

FCC Test Report (BT-LE)

Report No.: RF200522E04-3

FCC ID: TX2-RTL8852AE

Test Model: RTL8852AE

Received Date: May 22, 2020

Test Date: June 25 to Sep. 01, 2020

Issued Date: Sep. 24, 2020

Applicant: Realtek Semiconductor Corp.

Address: No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu 300, Taiwan

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

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

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

**FCC Registration /
Designation Number:** 723255 / TW2022



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Release Control Record

Issue No.	Description	Date Issued
RF200522E04-3	Original release.	Sep. 24, 2020

1 Certificate of Conformity

Product: 11ax RTL8852AE Combo module

Brand: REALTEK

Test Model: RTL8852AE

Sample Status: ENGINEERING SAMPLE

Applicant: Realtek Semiconductor Corp.

Test Date: June 25 to Sep. 01, 2020

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10: 2013

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 EMC characteristics under the conditions specified in this report.

Prepared by : Joyce Kuo , **Date:** Sep. 24, 2020
Joyce Kuo / Specialist

Approved by : Clark Lin , **Date:** Sep. 24, 2020
Clark Lin / Technical Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (SECTION 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -14.83dB at 0.17764MHz.
15.205 & 209 & 15.247(d)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -4.7dB at 291.10MHz, 286.80MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is i-pex(MHF) not a standard connector.

Note:

1. For 2.4GHz band compliance with rule 15.247(d) of the band-edge items, the test plots were recorded in Annex A. Test Procedures refer to report 4.1.3.
2. 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:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.9 dB
Conducted emissions	-	2.5 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.1 dB
	30MHz ~ 1GHz	5.1 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.1 dB
	18GHz ~ 40GHz	5.3 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT (BT-LE)

Product	11ax RTL8852AE Combo module
Brand	REALTEK
Test Model	RTL8852AE
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	3.3Vdc from host equipment
Modulation Type	GFSK
Modulation Technology	DTS
Transfer Rate	Up to 2Mbps
Operating Frequency	2402MHz ~ 2480MHz
Number of Channel	40
Output Power	BT-LE 1M: 18.239 mW BT-LE 2M: 18.365 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. The EUT has below HW SKU configuration, as below table:

SKU No.	Interface	Description
1	PCIe + USB	Single antenna port
2	PCIe + USB	Dual antenna port
3	PCIe + UART	Dual antenna port

Note: From the above HW SKUs, **SKU No.: 3** was selected as representative model for the test and its data was recorded in this report.

2. Simultaneously transmission condition.

Condition	Technology		
1	WLAN 2.4GHz	WLAN 5GHz	Bluetooth
2	WLAN 2.4GHz	WLAN 5GHz	-
3	WLAN 5GHz	Bluetooth	-

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

3. The antennas provided to the EUT, please refer to the following table:

Antenna Set	Chain No.	Brand	Model	Antenna Gain (dBi)	Frequency range (GHz)	Antenna Type	Connector Type	Cable Length (mm)
1	Chain 0	LYNwave	ALA110-222050-300011	3.5	2.4~2.5	PIFA	i-pex(MHF)	300
				5	5.15~5.85			
	Chain 1	LYNwave	ALA110-222050-300011	3.5	2.4~2.5	PIFA	i-pex(MHF)	300
				5	5.15~5.85			
2	Chain 0	PSA	RFDPA171320EMLB301	3.14	2.4~2.5	Dipole	i-pex(MHF)	200
				5	5.15~5.85			
	Chain 1	PSA	RFDPA171320EMLB301	3.14	2.4~2.5	Dipole	i-pex(MHF)	200
				5	5.15~5.85			

Note:

1. The Bluetooth technology will fix transmission on Chain 1.
2. Max. gain was selected for the final test, except for the radiated emissions test.

4. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.
5. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

3.2 Description of Test Modes

40 channels are provided to this EUT:

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

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	APCM	
1	√	√	√	√	Low power
2	√	√	√	√	High power

Where **RE $\geq$ 1G**: Radiated Emission above 1GHz **RE<1G**: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM**: Antenna Port Conducted Measurement

Note: The EUT's PIFA antenna had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.

Radiated Emission Test (Above 1GHz):

- ☒ 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).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE	DATA RATE (Mbps)
0 to 39	0, 19, 39	GFSK	1
1 to 38	1, 19, 38	GFSK	2

Radiated Emission Test (Below 1GHz):

- ☒ 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).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE	DATA RATE (Mbps)
1 to 38	19	GFSK	2

Power Line Conducted Emission Test:

- ☒ 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).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE	DATA RATE (Mbps)
1 to 38	19	GFSK	2

Antenna Port Conducted Measurement:

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ 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).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE	DATA RATE (Mbps)
0 to 39	0, 19, 39	GFSK	1
1 to 38	1, 19, 38	GFSK	2

Test Condition:

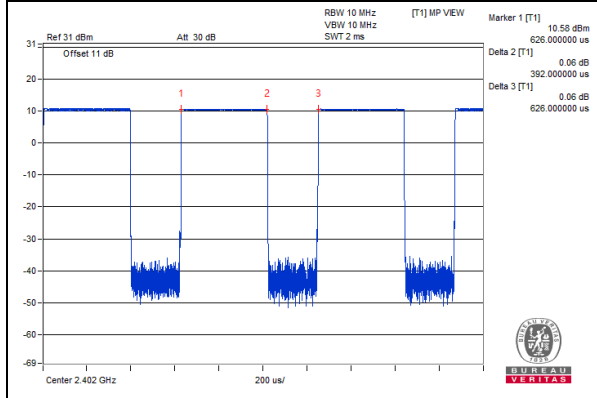
APPLICABLE TO	ENVIRONMENTAL CONDITIONS	Input Power (System)	TESTED BY
RE $\geq$ 1G	25deg. C, 75%RH	120Vac, 60Hz	Tom Yang
RE<1G	25deg. C, 75%RH	120Vac, 60Hz	Tom Yang
PLC	25deg. C, 75%RH	120Vac, 60Hz	Sampson Chen
APCM	25deg. C, 60%RH	120Vac, 60Hz	Kevin Ko

3.3 Duty Cycle of Test Signal

For Low power

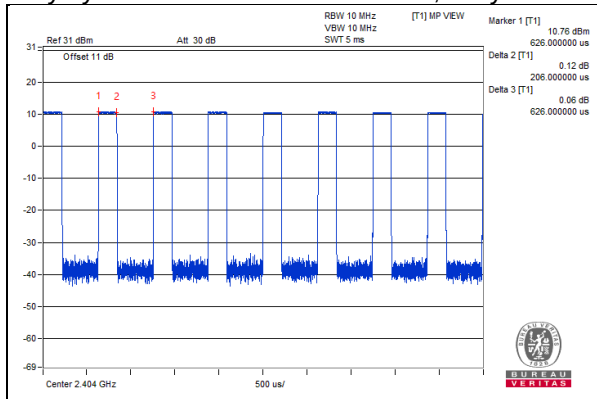
BT-LE 1M

Duty cycle = $0.392 \text{ ms} / 0.626 \text{ ms} = 0.626$, Duty factor = $10 * \log(1 / \text{Duty cycle}) = 2.03$



BT-LE 2M

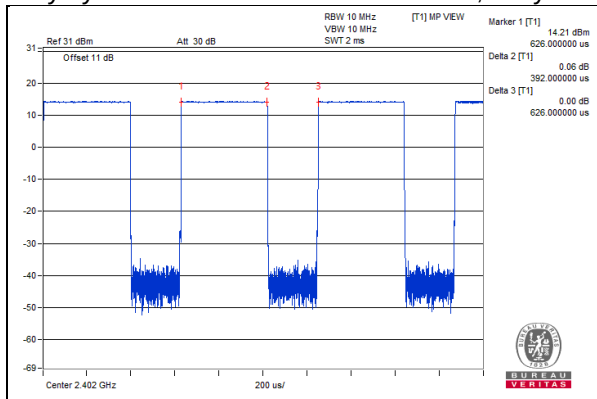
Duty cycle = $0.206 \text{ ms} / 0.626 = 0.329$, Duty factor = $10 * \log(1 / \text{Duty cycle}) = 4.83$



For High power

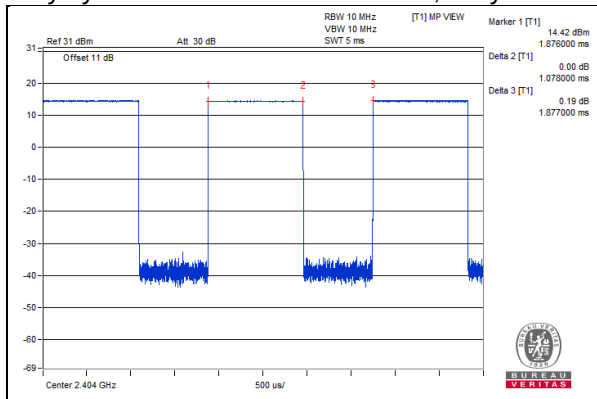
BT-LE 1M

Duty cycle = $0.392 \text{ ms} / 0.626 \text{ ms} = 0.626$, Duty factor = $10 * \log(1 / \text{Duty cycle}) = 2.03$



BT-LE 2M

Duty cycle = $1.078 \text{ ms} / 1.877 \text{ ms} = 0.574$, Duty factor = $10 * \log(1 / \text{Duty cycle}) = 2.41$



3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

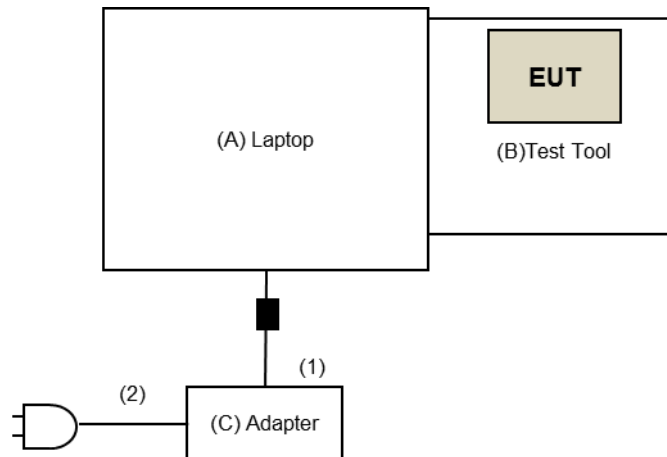
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	Latitude 5490	4LFTNV2	NA	Provided by Lab
B.	Test Tool	Realtek	NA	NA	NA	Supplied by client
C.	Adapter	DELL	FA65NE0-00	NA	NA	Provided by Lab

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Cable	1	1.6	No	1	Provided by Lab
2.	AC Cable	1	1	No	0	Provided by Lab

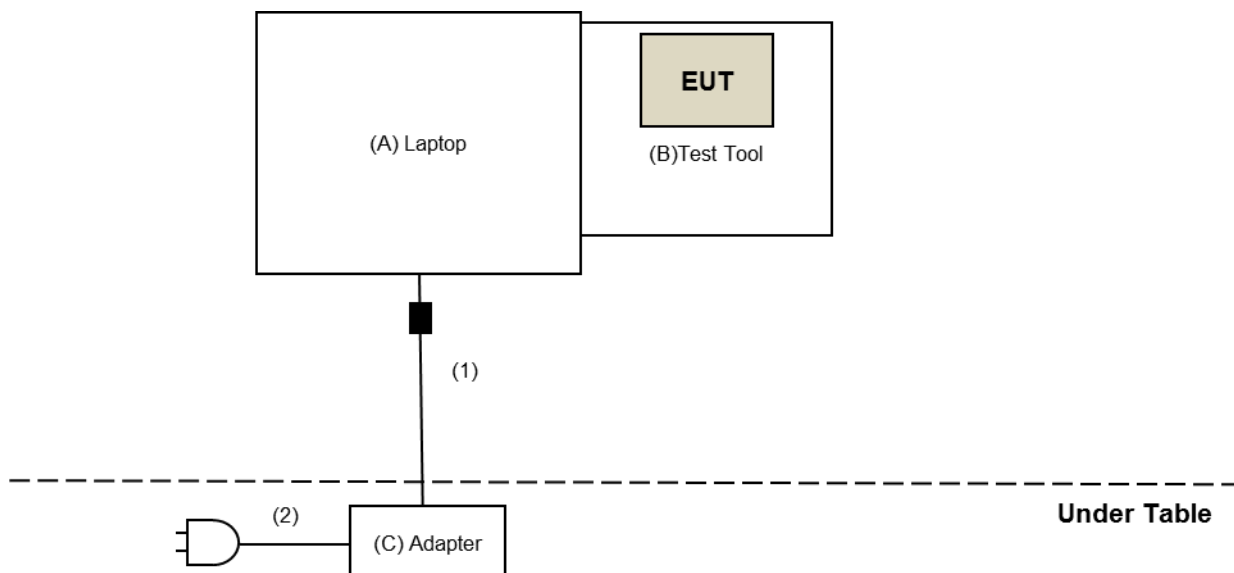
Note: The core is originally attached to the cable.

3.4.1 Configuration of System under Test

For AC Power Conducted Emissions test:



For Radiated Emissions test:



3.5 General Description of Applied Standards and references

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards and references:

Test standard:

FCC Part 15, Subpart C (15.247)

ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

References Test Guidance:

KDB 558074 D01 15.247 Meas Guidance v05r02

All test items have been performed as a reference to the above KDB test guidance.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB 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

NOTE:

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 1000MHz, 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 20dB under any condition of modulation.

4.1.2 Test Instruments

For Radiated Emission and Bandedge test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESR7	102026	Apr. 22, 2020	Apr. 21, 2021
Spectrum Analyzer Keysight	N9030B	MY57141948	May 22, 2020	May 21, 2021
Pre-Amplifier EMCi	EMC001340	980142	May 25, 2020	May 24, 2021
Loop Antenna Electro-Metrics	EM-6879	264	Feb. 18, 2020	Feb. 17, 2021
RF Cable	NA	LOOPCAB-001	Jan. 08, 2020	Jan. 07, 2021
RF Cable	NA	LOOPCAB-002	Jan. 08, 2020	Jan. 07, 2021
Pre-Amplifier EMCi	EMC330N	980538	Apr. 28, 2020	Apr. 27, 2021
Trilog Broadband Antenna SCHWARZBECK	VULB9168	9168-0842	Nov. 08, 2019	Nov. 07, 2020
RF Cable	8D	966-5-1	Apr. 29, 2020	Apr. 28, 2021
RF Cable	8D	966-5-2	Apr. 29, 2020	Apr. 28, 2021
RF Cable	8D	966-5-3	Apr. 29, 2020	Apr. 28, 2021
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-02	Jan. 14, 2020	Jan. 13, 2021
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-1819	Nov. 24, 2019	Nov. 23, 2020
Pre-Amplifier EMCi	EMC12630SE	980509	Apr. 29, 2020	Apr. 28, 2021
RF Cable EMCi	EMC104-SM-SM-1500	180503	Apr. 29, 2020	Apr. 28, 2021
RF Cable EMCi	EMC104-SM-SM-2000	180501	Apr. 29, 2020	Apr. 28, 2021
RF Cable EMCi	EMC104-SM-SM-6000	180506	Apr. 29, 2020	Apr. 28, 2021
Pre-Amplifier EMCi	EMC184045SE	980387	Jan. 15, 2020	Jan. 14, 2021
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 24, 2019	Nov. 23, 2020
RF Cable	EMC102-KM-KM-1200	160924	Jan. 15, 2020	Jan. 14, 2021
RF Cable	EMC-KM-KM-4000	200214	Mar. 11, 2020	Mar. 10, 2021
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. 5.
3. Tested Date: June 25 to Aug. 17, 2020

For other test items:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	100964	May 29, 2020	May 28, 2021
Power meter Anritsu	ML2495A	1529002	July 22, 2020	July 21, 2021
Power sensor Anritsu	MA2411B	1339443	July 22, 2020	July 21, 2021
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 14, 2020	Apr. 13, 2021
Software	ADT_RF Test Software V6.6.5.4	NA	NA	NA

- NOTE:**
1. The test was performed in Oven room 2.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. Tested Date: Aug. 31 to Sep. 01, 2020

4.1.3 Test Procedures

For Radiated emission below 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. 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.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) 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.
- f. The test-receiver system was set to peak and average detect 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.

Note:

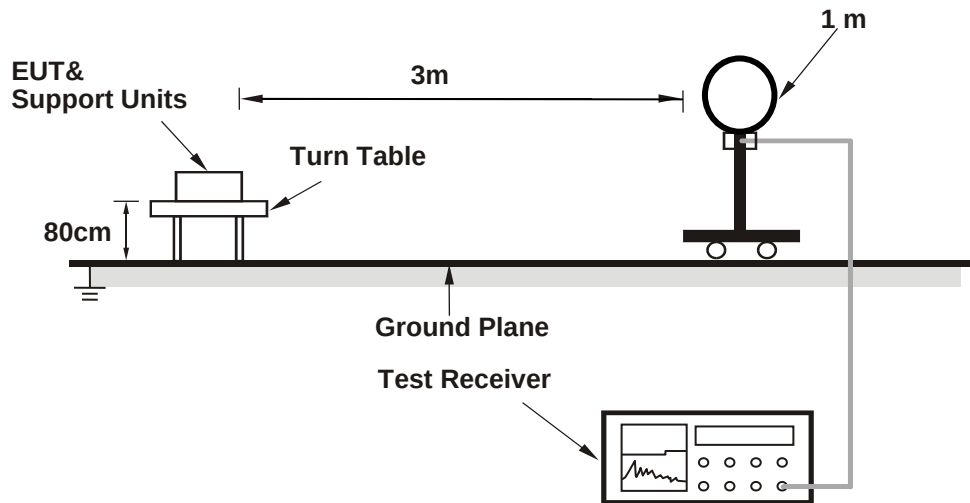
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

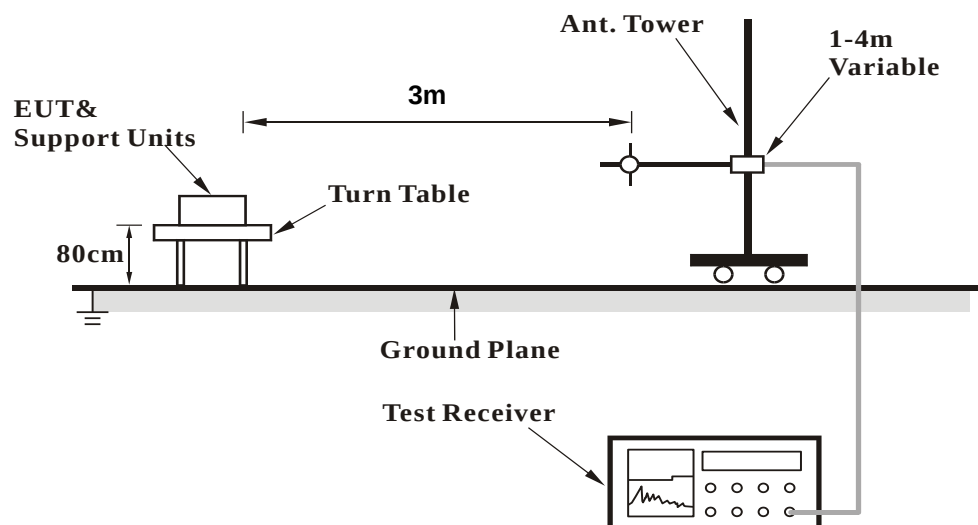
No deviation.

