

Test Mode	Channel	Verdict
BLE	НСН	PASS

HCH SPURIOUS EMISSION_30MHz~1GHz

		_								
Spectrum Analy Swept SA	zer 1	+					Fre	equency T		
KEYSIGHT RL +→+	Input: RF Coupling: DC Align: Auto	Input Z: 50 Ω Corrections: Off Freq Ref. Int (S)	#Atten: 20 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Power Avg Hold: 30/30 Trig: Free Run	(RMS <mark>123456</mark> M\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Center Frequer 515.000000 M	ncy Hz		
1 Spectrum	•		Ref LvI Offset	8.73 dB	Mkr1	826.63 MHz	970.000000 M	Hz		
Scale/Div 10 d	В		Ref Level 15.00) dBm		-55.73 dBm	Swept Spa	an		
LOY							Zero Span			
5.00							Full Spar	n		
-5.00						514 49 TO 10	Start Freq			
-15.0						UL1 -10.50 dBm	30.000000 MH	łz		
10.0							Stop Freq			
-25.0							1.000000000	GHz		
-35.0						_	AUTO TUN	NE		
-45.0							CF Step			
55.0					. ↓1		97.000000 MH	iz		
-55.0							Auto			
-65.0 <mark>partela</mark> rec	har birthe age pro	ang an the state of the state o	est de oorlet dit nie			ate only distantian and a statistical states are a state	Mari			
-75.0	and the state of the second	a na Gali di da ya na na	de service de service	and a second		1	0 Hz			
							Y Avis Scale			
Start 0.0300 G	Hz		#Video BW 30	0 kHz	Swoon 04	Stop 1.0000 GHz	Log			
HILES BW 100 P		A 1 04 0000			Sweep 94					
1		P Apr 24, 2023 12:38:09 PM					Signal Track (Span Zoom)			





8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

Please refer to FCC §15.205 and §15.209, ISED RSS-247 Clause 5.5, ISED RSS-GEN Clause 8.9&6.13 (Transmitter)

Radiation Disturbance Test Limit for ISED (9kHz-1GHz)

Except where otherwise indicated in the applicable RSS, radiated emissions shall comply with the field strength limits shown in table 5 and table 6. Additionally, the level of any transmitter unwanted emission shall not exceed the level of the transmitter's fundamental emission.

Table 5 – General field strength limits at frequencies above 30 MHz			
Frequency (MHz)	Field strength (μV/m at 3 m)		
30 - 88	100		
88 - 216	150		
216 - 960	200		
Above 960	500		

Table 6 – General field strength limits at frequencies below 30 MHz				
Frequency	Magnetic field strength (H-Field) (μA/m)	Measurement distance (m)		
9 - 490 kHz ^{Note 1}	6.37/F (F in kHz)	300		
490 - 1705 kHz	63.7/F (F in kHz)	30		
1.705 - 30 MHz	0.08	30		

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.



Please refer to FCC KDB 558074

Frequency	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(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
960~1000	500	3

Radiation Disturbance Test Limit for FCC (Class B) (9kHz-1GHz)

Note: 1) At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

(2) At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). This paragraph (f) shall not apply to Access BPL devices operating below 30 MHz.



Radiation Disturbance Test Limit for FCC (Above 1G)

	dB(uV/m) (at 3 meters)		
	Peak	Average	
Above 1000	74	54	

Restricted bands of operation

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

Note: ¹Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz. ²Above 38.6c





TEST SETUP AND PROCEDURE

Below 30MHz



The setting of the spectrum analyser

RBW	200 Hz (From 9kHz to 0.15MHz) / 9kHz (From 0.15MHz to 30MHz)
VBW	200 Hz (From 9kHz to 0.15MHz) / 9kHz (From 0.15MHz to 30MHz)
Sweep	Auto
Detector	Peak/QP/Average
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013

2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 12mm above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1m height antenna tower.

5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector

6. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

7. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)

8. The limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377 Ω . For example, the measurement frequency X kHz resulted in a level of Y dBuV/m, which is equivalent to Y-51.5 = Z dBuA/m, which has the same margin, W dB, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.



Below 1G



The setting of the spectrum analyser

RBW	120 kHz
VBW	300 kHz
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 12mm above ground.

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

5. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

6. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)



Above 1G



The setting of the spectrum analyser

RBW	1 MHz
VBW	PEAK:3 MHz AVG: See note6
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 0.4m above ground.

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

5. For measurement above 1GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.

6. For measurements above 1 GHz, the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements; and 1 MHz resolution bandwidth with video bandwidth \geq 1/T but not less than the setting list in section 7.1 when use peak detector, max hold to be run for at least [50*(1/Duty Cycle)] traces for average measurements. For the Duty Cycle need to refer the results in section 7.1.

7. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)



X axis, Y axis, Z axis positions:



Note: For this product can only working at Z axis.



