

Test Report No:
24B0101R-RFUSV24S-A

TEST REPORT

FCC Rules&Regulations

Product Name	goRAN+ Base Station
Brand Name	
Model No.	BS1AT-D08US
FCC ID	2AXTDBS1ATD08US
Applicant's Name / Address	Ubiik Inc. 19F., No. 17, Sec. 1, Chengde Rd., Datong Dist., Taipei City 103, Taiwan (R.O.C.)
Manufacturer's Name / Address	Ubiik Inc. 19F., No. 17, Sec. 1, Chengde Rd., Datong Dist., Taipei City 103, Taiwan (R.O.C.)
Test Method Requested, Standard	FCC CFR Title 47 Part 27 Subpart P ANSI/TIA-603-E-2016 ANSI C63.26-2015
Verdict Summary	IN COMPLIANCE
Documented By	 Amelia Wu
Approved By	 Allen Lin
Date of Receipt	Nov. 04, 2024
Date of Issue	May 28, 2025
Report Version	V1.0

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Competences and Guarantees

DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA.

General Conditions

1. The test results relate only to the samples tested.
2. The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.
3. This report must not be used to claim product endorsement by TAF or any agency of the government.
4. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.
5. Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Revision History

Version	Description	Issued Date
V0.1-Draft	Initial issue of report	May 28, 2025

Summary of Test Result

Report Clause	Test Items	Band	Ref Std. Clause	Limit	Result (PASS/FAIL)	Remark
3	RF Output Power Power Spectral Density	106	§2.1046 §27.1507	Base and Repeater stations < 400 Watts ERP(PSD) Mobile stations < 10 Watts ERP Power Portable stations < 3 Watts ERP	PASS	-
4	Occupied Bandwidth	106	§2.1049	N/A	PASS	-
5	Peak to Average Power Ratio	106	§27.1507	≤ 13 dB	PASS	-
6	Spurious Emission	106	§2.1053 §27.1509	< -13 dBm	PASS	-
7	Conducted Band Edge	106	§2.1051 §27.1509	< -13 dBm	PASS	-
8	Frequency Stability	106	§2.1055 §27.54	± 2.5 ppm	PASS	-
Note: The EUT has two different WWAN radio transmitters, one is chip on board and the other is a certified WWAN module (brand name: UBIK, model: RC7611-1, FCC ID: 2AXTDRC76B).						

Comments and Explanations

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Comments and Remarks

The product specification and testing instructions for the EUT declared in the report are provided by the manufacturer who will take all responsibilities for the accuracy.

1. General Information

1.1. EUT Description

Uplink Frequency Range (MHz)	LTE Band 106: 897.5 ~ 900.5
Downlink Frequency Range (MHz)	LTE Band 106: 936.5 ~ 939.5
Bandwidth (MHz)	LTE Band 106: 3
Type of Modulation	Cat-1: QPSK / 16QAM / 64QAM Cat-M1: QPSK / 16QAM

Accessories Information					
No.	Equipment Name	Brand Name	Model No.	Rating	
1	PoE	PHIHONG	POE60U-BTA	INPUT: 100-240V, 1.5A, 50-60Hz OUTPUT 1: 56V, 0.535A, 30W OUTPUT 2: 56V, 0.535A, 30W	
No.	Equipment Name	Brand Name	Model No.	Description	Remark
2	Power cord	SHEE LINE	SL-2 to SL-3	Non-Shielded, 1.8m	For PoE use
3	MicroSD card	ADATA	IDU3A-016GT	-	Internal of EUT

For WWAN Function:

Antenna Information						
Ant.	Brand Name	Model No.	Type	Antenna Gain (dBi)	Cable Loss (dB)	Actual Gain (dBi)
1	Dawn	DB-896-960V-13-75-NV2	Panel	13	-0.8	12.2
2	M.gear	C1991-690054-A(SRF2023 215)	Dipole	3.41	-	-
3	M.gear	C1991-690053-A(SRF2023 215)	Dipole	1.43	-	-
4	Invax	DS0915-0726WNM	Dipole	5.73	-	-

Note:

1. The EUT supports the 1TX function.
2. The EUT has 4 antennas, and only Ant. 1 is the highest gain and be evaluated.

For WWAN Module:

Antenna Information						
Ant.	Brand Name	Model No.	Type	Antenna Gain (dBi)		
				Band 2	Band 4	Band 13
1	Grand-Tek	OA-LTEWB-035-C0-UB	OMNI	1.80	0.06	1.40

For GNSS Function:

Antenna Information				
Ant.	Brand Name	Model No.	Type	Antenna Gain (dBi)
1	Jinchang	JCA225-N	RHCP	5

1.2. EUT Information

EUT Power Type	From PoE	
EUT Function	☒	Base and repeater stations
	☐	Mobile, control and auxiliary test stations

1.3. Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC CFR Title 47 Part 27 Subpart P
- FCC CFR Title 47 Part 2
- ANSI/TIA-603-E (2016)
- ANSI C63.26-2015
- FCC KDB 971168 D01 v03r01

The following reference test guidance is not within the scope of accreditation of TAF.

- FCC KDB 412172 D01 v01r01
- FCC KDB 414788 D01 v01r01

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

1.4. Testing Location Information

Testing Location Information		
Test Laboratory : DEKRA Testing and Certification Co., Ltd.		
1 (TAF: 3024)	ADD: No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. TEL: +886-3-582-8001 FAX: +886-3-582-8958 Test site Designation No. TW3024 with FCC. Conformity Assessment Body Identifier (CABID) TW3024 with ISED.	
2 (TAF: 3024)	ADD: No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. TEL: +886-3-582-8001 FAX: +886-3-582-8958 Test site Designation No. TW3024 with FCC. Conformity Assessment Body Identifier (CABID) TW3024 with ISED.	
Test site number for address 1 includes HC-SR02. Test site number for address 2 includes HC-CB02, HC-CB03, HC-CB04, HC-SR10 and HC-SR12.		

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
RF Conducted Emission	HC-SR12	Max Chang	25 / 65	2024/11/14
Radiated Emission	HC-CB02	Scott Chang Cyril Chen	21.5~23.5 / 53~58	2024/11/22~2024/11/26

1.5. Measurement Uncertainty

Uncertainties have been calculated according to the DEKRA internal document with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

Test Item	Uncertainty
RF Output Power	± 1.16 dB
Occupied Bandwidth	± 217.9 Hz
Peak to Average Power Ratio	± 2.47 dB
Spurious Emissions	± 3.52 dB below 1 GHz ± 3.56 dB above 1 GHz
Conducted Band Edge	± 2.47 dB
Frequency Stability	± 217.9 Hz

1.6. List of Test Equipment

HC-SR12

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	0.3-40 GHz	2024/10/29	2025/10/28
Pulse Power Sensor	Anritsu	MA2411B	1531043	0.3-40 GHz	2024/10/29	2025/10/28
Pulse Power Sensor	Anritsu	MA2411B	1531044	0.3-40 GHz	2024/10/29	2025/10/28
Signal & Spectrum Analyzer	R&S	FSV40	101869	10Hz-40GHz	2024/06/20	2025/06/19

HC-CB02

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Cal. Date	Next Cal. Date
Signal and Spectrum Analyzer	R&S	FSVA40	101435	10 Hz-40 GHz	2024/05/17	2025/05/16
Trilog Broadband Antenna	Schwarzbeck	VULB 9168	1272	30 MHz-2 GHz	2024/04/29	2025/04/28
Double Ridged Horn Antenna	RF SPIN	DRH18-E	211212A18EN	1G-18GHz	2024/11/08	2025/11/07
Horn Antenna	Schwarzbeck	BBHA 9170	203	18G-40GHz	2024/02/02	2025/02/01
Pre-Amplifier	EMCI	EMC01820I	980365	30M-8 GHz,20 dB	2024/04/02	2025/04/01
Pre-Amplifier	EMEC	EM01G18GA	060741	1G-18 GHz,50 dB	2024/04/23	2025/04/22
Pre-Amplifier	DEKRA	AP-400C	201801231	18G-40 GHz,48 dB	2024/10/15	2025/10/14
EMI Test Receiver	R&S	ESR7	102260	10 Hz-7 GHz	2024/11/15	2025/11/14
Magnetic Loop Antenna	Teseq	HLA 6121	44287	0.01-30 MHz	2024/10/17	2025/10/16
Coaxial Cable(13m)	Suhner	SF104	HC-CB02	30M-18 GHz	2024/08/13	2025/08/12
Coaxial Cable(3m)	Suhner,Rosnol	SF102_UP0264	HC-CB02-1	18G-40 GHz 3 m	2024/08/13	2025/08/12
Radiated Software	Audix	e3 V9	HC-CB02_1	N/A	N/A	N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2. Test Configuration of EUT

2.1. Test Condition

EUT Operational Condition			
Testing Voltage	Vnom (DC 56V)	Vmax (DC 61.6V)	Vmin (DC 50.4V)
Operational Climatic	Tnom (25°C)	Tmax (50°C)	Tmin (-30°C)

2.2. The Worst Case Measurement Configuration

Test Mode	Mode 1: Cat-1 LTE Band 106 Mode 2: Cat-M1 LTE Band 106
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Note:

1. Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. The device was tested under all bandwidths, RB configurations and modulations.
The worst case was found in "QPSK" and show in "Conducted Band Edge".
The worst case was found in "QPSK / 3 MHz" and show in "Spurious Emission".
3. The EUT could be applied with WWAN LTE of EUT + WWAN LTE of WWAN module function and SRD + WWAN LTE of WWAN module; therefore Co-location Maximum Permissible Exposure (please refer to DEKRA Test Report No.: 24B0101R-RFUSV17S-A) and Radiated Emission Co-location (please refer to Appendix G) tests are added for simultaneously transmit with WWAN LTE of EUT + WWAN LTE of WWAN module function and SRD + WWAN LTE of WWAN module.

2.3. Tested System Details

PoE 1 (Model No.: POE60U-BTA)

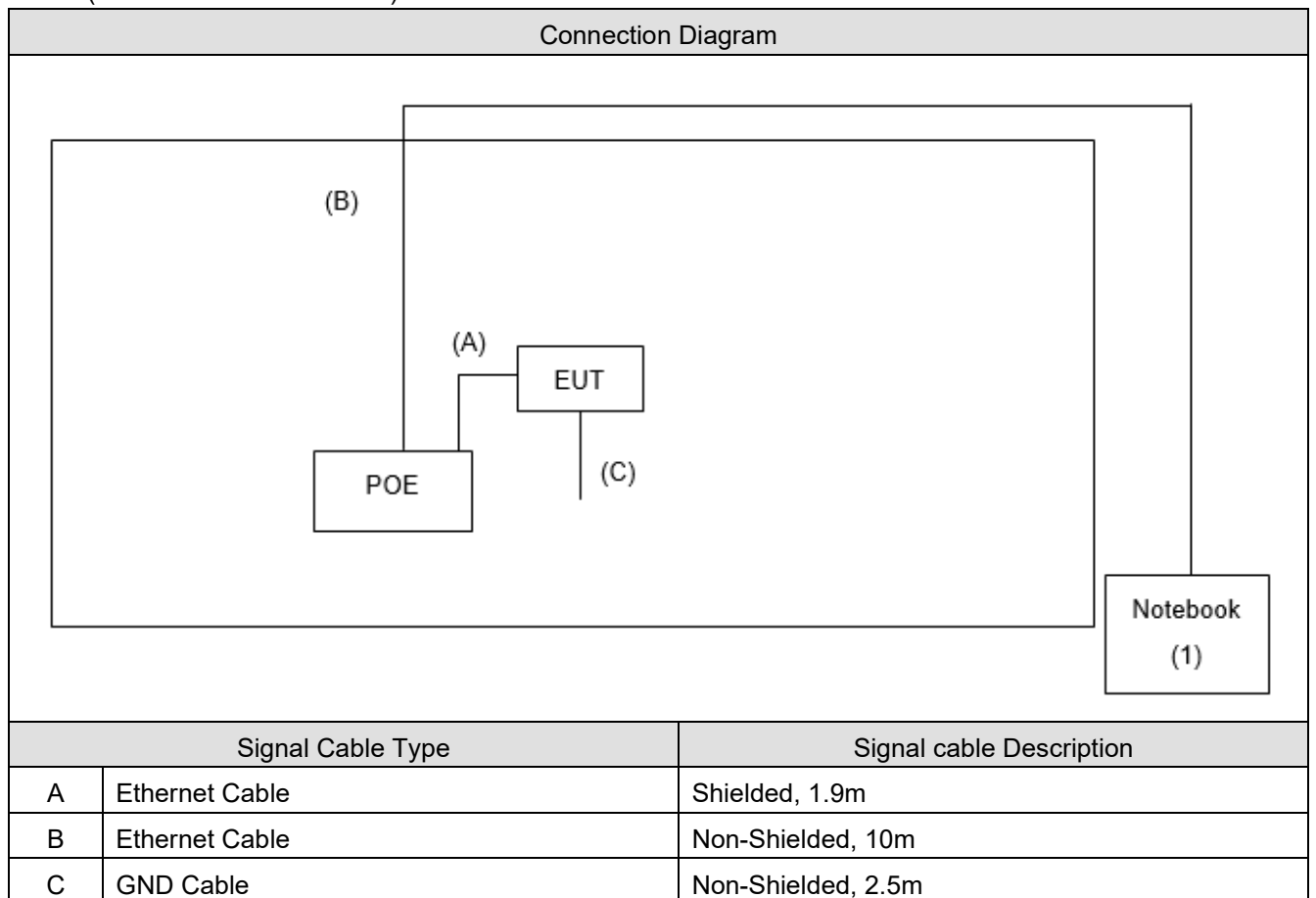
No.	Equipment	Brand Name	Model No.	Serial No.
1	Notebook	ASUS	E402S	GBN0CV14W224476

