FCC BLE TEST REPORT

No. 150220-BLE

For

MFOURTEL MEXICO S.A. DE C.V

Product Name: Mobile Phone

Model Name:M4 SS4345

Trade Name: M4

Issued Date: 2015-03-17

Test Laboratory:

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

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

Tel:+86(0)762-3607181, Fax:+86(0)762-3603336 Email: ncctmail@126.com. www.ncct.org.cn

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GENERAL SUMMARY

Product Name	Mobile Phone
Model Name	M4 SS4345
Applicant	MFOURTEL MEXICO S.A. DE C.V
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"
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: 2015.03.17
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	Wen Xiaoyong	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	Technology 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	25.4	49
Minimum Ambient	18.3	44

EUT is under testing environment.

1.3 Project Data

Project Leader	Wen Xiaoyong
Testing Start Date	2015-02-10
Testing End Date	2015-03-17

2. Client Information

2.1 Applicant Information

Company Name	MFOURTEL MEXICO S.A. DE C.V
Address	Av.Egercito Nacional 436 Piso 3 Chapultepec Morales Miguel Hidalgo D.F 11570
City	Mexico
Postal Code	/
Country	Mexico
Telephone	/
Fax	/

2.2 Manufacturer Information

Company Name	CK Telecom Limited
Address	Technology Road.High-Tech Development Zone. Heyuan

City	heyuan
Postal Code	/
Country	China
Telephone	0755-26738515
Fax	0755-26739500

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

3.1 About EUT

Model Name	M4 SS4345
FCC ID	CLNSS4345
Tx Frequency	GSM850:824.2～848.8 MHz UMTS Band V : 826.4~846.6MHz PCS1900 TX: 1850.2~1909.8MHz UMTS Band II TX: 1852.4~1907.6MHz Bluetooth/BLE: 2402 ~ 2480 MHz WIFI(802.11b/g/n-20): 2412 ~ 2462 MHz WIFI(n-40): 2422 ~ 2452 MHz
Rx Frequency	GSM850: 869.2~893.8 MHz UMTS Band V : 871.4~891.6 MHz PCS1900 TX: 1930.2~1989.8 MHz UMTS Band II TX: 1932.4~1987.6 MHz Bluetooth/BLE: 2402 ~ 2480 MHz WIFI(802.11b/g/n-20): 2412 ~ 2462 MHz WIFI(n-40): 2422 ~ 2452 MHz
Number of Channels	GSM850&WCDMA Band V:25 PCS1900&WCDMA Band II: 60 Bluetooth:79 WIFI(802.11b/g/n-20):11 WIFI(n-40):7 BLE:40
Modulation	GSM&DCS:GMSK WCDMA:BPSK/QPSK Bluetooth: GFSK&π/4-DQPSK&8DPSK WIFI:CCK/OFDM BLE:GFSK
Antenna Type	PIFA(GSM/DCS/WCDMA); MONOPOLE (Bluetooth/WIFI)
Antenna Gain	GSM850:-0.5dBi DCS1900: -0.5dBi WCDMA850: -1dBi WCDMA1900: -1dBi Bluetooth/BLE/WIFI: -1dBi

Normal Voltage	3.7V
Extreme Low Voltage	3.6V
Extreme High Voltage	4.2V
Extreme Low Temperature	0℃
Extreme High Temperature	45℃

3.2 Internal Identification of EUT

EUT ID*	IMEI	HW Version	SW Version
150220-M01	867040020000582	SLFQPLUS-V1.0	SLFQPLUS14A-S00A_CKT_L2EN_101_150130
150220-M04	867041020002230	SLFQPLUS-V1.0	SLFQPLUS14A-S00A_CKT_L2EN_101_150130

*EUT ID: is used to identify the test sample in the lab internally. 150220-M01 and 150220-M04 are the same mobile phone.

3.3 Internal Identification of AE

AE ID*	Description	Type	SN
150220-B01	Battery	CA366069HV	/
150220-C01	Adapter	A8-501000	/
150220-B04	Battery	CA366069HV	/
150220-C04	Adapter	A8-501000	/

*AE ID: is used to identify the test sample in the lab internally. 150220-B01 and 150220-B04 are the same accessory , 150220-C01 and 150220-C04 are the same accessory ,

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 Transmitter emissions	M04	Pass
7	AC Conducted Emission	M04	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	2014.08.15	2015.08.15
2	Switch Unit	/	E0112	/	2014.08.15	2015.08.15
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	2014.08.15	2015.08.15
2	BiCoNilog Antenna	3142E	00142015	ETS-Lindgren	2014.08.15	2015.08.15
3	Horn Antenna	3117	129169	ETS-Lindgren	2014.08.15	2015.08.15
4	Signal Generator	N5183A-532	MY49060563	Agilent	2014.08.15	2015.08.15
5	Universal Radio Communication Tester	E5515C	MY48367105	Agilent	2014.08.15	2015.08.15
6	RF Preselector	N9039A	MY48260024	Agilent	/	/
7	Loop Antenna	HFH2	860015/00	R&S	2014.08.15	2015.08.15