8.2. TEST ENVIRONMENT

Temperature	23.4 ℃	Relative Humidity	53.1%
Atmosphere Pressure	101.5kpa	Test Voltage	AC120V/60Hz

8.3. RESTRICTED BANDEDGE

TEST RESULT TABLE

Test Mode	Channel	Puw(dBm)	Verdict
	LCH	<limit< td=""><td>PASS</td></limit<>	PASS
	HCH	<limit< td=""><td>PASS</td></limit<>	PASS
	LCH	<limit< td=""><td>PASS</td></limit<>	PASS
BLE-2M	HCH	<limit< td=""><td>PASS</td></limit<>	PASS

<u>TEST GRAPHS</u>

Solutions



PK Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	2353.5379	39.49	9.90	49.39	74.00	24.61	Horizontal
2	2390.0000	37.21	10.35	47.56	74.00	26.44	Horizontal

- 2. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz (refer to clause 7.1.).
- 3. Measurement = Reading Level + Correct Factor.
- 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	2359.3137	39.18	9.90	49.08	74.00	24.92	Vertical
2	2390.0000	37.12	10.35	47.47	74.00	26.53	Vertical

- 2. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz (refer to clause 7.1.).
- 3. Measurement = Reading Level + Correct Factor.
- 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	2483.5000	58.20	10.64	68.84	74.00	5.16	Horizontal
2	2535.912	38.62	11.31	49.93	74.00	24.07	Horizontal

AV Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	2483.5000	31.32	10.64	41.96	54.00	12.04	Horizontal

- 2. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz (refer to clause 7.1.).
- 3. Measurement = Reading Level + Correct Factor.
- 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	2483.5000	59.44	10.64	70.08	74.00	3.92	Vertical
2	2532.154	38.60	11.32	49.92	74.00	24.08	Vertical

AV Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	2483.5000	31.44	10.64	42.08	54.00	11.92	Vertical

Note: 1. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.

2. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz (refer to clause 7.1.).

3. Measurement = Reading Level + Correct Factor.

4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



For BLE-2M Part:

Test Mode	Channel	Polarization	Verdict
BLE	LCH	Horizontal	PASS



PK Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	2352.4503	38.86	9.91	48.77	74.00	25.23	Horizontal
2	2390.0000	36.92	10.35	47.27	74.00	26.73	Horizontal

- 2. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz (refer to clause 7.1.).
- 3. Measurement = Reading Level + Correct Factor.
- 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	2368.071	39.58	10.07	49.65	74.00	24.35	Vertical
2	2390.0000	36.97	10.35	47.32	74.00	26.68	Vertical

- 2. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz (refer to clause 7.1.).
- 3. Measurement = Reading Level + Correct Factor.
- 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	2483.5000	55.90	10.64	66.54	74.00	7.46	Horizontal
2	2535.4619	38.50	11.31	49.81	74.00	24.19	Horizontal

AV Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	2483.5000	31.21	10.64	41.85	54.00	12.15	Horizontal

Note: 1. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.

2. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz (refer to clause 7.1.).

3. Measurement = Reading Level + Correct Factor.

4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	2483.5000	58.92	10.64	69.56	74.00	4.44	Vertical
2	2524.5706	38.63	11.16	49.79	74.00	24.21	Vertical

AV Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	2483.5000	32.26	10.64	42.90	54.00	11.10	Vertical

Note: 1. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.

2. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz (refer to clause 7.1.).

3. Measurement = Reading Level + Correct Factor.

4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



8.4. SPURIOUS EMISSIONS

TEST RESULTS TABLE

I) For 1GHz~3GHz				
Temperature	23.4 ℃	Relative Humidity	53.1%	
Atmosphere Pressure	101.5kpa	Test Voltage	AC120V/60Hz	

Test Mode	Channel	Puw(dBm) Ve	erdict
	LCH	<limit p<="" td=""><td>ASS</td></limit>	ASS
BLE-1M	MCH	<limit p<="" td=""><td>ASS</td></limit>	ASS
	HCH	<limit p<="" td=""><td>ASS</td></limit>	ASS
	LCH	<limit p<="" td=""><td>ASS</td></limit>	ASS
BLE-2M	MCH	<limit p<="" td=""><td>ASS</td></limit>	ASS
	HCH	<limit p<="" td=""><td>ASS</td></limit>	ASS
II)For 3GHz~18GI	Hz		
Temperature	23.4 ℃	Relative Humidity 53.1%	

Atmosphere Pressure101.5kpaTest VoltageAC120V/60Hz

Test Mode	Channel	Puw(dBm)	Verdict
	LCH	<limit< td=""><td>PASS</td></limit<>	PASS
BLE-1M	MCH	<limit< td=""><td>PASS</td></limit<>	PASS
	НСН	<limit< td=""><td>PASS</td></limit<>	PASS
	LCH	<limit< td=""><td>PASS</td></limit<>	PASS
BLE-2M	MCH	<limit< td=""><td>PASS</td></limit<>	PASS
	НСН	<limit< td=""><td>PASS</td></limit<>	PASS

III)For 18GHz~26.5GHz

Temperature	23.4 ℃	Relative Humidity	53.1%
Atmosphere Pressure	101.5kpa	Test Voltage	AC120V/60Hz

Test Mode	Channel	Puw(dBm)	Verdict
BLE-1M	MCH	<limit< th=""><th>PASS</th></limit<>	PASS
	•		•

Remark:

1) Through pre-testing all the test modes and test channels, but only the data of the worst case is included in this test report.



