

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

## INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT AND INDUSTRY CANADA RSS 247 CLASS II & IV PC REPORT

Applicant: Qualcomm Atheros, Inc.  
1700 Technology Drive, San Jose, CA 95110

Product Name: 802.11a/b/g/n/ac + BT4.1 M.2 2230 Type Card

Brand Name: Qualcomm Atheros

Model No.: QCNFA344A

Model Difference: N/A

Report Number: E2/2020/10011

FCC Rule Part: §15.247, Cat: DTS

IC RSS: RSS-247 issue 2 Feb 2017

Issue Date: Mar. 05, 2020

Date of Test: Jan. 14, 2020 ~ Mar. 04, 2020

Date of EUT Received: Jan. 14, 2020

### We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.

The test results of this report relate only to the tested sample identified in this report.

Approved By:

CHUN-CHIEH CHEN

Chun Chieh Chen / Supervisor



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## Revision History

Report Number	Revision	Description	Issue Date	Remark
E2/2020/10011	Rev.00	Original.	Mar. 05, 2020	Revised By: Susan Lin

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## Table of Contents

1	GENERAL INFORMATION .....	4
2	SYSTEM TEST CONFIGURATION .....	6
3	SUMMARY OF TEST RESULTS.....	8
4	DESCRIPTION OF TEST MODES .....	9
5	MEASUREMENT UNCERTAINTY .....	11
6	PEAK OUTPUT POWER MEASUREMENT.....	12
7	RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT .....	15
8	ANTENNA REQUIREMENT.....	26

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# 1 GENERAL INFORMATION

## 1.1 Product Description

Product Name of Host:	Notebook Computer	
Brand Name of Host:		
Marketing Name of Host:	SF314-42	
Model No. of Host:	N19C4	
Model Difference:	N/A	
Hardware Version:	N/A	
Software Version:	N/A	
Model No. of BT/WLAN Module:	QCNFA344A	
Scope:	The test report covers the radiated emissions requirements of the standards referenced in the report to allow system level approval of the module in this specific host.	
Class II & Class IV Permissive change:	802.11a/b/g/n/ac + BT4.1 M.2 2230 Type Card INSTALLED IN Notebook Computer	
Power Supply:	11.25Vdc from Rechargeable Li-ion Battery Pack or 19V by AC/DC Power Adapter	
	Battery:	Model No.: AP18C8K, Supplier: acer
	Adapter:	Model No.: A18-065N3A, Supplier: Chicony

Radio Technology:	Bluetooth LE Single mode
Frequency Range:	2402 – 2480MHz
Channel number:	40 channels
Modulation type:	GFSK
Antenna Designation:	PIFA Antenna, Supplier: Wistron Neweb Corporation, Part No.: 81EABA15.GA3 (DC33002EG20) (Aux) Peak Gain: -2.26dBi
Rated Power (Peak) / EIRP	2.13dBm -0.22dBm (EIRP)
Type of Emission	1M10F1D

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## 1.2 Test Methodology of Applied Standards

FCC Part 15, Subpart C §15.247  
FCC KDB 558074 D01 DTS Meas. Guidance v05r02  
RSS-247 issue 2 Feb. 2017  
RSS-Gen. issue 5, Amendment 1, March 2019  
ANSI C63.10:2013

## 1.3 Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory (TAF code 0513)  
No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333

FCC Designation number: TW0002

ISED CAB identifier: TW0513

## 1.4 Special Accessories

There are no special accessories used while test was conducted.

## 1.5 Equipment Modifications

There was no modification incorporated into the EUT.

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## 2 SYSTEM TEST CONFIGURATION

### 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2 EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

### 2.3 Test Procedure

#### 2.3.1 Conducted Emissions

The EUT is placed on a table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz. The CISPR Quasi-Peak and Average detector mode is employed. The two LISNs provide 50  $\mu$ H/50 ohm of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

#### 2.3.2 Conducted Test (RF)

The active antenna port of the unlicensed wireless device is connected to the spectrum analyzer with attenuator to protect the instrumentation. If a second antenna port is available, it is tested at one operating frequency, with other port(s) appropriately terminated, to verify it has similar output characteristics as the fully tested port.

#### 2.3.3 Radiated Emissions

The EUT is placed on a turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

### 2.4 Measurement Results Explanation Example

#### For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

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## 2.5 Configuration of Tested System

Fig 2-1 Radiated Emission



Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1	Bluetooth Test Software	N/A	N/A	N/A	N/A	N/A

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### 3 SUMMARY OF TEST RESULTS

FCC Rules	ISED Rules	Description Of Test	Result
§15.247(b) (3)	RSS-247 §5.4(4)	Peak Output Power	Compliant
§15.205 §15.209 §15.247(d)	RSS-247 §5.5	Radiated Band Edge and Spurious Emission	Compliant
§15.203	N/A	Antenna Requirement	Compliant

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## 4 DESCRIPTION OF TEST MODES