4.1.5 Test Setup

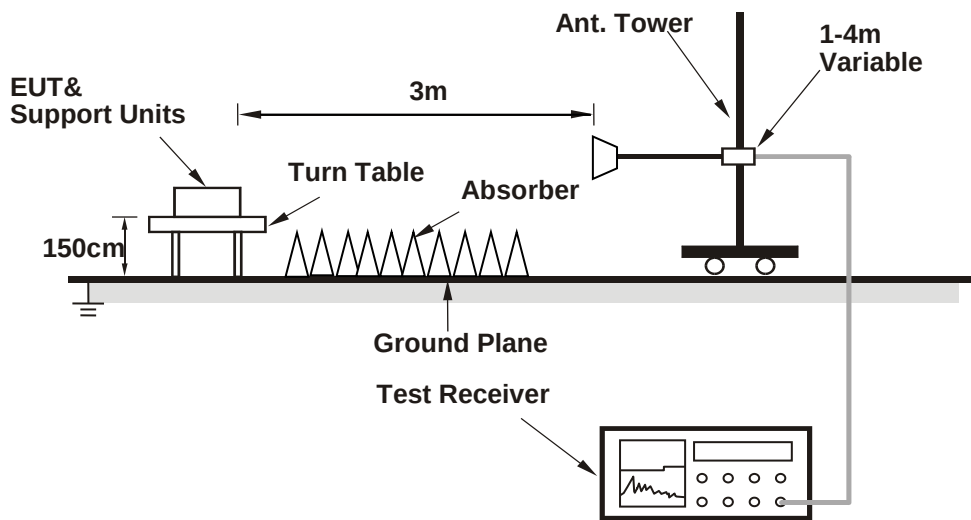
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

- Placed the EUT on the testing table.
- Controlling software (RF test tool.exe (5.3.1.42)) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results (Mode 1)

Dipole Antenna

Above 1GHz Data :

BT-LE 1M

Channel	TX Channel 0	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	2369.46	57.0 PK	74.0	-17.0	1.25 H	89	60.1	-3.1
2	2369.46	45.6 AV	54.0	-8.4	1.25 H	89	48.7	-3.1
3	*2402.00	97.9 PK			1.25 H	89	101.0	-3.1
4	*2402.00	96.7 AV			1.25 H	89	99.8	-3.1
5	4804.00	44.5 PK	74.0	-29.5	1.79 H	221	43.5	1.0
6	4804.00	38.0 AV	54.0	-16.0	1.79 H	221	37.0	1.0
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	2382.29	57.2 PK	74.0	-16.8	1.10 V	8	60.3	-3.1
2	2382.29	46.0 AV	54.0	-8.0	1.10 V	8	49.1	-3.1
3	*2402.00	104.3 PK			1.10 V	8	107.4	-3.1
4	*2402.00	103.6 AV			1.10 V	8	106.7	-3.1
5	4804.00	44.4 PK	74.0	-29.6	1.46 V	9	43.4	1.0
6	4804.00	37.3 AV	54.0	-16.7	1.46 V	9	36.3	1.0

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.
5. " * " : Fundamental frequency.

Channel	TX Channel 19	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	*2440.00	97.9 PK			1.28 H	80	100.9	-3.0
2	*2440.00	96.5 AV			1.28 H	80	99.5	-3.0
3	4880.00	44.7 PK	74.0	-29.3	1.76 H	221	43.8	0.9
4	4880.00	38.2 AV	54.0	-15.8	1.76 H	221	37.3	0.9
5	7320.00	45.4 PK	74.0	-28.6	1.53 H	72	38.4	7.0
6	7320.00	32.6 AV	54.0	-21.4	1.53 H	72	25.6	7.0
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	*2440.00	104.5 PK			1.11 V	6	107.5	-3.0
2	*2440.00	103.7 AV			1.11 V	6	106.7	-3.0
3	4880.00	44.2 PK	74.0	-29.8	1.46 V	15	43.3	0.9
4	4880.00	37.4 AV	54.0	-16.6	1.46 V	15	36.5	0.9
5	7320.00	45.3 PK	74.0	-28.7	1.47 V	72	38.3	7.0
6	7320.00	32.5 AV	54.0	-21.5	1.47 V	72	25.5	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.
5. " * ": Fundamental frequency.

Channel	TX Channel 39	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	*2480.00	98.0 PK			1.14 H	92	101.1	-3.1
2	*2480.00	96.8 AV			1.14 H	92	99.9	-3.1
3	2493.85	57.4 PK	74.0	-16.6	1.14 H	92	60.5	-3.1
4	2493.85	45.9 AV	54.0	-8.1	1.14 H	92	49.0	-3.1
5	4960.00	44.9 PK	74.0	-29.1	1.76 H	209	43.8	1.1
6	4960.00	38.2 AV	54.0	-15.8	1.76 H	209	37.1	1.1
7	7440.00	45.6 PK	74.0	-28.4	1.49 H	88	38.5	7.1
8	7440.00	32.9 AV	54.0	-21.1	1.49 H	88	25.8	7.1
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	*2480.00	105.9 PK			1.14 V	22	109.0	-3.1
2	*2480.00	105.2 AV			1.14 V	22	108.3	-3.1
3	2487.58	57.0 PK	74.0	-17.0	1.14 V	22	60.1	-3.1
4	2487.58	45.5 AV	54.0	-8.5	1.14 V	22	48.6	-3.1
5	4960.00	43.7 PK	74.0	-30.3	1.54 V	13	42.6	1.1
6	4960.00	36.9 AV	54.0	-17.1	1.54 V	13	35.8	1.1
7	7440.00	46.2 PK	74.0	-27.8	1.53 V	48	39.1	7.1
8	7440.00	33.0 AV	54.0	-21.0	1.53 V	48	25.9	7.1

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.
5. " * ": Fundamental frequency.

BT-LE 2M

Channel	TX Channel 1	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	2370.05	57.5 PK	74.0	-16.5	1.09 H	89	60.6	-3.1
2	2370.05	46.1 AV	54.0	-7.9	1.09 H	89	49.2	-3.1
3	*2404.00	98.0 PK			1.09 H	89	101.1	-3.1
4	*2404.00	95.9 AV			1.09 H	89	99.0	-3.1
5	4808.00	44.9 PK	74.0	-29.1	1.83 H	204	43.9	1.0
6	4808.00	38.2 AV	54.0	-15.8	1.83 H	204	37.2	1.0
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	2372.87	56.7 PK	74.0	-17.3	1.14 V	19	59.8	-3.1
2	2372.87	45.8 AV	54.0	-8.2	1.14 V	19	48.9	-3.1
3	*2404.00	104.6 PK			1.14 V	19	107.7	-3.1
4	*2404.00	102.7 AV			1.14 V	19	105.8	-3.1
5	4808.00	43.2 PK	74.0	-30.8	1.44 V	18	42.2	1.0
6	4808.00	36.6 AV	54.0	-17.4	1.44 V	18	35.6	1.0

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.
5. " * ": Fundamental frequency.

Channel	TX Channel 19	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	*2440.00	97.8 PK			1.09 H	92	100.8	-3.0
2	*2440.00	95.9 AV			1.09 H	92	98.9	-3.0
3	4880.00	44.8 PK	74.0	-29.2	1.78 H	205	43.9	0.9
4	4880.00	38.0 AV	54.0	-16.0	1.78 H	205	37.1	0.9
5	7320.00	45.1 PK	74.0	-28.9	1.50 H	75	38.1	7.0
6	7320.00	32.3 AV	54.0	-21.7	1.50 H	75	25.3	7.0
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	*2440.00	105.2 PK			1.14 V	12	108.2	-3.0
2	*2440.00	103.1 AV			1.14 V	12	106.1	-3.0
3	4880.00	44.1 PK	74.0	-29.9	1.44 V	20	43.2	0.9
4	4880.00	37.1 AV	54.0	-16.9	1.44 V	20	36.2	0.9
5	7320.00	46.2 PK	74.0	-27.8	1.51 V	41	39.2	7.0
6	7320.00	32.9 AV	54.0	-21.1	1.51 V	41	25.9	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.
5. " * ": Fundamental frequency.

Channel	TX Channel 38	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	*2478.00	98.5 PK			1.14 H	91	101.6	-3.1
2	*2478.00	96.5 AV			1.14 H	91	99.6	-3.1
3	2485.52	56.4 PK	74.0	-17.6	1.14 H	91	59.5	-3.1
4	2485.52	46.0 AV	54.0	-8.0	1.14 H	91	49.1	-3.1
5	4956.00	44.7 PK	74.0	-29.3	1.75 H	222	43.6	1.1
6	4956.00	38.0 AV	54.0	-16.0	1.75 H	222	36.9	1.1
7	7434.00	45.1 PK	74.0	-28.9	1.47 H	83	38.0	7.1
8	7434.00	32.5 AV	54.0	-21.5	1.47 H	83	25.4	7.1
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	*2478.00	107.8 PK			1.06 V	11	110.9	-3.1
2	*2478.00	105.9 AV			1.06 V	11	109.0	-3.1
3	2498.23	57.3 PK	74.0	-16.7	1.06 V	11	60.4	-3.1
4	2498.23	46.6 AV	54.0	-7.4	1.06 V	11	49.7	-3.1
5	4956.00	44.0 PK	74.0	-30.0	1.48 V	16	42.9	1.1
6	4956.00	37.1 AV	54.0	-16.9	1.48 V	16	36.0	1.1
7	7434.00	45.8 PK	74.0	-28.2	1.43 V	42	38.7	7.1
8	7434.00	33.1 AV	54.0	-20.9	1.43 V	42	26.0	7.1

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.
5. " * ": Fundamental frequency.

Below 1GHz Data:

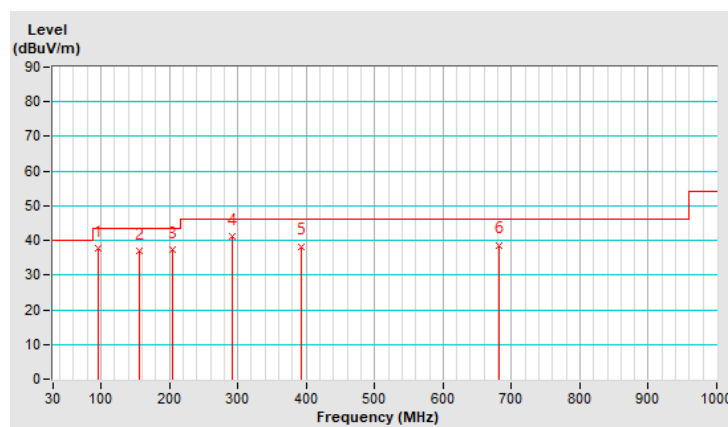
BT-LE 2M

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	95.70	37.9 QP	43.5	-5.6	3.02 H	356	55.7	-17.8
2	155.70	37.1 QP	43.5	-6.4	1.92 H	220	49.6	-12.5
3	204.60	37.4 QP	43.5	-6.1	1.06 H	247	53.5	-16.1
4	291.10	41.3 QP	46.0	-4.7	1.00 H	354	53.5	-12.2
5	393.00	38.3 QP	46.0	-7.7	1.06 H	125	48.0	-9.7
6	682.20	38.7 QP	46.0	-7.3	1.22 H	235	42.5	-3.8

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

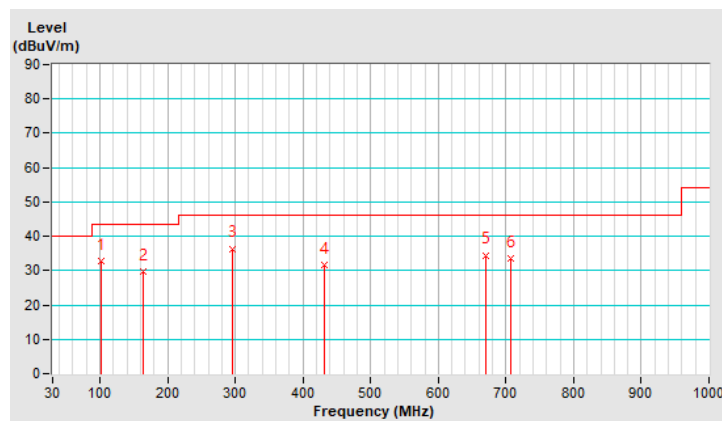


CHANNEL	TX Channel 19	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	102.60	32.7 QP	43.5	-10.8	4.00 V	113	49.3	-16.6
2	163.10	29.8 QP	43.5	-13.7	1.91 V	129	42.3	-12.5
3	295.00	36.4 QP	46.0	-9.6	1.97 V	274	48.5	-12.1
4	431.40	31.5 QP	46.0	-14.5	1.10 V	332	40.1	-8.6
5	669.70	34.5 QP	46.0	-11.5	1.22 V	351	38.6	-4.1
6	706.50	33.5 QP	46.0	-12.5	1.93 V	251	37.0	-3.5

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



PIFA Antenna

Above 1GHz Data:

BT-LE 1M

Channel	TX Channel 0	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	2370.15	56.2 PK	74.0	-17.8	1.70 H	218	59.3	-3.1
2	2370.15	45.3 AV	54.0	-8.7	1.70 H	218	48.4	-3.1
3	*2402.00	105.7 PK			1.70 H	218	108.8	-3.1
4	*2402.00	105.4 AV			1.70 H	218	108.5	-3.1
5	4804.00	44.2 PK	74.0	-29.8	1.63 H	220	43.2	1.0
6	4804.00	38.2 AV	54.0	-15.8	1.63 H	220	37.2	1.0
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	2388.35	56.4 PK	74.0	-17.6	1.90 V	205	59.5	-3.1
2	2388.35	45.2 AV	54.0	-8.8	1.90 V	205	48.3	-3.1
3	*2402.00	100.7 PK			1.90 V	205	103.8	-3.1
4	*2402.00	100.1 AV			1.90 V	205	103.2	-3.1
5	4804.00	45.3 PK	74.0	-28.7	1.50 V	6	44.3	1.0
6	4804.00	38.3 AV	54.0	-15.7	1.50 V	6	37.3	1.0

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.
5. " * ": Fundamental frequency.

Channel	TX Channel 19	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	*2440.00	103.7 PK			1.56 H	216	106.7	-3.0
2	*2440.00	102.7 AV			1.56 H	216	105.7	-3.0
3	4880.00	44.7 PK	74.0	-29.3	1.66 H	217	43.8	0.9
4	4880.00	38.0 AV	54.0	-16.0	1.66 H	217	37.1	0.9
5	7320.00	45.5 PK	74.0	-28.5	1.54 H	58	38.5	7.0
6	7320.00	32.9 AV	54.0	-21.1	1.54 H	58	25.9	7.0
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	*2440.00	100.7 PK			1.86 V	219	103.7	-3.0
2	*2440.00	100.1 AV			1.86 V	219	103.1	-3.0
3	4880.00	44.5 PK	74.0	-29.5	1.47 V	4	43.6	0.9
4	4880.00	37.4 AV	54.0	-16.6	1.47 V	4	36.5	0.9
5	7320.00	44.9 PK	74.0	-29.1	1.49 V	31	37.9	7.0
6	7320.00	32.3 AV	54.0	-21.7	1.49 V	31	25.3	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.
5. " * ": Fundamental frequency.

Channel	TX Channel 39	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	*2480.00	103.4 PK			1.54 H	213	106.5	-3.1
2	*2480.00	102.7 AV			1.54 H	213	105.8	-3.1
3	2498.97	56.6 PK	74.0	-17.4	1.54 H	213	59.7	-3.1
4	2498.97	44.5 AV	54.0	-9.5	1.54 H	213	47.6	-3.1
5	4960.00	45.0 PK	74.0	-29.0	1.76 H	208	43.9	1.1
6	4960.00	38.1 AV	54.0	-15.9	1.76 H	208	37.0	1.1
7	7440.00	45.1 PK	74.0	-28.9	1.53 H	50	38.0	7.1
8	7440.00	32.6 AV	54.0	-21.4	1.53 H	50	25.5	7.1
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	*2480.00	100.2 PK			1.90 V	196	103.3	-3.1
2	*2480.00	99.5 AV			1.90 V	196	102.6	-3.1
3	2498.06	56.0 PK	74.0	-18.0	1.90 V	196	59.1	-3.1
4	2498.06	45.1 AV	54.0	-8.9	1.90 V	196	48.2	-3.1
5	4960.00	44.0 PK	74.0	-30.0	1.49 V	32	42.9	1.1
6	4960.00	37.1 AV	54.0	-16.9	1.49 V	32	36.0	1.1
7	7440.00	45.9 PK	74.0	-28.1	1.42 V	7	38.8	7.1
8	7440.00	32.9 AV	54.0	-21.1	1.42 V	7	25.8	7.1

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.
5. " * ": Fundamental frequency.

BT-LE 2M

Channel	TX Channel 1	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	2375.33	56.7 PK	74.0	-17.3	1.50 H	213	59.8	-3.1
2	2375.33	45.6 AV	54.0	-8.4	1.50 H	213	48.7	-3.1
3	*2404.00	104.7 PK			1.50 H	213	107.8	-3.1
4	*2404.00	103.4 AV			1.50 H	213	106.5	-3.1
5	4808.00	45.0 PK	74.0	-29.0	1.63 H	212	44.0	1.0
6	4808.00	38.6 AV	54.0	-15.4	1.63 H	212	37.6	1.0
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	2373.42	56.5 PK	74.0	-17.5	2.10 V	197	59.6	-3.1
2	2373.42	45.3 AV	54.0	-8.7	2.10 V	197	48.4	-3.1
3	*2404.00	101.0 PK			2.10 V	197	104.1	-3.1
4	*2404.00	99.2 AV			2.10 V	197	102.3	-3.1
5	4808.00	45.0 PK	74.0	-29.0	1.40 V	10	44.0	1.0
6	4808.00	38.1 AV	54.0	-15.9	1.40 V	10	37.1	1.0

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.
5. " * ": Fundamental frequency.

Channel	TX Channel 19	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	*2440.00	103.6 PK			1.55 H	223	106.6	-3.0
2	*2440.00	102.1 AV			1.55 H	223	105.1	-3.0
3	4880.00	44.4 PK	74.0	-29.6	1.74 H	213	43.5	0.9
4	4880.00	37.7 AV	54.0	-16.3	1.74 H	213	36.8	0.9
5	7320.00	45.3 PK	74.0	-28.7	1.57 H	46	38.3	7.0
6	7320.00	33.0 AV	54.0	-21.0	1.57 H	46	26.0	7.0
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	*2440.00	101.4 PK			2.04 V	199	104.4	-3.0
2	*2440.00	99.7 AV			2.04 V	199	102.7	-3.0
3	4880.00	45.0 PK	74.0	-29.0	1.44 V	24	44.1	0.9
4	4880.00	37.7 AV	54.0	-16.3	1.44 V	24	36.8	0.9
5	7320.00	45.4 PK	74.0	-28.6	1.56 V	31	38.4	7.0
6	7320.00	32.7 AV	54.0	-21.3	1.56 V	31	25.7	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.
5. " * ": Fundamental frequency.

Channel	TX Channel 38	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	*2478.00	103.2 PK			1.56 H	212	106.3	-3.1
2	*2478.00	101.6 AV			1.56 H	212	104.7	-3.1
3	2497.45	55.3 PK	74.0	-18.7	1.56 H	212	58.4	-3.1
4	2497.45	45.6 AV	54.0	-8.4	1.56 H	212	48.7	-3.1
5	4956.00	44.4 PK	74.0	-29.6	1.65 H	197	43.3	1.1
6	4956.00	37.7 AV	54.0	-16.3	1.65 H	197	36.6	1.1
7	7434.00	45.0 PK	74.0	-29.0	1.51 H	54	37.9	7.1
8	7434.00	32.4 AV	54.0	-21.6	1.51 H	54	25.3	7.1
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	*2478.00	99.9 PK			1.92 V	193	103.0	-3.1
2	*2478.00	98.3 AV			1.92 V	193	101.4	-3.1
3	2490.45	56.1 PK	74.0	-17.9	1.92 V	193	59.2	-3.1
4	2490.45	45.4 AV	54.0	-8.6	1.92 V	193	48.5	-3.1
5	4956.00	44.2 PK	74.0	-29.8	1.47 V	18	43.1	1.1
6	4956.00	37.1 AV	54.0	-16.9	1.47 V	18	36.0	1.1
7	7434.00	45.3 PK	74.0	-28.7	1.46 V	20	38.2	7.1
8	7434.00	32.6 AV	54.0	-21.4	1.46 V	20	25.5	7.1

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.
5. " * ": Fundamental frequency.