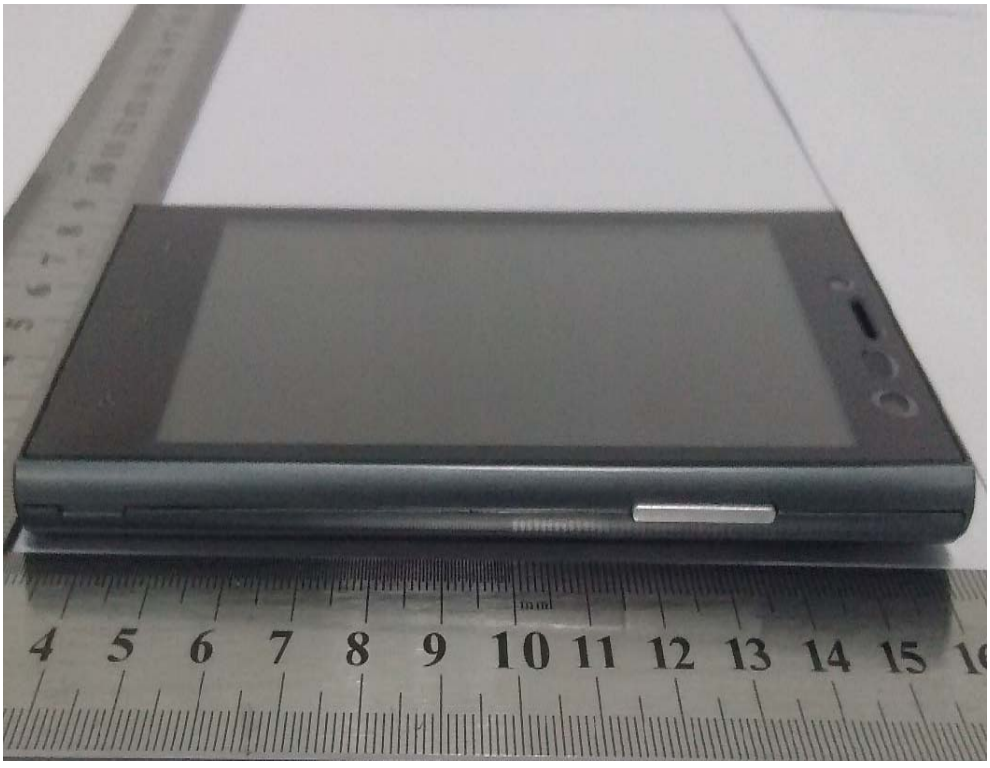
ANNEX A: EUT Photograph

EUT Front View

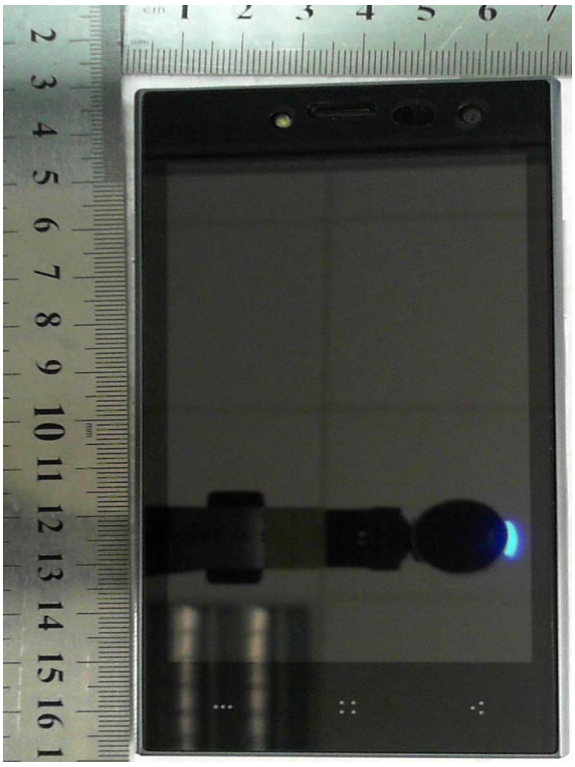
EUT behind View

EUT Left View

EUT Right View

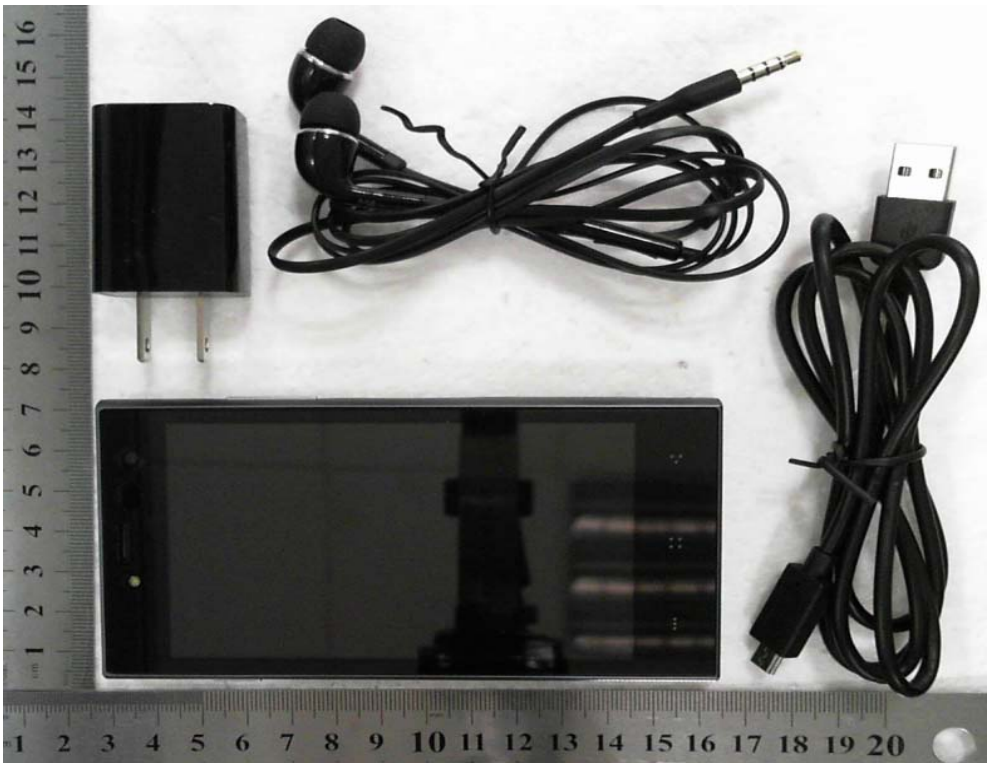


EUT Top View



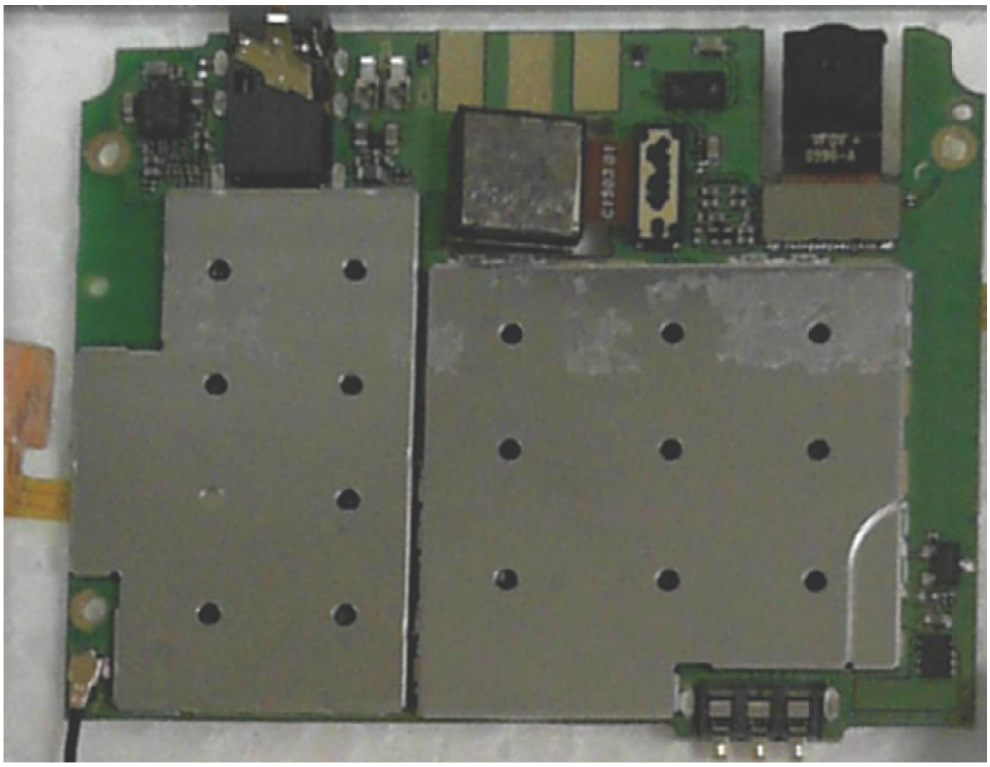
EUT Rear View

All

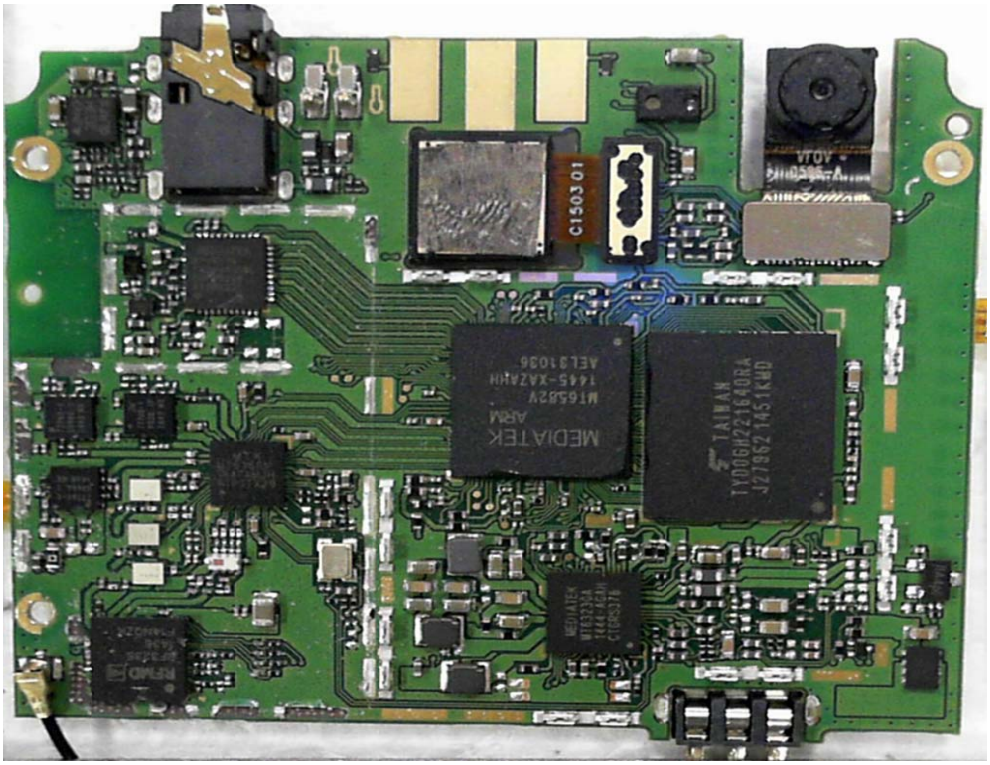


Cover off

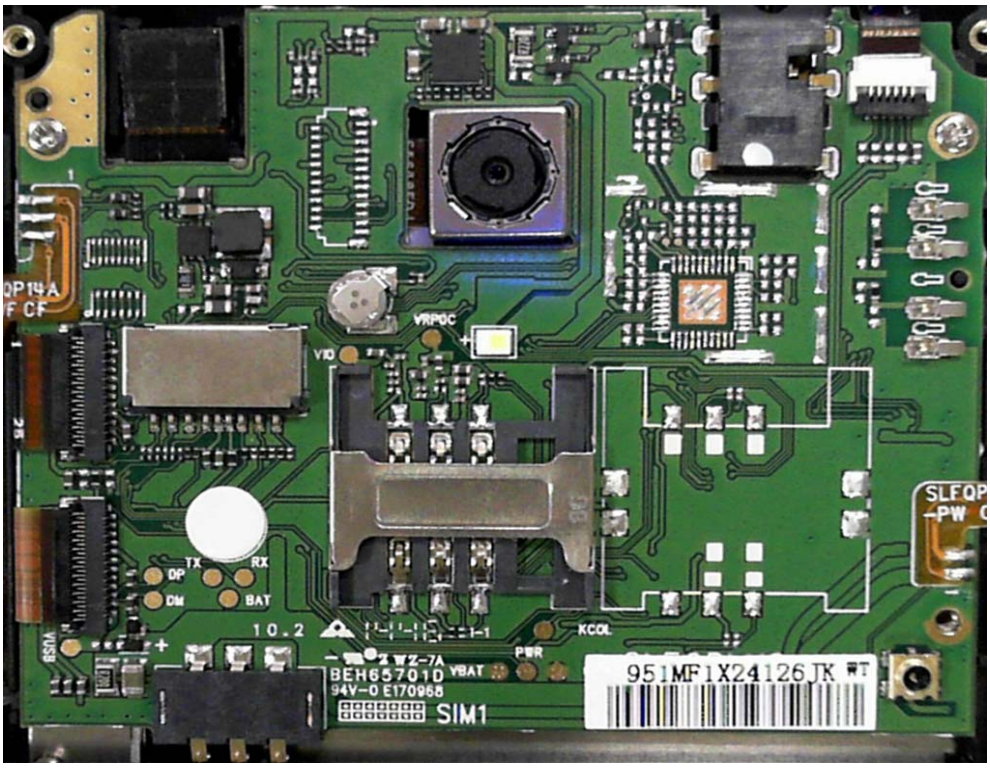
Main board With shielding Front View



Main board Without shielding Front View



Main board Rear



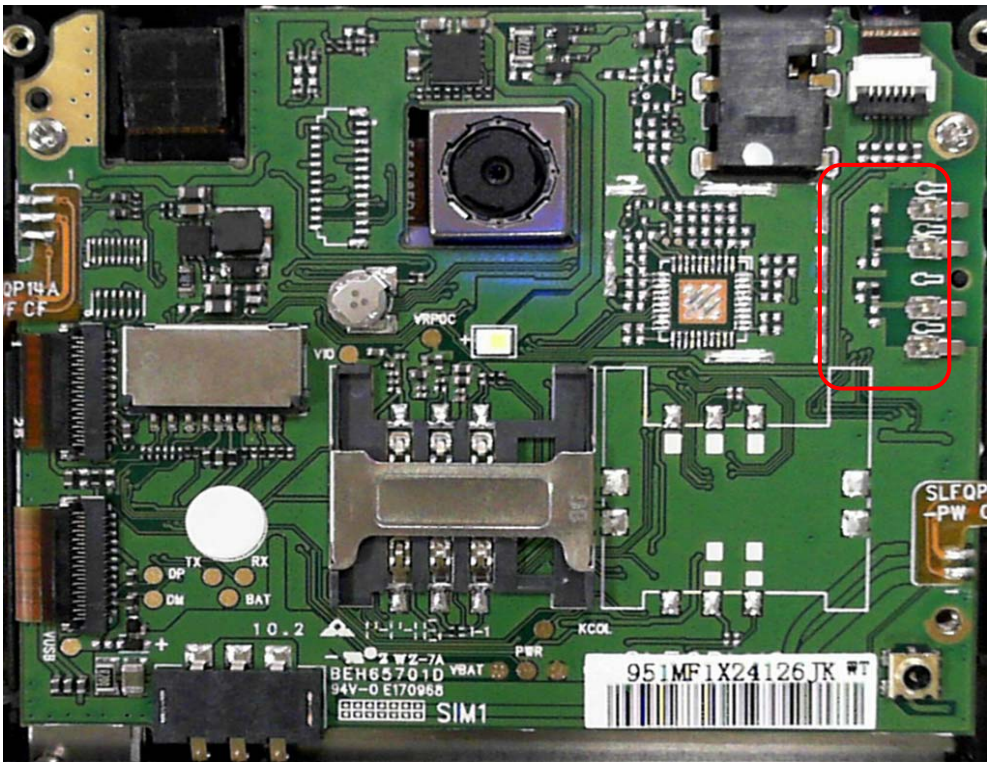
Battery Front View

USB Cable

Headset

GSM/DCS/UMTS Antenna View

BT/WIFI Antenna View

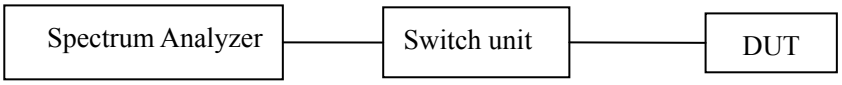


Adapter


M4
ADAPTADOR DE CORRIENTE ca/cc
MARCA:M4
MODELO: A8-501000
ESPECIFICACIONES ELÉCTRICAS:
ENTRADA:100-240Vca 50/60Hz 150mA
SALIDA:5,0Vcc 1000mA
5,00 Wh CARGA
0,15 Wh SIN CARGA
c UL us
LISTED
E466731
I.T.E. POWER SUPPLY
Hecho en China
NOM
NYCE

ANNEX B: Detailed Test Results

The radiated test setup is shown in each radiated test case section. The conducted test setup 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.1 Maximum Transmit Power

B.1.1 Description

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

B.1.2 Test Results

Test Mode	Limit EIRP(dBm)	Maximum peak output power(dBm)			Verdict
		2402MHz	2440MHz	2480MHz	
GFSK	30	-3.518	-3.667	-3.891	Pass

B.2 Maximum Power Spectral Density

B.2.1 Description

The maximum spectral density shall be equal to or less than 8 dBm per 3kHz.

