

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

OF

Applicant: Trek Bicycle Corporation
 801 West Madison Street, Waterloo, WI 53594, USA
Product Name: Transmitt MicroRemote
Brand Name: Bontrager
Marketing Name: Transmitt MicroRemote
Model No.: 563210
Model Difference: N/A
Report Number: E2/2019/70059
FCC ID: 2AHXD-563210
IC: 21334-563210
FCC Rule Part: Part 15.249
IC Rule Part: RSS-210 Issue 9 Nov. 2017
Issue Date: Oct. 01, 2019
Date of Test: Jul. 30, 2019 ~ Sep. 20, 2019
Date of EUT Received: Jul. 30, 2019

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: _____

Blue Yang
Blue Yang / Asst. Manager



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Revision History			
Revision	Description	Issue Date	Remark
Rev.00	Original.	Oct. 01, 2019	Revised by: Susan Lin

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1 GENERAL INFORMATION

1.1 Product Description

Product Name:	Transmitr MicroRemote	
Brand Name:	Bontrager	
Marketing Name:	Transmitr MicroRemote	
Model No.:	563210	
Model Difference:	N/A	
Product HW / SW Version:	0 / 1.0.0.0	
Radio HW / SW Version:	52 / 6.1.1	
Power Supply:	From Battery DC 3V	
	Battery:	Supplier: CHARIOT TECHNOLOGY CORP. Model: CR1632 DC 3V

Radio Technology:	2.4GHz Short Range Radio
Operation Frequency:	2457MHz
Channel number:	1 channel
Transmit Power	84.72dBuV/m (Peak)
Modulation Type:	GFSK

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1.2 Test Methodology of Applied Standards

FCC Part 15, Subpart C §15.249

ANSI C63.10:2013

RSS-Gen. issue 5 Apr. 2018

RSS-210 Issue 9 Nov. 2017

ANSI C63.10:2013

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

1.3 Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory (TAF code 0513)

FCC Designation number: TW0002

Canada Registration number: 4620E

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 30MHz. The CISPR Quasi-Peak and Average detector mode is employed according to §15.207. The two LISNs provide 50uH/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.

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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.

2.5 Limitation

(1) Conducted Emission

Conducted Emission Limits is as following.

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 – 0.5	66 - 56	56 - 46
0.5 – 5	56	46
5 - 30	60	50

(2) Radiated Emission

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following.

Frequency (MHz)	Field strength of Fundamental	Field strength of Harmonics	Distance (m)
902 – 928	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
2400 – 2483.5	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
5725 – 5875	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
24.0 – 24.25 GHz	250 mV/m (107.95dBuV/m)	2500 uV/m (67.95dBuV/m)	3

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(3) Radiated Emission

Emission Radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits as below, whichever is the lesser attenuation.

Frequency (MHz)	Field strength $\mu\text{V/m}$	Distance (m)	Field strength at 3m $\text{dB}\mu\text{V/m}$
1.705-30	30	30	69.54
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

(4) Radiated Emission

For frequencies above 1000MHz, the above field strength limits are based on average limits. 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.

- Re-mark:
1. Emission level in $\text{dB}\mu\text{V/m}=20 \log (\mu\text{V/m})$
 2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
 3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of § 15.205 and RSS-Gen § 8.10
 4. Emission spurious frequency which appearing within the Restricted Bands specified in provision of §15.205 and RSS-Gen § 8.10, then the general radiated emission limits in § 15.209 and RSS-Gen § 8.9 apply.

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2.6 Configuration of Tested System

Fig. 2-1 Radiated Emission & Conducted Configuration

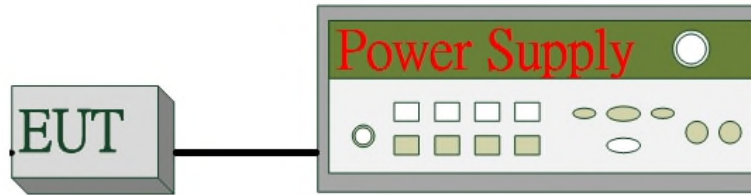


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1	2.4GHz Wireless Test Software	N/A	N/A	N/A	N/A	N/A
2	DC Power Supply	Agilent	E3640A	MY53140006	N/A	Unshielded

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3 SUMMARY OF TEST RESULTS

FCC Rules	ISED Rules	Description Of Test	Result
§15.207(a)	RSS-Gen §8.8	AC Power Line Conducted Emission	N/A
§15.249(a)(d)(e)	RSS-210 §B.10(a)(b) RSS-Gen § 8.9, RSS-Gen § 8.10	Radiated Emission	Compliant
§15.215(c)	RSS-Gen § 6.7	20Db & 99% bandwidth Measurement	Compliant
N/A	RSS-Gen § 8.11	Frequency stability	Compliant

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4 DESCRIPTION OF TEST MODES

4.1 Operated in 2457MHz Band

1 channel is provided.

Channel	Frequency
1	2457MHz

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.

RADIATED EMISSION TEST:

RADIATED EMISSION TEST (BELOW 1 GHz)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
ANT+	1	1	GFSK	1	Ch0
RADIATED EMISSION TEST (ABOVE 1 GHz)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
ANT+	1	1	GFSK	1	Ch0

Note:

The field strength of radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for ANT+ Transmitter for channel Low, Mid and High, the worst case E2 position was reported.

ANTENNA PORT CONDUCTED MEASUREMENT:

CONDUCTED TEST					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
ANT+	1	1	GFSK	1	Ch0

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5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
20dB & 99% Bandwidth	+/- 51.33 Hz
100 kHz Bandwidth Of Frequency Band Edges	+/- 0.84 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 CONDUCTED EMISSION TEST

6.1 Standard Applicable:

Frequency range within 150kHz to 30MHz shall not exceed the Limit table as below.