### 4.1 Operated in 2400 ~ 2483.5MHz Band

40 channels are provided for Bluetooth LE

ITEM	FREQUENCY	ITEM	FREQUENCY	ITEM	FREQUENCY
1	2402 MHz	15	2430 MHz	29	2458 MHz
2	2404 MHz	16	2432 MHz	30	2460 MHz
3	2406 MHz	17	2434 MHz	31	2462 MHz
4	2408 MHz	18	2436 MHz	32	2464 MHz
5	2410 MHz	19	2438 MHz	33	2466 MHz
6	2412 MHz	20	2440 MHz	34	2468 MHz
7	2414 MHz	21	2442 MHz	35	2470 MHz
8	2416MHz	22	2444 MHz	36	2472 MHz
9	2418 MHz	23	2446 MHz	37	2474 MHz
10	2420 MHz	24	2448 MHz	38	2476 MHz
11	2422 MHz	25	2450 MHz	39	2478 MHz
12	2424 MHz	26	2452 MHz	40	2480 MHz
13	2426 MHz	27	2454 MHz		
14	2428 MHz	28	2456 MHz		

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#### 4.2 The Worst Test Modes and Channel Details

1. The EUT has been tested under operating condition.
2. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
3. Investigation has been done on all the possible configurations for searching the worst case.

MODE	AVAILABLE FREQUENCY (MHz)	TESTED FREQUENCY (MHz)	MODULATION	DATA RATE (Mbps)
<b>RADIATED EMISSION TEST (ABOVE 1 GHz)</b>				
Bluetooth LE	2402 to 2480	2402, 2442, 2480	GFSK	1
<b>Note:</b> The field strength of radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for Bluetooth LE Transmitter for channel Low, Mid and High, the worst case E2 position was reported.				

<b>ANTENNA PORT CONDUCTED MEASUREMENT</b>				
MODE	AVAILABLE FREQUENCY (MHz)	TESTED FREQUENCY (MHz)	MODULATION	DATA RATE (Mbps)
Bluetooth LE	2402 to 2480	2402, 2442, 2480	GFSK	1

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## 5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
Peak Output Power	+/- 0.84 dB
6dB Bandwidth	+/- 51.33 Hz
100 KHz Bandwidth Of Frequency Band Edges	+/- 0.84 dB
Peak Power Density	+/- 1.3 dB
Temperature	+/- 0.65 °C
Humidity	+/- 4.6 %
DC / AC Power Source	DC= +/- 0.13%, AC= +/- 0.2%

Radiated Spurious Emission Measurement Uncertainty	
Polarization: Vertical	9kHz~30MHz: +/-2.3dB
	30MHz - 180MHz: +/- 3.37dB
	180MHz -417MHz: +/- 3.19dB
	0.417GHz-1GHz: +/- 3.19dB
	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB
Polarization: Horizontal	9kHz~30MHz: +/-2.3dB
	30MHz - 167MHz: +/- 4.22dB
	167MHz -500MHz: +/- 3.44dB
	0.5GHz-1GHz: +/- 3.39dB
	1GHz - 18GHz: +/- 4.08dB
	18GHz - 40GHz: +/- 4.08dB

### Note:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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## 6 PEAK OUTPUT POWER MEASUREMENT

### 6.1 Standard Applicable:

For systems using digital modulation in the 2400-2483.5 MHz bands, the limit for peak output power is 1Watt and the e.i.r.p. shall not exceed 4 W

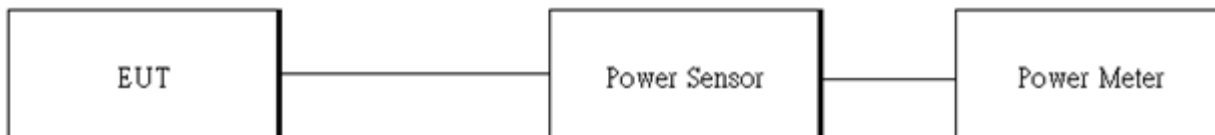
If the transmitting antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6dBi.

In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of Antenna exceeds 6dBi.

### 6.2 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	KEYSIGHT	N9010A	MY57120200	03/06/2019	03/05/2020
Power Meter	Anritsu	ML2496A	1326001	08/05/2019	08/04/2020
DC Block	PASTERNAK	PE8210	RF256	11/20/2019	11/19/2020
Coaxial Cables	Woken	00100A1F1A185C	RF230	11/20/2019	11/19/2020

### 6.3 Test Set-up:



### 6.4 Measurement Procedure:

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter.
4. Record the max. Reading as observed from Power Meter.
5. Repeat above procedures until all test default channel measured was complete.