B.2.2 Test Results

Test equipment parameter:

TRA: Max Hold RBW: 100kHz VBW: 300kHz Sweep time: AUTO

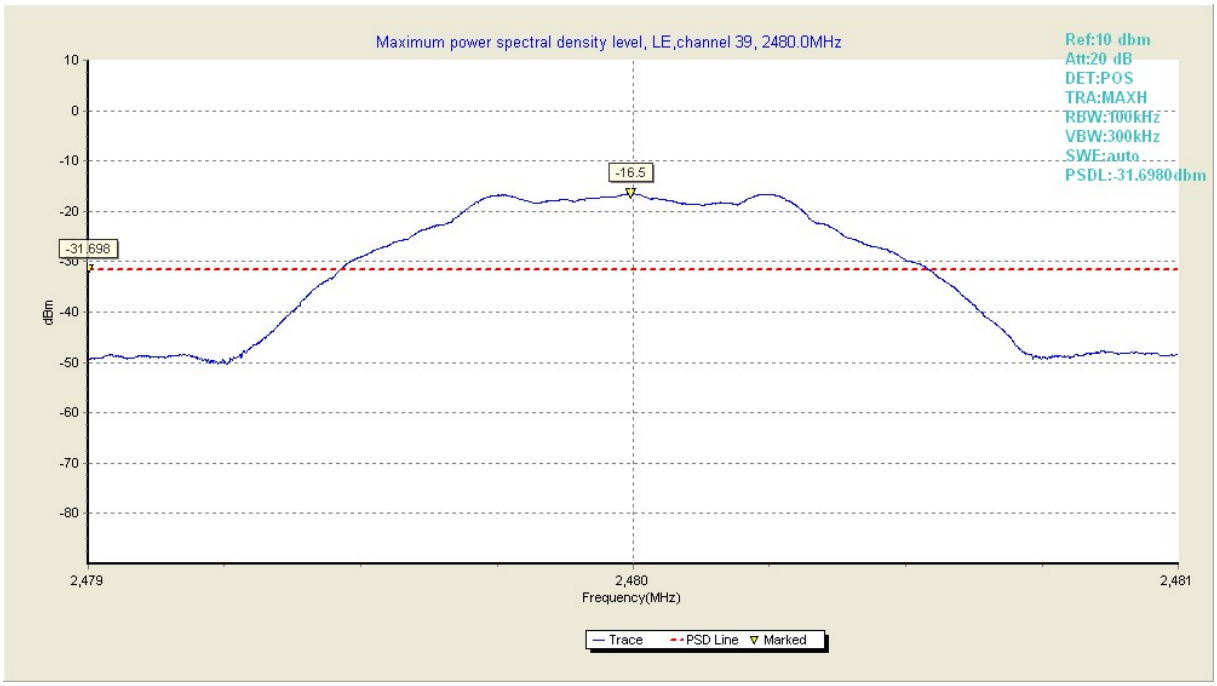
Limit (dBm)	PSD(dBm)						Verdict
	2402MHz		2440 MHz		2480 MHz		
8	-28.88	Fig.1	-28.89	Fig.2	-31.70	Fig.3	Pass
Antenna Gain: -1dBi							

Test Plot 1	2401.986084	-13.690000
Test Plot 2	2401.000000	-28.889000

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

Test Plot 1	2439.981934	-13.690000
Test Plot 2	2439.000000	-28.892000

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



Test Plot 1	2479.995117	-16.500000
Test Plot 2	2479.000000	-31.698000

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

B.3 6dBOccupied Bandwidth

B.3.1 Description

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

B.3.2 Test Results

Test equipment parameter:

TRA: Max Hold RBW: 50kHz VBW: 30kHz Sweep time: AUTO

Channel	Frequency (MHz)	Limit (MHz)	Occupied Bandwidth (MHz)	Test Results	Verdict
0	2402	0.5	0.690	Fig.4	Pass
19	2440		0.688	Fig.5	Pass
39	2480		0.687	Fig.6	Pass

Test plot 1	2401.657227	-19.740000
Test plot 2	2402.347900	-19.760000

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

Test plot 1	2439.656738	-19.620001
Test plot 2	2440.344727	-19.629999

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

Test plot 1	2479.654785	-19.709999
Test plot 2	2480.342041	-19.730000

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

B.4 Band Edge Compliance

B.4.1 Description

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

B.4.2Test Results

Test equipment parameter:

TRA: Max Hold RBW: 100kHz VBW: 300kHz Sweep time: AUTO

Channel	Frequency(MHz)	Limit (dB)	Test Result(dB)		Verdict
0	2400	-20	-53.32	Fig.7	Pass
39	2483.5		-53.32	Fig.8	Pass

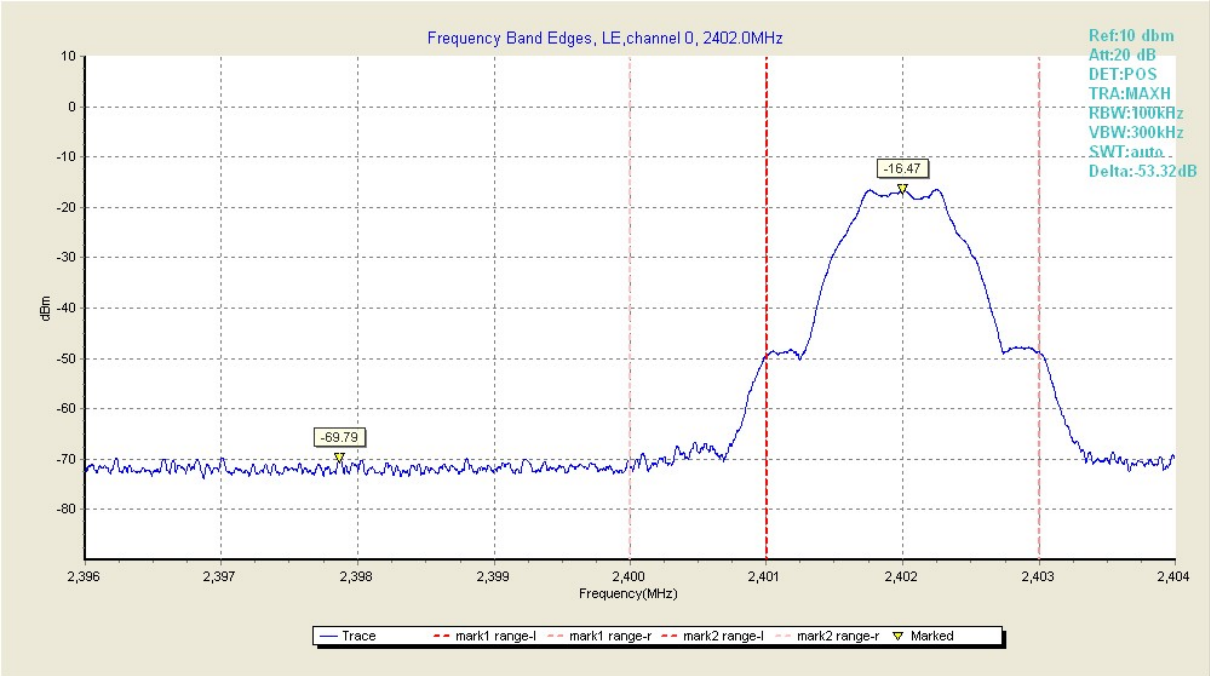


Fig7. Frequency Band Edges in channel 0,2402MHz

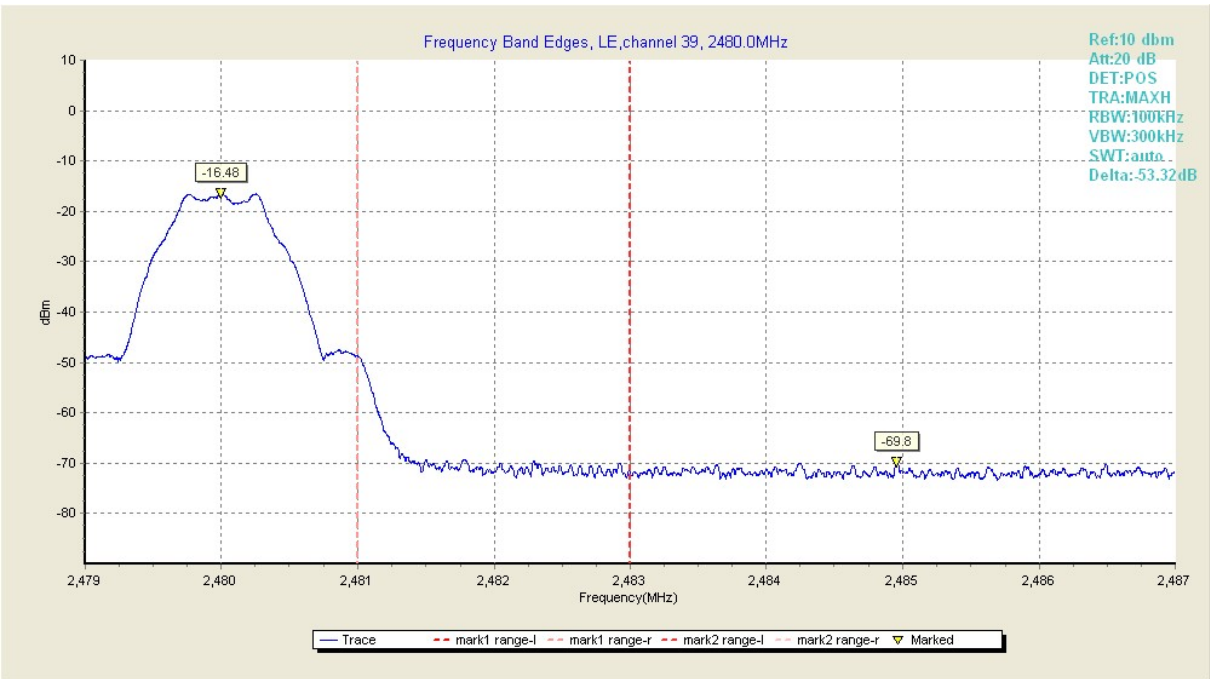


Fig8. Frequency Band Edges in channel 39,2480MHz

B.5 Conducted Spurious Emissions

B.5.1 Description

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

B.5.2 Test Results

Test equipment parameter:

TRA: Max Hold RBW: 100kHz VBW: 300kHz Sweep time: AUTO

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

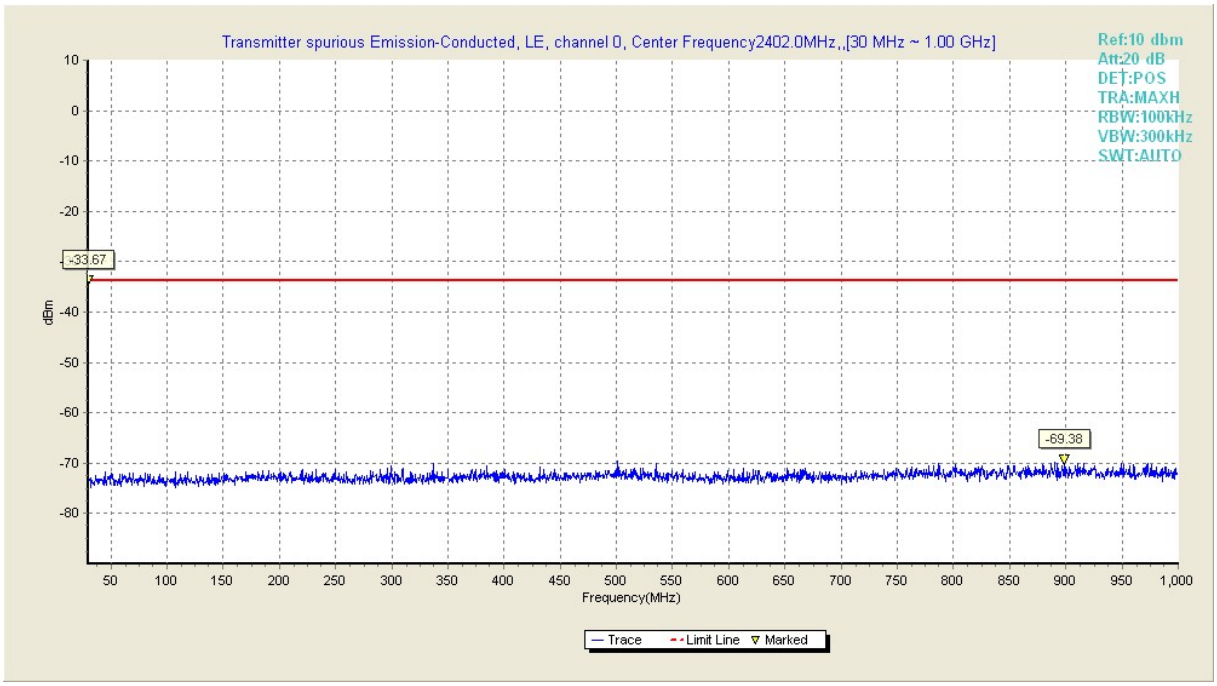


Fig.9 Transmitter spurious emission-Conducted of BLE in channel 0,(30MHz~1GHz)

