



Neutron Engineering Inc.

Radio Test Report

FCC ID: Q3N-1661

This report concerns (check one) : ☒ Original Grant ☐ Class II Change

Issued Date : Nov. 29, 2010

Project No. : R1011001

Equipment : BT Barcode Scanner

Model Name : 1661

Applicant : CIPHERLAB CO., LTD.

Address : 12F, 333, Dunhua S. Rd., Sec. 2, Taipei,
Taiwan

Tested by: Neutron Engineering Inc. EMC Laboratory

Date of Receipt: Nov. 10, 2010

Date of Test: Nov. 10, 2010 ~ Nov. 16, 2010

Testing Engineer:

Rush Kao

(Rush Kao)

Technical Manager:

Jeff Yang

(Jeff Yang)

Authorized Signatory:

Andy Chiu

(Andy Chiu)

Neutron Engineering Inc.

B1, No. 37, Lane 365, YangGuang St.

NeiHu District 114, Taipei, Taiwan.

TEL: +886-2-2657-3299

FAX: +886-2-2657-3331



C-2918 G-91 R-2669
R-2829 T-1666 T-1667



Declaration

Neutron represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (NML) of **R.O.C.**, or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

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1. CERTIFICATION

Equipment: BT Barcode Scanner
Brand Name: CIPHERLAB
Model Name: 1661
Applicant: CIPHERLAB CO., LTD.
Date of Test: Nov. 10, 2010 ~ Nov. 16, 2010
Standards: FCC Part15, Subpart C / ANCI C63.4 : 2003

The above equipment has been tested and found compliance with the requirement of the relative standards by Neutron Engineering Inc. EMC Laboratory.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FCCP-1-R1011001) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of NVLAP and TAF according to the ISO-17025 quality assessment standard and technical standard(s).



2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15, Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247 (c)	Antenna conducted Spurious Emission	PASS	
15.247 (a)(1)	Hopping Channel Separation	PASS	
15.247 (b)	Peak Output Power	PASS	
15.247 (c)	Radiated Spurious Emission	PASS	
15.247 (b)(1)	Number of Hopping Frequency	PASS	
15.247 (a)(1)	Dwell Time	PASS	
15.205	Restricted Bands	PASS	
15.203	Antenna Requirement	PASS	
1.1307 1.1310 2.1091 2.1093	RF Exposure Compliance	PASS	

NOTE:

(1) "N/A" denotes test is not applicable in this Test Report.



2.1 TEST FACILITY

The test facilities used to collect the test data in this report:

C01: (VCCI RN: C-2918; T-1666)

No.132-1, Lane 329, Sec. 2, Palian Road, Shijr City, Taipei, Taiwan.

CB08: (VCCI RN: G-91; FCC RN: 614388; IC Assigned Code: 4428C-1)

1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately **95%**.

The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2.

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U , (dB)	NOTE
C01	ANSI	150 kHz ~ 30 MHz	1.94	

B. Radiated Measurement :

Test Site	Item	Measurement Frequency Range	Uncertainty	NOTE
CB08	Radiated Emission at 3m	Horizontal Polarization	30 - 200MHz	3.35 dB
			200 - 1000MHz	3.11 dB
			1 - 18GHz	3.97 dB
			18 - 40GHz	4.01 dB
	Vertical Polarization		30 - 200MHz	3.22 dB
			200 - 1000MHz	3.24 dB
			1 - 18GHz	4.05 dB
			18 - 40GHz	4.04 dB

Our calculated Measurement Instrumentation Uncertainty is shown in the tables above. These are our U_{lab} values in CISPR 16-4-2 terminology.

Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called U_{CISPR} , as follows:

Conducted Disturbance (mains port) – 150 kHz – 30 MHz : 3.6 dB

Radiated Disturbance (electric field strength on an open area test site or alternative test site) – 30 MHz – 1000 MHz : 5.2 dB

It can be seen that our U_{lab} values are smaller than U_{CISPR} .



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	BT Barcode Scanner	
Brand Name	CIPHERLAB	
Model Name	1661	
OEM Brand/Model Name	N/A	
Model Difference	N/A	
Product Description	The EUT is a BT Barcode Scanner.	
	Operation Frequency:	2402~2480 MHz
	Modulation Type:	FHSS
	Bit Rate of Transmitter	1/2/3Mbps
	Number Of Channel	79CH
	Antenna Designation:	Please see Note 3.
	Antenna Gain(Peak)	Please see Note 3.
	Output Power:	2.35 dBm (Max.)(1M)
	Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.	
Power Source	DC Voltage supplied from AC/DC adapter or Battery.	
Power Rating	I/P: DC 5V	
	Battery: DC 3.7V/850 mAh	
Connecting I/O Port(s)	Please refer to the User's Manual	
Products Covered	1 * USB Standard-A to Mini-A Cable	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



2.

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	CIPHERLAB	PV004_1661	Printed	N/A	1.14



3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Test Mode	Description
Mode 1	CH00 (EUT with adapter or without adapter)
Mode 2	CH39 (EUT with adapter or without adapter)
Mode 3	CH78 (EUT with adapter or without adapter)

For Conducted Test	
Final Test Mode	Description
Mode 2	CH39 (EUT with adapter)

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH00 (EUT without adapter)
Mode 2	CH39 (EUT without adapter)
Mode 3	CH78 (EUT without adapter)

Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

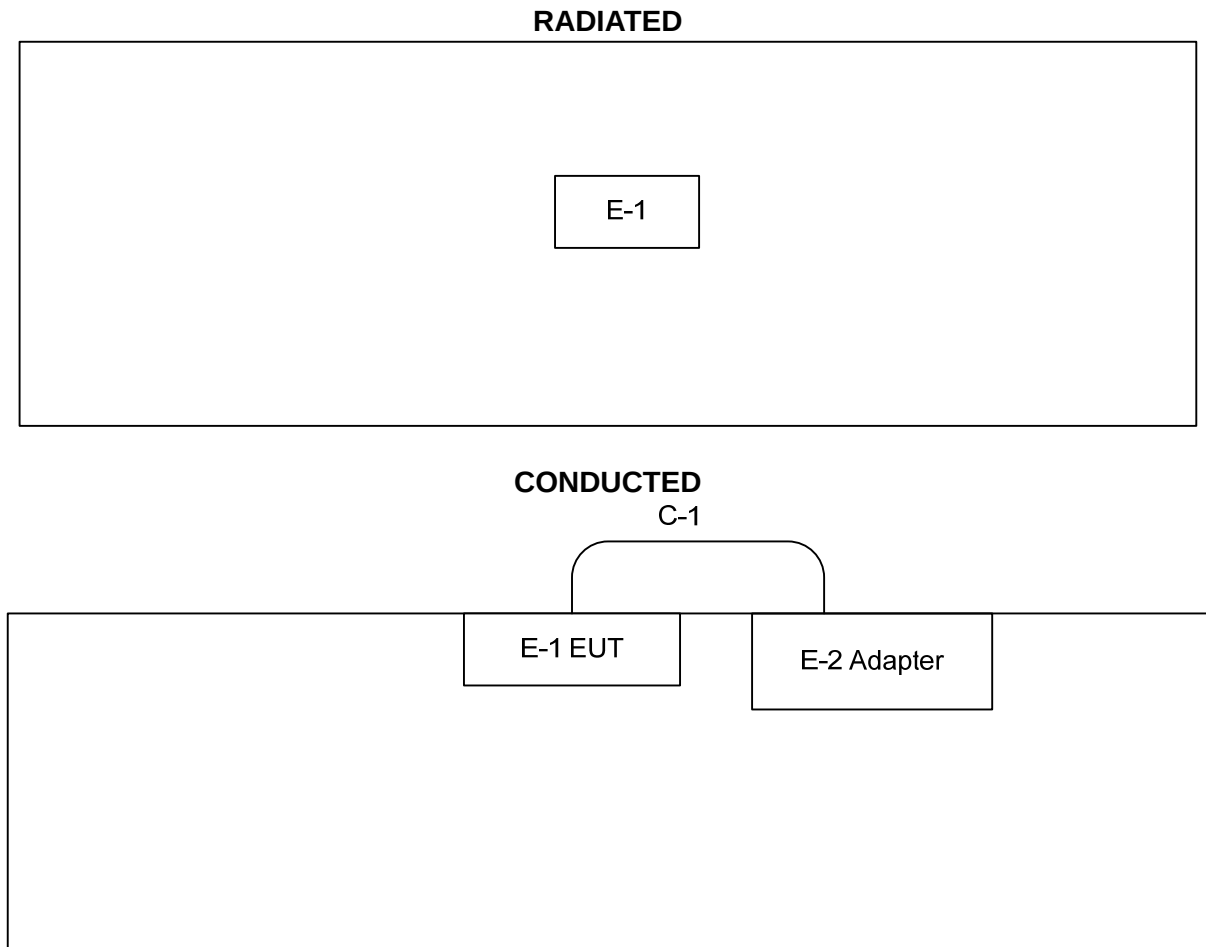
During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of FHSS

Data Rate	1M		
Test software Version	BarCode		
Frequency	2402 MHz	2441 MHz	2480 MHz
Power Parameters	3C	3C	3C

Data Rate	3M		
Test software Version	BarCode		
Frequency	2402 MHz	2441 MHz	2480 MHz
Power Parameters	@098	@098	@098



3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED





3.5 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.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	BT Barcode Scanner	CIPHERLAB	1661	Q3N-1661	N/A	EUT
E-2	SWITCHING ADAPTER	CPTC	MPAS-U012050U	N/A	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	1.0M	Power Cable

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.



4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSION (FREQUENCY RANGE 150 KHZ-30MHZ)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.
- (3) The test result calculated as following:
 Measurement Value = Reading Level + Correct Factor
 Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)
 Margin Level = Measurement Value – Limit Value

4.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Test Cable	N/A	SR03_C_01 &02	N/A	Aug. 20, 2011
2	LISN	EMCO	3816/2	00042991	Feb. 07, 2011
3	Pulse Limiter	Electro-Metrics	EM-7600	112644	Dec. 27, 2010
4	EMI Test Receiver	R&S	ESCI	100080	Mar. 17, 2011

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.



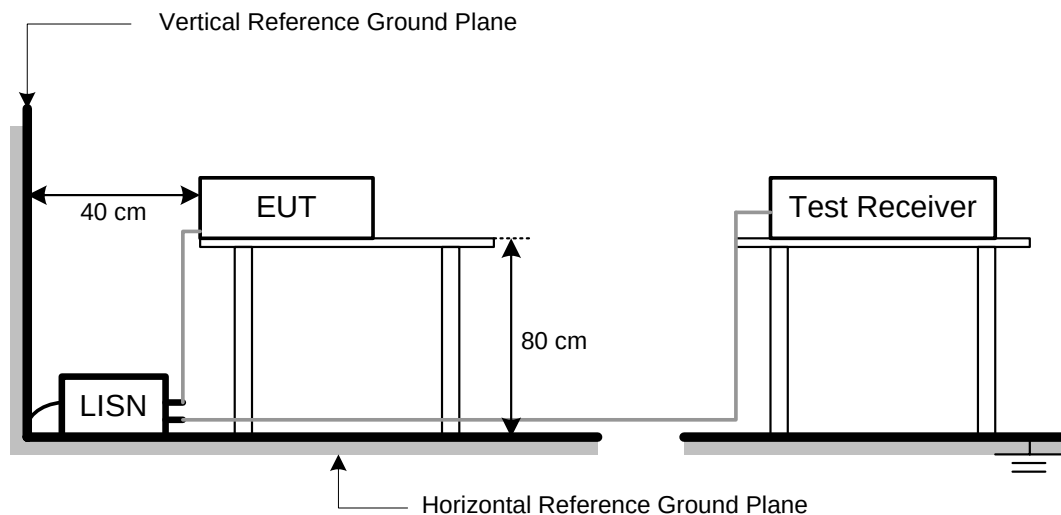
4.1.3 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP





4.1.6 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



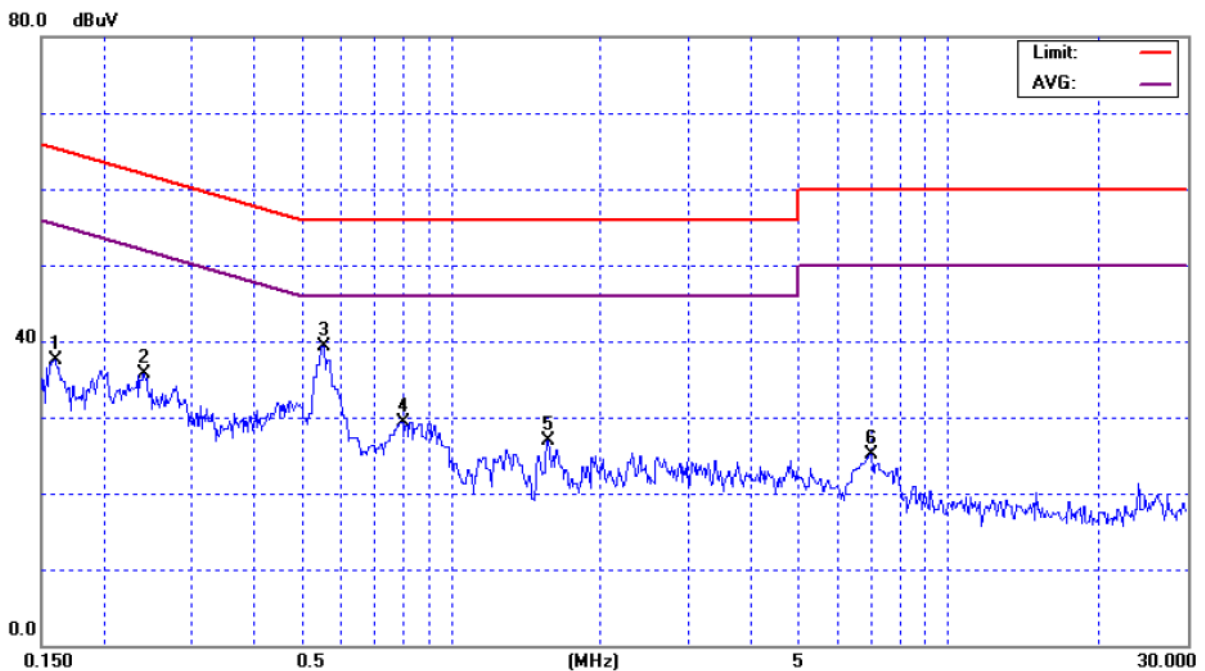
4.1.7 TEST RESULTS

EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24° C	Relative Humidity :	42%
Test Voltage :	AC 120V/60Hz (Adpater)		
Test Mode :	1M_CH39		

Freq. (MHz)	Terminal L/N	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV)		Limit(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.1591	Line	27.79	*	9.72	37.51	*	65.51	55.51	-28.00	(QP)
0.2410	Line	25.91	*	9.70	35.61	*	62.06	52.06	-26.45	(QP)
0.5540	Line	29.67	*	9.66	39.33	*	56.00	46.00	-16.67	(QP)
0.7970	Line	19.71	*	9.63	29.34	*	56.00	46.00	-26.66	(QP)
1.5620	Line	17.22	*	9.61	26.83	*	56.00	46.00	-29.17	(QP)
7.0000	Line	15.29	*	9.80	25.09	*	60.00	50.00	-34.91	(QP)

Remark:

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9 kHz; SPA setting in RBW=10 kHz, VBW =10 kHz, Swp. Time = 0.2 sec./ MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10 kHz, VBW=10 kHz, Swp. Time =0.2 sec./ MHz.
- (2) All readings are QP Mode value unless otherwise stated AVG in column of Note. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a "*" marked in AVG Mode column of Interference Voltage Measured.
- (3) In the "Note" column, QP means the margin value of QP is higher than Average and the "Margin" column shows the margin value of QP; AV means the margin value of Average is higher than QP and the "Margin" column shows the margin value of Average.



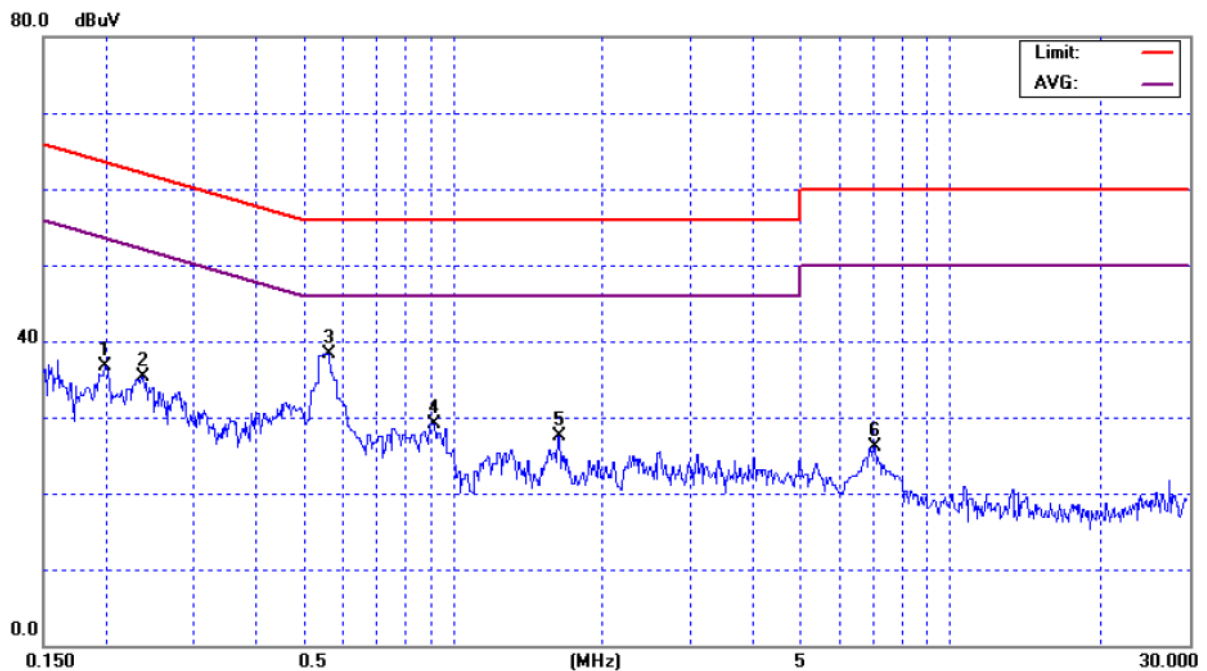


EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24° C	Relative Humidity :	42%
Test Voltage :	AC 120V/60Hz (Adpater)		
Test Mode :	1M_CH39		

Freq. (MHz)	Terminal L/N	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV)		Limit(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.1997	Neutral	26.94	*	9.75	36.69	*	63.62	53.62	-26.93	(QP)
0.2368	Neutral	25.51	*	9.74	35.25	*	62.21	52.21	-26.96	(QP)
0.5630	Neutral	28.63	*	9.70	38.33	*	56.00	46.00	-17.67	(QP)
0.9140	Neutral	19.44	*	9.67	29.11	*	56.00	46.00	-26.89	(QP)
1.6340	Neutral	17.76	*	9.67	27.43	*	56.00	46.00	-28.57	(QP)
7.0500	Neutral	16.30	*	9.90	26.20	*	60.00	50.00	-33.80	(QP)

Remark:

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9 kHz; SPA setting in RBW=10 kHz, VBW =10 kHz, Swp. Time = 0.2 sec./ MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10 kHz, VBW=10 kHz, Swp. Time =0.2 sec./ MHz.
- (2) All readings are QP Mode value unless otherwise stated AVG in column of Note. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a " * " marked in AVG Mode column of Interference Voltage Measured.
- (3) In the "Note" column, QP means the margin value of QP is higher than Average and the "Margin" column shows the margin value of QP; AV means the margin value of Average is higher than QP and the "Margin" column shows the margin value of Average.





4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS (Frequency Range 9KHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80	60	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15B.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).
- (4) The test result calculated as following:
 Measurement Value = Reading Level + Correct Factor
 Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain(if use)
 Margin Level = Measurement Value – Limit Value



4.2.2 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Aug. 31, 2011
2	Horn Antenna	Schwarzbeck	BBHA 9120	D-325	Dec. 15, 2010
3	Microwave Pre-amplifier	Agilent	8449B	3008A01714	Apr. 19, 2011
4	Microflex Cable	N/A	N/A	1m	May. 21, 2011
5	Microflex Cable	AISI	S104-SMAP-1	10m	Aug. 22, 2011
6	Microflex Cable	N/A	N/A	3m	Aug. 22, 2011
7	Test Cable	N/A	LMR-400	966_12m	Jun. 17, 2011
8	Test Cable	N/A	LMR-400	966_3m	Jun. 17, 2011
9	Pre-Amplifier	EMC	EMC-330	980001	Jun. 03, 2011
10	Log-Bicon Antenna	Schwarzbeck	VULB9168-352	9168-352	Jun. 17, 2011

Remark: " N/A" denotes No Model Name / Serial No. and No Calibration specified.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (other emission)	100KHz / 100KHz for peak

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP



4.2.3 TEST PROCEDURE

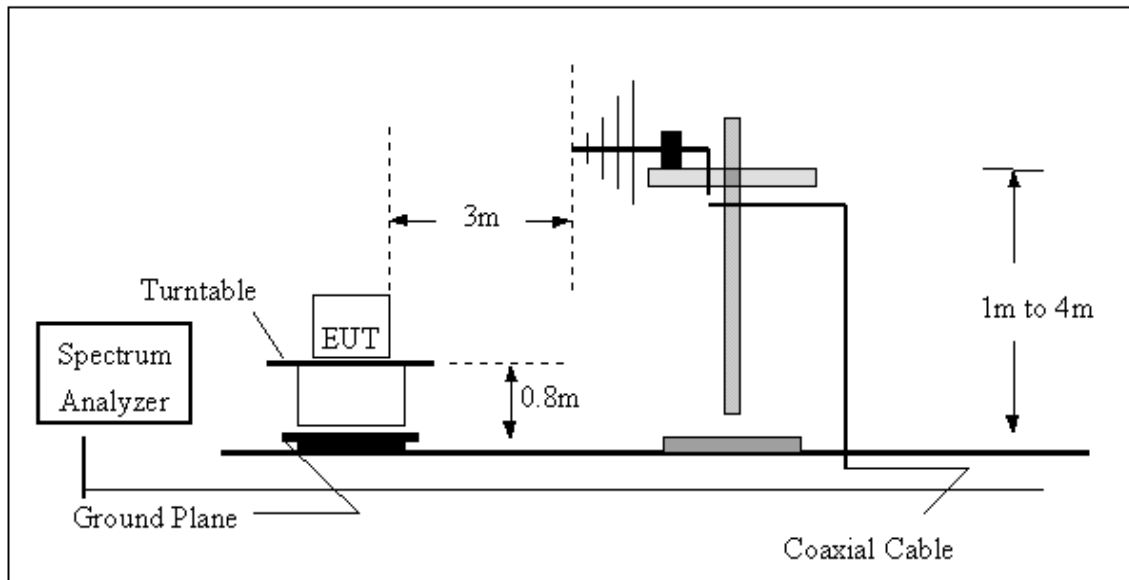
- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.
- g. The testing follows the guidelines in ANSI C63.4-2003 and FCC Public Notice DA 00-705 Measurement Guidelines. In case the emission is fail due to the used RBW / VBW is too wide, marker-delta method of FCC Public Notice DA 00-705 will be followed.