PoE 2 (Model No.: POEO75U-1BT)

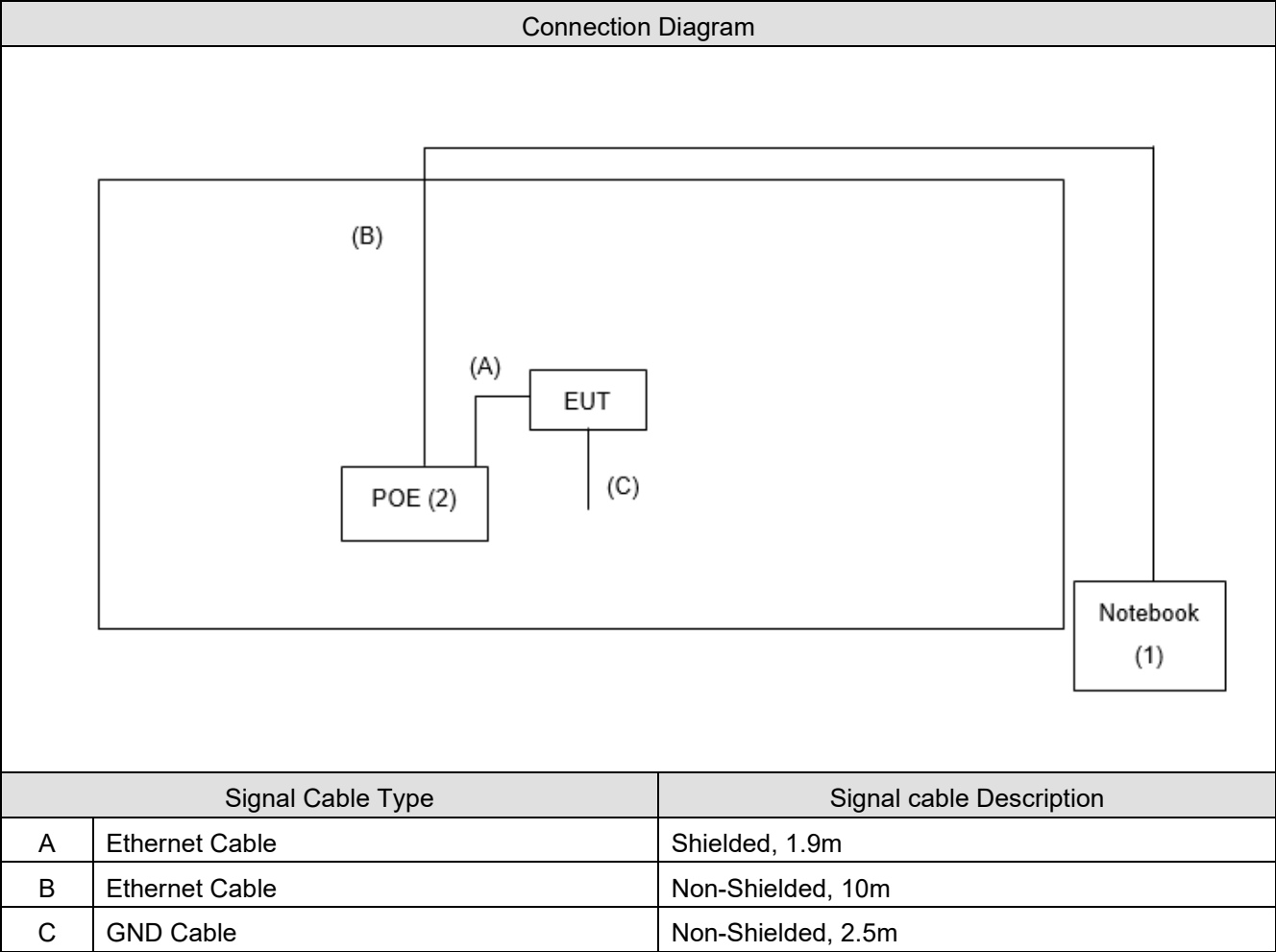
No.	Equipment	Brand Name	Model No.	Serial No.
1	Notebook	ASUS	E402S	GBN0CV14W224476
2	PoE	PHIHONG	POEO75U-1BT	N/A

2.4. Configuration of Tested System

PoE 1 (Model No.: POE60U-BTA)

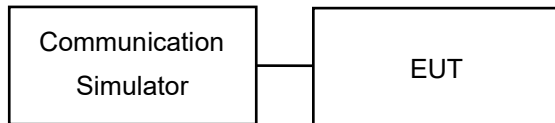


PoE 2 (Model No.: POEO75U-1BT)



3. RF Output Power & Power Spectral Density

3.1. Test Setup



3.2. Test Procedure

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum conducted RF output power under transmission mode and specific channel frequency. The relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_T - L_C$$

where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as P_{Meas} , typically dBW or dBm);

P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

G_T = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB

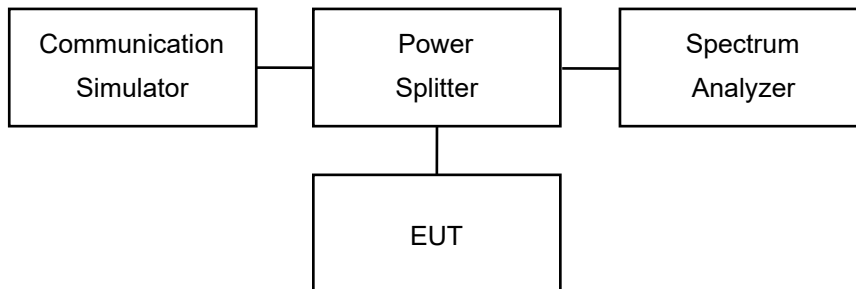
For PSD measurement were made in accordance with ANSI C63.26, clause 5.2.3.5 & 5.2.4.5.

3.3. Test Result of RF Output Power & Power Spectral Density

Refer as Appendix A

4. Occupied Bandwidth

4.1. Test Setup



4.2. Test Procedures

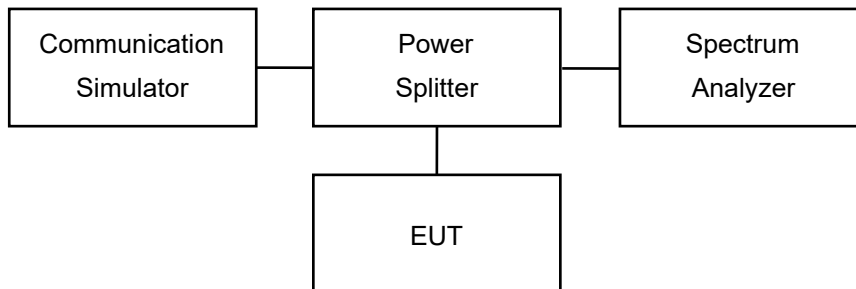
The EUT makes a call to the communication simulator. The 26dB bandwidth and 99% occupied bandwidth measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. The path loss was compensated to the results for each measurement.

4.3. Test Result of Occupied Bandwidth

Refer as Appendix B

5. Peak to Average Power Ratio

5.1. Test Setup



5.2. Test Procedure

1. The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. The path loss was compensated to the results for each measurement.
2. Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth.
3. Set the number of counts to a value that stabilizes the measured CCDF curve.
4. Record the maximum PAPR level associated with a probability of 0.1 %.

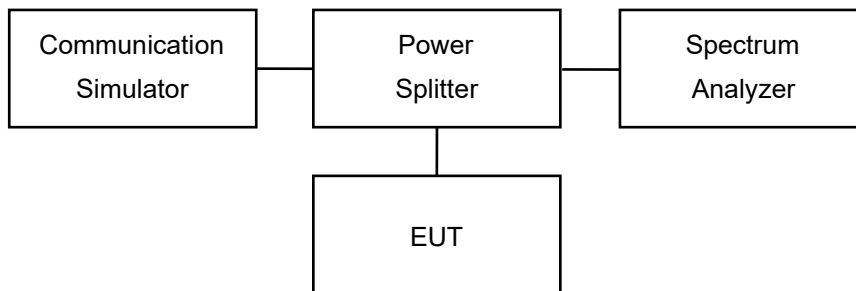
5.3. Test Result of Peak to Average Power Ratio

Refer as Appendix C

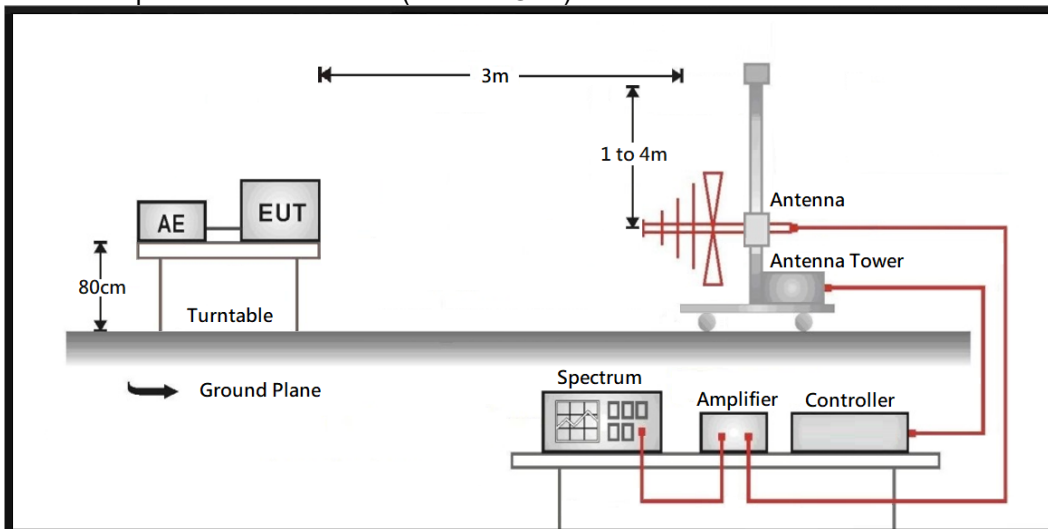
6. Spurious Emission

6.1. Test Setup

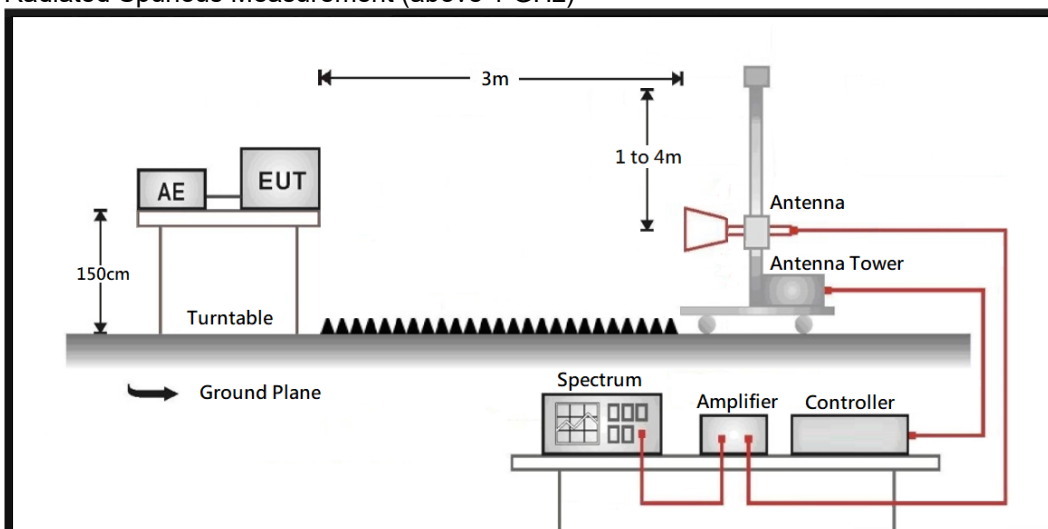
Conducted Spurious Measurement



Radiated Spurious Measurement (below 1 GHz)



Radiated Spurious Measurement (above 1 GHz)



6.2. Test Procedure

Conducted Spurious Measurement:

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. The path loss was compensated to the results for each measurement. The resolution bandwidth of the spectrum analyzer was set at 1 MHz, sufficient scans were taken to show the out of band Emission if any up to 10th harmonic.