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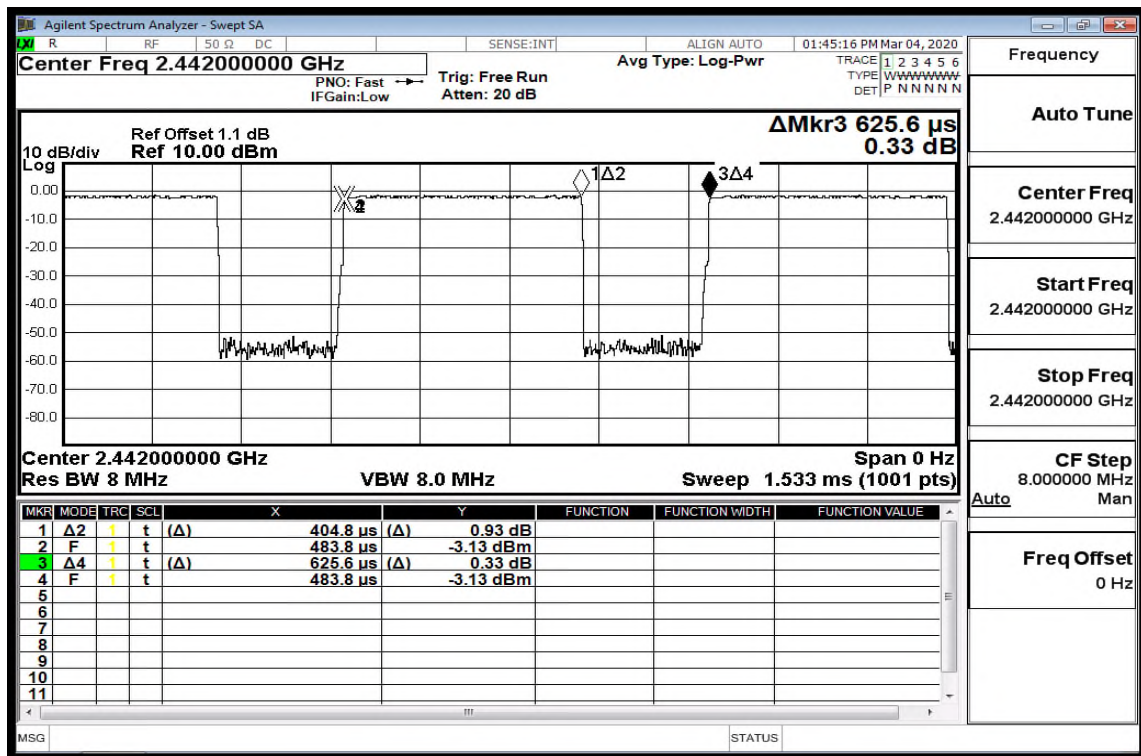
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## 6.5 Duty Factor:

### Duty Cycle

	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log ( 1/Duty Cycle )	1/T (kHz)	VBW setting (kHz)
BLE	64.70	1.89	0.35	1.00

Duty Cycle Factor:  $10 \cdot \log(1/(64.7/100)) = 1.89$



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## 6.6 Output Power:

### 6.6.1 Peak & Avg

CH	Frequency (MHz)	Peak Power Output (dBm)	Required Limit
Low	2402	1.72	1 Watt = 30 dBm
Mid	2442	2.08	1 Watt = 30 dBm
High	2480	2.13	1 Watt = 30 dBm
CH	Frequency (MHz)	Max. Avg. Output include tune up tolerance Power (dBm)	Required Limit
Low	2402	1.57	1 Watt = 30 dBm
Mid	2442	1.83	1 Watt = 30 dBm
High	2480	2.04	1 Watt = 30 dBm

\*Note: Measured by power meter, cable loss as dB that offsets on the power meter in Peak

\*Note: Measured by power meter, as cable loss+ Duty cycle factor that offsets on the power meter

\*Note: Max. Output include tune up tolerance Power is average power

### 6.6.2 EIRP

#### EIRP

CH	Frequency (MHz)	Max. Avg. Output include tune up tolerance Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit		
Low	2402	1.57	-2.26	-0.69	4W=	36	dBm
Mid	2442	1.83	-2.26	-0.43	4W=	36	dBm
High	2480	2.04	-2.26	-0.22	4W=	36	dBm

\* **Note:** EIRP = Average Power + Gain

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## 7 RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT

### 7.1 Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands must also comply with the §15.209 and RSS-Gen §8.9 Table 5 and 6 limit as below.

And according to §15.33(a) (1) & RSS-Gen §6.13.2.a for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

Frequency (MHz)	Field strength (microvolts/meter)	Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

**Note:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBμV/m) = 20 log Emission level (dBμV/m)

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## 7.2 Measurement Equipment Used