IV)For 30MHz~1GHz

Temperature	20.1 ℃	Relative Humidity	62.3%
Atmosphere Pressure	101.9kpa	Test Voltage	AC120V/60Hz

Test Mode	Channel	Puw(dBm)	Verdict
BLE-1M	MCH	<limit< th=""><th>PASS</th></limit<>	PASS

Remark:

1) Through pre-testing all the test modes and test channels, but only the data of the worst case is included in this test report.

V)For 9KHz~30MHz

Temperature	20.1 ℃	Relative Humidity	62.3%
Atmosphere Pressure	101.9kpa	Test Voltage	AC120V/60Hz

Test Mode	Channel	Puw(dBm)	Verdict
BLE-1M	MCH	<limit< th=""><th>PASS</th></limit<>	PASS

Remark:

1) Through pre-testing all the test modes and test channels, but only the data of the worst case is included in this test report.



Part I: 1GHz~3GHz

For 1M Part:

HARMONICS AND SPORIOUS EMISSIONS					
Test Mode	Channel	Polarization	Verdict		
BLE	LCH	Horizontal	PASS		



No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	1792.8491	57.29	-17.86	39.43	74.00	34.57	Horizontal
2	2008.8761	58.14	-16.24	41.90	74.00	32.10	Horizontal
3	2081.3852	58.28	-16.07	42.21	74.00	31.79	Horizontal
4	2241.9052	57.29	-15.03	42.26	74.00	31.74	Horizontal
5	2322.4153	56.85	-15.13	41.72	74.00	32.28	Horizontal
6	2722.2153	57.24	-12.31	44.93	74.00	29.07	Horizontal

Note: 1. Measurement = Reading Level + Correct Factor.

- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 4. Peak: Peak detector.
- 5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	1399.8	61.07	-20.45	40.62	74.00	33.38	Vertical
2	1797.5997	60.92	-17.74	43.18	74.00	30.82	Vertical
3	2163.6455	60.19	-15.99	44.20	74.00	29.80	Vertical
4	2241.6552	62.36	-15.04	47.32	74.00	26.68	Vertical
5	2554.1943	59.45	-13.79	45.66	74.00	28.34	Vertical
6	2722.2153	60.03	-12.31	47.72	74.00	26.28	Vertical

Note: 1. Measurement = Reading Level + Correct Factor.

- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 4. Peak: Peak detector.
- 5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	1992.124	57.34	-16.34	41.00	74.00	33.00	Horizontal
2	2114.6393	56.23	-15.87	40.36	74.00	33.64	Horizontal
3	2277.6597	59.00	-15.29	43.71	74.00	30.29	Horizontal
4	2361.1701	58.86	-14.75	44.11	74.00	29.89	Horizontal
5	2602.9504	53.83	-13.21	40.62	74.00	33.38	Horizontal
6	2765.7207	57.28	-12.92	44.36	74.00	29.64	Horizontal

Note: 1. Measurement = Reading Level + Correct Factor.

- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 4. Peak: Peak detector.
- 5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.









No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	1795.5994	60.18	-17.79	42.39	74.00	31.61	Vertical
2	2114.3893	61.66	-15.87	45.79	74.00	28.21	Vertical
3	2277.6597	63.67	-15.29	48.38	74.00	25.62	Vertical
4	2307.6635	63.71	-15.50	48.21	74.00	25.79	Vertical
5	2538.9424	59.04	-13.54	45.50	74.00	28.50	Vertical
6	2765.2207	58.31	-12.92	45.39	74.00	28.61	Vertical

Note: 1. Measurement = Reading Level + Correct Factor.

- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 4. Peak: Peak detector.
- 5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	1800.1	59.75	-17.68	42.07	74.00	31.93	Horizontal
2	1992.6241	59.31	-16.33	42.98	74.00	31.02	Horizontal
3	2217.4022	56.67	-15.43	41.24	74.00	32.76	Horizontal
4	2312.6641	62.91	-15.43	47.48	74.00	26.52	Horizontal
5	2581.9477	54.70	-13.47	41.23	74.00	32.77	Horizontal
6	2808.9761	56.43	-13.10	43.33	74.00	30.67	Horizontal

Note: 1. Measurement = Reading Level + Correct Factor.

- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 4. Peak: Peak detector.
- 5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	1992.6241	58.78	-16.33	42.45	74.00	31.55	Vertical
2	2147.8935	62.21	-15.62	46.59	74.00	27.41	Vertical
3	2260.6576	62.05	-15.23	46.82	74.00	27.18	Vertical
4	2312.6641	64.58	-15.43	49.15	74.00	24.85	Vertical
5	2515.9395	60.14	-13.67	46.47	74.00	27.53	Vertical
6	2808.4761	55.55	-13.09	42.46	74.00	31.54	Vertical

Note: 1. Measurement = Reading Level + Correct Factor.

- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 4. Peak: Peak detector.
- 5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



For 2M Part:

HARMONICS AND SPURIOUS EMISSIONS

Test Mode	Channel	Polarization	Verdict
BLE	LCH	Horizontal	PASS



PK Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	1196.0245	61.17	-21.95	39.22	74.00	34.78	Horizontal
2	1797.5997	59.11	-17.74	41.37	74.00	32.63	Horizontal
3	1994.8744	59.92	-16.31	43.61	74.00	30.39	Horizontal
4	2240.4051	60.57	-15.06	45.51	74.00	28.49	Horizontal
5	2298.6623	63.60	-15.40	48.20	74.00	25.80	Horizontal
6	2626.4533	58.72	-13.22	45.50	74.00	28.50	Horizontal

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

- 4. Peak: Peak detector.
- 5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	1398.7999	57.84	-20.47	37.37	74.00	36.63	Vertical
2	1797.5997	61.27	-17.74	43.53	74.00	30.47	Vertical
3	1998.6248	59.59	-16.29	43.30	74.00	30.70	Vertical
4	2091.8865	57.27	-16.05	41.22	74.00	32.78	Vertical
5	2251.1564	55.60	-14.97	40.63	74.00	33.37	Vertical
6	2580.6976	55.66	-13.49	42.17	74.00	31.83	Vertical

Note: 1. Measurement = Reading Level + Correct Factor.

- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 4. Peak: Peak detector.
- 5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	1195.0244	61.40	-21.94	39.46	74.00	34.54	Horizontal
2	1799.6	60.89	-17.69	43.20	74.00	30.80	Horizontal
3	1998.3748	58.25	-16.30	41.95	74.00	32.05	Horizontal
4	2253.1566	61.08	-15.02	46.06	74.00	27.94	Horizontal
5	2322.4153	62.55	-15.13	47.42	74.00	26.58	Horizontal
6	2580.4476	57.89	-13.49	44.40	74.00	29.60	Horizontal

Note: 1. Measurement = Reading Level + Correct Factor.

- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 4. Peak: Peak detector.
- 5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.









No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	1400.05	56.88	-20.45	36.43	74.00	37.57	Vertical
2	1797.8497	58.18	-17.73	40.45	74.00	33.55	Vertical
3	2092.1365	57.40	-16.04	41.36	74.00	32.64	Vertical
4	2261.9077	55.45	-15.27	40.18	74.00	33.82	Vertical
5	2295.912	55.97	-15.34	40.63	74.00	33.37	Vertical
6	2598.9499	56.42	-13.24	43.18	74.00	30.82	Vertical

Note: 1. Measurement = Reading Level + Correct Factor.

- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 4. Peak: Peak detector.
- 5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	1195.2744	62.39	-21.94	40.45	74.00	33.55	Horizontal
2	1799.3499	61.52	-17.69	43.83	74.00	30.17	Horizontal
3	1995.6245	59.21	-16.31	42.90	74.00	31.10	Horizontal
4	2156.8946	60.77	-15.88	44.89	74.00	29.11	Horizontal
5	2253.1566	61.05	-15.02	46.03	74.00	27.97	Horizontal
6	2586.4483	57.87	-13.43	44.44	74.00	29.56	Horizontal

Note: 1. Measurement = Reading Level + Correct Factor.

- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 4. Peak: Peak detector.
- 5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	1399.2999	57.61	-20.46	37.15	74.00	36.85	Vertical
2	1801.1001	60.93	-17.66	43.27	74.00	30.73	Vertical
3	1995.8745	60.00	-16.31	43.69	74.00	30.31	Vertical
4	2081.6352	56.96	-16.07	40.89	74.00	33.11	Vertical
5	2356.6696	55.56	-14.78	40.78	74.00	33.22	Vertical
6	2602.9504	56.82	-13.21	43.61	74.00	30.39	Vertical

Note: 1. Measurement = Reading Level + Correct Factor.

- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 4. Peak: Peak detector.
- 5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.