Frequency range MHz	Limits dB(uV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Note
 1.The lower limit shall apply at the transition frequencies
 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

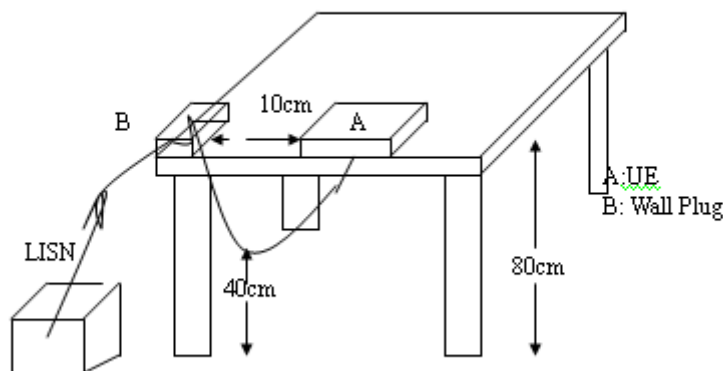
6.2 Measurement Equipment Used:

N/A

6.3 EUT Setup:

1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
2. The AC/DC Power adaptor of EUT was plug-in LISN. The EUT was placed flushed with the rear of the table.
3. The LISN was connected with 120Vac/60Hz power source.

6.4 Test SET-UP (Block Diagram of Configuration)



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6.5 Measurement Procedure:

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all phases of power being supplied by given UE are completed

6.6 Measurement Result:

N/A, Powered from DC 3V battery.

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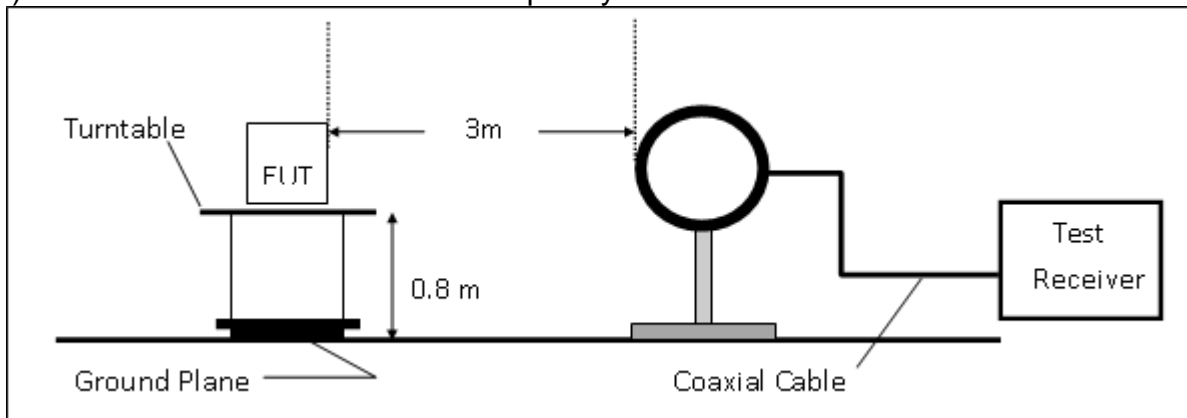
7 RADIATED EMISSION TEST

7.1 Measurement Procedure

1. The EUT was placed on a turn table with 0.8m for frequency < 1GHz and 1.5m for frequency > 1GHz above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

7.2 Test SET-UP (Block Diagram of Configuration)

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



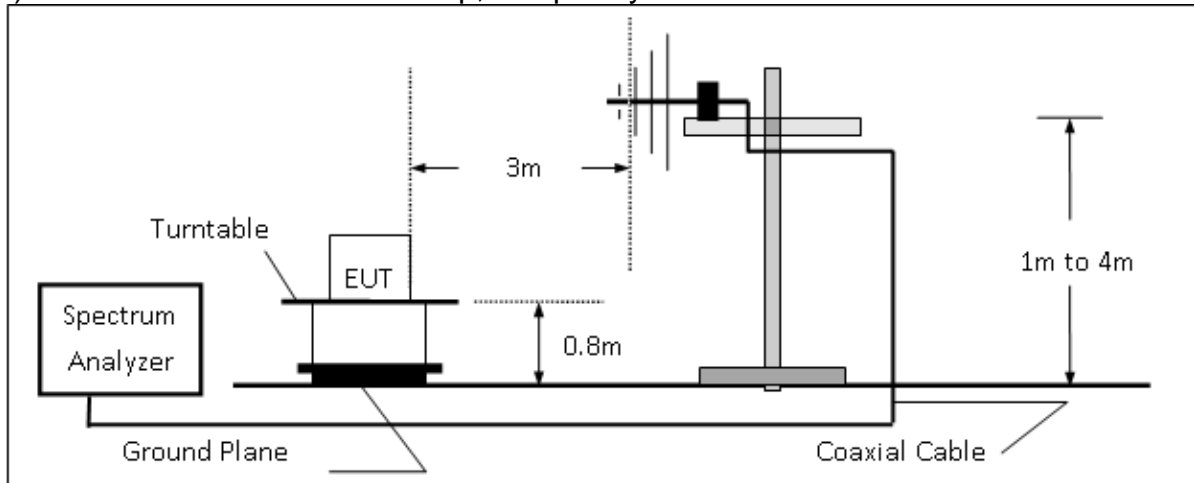
Note: There is a comparison data of both open-field test site and semi-Anechoic, and test result came out very similar.

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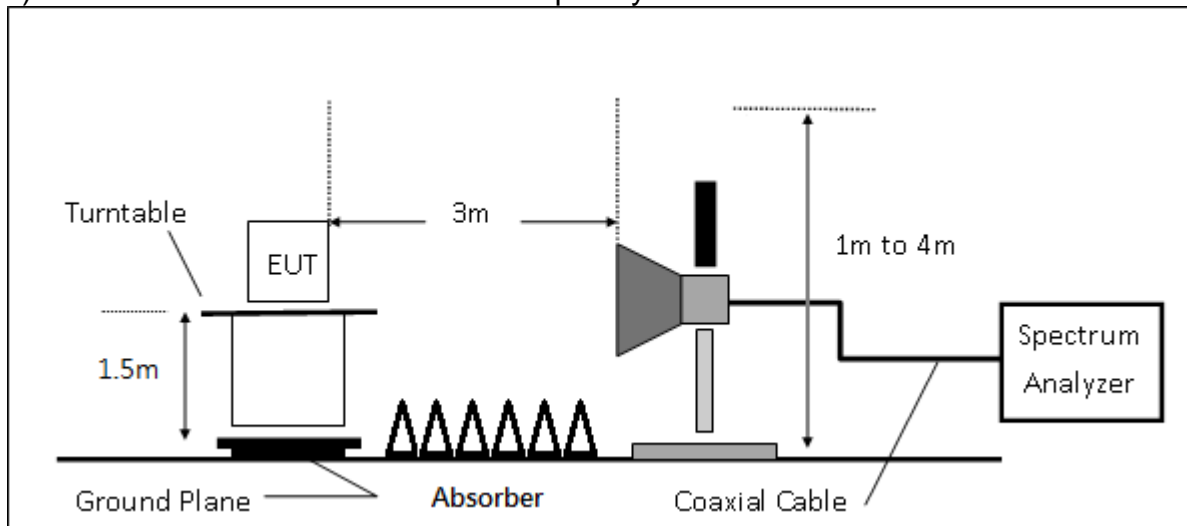
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(B) Radiated Emission Test Set-Up, Frequency form 30MHz to 1000MHz