Radiated Spurious Measurement:

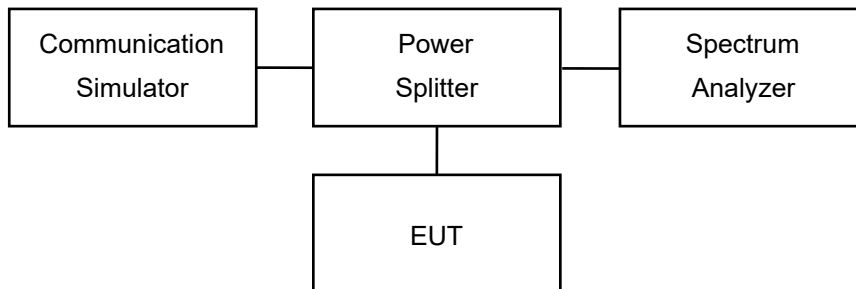
The EUT and its simulators are placed on a turn table which is 0.8 or 1.5 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations. The resolution bandwidth of the spectrum analyzer was set at 1 MHz, sufficient scans were taken to show the out of band Emission if any up to 10th harmonic. Taking the record of maximum spurious emission.

6.3. Test Result of Spurious Emission

Refer as Appendix D

7. Conducted Band Edge

7.1. Test Setup



7.2. Test Procedure

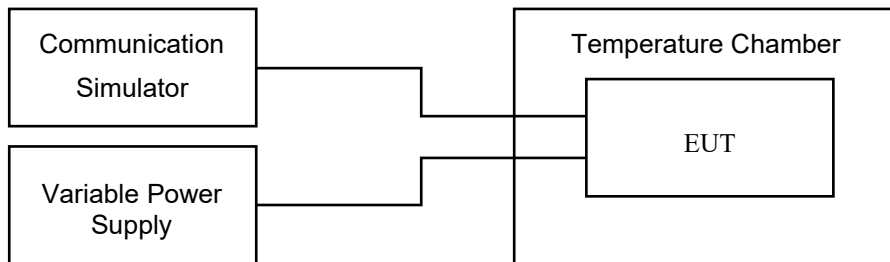
1. The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. The path loss was compensated to the results for each measurement.
2. In the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.

7.3. Test Result of Conducted Band Edge

Refer as Appendix E

8. Frequency Stability

8.1. Test Setup



8.2. Test Procedures

Frequency Stability under Temperature Variations:

The EUT under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a communication simulator. The EUT was placed inside the temperature chamber. Set the EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

Frequency Stability under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC or DC power supply to power the EUT and set the voltage to rated voltage. Reduce the input voltage to specify extreme voltage variation ($\pm 15\%$) and endpoint, record the maximum frequency change.

8.3. Test Result of Frequency Stability

Refer as Appendix F

Appendix A. Test Result of RF Output Power & Power Spectral Density

<RF Output Power>

Mode 1: Cat-1_LTE Band 106

Mode					Conducted Power			ERP Power			Limit
BW (MHz)	Channel	Frequency (MHz)	RB No.	RB offset	QPSK (dBm)	16-QAM (dBm)	64-QAM (dBm)	QPSK ERP(W)	16-QAM ERP(W)	64-QAM ERP(W)	Limit ERP(W)
3	70686	938	15	0	29.71	29.83	29.92	9.462	9.727	9.931	N/A

Note:

1. ERP (W) = Conducted Output Power (dBm) + Antenna Gain (dBi) - 2.15

2. ERP (W) = $(10^{(\text{Power(dBm)}/10)}) \times 10^{-3}$

Mode 2: Cat-M1_LTE Band 106

Mode					Conducted Power		ERP Power		Limit
BW (MHz)	Channel	Frequency (MHz)	RB No.	RB offset	QPSK (dBm)	16-QAM (dBm)	QPSK ERP(W)	16-QAM ERP(W)	Limit ERP(W)
3	70686	938	15	0	29.83	29.79	9.727	9.638	N/A

Note:

1. ERP (W) = Conducted Output Power (dBm) + Antenna Gain (dBi) - 2.15

2. ERP (W) = $(10^{(\text{Power(dBm)}/10)}) \times 10^{-3}$

<Power Spectral Density>

Mode 1: Cat-1_LTE Band 106

Mode					ERP PSD			ERP PSD Limit
BW (MHz)	Channel	Frequency (MHz)	RB No.	RB offset	QPSK (dBm/MHz)	16-QAM (dBm/MHz)	64-QAM (dBm/MHz)	dBm/MHz
3	70686	938	15	0	41.23	41.11	41.09	56.021

Mode 2: Cat-M1_LTE Band 106

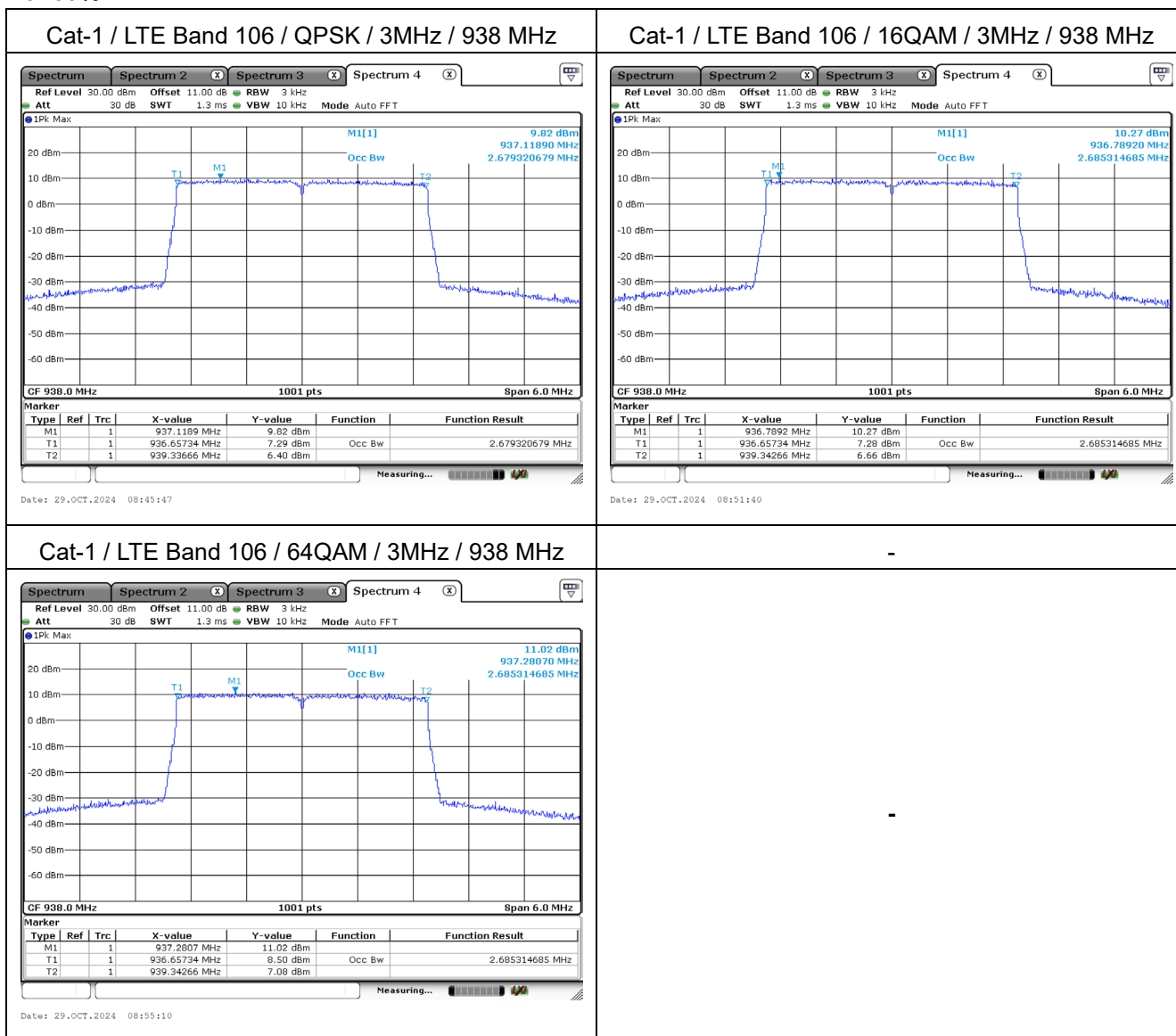
Mode					ERP PSD		ERP PSD Limit
BW (MHz)	Channel	Frequency (MHz)	RB No.	RB offset	QPSK (dBm/MHz)	16-QAM (dBm/MHz)	dBm/MHz
3	70686	938	15	0	41.35	40.91	56.021

Appendix B. Test Result of Occupied Bandwidth

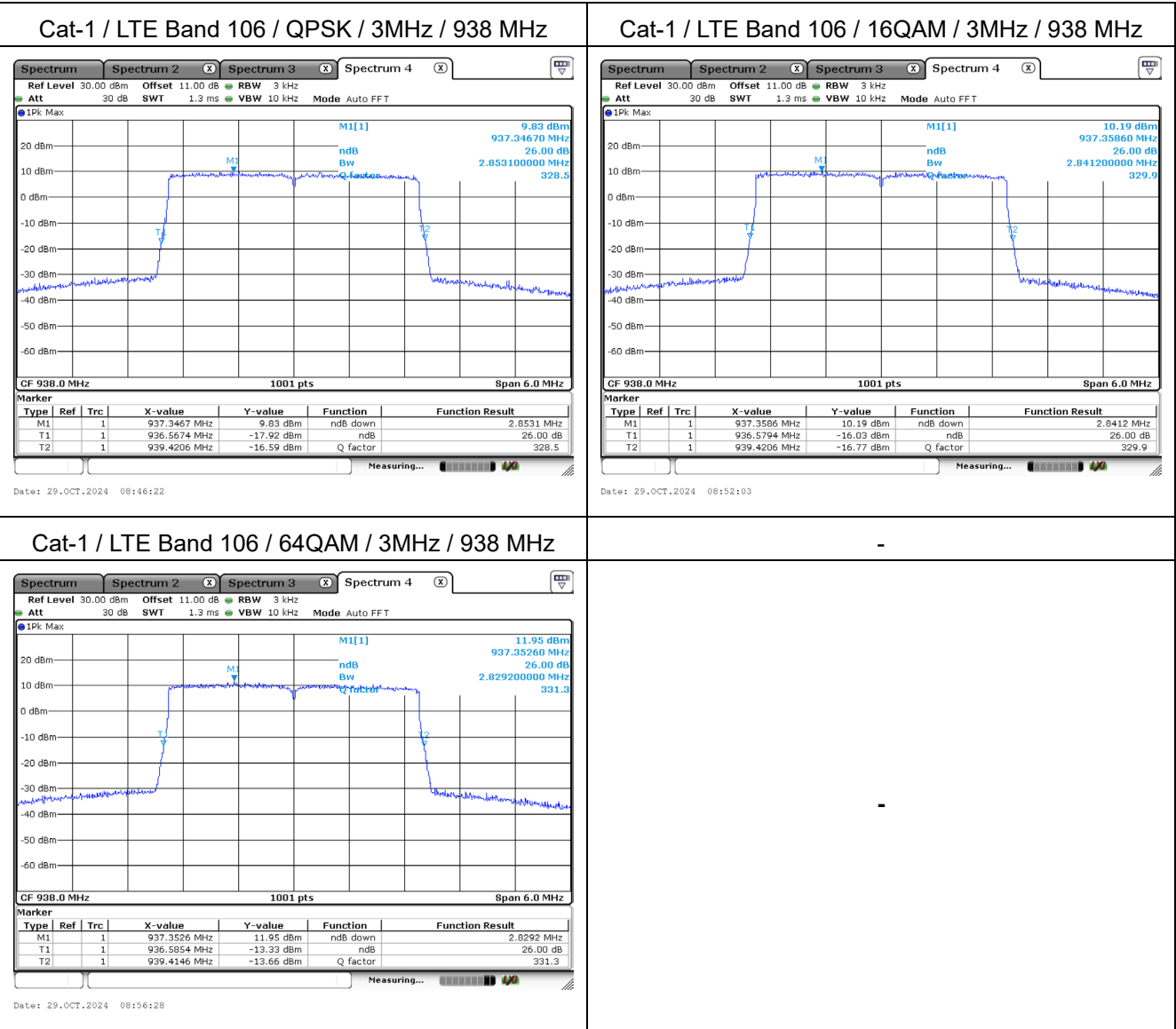
Mode 1: Cat-1 LTE Band 106

Bandwidth (MHz)	Modulation	Channel	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
				26dB BW	99% BW	
3M	QPSK	70686	938	2.853	2.679	N/A
	16-QAM			2.841	2.685	N/A
	64-QAM			2.829	2.685	N/A

