TEST REPORT

Applicant Name :	Meizhou Guo Wei Electronics Co., Ltd
Address :	AD1 Section, Economic Development Area, Dongsheng Industrial District, Meizhou, Guangdong, China.
Report Number :	RA221117-54815E-RFAA1
FCC ID:	2ARRB-VM40XLBU
IC	20353-VM40XLBU

Test Standard (s)

FCC PART 15.247; RSS-GEN ISSUE 5, FEBRUARY 2021 AMENDMENT 2; RSS-247, ISSUE 2, FEBRUARY 2017

Sample Description

Product Type:	Video baby monitor
Model No.:	VM40XL TOUCHBU
Multiple Model(s) No.:	N/A
Trade Mark:	Motorola
Date Received:	2022/11/17
Report Date:	2023/02/13

Test Result:	Pass*

* In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

Andy Yu
EMC Engineer

Approved By:

Candy Li
EMC Engineer

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	RA221117-54815E-RFAA1	Original Report	2023/02/13

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

HVIN	VM40XL TOUCHBU
Frequency Range	2402-2477MHz
Maximum conducted Peak output power	16.36dBm
Modulation Technique	GFSK
Antenna Specification*	0dBi (It is provided by the applicant)
Voltage Range	DC 5.0V from adapter
Sample serial number	1WPR-3 (Assigned by ATC)
Sample/EUT Status	Good condition
Adapter1 information	Model: BQ05A-0501000-U Input: 100-240V,50/60Hz Max, 300mA Output: DC 5.0V, 1000mA
Adapter2 information	Model: YWK-AD050100-U Input: 100-240V, 50/60Hz, 0.3A Output: DC 5.0V, 1000mA
Adapter 3 information	Model: PS05Q050K1000UD Input: 100-240V, 50/60Hz, 0.25A Max Output: DC 5.0V, 1.0A

Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commission rules, and RSS-GEN, RSS-247.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, section 15.203, 15.205, 15.207, 15.209, 15.247 rules and RSS-GEN, RSS-247.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed at Shenzhen Accurate Technology Co., Ltd. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		5%
RF Frequency		$0.082*10^{-7}$
RF output power, conducted		0.73dB
Unwanted Emission, conducted		1.6dB
AC Power Lines Conducted Emissions		2.72dB
Emissions, Radiated	9kHz - 30MHz	2.66dB
	30MHz - 1GHz	4.28dB
	1GHz - 18GHz	4.98dB
	18GHz - 26.5GHz	5.06dB
	26.5GHz - 40GHz	4.72dB
Temperature		1℃
Humidity		6%
Supply voltages		0.4%

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Facility

The test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 708358, the FCC Designation No.: CN1189. Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 429 7.01.

Listed by Innovation, Science and Economic Development Canada (ISEDC), the Registration Number is 5077A.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode.

Frequency List

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2402	12	2445
2	2404	13	2450
3	2406	14	2455
4	2408	15	2460
5	2410	16	2465
6	2415	17	2467
7	2420	18	2469
8	2425	19	2471
9	2430	20	2473
10	2435	21	2475
11	2440	22	2477

EUT was tested with Channel 1, 11 and 22.

EUT Exercise Software

“Teraterm”* software was used and the power level is default*. The software and power level was provided by the applicant.

Special Accessories

No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

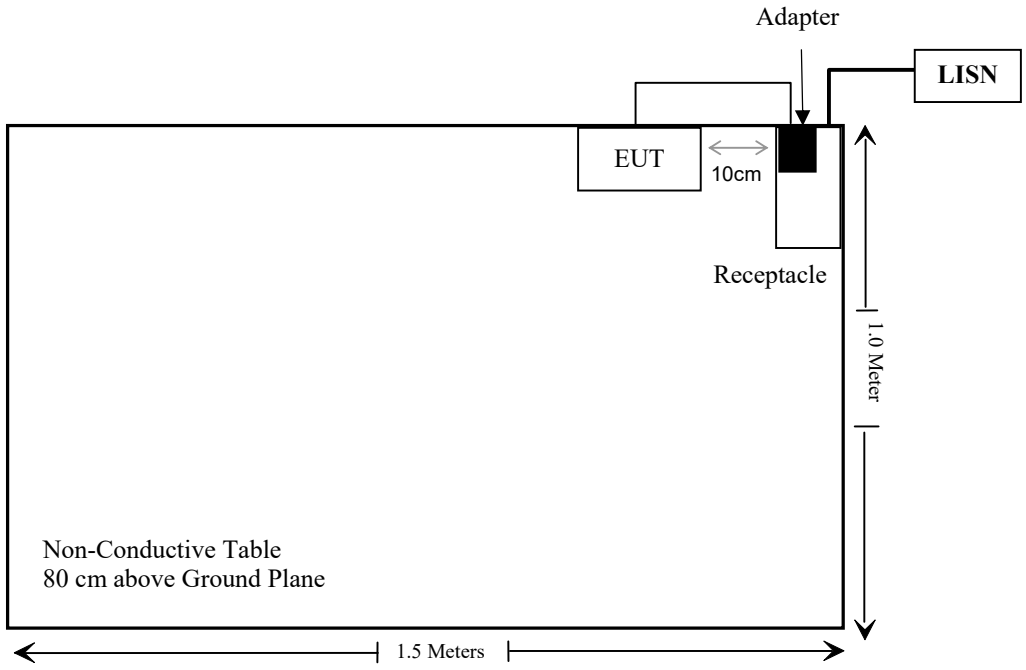
Manufacturer	Description	Model	Serial Number
/	/	/	/

External I/O Cable

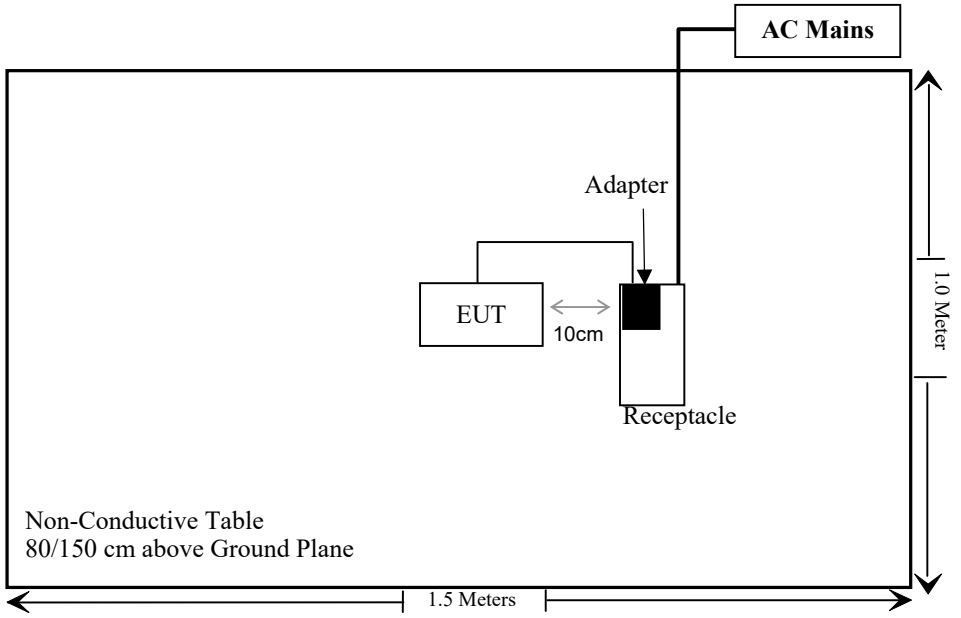
Cable Description	Length (m)	From Port	To
Un-shielding Detachable DC Cable	1.5	EUT	Adapter

Block Diagram of Test Setup

For conducted emission:



For Radiated Emissions:



