FCC Radio Test Report

FCC ID: 2AF5PMGMT87

Report No.	:	BTL-FCCP-1-2006T060
Equipment	:	D3.1 Cable Modem plus AX6000 Router with Voice
Model Name	:	MT8733, MG8725
Brand Name	:	MOTOROLA
Applicant	:	MTRLC LLC
Address	:	225 Franklin Street, 26th Floor, Boston, MA 02110 USA
Radio Function	:	Z-Wave
FCC Rule Part(s)	:	FCC Part15, Subpart C (15.249)
Measurement Procedure(s)	:	ANSI C63.10-2013
Date of Receipt	:	2020/6/12
Date of Test	:	2020/6/12 ~ 2020/8/11
Issued Date	:	2020/8/26

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.

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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.

CONTENTS

REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	2020/8/26

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; FCC DN:TW0659.

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

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **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)
C05	CISPR	150 kHz ~ 30MHz	3.44

B. Radiated emissions test :

Test Site	Measurement Frequency Range	U,(dB)
CB15	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

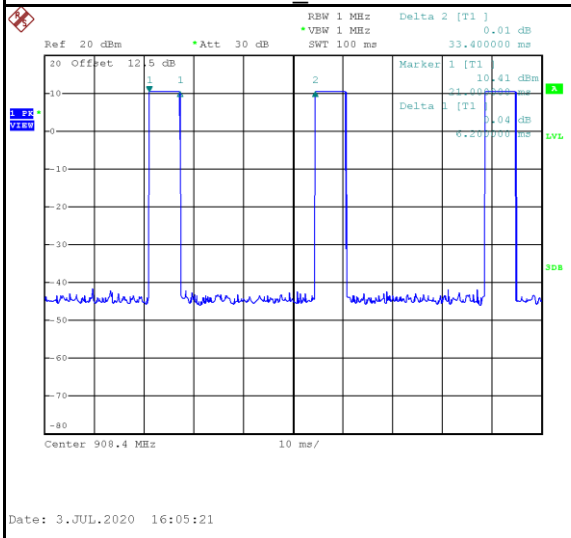
Test Item	Environment Condition	Test Voltage	Tested by
AC Power Line Conducted Emissions	24 °C, 57 %	AC 120V	William Wei
Radiated emissions below 1 GHz	Refer to data	AC 120V	Aven Ho
Radiated emissions above 1 GHz	Refer to data	AC 120V	Aven Ho
Bandwidth	24.7 °C, 54 %	AC 120V	Tim Lee

1.4 DUTY CYCLE

If duty cycle is ≥ 98 %, duty factor is not required.
If duty cycle is < 98 %, duty factor shall be considered.

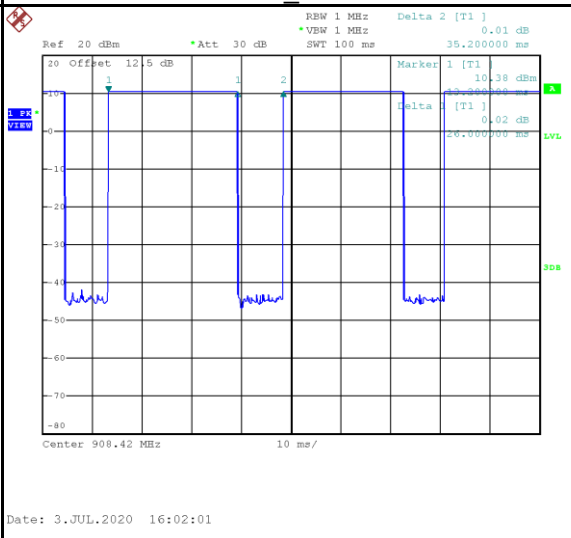
Remark	Delta 1			Delta 2	On Time/Period	10 log(1/Duty Cycle)
Mode	ON (ms)	Numbers (ON)	On Time (B) (ms)	Period (ON+OFF) (ms)	Duty Cycle (%)	Duty Factor (dB)
Zwave_908.4 MHz	6.200	1	6.200	33.400	18.56%	7.31
Zwave_908.42 MHz	26.000	1	26.000	35.200	73.86%	1.32
Zwave_916 MHz	5.000	1	5.000	32.200	15.53%	8.09

Zwave_908.4 MHz



Date: 3.JUL.2020 16:05:21

Zwave_908.42 MHz



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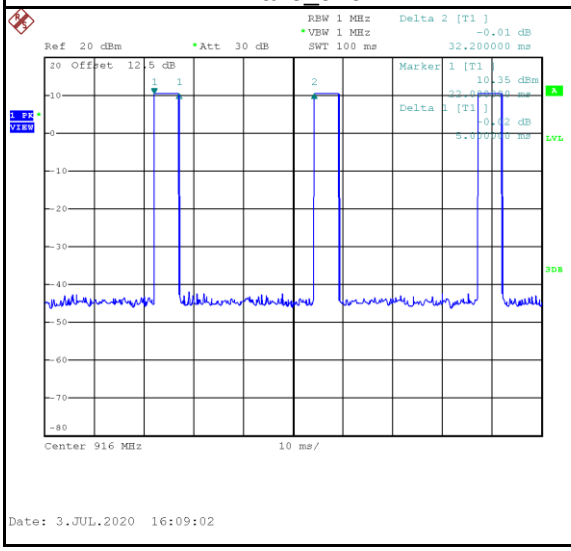
Zwave_916 MHz



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2 GENERAL INFORMATION

2.1 DESCRIPTION OF EUT

Equipment	D3.1 Cable Modem plus AX6000 Router with Voice
Model Name	MT8733, MG8725
Brand Name	MOTOROLA
Model Difference	Model Name: MT8733 — VoIP port: YES Model Name: MG8725 — VoIP port: NO
Power Source	DC Voltage supplied from AC/DC adapter. #1 Ktec / KSA-36W-120300HU #2 HONOR / ADS-40FSI-12 12036EPCU
Power Rating	#1 Input: 100-240V~ 50/60Hz 1.0A Output: 12Vdc 3.0A #2 Input: 100-240V~ 50/60Hz Max. 1.0A Output: 12Vdc 3.0A
Products Covered	2 * Adapter: (1) Ktec / KSA-36W-120300HU (2) HONOR / ADS-40FSI-12 12036EPCU
Operation Frequency	908.4~916 MHz
Modulation Technology	FSK
Transfer Rate	40 Kbps
Field Strength	77.14 dBuV/m
Test Model	MT8733
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)
01	908.4
02	908.42
03	916

(3) Table for Filed Antenna:

Ant.	Model No.	Antenna Type	Connector	Gain (dBi)
1	Metal	PIFA	SMA	0

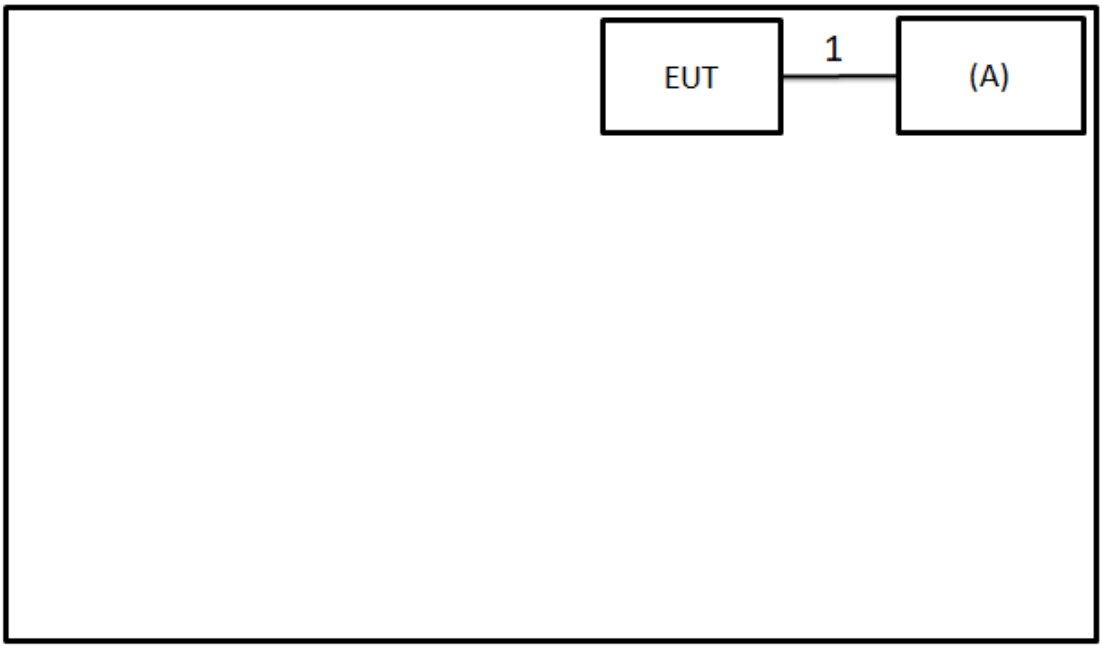
2.2 TEST MODES

Test Items	Test mode	Channel	Note
AC power line conducted emissions	Normal/Idle	-	-
Transmitter Radiated Emissions (below 1GHz)	Zwave	01	-
Transmitter Radiated Emissions (above 1GHz)	Zwave	01/03	Bandedge
	Zwave	01/02/03	Harmonic
Bandwidth	Zwave	01/02/03	-

