

TEST REPORT

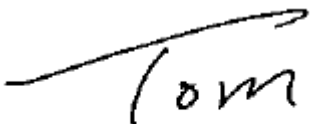
Applicant	Amazon.com Services Inc.
Address	410 Terry Avenue North Seattle, United States, WA 98109

Manufacturer or Supplier	TCL Technoly Electronics(Huizhou) Co., Ltd.
Address	Section 37, Zhongkai High-tech Development Zone, Huizhou City, Guang Dong Province, China, 516006.
Product	Echo Wall Clock ME
Brand Name	Amazon
Model	C8G55Z
Additional Model & Model Difference	KL6G3L, see section 3.1
Date of tests	Oct. 12, 2019 ~ Oct. 26, 2019

The submitted sample of the above equipment has been tested partially for according to the requirements of the following standards:

☒ **FCC Part 15, Subpart C, Section 15.247**
For radiated emission, conducted output power test items

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Tested by Tom Chen Project Engineer / EMC Department	Approved by Glyn He Assistant Manager / EMC Department
	 Date: Nov. 13, 2019

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TABLE OF CONTENTS

RELEASE CONTROL RECORD	3
1 SUMMARY OF TEST RESULTS.....	4
2 MEASUREMENT UNCERTAINTY	4
3 GENERAL INFORMATION	5
3.1 GENERAL DESCRIPTION OF EUT.....	5
3.2 DESCRIPTION OF TEST MODES.....	6
3.2.1. CONFIGURATION OF SYSTEM UNDER TEST	6
3.2.2. TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	6
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS.....	9
3.4 DESCRIPTION OF SUPPORT UNITS.....	9
4 TEST TYPES AND RESULTS.....	10
4.1 RADIATED EMISSION MEASUREMENT	10
4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT	10
4.1.2 TEST INSTRUMENTS.....	11
4.1.3 TEST PROCEDURES	12
4.1.4 DEVIATION FROM TEST STANDARD	13
4.1.5 TEST SETUP	13
4.1.6 EUT OPERATING CONDITIONS	14
4.1.7 TEST RESULTS	15
4.2 CONDUCTED OUTPUT POWER	25
4.3.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT	25
4.3.2 TEST SETUP	25
4.3.3 TEST INSTRUMENTS.....	25
4.3.4 TEST PROCEDURES	26
4.3.5 DEVIATION FROM TEST STANDARD	26
4.3.6 EUT OPERATING CONDITIONS	26
4.3.7 TEST RESULTS	26
4.3.7.1 MAXIMUM PEAK OUTPUT POWER	26
4.3.7.2 AVERAGE OUTPUT POWER (FOR REFERENCE)	26
4 PHOTOGRAPHS OF THE TEST CONFIGURATION	27
5 APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	28



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Test Report No.: RF191012N030-2

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF180829N012-2	Original release	Dec. 04, 2018
RF191012N030-2	Based on the original report RF180829N012-2, added a new model and reduced power setting and changed product name. It needs to be retested radiated emission, conducted output power test items.	Nov. 13, 2019



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.205 15.209	Radiated Emission	PASS	Meet the requirement of limit.
15.247(b)	Conducted Output power	PASS	Meet the requirement of limit.
Note: All other RF test data refer to the report RF180829N012-2.			

2 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	UNCERTAINTY
Radiated emissions	9KHz ~ 30MHz	2.90dB
	30MHz ~ 1GMHz	3.76dB
	1GHz ~ 18GHz	4.84dB
	18GHz ~ 40GHz	4.96dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.



