FCC BLE TEST REPORT

No. GCCT16CFR01-BLE

For

OBI Connect FZE

Product Name: Mobile Phone

Model Name: Obi Worldphone SF1

Trade Name: OBI

Issued Date: 2016-03-28

Test Laboratory:

GCCT, *Guangdong Telecommunications Terminal Products Quality Supervision and Testing Center*

Keji Road, High-tech Zone, He Yuan, Guang Dong, PR China 517001

Tel:+86(0)762-3607221, Fax:+86(0)762-3603336 Email: ncctmail@126.com. www.ncct.org.cn

CONTENTS

GENERAL SUMMARY

Product Name	Mobile Phone
Model Name	Obi Worldphone SF1
Trade Name	OBI
Applicant	OBI Connect FZE
Manufacturer	CK Telecom Limited
Test Laboratory	GCCT, Guangdong Telecommunications Terminal Products Quality Supervision and Testing Center
Reference Standards	FCC CFR 47 Part 15C:"Radio Frequency Devices Sub-Part C: intentional Radiators" ANSI C63.10-2013, "American National Standard for Testing Unlicensed Wireless Devices" KDB 558074 D01 DTS Meas Guidance v03r03
Test Conclusion	This portable wireless equipment has been measured in all cases requested by the relevant standards. Test results in annex B of this test report are below limits specified in the relevant standards. General Judgment: Pass Date of issue: 2016.03.28
Comment	The test results in this report apply only to the tested sample of the stated device/equipment.

Approved by:	*Reviewed by:*	*Tested by:*
Luo Jian	Dong Xiaobo	Gao Xiaoqing
Manager	Deputy Manager	Test Engineer

1. Test Laboratory

1.1 Testing Location

Company Name	GCCT, Guangdong Telecommunications Terminal Products Quality Supervision and Testing Center
Address	Keji Road, High-tech Zone, Heyuan, Guangdong Province, PR.China
CNAS Registration No.	L4992
FCC Registration No.	303878
Postal Code	517001
Telephone	+86-762-3607221
Fax	+86-762-3603336

1.2 Testing Environment

Environment Data	Temperature(℃)	Humidity(%)
Maximum Ambient	22.3	51
Minimum Ambient	17.8	44

EUT is under testing environment.

1.3 Project Data

Project Leader	Dong Xiaobo
Testing Start Date	2016-03-15
Testing End Date	2016-03-28

2. Client Information

2.1 Applicant Information

Company Name	OBI Connect FZE
Address	B-21,Dubai Airport Free zone, PO BOX 371475, United Arab Emirates
City	Dubai
Postal Code	/
Country	United Arab Emirates

2.2 Manufacturer Information

Company Name	CK Telecom Limited
Address	Keji Road.High-Tech Development Zone. Heyuan, Guangdong,P.R.China.
City	Heyuan
Postal Code	/
Country	China

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1 About EUT

Model Name	Obi Worldphone SF1
FCC ID	2AGBLSF1
Tx Frequency	GSM850:824 ~ 848 MHz PCS1900 : 1850 ~ 1909MHz WCDMA Band II: 1852 ~ 1908MHz WCDMA Band V: 826 ~ 846MHz Bluetooth& BLE: 2402 ~ 2480MHz WIFI(802.11b/g/n-20): 2412 ~ 2462MHz WIFI(802.11n-40): 2422 ~ 2452MHz
Rx Frequency	GSM850: 869 ~ 893MHz GSM1900: 1930 ~ 1989MHz WCDMA Band II: 1932 ~ 1987MHz WCDMA Band V: 871 ~ 891MHz Bluetooth& BLE: 2402 ~ 2480MHz WIFI(802.11b/g/n-20): 2412 ~ 2462MHz WIFI(802.11n-40): 2422 ~ 2452MHz GPS:1575MHz
Number of Channels	GSM850 :25 GSM1900 : 60 WCDMA Band II: 60 WCDMA Band V: 25 Bluetooth:79 BLE:40 WIFI(802.11b/g/n-20):11 WIFI(802.11n-40):7
Modulation	GSM:GMSK WCDMA:BPSK/QPSK BLE:GFSK Bluetooth: GFSK&π/4-DQPSK&8DPSK WIFI:CCK/OFDM
Antenna Type	PIFA(GSM/DCS/WCDMA); MONOPOLE (Bluetooth/WIFI)

Antenna Gain	GSM850&1900:-0.5dBi GSM900&1800:-0.5dBi WCDMA Band II&V: -1dBi Bluetooth&BLE&WIFI: -1dBi GPS: -1dBi
Normal Voltage	3.8V
Extreme Low Voltage	3.6V
Extreme High Voltage	4.2V
Extreme Low Temperature	0℃
Extreme High Temperature	40℃

Note: Photographs of EUT are shown in ANNEX A of this test report.

Note: high and low voltage values in extreme condition test are given by manufacturer

3.2 Internal Identification of EUT

EUT ID *	IMEI	HW Version	SW Version
GCCT16CFR01-M01	/	MIRAGE03-V1.0	/
GCCT16CFR01-M03	/	MIRAGE03-V1.0	/

*EUT ID: is used to identify the test sample in the lab internally.GCCT16CFR01-M01 and GCCT16CFR01-M03 are the same mobile phone.

3.3 Internal Identification of AE

AE ID *	Description	Model	Manufacturer
GCCT16CFR01-B01	Battery	OB3000CK	DONG GUAN DRN NEW ENERGY CO.,LTD.
GCCT16CFR01-C01	Adapter	AOD2A5V	DONGGUAN AOHAI POWER TECHNOLOGY CO,LTD.
GCCT16CFR01-B03	Battery	OB3000CK	DONG GUAN DRN NEW ENERGY CO.,LTD.
GCCT16CFR01-C03	Adapter	AOD2A5V	DONGGUAN AOHAI POWER TECHNOLOGY CO,LTD.

*AE ID: is used to identify the test sample in the lab internally.GCCT16CFR01-B01 and GCCT16CFR01-B03 are the same accessories, GCCT16CFR01-C01 and GCCT16CFR01-C03 are the same accessories.

4. Test Results

4.1 Summary of Test Results

No	Test cases	Sample	Verdict
1	Maximum transmit power	M01	Pass
2	Maximum Power Spectral Density	M01	Pass
3	6dB Occupied Bandwidth	M01	Pass
4	Band Edge Compliance	M01	Pass
5	Conducted Transmitter emissions	M01	Pass
6	Radiated emissions	M03	Pass
7	AC Conducted Emission	M03	Pass
8	Antenna Requirements	M01	Pass

Note: please refer to Annex B in this test report for the detailed test results.

EUT was tested with Channel 0, 19,39.

4.2 Statements

GCCT has evaluated the test cases requested by the applicant/manufacturer as listed in section 4.1 of this report, for the EUT specified in section 3, according to the standards or reference documents listed in general summary.

5. Test Equipment Utilized

Table 1. Measurement Equipment

Hardware						
No.	**Name**	**Model**	**SN**	**Manufacture**	**Cal. Date**	**Cal. Due Date**
1	Spectrum Analyzer	N9020A	MY52091261	Agilent	2015.08.21	2016.08.20
2	Switch Unit	/	E0112	/	2015.08.21	2016.08.20
3	Power Sensor	U2021XA	MY50000196	Agilent	2015.08.21	2016.08.20
Software						
Tech BT			v1.0.3			

Table 2. Radiated emission test system

No.	Name	Model	SN	Manufacture	Cal. date	Cal. Due Date
1	Spectrum Analyzer	E4440A	MY48250641	Agilent	2015.08.21	2016.08.20
2	BiCoNilog Antenna	3142E	00142015	ETS-Lindgren	2015.09.15	2017.09.14
3	Horn Antenna	3117	129169	ETS-Lindgren	2015.09.15	2017.09.14
4	Signal Generator	N5183A-532	MY49060563	Agilent	2015.08.21	2016.08.20
5	Universal Radio Communication Tester	E5515C	MY48367105	Agilent	2015.08.21	2016.08.20
6	RF Preselector	N9039A	MY48260024	Agilent	/	/
7	Loop Antenna	HFH2	860015/00	R&S	2015.08.21	2016.08.20

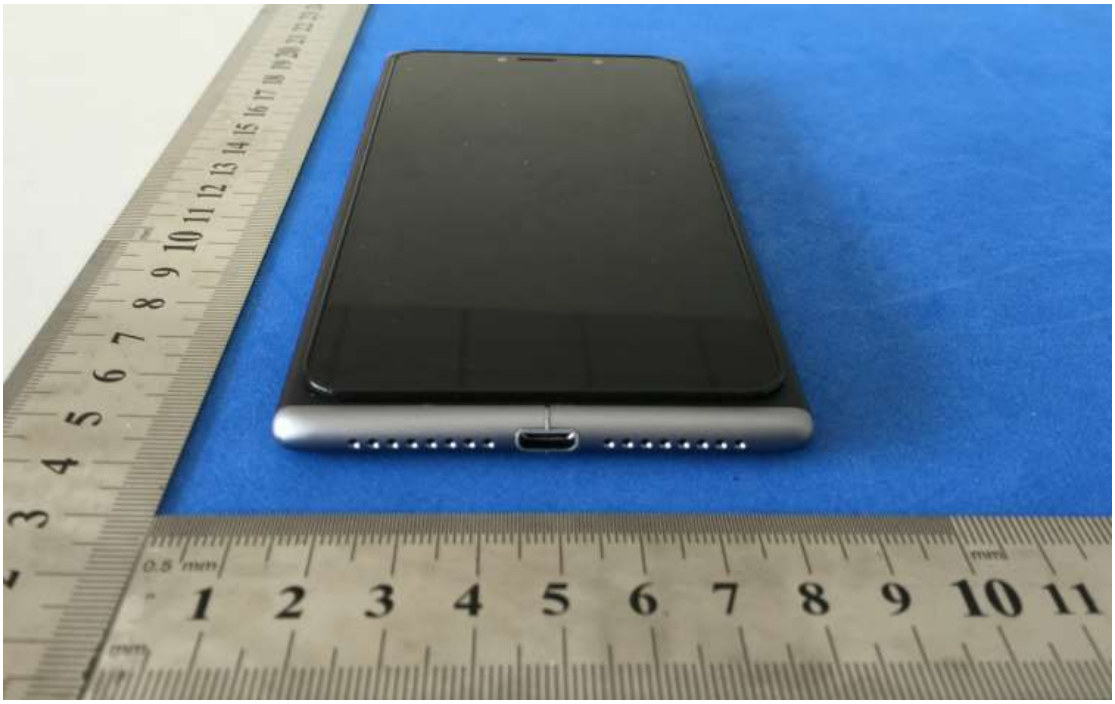
Table 3. Accessories

No.	Name	Model	SN	Manufacturer	Cal. date	Cal. Due Date
1	PC	Pavilion dv2	CNC9112F68	HP	/	/
2	Printer	BOISB-0604-00	VNF3L52398	HP	/	/
3	Mouse	M-UAV-DEL8	/	DELL	/	/
4	Power line	I-SHENG	/	/	/	/
5	USB cable	SHIELDED	E174089	/	/	/