966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Broadband Antenna	SCHWAZBECK	VULB 9168	9168-617	11/04/2019	11/03/2020
Horn Antenna	Schwarzbeck	BBHA9170	185	08/07/2019	08/06/2020
Horn Antenna	Schwarzbeck	BBHA9120D	1341	06/12/2019	06/11/2020
Loop Antenna	ETS.LINDGREN	6502	143303	04/25/2019	04/24/2020
3m Site NSA	SGS	966 chamber D	N/A	07/12/2019	07/11/2020
Spectrum Analyzer	KEYSIGHT	N9010A	MY51440113	07/15/2019	07/14/2020
Pre-Amplifier	EMC Instruments	EMC184045B	980135	11/20/2019	11/19/2020
Pre-Amplifier	EMC Instruments	EMC9135	980234	11/20/2019	11/19/2020
Pre-Amplifier	EMC Instruments	EMC12630SE	980271	11/20/2019	11/19/2020
Attenuator	Woken	WATT-218FS-10	RF25	11/20/2019	11/19/2020
High Pass Filter	R&S	F13 HPF 3GHz	RF64	11/20/2019	11/19/2020
Low Pass Filter	EWT	EWT-56-0019	RF46	11/20/2019	11/19/2020
Notch Filter	EWT	EWT-54-0038	RF55	11/20/2019	11/19/2020
Coaxial Cable	Huber Suhner	SUCOFLEX 104	MY17388/4	11/20/2019	11/19/2020
Coaxial Cable	Huber Suhner	RG 214/U	W22.03	11/20/2019	11/19/2020
Coaxial Cable	Huber Suhner	SUCOFLEX 104	MY17413/4	11/20/2019	11/19/2020

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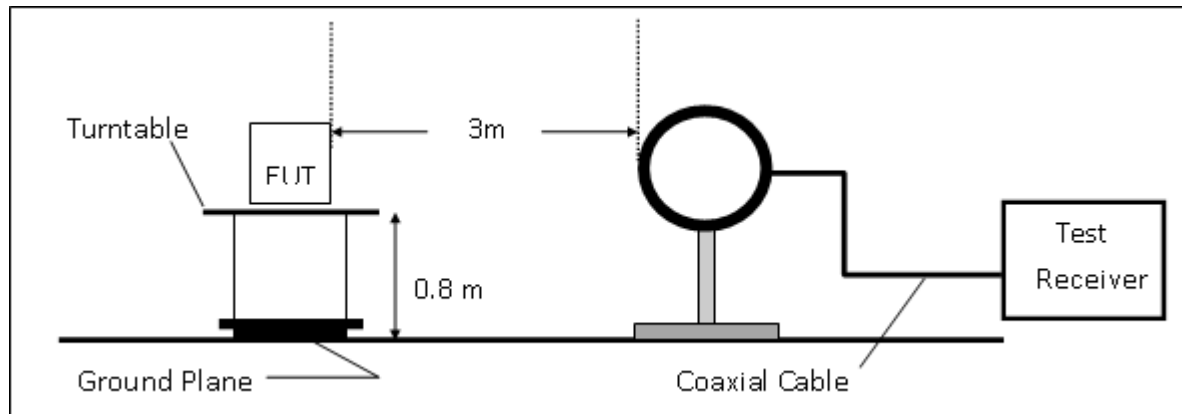
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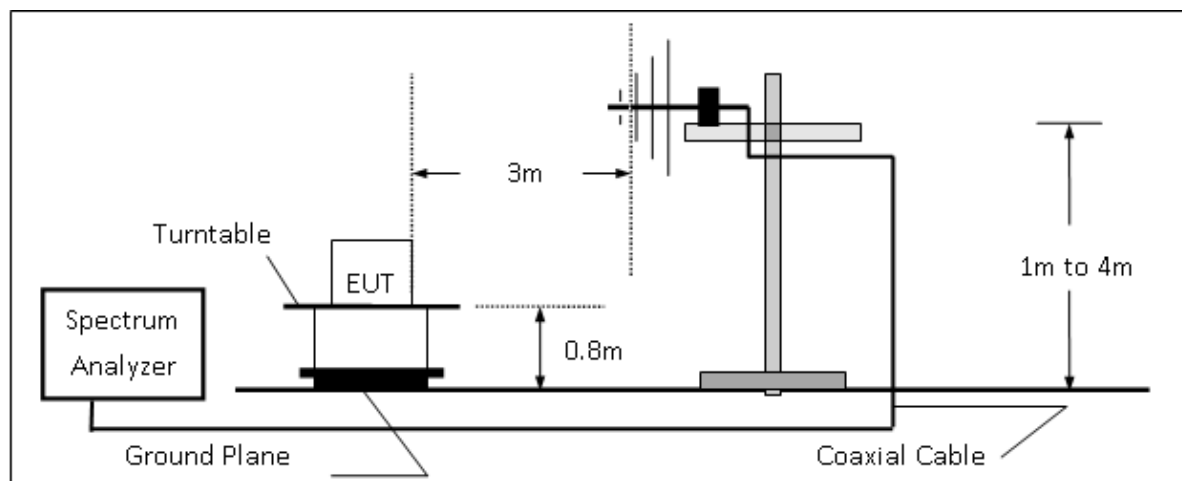