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



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7.3 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Broadband Antenna	SCHWAZBECK	VULB 9168	9168-617	10/30/2018	10/29/2019
Horn Antenna	SCHWAZBECK	BBHA9170	184	12/27/2018	12/26/2019
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	R&S	FSV-40	10058	01/02/2019	01/01/2020
Pre-Amplifier	EMC Instruments	EMC184045B	980135	12/25/2018	12/24/2019
Pre-Amplifier	EMC Instruments	EMC9135	980234	12/25/2018	12/24/2019
Pre-Amplifier	EMC Instruments	EMC12630SE	980271	12/25/2018	12/24/2019
Attenuator	Woken	WATT-218FS-10	RF25	12/25/2018	12/24/2019
Highpass Filter	Micro Tronics	BRM50701-01	G008	12/25/2018	12/24/2019
High Pass Filter	Micro-Tronics	G003	RF99	12/25/2018	12/24/2019
Notch Filter	Woken	EWT-54-0037	RF54	12/25/2018	12/24/2019
Notch Filter	Woken	EWT-54-0038	RF55	12/25/2018	12/24/2019
Band Rejection Filter	Micro-Tronics	G015	RF100	12/25/2018	12/24/2019
Band Rejection Filter	Micro-Tronics	G016	RF101	12/25/2018	12/24/2019
Band Rejection Filter	Micro-Tronics	G021	RF102	12/25/2018	12/24/2019
Lowpass Filter	Woken	EWT-56-0019	RF46	12/25/2018	12/24/2019
Coaxial Cable	Huber Suhner	SUCOFLEX 104	MY17388/4	12/25/2018	12/24/2019
Coaxial Cable	Huber Suhner	RG 214/U	W22.03	12/25/2018	12/24/2019
Coaxial Cable	Huber Suhner	SUCOFLEX 104	MY17413/4	12/25/2018	12/24/2019

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7.4 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	

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

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

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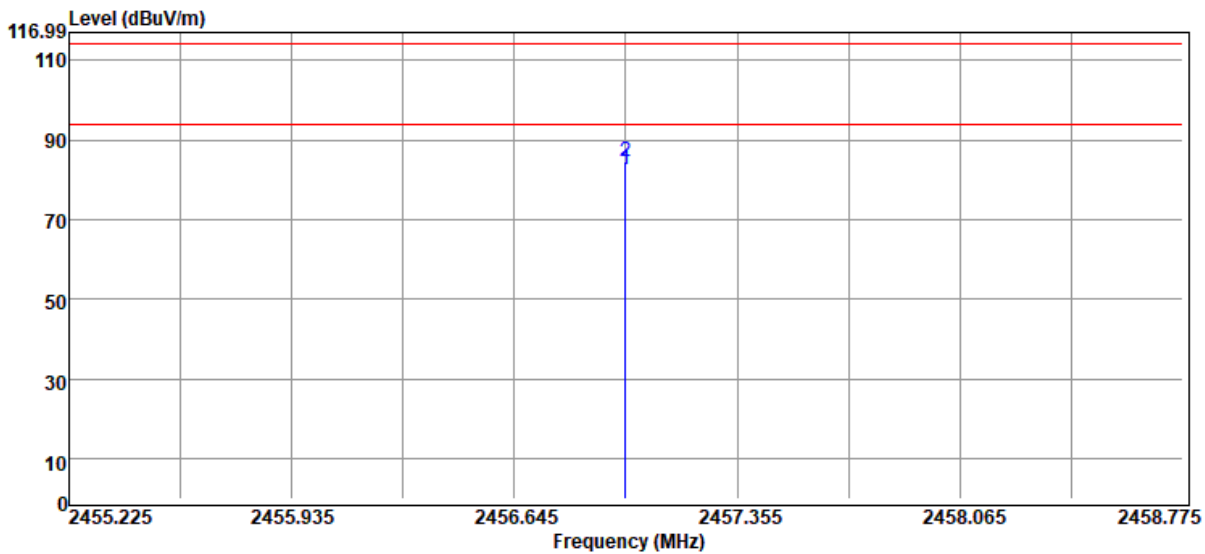
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7.5 Measurement Result

Radiated Spurious Emission Measurement Result (Main)

Report Number	:E2/2019/70059	Test Date	:2019-09-02
Operation Mode	:ANT+	Temp./Humi.	:24.3/59
Test Channel	:2457 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Main CH MID	Engineer	:Pony
EUT Pol	:E2 Plan		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
2457.00	Average	87.48	-5.09	82.39	94.00	-11.61
2457.00	Peak	89.75	-5.09	84.66	114.00	-29.34