Part II: 3GHz~18GHz

For 1M Part:



ΡK	Res	ult:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	4556.4446	47.83	-5.48	42.35	74.00	31.65	Horizontal
2	6172.8966	43.91	-2.02	41.89	74.00	32.11	Horizontal
3	7808.101	45.03	1.07	46.10	74.00	27.90	Horizontal
4	10755.9695	42.67	4.45	47.12	74.00	26.88	Horizontal
5	15509.6887	38.40	13.00	51.40	74.00	22.60	Horizontal
6	17975.622	36.77	18.68	55.45	74.00	18.55	Horizontal

AV Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	17975.622	27.30	18.68	45.98	54.00	8.02	Horizontal

- 2. If peak result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
- 4. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz(refer to clause 7.1.).
- 5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



Test Mode	Channel	Polarization	Verdict
BLE	LCH	Vertical	PASS



No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	4571.4464	47.76	-5.56	42.20	74.00	31.80	Vertical
2	5450.9314	43.75	-2.37	41.38	74.00	32.62	Vertical
3	7671.2089	43.30	1.43	44.73	74.00	29.27	Vertical
4	9711.4639	42.71	3.64	46.35	74.00	27.65	Vertical
5	14626.4533	39.06	11.96	51.02	74.00	22.98	Vertical
6	17966.2458	36.60	18.61	55.21	74.00	18.79	Vertical

AV Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	17966.2458	26.83	18.61	45.44	54.00	8.56	Vertical

- If peak result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
- 4. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz(refer to clause 7.1.).
- 5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	3836.3545	48.17	-7.38	40.79	74.00	33.21	Horizontal
2	5019.6275	46.91	-3.61	43.30	74.00	30.70	Horizontal
3	9703.963	43.38	3.58	46.96	74.00	27.04	Horizontal
4	11221.0276	42.21	5.00	47.21	74.00	26.79	Horizontal
5	14547.6935	38.92	11.62	50.54	74.00	23.46	Horizontal
6	17932.4916	36.88	18.70	55.58	74.00	18.42	Horizontal

AV Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	17932.4916	26.73	18.70	45.43	54.00	8.57	Horizontal

- 2. If peak result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
- 4. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz(refer to clause 7.1.).
- 5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	3834.4793	47.66	-7.31	40.35	74.00	33.65	Vertical
2	5113.3892	45.93	-3.46	42.47	74.00	31.53	Vertical
3	6992.374	45.35	-0.68	44.67	74.00	29.33	Vertical
4	9670.2088	43.03	3.52	46.55	74.00	27.45	Vertical
5	14778.3473	39.03	11.85	50.88	74.00	23.12	Vertical
6	18000	36.51	18.76	55.27	74.00	18.73	Vertical

AV Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	18000	28.66	18.76	47.42	54.00	6.58	Vertical

- 2. If peak result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
- 4. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz(refer to clause 7.1.).
- 5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	4278.9099	47.27	-5.15	42.12	74.00	31.88	Horizontal
2	5516.5646	44.93	-2.96	41.97	74.00	32.03	Horizontal
3	8963.2454	43.81	2.41	46.22	74.00	27.78	Horizontal
4	13246.2808	40.06	8.44	48.50	74.00	25.50	Horizontal
5	16021.6277	38.00	14.25	52.25	74.00	21.75	Horizontal
6	17990.6238	36.80	18.59	55.39	74.00	18.61	Horizontal

AV Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	17990.6238	27.49	18.59	46.08	54.00	7.92	Horizontal

- 2. If peak result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
- 4. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz(refer to clause 7.1.).
- 5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	3999.4999	49.92	-6.90	43.02	74.00	30.98	Vertical
2	4892.1115	46.27	-3.56	42.71	74.00	31.29	Vertical
3	6986.7483	52.19	-0.86	51.33	74.00	22.67	Vertical
4	10557.1946	42.86	4.30	47.16	74.00	26.84	Vertical
5	16736.092	38.42	14.91	53.33	74.00	20.67	Vertical
6	17986.8734	36.31	18.60	54.91	74.00	19.09	Vertical

AV Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	17986.8734	26.88	18.60	45.48	54.00	8.52	Vertical

- 2. If peak result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
- 4. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz(refer to clause 7.1.).
- 5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



For 2M Part:





PK Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	3616.9521	48.47	-8.71	39.76	74.00	34.24	Horizontal
2	4781.4727	46.39	-3.70	42.69	74.00	31.31	Horizontal
3	6227.2784	43.34	-1.37	41.97	74.00	32.03	Horizontal
4	7748.0935	43.41	1.36	44.77	74.00	29.23	Horizontal
5	13475.0594	39.76	8.87	48.63	74.00	25.37	Horizontal
6	17996.2495	36.39	18.69	55.08	74.00	18.92	Horizontal

AV Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	17996.2495	27.77	18.69	46.46	54.00	7.54	Horizontal

- 2. If peak result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
- 4. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz(refer to clause 7.1.).
- 5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