3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Echo Wall Clock ME
MODEL NO.	C8G55Z
ADDITIONAL MODELS	KL6G3L
FCC ID	UUU-8459
NOMINAL VOLTAGE	DC 6V (1.5V*AA*4) from Battery
MODULATION TECHNOLOGY	DTS
MODULATION TYPE	BT-LE(GFSK)
OPERATING FREQUENCY	2402-2480MHz
PEAK OUTPUT POWER	3.451mW (Max. Measured)
ANTENNA TYPE	PCB Antenna, 2.89dBi Gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	N/A

NOTES:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
3. Please refer to the EUT photo document (Reference No.: 191012N030) for detailed product photo.
4. Additional model KL6G3L is identical with the test model C8G55Z except the appearance and model number for marketing purpose.



3.2 DESCRIPTION OF TEST MODES

40 channels are provided for BT-LE(GFSK):

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

3.2.1. CONFIGURATION OF SYSTEM UNDER TEST

Please see section 5 photographs of the test configuration for reference.

3.2.2. TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports

The worst case was found when positioned on X axis for radiated emission. Following test modes were selected for the final test, and the final worst case is marked in boldface and recorded in the report:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE<1G	RE≥1G	PLC	APCM	
A	√	√	-	√	Powered by New Battery

Where **RE<1G**: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission

RE≥1G: Radiated Emission above 1GHz
APCM: Antenna Port Conducted Measurement

NOTE: No need to concern of Conducted Emission due to the EUT is powered by battery.

**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, XYZ axis and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
BT-LE	0 to 39	39	DTS	BT-LE	1

For the test results, only the worst case was shown in test report.

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, XYZ axis and antenna ports (if EUT with antenna diversity architecture).

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
BT-LE	0 to 39	0,19, 39	DTS	BT-LE	1

ANTENNA PORT CONDUCTED MEASUREMENT:

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ 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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
BT-LE	0 to 39	0, 19, 39	DTS	BT-LE	1



TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	25deg. C, 55%RH	DC 6V From New Battery	Walker
RE≥1G	25deg. C, 55%RH	DC 6V From New Battery	Walker
PLC	N/A	N/A	N/A
APCM	25deg. C, 60%RH	DC 6V From New Battery	Robert Cheng



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C, Section 15.247

KDB558074 D01 15.247 Meas Guidance v05r02

ANSI C63.10-2013

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

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as a dependent unit together without any other necessary accessories or support units.



4 TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

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

NOTES:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), 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.



4.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU40	100449	Mar. 12,19	Mar. 11,20
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	May 22,19	May 21,20
Active Loop Antenna (9KHz -30MHz)	SCHWARZBECK	FMZB 1519B	1519B-045	May 28,19	May 27,20
Amplifier (9KHz -1GHz)	Burgeon	BPA-530	100210	Apr. 21,19	Apr. 20,20
Bilog Antenna (20MHz -2GHz)	Teseq	CBL 6111D	30643	Jun. 23,19	Jun. 22,20
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	Jun. 23,19	Jun. 22,20
Horn Antenna (18GHz -40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170242	May 05,19	May 04,20
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	Apr. 21,19	Apr. 20,20
Test Software	ADT	ADT_Radiated _V7.6.15.9.2	N/A	N/A	N/A
Broadband Preamplifier (1GHz~18GHz)	SCHWARZBECK	BBV9718	305	Apr. 21,19	Apr. 20,20
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 09,18	Nov. 08,19
Test Software	ADT	ADT_Radiated _V7.6.15.9.2	N/A	N/A	N/A
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	May 20,19	May 19,20

NOTES:

1. The test was performed in 966 Chamber.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GREGT/CHINA and NIM/CHINA.
3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 749762.



4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 1.5 meters (above 1GHz) and 0.8 meters (below 1GHz) above the ground at a 3 meters semi-anechoic chamber. 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. For below 1GHz was used bilog antenna, and above 1GHz was used horn antenna, and its height 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 Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.
- g. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

NOTES:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
- 4.All modes of operation were investigated and the worst-case emissions are reported.
- 5.The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file test setup photo.