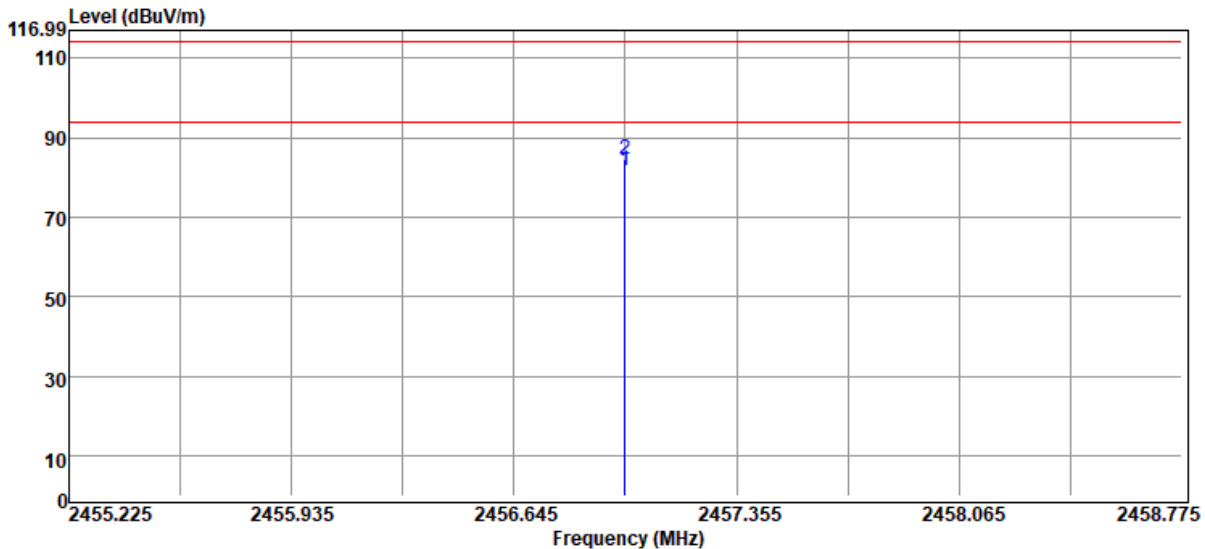
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Report Number :E2/2019/70059
 Operation Mode :ANT+
 Test Channel :2457 MHz
 Test Mode :Main CH MID
 EUT Pol :E2 Plan

Test Date :2019-09-02
 Temp./Humi. :24.3/59
 Antenna Pol. :HORIZONTAL
 Engineer :Pony



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
2457.00	Average	86.98	-5.09	81.89	94.00	-12.11
2457.00	Peak	89.81	-5.09	84.72	114.00	-29.28

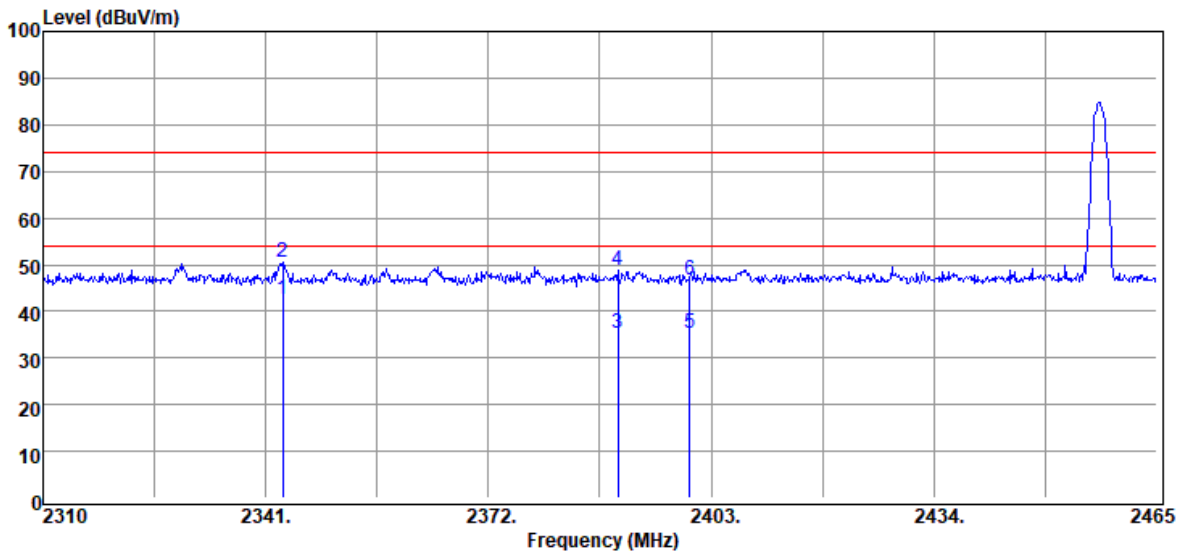
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Radiated Spurious Emission Measurement Result (Bandedge)

Report Number	:E2/2019/70059	Test Date	:2019-09-02
Operation Mode	:ANT+	Temp./Humi.	:24.3/59
Test Channel	:2457 MHz	Antenna Pol.	:VERTICAL
Test Mode	:BE CH LOW	Engineer	:Pony
EUT Pol	:E2 Plan		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2343.33	Average	48.04	-5.46	42.58	54.00	-11.42
2343.33	Peak	55.94	-5.46	50.48	74.00	-23.52
2390.00	Average	40.89	-5.50	35.39	54.00	-18.61
2390.00	Peak	54.37	-5.50	48.87	74.00	-25.13
2400.00	Average	40.72	-5.52	35.20	54.00	-18.80
2400.00	Peak	52.31	-5.52	46.79	74.00	-27.21

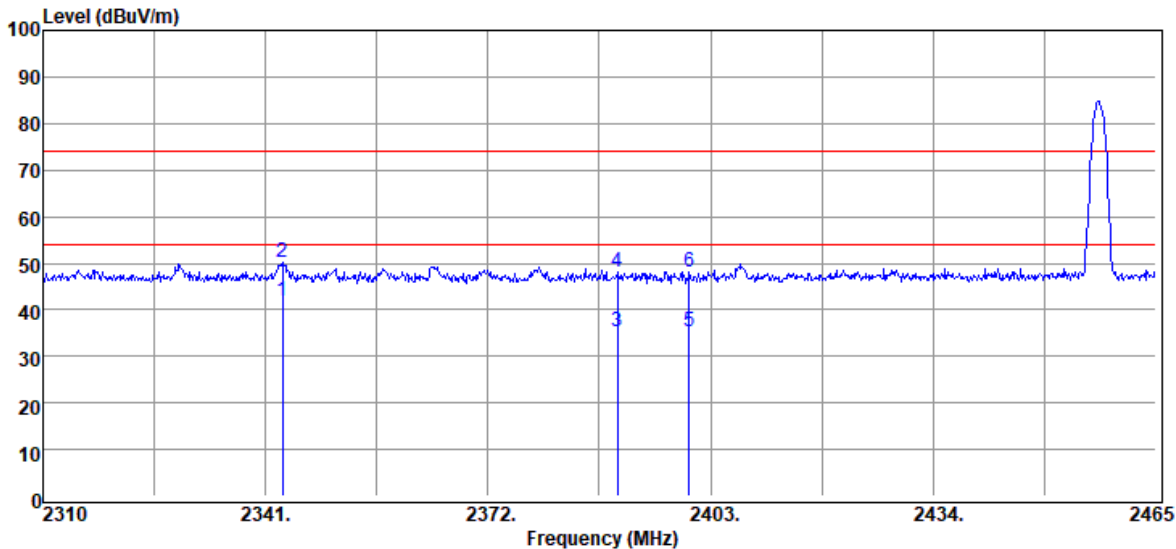
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Report Number :E2/2019/70059
 Operation Mode :ANT+
 Test Channel :2457 MHz
 Test Mode :BE CH LOW
 EUT Pol :E2 Plan

