

FCC Test Report

(Co-Located)

Report No.: RFBHPY-WTW-P23100691-6

FCC ID: LY5-PCITP2

Test Model: PCI-TP2

Received Date: Oct. 31, 2023

Test Date: Dec. 08, 2023

Issued Date: Mar. 27, 2024

Applicant: PCI Private Limited

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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**FCC Registration/
Designation Number:** 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
RFBHPY-WTW-P23100691-6	Original release	

1 Certificate of Conformity

Product: Telematics Platform 2

Brand: PCI

Test Model: PCI-TP2

Sample Status: Engineering sample

Applicant: PCI Private Limited

Test Date: Dec. 08, 2023

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)

47 CFR FCC Part 15, Subpart E (Section 15.407)

47 CFR FCC Part 22

47 CFR FCC Part 24

47 CFR FCC Part 27

47 CFR FCC Part 90

ANSI 63.26-2015

ANSI C63.10-2013

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 : Pettie Chen , **Date:** Mar. 27, 2024
Pettie Chen / Senior Specialist

Approved by : Jeremy Lin , **Date:** Mar. 27, 2024
Jeremy Lin / 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) 47 CFR FCC Part 22 47 CFR FCC Part 24 47 CFR FCC Part 27 47 CFR FCC Part 90 ANSI 63.26-2015 ANSI C63.10-2013		
FCC Clause	Test Item	Result	Remarks
15.205 / 15.209 / 15.247(d) 15.407(b)(9) 15.407(b)(4(i)/10) Part 2.1053	Radiated Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -0.90dB at 11510.00MHz.

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) ($\pm$)
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	2.44 dB
	30 MHz ~ 1 GHz	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	Telematics Platform 2	
Brand	PCI	
Test Model	PCI-TP2	
Sample Status	Engineering sample	
Power Supply Rating	3.7Vdc from battery 12Vdc or 24Vdc from power supply	
Modulation Type	Bluetooth	GFSK, $\pi/4$ -DQPSK, 8DPSK
	Bluetooth LE	GFSK
	WLAN	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in VHT mode
	WWAN	QPSK, 16QAM
Operating Frequency	Bluetooth	2402 ~ 2480 MHz
	Bluetooth LE	2402 ~ 2480 MHz
	WLAN	2412 ~ 2462 MHz, 5180 ~ 5240 MHz, 5260 ~ 5320 MHz, 5500 ~ 5720 MHz, 5745 ~ 5825 MHz
	GSM 850	824 ~ 849 MHz
	GSM 1900	1850 ~ 1910 MHz
	WCDMA Band 2	1850 ~ 1910 MHz
	WCDMA Band 4	1710 ~ 1755 MHz
	WCDMA Band 5	824 ~ 849 MHz
	LTE Band 2	1850 ~ 1910 MHz
	LTE Band 4	1710 ~ 1755 MHz
	LTE Band 5	824 ~ 849 MHz
	LTE Band 7	2500 ~ 2570 MHz
	LTE Band 12	698 ~ 716 MHz
	LTE Band 13	777 ~ 787 MHz
	LTE Band 26	814 ~ 849 MHz
	LTE Band 38	2570 ~ 2620 MHz
	LTE Band 41	2496 ~ 2690 MHz
	LTE Band 66	1710 ~ 1780 MHz
Antenna Type	Refer to Note	
Antenna Connector	Refer to Note	
Accessory Device	NA	

Note:

1. The antenna information is listed as below.

WLAN / Bluetooth antenna:

Gain (dBi)					Antenna Type	Connector Type
2400~2483.5 MHz	5150 ~ 5250 MHz	5250 ~ 5350 MHz	5470 ~ 5725 MHz	5725 ~ 5825 MHz		
2.96	3.07	2.85	4.67	4.53	FPC	MMCX

WWAN antenna:

Antenna Type	FPC	
Connector Type	MMCX	
Band	Freq. Range (MHz)	Gain (dBi)
GSM 850	824 ~ 849	0.15
GSM 1900	1850 ~ 1910	2.61
WCDMA Band 2	1850 ~ 1910	2.61
WCDMA Band 4	1710 ~ 1755	2.78
WCDMA Band 5	824 ~ 849	0.15
LTE Band 2	1850 ~ 1910	2.61
LTE Band 4	1710 ~ 1755	2.78
LTE Band 5	824 ~ 849	0.15
LTE Band 7	2500 ~ 2570	1.96
LTE Band 12	698 ~ 716	-1.54
LTE Band 13	777 ~ 787	0.19
LTE Band 26	814 ~ 849	0.22
LTE Band 38	2570 ~ 2620	1.75
LTE Band 41	2496 ~ 2690	1.96
LTE Band 66	1710 ~ 1780	2.78

2. Detail antenna specification please refer to antenna datasheet an antenna gain measurement report.

3. For WWAN, the channel with the maximum power is chosen for the final tests.

4. The 2.4GHz and 5GHz cannot transmit simultaneously.

5. For WWAN function is for contains FCC ID: LY5-PCITP200

3.2 Description of Test Modes

Bluetooth:

79 channels are provided for BT-EDR:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (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 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
9	2420	19	2440	29	2460	39	2480

WLAN 2.4G:

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20), VHT20:

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

7 channels are provided for 802.11n (HT40), VHT40:

Channel	Frequency	Channel	Frequency
3	2422 MHz	7	2442 MHz
4	2427 MHz	8	2447 MHz
5	2432 MHz	9	2452 MHz
6	2437 MHz		

WLAN 5G:

FOR 5180 ~ 5320 MHz

8 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
36	5180 MHz	52	5260 MHz
40	5200 MHz	56	5280 MHz
44	5220 MHz	60	5300 MHz
48	5240 MHz	64	5320 MHz

4 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	54	5270 MHz
46	5230 MHz	62	5310 MHz

2 channels are provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
42	5210 MHz	58	5290 MHz

FOR 5500 ~ 5720 MHz

12 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

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

6 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

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

3 channels are provided for 802.11ac (VHT80):

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

FOR 5745 ~ 5825 MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

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

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775 MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to			Description
	RE $\geq$ 1G	RE<1G	OB	
-	√	√	√	-

Where RE $\geq$ 1G: Radiated Emission above 1GHz & Bandedge Measurement
 RE<1G: Radiated Emission below 1GHz
 OB: Conducted Out-Band Emission Measurement

NOTE: The EUT is designed to be positioned on the Z-plane only.