### 7.3 Test SET-UP

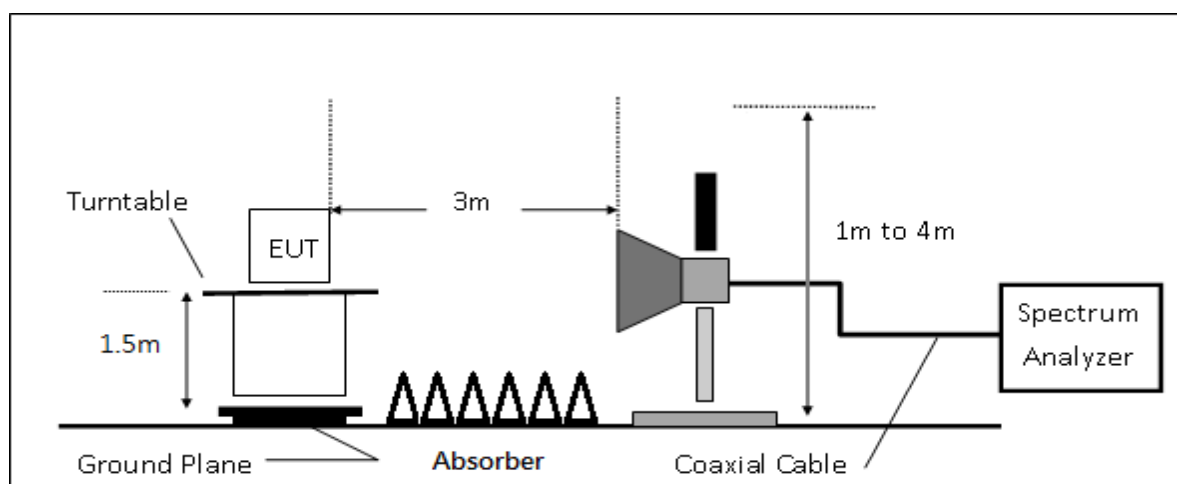
#### (A) Radiated Emission Test Set-UP Frequency Below 30MHz.



#### (B) Radiated Emission Test Set-Up, Frequency form 30MHz to 1000MHz



#### (C) Radiated Emission Test Set-UP Frequency Over 1 GHz



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## 7.4 Measurement Procedure

1. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
2. The EUT was placed on a turn table with 0.8m for frequency < 1GHz and 1.5m for frequency > 1GHz above ground plan.
3. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
4. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
5. Set the spectrum analyzer as RBW=120 kHz and VBW=300 kHz for Peak Detector (PK) and Quasi-peak (QP) at frequency below 1 GHz.
6. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Peak Detector at frequency above 1 GHz.
7. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW  $\geq 1/T$  (Duty cycle < 98%) for Average Detector at frequency above 1 GHz.
8. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.
9. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
10. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. On spectrum, change spectrum mode in linear display mode, and reduce VBW = 10Hz if average reading is measured.
11. Repeat above procedures until all default test channel measured were complete.

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## 7.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

**Where** *FS* = Field Strength *CL* = Cable Attenuation Factor (Cable Loss)  
*RA* = Reading Amplitude *AG* = Amplifier Gain  
*AF* = Antenna Factor

*The limit of the emission level is expressed in dBuV/m, which converts  $20 \cdot \log(uV/m)$*

*Actual FS(dBuV/m) = SPA. Reading level(dBuV) + Factor(dB)*

*Factor(dB) = Antenna Factor(dBuV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)*

## 7.6 Test Results of Radiated Spurious Emissions form 9 kHz to 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) was not reported.

## 7.7 Measurement Result:

Note: Refer to next page spectrum analyzer data chart and tabular data sheets.

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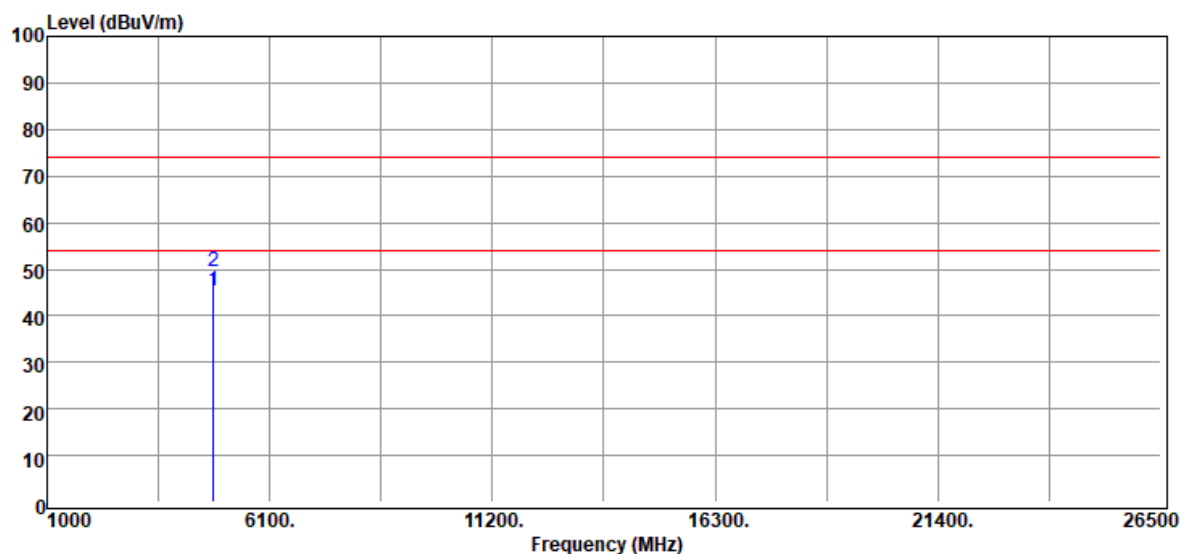
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### 7.7.1 Radiated Spurious Emission above 1GHz