Test Date :2019-09-02
 Temp./Humi. :24.3/59
 Antenna Pol. :HORIZONTAL
 Engineer :Pony



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2343.33	Average	47.43	-5.46	41.97	54.00	-12.03
2343.33	Peak	55.57	-5.46	50.11	74.00	-23.89
2390.00	Average	40.91	-5.50	35.41	54.00	-18.59
2390.00	Peak	53.71	-5.50	48.21	74.00	-25.79
2400.00	Average	40.73	-5.52	35.21	54.00	-18.79
2400.00	Peak	53.53	-5.52	48.01	74.00	-25.99

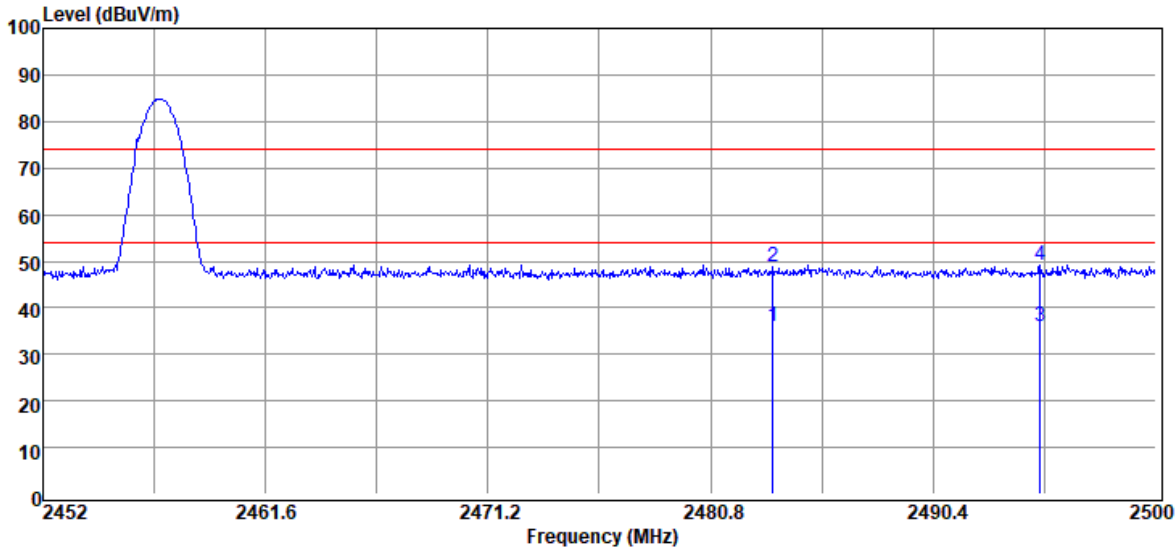
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Report Number :E2/2019/70059
 Operation Mode :ANT+
 Test Channel :2457 MHz
 Test Mode :BE CH HIGH
 EUT Pol :E2 Plan

Test Date :2019-09-02
 Temp./Humi. :24.3/59
 Antenna Pol. :HORIZONTAL
 Engineer :Pony



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2483.50	Average	40.84	-4.89	35.95	54.00	-18.05
2483.50	Peak	53.68	-4.89	48.79	74.00	-25.21
2495.01	Average	40.89	-4.80	36.09	54.00	-17.91
2495.01	Peak	54.02	-4.80	49.22	74.00	-24.78

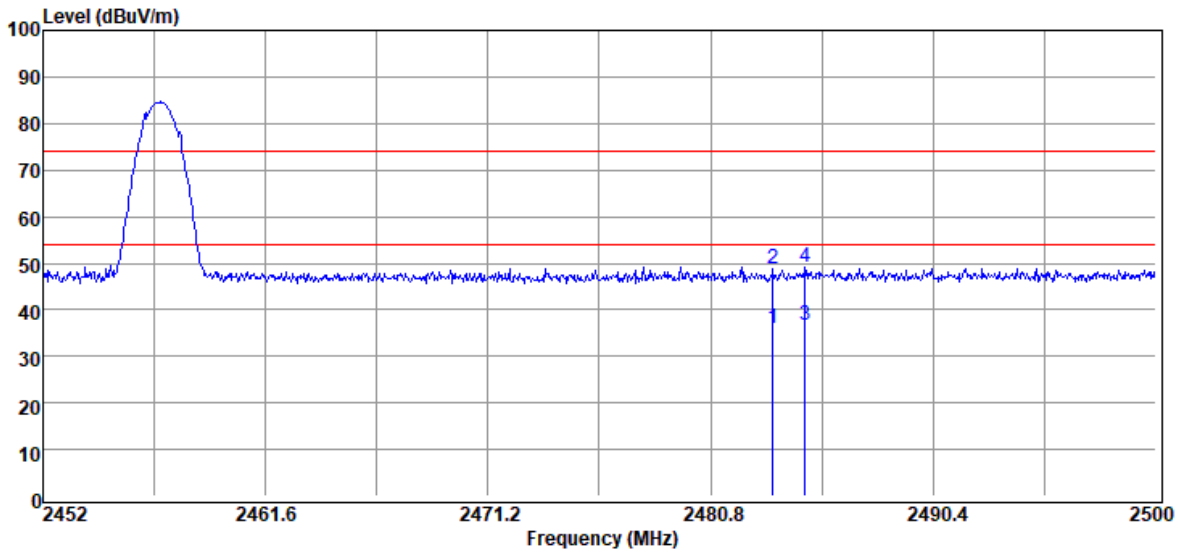
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Report Number :E2/2019/70059
 Operation Mode :ANT+
 Test Channel :2457 MHz
 Test Mode :BE CH HIGH
 EUT Pol :E2 Plan