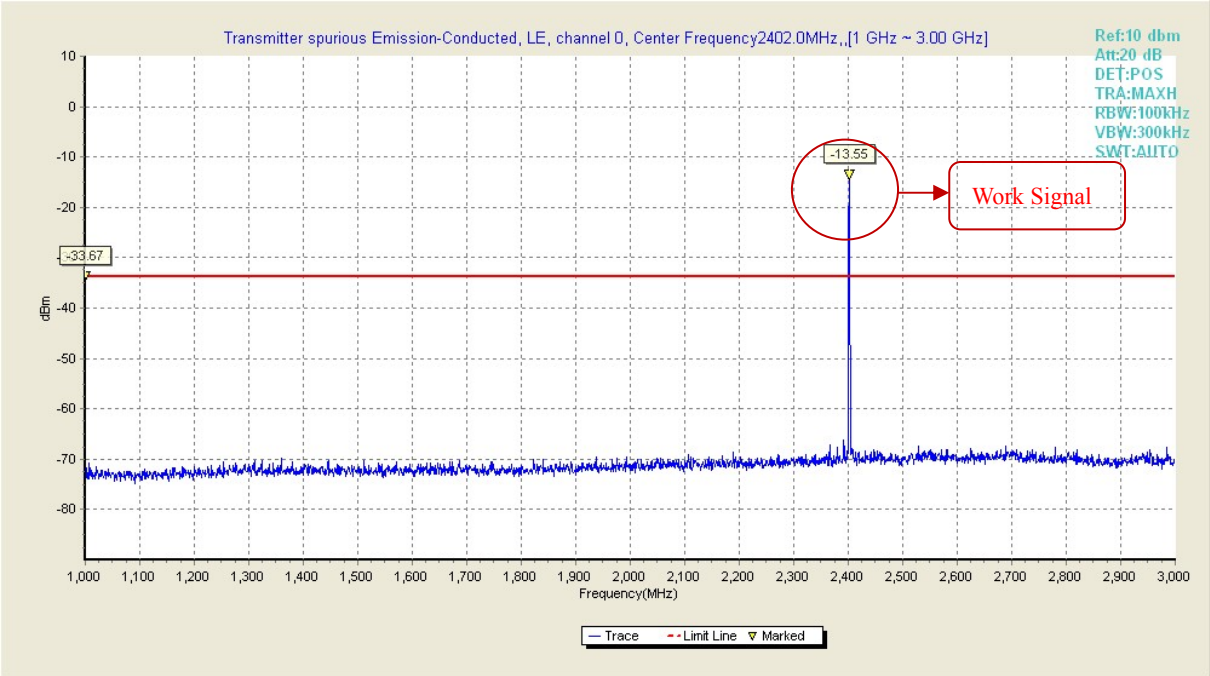


Fig.10 Transmitter spurious emission-Conducted of BLE in channel 0,(1GHz ~3GHz)

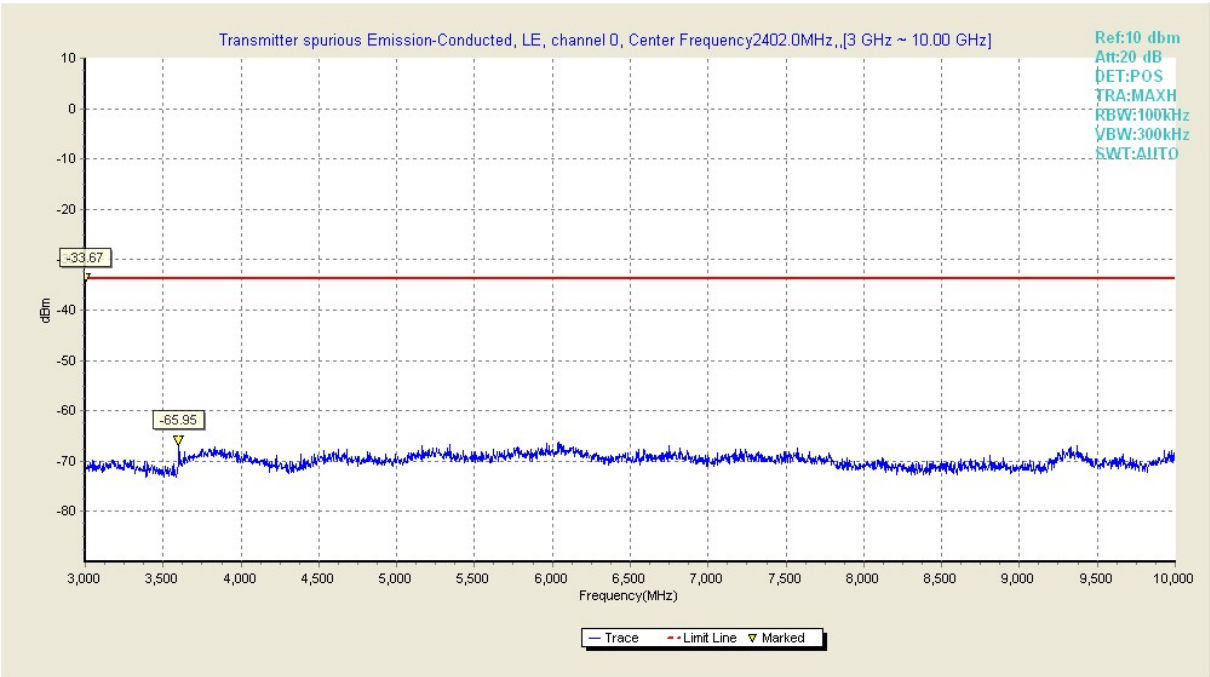


Fig.11 Transmitter spurious emission-Conducted of BLE in channel 0,(3GHz ~10GHz)

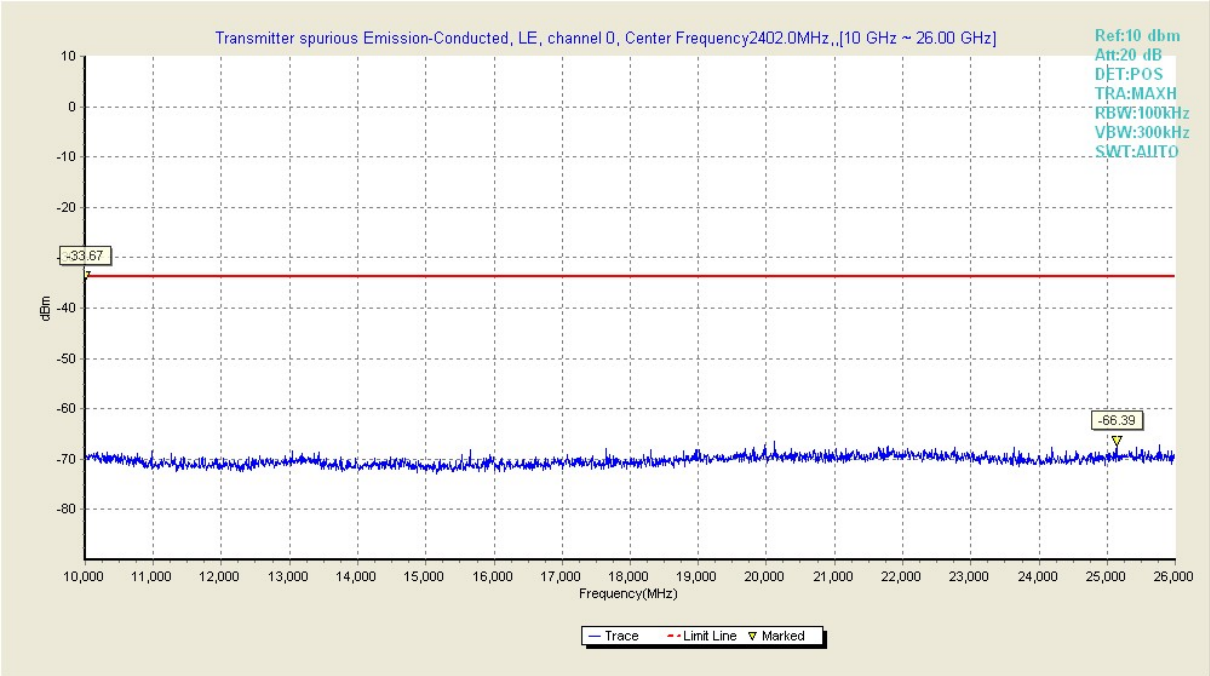


Fig.12 Transmitter spurious emission-Conducted of BLE in channel 0,(10GHz ~26GHz)

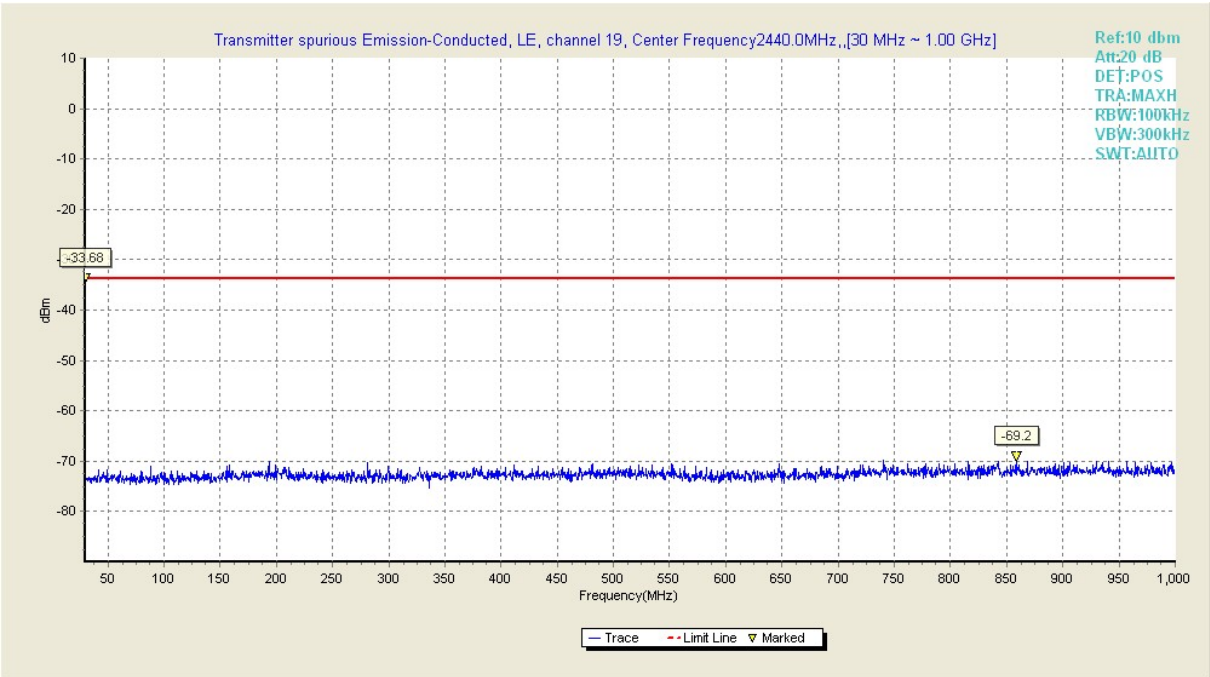


Fig.13 Transmitter spurious emission-Conducted of BLE in channel 19,(30MHz ~1GHz)