NOTE:
(1) For radiated emission band edge test, both Vertical and Horizontal are evaluated, but only the worst case (Horizontal) is recorded.
(2) All X, Y and Z axes are evaluated, but only the worst case (X axis) is recorded.
(3) There were no emissions found below 30 MHz within 20 dB of the limit.
(4) All adapter are evaluated, the KSA-36W-120300HU is the worst and recorded as below test data.

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.



2.4 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.	Remarks
A	Adapter	Ktec	KSA-36W-120300HU	N/A	Supplied by test requester.

Item	Shielded	Ferrite Core	Length	Cable Type	Remarks
1	N/A	N/A	1.5m	Power cable	Supplied by test requester.

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

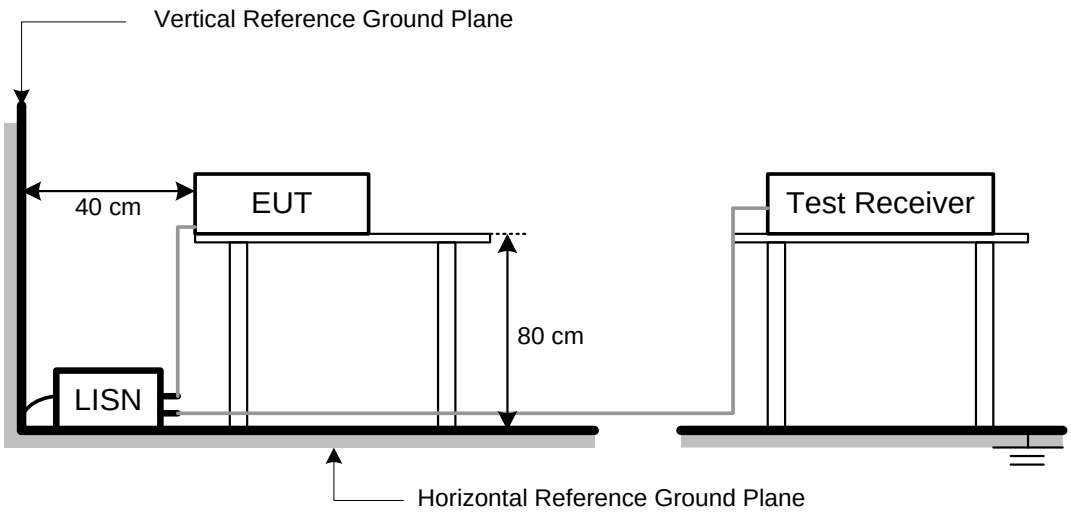
a. The EUT was placed 0.8 m above the horizontal ground plane with the EUT being connected to the power mains through a line impedance stabilization network (LISN).
All other support equipment were powered from an additional LISN(s).
The LISN provides 50 Ohm/50uH of impedance for the measuring instrument.
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
41.91	+	-8.36	=	33.55

Measurement Value		Limit Value		Margin Level
33.55	-	43.50	=	-9.95

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

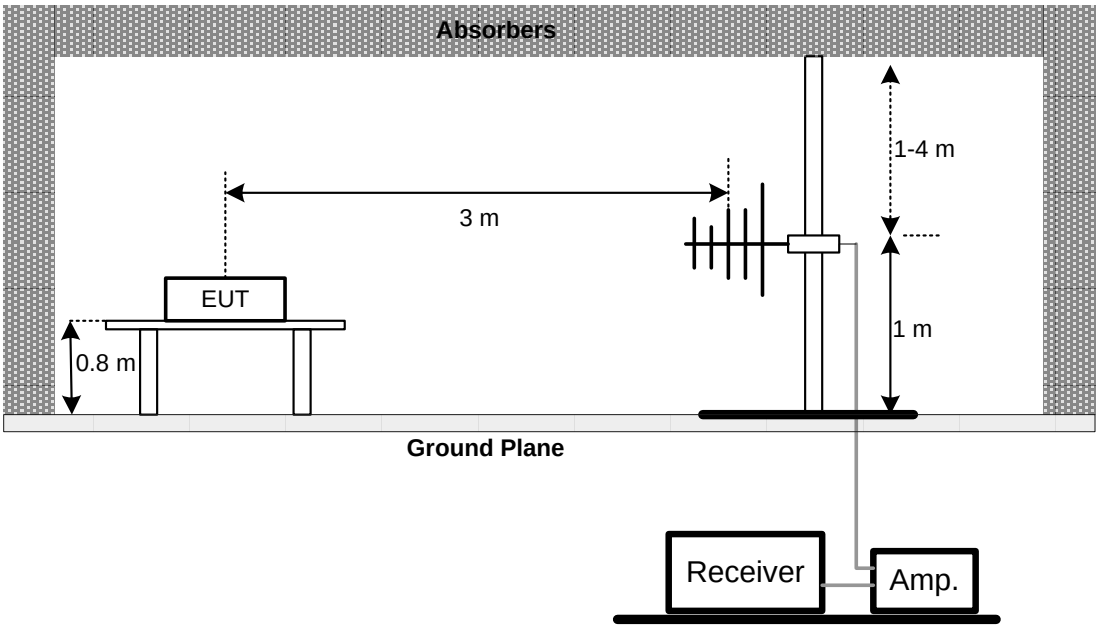
a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The measuring distance 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)
c. 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.
d. 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).
e. 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.
f. 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.
g. 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)
h. 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)
i. For the actual test configuration, please refer to the related Item – EUT TEST PHOTO.

4.3 DEVIATION FROM TEST STANDARD

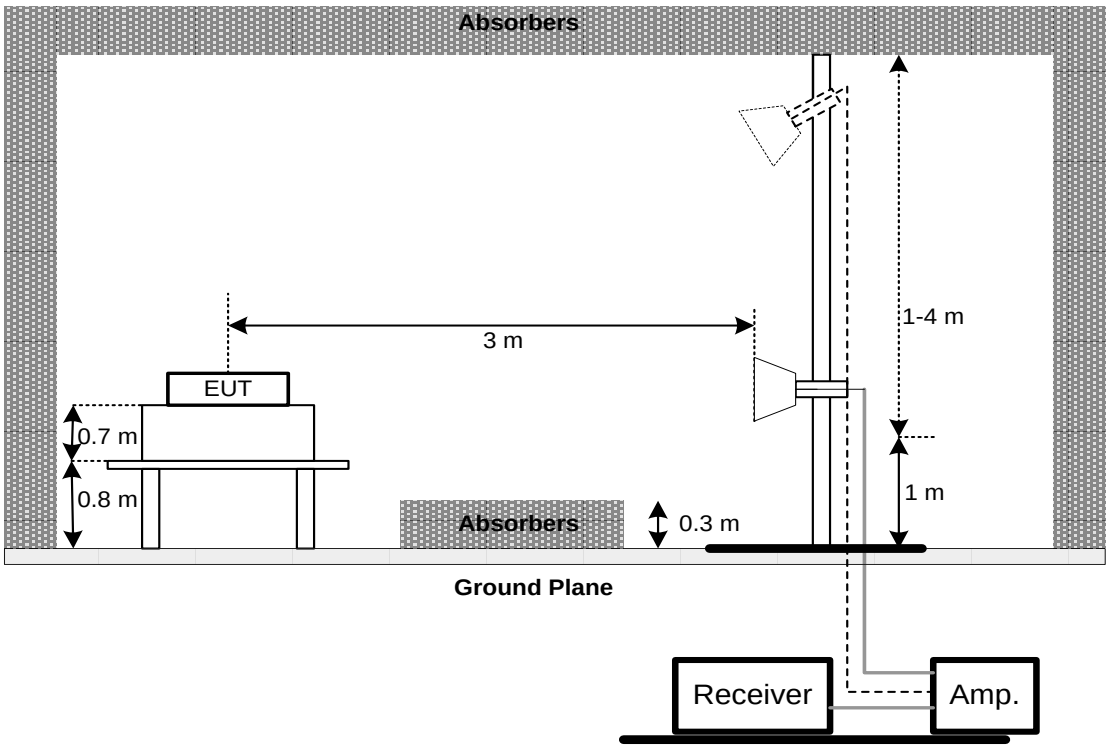
No deviation.