ANNEX A: EUT Photograph

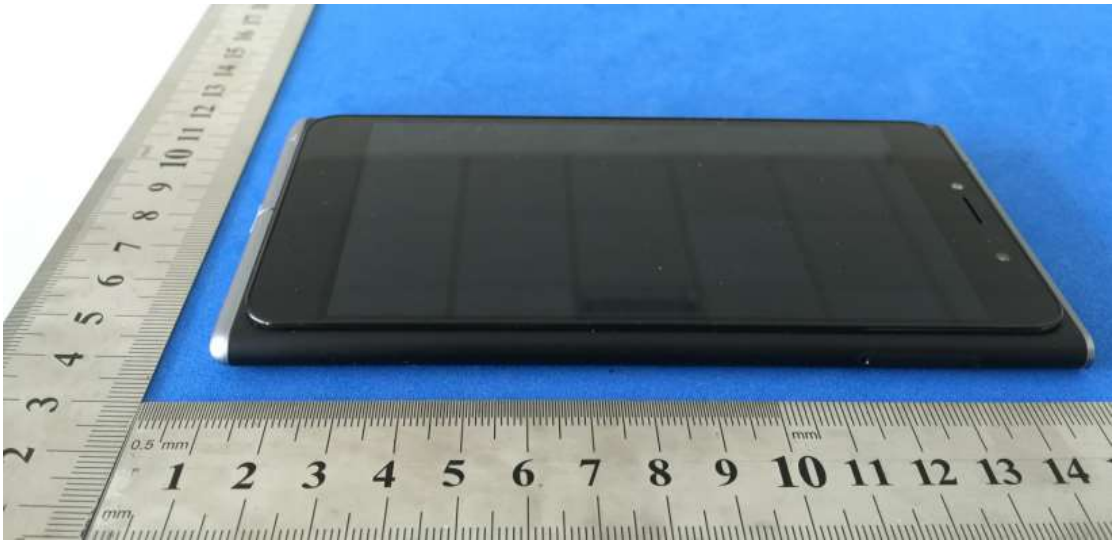
EUT Front View

EUT behind View



EUT Left View

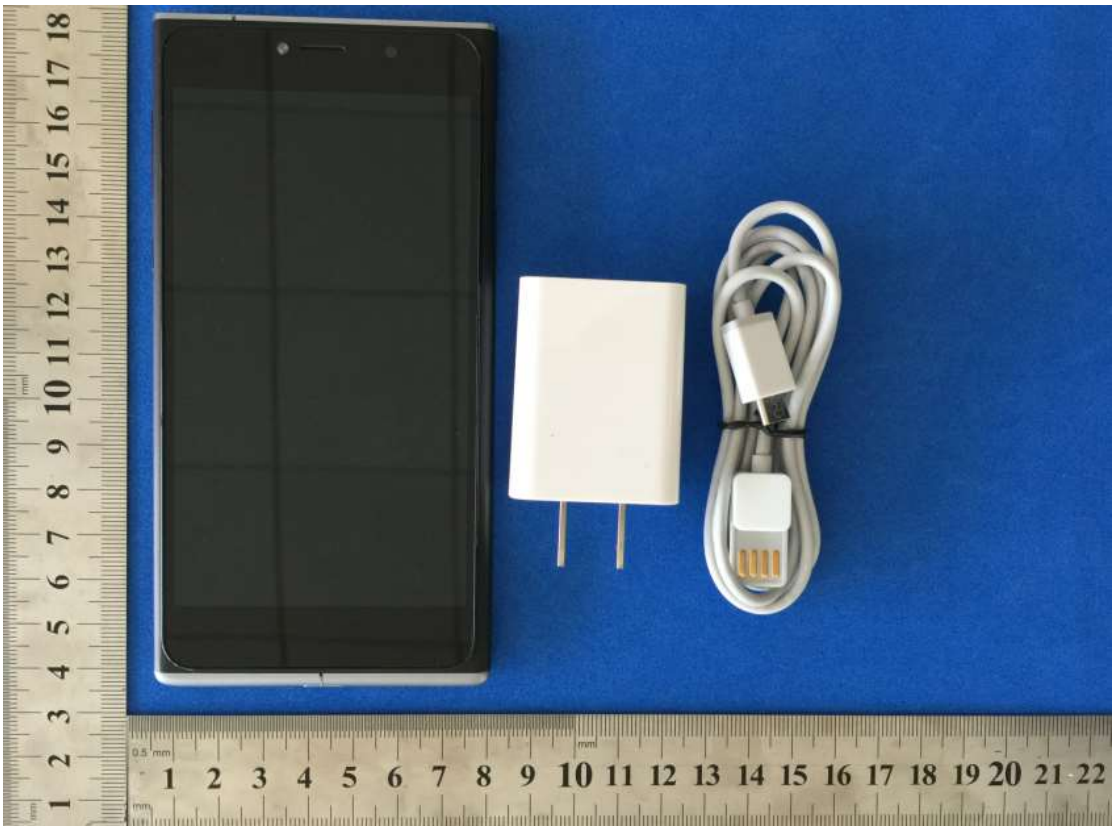
EUT Right View



EUT Top View

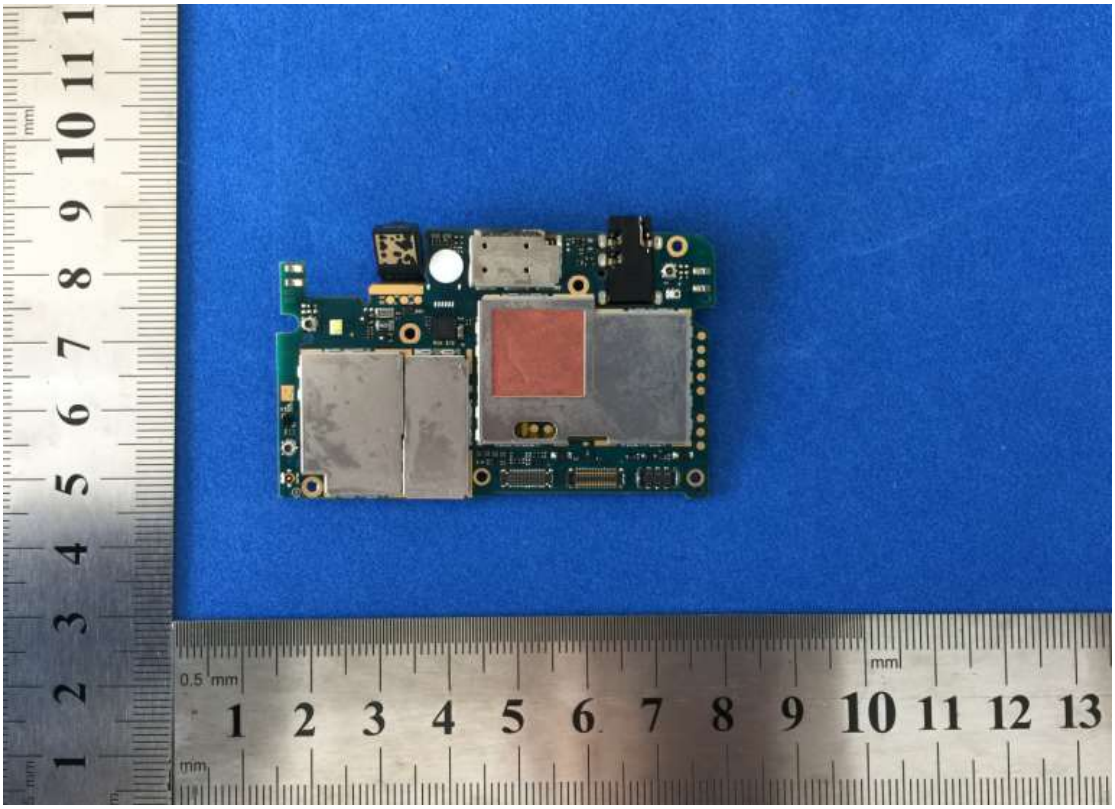
EUT Rear View

All

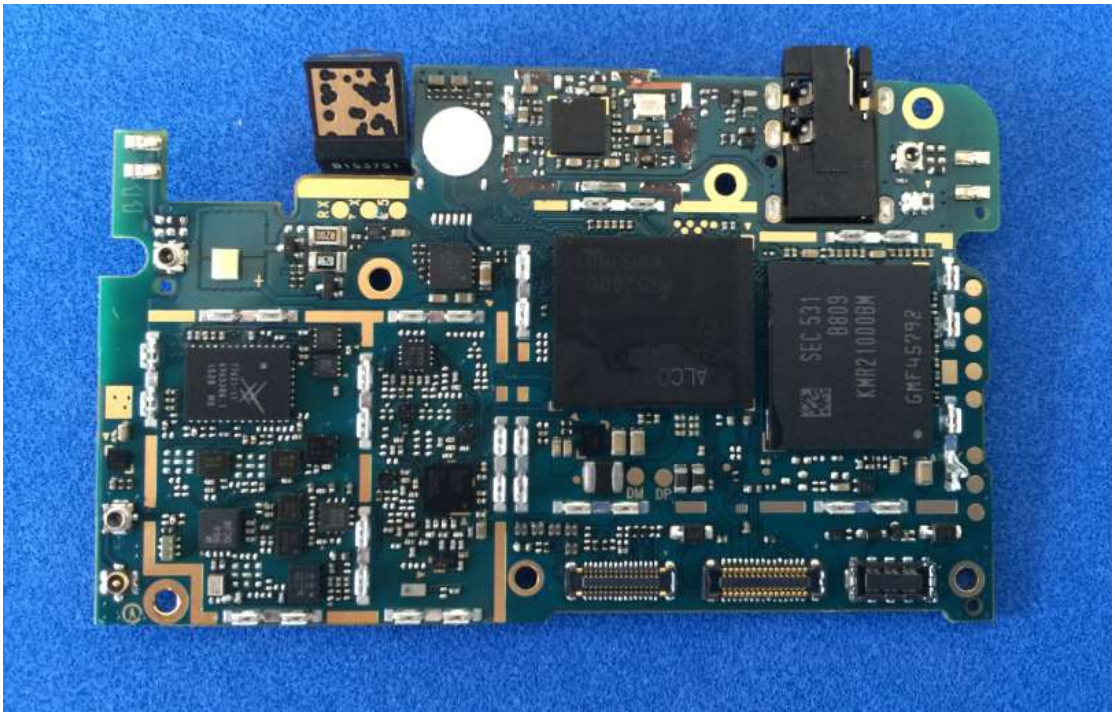


Cover off

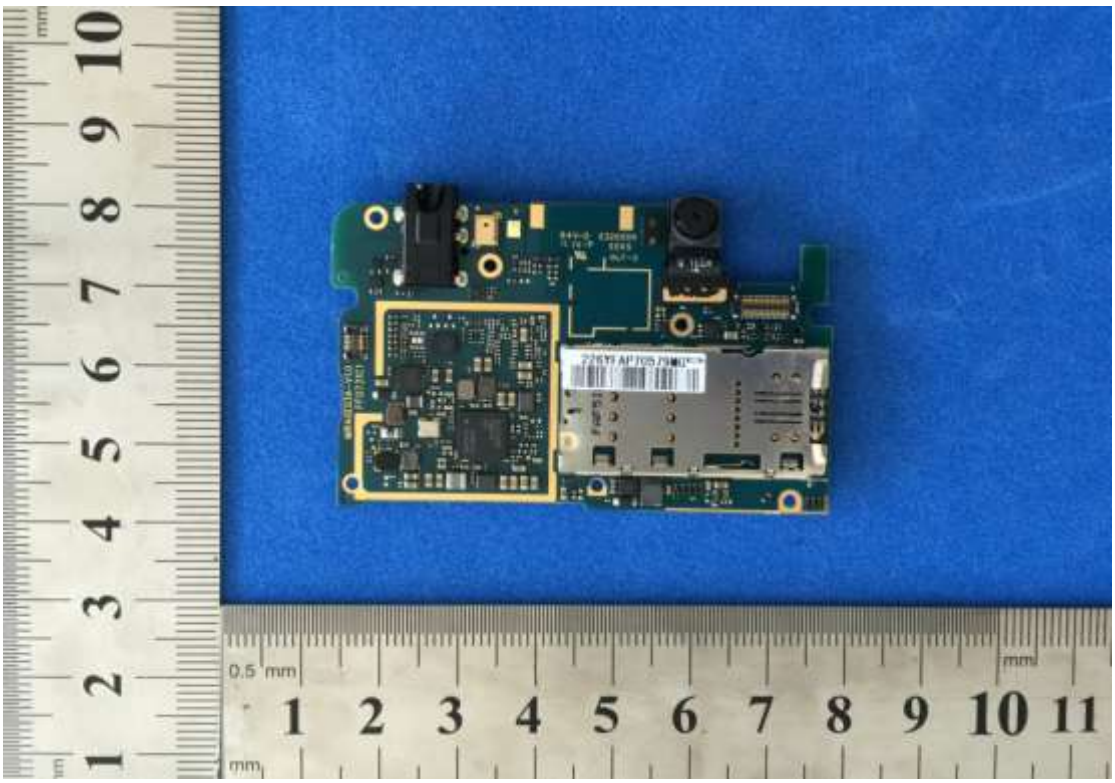
Main board with shielding Front View



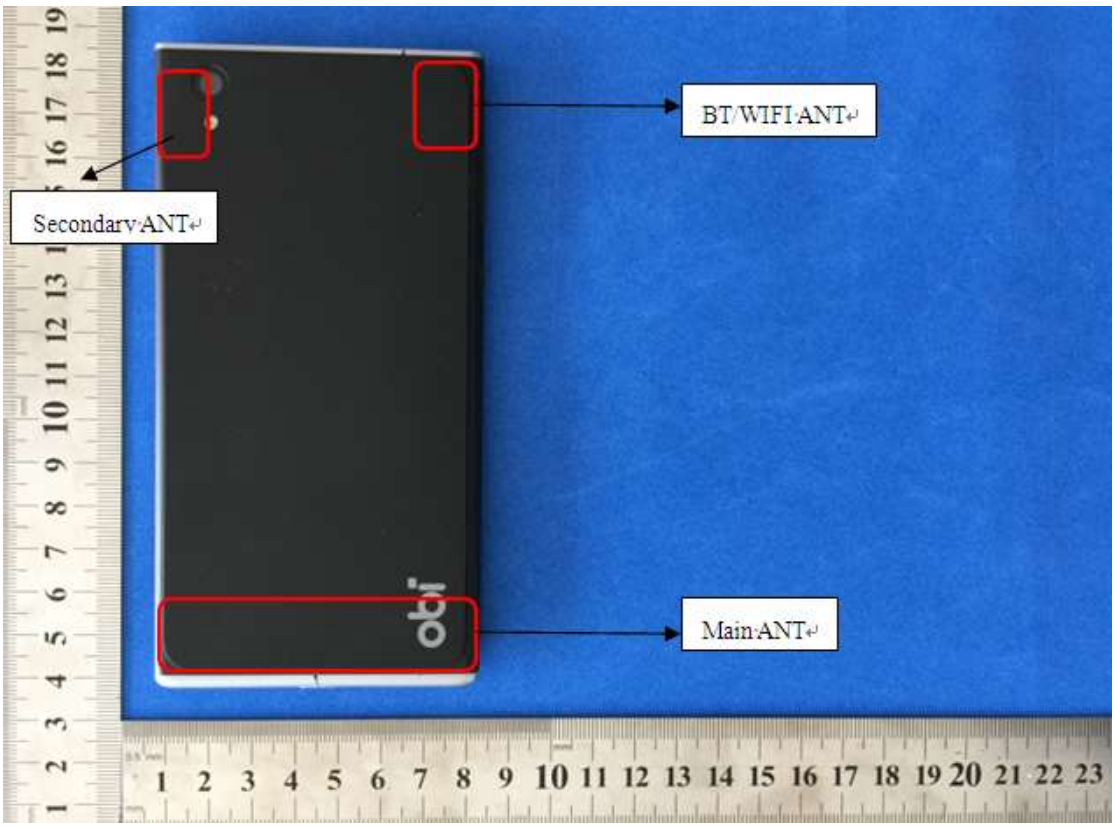
Main board without shielding Front View



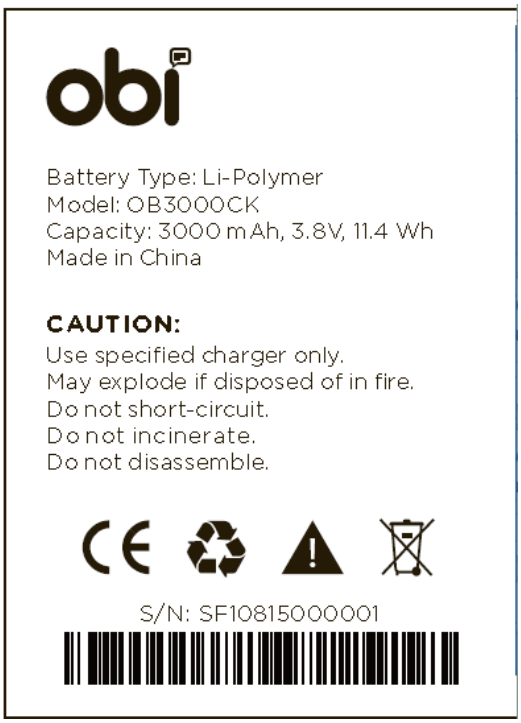
Main board Rear View



Antenna View

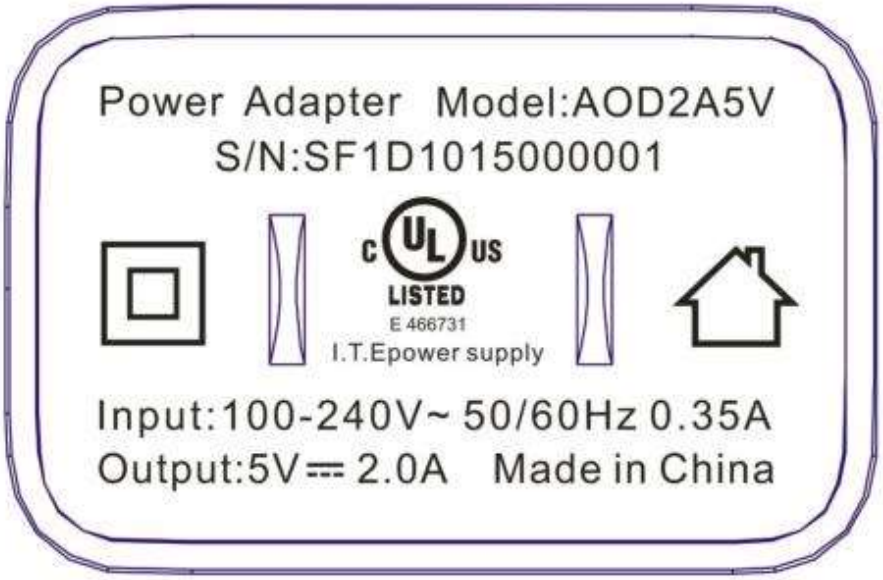


Battery label View

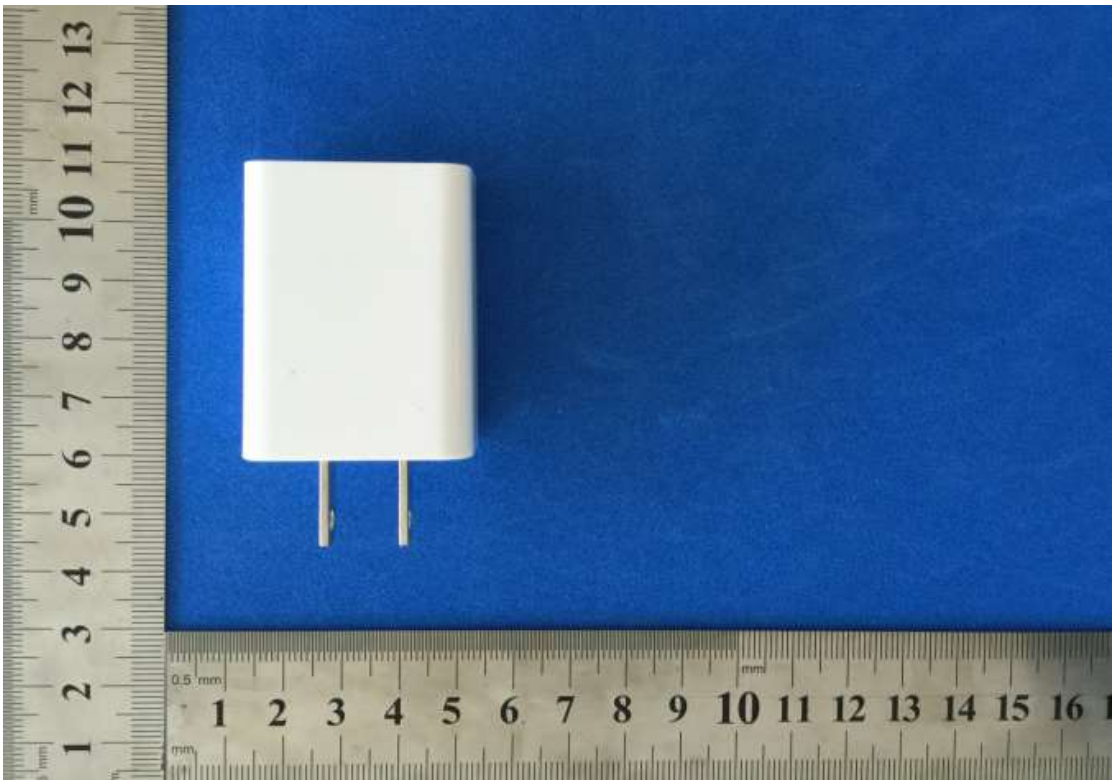


Battery View

Adapter label view

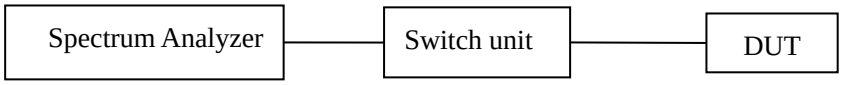


Adapter view



ANNEX B: Detailed Test Results

The radiated test setup is shown in each radiated test case section. The conducted test setup except RF Power is shown as following:



All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.

B.1Maximum Transmit Power

B.1.1 Description

The maximum Peak Output power shall be equal to or less than 30dBm.

B.1.2 Test procedures

Conducted Measurement

EUT was set for low, mid, high channel with modulated mode and highest RF output power
The power meter was connected to the antenna terminal.

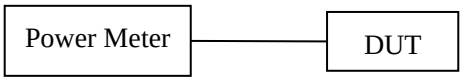
Standard Requirement

One of the following procedures may be used to determine the maximum peak conducted output power of a DTS EUT.

Procedures:

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

B.1.3 Test Setup



B.1.4 Test Results

Test Mode	Maximum peak output power(dBm)			Verdict