SUMMARY OF TEST RESULTS

FCC Rules	ISEDC Rules	Description of Test	Result	Remark
§15.247 (i), §2.1091	RSS-102 § 2.5.2	RF Exposure& Exemption Limits for Routine Evaluation – RF Exposure Evaluation	Compliant	-
§15.203	RSS-Gen §6.8	Antenna Requirement	Compliant	-
§15.207(a)	RSS-Gen §8.8	AC Line Conducted Emissions	Compliant	-
§15.205, §15.209 & §15.247(d)	RSS-247 § 5.5	Radiated Emissions (30MHz-1GHz)	Compliant	-
§15.205, §15.209 & §15.247(d)	RSS-247 § 5.5	Radiated Emissions (above 1GHz)		See note Page 24~28 of reference report
§15.247(a)(1)	RSS- Gen§6.7, RSS-247 § 5.1 (a)	99% Occupied Bandwidth & 20 dB Emission Bandwidth	-	See note Page 31~34 of reference report
§15.247(a)(1)	RSS-247 § 5.1 (b)	Channel Separation Test	-	See note Page 29~30 of reference report
§15.247(a)(1)(iii)	RSS-247 § 5.1 (d)	Time of Occupancy (Dwell Time)	-	See note Page 37~38 of reference report
§15.247(a)(1)(iii)	RSS-247 § 5.1 (d)	Quantity of hopping channel Test	-	See note Page 35~36 of reference report
§15.247(b)(1)	RSS-247 § 5.1(b) &§ 5.4(b)	Peak Output Power Measurement	Compliant	-
§15.247(d)	RSS-247 § 5.5	Band edges	-	See note Page 42~45 of reference report

Note：
1. The manufacturer declared the EUT is electrical identical to the certified product Video baby monitor (model: VM40 CONNECTBU, FCC ID: 2ARRB-VM85BU, IC: 20353-VM85BU), except the mood night and Wi-Fi feature was remove.
2. The RF output power was spot checked and it's consistently with the reference report.
3. The test data refers to the report: SZ1210301-05161EA.
4. The Shenzhen Accurate Technology Co., Ltd. is responsible for all the information provided in this report, except when information is provided by the customer as identified in this report

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
Rohde& Schwarz	EMI Test Receiver	ESCI	100784	2022/11/25	2023/11/24
Rohde & Schwarz	L.I.S.N.	ENV216	101314	2022/11/25	2023/11/24
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2022/12/07	2023/12/06
Unknown	RF Coaxial Cable	No.17	N0350	2022/11/25	2023/11/24
Conducted Emission Test Software: e3 19821b (V9)					
Radiated Emission Test(below 1GHz)					
Rohde& Schwarz	Test Receiver	ESR	102725	2022/11/25	2023/11/24
SONOMA INSTRUMENT	Amplifier	310 N	186131	2022/11/08	2023/11/07
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2021/07/06	2024/07/05
Unknown	RF Coaxial Cable	No.12	N040	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.13	N300	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.14	N800	2022/11/25	2023/11/24
RF Conducted Test					
Rohde&Schwarz	Spectrum Analyzer	FSU26	200982	2022/07/04	2023/07/03
WEINSCHEL	10dB Attenuator	5324	AU 3842	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.31	RF-01	Each time	

*** Statement of Traceability:** Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §15.247 (i) & §1.1307 (b) (3) & §2.1091- RF Exposure

Applicable Standard

According to KDB 447498 D04 Interim General RF Exposure Guidance

MPE-Based Exemption:

An alternative to the SAR-based exemption is provided in § 1.1307(b)(3)(i)(C), for a much wider frequency range, from 300 kHz to 100 GHz, applicable for separation distances greater or equal to $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. The MPE-based test exemption condition is in terms of ERP, defined as the product of the maximum antenna gain and the delivered maximum time-averaged power. For this case, a RF source is an RF exempt device if its ERP (watts) is no more than a frequency-dependent value, as detailed tabular form in Appendix B. These limits have been derived based on the basic specifications on Maximum Permissible Exposure (MPE) considered for the FCC rules in § 1.1310(e)(1).

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R^2.
1.34-30	3,450 R^2/f^2.
30-300	3.83 R^2.
300-1,500	0.0128 R^2f.
1,500-100,000	19.2R^2.

f = frequency in MHz;
R = minimum separation distance from the body of a nearby person (appropriate units, e.g., m);

Result

For worst case:

Frequency (MHz)	Tune up conducted power	Antenna Gain		ERP		Evaluation Distance (m)	ERP Limit (W)
	(dBm)	(dBi)	(dBd)	(dBm)	(W)		
2402-2477	17.0	0	-2.15	14.85	0.031	0.2	0.768

Note: 1. The tune up conducted power and antenna gain was declared by the applicant.
2. 0dBd=2.15dBi.

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliant.

RSS-102 § 2.5.2 –EXEMPTION LIMITS FOR ROUTINE EVALUATION-RF EXPOSURE EVALUATION

Applicable Standard

According to RSS-102 § (2.5.2):

2.5.2 Exemption Limits for Routine Evaluation — RF Exposure Evaluation

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz[6] and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $22.48/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2}\ f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

Calculated Data:

Mode	Frequency (MHz)	Antenna Gain (dBi)	Turn up Conducted Power (dBm)	Turn up EIRP		EIRP Limit (W)
				(dBm)	(W)	
FHSS	2402-2477	0	17.0	17.0	0.050	2.68

Note: The tune up conducted power and antenna gain was declared by the applicant.

So the RF Exposure evaluation can be compliance.

FCC §15.203 & RSS-GEN §6.8– ANTENNA REQUIREMENT

Applicable Standard

According to FCC § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.

The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

For licence-exempt equipment with detachable antennas, the user manual shall also contain the following notice in a conspicuous location:

This radio transmitter [enter the device's ISED certification number] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.
Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

Antenna Connector Construction

The EUT has one internal antenna arrangements which were permanently attached and the gain is 0dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Type	Antenna Gain	Impedance
Monopole	0dBi	50 Ω

Result: Compliance.

FCC §15.207 (a) & RSS-GEN §8.8– AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207(a)

Unless stated otherwise in the applicable RSS, for radio apparatus that are designed to be connected to the public utility AC power network, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the range 150 kHz to 30 MHz shall not exceed the limits in table 4, as measured using a 50 μH / 50 Ω line impedance stabilization network. This requirement applies for the radio frequency voltage measured between each power line and the ground terminal of each AC power-line mains cable of the EUT.

For an EUT that connects to the AC power lines indirectly, through another device, the requirement for compliance with the limits in table 4 shall apply at the terminals of the AC power-line mains cable of a representative support device, while it provides power to the EUT. The lower limit applies at the boundary between the frequency ranges. The device used to power the EUT shall be representative of typical applications.

Table 4 - AC Power Lines Conducted Emission Limits		
Frequency range (MHz)	Conducted limit (dBμV)	
	Quasi-Peak	Average
0.15 – 0.5	66 to 56[1]	56 to 46[1]
0.5 – 5	56	46
5 – 30	60	50

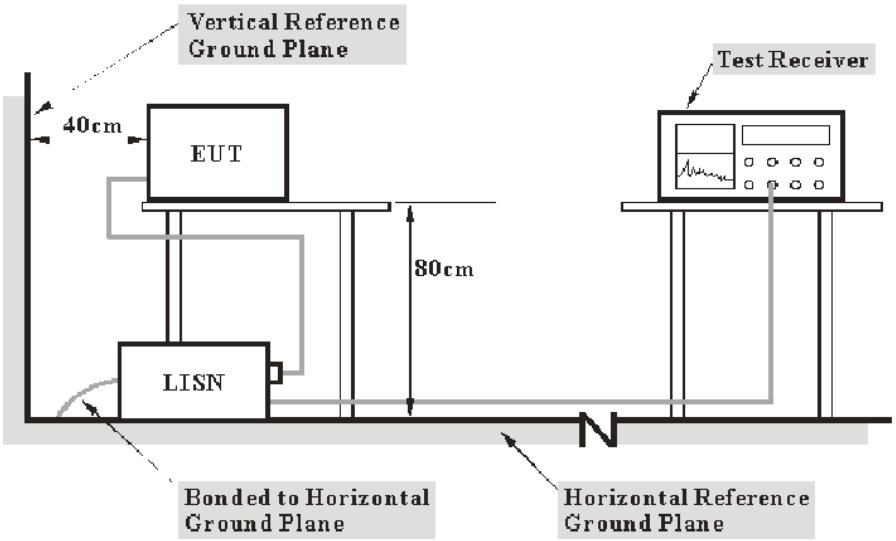
Note 1: The level decreases linearly with the logarithm of the frequency.