Radiated Emission Test (Above 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	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology
-	Bluetooth + 802.11ac (VHT40) + GSM 850	2402-2480	0 to 78	0 + 151 + 251	GFSK
		5745-5825	151 to 159		BPSK
		824.2-848.8	128 to 251		GPRS
-	Bluetooth + 802.11g + GSM 850	2402-2480	0 to 78	0 + 6 + 251	GFSK
		2412-2462	1 to 11		BPSK
		824.2-848.8	128 to 251		GPRS

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	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology
-	Bluetooth + 802.11ac (VHT40) + GSM 850	2402-2480	0 to 78	0 + 151 + 251	GFSK
		5745-5825	151 to 159		BPSK
		824.2-848.8	128 to 251		GPRS
-	Bluetooth + 802.11g + GSM 850	2402-2480	0 to 78	0 + 6 + 251	GFSK
		2412-2462	1 to 11		BPSK
		824.2-848.8	128 to 251		GPRS

Conducted Out of Band Emission Measurement:

- ☒ 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
-	Bluetooth + 802.11ac (VHT40)	2402-2480	0 to 78	0 + 151	GFSK
		5745-5825	151 to 159		BPSK
-	Bluetooth + 802.11g	2402-2480	0 to 78	0 + 6	GFSK
		2412-2462	1 to 11		BPSK

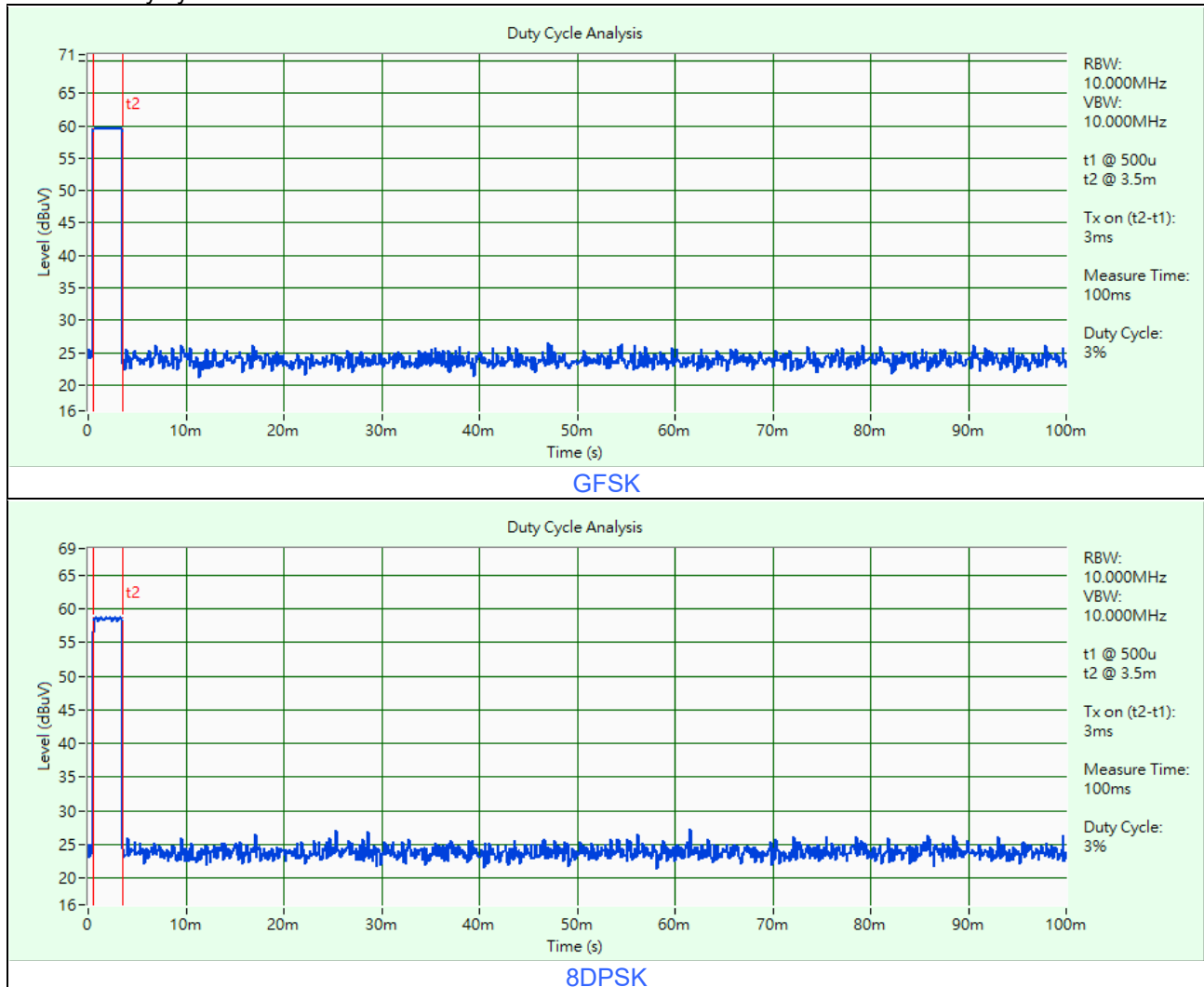
Test Condition:

Applicable to	Environmental Conditions	Input Power (System)	Tested by
RE $\geq$ 1G	24 deg. C, 72% RH	12Vdc	Vincent Chen
RE<1G	24 deg. C, 72% RH	12Vdc	Vincent Chen
OB	24 deg. C, 72% RH	12Vdc	Vincent Chen

