

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)

Report No.: RFBWIN-WTW-P22110682-3

FCC ID: J9C-QCNCM865

Product: Qualcomm WiFi 7/BT Combo module

Brand: Qualcomm

Model No.: QCNCM865

Received Date: 2022/11/24

Test Date: 2023/1/9 ~ 2023/2/20

Issued Date: 2023/3/21

Applicant: Qualcomm Technologies, Inc.

Address: 5775 Morehouse Drive, San Diego, CA 92121-1714

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory

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Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan

FCC Registration / 723255 / TW2022

Designation Number:

Approved by: _____, **Date:** 2023/3/21
May Chen / Manager

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Prepared by : Luna Yu / Specialist



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Release Control Record

Issue No.	Description	Date Issued
RFBWIN-WTW-P22110682-3	Original release.	2023/3/21

1 Certificate

Product: Qualcomm WiFi 7/BT Combo module

Brand: Qualcomm

Test Model: QCNCM865

Sample Status: Engineering sample

Applicant: Qualcomm Technologies, Inc.

Test Date: 2023/1/9 ~ 2023/2/20

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)

Measurement ANSI C63.10-2013

procedure: KDB 558074 D01 15.247 Meas Guidance v05r02

KDB 662911 D01 Multiple Transmitter Output v02r01

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
Standard / Clause	Test Item	Result	Remark
15.247(b)	RF Output Power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	Pass	Meet the requirement of limit.
15.247(a)(2)	6 dB Bandwidth	Pass	Meet the requirement of limit.
15.247(d)	Conducted Out of Band Emissions	Pass	Meet the requirement of limit.
15.207	AC Power Conducted Emissions	Pass	Minimum passing margin is -9.36 dB at 0.56795 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -4.7 dB at 296.66 MHz, 105.58 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -17.2 dB at 7320.00 MHz, 7440.00 MHz
15.203	Antenna Requirement	Pass	Antenna connector is MHF 4L not a standard connector.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Parameter	Specification	Expanded Uncertainty (k=2) (±)
Conducted Out of Band Emissions	9 kHz ~ 40 GHz	2.5 dB
AC Power Conducted Emissions	150 kHz ~ 30 MHz	1.9 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.1 dB
	30 MHz ~ 1 GHz	5.1 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	5.1 dB
	18 GHz ~ 40 GHz	5.3 dB

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description

Product	Qualcomm WiFi 7/BT Combo module
Brand	Qualcomm
Test Model	QCNCM865
Status of EUT	Engineering sample
Power Supply Rating	3.3Vdc from host equipment
Modulation Type	GFSK
Modulation Technology	DTS
Transfer Rate	Up to 2 Mbps
Operating Frequency	2.402 GHz ~ 2.48 GHz
Number of Channel	40
Output Power	52.218 mW (17.18 dBm)

Note:

1. There are Bluetooth and WLAN (2.4 GHz & 5 GHz & 5.9 GHz & 6 GHz) technology used for the EUT.
2. Simultaneously transmission condition.

DBS			
Condition	Technology		
1	WLAN(2.4GHz)_Ant 0+1	WLAN(5GHz) _Ant 0+1	
2	WLAN(2.4GHz) _Ant 0+1	WLAN(6GHz) _Ant 0+1	
HBS+BT			
Condition	Technology		
3	Bluetooth_Ant 0+1	WLAN(5GHz) _Ant 0+1	
4	Bluetooth_Ant 0+1	WLAN(6GHz) _Ant 0+1	
5	WLAN(5GHz_U-NII-1, U-NII-2A) _Ant 0+1	WLAN(5GHz_U-NII-2C, U-NII-3, U-NII-4) _Ant 0+1	Bluetooth
6	WLAN(5GHz_U-NII-1, U-NII-2A) _Ant 0+1	WLAN(6GHz) _Ant 0+1	Bluetooth

3. QCNCM865 has HW variant SKUs below to support different Microsoft Windows platform system and feature:

SKU	Support platform system and feature
NCM865	X86 platform, support DBS and HBS
NCM865A	Qualcomm platform, support DBS and HBS
NCM835	X86 platform, support DBS
NCM835A	Qualcomm platform, support DBS
Note: From the above SKUs, the worst was found in SKU (NCM865) . Therefore only the test data of the modes were recorded in this report.	

4. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna Set	RF Chain No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range	Cable Loss (dB)	Antenna Type	Connector Type	Cable Length
1	Chain0/1	Hong-Bo	260-25094	3.53	2.4~2.4835GHz	0.74	PIFA	MHF 4L	300mm
				3.06	5.15~5.25GHz	1.16			
				3.07	5.25~5.35GHz	1.18			
				4.81	5.47~5.725GHz	1.26			
				4.2	5.725~5.850GHz	1.28			
2	Chain0/1	Hong-Bo	260-25083	5.09	5.850~5.895 GHz	1.29	PIFA	MHF 4L	300mm
				5.14	5.925~6.425 GHz	1.35			
				5.09	6.425~6.525 GHz	1.38			
				5.16	6.525~6.875 GHz	1.45			
				5.12	6.875~7.125 GHz	1.50			
3	Chain0/1	Hong-Bo	260-25084	3.22	2.4~2.4835 GHz	0.49	Monopole	MHF 4L	200mm
				3.35	5.150~5.250 GHz	0.76			
				3.42	5.250~5.350 GHz	0.77			
				4.77	5.470~5.725 GHz	0.80			
				4.72	5.725~5.850 GHz	0.84			
				4.71	5.850~5.895 GHz	0.84			
				4.75	5.925~6.425 GHz	0.86			
				4.29	6.425~6.525 GHz	0.91			
				4.81	6.525~6.875 GHz	0.96			
				4.74	6.875~7.125 GHz	0.98			

* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

3.3 Channel List

40 channels are provided for BT-LE:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

3.4 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	1. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
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Following channel(s) was (were) selected for the final test as listed below:

Test Item	EUT Configure Mode	Mode	Tested Channel	TX Antenna	Modulation	Data Rate Parameter
RF Output Power / Power Spectral Density	A	BT-LE 1M	0, 19, 39	1TX, 2TX	GFSK	1Mb/s
		BT-LE 2M	0, 19, 39	1TX, 2TX	GFSK	2Mb/s
6 dB Bandwidth / Conducted Out of Band Emissions	A	BT-LE 1M	0, 19, 39	1TX, 2TX	GFSK	1Mb/s
		BT-LE 2M	0, 19, 39	1TX, 2TX	GFSK	2Mb/s
AC Power Conducted Emissions	B	BT-LE 1M	19	1TX	GFSK	1Mb/s
Unwanted Emissions below 1 GHz	A, B	BT-LE 1M	19	1TX	GFSK	1Mb/s
Unwanted Emissions above 1 GHz	A, B	BT-LE 1M	0, 19, 39	1TX, 2TX	GFSK	1Mb/s
		BT-LE 2M	0, 19, 39	1TX, 2TX	GFSK	2Mb/s
EUT Configure Mode:	A	EUT only (w/o antenna)				
	B	EUT with 50 ohm terminator				

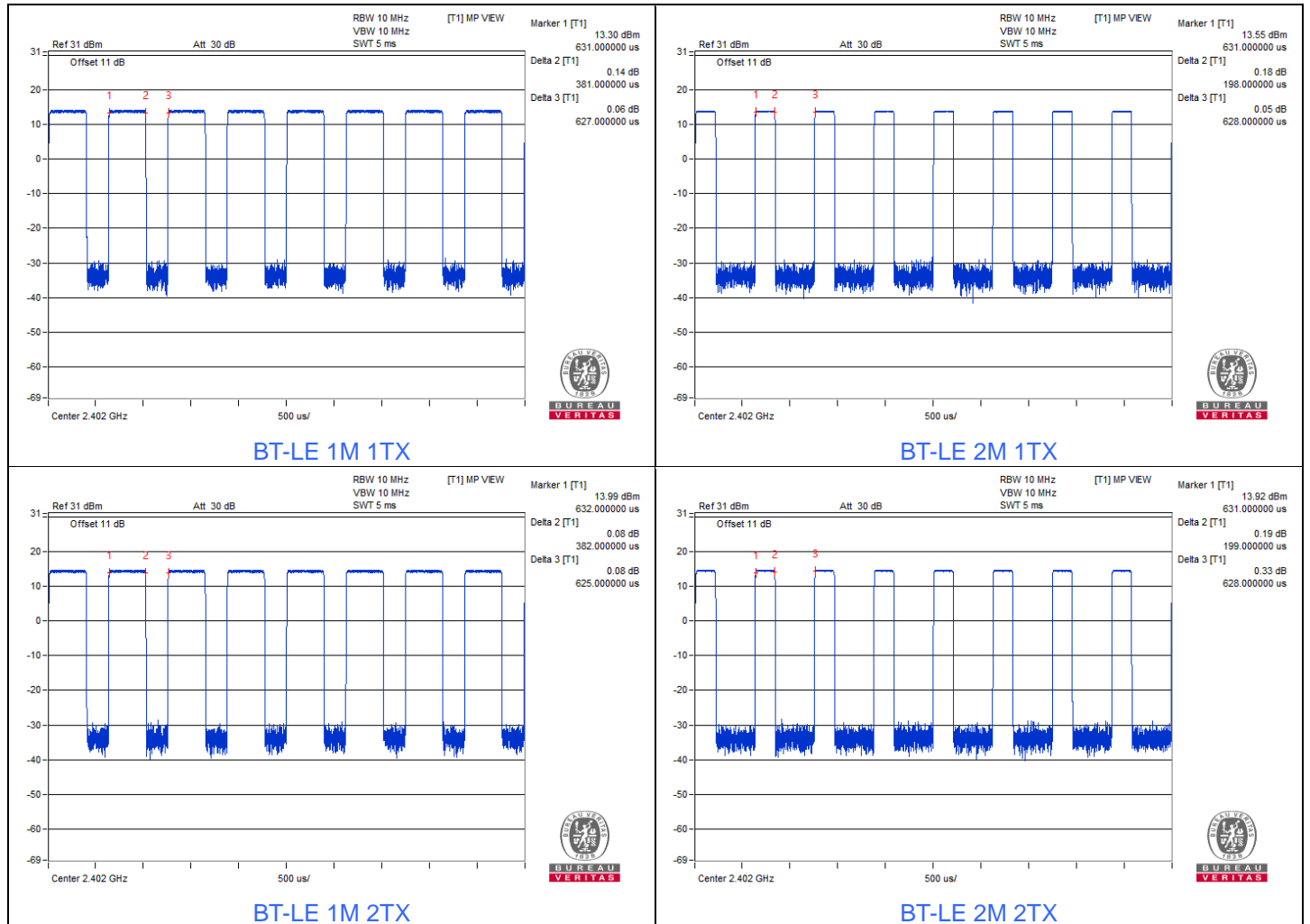
3.5 Duty Cycle of Test Signal

BT-LE 1M 1TX: Duty cycle = 0.381 ms / 0.627 ms x 100% = 60.8%, duty factor = 10 * log (1/Duty cycle) = 2.16 dB

BT-LE 2M 1TX: Duty cycle = 0.198 ms / 0.628 ms x 100% = 31.5%, duty factor = 10 * log (1/Duty cycle) = 5.01 dB

BT-LE 1M 2TX: Duty cycle = 0.382 ms / 0.625 ms x 100% = 61.1%, duty factor = 10 * log (1/Duty cycle) = 2.14 dB

BT-LE 2M 2TX: Duty cycle = 0.199 ms / 0.628 ms x 100% = 31.7%, duty factor = 10 * log (1/Duty cycle) = 4.99 dB

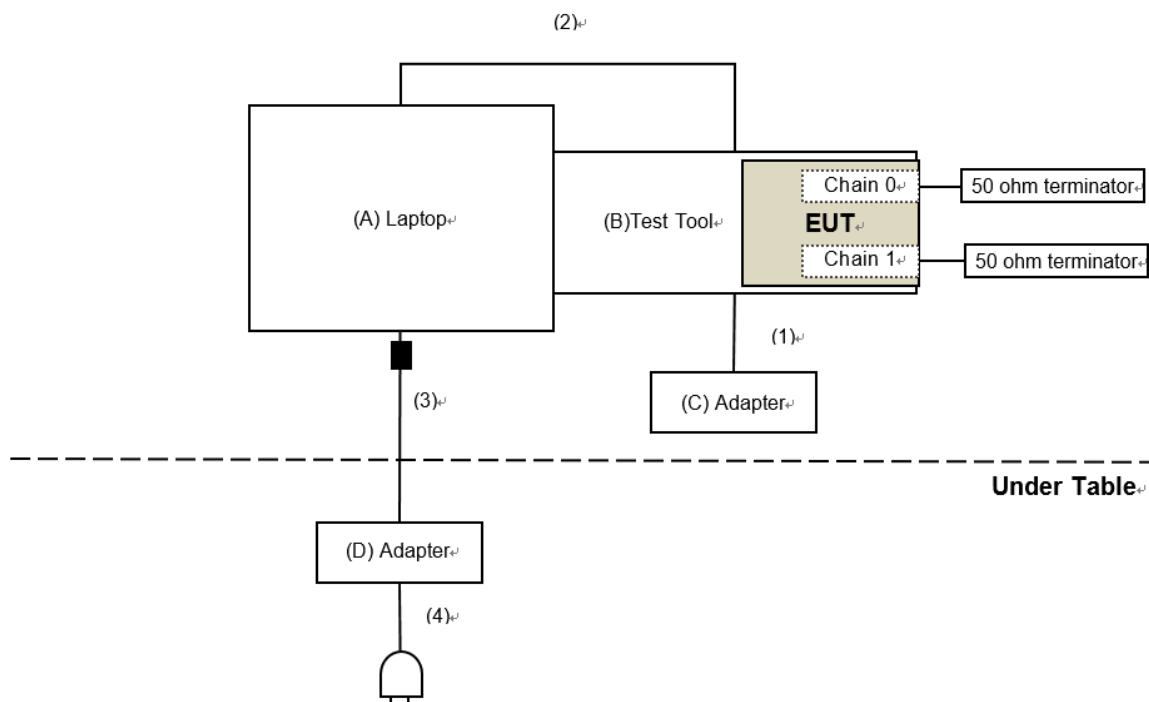


3.6 Test Program Used and Operation Descriptions

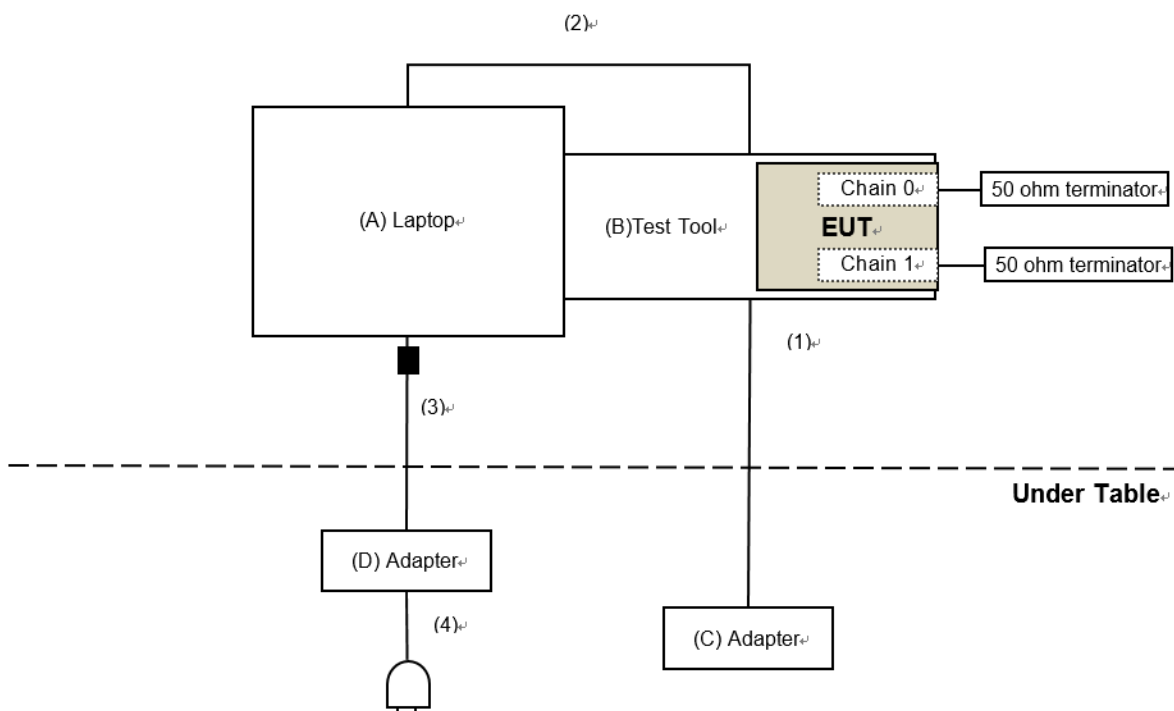
Controlling software (QRCT 4.0.00159.1) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices

For AC Power Conducted Emission test



For Unwanted Emission test



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Laptop	Dell	E5420	6FGHKV1	N/A	Provided by Lab
B	Test Tool	Qualcomm	N/A	N/A	N/A	Supplied by applicant
C	Adapter	PHIHONG	PSAA12A-120L6	N/A	N/A	Supplied by applicant
D	Adapter	Dell	LLA65NS2-01	N/A	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	DC Cable	1	1.2	NO	0	Supplied by applicant
2	USB Cable	1	0.6	Yes	0	Provided by Lab
3	DC Cable	1	1.8	NO	1	Provided by Lab
4	AC Cable	1	1.5	NO	0	Provided by Lab

4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Power Meter Anritsu	ML2495A	1529002	2022/6/22	2023/6/21
Pulse Power Sensor Anritsu	MA2411B	1726434	2022/6/22	2023/6/21

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2023/1/9 ~ 2023/1/18

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112409	2022/3/11	2023/3/10

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2023/1/9 ~ 2023/1/18

4.3 6 dB Bandwidth

Refer to section 4.2 to get information of the instruments.

4.4 Conducted Out of Band Emissions

Refer to section 4.2 to get information of the instruments.

4.5 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohm terminal resistance	N/A	EMC-01	2022/9/27	2023/9/26
Fixed attenuator STI	STI02-2200-10	005	2022/8/24	2023/8/23
LISN R&S	ESH3-Z5	848773/004	2022/10/18	2023/10/17
RF Coaxial Cable JYEBO	5D-FB	COCCAB-001	2022/8/24	2023/8/23
Software BVADT	BVADT_Cond_V7.3.7.4	N/A	N/A	N/A
TEST RECEIVER R&S	ESCS 30	847124/029	2022/10/14	2023/10/13

Notes:

1. The test was performed in Conduction 1
2. Tested Date: 2023/2/20

4.6 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Bilog Antenna Schwarzbeck	VULB 9168	9168-0842	2022/10/24	2023/10/23
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	N/A	N/A
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-02	2022/12/28	2023/12/27
LOOP ANTENNA Electro-Metrics	EM-6879	264	2022/3/18	2023/3/17
Pre_Amplifier Agilent	8447D	2944A10636	2022/3/19	2023/3/18
Pre_Amplifier EMCI	EMC330N	980538	2022/4/25	2023/4/24
RF Coaxial Cable COMMATE/PEWC	8D	966-5-1	2022/4/25	2023/4/24
		966-5-2	2022/4/25	2023/4/24
		966-5-3	2022/4/25	2023/4/24
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-001	2022/12/19	2023/12/18
		LOOPCAB-002	2022/12/19	2023/12/18
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112410	2022/3/13	2023/3/12
Test Receiver R&S	ESR3	102528	2023/2/10	2024/2/9

Notes:

1. The test was performed in 966 Chamber No. 5.
2. Tested Date: 2023/2/15

4.7 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-1819	2022/11/13	2023/11/12
	BBHA 9170	9170-739	2022/11/13	2023/11/12
Pre_Amplifier EMCI	EMC12630SE	980509	2022/4/25	2023/4/24
	EMC184045SE	980387	2022/12/28	2023/12/27
RF Cable-Frequency range: 1-40GHz EMCI	EMC102-KM-KM-1200	160924	2022/12/28	2023/12/27
RF Coaxial Cable EMCI	EMC-KM-KM-4000	200214	2022/3/8	2023/3/7
	EMC104-SM-SM-1500	180503	2022/4/25	2023/4/24
	EMC104-SM-SM-2000	180501	2022/4/25	2023/4/24
	EMC104-SM-SM-6000	180506	2022/4/25	2023/4/24
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112410	2022/3/13	2023/3/12
Test Receiver R&S	ESR3	102528	2023/2/10	2024/2/9

Notes:

1. The test was performed in 966 Chamber No. 5.
2. Tested Date: 2023/2/20

5 Limits of Test Items

5.1 RF Output Power

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30 dBm)

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

5.2 Power Spectral Density

The Maximum of Power Spectral Density Measurement is 8 dBm in any 3 kHz.

5.3 6 dB Bandwidth

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

5.4 Conducted Out of Band Emissions

Below 20 dB of the highest emission level of operating band (in 100 kHz Resolution Bandwidth).

5.5 AC Power Conducted Emissions

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

Notes:

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

5.6 Unwanted Emissions below 1 GHz

Radiated emissions up to 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

Frequencies (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
Above 960	500	3

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).

5.7 Unwanted Emissions above 1 GHz

Radiated emissions above 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

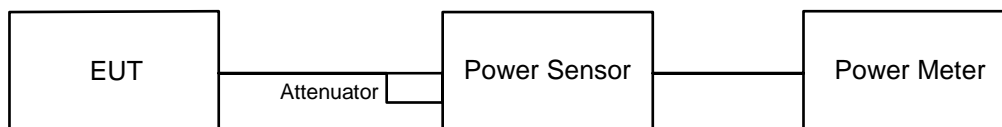
Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup



6.1.2 Test Procedure

Peak Power:

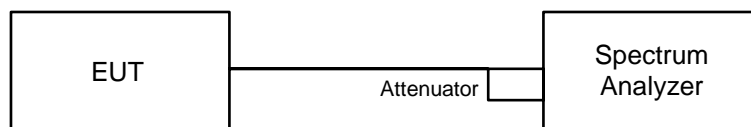
A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

Average Power:

Average power sensor was used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

6.2 Power Spectral Density

6.2.1 Test Setup

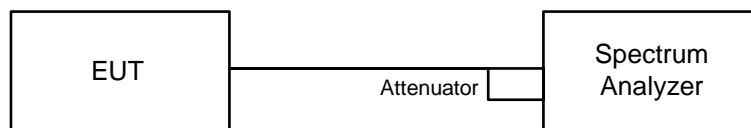


6.2.2 Test Procedure

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set the RBW to: 3 kHz.
- Set the VBW $\geq 3 \times$ RBW.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.

6.3 6 dB Bandwidth

6.3.1 Test Setup

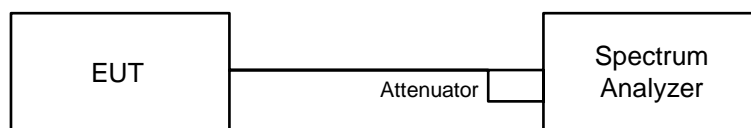


6.3.2 Test Procedure

- Set resolution bandwidth (RBW) = 100 kHz.
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.4 Conducted Out of Band Emissions

6.4.1 Test Setup



6.4.2 Test Procedure

MEASUREMENT PROCEDURE REF

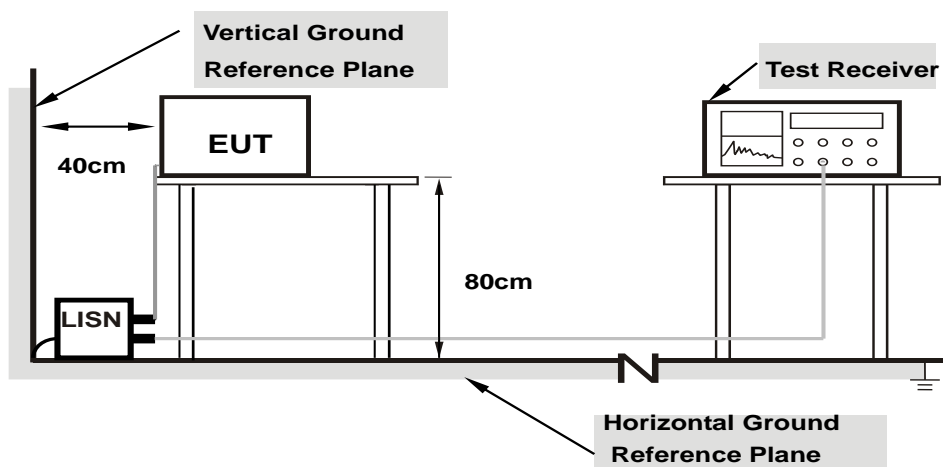
- Set the RBW = 100 kHz.
- Set the VBW ≥ 300 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

- Set RBW = 100 kHz.
- Set VBW ≥ 300 kHz.
- Detector = peak.
- Sweep = auto couple.
- Trace Mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level.

6.5 AC Power Conducted Emissions

6.5.1 Test Setup



Note: 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.5.2 Test Procedure

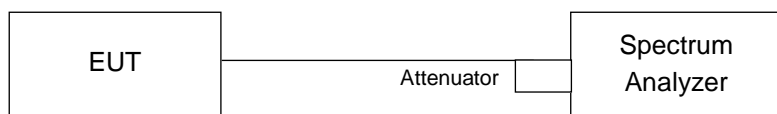
- The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50 uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz-30 MHz.

6.6 Unwanted Emissions below 1 GHz

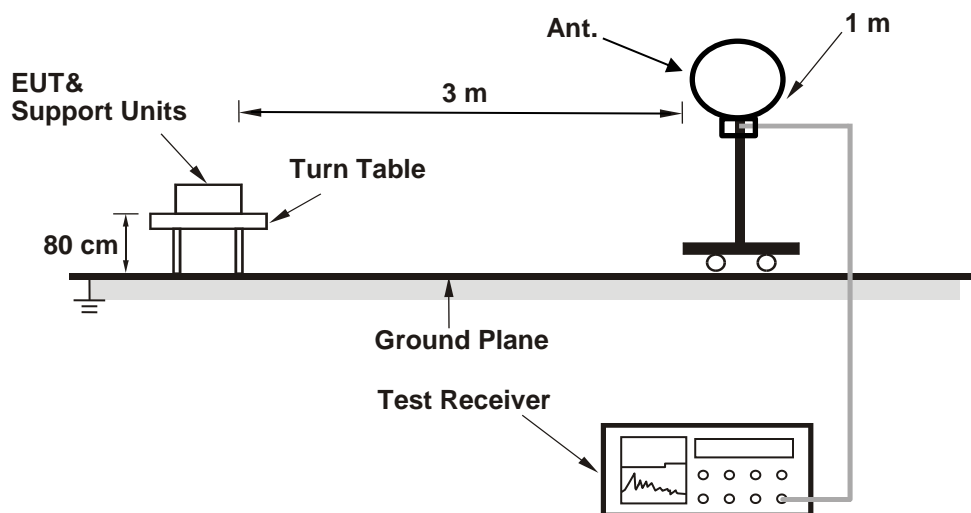
6.6.1 Test Setup

For Conducted Configuration:

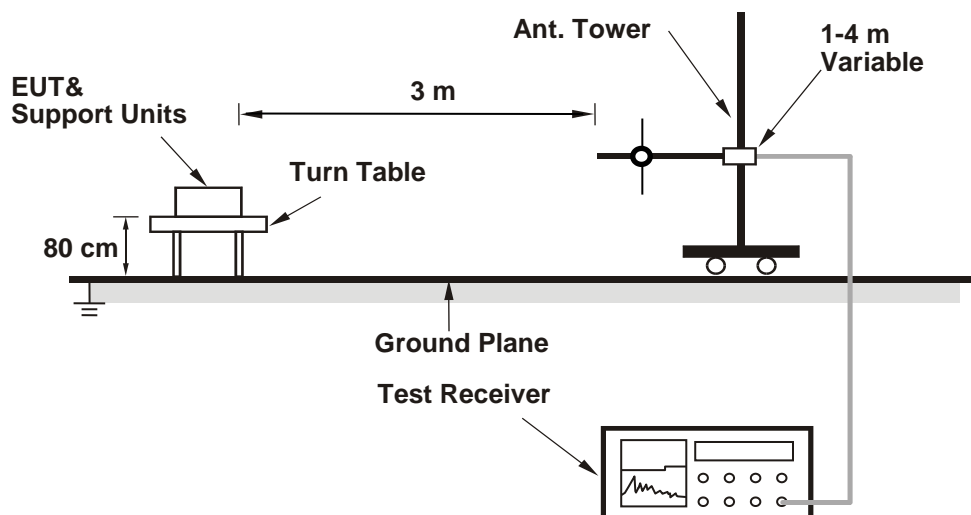


For Radiated Configuration:

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.6.2 Test Procedure

Following FCC KDB 789033 D02 General UNII Test Procedures:

Radiated versus Conducted Measurements.

The unwanted emission limits in both the restricted and non-restricted bands are based on antenna-port conducted measurements in conjunction with cabinet emissions tests are permitted to demonstrate compliance.

The following steps was performed:

- a. Cabinet emissions measurements. Radiated measurement was performed to ensure that cabinet emissions are below the emission limits. For the cabinet-emission measurements the antenna was replaced by a termination matching the nominal impedance of the antenna.
- b. Conducted tests was performed using equipment that matches the nominal impedance of the antenna assembly used with the EUT.
- c. EIRP calculation. A value representative of an upper bound on out-of-band antenna gain (in dBi) shall be added to the measured antenna-port conducted emission power to compute EIRP within the specified measurement bandwidth. (For emissions in the restricted bands, additional calculations are required to convert EIRP to field strength at the specified distance.) The upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands or 2 dBi, whichever is greater.
- d. EIRP adjustments for multiple outputs. (Follow the procedures specified in FCC KDB Publication 662911)
- e. For all of Radiation emission test

For Radiated emission below 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode, except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz at frequency below 150 kHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz or 10 kHz at frequency (150 kHz to 30 MHz).
3. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated emission above 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. 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 from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

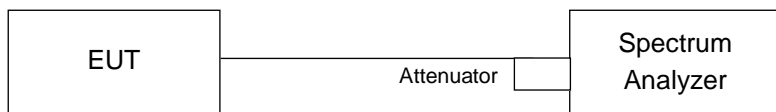
Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

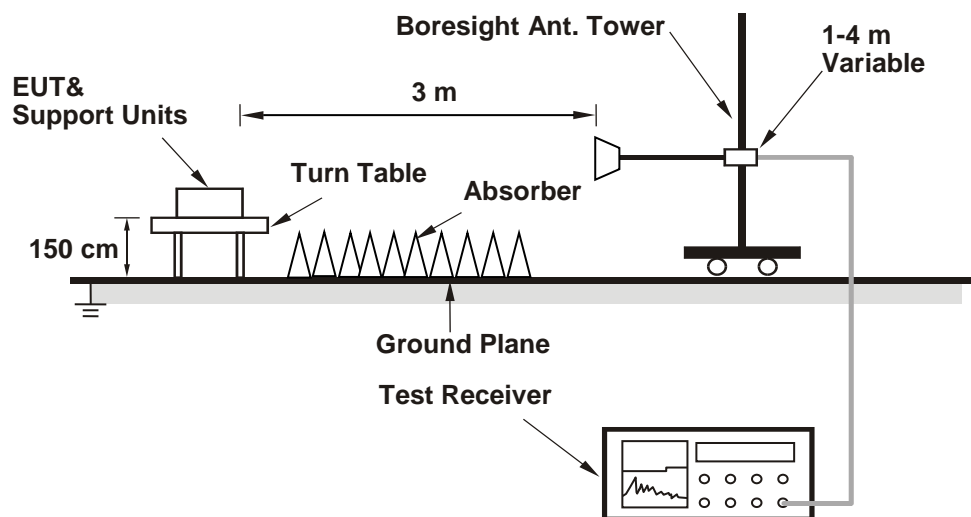
6.7 Unwanted Emissions above 1 GHz

6.7.1 Test Setup

For Conducted Configuration:



For Radiated Configuration:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.7.2 Test Procedure

Following FCC KDB 789033 D02 General UNII Test Procedures:

Radiated versus Conducted Measurements.