Below 1GHz Data:

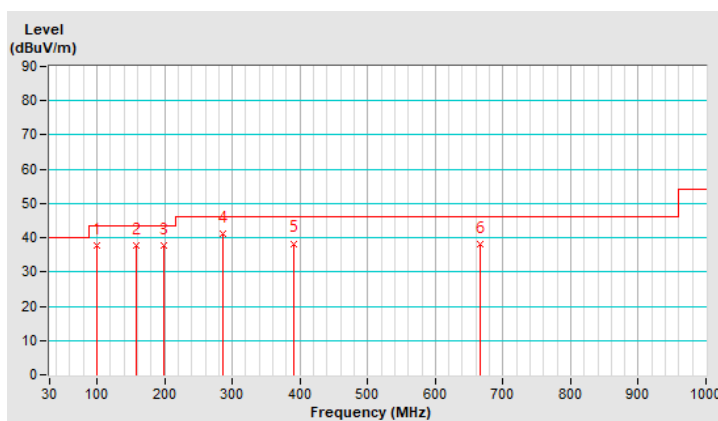
BT-LE 2M

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	99.70	37.8 QP	43.5	-5.7	3.01 H	346	54.9	-17.1
2	158.60	37.9 QP	43.5	-5.6	1.99 H	230	50.4	-12.5
3	199.60	37.8 QP	43.5	-5.7	1.05 H	215	53.9	-16.1
4	286.80	41.3 QP	46.0	-4.7	1.10 H	360	53.5	-12.2
5	390.70	38.3 QP	46.0	-7.7	1.02 H	142	48.1	-9.8
6	666.40	38.0 QP	46.0	-8.0	1.15 H	236	42.1	-4.1

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

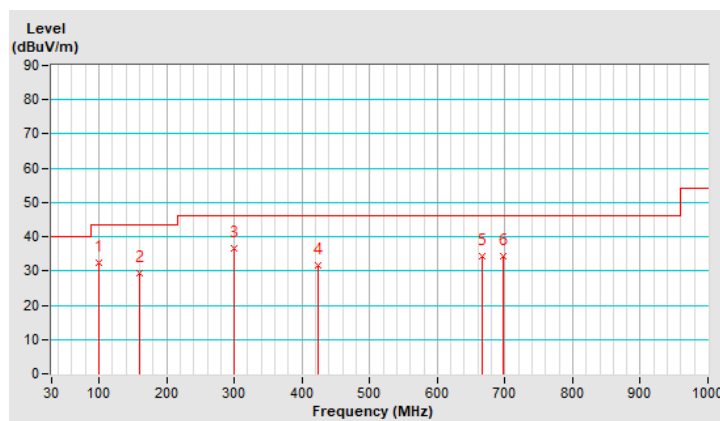


CHANNEL	TX Channel 19	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	99.90	32.4 QP	43.5	-11.1	3.87 V	79	49.4	-17.0
2	159.70	29.5 QP	43.5	-14.0	2.05 V	117	41.9	-12.4
3	298.90	36.5 QP	46.0	-9.5	2.04 V	289	48.5	-12.0
4	424.60	31.8 QP	46.0	-14.2	1.11 V	328	40.6	-8.8
5	666.60	34.4 QP	46.0	-11.6	1.22 V	295	38.5	-4.1
6	696.70	34.2 QP	46.0	-11.8	1.96 V	222	37.8	-3.6

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.1.8 Test Results (Mode 2)

Dipole Antenna

Above 1GHz Data :

BT-LE 1M

Channel	TX Channel 0	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	2365.93	57.1 PK	74.0	-16.9	1.26 H	90	60.1	-3.0
2	2365.93	45.7 AV	54.0	-8.3	1.26 H	90	48.7	-3.0
3	*2402.00	102.5 PK			1.26 H	90	105.6	-3.1
4	*2402.00	101.7 AV			1.26 H	90	104.8	-3.1
5	4804.00	45.3 PK	74.0	-28.7	1.75 H	207	44.3	1.0
6	4804.00	38.4 AV	54.0	-15.6	1.75 H	207	37.4	1.0
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	2383.32	56.9 PK	74.0	-17.1	1.12 V	16	60.0	-3.1
2	2383.32	45.5 AV	54.0	-8.5	1.12 V	16	48.6	-3.1
3	*2402.00	108.5 PK			1.12 V	16	111.6	-3.1
4	*2402.00	108.0 AV			1.12 V	16	111.1	-3.1
5	4804.00	43.0 PK	74.0	-31.0	1.56 V	55	42.0	1.0
6	4804.00	36.9 AV	54.0	-17.1	1.56 V	55	35.9	1.0

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.
5. " * ": Fundamental frequency.

Channel	TX Channel 19	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	*2440.00	102.4 PK			1.22 H	97	105.4	-3.0
2	*2440.00	101.6 AV			1.22 H	97	104.6	-3.0
3	4880.00	45.2 PK	74.0	-28.8	1.73 H	225	44.3	0.9
4	4880.00	38.7 AV	54.0	-15.3	1.73 H	225	37.8	0.9
5	7320.00	45.9 PK	74.0	-28.1	1.45 H	86	38.9	7.0
6	7320.00	33.5 AV	54.0	-20.5	1.45 H	86	26.5	7.0
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	*2440.00	110.7 PK			1.06 V	21	113.7	-3.0
2	*2440.00	110.0 AV			1.06 V	21	113.0	-3.0
3	4880.00	42.8 PK	74.0	-31.2	1.57 V	54	41.9	0.9
4	4880.00	36.6 AV	54.0	-17.4	1.57 V	54	35.7	0.9
5	7320.00	46.3 PK	74.0	-27.7	1.38 V	50	39.3	7.0
6	7320.00	33.0 AV	54.0	-21.0	1.38 V	50	26.0	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.
5. " * " : Fundamental frequency.

Channel	TX Channel 39	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	*2480.00	101.9 PK			1.23 H	92	105.0	-3.1
2	*2480.00	101.1 AV			1.23 H	92	104.2	-3.1
3	2489.07	56.9 PK	74.0	-17.1	1.23 H	92	60.0	-3.1
4	2489.07	45.9 AV	54.0	-8.1	1.23 H	92	49.0	-3.1
5	4960.00	45.8 PK	74.0	-28.2	1.72 H	225	44.7	1.1
6	4960.00	38.8 AV	54.0	-15.2	1.72 H	225	37.7	1.1
7	7440.00	46.1 PK	74.0	-27.9	1.52 H	71	39.0	7.1
8	7440.00	33.4 AV	54.0	-20.6	1.52 H	71	26.3	7.1
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	*2480.00	110.9 PK			1.04 V	13	114.0	-3.1
2	*2480.00	110.3 AV			1.04 V	13	113.4	-3.1
3	2483.50	57.3 PK	74.0	-16.7	1.04 V	13	60.4	-3.1
4	2483.50	47.0 AV	54.0	-7.0	1.04 V	13	50.1	-3.1
5	4960.00	43.7 PK	74.0	-30.3	1.55 V	50	42.6	1.1
6	4960.00	37.1 AV	54.0	-16.9	1.55 V	50	36.0	1.1
7	7440.00	45.9 PK	74.0	-28.1	1.36 V	34	38.8	7.1
8	7440.00	32.6 AV	54.0	-21.4	1.36 V	34	25.5	7.1

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.
5. " * ": Fundamental frequency.

BT-LE 2M

Channel	TX Channel 1	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	2371.94	58.0 PK	74.0	-16.0	1.22 H	93	61.1	-3.1
2	2371.94	46.1 AV	54.0	-7.9	1.22 H	93	49.2	-3.1
3	*2404.00	100.1 PK			1.22 H	93	103.2	-3.1
4	*2404.00	98.1 AV			1.22 H	93	101.2	-3.1
5	4808.00	45.3 PK	74.0	-28.7	1.77 H	221	44.3	1.0
6	4808.00	38.3 AV	54.0	-15.7	1.77 H	221	37.3	1.0
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	2363.48	57.2 PK	74.0	-16.8	1.12 V	16	60.2	-3.0
2	2363.48	46.0 AV	54.0	-8.0	1.12 V	16	49.0	-3.0
3	*2404.00	108.3 PK			1.12 V	16	111.4	-3.1
4	*2404.00	106.5 AV			1.12 V	16	109.6	-3.1
5	4808.00	42.7 PK	74.0	-31.3	1.53 V	50	41.7	1.0
6	4808.00	36.5 AV	54.0	-17.5	1.53 V	50	35.5	1.0

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.
5. " * ": Fundamental frequency.

Channel	TX Channel 19	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	*2440.00	100.0 PK			1.27 H	81	103.0	-3.0
2	*2440.00	98.2 AV			1.27 H	81	101.2	-3.0
3	4880.00	45.6 PK	74.0	-28.4	1.79 H	217	44.7	0.9
4	4880.00	38.8 AV	54.0	-15.2	1.79 H	217	37.9	0.9
5	7320.00	46.1 PK	74.0	-27.9	1.52 H	72	39.1	7.0
6	7320.00	33.5 AV	54.0	-20.5	1.52 H	72	26.5	7.0
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	*2440.00	108.3 PK			1.12 V	0	111.3	-3.0
2	*2440.00	106.7 AV			1.12 V	0	109.7	-3.0
3	4880.00	43.8 PK	74.0	-30.2	1.48 V	59	42.9	0.9
4	4880.00	37.2 AV	54.0	-16.8	1.48 V	59	36.3	0.9
5	7320.00	46.7 PK	74.0	-27.3	1.37 V	51	39.7	7.0
6	7320.00	33.1 AV	54.0	-20.9	1.37 V	51	26.1	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.
5. " * ": Fundamental frequency.

Channel	TX Channel 38	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	*2478.00	101.6 PK			1.26 H	94	104.7	-3.1
2	*2478.00	100.0 AV			1.26 H	94	103.1	-3.1
3	2489.75	56.5 PK	74.0	-17.5	1.26 H	94	59.6	-3.1
4	2489.75	45.9 AV	54.0	-8.1	1.26 H	94	49.0	-3.1
5	4956.00	44.8 PK	74.0	-29.2	1.80 H	218	43.7	1.1
6	4956.00	38.3 AV	54.0	-15.7	1.80 H	218	37.2	1.1
7	7434.00	45.2 PK	74.0	-28.8	1.47 H	86	38.1	7.1
8	7434.00	32.9 AV	54.0	-21.1	1.47 H	86	25.8	7.1
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	*2478.00	111.2 PK			1.04 V	14	114.3	-3.1
2	*2478.00	109.7 AV			1.04 V	14	112.8	-3.1
3	2484.86	56.7 PK	74.0	-17.3	1.04 V	14	59.8	-3.1
4	2484.86	46.2 AV	54.0	-7.8	1.04 V	14	49.3	-3.1
5	4956.00	43.4 PK	74.0	-30.6	1.49 V	39	42.3	1.1
6	4956.00	37.3 AV	54.0	-16.7	1.49 V	39	36.2	1.1
7	7434.00	46.3 PK	74.0	-27.7	1.44 V	53	39.2	7.1
8	7434.00	32.7 AV	54.0	-21.3	1.44 V	53	25.6	7.1

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.
5. " * ": Fundamental frequency.

Below 1GHz Data:

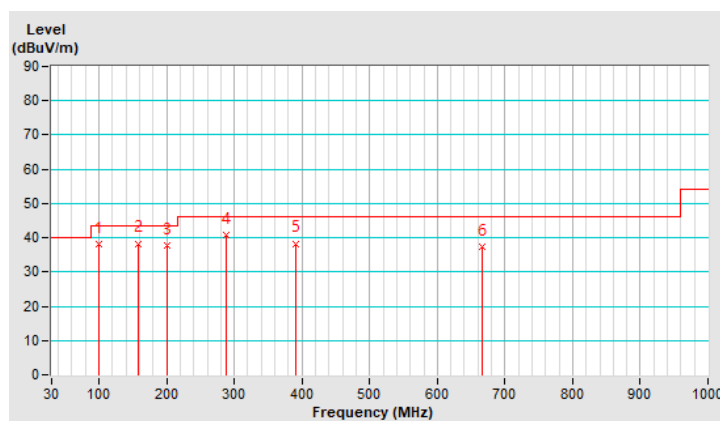
BT-LE 2M

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	99.60	38.0 QP	43.5	-5.5	1.99 H	326	55.1	-17.1
2	158.80	38.3 QP	43.5	-5.2	1.64 H	264	50.8	-12.5
3	200.00	37.6 QP	43.5	-5.9	1.05 H	237	53.7	-16.1
4	287.40	40.8 QP	46.0	-5.2	1.23 H	360	53.0	-12.2
5	390.50	38.3 QP	46.0	-7.7	1.08 H	130	48.2	-9.9
6	666.90	37.3 QP	46.0	-8.7	1.16 H	254	41.4	-4.1

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

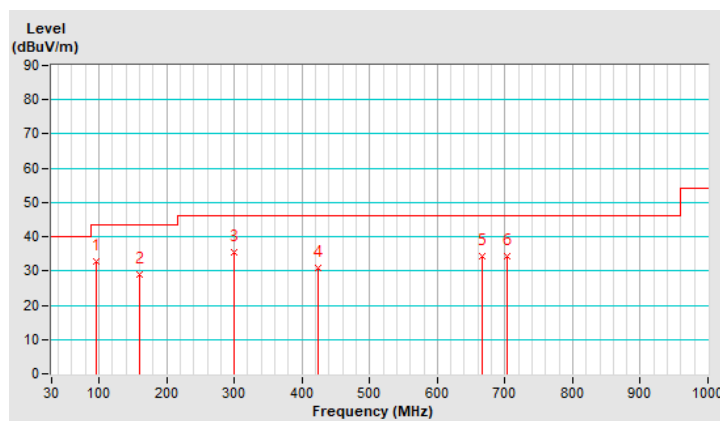


CHANNEL	TX Channel 19	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	95.60	32.8 QP	43.5	-10.7	1.68 V	102	50.6	-17.8
2	159.60	28.8 QP	43.5	-14.7	2.10 V	93	41.2	-12.4
3	299.10	35.6 QP	46.0	-10.4	1.68 V	301	47.6	-12.0
4	424.60	30.9 QP	46.0	-15.1	1.17 V	313	39.7	-8.8
5	666.80	34.2 QP	46.0	-11.8	1.18 V	312	38.3	-4.1
6	703.50	34.4 QP	46.0	-11.6	1.32 V	209	37.9	-3.5

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



PIFA Antenna

Above 1GHz Data:

BT-LE 1M

Channel	TX Channel 0	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	2378.11	56.8 PK	74.0	-17.2	1.66 H	217	59.9	-3.1
2	2378.11	45.2 AV	54.0	-8.8	1.66 H	217	48.3	-3.1
3	*2402.00	109.9 PK			1.66 H	217	113.0	-3.1
4	*2402.00	109.7 AV			1.66 H	217	112.8	-3.1
5	4804.00	44.6 PK	74.0	-29.4	1.73 H	197	43.6	1.0
6	4804.00	38.3 AV	54.0	-15.7	1.73 H	197	37.3	1.0
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	2366.87	56.2 PK	74.0	-17.8	1.19 V	204	59.3	-3.1
2	2366.87	45.4 AV	54.0	-8.6	1.19 V	204	48.5	-3.1
3	*2402.00	104.7 PK			1.19 V	204	107.8	-3.1
4	*2402.00	104.0 AV			1.19 V	204	107.1	-3.1
5	4804.00	45.3 PK	74.0	-28.7	1.48 V	8	44.3	1.0
6	4804.00	38.1 AV	54.0	-15.9	1.48 V	8	37.1	1.0

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.
5. " * ": Fundamental frequency.

Channel	TX Channel 19	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	*2440.00	107.1 PK			1.21 H	216	110.1	-3.0
2	*2440.00	106.7 AV			1.21 H	216	109.7	-3.0
3	4880.00	44.7 PK	74.0	-29.3	1.79 H	180	43.8	0.9
4	4880.00	38.4 AV	54.0	-15.6	1.79 H	180	37.5	0.9
5	7320.00	44.7 PK	74.0	-29.3	1.64 H	74	37.7	7.0
6	7320.00	32.2 AV	54.0	-21.8	1.64 H	74	25.2	7.0
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	*2440.00	103.7 PK			1.26 V	191	106.7	-3.0
2	*2440.00	102.9 AV			1.26 V	191	105.9	-3.0
3	4880.00	44.9 PK	74.0	-29.1	1.37 V	3	44.0	0.9
4	4880.00	37.8 AV	54.0	-16.2	1.37 V	3	36.9	0.9
5	7320.00	45.5 PK	74.0	-28.5	1.54 V	36	38.5	7.0
6	7320.00	33.3 AV	54.0	-20.7	1.54 V	36	26.3	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.
5. " * ": Fundamental frequency.

Channel	TX Channel 39	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	*2480.00	107.7 PK			1.24 H	210	110.8	-3.1
2	*2480.00	107.1 AV			1.24 H	210	110.2	-3.1
3	2483.74	56.2 PK	74.0	-17.8	1.24 H	210	59.3	-3.1
4	2483.74	45.3 AV	54.0	-8.7	1.24 H	210	48.4	-3.1
5	4960.00	44.5 PK	74.0	-29.5	1.73 H	172	43.4	1.1
6	4960.00	37.7 AV	54.0	-16.3	1.73 H	172	36.6	1.1
7	7440.00	44.8 PK	74.0	-29.2	1.63 H	78	37.7	7.1
8	7440.00	31.9 AV	54.0	-22.1	1.63 H	78	24.8	7.1
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	*2480.00	103.8 PK			1.24 V	193	106.9	-3.1
2	*2480.00	103.2 AV			1.24 V	193	106.3	-3.1
3	2489.85	55.8 PK	74.0	-18.2	1.24 V	193	58.9	-3.1
4	2489.85	45.2 AV	54.0	-8.8	1.24 V	193	48.3	-3.1
5	4960.00	44.8 PK	74.0	-29.2	1.42 V	21	43.7	1.1
6	4960.00	37.7 AV	54.0	-16.3	1.42 V	21	36.6	1.1
7	7440.00	45.2 PK	74.0	-28.8	1.55 V	41	38.1	7.1
8	7440.00	32.9 AV	54.0	-21.1	1.55 V	41	25.8	7.1

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.
5. " * ": Fundamental frequency.

BT-LE 2M

Channel	TX Channel 1	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	2362.84	56.6 PK	74.0	-17.4	1.67 H	219	59.6	-3.0
2	2362.84	45.6 AV	54.0	-8.4	1.67 H	219	48.6	-3.0
3	*2404.00	110.1 PK			1.67 H	219	113.2	-3.1
4	*2404.00	108.3 AV			1.67 H	219	111.4	-3.1
5	4808.00	45.1 PK	74.0	-28.9	1.78 H	188	44.1	1.0
6	4808.00	38.5 AV	54.0	-15.5	1.78 H	188	37.5	1.0
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	2374.81	57.1 PK	74.0	-16.9	1.40 V	203	60.2	-3.1
2	2374.81	45.9 AV	54.0	-8.1	1.40 V	203	49.0	-3.1
3	*2404.00	104.4 PK			1.40 V	203	107.5	-3.1
4	*2404.00	102.8 AV			1.40 V	203	105.9	-3.1
5	4808.00	45.1 PK	74.0	-28.9	1.42 V	20	44.1	1.0
6	4808.00	37.9 AV	54.0	-16.1	1.42 V	20	36.9	1.0

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.
5. " * ": Fundamental frequency.

Channel	TX Channel 19	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	*2440.00	109.9 PK			1.68 H	217	112.9	-3.0
2	*2440.00	107.8 AV			1.68 H	217	110.8	-3.0
3	4880.00	45.0 PK	74.0	-29.0	1.77 H	195	44.1	0.9
4	4880.00	38.4 AV	54.0	-15.6	1.77 H	195	37.5	0.9
5	7320.00	44.7 PK	74.0	-29.3	1.63 H	71	37.7	7.0
6	7320.00	32.2 AV	54.0	-21.8	1.63 H	71	25.2	7.0
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	*2440.00	104.2 PK			1.42 V	201	107.2	-3.0
2	*2440.00	102.6 AV			1.42 V	201	105.6	-3.0
3	4880.00	44.9 PK	74.0	-29.1	1.42 V	2	44.0	0.9
4	4880.00	37.7 AV	54.0	-16.3	1.42 V	2	36.8	0.9
5	7320.00	44.7 PK	74.0	-29.3	1.45 V	27	37.7	7.0
6	7320.00	32.6 AV	54.0	-21.4	1.45 V	27	25.6	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.
5. " * ": Fundamental frequency.