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 3.5 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	2019/8/15	2020/8/14
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	EMC02325B	980217	2020/4/10	2021/4/9
2	Preamplifier	EMCI	EMC012645B	980267	2020/4/10	2021/4/9
3	Preamplifier	EMCI	EMC2654045	980030	2020/1/31	2021/1/30
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	Horm Ant	SCHWARZBECK	BBHA 9120D	9120D-1342	2020/6/12	2021/6/11
10	Horm Ant	Schwarzbeck	BBHA 9170	187	2019/12/21	2020/12/20
11	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	0992	2020/7/10	2021/7/9
12	5dB Attenuator	EMCI	EMCI-N-0-625	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

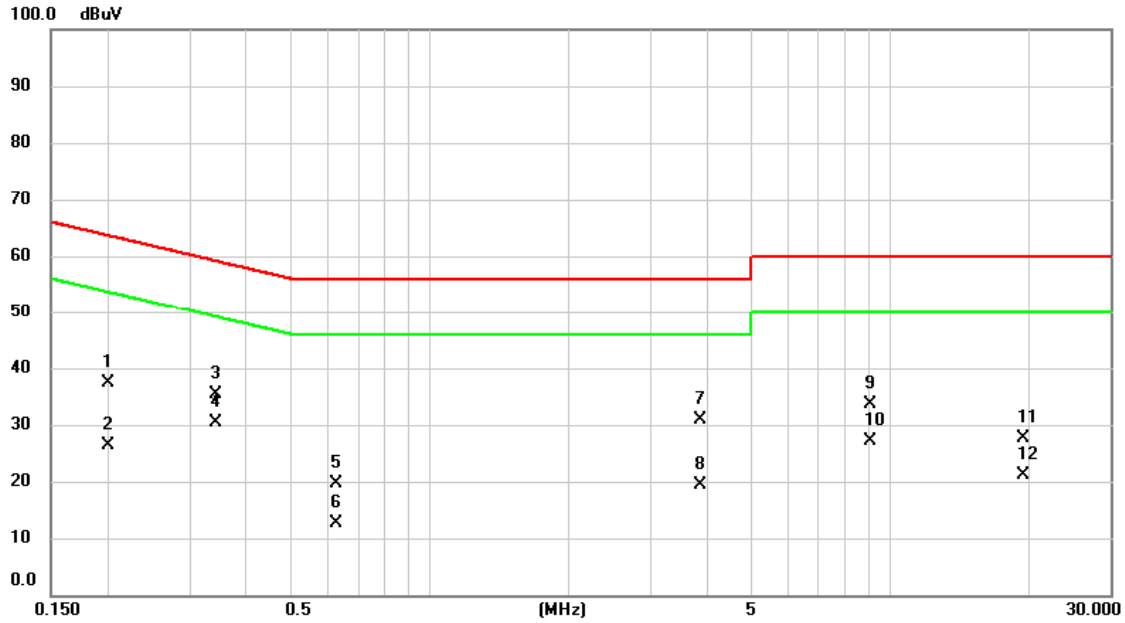
Please refer to document Appendix No.: TP-2006T060-FCCP-1 (APPENDIX-TEST PHOTOS).

8 EUT PHOTOS

Please refer to document Appendix No.: EP-2006T060-1 (APPENDIX-EUT PHOTOS).

APPENDIX A AC POWER LINE CONDUCTED EMISSIONS

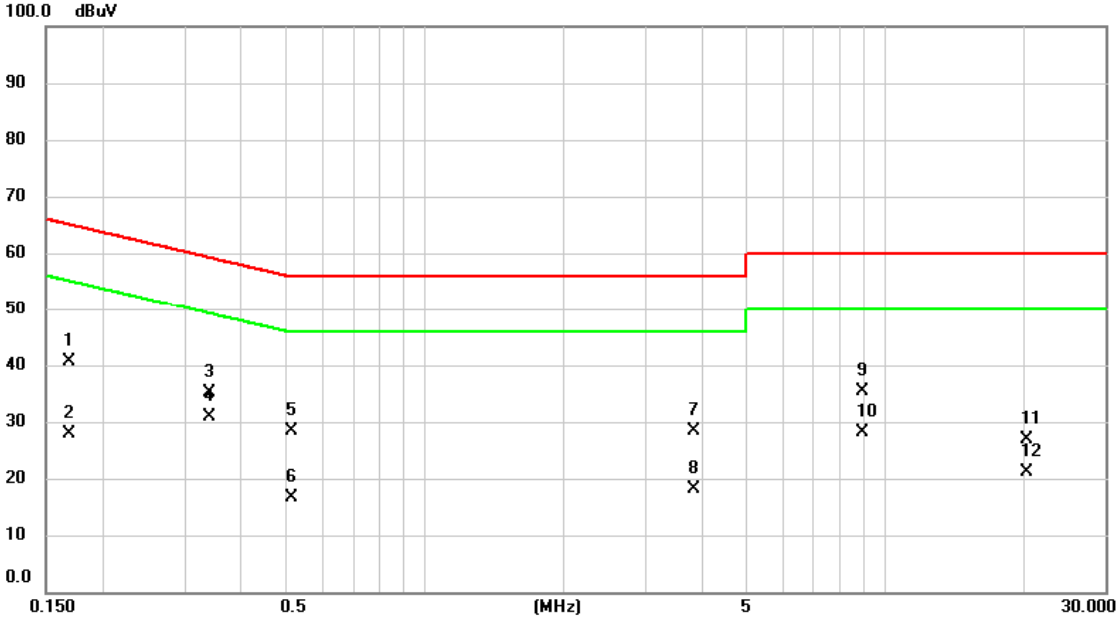
Test Mode	Normal	Tested Date	2020/7/3
Test Voltage	AC 120V/60Hz	Phase	Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1995	27.70	9.66	37.36	63.63	-26.27	QP	
2		0.1995	16.67	9.66	26.33	53.63	-27.30	AVG	
3		0.3435	25.65	9.71	35.36	59.12	-23.76	QP	
4	*	0.3435	20.77	9.71	30.48	49.12	-18.64	AVG	
5		0.6292	10.03	9.72	19.75	56.00	-36.25	QP	
6		0.6292	2.91	9.72	12.63	46.00	-33.37	AVG	
7		3.8580	20.99	9.81	30.80	56.00	-25.20	QP	
8		3.8580	9.64	9.81	19.45	46.00	-26.55	AVG	
9		9.0510	23.71	9.92	33.63	60.00	-26.37	QP	
10		9.0510	17.17	9.92	27.09	50.00	-22.91	AVG	
11		19.4145	17.49	10.02	27.51	60.00	-32.49	QP	
12		19.4145	11.06	10.02	21.08	50.00	-28.92	AVG	

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

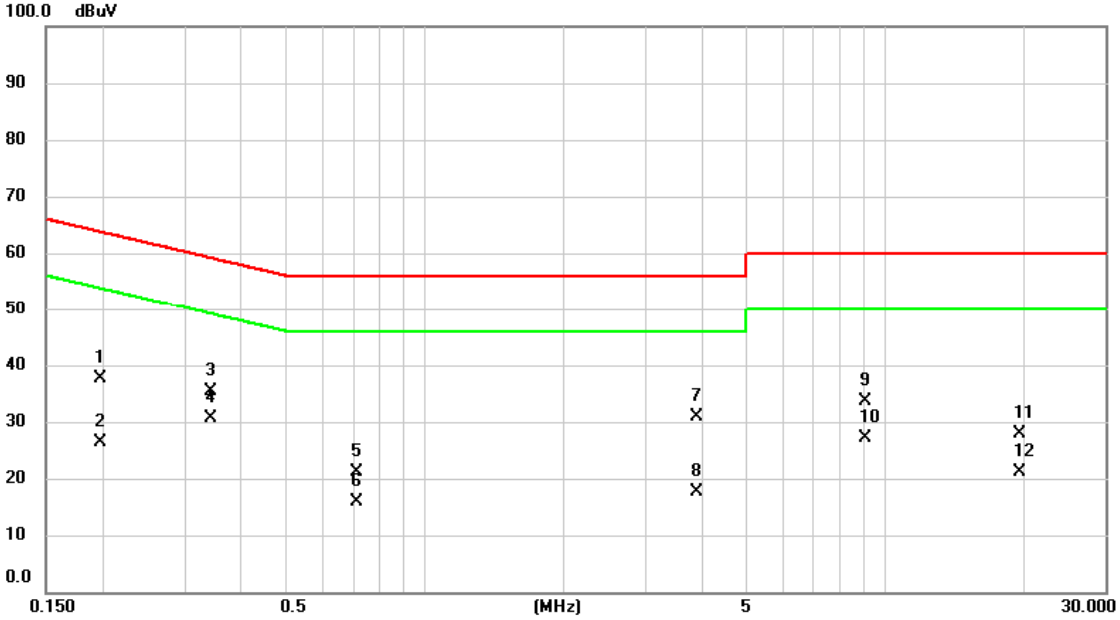
Test Mode	Normal	Tested Date	2020/7/3
Test Voltage	AC 120V/60Hz	Phase	Neutral



