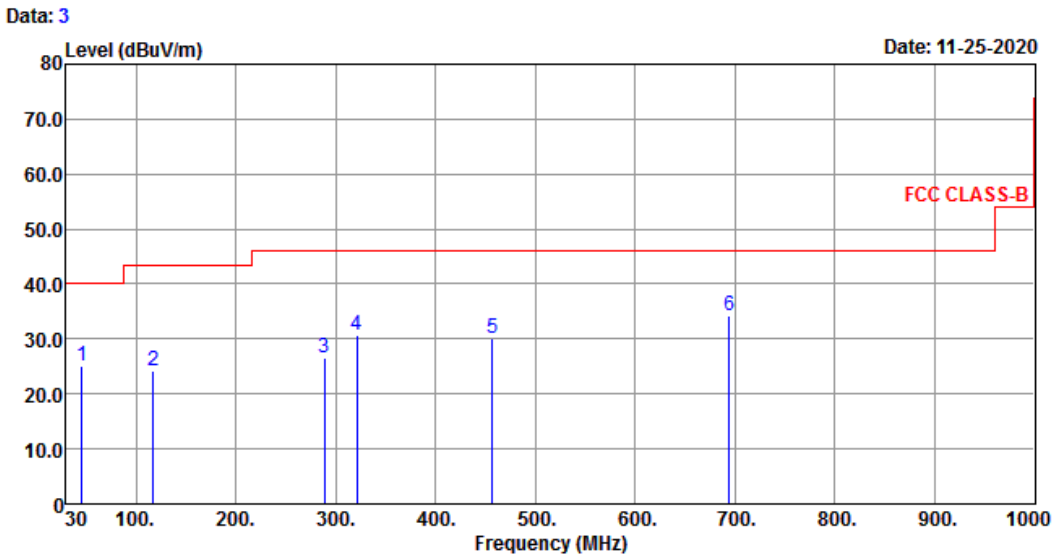
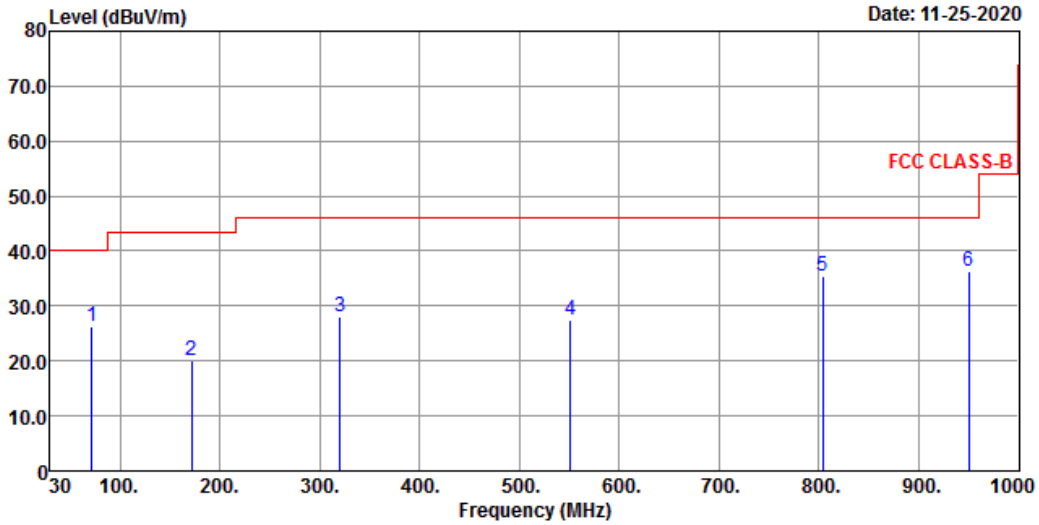


Site : 966 Chamber 5
Condition: FCC CLASS-B 3m HORIZONTAL
Remark : 11N_HT20_TX_CH157+BT_TX_CH78+
: LTE Band 2 QPSK_20M Link_L-CH_LF
Tested by: Cyril Chen

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	45.52	25.01	36.79	-11.78	40.00	-14.99	177	192	QP
2	117.30	24.30	38.33	-14.03	43.50	-19.20	107	65	QP
3	288.99	26.63	38.10	-11.47	46.00	-19.37	189	124	QP
4	321.00	30.76	41.18	-10.42	46.00	-15.24	153	261	QP
5	456.80	30.26	36.54	-6.28	46.00	-15.74	188	274	QP
6 pp	694.45	34.17	34.91	-0.74	46.00	-11.83	163	265	QP

Data: 4



Site : 966 Chamber 5
Condition: FCC CLASS-B 3m VERTICAL
Remark : 11N_HT20_TX_CH157+BT_TX_CH
: LTE Band 2 QPSK_20M Link_L-CH_LF
Tested by: Cyril Chen

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	71.71	26.19	40.49	-14.30	40.00	-13.81	106	254	QP
2	171.62	20.12	32.57	-12.45	43.50	-23.38	148	183	QP
3	320.03	28.09	38.56	-10.47	46.00	-17.91	195	351	QP
4	550.89	27.39	31.83	-4.44	46.00	-18.61	114	260	QP
5	804.06	35.45	33.67	1.78	46.00	-10.55	171	185	QP
6 pp	950.53	36.43	32.74	3.69	46.00	-9.57	127	138	QP

5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Tel: 886-2-26052180
Fax: 886-2-26051924

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Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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