Channel	TX Channel 38	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

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	*2478.00	108.3 PK			1.25 H	210	111.4	-3.1
2	*2478.00	106.4 AV			1.25 H	210	109.5	-3.1
3	2483.50	56.0 PK	74.0	-18.0	1.25 H	210	59.1	-3.1
4	2483.50	46.4 AV	54.0	-7.6	1.25 H	210	49.5	-3.1
5	4956.00	45.0 PK	74.0	-29.0	1.74 H	185	43.9	1.1
6	4956.00	38.3 AV	54.0	-15.7	1.74 H	185	37.2	1.1
7	7434.00	44.3 PK	74.0	-29.7	1.69 H	78	37.2	7.1
8	7434.00	31.4 AV	54.0	-22.6	1.69 H	78	24.3	7.1
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	*2478.00	104.2 PK			1.25 V	196	107.3	-3.1
2	*2478.00	102.4 AV			1.25 V	196	105.5	-3.1
3	2483.50	55.7 PK	74.0	-18.3	1.25 V	196	58.8	-3.1
4	2483.50	46.3 AV	54.0	-7.7	1.25 V	196	49.4	-3.1
5	4956.00	44.3 PK	74.0	-29.7	1.38 V	15	43.2	1.1
6	4956.00	37.5 AV	54.0	-16.5	1.38 V	15	36.4	1.1
7	7434.00	44.9 PK	74.0	-29.1	1.53 V	50	37.8	7.1
8	7434.00	32.9 AV	54.0	-21.1	1.53 V	50	25.8	7.1

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.
5. " * ": Fundamental frequency.

Below 1GHz Data:

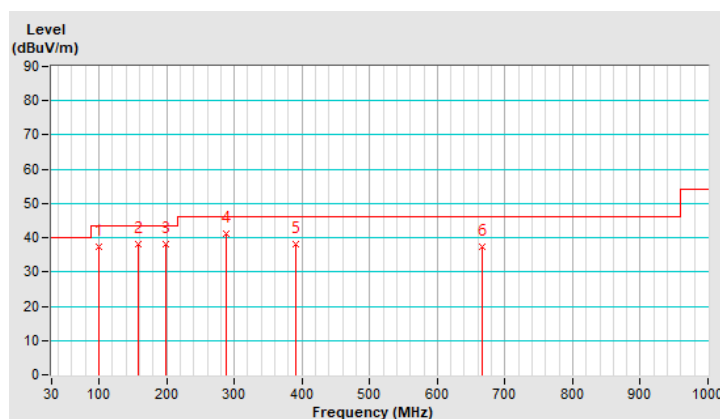
BT-LE 2M

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	99.00	37.4 QP	43.5	-6.1	2.05 H	338	54.6	-17.2
2	158.90	38.1 QP	43.5	-5.4	1.68 H	245	50.6	-12.5
3	199.60	38.1 QP	43.5	-5.4	1.00 H	236	54.2	-16.1
4	287.10	41.0 QP	46.0	-5.0	1.22 H	360	53.2	-12.2
5	391.20	38.0 QP	46.0	-8.0	1.14 H	126	47.8	-9.8
6	666.60	37.2 QP	46.0	-8.8	1.15 H	235	41.3	-4.1

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

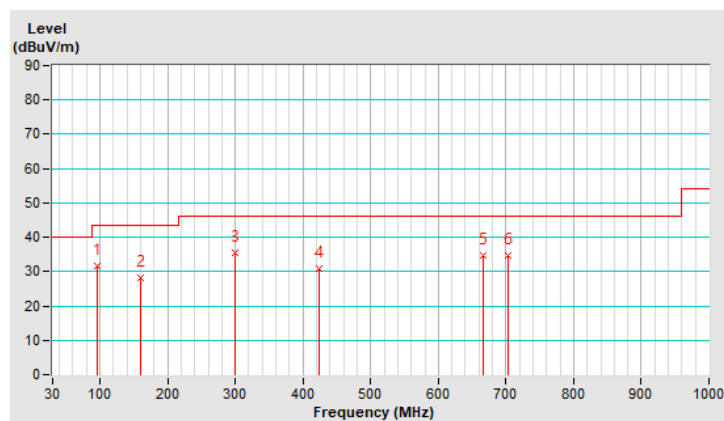


CHANNEL	TX Channel 19	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	95.60	31.8 QP	43.5	-11.7	1.72 V	87	49.6	-17.8
2	159.60	28.3 QP	43.5	-15.2	2.08 V	105	40.7	-12.4
3	299.10	35.4 QP	46.0	-10.6	1.71 V	299	47.4	-12.0
4	424.60	30.7 QP	46.0	-15.3	1.19 V	318	39.5	-8.8
5	666.80	34.6 QP	46.0	-11.4	1.18 V	314	38.7	-4.1
6	703.50	34.7 QP	46.0	-11.3	1.31 V	221	38.2	-3.5

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

Note: 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 0.50MHz.

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Oct. 23, 2019	Oct. 22, 2020
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 23, 2019	Oct. 22, 2020
Line-Impedance Stabilization Network (for Peripheral) R&S	ESH3-Z5	835239/001	Mar. 19, 2020	Mar. 18, 2021
50 ohms Terminator	50	3	Oct. 23, 2019	Oct. 22, 2020
RF Cable	5D-FB	COCCAB-001	Sep. 27, 2019	Sep. 26, 2020
Fixed attenuator EMCI	STI02-2200-10	005	Aug. 30, 2019	Aug. 29, 2020
Software BVADT	BVADT_Cond_V7.3.7.4	NA	NA	NA

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Conduction 1.
- 3 Tested Date: Aug. 13, 2020

4.2.3 Test Procedures

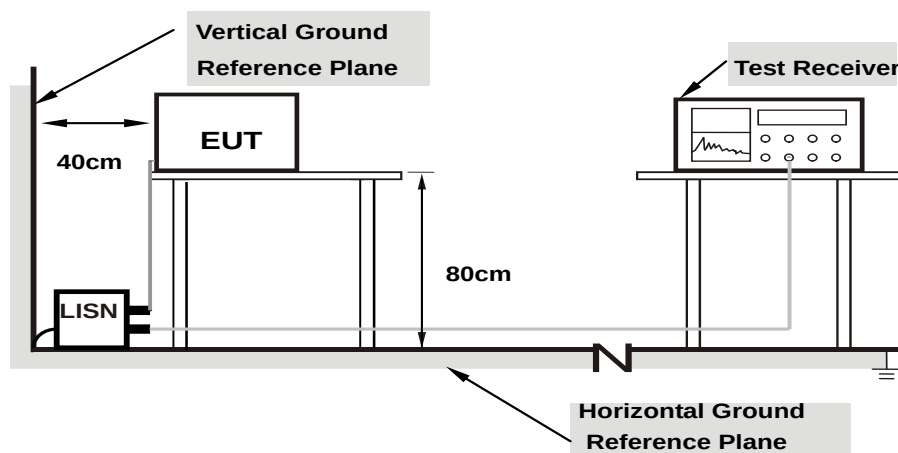
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 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).

4.2.6 EUT Operating Conditions

Same as 4.1.6.

4.2.7 Test Results (Mode 1)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17734	9.97	36.93	13.90	46.90	23.87	64.61	54.61	-17.71	-30.74
2	0.20078	9.97	34.82	15.88	44.79	25.85	63.58	53.58	-18.79	-27.73
3	0.37656	9.98	23.58	7.79	33.56	17.77	58.35	48.35	-24.79	-30.58
4	0.89609	10.01	22.65	8.41	32.66	18.42	56.00	46.00	-23.34	-27.58
5	18.21875	10.95	25.45	18.18	36.40	29.13	60.00	50.00	-23.60	-20.87
6	20.26953	11.06	24.64	17.83	35.70	28.89	60.00	50.00	-24.30	-21.11

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

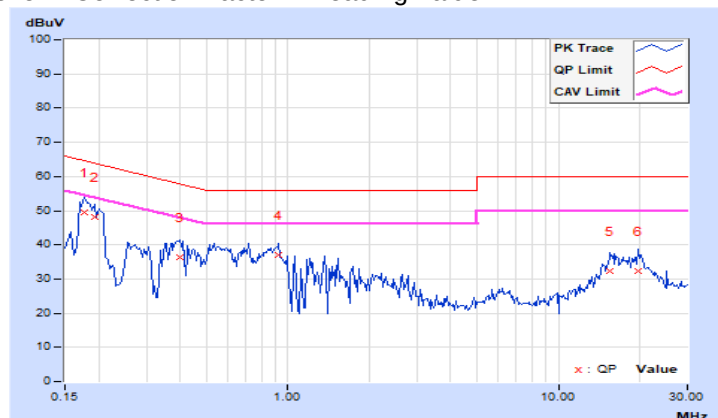


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17734	9.97	39.46	16.56	49.43	26.53	64.61	54.61	-15.18	-28.08
2	0.19297	9.97	38.09	16.92	48.06	26.89	63.91	53.91	-15.85	-27.02
3	0.40000	9.98	26.47	12.12	36.45	22.10	57.85	47.85	-21.40	-25.75
4	0.92734	10.02	27.10	11.33	37.12	21.35	56.00	46.00	-18.88	-24.65
5	15.47656	10.62	21.76	14.58	32.38	25.20	60.00	50.00	-27.62	-24.80
6	19.80859	10.79	21.47	14.99	32.26	25.78	60.00	50.00	-27.74	-24.22

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



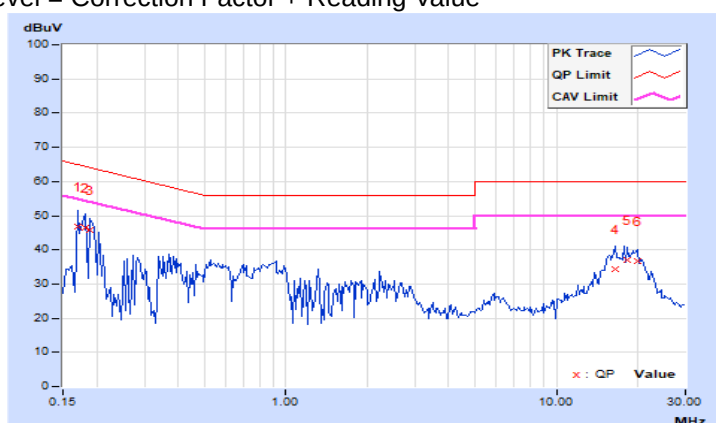
4.2.8 Test Results (Mode 2)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	----------	-------------------	--------------------------------

No	Freq. [MHz]	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16983	9.97	36.71	10.25	46.68	20.22	64.97	54.97	-18.29	-34.75
2	0.18120	9.97	36.52	14.50	46.49	24.47	64.43	54.43	-17.94	-29.96
3	0.18926	9.97	35.80	14.78	45.77	24.75	64.07	54.07	-18.30	-29.32
4	16.46477	10.85	23.39	16.45	34.24	27.30	60.00	50.00	-25.76	-22.70
5	18.22269	10.95	26.05	18.13	37.00	29.08	60.00	50.00	-23.00	-20.92
6	20.06245	11.05	25.61	18.37	36.66	29.42	60.00	50.00	-23.34	-20.58

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

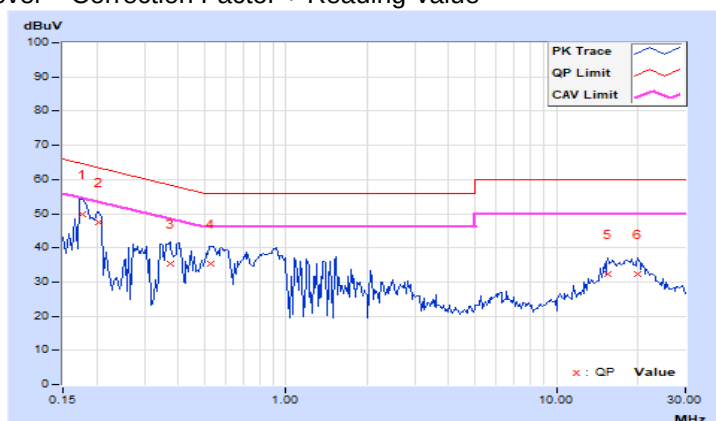


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

No	Freq. [MHz]	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17764	9.97	39.80	16.50	49.77	26.47	64.60	54.60	-14.83	-28.13
2	0.20423	9.97	37.37	17.29	47.34	27.26	63.44	53.44	-16.10	-26.18
3	0.37240	9.98	25.30	8.71	35.28	18.69	58.45	48.45	-23.17	-29.76
4	0.52841	9.99	25.40	6.80	35.39	16.79	56.00	46.00	-20.61	-29.21
5	15.55826	10.62	21.61	15.79	32.23	26.41	60.00	50.00	-27.77	-23.59
6	19.92121	10.80	21.51	14.51	32.31	25.31	60.00	50.00	-27.69	-24.69

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

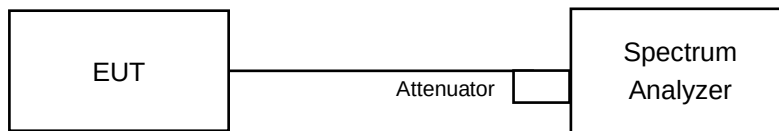


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

- Set resolution bandwidth (RBW) = 100kHz
- 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

4.3.5 Deviation from Test Standard

No deviation.

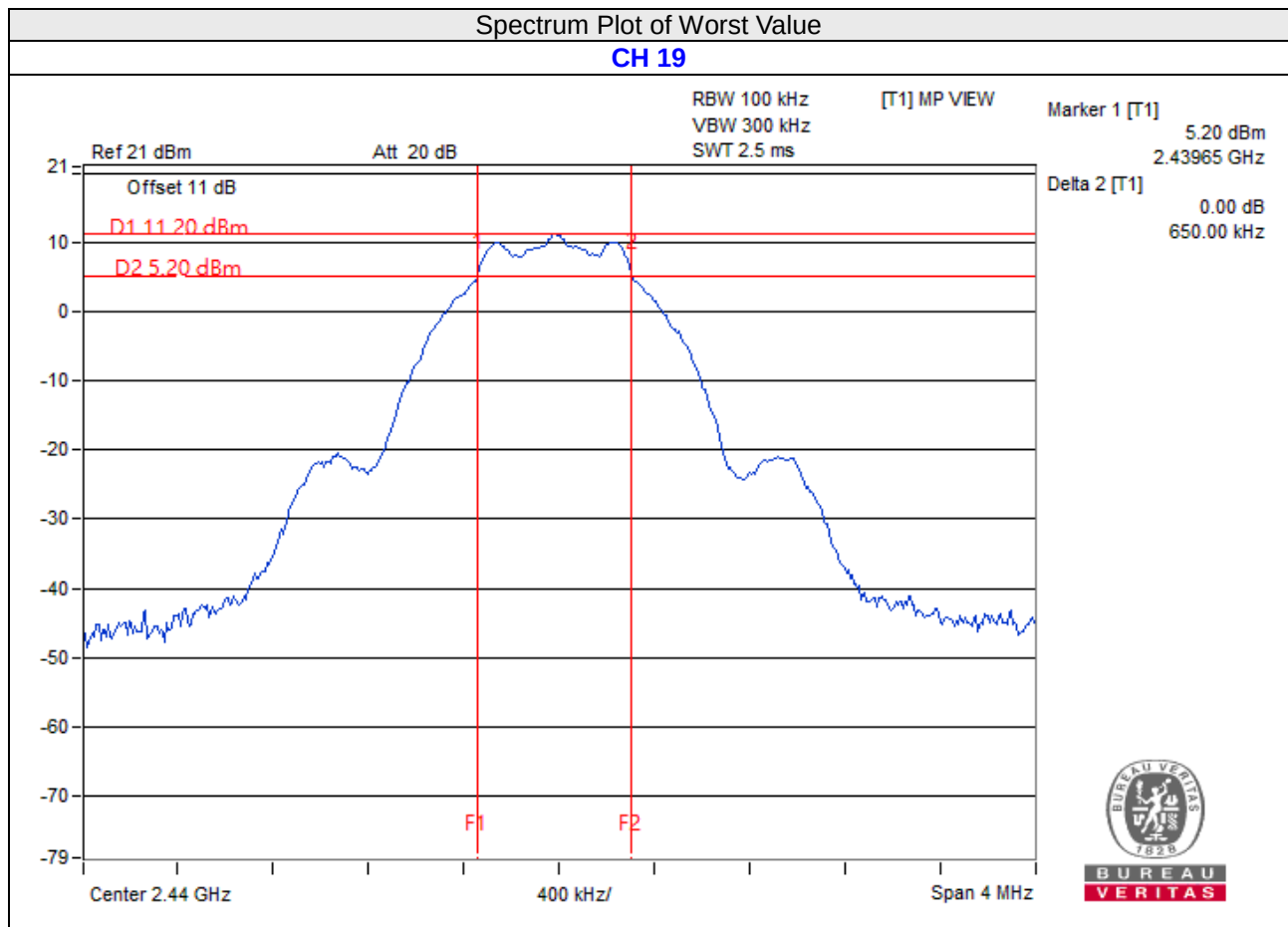
4.3.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 Test Results (Mode 1)

BT-LE 1M

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	0.66	0.5	Pass
19	2440	0.65	0.5	Pass
39	2480	0.66	0.5	Pass

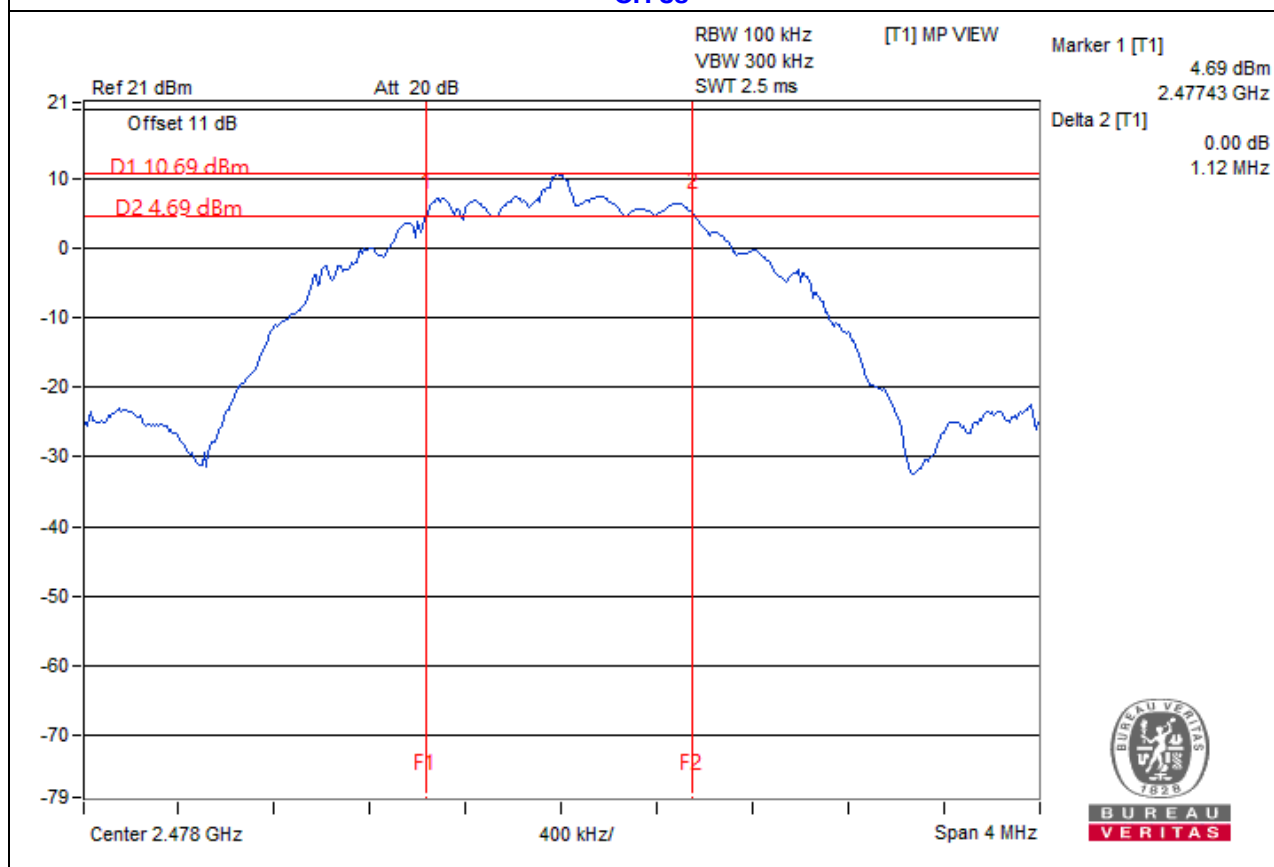


BT-LE 2M

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2404	1.13	0.5	Pass
19	2440	1.14	0.5	Pass
38	2478	1.12	0.5	Pass