3.3 Duty Cycle of Test Signal

GFSK: Duty cycle = 3 ms / 100 ms x 100% = 3.0%

8DPSK: Duty cycle = 3 ms / 100 ms x 100% = 3.0%



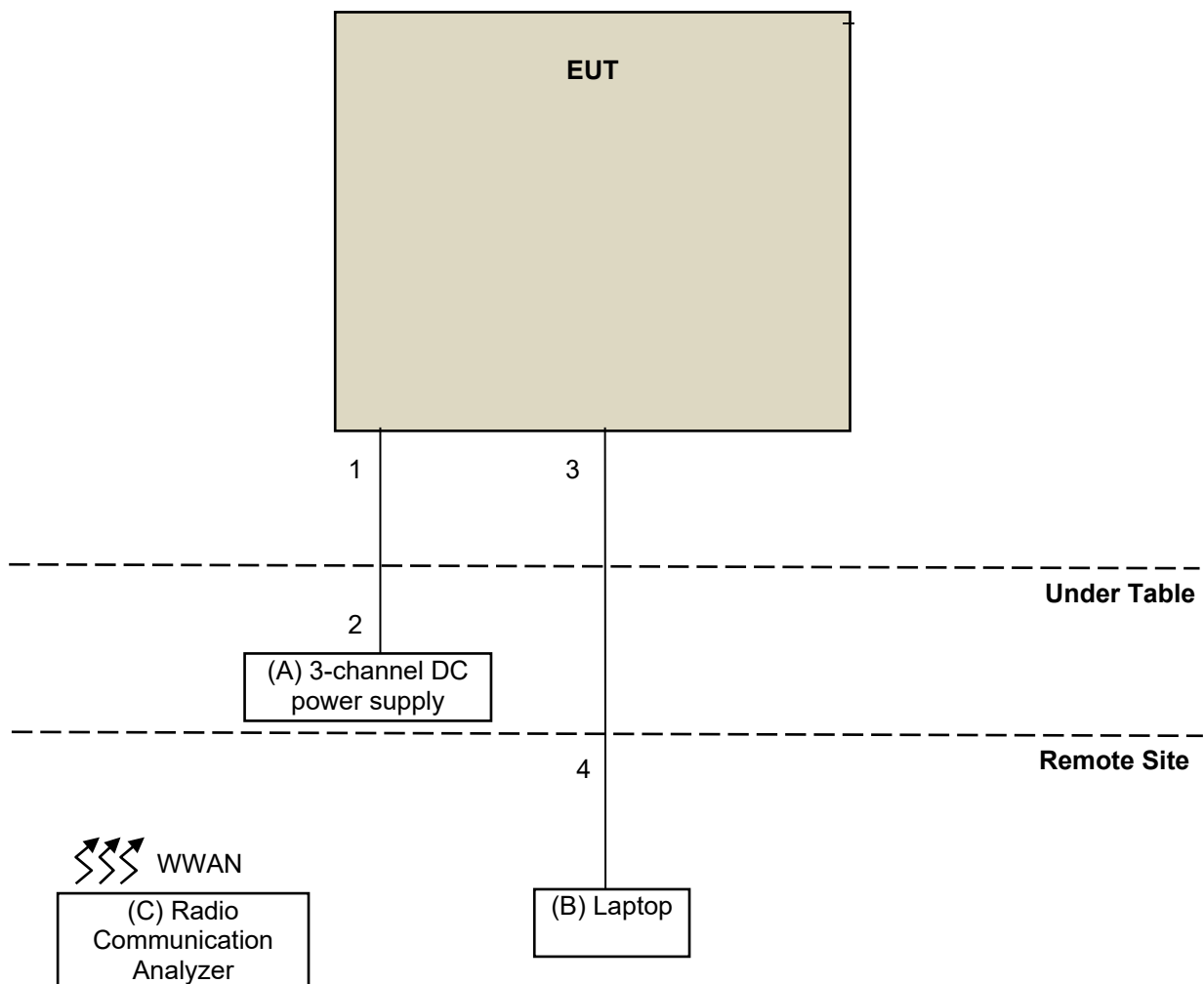
3.4 Description of Support Units

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	3-channel DC power supply	JIN YIH Technology	ODP3033	ODP30332128133	NA	NA
B	Laptop	DELL	Inspiron 14R	8LRKKW1	NA	NA
C	Radio Communication Analyzer	Anritsu	MT8821C	6201462755	NA	NA

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	DC Cable	1	1.8	No	0	Supplied by applicant
2	DC Cable	1	3	No	0	Provided by Lab
3	LAN Cable	1	1.5	No	0	Supplied by applicant
4	LAN Cable	1	10	No	0	Provided by Lab

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specification of the EUT declared by the manufacturer, it must comply with the requirements of the following standards:

47 CFR FCC Part 15, Subpart C (Section 15.247)

47 CFR FCC Part 15, Subpart E (Section 15.407)

47 CFR FCC Part 22

47 CFR FCC Part 24

47 CFR FCC Part 27

47 CFR FCC Part 90

ANSI 63.26-2015

ANSI C63.10-2013

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

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.

Radiated emissions above 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

Notes:

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 1000 MHz, 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 20 dB under any condition of modulation.

For WWAN:

According to FCC 47 CFR part 27.53(g), for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. The limit of emissions is equal to -13 dBm.

4.1.2 Test Instruments

Radiated Spurious Emissions below 1GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-472	2023/10/16	2024/10/15
EXA Signal Analyzer Agilent	N9010A	MY52220207	2023/1/3	2024/1/2
Loop Antenna Electro-Metrics	EM-6879	269	2023/9/23	2024/9/22
Loop Antenna TESEQ	HLA 6121	45745	2023/8/8	2024/8/7
MXE EMI Receiver Keysight	N9038A	MY55420137	2023/5/3	2024/5/2
Preamplifier EMCI	EMC 330H	980112	2023/9/27	2024/9/26
	EMC001340	980201	2023/9/27	2024/9/26
RF Coaxial Cable EMCI	5D-NM-BM	140903+140902	2023/1/7	2024/1/6
RF Coaxial Cable Woken	8D-FB	Cable-Ch10-01	2023/9/27	2024/9/26
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5.
2. Tested Date: 2023/12/8

Radiated Spurious Emissions above 1GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	7	N/A	N/A
EXA Signal Analyzer Agilent	N9010A	MY52220207	2023/1/3	2024/1/2
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-969	2023/11/12	2024/11/11
	BBHA 9170	148	2023/11/12	2024/11/11
MXE EMI Receiver Keysight	N9038A	MY55420137	2023/5/3	2024/5/2
Notch Filter Micro-Tronics	BRM17690	004	2023/1/11	2024/1/10
	BRM50716	060	2023/1/11	2024/1/10
Preamplifier EMCI	EMC 012645	980115	2023/9/27	2024/9/26
	EMC 184045	980116	2023/9/27	2024/9/26
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	2023/7/8	2024/7/7
	EMC102-KM-KM-3000	150929	2023/7/8	2024/7/7
	EMC104-SM-SM-8000+3000	171005	2023/9/27	2024/9/26
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	EMC104-SM-SM-1000(140807)	2023/9/27	2024/9/26
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5.
2. Tested Date: 2023/12/8

4.1.3 Test Procedures

For WLAN 2.4G, BT:

For Radiated emission below 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters 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. 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, except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz at frequency below 150 kHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz or 10 kHz at frequency (150 kHz to 30 MHz).
3. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated emission above 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters 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.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

For WLAN 5G:

For Radiated emission above 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters 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.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated emission above 1 GHz

- a. The EUT was placed on the top of a rotating table 1.5 meters 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 peak and average detects 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.

Notes:

1. 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.
2. For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10 Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1 GHz.
3. All modes of operation were investigated and the worst-case emissions are reported.

For WWAN:

The EUT is configured by test software or key-in commands to set data modulation and maximum power using WWAN technology.