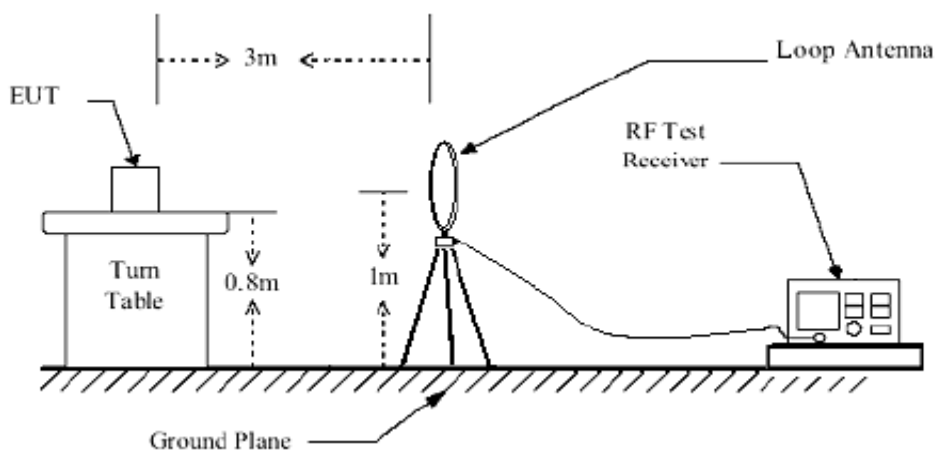


4.1.4 DEVIATION FROM TEST STANDARD

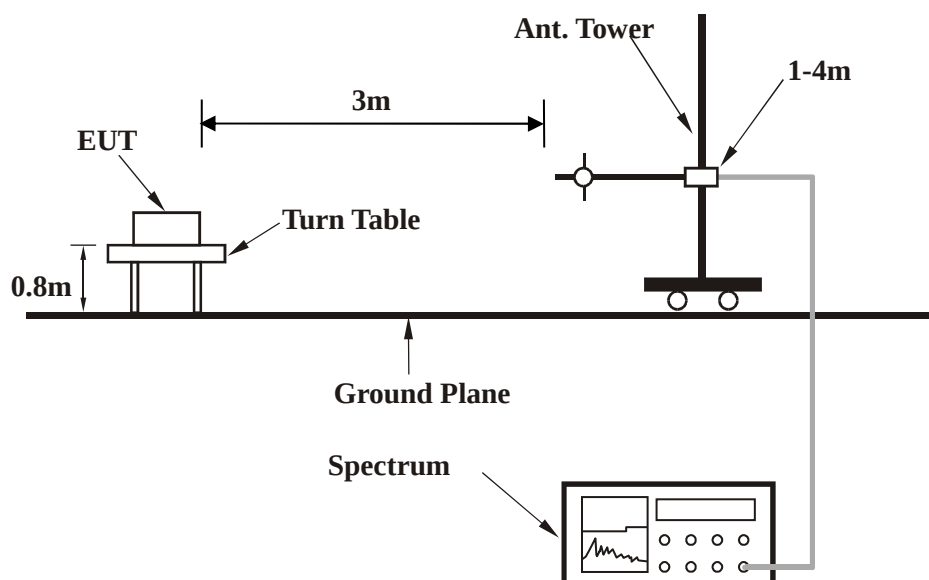
No deviation.