	2402MHz	2440MHz	2480MHz	
GFSK	-1.328	-0.384	-1.526	Pass

B.2Maximum Power Spectral Density

B.2.1 Description

The maximum spectral density shall be equal to or less than8dBm

B.2.2 Test procedures

Conducted Measurement

EUT was set for low, mid, high channel with modulated mode and highest RF output power
The spectrum analyzer was connected to the antenna terminal.

Standard Requirement

The DTS rules specify a conducted PSD limit within the DTS bandwidth during any time interval of continuous transmission.5 Such specifications require that the same method as used to determine the conducted output power shall also be used to determine the power spectral density. Therefore, if maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option):

Procedures:

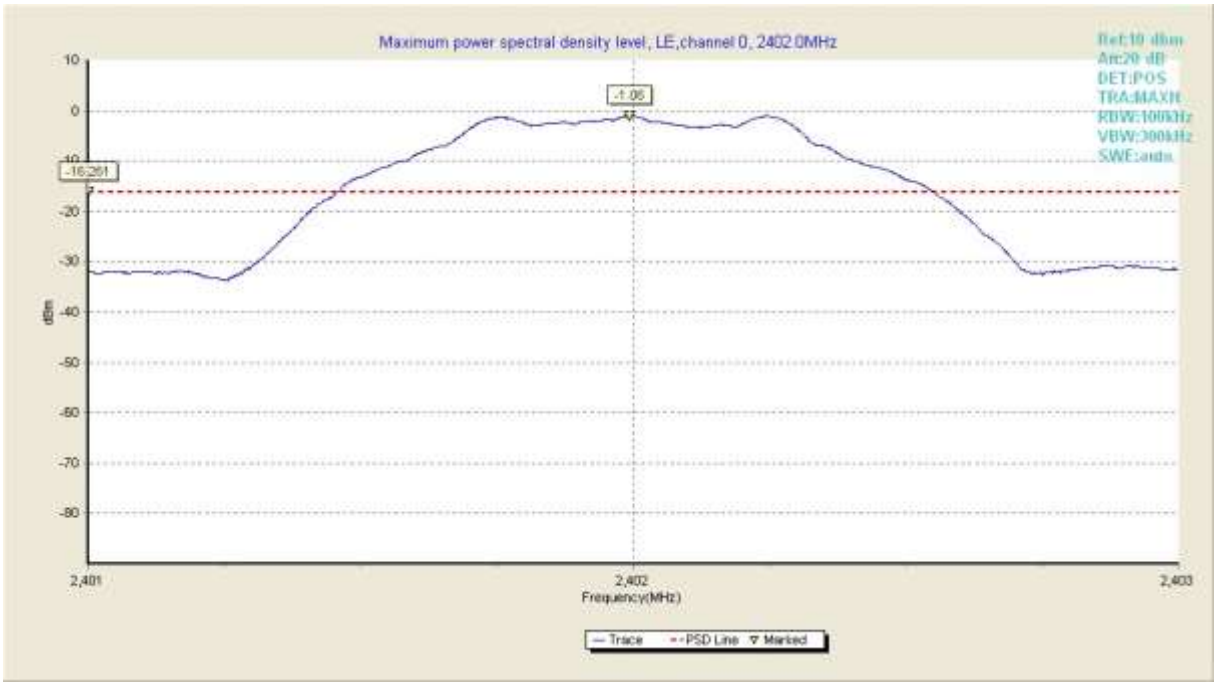
Method PKPSD (peak PSD)

This procedure shall be used if maximum peak conducted output power was used to compliance, and is optional if the maximum conducted (average) output power was used to demonstrate compliance.

a) Set analyzer center frequency to DTS channel center frequency.
b) Set the span to 1.5 times the DTS bandwidth
c) Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d) Set the VBW ≥ 3 RBW.
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) Use the peak marker function to determine the maximum amplitude level within the RBW.
j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

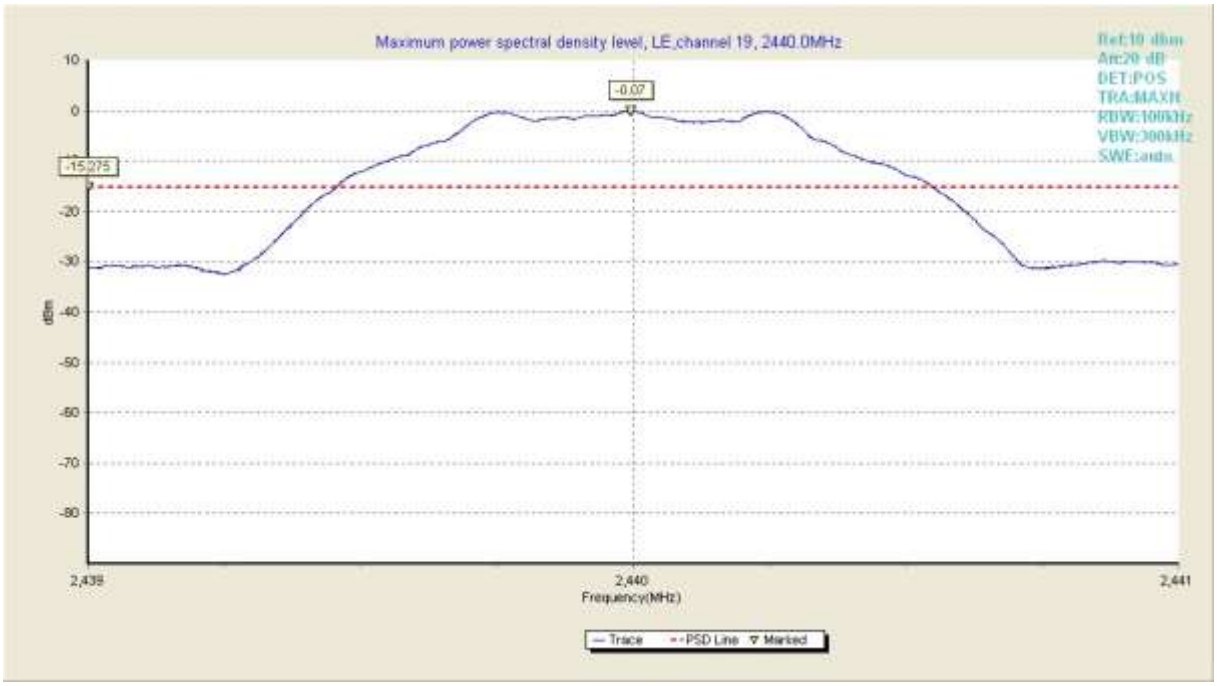
B.2.3 Test Results

Limit (dBm)	PSD(dBm)						Verdict
	2402MHz		2440 MHz		2480 MHz		
8	-16.26	Fig.1	-15.27	Fig.2	-16.42	Fig.3	Pass
Antenna Gain: -1dBi							