For 99% BW



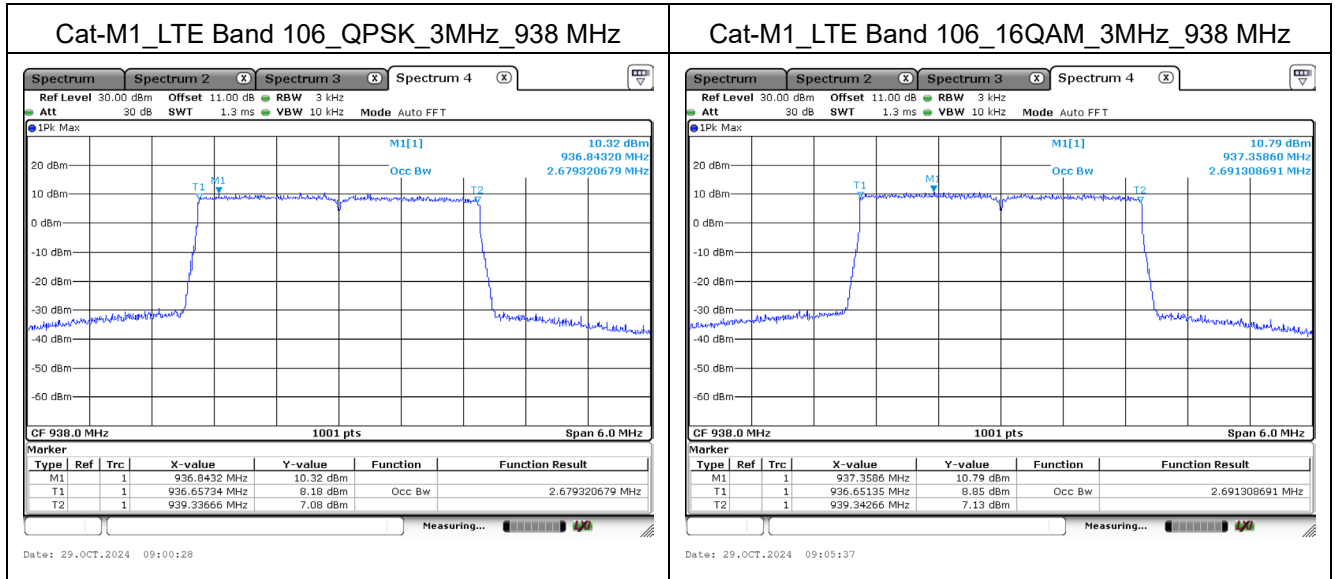
For 26dB BW



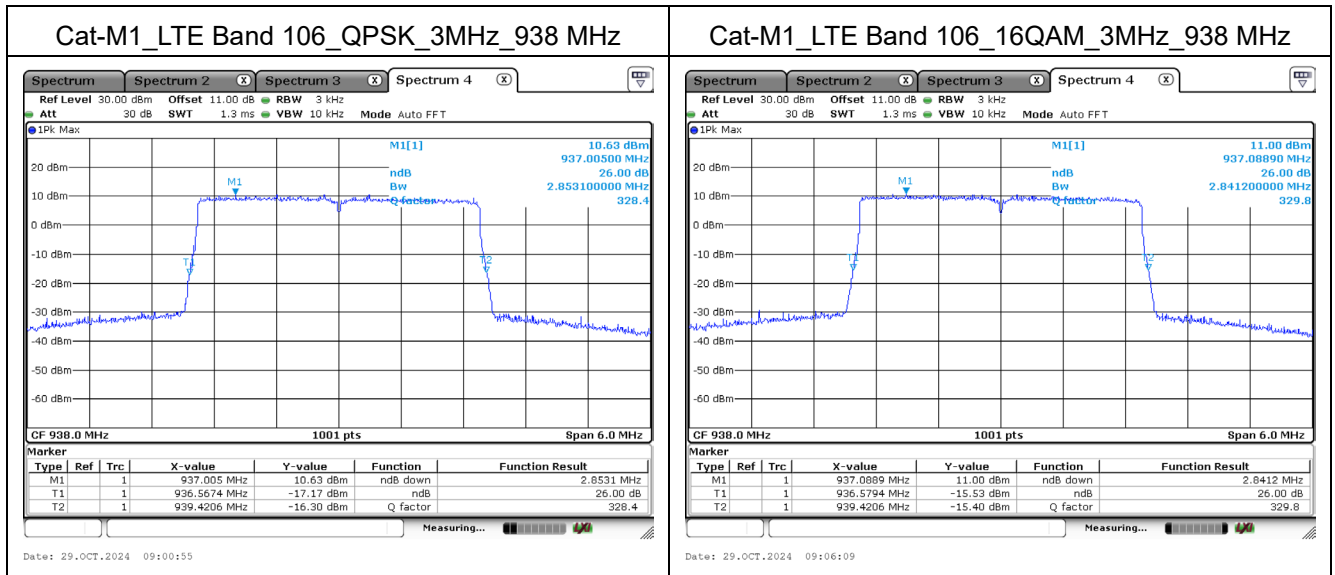
Mode 2: Cat-M1_LTE Band 106

Bandwidth (MHz)	Modulation	Channel	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
				26dB BW	99% BW	
3M	QPSK	70686	938	2.853	2.679	N/A
	16-QAM			2.841	2.691	N/A