For an EUT with a permanent or detachable antenna operating between 150 kHz and 30 MHz, the AC power-line conducted emissions must be measured using the following configurations:

(a) Perform the AC power-line conducted emissions test with the antenna connected to determine compliance with the limits of table 4 outside the transmitter's fundamental emission band.

(b) Retest with a dummy load instead of the antenna to determine compliance with the limits of table 4 within the transmitter's fundamental emission band. For a detachable antenna, remove the antenna and connect a suitable dummy load to the antenna connector. For a permanent antenna, remove the antenna and terminate the RF output with a dummy load or network that simulates the antenna in the fundamental frequency band.

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The measurement procedure of EUT setup is according with ANSI C63.10-2013. The related limit was specified in FCC Part 15.207 and RSS-Gen limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak and average detection mode.

Corrected Factor & Margin Calculation

The Corrected factor is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss. The basic equation is as follows:

Factor = LISN VDF + Cable Loss

The "**Over Limit**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a over limit of -7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

Over Limit = Level – Limit

Test Data

Environmental Conditions

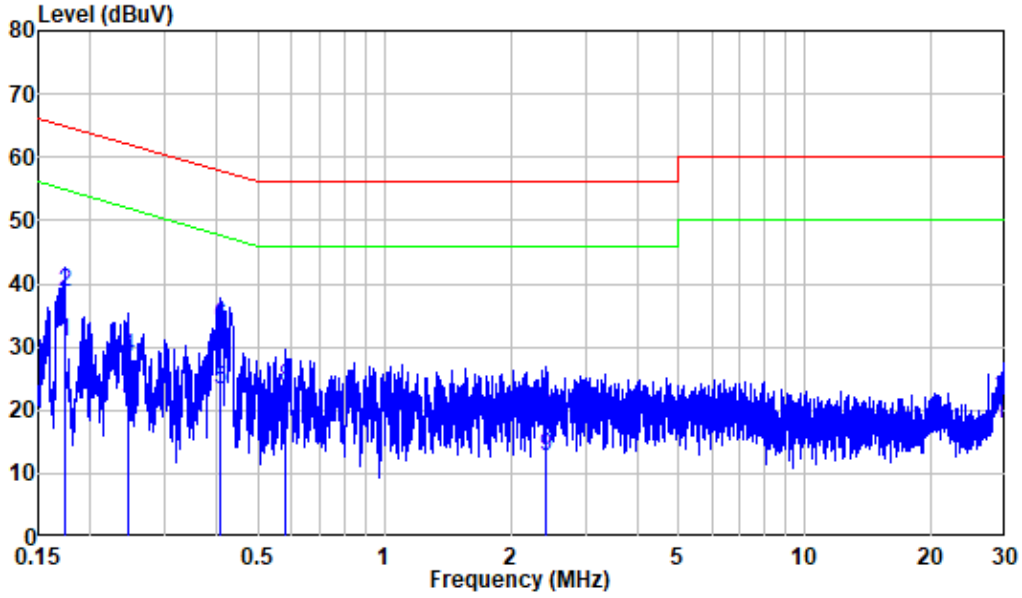
Temperature:	19 ℃
Relative Humidity:	46 %
ATM Pressure:	101.0 kPa

The testing was performed by Chenjie on 2022-12-20.

EUT operation mode: Transmitting (worst case is low channel)

Adapter 1(BQ05A-0501000-U)

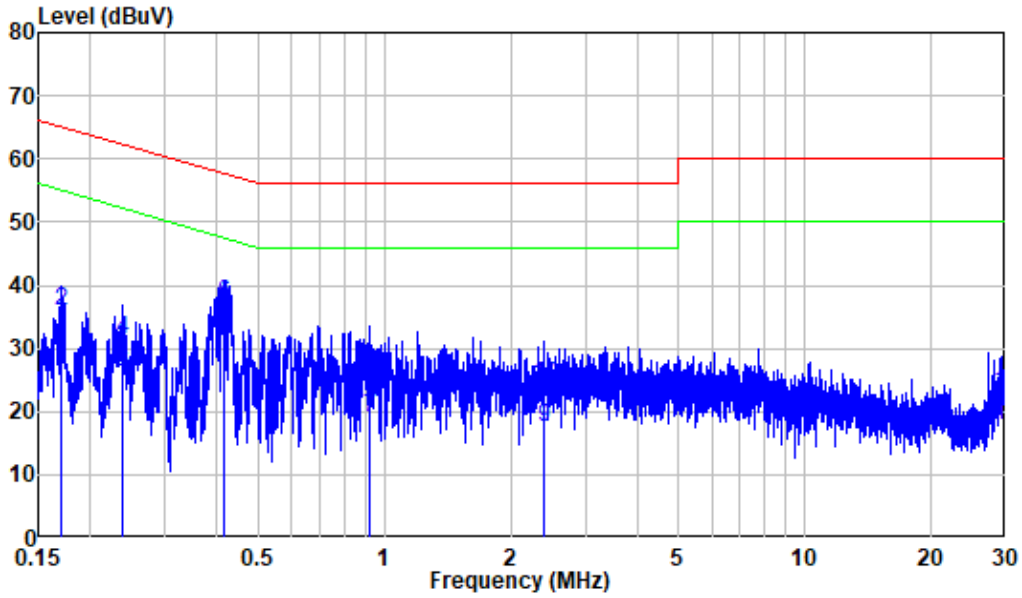
AC 120V/60 Hz, Line



Site : Shielding Room
Condition: Line
Mode : Transmitting
Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.174	9.80	21.05	30.85	54.79	-23.94	Average
2	0.174	9.80	28.69	38.49	64.79	-26.30	QP
3	0.246	9.80	11.88	21.68	51.90	-30.22	Average
4	0.246	9.80	18.58	28.38	61.90	-33.52	QP
5	0.408	9.80	13.47	23.27	47.69	-24.42	Average
6	0.408	9.80	23.50	33.30	57.69	-24.39	QP
7	0.582	9.81	8.55	18.36	46.00	-27.64	Average
8	0.582	9.81	13.66	23.47	56.00	-32.53	QP
9	2.409	9.82	2.81	12.63	46.00	-33.37	Average
10	2.409	9.82	9.17	18.99	56.00	-37.01	QP
11	29.980	10.10	7.77	17.87	50.00	-32.13	Average
12	29.980	10.10	11.98	22.08	60.00	-37.92	QP