The unwanted emission limits in both the restricted and non-restricted bands are based on antenna-port conducted measurements in conjunction with cabinet emissions tests are permitted to demonstrate compliance.

The following steps was performed:

- a. Cabinet emissions measurements. Radiated measurement was performed to ensure that cabinet emissions are below the emission limits. For the cabinet-emission measurements the antenna was replaced by a termination matching the nominal impedance of the antenna.
- b. Conducted tests was performed using equipment that matches the nominal impedance of the antenna assembly used with the EUT.
- c. EIRP calculation. A value representative of an upper bound on out-of-band antenna gain (in dBi) shall be added to the measured antenna-port conducted emission power to compute EIRP within the specified measurement bandwidth. (For emissions in the restricted bands, additional calculations are required to convert EIRP to field strength at the specified distance.) The upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands or 2 dBi, whichever is greater.
- d. EIRP adjustments for multiple outputs. (Follow the procedures specified in FCC KDB Publication 662911)
- e. For all of Radiation emission test

For Radiated emission above 1 GHz

- a. The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. 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 from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Notes:

1. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
2. For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10 Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1 GHz.
3. All modes of operation were investigated and the worst-case emissions are reported.

7 Test Results of Test Item

7.1 RF Output Power

Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 65% RH	Tested By:	Katina Lu
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For Peak Power

BT-LE 1M 1TX

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
0	2402	38.459	15.85	30	Pass
19	2440	42.17	16.25	30	Pass
39	2480	31.842	15.03	30	Pass

Note: The antenna gain is 3.53 dBi < 6 dBi, so the output power limit shall not be reduced.

BT-LE 2M 1TX

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
0	2402	38.107	15.81	30	Pass
19	2440	41.879	16.22	30	Pass
39	2480	32.885	15.17	30	Pass

Note: The antenna gain is 3.53 dBi < 6 dBi, so the output power limit shall not be reduced.

BT-LE 1M 2TX

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
0	2402	14.18	13.03	46.273	16.65	29.46	Pass
19	2440	14.49	13.82	52.218	17.18	29.46	Pass
39	2480	13.27	12.62	39.513	15.97	29.46	Pass

Notes:

1. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
2. The directional gain is 6.54 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (6.54 - 6) = 29.46$ dBm.

BT-LE 2M 2TX

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
0	2402	13.97	13.09	45.316	16.56	29.46	Pass
19	2440	14.29	13.75	50.567	17.04	29.46	Pass
39	2480	13.46	12.68	40.717	16.10	29.46	Pass

Notes:

1. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
2. The directional gain is 6.54 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.54-6) = 29.46 dBm.

For Average Power
BT-LE 1M 1TX

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	36.392	15.61
19	2440	40.365	16.06
39	2480	30.409	14.83

BT-LE 2M 1TX

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	34.834	15.42
19	2440	40.179	16.04
39	2480	31.117	14.93

BT-LE 1M 2TX

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
0	2402	13.82	12.73	42.849	16.32
19	2440	14.15	13.61	48.963	16.90
39	2480	12.96	12.37	37.028	15.69

BT-LE 2M 2TX

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
0	2402	13.59	12.80	41.911	16.22
19	2440	14.00	13.59	47.975	16.81
39	2480	13.18	12.45	38.376	15.84

7.2 Power Spectral Density

Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 65% RH	Tested By:	Katina Lu
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BT-LE 1M 1TX

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
0	2402	-1.56	8	Pass
19	2440	-1.14	8	Pass
39	2480	-2.12	8	Pass

Note: The antenna gain is 3.53 dBi < 6 dBi, so the power density limit shall not be reduced.

BT-LE 2M 1TX

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
0	2402	-3.63	8	Pass
19	2440	-3.14	8	Pass
39	2480	-4.31	8	Pass

Note: The antenna gain is 3.53 dBi < 6 dBi, so the power density limit shall not be reduced.

BT-LE 1M 2TX

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1			
0	2402	-1.02	-1.91	1.57	7.46	Pass
19	2440	-0.79	-1.05	2.09	7.46	Pass
39	2480	-1.93	-2.43	0.84	7.46	Pass

Notes:

- Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
- Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
- The directional gain is 6.54 dBi > 6 dBi, so the power density limit shall be reduced to $8 - (6.54 - 6) = 7.46$ dBm/3kHz.

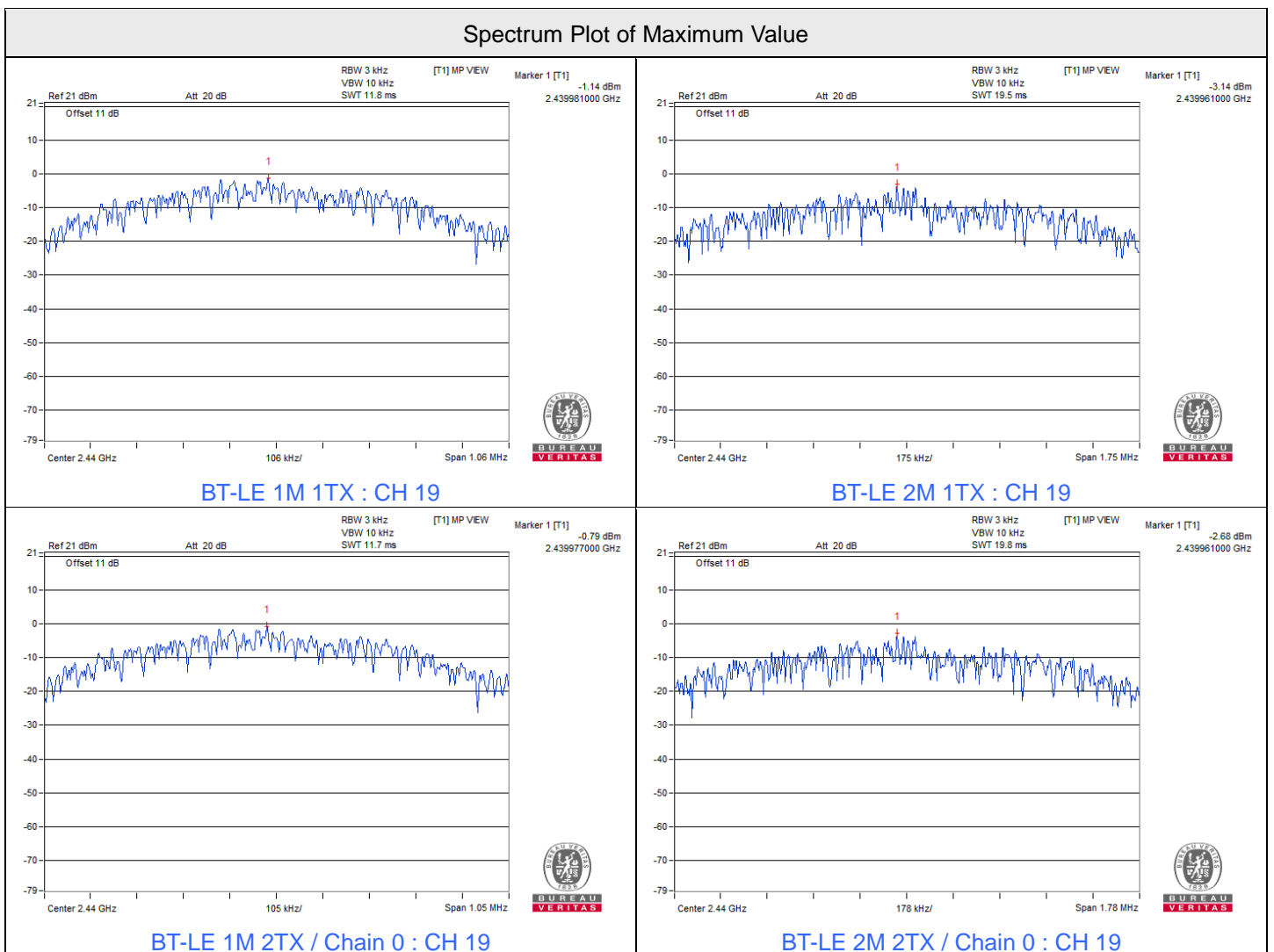


BT-LE 2M 2TX

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1			
0	2402	-3.03	-4.44	-0.67	7.46	Pass
19	2440	-2.68	-3.44	-0.03	7.46	Pass
39	2480	-4.18	-4.64	-1.39	7.46	Pass

Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
3. The directional gain is 6.54 dBi > 6 dBi, so the power density limit shall be reduced to 8-(6.54-6) = 7.46 dBm/3kHz.



7.3 6 dB Bandwidth

Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 65% RH	Tested By:	Katina Lu
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BT-LE 1M 1TX

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
0	2402	0.7	0.5	Pass
19	2440	0.71	0.5	Pass
39	2480	0.7	0.5	Pass

BT-LE 2M 1TX

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
0	2402	1.17	0.5	Pass
19	2440	1.17	0.5	Pass
39	2480	1.18	0.5	Pass

BT-LE 1M 2TX

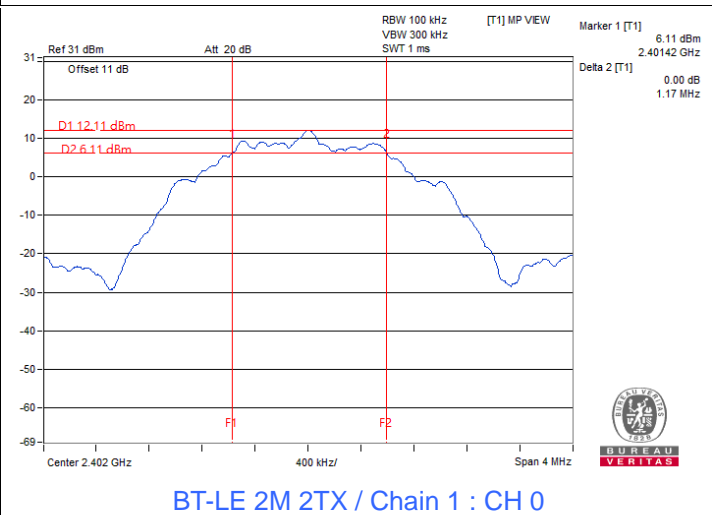
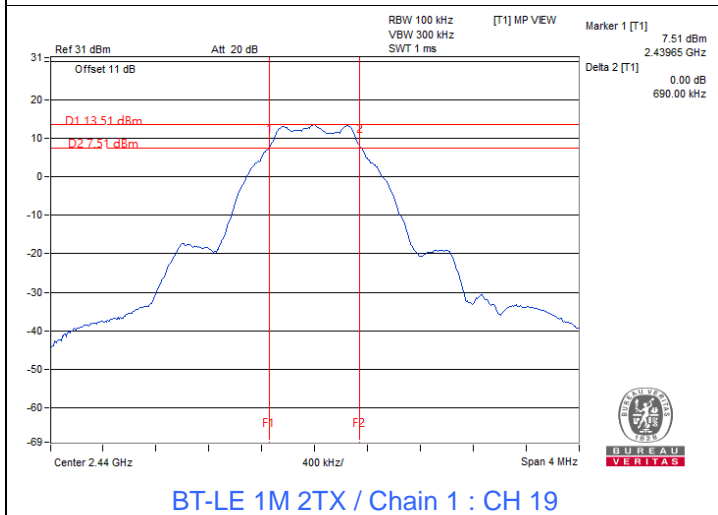
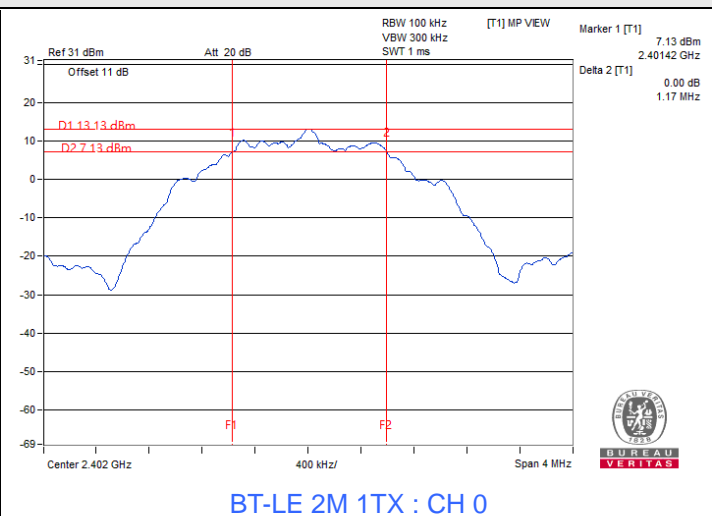
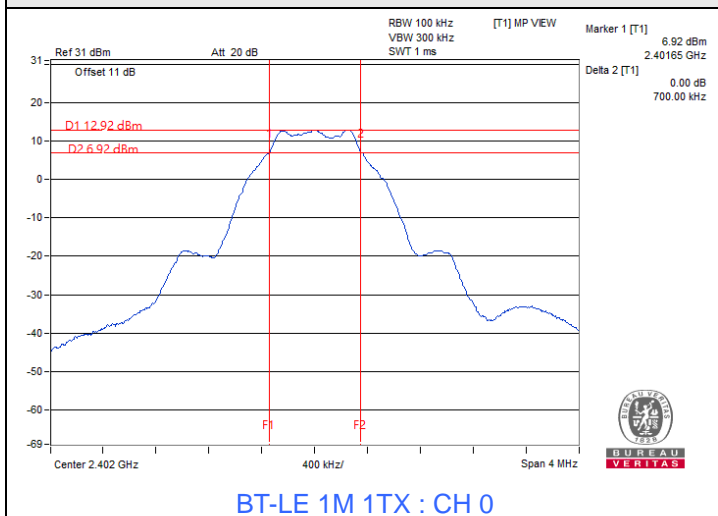
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
0	2402	0.71	0.70	0.5	Pass
19	2440	0.70	0.69	0.5	Pass
39	2480	0.70	0.70	0.5	Pass

BT-LE 2M 2TX

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
0	2402	1.19	1.17	0.5	Pass
19	2440	1.19	1.18	0.5	Pass
39	2480	1.18	1.18	0.5	Pass



Spectrum Plot of Minimum Value



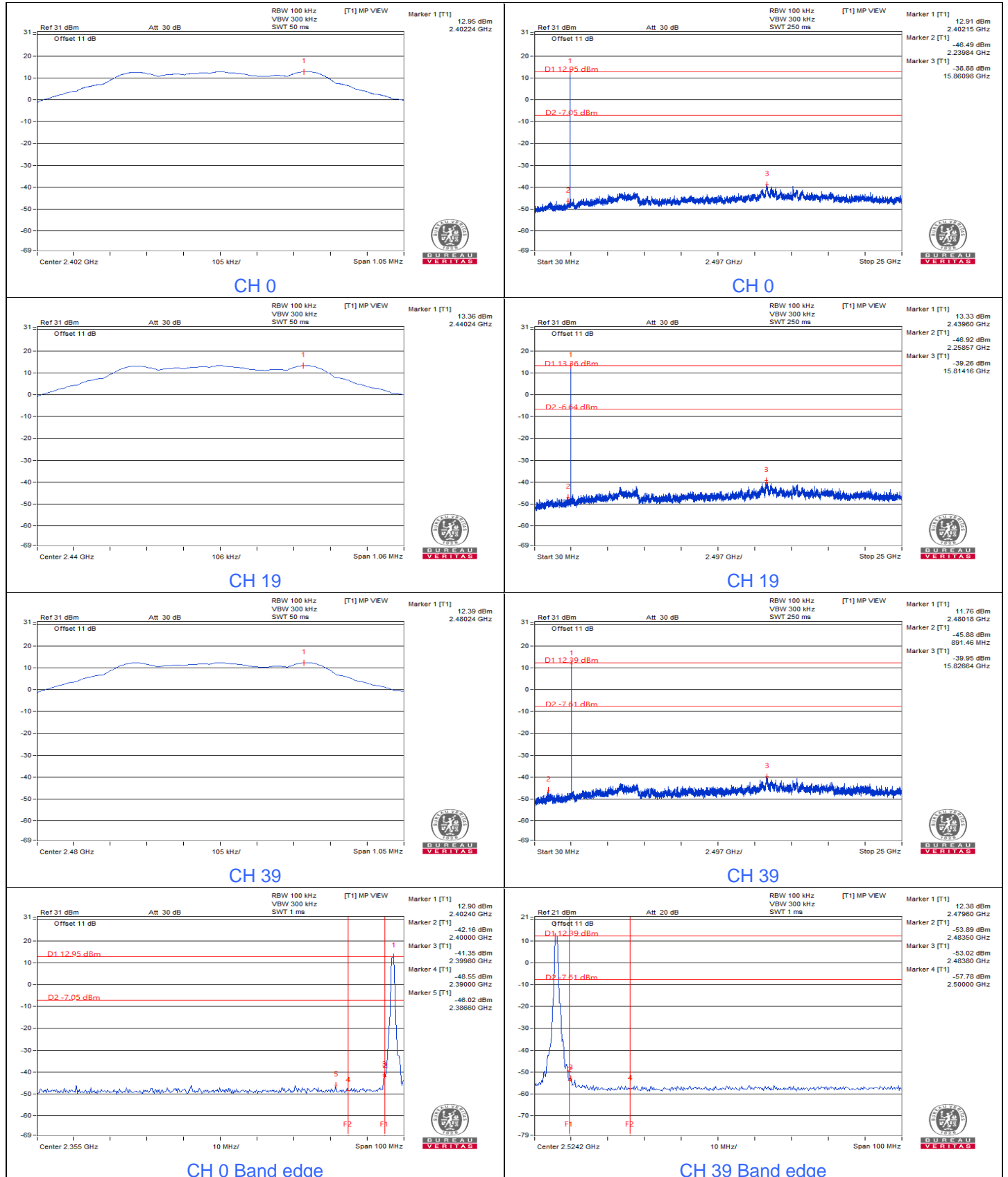


7.4 Conducted Out of Band Emissions

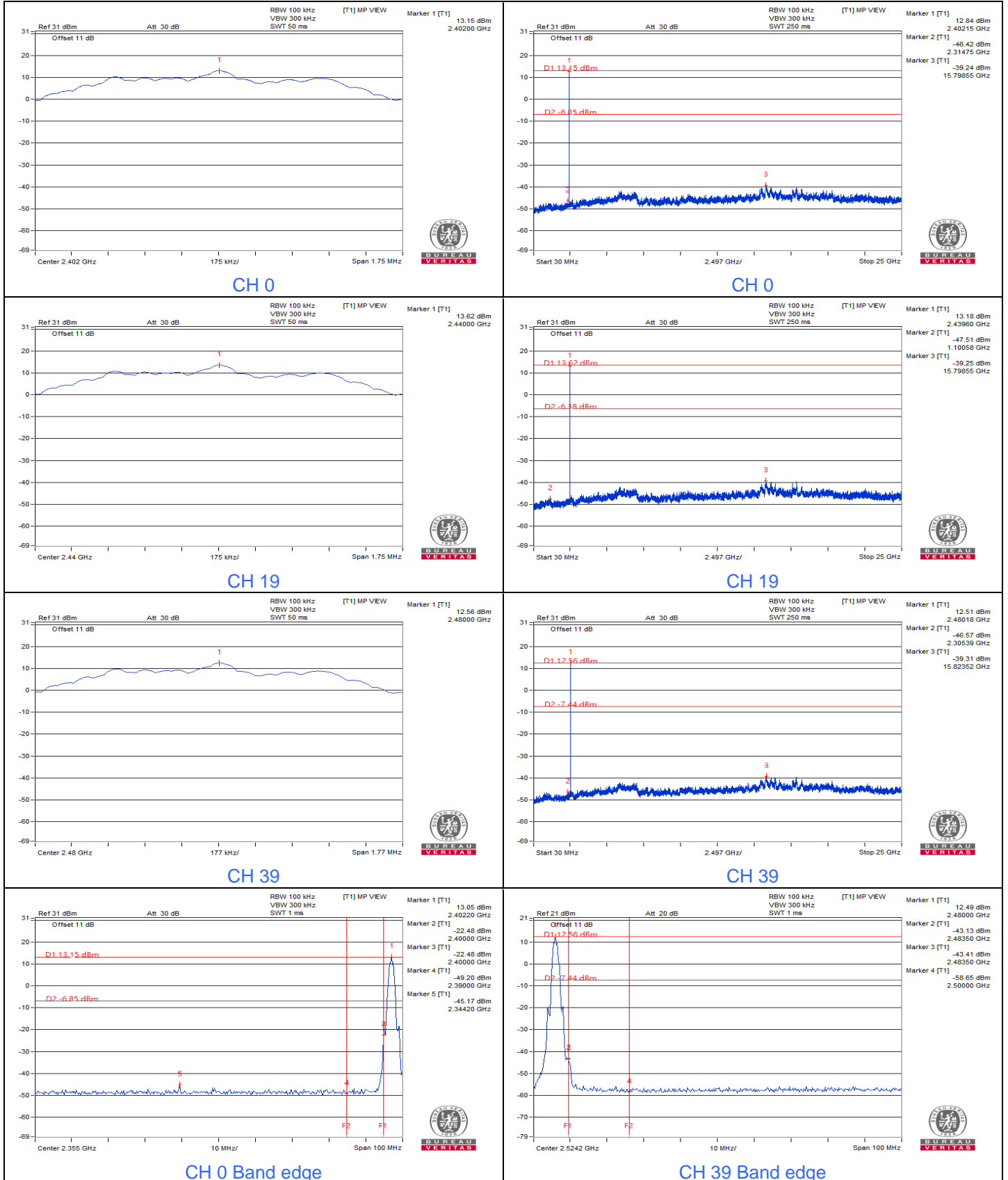
Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 65% RH	Tested By:	Katina Lu
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BT-LE 1M 1TX

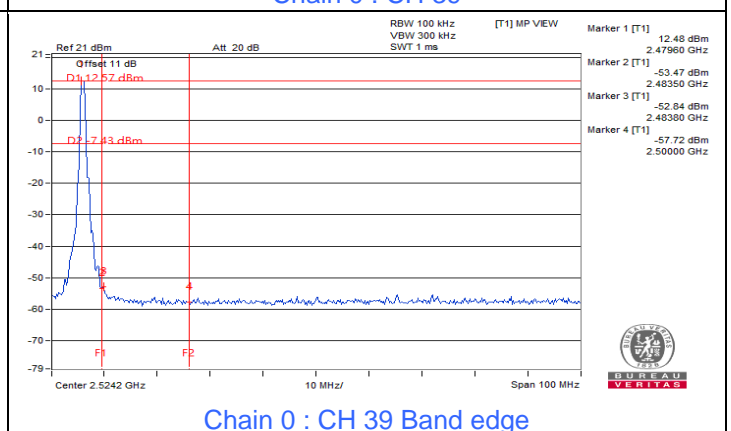
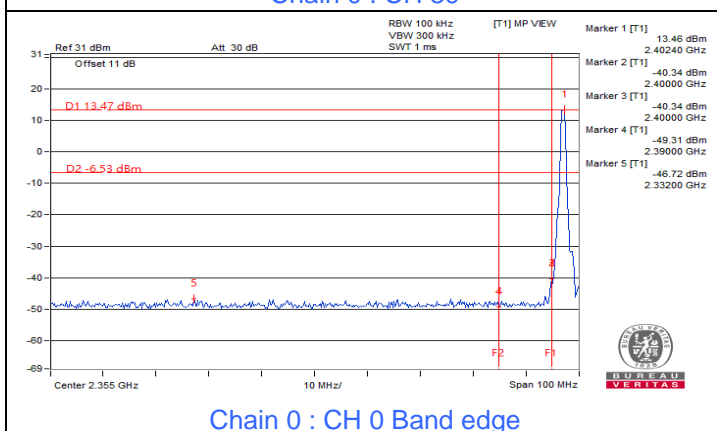
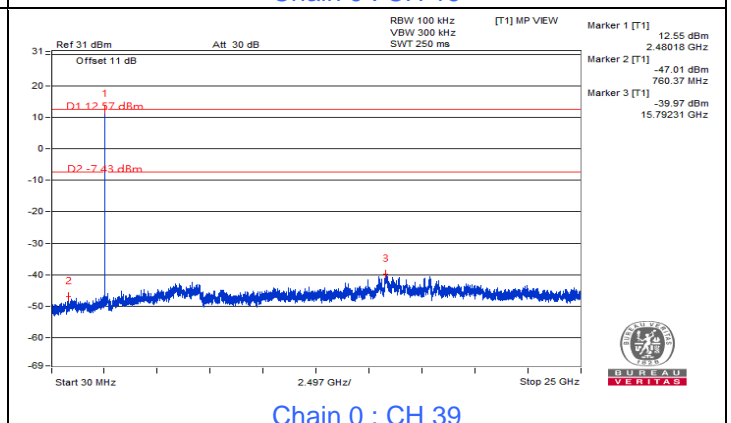
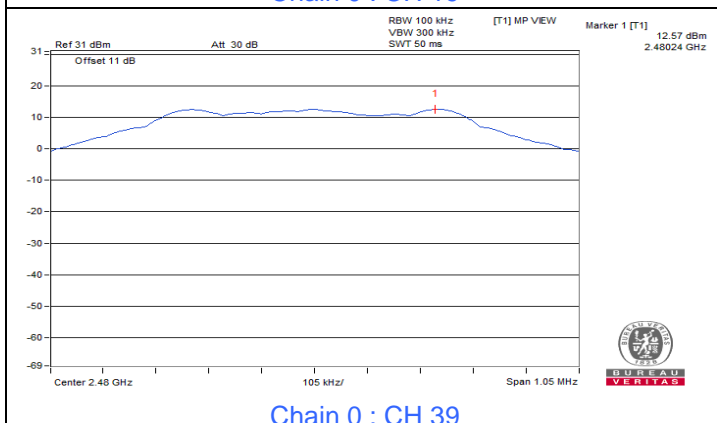
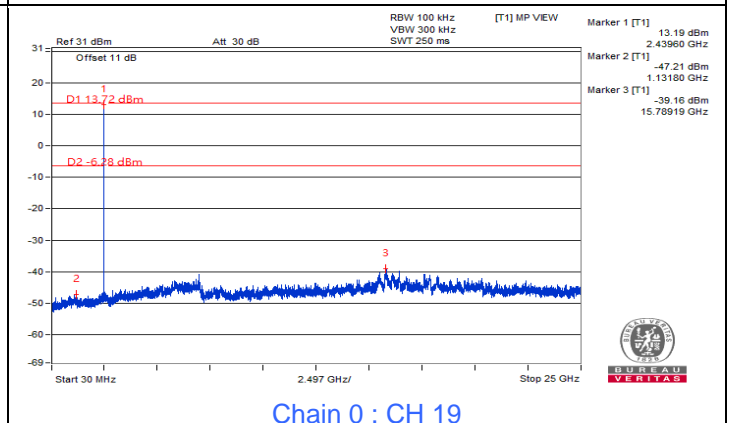
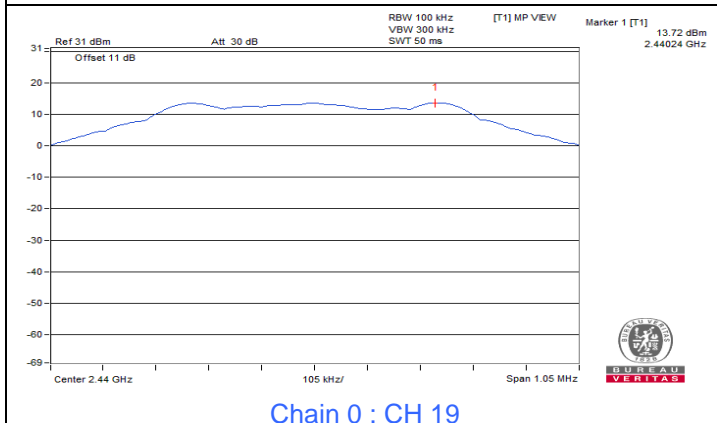
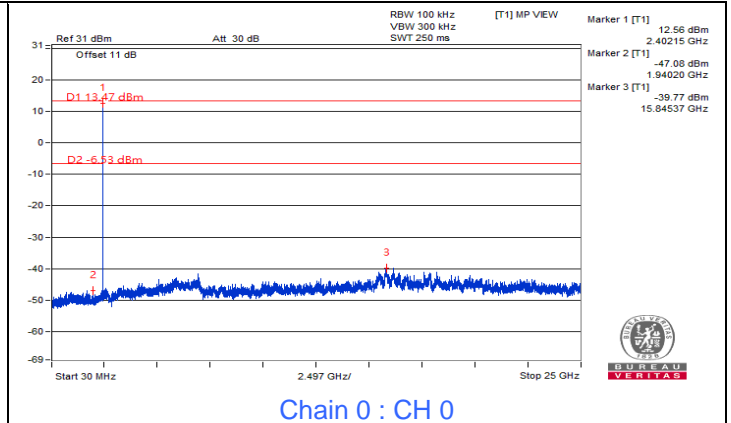
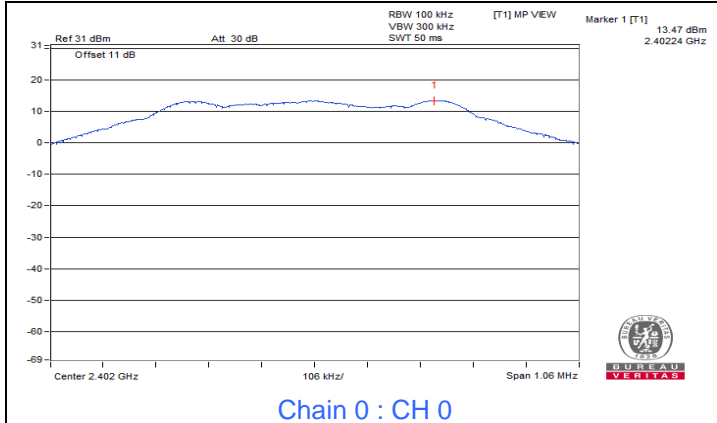