Report Number :E2/2020/10011  
Operation Mode :BLE 1M  
Test Channel :2402 MHz  
Test Mode :TX CH LOW  
EUT Pol :E2 Plan

Test Date :2020-01-14  
Temp./Humi. :21.1/60  
Antenna Pol. :VERTICAL  
Engineer :Kailin



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
Mode	Reading Level			FS	@3m	
MHz	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4804.00	Average	45.56	-0.35	45.21	54.00	-8.79
4804.00	Peak	49.67	-0.35	49.32	74.00	-24.68

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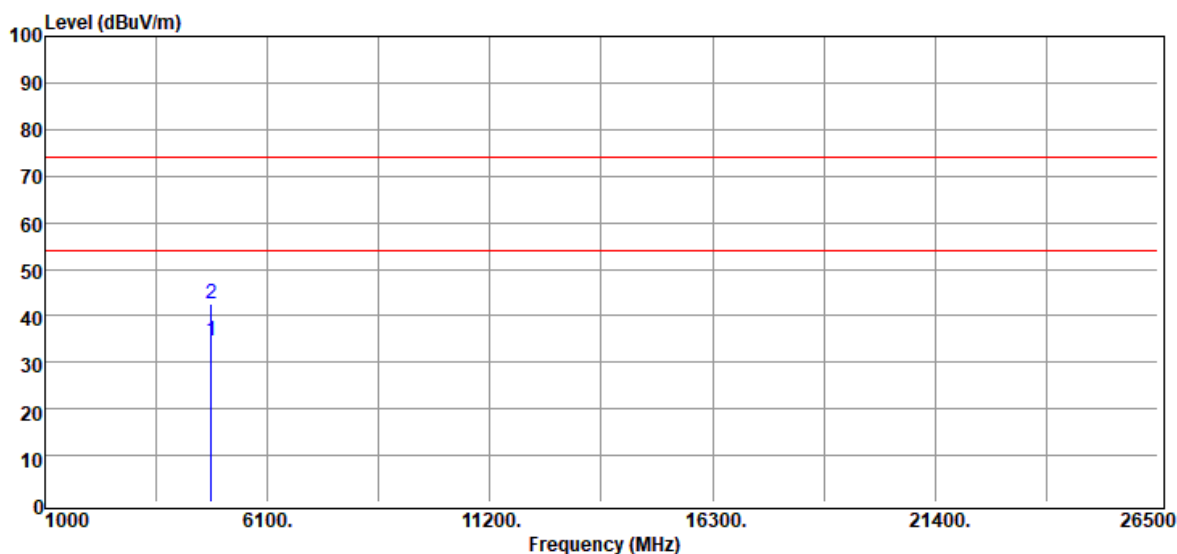
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Report Number :E2/2020/10011  
Operation Mode :BLE 1M  
Test Channel :2402 MHz  
Test Mode :TX CH LOW  
EUT Pol :E2 Plan

Test Date :2020-01-14  
Temp./Humi. :21.1/60  
Antenna Pol. :HORIZONTAL  
Engineer :Kailin



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
4804.00	Average	35.11	-0.35	34.76	54.00	-19.24
4804.00	Peak	43.05	-0.35	42.70	74.00	-31.30

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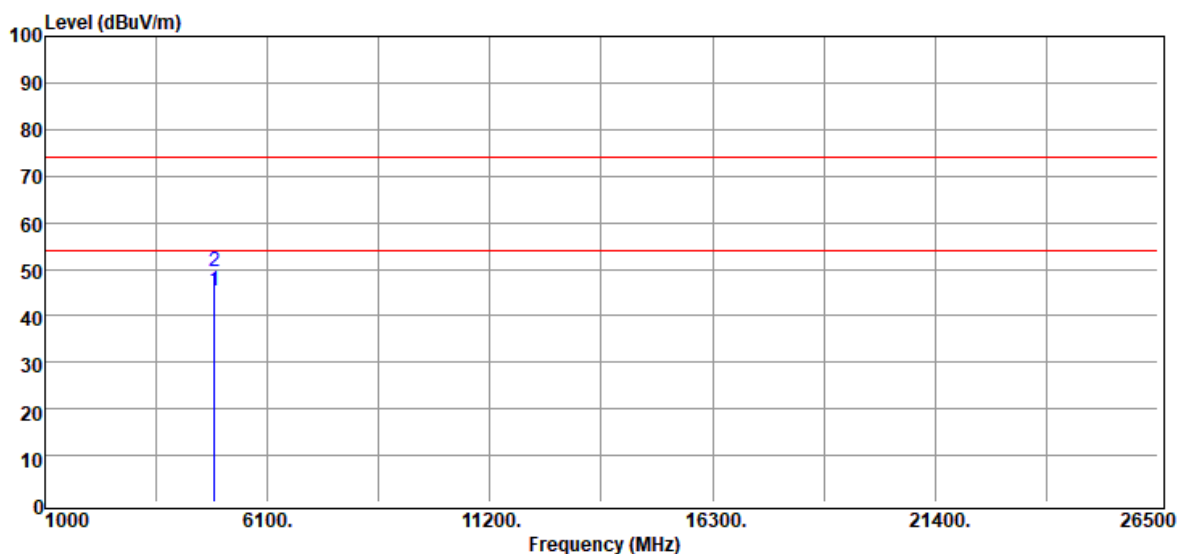
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Report Number :E2/2020/10011  
Operation Mode :BLE 1M  
Test Channel :2442 MHz  
Test Mode :TX CH MID  
EUT Pol :E2 Plan