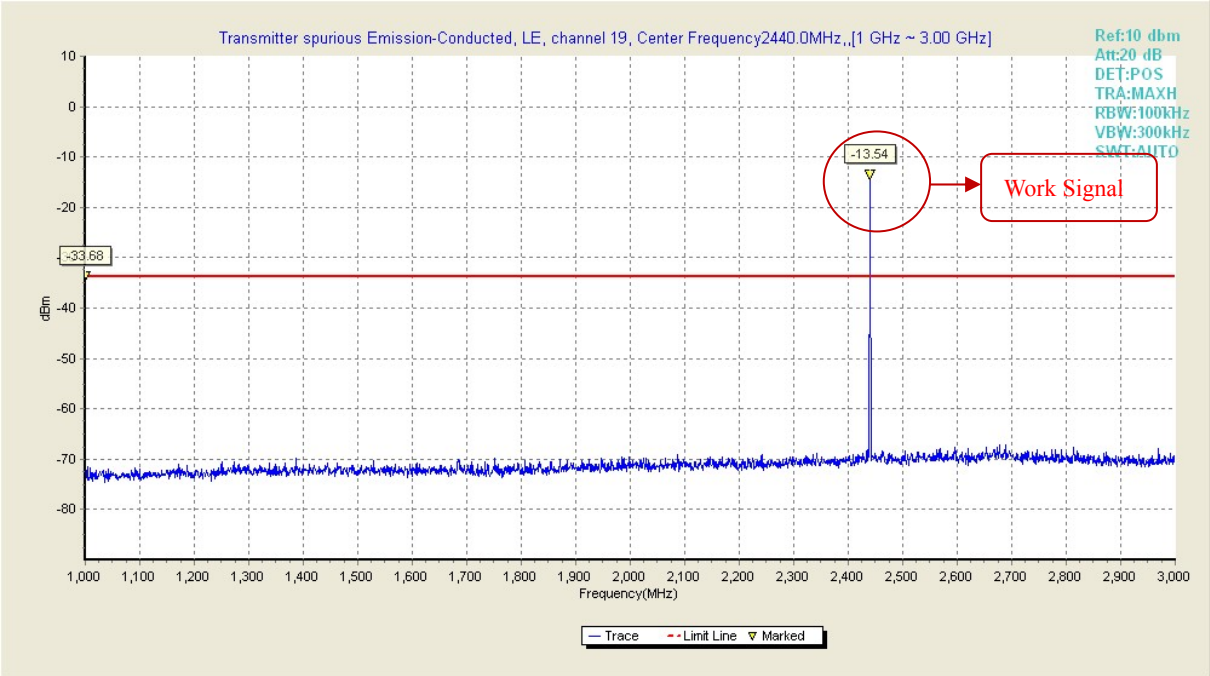


Fig.14 Transmitter spurious emission-Conducted of BLE in channel 19,(1GHz ~3GHz)

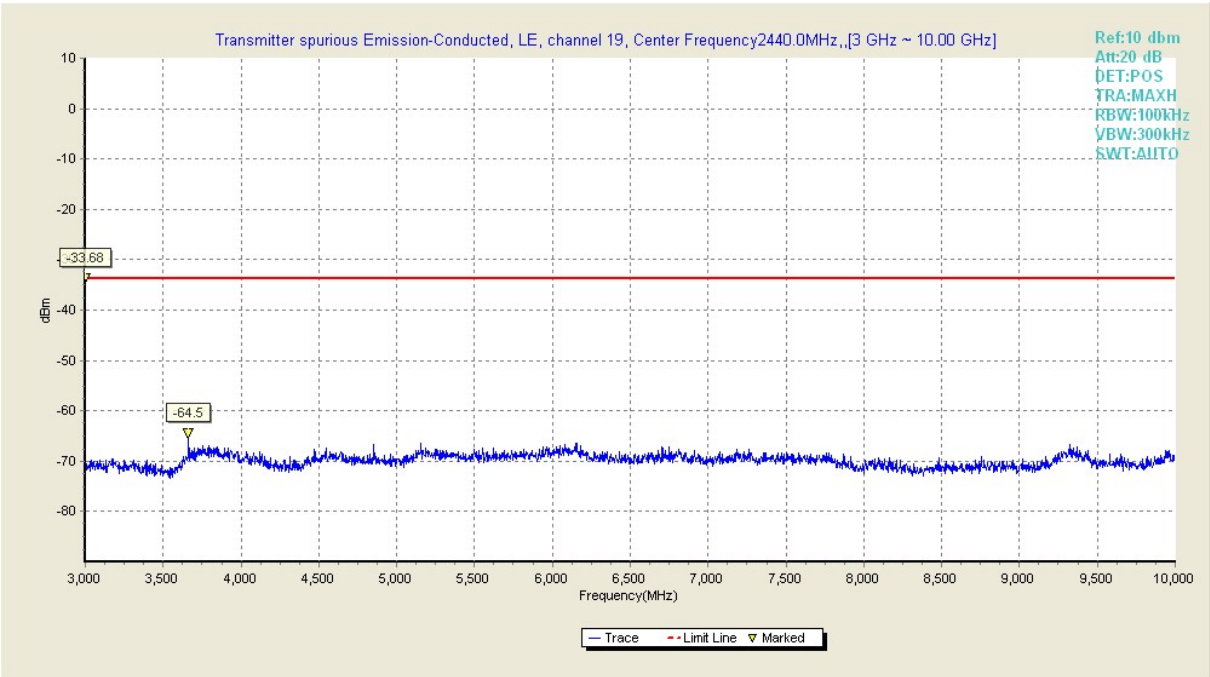


Fig.15 Transmitter spurious emission-Conducted of BLE in channel 19,(3GHz ~10GHz)

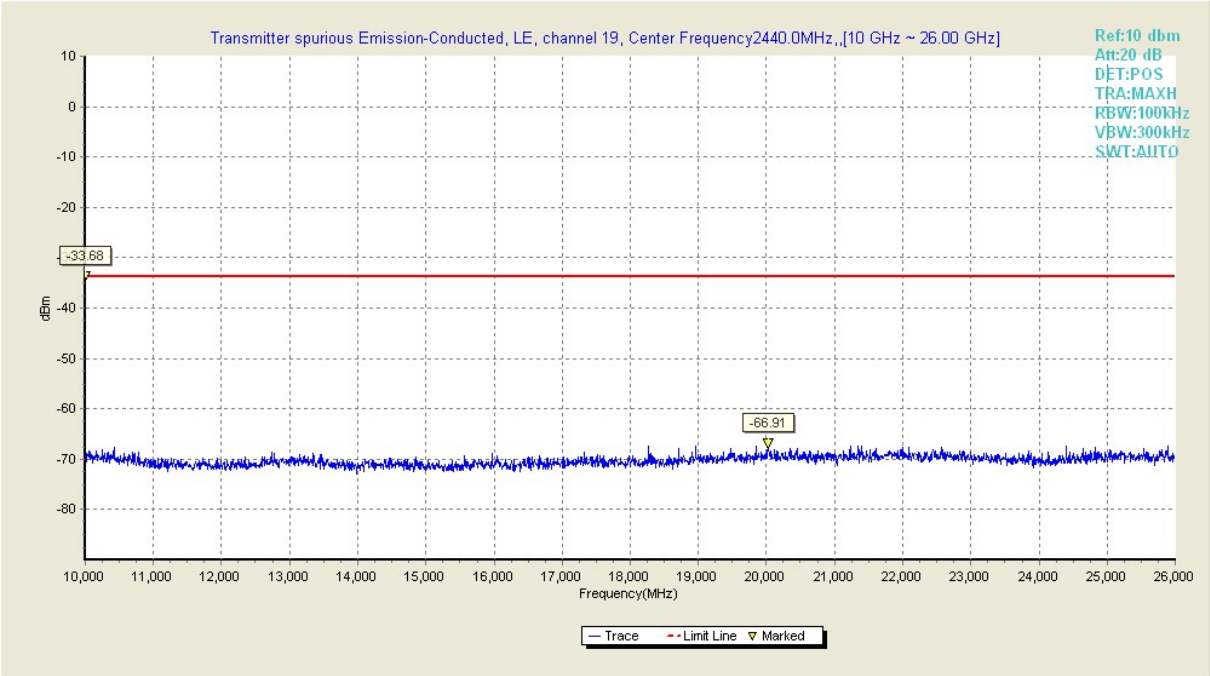


Fig.16 Transmitter spurious emission-Conducted of BLE in channel 19,(10GHz ~26GHz)

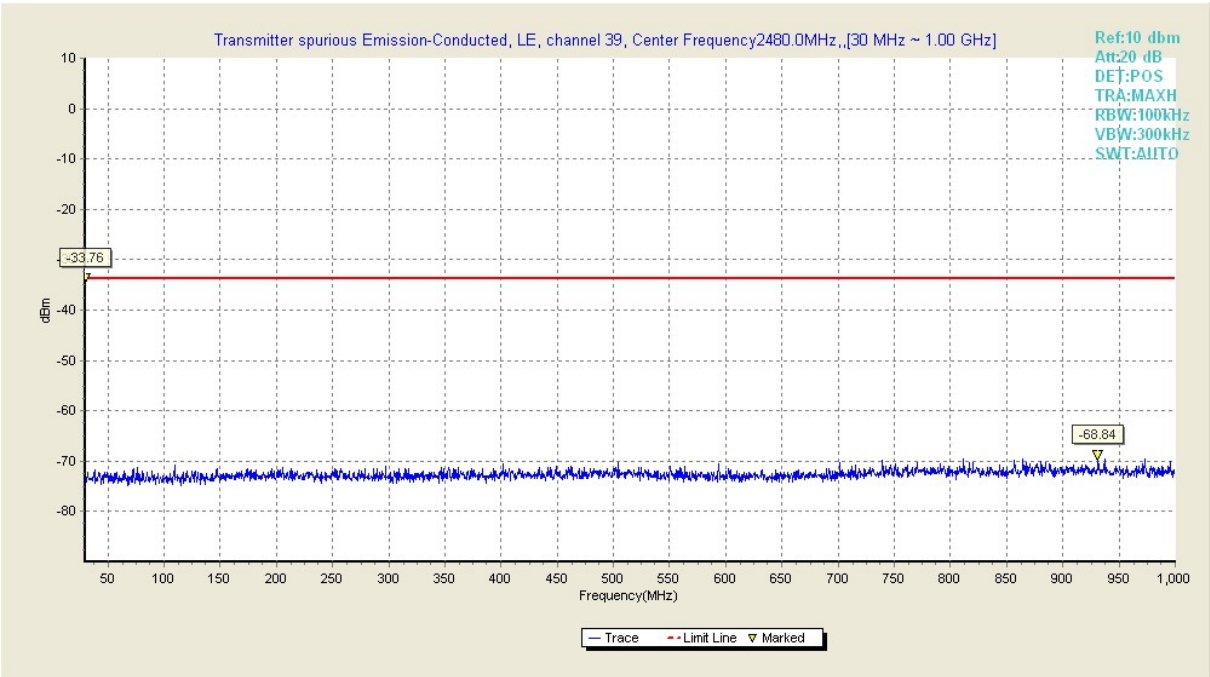


Fig.17 Transmitter spurious emission-Conducted of BLE in channel 39,(30MHz ~1GHz)