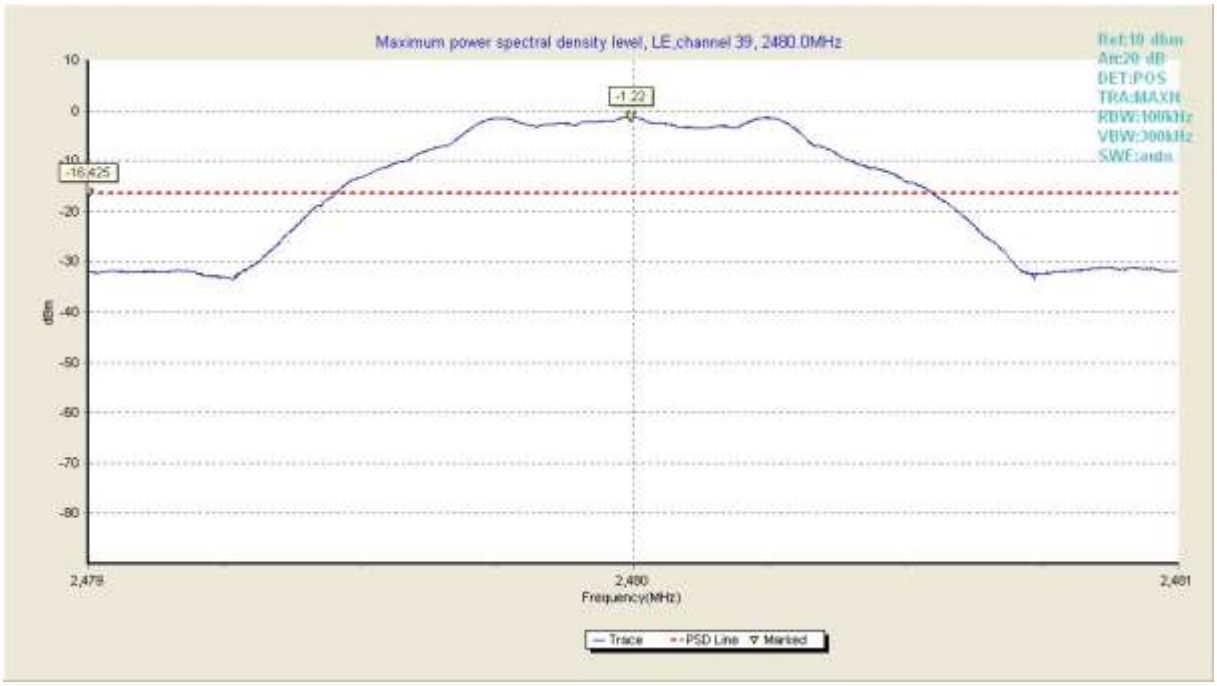
Test Plot 1	2401.992920	-1.060000
Test Plot 2	2401.000000	-16.261000

Fig.1 Maximum power spectral density of BLE in channel 0



Test Plot 1	2439.996094	-0.070000
Test Plot 2	2439.000000	-15.275000

Fig.2 Maximum power spectral density of BLE in channel 19



Test Plot 1	2479.995117	-1.220000
Test Plot 2	2479.000000	-16.424999

Fig.3 Maximum power spectral density of BLE in channel 39

B.3DTS (6dB)Channel Bandwidth

B.3.1 Description

The Occupied 6dB Bandwidth shall be equal to or more than 500 kHz.

B.3.2 Test procedures

Conducted Measurement

EUT was set for low, mid, high channel with modulated mode and highest RF output power

The spectrum analyzer was connected to the antenna terminal.

Standard Requirement

This bandwidth is referred to as the DTS bandwidth.

Procedures:

a) Set RBW = 100 kHz.

b) Set the video bandwidth (VBW) ≥ 3 RBW.

c) Detector = Peak.

d) Trace mode = max hold.

e) Sweep = auto couple.

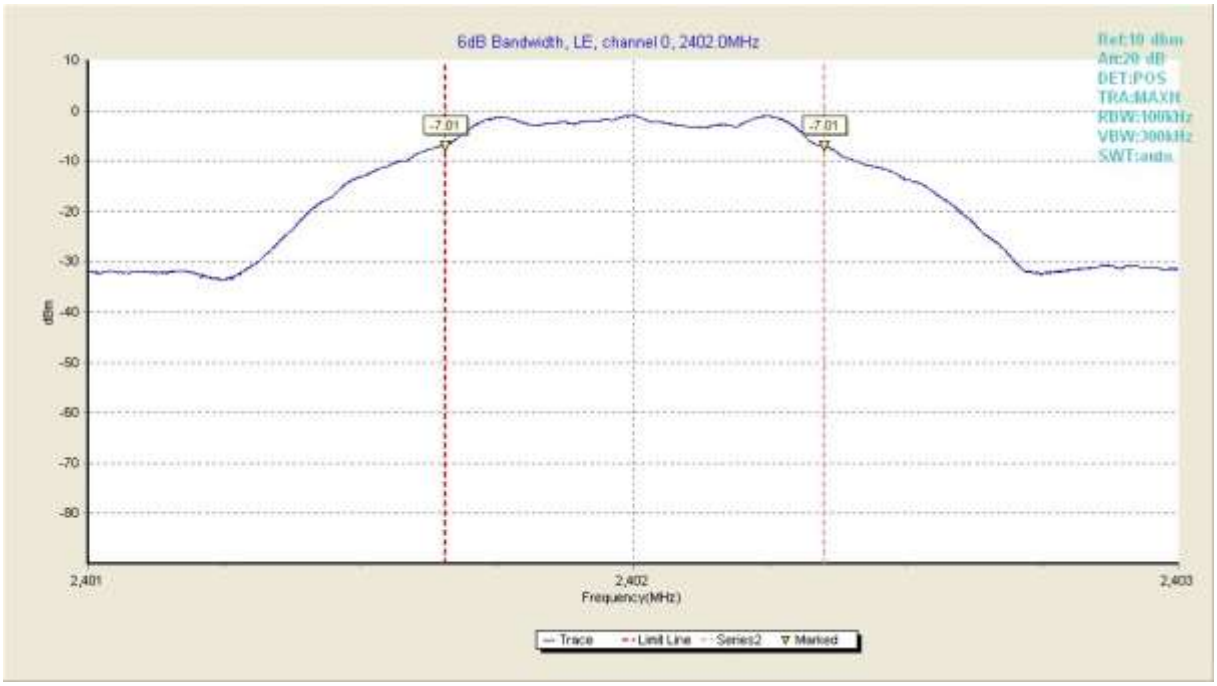
f) Allow the trace to stabilize.

g) Measure the maximum width of the emission that is constrained by the frequencies. associated with

the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

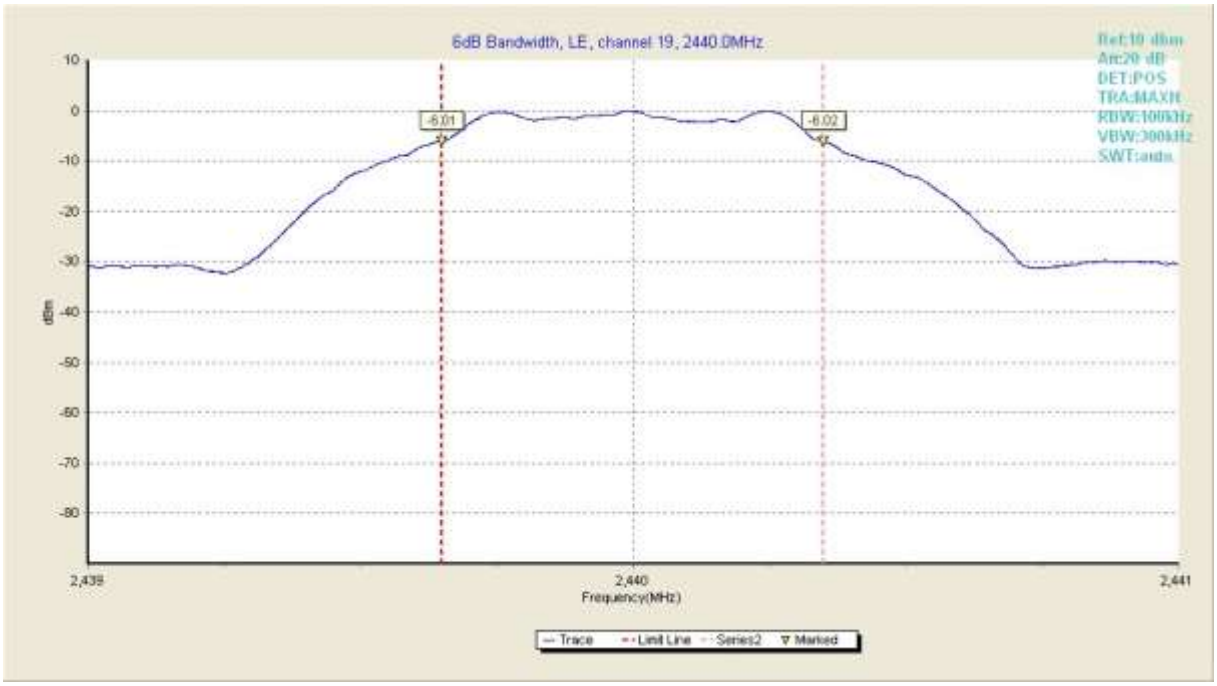
B.3.3 Test Results

Channel	Frequency (MHz)	Limit (MHz)	Occupied Bandwidth (MHz)	Test Results	Verdict
0	2402	0.5	0.695	Fig.7	Pass
19	2440		0.700	Fig.8	Pass
39	2480		0.701	Fig.9	Pass



Test plot 1	2401.655273	-7.010000
Test plot 2	2402.350586	-7.010000

Fig.4 6dB Bandwidth of BLE in channel 0,2402MHz



Test plot 1	2439.648682	-6.010000
Test plot 2	2440.348633	-6.020000

Fig.5 6dB Bandwidth of BLE in channel 19,2440MHz

Test plot 1	2479.645264	-7.160000
Test plot 2	2480.345947	-7.120000

Fig.6 6dB Bandwidth of BLE in channel 39,2480MHz

B.4Band Edge

B.4.1 Conducted Measurement

B.4.1.1 Description

The Band Edges Compliance shall be equal to or less than -20 dB.

B.4.1.2 Test procedures

Conducted Measurement

EUT was set for low, mid, high channel with modulated mode and highest RF output power
The spectrum analyzer was connected to the antenna terminal.

Standard Requirement

Emissions within 2 MHz of an authorized band edge may be measured using either the marker-delta method (for peak or average emissions) or the integration method (for average emissions only), described below, provided that the OBW edge falls within 2 MHz of the band edge. Otherwise, all unwanted emissions measurements shall be performed using the standard methods.

Procedures

Peak Detection

When using a peak detector to measure unwanted emissions at or near the band edge (within 2 MHz of the authorized band), the following integration procedure can be used.

a) Set instrument center frequency to the frequency of the emission to be measured (must be within 2 MHz of the authorized band edge).
b) Set span to 2 MHz
c) RBW = 100 kHz.
d) VBW ≥ 3 x RBW.
e) Detector = peak.
f) Sweep time = auto.
g) Trace mode = max hold.
h) Allow sweep to continue until the trace stabilizes (required measurement time may increase for low duty cycle applications)
i) Compute the power by integrating the spectrum over 1 MHz using the analyzer's band power measurement function with band limits set equal to the emission frequency ($f_{emission}$) ± 0.5 MHz. If the instrument does not have a band power function, then sum the amplitude levels (in power units) at 100 kHz intervals extending across the 1 MHz spectrum defined by $f_{emission}$ ± 0.5 MHz.

B.4.1.3Test Results

Channel	Frequency(MHz)	Limit (dB)	Test Result(dB)		Verdict
0	2400	-20	-57.41	Fig.10	Pass
39	2483.5		-63.40	Fig.11	Pass