4.1.5 TEST SETUP

Below 30MHz test setup



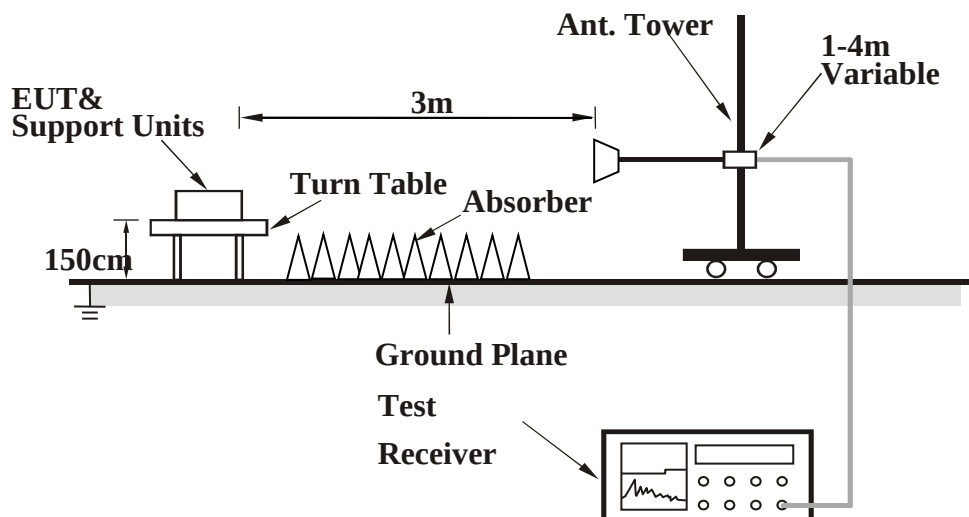
Below 1GHz test setup



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



Above 1GHz test setup



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

4.1.6 EUT OPERATING CONDITIONS

- Set the EUT under full load condition and placed them on a testing table.
- Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.
- The necessary accessories enable the EUT in full functions.



4.1.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA:

BT-LE (GFSK)

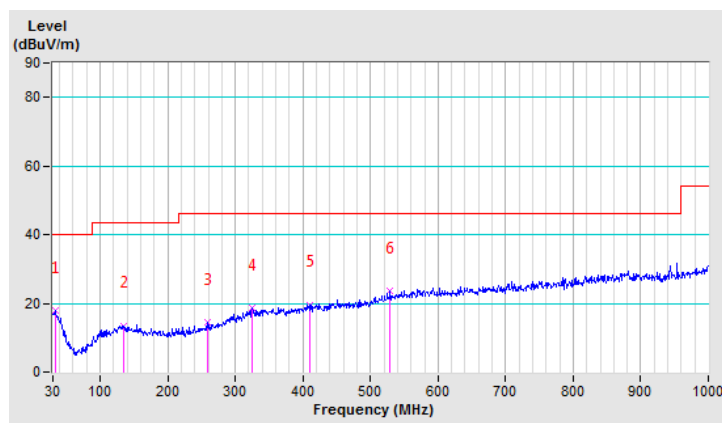
For KL6G3L

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
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	32.91	17.88 QP	40.00	-22.12	1.00 H	145	30.05	-12.17
2	134.76	13.51 QP	43.50	-29.99	1.00 H	173	29.72	-16.21
3	258.92	14.34 QP	46.00	-31.66	1.00 H	180	29.76	-15.42
4	324.88	18.60 QP	46.00	-27.40	1.00 H	137	29.65	-11.05
5	410.24	19.63 QP	46.00	-26.37	1.00 H	240	28.68	-9.05
6	529.55	23.51 QP	46.00	-22.49	1.00 H	175	29.63	-6.12

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).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.





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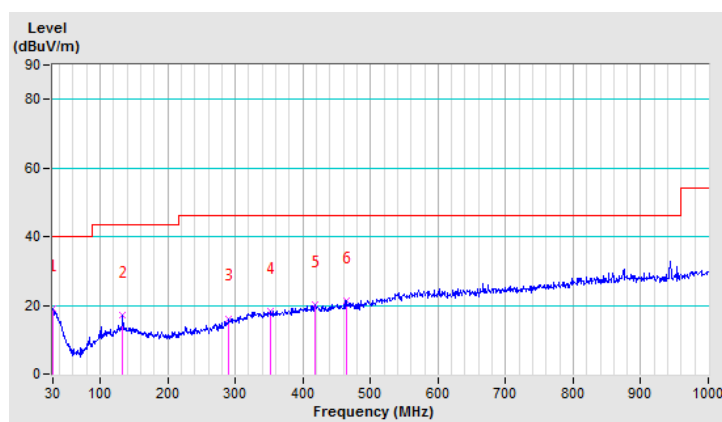
Test Report No.: RF191012N030-2