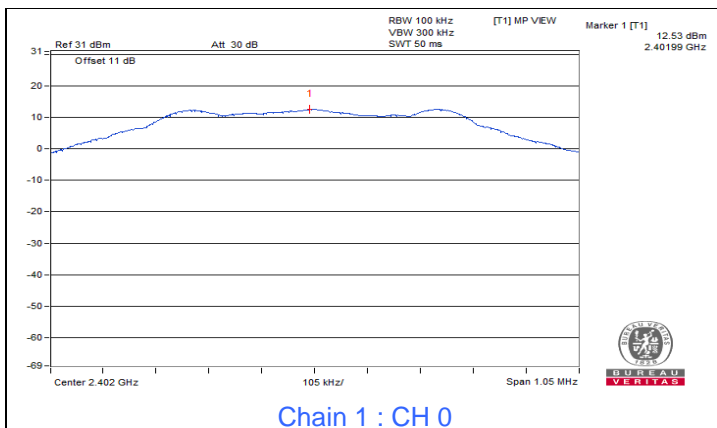
BT-LE 2M 1TX



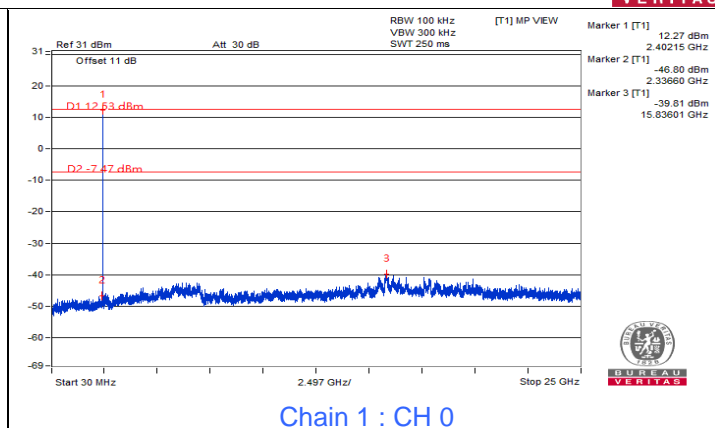


BT-LE 1M 2TX

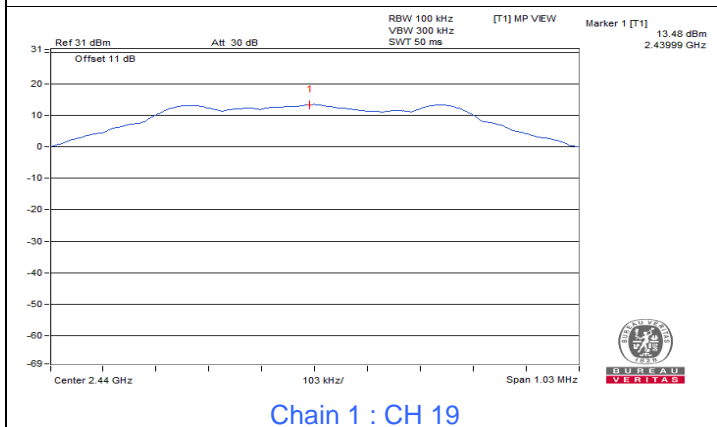




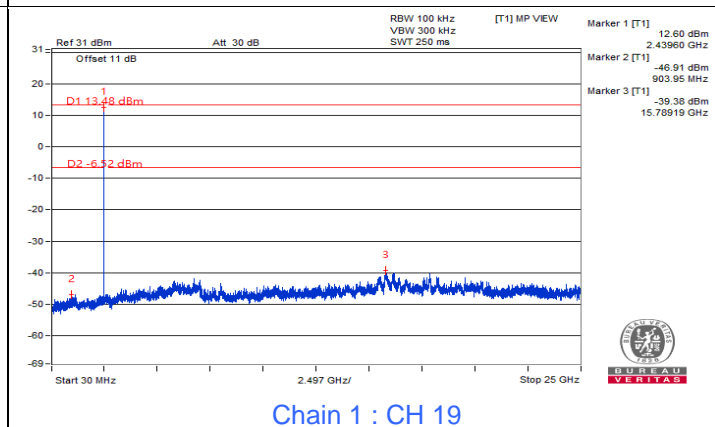
Chain 1 : CH 0



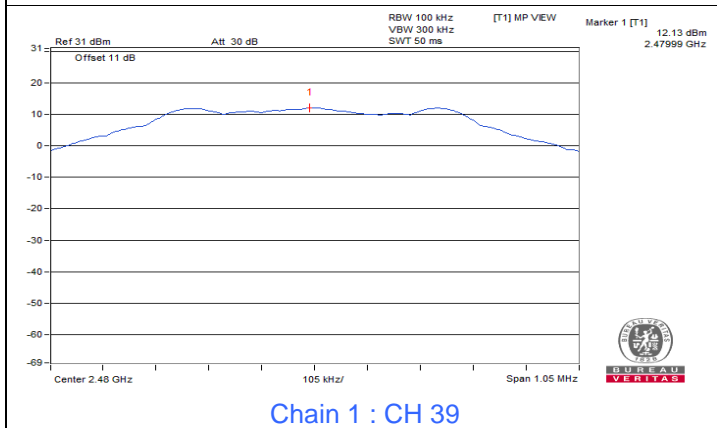
Chain 1 : CH 0



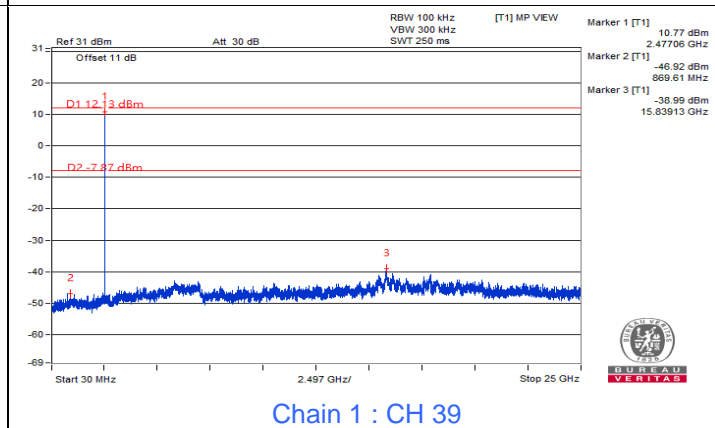
Chain 1 : CH 19



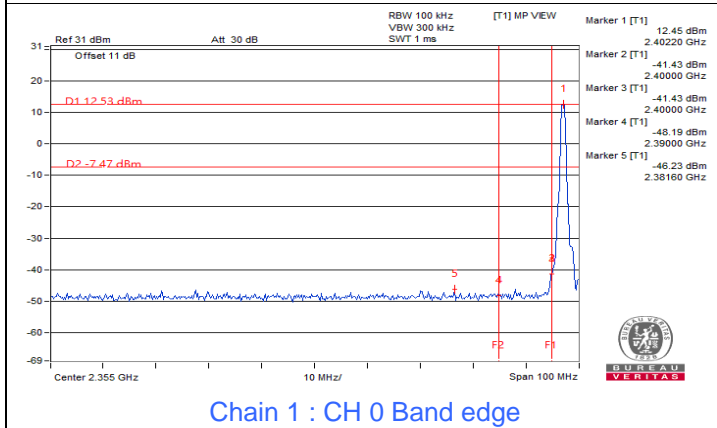
Chain 1 : CH 19



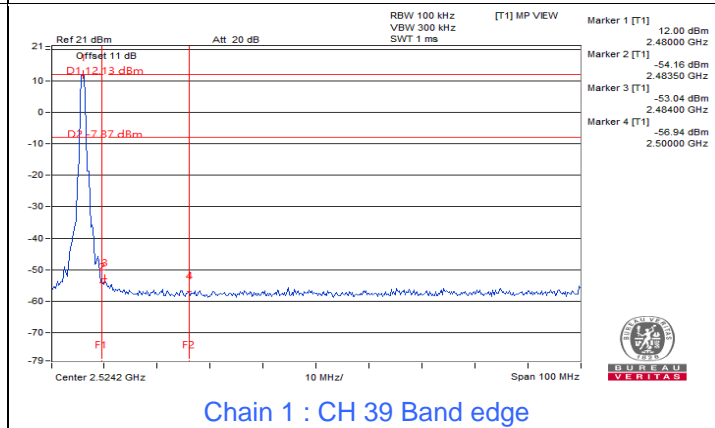
Chain 1 : CH 39



Chain 1 : CH 39



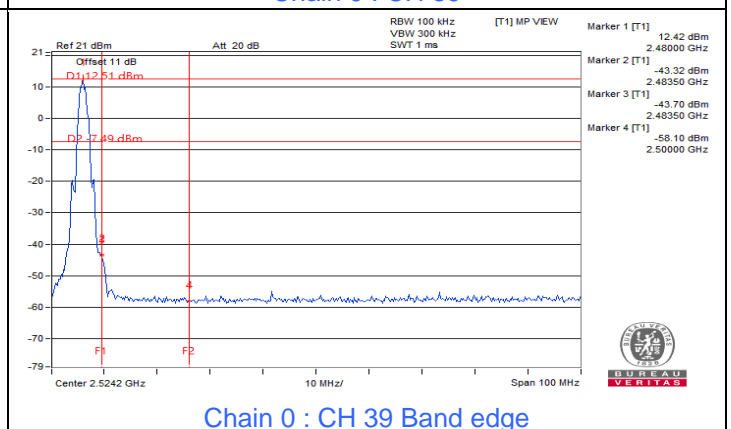
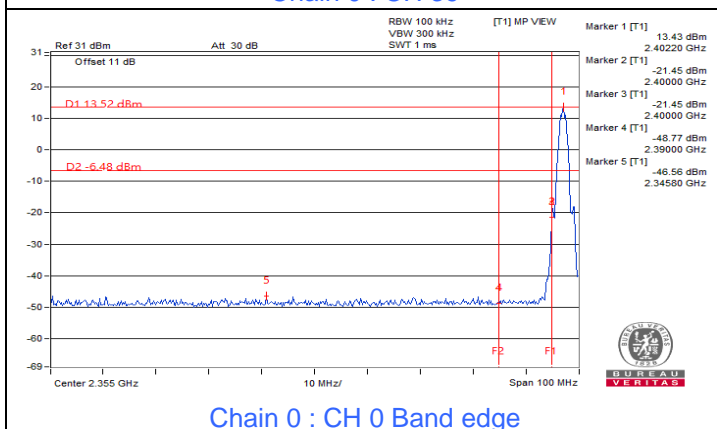
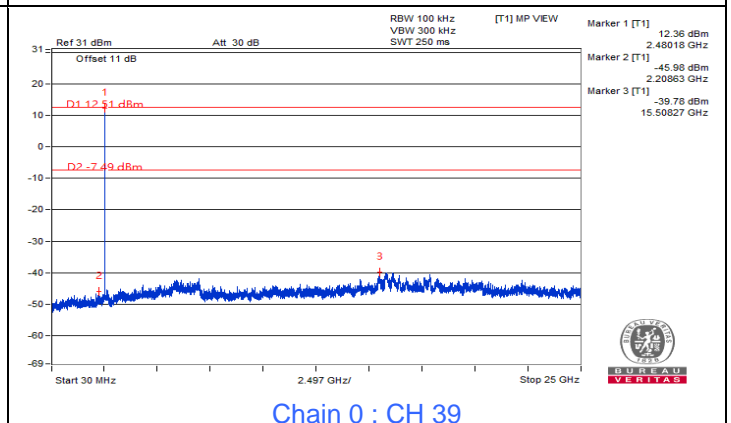
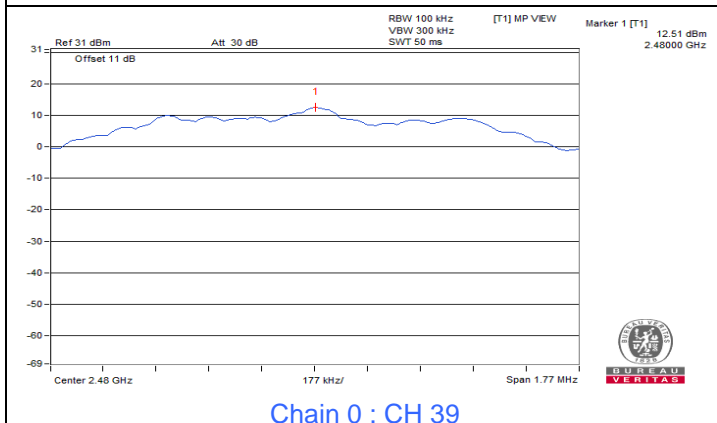
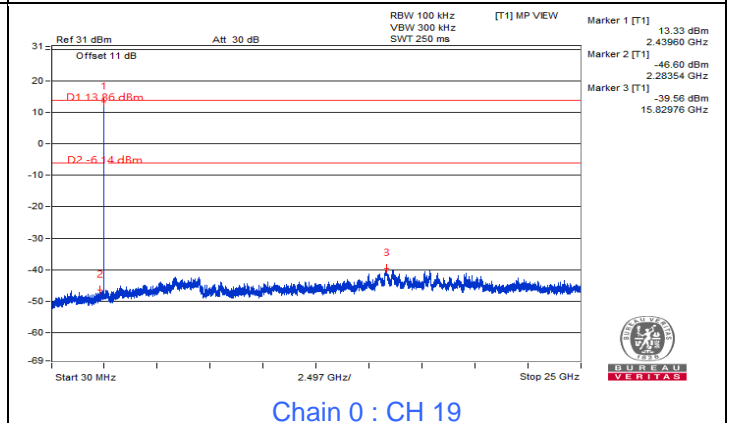
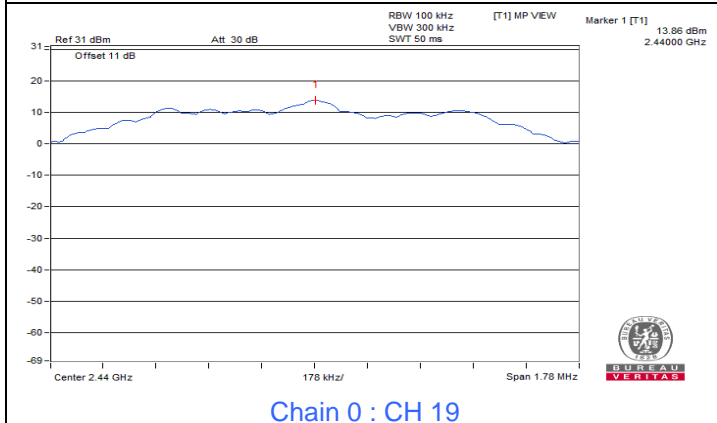
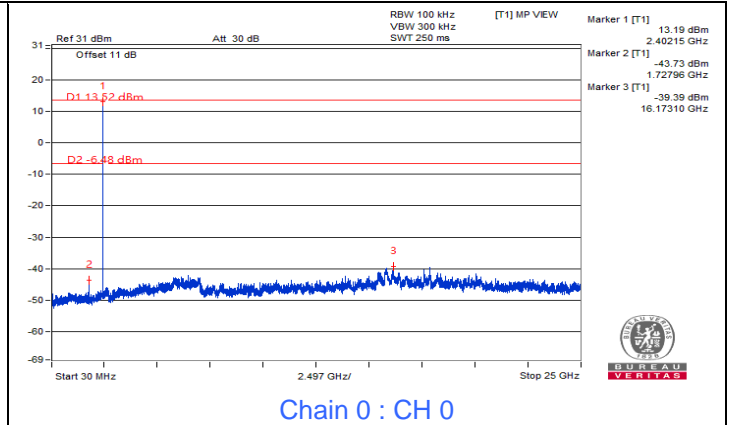
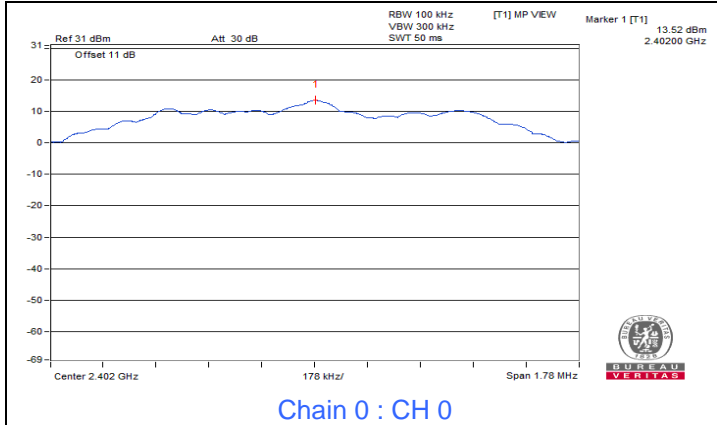
Chain 1 : CH 0 Band edge

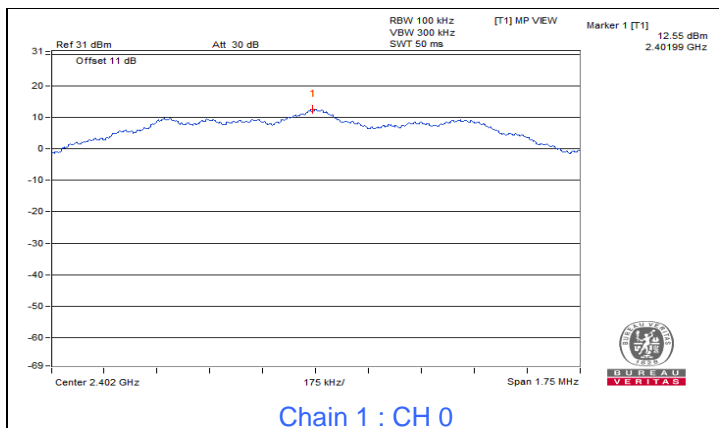


Chain 1 : CH 39 Band edge

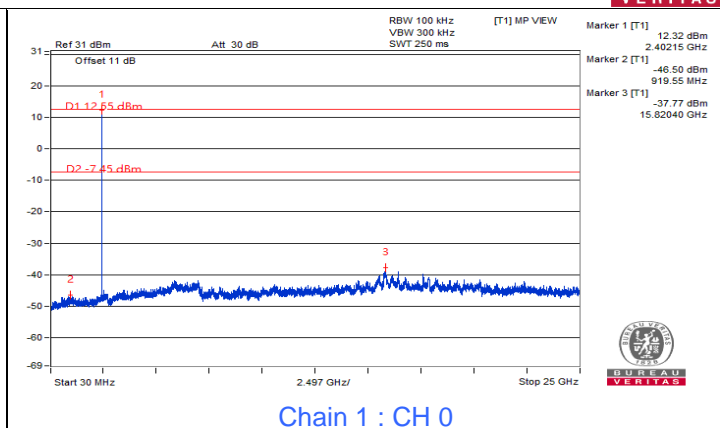


BT-LE 2M 2TX

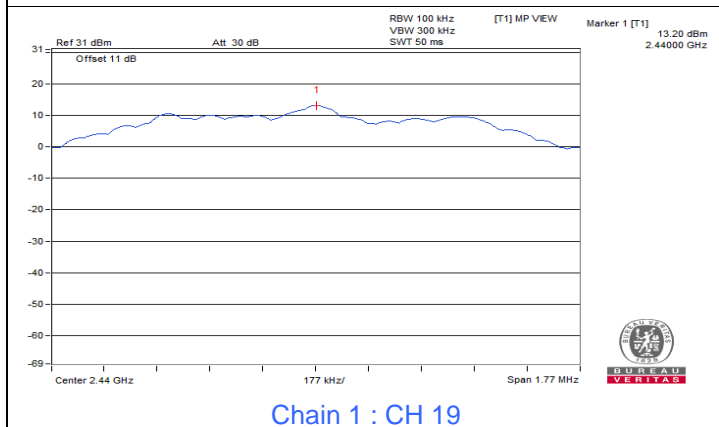




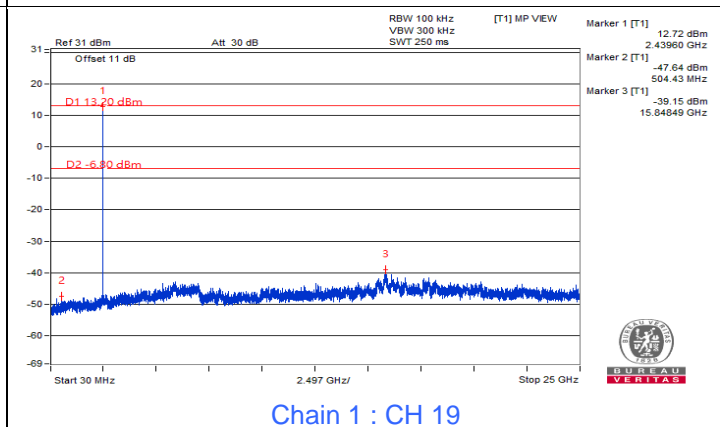
Chain 1 : CH 0



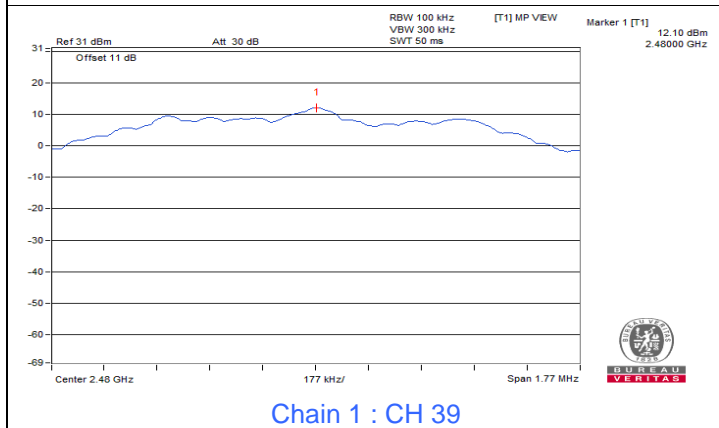
Chain 1 : CH 0



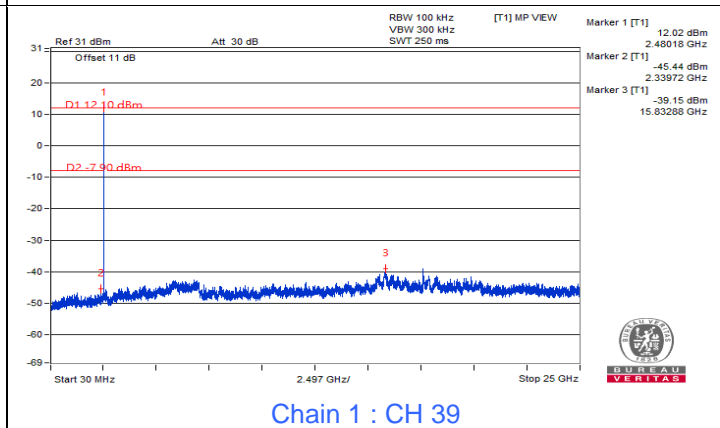
Chain 1 : CH 19



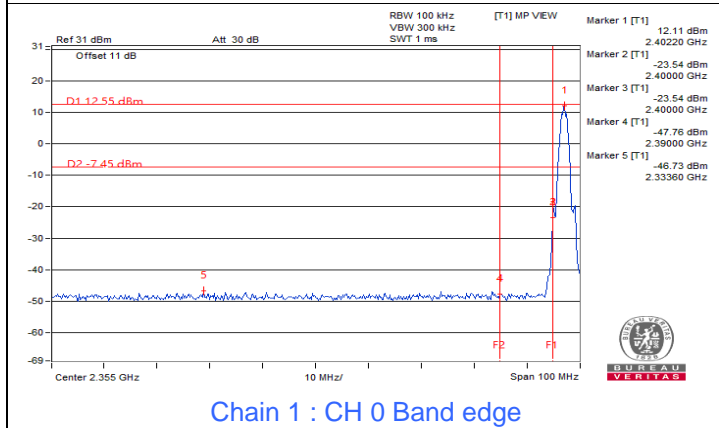
Chain 1 : CH 19



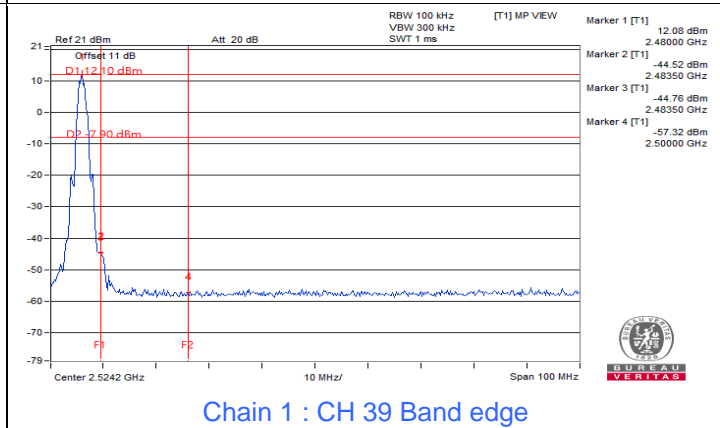
Chain 1 : CH 39



Chain 1 : CH 39



Chain 1 : CH 0 Band edge



Chain 1 : CH 39 Band edge

7.5 AC Power Conducted Emissions

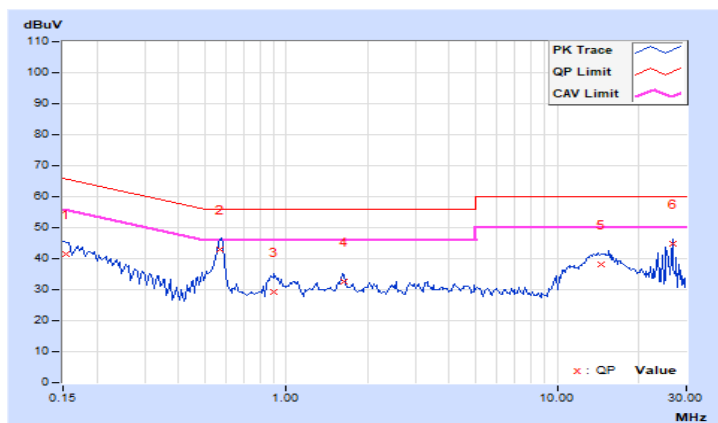
Mode B

RF Mode	BT-LE 1M	Channel	CH 19 : 2440 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Carter Lin		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15390	9.96	31.46	24.51	41.42	34.47	65.79	55.79	-24.37	-21.32
2	0.56795	9.98	32.97	26.66	42.95	36.64	56.00	46.00	-13.05	-9.36
3	0.89604	9.99	19.27	16.73	29.26	26.72	56.00	46.00	-26.74	-19.28
4	1.62893	10.03	22.59	18.08	32.62	28.11	56.00	46.00	-23.38	-17.89
5	14.52737	10.77	27.38	20.55	38.15	31.32	60.00	50.00	-21.85	-18.68
6	26.62102	11.21	33.61	28.21	44.82	39.42	60.00	50.00	-15.18	-10.58

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

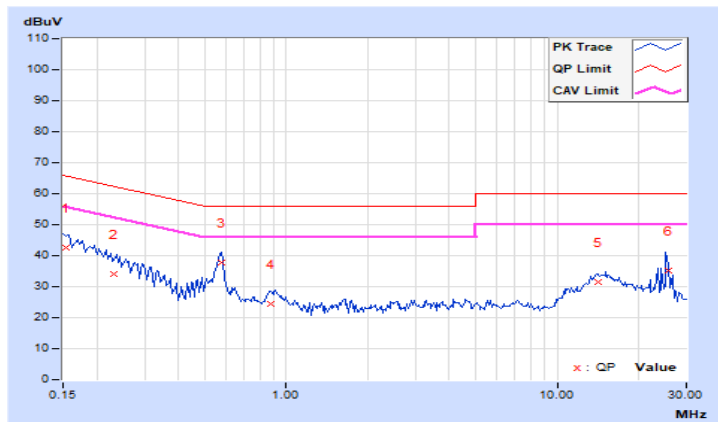


RF Mode	BT-LE 1M	Channel	CH 19 : 2440 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Carter Lin		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15392	9.93	32.61	19.33	42.54	29.26	65.79	55.79	-23.25	-26.53
2	0.23205	9.94	24.27	10.57	34.21	20.51	62.38	52.38	-28.17	-31.87
3	0.57968	9.95	27.96	18.69	37.91	28.64	56.00	46.00	-18.09	-17.36
4	0.88045	9.96	14.51	2.25	24.47	12.21	56.00	46.00	-31.53	-33.79
5	14.17964	10.57	20.86	13.40	31.43	23.97	60.00	50.00	-28.57	-26.03
6	25.85932	10.86	24.39	18.25	35.25	29.11	60.00	50.00	-24.75	-20.89

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



7.6 Unwanted Emissions below 1 GHz

Radiated versus Conducted Measurement

For Radiated measurement:

The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation)

For Conducted measurement:

The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).

Conducted Emission Convert Formula

a. $\text{Emission Level (dBuV/m)} = \text{EIRP Level (dBm)} - 20\log(d) + 104.8$

d = measurement distance in 3 meters.

b. $\text{EIRP Level (dBm)} = \text{Raw Value(dBm)} + \text{Correction Factor(dB)}$

c. Correction Factor is directional gain, and the composite gain will be used when signal support the correlated signal

For the out of band spurious the gain for the specific band may have been used rather than the highest gain across all bands.

For the band edge the gain for the specific band may have been used.

Notes:

1. In restricted bands below 1000 MHz, add upper bound on ground plane reflection:

For $f = 30 - 1000$ MHz, add 4.7 dB.