For 99% BW

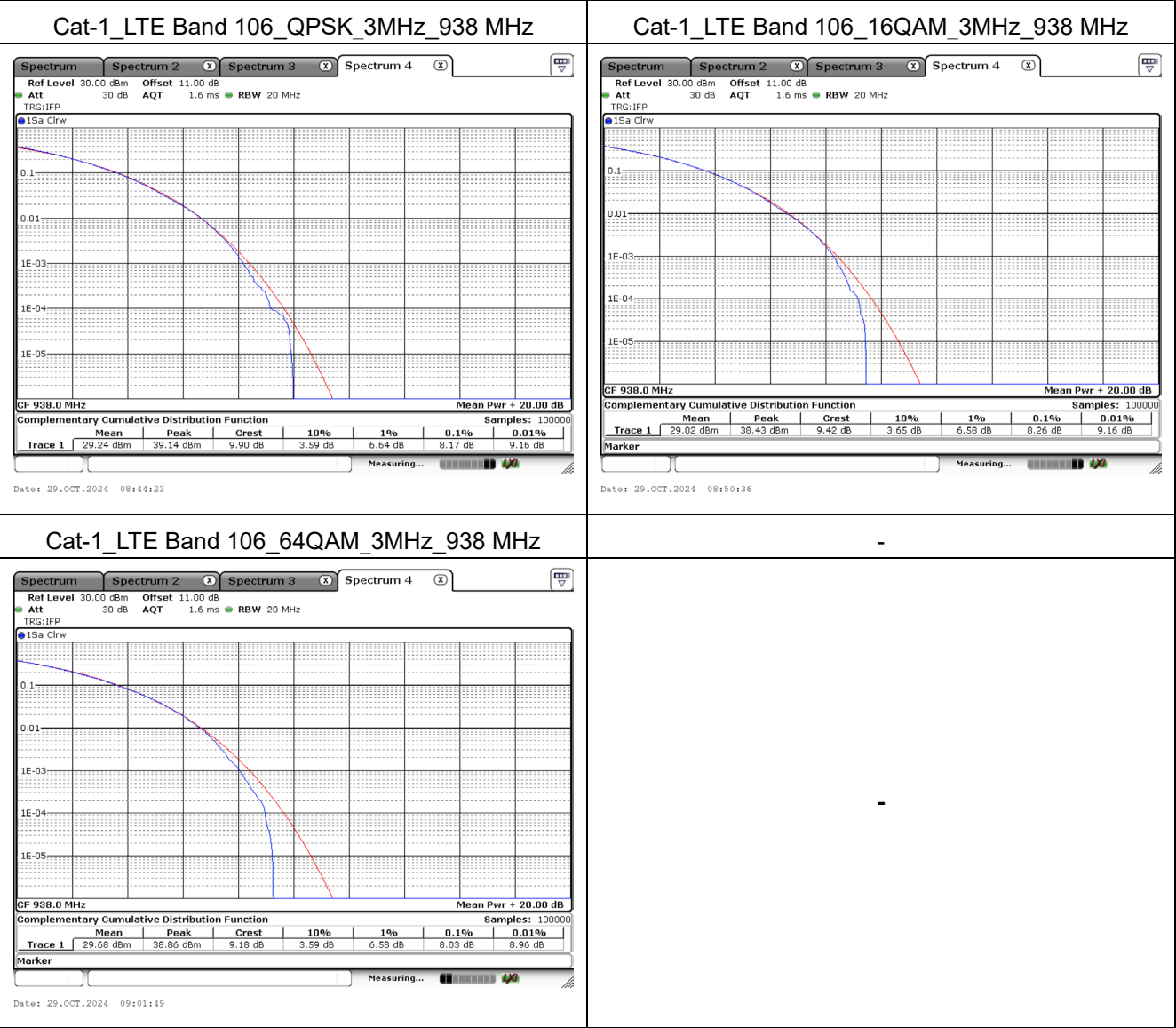


For 26dB BW

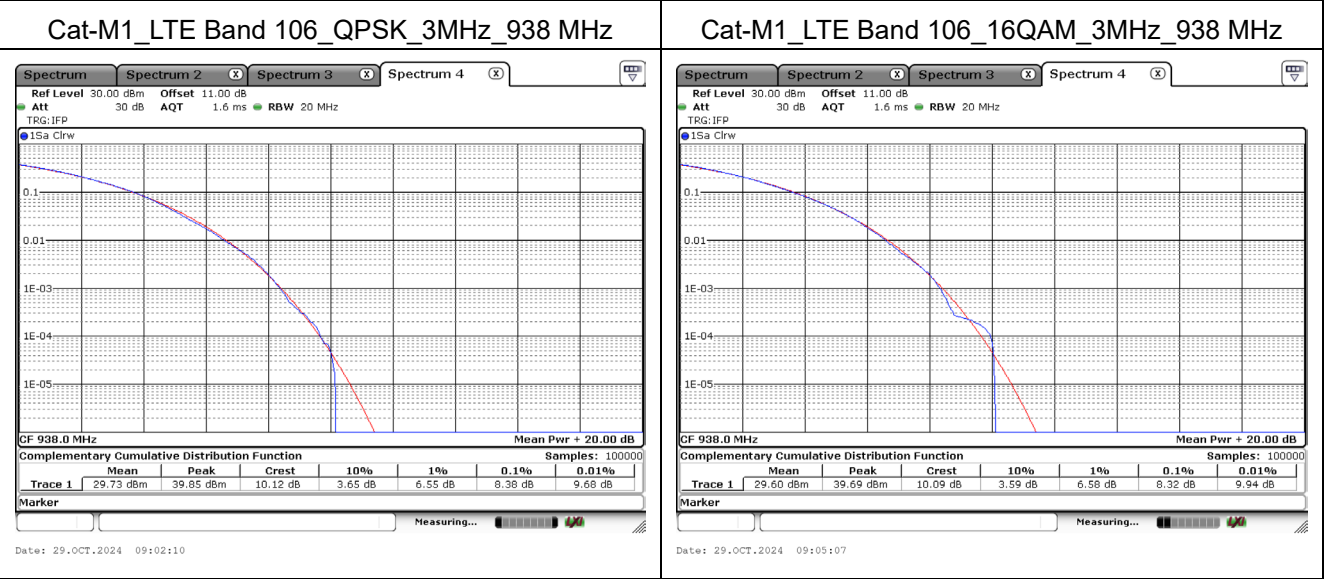


Appendix C. Test Result of Peak to Average Power Ratio

Mode 1: Cat-M1_LTE Band 106

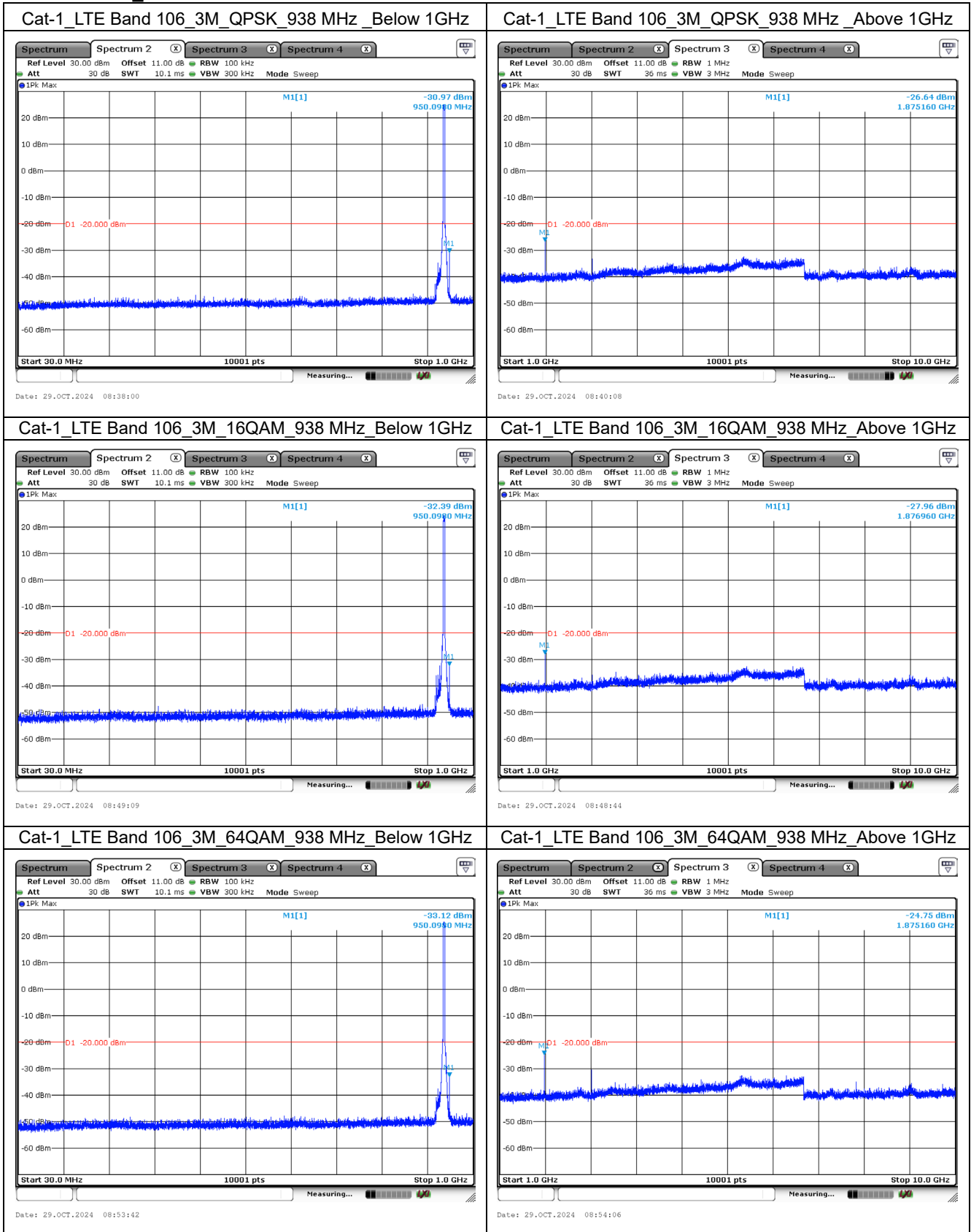


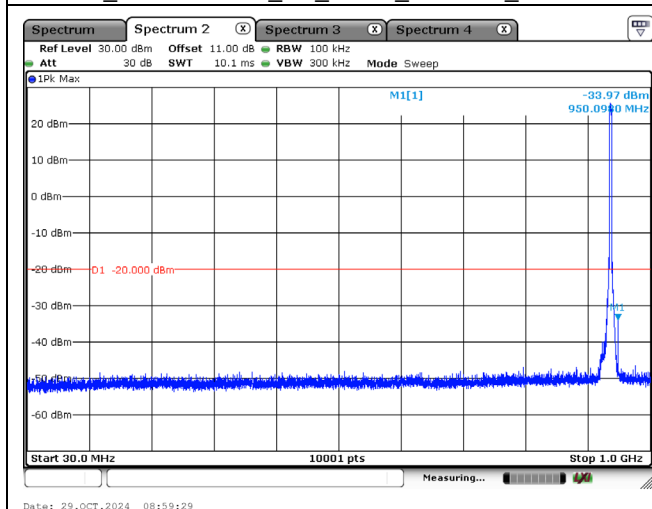
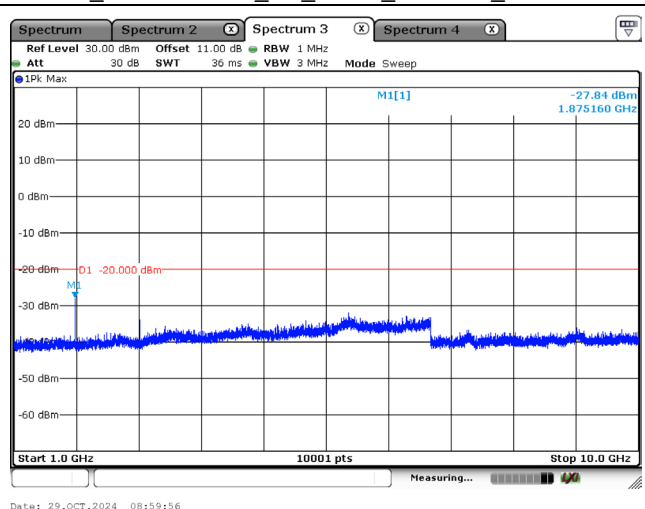
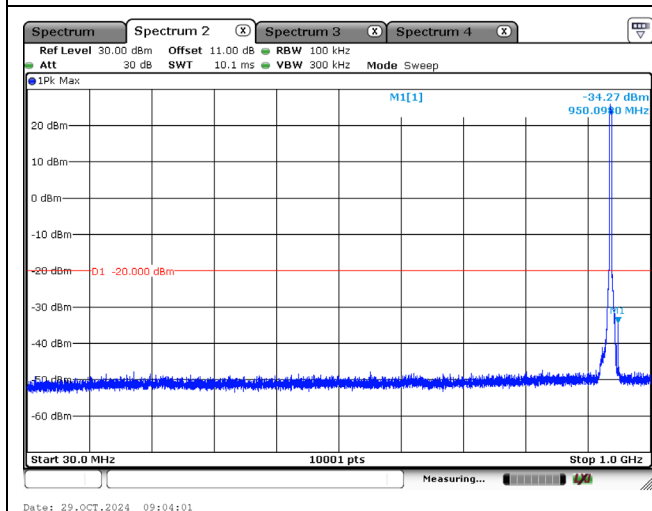
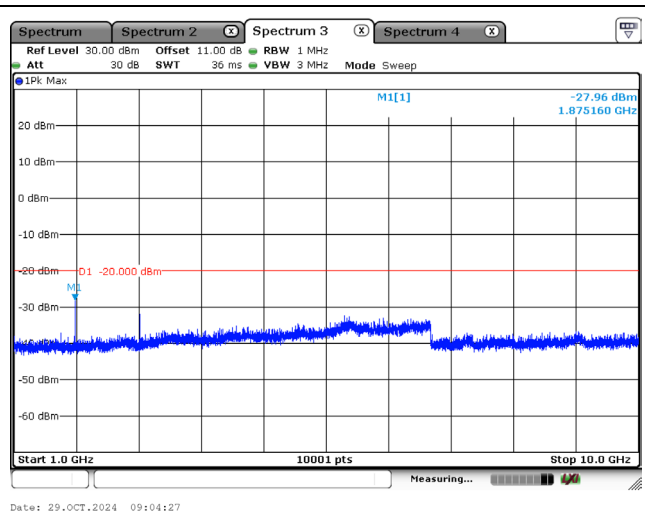
Mode 2: Cat-M1_LTE Band 106



Appendix D.1 Test Result of Conducted Spurious Emission

Mode 1: Cat-1_LTE Band 106



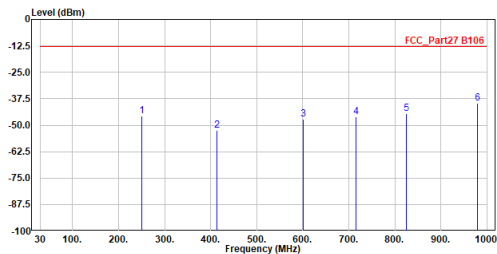
Mode 2: Cat-M1_LTE Band 106**Cat-M1_LTE Band 106_3M_QPSK_938 MHz_Below 1GHz****Cat-M1_LTE Band 106_3M_QPSK_938 MHz_Above 1GHz****Cat-M1_LTE Band 106_3M_16QAM_938 MHz_Below 1GHz****Cat-M1_LTE Band 106_3M_16QAM_938 MHz_Above 1GHz**

Appendix D.2 Test Result of Radiated Spurious Emission

30 MHz ~ 1GHz

Mode 1 / PoE 1 (Model No.: POE60U-BTA)

Site :HC-CB02
Condition :3m Horizontal
Mode :LF_LTE_Cat-1_3M_QPSK_B106_938MHz
Test by :Cyril Chen

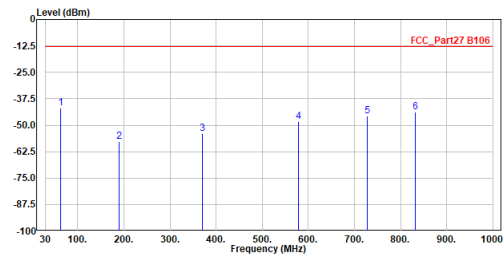


No.	Frequency MHz	Level dBm	Limit Line dBm	Over Limit dB	Read Level dBm	Factor dB	Remark
1	250.190	-45.84	-13.00	-32.84	-64.75	18.91	Peak
2	413.732	-52.60	-13.00	-39.60	-75.71	23.11	Peak
3	600.748	-47.19	-13.00	-34.19	-74.55	27.36	Peak
4	714.917	-45.92	-13.00	-32.92	-74.64	28.72	Peak
5	825.594	-44.69	-13.00	-31.69	-74.71	30.02	Peak
6	980.115	-39.67	-13.00	-26.67	-71.19	31.52	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuV/m) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Site :HC-CB02
Condition :3m Vertical
Mode :LF_LTE_Cat-1_3M_QPSK_B106_938MHz
Test by :Cyril Chen