- a. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) height or 1.5 m height (above 1GHz) 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. 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.
- c. Perform a field strength measurement and record the worse read value, is the field strength value via a spectrum reading obtained corrected for antenna factor, cable loss and pre-amplifier factor and then mathematically convert the measured field strength level to EIRP/ERP level.
- d. Following ANSI C63.26 section 5.5 and 5.2.7
- e. $EIRP (dBm) = E (dB\mu V/m) + 20\log(D) - 104.8$; where D is the measurement distance (in the far field region) in m.
- f. $ERP (dBm) = E (dB\mu V/m) + 20\log(D) - 104.8 - 2.15$; where D is the measurement distance (in the far field region) in m.

Note:

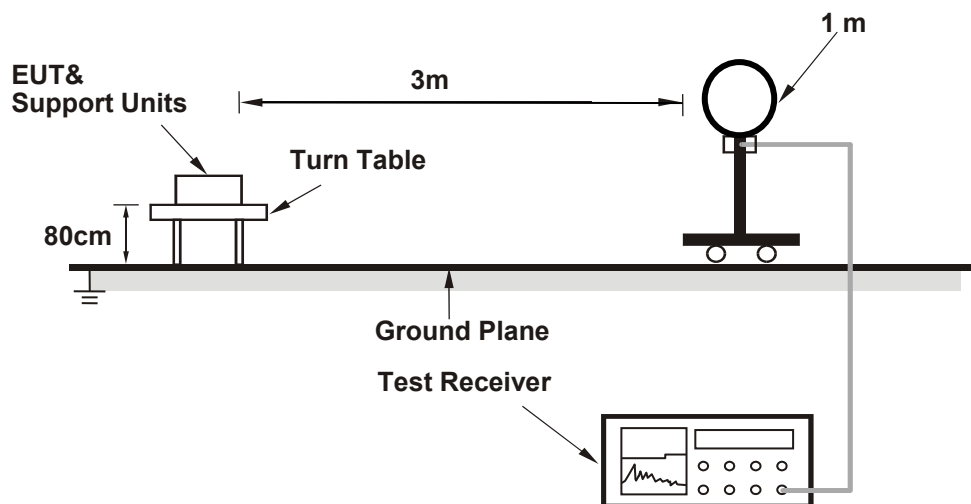
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz.
Set detector = average.

4.1.4 Deviation from Test Standard

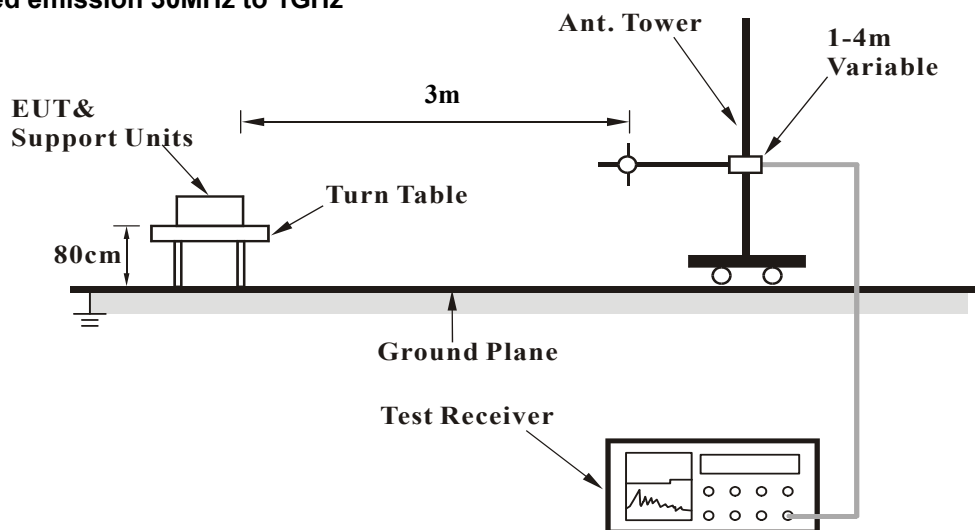
No deviation.

4.1.5 Test Setup

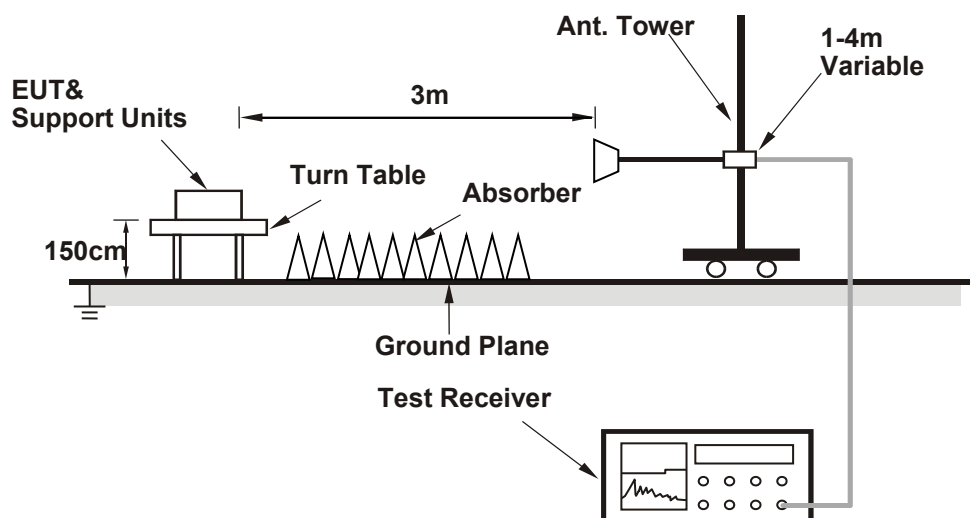
For Radiated emission below 30MHz



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

Set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz Data:

Bluetooth + 802.11ac (VHT40) + GSM 850

RF Mode	Bluetooth	Channel	CH 0 : 2402 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=RMS

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2312.86	61.70 PK	74.00	-12.30	2.13 H	216	27.50	34.20
2	2312.86	48.60 AV	54.00	-5.40	2.13 H	216	14.40	34.20
3	*2402.00	109.80 PK			2.13 H	216	75.90	33.90
4	*2402.00	79.30 AV			2.13 H	216	45.40	33.90
5	4804.00	60.00 PK	74.00	-14.00	1.65 H	152	57.40	2.60
6	4804.00	29.50 AV	54.00	-24.50	1.65 H	152	26.90	2.60
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2312.75	60.60 PK	74.00	-13.40	1.44 V	153	26.40	34.20
2	2312.75	47.50 AV	54.00	-6.50	1.44 V	153	13.30	34.20
3	*2402.00	107.10 PK			1.44 V	153	73.20	33.90
4	*2402.00	76.60 AV			1.44 V	153	42.70	33.90
5	4804.00	58.30 PK	74.00	-15.70	2.76 V	186	55.70	2.60
6	4804.00	27.80 AV	54.00	-26.20	2.76 V	186	25.20	2.60

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.