4.2.4 DEVIATION FROM TEST STANDARD

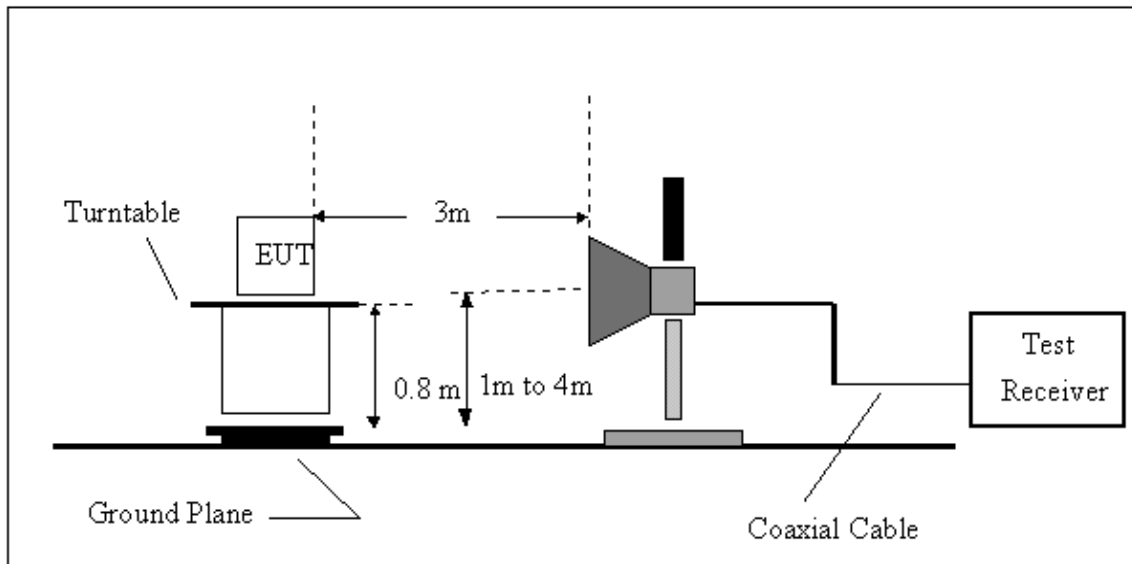
No deviation

4.2.5 TEST SETUP

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



4.2.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **4.1.6** Unless otherwise a special operating condition is specified in the follows during the testing.



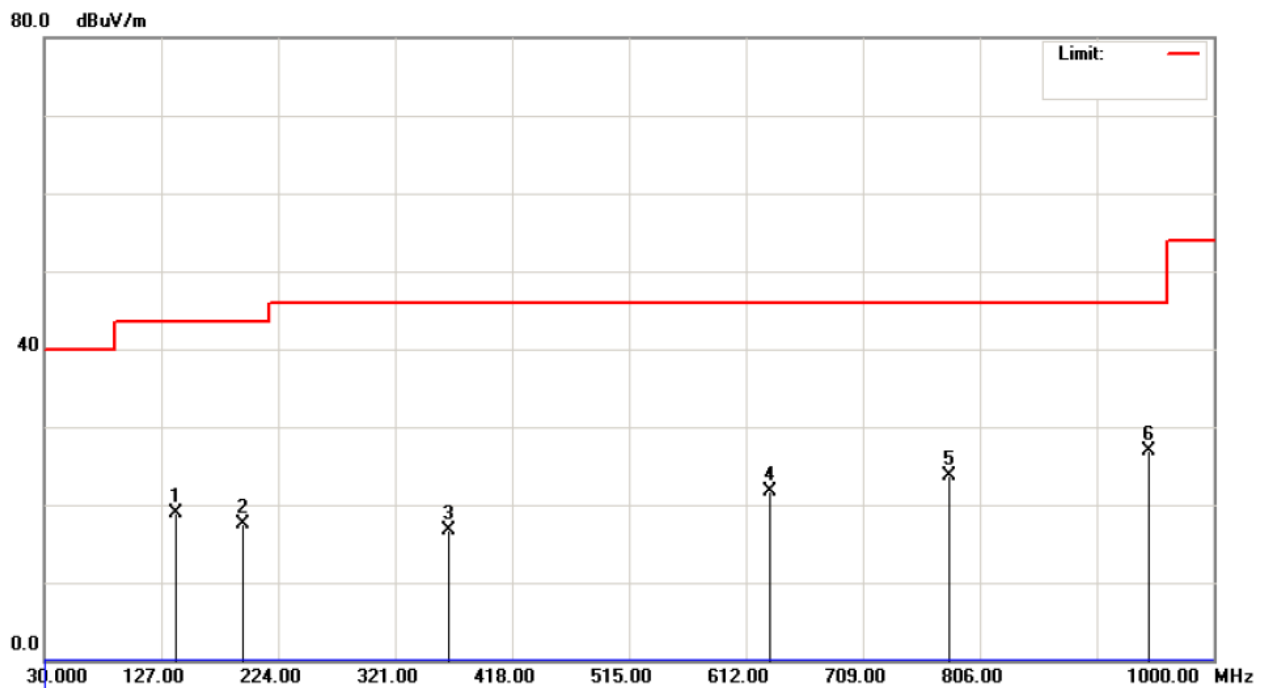
4.2.7 TEST RESULTS-BETWEEN 30MHZ – 1000MHZ

EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24 °C	Relative Humidity :	51%
Test Voltage :	DC 3.7V	EUT Orthogonal Axis :	Y
Test Mode :	1M_CH39		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
138.64	V	35.96	-17.08	18.88	43.50	- 24.62	
194.90	V	36.86	-19.28	17.58	43.50	- 25.92	
365.62	V	30.78	-14.14	16.64	46.00	- 29.36	
631.40	V	30.14	-8.34	21.80	46.00	- 24.20	
780.78	V	29.86	-6.23	23.63	46.00	- 22.37	
945.68	V	30.31	-3.39	26.92	46.00	- 19.08	

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) EUT Orthogonal Axis :
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (3) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



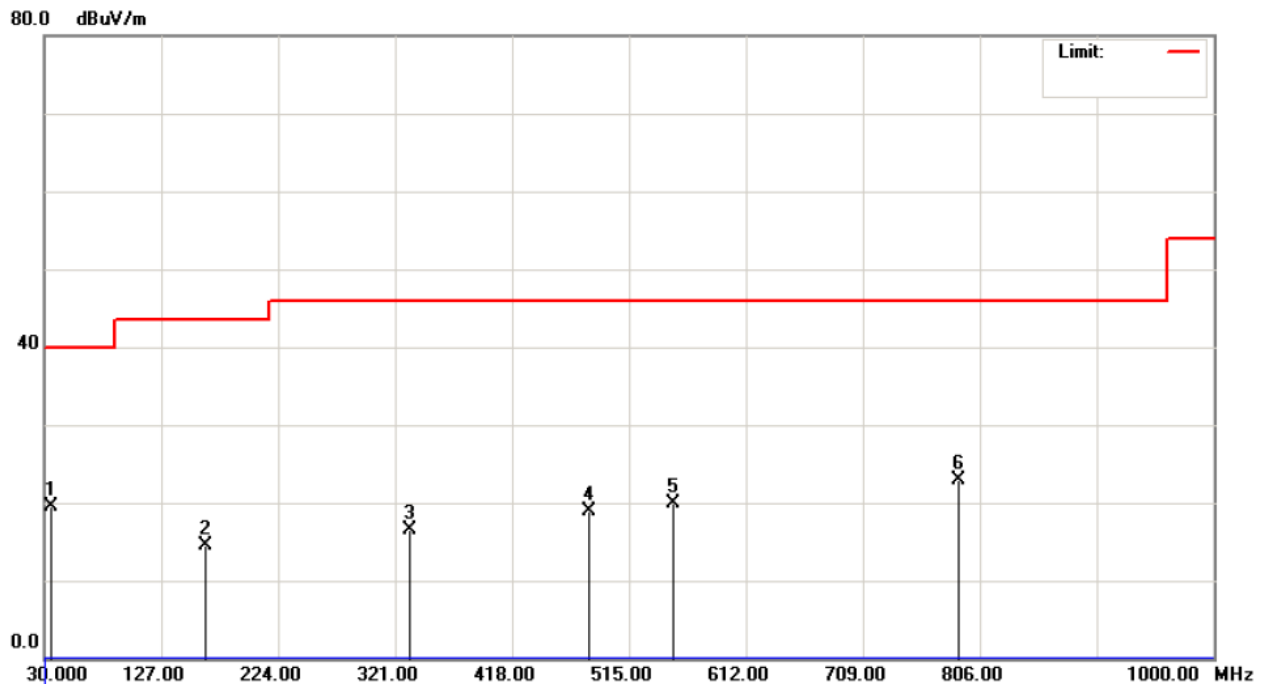


EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24° C	Relative Humidity :	51%
Test Voltage :	DC 3.7V	EUT Orthogonal Axis :	Y
Test Mode :	1M_CH39		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
35.82	H	36.61	-17.12	19.49	40.00	- 20.51	
163.86	H	31.36	-16.76	14.60	43.50	- 28.90	
332.64	H	31.48	-14.98	16.50	46.00	- 29.50	
482.02	H	30.22	-11.32	18.90	46.00	- 27.10	
551.86	H	29.88	-9.96	19.92	46.00	- 26.08	
788.54	H	29.02	-6.14	22.88	46.00	- 23.12	

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) EUT Orthogonal Axis :
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (3) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.





4.2.8 TEST RESULTS-ABOVE 1000MHZ

EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24 °C	Relative Humidity :	51%
Test Voltage :	DC 3.7V	EUT Orthogonal Axis :	Y
Test Mode :	1M_CH00		

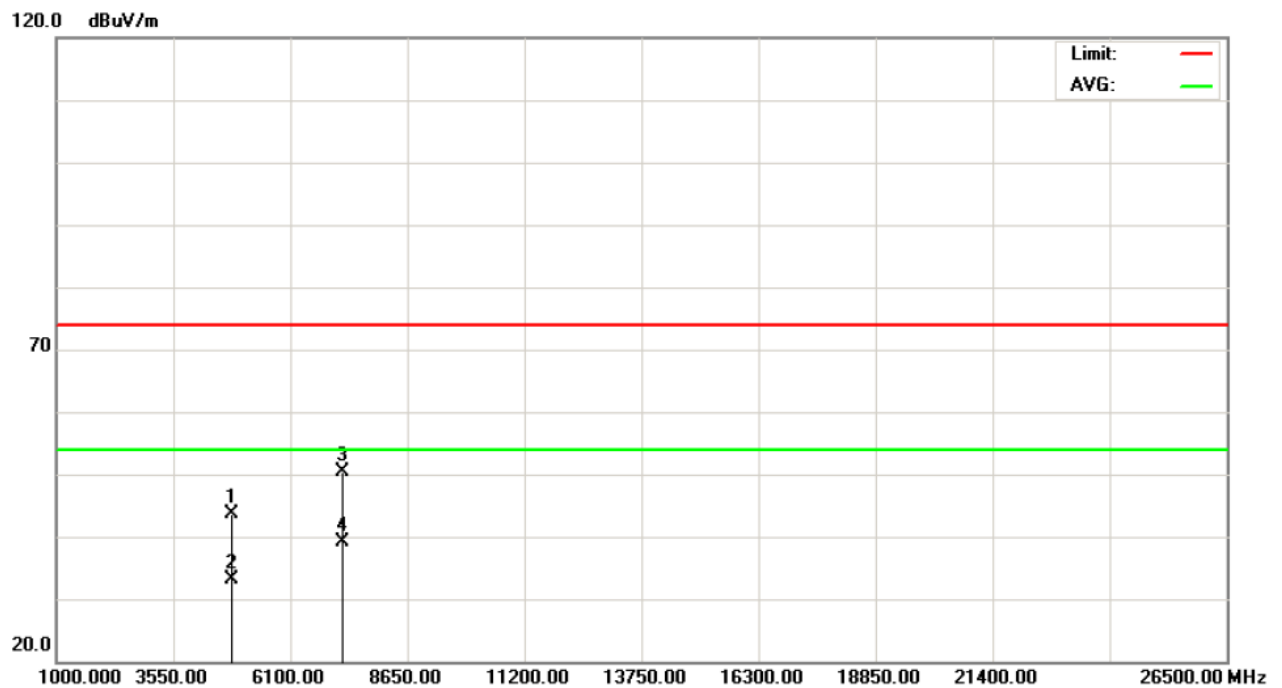
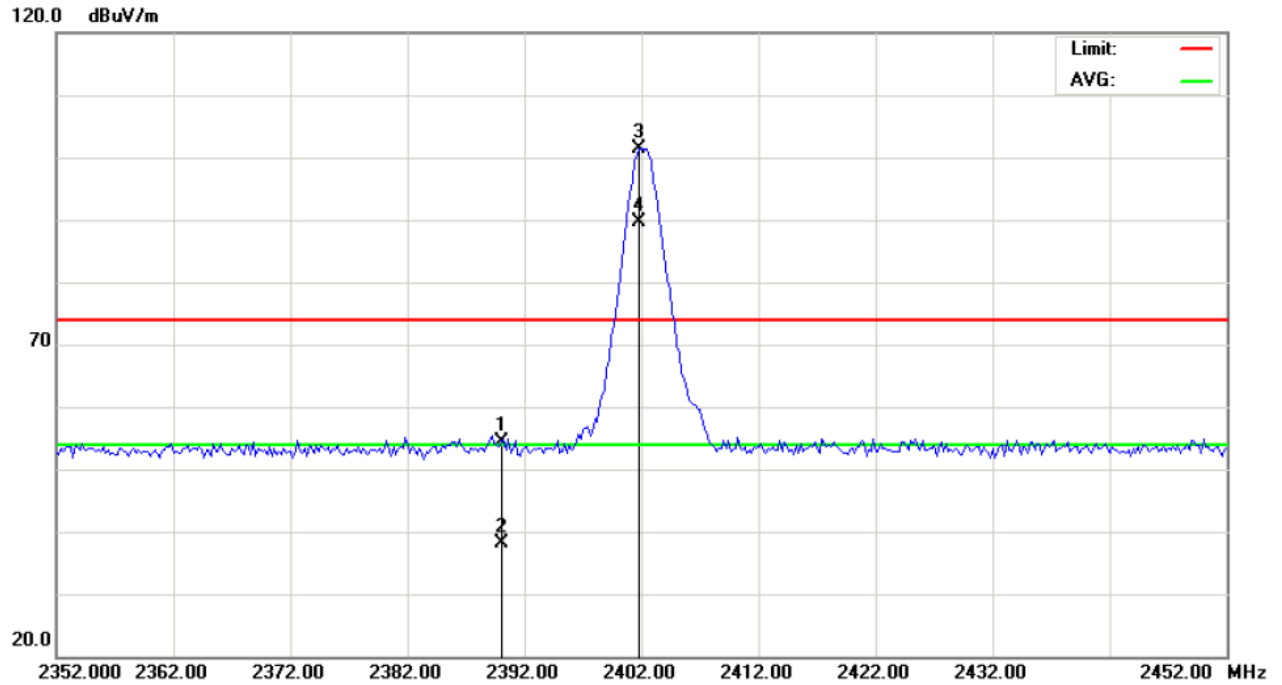
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	V	23.12	6.88	31.26	54.38	38.14	74.00	54.00	Y/E
2401.80	V	70.13	58.28	31.32	101.45	89.60			Y/F
4804.05	V	40.70	30.24	2.84	43.54	33.08	74.00	54.00	Y/H
7206.06	V	41.88	30.54	8.60	50.48	39.14	74.00	54.00	Y/H

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna



Orthogonal Axis : Y
CH00(Above 1000 MHz, Vertical)





EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24 °C	Relative Humidity :	51%
Test Voltage :	DC 3.7V	EUT Orthogonal Axis :	Y
Test Mode :	1M_CH00		

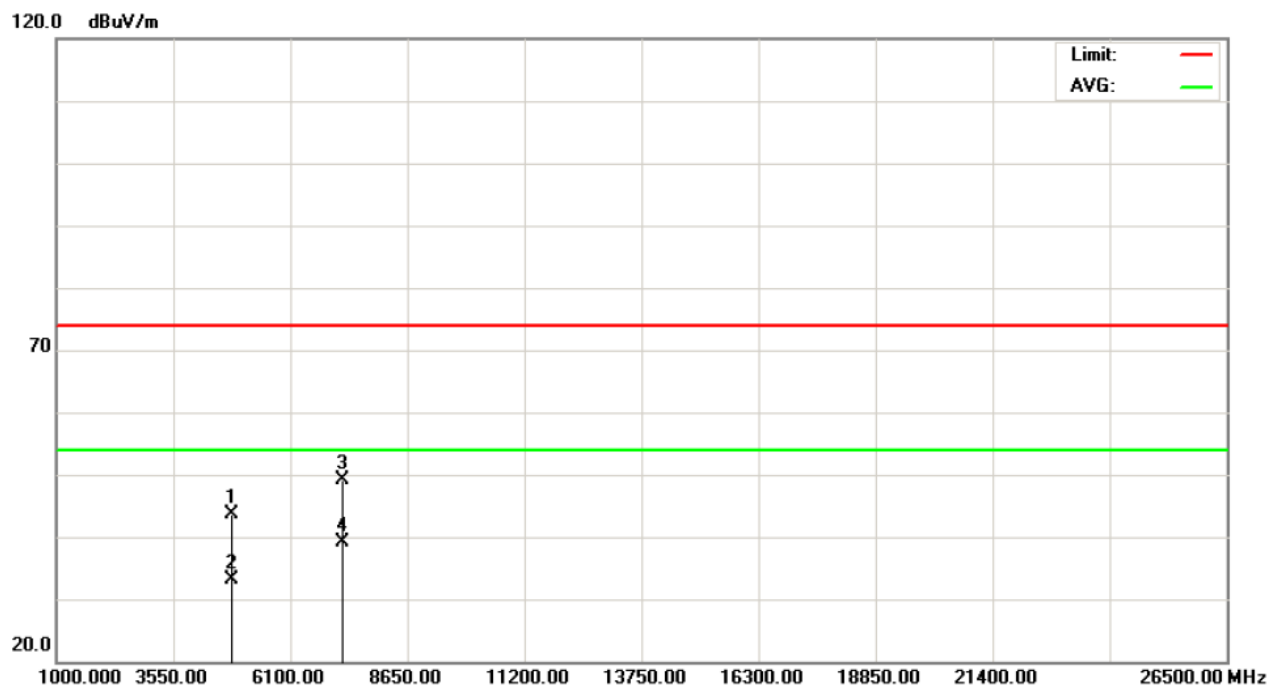
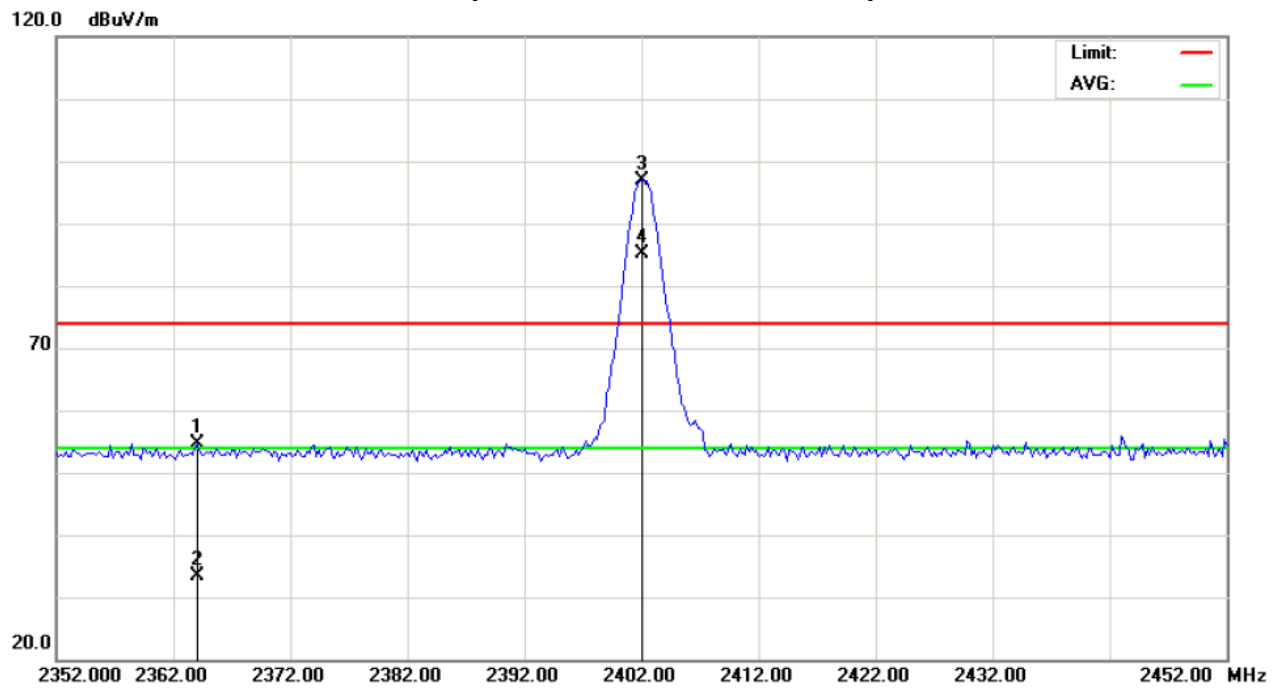
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2364.00	H	23.58	2.29	31.15	54.73	33.44	74.00	54.00	Y/E
2402.00	H	65.64	53.69	31.32	96.96	85.01			Y/F
4804.06	H	40.85	30.24	2.84	43.69	33.08	74.00	54.00	Y/H
7205.96	H	40.42	30.52	8.60	49.02	39.12	74.00	54.00	Y/H

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna



Orthogonal Axis : Y
CH00(Above 1000 MHz, Horizontal)





EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24 ° C	Relative Humidity :	51%
Test Voltage :	DC 3.7V	EUT Orthogonal Axis :	Y
Test Mode :	1M_CH39		