Test Date :2019-09-02
 Temp./Humi. :24.3/59
 Antenna Pol. :VERTICAL
 Engineer :Pony



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
2483.50	Average	40.75	-4.89	35.86	54.00	-18.14
2483.50	Peak	53.53	-4.89	48.64	74.00	-25.36
2484.88	Average	41.64	-4.89	36.75	54.00	-17.25
2484.88	Peak	53.89	-4.89	49.00	74.00	-25.00

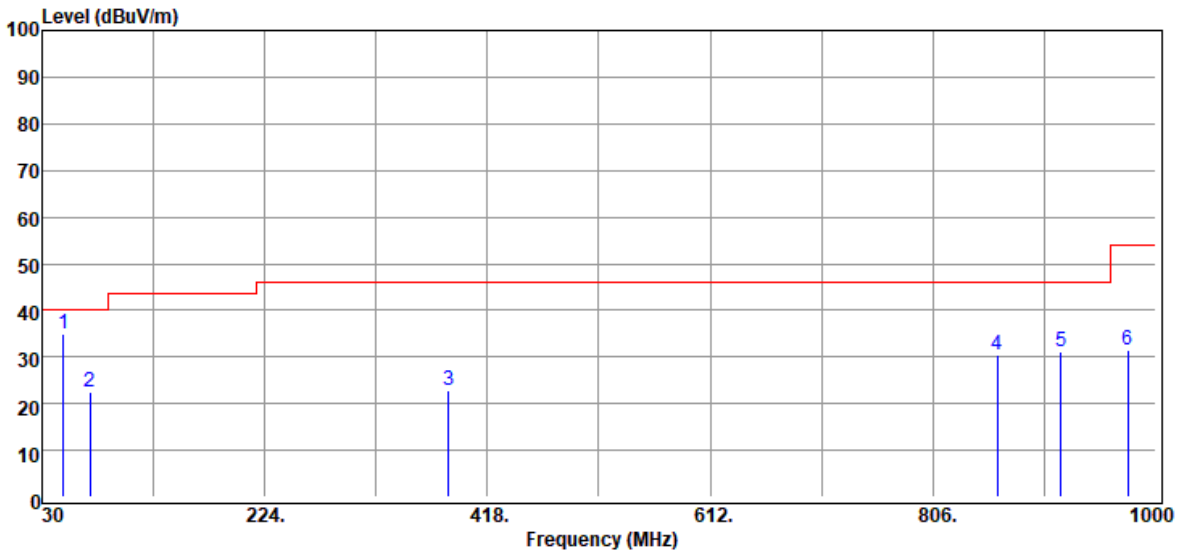
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Radiated Spurious Emission Measurement Result Below 1GHz

Report Number	:E2/2019/70059	Test Date	:2019-09-02
Operation Mode	:ANT+	Temp./Humi.	:24.3/59
Test Channel	:2457 MHz	Antenna Pol.	:VERTICAL
Test Mode	:TX CH MID	Engineer	:Pony
EUT Pol	:E2 Plan		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
48.43	Peak	51.63	-16.61	35.02	40.00	-4.98
71.71	Peak	42.03	-19.69	22.34	40.00	-17.66
384.05	Peak	35.90	-13.20	22.70	46.00	-23.30
862.26	Peak	35.55	-5.16	30.39	46.00	-15.61
917.55	Peak	35.30	-4.30	31.00	46.00	-15.00
975.75	Peak	34.63	-3.19	31.44	54.00	-22.56

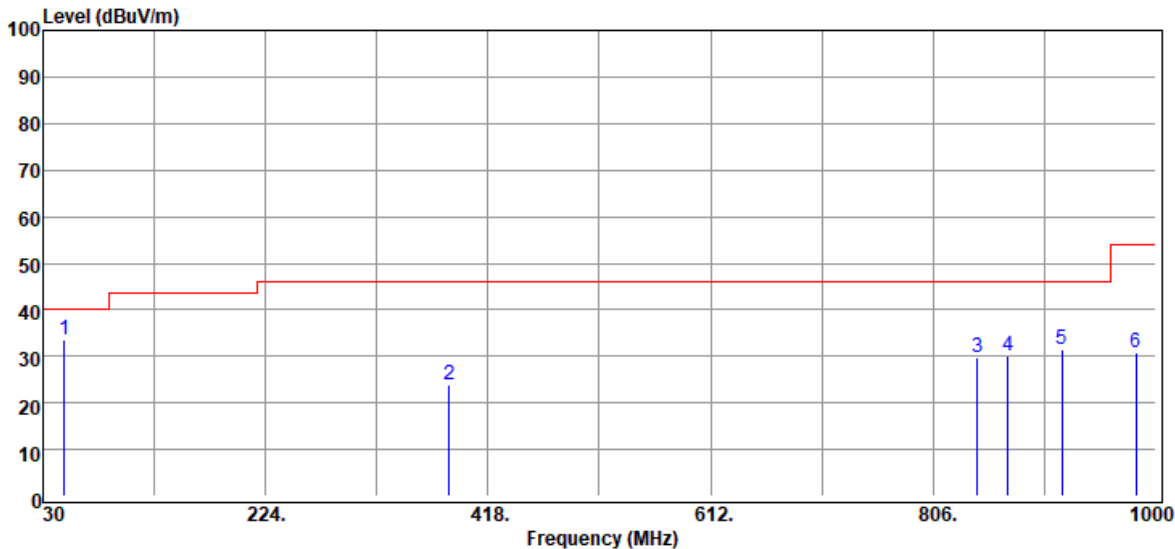
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Report Number :E2/2019/70059
 Operation Mode :ANT+
 Test Channel :2457 MHz
 Test Mode :TX CH MID
 EUT Pol :E2 Plan

Test Date :2019-09-02
 Temp./Humi. :24.3/59
 Antenna Pol. :HORIZONTAL
 Engineer :Pony



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
48.43	Peak	50.26	-16.61	33.65	40.00	-6.35
384.05	Peak	37.13	-13.20	23.93	46.00	-22.07
844.80	Peak	35.60	-5.91	29.69	46.00	-16.31
870.99	Peak	34.87	-4.75	30.12	46.00	-15.88
918.52	Peak	35.81	-4.28	31.53	46.00	-14.47
982.54	Peak	34.20	-3.34	30.86	54.00	-23.14