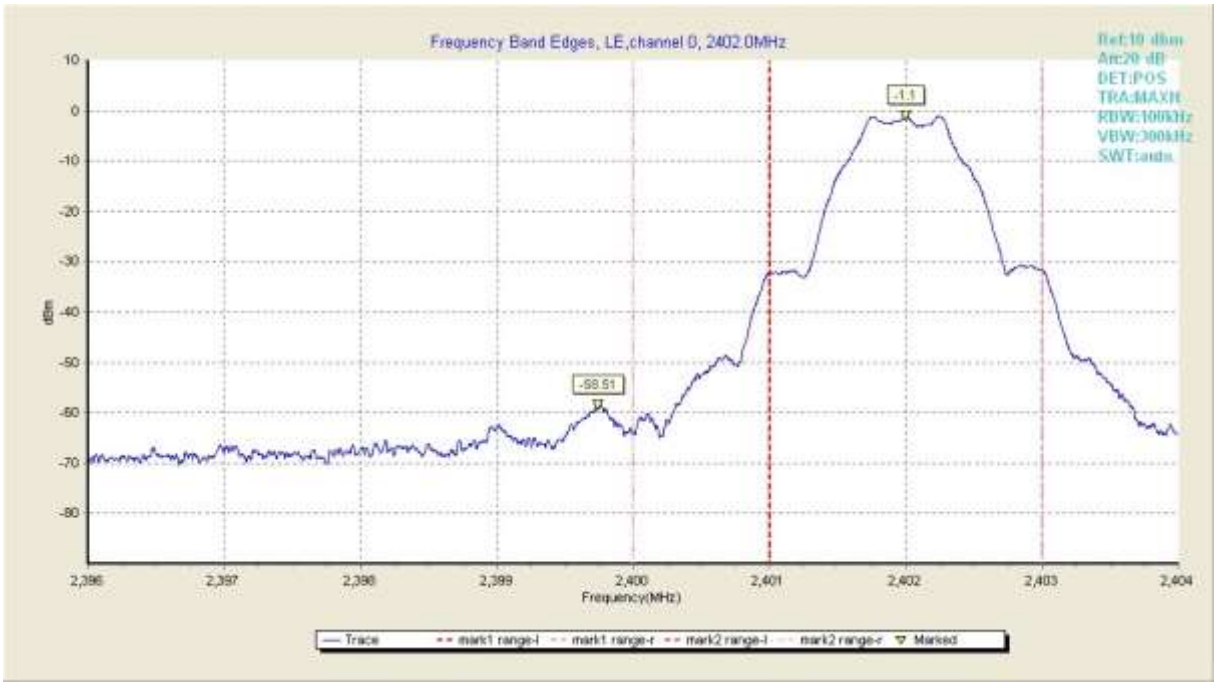


Fig.7 Frequency Band Edges in channel 0,2402MHz

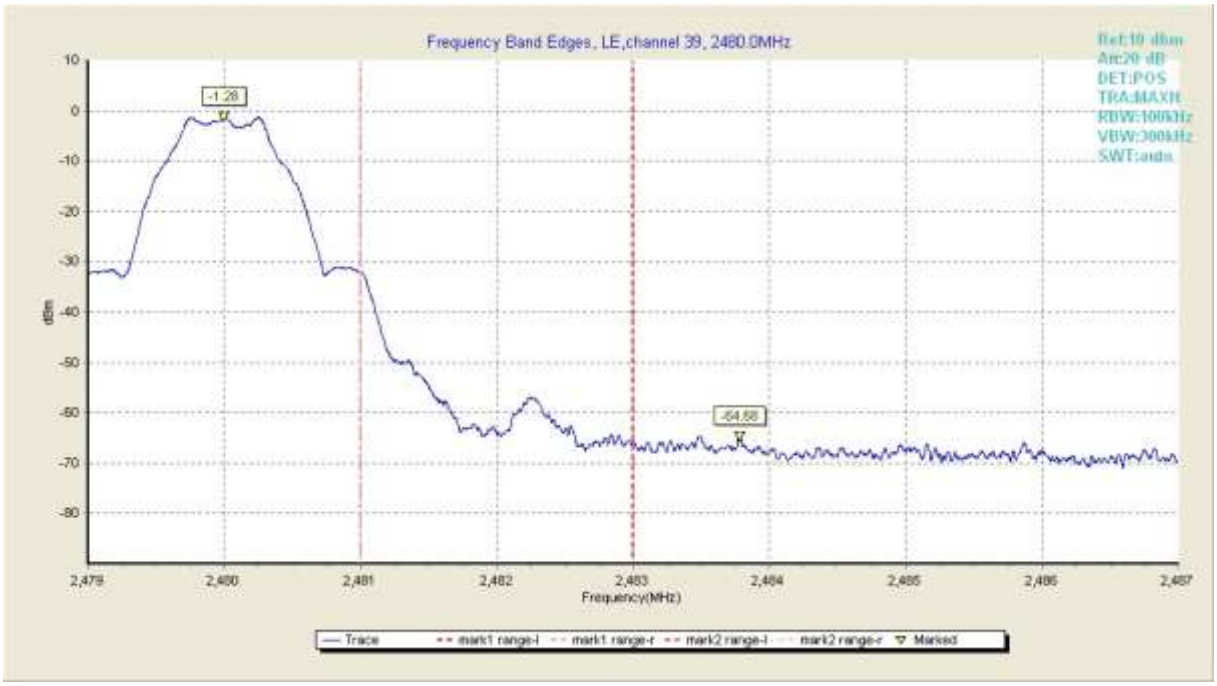


Fig.8 Frequency Band Edges in channel 39,2480MHz

B.4.2 Radiated measurement

B.4.2.1 Procedures:

a) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

b) Position the EUT on the rotated table inside the anechoic chamber without connection to measurement instrument. Turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear

range. Repeat above procedures until all measured frequencies were complete.

c) Set band RBW=1MHz, VBW=3MHz with a convenient frequency span from band edge.

d) Find the highest point in edge frequency, and then calculated results.

e) Repeat above procedures until all measured frequencies were complete.

B.4.2.2 Test Results

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
2400MHz									
485.79	12.55	QP	144	1.1	H	21.09	33.64	46.50	-12.86
485.79	11.63	QP	226	1.3	V	21.09	32.72	46.50	-13.78
2400	**45.32**	**PK**	**246**	**1.2**	**V**	**-1.08**	**44.24**	**74.00**	**-29.76**
2400	**43.78**	**Ave**	**246**	**1.2**	**V**	**-1.08**	**42.7**	**54.00**	**-11.3**
4804	46.55	PK	94	1.4	V	-1.06	45.49	74.00	-28.51
4804	44.79	Ave	94	1.4	V	-1.06	43.73	54.00	-10.27
7206	43.31	PK	233	1.1	V	1.31	44.62	74.00	-29.38
7206	44.26	Ave	233	1.1	V	1.31	45.57	54.00	-8.43
2483.5MHz									
485.79	15.36	QP	76	1.9	H	21.09	36.45	46.50	-10.05
485.79	14.97	QP	213	1.8	V	21.09	36.06	46.50	-10.44
2483.5	**43.46**	**PK**	**169**	**1.4**	**V**	**-0.31**	**43.15**	**74.00**	**-30.85**
2483.5	**42.13**	**Ave**	**169**	**1.4**	**V**	**-0.31**	**41.82**	**54.00**	**-12.18**
4960	43.69	PK	258	1.6	V	-0.25	43.44	74.00	-30.56
4960	42.74	Ave	258	1.6	V	-0.25	42.49	54.00	-11.51
7440	42.76	PK	164	1.6	V	2.86	45.62	74.00	-28.38
7440	41.28	Ave	164	1.6	V	2.86	44.14	54.00	-9.86

B.5ConductedSpurious Emissions

B.5.1 Description

All harmonics/spurious must be at least 20 dB down from the highest emissionlevel within the authorized band.

B.5.2 Test Procedures

Conducted Measurement

EUT was set for low, mid, high channel with modulated mode and highest RF output power

The spectrum analyzer was connected to the antenna terminal.

Procedures

a) The EUT was connected to SA by a low loss cable.

b) Set RBW=100 kHz, VBW≥ RBW, scan up to 10th harmonics. All harmonics/Spurs emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

B.5.3 Test Results

Channel	Frequency Range	Test Results	Verdict
0	30MHz ~ 1GHz	Fig.9	Pass
	1GHz ~ 3GHz	Fig.10	Pass
	3GHz ~ 10GHz	Fig.11	Pass
	10GHz ~ 26GHz	Fig.12	Pass
19	30MHz ~ 1GHz	Fig.13	Pass
	1GHz ~ 3GHz	Fig.14	Pass
	3GHz ~ 10GHz	Fig.15	Pass
	10GHz ~ 26GHz	Fig.16	Pass
39	30MHz ~ 1GHz	Fig.17	Pass
	1GHz ~ 3GHz	Fig.18	Pass
	3GHz ~ 10GHz	Fig.19	Pass
	10GHz ~ 26GHz	Fig.20	Pass

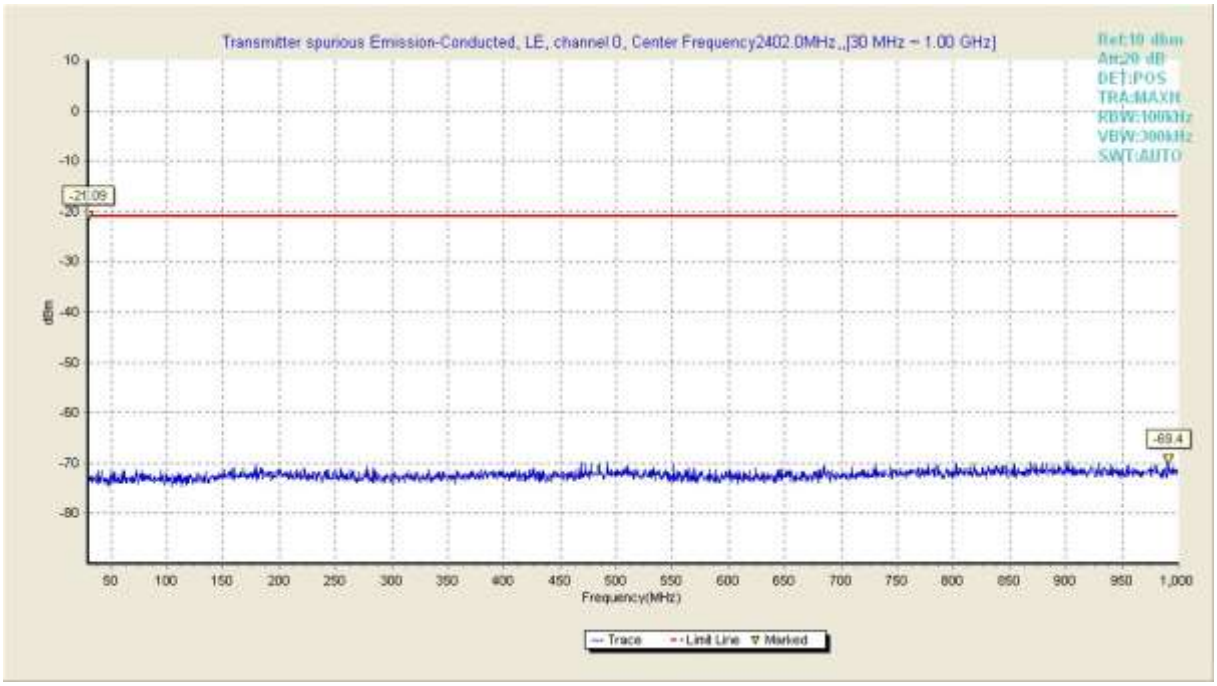


Fig.9 Transmitter spurious emission-Conducted of BLE in channel 0,(30MHz~1GHz)

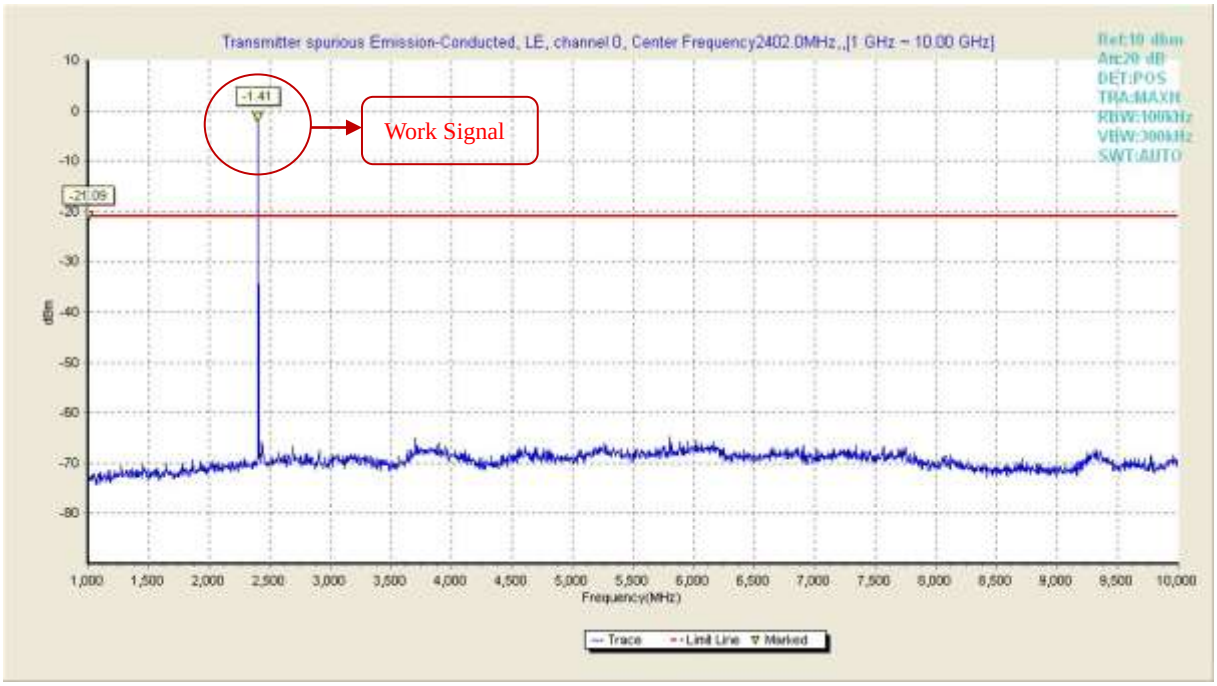


Fig. 10 Transmitter spurious emission-Conducted of BLE in channel 0,(1GHz ~10GHz)

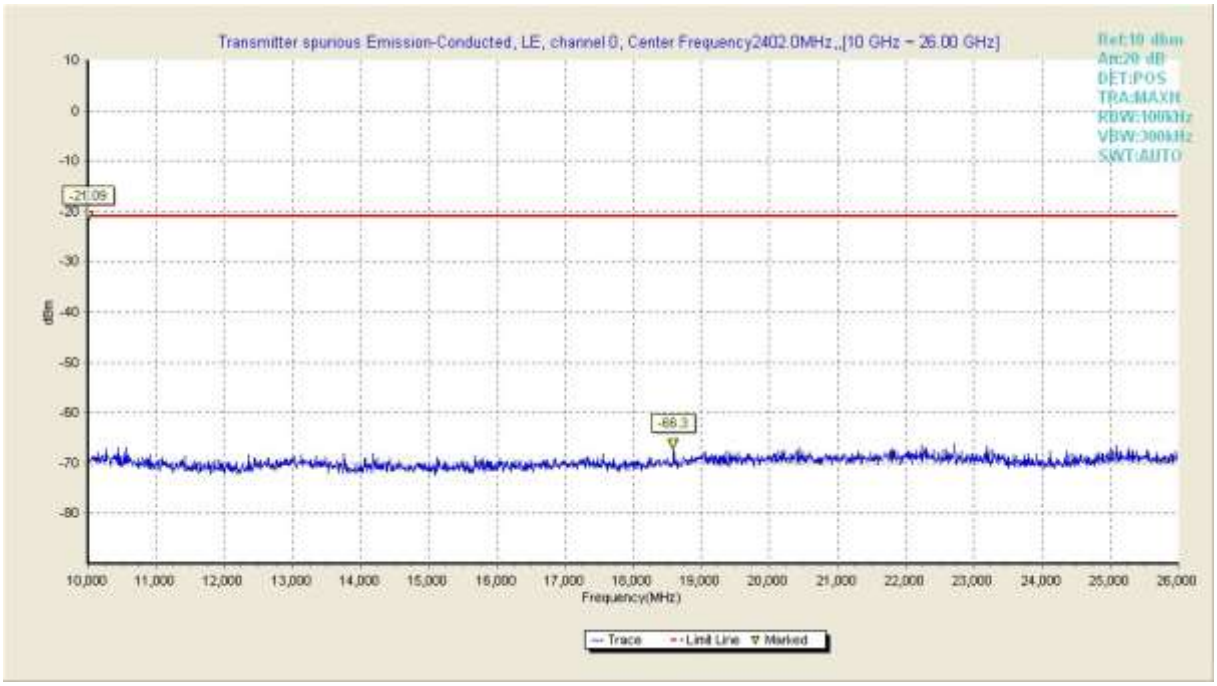


Fig.11 Transmitter spurious emission-Conducted of BLE in channel 0,(10GHz ~26GHz)