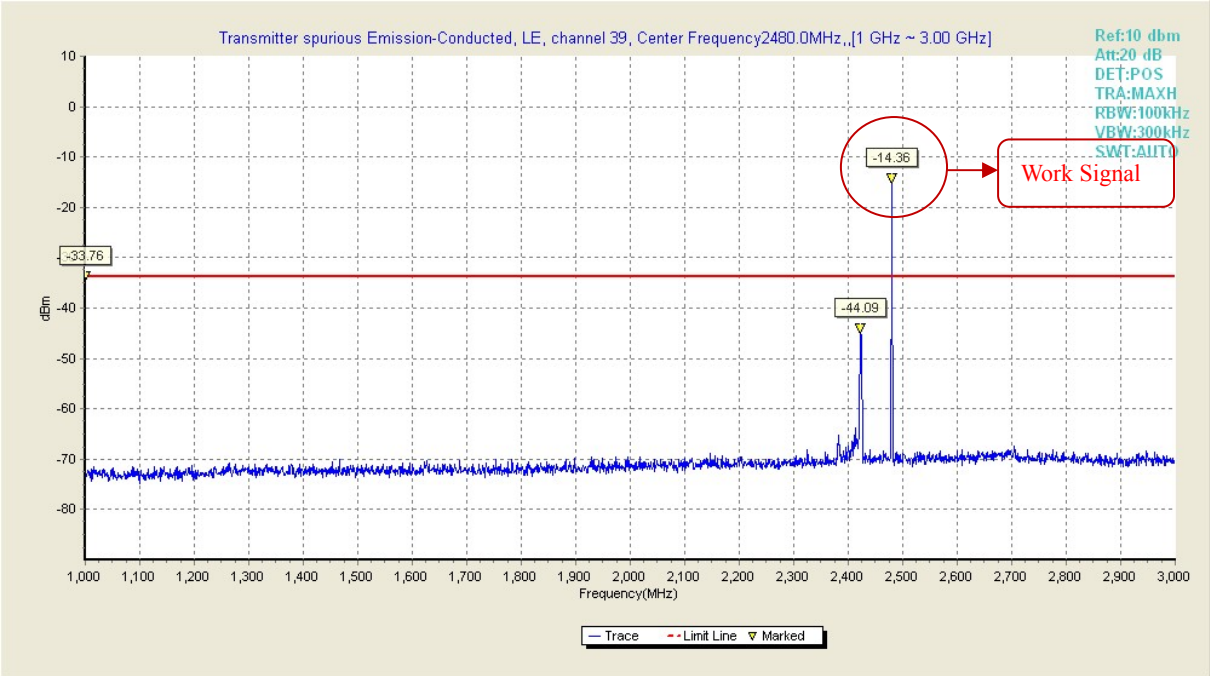


Fig.18 Transmitter spurious emission-Conducted of BLE in channel 39,(1GHz ~3GHz)

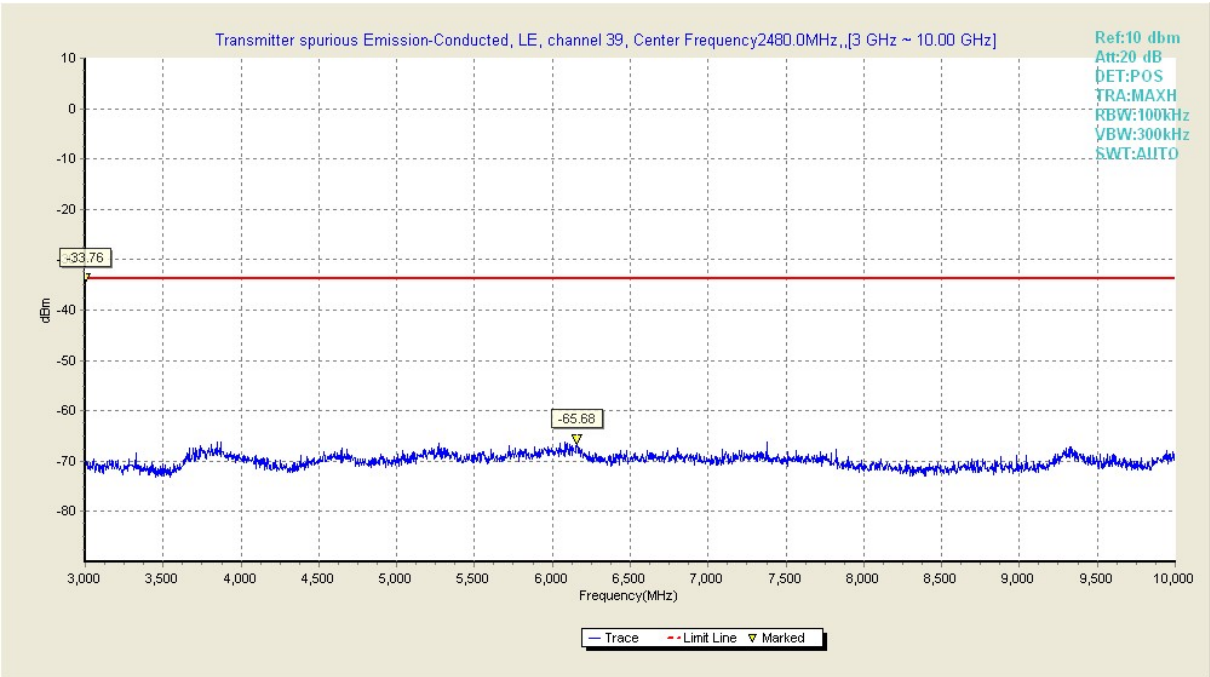


Fig.19 Transmitter spurious emission-Conducted of BLE in channel 39,(3GHz ~10GHz)

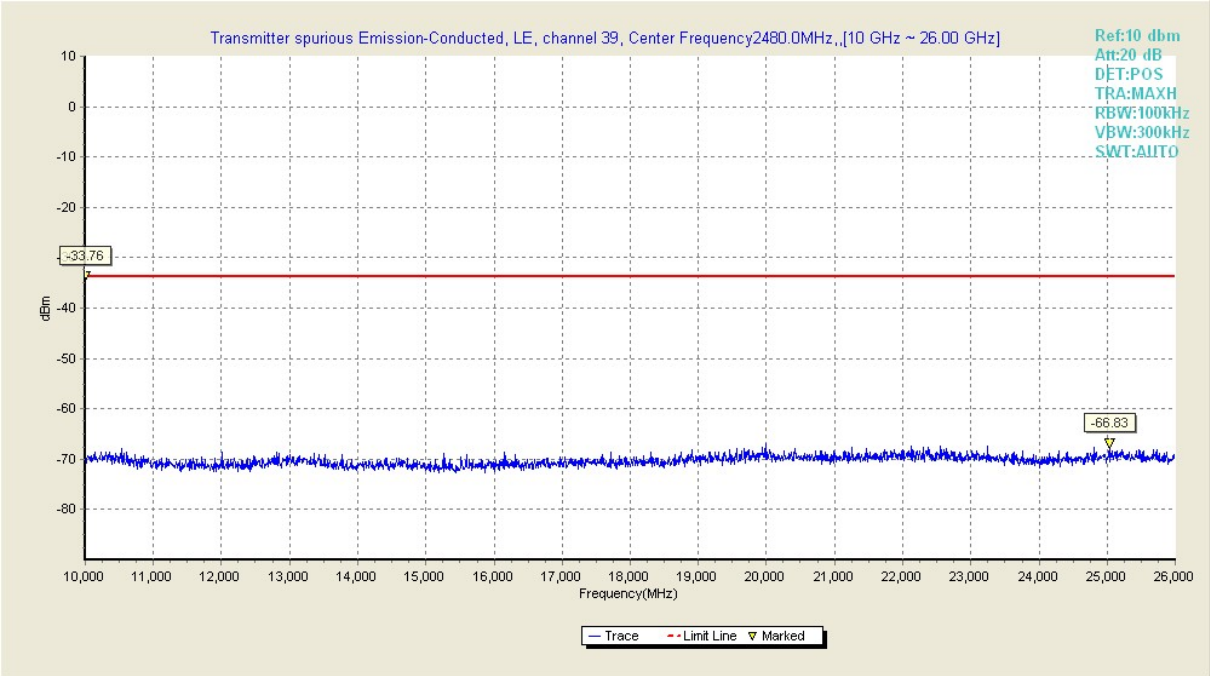


Fig.20 Transmitter spurious emission-Conducted of BLE in channel 39,(10GHz ~26GHz)

B.6 Radiated Emissions

B.6.1 Limit of Radiated Emission

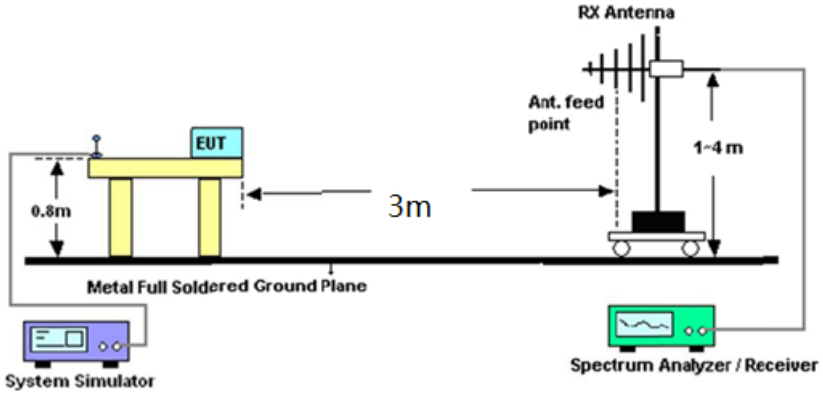
In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as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

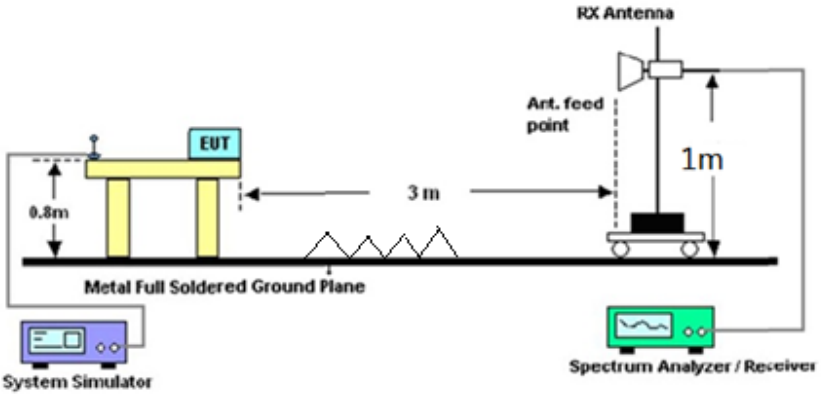
B.6.2 Test Setup

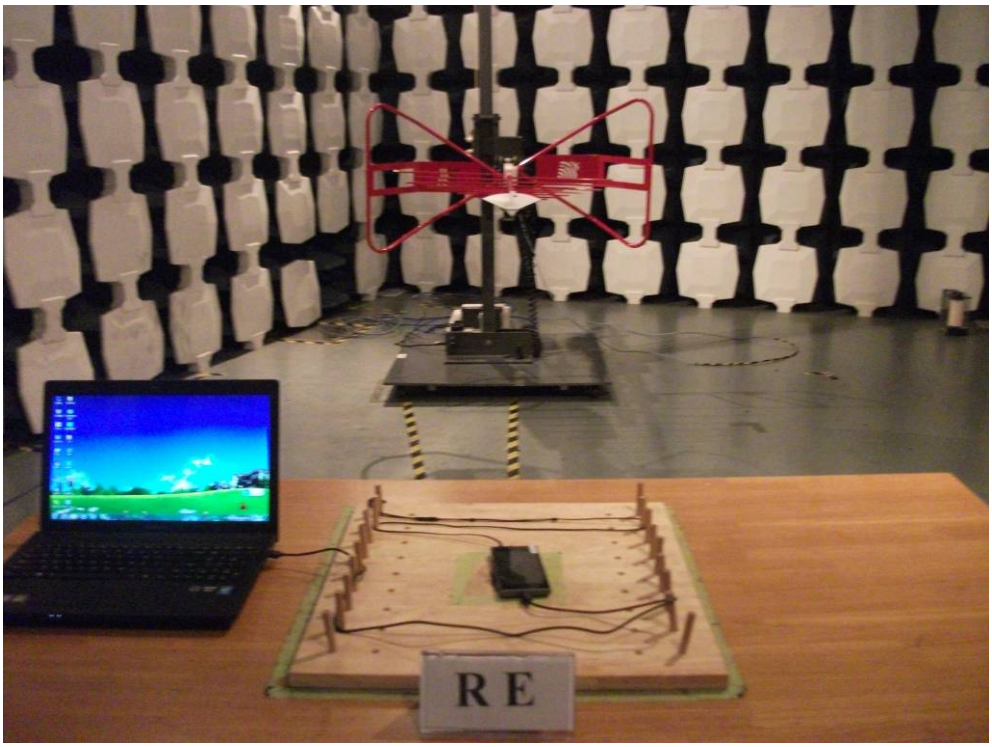
Frequency Band(MHz)	Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	Peak	100kHz	100kHz
Above 1000	Peak	1MHz	1MHz
	Average	1MHz	10Hz