Spectrum Plot of Worst Value

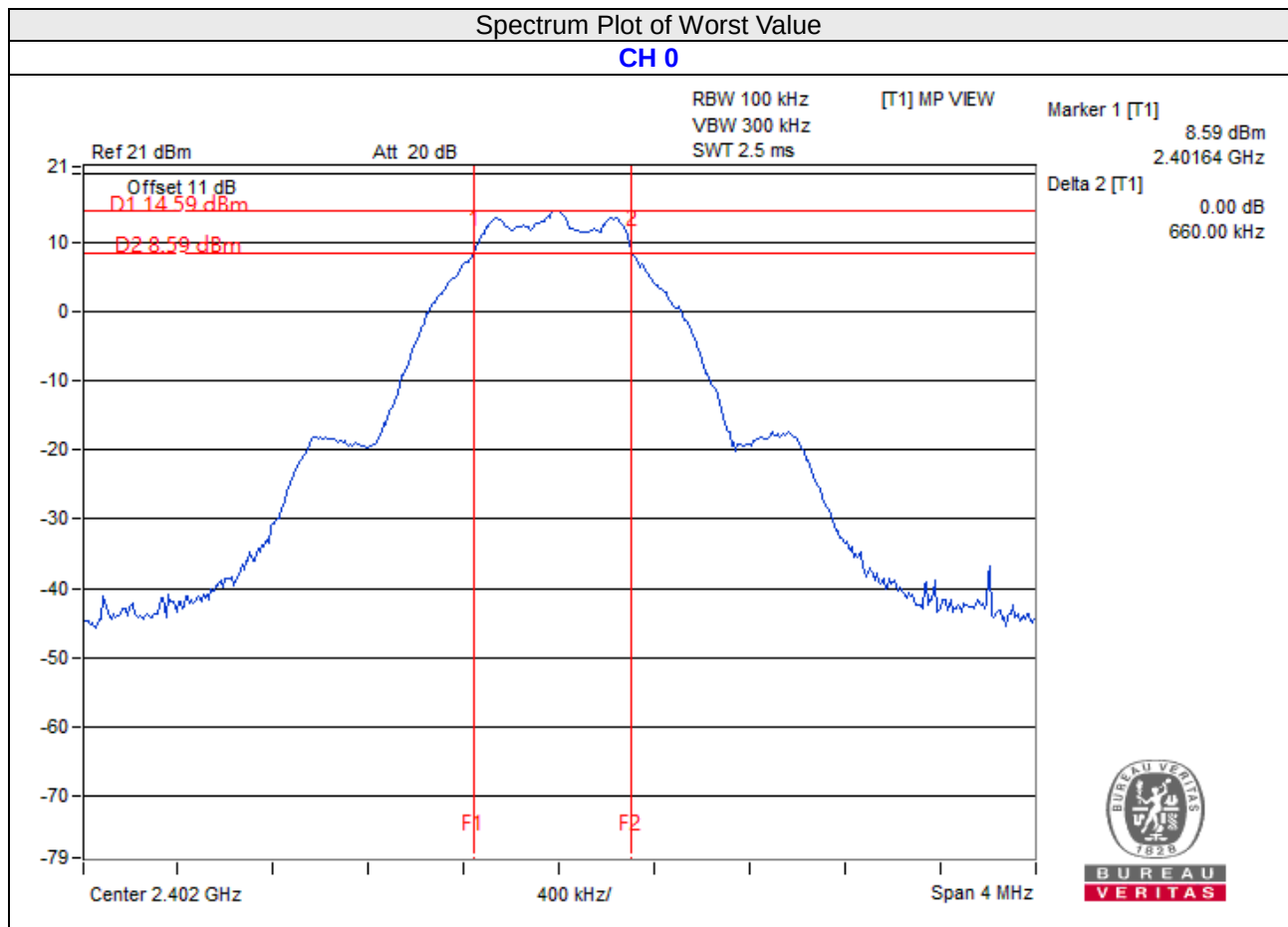
CH 38



4.3.8 Test Results (Mode 2)

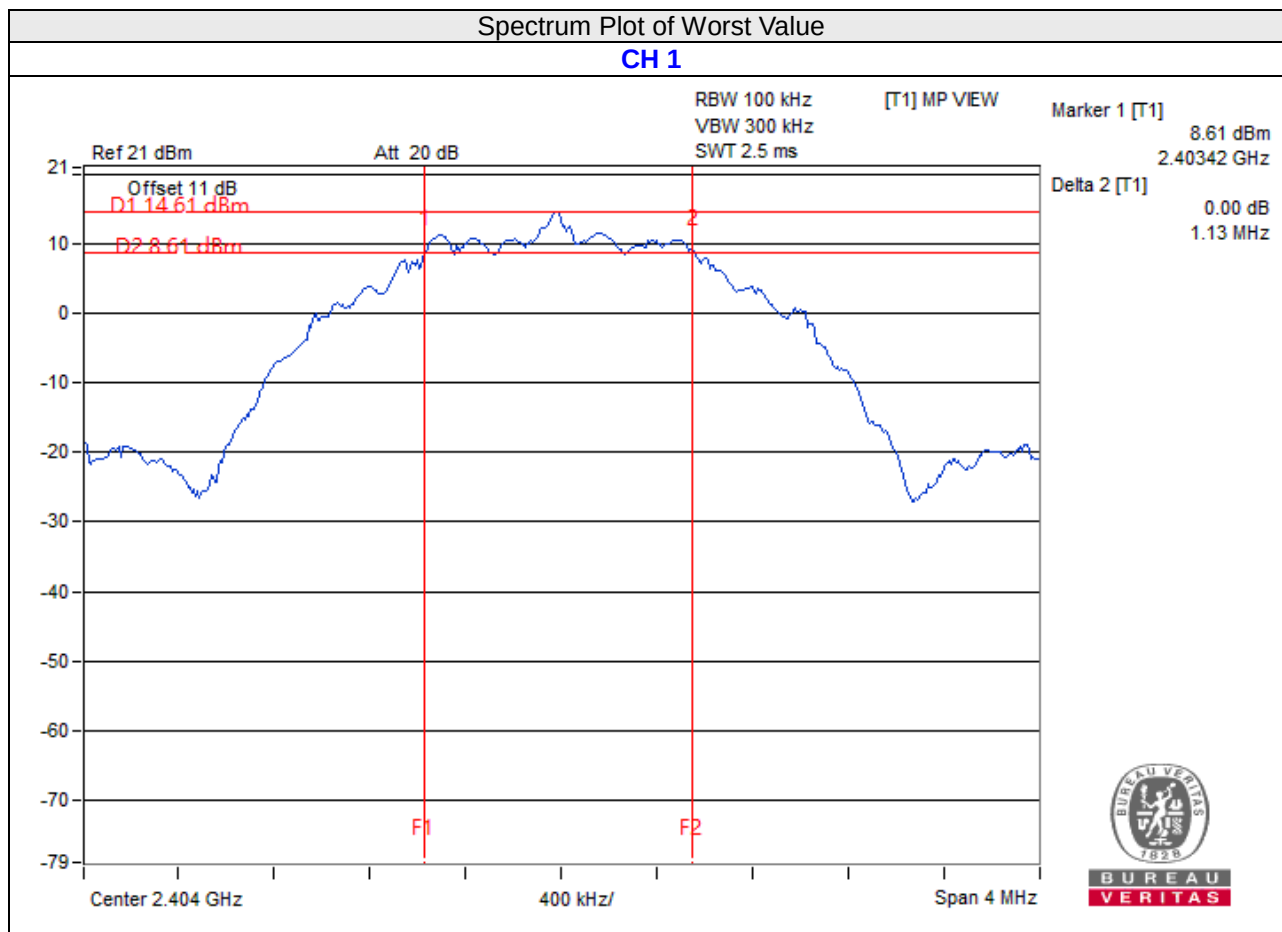
BT-LE 1M

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	0.66	0.5	Pass
19	2440	0.66	0.5	Pass
39	2480	0.66	0.5	Pass



BT-LE 2M

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2404	1.13	0.5	Pass
19	2440	1.13	0.5	Pass
38	2478	1.13	0.5	Pass

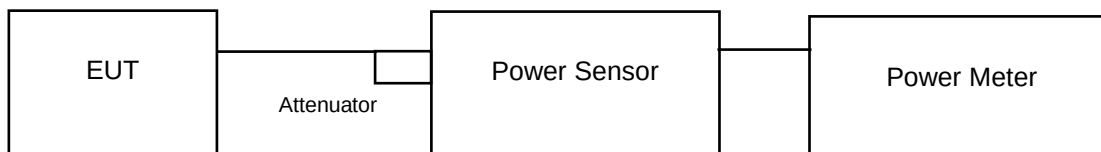


4.4 Conducted Output Power Measurement

4.4.1 Limits OF Conducted Output Power Measurement

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

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 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..

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results (Mode 1)

BT-LE 1M

FOR PEAK POWER

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
0	2402	4.365	6.40	30	Pass
19	2440	4.645	6.67	30	Pass
39	2480	4.634	6.66	30	Pass

FOR AVERAGE POWER

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	4.15	6.18
19	2440	4.416	6.45
39	2480	4.365	6.40

BT-LE 2M

FOR PEAK POWER

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2404	4.335	6.37	30	Pass
19	2440	4.634	6.66	30	Pass
38	2478	4.457	6.49	30	Pass

FOR AVERAGE POWER

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2404	4.102	6.13
19	2440	4.365	6.40
38	2478	4.217	6.25

4.4.8 Test Results (Mode 2)

BT-LE 1M

FOR PEAK POWER

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
0	2402	18.239	12.61	30	Pass
19	2440	17.378	12.40	30	Pass
39	2480	16.982	12.30	30	Pass

FOR AVERAGE POWER

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	17.539	12.44
19	2440	16.672	12.22
39	2480	16.331	12.13

BT-LE 2M

FOR PEAK POWER

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2404	16.982	12.30	30	Pass
19	2440	18.365	12.64	30	Pass
38	2478	17.701	12.48	30	Pass

FOR AVERAGE POWER

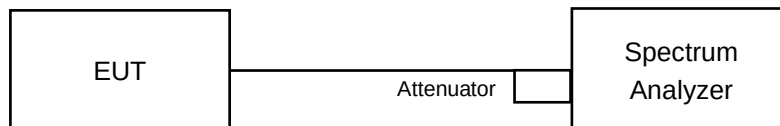
Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2404	16.52	12.18
19	2440	17.62	12.46
38	2478	16.866	12.27

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 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: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set the VBW $\geq 3 \times \text{RBW}$.
- 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.

4.5.5 Deviation from Test Standard

No deviation.

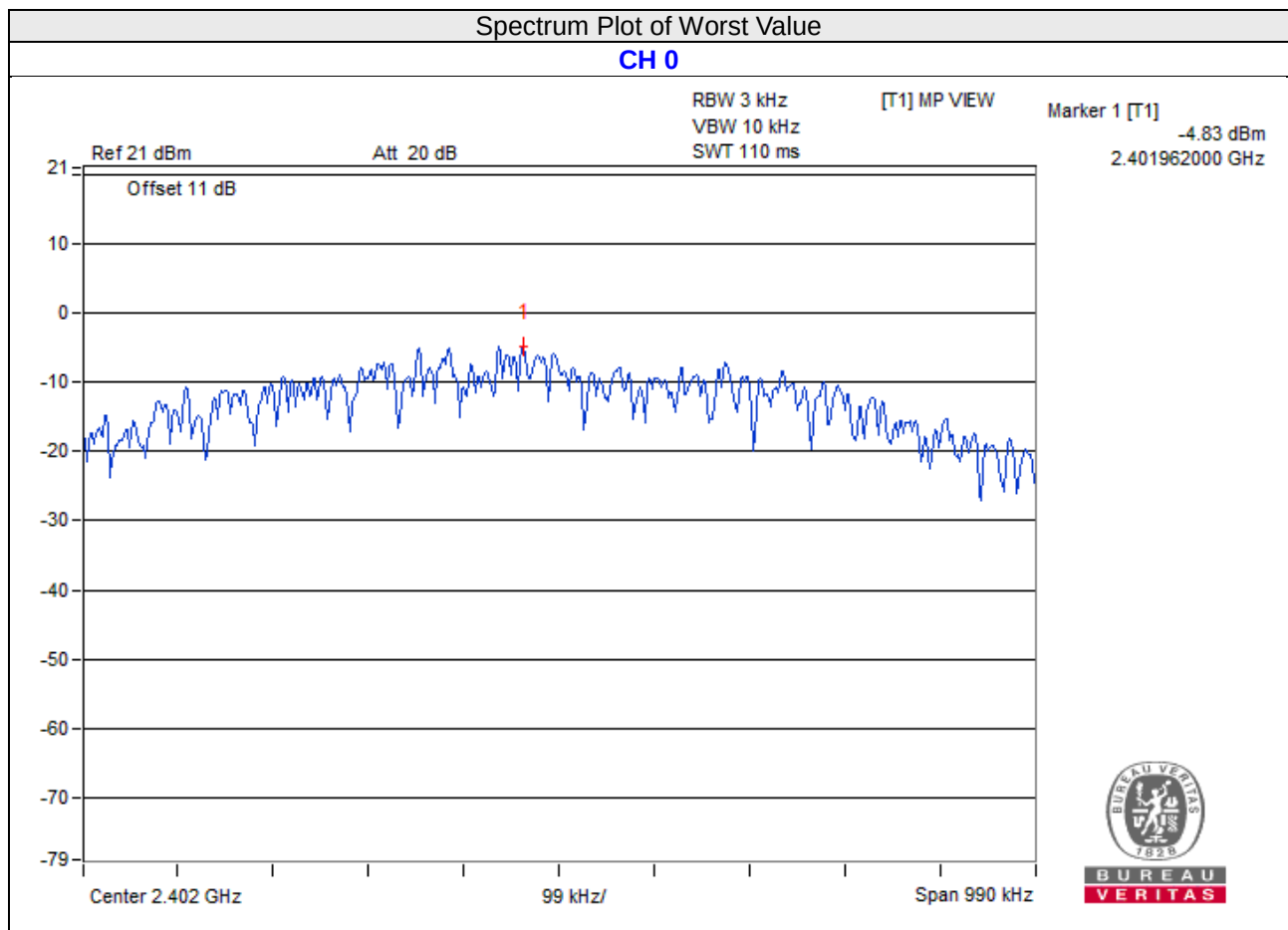
4.5.6 EUT Operating Condition

Same as Item 4.3.6

4.5.7 Test Results (Mode 1)

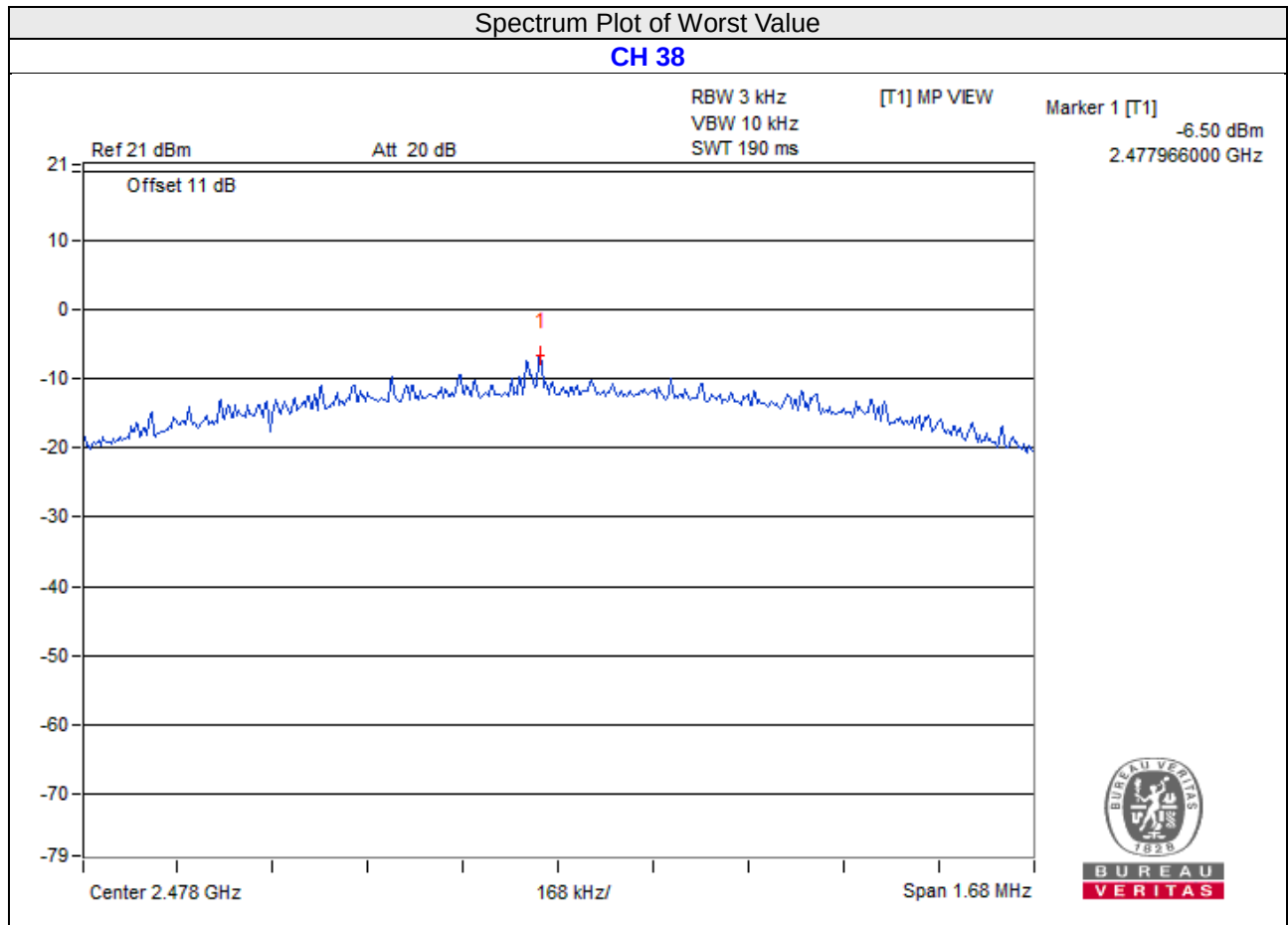
BT-LE 1M

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	2402	-4.83	8	Pass
19	2440	-5.26	8	Pass
39	2480	-4.83	8	Pass



BT-LE 2M

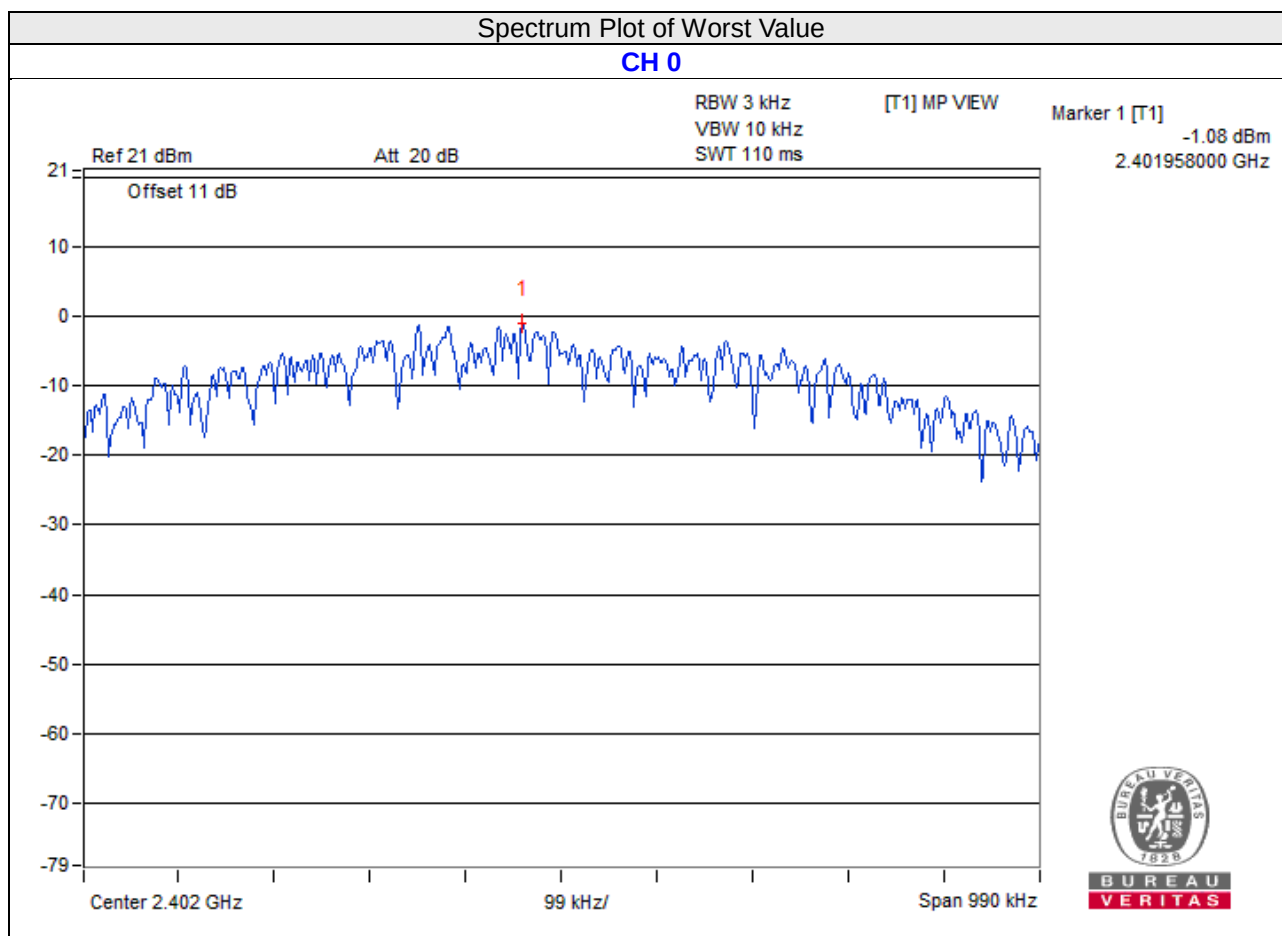
Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2404	-7.31	8	Pass
19	2440	-7.05	8	Pass
38	2478	-6.50	8	Pass