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
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	30.00	19.14 QP	40.00	-20.86	1.00 V	137	30.34	-11.20
2	132.82	17.10 QP	43.50	-26.40	1.00 V	57	33.27	-16.17
3	289.96	16.19 QP	46.00	-29.81	1.00 V	175	29.28	-13.09
4	352.04	18.23 QP	46.00	-27.77	1.00 V	156	28.55	-10.32
5	418.00	20.27 QP	46.00	-25.73	1.00 V	195	29.14	-8.87
6	465.53	21.42 QP	46.00	-24.58	1.00 V	147	29.79	-8.37

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).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.



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ABOVE 1GHz TEST DATA:

BT-LF (GFSK)

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	2390.00	45.52 PK	74.00	-28.48	1.00 H	251	42.68	2.84
2	2390.00	36.77 AV	54.00	-17.23	1.00 H	251	33.93	2.84
3	*2402.00	104.69 PK			1.00 H	251	101.80	2.89
4	*2402.00	103.51 AV			1.00 H	251	100.62	2.89
5	4804.00	52.71 PK	74.00	-21.29	1.00 H	7	47.45	5.26
6	4804.00	48.82 AV	54.00	-5.18	1.00 H	7	43.56	5.26
7	#7206.00	51.57 PK	74.00	-22.43	1.00 H	155	42.28	9.29
8	#7206.00	42.20 AV	54.00	-11.80	1.00 H	155	32.91	9.29
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	2390.00	43.59 PK	74.00	-30.41	1.00 V	20	40.75	2.84
2	2390.00	33.25 AV	54.00	-20.75	1.00 V	20	30.41	2.84
3	*2402.00	99.03 PK			1.00 V	20	96.14	2.89
4	*2402.00	98.31 AV			1.00 V	20	95.42	2.89
5	4804.00	51.83 PK	74.00	-22.17	1.00 V	153	46.57	5.26
6	4804.00	44.12 AV	54.00	-9.88	1.00 V	153	38.86	5.26
7	#7206.00	53.17 PK	74.00	-20.83	1.00 V	55	43.88	9.29
8	#7206.00	45.39 AV	54.00	-8.61	1.00 V	55	36.10	9.29

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).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	*2440.00	101.05 PK			1.00 H	253	98.02	3.03
2	*2440.00	100.21 AV			1.00 H	253	97.18	3.03
3	4880.00	54.66 PK	74.00	-19.34	1.00 H	31	49.28	5.38
4	4880.00	50.16 AV	54.00	-3.84	1.00 H	31	44.78	5.38
5	7320.00	52.85 PK	74.00	-21.15	1.00 H	105	43.50	9.35
6	7320.00	43.74 AV	54.00	-10.26	1.00 H	105	34.39	9.35
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	*2440.00	97.73 PK			1.00 V	179	94.70	3.03
2	*2440.00	95.66 AV			1.00 V	179	92.63	3.03
3	4880.00	51.03 PK	74.00	-22.97	1.00 V	177	45.65	5.38
4	4880.00	44.86 AV	54.00	-9.14	1.00 V	177	39.48	5.38
5	7320.00	55.39 PK	74.00	-18.61	1.00 V	53	46.04	9.35
6	7320.00	49.03 AV	54.00	-4.97	1.00 V	53	39.68	9.35

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).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.



CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	*2480.00	99.26 PK			1.00 H	251	96.09	3.17
2	*2480.00	98.22 AV			1.00 H	251	95.05	3.17
3	2483.50	50.95 PK	74.00	-23.05	1.00 H	251	47.76	3.19
4	2483.50	38.36 AV	54.00	-15.64	1.00 H	251	35.17	3.19
5	4960.00	53.15 PK	74.00	-20.85	1.00 H	185	47.65	5.50
6	4960.00	48.32 AV	54.00	-5.68	1.00 H	185	42.82	5.50
7	7440.00	54.25 PK	74.00	-19.75	1.00 H	35	44.83	9.42
8	7440.00	44.29 AV	54.00	-9.71	1.00 H	35	34.87	9.42
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	*2480.00	95.97 PK			1.00 V	182	92.80	3.17
2	*2480.00	94.85 AV			1.00 V	182	91.68	3.17
3	2483.50	49.69 PK	74.00	-24.31	1.00 V	182	46.50	3.19
4	2483.50	36.15 AV	54.00	-17.85	1.00 V	182	32.96	3.19
5	4960.00	50.24 PK	74.00	-23.76	1.00 V	202	44.74	5.50
6	4960.00	45.06 AV	54.00	-8.94	1.00 V	202	39.56	5.50
7	7440.00	55.64 PK	74.00	-18.36	1.00 V	141	46.22	9.42
8	7440.00	48.31 AV	54.00	-5.69	1.00 V	141	38.89	9.42

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).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.



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Test Report No.: RF191012N030-2

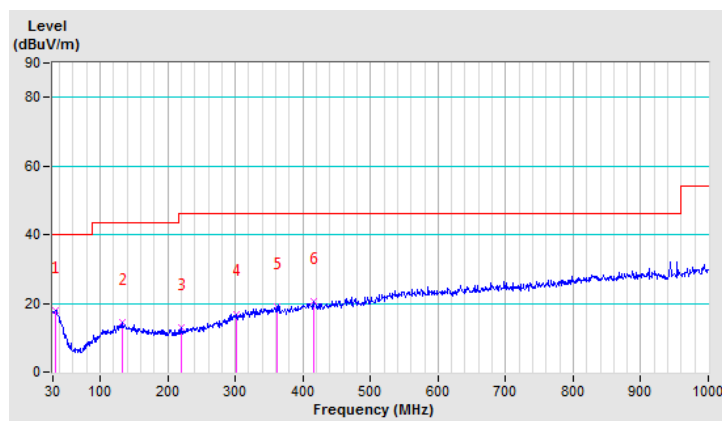
For C8G55Z

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
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	33.88	17.98 QP	40.00	-22.02	1.00 H	145	30.21	-12.23
2	132.82	14.59 QP	43.50	-28.91	1.00 H	173	30.76	-16.17
3	220.12	12.79 QP	46.00	-33.21	1.00 H	180	29.86	-17.07
4	301.60	16.97 QP	46.00	-29.03	1.00 H	137	29.39	-12.42
5	360.77	19.21 QP	46.00	-26.79	1.00 H	240	29.50	-10.29
6	416.06	20.53 QP	46.00	-25.47	1.00 H	175	29.44	-8.91

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).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.



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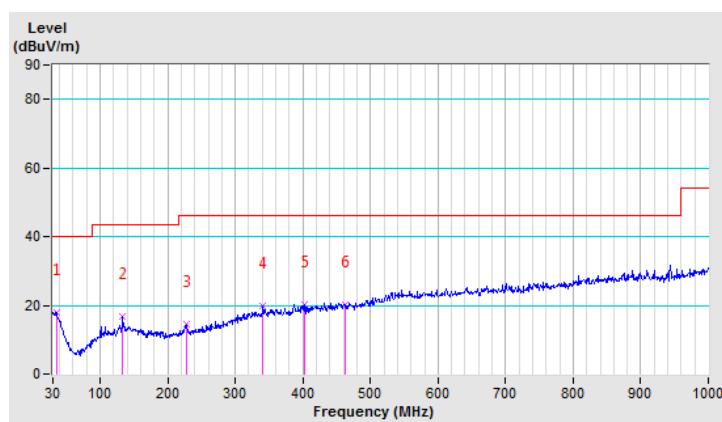
Test Report No.: RF191012N030-2