AC 120V/60 Hz, Neutral

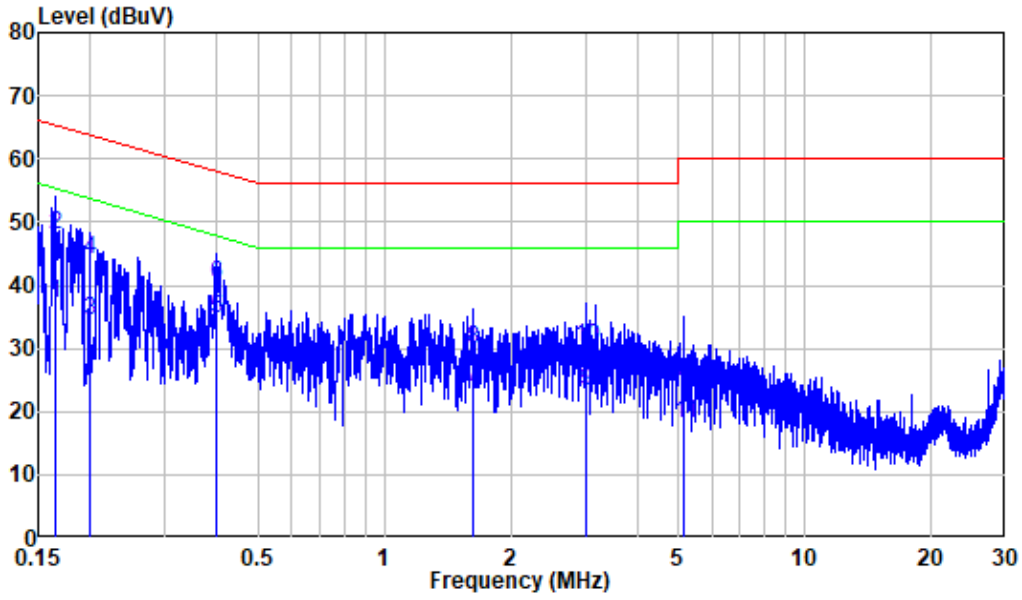


Site : Shielding Room
Condition: Neutral
Mode : Transmitting
Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.170	9.80	19.39	29.19	54.97	-25.78	Average
2	0.170	9.80	25.99	35.79	64.97	-29.18	QP
3	0.238	9.80	16.54	26.34	52.17	-25.83	Average
4	0.238	9.80	21.72	31.52	62.17	-30.65	QP
5	0.417	9.80	21.55	31.35	47.51	-16.16	Average
6	0.417	9.80	27.44	37.24	57.51	-20.27	QP
7	0.919	9.81	9.31	19.12	46.00	-26.88	Average
8	0.919	9.81	16.00	25.81	56.00	-30.19	QP
9	2.396	9.82	7.67	17.49	46.00	-28.51	Average
10	2.396	9.82	14.24	24.06	56.00	-31.94	QP
11	29.980	10.20	7.53	17.73	50.00	-32.27	Average
12	29.980	10.20	12.86	23.06	60.00	-36.94	QP

Adapter 2 (YWK-AD050100-U)

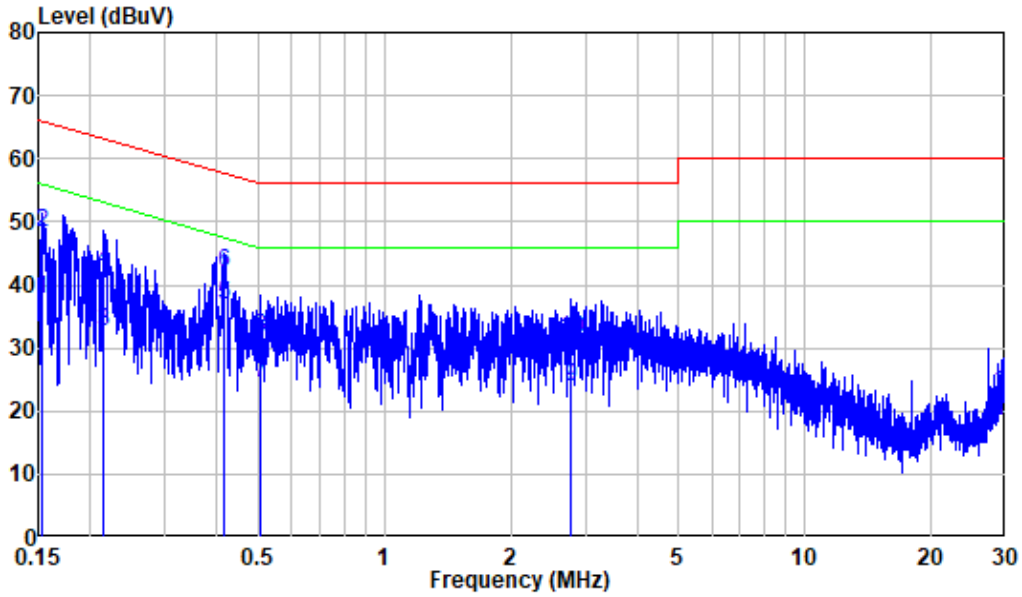
AC 120V/60 Hz, Line



Site : Shielding Room
Condition: Line
Job No. : RA221117-54815E-RFA2
Mode : Transmitting
Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.165	9.80	27.35	37.15	55.21	-18.06	Average
2	0.165	9.80	38.33	48.13	65.21	-17.08	QP
3	0.200	9.80	24.53	34.33	53.61	-19.28	Average
4	0.200	9.80	34.20	44.00	63.61	-19.61	QP
5	0.399	9.80	24.77	34.57	47.88	-13.31	Average
6	0.399	9.80	30.50	40.30	57.88	-17.58	QP
7	1.619	9.82	14.04	23.86	46.00	-22.14	Average
8	1.619	9.82	20.11	29.93	56.00	-26.07	QP
9	3.029	9.83	13.42	23.25	46.00	-22.75	Average
10	3.029	9.83	20.28	30.11	56.00	-25.89	QP
11	5.159	9.85	8.38	18.23	50.00	-31.77	Average
12	5.159	9.85	14.98	24.83	60.00	-35.17	QP

AC 120V/60 Hz, Neutral

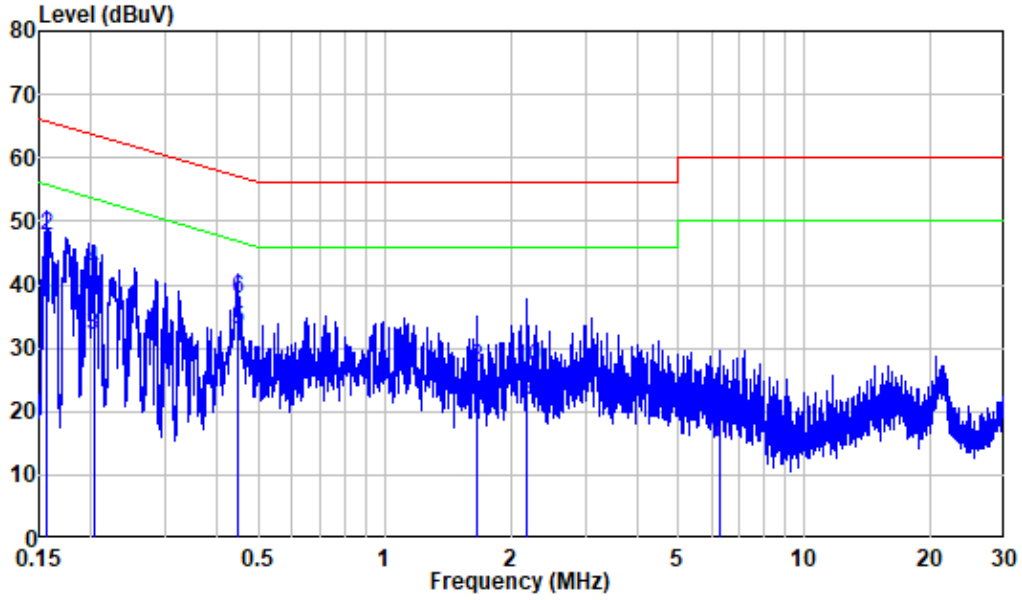


Site : Shielding Room
Condition: Neutral
Mode : Transmitting
Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.154	9.80	28.01	37.81	55.81	-18.00	Average
2	0.154	9.80	38.51	48.31	65.81	-17.50	QP
3	0.215	9.80	22.79	32.59	53.01	-20.42	Average
4	0.215	9.80	32.52	42.32	63.01	-20.69	QP
5	0.416	9.80	26.96	36.76	47.52	-10.76	Average
6	0.416	9.80	32.05	41.85	57.52	-15.67	QP
7	0.507	9.80	14.75	24.55	46.00	-21.45	Average
8	0.507	9.80	21.89	31.69	56.00	-24.31	QP
9	2.772	9.83	13.90	23.73	46.00	-22.27	Average
10	2.772	9.83	21.62	31.45	56.00	-24.55	QP
11	29.980	10.20	8.13	18.33	50.00	-31.67	Average
12	29.980	10.20	12.81	23.01	60.00	-36.99	QP

Adapter 3 (PS05Q050K1000UD)