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1685	30.98	9.67	40.65	65.03	-24.38	QP	
2		0.1685	18.16	9.67	27.83	55.03	-27.20	AVG	
3		0.3412	25.41	9.71	35.12	59.17	-24.05	QP	
4	*	0.3412	21.24	9.71	30.95	49.17	-18.22	AVG	
5		0.5144	18.65	9.71	28.36	56.00	-27.64	QP	
6		0.5144	6.86	9.71	16.57	46.00	-29.43	AVG	
7		3.8153	18.45	9.81	28.26	56.00	-27.74	QP	
8		3.8153	8.22	9.81	18.03	46.00	-27.97	AVG	
9		8.9138	25.40	9.92	35.32	60.00	-24.68	QP	
10		8.9138	18.25	9.92	28.17	50.00	-21.83	AVG	
11		20.2425	16.96	10.02	26.98	60.00	-33.02	QP	
12		20.2425	11.11	10.02	21.13	50.00	-28.87	AVG	

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

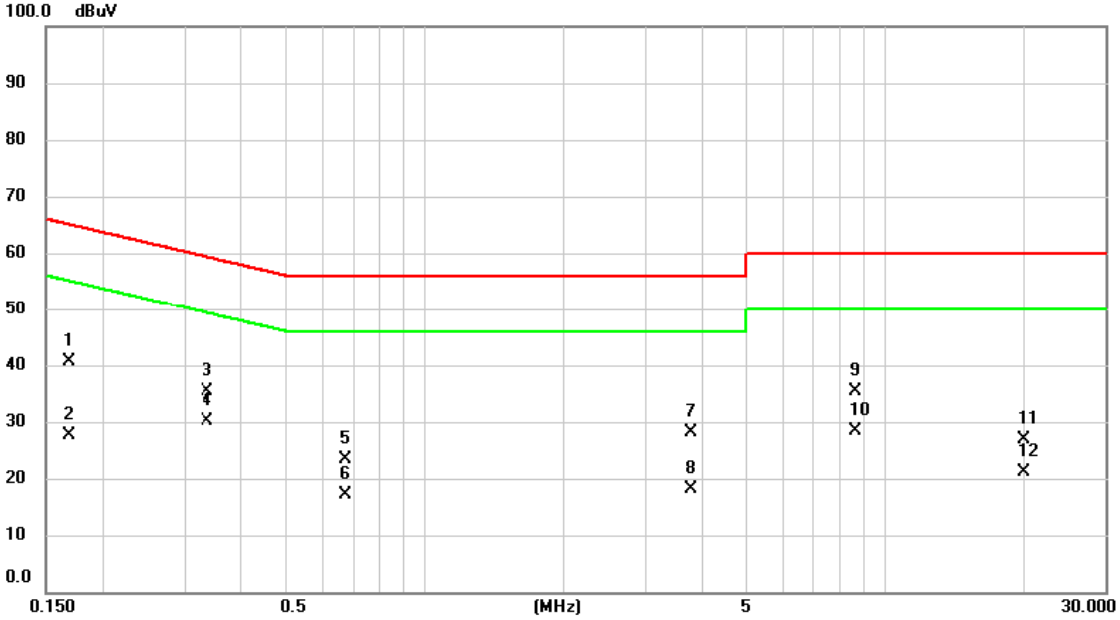
Test Mode	Idle	Tested Date	2020/7/3
Test Voltage	AC 120V/60Hz	Phase	Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1973	27.92	9.66	37.58	63.72	-26.14	QP	
2		0.1973	16.60	9.66	26.26	53.72	-27.46	AVG	
3		0.3435	25.57	9.71	35.28	59.12	-23.84	QP	
4	*	0.3435	20.81	9.71	30.52	49.12	-18.60	AVG	
5		0.7102	11.38	9.73	21.11	56.00	-34.89	QP	
6		0.7102	6.13	9.73	15.86	46.00	-30.14	AVG	
7		3.8850	21.10	9.81	30.91	56.00	-25.09	QP	
8		3.8850	7.81	9.81	17.62	46.00	-28.38	AVG	
9		9.0668	23.80	9.92	33.72	60.00	-26.28	QP	
10		9.0668	17.25	9.92	27.17	50.00	-22.83	AVG	
11		19.6305	17.78	10.02	27.80	60.00	-32.20	QP	
12		19.6305	11.13	10.02	21.15	50.00	-28.85	AVG	

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

Test Mode	Idle	Tested Date	2020/7/3
Test Voltage	AC 120V/60Hz	Phase	Neutral

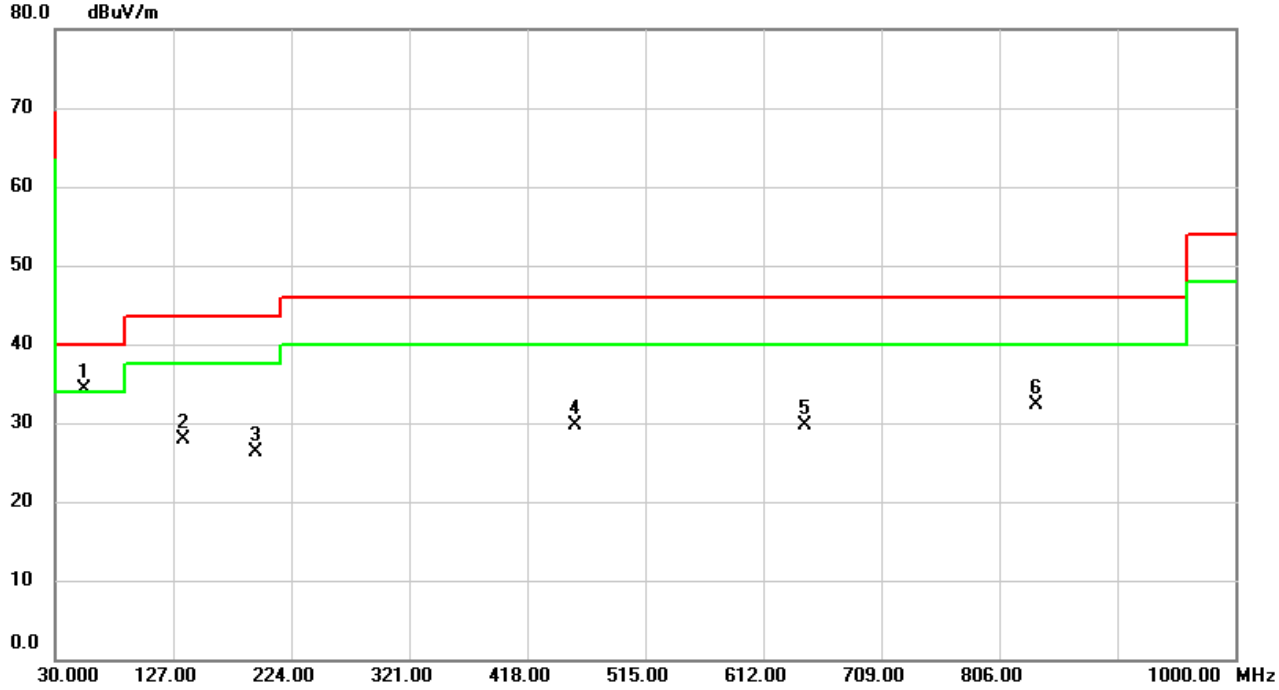


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1680	30.97	9.67	40.64	65.06	-24.42	QP	
2		0.1680	17.98	9.67	27.65	55.06	-27.41	AVG	
3		0.3367	25.67	9.71	35.38	59.28	-23.90	QP	
4	*	0.3367	20.36	9.71	30.07	49.28	-19.21	AVG	
5		0.6720	13.70	9.72	23.42	56.00	-32.58	QP	
6		0.6720	7.29	9.72	17.01	46.00	-28.99	AVG	
7		3.7658	18.22	9.81	28.03	56.00	-27.97	QP	
8		3.7658	8.30	9.81	18.11	46.00	-27.89	AVG	
9		8.6280	25.44	9.91	35.35	60.00	-24.65	QP	
10		8.6280	18.40	9.91	28.31	50.00	-21.69	AVG	
11		19.9860	16.98	10.02	27.00	60.00	-33.00	QP	
12		19.9860	11.16	10.02	21.18	50.00	-28.82	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