Test Mode	Channel	Polarization	Verdict
BLE	LCH	Vertical	PASS



No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	3832.6041	48.05	-7.23	40.82	74.00	33.18	Vertical
2	5015.877	46.38	-3.69	42.69	74.00	31.31	Vertical
3	6994.2493	51.50	-0.59	50.91	74.00	23.09	Vertical
4	10778.4723	42.75	4.29	47.04	74.00	26.96	Vertical
5	14675.2094	39.13	11.92	51.05	74.00	22.95	Vertical
6	17921.2402	36.30	18.71	55.01	74.00	18.99	Vertical

AV Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	17921.2402	27.17	18.71	45.88	54.00	8.12	Vertical

- If peak result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
- 4. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz(refer to clause 7.1.).
- 5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	4451.4314	46.76	-4.93	41.83	74.00	32.17	Horizontal
2	5452.8066	43.95	-2.40	41.55	74.00	32.45	Horizontal
3	8175.647	42.81	2.09	44.90	74.00	29.10	Horizontal
4	10315.2894	43.20	4.07	47.27	74.00	26.73	Horizontal
5	14380.7976	39.14	11.31	50.45	74.00	23.55	Horizontal
6	17969.9962	36.61	18.70	55.31	74.00	18.69	Horizontal

AV Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	17969.9962	27.07	18.70	45.77	54.00	8.23	Horizontal

- 2. If peak result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
- 4. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz(refer to clause 7.1.).
- 5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	3330.0413	52.23	-9.63	42.60	74.00	31.40	Vertical
2	4618.3273	48.06	-5.49	42.57	74.00	31.43	Vertical
3	5790.3488	45.00	-3.24	41.76	74.00	32.24	Vertical
4	8785.0981	43.95	2.50	46.45	74.00	27.55	Vertical
5	14399.5499	40.32	11.54	51.86	74.00	22.14	Vertical
6	17992.4991	36.68	18.63	55.31	74.00	18.69	Vertical

AV Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	17992.4991	27.20	18.63	45.83	54.00	8.17	Vertical

- 2. If peak result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
- 4. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz(refer to clause 7.1.).
- 5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	3371.2964	49.48	-9.48	40.00	74.00	34.00	Horizontal
2	4751.4689	46.63	-4.62	42.01	74.00	31.99	Horizontal
3	6705.4632	43.22	-0.65	42.57	74.00	31.43	Horizontal
4	11590.4488	42.09	5.35	47.44	74.00	26.56	Horizontal
5	15618.4523	38.38	13.47	51.85	74.00	22.15	Horizontal
6	17992.4991	36.38	18.63	55.01	74.00	18.99	Horizontal

AV Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	17992.4991	27.44	18.63	46.07	54.00	7.93	Horizontal

- 2. If peak result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
- 4. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz(refer to clause 7.1.).
- 5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	3995.7495	51.62	-6.98	44.64	74.00	29.36	Vertical
2	4987.7485	45.89	-3.49	42.40	74.00	31.60	Vertical
3	8042.5053	43.19	2.27	45.46	74.00	28.54	Vertical
4	13160.02	39.89	8.11	48.00	74.00	26.00	Vertical
5	14663.958	39.04	11.90	50.94	74.00	23.06	Vertical
6	17778.7223	37.43	17.89	55.32	74.00	18.68	Vertical

AV Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	17778.7223	27.87	17.89	45.76	54.00	8.24	Vertical

- 2. If peak result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
- 4. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz(refer to clause 7.1.).
- 5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
- 6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



Part III: 18GHz~26.5GHz



SPURIOUS EMISSIONS 18GHz TO 26.5GHz (WORST-CASE CONFIGURATION)

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	18556.8057	51.79	-6.49	45.30	74.00	28.70	Peak
2	20452.4952	50.02	-5.60	44.42	74.00	29.58	Peak
3	21718.2718	50.43	-5.75	44.68	74.00	29.32	Peak
4	23107.3107	50.30	-3.47	46.83	74.00	27.17	Peak
5	24098.5099	50.36	-2.70	47.66	74.00	26.34	Peak
6	25308.1808	52.24	-3.31	48.93	74.00	25.07	Peak

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. Measurement = Reading Level + Correct Factor.
- 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	19031.1531	51.25	-6.03	45.22	74.00	28.78	Peak
2	20857.9858	50.15	-5.95	44.20	74.00	29.80	Peak
3	22317.5818	50.77	-5.13	45.64	74.00	28.36	Peak
4	23064.8065	50.10	-3.50	46.60	74.00	27.40	Peak
5	24034.7535	50.02	-2.64	47.38	74.00	26.62	Peak
6	25441.6442	50.60	-3.23	47.37	74.00	26.63	Peak

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. Measurement = Reading Level + Correct Factor.
- 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



Part IV: 30MHz~1GHz

	Test Mode	Channel	Polarization	Verdict
	BLE-1M	MCH	Horizontal	PASS
	100	MaxPeak 🔲 Avera	ge <u> </u>	— Trace1
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	30M	100M	300M	1G
		Freq	uency[MHz]	

SPURIOUS EMISSIONS 30M TO 1GHz (WORST-CASE CONFIGURATION)

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	50.8602	13.32	20.92	34.24	40.0	5.76	Peak
2	173.111	14.73	16.45	31.18	43.5	12.32	Peak
3	178.4473	14.53	16.73	31.26	43.5	12.24	Peak
4	184.7539	14.45	17.39	31.84	43.5	11.66	Peak
5	190.5754	11.12	18.08	29.20	43.5	14.30	Peak
6	228.9000	10.89	19.73	30.62	46.0	15.38	Peak

Note: 1. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit. 2. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.