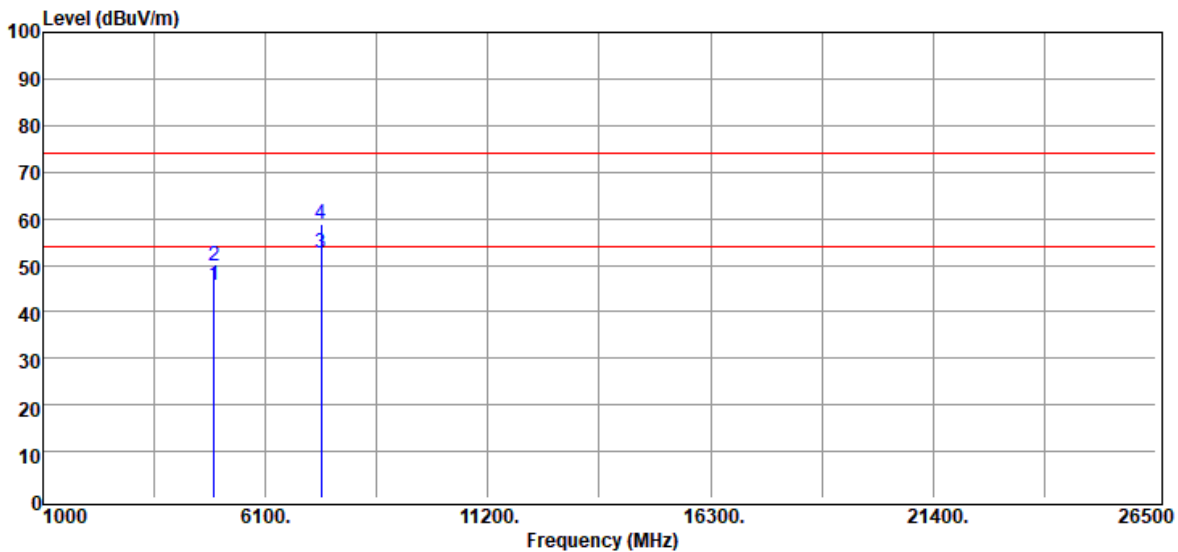
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Above 1GHz

Report Number	:E2/2019/70059	Test Date	:2019-09-02
Operation Mode	:ANT+	Temp./Humi.	:24.3/59
Test Channel	:2457 MHz	Antenna Pol.	:VERTICAL
Test Mode	:TX CH MID	Engineer	:Pony
EUT Pol	:E2 Plan		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
4914.00	Average	44.79	0.83	45.62	54.00	-8.38
4914.00	Peak	48.96	0.83	49.79	74.00	-24.21
7371.00	Average	45.46	6.99	52.45	54.00	-1.55
7371.00	Peak	51.75	6.99	58.74	74.00	-15.26

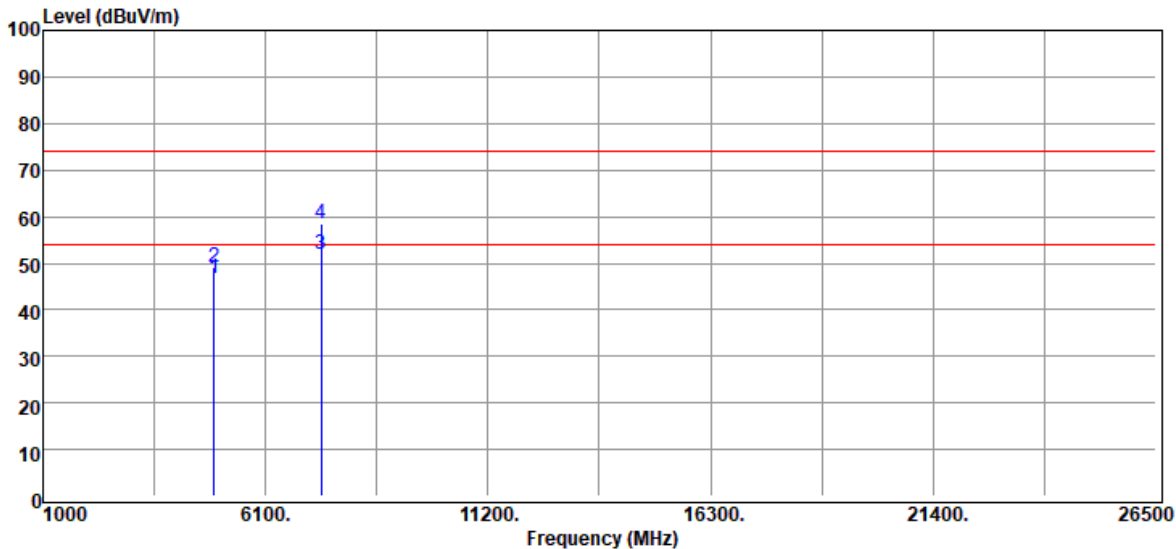
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Report Number :E2/2019/70059
 Operation Mode :ANT+
 Test Channel :2457 MHz
 Test Mode :TX CH MID
 EUT Pol :E2 Plan

Test Date :2019-09-02
 Temp./Humi. :24.3/59
 Antenna Pol. :HORIZONTAL
 Engineer :Pony



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
4914.00	Average	45.95	0.83	46.78	54.00	-7.22
4914.00	Peak	48.26	0.83	49.09	74.00	-24.91
7371.00	Average	45.02	6.99	52.01	54.00	-1.99
7371.00	Peak	51.48	6.99	58.47	74.00	-15.53

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8 20 DB & 99% BANDWIDTH MEASUREMENT

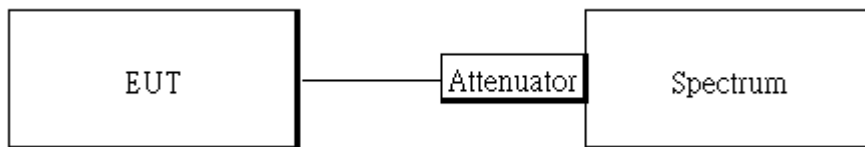
8.1 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. **For 20dB BW measurement:**
Set SPA Center Frequency = fundamental frequency, RBW = 100kHz, VBW = 300kHz, Span = 5MHz and Set SPA Max hold. Mark peak, -20dB.