Test Date :2020-01-14  
Temp./Humi. :21.1/60  
Antenna Pol. :VERTICAL  
Engineer :Kailin



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
Mode		Reading Level		FS	@3m	
MHz	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
4884.00	Average	45.63	-0.45	45.18	54.00	-8.82
4884.00	Peak	49.96	-0.45	49.51	74.00	-24.49

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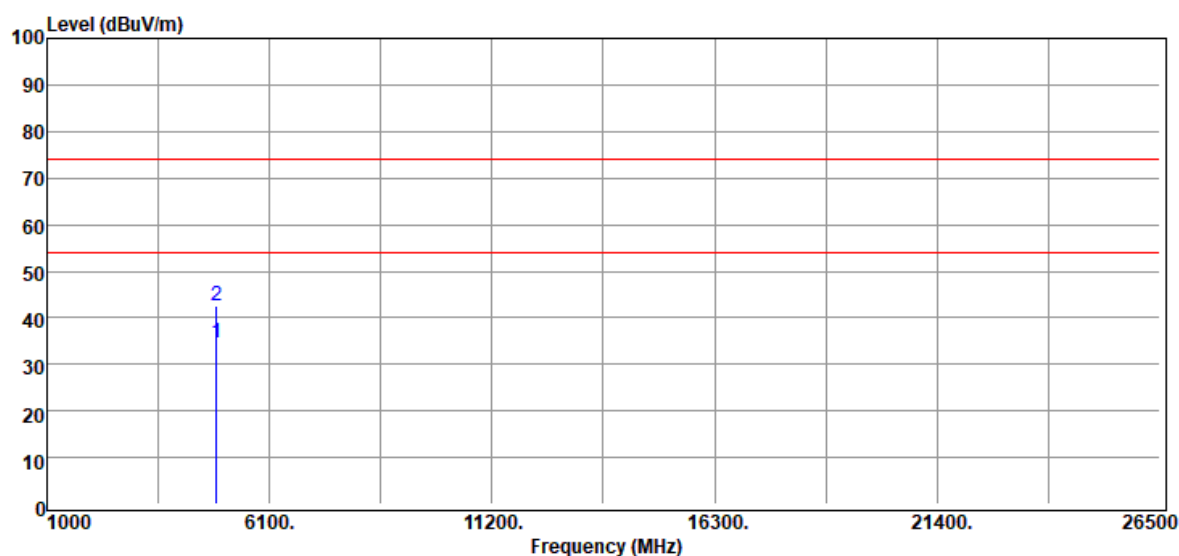
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Report Number :E2/2020/10011  
Operation Mode :BLE 1M  
Test Channel :2442 MHz  
Test Mode :TX CH MID  
EUT Pol :E2 Plan

Test Date :2020-01-14  
Temp./Humi. :21.1/60  
Antenna Pol. :HORIZONTAL  
Engineer :Kailin



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
Mode		Reading Level		FS	@3m	
MHz	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
4884.00	Average	34.96	-0.45	34.51	54.00	-19.49
4884.00	Peak	42.90	-0.45	42.45	74.00	-31.55