2. The conducted emission test was considered some factor to compute test result.

Mode A

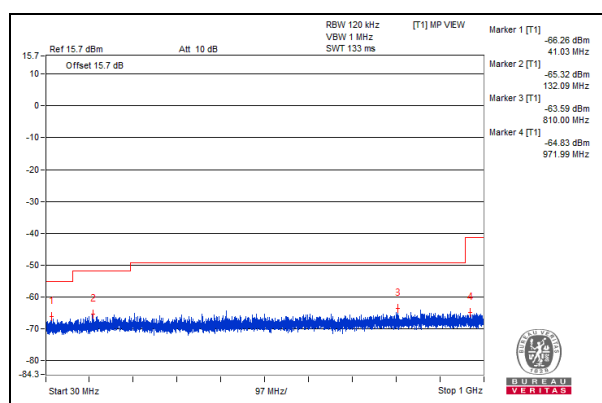
BT-LE 1M 1TX - Channel 19

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	41.03	34.16	40	-5.84	-66.26	5.16	-61.10
2	132.09	35.1	43.5	-8.4	-65.32	5.16	-60.16
3	810	36.83	46	-9.17	-63.59	5.16	-58.43
4	971.99	35.59	54	-18.41	-64.83	5.16	-59.67

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



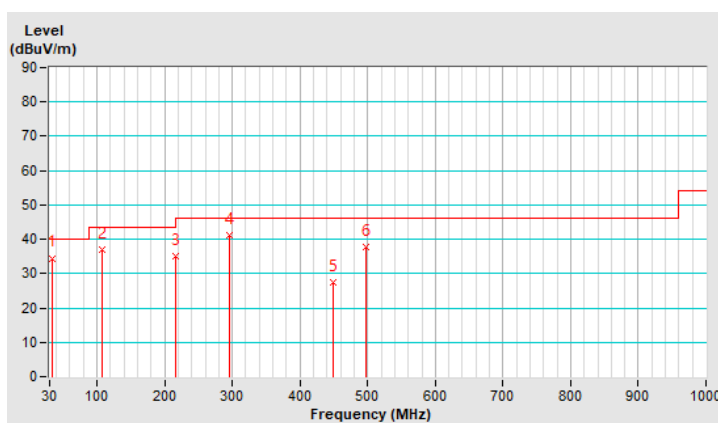
Mode B
1TX

RF Mode	BT-LE 1M	Channel	CH 19 : 2440 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 68% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	33.31	34.5 QP	40.0	-5.5	3.00 H	292	48.3	-13.8
2	107.92	36.9 QP	43.5	-6.6	2.00 H	326	52.9	-16.0
3	215.56	35.0 QP	43.5	-8.5	1.00 H	145	51.0	-16.0
4	296.66	41.3 QP	46.0	-4.7	1.00 H	194	53.7	-12.4
5	449.46	27.5 QP	46.0	-18.5	2.00 H	327	35.7	-8.2
6	497.08	37.7 QP	46.0	-8.3	1.50 H	178	45.3	-7.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

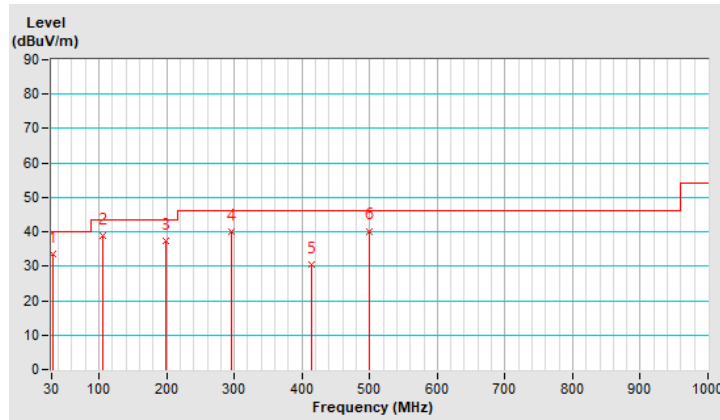


RF Mode	BT-LE 1M	Channel	CH 19 : 2440 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 68% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	32.31	33.5 QP	40.0	-6.5	3.00 V	283	47.3	-13.8
2	105.58	38.8 QP	43.5	-4.7	2.00 V	315	55.2	-16.4
3	198.12	37.2 QP	43.5	-6.3	1.50 V	162	53.3	-16.1
4	295.45	40.0 QP	46.0	-6.0	1.00 V	209	52.4	-12.4
5	414.49	30.5 QP	46.0	-15.5	2.00 V	200	40.0	-9.5
6	499.77	40.2 QP	46.0	-5.8	1.50 V	308	47.8	-7.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



7.7 Unwanted Emissions above 1 GHz

Radiated versus Conducted Measurement

For Radiated measurement:

The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation)

For Conducted measurement:

The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).

Conducted Emission Convert Formula

a. $\text{Emission Level (dBuV/m)} = \text{EIRP Level (dBm)} - 20\log(d) + 104.8$

d = measurement distance in 3 meters.

b. $\text{EIRP Level (dBm)} = \text{Raw Value(dBm)} + \text{Correction Factor(dB)}$

c. Correction Factor is directional gain, and the composite gain will be used when signal support the correlated signal

For the out of band spurious the gain for the specific band may have been used rather than the highest gain across all bands.

For the band edge the gain for the specific band may have been used.

Notes:

1. In restricted bands below 1000 MHz, add upper bound on ground plane reflection:

For $f = 30 - 1000$ MHz, add 4.7 dB.

2. The conducted emission test was considered some factor to compute test result.

Mode A

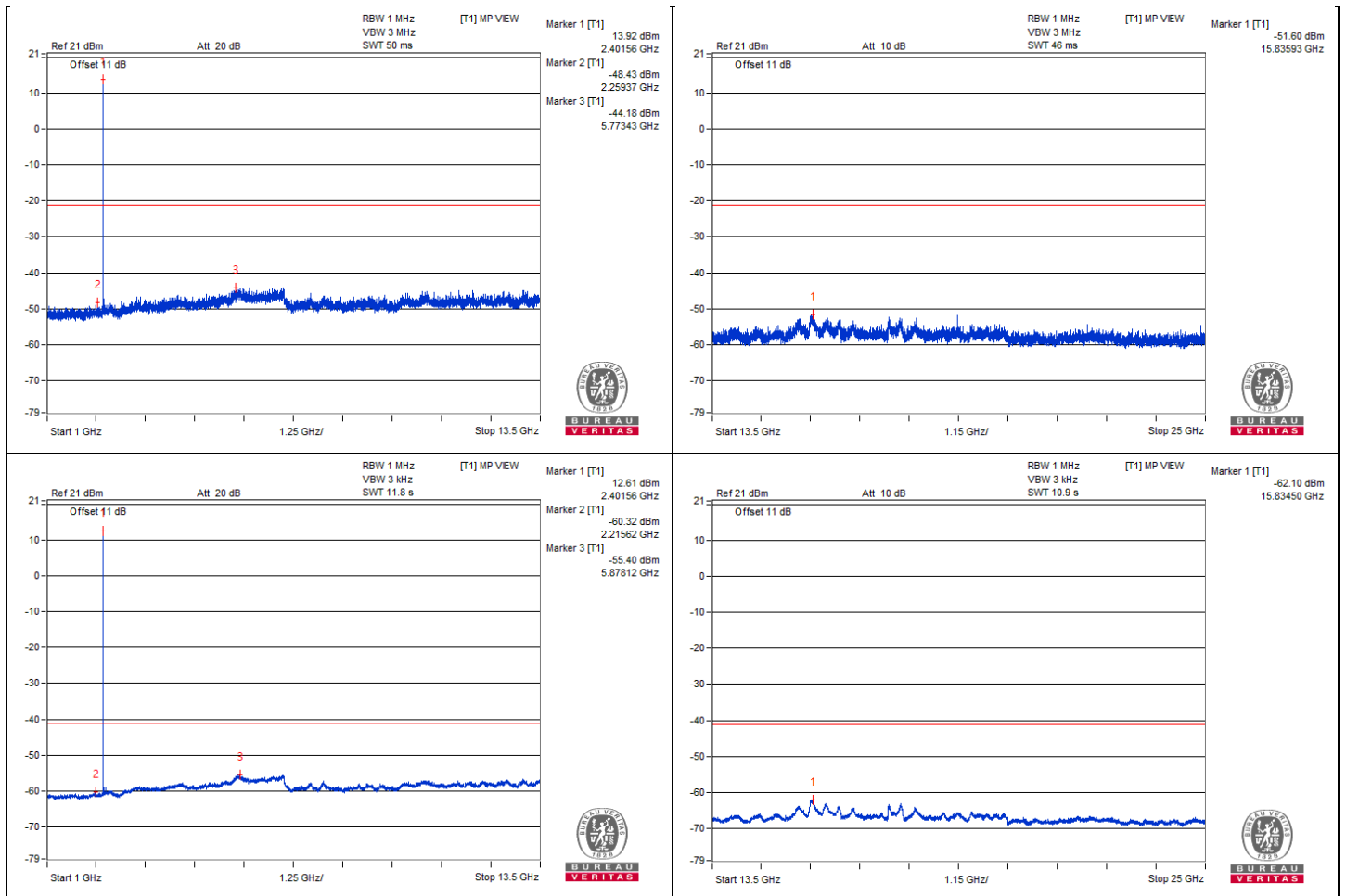
BT-LE 1M 1TX - Channel 0

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2259.37	51.99 PK	74	-22.01	-48.43	5.16	-43.27
2	2215.62	40.1 AV	54	-13.9	-60.32	5.16	-55.16
3	15835.93	48.82 PK	74	-25.18	-51.6	5.16	-46.44
4	15834.5	38.32 AV	54	-15.68	-62.1	5.16	-56.94

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

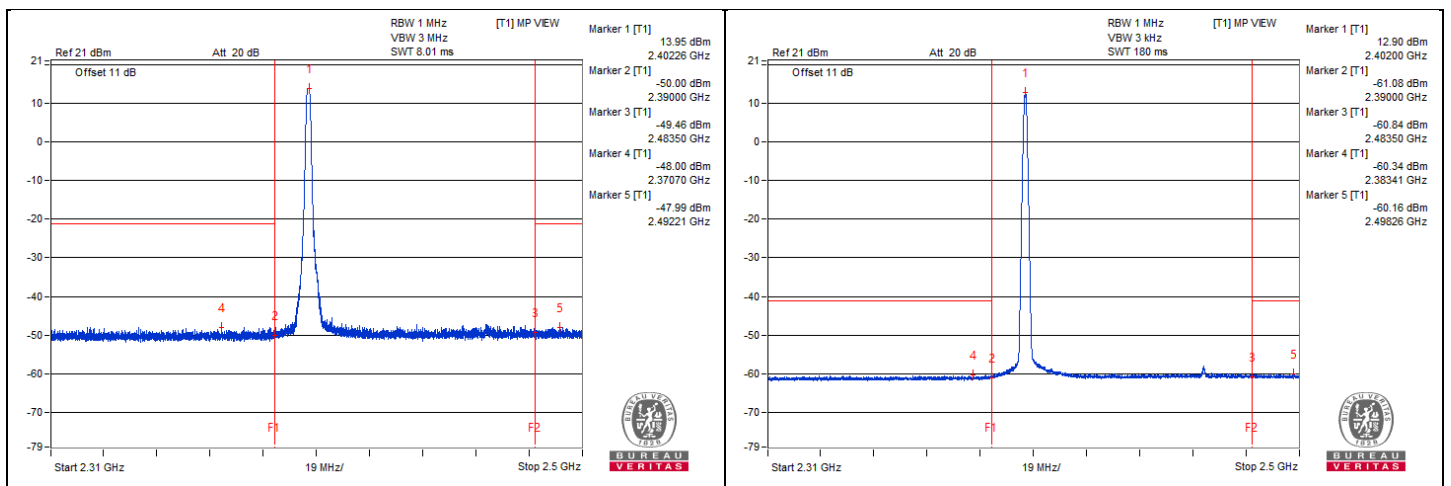


Bandedge table

No.	Frequency (MHz)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2370.7	50.79 PK	74	-23.21	-48	3.53	-44.47
2	2383.41	38.45 AV	54	-15.55	-60.34	3.53	-56.81
3	2492.21	50.8 PK	74	-23.2	-47.99	3.53	-44.46
4	2498.26	38.63 AV	54	-15.37	-60.16	3.53	-56.63

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



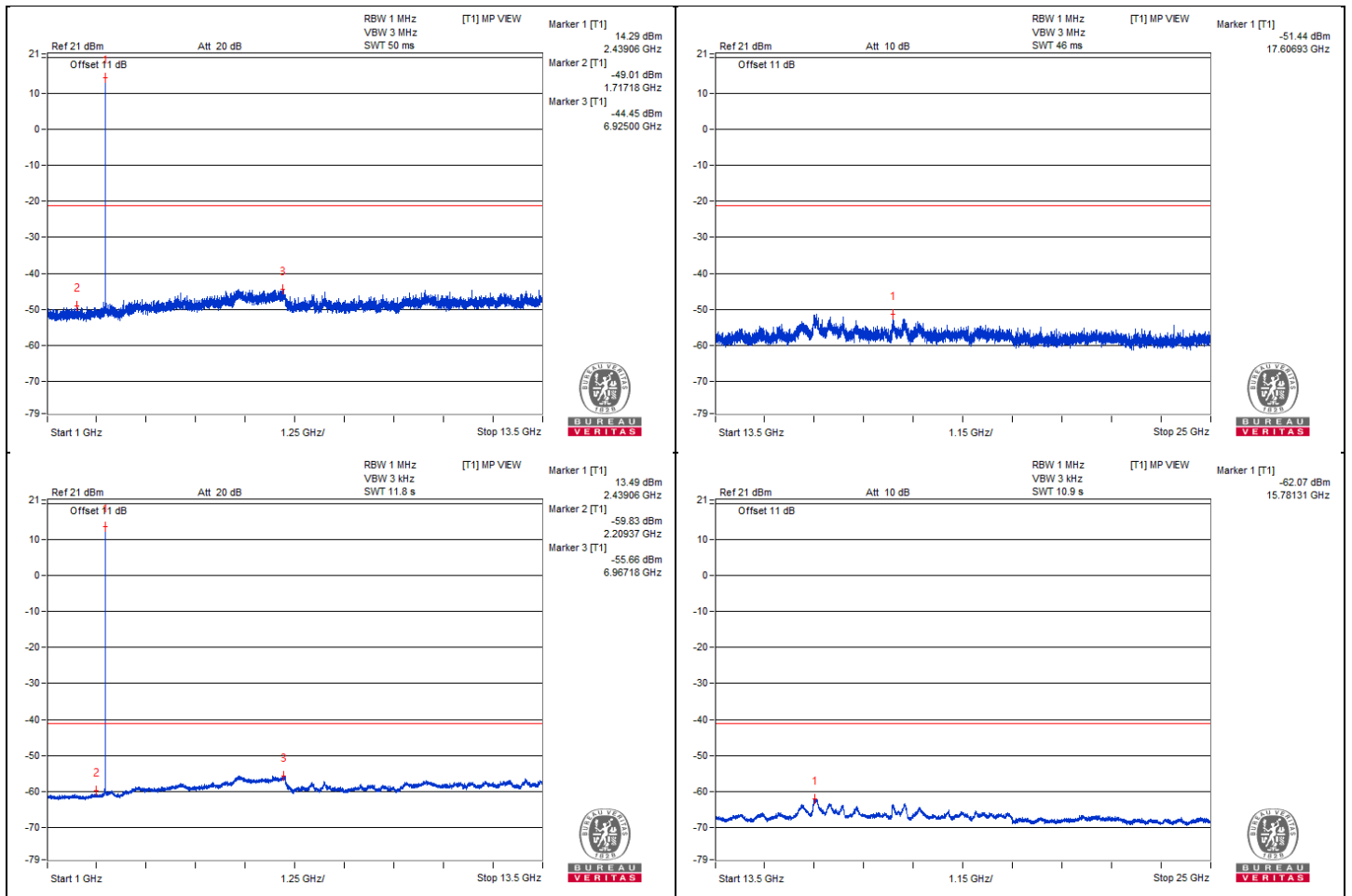
BT-LE 1M 1TX - Channel 19

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	1717.18	51.41 PK	74	-22.59	-49.01	5.16	-43.85
2	2209.37	40.59 AV	54	-13.41	-59.83	5.16	-54.67

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

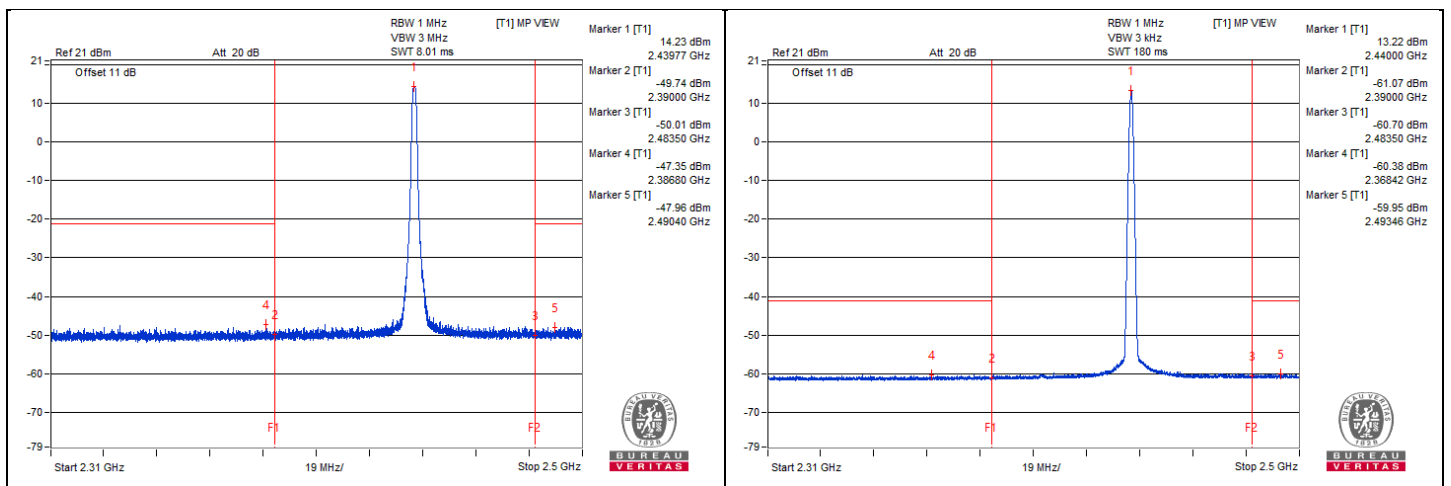


Bandedge table

No.	Frequency (MHz)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2386.8	51.44 PK	74	-22.56	-47.35	3.53	-43.82
2	2368.42	38.41 AV	54	-15.59	-60.38	3.53	-56.85
3	2490.4	50.83 PK	74	-23.17	-47.96	3.53	-44.43
4	2493.46	38.84 AV	54	-15.16	-59.95	3.53	-56.42

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



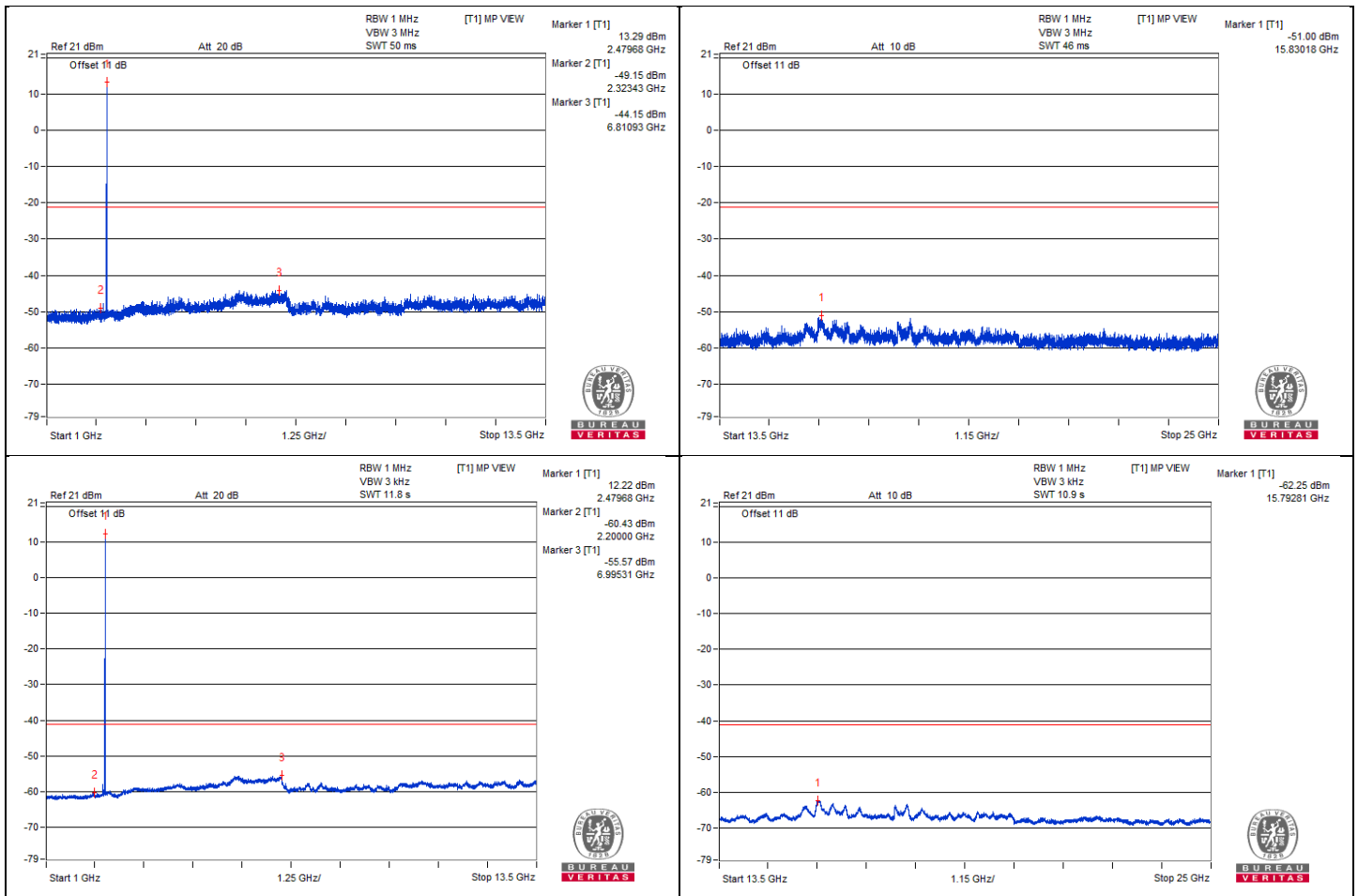
BT-LE 1M 1TX - Channel 39

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2323.43	51.27 PK	74	-22.73	-49.15	5.16	-43.99
2	2200	39.99 AV	54	-14.01	-60.43	5.16	-55.27
3	15830.18	49.42 PK	74	-24.58	-51	5.16	-45.84
4	15792.81	38.17 AV	54	-15.83	-62.25	5.16	-57.09

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

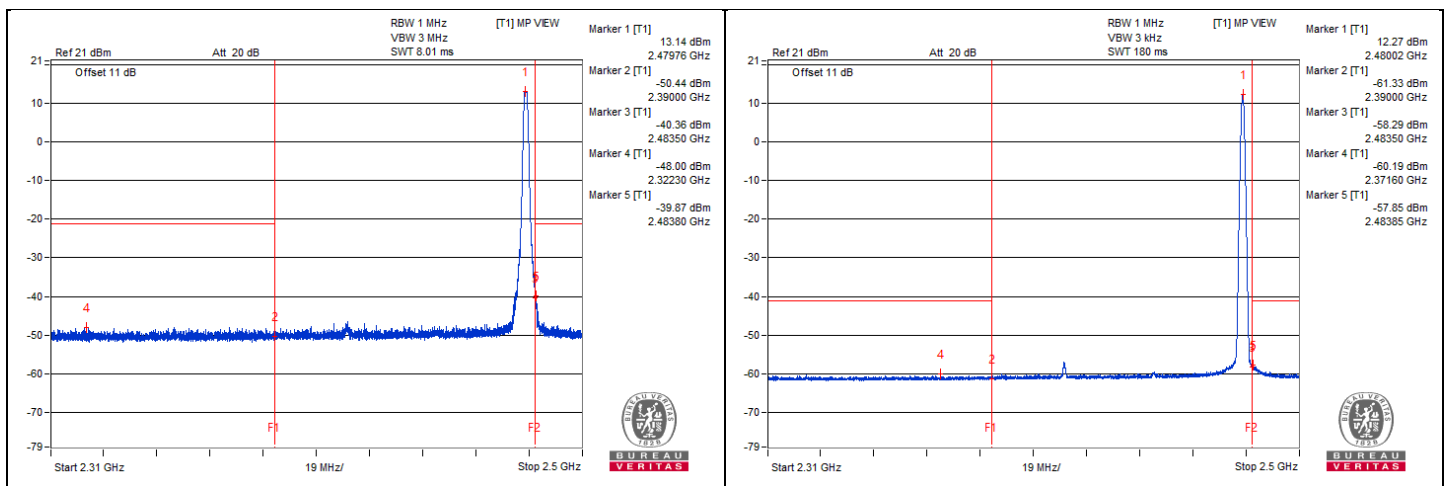


Bandedge table

No.	Frequency (MHz)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2322.3	50.79 PK	74	-23.21	-48	3.53	-44.47
2	2371.6	38.6 AV	54	-15.4	-60.19	3.53	-56.66
3	2483.8	58.92 PK	74	-15.08	-39.87	3.53	-36.34
4	2483.85	40.94 AV	54	-13.06	-57.85	3.53	-54.32

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



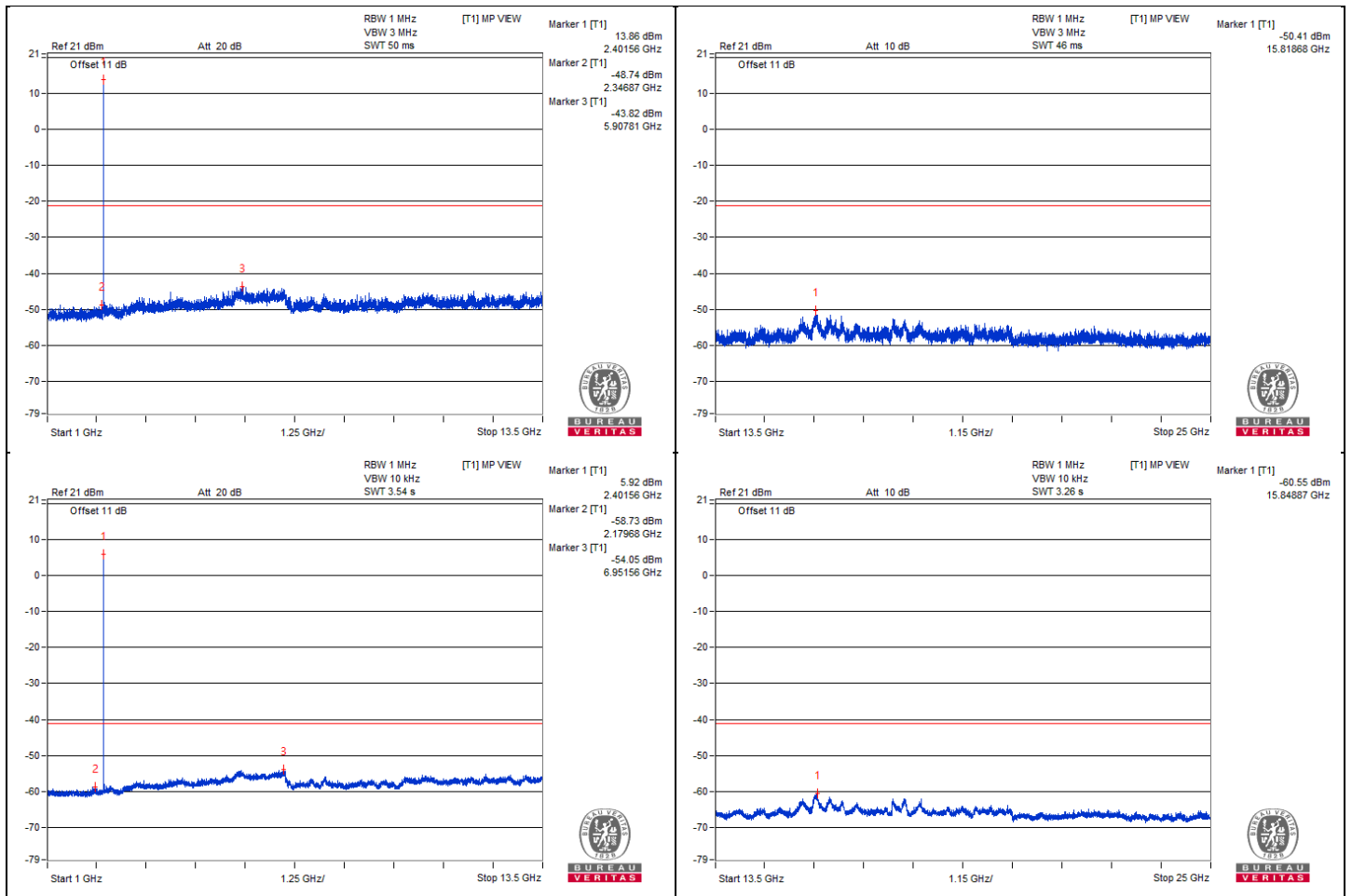
BT-LE 2M 1TX - Channel 0

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	15818.68	50.01 PK	74	-23.99	-50.41	5.16	-45.25
2	15848.87	39.87 AV	54	-14.13	-60.55	5.16	-55.39

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

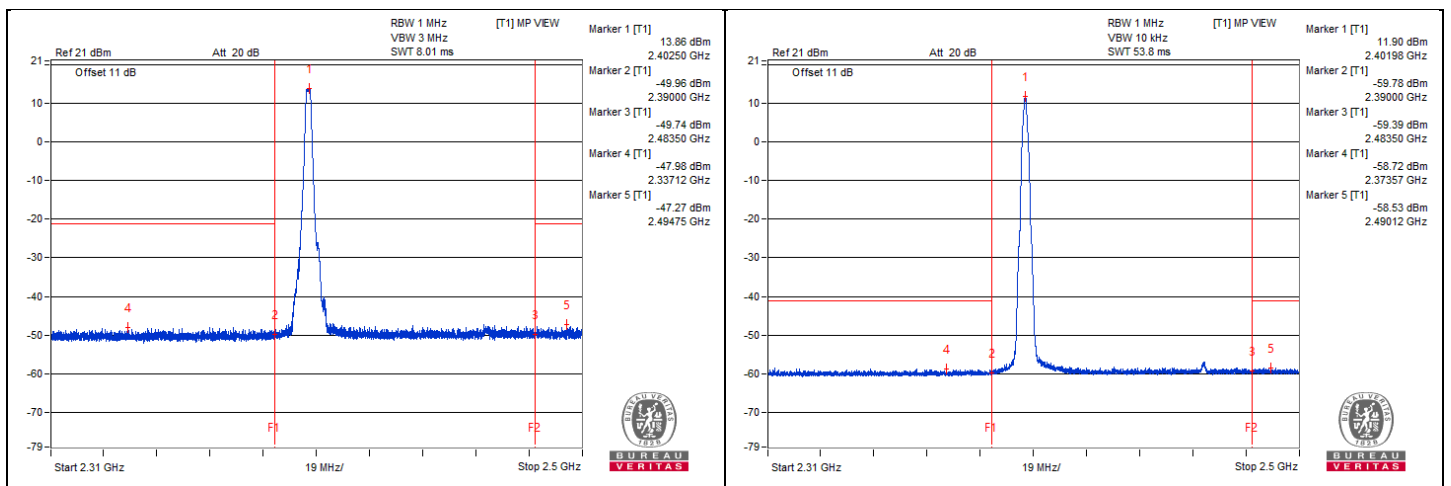


Bandedge table

No.	Frequency (MHz)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2337.12	50.81 PK	74	-23.19	-47.98	3.53	-44.45
2	2373.57	40.07 AV	54	-13.93	-58.72	3.53	-55.19
3	2494.75	51.52 PK	74	-22.48	-47.27	3.53	-43.74
4	2490.12	40.26 AV	54	-13.74	-58.53	3.53	-55.00