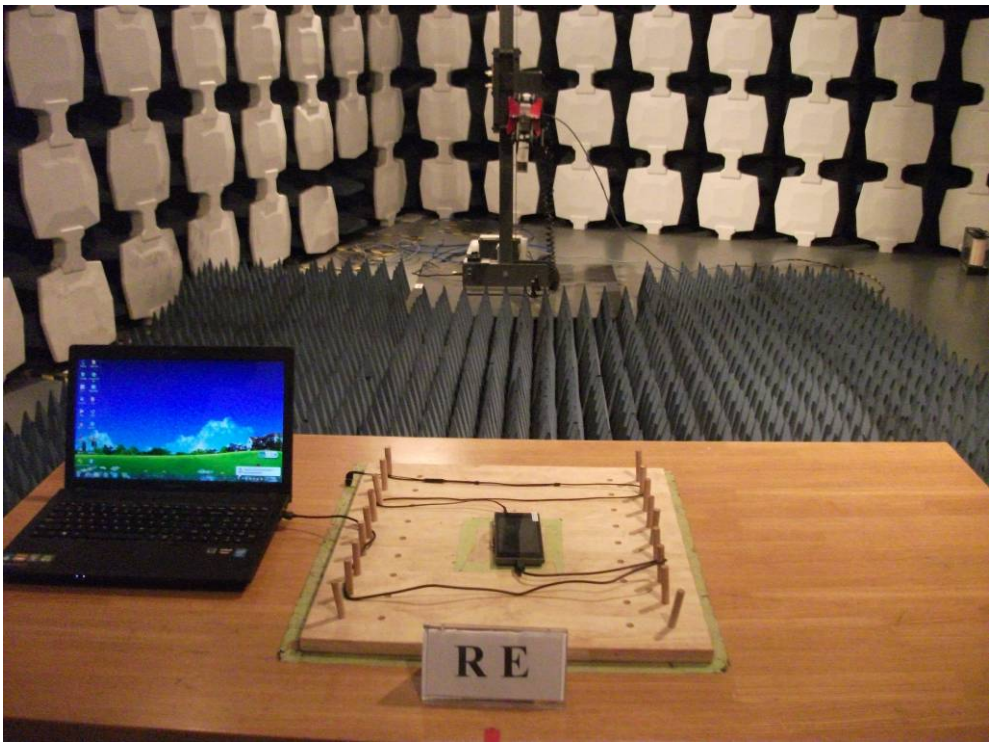
Radiated Emissions Frequency: Below 1GHz



Radiated Emissions Frequency: above 1GHz







B.6.3 Test Results

The low frequency, which started from 9kHz to 30MHz and the high frequency, which started from 18GHz to 26GHz, were pre-scanned and which was 20dB lower than limit line per 15.31(0) were not reported.

