

FCC Radio Test Report

FCC ID: 2AWVKH11BTGRC

Report No. : BTL-FCCP-1-2007T121
Equipment : Wireless Trackball Receiver
Model Name : TS-H11BTG-RC
Brand Name : Tesoro
Applicant : Tesoro Technology USA Inc.
Address : 142N Milpitas Blvd #328 Milpitas, CA, 95035, USA

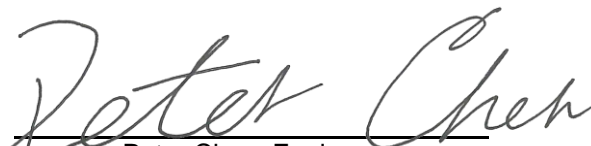
Radio Function : Short Range Devices

FCC Rule Part(s) : FCC Part15, Subpart C (15.249)
Measurement Procedure(s) : ANSI C63.10-2013

Date of Receipt : 2020/7/24
Date of Test : 2020/7/24 ~ 2020/8/18
Issued Date : 2020/9/11


The above equipment has been tested and found in compliance with the requirement of the above standards by BTL Inc.

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Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

The report must not be used by the client to claim product certification, approval, or endorsement by NIST, A2LA, or any agency of the U.S. Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

BTL's laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

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REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	2020/9/8
R01	Revised report to address TCB's comments.	2020/9/11

1 SUMMARY OF TEST RESULTS

Test procedures according to the technical standards.

FCC Part 15, Subpart C (15.249)				
Standard(s) Section	Description	Test Result	Judgement	Remark
15.207	AC Power Line Conducted Emissions	APPENDIX A	Pass	-----
15.205 15.209 15.249(a)(d)	Radiated Emissions	APPENDIX B APPENDIX C	Pass	-----
15.215(c)	Bandwidth	APPENDIX D	Pass	-----

NOTE:

- (1) "N/A" denotes test is not applicable in this Test Report.
- (2) The report format version is TP.1.1.1.

1.1 TEST FACILITY

The test facilities used to collect the test data in this report:

No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

The test sites and facilities are covered under FCC RN: 674415 and DN: TW0659.

☐ C05 ☐ CB08 ☐ CB11 ☐ CB15 ☐ CB16
☐ SR06

No.18, Ln. 171, Sec. 2, Jiuzong Rd., Neihu Dist., Taipei City 114, Taiwan

The test sites and facilities are covered under FCC RN: 270329 and DN: TW0030.

☒ C03 ☒ CB18 ☐ CB19 ☒ SR06

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k = 2$, providing a level of confidence of approximately **95 %**. The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2 U_{CISPR} requirement.

A. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U (dB)
C03	CISPR	150 kHz ~ 30 MHz	2.30

B. Radiated emissions test :

Test Site	Measurement Frequency Range	U,(dB)
CB18	0.03 GHz ~ 0.2 GHz	4.17
	0.2 GHz ~ 1 GHz	4.72
	1 GHz ~ 6 GHz	5.21
	6 GHz ~ 18 GHz	5.51
	18 GHz ~ 26 GHz	3.69
	26 GHz ~ 40 GHz	4.23

C. Conducted test :

Test Item	U,(dB)
Bandwidth	1.13

NOTE:

Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

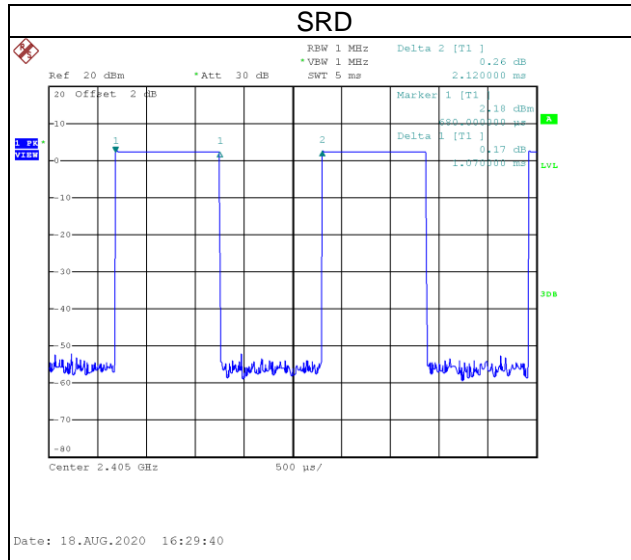
1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Environment Condition	Test Voltage	Tested by
AC Power Line Conducted Emissions	24 °C, 57 %	AC 120V	William Wei
Radiated emissions below 1 GHz	Refer to data	DC 5V	Aven Ho
Radiated emissions above 1 GHz	Refer to data	DC 5V	Aven Ho
Bandwidth	25.2 °C, 54 %	DC 5V	William Wei

1.4 DUTY CYCLE

If duty cycle is $\geq 98\%$, duty factor is not required.

If duty cycle is $< 98\%$, duty factor shall be considered.



Remark	Delta 1			Delta 2	On Time/Period
Mode	ON (ms)	Numbers (ON)	On Time (B) (ms)	Period (ON+OFF) (ms)	Duty Cycle (%)
SRD	1.070	1	1.070	2.120	50.47%

2 GENERAL INFORMATION

2.1 DESCRIPTION OF EUT

Equipment	Wireless Trackball Receiver
Model Name	TS-H11BTG-RC
Brand Name	Tesoro
Model Difference	N/A
Power Source	DC voltage supplied from host system.
Power Rating	DC 5V
Products Covered	N/A
S/N No	BJ0700001
Frequency Range	2400 MHz ~ 2483.5 MHz
Operation Frequency	2405 MHz ~ 2470 MHz
Modulation Technology	GFSK
Transfer Rate	2Mbps
Field Strength	70.96dBuV/m
Test Model	TS-H11BTG-RC
Sample Status	Engineering Sample
EUT Modification(s)	N/A

NOTE:

(1) For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

(2) Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2405	01	2413
02	2422	03	2430
04	2440	05	2450
06	2460	07	2470

(3) Table for Filed Antenna:

Ant.	Brand	Test Model	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	PCB	N/A	-9.14

2.2 TEST MODES

Test Items	Test mode	Channel	Note
AC power line conducted emissions	Normal/Idle	-	-
Transmitter Radiated Emissions (below 1GHz)	SRD	07	-
Transmitter Radiated Emissions (above 1GHz)	SRD	00/03/07	Fundamental
	SRD	00/03/07	Harmonic
Bandwidth	SRD	00/03/07	-

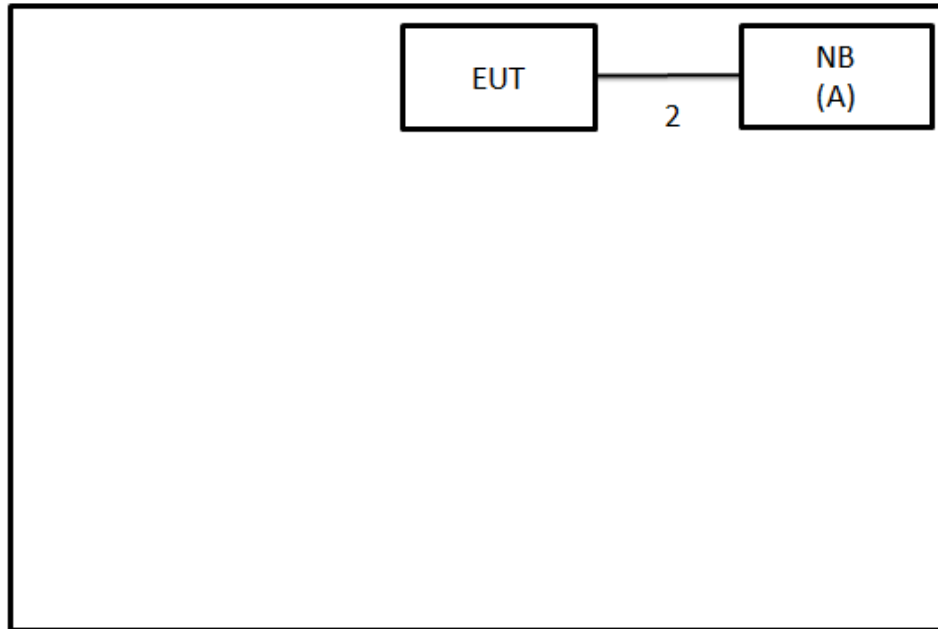
NOTE:

- (1) The Radiated emissions test was verified based on the worst conducted power and Bandwidth test results reported in the original report.
- (2) For radiated emission fundamental test, both Vertical and Horizontal are evaluated, but only the worst case (Horizontal) is recorded.
- (3) All X, Y and Z axes are evaluated, but only the worst case (X axis) is recorded.
- (4) There were no emissions found below 30 MHz within 20 dB of the limit.

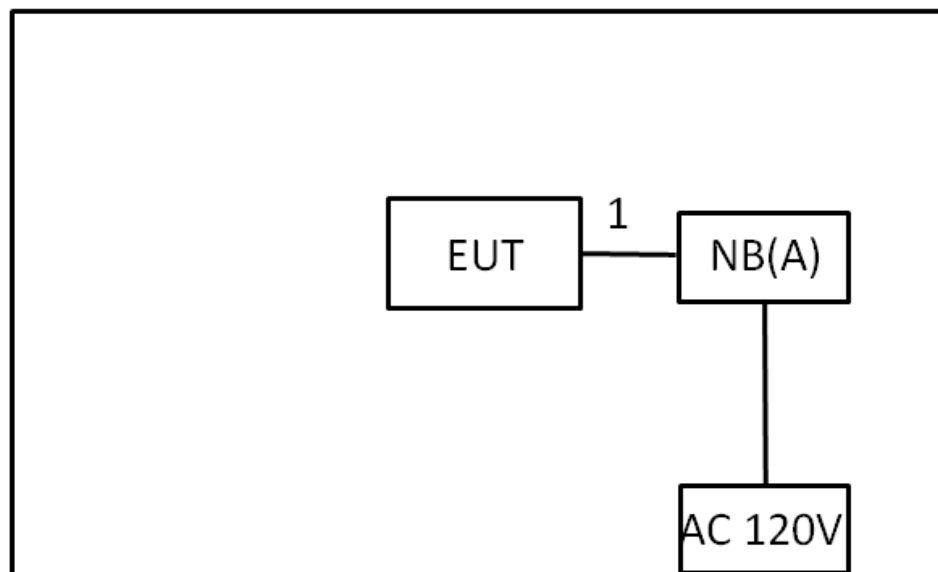
2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Equipment letters and Cable numbers refer to item numbers described in the tables of clause 2.4.