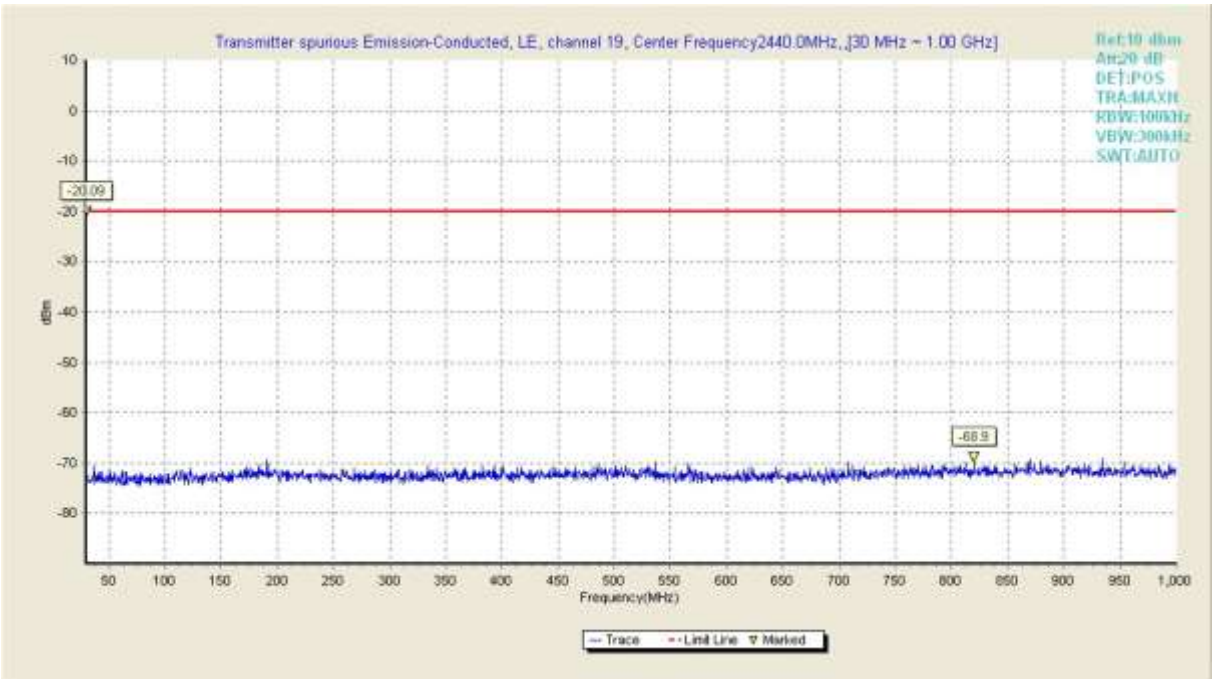


Fig.12 Transmitter spurious emission-Conducted of BLE in channel 19,(30MHz ~1GHz)

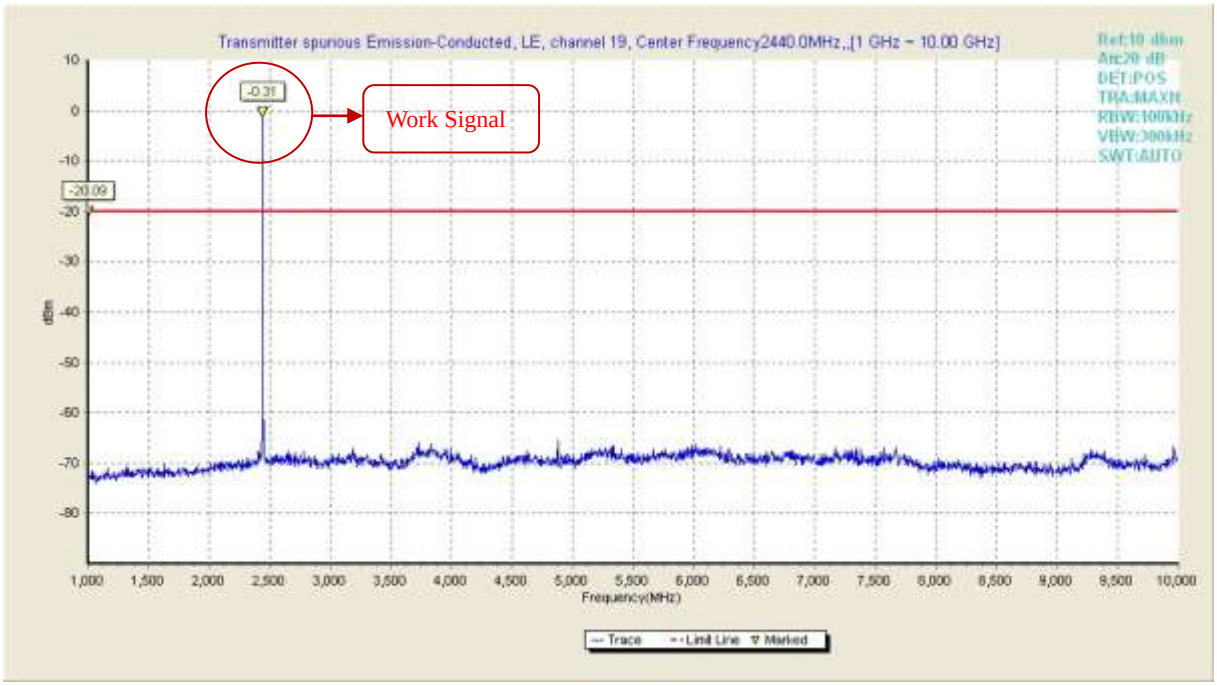


Fig.13 Transmitter spurious emission-Conducted of BLE in channel 19,(1GHz ~10GHz)

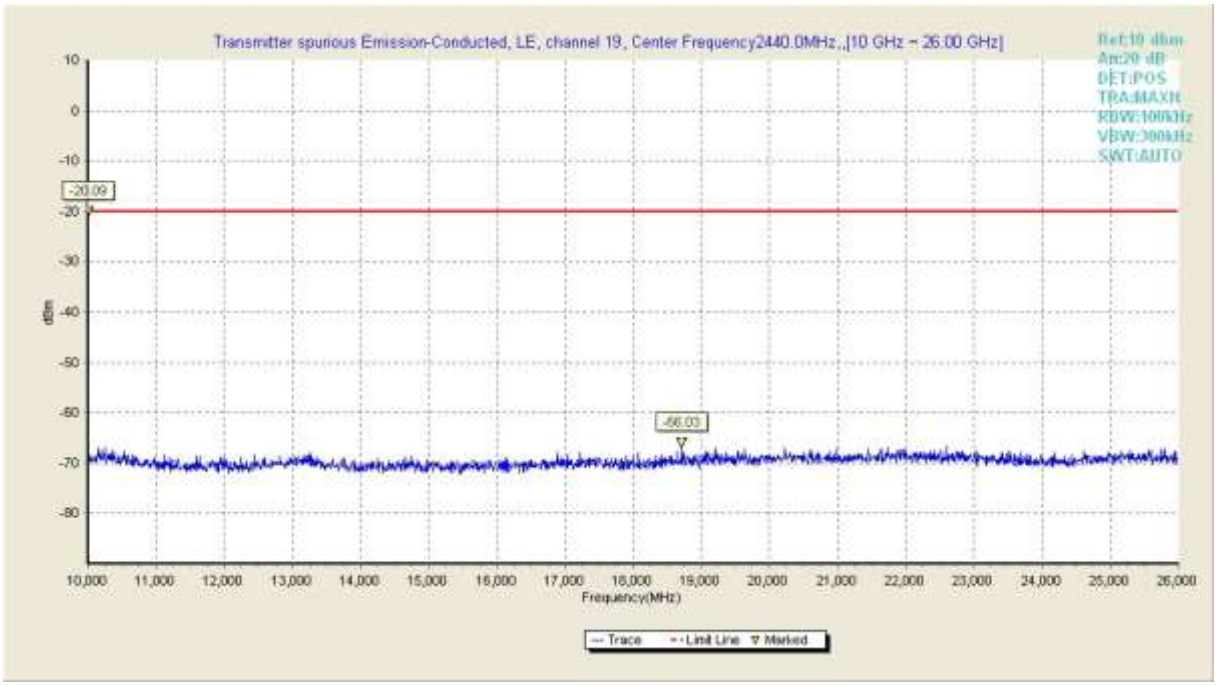


Fig.14 Transmitter spurious emission-Conducted of BLE in channel 19,(10GHz ~26GHz)

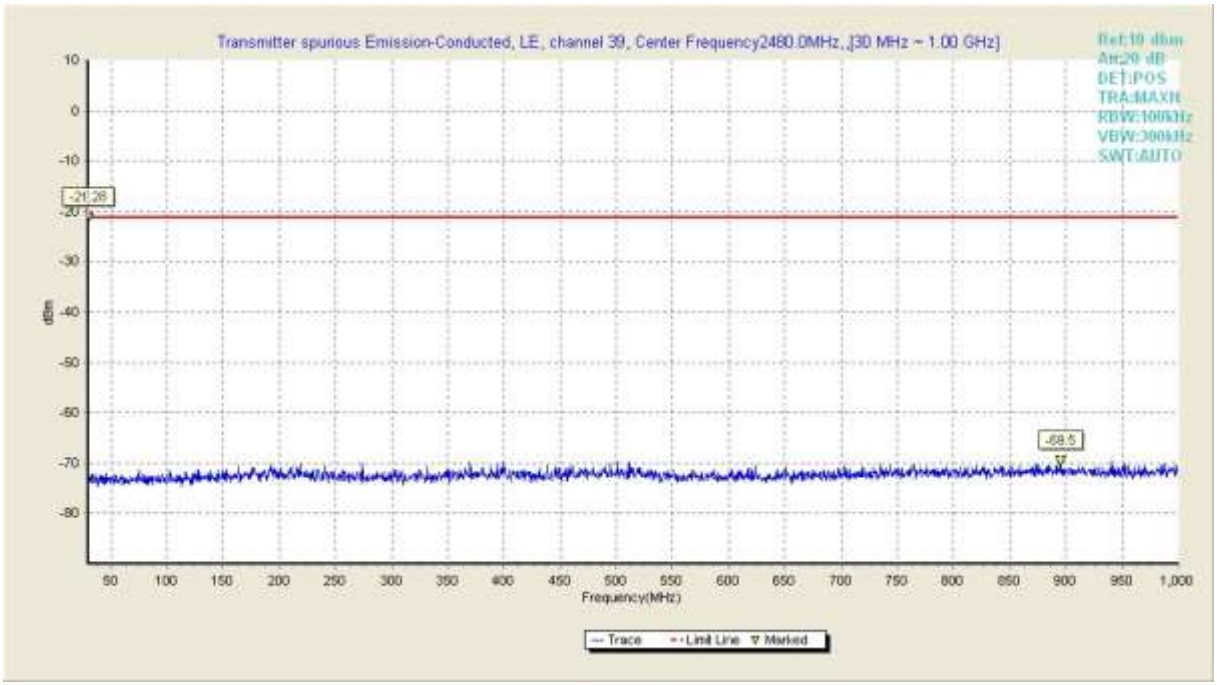


Fig.15 Transmitter spurious emission-Conducted of BLE in channel 39,(30MHz ~1GHz)

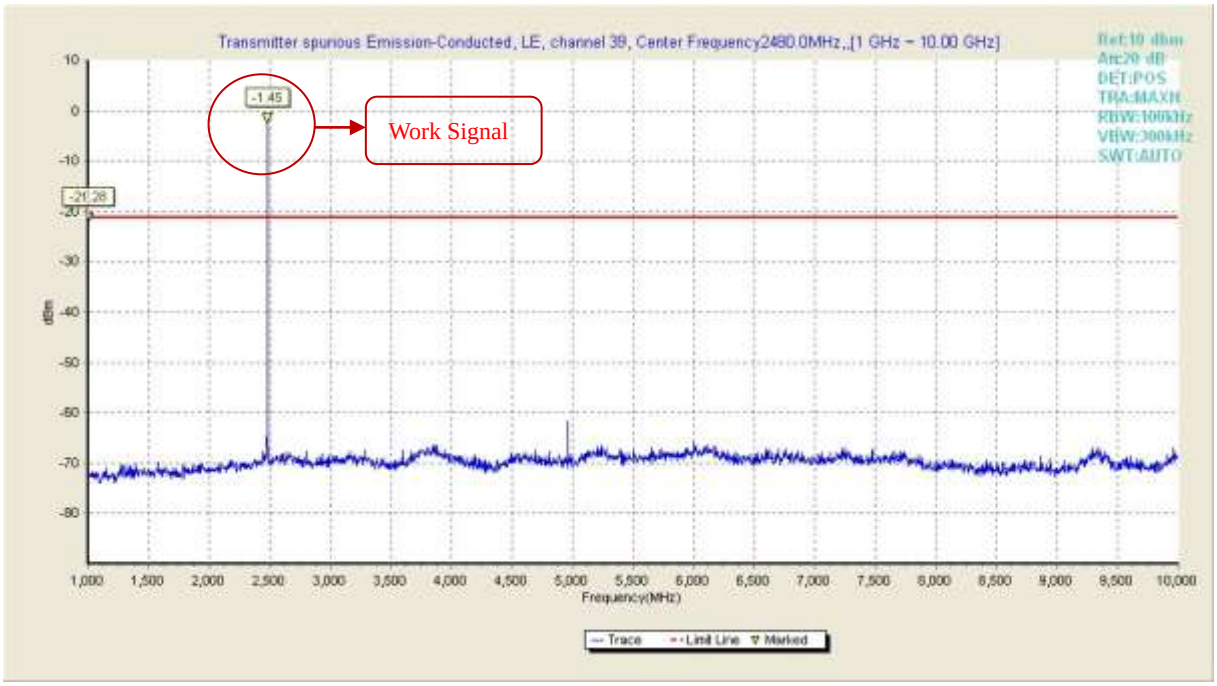


Fig.16 Transmitter spurious emission-Conducted of BLE in channel 39,(1GHz ~10GHz)