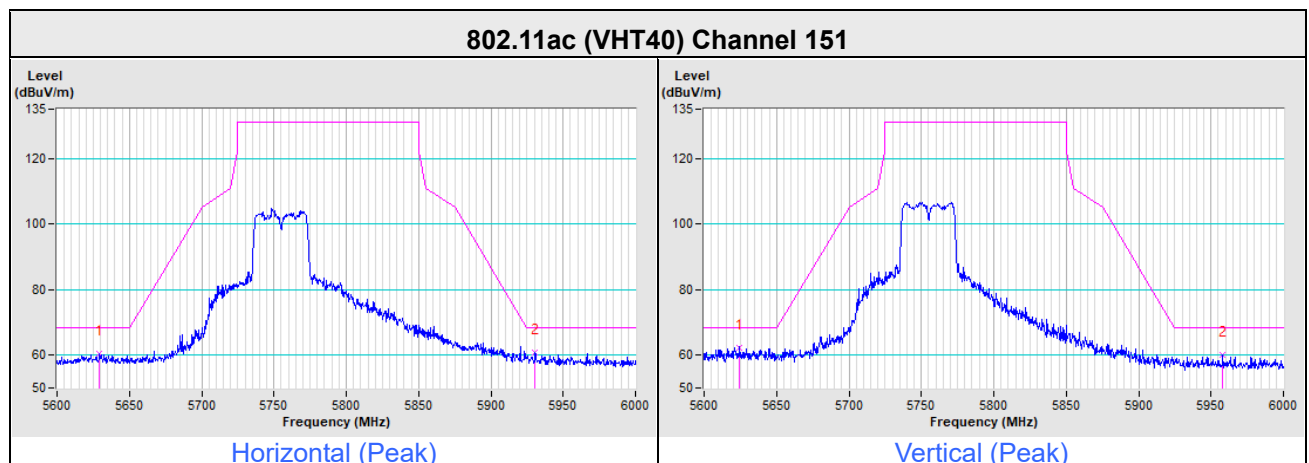
RF Mode	802.11ac (VHT40)	Channel	CH 151 : 5755 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=RMS

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5629.20	60.60 PK	68.20	-7.60	1.61 H	157	56.90	3.70
2	*5755.00	105.40 PK			1.61 H	157	63.80	41.60
3	*5755.00	95.30 AV			1.61 H	157	53.70	41.60
4	#5930.40	60.80 PK	68.20	-7.40	1.61 H	157	56.30	4.50
5	11510.00	64.70 PK	74.00	-9.30	2.14 H	142	53.10	11.60
6	11510.00	52.60 AV	54.00	-1.40	2.14 H	142	41.00	11.60
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5624.40	62.30 PK	68.20	-5.90	1.54 V	179	58.60	3.70
2	*5755.00	108.90 PK			1.54 V	179	67.30	41.60
3	*5755.00	98.40 AV			1.54 V	179	56.80	41.60
4	#5958.00	60.00 PK	68.20	-8.20	1.54 V	179	55.40	4.60
5	11510.00	66.00 PK	74.00	-8.00	2.32 V	111	54.40	11.60
6	11510.00	53.10 AV	54.00	-0.90	2.32 V	111	41.50	11.60

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.
6. " # ": The radiated frequency is out of the restricted band.

Frequency Range	5.6 GHz ~ 6 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak
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Channel	CH 251
Frequency Range	1GHz ~ 18GHz

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1697.60	-46.4	-13.0	-33.4	1.35 H	274	56.2	-102.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1697.60	-48.6	-13.0	-35.6	1.45 V	295	54.0	-102.6

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.

Bluetooth + 802.11g + GSM 850

RF Mode	Bluetooth	Channel	CH 0 : 2402 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=RMS

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2312.86	61.60 PK	74.00	-12.40	2.24 H	236	27.40	34.20
2	2312.86	48.50 AV	54.00	-5.50	2.24 H	236	14.30	34.20
3	*2402.00	109.70 PK			2.24 H	236	75.80	33.90
4	*2402.00	79.20 AV			2.24 H	236	45.30	33.90
5	4804.00	59.90 PK	74.00	-14.10	1.73 H	185	57.30	2.60
6	4804.00	29.40 AV	54.00	-24.60	1.73 H	185	26.80	2.60
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2312.75	60.60 PK	74.00	-13.40	1.42 V	162	26.40	34.20
2	2312.75	47.50 AV	54.00	-6.50	1.42 V	162	13.30	34.20
3	*2402.00	107.00 PK			1.42 V	162	73.10	33.90
4	*2402.00	76.50 AV			1.42 V	162	42.60	33.90
5	4804.00	58.20 PK	74.00	-15.80	2.43 V	177	55.60	2.60
6	4804.00	27.70 AV	54.00	-26.30	2.43 V	177	25.10	2.60

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.

RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=RMS

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	111.80 PK			1.63 H	221	77.80	34.00
2	*2437.00	101.70 AV			1.63 H	221	67.70	34.00
3	4874.00	68.70 PK	74.00	-5.30	1.46 H	165	66.10	2.60
4	4874.00	52.30 AV	54.00	-1.70	1.46 H	165	49.70	2.60
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	110.80 PK			1.15 V	123	76.80	34.00
2	*2437.00	100.50 AV			1.15 V	123	66.50	34.00
3	4874.00	62.70 PK	74.00	-11.30	1.43 V	267	60.10	2.60
4	4874.00	48.60 AV	54.00	-5.40	1.43 V	267	46.00	2.60

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.

Channel	CH 251
Frequency Range	1GHz ~ 18GHz

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1697.60	-47.16	-13.00	-34.16	1.40 H	225	55.46	-102.62
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1697.60	-48.97	-13.00	-35.97	1.50 V	285	53.65	-102.62

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.