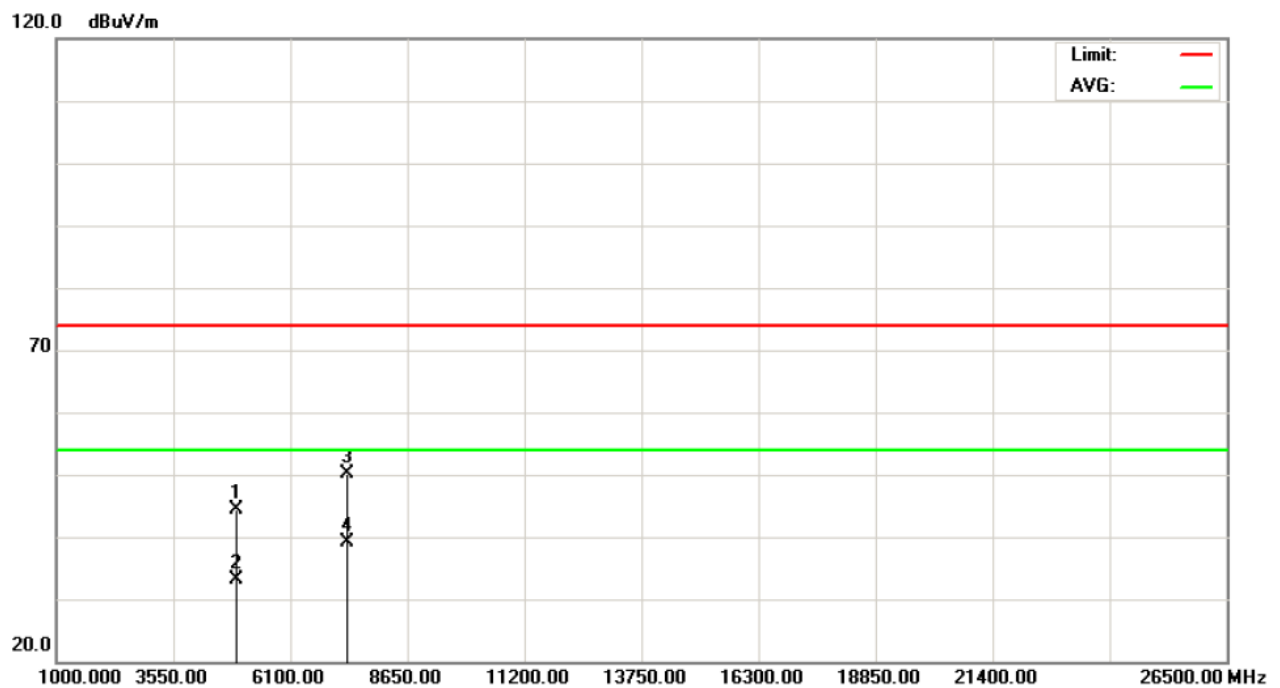
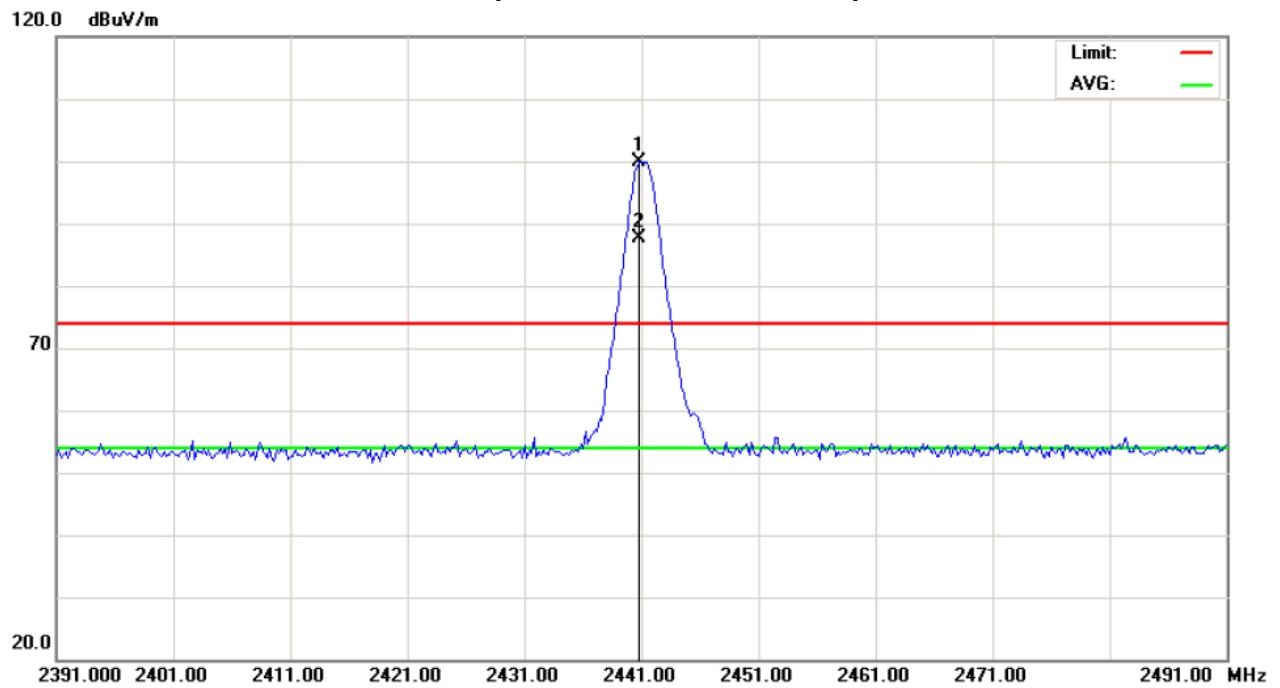
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2440.80	V	68.44	56.08	31.49	99.93	87.57			Y/F
4881.98	V	41.43	30.19	3.03	44.46	33.22	74.00	54.00	Y/H
7323.11	V	41.42	30.36	8.77	50.19	39.13	74.00	54.00	Y/H

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna



Orthogonal Axis : Y
CH39 (Above 1000 MHz, Vertical)





EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24 °C	Relative Humidity :	51%
Test Voltage :	DC 3.7V	EUT Orthogonal Axis :	Y
Test Mode :	1M_CH39		

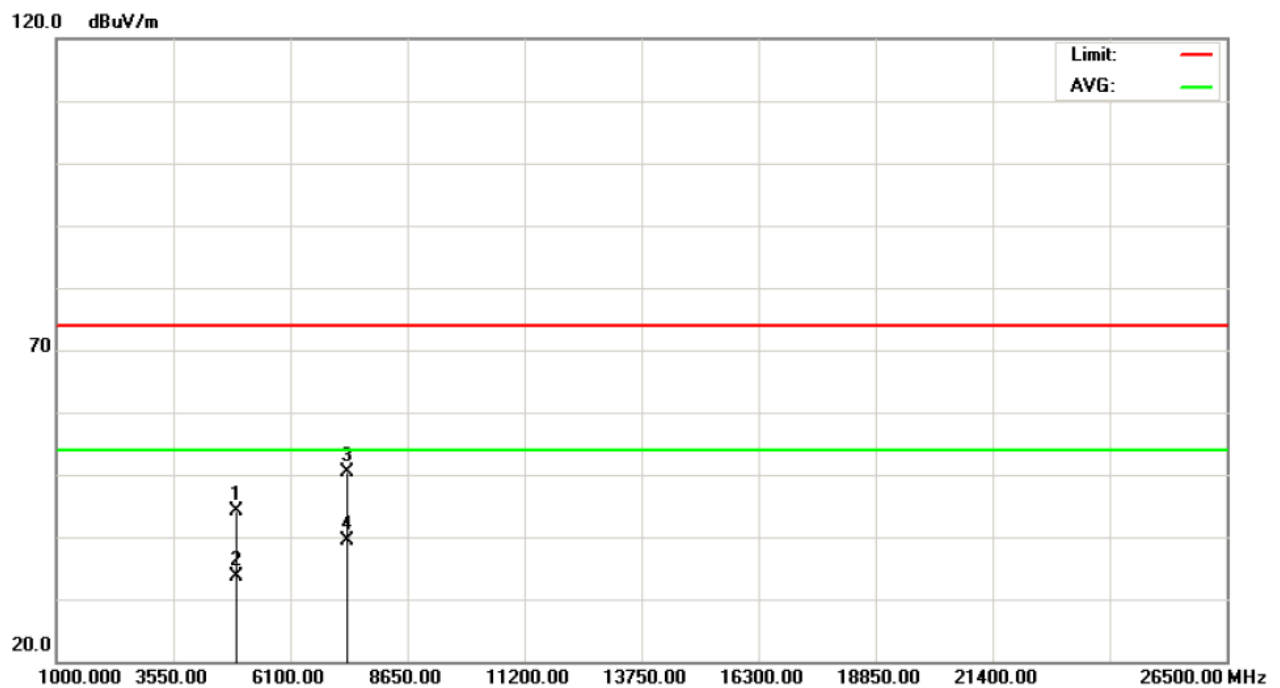
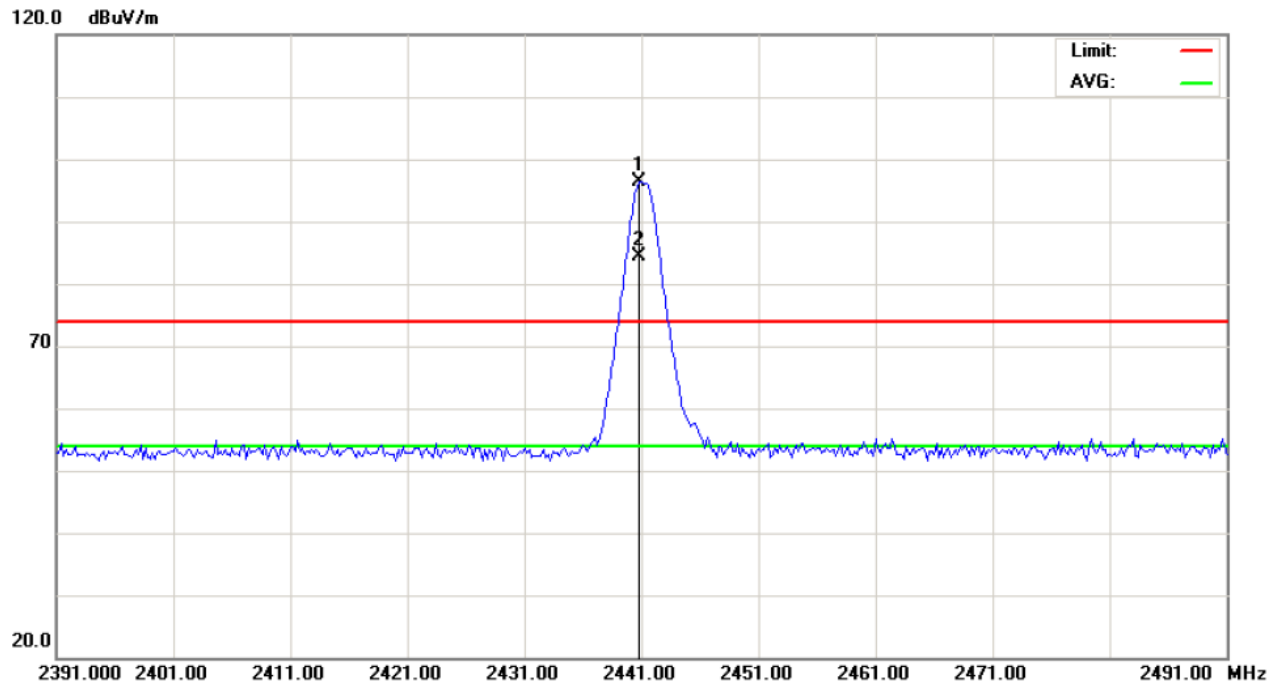
Freq. (MHz)	Ant. Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2440.80	H	64.80	52.90	31.49	96.29	84.39			Y/F
4882.03	H	41.18	30.71	3.04	44.22	33.75	74.00	54.00	Y/H
7322.96	H	41.64	30.64	8.77	50.41	39.41	74.00	54.00	Y/H

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna



Orthogonal Axis : Y
CH39 (Above 1000 MHz, Horizontal)





EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24 °C	Relative Humidity :	51%
Test Voltage :	DC 3.7V	EUT Orthogonal Axis :	Y
Test Mode :	1M_CH78		

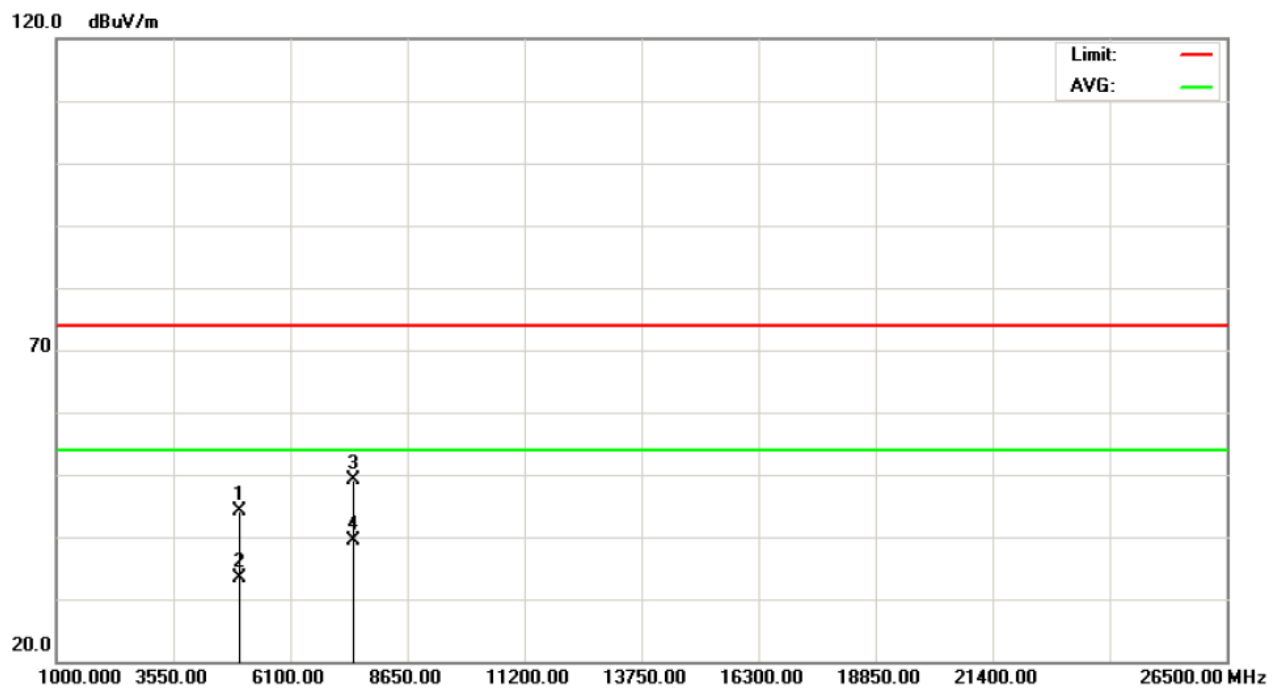
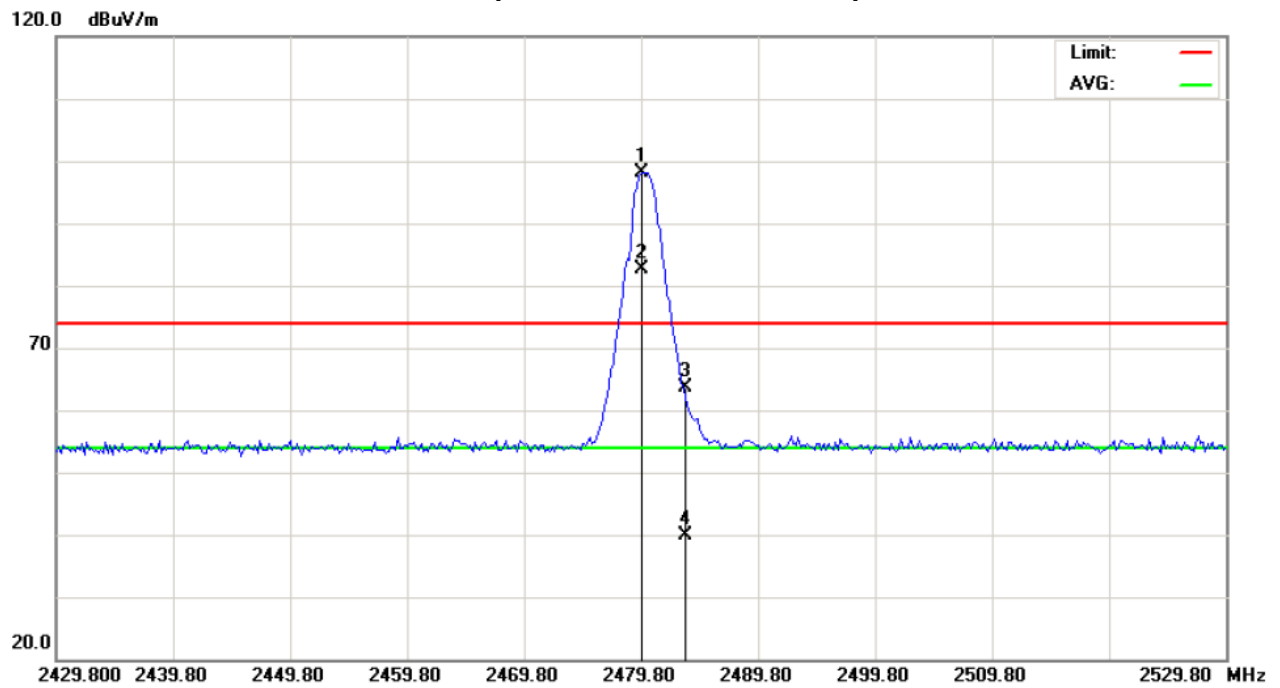
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2479.80	V	66.59	51.06	31.66	98.25	82.72			Y/F
2483.50	V	31.83	8.14	31.68	63.51	39.82	74.00	54.00	Y/H
4960.11	V	41.02	30.13	3.23	44.25	33.36	74.00	54.00	Y/H
7440.05	V	40.08	30.48	8.95	49.03	39.43	74.00	54.00	Y/H

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna



Orthogonal Axis : Y
CH78 (Above 1000 MHz, Vertical)





EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24 ° C	Relative Humidity :	51%
Test Voltage :	DC 3.7V	EUT Orthogonal Axis :	Y
Test Mode :	1M_CH78		

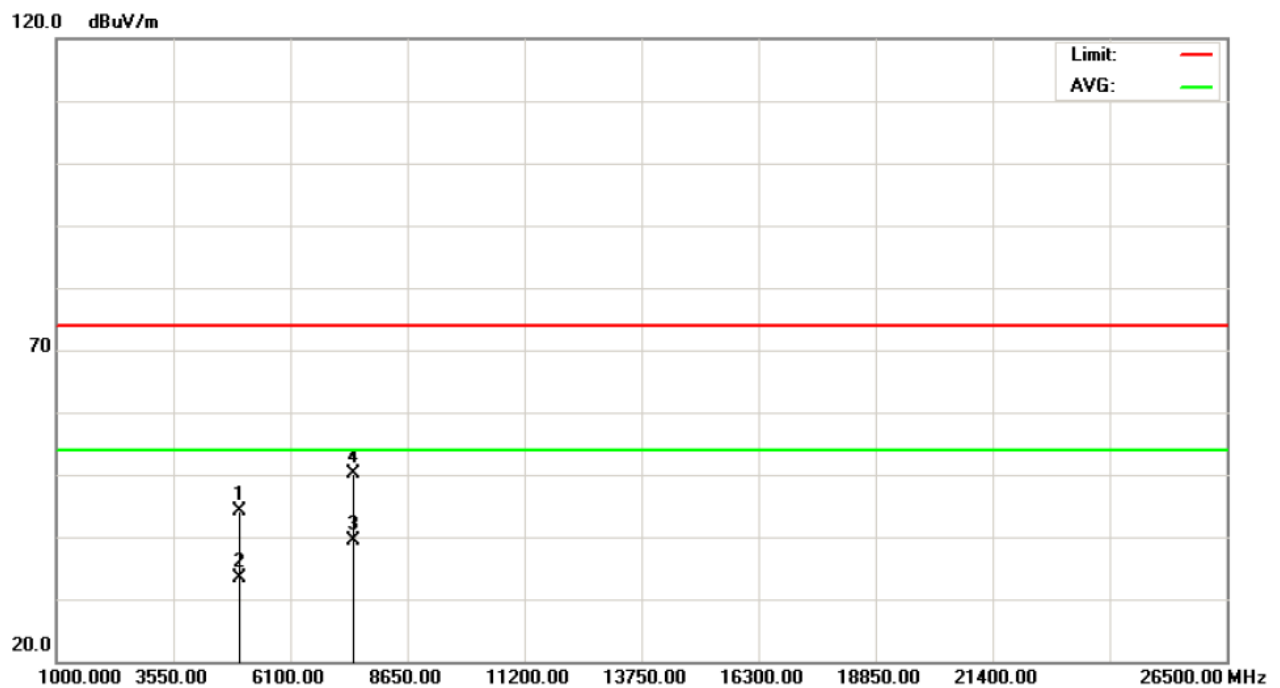
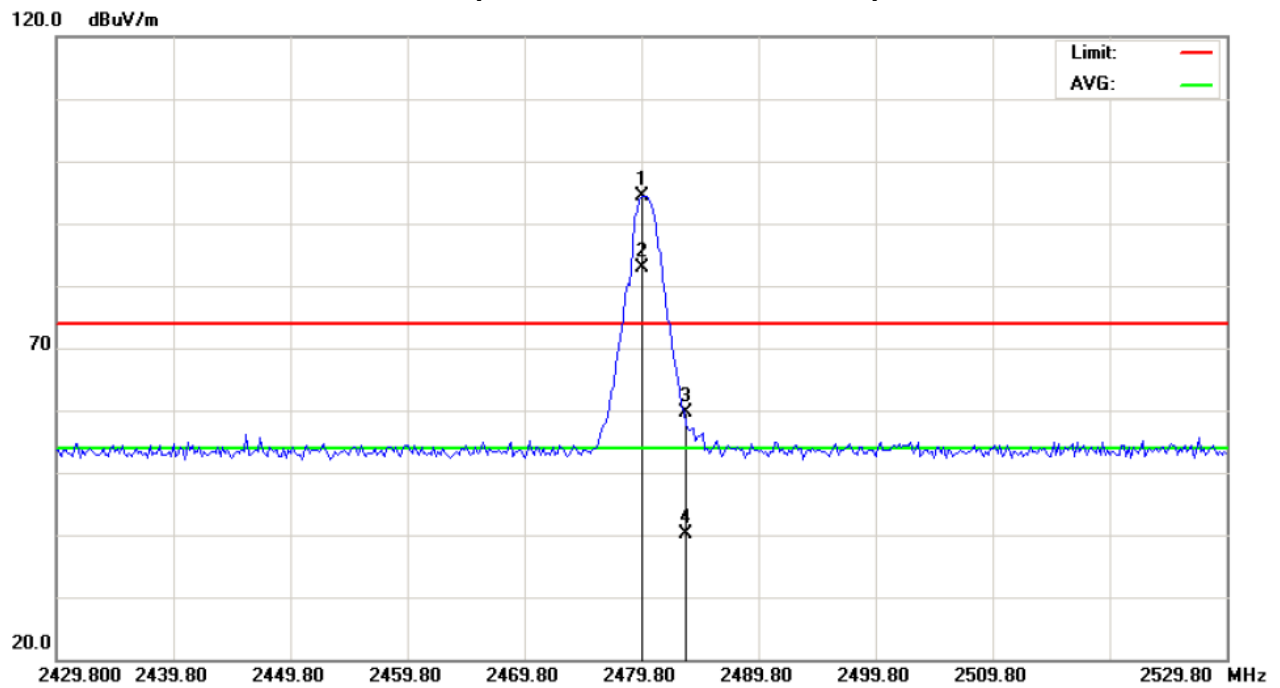
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2479.80	H	62.67	51.34	31.66	94.33	83.00			Y/F
2483.50	H	28.01	8.42	31.68	59.69	40.10	74.00	54.00	Y/H
4959.96	H	40.94	30.07	3.23	44.17	33.30	74.00	54.00	Y/H
7440.04	H	41.12	30.44	8.95	50.07	39.39	74.00	54.00	Y/H