For 99% BW measurement:

Set the spectrum analyzer as RBW=1% of the approximate emission bandwidth, VBW = 3 times RBW, Span= approximately 20dB below the peak level. Sweep=auto
Turn on the 99% bandwidth function, max reading.

8.2 Test SET-UP (Block Diagram of Configuration)



8.3 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	N9010A	MY57120200	03/06/2019	03/05/2020
DC Power Supply	Agilent	E3640A	MY53140006	05/31/2019	05/30/2020
DC Block	PASTERNAK	PE8210	RF81	12/25/2018	12/24/2019

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No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司

t (886-2) 2299-3279

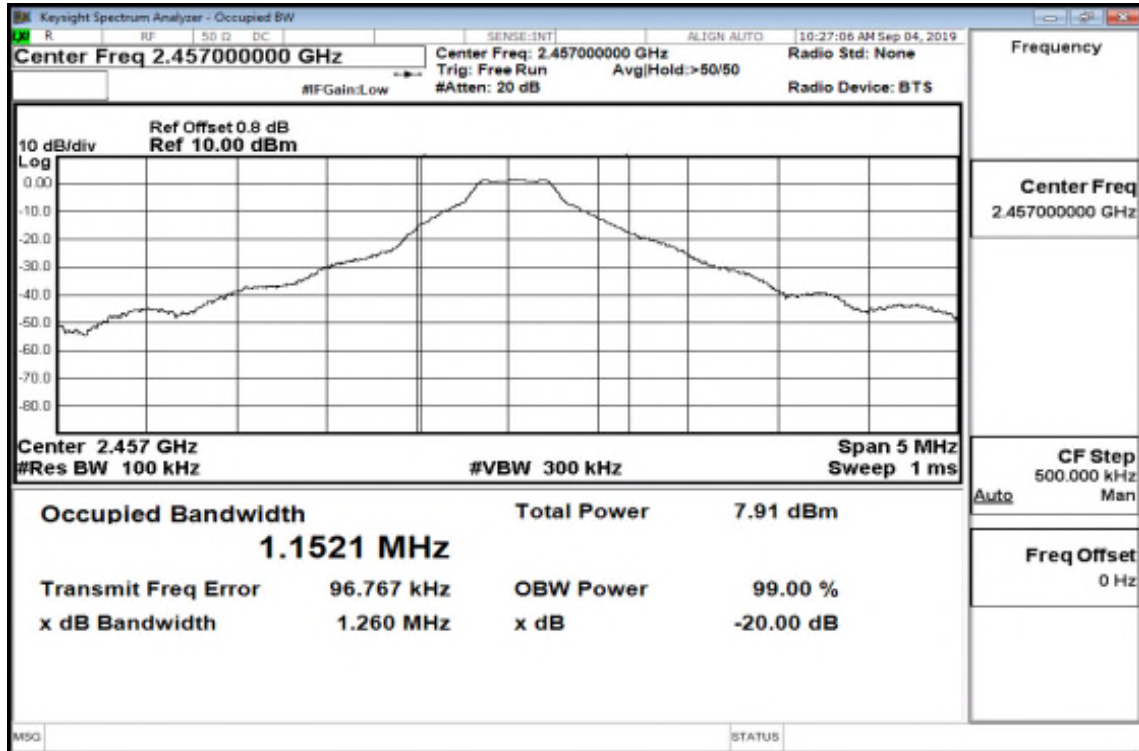
f (886-2) 2298-0488

www.tw.sgs.com

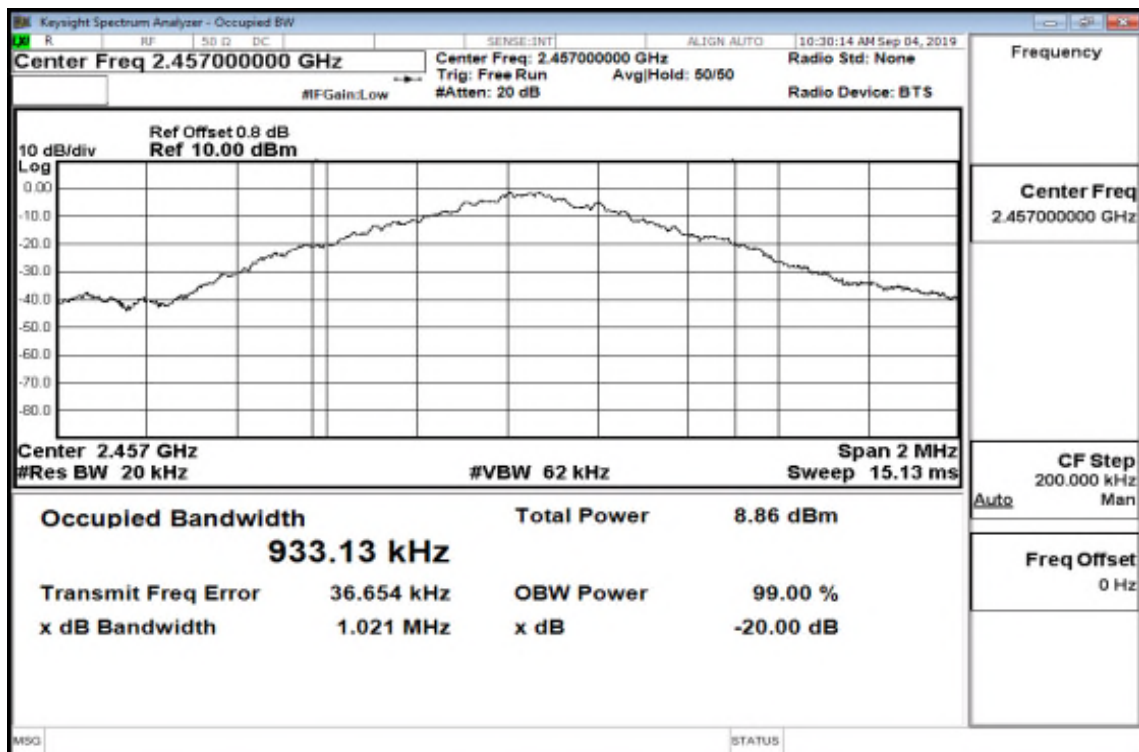
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8.4 Measurement Results:

2457MHz
OBW 20dB



OBW 99%



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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.

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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