AC power line conducted emissions



Radiated Emissions



2.4 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.	Remarks
A	NB	HP	TPN-I119	N/A	Furnished by test lab.

Item	Shielded	Ferrite Core	Length	Cable Type	Remarks
1	NO	NO	1.5m	usb extension cable	Furnished by test lab.
2	NO	NO	1m	usb extension cable	Furnished by test lab.

3 AC POWER LINE CONDUCTED EMISSIONS TEST

3.1 LIMIT

Frequency (MHz)	Limit (dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56 *	56 - 46 *
0.50 - 5.0	56	46
5.0 - 30.0	60	50

NOTE:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.
- (3) The test result calculated as following:
 Measurement Value = Reading Level + Correct Factor
 Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor (if use)
 Margin Level = Measurement Value – Limit Value
 Calculation example:

Reading Level		Correct Factor		Measurement Value
38.22	+	3.45	=	41.67

Measurement Value		Limit Value		Margin Level
41.67	-	60	=	-18.33

The following table is the setting of the receiver.

Receiver Parameter	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 KHz

3.2 TEST PROCEDURE

- a. The EUT was placed 0.8 m above the horizontal ground plane with the EUT being connected to the power mains through a line impedance stabilization network (LISN).
 All other support equipment were powered from an additional LISN(s).
 The LISN provides 50 Ohm/50uH of impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle to keep the cable above 40 cm.
- c. Excess I/O cables that are not connected to a peripheral shall be bundled in the center.
 The end of the cable will be terminated, using the correct terminating impedance.
 The overall length shall not exceed 1 m.
- d. The LISN is spaced at least 80 cm from the nearest part of the EUT chassis.
- e. For the actual test configuration, please refer to the related Item – EUT TEST PHOTO.

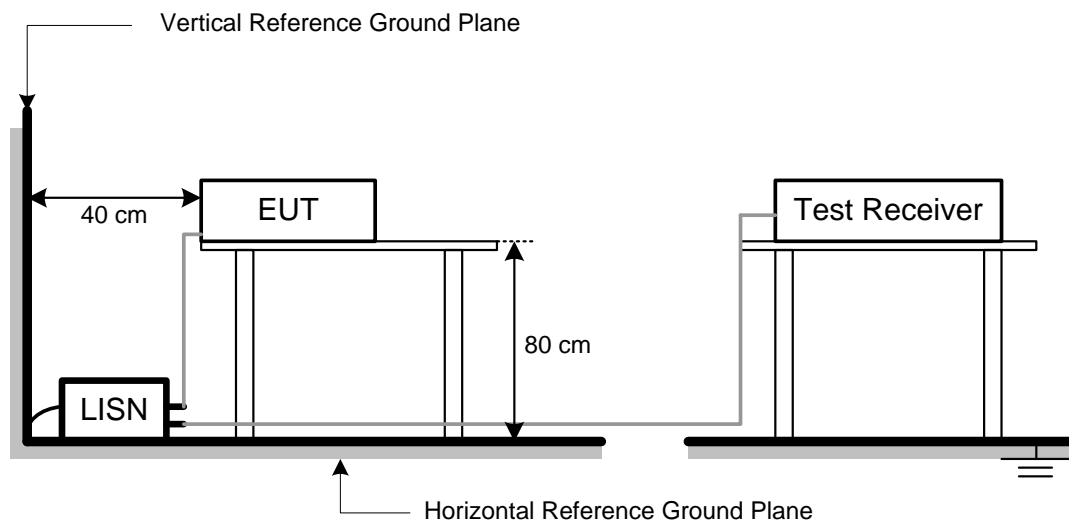
NOTE:

- (1) In the results, each reading is marked as Peak, QP or AVG per the detector used.
 BW=9 kHz (6 dB Bandwidth)
- (2) All readings are Peak unless otherwise stated QP or AVG in column of Note. Both the QP and the AVG readings must be less than the limit for compliance.

3.3 DEVIATION FROM TEST STANDARD

No deviation.

3.4 TEST SETUP



3.5 TEST RESULT

Please refer to the APPENDIX A.

4 RADIATED EMISSIONS TEST

4.1 LIMIT

In case the emission fall within the restricted band specified on 15.205, then the 15.209 limit in the table below has to be followed.

LIMITS OF RADIATED EMISSIONS MEASUREMENT (9 kHz to 1000 MHz)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

LIMITS OF RADIATED EMISSIONS MEASUREMENT (Above 1000 MHz)

Frequency (MHz)	Radiated Emissions (dBuV/m)		Measurement Distance (meters)
	Peak	Average	
Above 1000	74	54	3

NOTE:

- (1) The limit for radiated test was performed according to FCC Part 15, Subpart C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).
- (4) The test result calculated as following:
 Measurement Value = Reading Level + Correct Factor
 Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)
 Margin Level = Measurement Value - Limit Value
 Calculation example:

Reading Level		Correct Factor		Measurement Value
19.11	+	2.11	=	21.22

Measurement Value		Limit Value		Margin Level
21.22	-	54	=	-32.78

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average

Spectrum Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9KHz~90KHz for PK/AVG detector
Start ~ Stop Frequency	90KHz~110KHz for QP detector
Start ~ Stop Frequency	110KHz~490KHz for PK/AVG detector
Start ~ Stop Frequency	490KHz~30MHz for QP detector
Start ~ Stop Frequency	30MHz~1000MHz for QP detector

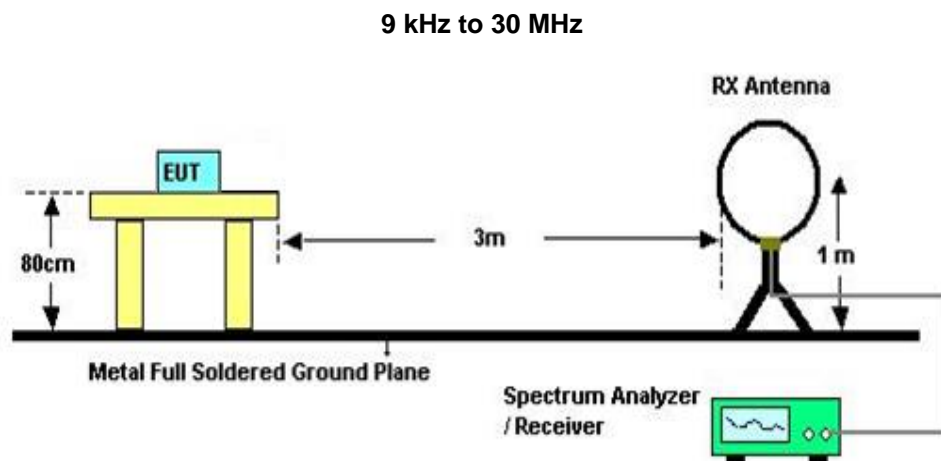
4.2 TEST PROCEDURE

- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
- The height of the equipment or of the substitution antenna shall be 0.8 m or 1.5 m, the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.
- The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform. (below 1GHz)
- All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform. (above 1GHz)
- For the actual test configuration, please refer to the related Item – EUT TEST PHOTO.

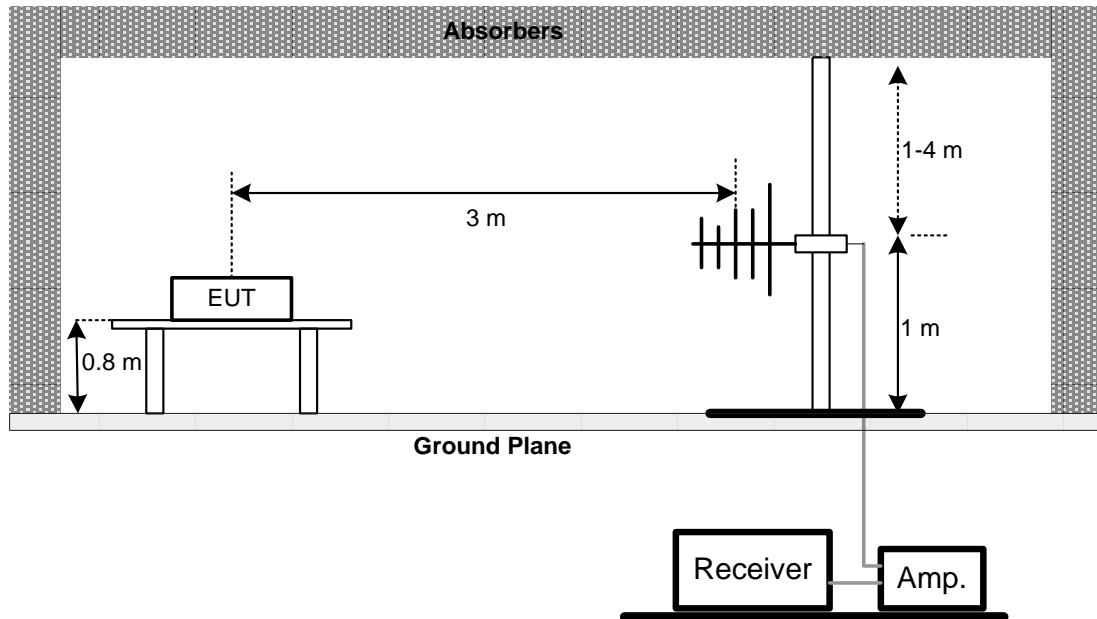
4.3 DEVIATION FROM TEST STANDARD

No deviation.