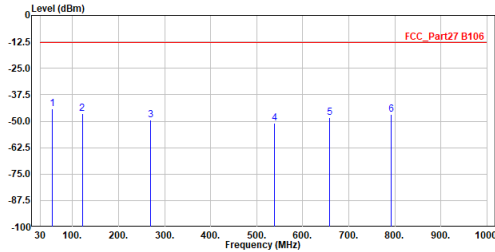
No.	Frequency MHz	Level dBm	Limit Line dBm	Over Limit dB	Read Level dBm	Factor dB	Remark
1	62.301	-41.76	-13.00	-28.76	-62.24	20.48	Peak
2	189.565	-57.59	-13.00	-44.59	-75.42	17.83	Peak
3	370.373	-53.98	-13.00	-40.98	-76.19	22.21	Peak
4	578.050	-48.34	-13.00	-35.34	-74.83	26.49	Peak
5	728.303	-45.58	-13.00	-32.58	-74.49	28.91	Peak
6	831.996	-43.85	-13.00	-30.85	-74.05	30.20	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuV/m) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Mode 1 / PoE 2 (Model No.: POEO75U-1BT)

Site :HC-CB02
Condition :3m Horizontal
Mode :LF_LTE_Cat-1_3M_QPSK_B106_938MHz
Test by :Cyril Chen

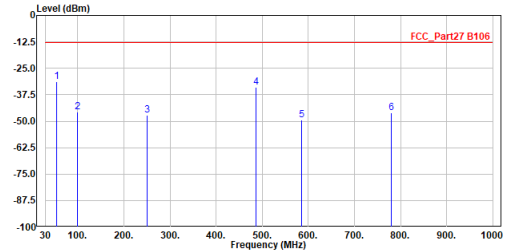


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	56.578	-44.01	-13.00	-31.01	-65.14	21.13	Peak
2	120.889	-46.57	-13.00	-33.57	-65.17	18.60	Peak
3	270.075	-49.52	-13.00	-36.52	-69.33	19.81	Peak
4	538.377	-51.00	-13.00	-38.00	-76.76	25.76	Peak
5	658.948	-48.25	-13.00	-35.25	-76.04	27.79	Peak
6	792.808	-46.72	-13.00	-33.72	-76.47	29.75	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuVm) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Site :HC-CB02
Condition :3m Vertical
Mode :LF_LTE_Cat-1_3M_QPSK_B106_938MHz
Test by :Cyril Chen

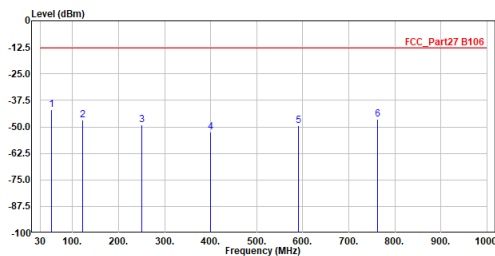


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	54.153	-31.30	-13.00	-18.30	-52.42	21.12	Peak
2	98.482	-45.75	-13.00	-32.75	-61.45	15.70	Peak
3	249.996	-47.22	-13.00	-34.22	-66.11	18.89	Peak
4	486.482	-34.04	-13.00	-21.04	-58.81	24.77	Peak
5	585.810	-49.35	-13.00	-36.35	-76.12	26.77	Peak
6	779.228	-46.10	-13.00	-33.10	-75.82	29.72	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuVm) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Site :HC-CB02
Condition :3m Horizontal
Mode :LF_LTE_Cat-1_3M_16QAM_B106_938MHz
Test by :Cyril Chen

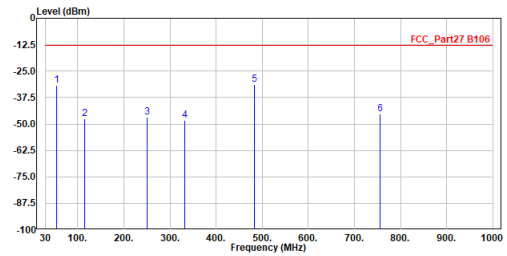


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	54.250	-41.71	-13.00	-28.71	-62.83	21.12	Peak
2	122.150	-46.72	-13.00	-33.72	-65.43	18.71	Peak
3	250.093	-48.89	-13.00	-35.89	-67.79	18.90	Peak
4	399.085	-52.62	-13.00	-39.62	-75.44	22.82	Peak
5	591.048	-49.62	-13.00	-36.62	-76.60	26.98	Peak
6	762.544	-46.50	-13.00	-33.50	-76.10	29.60	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuVm) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Site :HC-CB02
Condition :3m Vertical
Mode :LF_LTE_Cat-1_3M_16QAM_B106_938MHz
Test by :Cyril Chen

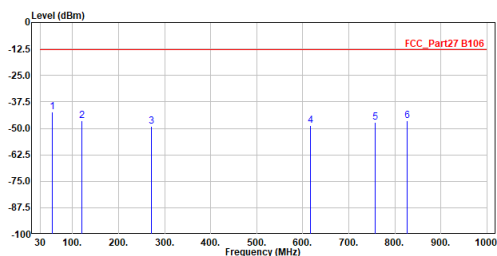


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	54.347	-31.73	-13.00	-18.73	-52.85	21.12	Peak
2	114.778	-47.70	-13.00	-34.70	-65.91	18.21	Peak
3	250.190	-46.84	-13.00	-33.84	-65.75	18.91	Peak
4	332.640	-48.34	-13.00	-35.34	-69.75	21.41	Peak
5	482.602	-31.46	-13.00	-18.46	-56.20	24.74	Peak
6	755.366	-45.38	-13.00	-32.38	-74.96	29.58	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuVm) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Site :HC-CB02
 Condition :3m Horizontal
 Mode :LF_LTE_Cat-1_3M_64QAM_8106_938MHz
 Test by :Cyril Chen

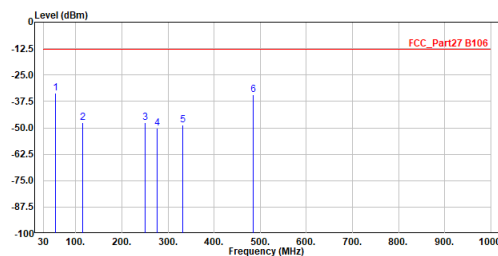


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBm	dBm	Limit	Level	dB	
1	56.384	-42.40	-13.00	-29.40	-63.51	21.11	Peak
2	120.792	-46.58	-13.00	-33.58	-65.18	18.60	Peak
3	270.366	-48.87	-13.00	-35.87	-68.69	19.82	Peak
4	617.044	-48.61	-13.00	-35.61	-76.02	27.41	Peak
5	756.627	-47.20	-13.00	-34.20	-76.79	29.59	Peak
6	826.273	-46.28	-13.00	-33.28	-76.33	30.05	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuV) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Site :HC-CB02
 Condition :3m Vertical
 Mode :LF_LTE_Cat-1_3M_64QAM_8106_938MHz
 Test by :Cyril Chen



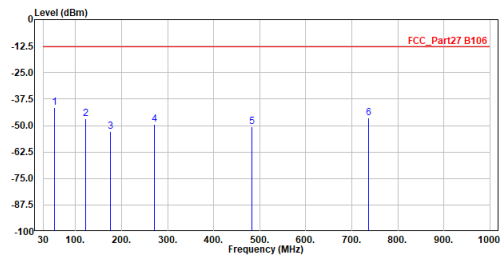
No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBm	dBm	Limit	Level	dB	
1	56.190	-33.42	-13.00	-20.42	-54.52	21.10	Peak
2	114.584	-47.50	-13.00	-34.50	-65.72	18.22	Peak
3	249.996	-47.71	-13.00	-34.71	-66.60	18.89	Peak
4	275.798	-50.13	-13.00	-37.13	-70.19	20.06	Peak
5	331.864	-48.57	-13.00	-35.57	-69.97	21.40	Peak
6	485.221	-34.22	-13.00	-21.22	-58.96	24.74	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuV) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Mode 2 / PoE 2 (Model No.: POEO75U-1BT)

Site :HC-CB02
 Condition :3m Horizontal
 Mode :LF_LTE_Cat-M1_3M_QPSK_B106_938MHz
 Test by :Cyril Chen

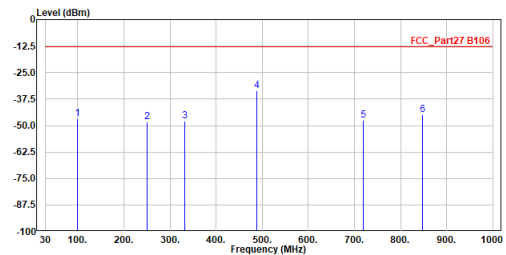


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	54.444	-41.49	-13.00	-28.49	-62.61	21.12	Peak
2	121.665	-46.78	-13.00	-33.78	-65.45	18.67	Peak
3	175.209	-52.91	-13.00	-39.91	-72.60	19.69	Peak
4	271.821	-49.46	-13.00	-36.46	-69.34	19.88	Peak
5	483.087	-50.73	-13.00	-37.73	-75.47	24.74	Peak
6	735.869	-46.34	-13.00	-33.34	-75.52	29.18	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuVm) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Site :HC-CB02
 Condition :3m Vertical
 Mode :LF_LTE_Cat-M1_3M_QPSK_B106_938MHz
 Test by :Cyril Chen



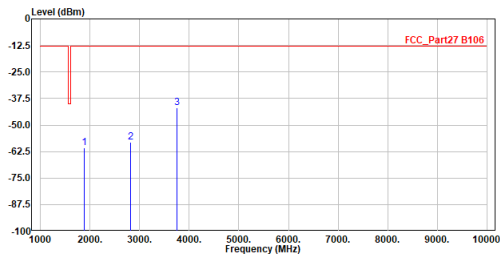
No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	98.579	-46.77	-13.00	-33.77	-62.48	15.71	Peak
2	250.093	-48.24	-13.00	-35.24	-67.14	18.90	Peak
3	332.252	-47.91	-13.00	-34.91	-69.32	21.41	Peak
4	487.937	-33.49	-13.00	-20.49	-58.30	24.81	Peak
5	718.700	-47.62	-13.00	-34.62	-76.41	28.79	Peak
6	846.934	-44.75	-13.00	-31.75	-74.98	30.23	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuVm) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Above 1 GHz

Site :HC-CB02
Condition :3m Horizontal
Mode :LTE_Cat-1_3M_QPSK_B106_938MHz
Test by :Scott Chang

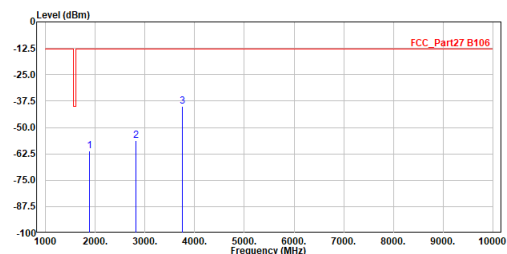


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	1876.000	-60.91	-13.00	-47.91	-47.28	-13.63	Peak
2	2814.000	-58.07	-13.00	-45.07	-47.77	-10.30	Peak
3	3752.000	-41.84	-13.00	-28.84	-34.85	-6.99	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuVm) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Site :HC-CB02
Condition :3m Vertical
Mode :LTE_Cat-1_3M_QPSK_B106_938MHz
Test by :Scott Chang

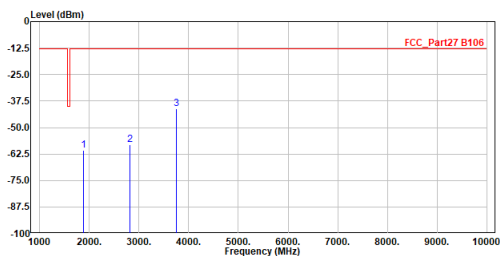


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	1876.000	-61.13	-13.00	-48.13	-47.50	-13.63	Peak
2	2814.000	-56.04	-13.00	-43.04	-45.74	-10.30	Peak
3	3752.000	-39.88	-13.00	-26.88	-32.89	-6.99	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuVm) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Site :HC-CB02
Condition :3m Horizontal
Mode :LTE_Cat-1_3M_16QAM_B106_938MHz
Test by :Scott Chang

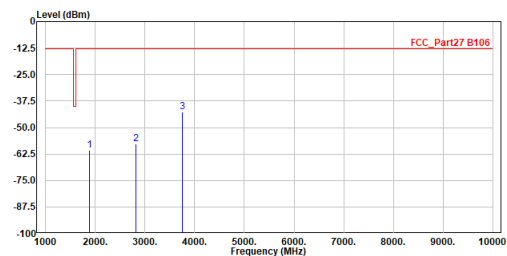


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	1876.000	-60.81	-13.00	-47.81	-47.18	-13.63	Peak
2	2814.000	-58.12	-13.00	-45.12	-47.82	-10.30	Peak
3	3752.000	-41.03	-13.00	-28.03	-34.04	-6.99	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuVm) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Site :HC-CB02
Condition :3m Vertical
Mode :LTE_Cat-1_3M_16QAM_B106_938MHz
Test by :Scott Chang