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



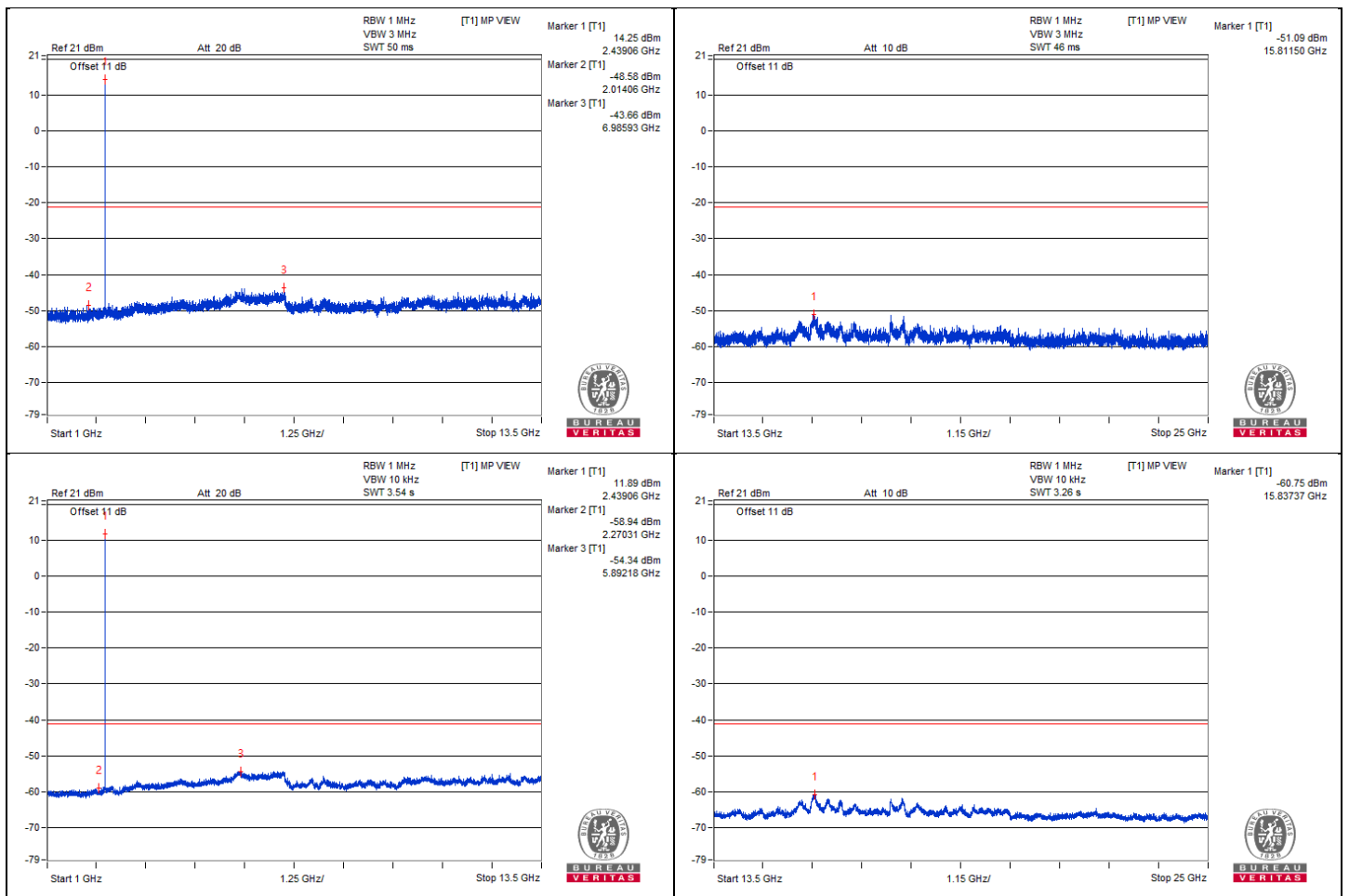
BT-LE 2M 1TX - Channel 19

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2014.06	51.84 PK	74	-22.16	-48.58	5.16	-43.42
2	2270.31	41.48 AV	54	-12.52	-58.94	5.16	-53.78
3	15811.5	49.33 PK	74	-24.67	-51.09	5.16	-45.93
4	15837.37	39.67 AV	54	-14.33	-60.75	5.16	-55.59

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

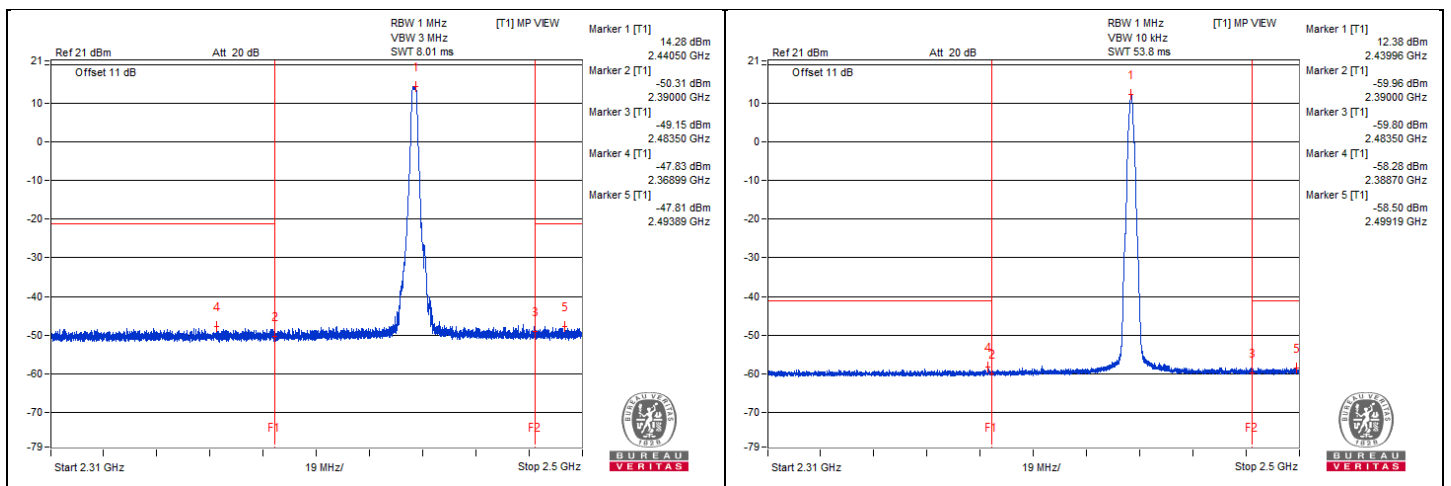


Bandedge table

No.	Frequency (MHz)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2368.99	50.96 PK	74	-23.04	-47.83	3.53	-44.30
2	2388.7	40.51 AV	54	-13.49	-58.28	3.53	-54.75
3	2493.89	50.98 PK	74	-23.02	-47.81	3.53	-44.28
4	2499.19	40.29 AV	54	-13.71	-58.5	3.53	-54.97

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



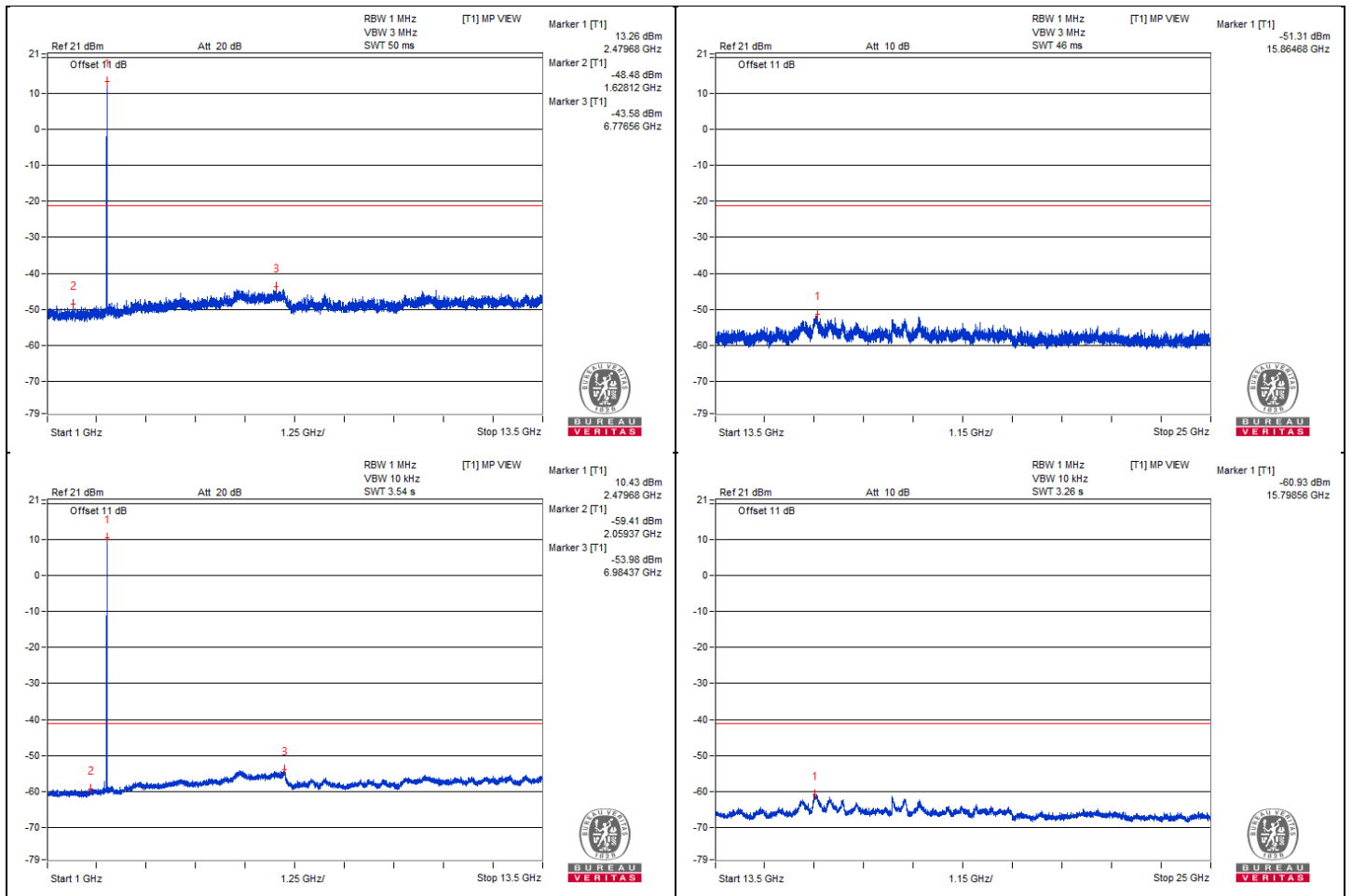
BT-LE 2M 1TX - Channel 39

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	15864.68	49.11 PK	74	-24.89	-51.31	5.16	-46.15
2	15798.56	39.49 AV	54	-14.51	-60.93	5.16	-55.77

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

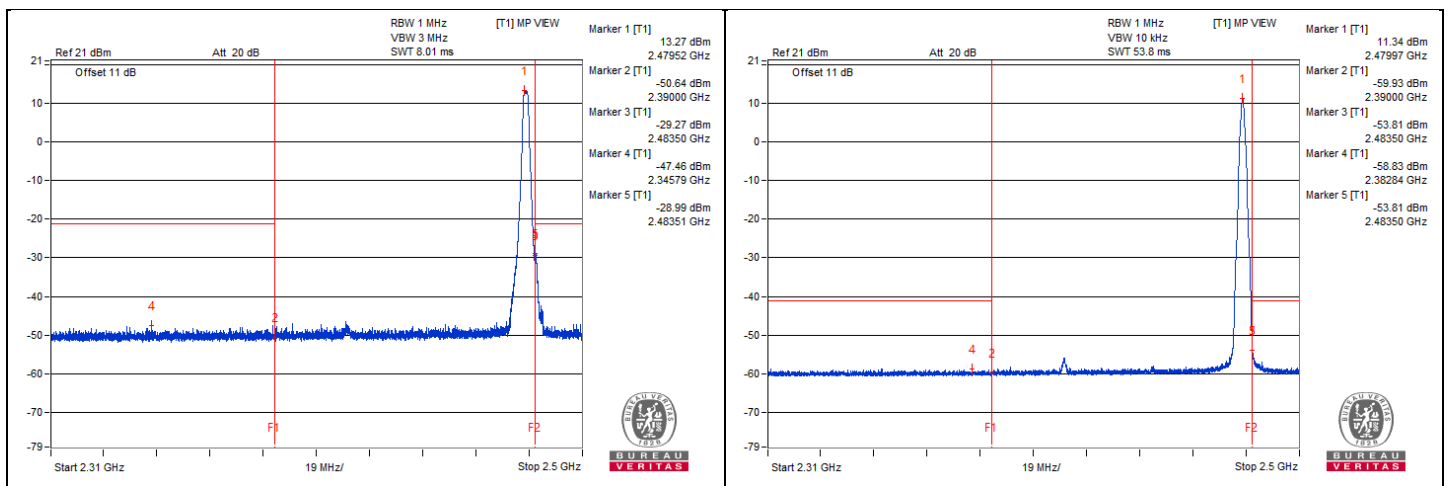


Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2345.79	51.33 PK	74	-22.67	-47.46	3.53	-43.93
2	2382.84	39.96 AV	54	-14.04	-58.83	3.53	-55.30
3	2483.51	69.8 PK	74	-4.2	-28.99	3.53	-25.46
4	2483.5	44.98 AV	54	-9.02	-53.81	3.53	-50.28

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



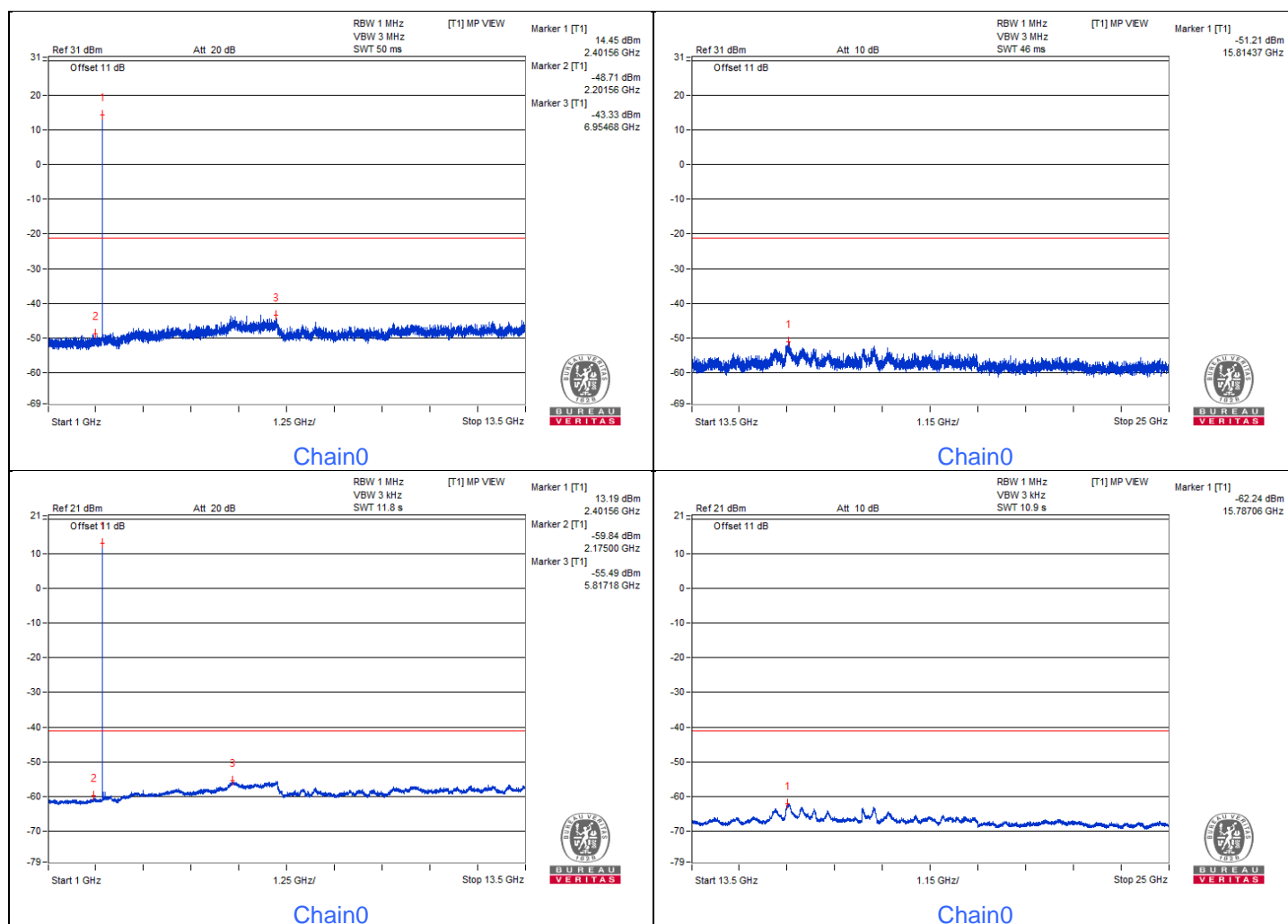
BT-LE 1M 2TX - Channel 0

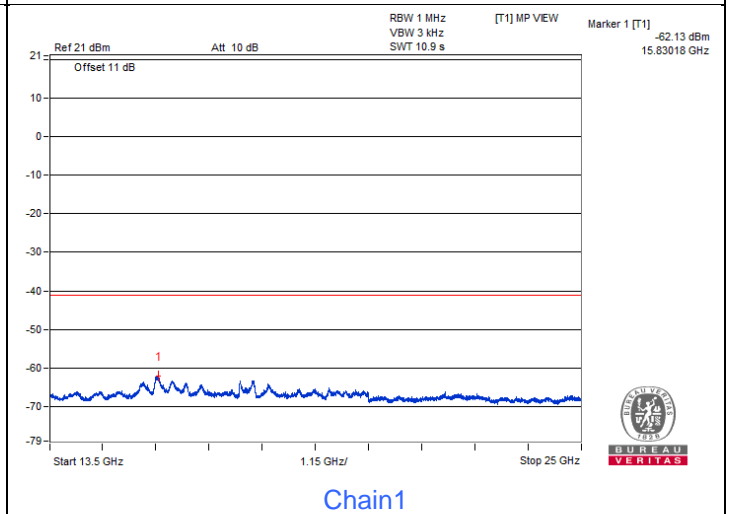
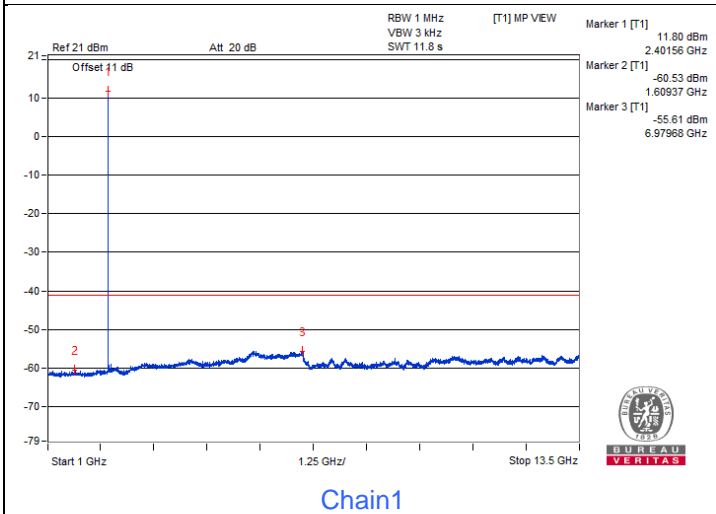
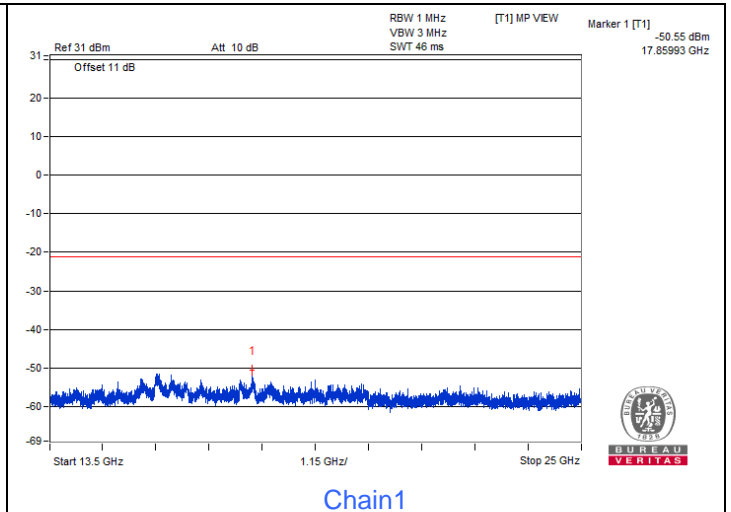
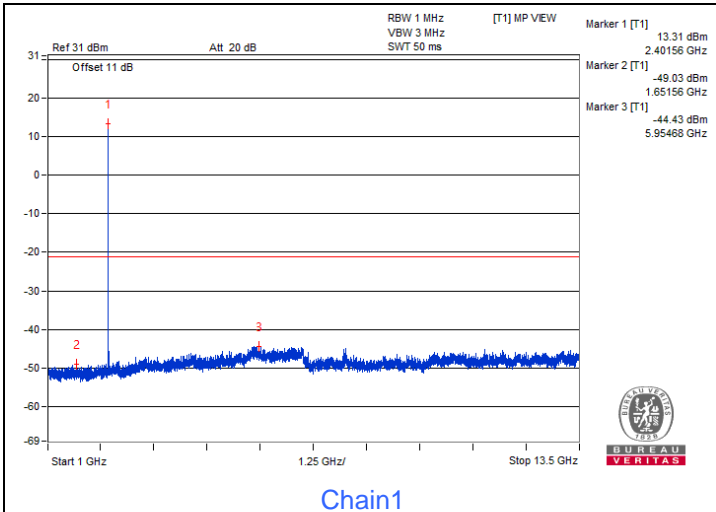
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2339.06	56.41 PK	74	-17.59	-51.22	-49.1	8.17	-38.85
2	2389.06	45.52 AV	54	-8.48	-60.8	-61.05	8.17	-49.74

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



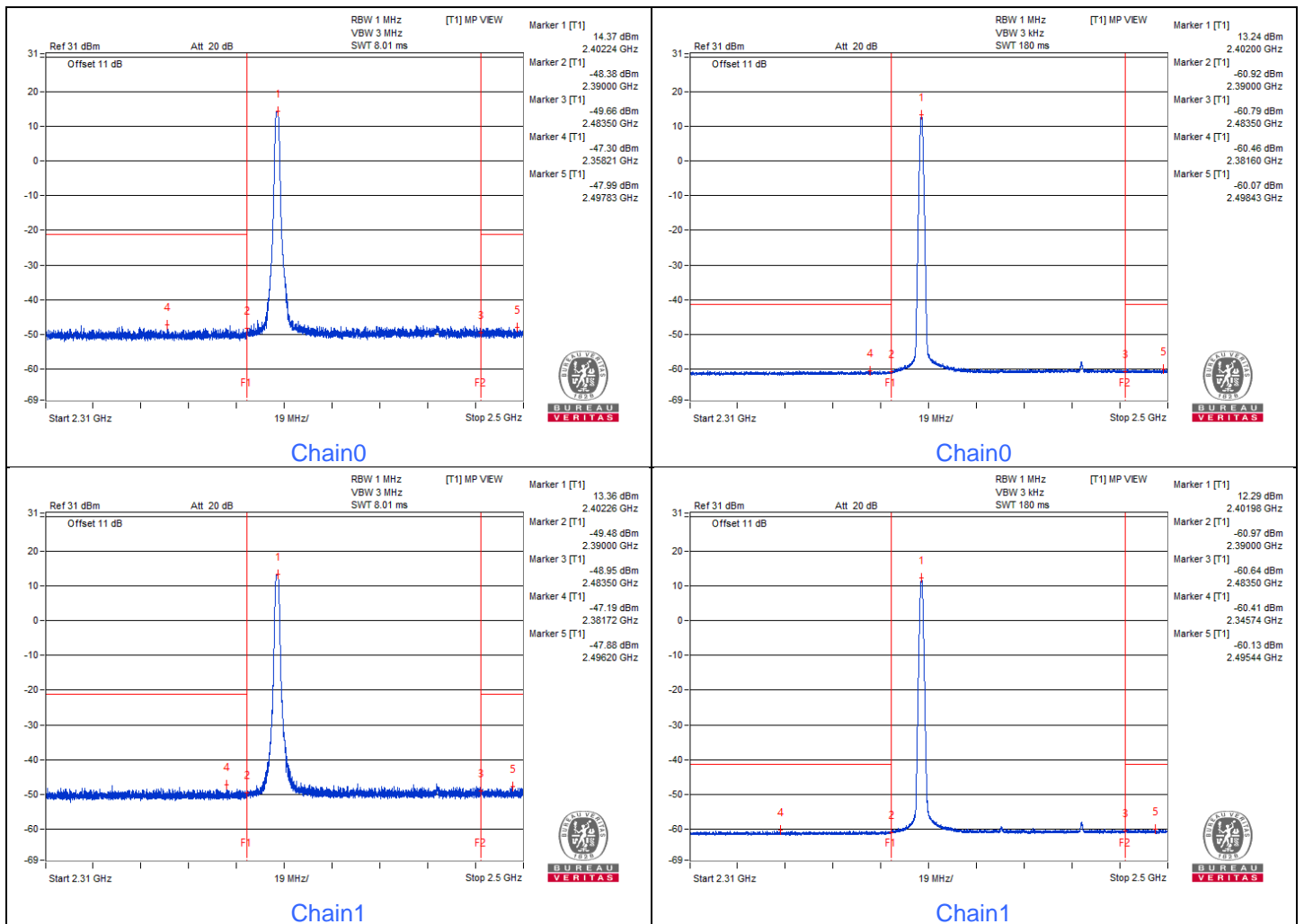


Bandedge table

No.	Frequency (MHz)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2358.21	56.56 PK	74	-17.44	-47.3	-49.47	6.54	-38.70
2	2345.74	44.17 AV	54	-9.83	-60.89	-60.41	6.54	-51.09

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



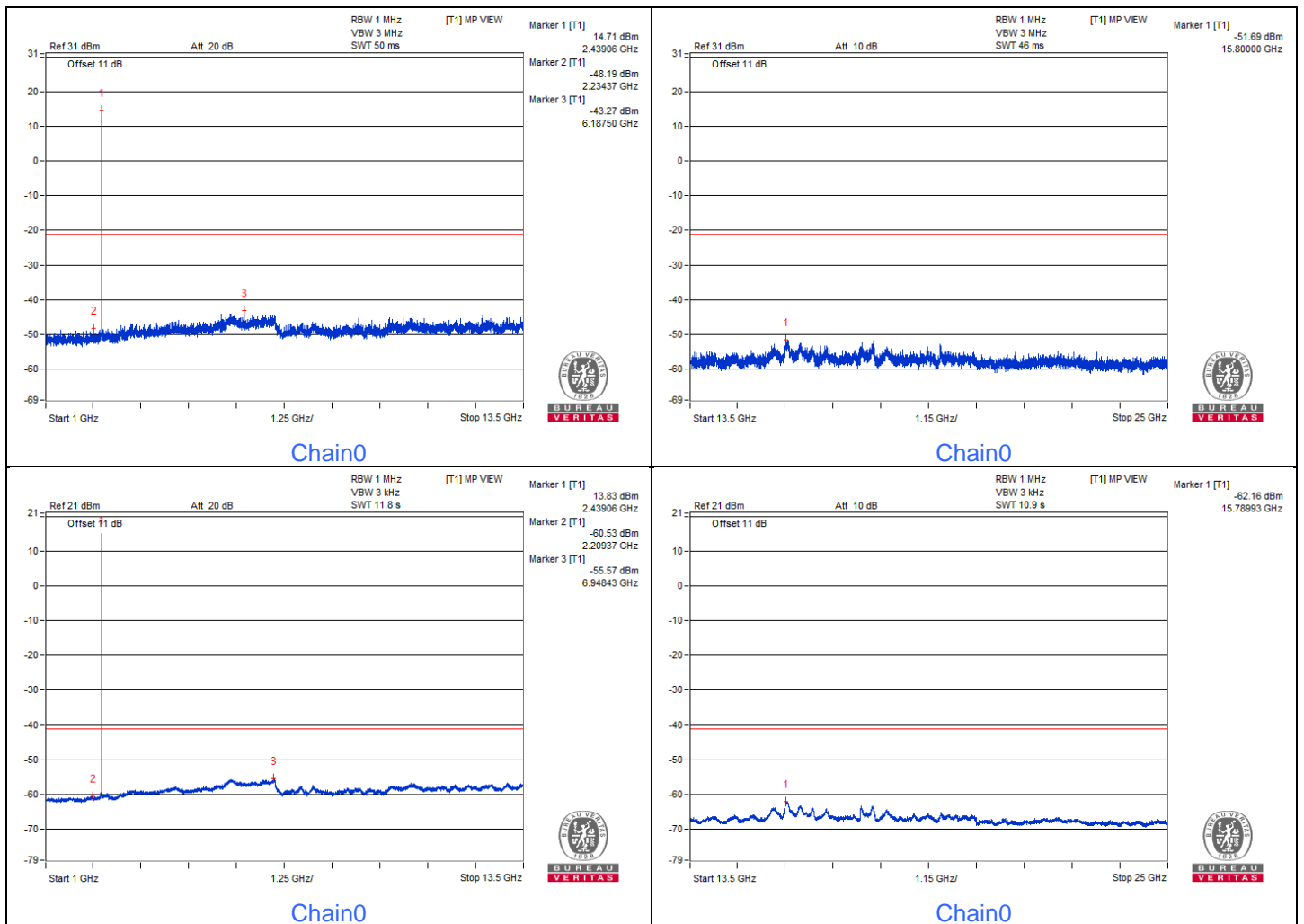
BT-LE 1M 2TX - Channel 19

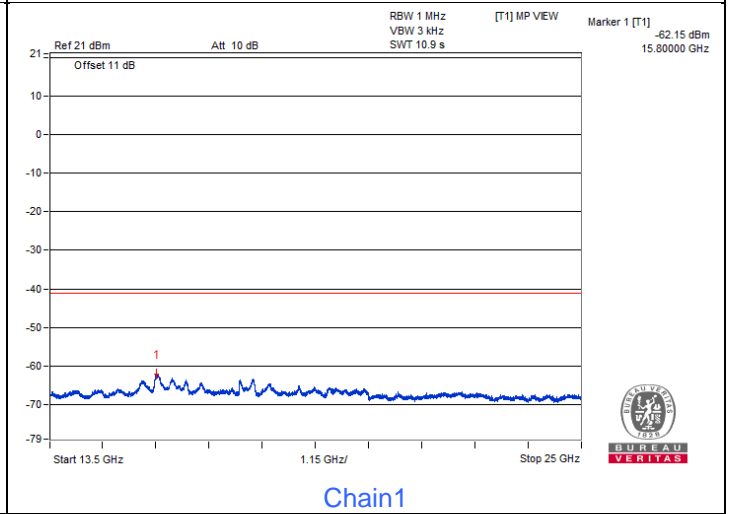
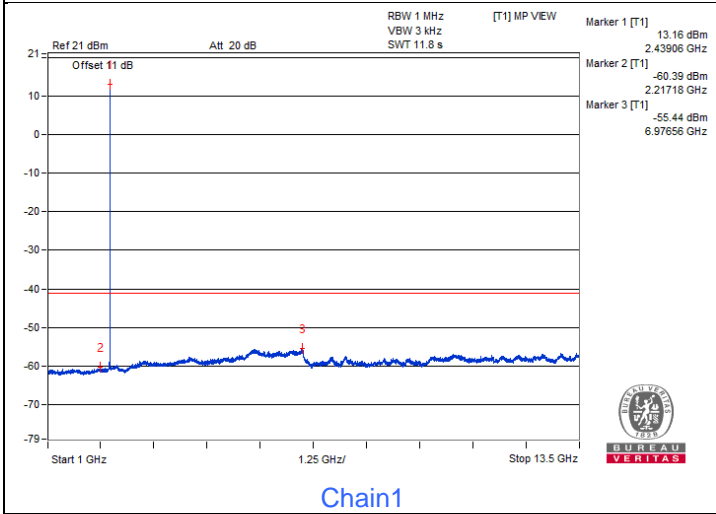
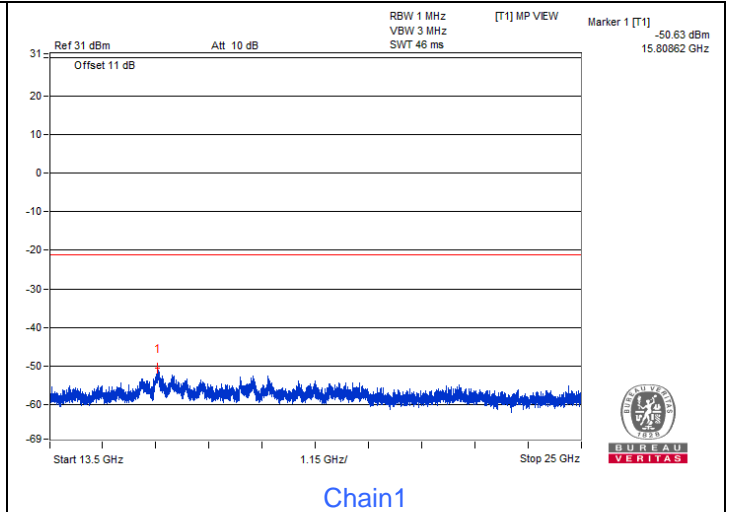
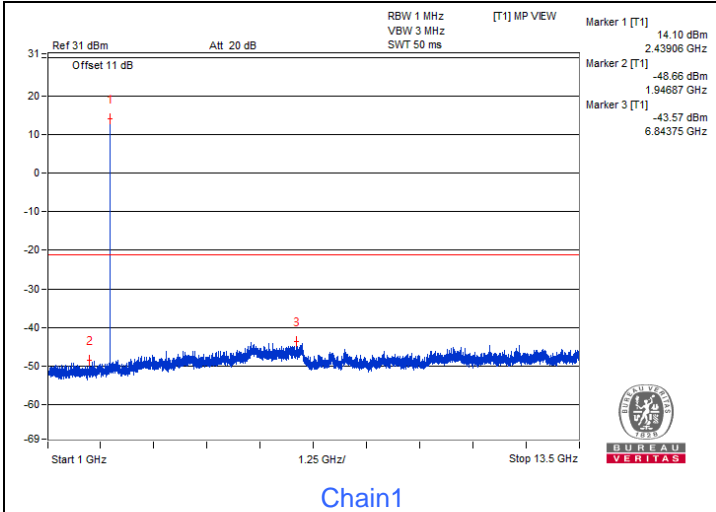
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2373.43	56.59 PK	74	-17.41	-49.18	-50.65	8.17	-38.67
2	2334.37	45.69 AV	54	-8.31	-60.84	-60.67	8.17	-49.57