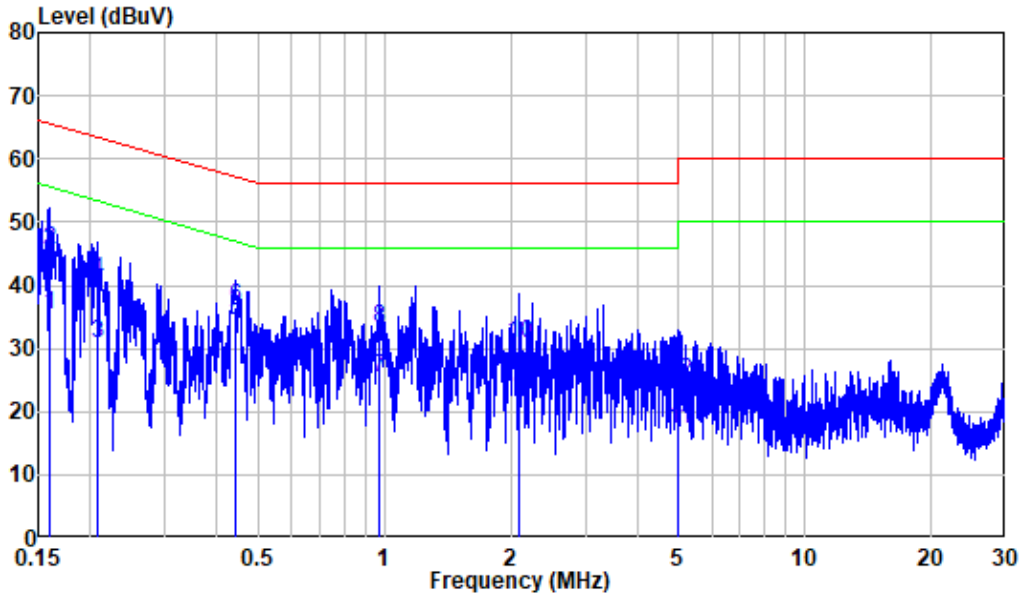
AC 120V/60 Hz, Line



Site : Shielding Room
Condition: Line
Mode : Transmitting
Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.156	9.80	26.70	36.50	55.65	-19.15	Average
2	0.156	9.80	37.84	47.64	65.65	-18.01	QP
3	0.202	9.80	22.18	31.98	53.51	-21.53	Average
4	0.202	9.80	32.60	42.40	63.51	-21.11	QP
5	0.445	9.80	23.00	32.80	46.96	-14.16	Average
6	0.445	9.80	27.90	37.70	56.96	-19.26	QP
7	1.660	9.82	10.97	20.79	46.00	-25.21	Average
8	1.660	9.82	16.97	26.79	56.00	-29.21	QP
9	2.185	9.82	11.79	21.61	46.00	-24.39	Average
10	2.185	9.82	17.08	26.90	56.00	-29.10	QP
11	6.302	9.86	5.27	15.13	50.00	-34.87	Average
12	6.302	9.86	11.35	21.21	60.00	-38.79	QP

AC 120V/60 Hz, Neutral



Site : Shielding Room
Condition: Neutral
Mode : Transmitting
Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.159	9.80	25.65	35.45	55.52	-20.07	Average
2	0.159	9.80	35.73	45.53	65.52	-19.99	QP
3	0.208	9.80	21.09	30.89	53.28	-22.39	Average
4	0.208	9.80	31.02	40.82	63.28	-22.46	QP
5	0.442	9.80	24.56	34.36	47.02	-12.66	Average
6	0.442	9.80	26.81	36.61	57.02	-20.41	QP
7	0.972	9.81	15.44	25.25	46.00	-20.75	Average
8	0.972	9.81	23.43	33.24	56.00	-22.76	QP
9	2.093	9.82	12.54	22.36	46.00	-23.64	Average
10	2.093	9.82	20.86	30.68	56.00	-25.32	QP
11	5.015	9.89	7.45	17.34	50.00	-32.66	Average
12	5.015	9.89	14.98	24.87	60.00	-35.13	QP

FCC §15.205, §15.209 & §15.247(d) & RSS-247§ 5.5 – RADIATED EMISSIONS

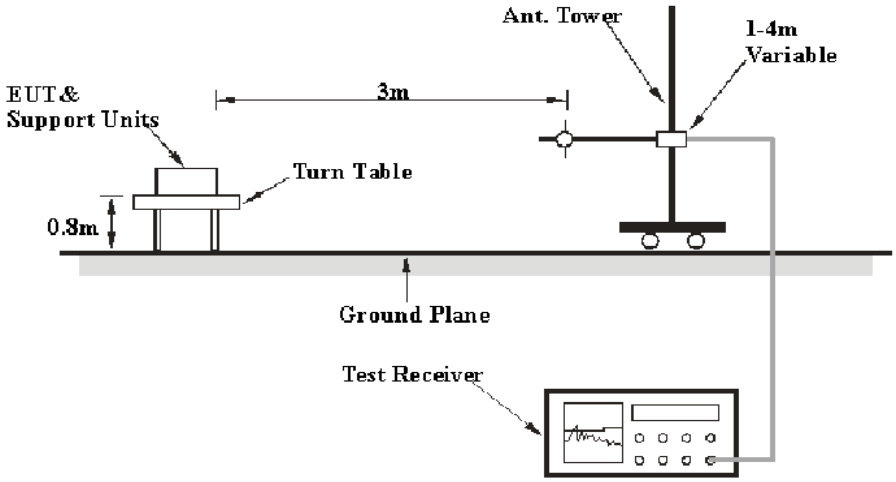
Applicable Standard

FCC §15.205; §15.209; §15.247(d) and RSS-247 §5.5

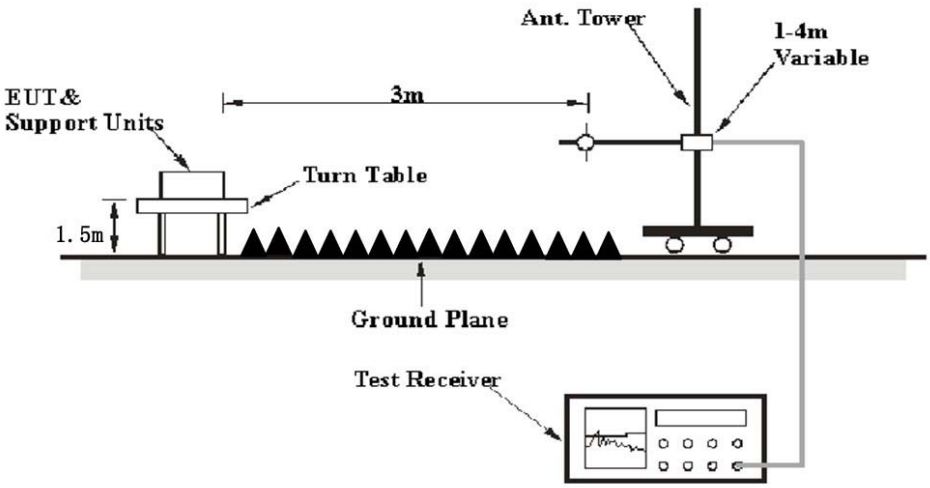
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

EUT Setup

Below 1 GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, FCC 15.247 limits and RSS-247/RSS-Gen limits.

EMI Test Receiver & Spectrum Analyzer Setup

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1 MHz	10 Hz	/	Average

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All final data was recorded in Quasi-peak detection mode for frequency range of 30 MHz -1 GHz and peak and Average detection modes for frequencies above 1 GHz.

Corrected Factor & Margin Calculation

The Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain. The basic equation is as follows:

Factor = Antenna Factor + Cable Loss - Amplifier Gain

The "**Over Limit/Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over Limit/margin of -7dB means the emission is 7dB below the limit. The equation for calculation is as follows:

Over Limit/Margin = Level / Corrected Amplitude – Limit
Level / Corrected Amplitude = Read Level + Factor

Test Data

Environmental Conditions

Temperature:	25℃
Relative Humidity:	55%
ATM Pressure:	101.0 kPa

The testing was performed by Jimi on 2022-12-20.