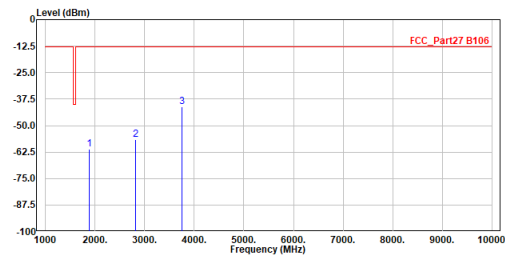


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	1876.000	-60.78	-13.00	-47.78	-47.15	-13.63	Peak
2	2814.000	-57.82	-13.00	-44.82	-47.52	-10.30	Peak
3	3752.000	-42.50	-13.00	-29.50	-35.51	-6.99	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuVm) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Site :HC-CB02
Condition :3m Horizontal
Mode :LTE_Cat-1_3M_64QAM_B106_938MHz
Test by :Scott Chang

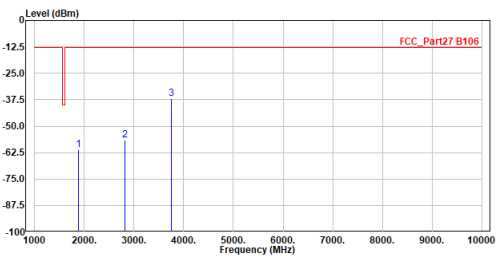


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	1876.000	-61.22	-13.00	-48.22	-47.59	-13.63	Peak
2	2814.000	-56.71	-13.00	-43.71	-46.41	-10.30	Peak
3	3752.000	-41.05	-13.00	-28.05	-34.06	-6.99	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuVm) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Site :HC-CB02
Condition :3m Vertical
Mode :LTE_Cat-1_3M_64QAM_B106_938MHz
Test by :Scott Chang

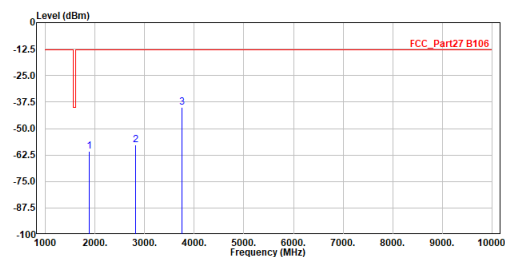


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	1876.000	-61.31	-13.00	-48.31	-47.68	-13.63	Peak
2	2814.000	-56.55	-13.00	-43.55	-46.25	-10.30	Peak
3	3752.000	-37.01	-13.00	-24.01	-30.02	-6.99	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuVm) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Site :HC-CB02
Condition :3m Horizontal
Mode :LTE_Cat-M1_3M_QPSK_B106_938MHz
Test by :Scott Chang

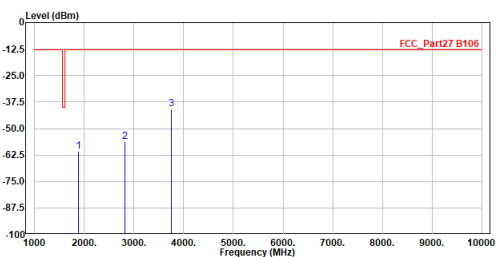


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	1876.000	-60.59	-13.00	-47.59	-46.96	-13.63	Peak
2	2814.000	-57.75	-13.00	-44.75	-47.45	-10.30	Peak
3	3752.000	-40.15	-13.00	-27.15	-33.16	-6.99	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuVm) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Site :HC-CB02
Condition :3m Vertical
Mode :LTE_Cat-M1_3M_QPSK_B106_938MHz
Test by :Scott Chang

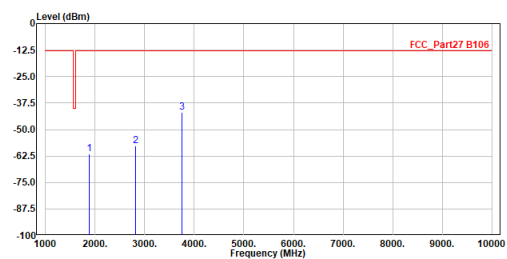


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	1876.000	-60.84	-13.00	-47.84	-47.21	-13.63	Peak
2	2814.000	-56.06	-13.00	-43.06	-45.76	-10.30	Peak
3	3752.000	-40.85	-13.00	-27.85	-33.86	-6.99	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuVm) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Site :HC-CB02
Condition :3m Horizontal
Mode :LTE_Cat-M1_3M_16QAM_B106_938MHz
Test by :Scott Chang

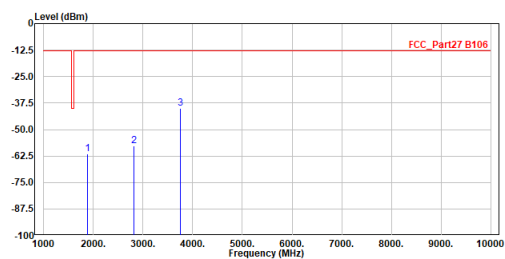


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	1876.000	-61.42	-13.00	-48.42	-47.79	-13.63	Peak
2	2814.000	-57.59	-13.00	-44.59	-47.29	-10.30	Peak
3	3752.000	-41.84	-13.00	-28.84	-34.85	-6.99	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuV/m) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Site :HC-CB02
Condition :3m Vertical
Mode :LTE_Cat-M1_3M_16QAM_B106_938MHz
Test by :Scott Chang



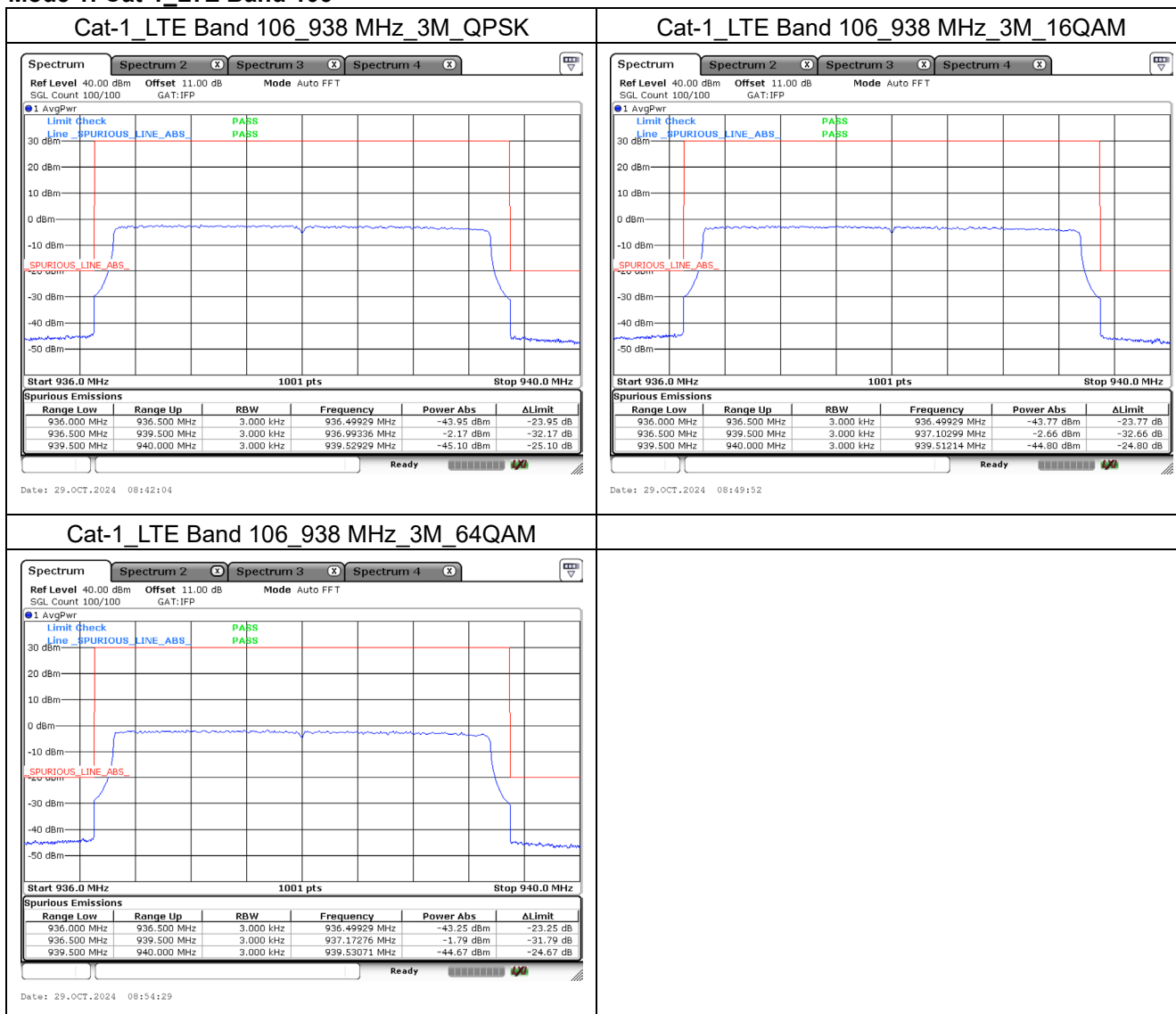
No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	1876.000	-61.60	-13.00	-48.60	-47.97	-13.63	Peak
2	2814.000	-57.68	-13.00	-44.68	-47.38	-10.30	Peak
3	3752.000	-40.03	-13.00	-27.03	-33.04	-6.99	Peak

Note:

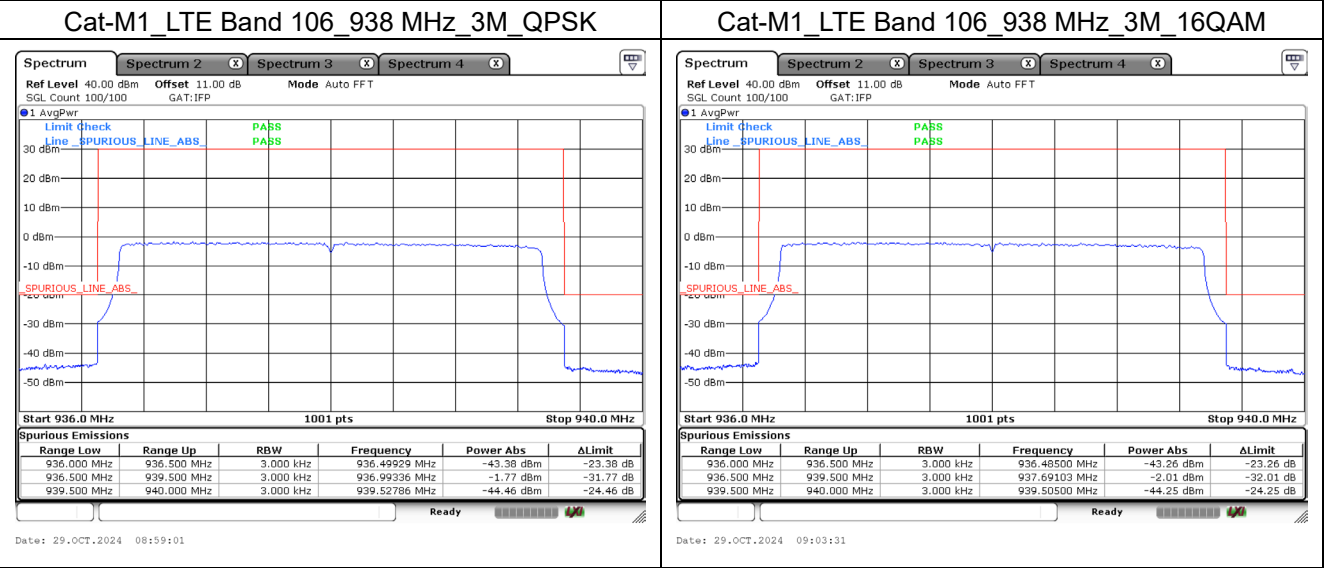
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor + Aux Factor
3. Over Limit = Level - Limit Line
4. Aux Factor = Convert E (dBuV/m) to EIRP (dBm)
 $= 107 + 20\log(3) - 104.8 = 11.8 \text{ dB}$
5. The other emission levels were very low against the limit.
6. The emission under 1GHz was not included since the emission levels are very low against the limit.