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
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	34.85	17.93 QP	40.00	-22.07	1.00 V	137	30.47	-12.54
2	132.82	16.85 QP	43.50	-26.65	1.00 V	57	33.02	-16.17
3	227.88	14.51 QP	46.00	-31.49	1.00 V	175	31.12	-16.61
4	340.40	19.69 QP	46.00	-26.31	1.00 V	156	30.50	-10.81
5	401.51	20.11 QP	46.00	-25.89	1.00 V	195	29.36	-9.25
6	462.62	20.10 QP	46.00	-25.90	1.00 V	147	28.54	-8.44

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).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.



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ABOVE 1GHz TEST DATA:

BT-LF (GFSK)

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	2390.00	44.48 PK	74.00	-29.52	1.00 H	243	41.64	2.84
2	2390.00	33.96 AV	54.00	-20.04	1.00 H	243	31.12	2.84
3	*2402.00	101.57 PK			1.00 H	243	98.68	2.89
4	*2402.00	100.58 AV			1.00 H	243	97.69	2.89
5	4804.00	54.40 PK	74.00	-19.60	1.00 H	74	49.14	5.26
6	4804.00	50.88 AV	54.00	-3.12	1.00 H	74	45.62	5.26
7	#7206.00	52.34 PK	74.00	-21.66	1.00 H	304	43.05	9.29
8	#7206.00	42.81 AV	54.00	-11.19	1.00 H	304	33.52	9.29
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	2390.00	43.67 PK	74.00	-30.33	1.00 V	6	40.83	2.84
2	2390.00	33.71 AV	54.00	-20.29	1.00 V	6	30.87	2.84
3	*2402.00	95.37 PK			1.00 V	6	92.48	2.89
4	*2402.00	94.27 AV			1.00 V	6	91.38	2.89
5	4804.00	51.86 PK	74.00	-22.14	1.00 V	186	46.60	5.26
6	4804.00	46.35 AV	54.00	-7.65	1.00 V	186	41.09	5.26
7	#7206.00	53.40 PK	74.00	-20.60	1.00 V	344	44.11	9.29
8	#7206.00	46.24 AV	54.00	-7.76	1.00 V	344	36.95	9.29

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).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	*2440.00	98.19 PK			1.00 H	239	95.16	3.03
2	*2440.00	97.06 AV			1.00 H	239	94.03	3.03
3	4880.00	56.14 PK	74.00	-17.86	1.00 H	346	50.76	5.38
4	4880.00	50.92 AV	54.00	-3.08	1.00 H	346	45.54	5.38
5	7320.00	53.07 PK	74.00	-20.93	1.00 H	115	43.72	9.35
6	7320.00	42.85 AV	54.00	-11.15	1.00 H	115	33.50	9.35
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	*2440.00	94.50 PK			1.00 V	0	91.47	3.03
2	*2440.00	93.32 AV			1.00 V	0	90.29	3.03
3	4880.00	53.16 PK	74.00	-20.84	1.00 V	69	47.78	5.38
4	4880.00	47.08 AV	54.00	-6.92	1.00 V	69	41.70	5.38
5	7320.00	54.79 PK	74.00	-19.21	1.00 V	231	45.44	9.35
6	7320.00	46.71 AV	54.00	-7.29	1.00 V	231	37.36	9.35

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).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.



CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	*2480.00	101.05 PK			1.00 H	212	97.88	3.17
2	*2480.00	99.34 AV			1.00 H	212	96.17	3.17
3	2483.50	52.69 PK	74.00	-21.31	1.00 H	212	49.50	3.19
4	2483.50	41.83 AV	54.00	-12.17	1.00 H	212	38.64	3.19
5	4960.00	51.35 PK	74.00	-22.65	1.00 H	342	45.85	5.50
6	4960.00	46.07 AV	54.00	-7.93	1.00 H	342	40.57	5.50
7	7440.00	52.33 PK	74.00	-21.67	1.00 H	103	42.91	9.42
8	7440.00	43.31 AV	54.00	-10.69	1.00 H	103	33.89	9.42
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	*2480.00	94.21 PK			1.00 V	353	91.04	3.17
2	*2480.00	93.14 AV			1.00 V	353	89.97	3.17
3	2483.50	48.86 PK	74.00	-25.14	1.00 V	353	45.67	3.19
4	2483.50	38.12 AV	54.00	-15.88	1.00 V	353	34.93	3.19
5	4960.00	47.71 PK	74.00	-26.29	1.00 V	0	42.21	5.50
6	4960.00	40.83 AV	54.00	-13.17	1.00 V	0	35.33	5.50
7	7440.00	52.32 PK	74.00	-21.68	1.00 V	313	42.90	9.42
8	7440.00	44.04 AV	54.00	-9.96	1.00 V	313	34.62	9.42

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).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.

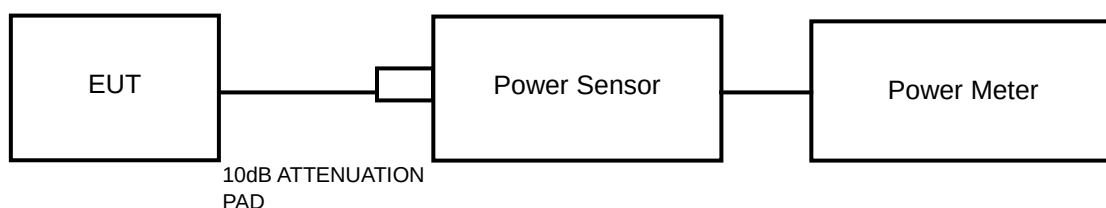


4.2 CONDUCTED OUTPUT POWER

4.3.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz band: 1 Watt (30dBm)

4.3.2 TEST SETUP



4.3.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Sensor	Keysight	U2021XA	MY55060016	May 22,19	May 21,20
Power Sensor	Keysight	U2021XA	MY55060018	May 22,19	May 21,20
Power Meter	Anritsu	ML2495A	1139001	Mar. 12,19	Mar. 11,20
Power Sensor	Anritsu	MA2411B	1531155	Mar. 12,19	Mar. 11,20
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 17, 19	Oct.16, 20
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Nov.15, 18	Nov. 14,19
Oscilloscope	Agilent	DSO9254A	MY51260160	Sep. 18,19	Sep. 17,20
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Mar. 13,19	Mar. 12,20
Signal Generator	Agilent	N5183A	MY50140980	Sep. 19,19	Sep. 18,20
Agile Signal Generator	Agilent	8645A	Agilent	Sep. 12,19	Sep. 11,20
Spectrum Analyzer	Keysight	N9020A	MY55400499	Mar. 12,19	Mar. 11,20
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Sep. 12,19	Sep. 11,20
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	May 20,19	May 19,20
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A	N/A
DC Source	Keysight	E3642A	MY56146098	N/A	N/A

NOTES: 1. The test was performed in RF Oven room.

2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.



4.3.4 TEST PROCEDURES

A peak sensor was used on the output port of the EUT. A peak power meter was used to read the response of the peak power sensor. Record the peak power level.

4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

4.3.6 EUT OPERATING CONDITIONS

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

4.3.7 TEST RESULTS

4.3.7.1 MAXIMUM PEAK OUTPUT POWER

BT-LE (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT (W)	PASS/FAIL
0	2402	5.37	3.443	1	PASS
19	2440	5.29	3.381	1	PASS
39	2480	5.38	3.451	1	PASS

4.3.7.2 AVERAGE OUTPUT POWER (FOR REFERENCE)

The average power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

BT-LE (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)
0	2402	3.60
19	2440	3.55
39	2480	3.64



Test Report No.: RF191012N030-2

4 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



Test Report No.: RF191012N030-2

5 APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---