EUT operation mode: Transmitting

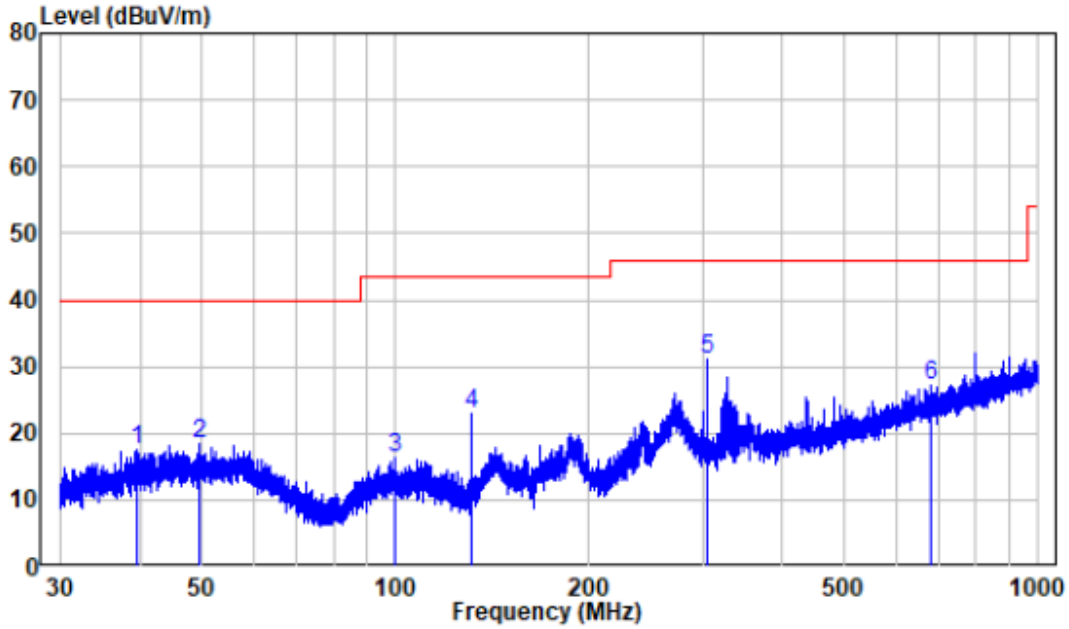
Note: test data for above 1GHz, please refer to the report SZ1210301-05161EA page 24 to page 28.

30MHz-1GHz: *(worst case is low channel)*

Note: When the test result of peak was less than the limit of QP more than 6dB, just peak value were recorded.

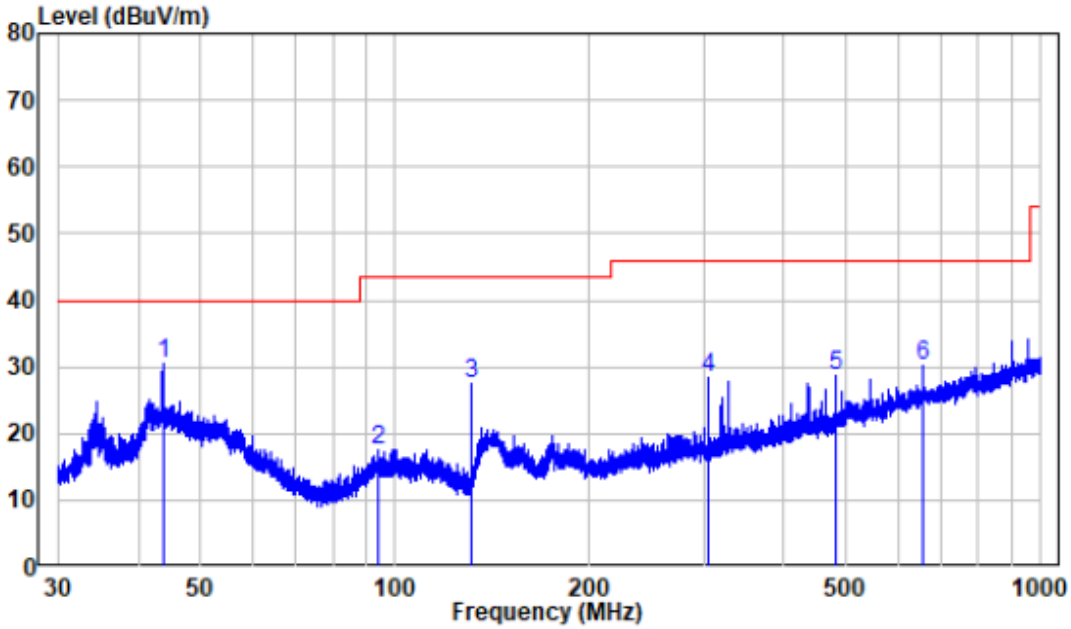
Adapter 1(BQ05A-0501000-U)

Horizontal:



	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	39.593	-10.43	27.98	17.55	40.00	-22.45	Peak
2	49.598	-9.93	28.26	18.33	40.00	-21.67	Peak
3	99.615	-11.89	28.15	16.26	43.50	-27.24	Peak
4	130.894	-14.92	37.79	22.87	43.50	-20.63	Peak
5	305.546	-9.04	40.13	31.09	46.00	-14.91	Peak
6	679.066	-1.52	28.78	27.26	46.00	-18.74	Peak

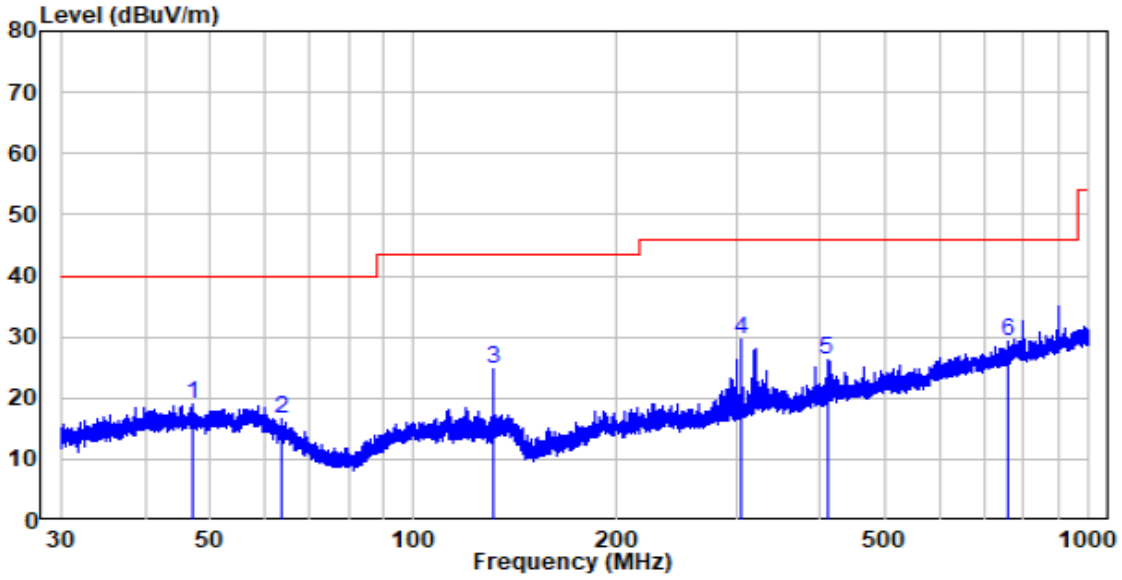
Vertical



	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	43.620	-9.92	40.45	30.53	40.00	-9.47	Peak
2	94.098	-12.67	30.18	17.51	43.50	-25.99	Peak
3	130.894	-14.92	42.34	27.42	43.50	-16.08	Peak
4	305.546	-9.04	37.30	28.26	46.00	-17.74	Peak
5	480.107	-5.00	33.68	28.68	46.00	-17.32	Peak
6	654.806	-1.58	31.90	30.32	46.00	-15.68	Peak