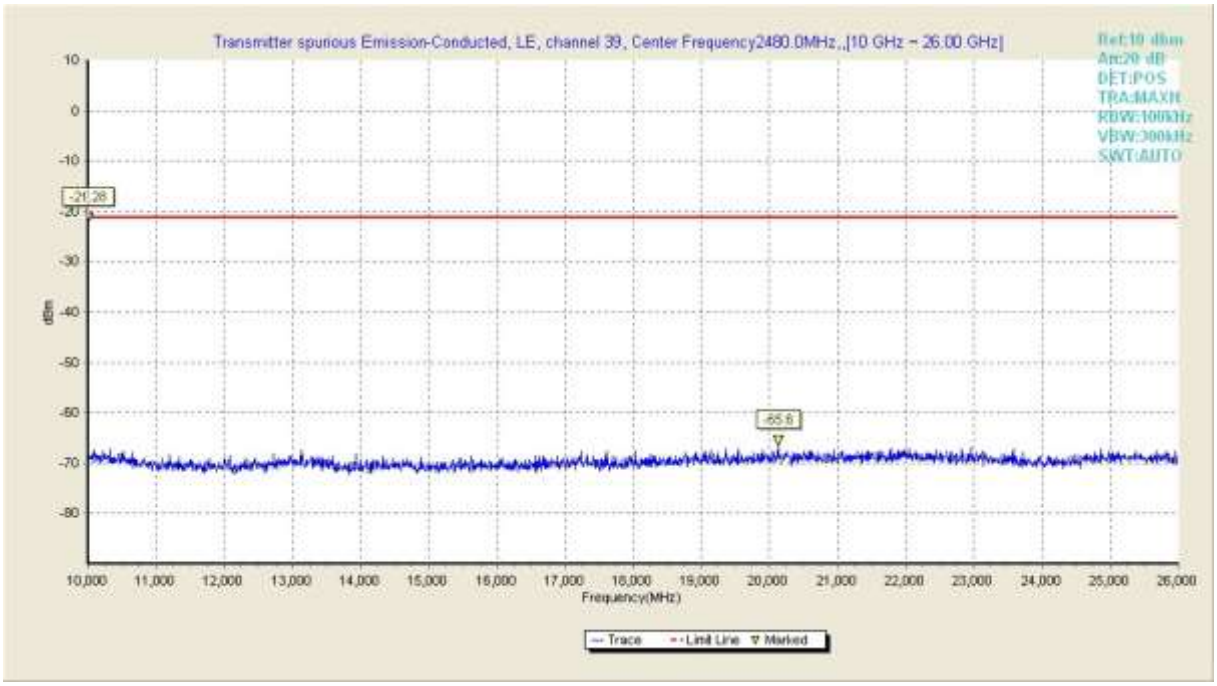


Fig.17 Transmitter spurious emission-Conducted of BLE in channel 39,(10GHz ~26GHz)

B.6 Radiated Emissions

B.6.1 Limit of Radiated Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below

Frequency(MHz)	Field Strength(microvolts/meters)	Measurement Distance(Meters)
0.009-0.490	2400/F(kHz)	3000
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

B.6.2 Test Procedure

a The EUT was placed on a turntable with 1.5 meter above ground.

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

c. The table was rotated 360 degrees to determine the position of the highest radiation.

d. The height of the antenna is varied between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.

e. For each suspected emission, 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.

f. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode. SA setting: Span= wide enough to fully capture the emission being measured; RBW=1MHz (f ＞ 1GHz), RBW=100kHz (f＜1GHz),VBW≥ RBW, Sweep time=auto, Trace= Max hold. Above 18GHz shall be extrapolated to specified distance using an extrapolation factor 20dB/decade from 3m to 1m.

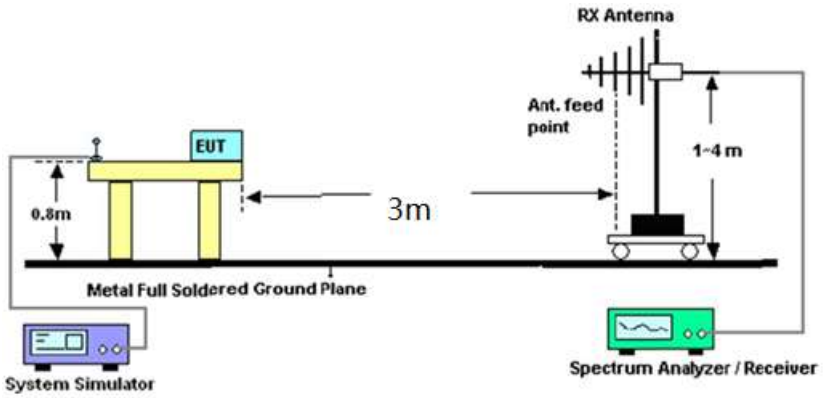
g. If the emission level of the EUT in peak mode was 20dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported.

h. Emission level (dBμV/m) = 20 log Emission level (μV/m).

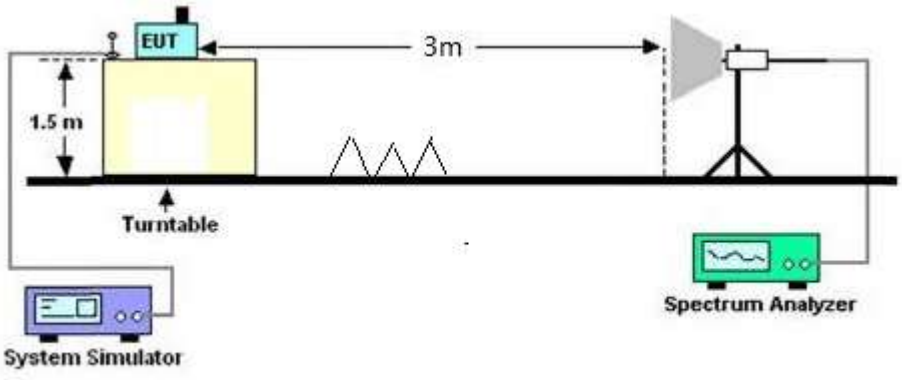
B.6.3 Test Setup

Frequency Band(MHz)	Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	QP	100kHz	100kHz
Above 1000	Peak	1MHz	1MHz
	Average	1MHz	10Hz

Radiated Emissions Frequency: Below 1GHz



Radiated Emissions Frequency: above 1GHz




RE


RE

B.6.4 Test Results

From 6GHz to 18GHz, EUT was pre-scanned and which was 20dB lower than limit line per 15.31(0) and not reported.

Test Mode: Traffic

Verdict: Pass

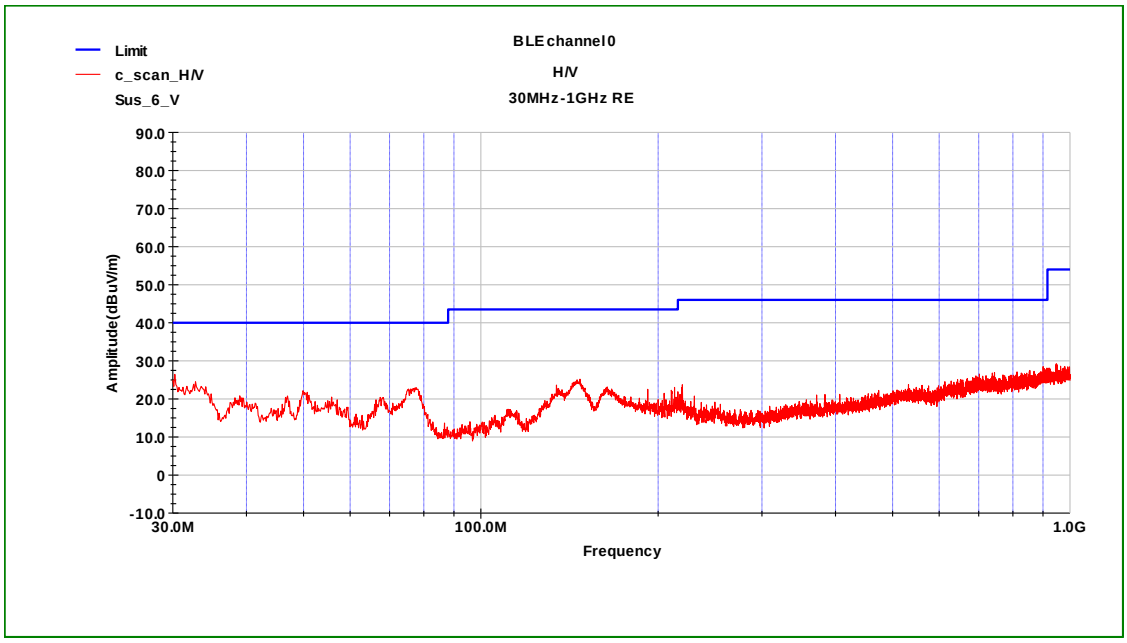


Fig.18 Radiated Emission of channel 0 in 30MHz-1GHz

BT CH0

Fig.19 Radiated Emission of channel 0 in 1GHz-6GHz

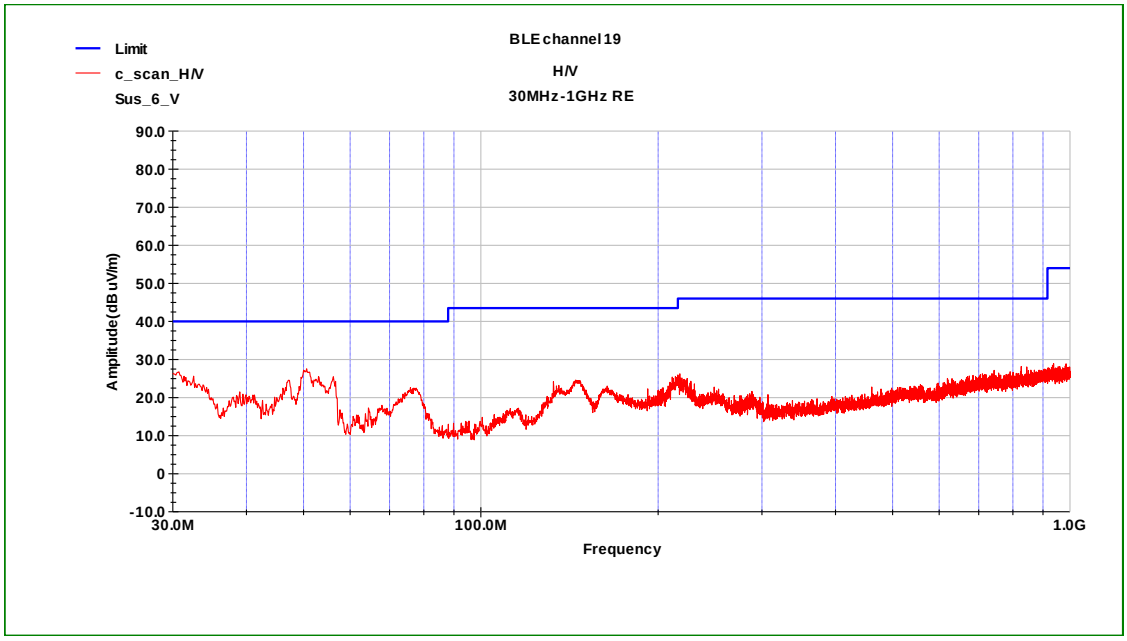
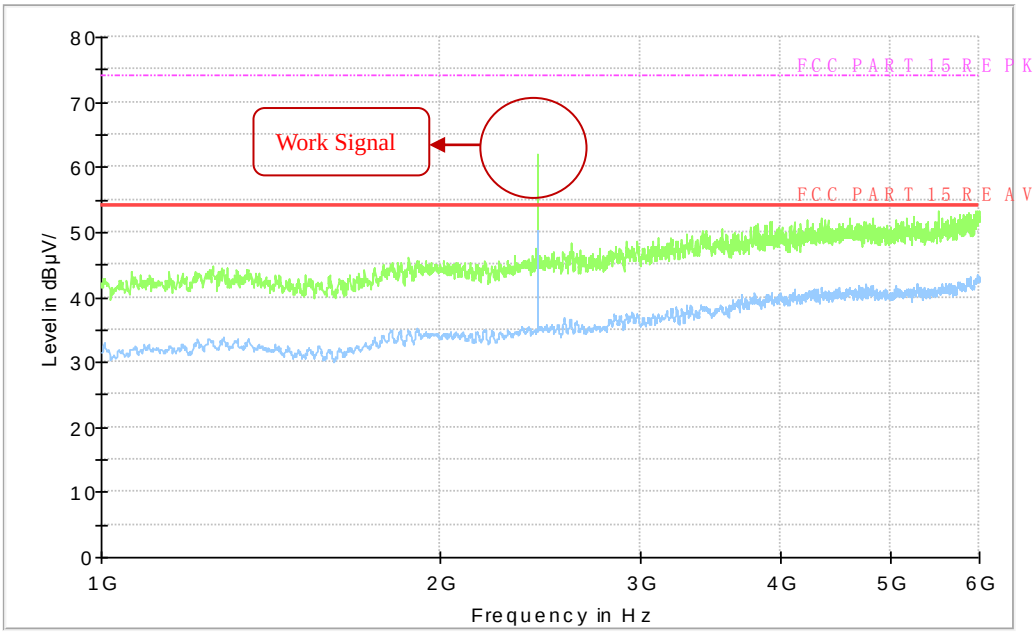