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency◦“F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown “ * ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :
“X” - denotes Laid on Table ; “Y” - denotes Vertical Stand ; “Z” - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna



Orthogonal Axis : Y
CH78 (Above 1000 MHz, Horizontal)





EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24 ° C	Relative Humidity :	51%
Test Voltage :	DC 3.7V	EUT Orthogonal Axis :	Y
Test Mode :	3M_CH00		

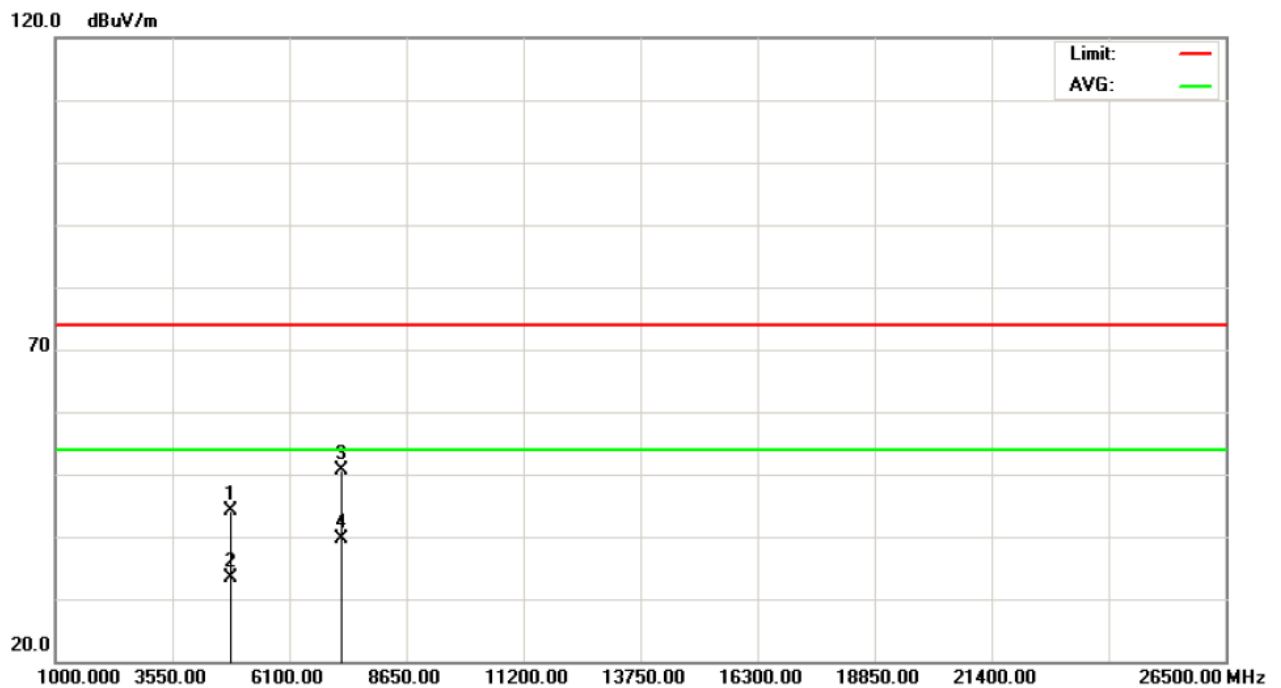
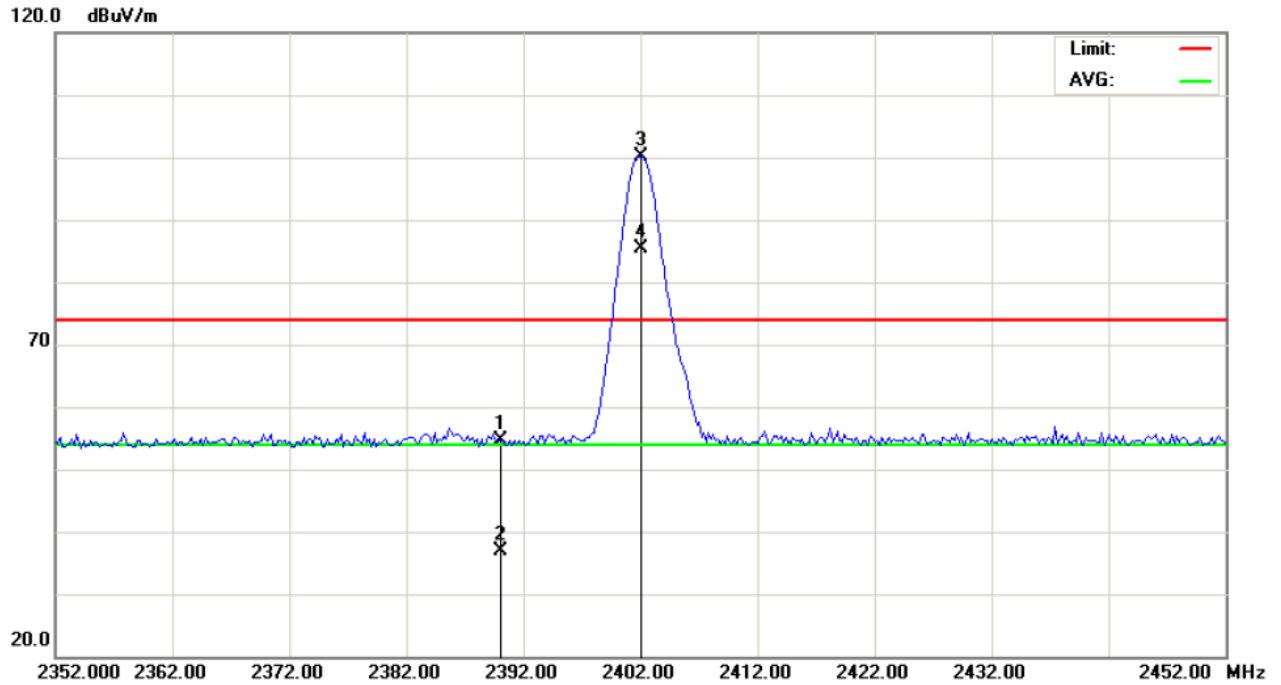
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	V	23.26	5.66	31.26	54.52	36.92	74.00	54.00	Y/E
2402.00	V	68.92	54.14	31.32	100.24	85.46			Y/F
4803.95	V	41.35	30.58	2.84	44.19	33.42	74.00	54.00	Y/H
7205.97	V	42.11	30.97	8.60	50.71	39.57	74.00	54.00	Y/H

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency◦“F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown “ * ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :
“X” - denotes Laid on Table ; “Y” - denotes Vertical Stand ; “Z” - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna



Orthogonal Axis : Y
CH00(Above 1000 MHz, Vertical)





EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24 °C	Relative Humidity :	51%
Test Voltage :	DC 3.7V	EUT Orthogonal Axis :	Y
Test Mode :	3M_CH00		

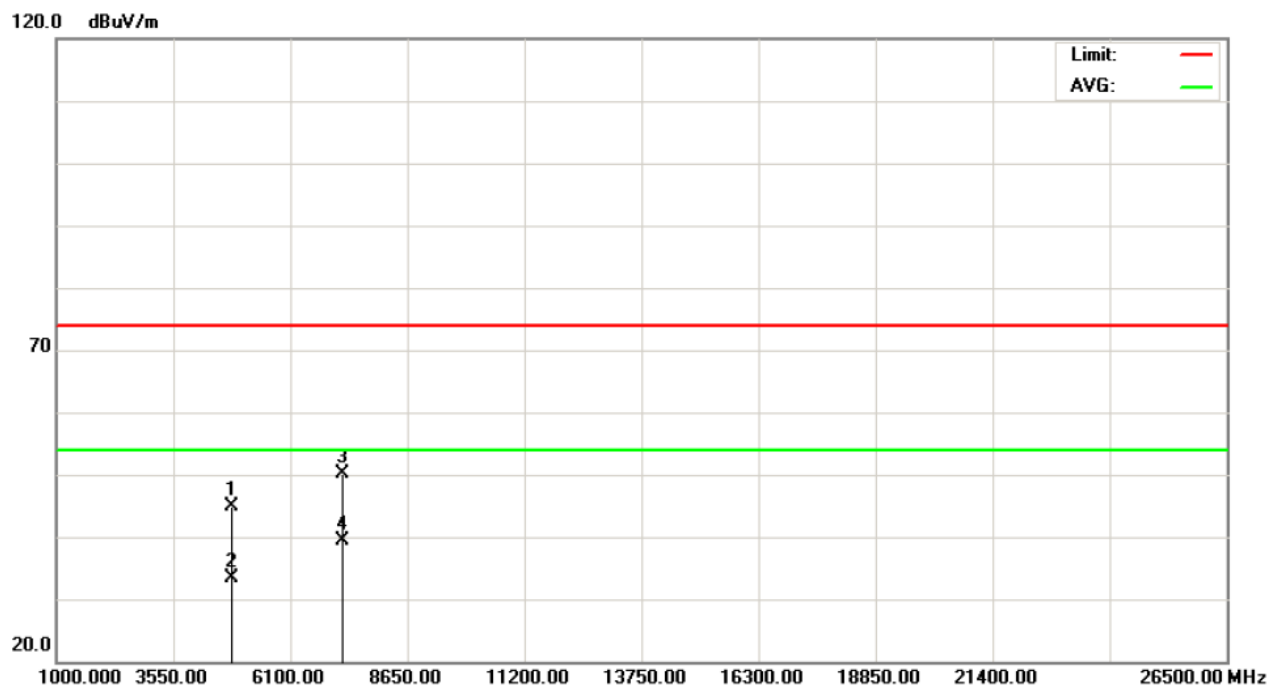
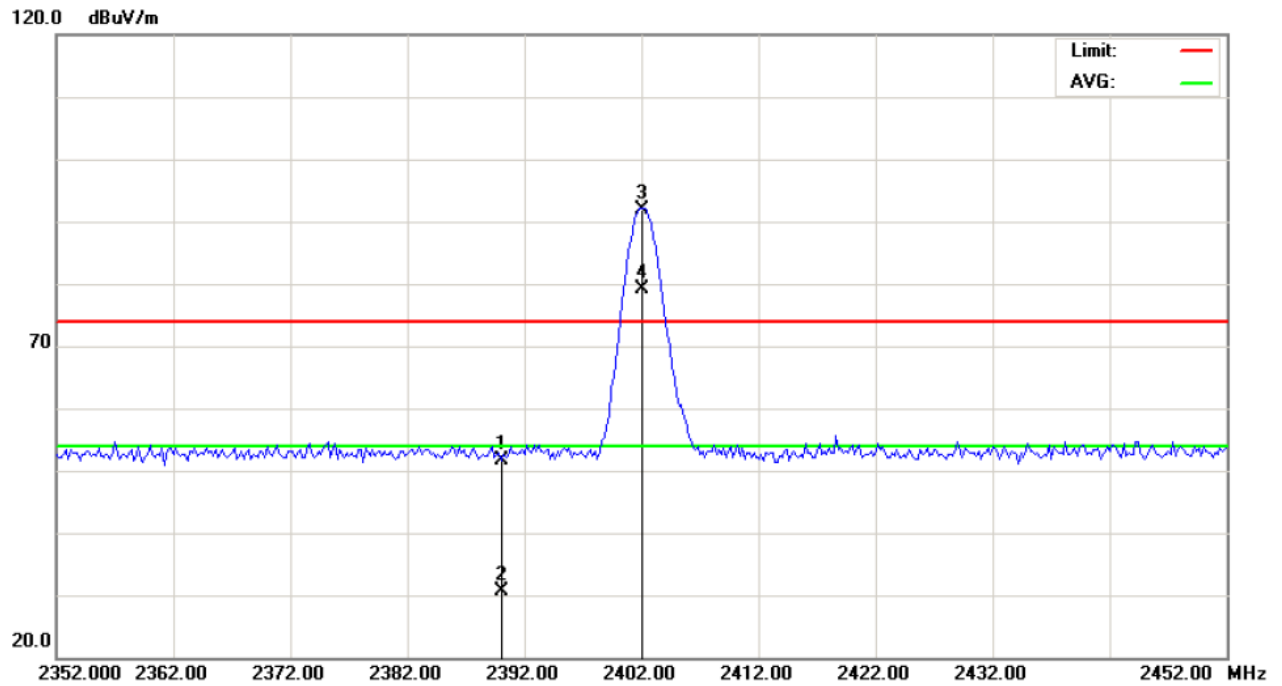
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	H	20.43	-0.74	31.26	51.69	30.52	74.00	54.00	Y/E
2402.00	H	60.68	47.74	31.32	92.00	79.06			Y/F
4804.14	H	42.14	30.58	2.84	44.98	33.42	74.00	54.00	Y/H
7206.07	H	41.46	30.88	8.60	50.06	39.48	74.00	54.00	Y/H

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna



Orthogonal Axis : Y
CH00(Above 1000 MHz, Horizontal)





EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24 °C	Relative Humidity :	51%
Test Voltage :	DC 3.7V	EUT Orthogonal Axis :	Y
Test Mode :	3M_CH39		

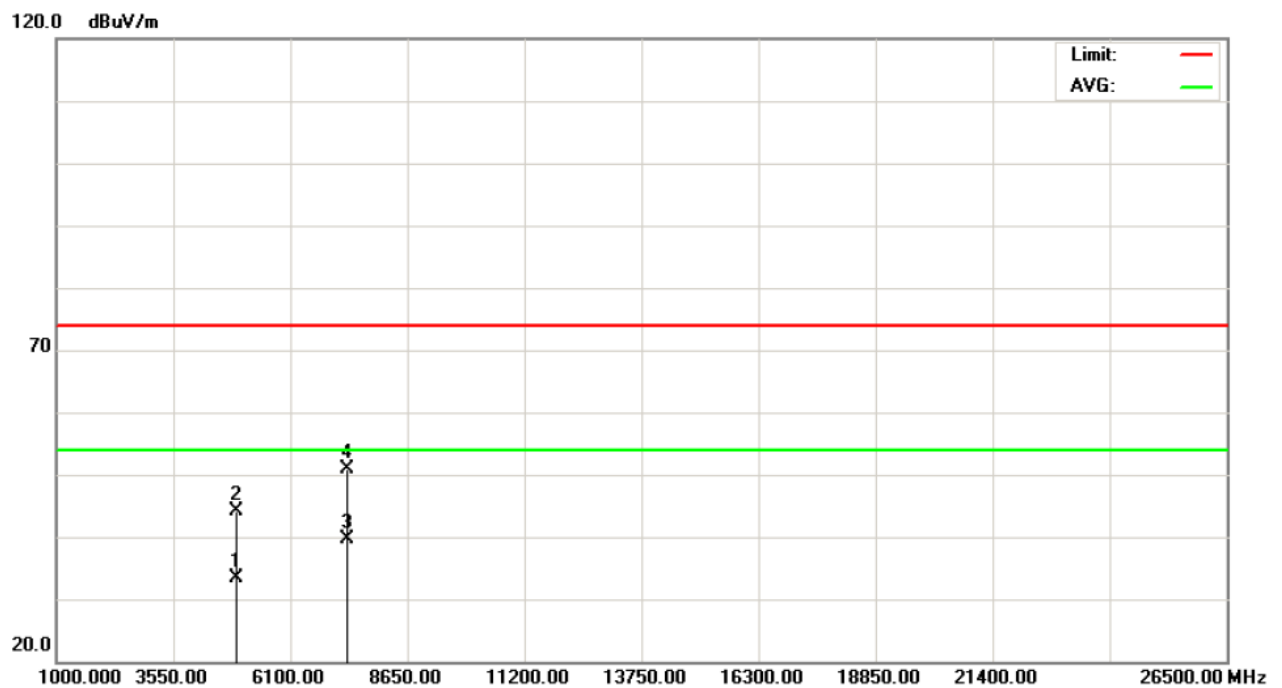
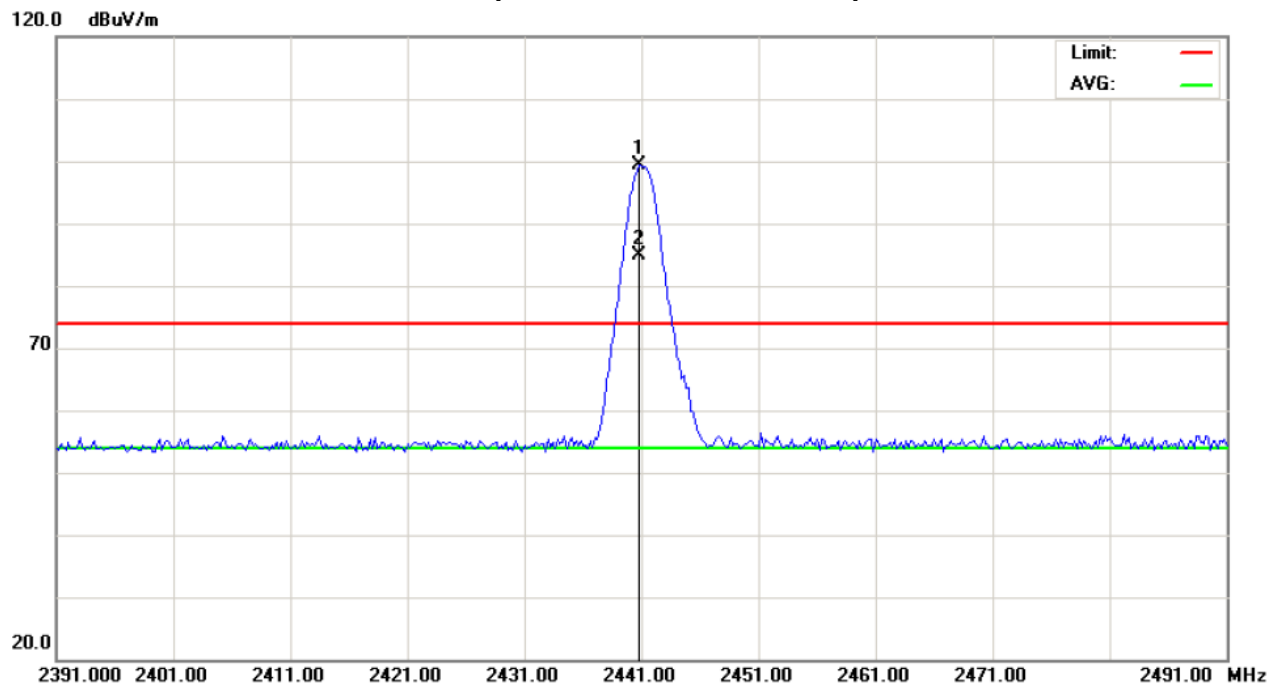
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2440.80	V	67.78	53.45	31.49	99.27	84.94			Y/F
4881.89	V	41.08	30.26	3.03	44.11	33.29	74.00	54.00	Y/H
7322.96	V	42.16	30.89	8.77	50.93	39.66	74.00	54.00	Y/H

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna



Orthogonal Axis : Y
CH39 (Above 1000 MHz, Vertical)





EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24 ° C	Relative Humidity :	51%
Test Voltage :	DC 3.7V	EUT Orthogonal Axis :	Y
Test Mode :	3M_CH39		