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



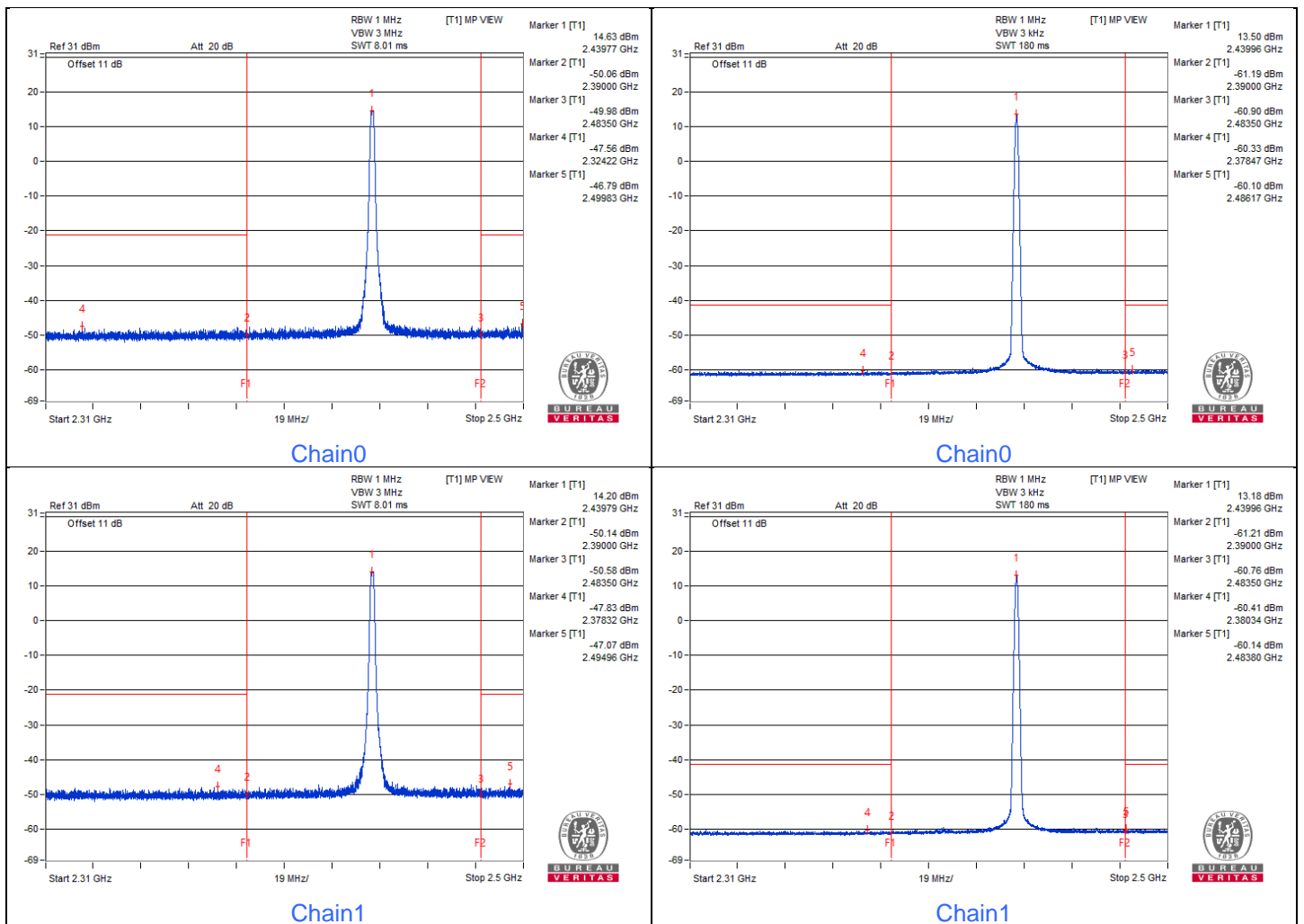


Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2384.17	56.19 PK	74	-17.81	-48.61	-48.63	6.54	-39.07
2	2363.55	44.18 AV	54	-9.82	-60.45	-60.81	6.54	-51.08

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



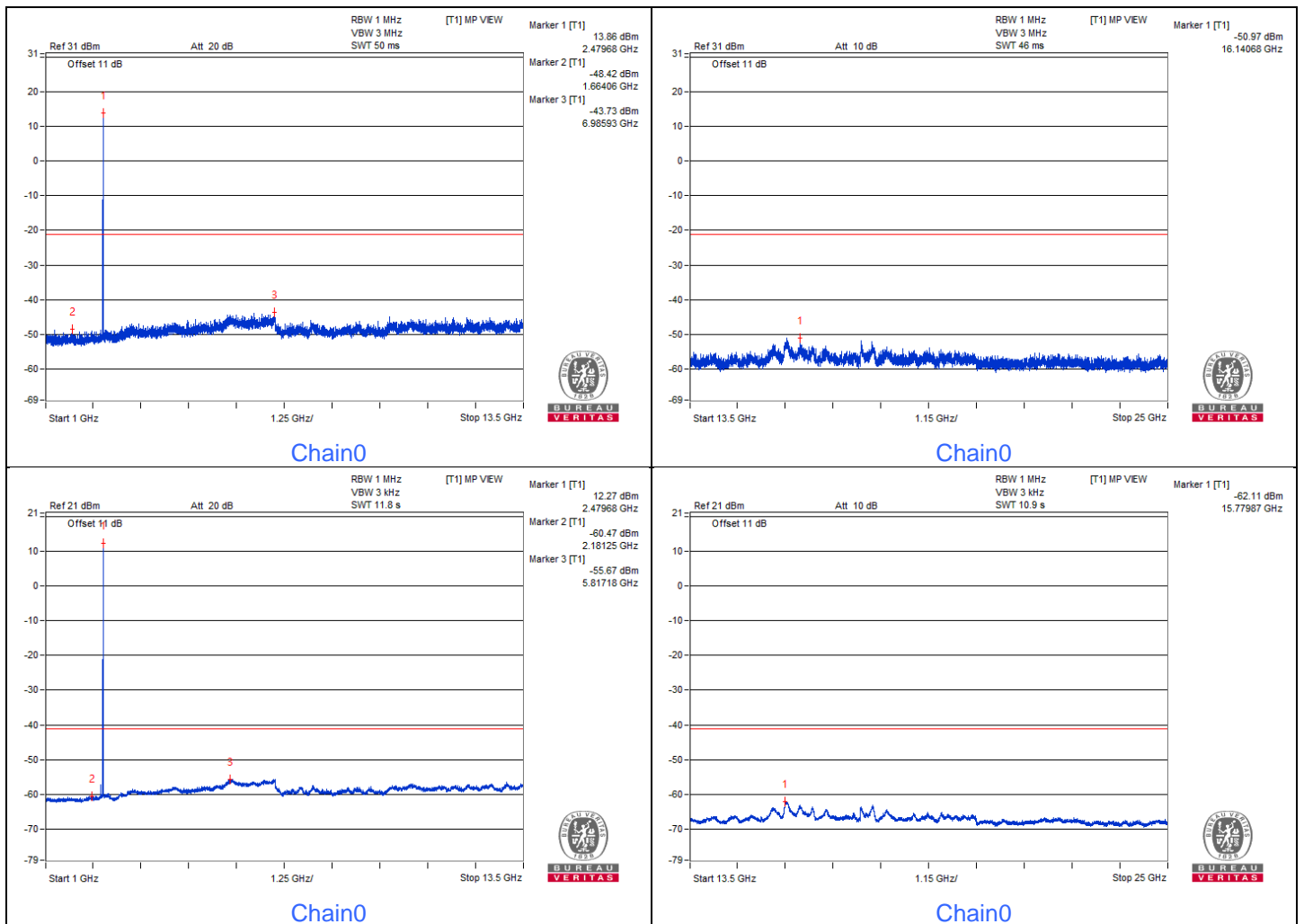
BT-LE 1M 2TX - Channel 39

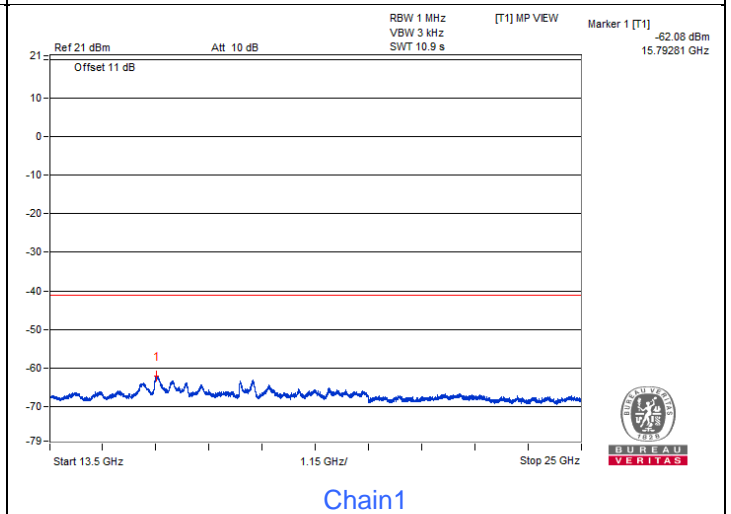
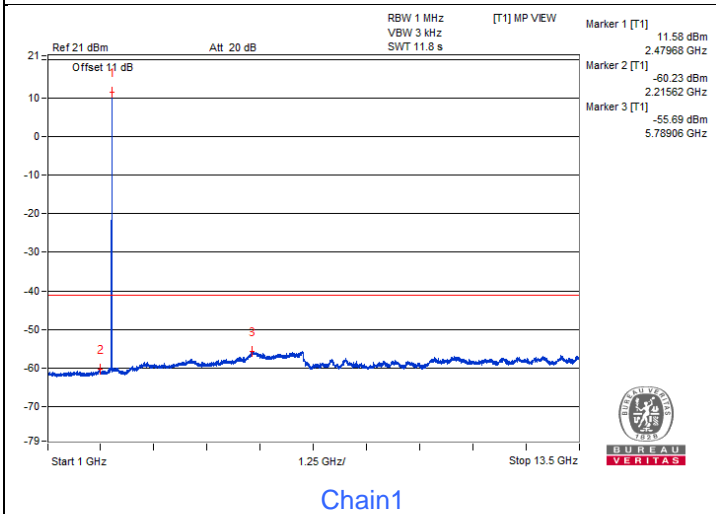
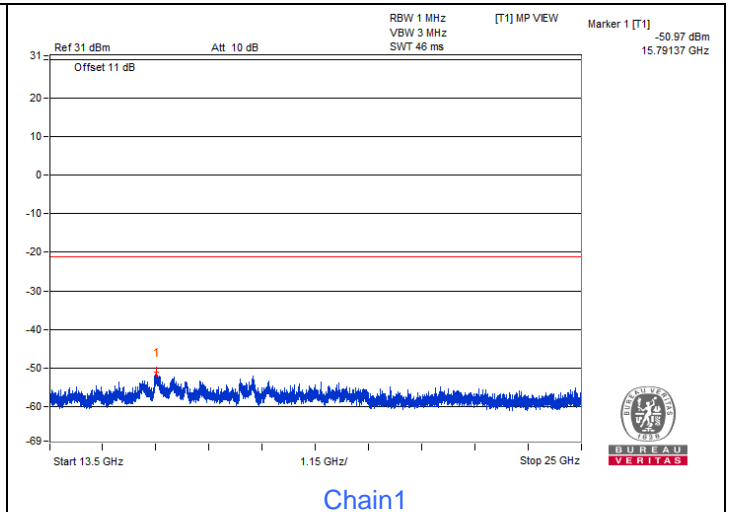
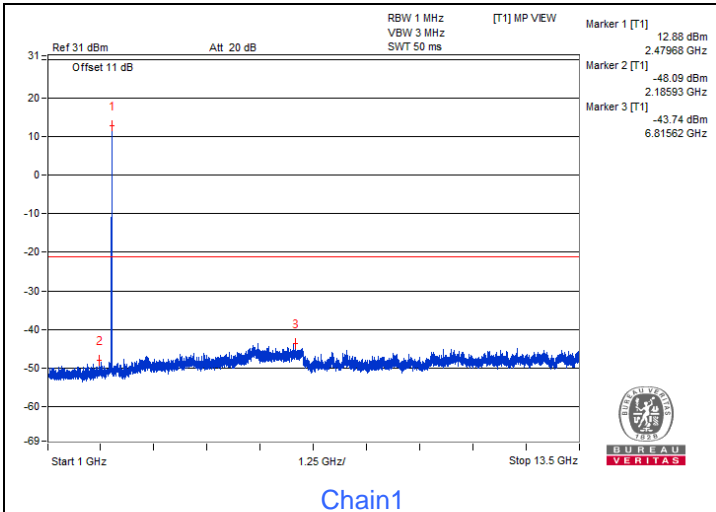
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2385.93	56.19 PK	74	-17.81	-49.93	-50.59	8.17	-39.07
2	2314.06	45.7 AV	54	-8.3	-60.7	-60.78	8.17	-49.56

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



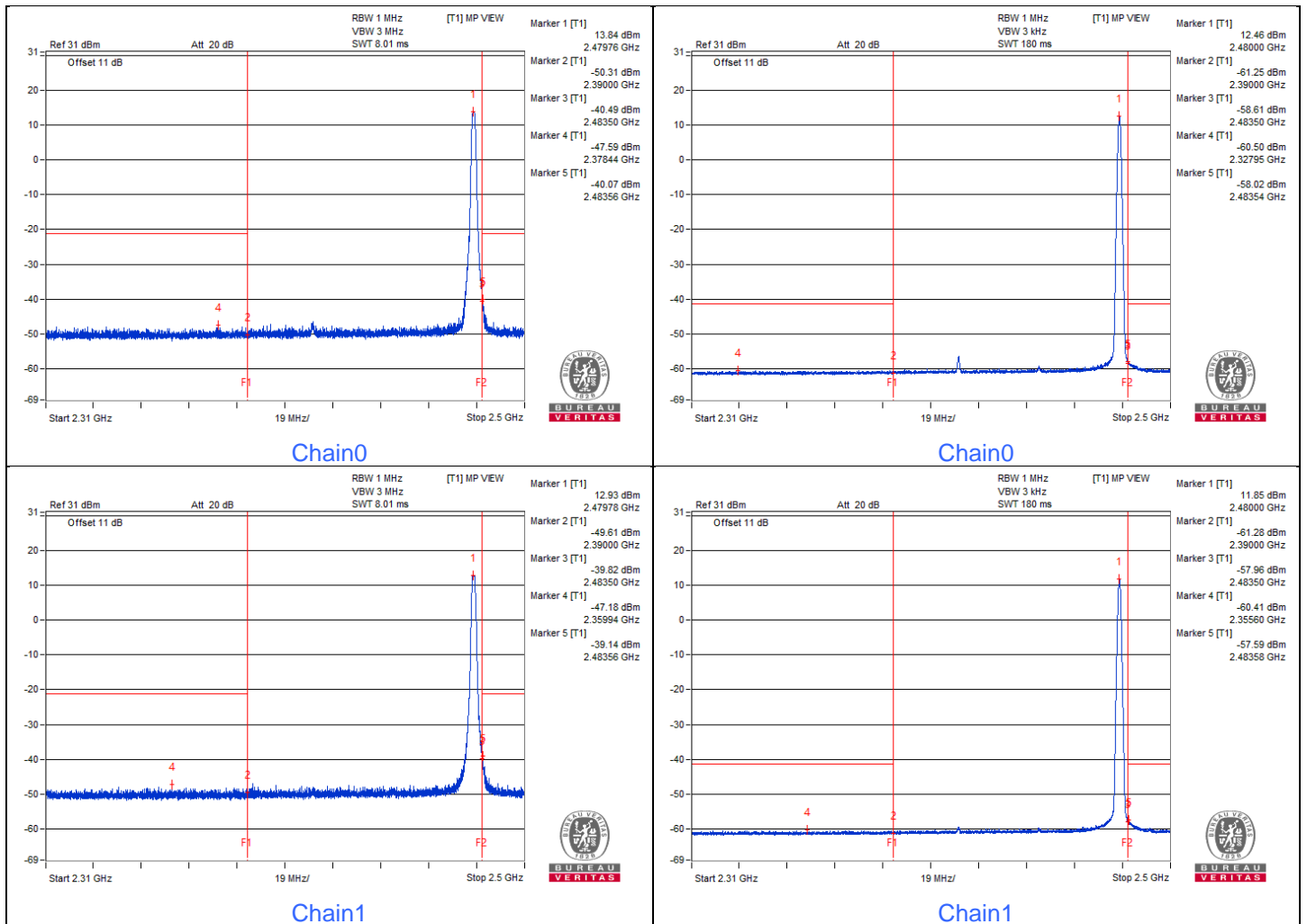


Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2354.72	56.37 PK	74	-17.63	-48.88	-48.05	6.54	-38.89
2	2378.13	44.1 AV	54	-9.9	-60.98	-60.45	6.54	-51.16

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



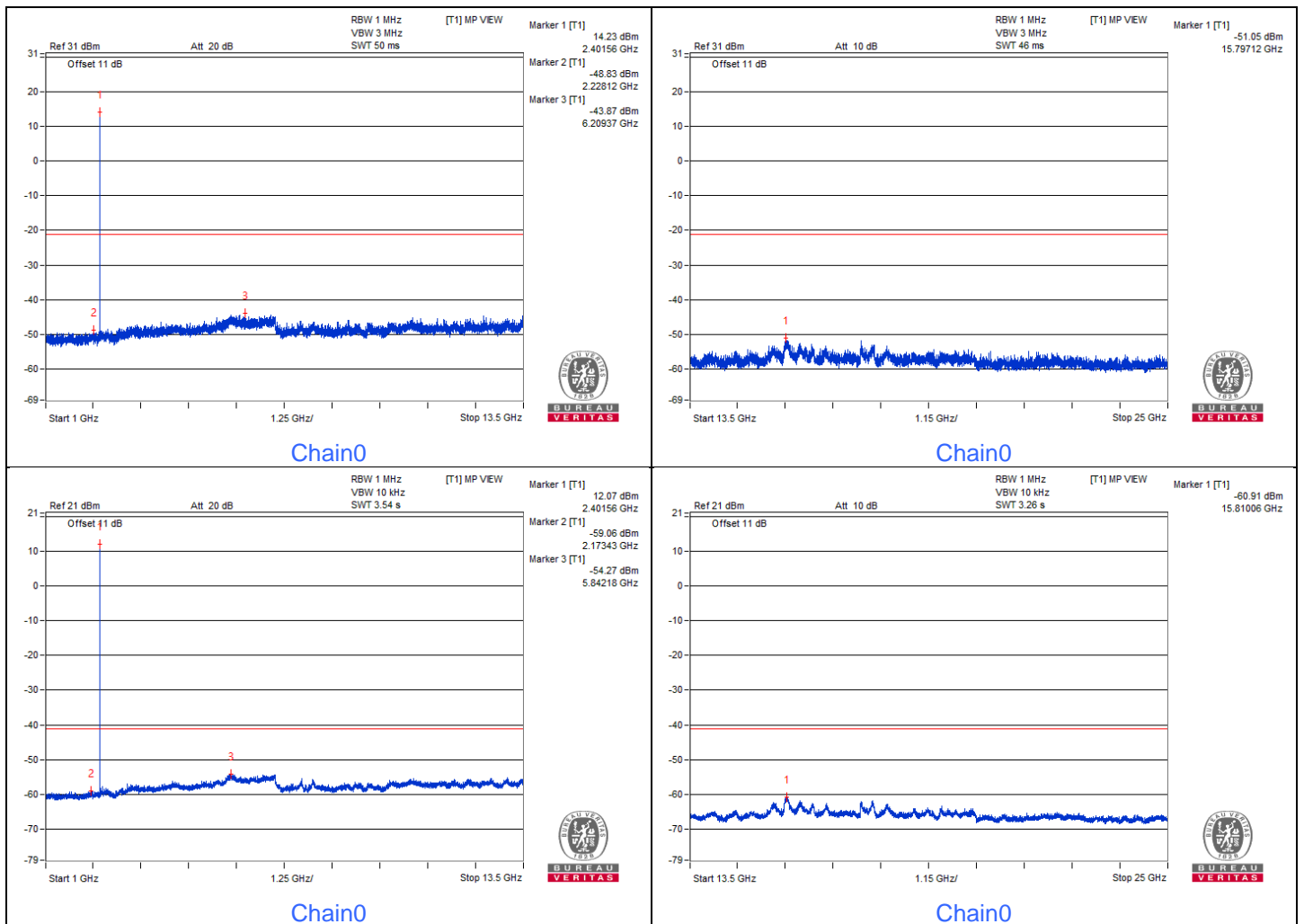
BT-LE 2M 2TX - Channel 0

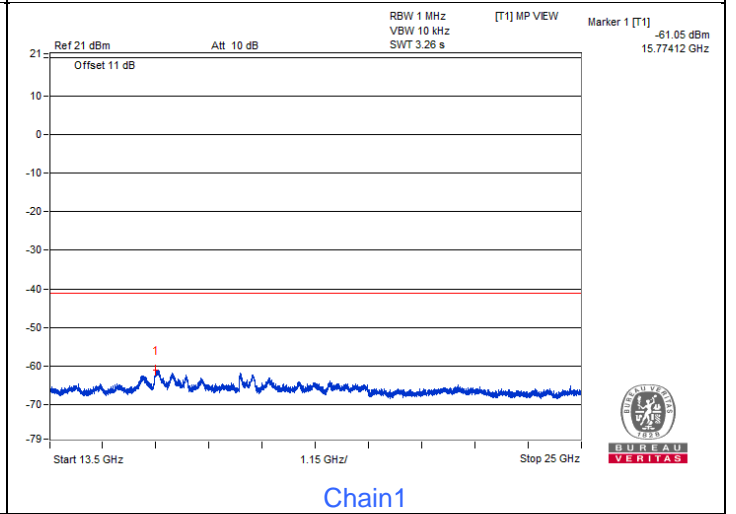
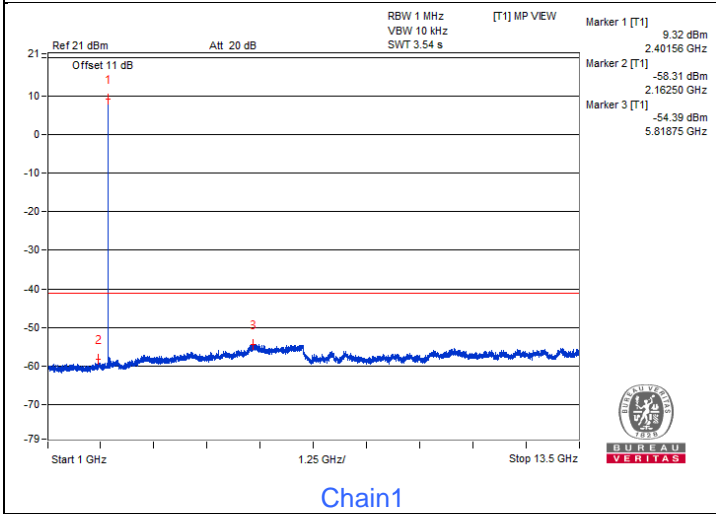
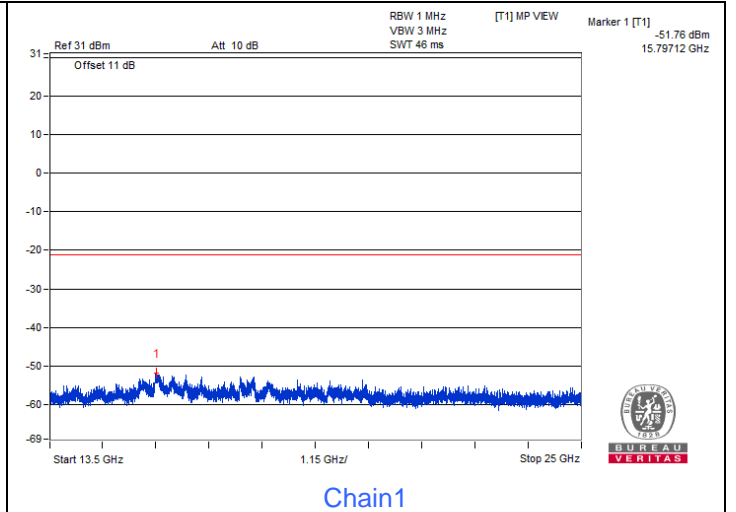
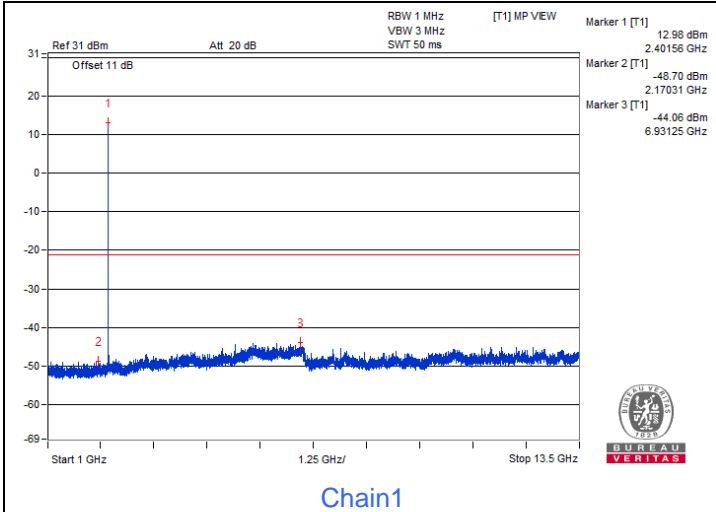
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2384.37	56.86 PK	74	-17.14	-49.77	-49.39	8.17	-38.40
2	2371.87	47.01 AV	54	-6.99	-59.69	-59.18	8.17	-48.25