Below 1GHz data

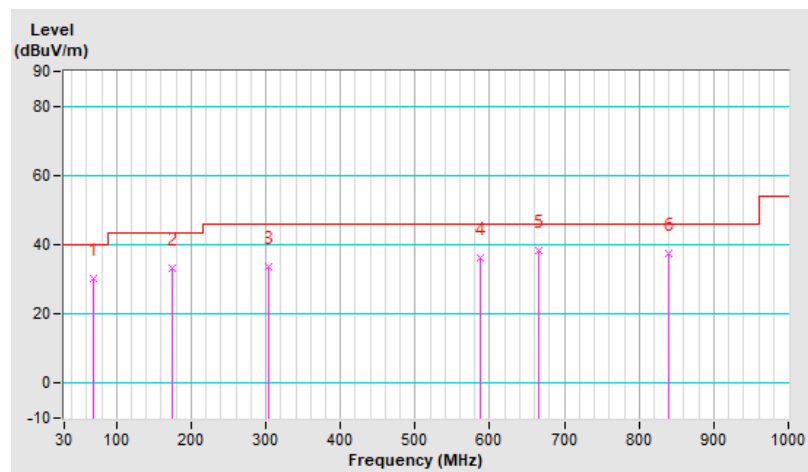
Bluetooth + 802.11ac (VHT40) + GSM 850

CHANNEL	CH 0 + CH 151	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 m								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	68.80	30.30 QP	40.00	-9.70	2.00 H	6	45.10	-14.80
2	174.53	33.20 QP	43.50	-10.30	1.50 H	35	46.70	-13.50
3	304.51	33.50 QP	46.00	-12.50	2.00 H	11	45.30	-11.80
4	587.75	36.30 QP	46.00	-9.70	2.00 H	233	41.60	-5.30
5	666.32	38.20 QP	46.00	-7.80	1.50 H	250	42.00	-3.80
6	838.98	37.40 QP	46.00	-8.60	1.00 H	167	38.30	-0.90

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 of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

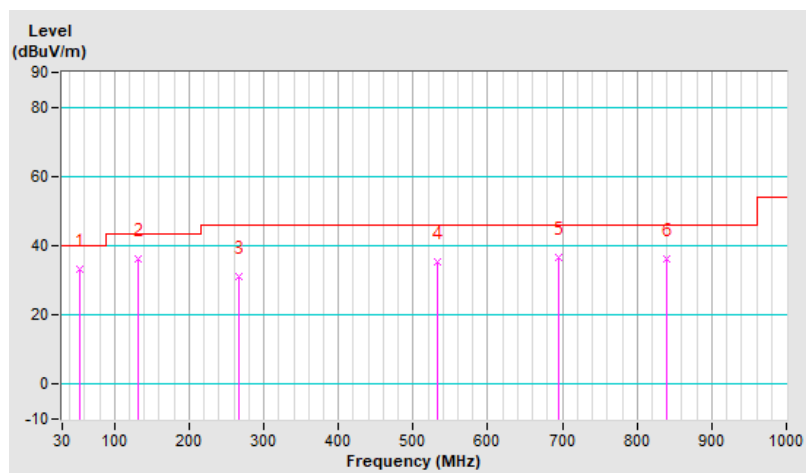


CHANNEL	CH 0 + CH 151	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 m								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	53.28	33.20 QP	40.00	-6.80	1.00 V	325	45.70	-12.50
2	130.88	36.30 QP	43.50	-7.20	1.50 V	206	49.90	-13.60
3	266.68	30.90 QP	46.00	-15.10	1.50 V	221	44.00	-13.10
4	533.43	35.50 QP	46.00	-10.50	2.00 V	137	41.70	-6.20
5	695.42	36.50 QP	46.00	-9.50	1.50 V	216	39.80	-3.30
6	838.98	36.00 QP	46.00	-10.00	1.00 V	189	36.90	-0.90

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 of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

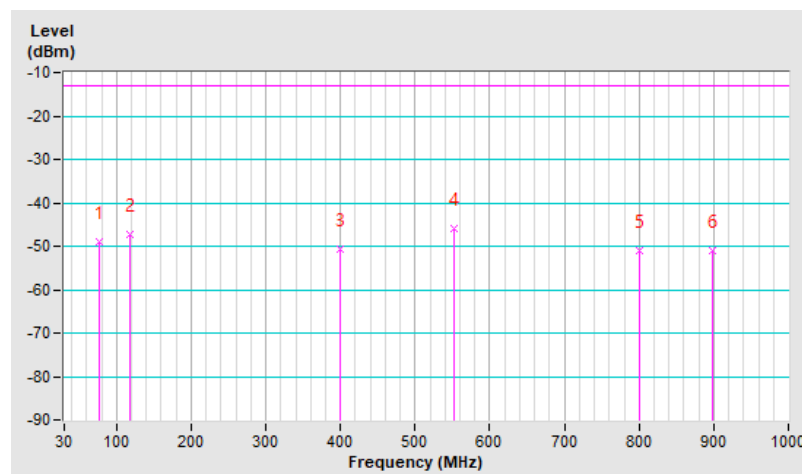


CHANNEL	CH 251	FREQUENCY RANGE	Below 1000 MHz
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Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	77.53	-49.12	-13.00	-36.12	2.00 H	2	65.07	-114.19
2	118.27	-47.42	-13.00	-34.42	1.50 H	73	64.71	-112.13
3	400.54	-50.63	-13.00	-37.63	1.00 H	248	56.41	-107.04
4	552.83	-46.00	-13.00	-33.00	1.50 H	216	57.58	-103.58
5	800.18	-51.06	-13.00	-38.06	1.50 H	199	47.46	-98.52
6	898.15	-51.02	-13.00	-38.02	2.00 H	256	47.18	-98.20

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

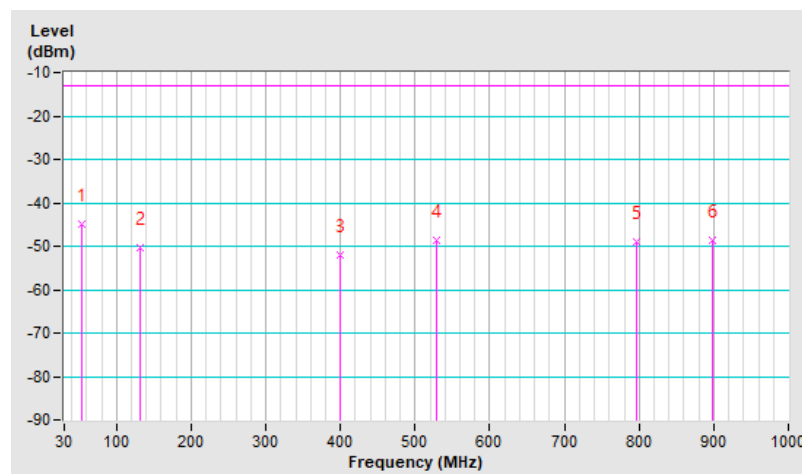


CHANNEL	CH 251	FREQUENCY RANGE	Below 1000 MHz
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Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	53.28	-44.90	-13.00	-31.90	1.00 V	341	65.11	-110.01
2	130.88	-50.40	-13.00	-37.40	1.50 V	218	60.65	-111.05
3	399.57	-52.14	-13.00	-39.14	1.50 V	213	54.92	-107.06
4	528.58	-48.62	-13.00	-35.62	2.00 V	143	55.01	-103.63
5	797.27	-48.95	-13.00	-35.95	1.50 V	318	49.55	-98.50
6	898.15	-48.68	-13.00	-35.68	1.00 V	202	49.52	-98.20