No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
1	50.6177	10.29	20.96	31.25	40.0	8.75	Peak
2	172.6259	7.73	16.41	24.14	43.5	19.36	Peak
3	178.4473	8.29	16.73	25.02	43.5	18.48	Peak
4	190.3328	5.96	18.06	24.02	43.5	19.48	Peak
5	228.9000	6.33	19.73	26.06	46.0	19.94	Peak
6	525.0670	5.11	26.16	31.27	46.0	14.73	Peak

Note: 1. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

- 2. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.
- 3. Measurement = Reading Level + Correct Factor.



Part V: 9kHz~30MHz

SFURIOUS ENIISSIONS BEIOW SUMITZ (WORST CASE CONFIGURATION-FACE ON)										
Test Mode	Channel	Frequency Range	Verdict							
BLE-1M	MCH	9kHz~150kHz	PASS							

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No.	Frequency	Reading Level	Correct Factor	FCC Result	FCC Limit	ISED Result	ISED Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dBuA/m]	[dBuA/m]	[dB]	
1	0.0131	34.56	-61.88	-27.32	45.73	-78.82	-5.77	73.05	Peak
2	0.0155	31.94	-61.85	-29.91	44.29	-81.41	-7.21	74.20	Peak
3	0.0261	29.04	-61.75	-32.71	39.43	-84.21	-12.07	72.14	Peak
4	0.0315	31.22	-61.71	-30.49	37.68	-81.99	-13.82	68.17	Peak
5	0.0873	26.6	-61.81	-35.21	28.8	-86.71	-22.70	64.01	Peak
6	0.0973	19.16	-61.81	-42.65	27.85	-94.15	-23.65	70.50	Peak

Note: 1. Measurement = Reading Level + Correct Factor.

- 2. Result 300m= Result 3m-80 dBuV/m
- 3. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.
- 4. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report
- 5. The limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377Ω. For example, the measurement frequency X KHz resulted in a level of Y dBuV/m, which is equivalent to Y-51.5 = Z dBuA/m, which has the same margin, W dB, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.



SPURIOUS EMISSIONS Below 30MHz (WORST CASE CONFIGURATION-FACE ON)						
Test Mode	Channel	Frequency Range	Verdict			

l est Mode	Channel	Frequency Range	Verdict
BLE-1M	MCH	150kHz~490kHz	PASS



No.	Frequency	Reading Level	Correct Factor	FCC Result	FCC Limit	ISED Result	ISED Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dBuA/m]	[dBuA/m]	[dB]	
1	0.1787	26.86	-61.85	-34.99	22.56	-86.49	-28.94	57.55	Peak
2	0.1966	26.03	-61.86	-35.83	21.73	-87.33	-29.77	57.56	Peak
3	0.264	26.88	-61.89	-35.01	19.33	-86.51	-32.17	54.34	Peak
4	0.2761	25.57	-61.9	-36.33	18.9	-87.83	-32.6	55.23	Peak
5	0.3085	22.49	-61.91	-39.42	17.85	-90.92	-33.65	57.27	Peak
6	0.3433	22.67	-61.9	-39.23	16.98	-90.73	-34.52	56.21	Peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. Result 300m= Result 3m-80 dBuV/m

- 3. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.
- 4. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report
- 5. The limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377Ω. For example, the measurement frequency X KHz resulted in a level of Y dBuV/m, which is equivalent to Y-51.5 = Z dBuA/m, which has the same margin, W dB, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.



SPURIOUS EMISSIONS Below 30MHz (WORST CASE CONFIGURATION-FACE ON)

Test Mode	Channel	Frequency Range	Verdict
BLE-1M	MCH	490kHz~30MHz	PASS



No.	Frequency	Reading Level	Correct Factor	FCC Result	FCC Limit	ISED Result	ISED Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dBuA/m]	[dBuA/m]	[dB]	
1	0.5269	37.39	-21.87	15.52	33.21	-35.98	-18.29	17.69	Peak
2	0.5785	25.74	-21.88	3.86	32.38	-47.64	-19.12	28.52	Peak
3	1.0508	30.31	-21.85	8.46	27.18	-43.04	-24.32	18.72	Peak
4	1.5747	24.82	-21.84	2.98	23.66	-48.52	-27.84	20.68	Peak
5	2.106	19.72	-21.8	-2.08	29.54	-53.58	-21.96	31.62	Peak
6	2.6373	13.68	-21.79	-8.11	29.54	-59.61	-21.96	37.65	Peak

- 2. Result 300m= Result 3m-80 dBuV/m
- 3. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.
- 4. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report
- 5. The limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377Ω. For example, the measurement frequency X KHz resulted in a level of Y dBuV/m, which is equivalent to Y-51.5 = Z dBuA/m, which has the same margin, W dB, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.