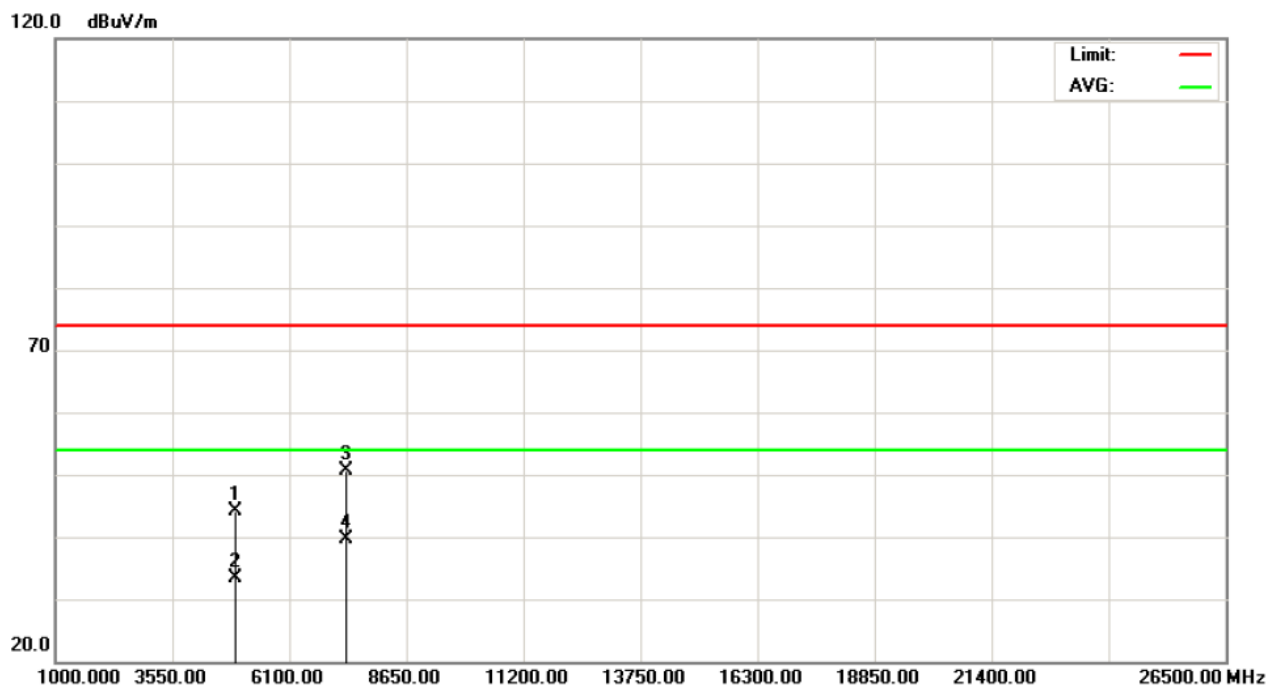
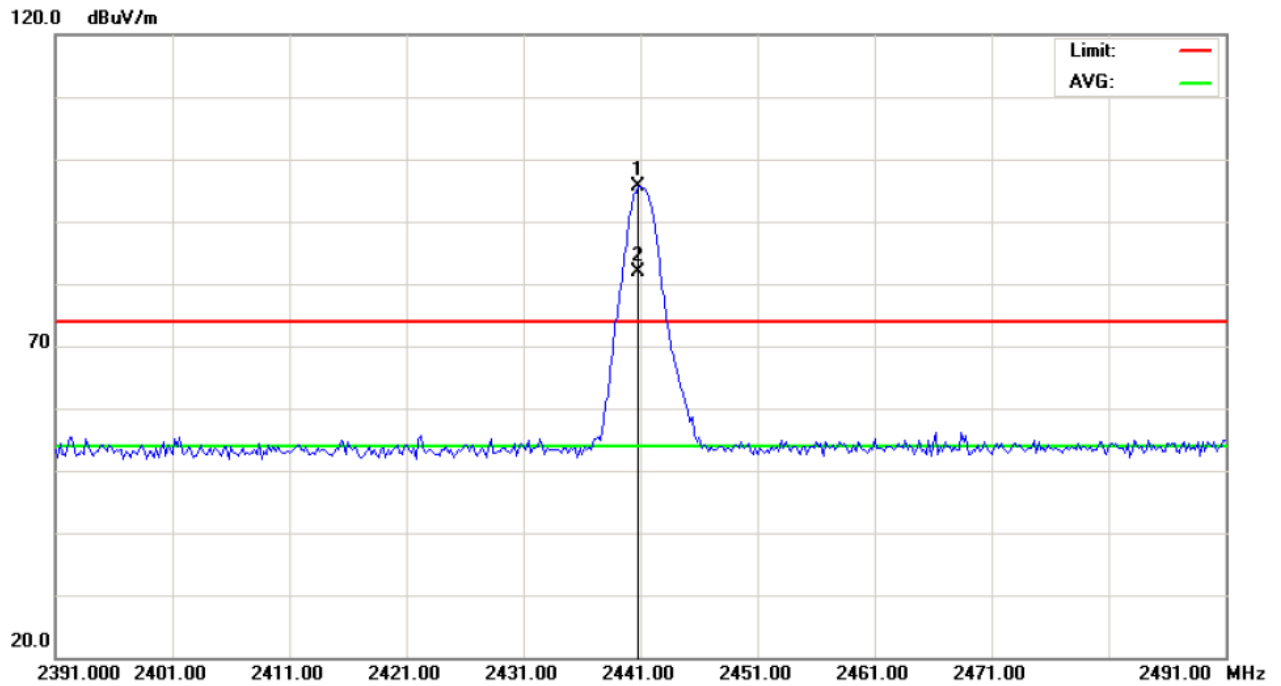
Freq. (MHz)	Ant. Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2440.00	H	64.07	50.39	31.49	95.56	81.88			Y/F
4881.94	H	41.09	30.35	3.03	44.12	33.38	74.00	54.00	Y/H
7322.95	H	41.98	30.86	8.77	50.75	39.63	74.00	54.00	Y/H

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna



Orthogonal Axis : Y
CH39 (Above 1000 MHz, Horizontal)





EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24 °C	Relative Humidity :	51%
Test Voltage :	DC 3.7V	EUT Orthogonal Axis :	Y
Test Mode :	3M_CH78		

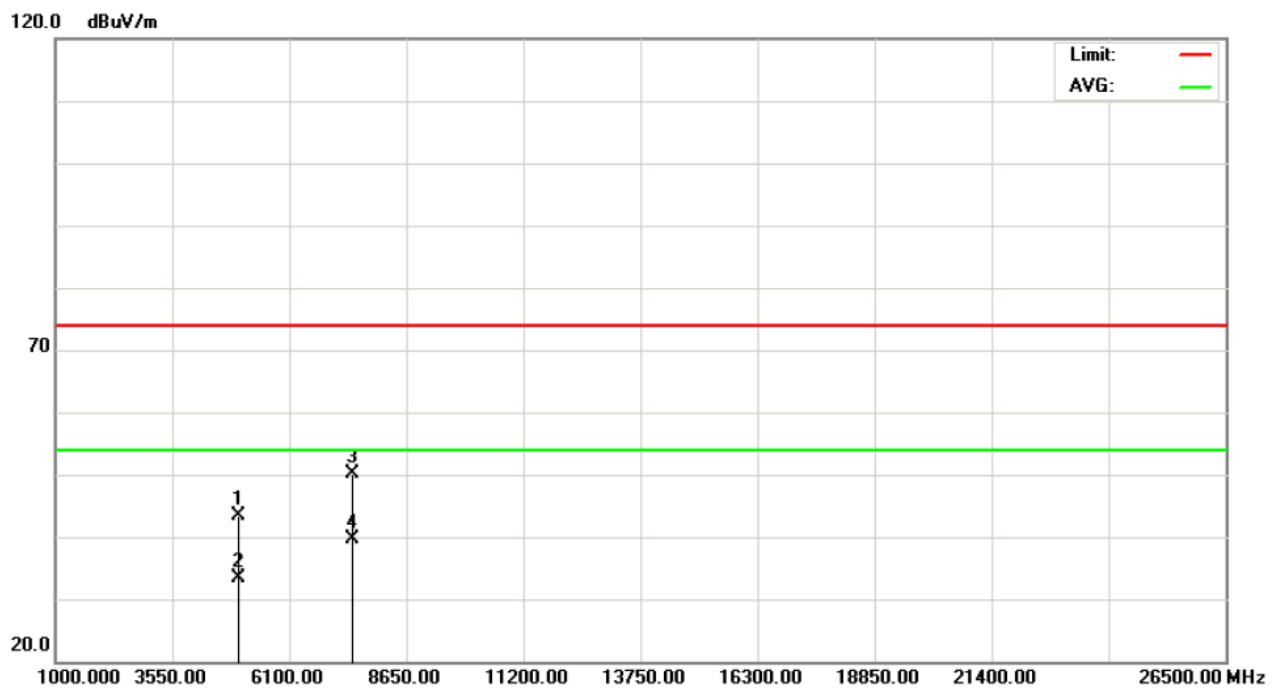
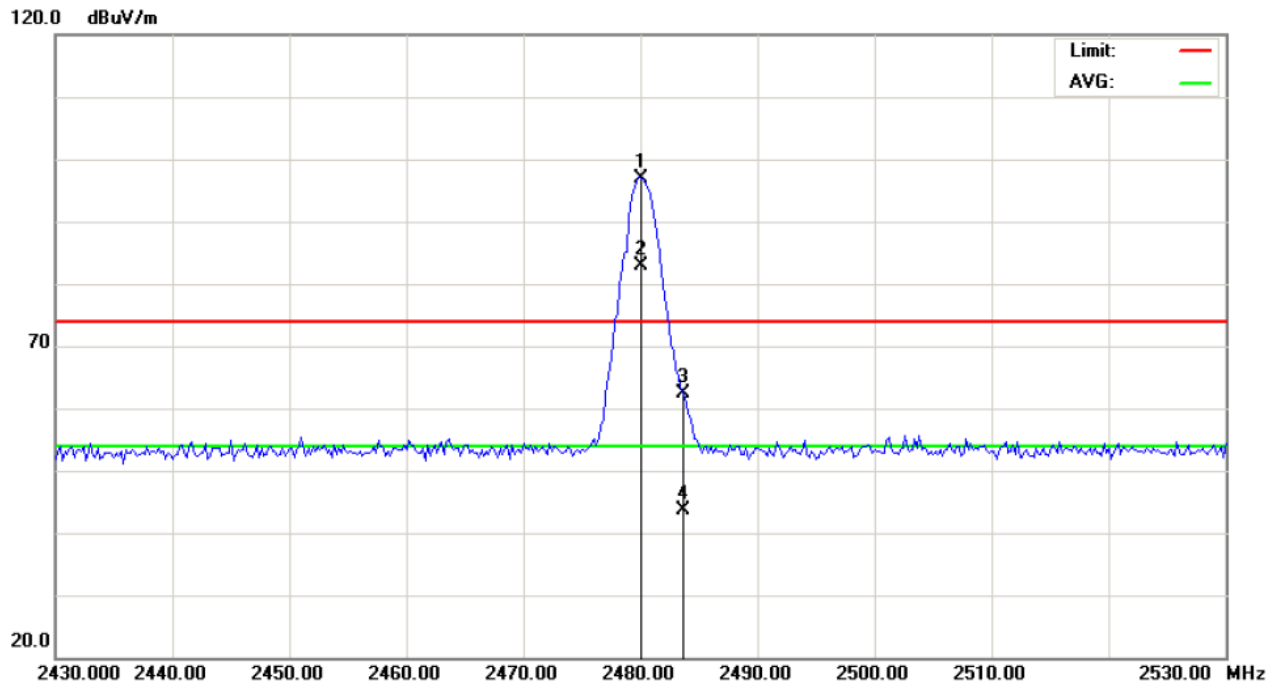
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2480.00	V	65.24	51.15	31.66	96.90	82.81			Y/F
2483.50	V	30.62	11.92	31.68	62.30	43.60	74.00	54.00	Y/H
4959.91	V	40.18	30.12	3.23	43.41	33.35	74.00	54.00	Y/H
7440.09	V	41.07	30.58	8.95	50.02	39.53	74.00	54.00	Y/H

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna



Orthogonal Axis : Y
CH78 (Above 1000 MHz, Vertical)





EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24 ° C	Relative Humidity :	51%
Test Voltage :	DC 3.7V	EUT Orthogonal Axis :	Y
Test Mode :	3M_CH78		

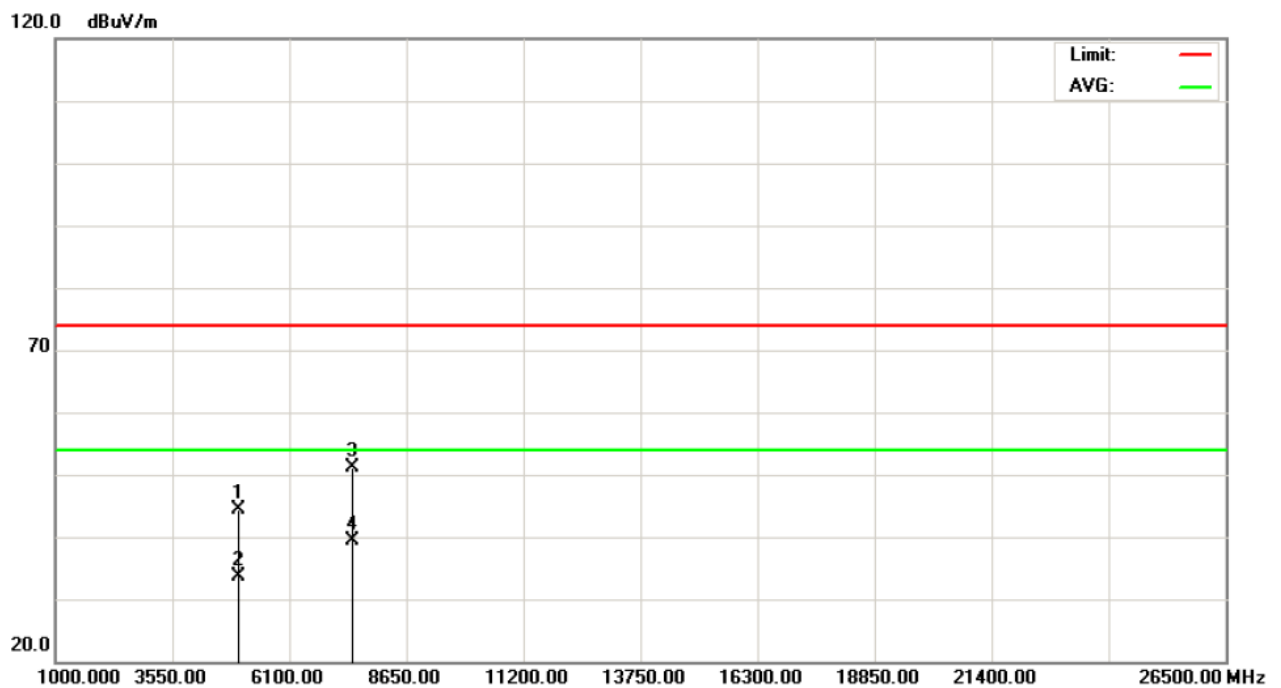
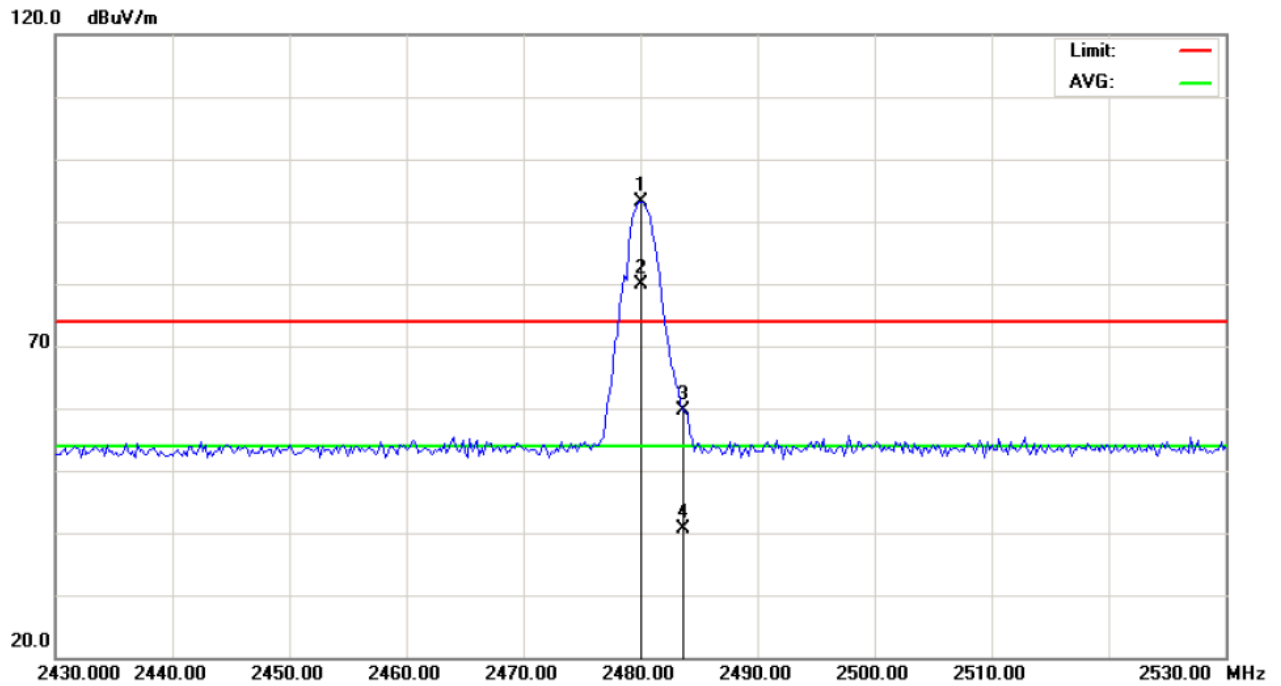
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2480.00	H	61.52	48.11	31.66	93.18	79.77			Y/F
2483.50	H	27.87	8.88	31.68	59.55	40.56	74.00	54.00	Y/H
4959.99	H	41.10	30.36	3.23	44.33	33.59	74.00	54.00	Y/H
7440.09	H	42.12	30.51	8.95	51.07	39.46	74.00	54.00	Y/H

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency◦“F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown “ * ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :
“X” - denotes Laid on Table ; ”Y” - denotes Vertical Stand ; ”Z” - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna



Orthogonal Axis : Y
CH78 (Above 1000 MHz, Horizontal)





4.2.9 TEST RESULTS-RESTRICTED BANDS REQUIREMENTS

EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24° C	Relative Humidity :	51%
Test Voltage :	DC 3.7V		
Test Mode :	1M_Vertical		
Note :	1. The transmitter was setup to transmit at the lowest channel (CH00). Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel (CH78). Then the field strength was measured at 2483.5-2500 MHz.		

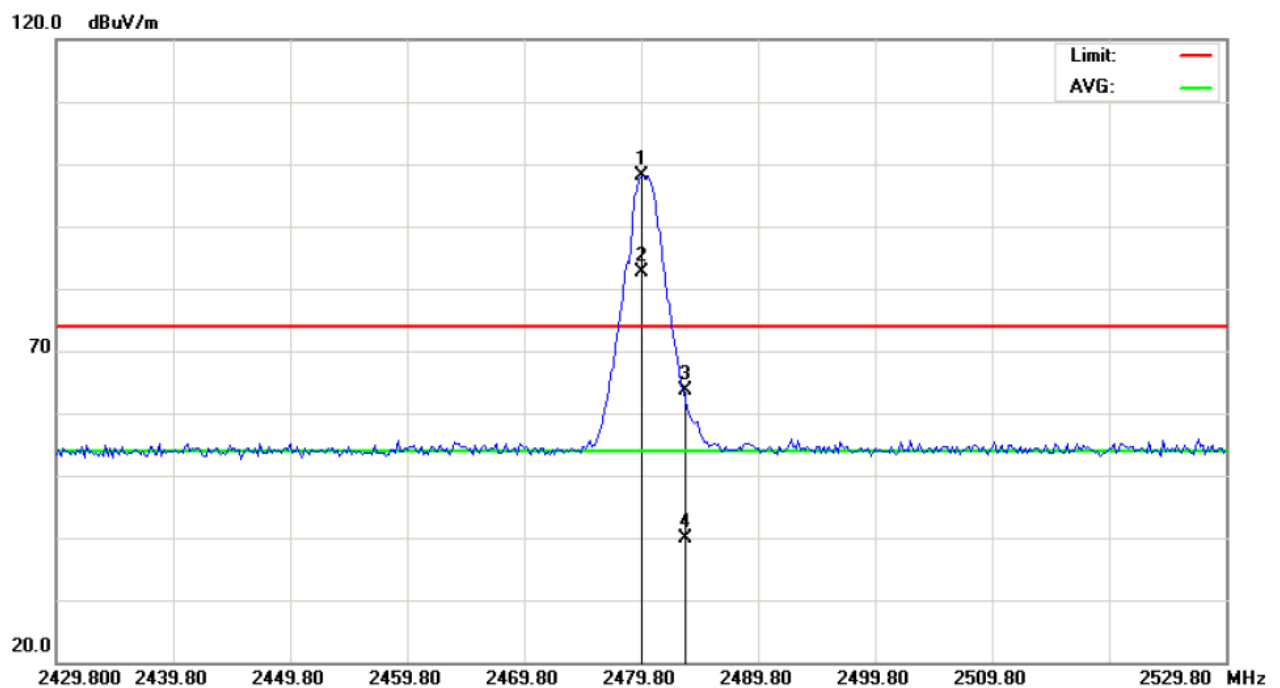
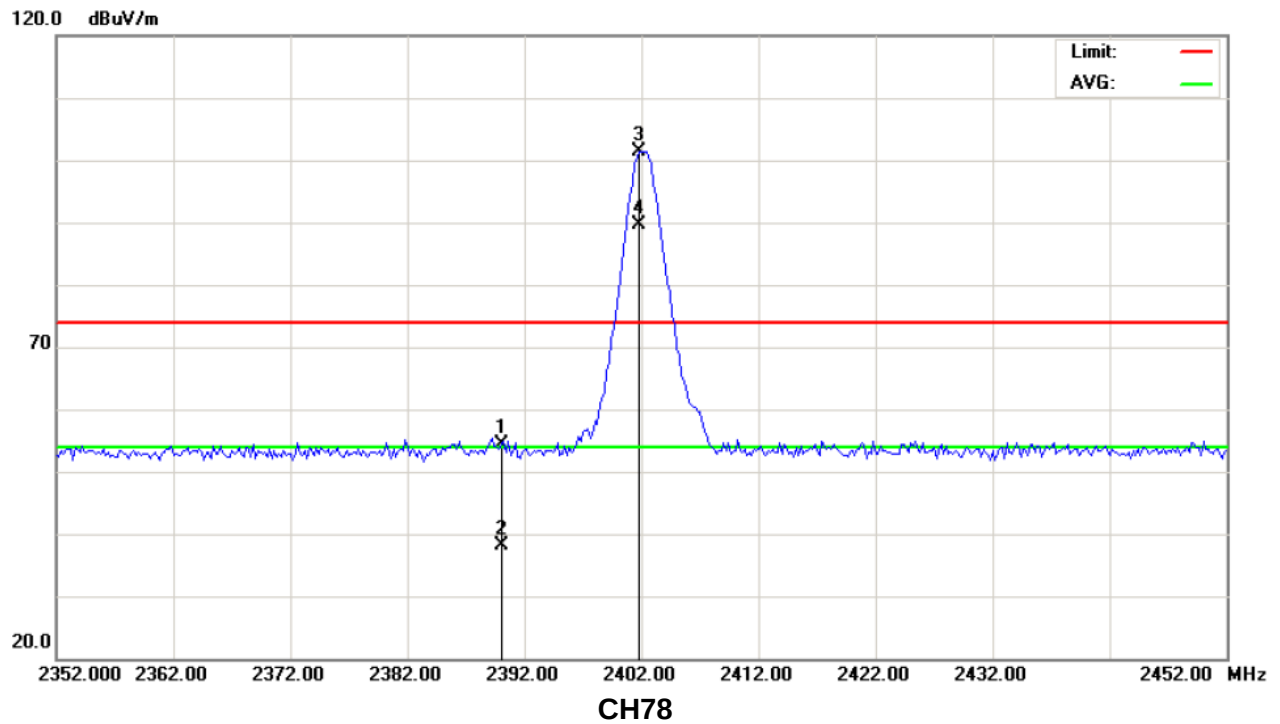
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	V	23.12	6.88	31.26	54.38	38.14	74.00	54.00	CH00
2483.50	V	31.83	8.14	31.68	63.51	39.82	74.00	54.00	CH78

Remark :

- (1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission °
- (2) EUT Orthogonal Axis :
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand



Restricted Bands Requirements, Vertical CH00





EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24 °C	Relative Humidity :	51%
Test Voltage :	DC 3.7V		
Test Mode :	1M_Horizontal		
Note :	1. The transmitter was setup to transmit at the lowest channel (CH00). Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel (CH78). Then the field strength was measured at 2483.5-2500 MHz.		