4.5.8 Test Results (Mode 2)

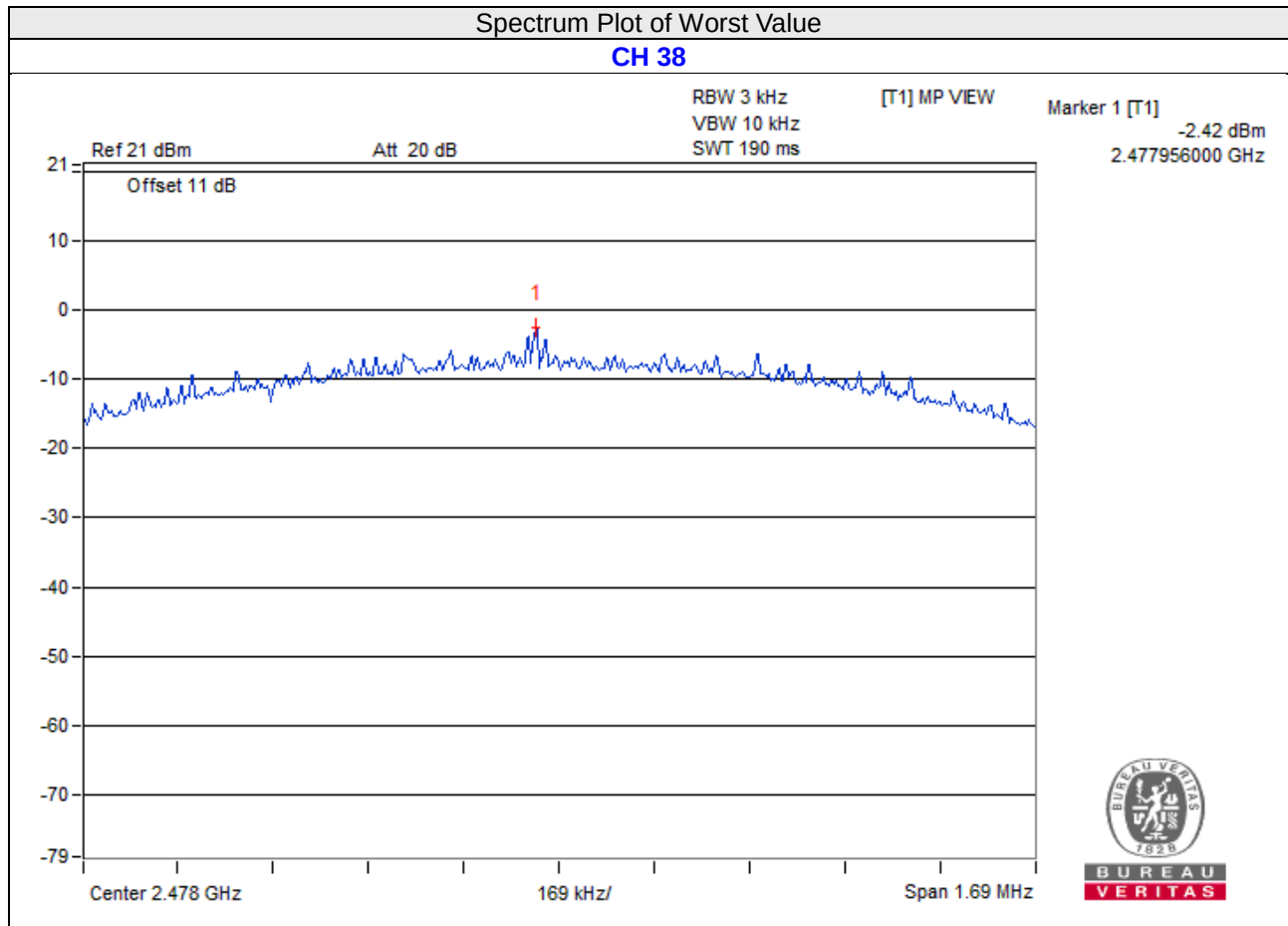
BT-LE 1M

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	2402	-1.08	8	Pass
19	2440	-1.68	8	Pass
39	2480	-1.18	8	Pass



BT-LE 2M

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2404	-2.48	8	Pass
19	2440	-3.44	8	Pass
38	2478	-2.42	8	Pass

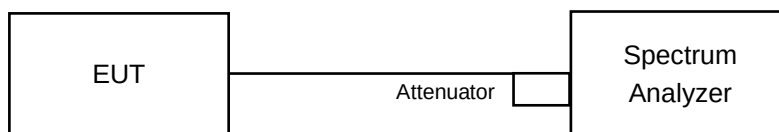


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW $\geq$ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW $\geq$ 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

4.6.5 Deviation from Test Standard

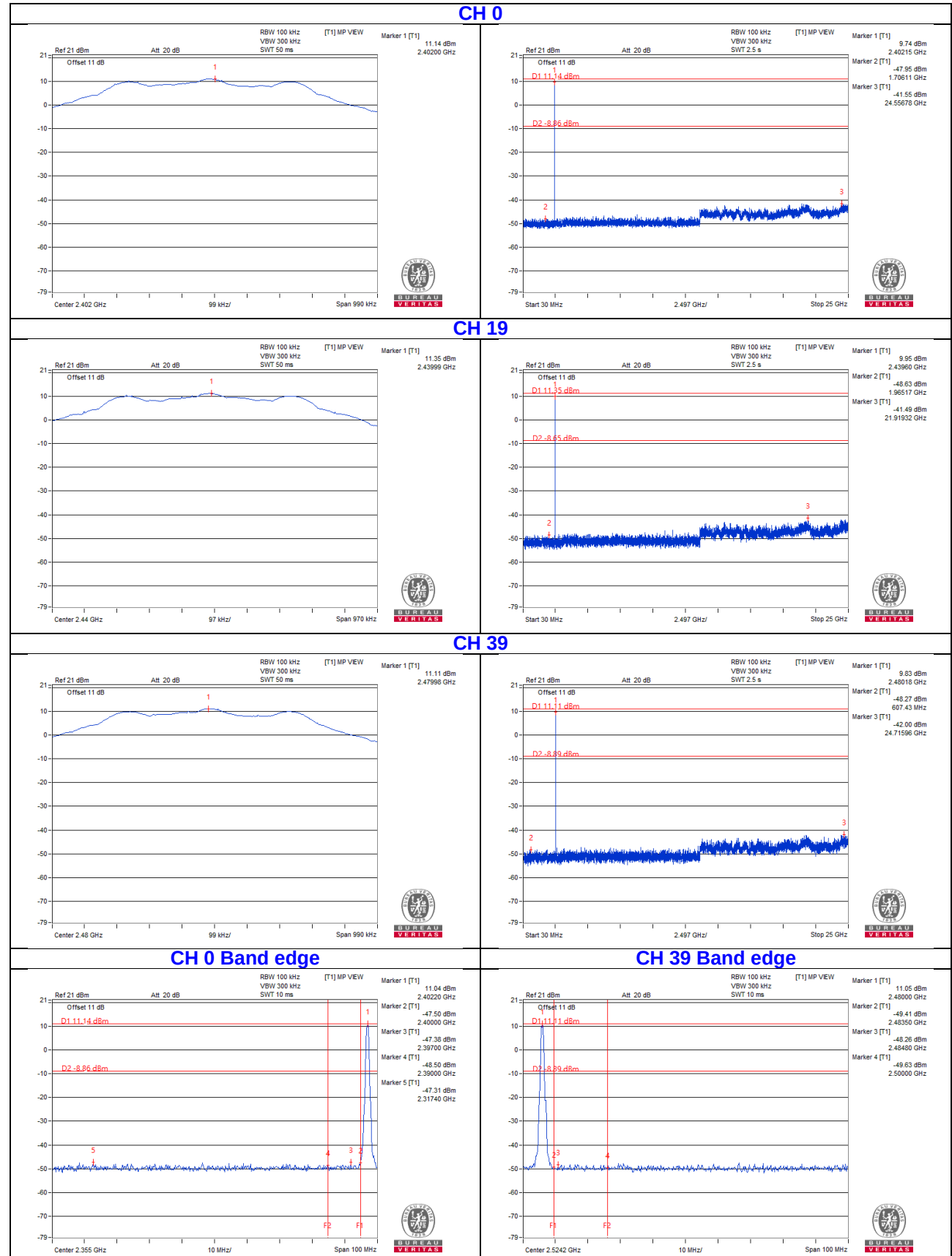
No deviation.

4.6.6 EUT Operating Condition

Same as Item 4.3.6

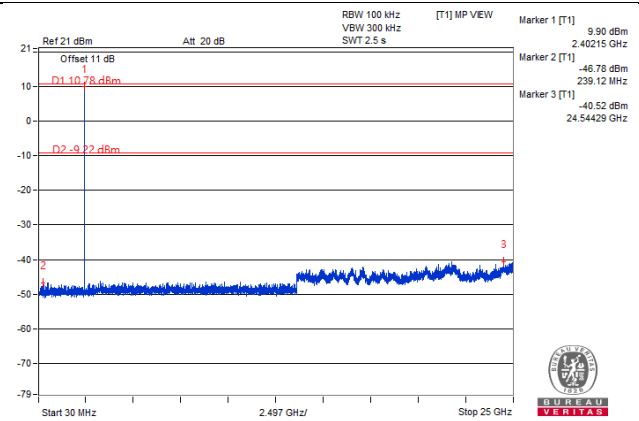
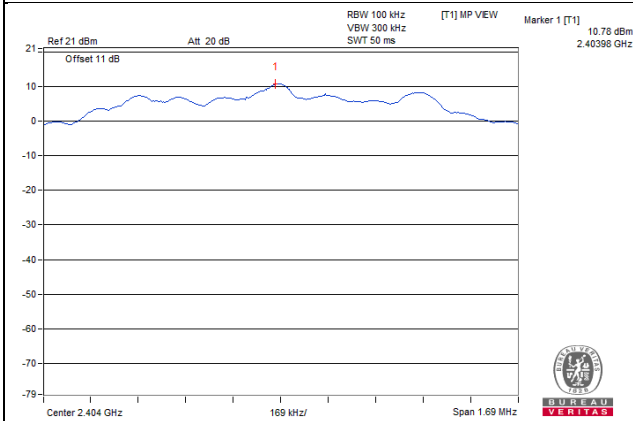
4.6.7 Test Results (Mode 1)

BT-LE 1M

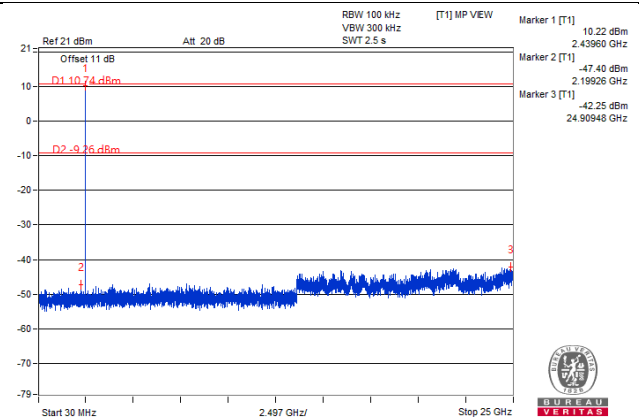
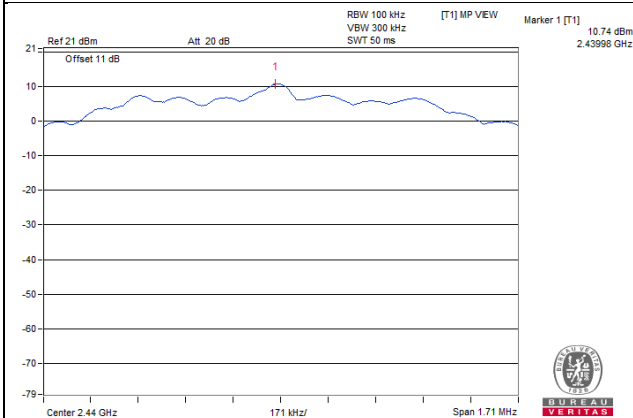


BT-LE 2M

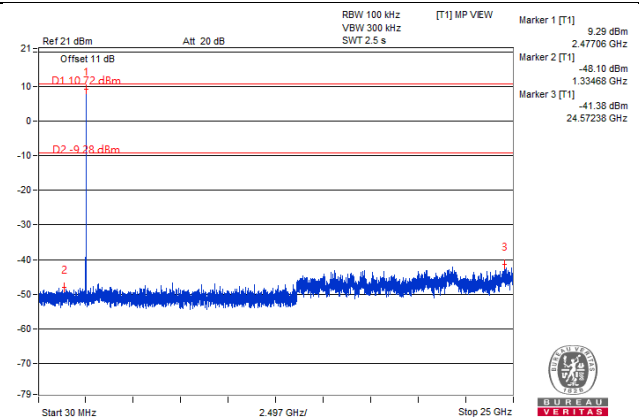
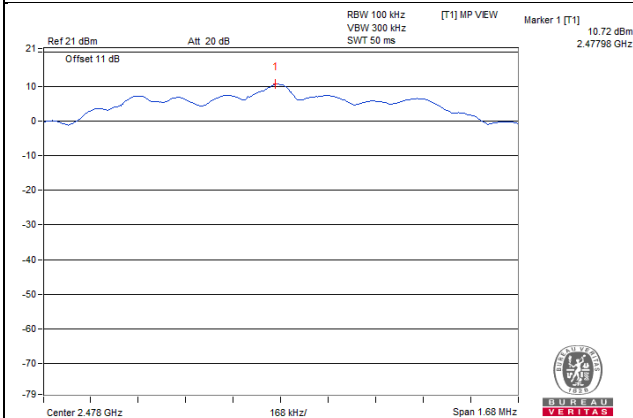
CH 1



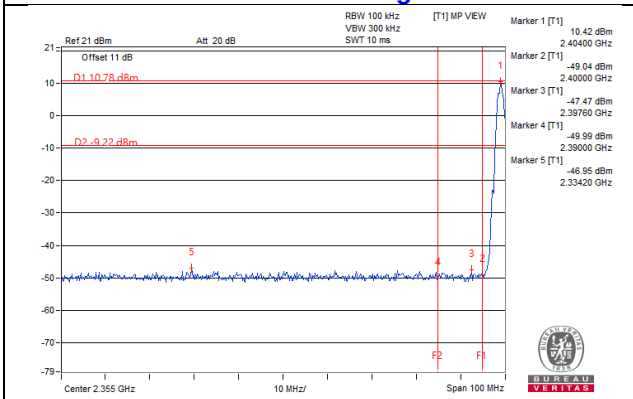
CH 19



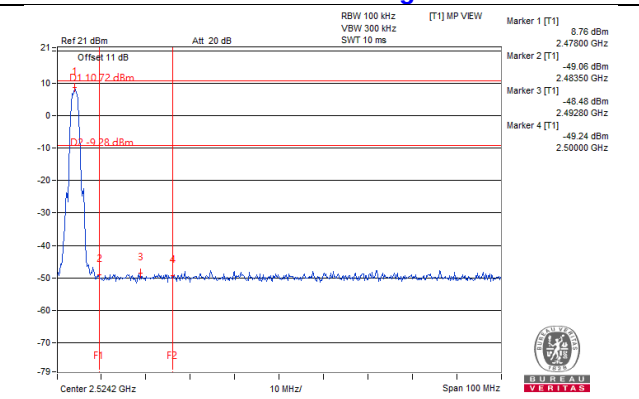
CH 38



CH 1 Band edge

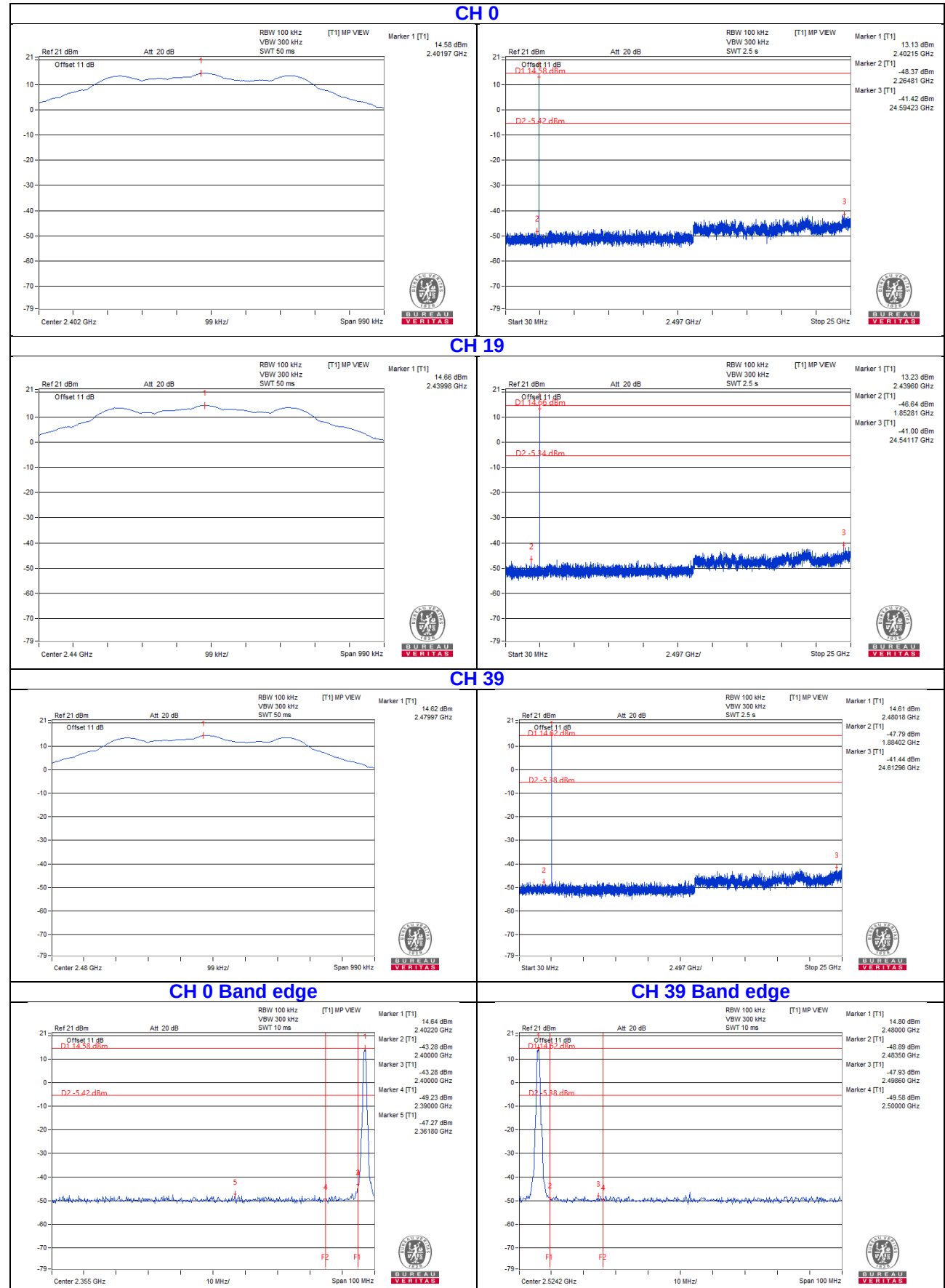


CH 38 Band edge



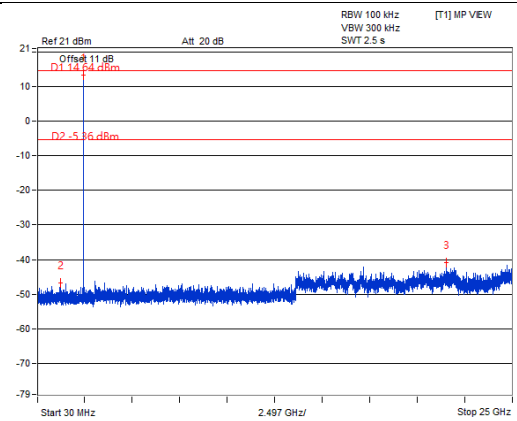
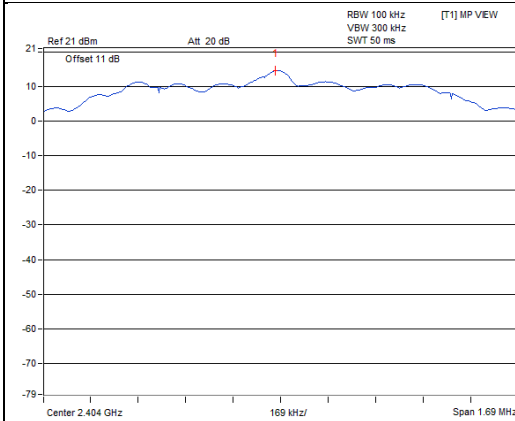
4.6.8 Test Results (Mode 2)