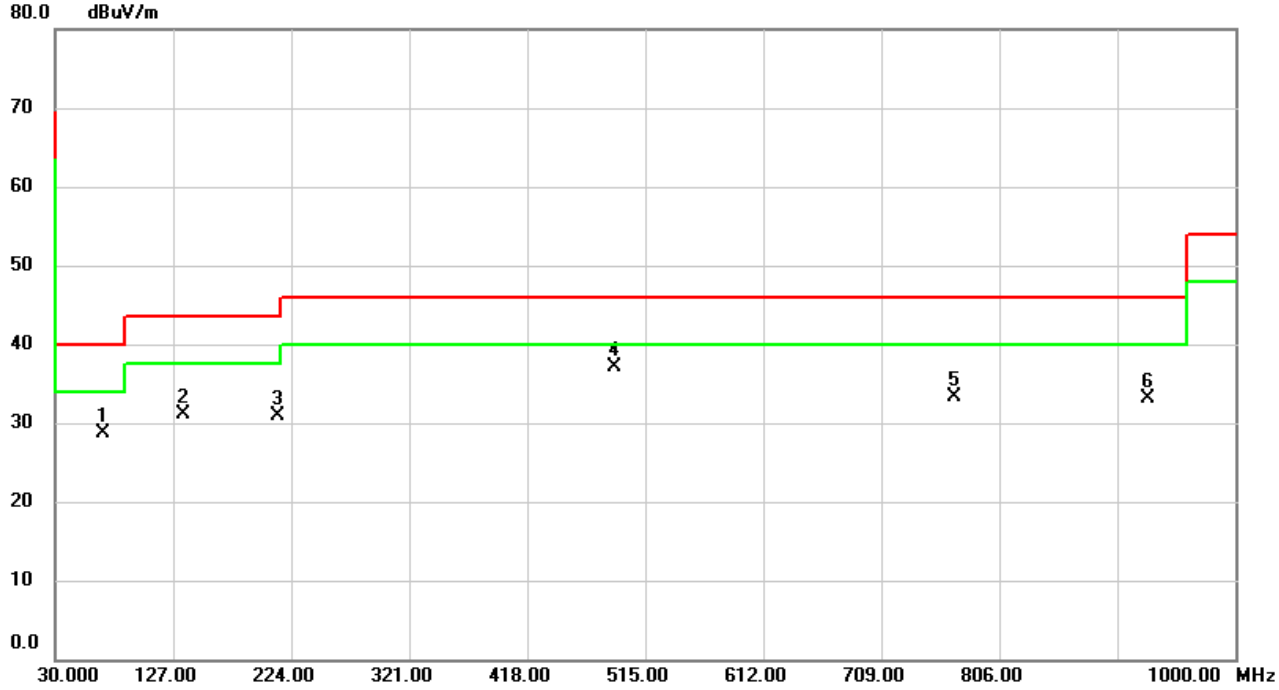
Test Mode	Zwave	Test Date	2020/7/6
Test Frequency	908.4	Polarization	Vertical
Temp	22°C	Hum.	52%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	54.2500	42.23	-7.98	34.25	40.00	-5.75	peak	
2		134.7600	37.29	-9.46	27.83	43.50	-15.67	peak	
3		194.9000	36.63	-10.41	26.22	43.50	-17.28	peak	
4		456.8000	33.19	-3.49	29.70	46.00	-16.30	peak	
5		645.9500	29.67	0.11	29.78	46.00	-16.22	peak	
6		836.0700	29.38	3.02	32.40	46.00	-13.60	peak	

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

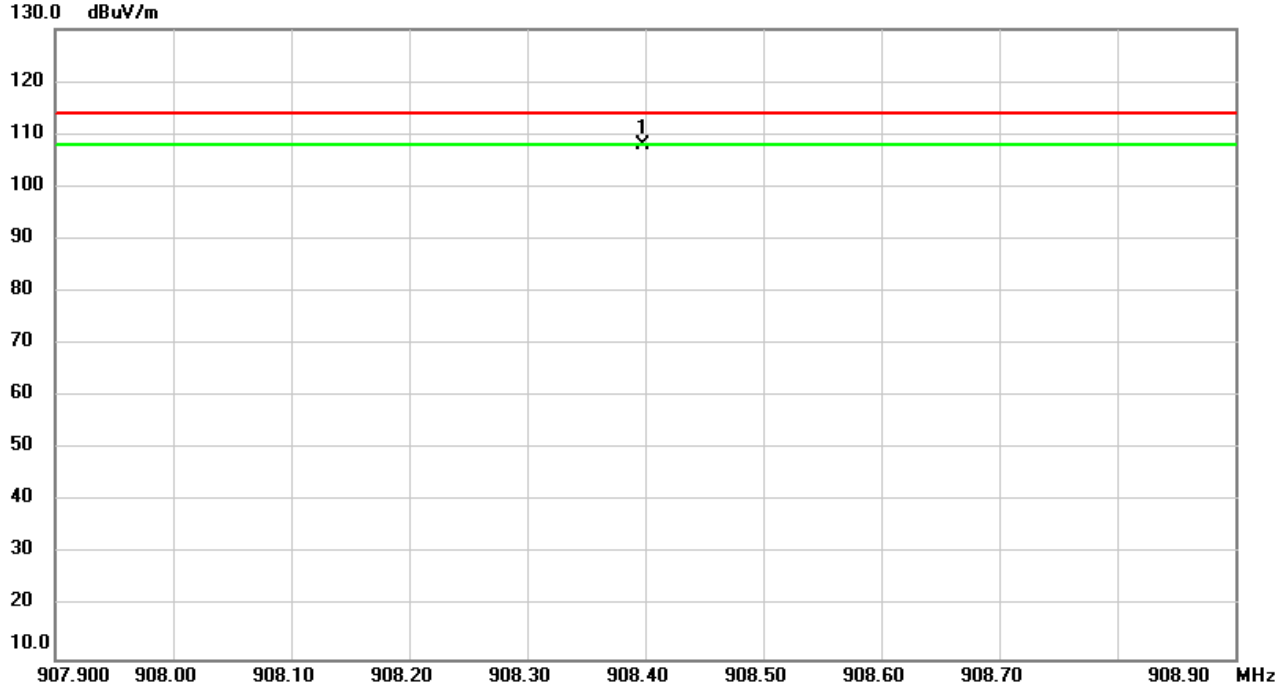
Test Mode	Zwave	Test Date	2020/7/6
Test Frequency	908.4	Polarization	Horizontal
Temp	22°C	Hum.	52%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		68.8000	39.04	-10.42	28.62	40.00	-11.38	peak	
2		134.7600	40.61	-9.46	31.15	43.50	-12.35	peak	
3		212.3600	41.63	-10.69	30.94	43.50	-12.56	peak	
4	*	489.7800	40.16	-3.00	37.16	46.00	-8.84	peak	
5		769.1400	31.08	2.30	33.38	46.00	-12.62	peak	
6		928.2200	28.72	4.33	33.05	46.00	-12.95	peak	