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



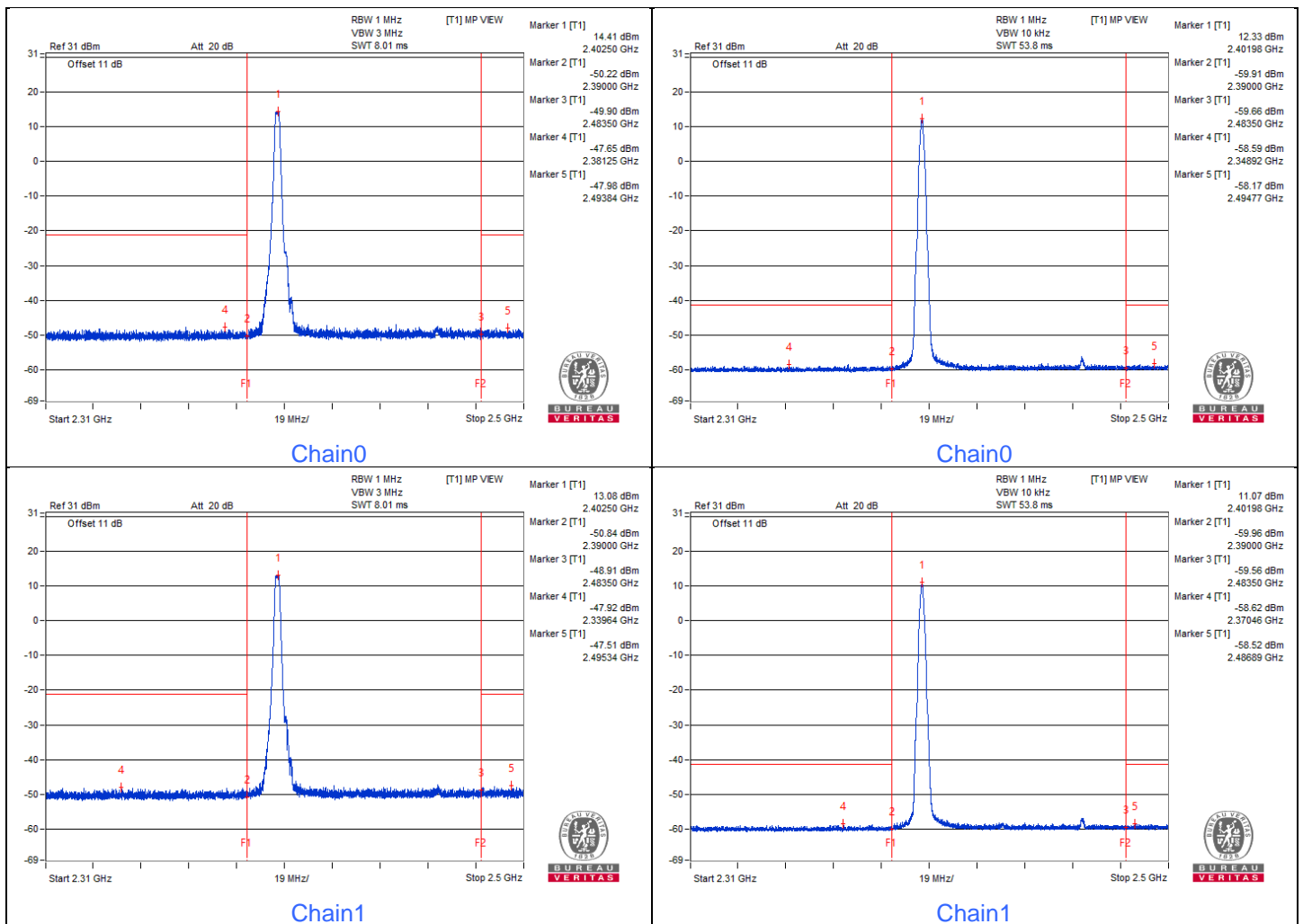


Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2381.25	56.16 PK	74	-17.84	-47.65	-49.95	6.54	-39.10
2	2372.58	45.64 AV	54	-8.36	-58.62	-59.8	6.54	-49.62

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



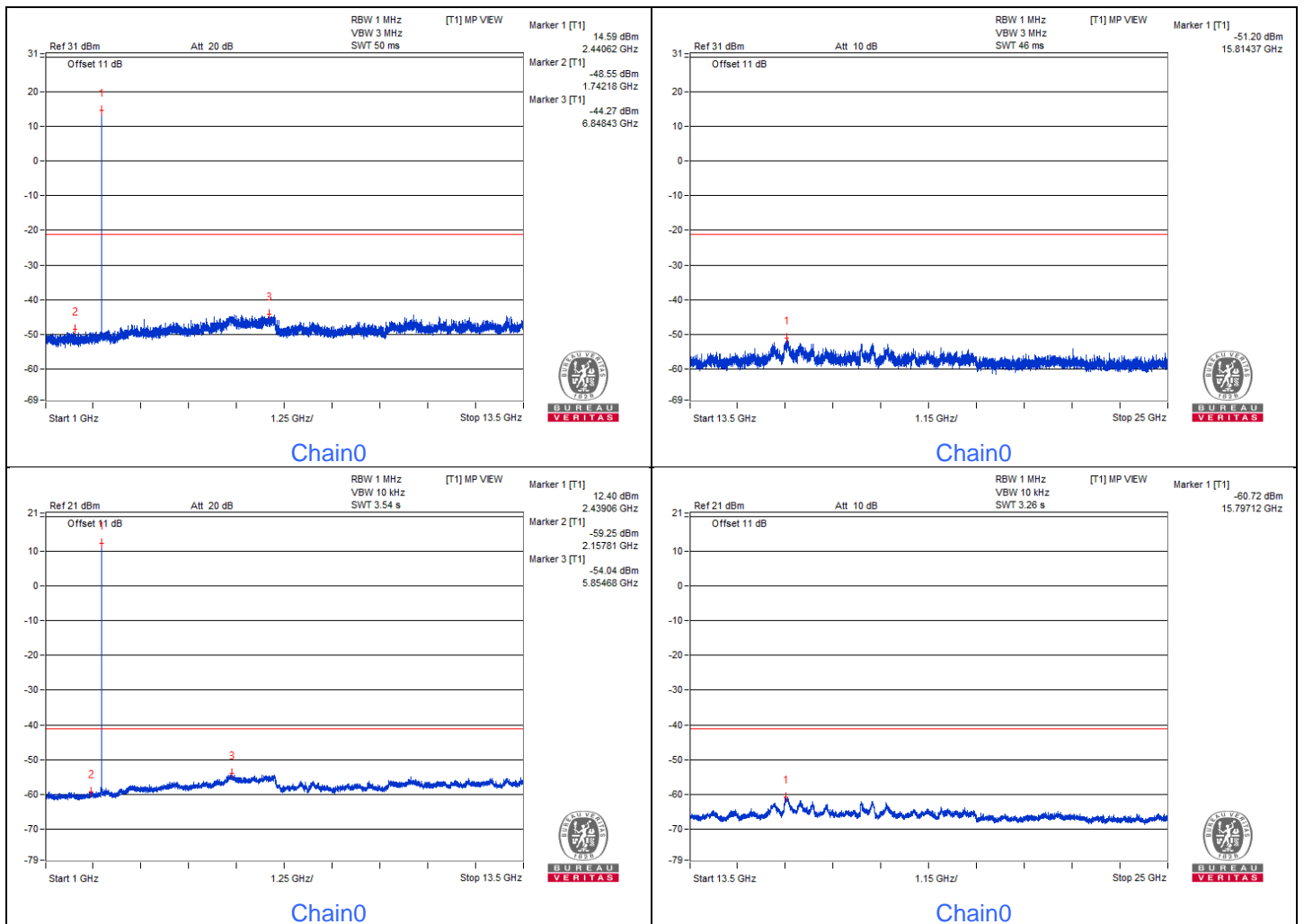
BT-LE 2M 2TX - Channel 19

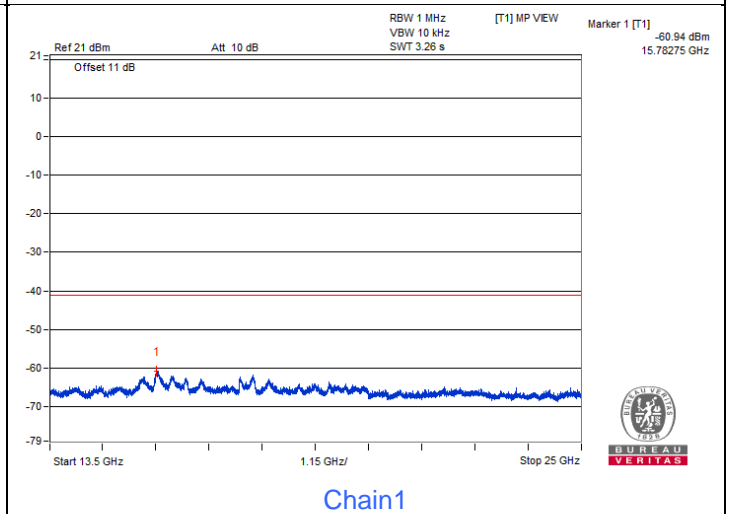
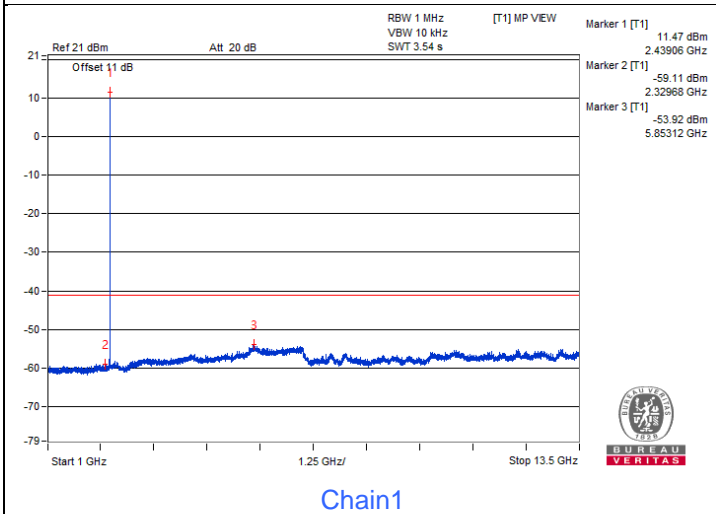
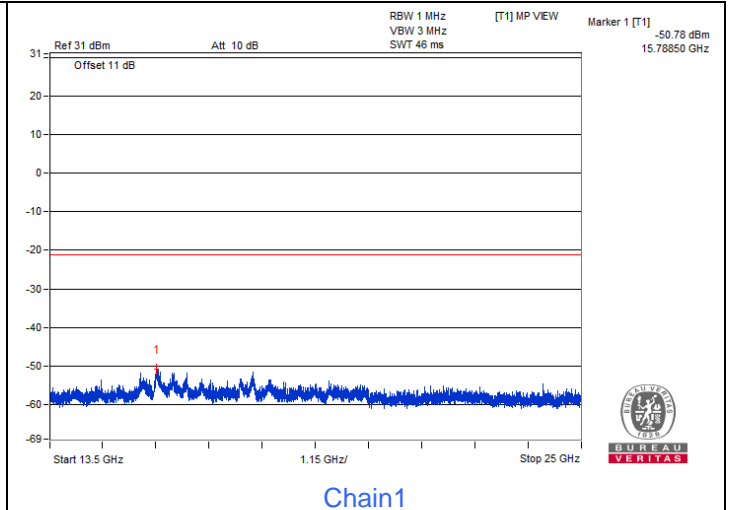
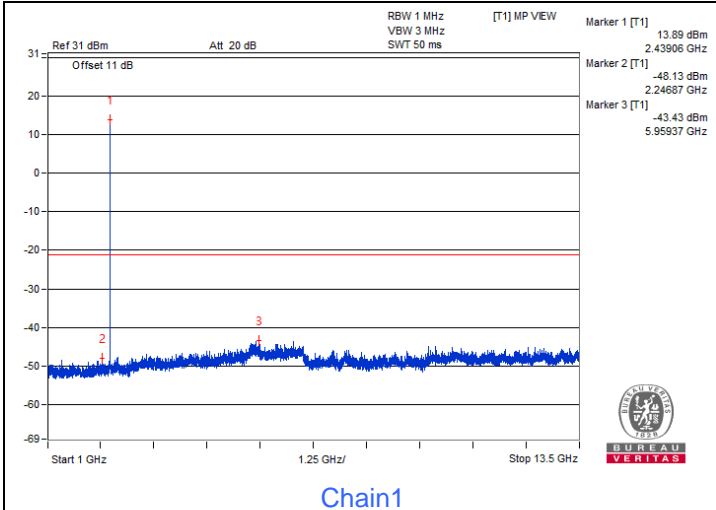
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2323.43	56.63 PK	74	-17.37	-50.06	-49.57	8.17	-38.63
2	2329.68	46.81 AV	54	-7.19	-60.23	-59.11	8.17	-48.45

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



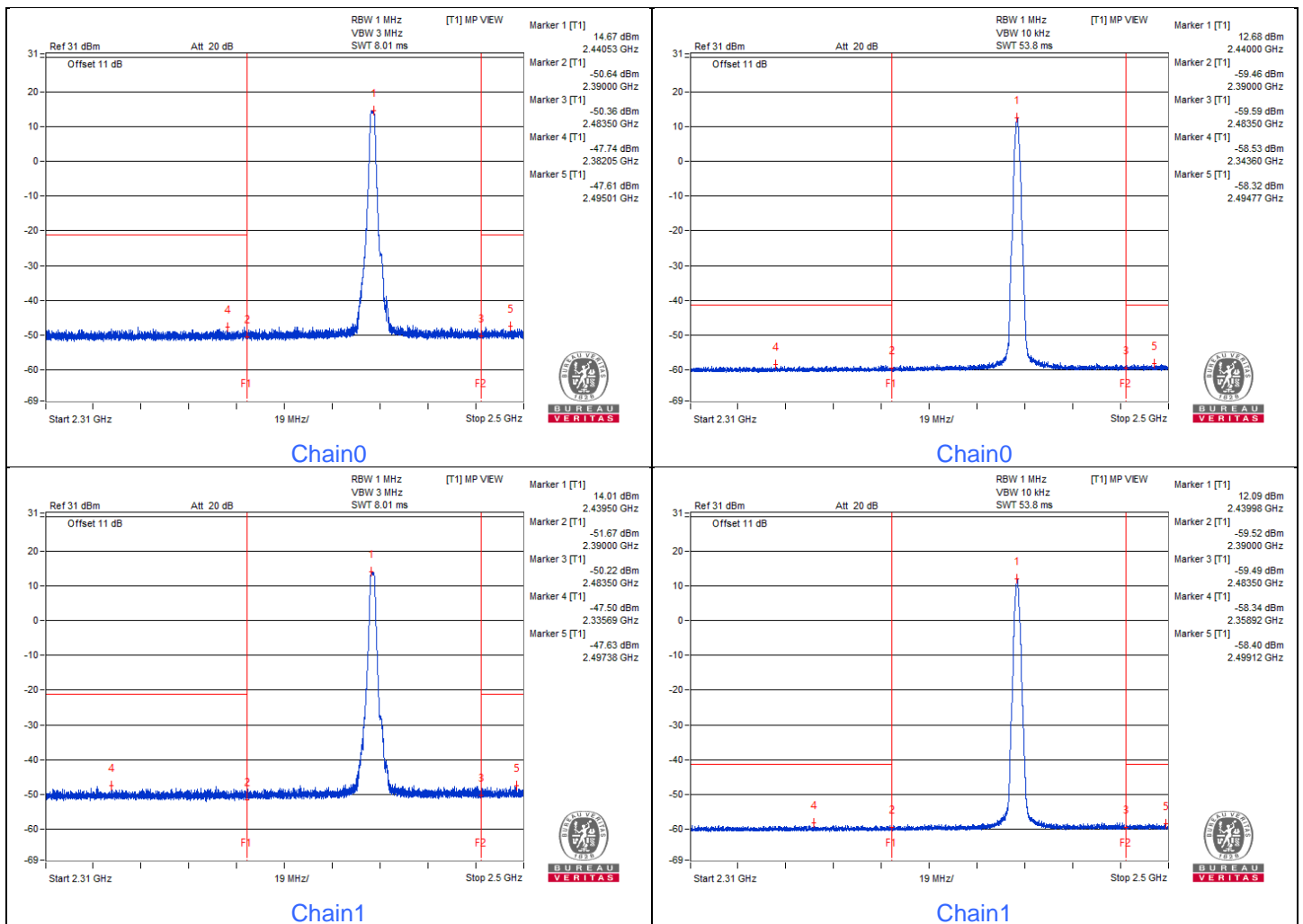


Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2389.01	56.14 PK	74	-17.86	-47.79	-49.78	6.54	-39.12
2	2358.92	45.78 AV	54	-8.22	-59.85	-58.34	6.54	-49.48

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



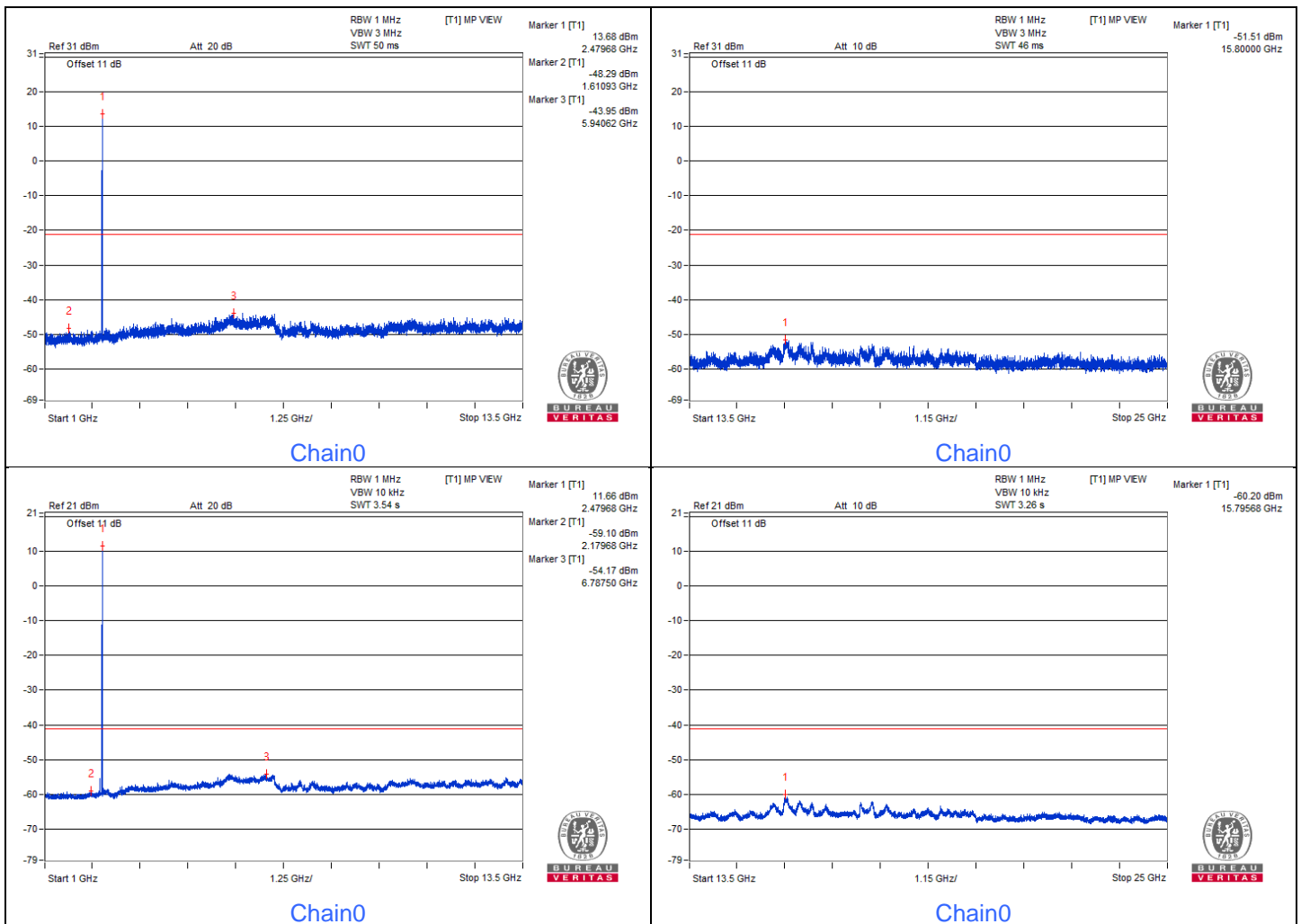
BT-LE 2M 2TX - Channel 39

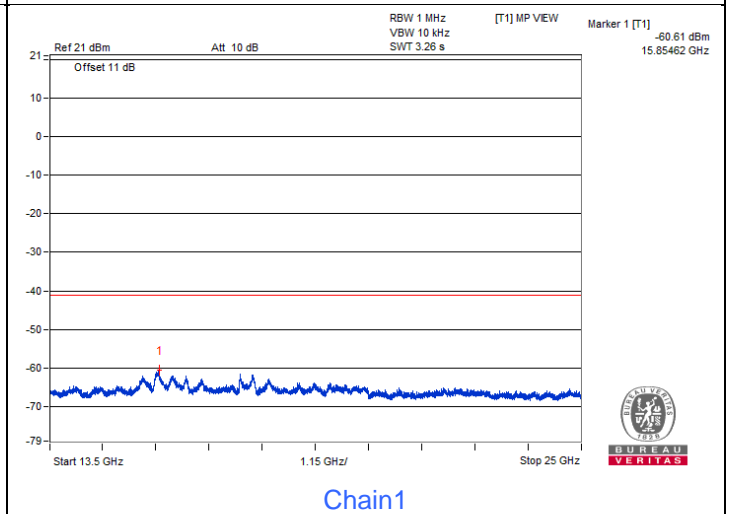
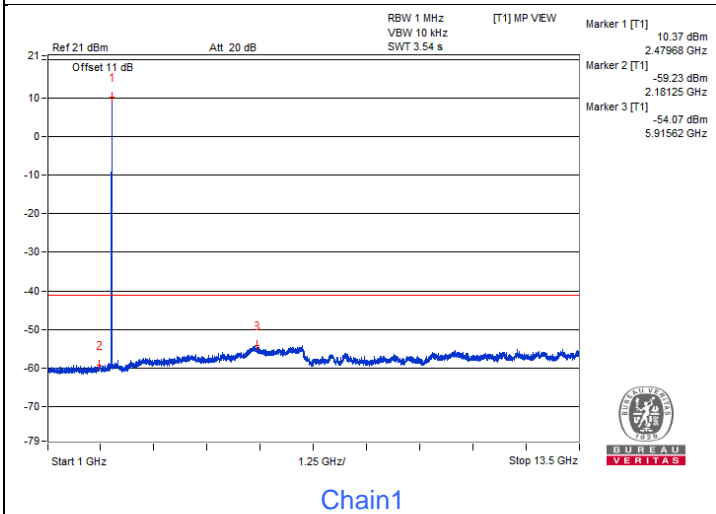
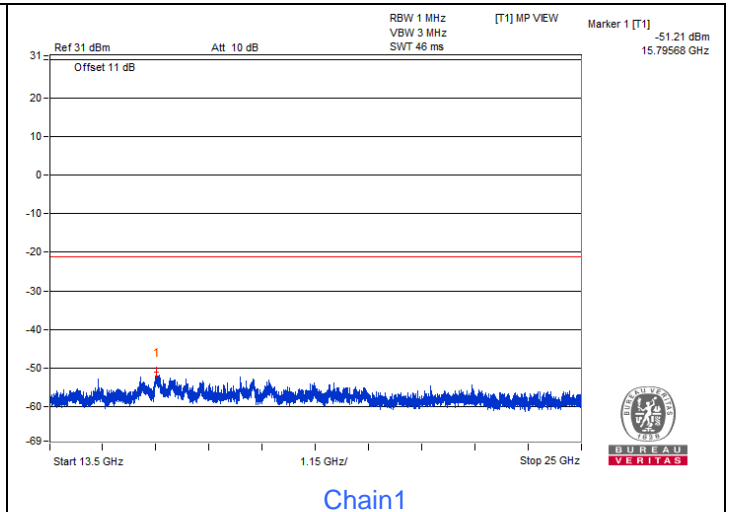
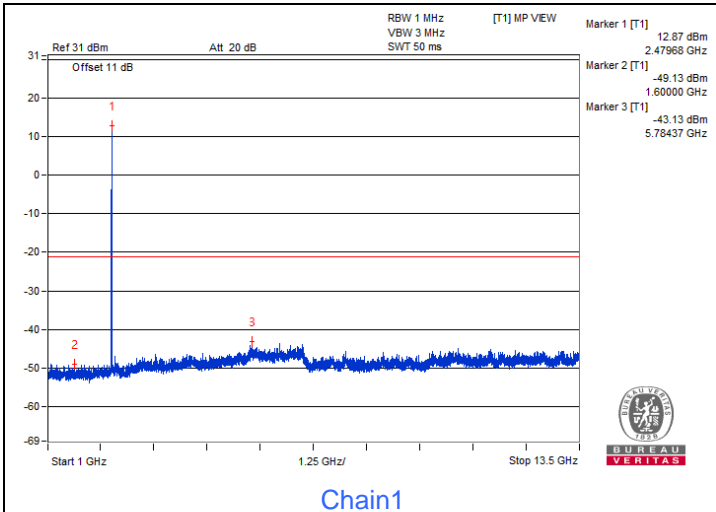
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2335.93	56.1 PK	74	-17.9	-49.34	-51.63	8.17	-39.16
2	2385.93	47.34 AV	54	-6.66	-58.96	-59.24	8.17	-47.92

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



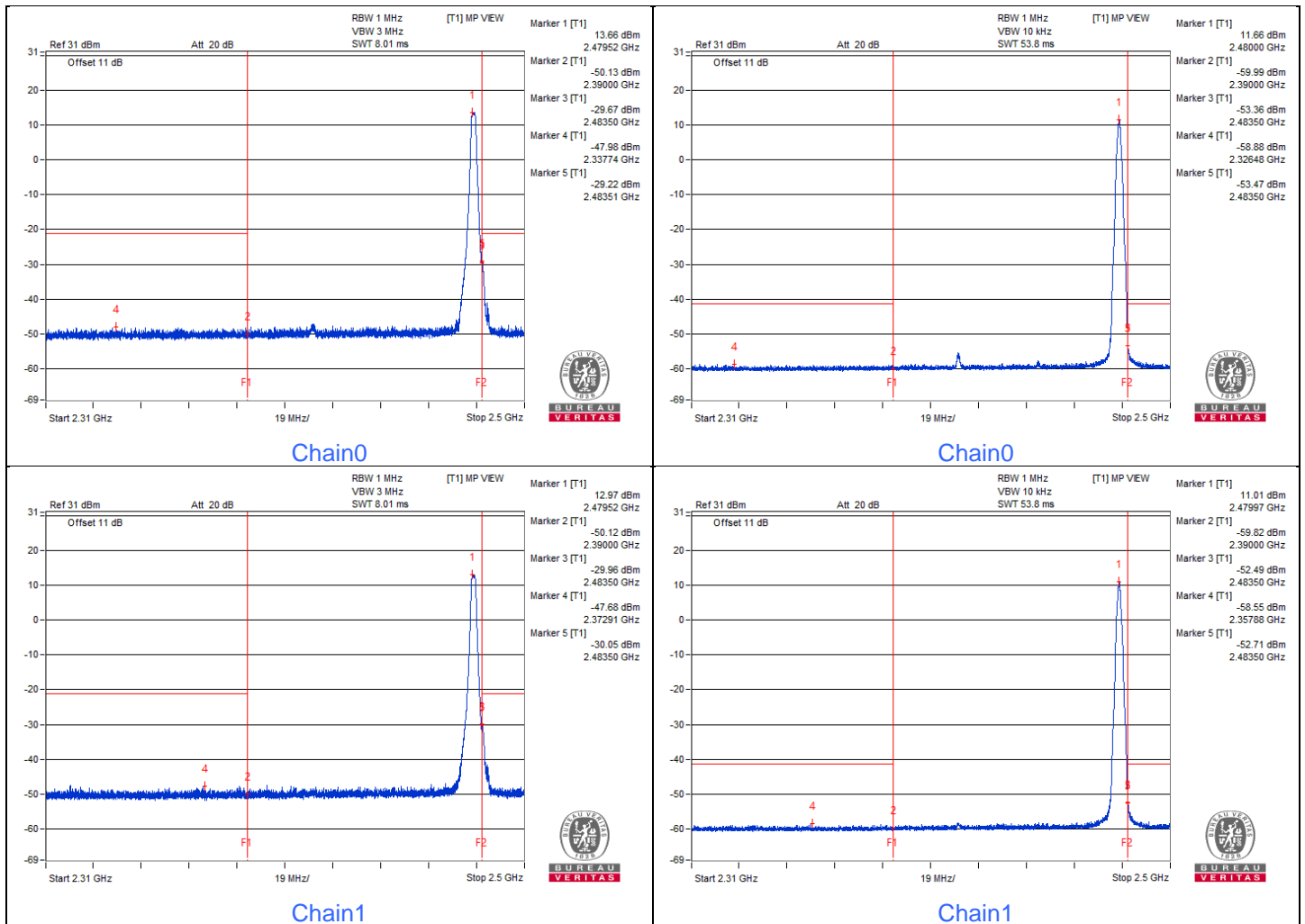


Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2387.04	56.28 PK	74	-17.72	-48.81	-48.26	6.54	-38.98
2	2376.42	45.58 AV	54	-8.42	-59.13	-59.34	6.54	-49.68

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



Mode B

1TX

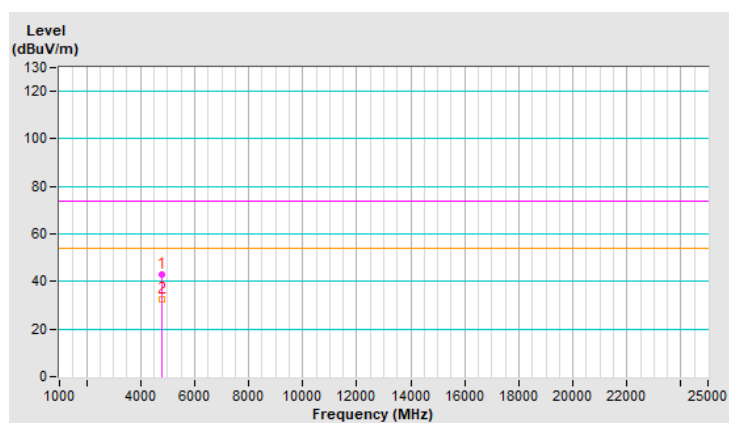
RF Mode	BT-LE 1M	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4804.00	42.7 PK	74.0	-31.3	2.16 H	252	41.3	1.4
2	4804.00	32.3 AV	54.0	-21.7	2.16 H	252	30.9	1.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

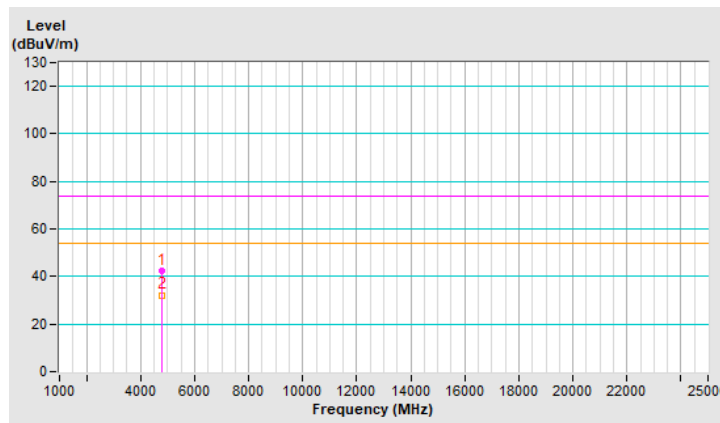


RF Mode	BT-LE 1M	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4804.00	42.2 PK	74.0	-31.8	1.63 V	129	40.8	1.4
2	4804.00	32.2 AV	54.0	-21.8	1.63 V	129	30.8	1.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