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



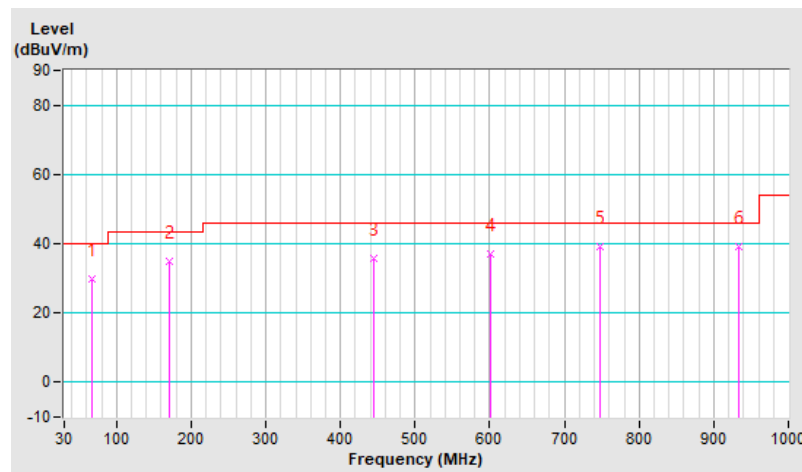
Bluetooth + 802.11g + GSM 850

CHANNEL	CH 0 + CH 6	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 m								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	66.90	29.70 QP	40.00	-10.30	2.00 H	162	43.90	-14.20
2	171.60	35.00 QP	43.50	-8.50	1.50 H	8	48.20	-13.20
3	444.20	35.60 QP	46.00	-10.40	2.00 H	209	43.90	-8.30
4	601.30	36.90 QP	46.00	-9.10	1.50 H	219	42.10	-5.20
5	746.80	39.10 QP	46.00	-6.90	1.50 H	259	40.50	-1.40
6	933.10	39.30 QP	46.00	-6.70	1.00 H	254	39.80	-0.50

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 of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

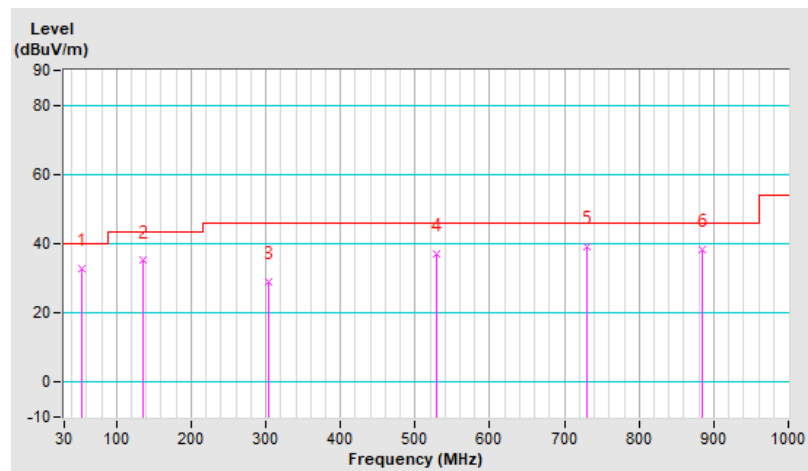


CHANNEL	CH 0 + CH 6	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 m								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	53.28	32.90 QP	40.00	-7.10	1.00 V	275	45.40	-12.50
2	135.73	35.10 QP	43.50	-8.40	1.50 V	201	48.40	-13.30
3	304.51	28.90 QP	46.00	-17.10	1.00 V	202	40.70	-11.80
4	528.58	37.00 QP	46.00	-9.00	2.00 V	100	43.30	-6.30
5	729.37	39.30 QP	46.00	-6.70	1.50 V	255	41.60	-2.30
6	885.54	38.20 QP	46.00	-7.80	1.50 V	214	39.00	-0.80

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 of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

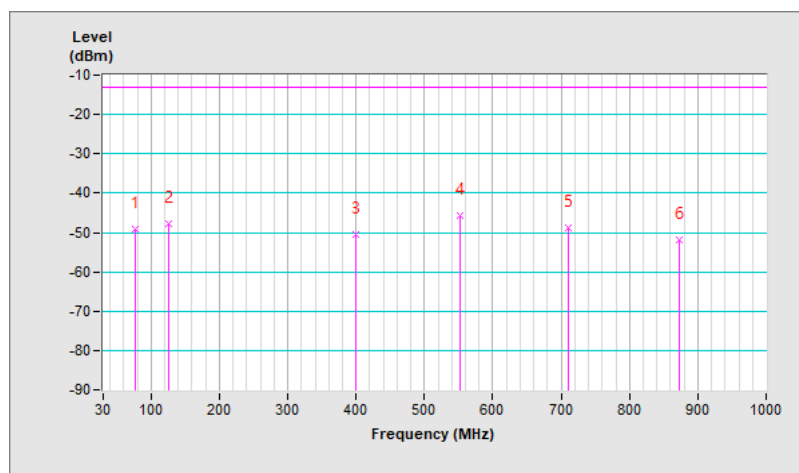


CHANNEL	CH 251	FREQUENCY RANGE	Below 1000 MHz
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Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	76.56	-49.20	-13.00	-36.20	2.00 H	135	62.40	-111.60
2	125.06	-47.80	-13.00	-34.80	1.50 H	146	61.40	-109.20
3	399.57	-50.40	-13.00	-37.40	1.50 H	231	54.30	-104.70
4	552.83	-45.70	-13.00	-32.70	1.00 H	219	55.60	-101.30
5	710.94	-48.70	-13.00	-35.70	1.50 H	46	49.30	-98.00
6	872.93	-51.90	-13.00	-38.90	2.00 H	259	44.00	-95.90