BT-LE 1M

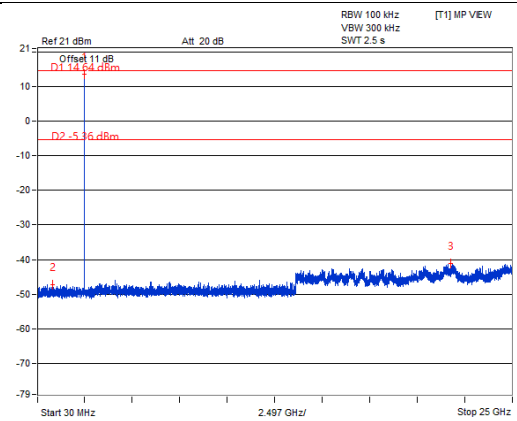
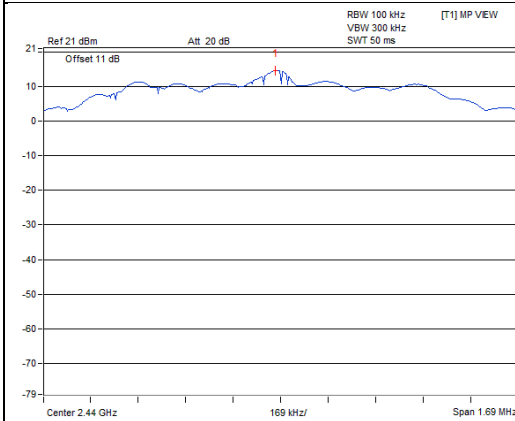


BT-LE 2M

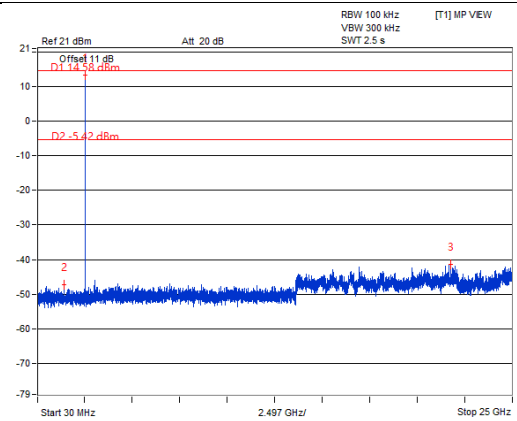
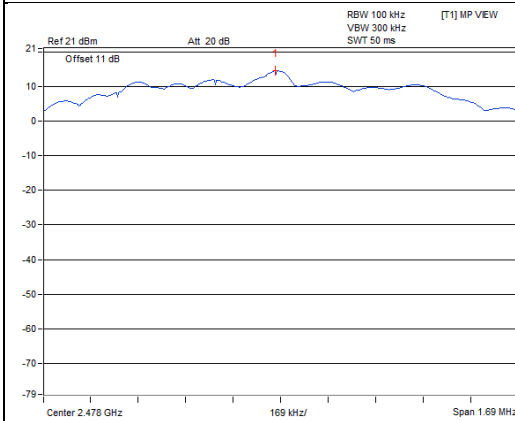
CH 1



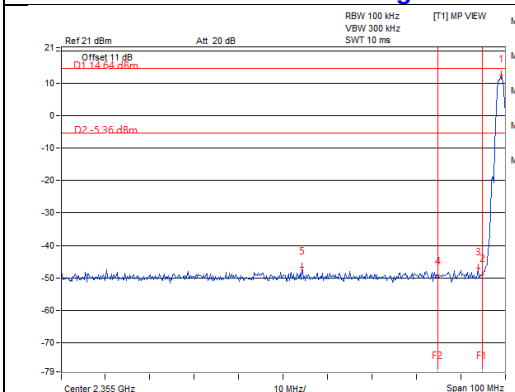
CH 19



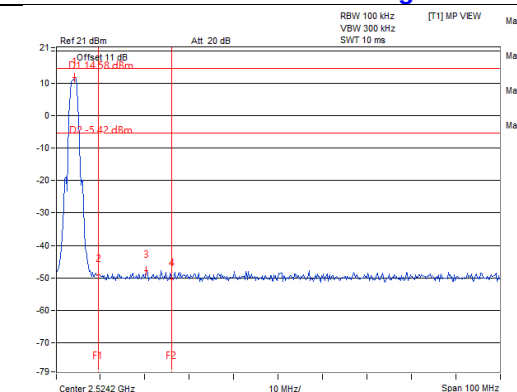
CH 38



CH 1 Band edge



CH 38 Band edge



5 Pictures of Test Arrangements

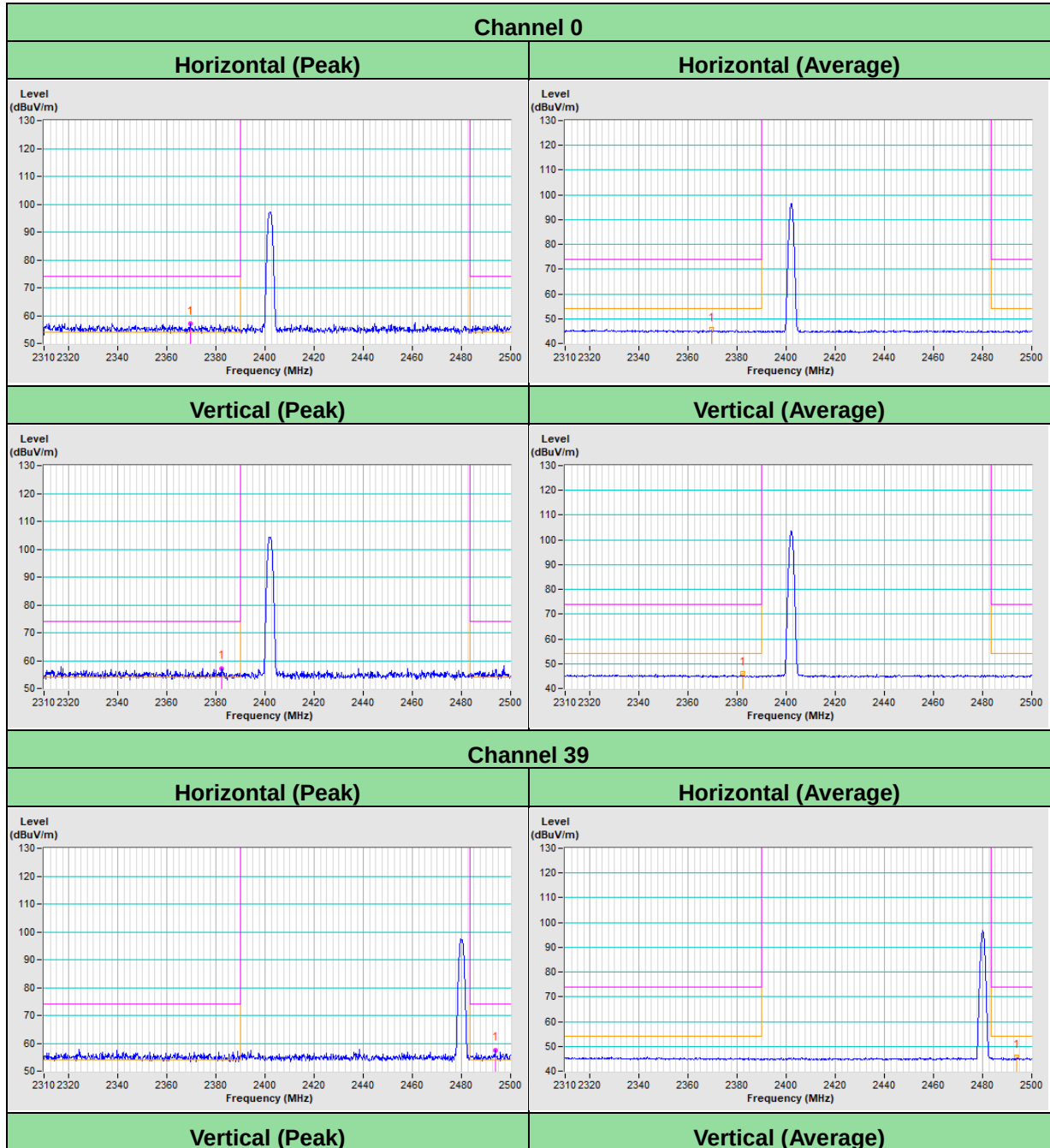
Please refer to the attached file (Test Setup Photo).

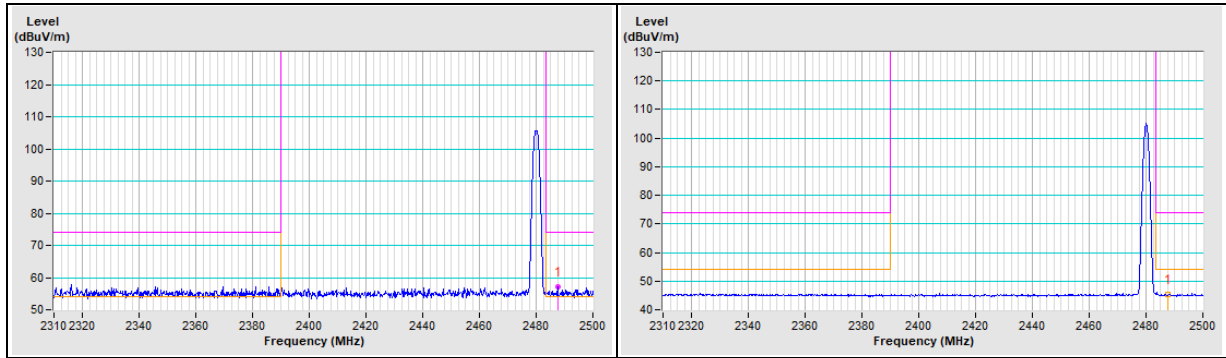
Annex A - Band-Edge Measurement

Annex A.1 - Test Results (Mode 1)