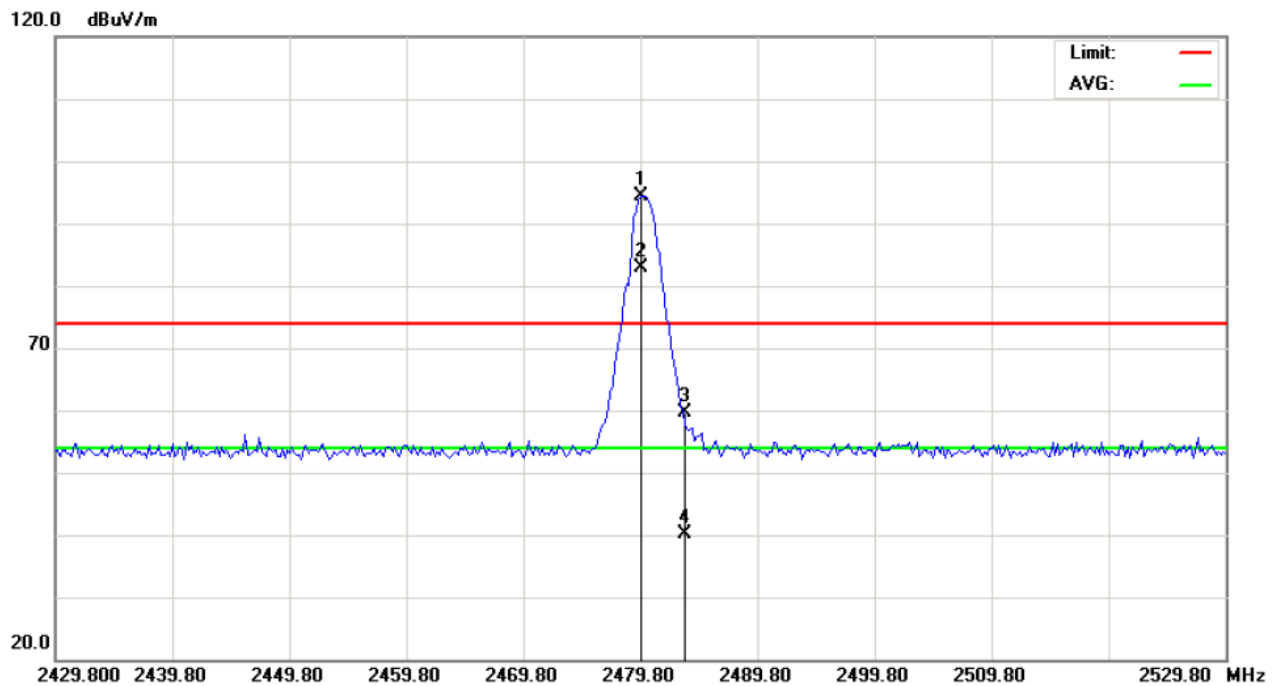
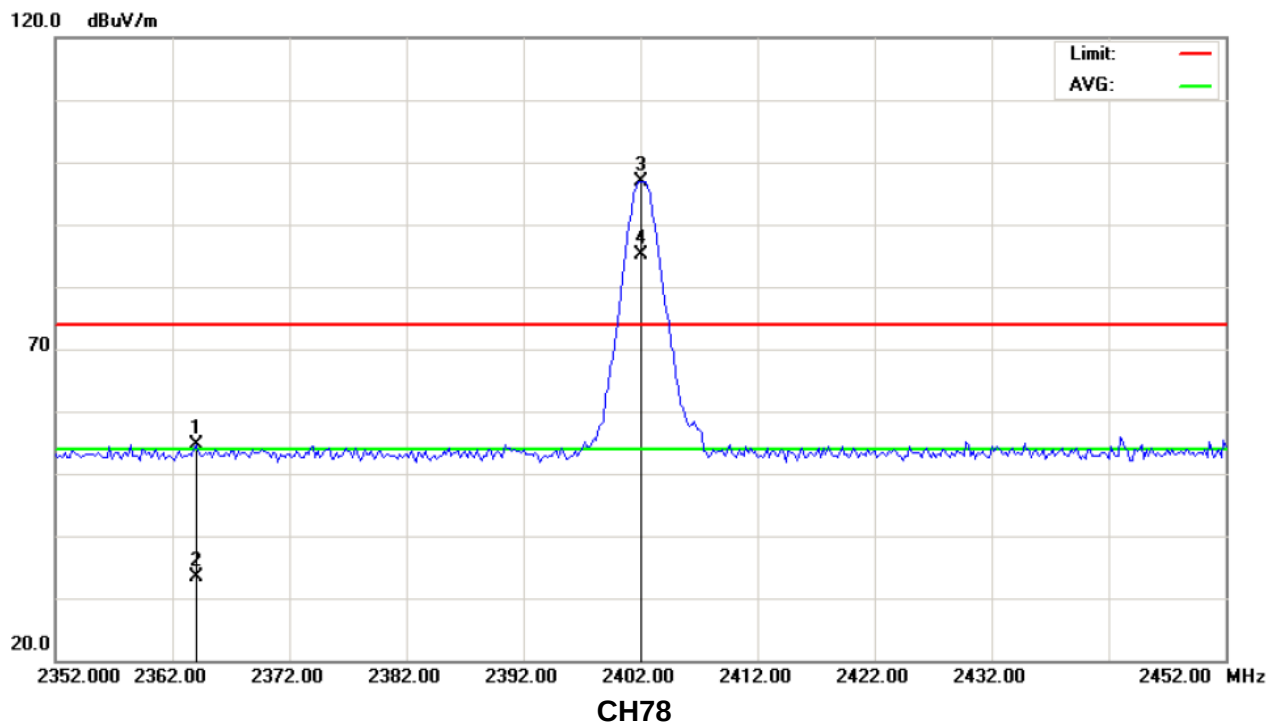
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2364.00	H	23.58	2.29	31.15	54.73	33.44	74.00	54.00	CH00
2483.50	H	28.01	8.42	31.68	59.69	40.10	74.00	54.00	CH78

Remark :

- (1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission °
- (2) EUT Orthogonal Axis :
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand



Restricted Bands Requirements, Horizontal CH00





EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24 °C	Relative Humidity :	51%
Test Voltage :	DC 3.7V		
Test Mode :	3M_Vertical		
Note :	1. The transmitter was setup to transmit at the lowest channel (CH00). Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel (CH78). Then the field strength was measured at 2483.5-2500 MHz.		

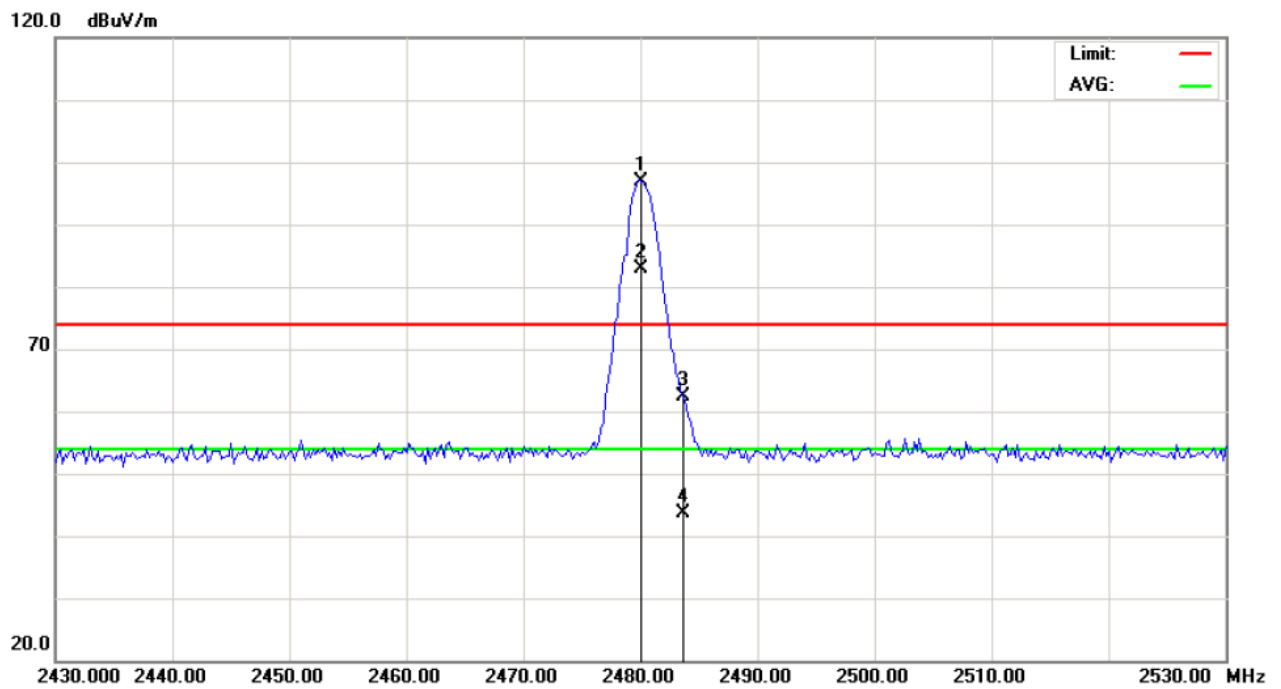
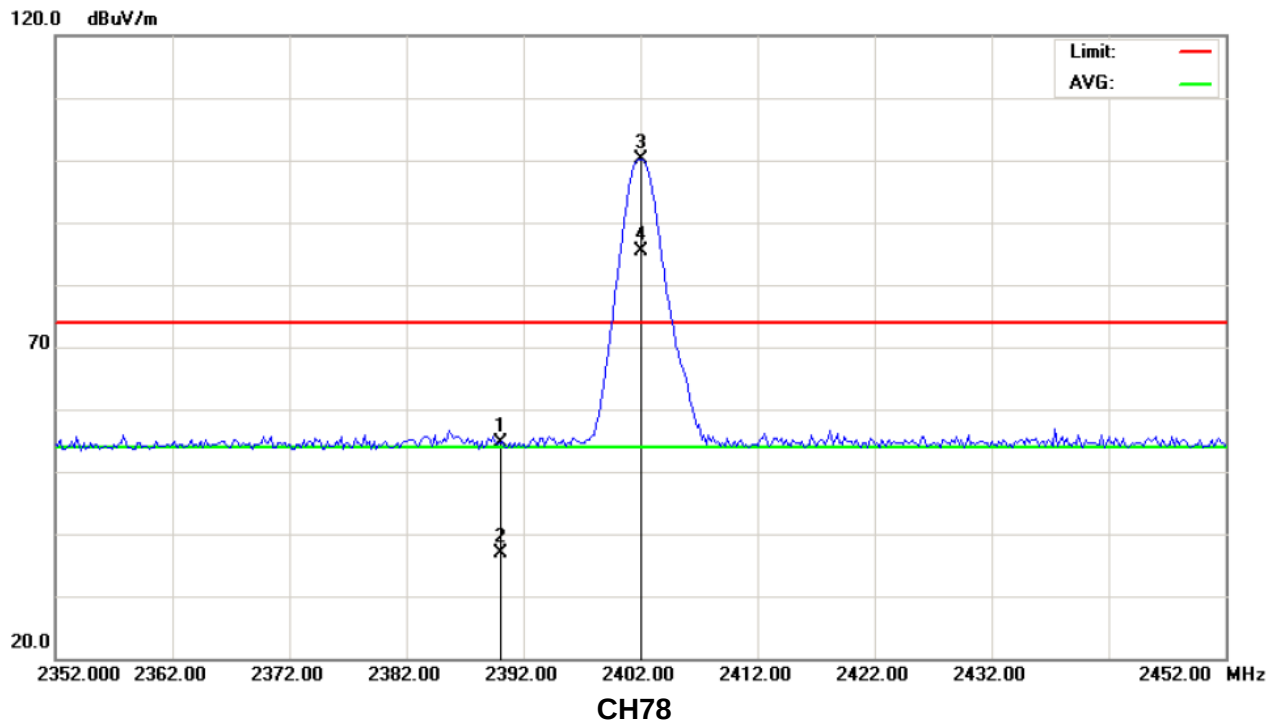
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	V	23.26	5.66	31.26	54.52	36.92	74.00	54.00	CH00
2483.50	V	30.62	11.92	31.68	62.30	43.60	74.00	54.00	CH78

Remark :

- (1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission °
- (2) EUT Orthogonal Axis :
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand



Restricted Bands Requirements, Vertical CH00





EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	24 ° C	Relative Humidity :	51%
Test Voltage :	DC 3.7V		
Test Mode :	3M_Horizontal		
Note :	1. The transmitter was setup to transmit at the lowest channel (CH00). Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel (CH78). Then the field strength was measured at 2483.5-2500 MHz.		

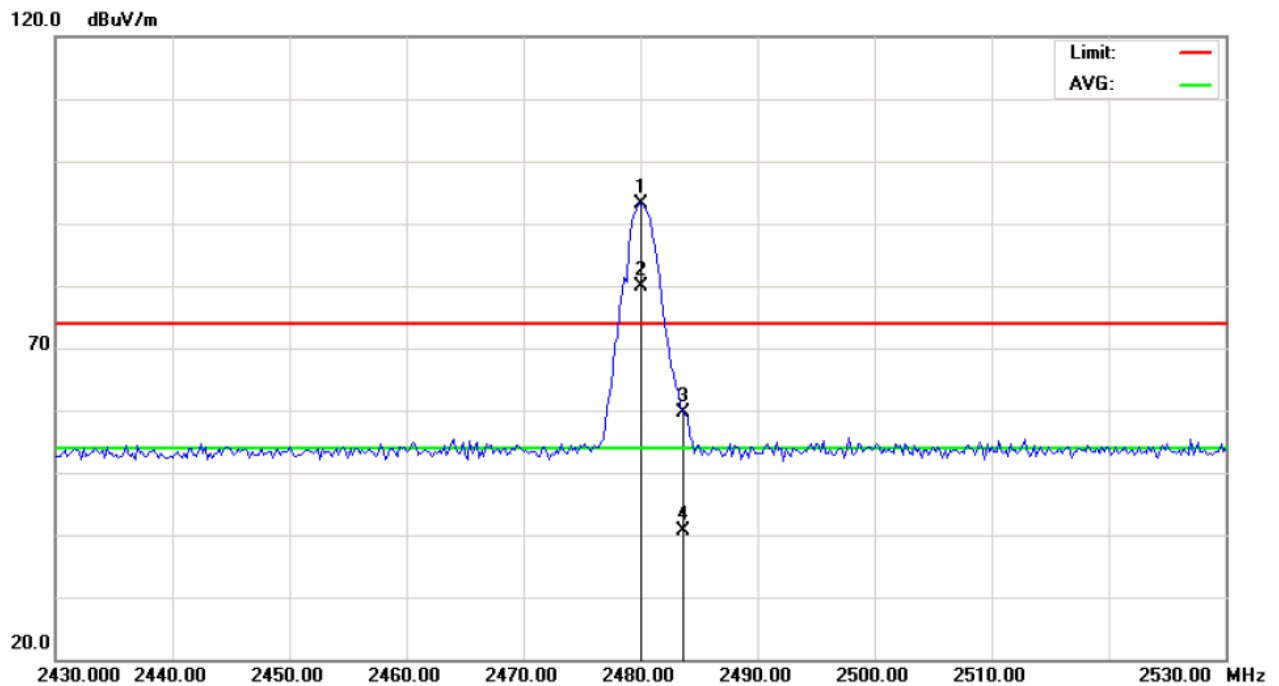
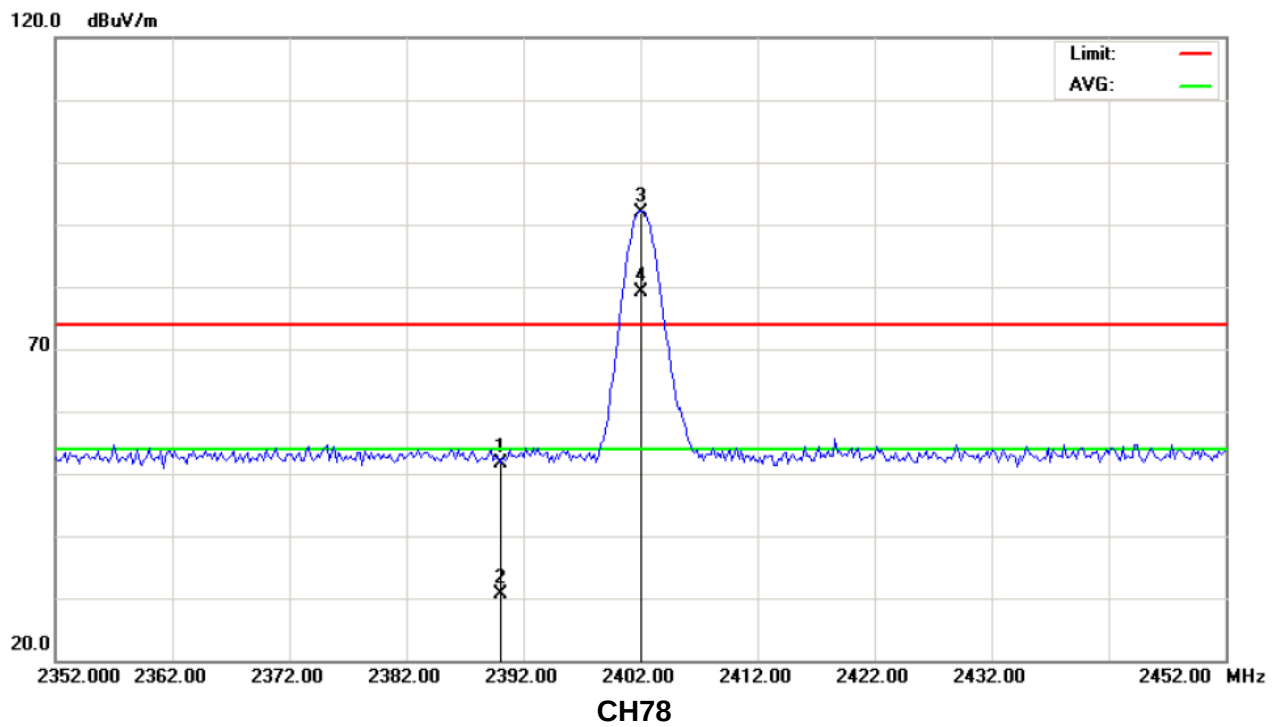
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	H	20.43	-0.74	31.26	51.69	30.52	74.00	54.00	CH00
2483.50	H	27.87	8.88	31.68	59.55	40.56	74.00	54.00	CH78

Remark :

- (1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission °
- (2) EUT Orthogonal Axis :
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand



Restricted Bands Requirements, Horizontal CH00



**5. NUMBER OF HOPPING CHANNEL****5.1 APPLIED PROCEDURES / LIMIT**

FCC Part15 (15.247) , Subpart C			
Section	Test Item	Frequency Range (MHz)	Result
15.247 (a)(1)(ii)	Number of Hopping Channel	2400-2483.5	PASS

5.1.1 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Aug. 31, 2011

Remark: " N/A" denotes No Model Name, Serial No. or No Calibration specified.

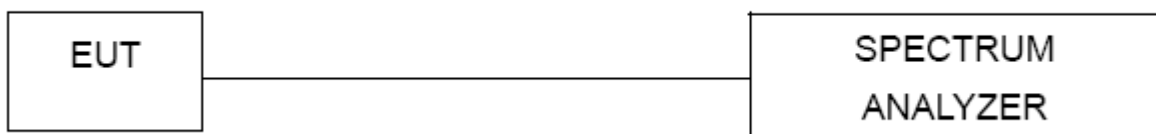
Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating Frequency Range
RB	100 kHz
VB	100 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.1.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = Auto.

5.1.3 DEVIATION FROM STANDARD

No deviation.

5.1.4 TEST SETUP**5.1.5 EUT OPERATION CONDITIONS**

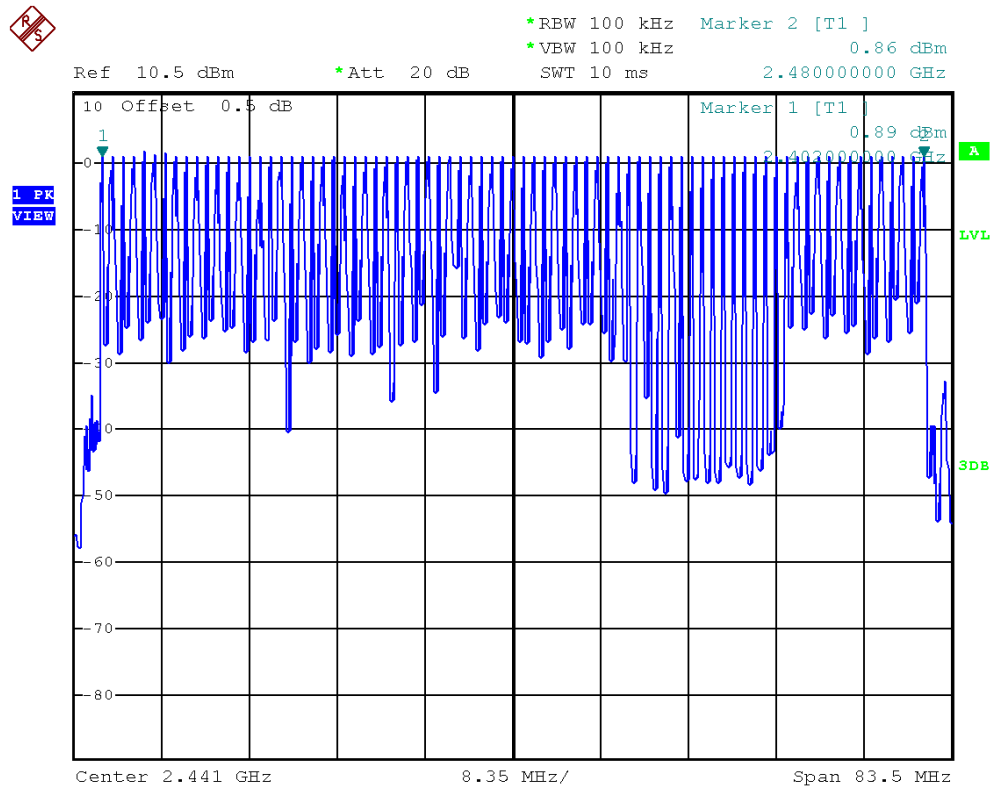
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



5.1.6 TEST RESULTS

EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	23° C	Relative Humidity :	50%
Test Voltage :	DC 3.7V		
Test Mode :	1M_Hopping Mode		

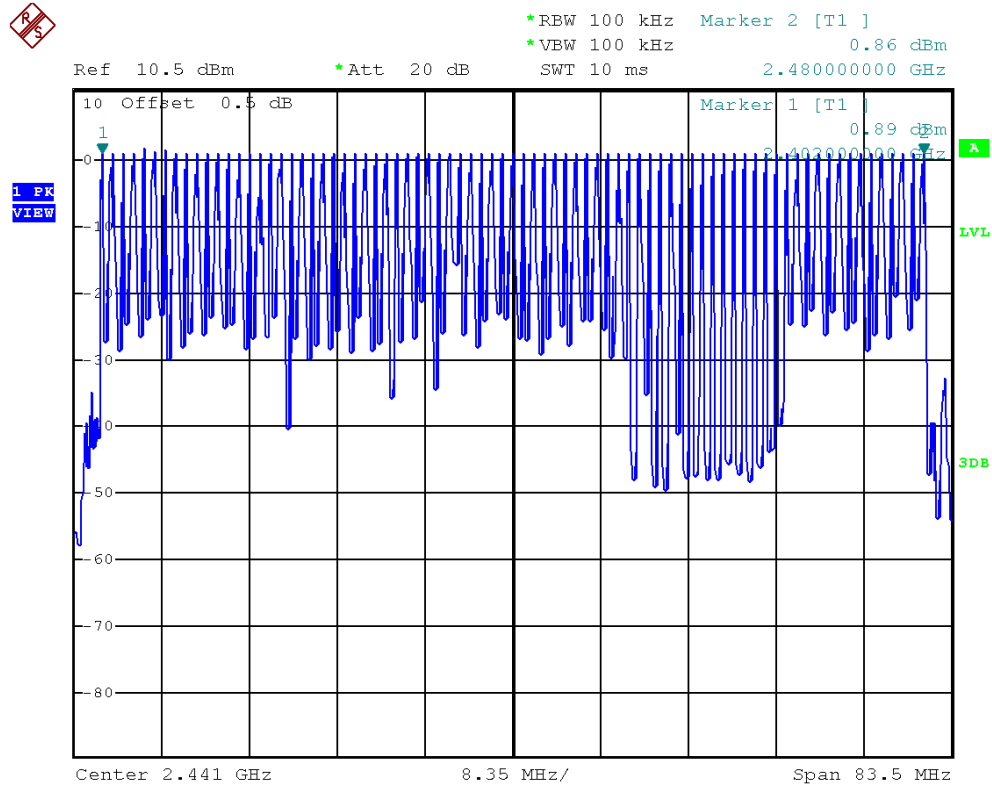
Number of Hopping Channel	79
---------------------------	----





EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	23 °C	Relative Humidity :	50%
Test Voltage :	DC 3.7V		
Test Mode :	3M_Hopping Mode		

Number of Hopping Channel	79
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6. AVERAGE TIME OF OCCUPANCY

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (a)(1)(ii)	Average Time of Occupancy	≤ 0.4 sec (a 30 second period)	2400-2483.5	PASS

6.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Aug. 31, 2011

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

6.1.2 TEST PROCEDURE

- a. The transmitter output (antenna port) was connected to the spectrum analyser
- b. Set RBW of spectrum analyzer to 100kHz and VBW to 100kHz.
- c. Use a video trigger with the trigger level set to enable triggering only on full pulses.
- d. Sweep Time is more than once pulse time.
- e. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- f. Measure the maximum time duration of one single pulse.
- g. Set the EUT for DH5, DH3 and DH1 packet transmitting.
- h. Measure the maximum time duration of one single pulse.
- i. DH5 Packet permit maximum $1600 / 79 / 6 = 3.37$ hops per second in each channel (5 time slots RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times $3.37 \times 31.6 = 106.6$ within 31.6 seconds.
- j. DH3 Packet permit maximum $1600 / 79 / 4 = 5.06$ hops per second in each channel (3 time slots RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times $5.06 \times 31.6 = 160$ within 31.6 seconds.
- k. DH1 Packet permit maximum $1600 / 79 / 2 = 10.12$ hops per second in each channel (1 time slot RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times $10.12 \times 31.6 = 320$ within 31.6 seconds.