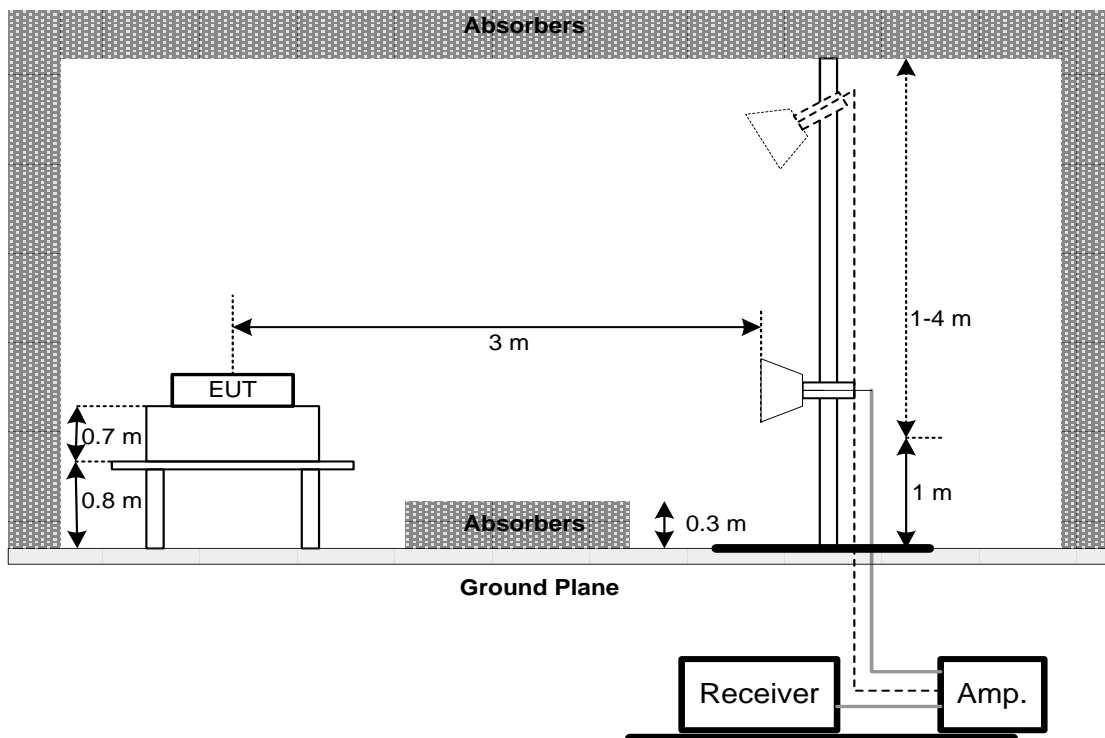
4.4 TEST SETUP



30 MHz to 1 GHz



Above 1 GHz



4.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.6 TEST RESULT – 30 MHZ TO 1 GHZ

Please refer to the APPENDIX B.

4.7 TEST RESULT – ABOVE 1 GHZ

Please refer to the APPENDIX C.

NOTE:

- (1) No limit: This is fundamental signal, the judgment is not applicable.
For fundamental signal judgment was referred to Peak output test.

5 BANDWIDTH TEST

5.1 APPLIED PROCEDURES / LIMIT

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. In the case of intentional radiators operating under the provisions of subpart E, the emission bandwidth may span across multiple contiguous frequency bands identified in that subpart. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

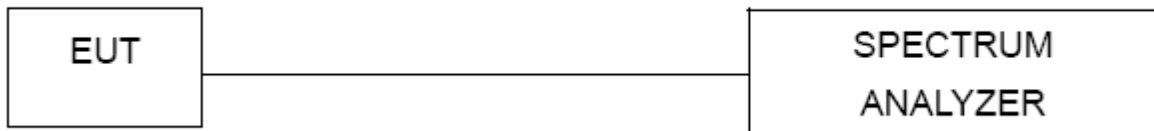
5.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting : RBW= 100KHz, VBW=300KHz, Sweep time = 2.5 ms.

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



5.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

5.6 TEST RESULTS

Please refer to the APPENDIX D.

6 LIST OF MEASURING EQUIPMENTS

AC Power Line Conducted Emissions						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	TWO-LINE V-NETWORK	R&S	ENV216	101050	2020/6/11	2021/6/10
2	Test Cable	EMCI	EMC400-BM-BM-5000	170501	2020/6/8	2021/6/7
3	EMI Test Receiver	R&S	ESR7	101433	2019/12/13	2020/12/12
4	Measurement Software	EZ	EZ EMC (Version NB-03A1-01)	N/A	N/A	N/A

Radiated Emissions						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Preamplifier	EMCI	EMC001340	980555	2020/4/10	2021/4/9
2	Preamplifier	EMCI	EMC02325B	980217	2020/4/10	2021/4/9
3	Preamplifier	EMCI	EMC012645B	980267	2020/4/10	2021/4/9
4	Test Cable	EMCI	EMC104-SM-SM-800	150207	2020/4/10	2021/4/9
5	Test Cable	EMCI	EMC104-SM-SM-3000	151205	2020/4/10	2021/4/9
6	Test Cable	EMCI	EMC-SM-SM-7000	180408	2020/4/10	2021/4/9
7	MXE EMI Receiver	Agilent	N9038A	MY554200087	2020/6/10	2021/6/9
8	Signal Analyzer	Agilent	N9010A	MY56480554	2020/6/4	2021/6/3
9	Horn Ant	SCHWARZBECK	BBHA 9120D	9120D-1342	2020/6/12	2021/6/11
10	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	0992	2020/7/10	2021/7/9
11	5dB Attenuator	EMCI	EMCI-N-6-05	AT-N0508	2020/7/10	2021/7/9

Bandwidth						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Spectrum Analyzer	R&S	FSP 40	100129	2020/6/15	2021/6/14

Remark: "N/A" denotes no model name, no serial no. or no calibration specified.
All calibration period of equipment list is one year.

7 EUT TEST PHOTO

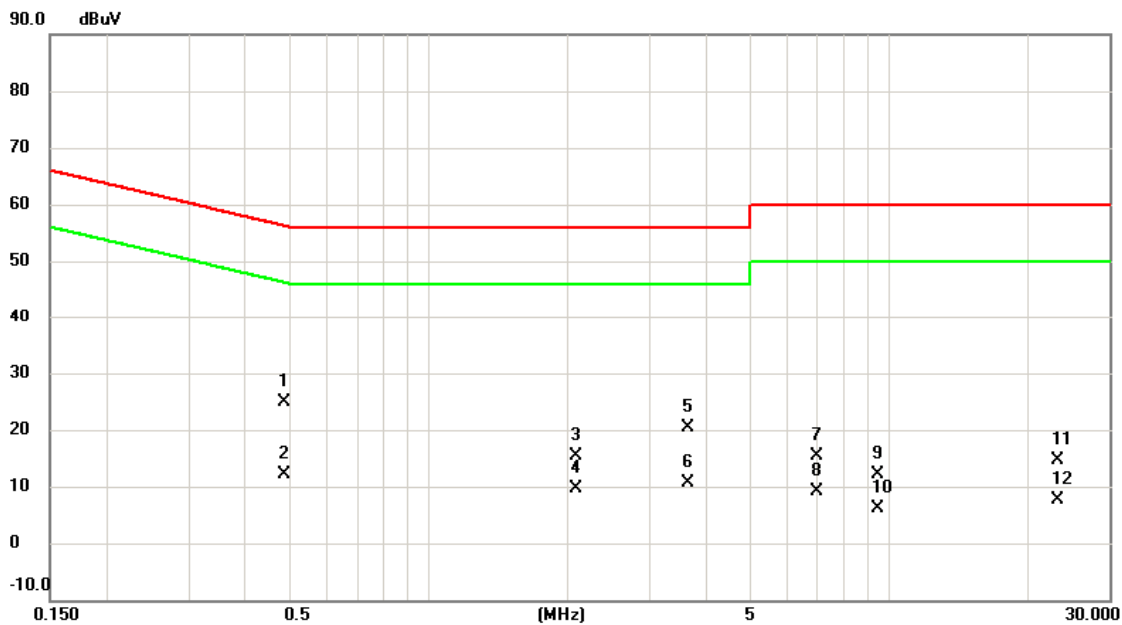
Please refer to document Appendix No.: TP-2007T121-FCCP-1 (APPENDIX-TEST PHOTOS).

8 EUT PHOTOS

Please refer to document Appendix No.: EP-2007T121-1 (APPENDIX-EUT PHOTOS).