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

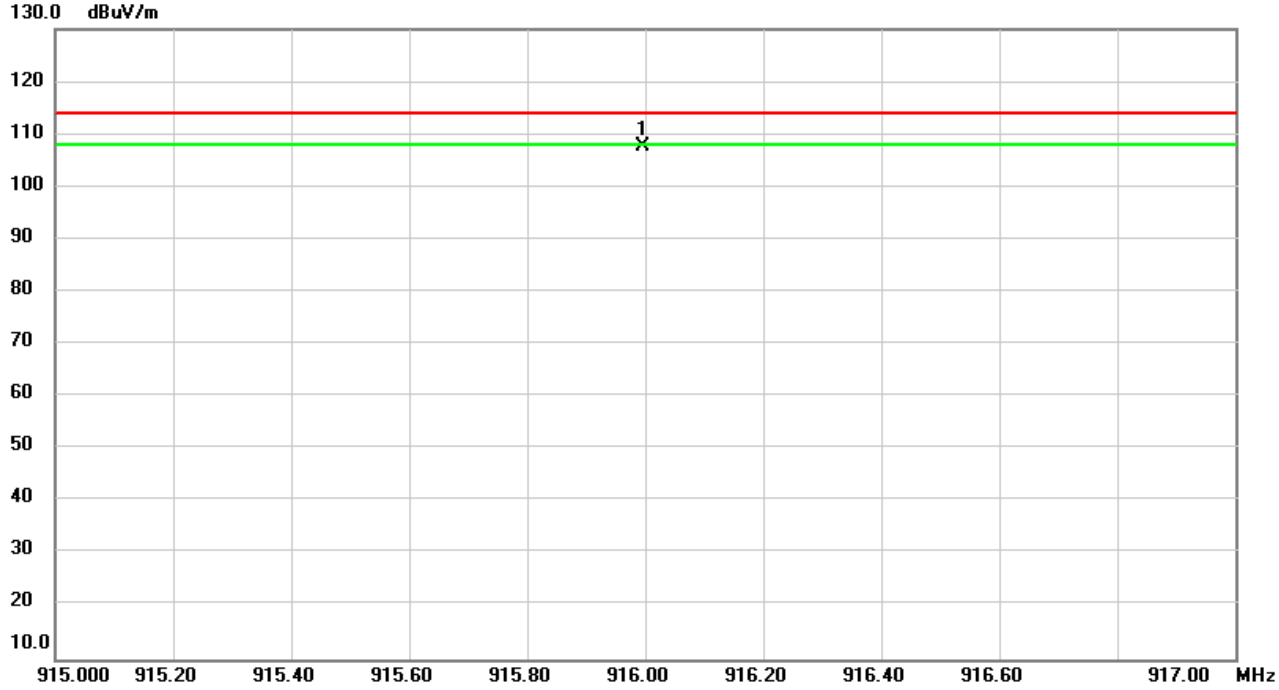
Test Mode	Zwave	Test Date	2020/7/6
Test Frequency	908.4	Polarization	Horizontal
Temp	22°C	Hum.	52%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	908.3980	77.14	30.83	107.97	114.00	-6.03	peak	

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

Test Mode	Zwave	Test Date	2020/7/6
Test Frequency	916	Polarization	Horizontal
Temp	22°C	Hum.	52%

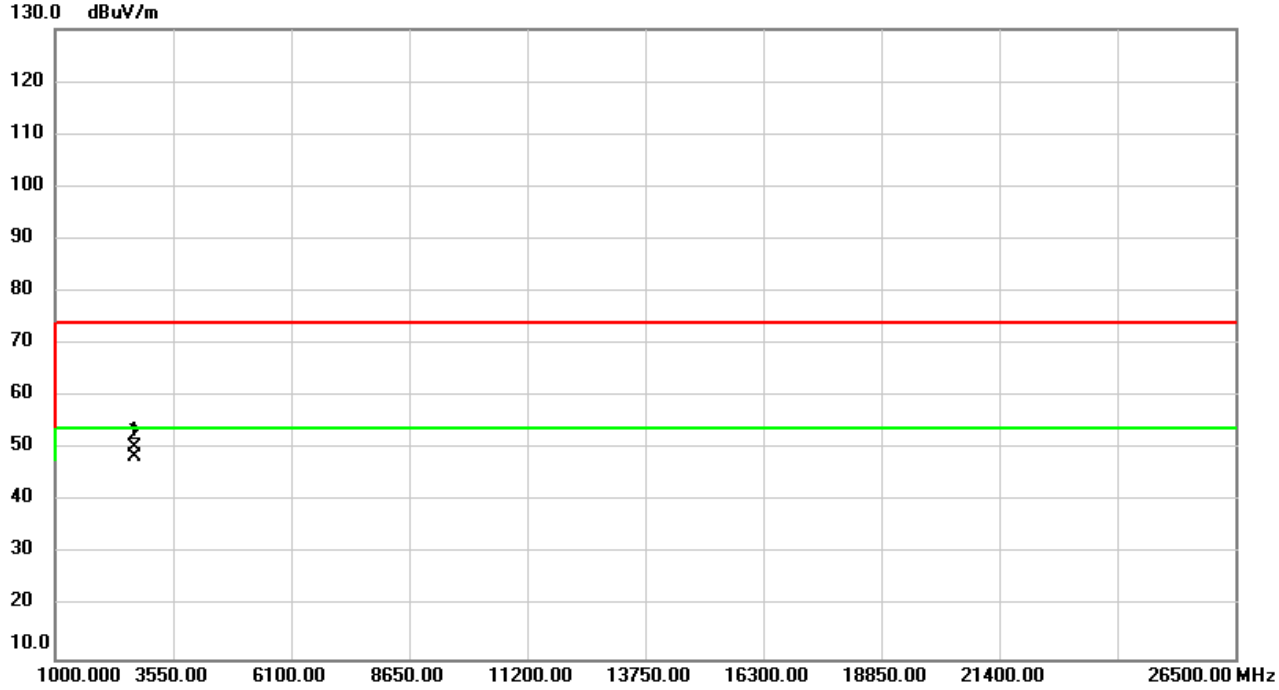


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	915.9970	76.68	30.92	107.60	114.00	-6.40	peak	

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

APPENDIX C RADIATED EMISSIONS - ABOVE 1 GHZ

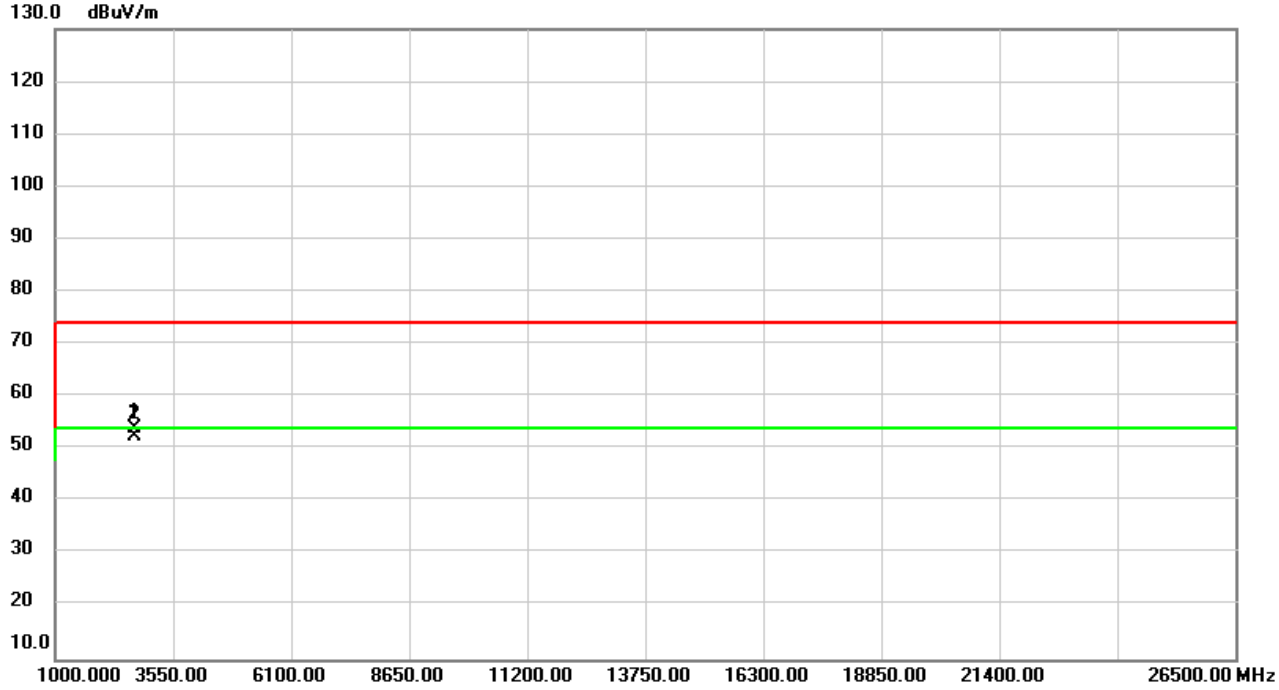
Test Mode	Zwave	Test Date	2020/7/6
Test Frequency	908.4	Polarization	Vertical
Temp	22°C	Hum.	52%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2725.200	64.43	-13.98	50.45	74.00	-23.55	peak	
2	*	2725.200	62.40	-13.98	48.42	54.00	-5.58	AVG	