9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

Please refer to FCC §15.207 (a)

	Limit (dBuV)					
	Quasi-peak	Average				
0.15 -0.5	66 - 56 *	56 - 46 *				
0.50 -5.0	56.00	46.00				
5.0 -30.0	60.00	50.00				

TEST ENVIRONMENT

Temperature	21.9°C	Relative Humidity	52.2%
Atmosphere Pressure	102.1kpa	Test Voltage	AC120V/60Hz

TEST SETUP AND PROCEDURE



The EUT is put on a table of non-conducting material that is 12mm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through an Artificial Mains Network (A.M.N.). A EMI Measurement Receiver (R&S Test Receiver ESR3) is used to test the emissions from both sides of AC line. According to the requirements in Section 6.2 of ANSI C63.10-2013.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode. The bandwidth of EMI test receiver is set at 9kHz.

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.





LINE L RESULTS (WORST-CASE CONFIGURATION)

Final_Result

Frequency [MHz]	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Meas. Time [ms]	Bandwidth [kHz]	Line	Filter	Corr. [dB]
0.388800		16.59	48.09	31.50	1000.0	9.000	L1	OFF	9.6
0.388800	49.28		58.09	8.81	1000.0	9.000	L1	OFF	9.6
4.097663		24.19	46.00	21.81	1000.0	9.000	L1	OFF	9.6
4.097663	33.85		56.00	22.15	1000.0	9.000	L1	OFF	9.6
6.561780	38.02		60.00	21.98	1000.0	9.000	L1	OFF	9.7
7.584143	39.01		60.00	20.99	1000.0	9.000	L1	OFF	9.7
7.584143		28.79	50.00	21.21	1000.0	9.000	L1	OFF	9.7
8.075175	38.34		60.00	21.66	1000.0	9.000	L1	OFF	9.7
8.076668		27.85	50.00	22.15	1000.0	9.000	L1	OFF	9.7
8.545313		27.03	50.00	22.97	1000.0	9.000	L1	OFF	9.7
8.545313	37.58		60.00	22.42	1000.0	9.000	L1	OFF	9.7
8.551283		26.81	50.00	23.19	1000.0	9.000	L1	OFF	9.7

Note: 1. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

- 2. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
- 3. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.
- 4. The extension cord/outlet strip was calibrated with the LISN as required by ANSI C63.10:2013 Clause 6.2.2.
- 5. Pre-testing all test modes and channels and find the MCH of BLE-1M which is the worst case, so only the worst case is included in this test report.



LINE N RESULTS (WORST-CASE CONFIGURATION)



Final_Result

Frequency [MHz]	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Meas. Time [ms]	Bandwidth [kHz]	Line	Filter	Corr. [dB]
0.196268		25.57	53.77	28.19	1000.0	9.000	Ν	OFF	9.6
0.196268	58.16		63.77	5.60	1000.0	9.000	Ν	OFF	9.6
0.352980		32.96	48.89	15.94	1000.0	9.000	Ν	OFF	9.6
0.352980	48.97		58.89	9.92	1000.0	9.000	Ν	OFF	9.6
0.441038		18.27	47.04	28.77	1000.0	9.000	Ν	OFF	9.6
0.441038	45.93		57.04	11.11	1000.0	9.000	Ν	OFF	9.6
7.894583	37.22		60.00	22.78	1000.0	9.000	Ν	OFF	9.7
7.896075		23.53	50.00	26.47	1000.0	9.000	Ν	OFF	9.7
12.833265	35.60		60.00	24.40	1000.0	9.000	Ν	OFF	9.7
12.833265		26.23	50.00	23.77	1000.0	9.000	Ν	OFF	9.7
14.828738		26.42	50.00	23.58	1000.0	9.000	Ν	OFF	9.7
14.828738	34.35		60.00	25.65	1000.0	9.000	Ν	OFF	9.7

Note: 1. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

- 2. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
- 3. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.
- 4. The extension cord/outlet strip was calibrated with the LISN as required by ANSI C63.10:2013 Clause 6.2.2.
- 5. Pre-testing all test modes and channels and find the MCH of BLE-1M which is the worst case, so only the worst case is included in this test report.



10. ANTENNA REQUIREMENTS

APPLICABLE REQUIREMENTS

Please refer to FCC §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Please refer to FCC §15.247(b)(4)

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

ANTENNA GAIN

The antenna gain of EUT is less than 6 dBi

END OF REPORT