Appendix E. Test Result of Conducted Band Edge

Mode 1: Cat-1_LTE Band 106



Mode 2: Cat-M1_LTE Band 106



Appendix F. Test Result of Frequency Stability**Mode 1: Cat-1_LTE Band 106****LTE Band 106 / 3 MHz / 938 MHz**

Voltage (VDC)	Frequency Stability (Hz)	Frequency Stability (ppm)
61.60	2.90	0.0031
56.00	3.22	0.0034
50.40	3.08	0.0033

Temperature (°C)	Frequency Stability (Hz)	Frequency Stability (ppm)
-30	3.72	0.0040
-20	3.38	0.0036
-10	2.87	0.0031
0	3.02	0.0032
10	3.74	0.0040
20	2.64	0.0028
30	2.44	0.0026
40	3.22	0.0034
50	2.73	0.0029

Mode 2: Cat-M1_LTE Band 106**LTE Band 106 / 3 MHz / 938 MHz**

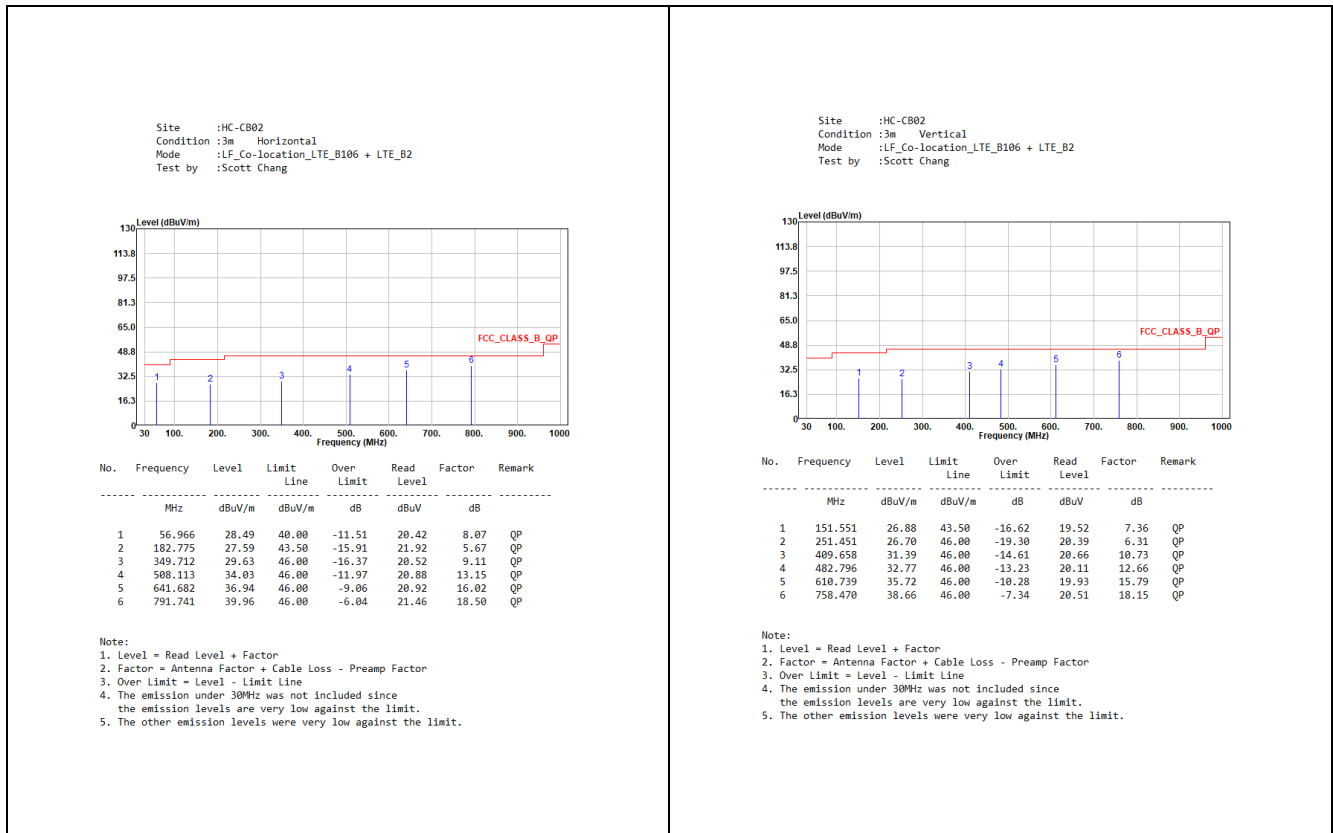
Voltage (VDC)	Frequency Stability (Hz)	Frequency Stability (ppm)
61.60	1.42	0.0015
56.00	2.16	0.0023
50.40	1.42	0.0015

Temperature (°C)	Frequency Stability (Hz)	Frequency Stability (ppm)
-30	1.43	0.0015
-20	2.24	0.0024
-10	2.20	0.0023
0	1.72	0.0018
10	1.65	0.0018
20	1.40	0.0015
30	1.90	0.0020
40	2.18	0.0023
50	1.24	0.0013

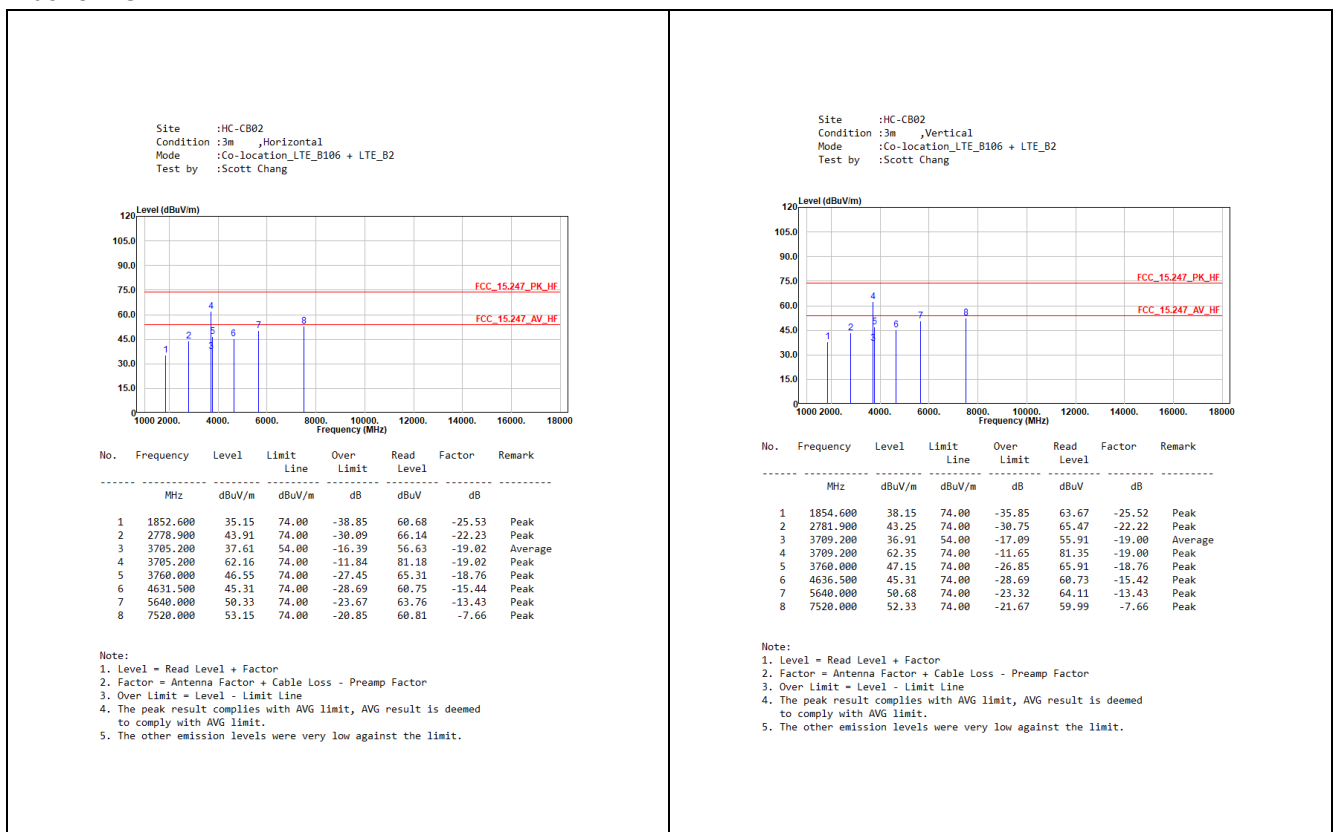
Appendix G. Test Result of Radiated Emissions Co-location

1. WWAN LTE of EUT + WWAN LTE of WWAN module

30 MHz ~ 1 GHz:

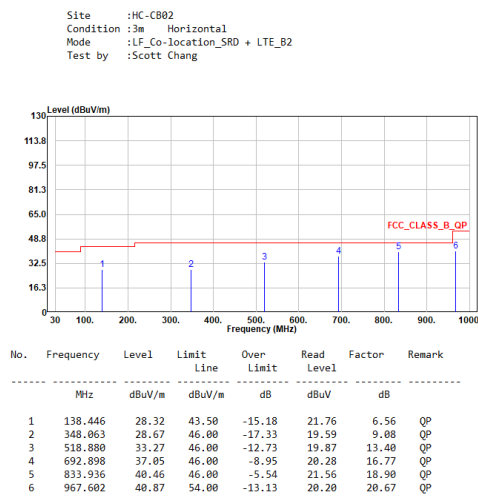


Above 1 GHz:

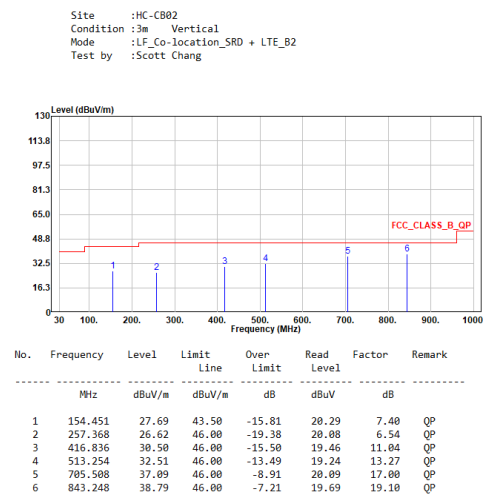


2. SRD + WWAN LTE of WWAN module

30 MHz ~ 1 GHz:

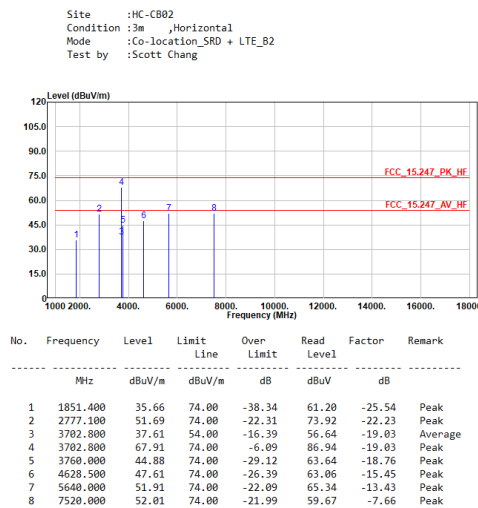


Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.
5. The other emission levels were very low against the limit.

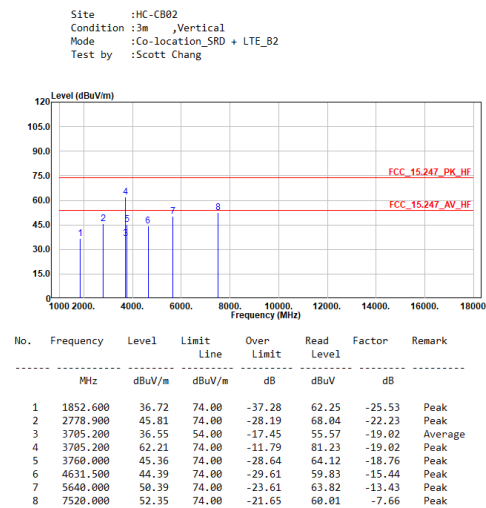


Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.
5. The other emission levels were very low against the limit.

Above 1 GHz:



Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.



Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.