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

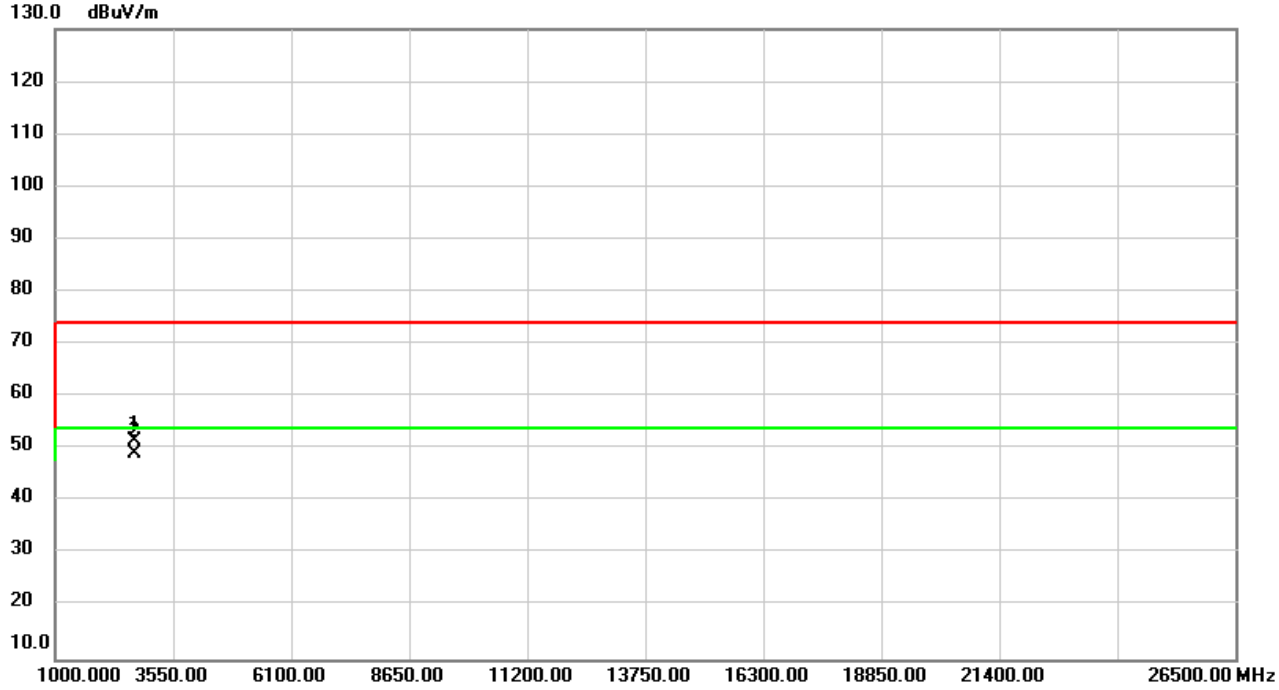
Test Mode	Zwave	Test Date	2020/7/6
Test Frequency	908.4	Polarization	Horizontal
Temp	22°C	Hum.	52%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2725.200	68.03	-13.98	54.05	74.00	-19.95	peak	
2	*	2725.200	66.49	-13.98	52.51	54.00	-1.49	AVG	

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

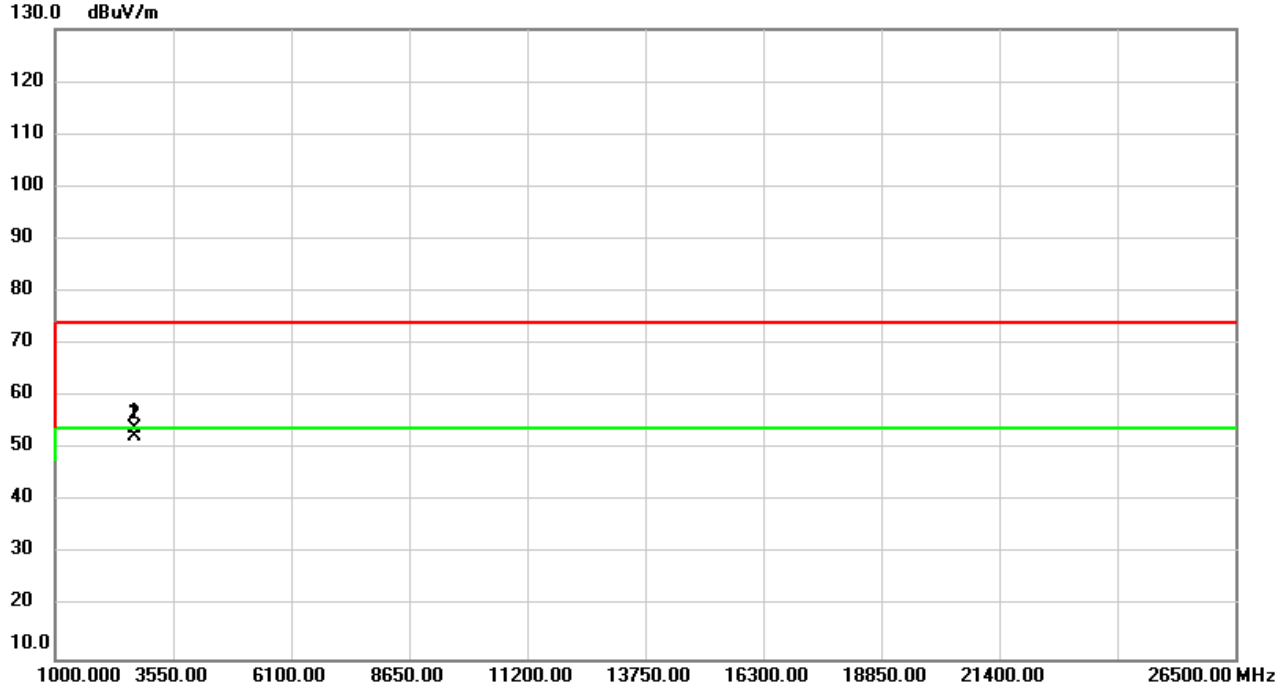
Test Mode	Zwave	Test Date	2020/7/6
Test Frequency	908.42	Polarization	Vertical
Temp	22°C	Hum.	52%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2725.260	65.47	-13.98	51.49	74.00	-22.51	peak	
2	*	2725.260	63.20	-13.98	49.22	54.00	-4.78	AVG	

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

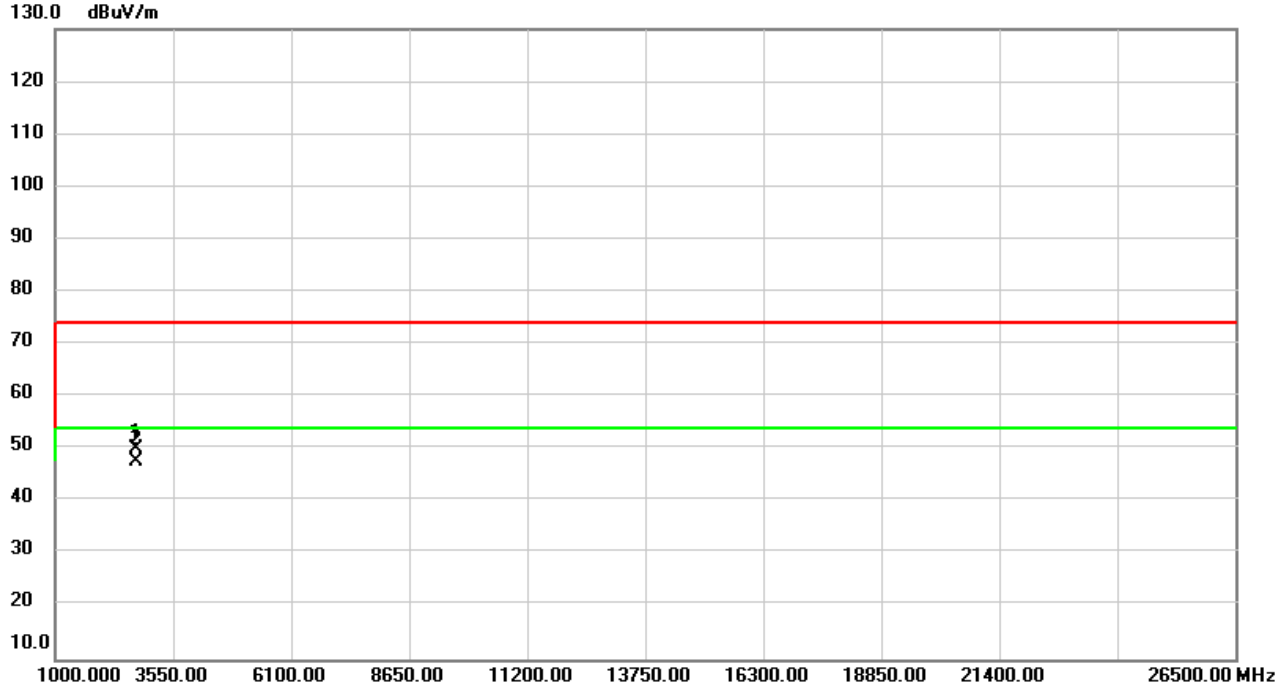
Test Mode	Zwave	Test Date	2020/7/6
Test Frequency	908.42	Polarization	Horizontal
Temp	22°C	Hum.	52%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2725.260	67.97	-13.98	53.99	74.00	-20.01	peak	
2	*	2725.260	66.46	-13.98	52.48	54.00	-1.52	AVG	