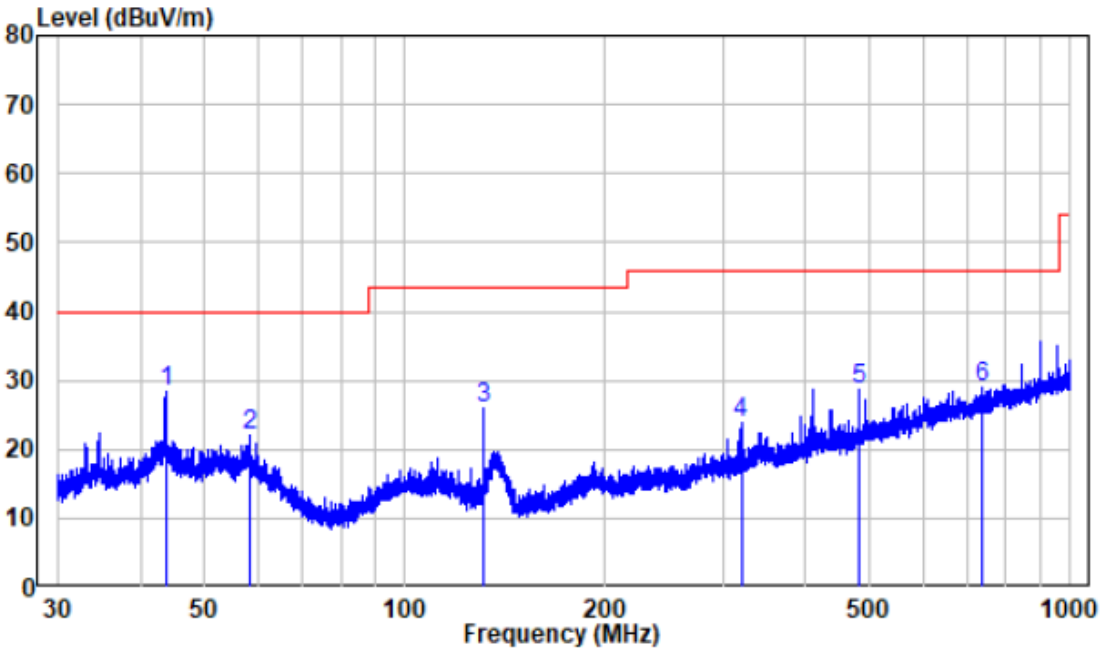
Adapter 2 (YWK-AD050100-U)

Horizontal:



	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	46.99_	-10.00	28.97	18.97	40.00	-21.03	Peak
2	63.675	-12.04	28.56	16.52	40.00	-23.48	Peak
3	130.894	-14.92	39.59	24.67	43.50	-18.83	Peak
4	305.546	-9.04	38.52	29.48	46.00	-16.52	Peak
5	409.125	-6.40	32.62	26.22	46.00	-19.78	Peak
6	760.037	-0.55	29.71	29.16	46.00	-16.84	Peak

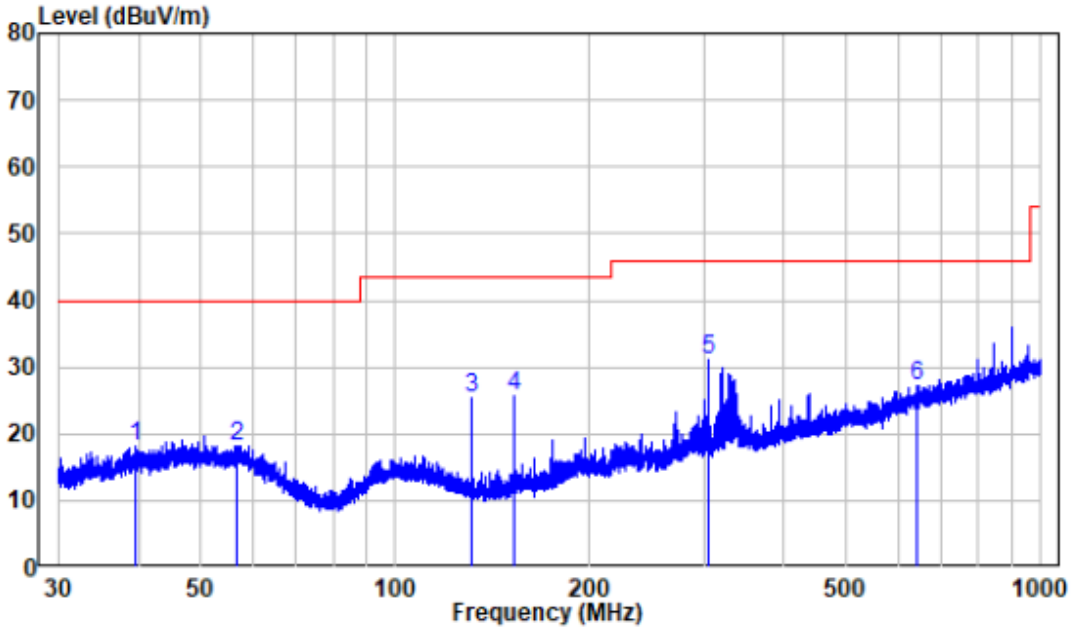
Vertical



	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	43.620	-9.92	38.19	28.27	40.00	-11.73	Peak
2	58.561	-10.10	32.09	21.99	40.00	-18.01	Peak
3	130.894	-14.92	40.80	25.88	43.50	-17.62	Peak
4	320.077	-8.45	32.17	23.72	46.00	-22.28	Peak
5	480.107	-5.00	33.57	28.57	46.00	-17.43	Peak
6	737.718	-0.73	29.75	29.02	46.00	-16.98	Peak

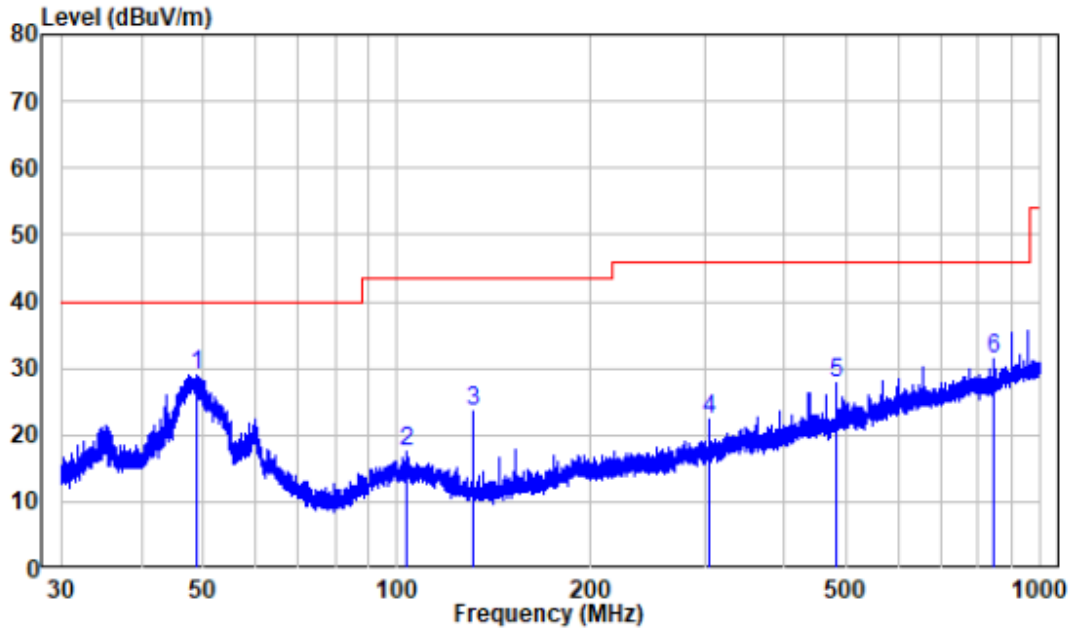
Adapter 3 (PS05Q050K1000UD)