Test Mode: Traffic

Verdict: Pass

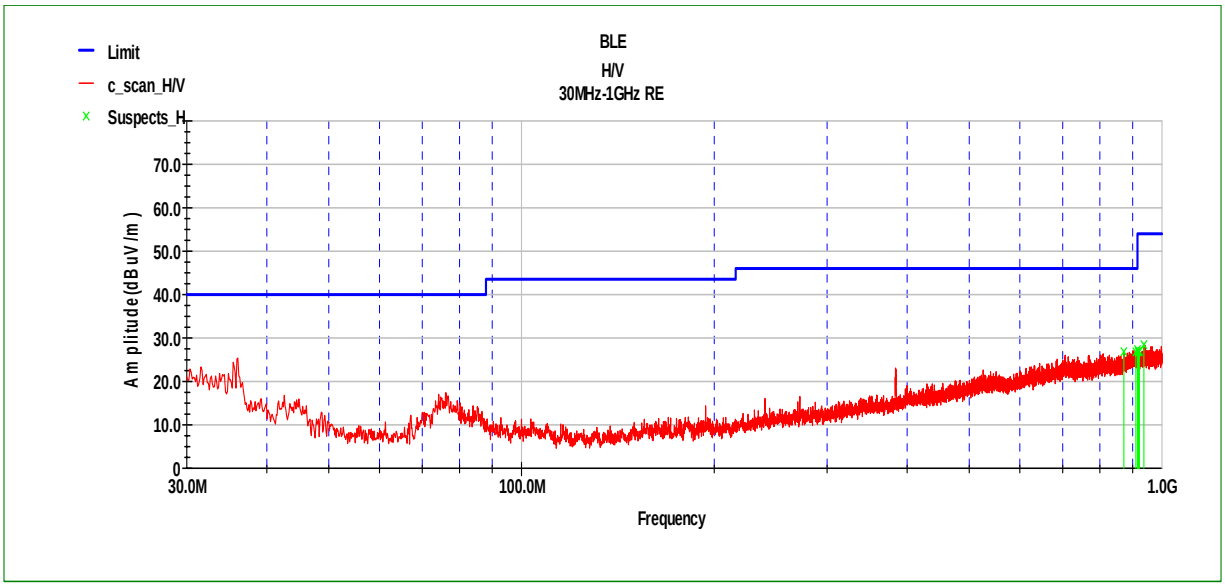


Fig.21 Radiated Emission of channel 0 in 30MHz-1GHz

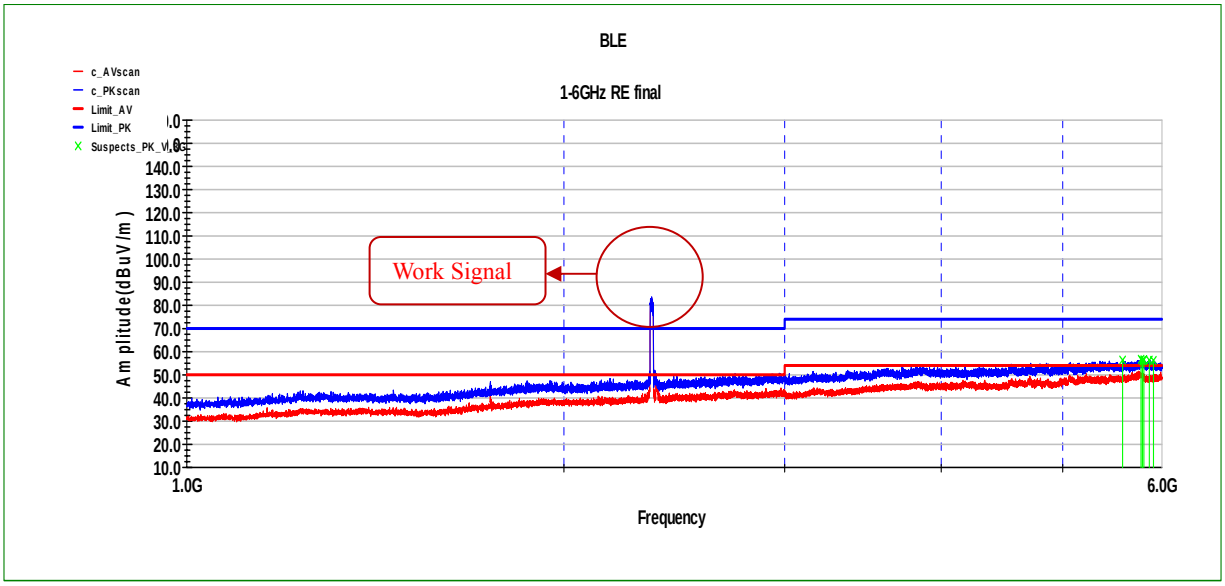


Fig.22 Radiated Emission of channel 0 in 1GHz-6GHz

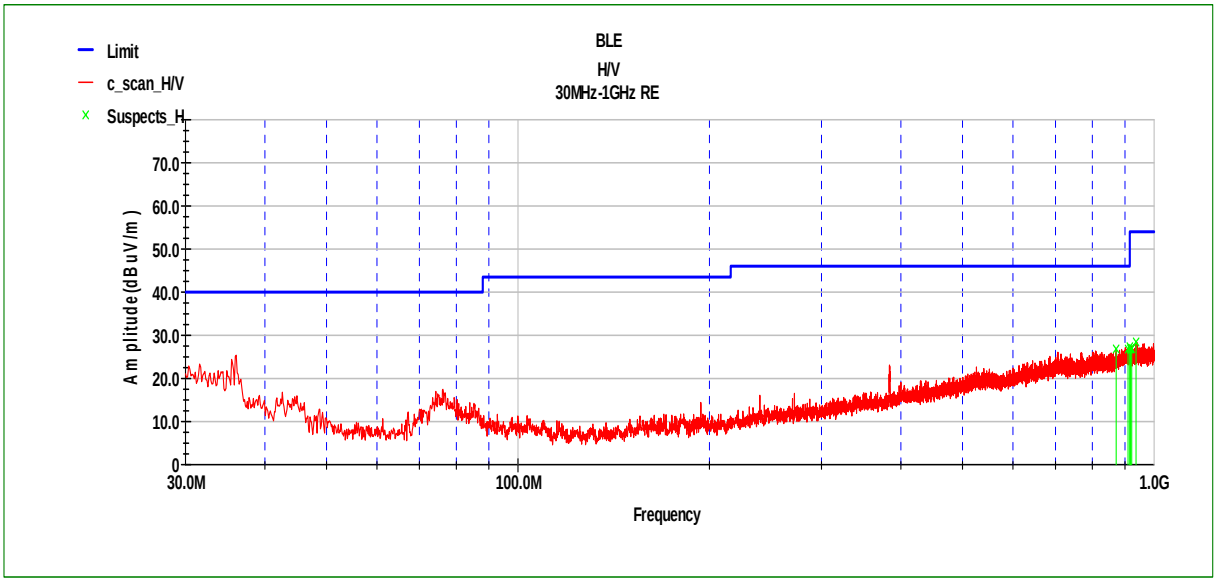


Fig.23 Radiated Emission of channel 19 in 30MHz-1GHz

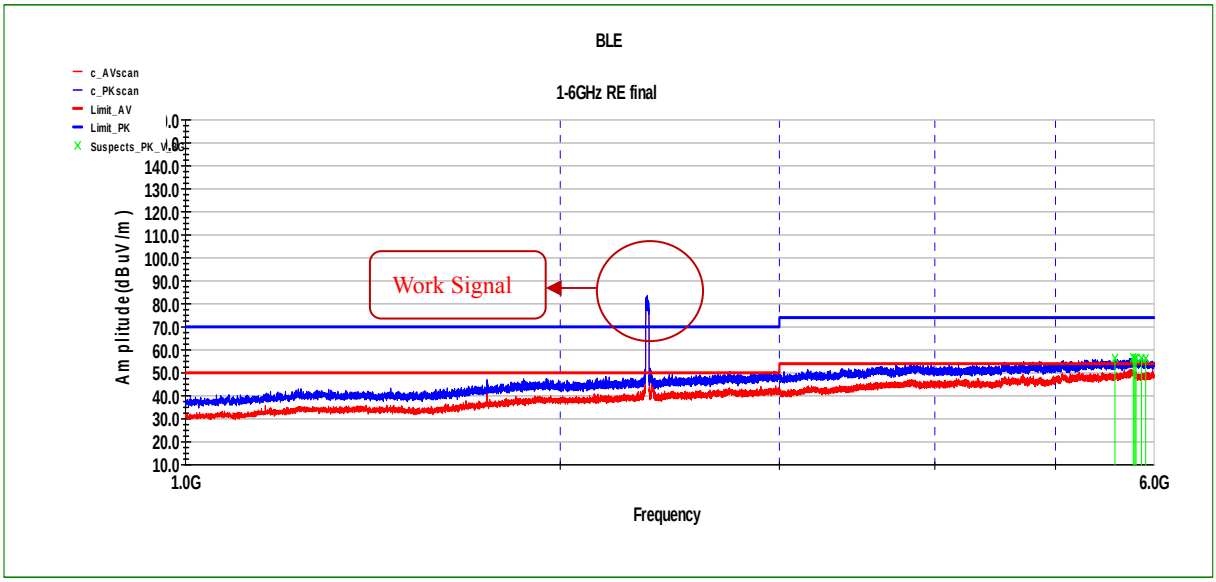


Fig.24 Radiated Emission of channel 19 in 1GHz-6GHz

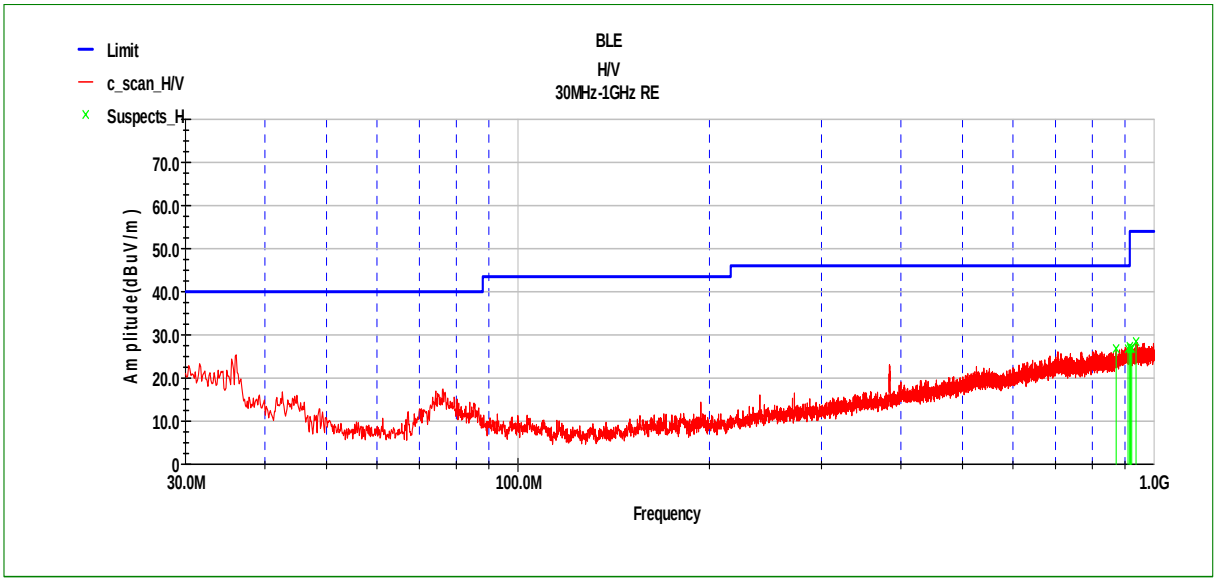


Fig.25 Radiated Emission of channel 39 in 30MHz-1GHz

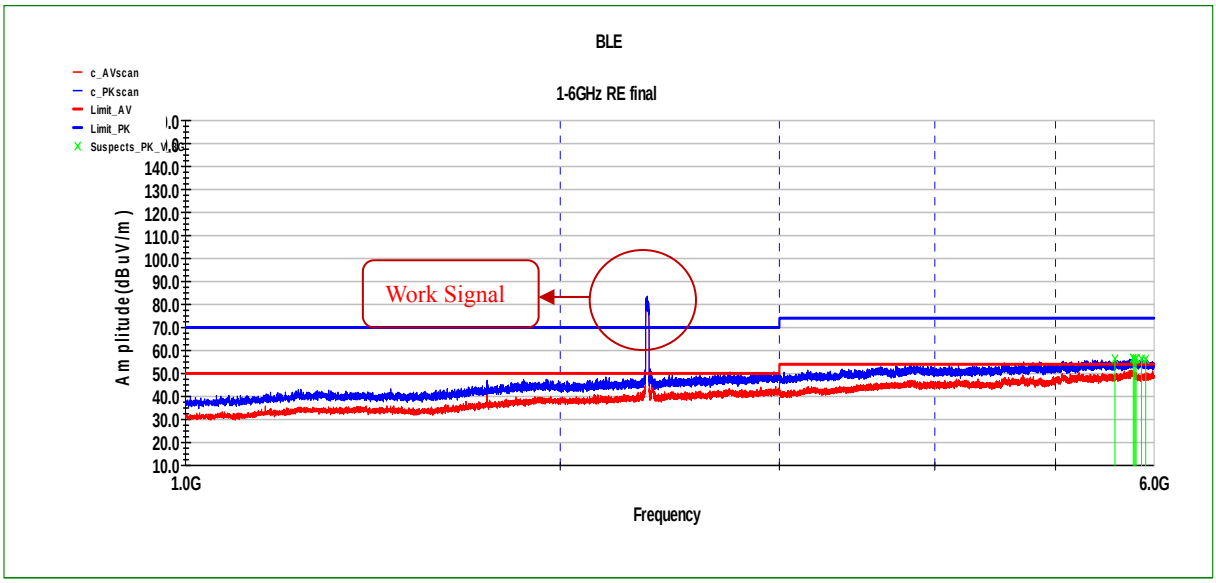


Fig.26 Radiated Emission of channel 39 in 1GHz-6GHz

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

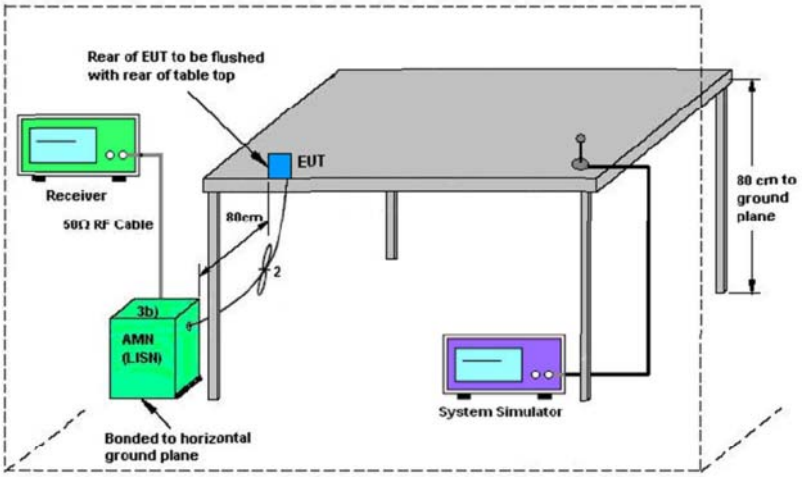
B.7.2 Test Procedure

1. 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.

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

3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

B.7.4 Test Setup



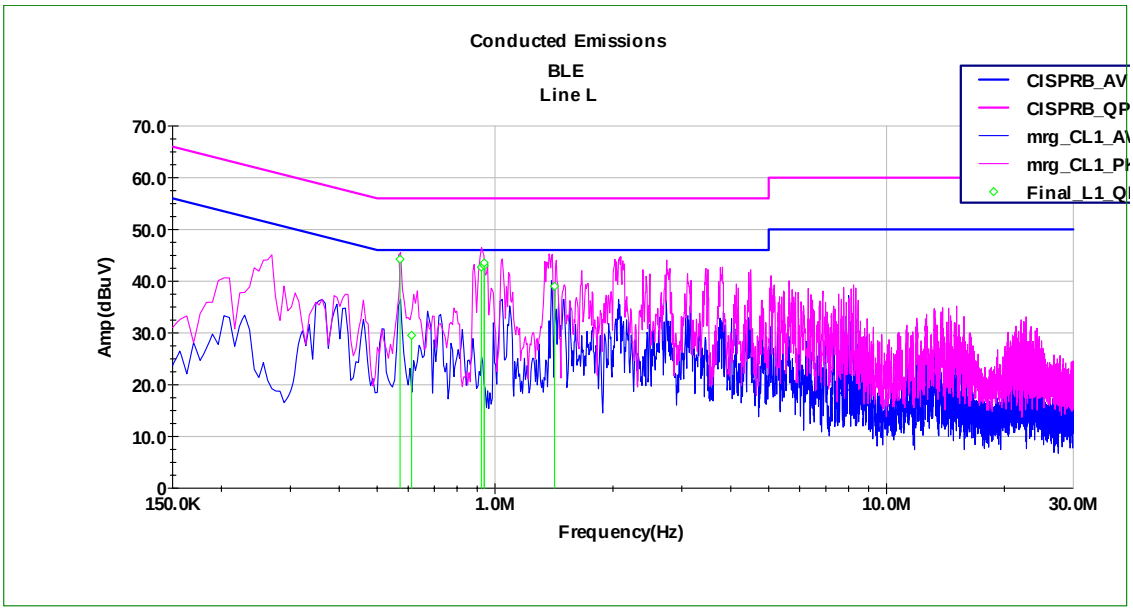
B.7.5 Test Results

Limit

Frequency of Emission(MHz)	Conducted Limit(dBμV)	
	Quasi –Peak	Average
0.15-0.5	66 to 56*	56 to 46*

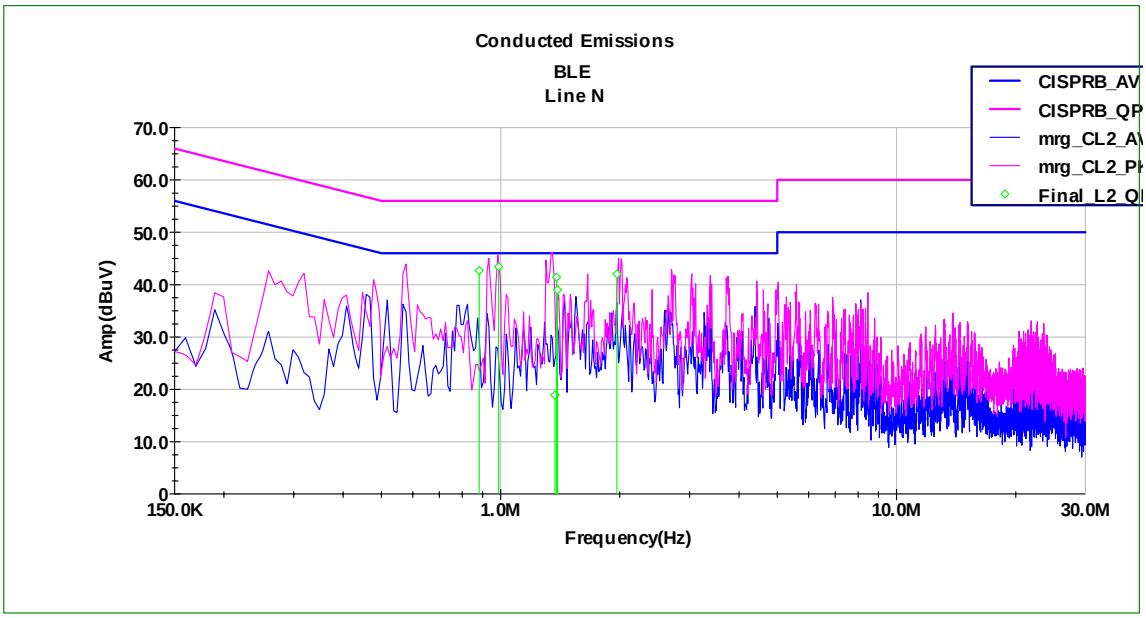
0.5-5	56	46
5-30	60	50
*Decreases with logarithm of the frequency		

LINE L



Frequency (MHz)	Limit dB(μV)	QP dB(μV)	Frequency (MHz)	Limit dB(μV)	AV dB(μV)
0.572	56	44.25	0.572	46	39.8
0.612	56	29.54	0.612	46	21.98
0.922	56	42.69	0.922	46	31.04
0.938	56	43.02	0.938	46	28.1
0.939	56	43.55	0.939	46	27.85
1.419	56	39.03	1.419	46	24.12

LINE N



Frequency (MHz)	Limit dB(μV)	QP dB(μV)	Frequency (MHz)	Limit dB(μV)	AV dB(μV)
0.882	56	42.69	0.364	46	32.03
0.988	56	43.41	0.431	46	32.67
1.372	56	18.92	0.939	46	14.57
1.384	56	41.41	0.981	46	29.37
1.392	56	38.98	1.453	46	25.08
1.966	56	42.02	1.498	46	30.68

B.8 Antenna 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.

*****END OF REPORT*****