APPENDIX A AC POWER LINE CONDUCTED EMISSIONS

Test Mode	Normal	Tested Date	2020/8/18
Test Frequency	-	Phase	Line

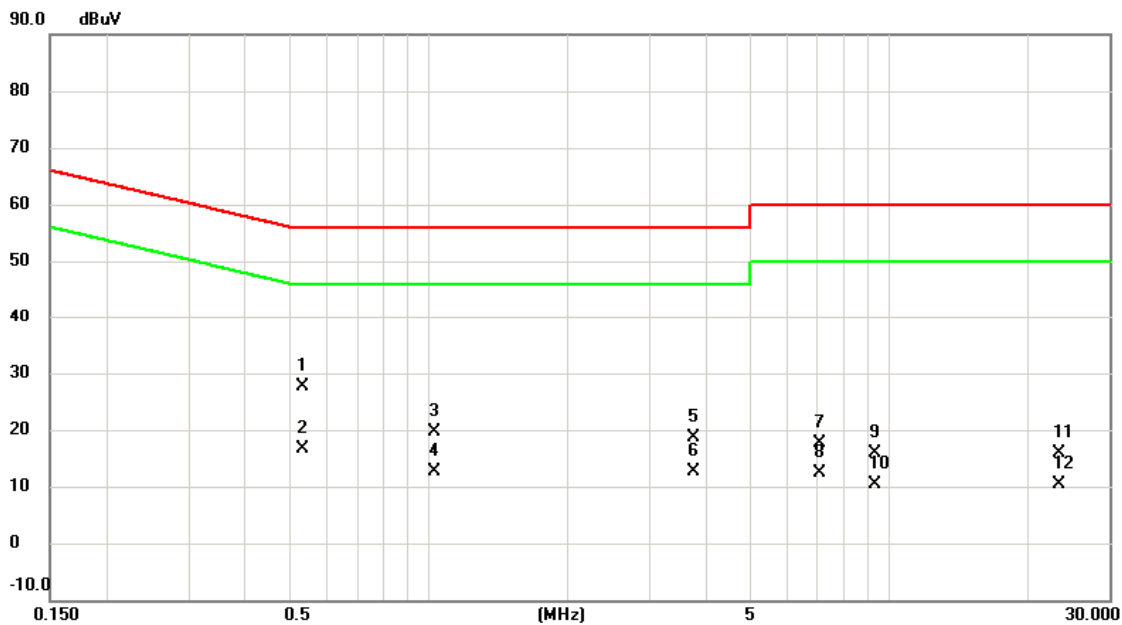


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.4852	24.85	0.04	24.89	56.25	-31.36	QP	
2		0.4852	12.04	0.04	12.08	46.25	-34.17	AVG	
3		2.0850	15.19	0.09	15.28	56.00	-40.72	QP	
4		2.0850	9.49	0.09	9.58	46.00	-36.42	AVG	
5		3.6488	20.15	0.12	20.27	56.00	-35.73	QP	
6		3.6488	10.61	0.12	10.73	46.00	-35.27	AVG	
7		6.9653	15.11	0.15	15.26	60.00	-44.74	QP	
8		6.9653	9.03	0.15	9.18	50.00	-40.82	AVG	
9		9.4830	11.98	0.16	12.14	60.00	-47.86	QP	
10		9.4830	5.99	0.16	6.15	50.00	-43.85	AVG	
11		23.1203	14.36	0.21	14.57	60.00	-45.43	QP	
12		23.1203	7.51	0.21	7.72	50.00	-42.28	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	Normal	Tested Date	2020/8/18
Test Frequency	-	Phase	Neutral

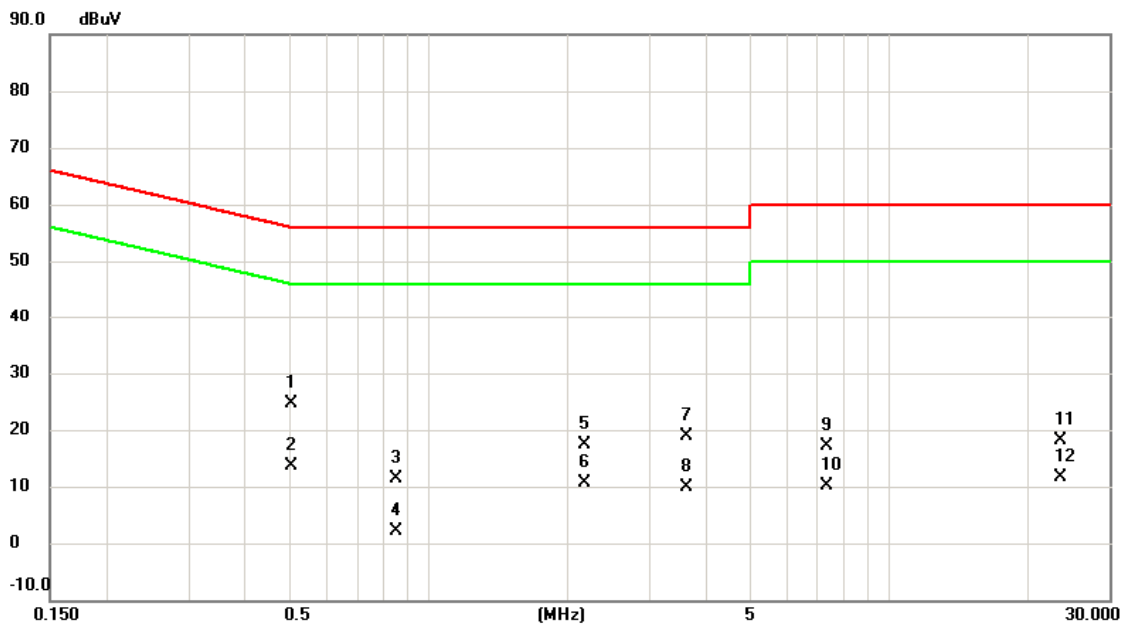


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.5325	27.58	0.04	27.62	56.00	-28.38	QP	
2		0.5325	16.57	0.04	16.61	46.00	-29.39	AVG	
3		1.0252	19.52	0.06	19.58	56.00	-36.42	QP	
4		1.0252	12.61	0.06	12.67	46.00	-33.33	AVG	
5		3.7410	18.40	0.12	18.52	56.00	-37.48	QP	
6		3.7410	12.49	0.12	12.61	46.00	-33.39	AVG	
7		7.0530	17.54	0.15	17.69	60.00	-42.31	QP	
8		7.0530	12.22	0.15	12.37	50.00	-37.63	AVG	
9		9.3435	15.64	0.16	15.80	60.00	-44.20	QP	
10		9.3435	10.20	0.16	10.36	50.00	-39.64	AVG	
11		23.3228	15.74	0.21	15.95	60.00	-44.05	QP	
12		23.3228	10.13	0.21	10.34	50.00	-39.66	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	Idle	Tested Date	2020/8/18
Test Frequency	-	Phase	Line

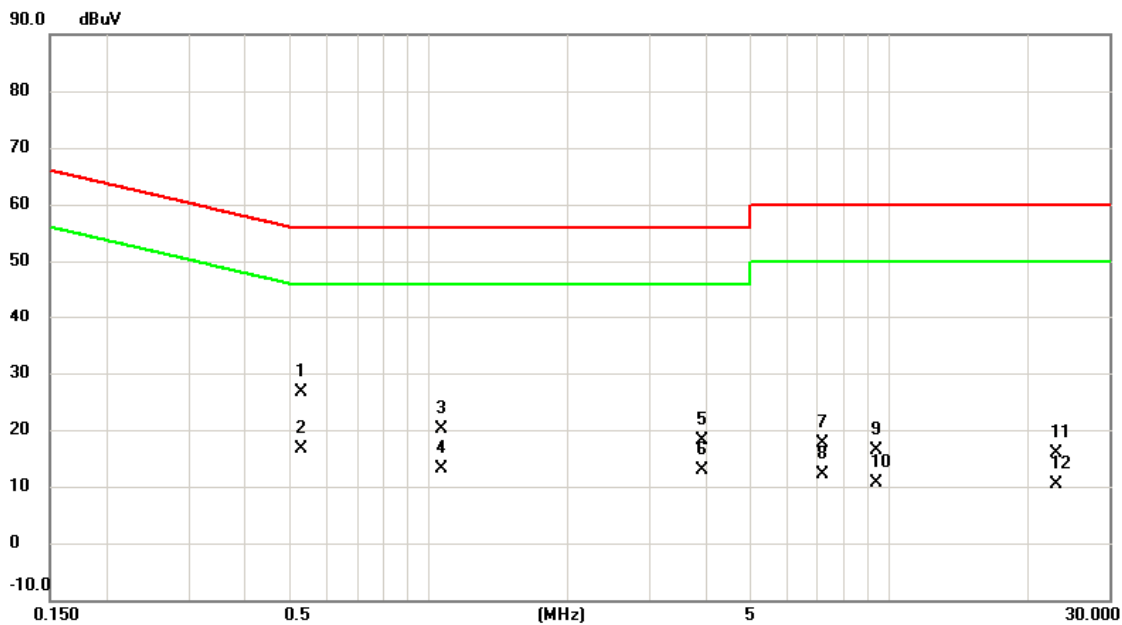


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.5055	24.65	0.04	24.69	56.00	-31.31	QP	
2		0.5055	13.70	0.04	13.74	46.00	-32.26	AVG	
3		0.8497	11.37	0.05	11.42	56.00	-44.58	QP	
4		0.8497	2.10	0.05	2.15	46.00	-43.85	AVG	
5		2.1818	17.31	0.09	17.40	56.00	-38.60	QP	
6		2.1818	10.66	0.09	10.75	46.00	-35.25	AVG	
7		3.6060	18.65	0.12	18.77	56.00	-37.23	QP	
8		3.6060	9.78	0.12	9.90	46.00	-36.10	AVG	
9		7.3073	16.92	0.15	17.07	60.00	-42.93	QP	
10		7.3073	9.97	0.15	10.12	50.00	-39.88	AVG	
11		23.4983	17.95	0.21	18.16	60.00	-41.84	QP	
12		23.4983	11.35	0.21	11.56	50.00	-38.44	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	Idle	Tested Date	2020/8/18
Test Frequency	-	Phase	Neutral