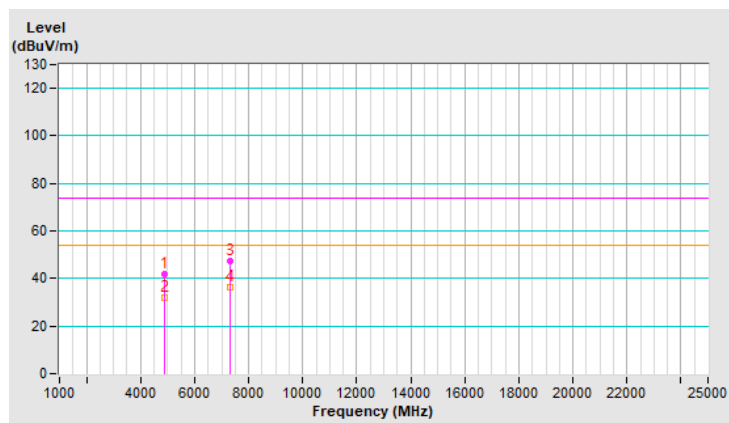


RF Mode	BT-LE 1M	Channel	CH 19 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4880.00	42.0 PK	74.0	-32.0	2.17 H	253	40.7	1.3
2	4880.00	32.0 AV	54.0	-22.0	2.17 H	253	30.7	1.3
3	7320.00	47.2 PK	74.0	-26.8	1.56 H	113	40.2	7.0
4	7320.00	36.4 AV	54.0	-17.6	1.56 H	113	29.4	7.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

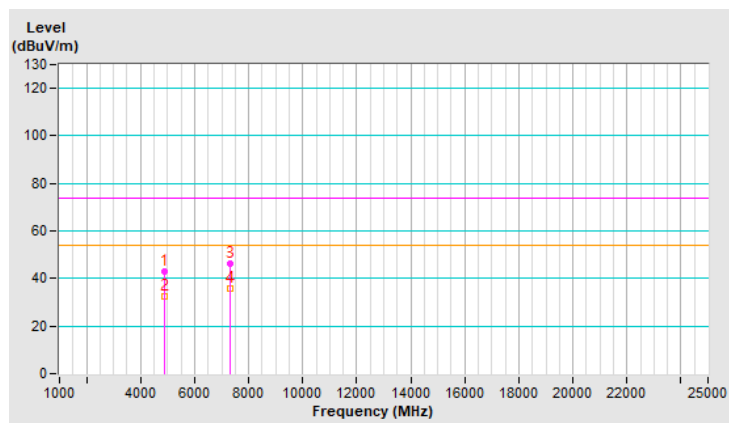


RF Mode	BT-LE 1M	Channel	CH 19 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4880.00	42.9 PK	74.0	-31.1	1.61 V	123	41.6	1.3
2	4880.00	32.7 AV	54.0	-21.3	1.61 V	123	31.4	1.3
3	7320.00	46.3 PK	74.0	-27.7	1.89 V	274	39.3	7.0
4	7320.00	35.9 AV	54.0	-18.1	1.89 V	274	28.9	7.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

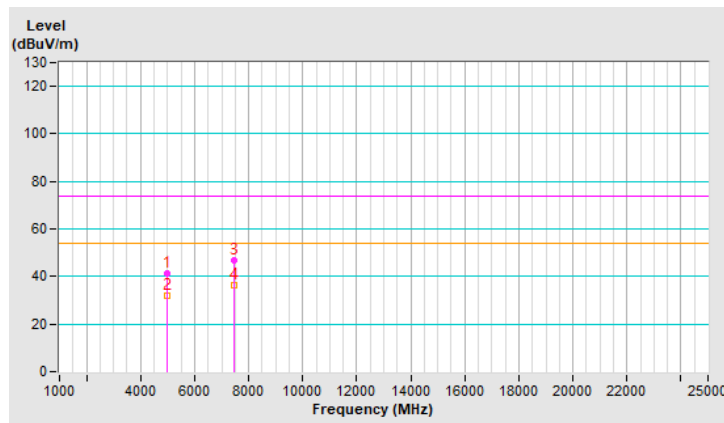


RF Mode	BT-LE 1M	Channel	CH 39 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4960.00	41.5 PK	74.0	-32.5	2.11 H	251	40.1	1.4
2	4960.00	31.8 AV	54.0	-22.2	2.11 H	251	30.4	1.4
3	7440.00	46.6 PK	74.0	-27.4	1.61 H	126	39.2	7.4
4	7440.00	36.1 AV	54.0	-17.9	1.61 H	126	28.7	7.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

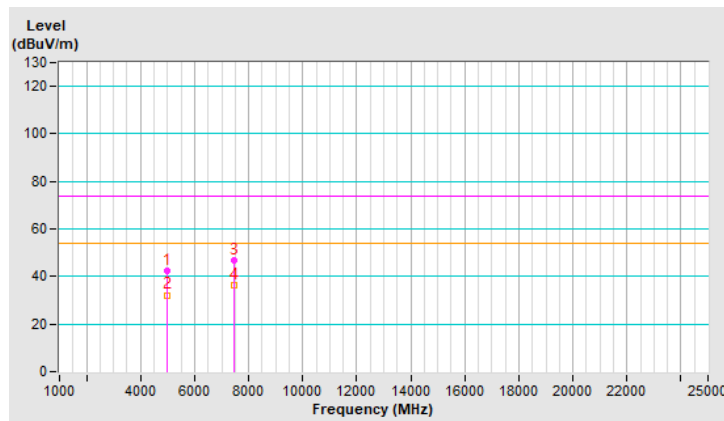


RF Mode	BT-LE 1M	Channel	CH 39 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4960.00	42.2 PK	74.0	-31.8	1.65 V	113	40.8	1.4
2	4960.00	32.2 AV	54.0	-21.8	1.65 V	113	30.8	1.4
3	7440.00	46.9 PK	74.0	-27.1	1.93 V	281	39.5	7.4
4	7440.00	36.2 AV	54.0	-17.8	1.93 V	281	28.8	7.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

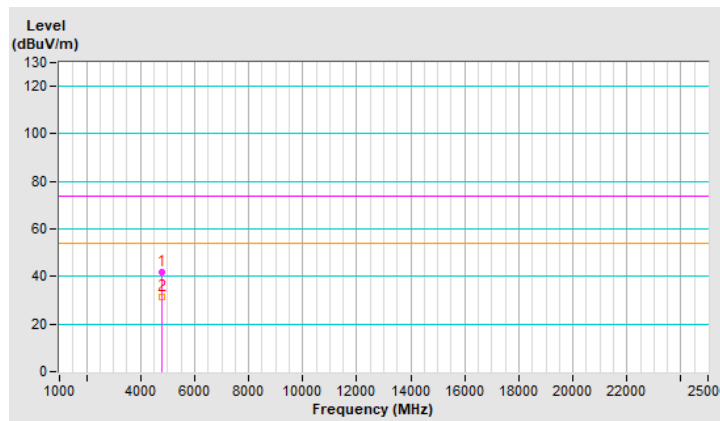


RF Mode	BT-LE 2M	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 5.1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4804.00	41.7 PK	74.0	-32.3	2.14 H	256	40.3	1.4
2	4804.00	31.6 AV	54.0	-22.4	2.14 H	256	30.2	1.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

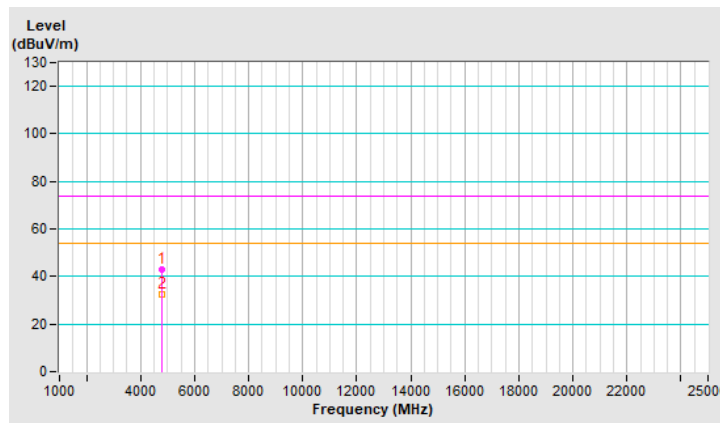


RF Mode	BT-LE 2M	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 5.1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4804.00	42.7 PK	74.0	-31.3	1.61 V	115	41.3	1.4
2	4804.00	32.6 AV	54.0	-21.4	1.61 V	115	31.2	1.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

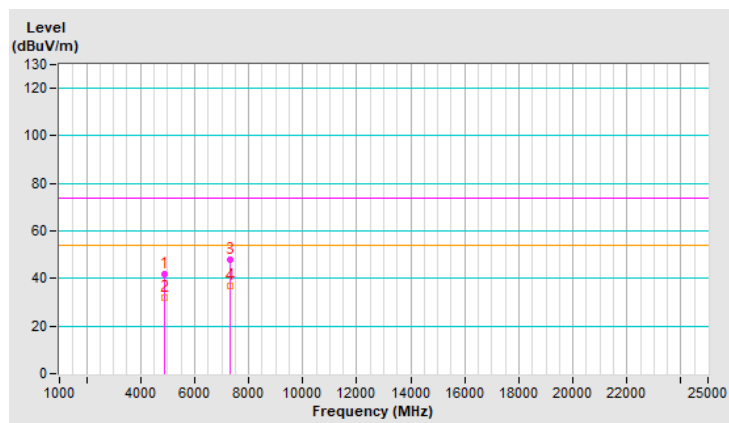


RF Mode	BT-LE 2M	Channel	CH 19 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 5.1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4880.00	41.7 PK	74.0	-32.3	2.19 H	254	40.4	1.3
2	4880.00	31.7 AV	54.0	-22.3	2.19 H	254	30.4	1.3
3	7320.00	47.8 PK	74.0	-26.2	1.58 H	119	40.8	7.0
4	7320.00	36.8 AV	54.0	-17.2	1.58 H	119	29.8	7.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

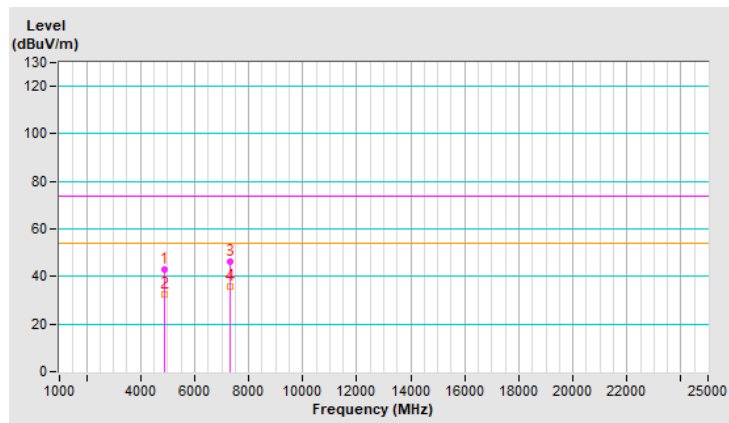


RF Mode	BT-LE 2M	Channel	CH 19 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 5.1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4880.00	42.8 PK	74.0	-31.2	1.60 V	125	41.5	1.3
2	4880.00	32.5 AV	54.0	-21.5	1.60 V	125	31.2	1.3
3	7320.00	46.3 PK	74.0	-27.7	1.89 V	276	39.3	7.0
4	7320.00	35.7 AV	54.0	-18.3	1.89 V	276	28.7	7.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

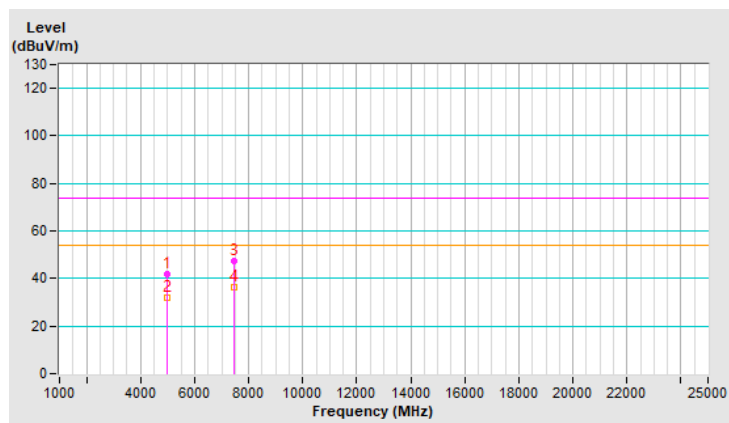


RF Mode	BT-LE 2M	Channel	CH 39 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 5.1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4960.00	42.0 PK	74.0	-32.0	2.17 H	247	40.6	1.4
2	4960.00	31.8 AV	54.0	-22.2	2.17 H	247	30.4	1.4
3	7440.00	47.2 PK	74.0	-26.8	1.53 H	98	39.8	7.4
4	7440.00	36.5 AV	54.0	-17.5	1.53 H	98	29.1	7.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

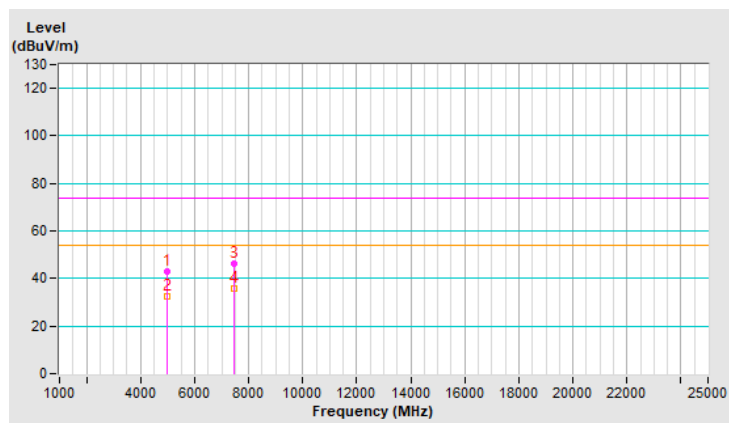


RF Mode	BT-LE 2M	Channel	CH 39 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 5.1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4960.00	43.1 PK	74.0	-30.9	1.64 V	114	41.7	1.4
2	4960.00	32.6 AV	54.0	-21.4	1.64 V	114	31.2	1.4
3	7440.00	46.4 PK	74.0	-27.6	1.86 V	276	39.0	7.4
4	7440.00	35.9 AV	54.0	-18.1	1.86 V	276	28.5	7.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.



2TX

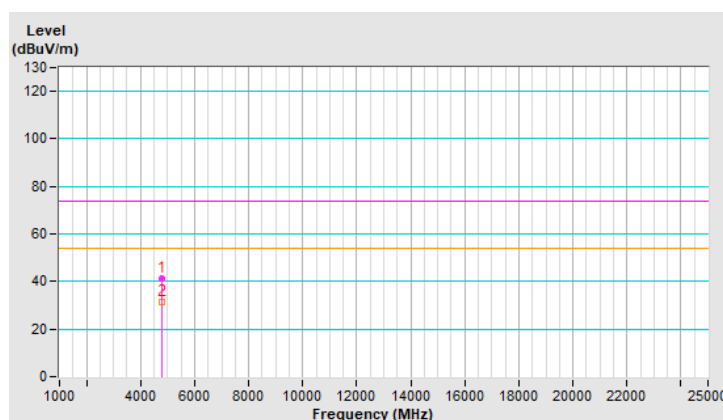
RF Mode	BT-LE 1M	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4804.00	41.3 PK	74.0	-32.7	2.20 H	255	39.9	1.4
2	4804.00	31.4 AV	54.0	-22.6	2.20 H	255	30.0	1.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.



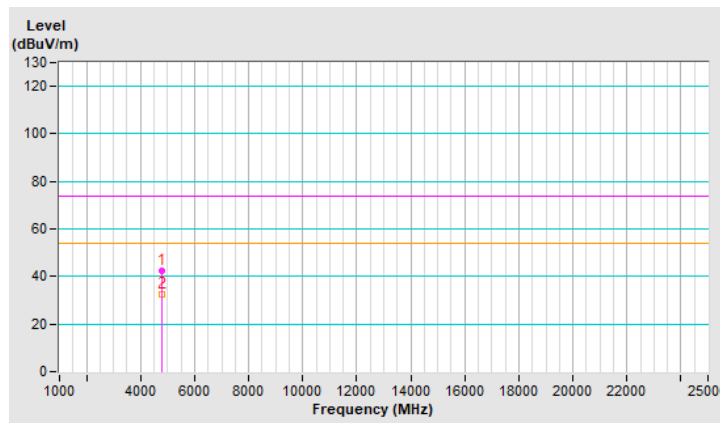


RF Mode	BT-LE 1M	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4804.00	42.4 PK	74.0	-31.6	1.70 V	137	41.0	1.4
2	4804.00	32.5 AV	54.0	-21.5	1.70 V	137	31.1	1.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

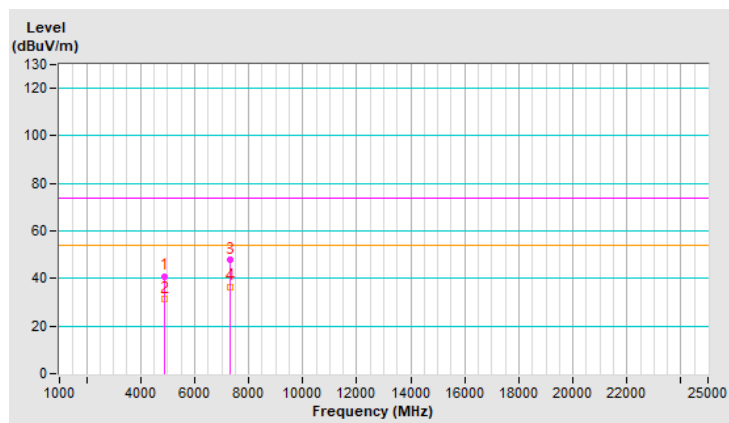


RF Mode	BT-LE 1M	Channel	CH 19 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4880.00	41.0 PK	74.0	-33.0	2.17 H	266	39.7	1.3
2	4880.00	31.3 AV	54.0	-22.7	2.17 H	266	30.0	1.3
3	7320.00	47.8 PK	74.0	-26.2	1.55 H	115	40.8	7.0
4	7320.00	36.6 AV	54.0	-17.4	1.55 H	115	29.6	7.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

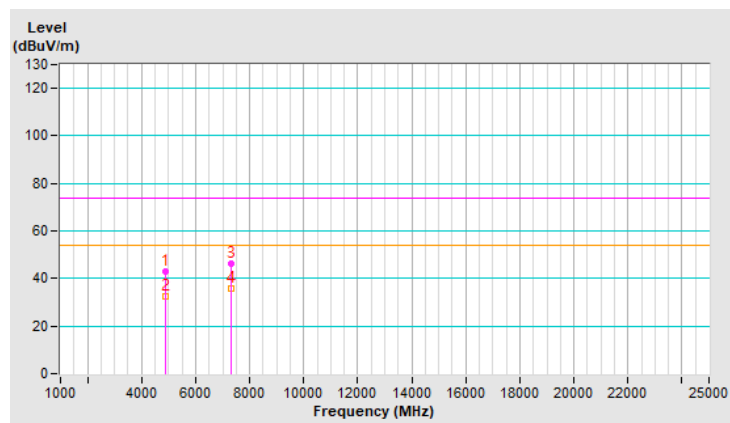


RF Mode	BT-LE 1M	Channel	CH 19 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4880.00	42.7 PK	74.0	-31.3	1.66 V	138	41.4	1.3
2	4880.00	32.7 AV	54.0	-21.3	1.66 V	138	31.4	1.3
3	7320.00	46.0 PK	74.0	-28.0	1.87 V	285	39.0	7.0
4	7320.00	35.7 AV	54.0	-18.3	1.87 V	285	28.7	7.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

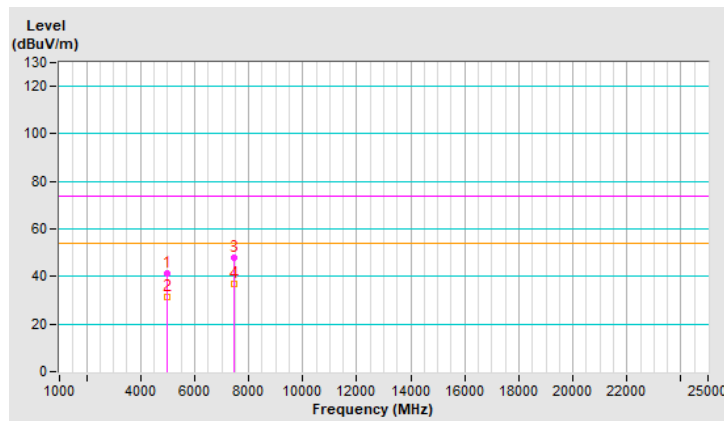


RF Mode	BT-LE 1M	Channel	CH 39 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4960.00	41.1 PK	74.0	-32.9	2.16 H	266	39.7	1.4
2	4960.00	31.4 AV	54.0	-22.6	2.16 H	266	30.0	1.4
3	7440.00	47.8 PK	74.0	-26.2	1.60 H	123	40.4	7.4
4	7440.00	36.7 AV	54.0	-17.3	1.60 H	123	29.3	7.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

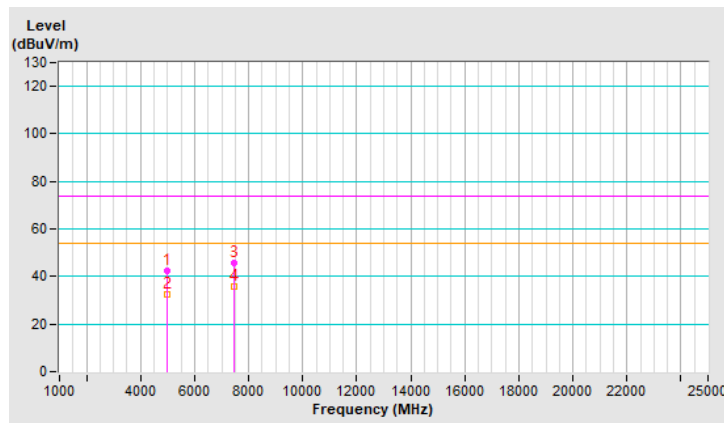


RF Mode	BT-LE 1M	Channel	CH 39 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4960.00	42.6 PK	74.0	-31.4	1.58 V	120	41.2	1.4
2	4960.00	32.4 AV	54.0	-21.6	1.58 V	120	31.0	1.4
3	7440.00	45.7 PK	74.0	-28.3	1.95 V	270	38.3	7.4
4	7440.00	35.6 AV	54.0	-18.4	1.95 V	270	28.2	7.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

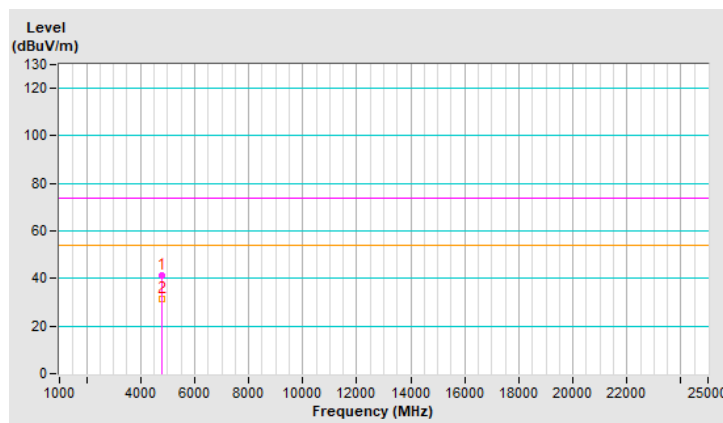


RF Mode	BT-LE 2M	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 5.1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4804.00	41.1 PK	74.0	-32.9	2.21 H	279	39.7	1.4
2	4804.00	31.6 AV	54.0	-22.4	2.21 H	279	30.2	1.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

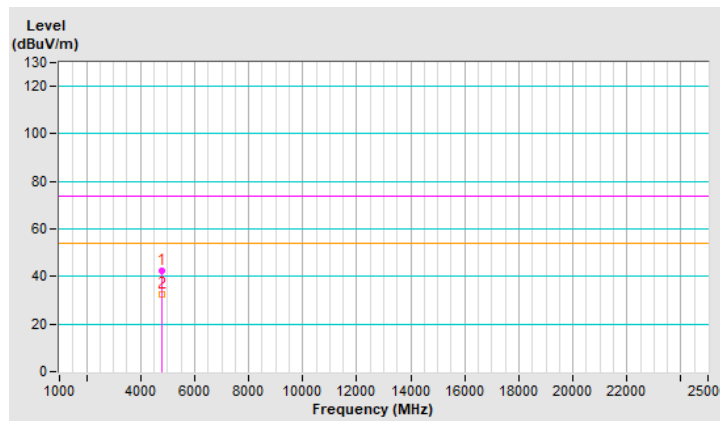


RF Mode	BT-LE 2M	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 5.1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4804.00	42.5 PK	74.0	-31.5	1.72 V	144	41.1	1.4
2	4804.00	32.6 AV	54.0	-21.4	1.72 V	144	31.2	1.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

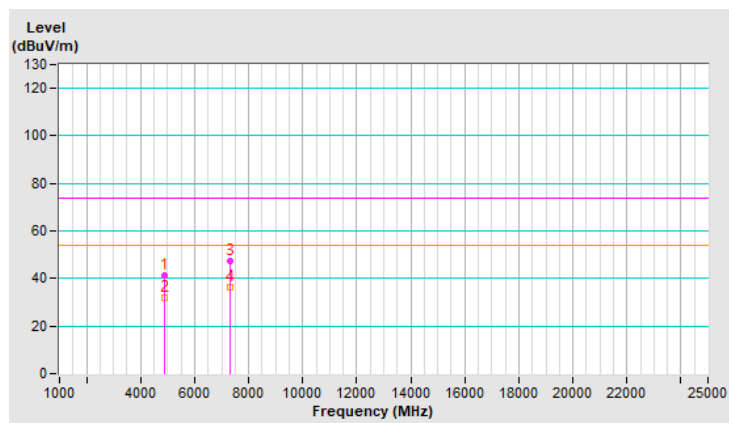


RF Mode	BT-LE 2M	Channel	CH 19 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 5.1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4880.00	41.5 PK	74.0	-32.5	2.15 H	263	40.2	1.3
2	4880.00	31.7 AV	54.0	-22.3	2.15 H	263	30.4	1.3
3	7320.00	47.4 PK	74.0	-26.6	1.56 H	122	40.4	7.0
4	7320.00	36.4 AV	54.0	-17.6	1.56 H	122	29.4	7.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

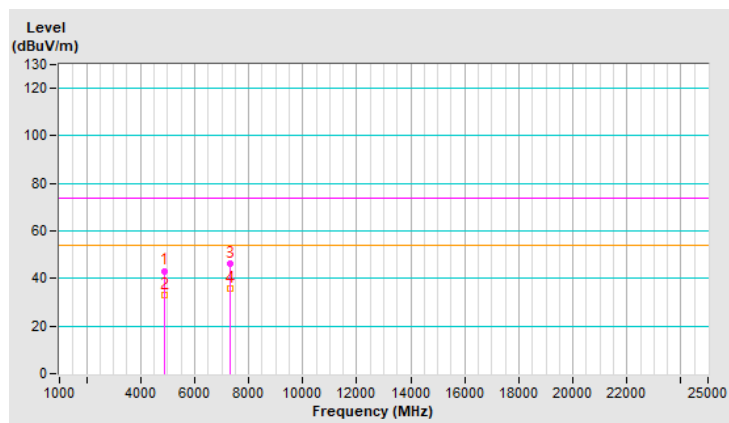


RF Mode	BT-LE 2M	Channel	CH 19 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 5.1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4880.00	43.2 PK	74.0	-30.8	1.65 V	121	41.9	1.3
2	4880.00	32.8 AV	54.0	-21.2	1.65 V	121	31.5	1.3
3	7320.00	46.2 PK	74.0	-27.8	1.87 V	289	39.2	7.0
4	7320.00	35.6 AV	54.0	-18.4	1.87 V	289	28.6	7.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

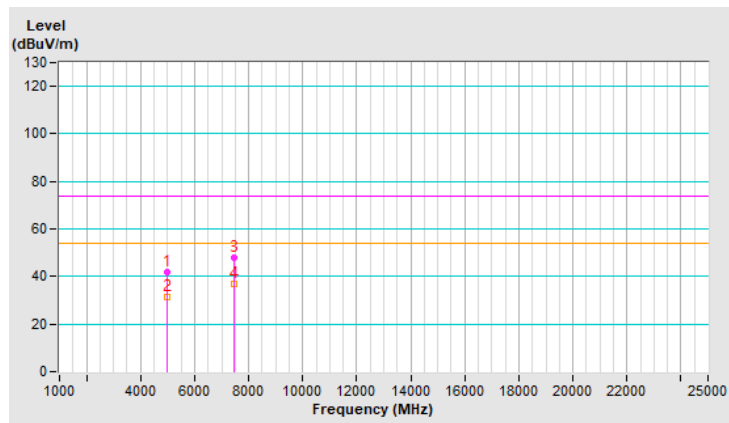


RF Mode	BT-LE 2M	Channel	CH 39 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 5.1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4960.00	41.6 PK	74.0	-32.4	2.23 H	238	40.2	1.4
2	4960.00	31.3 AV	54.0	-22.7	2.23 H	238	29.9	1.4
3	7440.00	48.0 PK	74.0	-26.0	1.54 H	132	40.6	7.4
4	7440.00	36.8 AV	54.0	-17.2	1.54 H	132	29.4	7.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

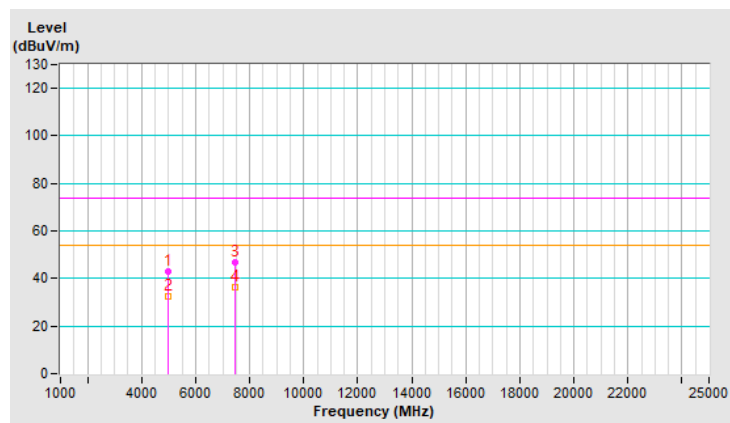


RF Mode	BT-LE 2M	Channel	CH 39 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 5.1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4960.00	42.7 PK	74.0	-31.3	1.66 V	124	41.3	1.4
2	4960.00	32.5 AV	54.0	-21.5	1.66 V	124	31.1	1.4
3	7440.00	46.6 PK	74.0	-27.4	1.92 V	267	39.2	7.4
4	7440.00	36.2 AV	54.0	-17.8	1.92 V	267	28.8	7.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.



8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.

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