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

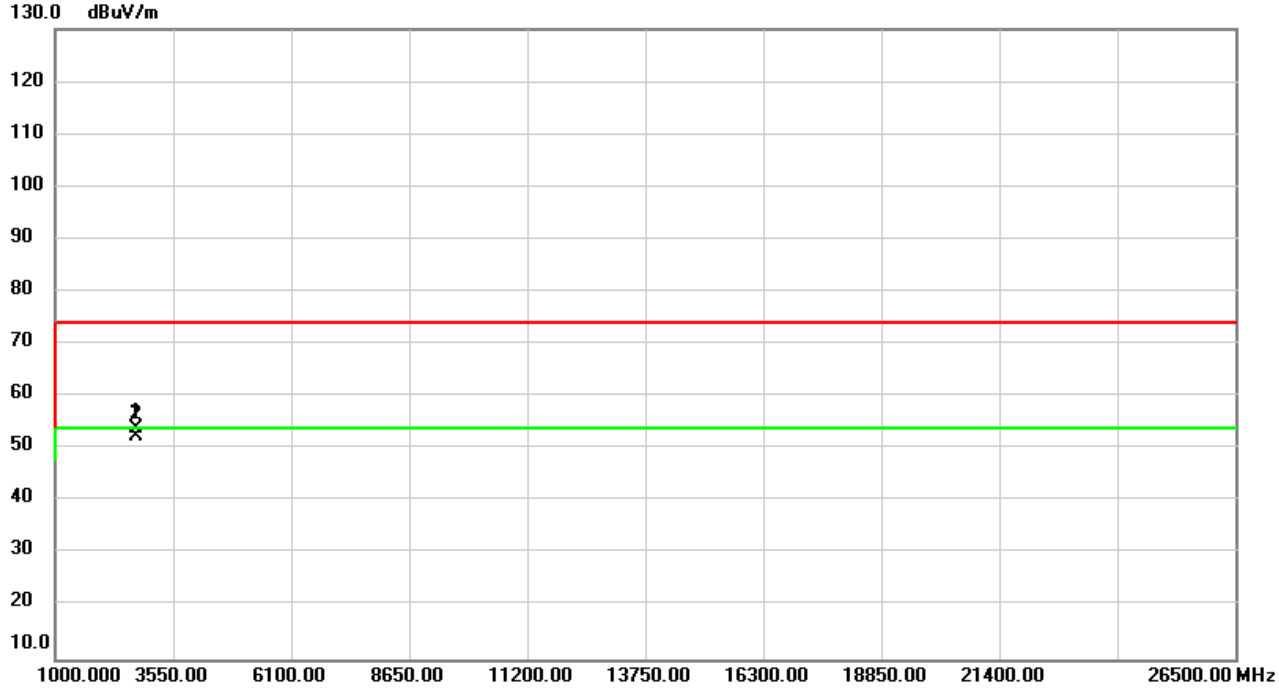
Test Mode	Zwave	Test Date	2020/7/6
Test Frequency	916	Polarization	Vertical
Temp	22°C	Hum.	52%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2748.000	63.92	-13.90	50.02	74.00	-23.98	peak	
2	*	2748.000	61.41	-13.90	47.51	54.00	-6.49	AVG	

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

Test Mode	Zwave	Test Date	2020/7/6
Test Frequency	916	Polarization	Horizontal
Temp	22°C	Hum.	52%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2748.000	67.76	-13.90	53.86	74.00	-20.14	peak	
2	*	2748.000	66.49	-13.90	52.59	54.00	-1.41	AVG	

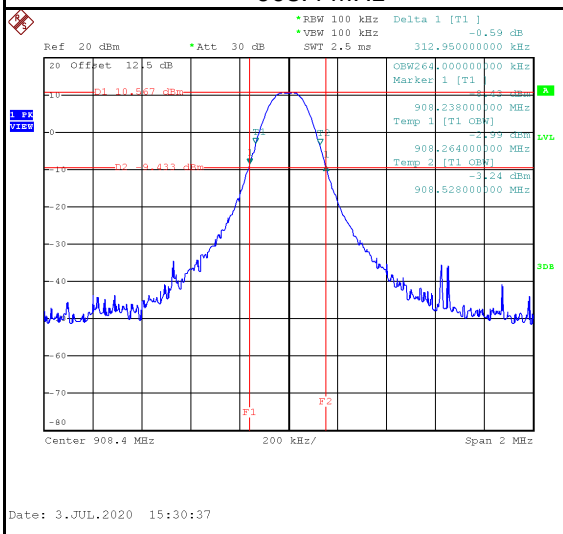
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

APPENDIX D BANDWIDTH

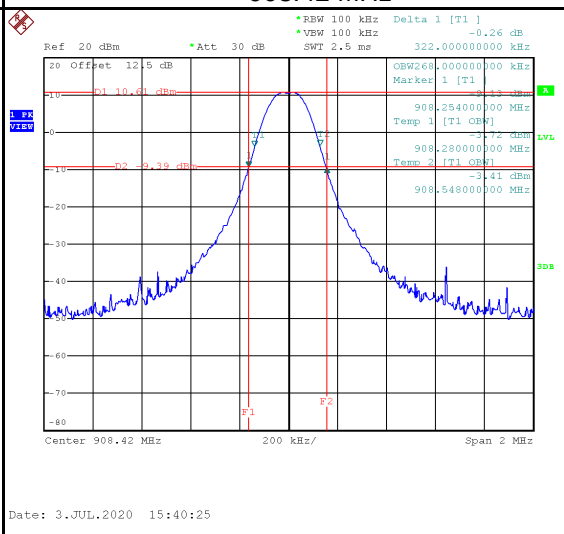
Test Mode:	TX Mode
Test Voltage	AC 120V/60Hz

Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied BW (MHz)	Fequency range MHz (20dB Down) fL ＞ 2400 MHz	Fequency range MHz (20dB Down) fH ＜ 2483.5 MHz
908.4	0.31	0.26	908.2380	-
908.42	0.32	0.27	-	-
916	0.33	0.27	-	916.1579

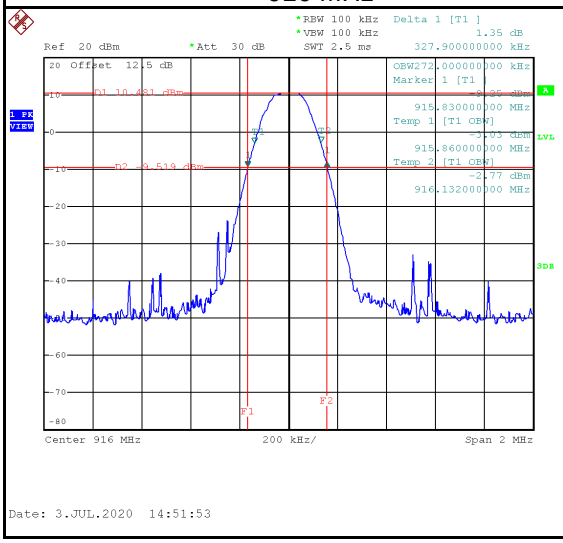
908.4 MHz



908.42 MHz



916 MHz



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End of Test Report