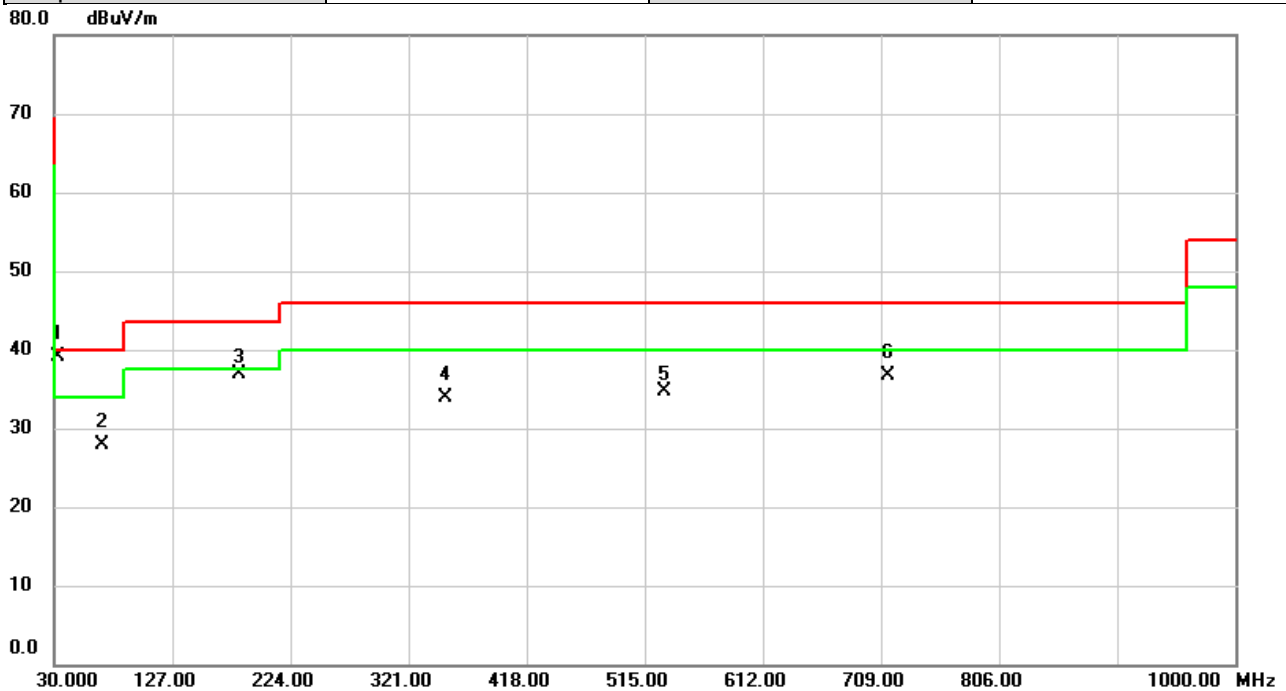
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.5302	26.61	0.04	26.65	56.00	-29.35	QP	
2		0.5302	16.47	0.04	16.51	46.00	-29.49	AVG	
3		1.0657	20.05	0.06	20.11	56.00	-35.89	QP	
4		1.0657	13.06	0.06	13.12	46.00	-32.88	AVG	
5		3.9188	18.10	0.13	18.23	56.00	-37.77	QP	
6		3.9188	12.64	0.13	12.77	46.00	-33.23	AVG	
7		7.1633	17.43	0.15	17.58	60.00	-42.42	QP	
8		7.1633	11.94	0.15	12.09	50.00	-37.91	AVG	
9		9.3683	16.23	0.16	16.39	60.00	-43.61	QP	
10		9.3683	10.48	0.16	10.64	50.00	-39.36	AVG	
11		23.0370	15.78	0.21	15.99	60.00	-44.01	QP	
12		23.0370	10.28	0.21	10.49	50.00	-39.51	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

APPENDIX B RADIATED EMISSIONS - 30 MHZ TO 1 GHZ

Test Mode	SRD	Test Date	2020/8/10
Test Frequency	2470MHz	Polarization	Vertical
Temp	23°C	Hum.	67%

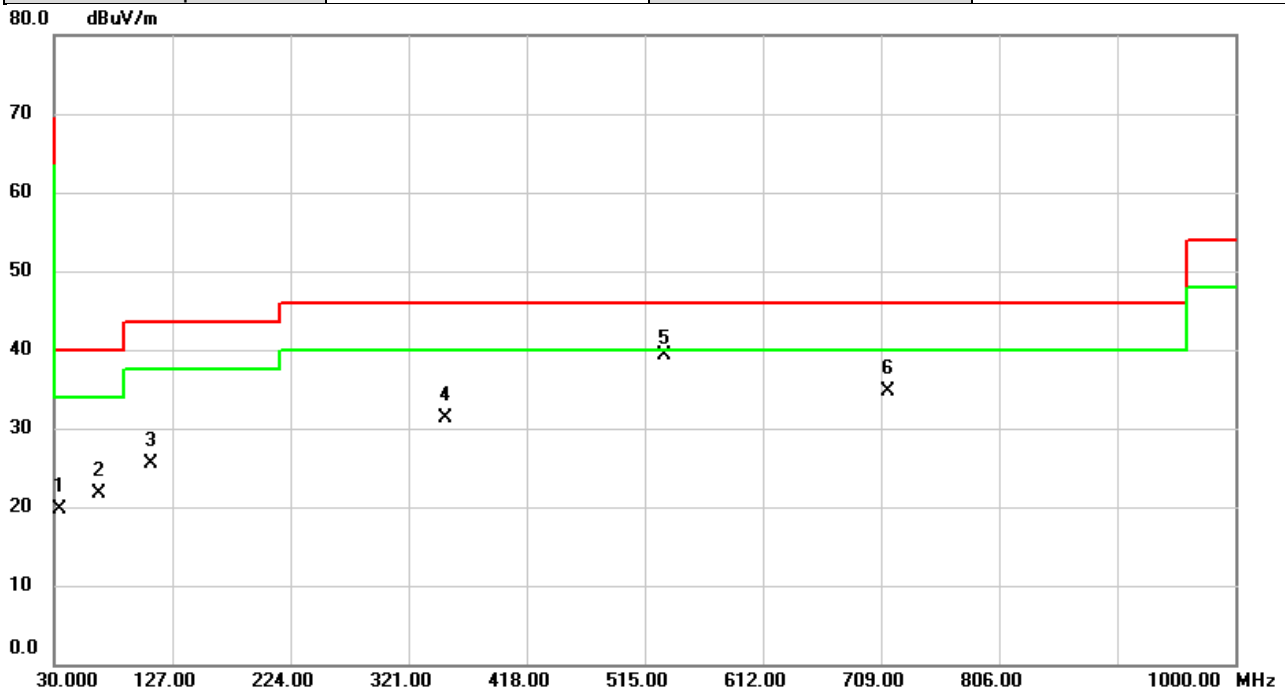


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	32.9100	48.07	-9.04	39.03	40.00	-0.97	QP	
2		68.8000	38.26	-10.35	27.91	40.00	-12.09	QP	
3		181.3200	46.82	-9.86	36.96	43.50	-6.54	peak	
4		351.0700	40.01	-6.11	33.90	46.00	-12.10	QP	
5		530.5200	36.95	-2.16	34.79	46.00	-11.21	peak	
6		714.8200	35.56	1.15	36.71	46.00	-9.29	QP	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	SRD	Test Date	2020/8/10
Test Frequency	2470MHz	Polarization	Horizontal
Temp	23°C	Hum.	67%



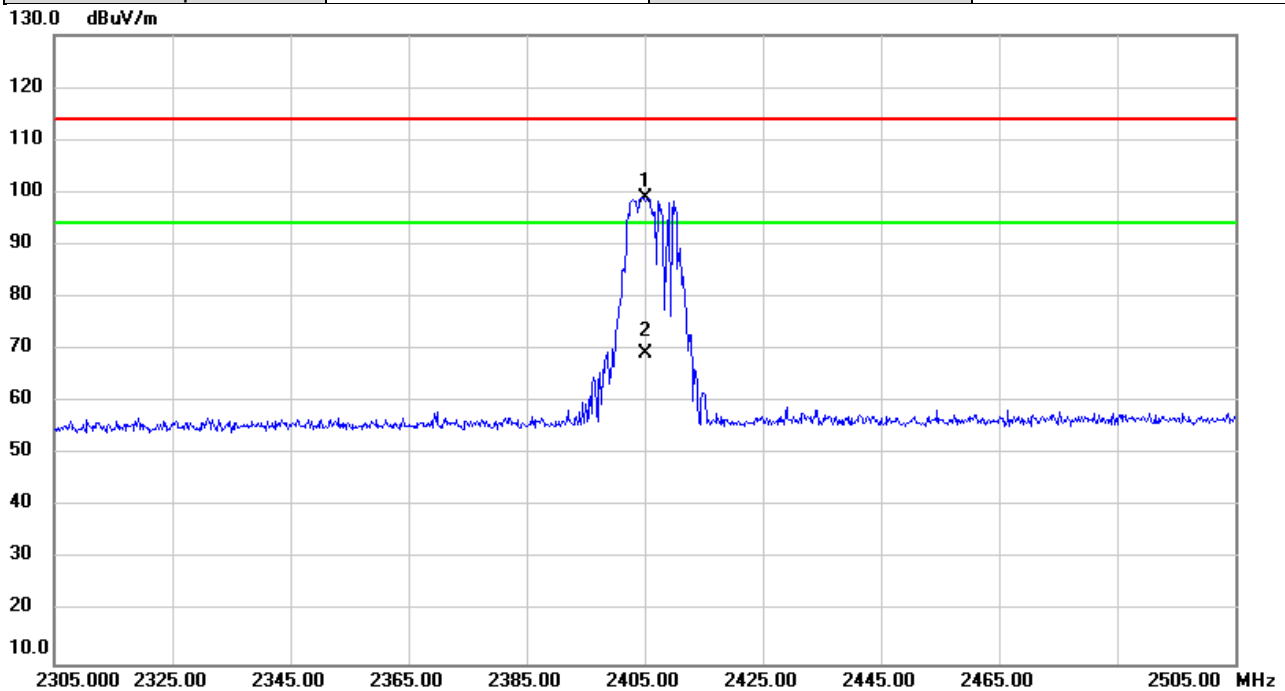
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		34.8500	28.71	-9.03	19.68	40.00	-20.32	QP	
2		66.8600	31.63	-9.99	21.64	40.00	-18.36	QP	
3		109.5400	36.91	-11.47	25.44	43.50	-18.06	QP	
4		351.0700	37.50	-6.11	31.39	46.00	-14.61	QP	
5	*	530.5200	41.50	-2.16	39.34	46.00	-6.66	peak	
6		714.8200	33.56	1.15	34.71	46.00	-11.29	QP	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