Horizontal:



	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	39.593	-10.43	28.44	18.01	40.00	-21.99	Peak
2	56.792	-10.08	28.27	18.19	40.00	-21.81	Peak
3	130.894	-14.92	40.23	25.31	43.50	-18.19	Peak
4	152.731	-15.10	40.64	25.54	43.50	-17.96	Peak
5	305.546	-9.04	40.27	31.23	46.00	-14.77	Peak
6	643.707	-1.89	29.12	27.23	46.00	-18.77	Peak

Vertical



	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	48.651	-9.97	39.00	29.03	40.00	-10.97	Peak
2	103.216	-11.67	29.18	17.51	43.50	-25.99	Peak
3	130.894	-14.92	38.45	23.53	43.50	-19.97	Peak
4	305.546	-9.04	31.31	22.27	46.00	-23.73	Peak
5	480.107	-5.00	32.74	27.74	46.00	-18.26	Peak
6	845.829	0.40	30.85	31.25	46.00	-14.75	Peak

FCC §15.247(b) (1) & RSS-247§ 5.1(b) &§ 5.4(b) - PEAK OUTPUT POWER MEASUREMENT

Applicable Standard

According to §15.247(b) (1), for frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. And for all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.

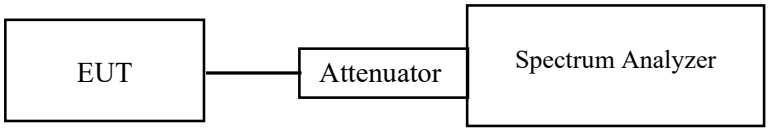
For frequency hopping systems (FHSs) operating in the band 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1.0 W if the hopset uses 75 or more hopping channels; the maximum peak conducted output power shall not exceed 0.125 W if the hopset uses less than 75 hopping channels. The e.i.r.p. shall not exceed 4 W (see Section 5.4(e) for exceptions).

Frequency hopping systems (FHSs) shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the -20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, FHSs operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two thirds of the -20 dB bandwidth of the hopping channel, whichever is greater, provided that the systems operate with an output power no greater than 0.125 W.

Test Procedure

Test Method: ANSI C63.10-2013 Clause 7.8.5

1. Place the EUT on a bench and set in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.
3. Add a correction factor to the display.



Test Data

Environmental Conditions

Temperature:	22 ℃
Relative Humidity:	55%
ATM Pressure:	101.0 kPa

The testing was performed by Andy Yu on 2023-02-09.

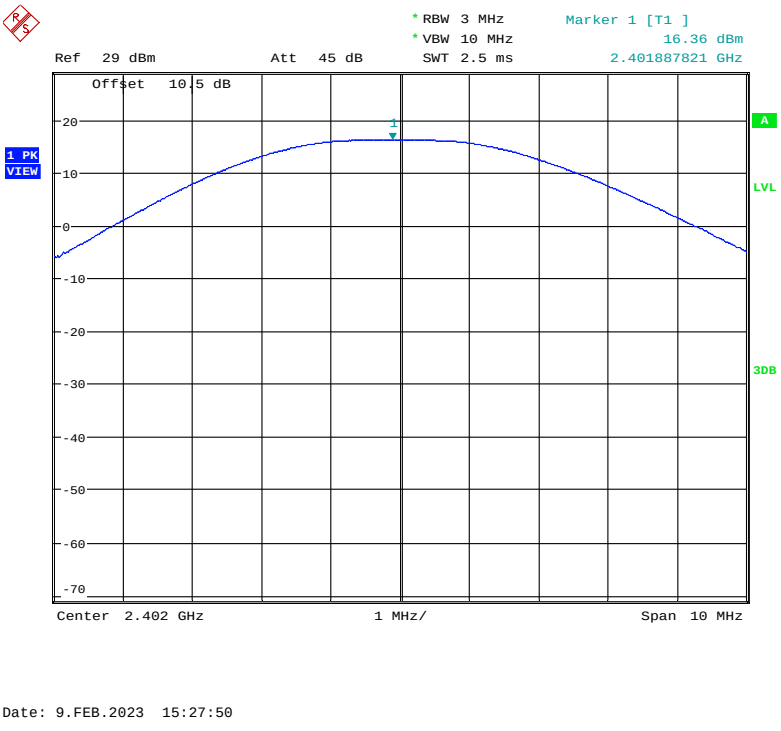
EUT operation mode: Transmitting

Test Result: Compliant.

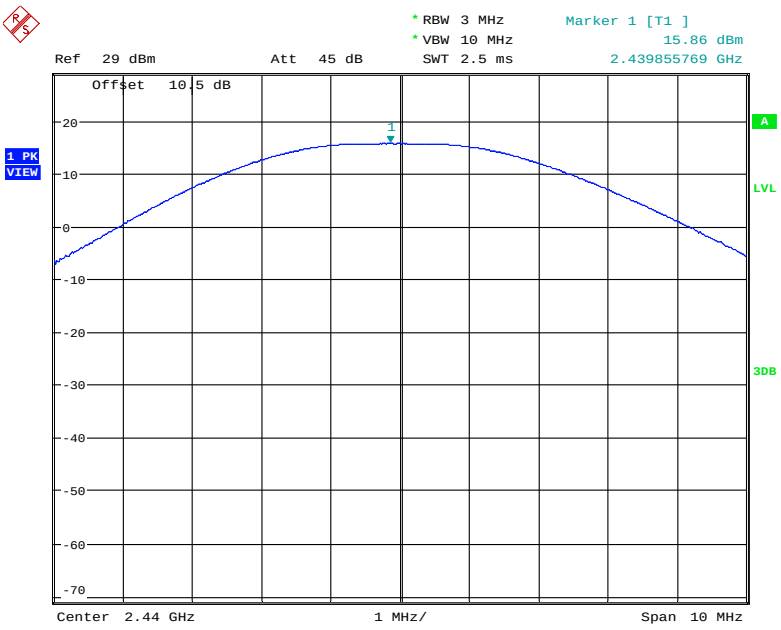
Mode	Channel	Frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)
GFSK	Low	2402	16.36	20.97
	Middle	2440	15.86	20.97
	High	2477	15.02	20.97

Note: the antenna gain is 0dBi, the maximum EIRP=16.36dBm+0dBi=16.36dBm<36dBm, so it's compliance with EIRP limit of ISEDC.

Low Channel



Middle Channel



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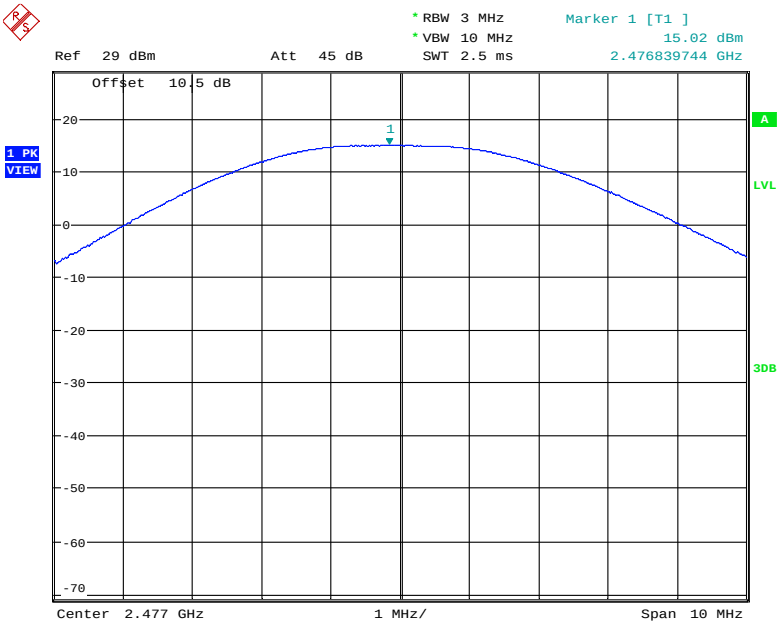
High Channel



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