6.1.3 DEVIATION FROM STANDARD

No deviation.



6.1.4 TEST SETUP



6.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

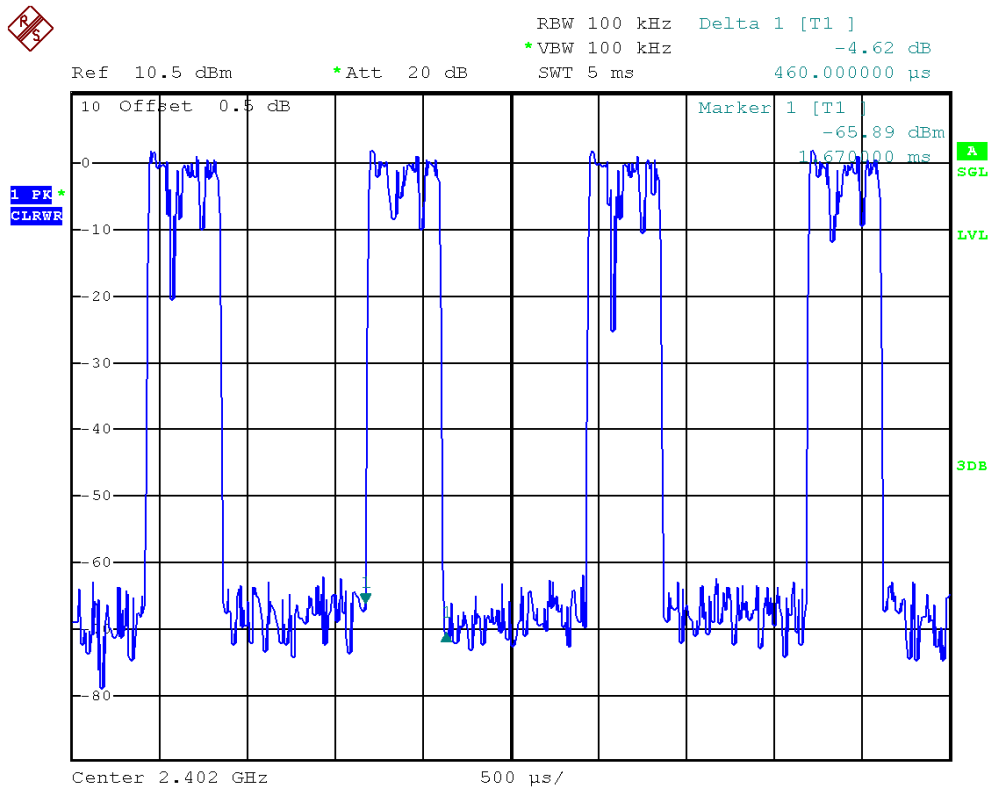


6.1.6 TEST RESULTS

EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	25° C	Relative Humidity :	60%
Test Voltage :	DC 3.7V		
Test Mode :	1M_CH00-DH1/DH3/DH5		

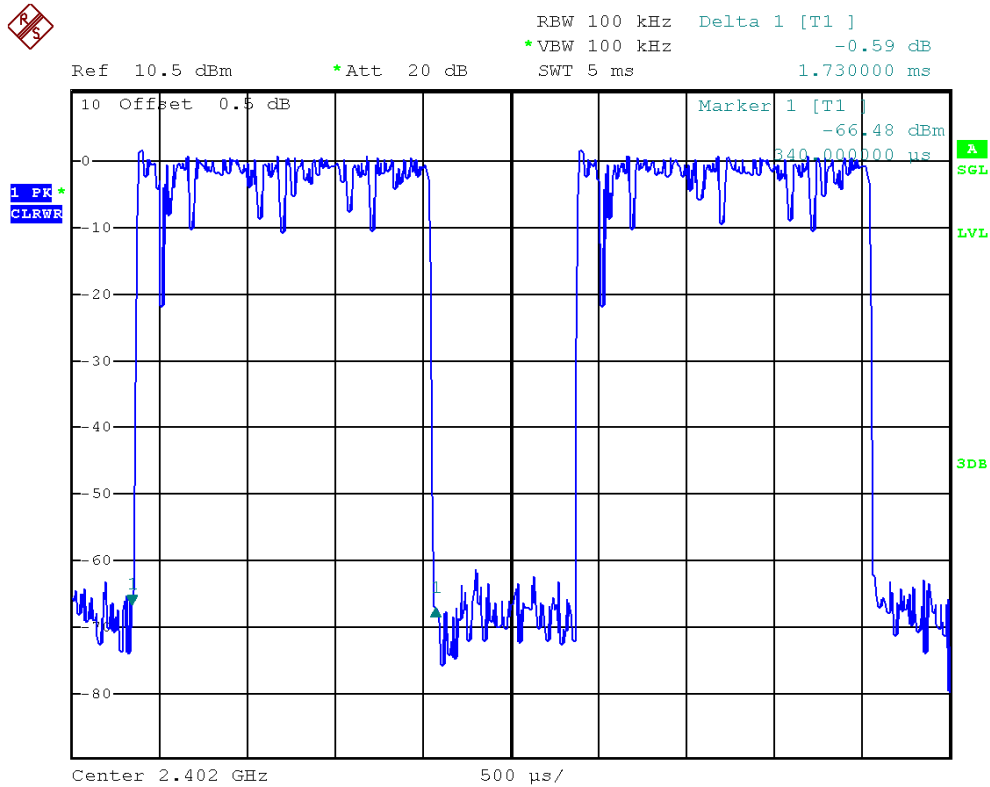
Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
DH1	2402 MHz	0.4600	0.1472	0.4000
DH3	2402 MHz	1.7300	0.2768	0.4000
DH5	2402 MHz	2.9900	0.3189	0.4000

CH00-DH1

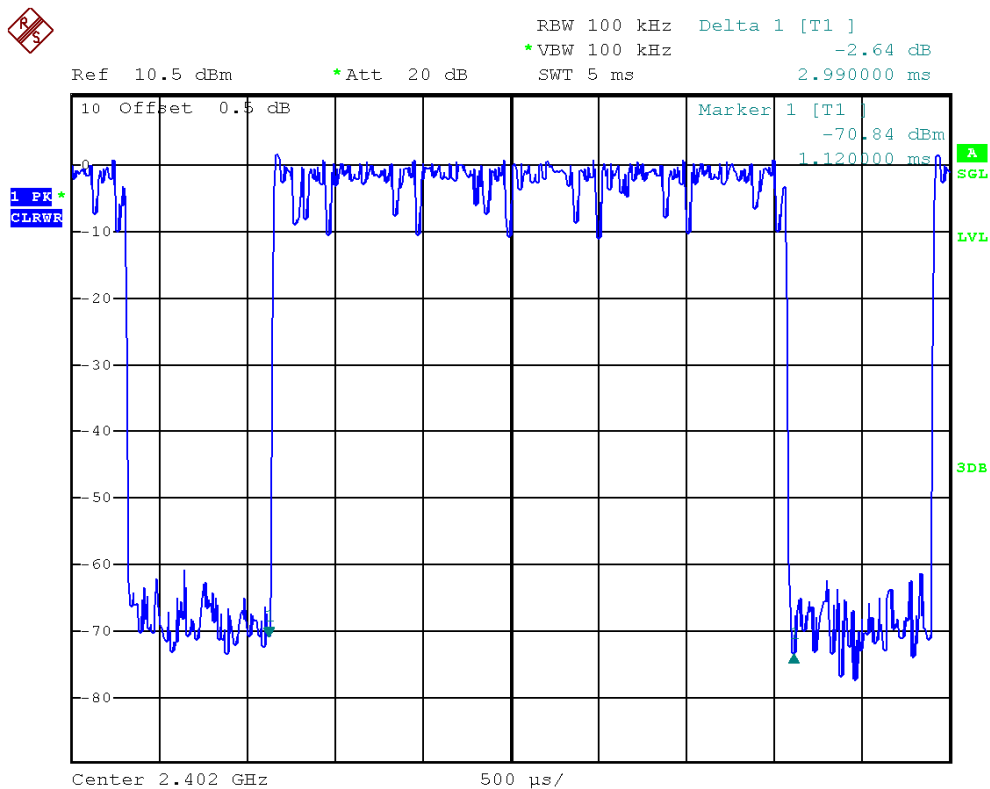




CH00-DH3



CH00-DH5

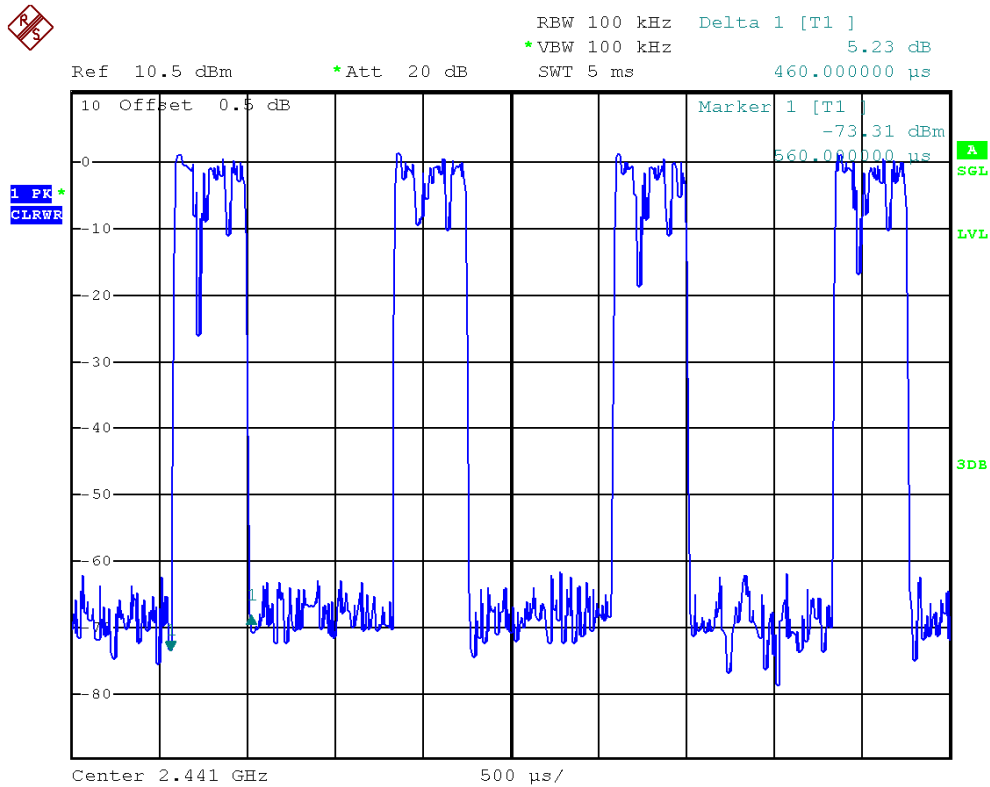




EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	25 °C	Relative Humidity :	60%
Test Voltage :	DC 3.7V		
Test Mode :	1M_CH39 -DH1/DH3/DH5		

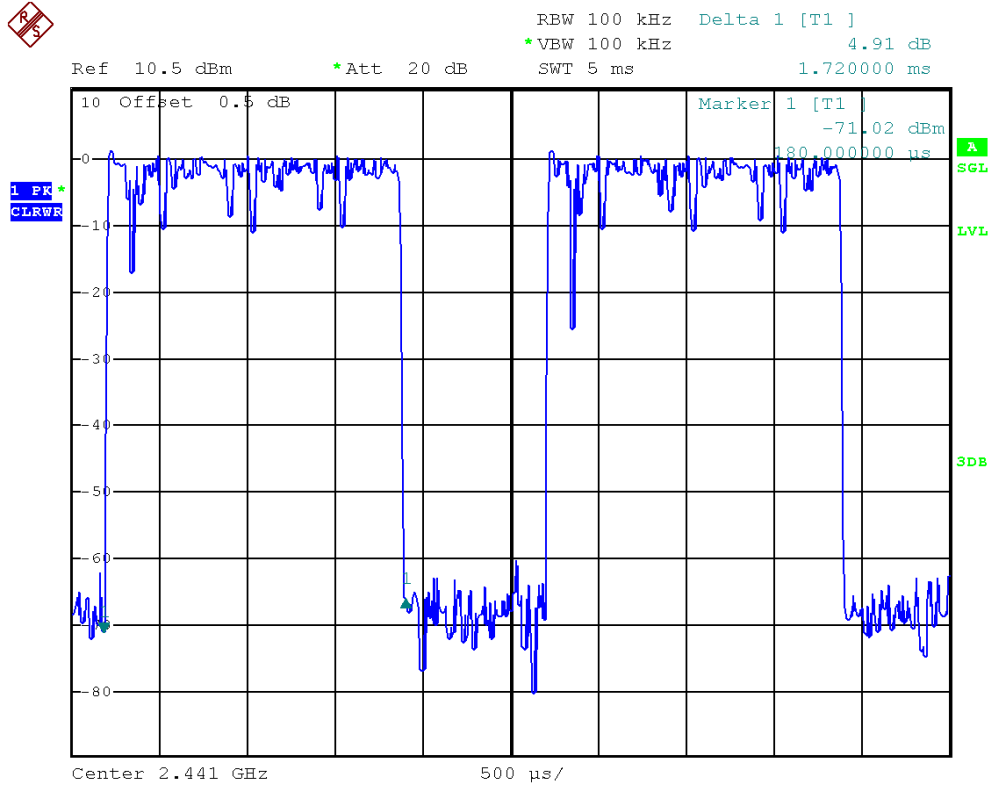
Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
DH1	2441 MHz	0.4600	0.1472	0.4000
DH3	2441 MHz	1.7200	0.2752	0.4000
DH5	2441 MHz	2.9900	0.3189	0.4000

CH39-DH1

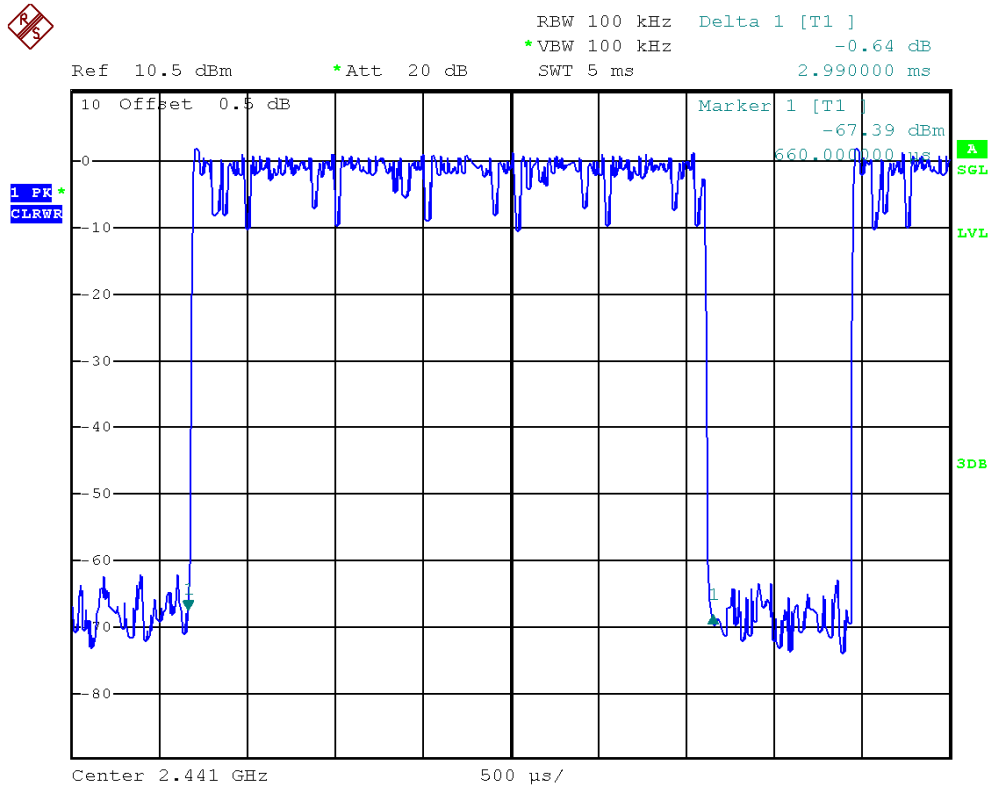




CH39-DH3



CH39-DH5

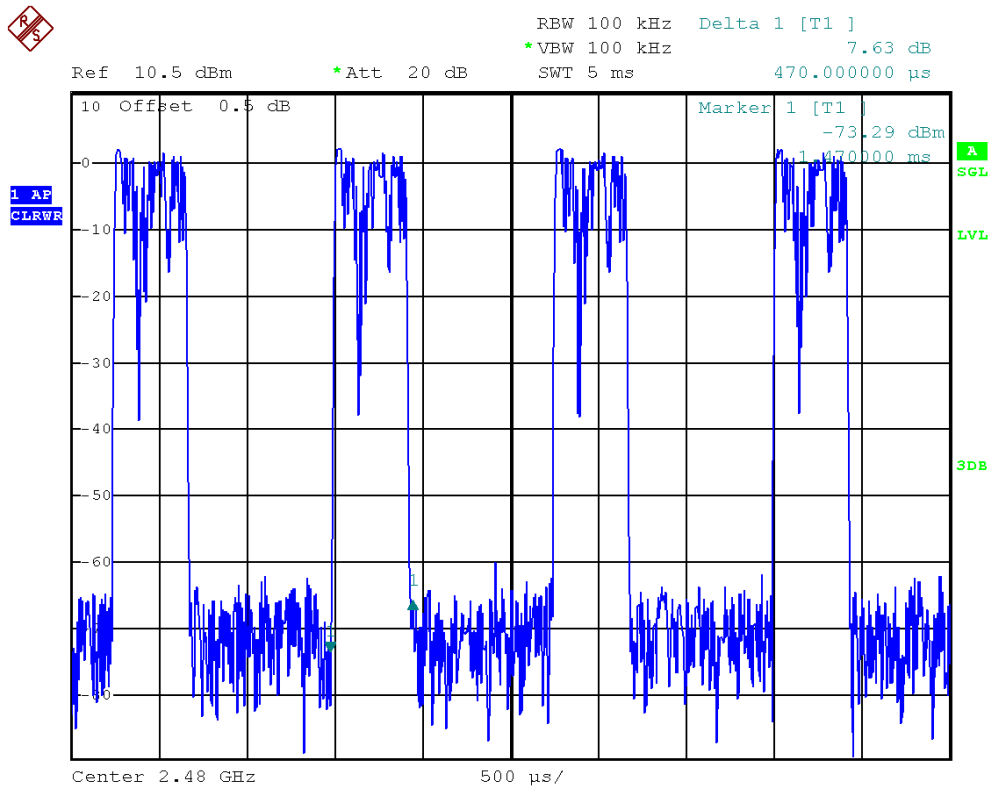




EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	25 °C	Relative Humidity :	60%
Test Voltage :	DC 3.7V		
Test Mode :	1M_CH78 -DH1/DH3/DH5		