APPENDIX C RADIATED EMISSIONS - ABOVE 1 GHZ

Test Mode	SRD	Test Date	2020/8/10
Test Frequency	2405MHz	Polarization	Horizontal
Temp	23°C	Hum.	67%



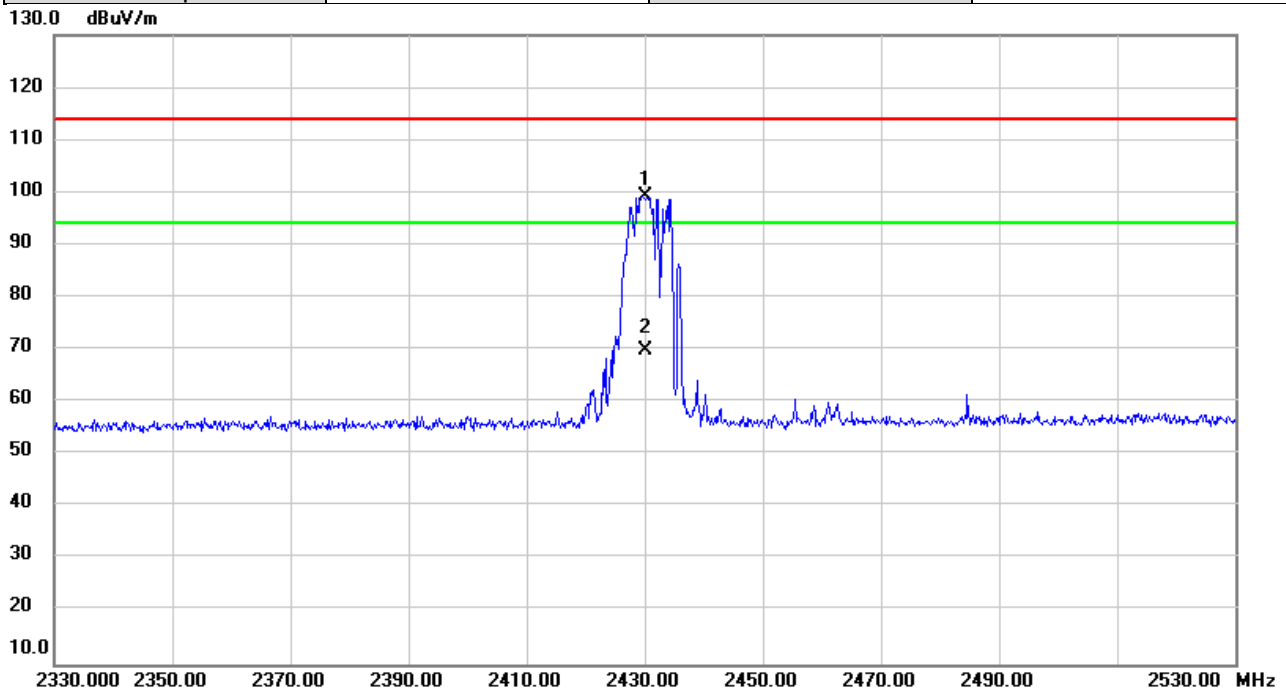
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2405.000	68.14	30.85	98.99	114.00	-15.01	peak	
2		2405.000	38.36	30.85	69.21	94.00	-24.79	AVG	

REMARKS:

(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode	SRD	Test Date	2020/8/10
Test Frequency	2430MHz	Polarization	Horizontal
Temp	23°C	Hum.	67%



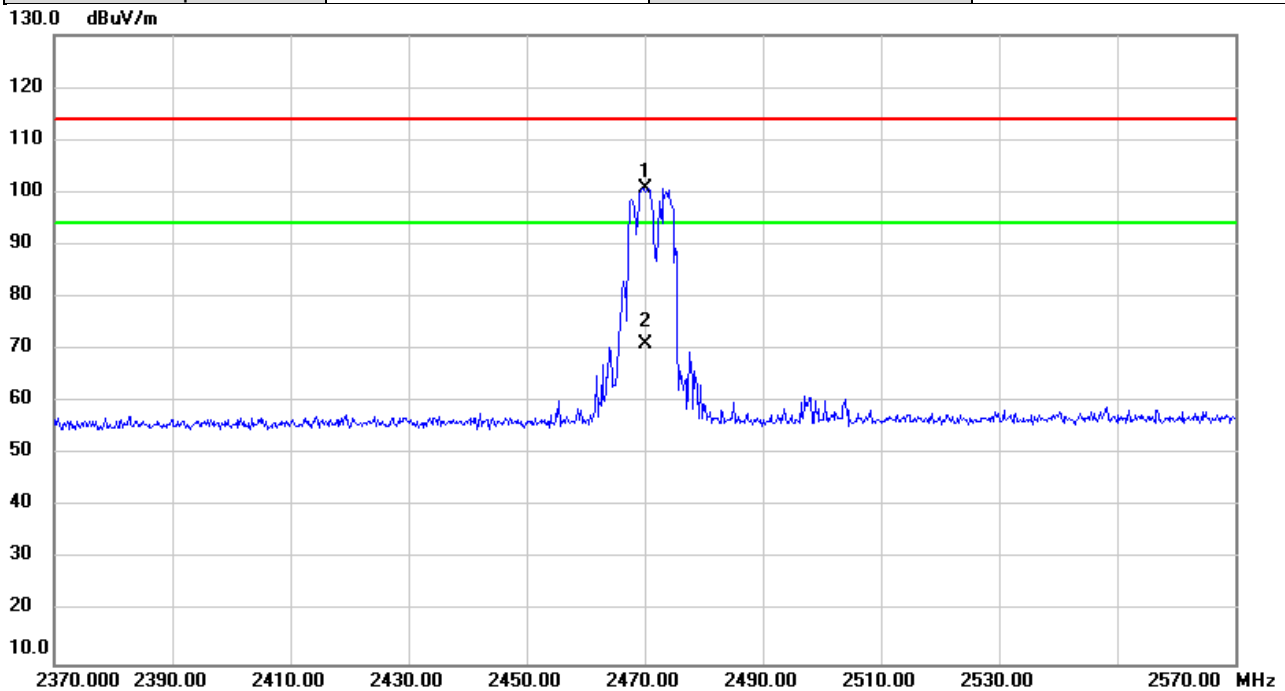
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2430.000	68.17	30.95	99.12	114.00	-14.88	peak	
2		2430.000	38.75	30.95	69.70	94.00	-24.30	AVG	

REMARKS:

(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode	SRD	Test Date	2020/8/10
Test Frequency	2470MHz	Polarization	Horizontal
Temp	23°C	Hum.	67%



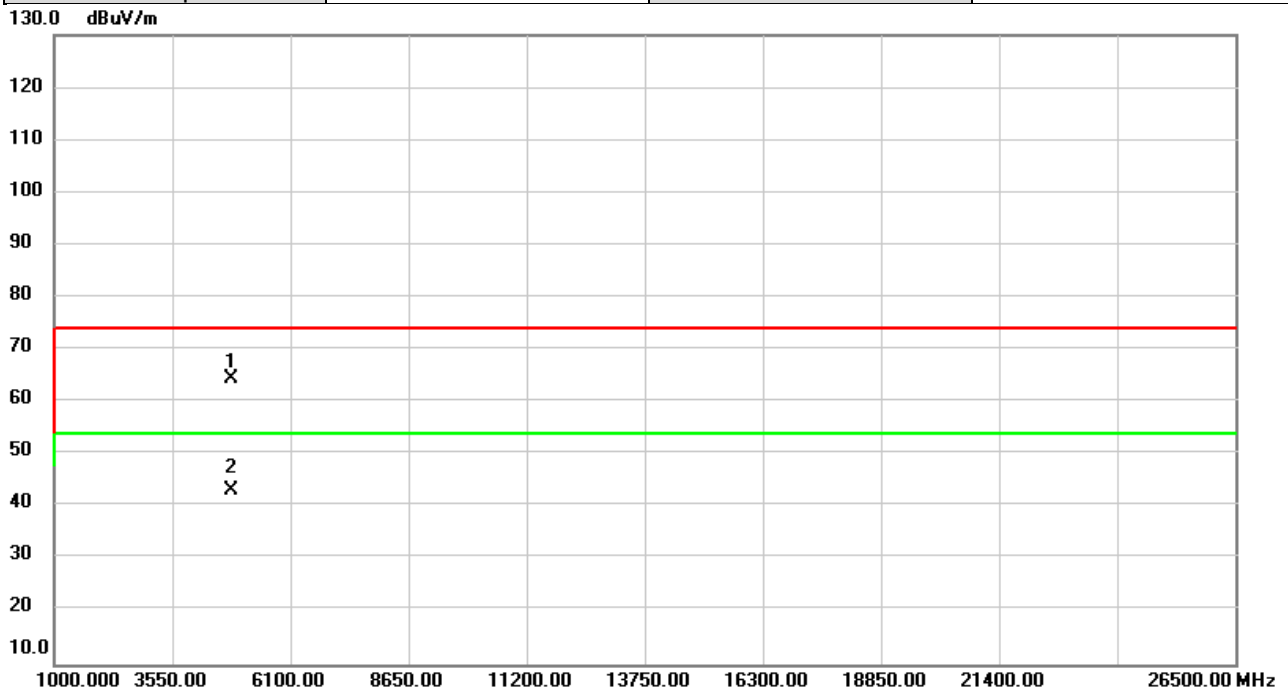
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2470.000	69.66	31.11	100.77	114.00	-13.23	peak	
2		2470.000	39.85	31.11	70.96	94.00	-23.04	AVG	