Fig.20 Radiated Emission of channel 19 in 30MHz-1GHz



BT CH39

Fig.21 Radiated Emission of channel 19 in 1GHz-6GHz

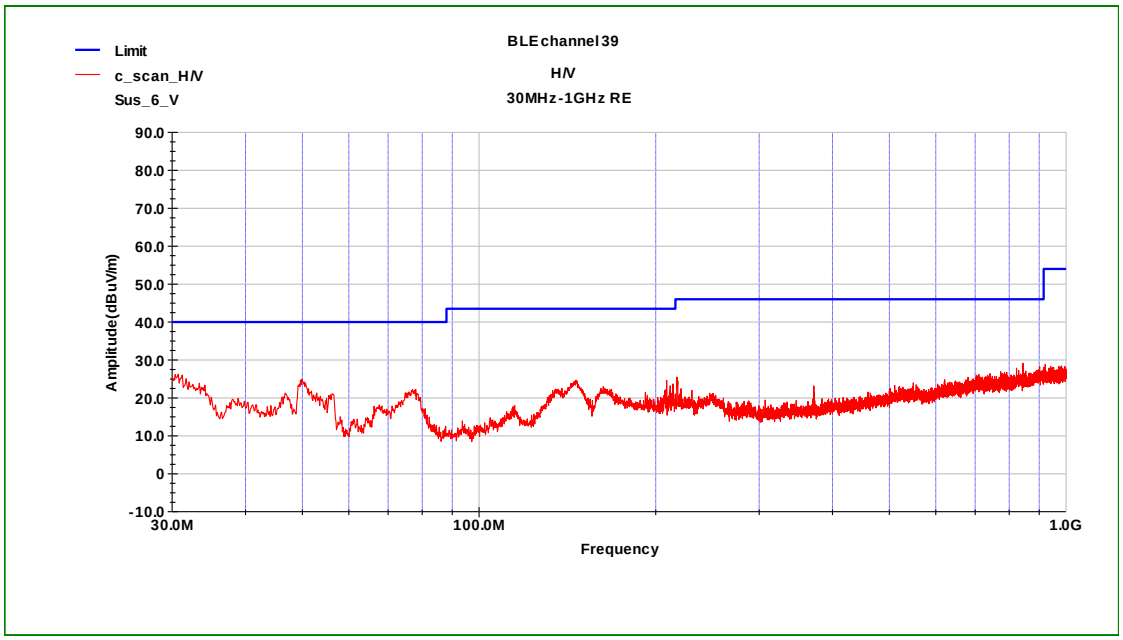
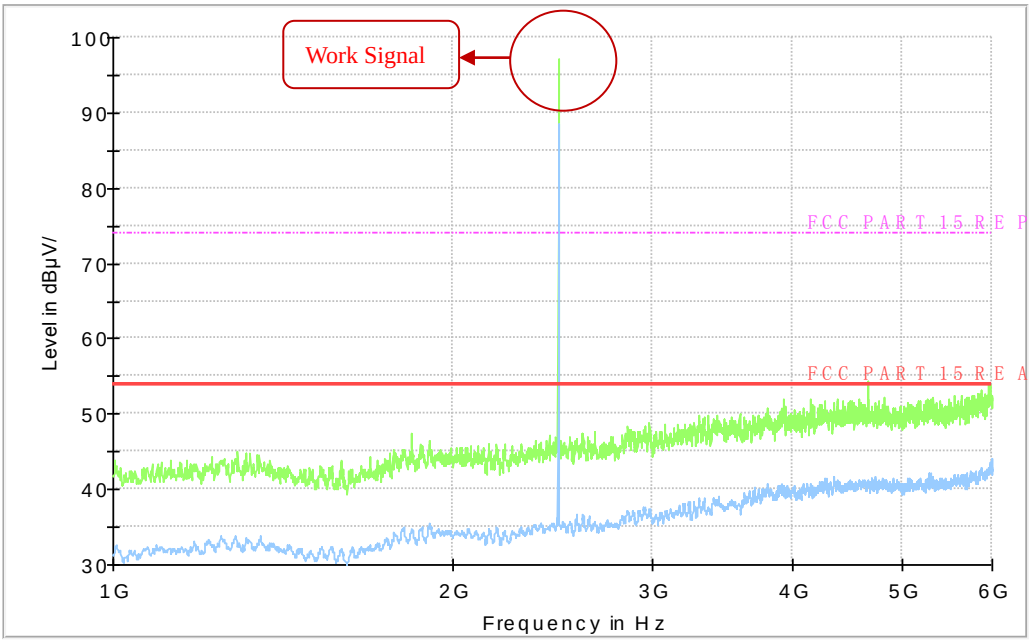


Fig.22 Radiated Emission of channel 39 in 30MHz-1GHz



BT CH78

Fig.23 Radiated Emission of channel 39 in 1GHz-6GHz

B.7 AC Conducted Emission

B.7.1 Description

For equipment that is designed to be connected to the public utility (AC) power line, the radio

frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits

B.7.2 Test Procedure

a) The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.

b) Connect EUT to the power mains through a line impedance stabilization network (LISN).

c) All the support units are connecting to the other LISN.

d) The LISN provides 50 ohm coupling impedance for the measuring instrument.

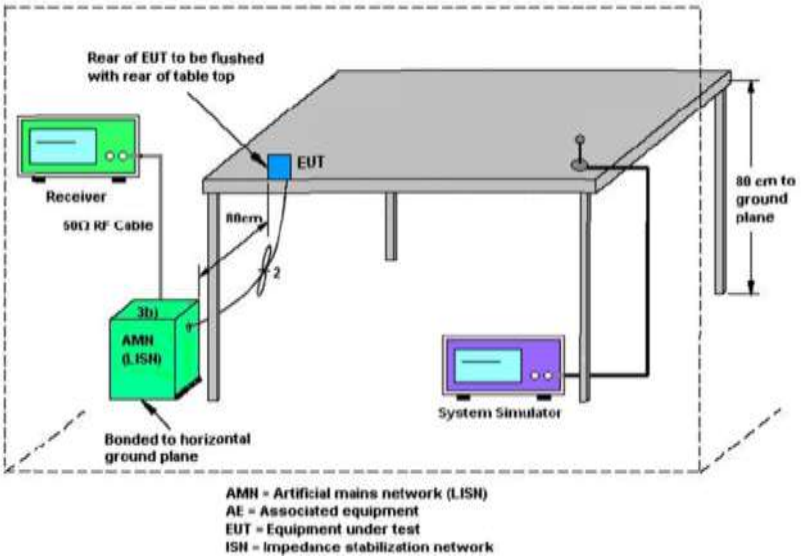
e) The FCC states that a 50 ohm, 50 microhenry LISN should be used.

f) Both sides of AC line were checked for maximum conducted interference.

g) The frequency range from 150 kHz to 30 MHz was searched.

h) Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

B.7.3 Test Setup



B.7.4 Test Results

Limit

Frequency of Emission(MHz)	Conducted Limit(dBμV)	
	Quasi –Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with logarithm of the frequency		

LINE L

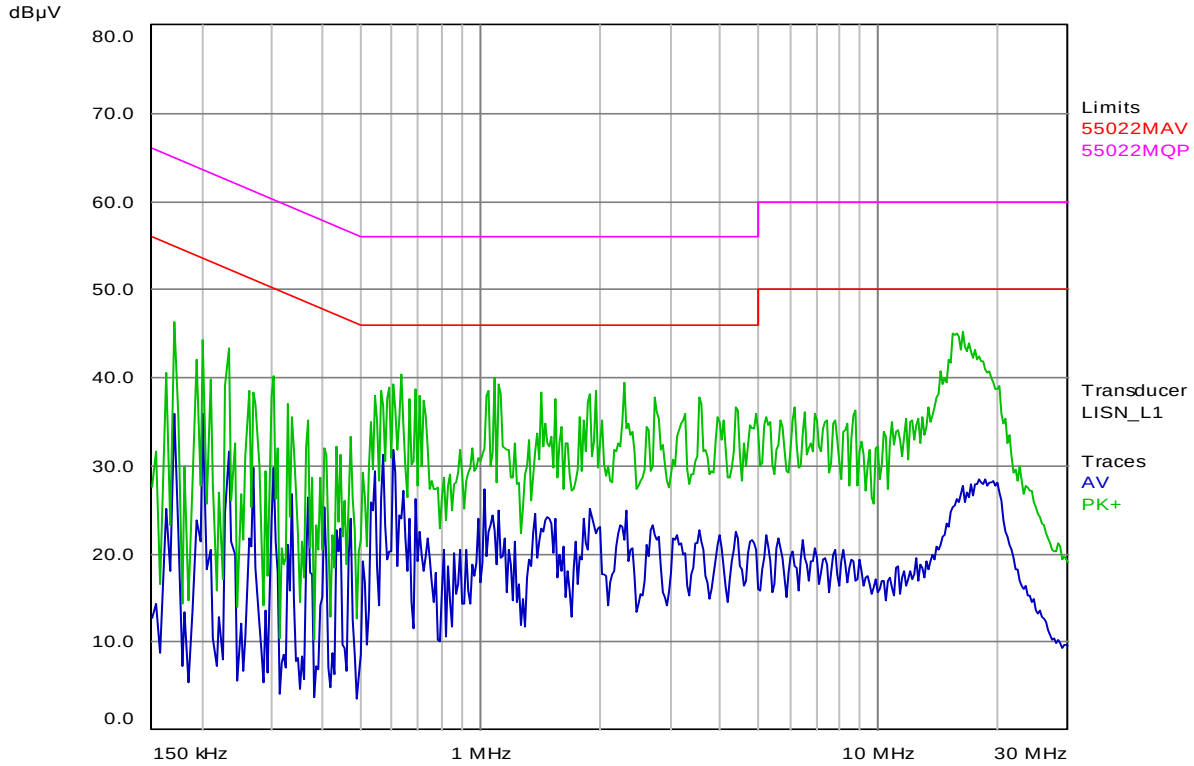
Scan Settings (1 Range)

Frequencies			Receiver Settings			
Start	Stop	Step	Res BW	M-Time	Atten	Preamp
150 kHz	30 MHz	4 kHz	9 kHz (6dB)	5 ms	Auto	Off

Final Measurement

Detectors:	AV, QP	Meas Time:	see scan settings
Peaks:	6	Acc. Margin:	10 dB

Pre-measurement Graph



Final Measurement Results

Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
/	/	/	/	/	/	/

* = limit exceeded

LINE N

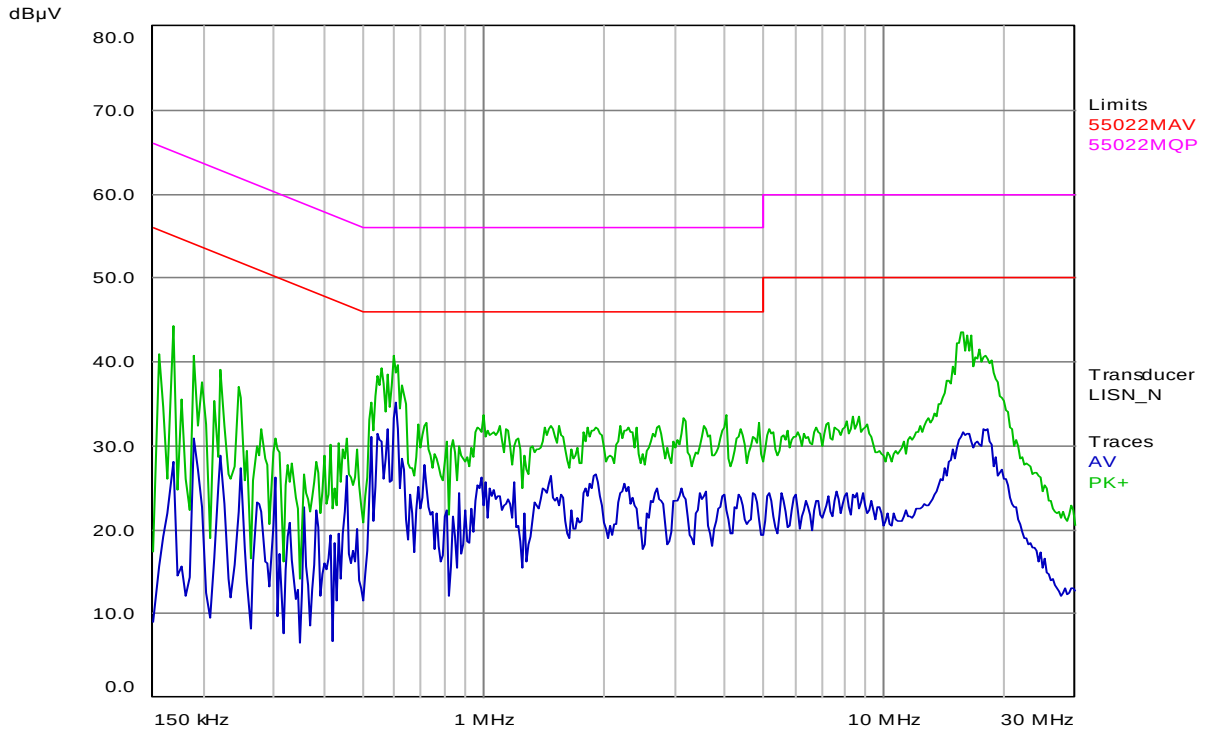
Scan Settings (1 Range)

Frequencies			Receiver Settings			
Start	**Stop**	**Step**	**Res BW**	**M-Time**	**Atten**	**Preamp**
150 kHz	30 MHz	4.5 kHz	9kHz (6dB)	15 ms	Auto	Off

Final Measurement

Detectors:	AV, QP	Meas Time:	1 s
Peaks:	6	Acc. Margin:	10 dB

Pre-measurement Graph



Final Measurement Results

Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 AV	0.564	31.39	46.00	-14.61	/	N / on

* = limit exceeded

B.8Antenna Requirements

B.8.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. 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 FCC rule.

B.8.2 Antenna Connected construction

The Antenna type used in this product is PIFA Antenna without connector and it is considered to meet antenna requirement.

B.8.3 Antenna Gain

The antenna peak gain of EUT is less than 6dBi, Therefore, it is not necessary to reduced maximum peak output power limit.

ANNEX C: Report Revision History

Report NO.	Report version	Description	Issue Date
GCCT16CFR01-BLE	NONE	Original	2015.03.28

END OF REPORT