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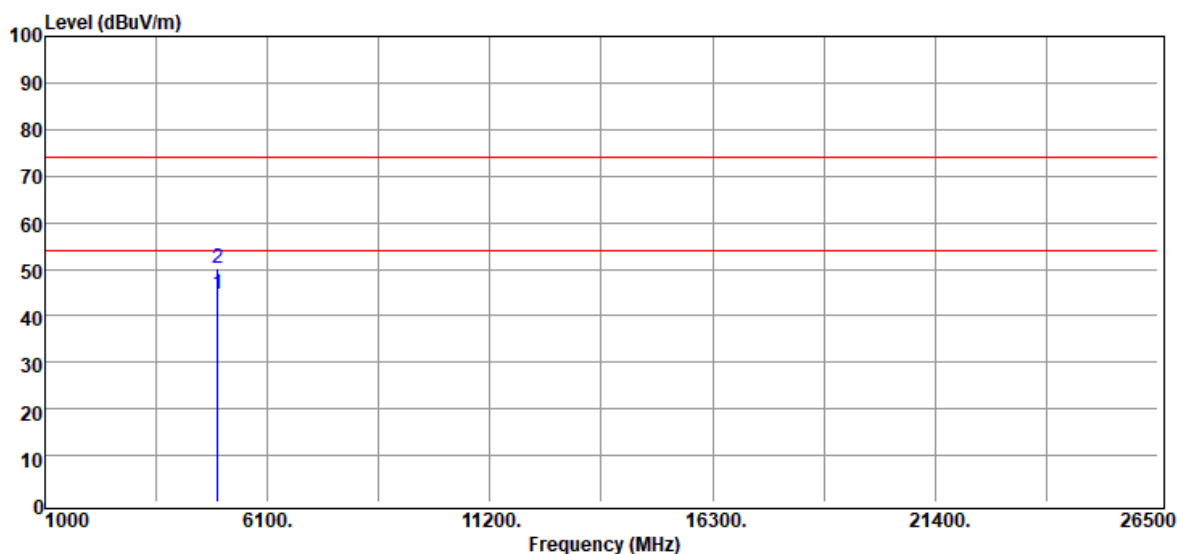
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Report Number :E2/2020/10011  
Operation Mode :BLE 1M  
Test Channel :2480 MHz  
Test Mode :TX CH HIGH  
EUT Pol :E2 Plan

Test Date :2020-01-14  
Temp./Humi. :21.1/60  
Antenna Pol. :VERTICAL  
Engineer :Kailin



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
Mode		Reading Level		FS	@3m	
MHz	PK/QP/AV	dBuV	dB	dBuV/m	dBuV/m	dB
4960.00	Average	45.33	-0.75	44.58	54.00	-9.42
4960.00	Peak	50.81	-0.75	50.06	74.00	-23.94

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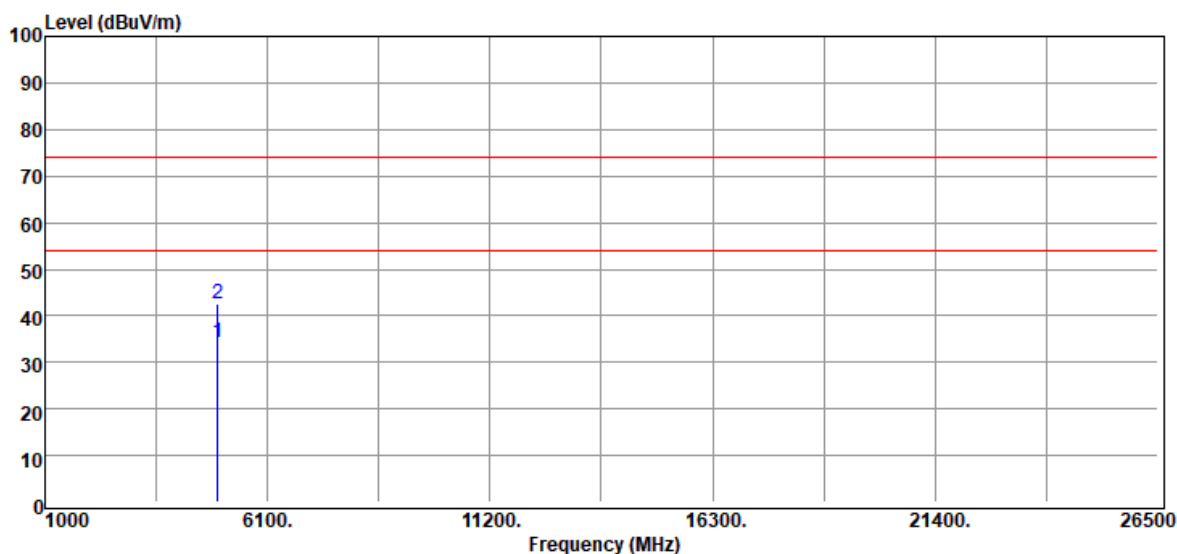
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Report Number :E2/2020/10011  
Operation Mode :BLE 1M  
Test Channel :2480 MHz  
Test Mode :TX CH HIGH  
EUT Pol :E2 Plan

Test Date :2020-01-14  
Temp./Humi. :21.1/60  
Antenna Pol. :HORIZONTAL  
Engineer :Kailin



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4960.00	Average	35.02	-0.75	34.27	54.00	-19.73
4960.00	Peak	43.22	-0.75	42.47	74.00	-31.53

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## 8 ANTENNA REQUIREMENT

### 8.1 Standard Applicable:

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device.

If the transmitting antenna is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi.

In case of point-to-point operation, the power shall be reduced by the one dB for every 3 dB that the directional gain of antenna exceeds 6dBi.

### 8.2 Antenna Connected Construction:

The antenna is designed as permanently attached and no consideration of replacement. Please see EUT photo for details.

*~ End of Report ~*

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