REMARKS:

(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode	SRD	Test Date	2020/8/10
Test Frequency	2405MHz	Polarization	Vertical
Temp	23°C	Hum.	67%

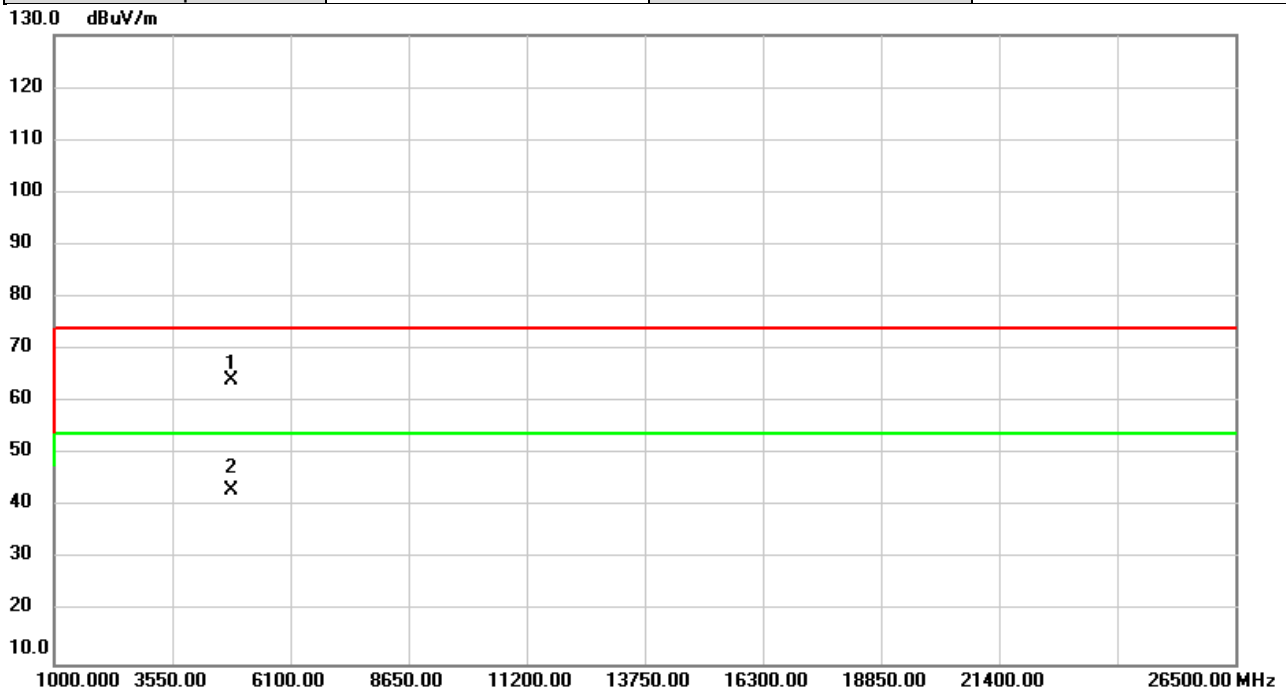


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	4810.000	74.47	-10.00	64.47	74.00	-9.53	peak	
2		4810.000	53.24	-10.00	43.24	54.00	-10.76	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	SRD	Test Date	2020/8/10
Test Frequency	2405MHz	Polarization	Horizontal
Temp	23°C	Hum.	67%

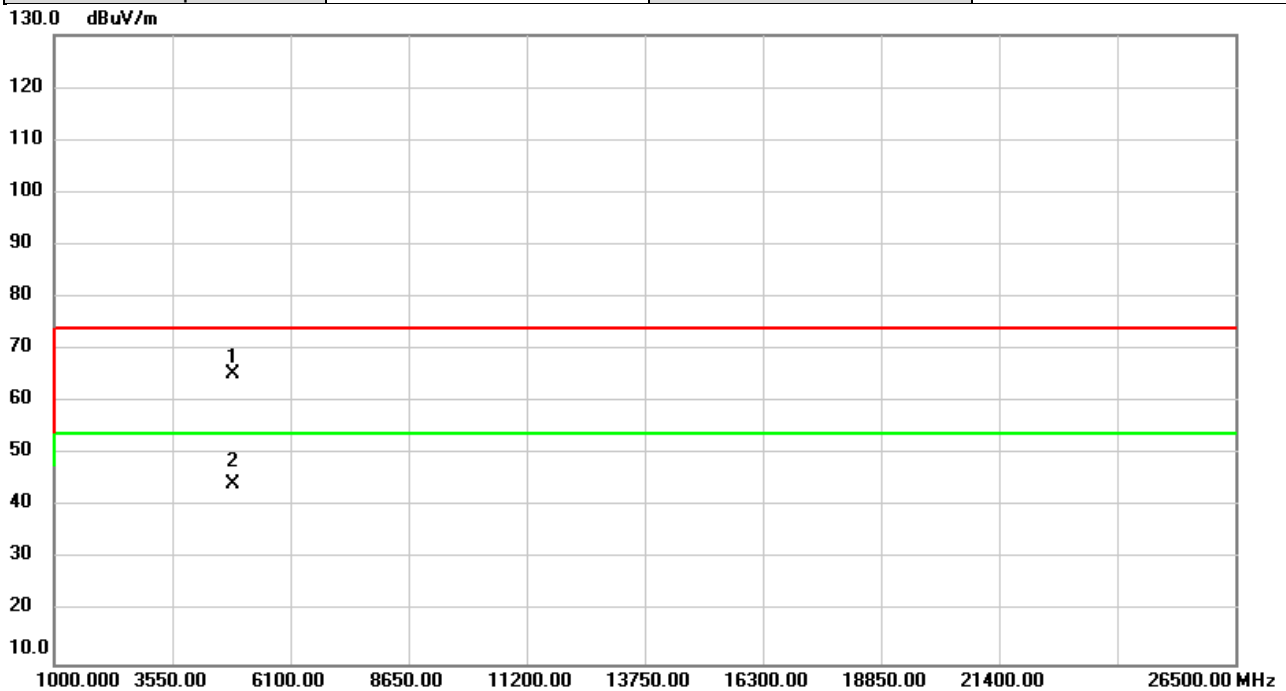


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	4810.000	74.25	-10.00	64.25	74.00	-9.75	peak	
2		4810.000	53.20	-10.00	43.20	54.00	-10.80	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	SRD	Test Date	2020/8/10
Test Frequency	2430MHz	Polarization	Vertical
Temp	23°C	Hum.	67%

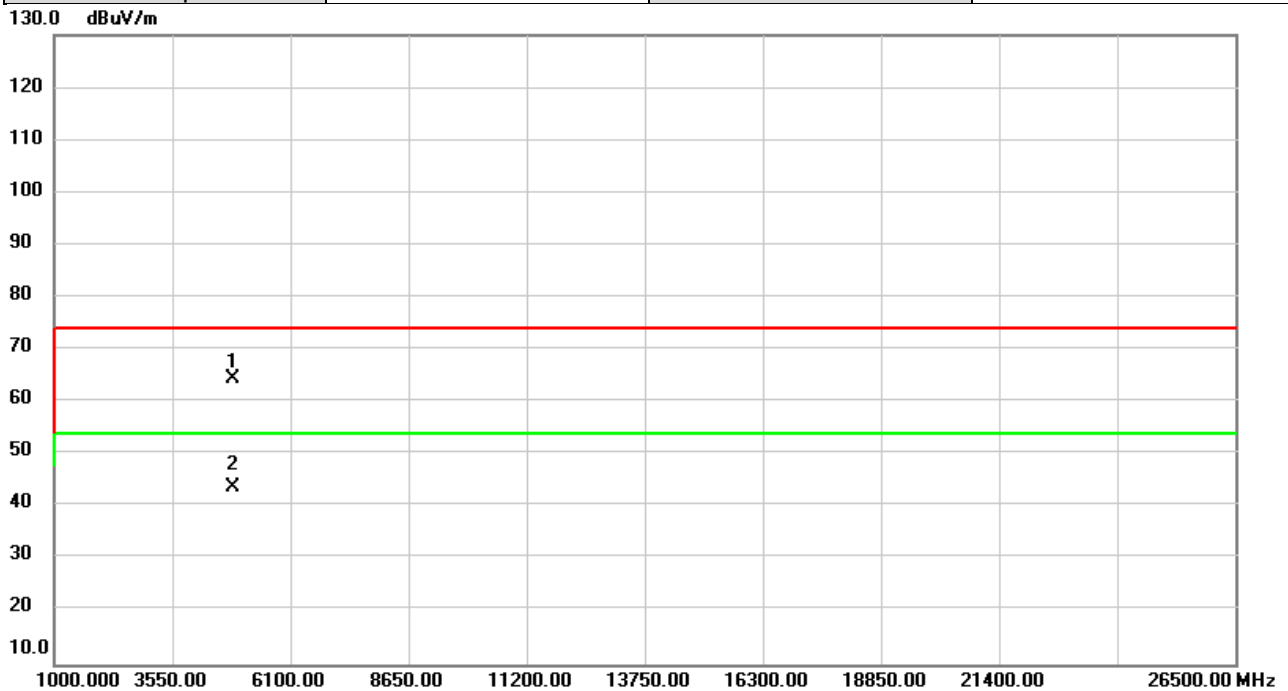


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	4860.000	75.19	-9.83	65.36	74.00	-8.64	peak	
2		4860.000	54.13	-9.83	44.30	54.00	-9.70	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	SRD	Test Date	2020/8/10
Test Frequency	2430MHz	Polarization	Horizontal
Temp	23°C	Hum.	67%