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

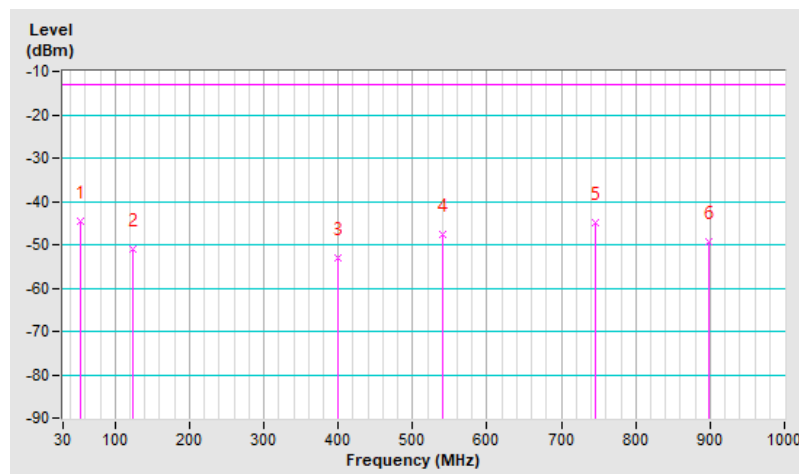


CHANNEL	CH 251	FREQUENCY RANGE	Below 1000 MHz
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Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	53.28	-44.60	-13.00	-31.60	1.00 V	1	65.41	-110.01
2	124.09	-51.10	-13.00	-38.10	1.00 V	204	60.53	-111.63
3	400.54	-53.17	-13.00	-40.17	1.50 V	244	53.87	-107.04
4	541.19	-47.60	-13.00	-34.60	2.00 V	131	56.03	-103.63
5	744.89	-45.01	-13.00	-32.01	1.50 V	106	53.90	-98.91
6	899.12	-49.40	-13.00	-36.40	1.00 V	193	48.80	-98.20

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

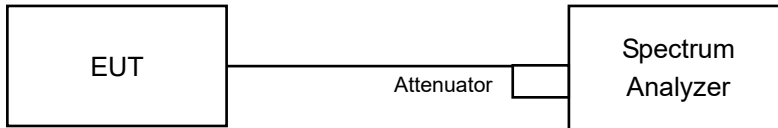


4.2 Conducted Out of Band Emission Measurement

4.2.1 Limits of Conducted Out of Band Emission Measurement

Below 20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.2.2 Test Setup



4.2.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.2.4 Test Procedure

MEASUREMENT PROCEDURE REF

- Set the RBW = 100 kHz.
- Set the VBW $\geq$ 300 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

- Set RBW = 100 kHz.
- Set VBW $\geq$ 300 kHz.
- Detector = peak.
- Sweep = auto couple.
- Trace Mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level.

4.2.5 Deviation from Test Standard

No deviation.

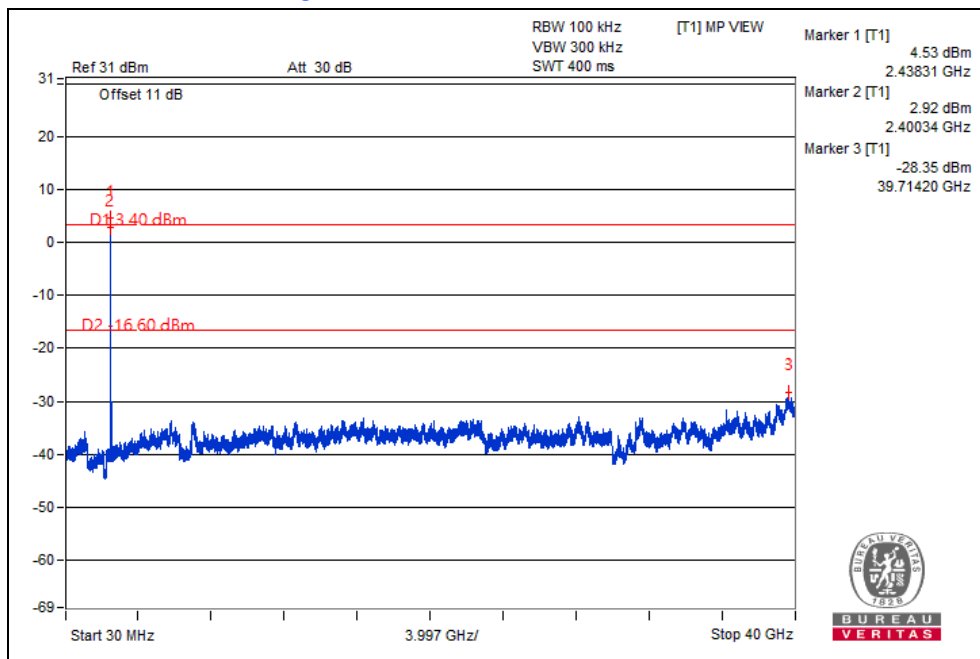
4.2.6 EUT Operating Condition

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

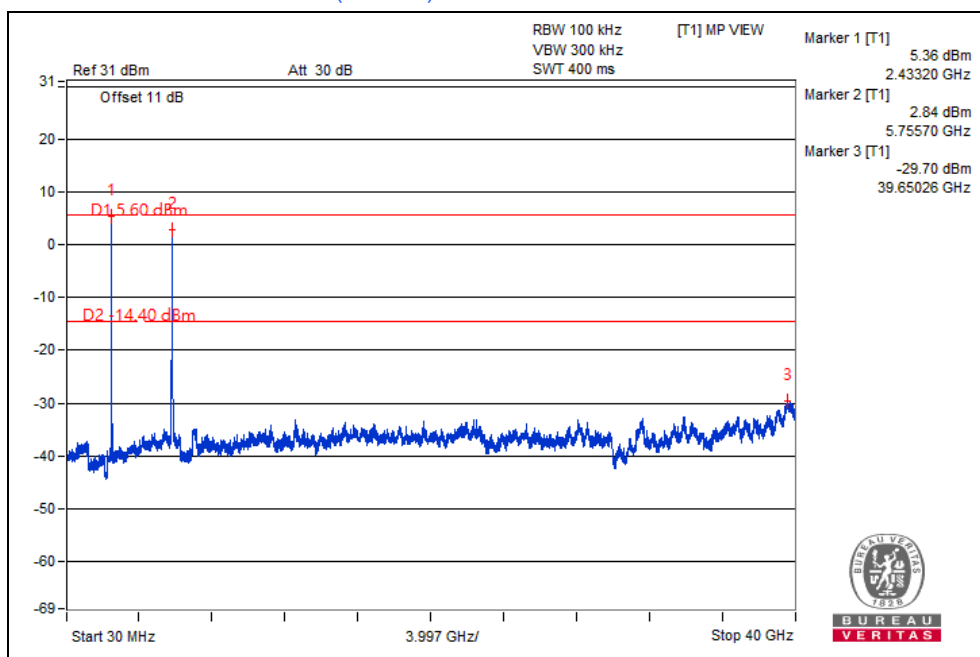
4.2.7 Test Results

The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

Bluetooth Ch 0 + 802.11g Ch 6



Bluetooth Ch 0 + 802.11ac (VHT40) Ch 151



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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Email: service.adt@bureauveritas.com

Web Site: <http://ee.bureauveritas.com.tw>

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

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