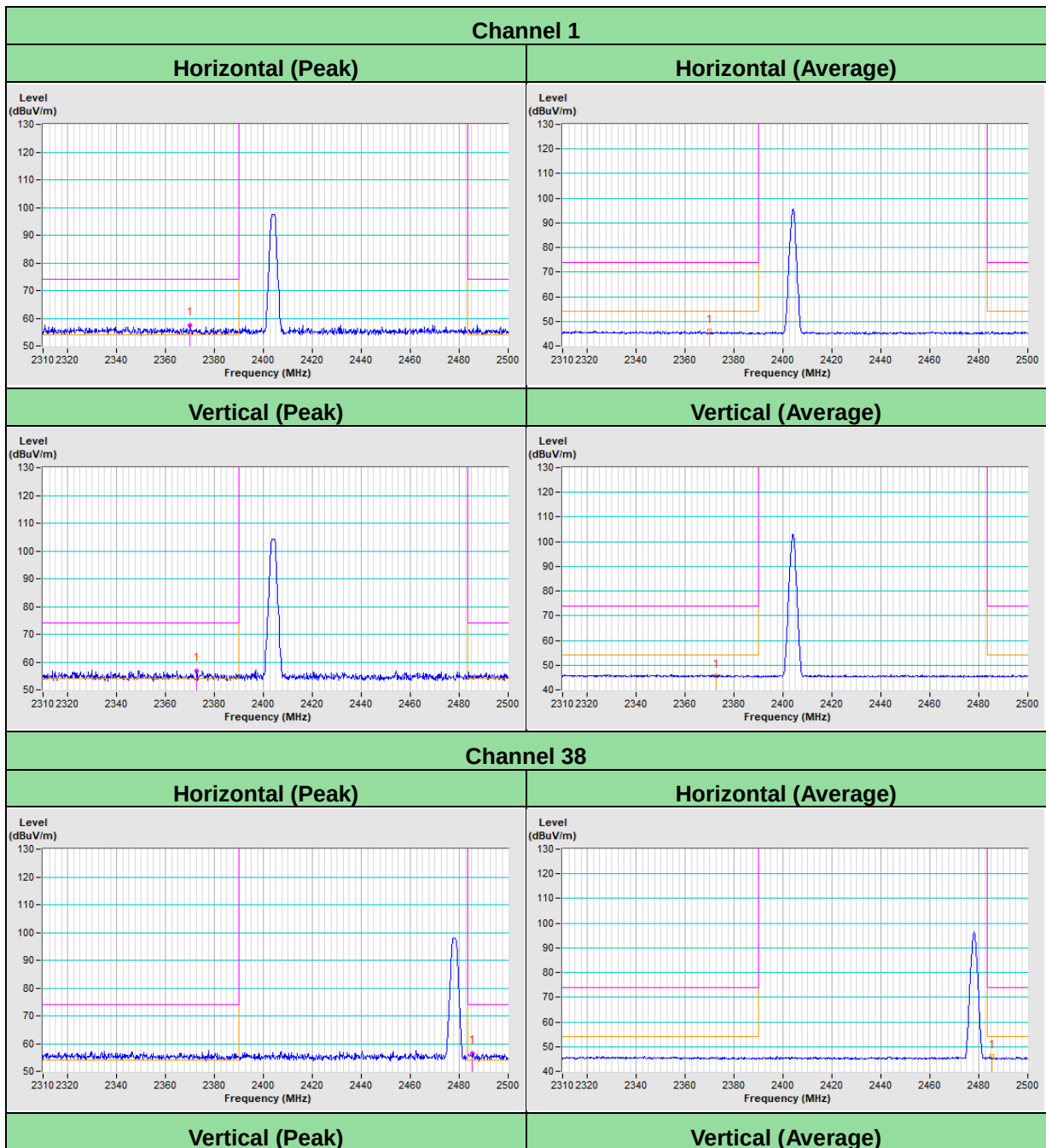
Dipole Antenna

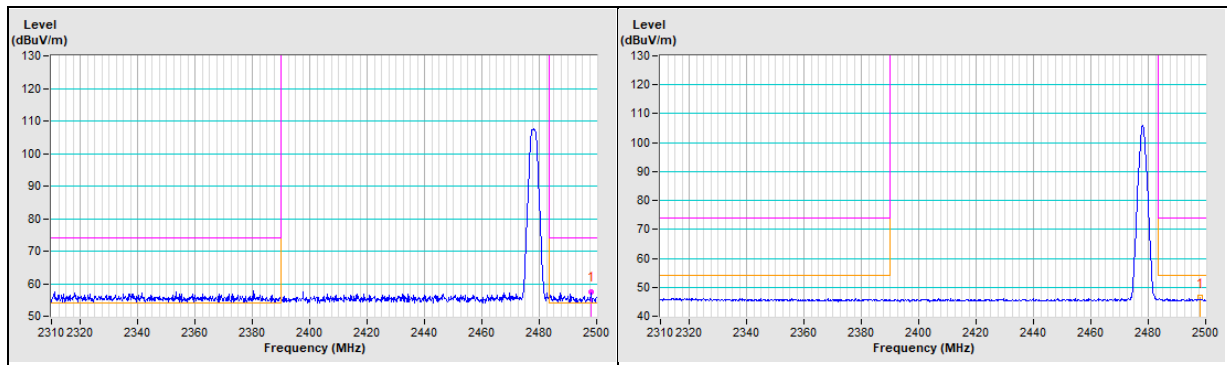
BT-LE 1M





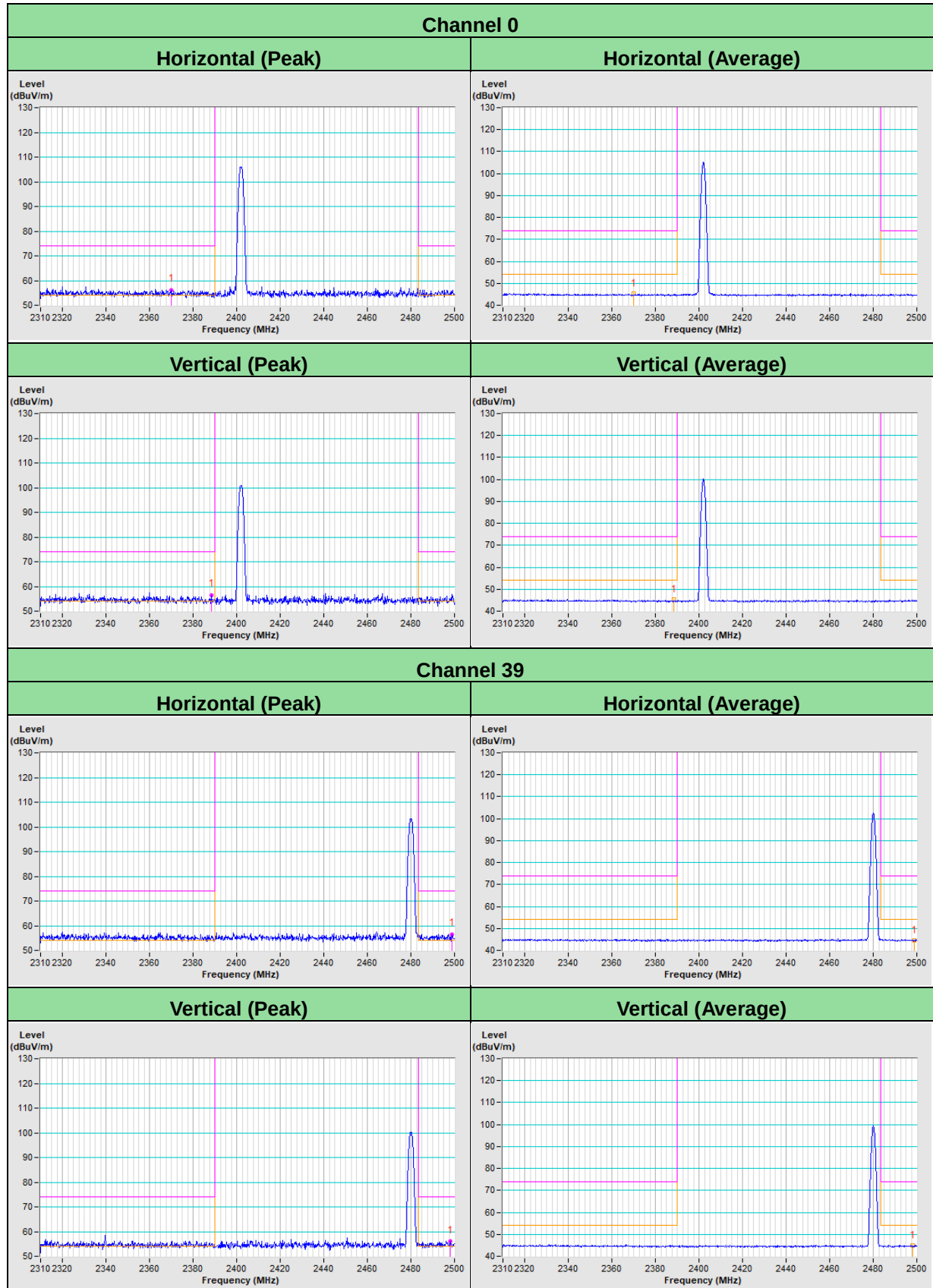
BT-LE 2M



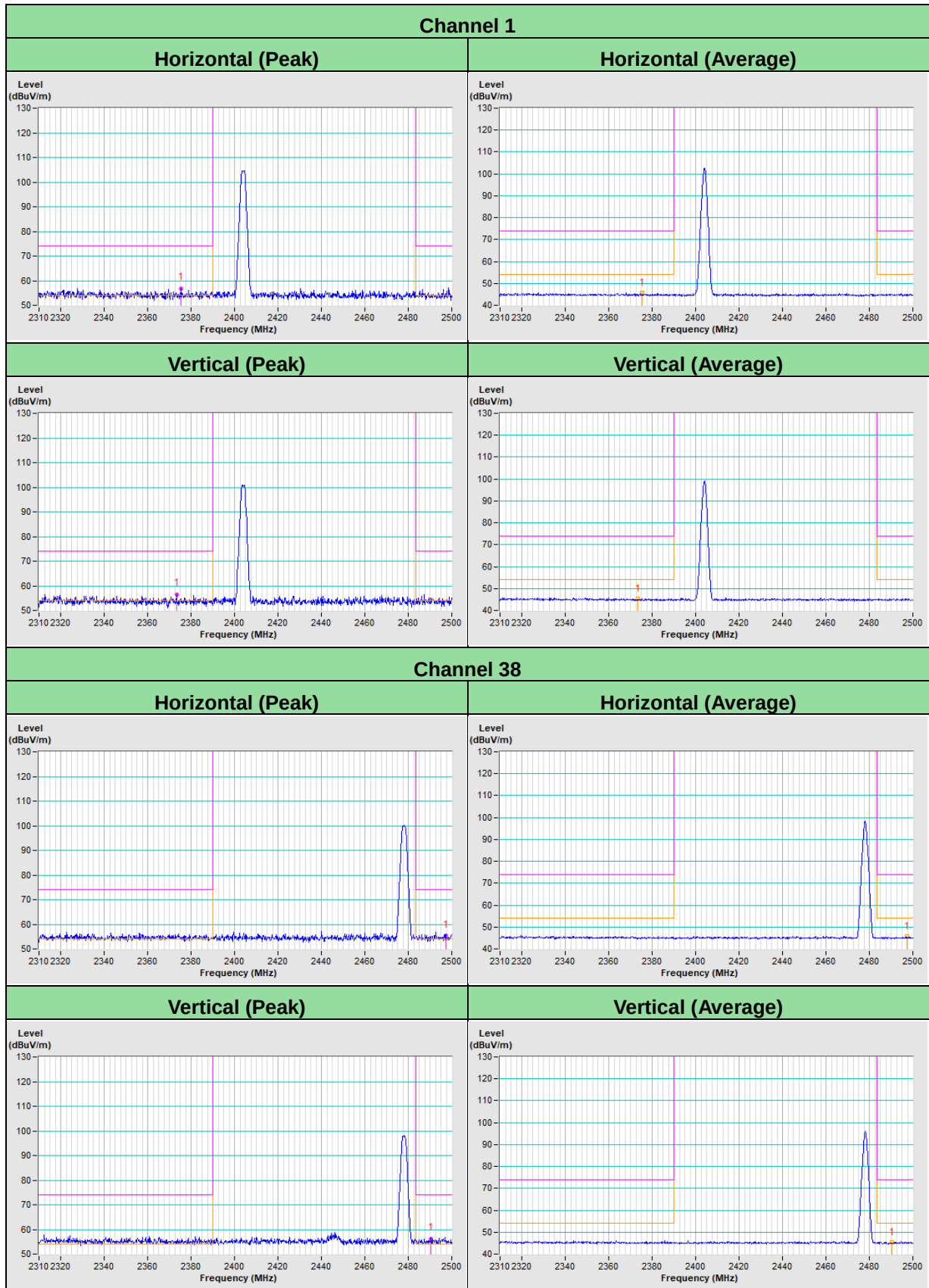


PIFA Antenna

BT-LE 1M



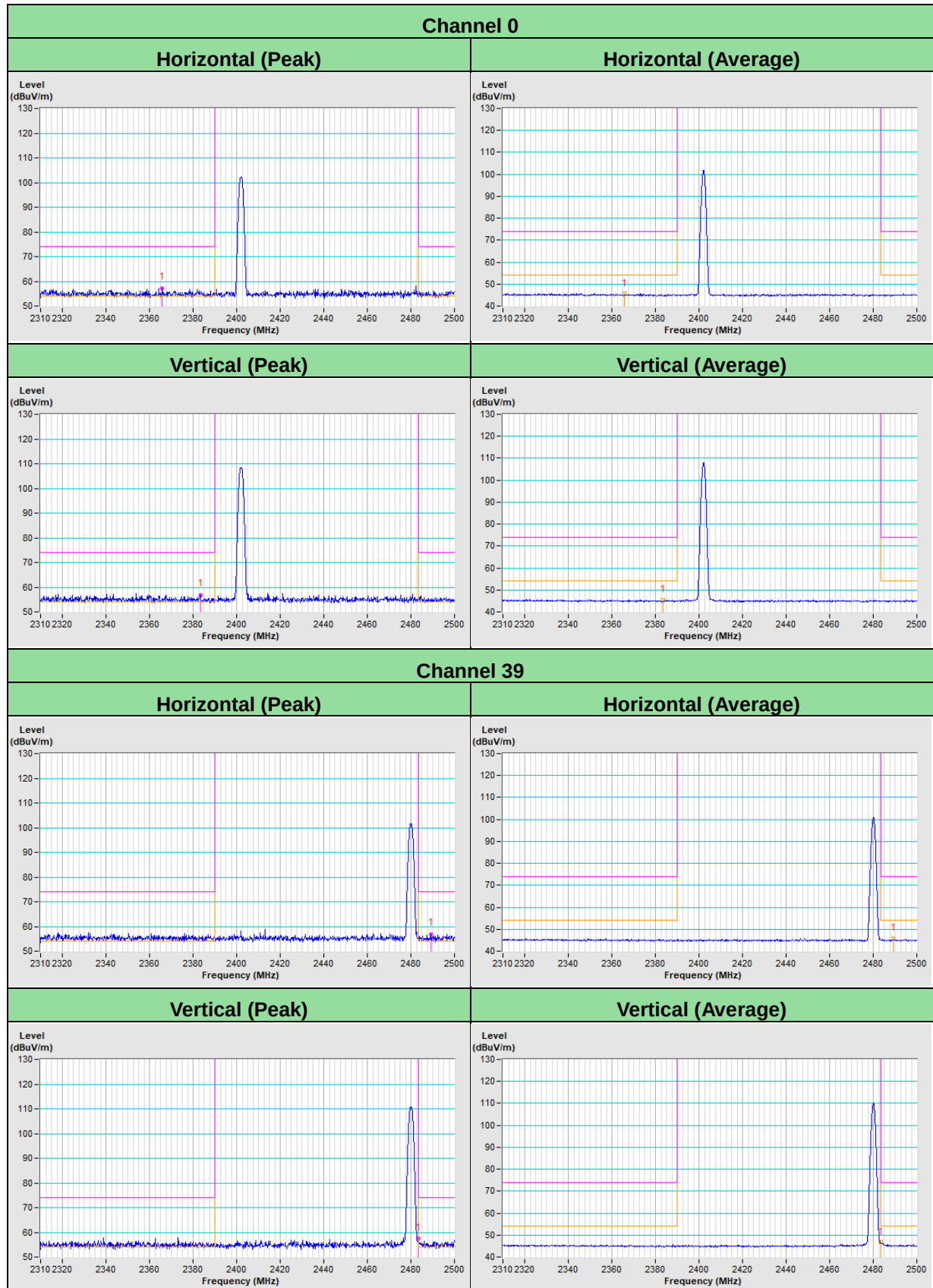
BT-LE 2M



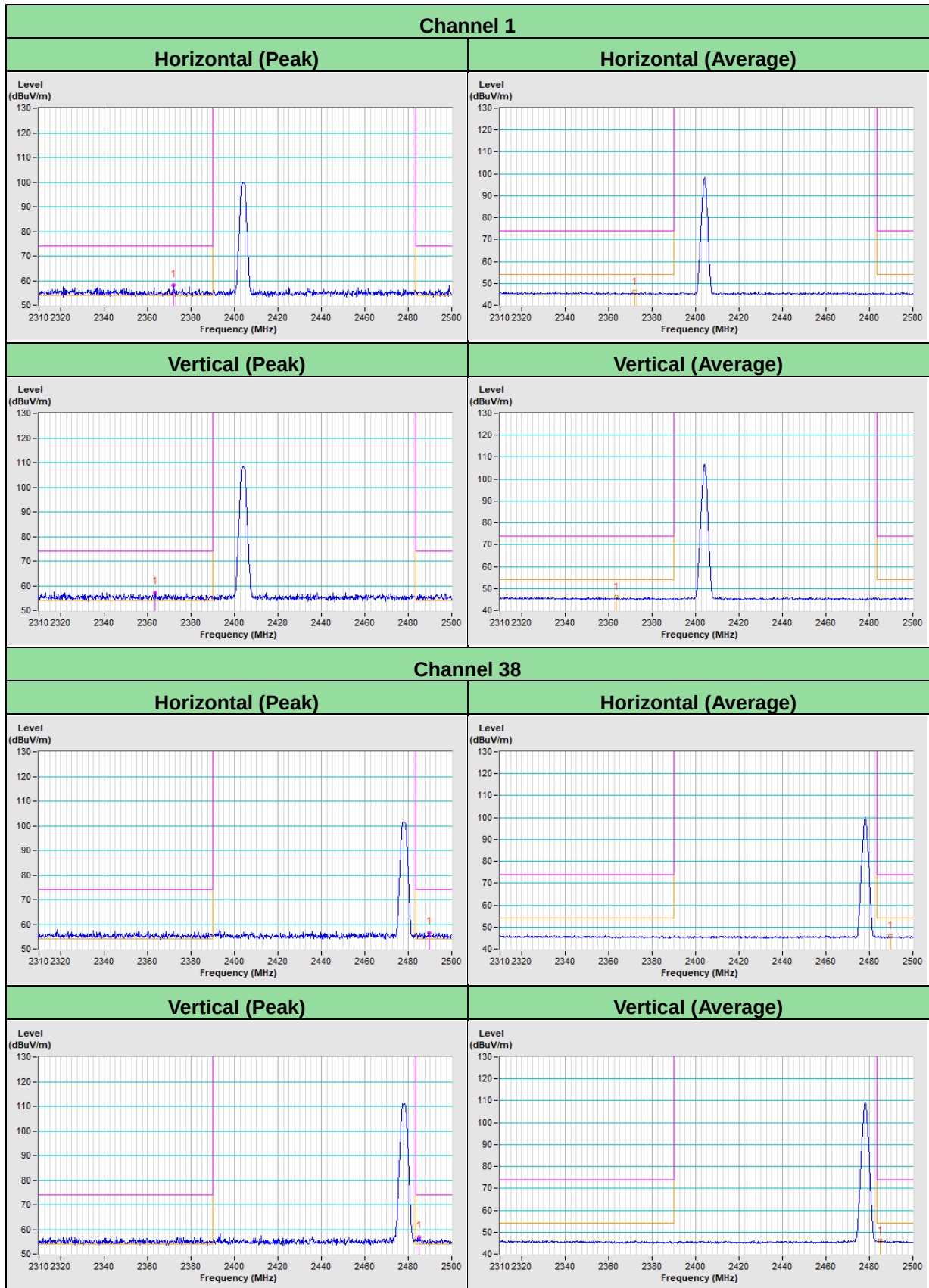
Annex A.2 - Test Results (Mode 2)

Dipole Antenna

BT-LE 1M

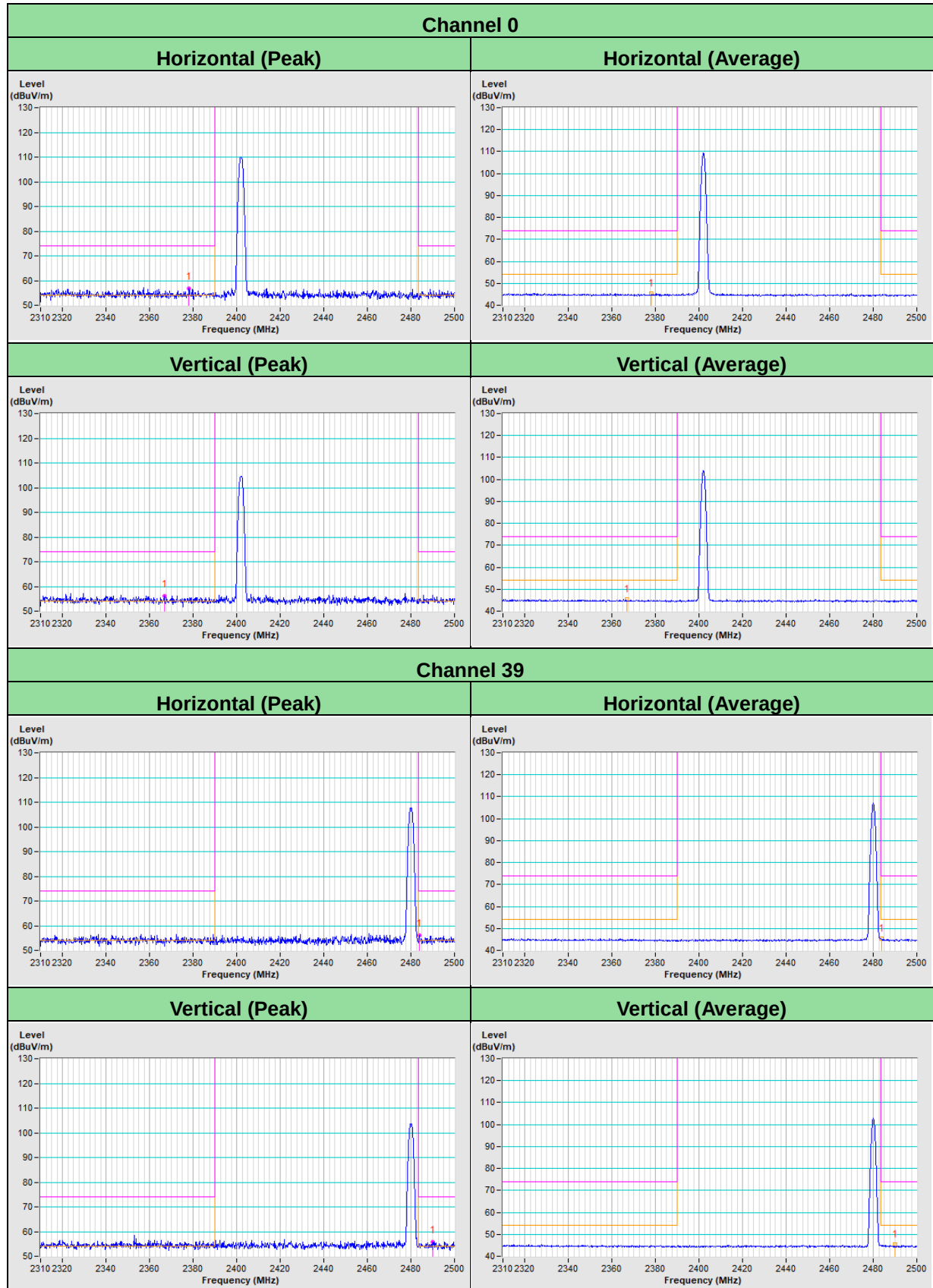


BT-LE 2M

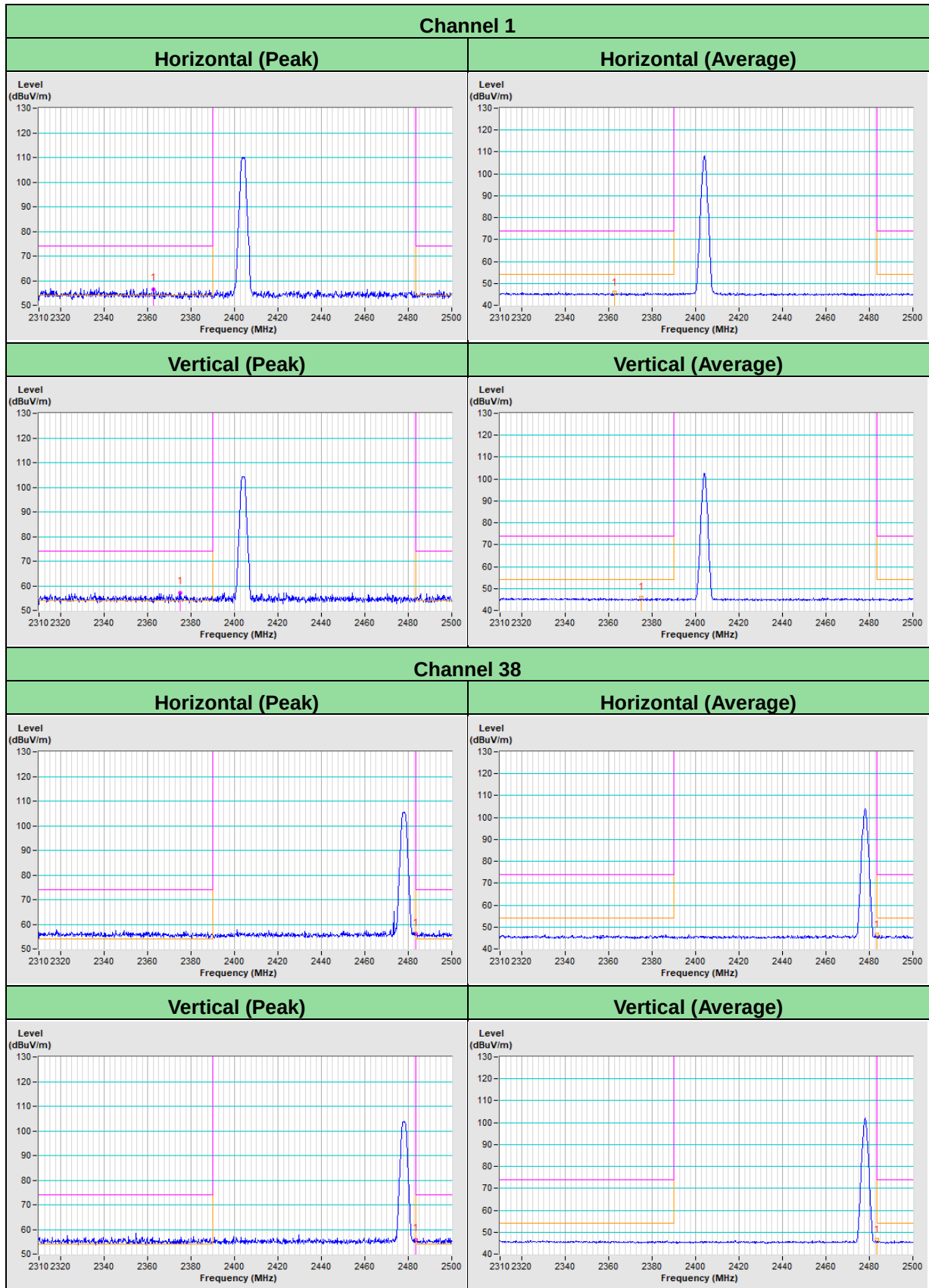


PIFA Antenna

BT-LE 1M



BT-LE 2M



Appendix – 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:

Lin Kou EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

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