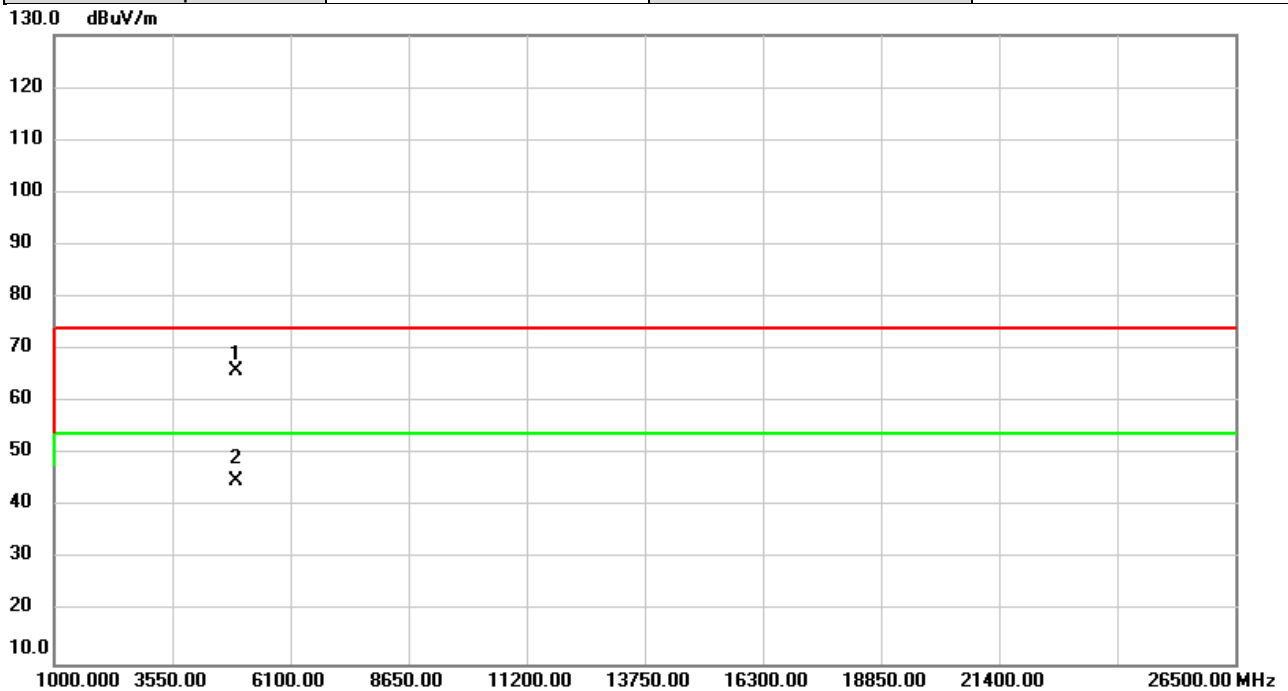


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	4860.000	74.17	-9.83	64.34	74.00	-9.66	peak	
2		4860.000	53.53	-9.83	43.70	54.00	-10.30	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	SRD	Test Date	2020/8/10
Test Frequency	2470MHz	Polarization	Vertical
Temp	23°C	Hum.	67%

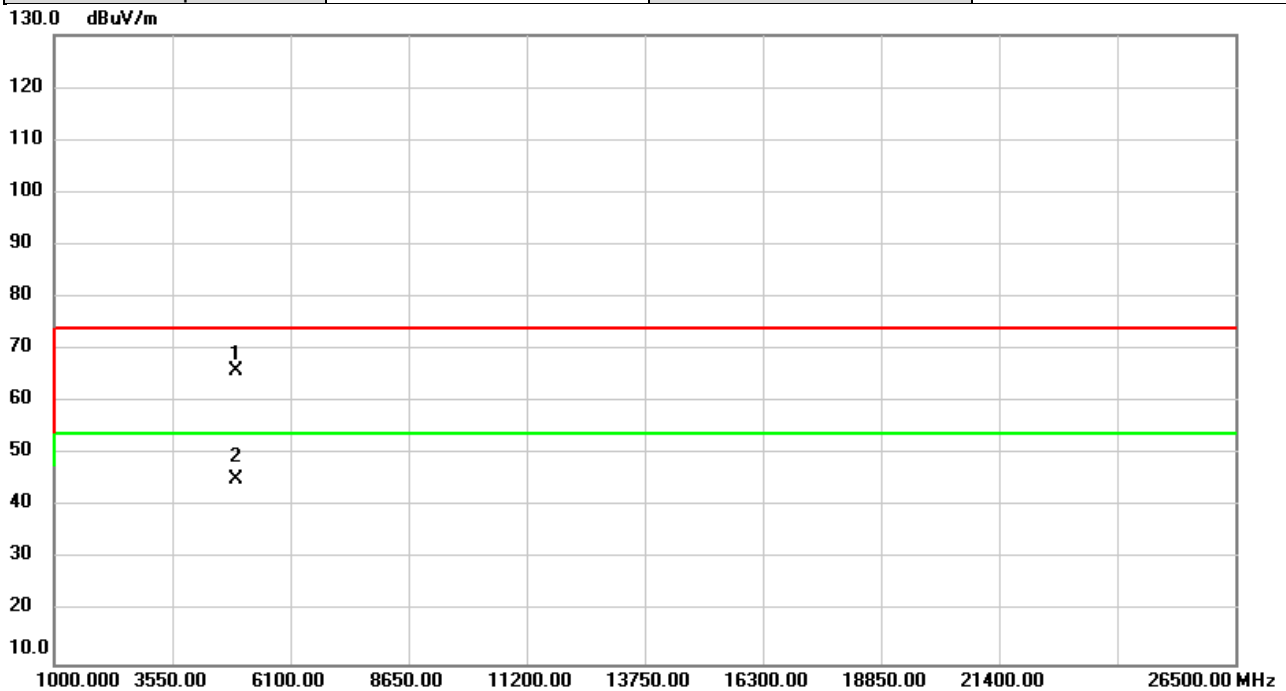


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	4940.000	75.38	-9.57	65.81	74.00	-8.19	peak	
2		4940.000	54.50	-9.57	44.93	54.00	-9.07	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	SRD	Test Date	2020/8/10
Test Frequency	2470MHz	Polarization	Horizontal
Temp	23°C	Hum.	67%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	4940.000	75.61	-9.57	66.04	74.00	-7.96	peak	
2		4940.000	54.78	-9.57	45.21	54.00	-8.79	AVG	

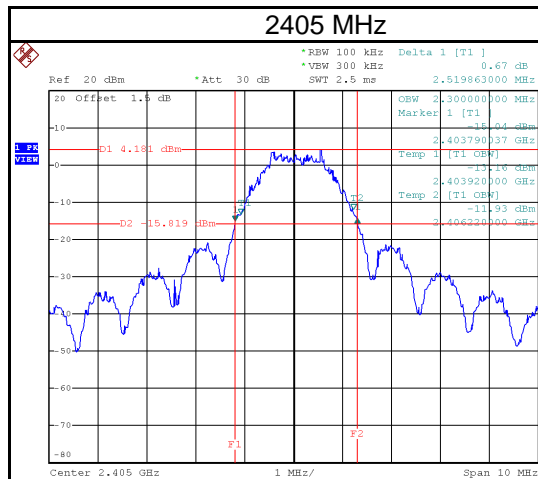
REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

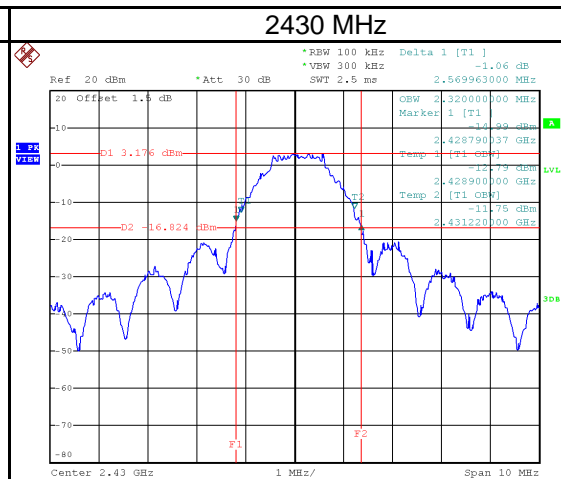
APPENDIX D BANDWIDTH

Test Mode:	SRD
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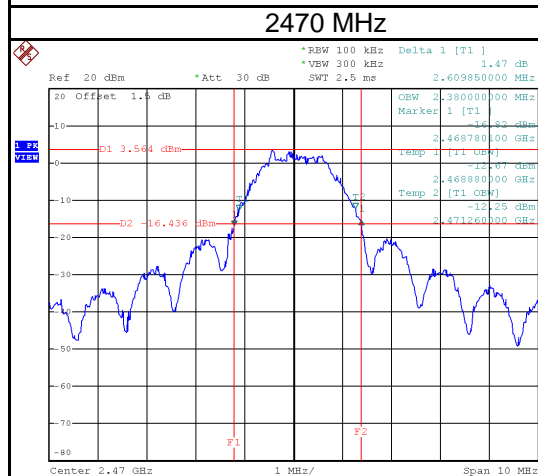
Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2405	2.52	2.30	500	Pass
2430	2.57	2.32	500	Pass
2470	2.61	2.38	500	Pass



Date: 18.AUG.2020 18:37:16



Date: 18.AUG.2020 18:38:21



Date: 18.AUG.2020 18:39:23

End of Test Report