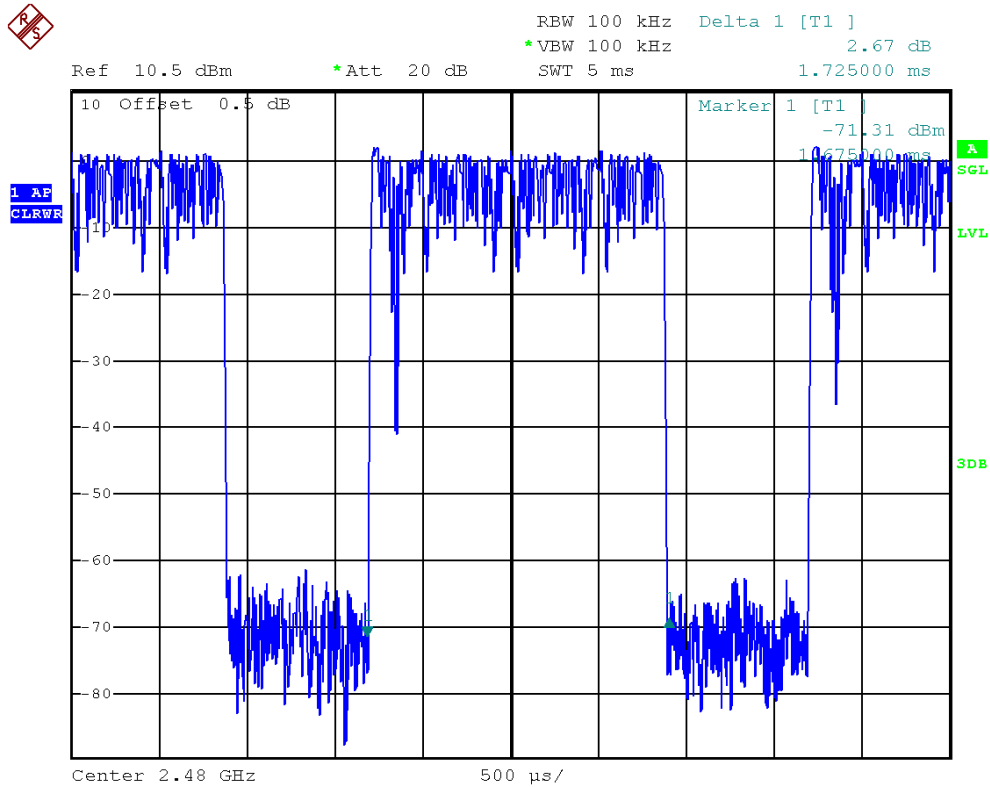
Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
DH1	2480 MHz	0.4700	0.1504	0.4000
DH3	2480 MHz	1.7200	0.2752	0.4000
DH5	2480 MHz	2.9600	0.3157	0.4000

CH78-DH1

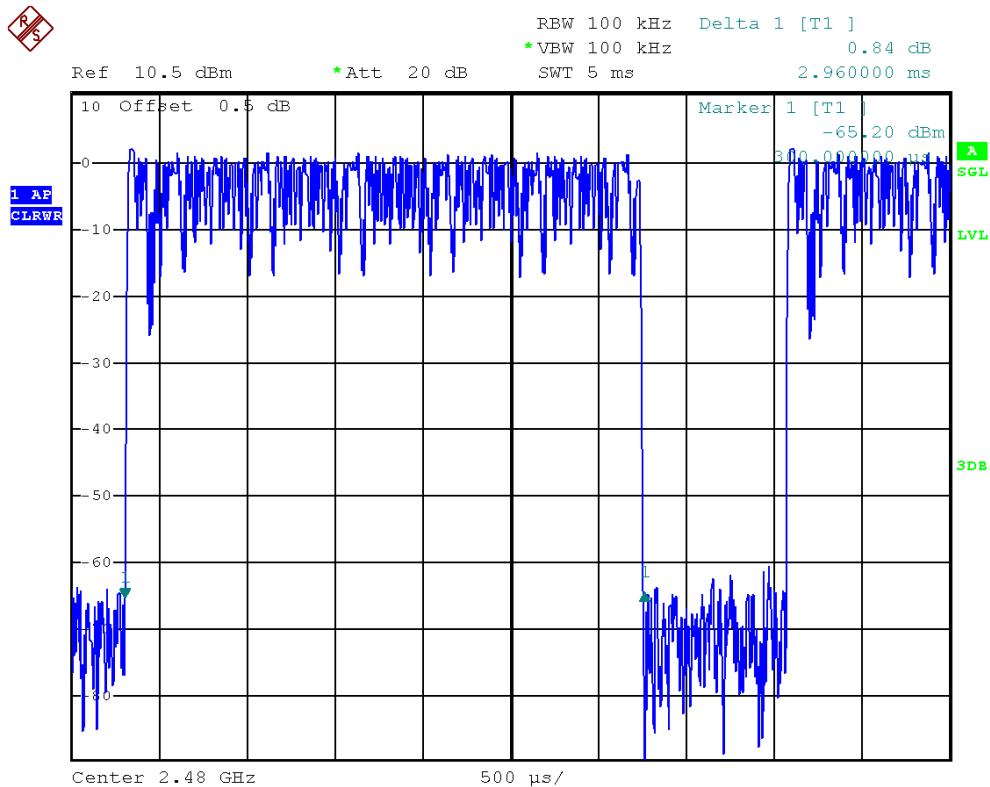




CH78-DH3



CH78-DH5

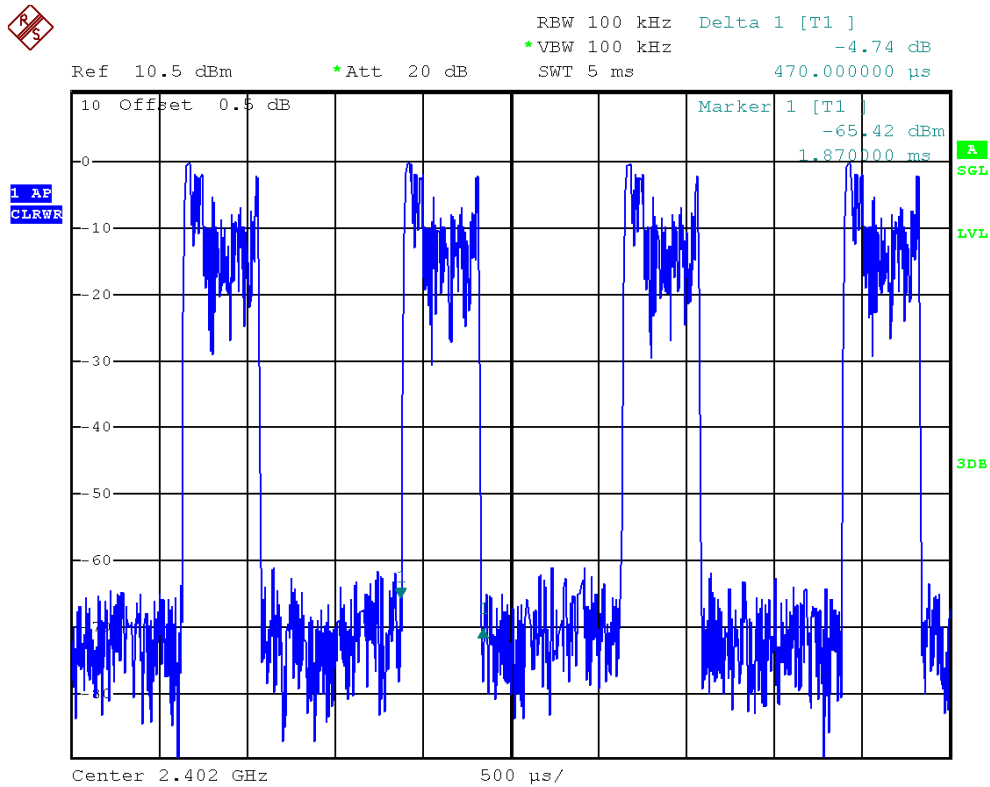




EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	25°C	Relative Humidity :	60%
Test Voltage :	DC 3.7V		
Test Mode :	3M_CH00-DH1/DH3/DH5		

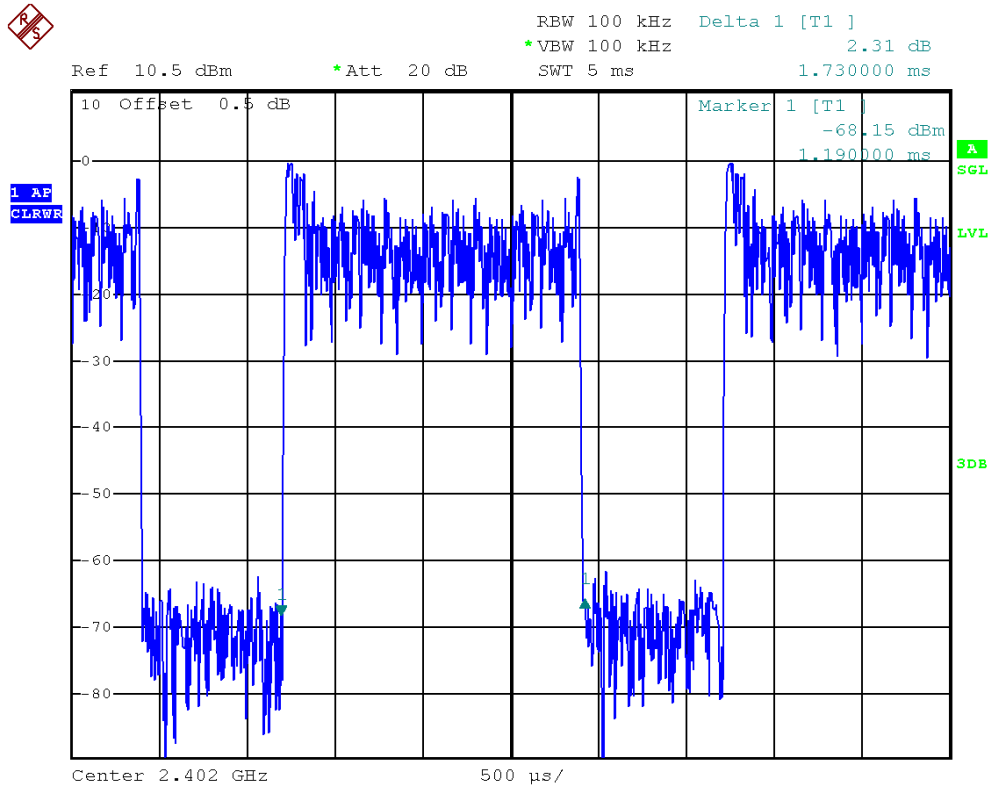
Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
DH1	2402 MHz	0.4700	0.1504	0.4000
DH3	2402 MHz	1.7300	0.2768	0.4000
DH5	2402 MHz	3.0000	0.3200	0.4000

CH00-DH1

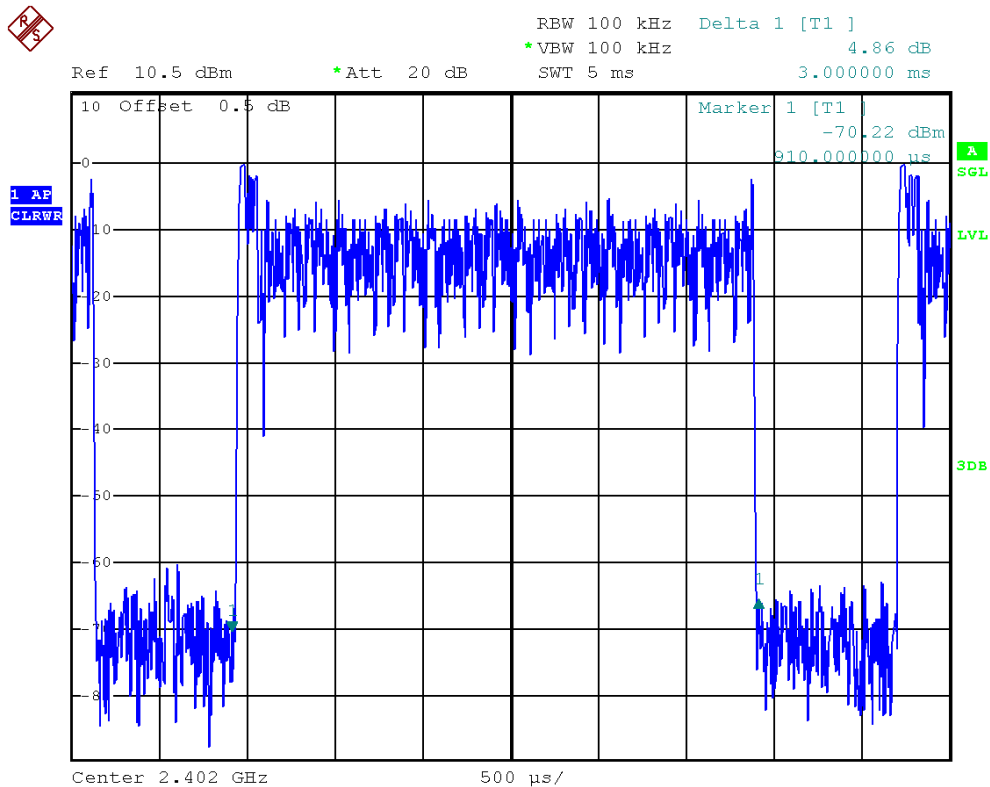




CH00-DH3



CH00-DH5

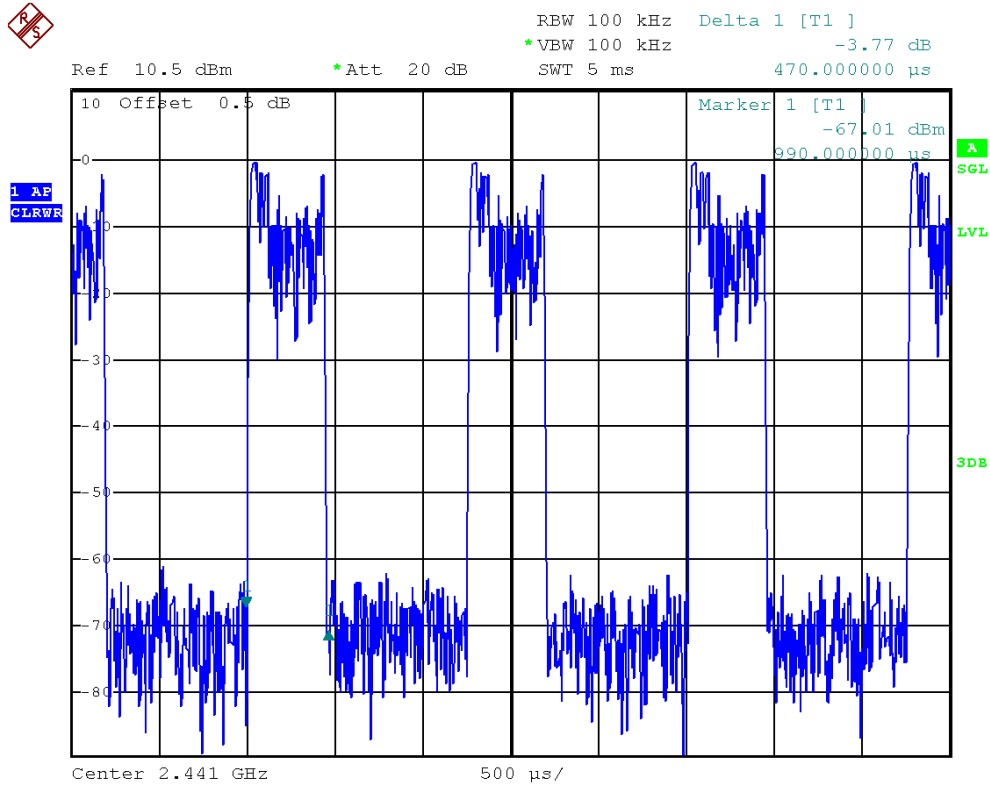




EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	25 °C	Relative Humidity :	60%
Test Voltage :	DC 3.7V		
Test Mode :	3M_CH39 -DH1/DH3/DH5		

Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
DH1	2441 MHz	0.4700	0.1504	0.4000
DH3	2441 MHz	1.7300	0.2768	0.4000
DH5	2441 MHz	2.9900	0.3189	0.4000

CH39-DH1





CH39-DH3



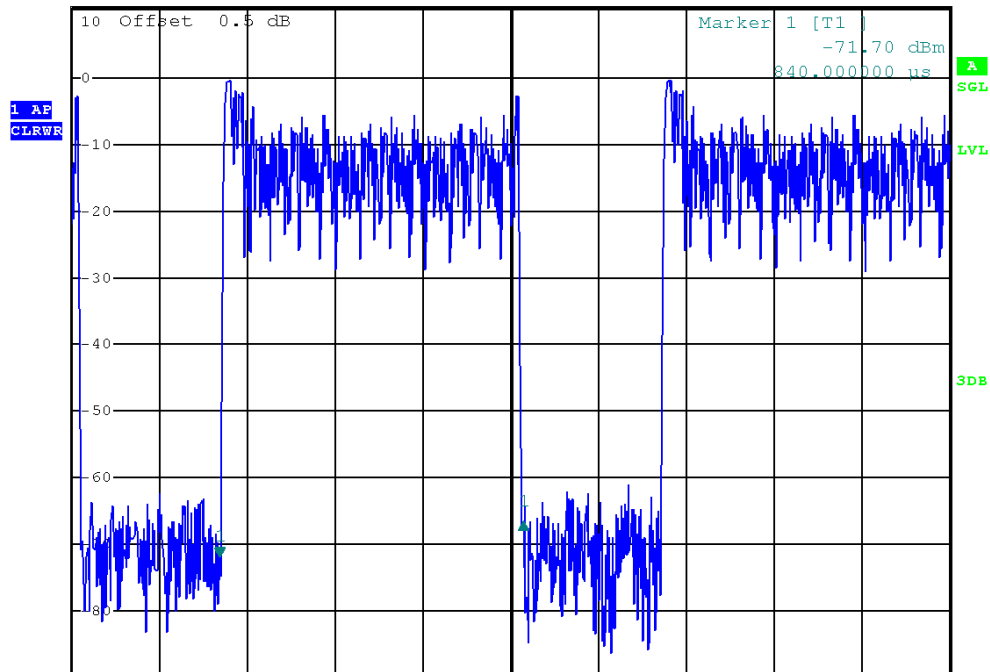
RBW 100 kHz Delta 1 [T1]
*VBW 100 kHz 5.20 dB
SWT 5 ms 1.730000 ms

Ref 10.5 dBm

*Att 20 dB

SWT 5 ms

1.730000 ms



Center 2.441 GHz

500 μs/

CH39-DH5



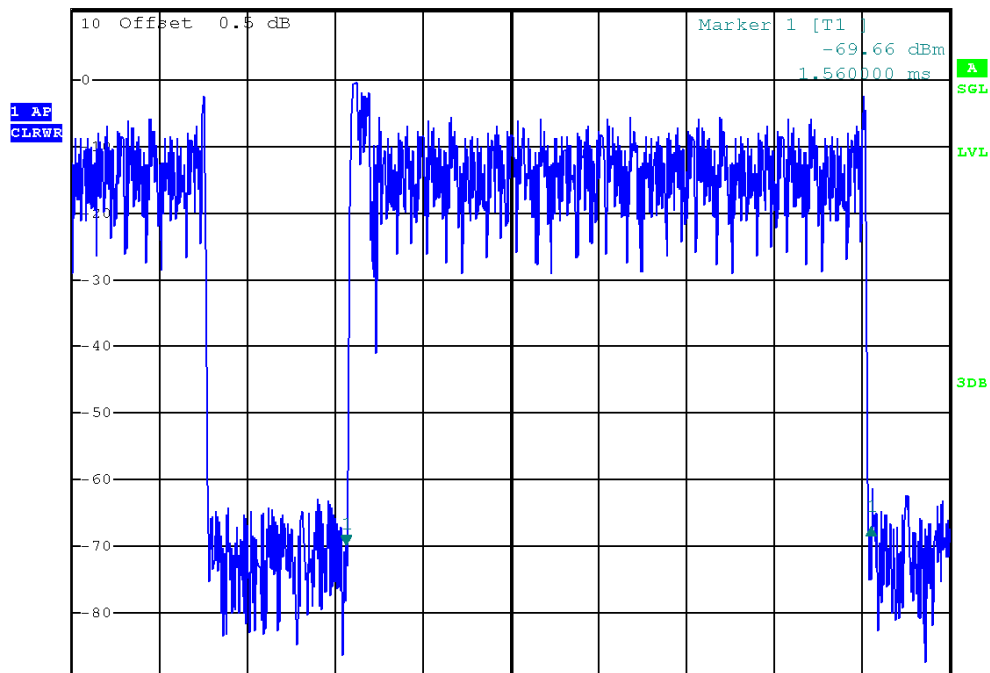
RBW 100 kHz Delta 1 [T1]
*VBW 100 kHz 2.58 dB
SWT 5 ms 2.990000 ms

Ref 10.5 dBm

*Att 20 dB

SWT 5 ms

2.990000 ms



Center 2.441 GHz

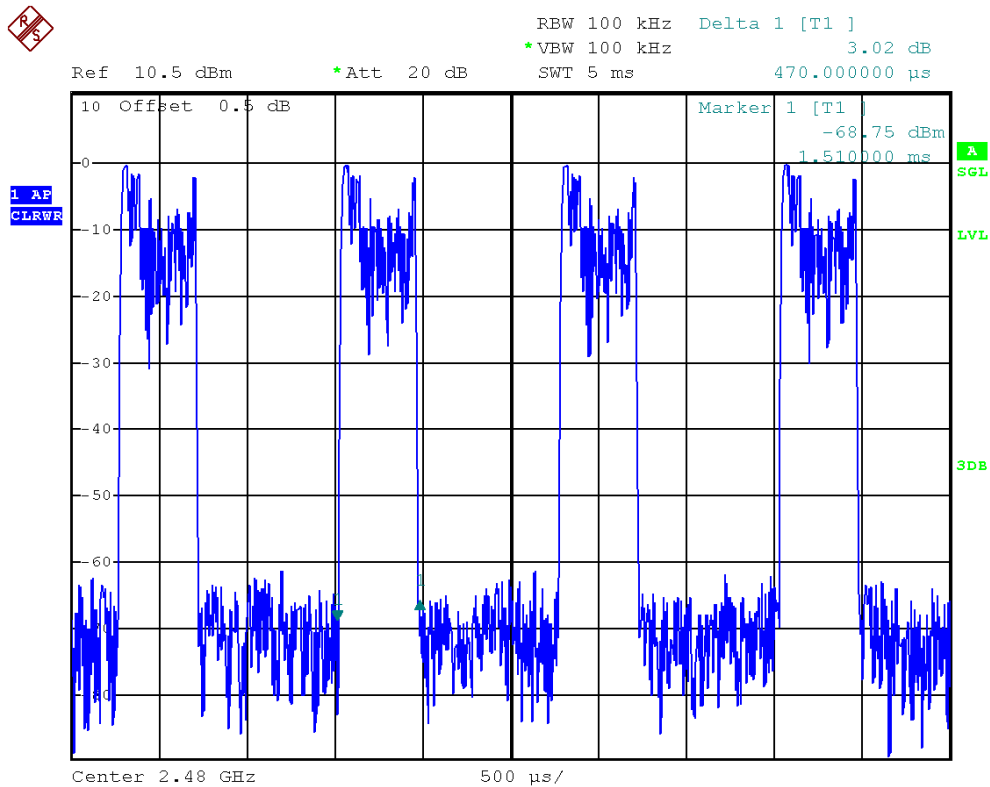
500 μs/



EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	25 °C	Relative Humidity :	60%
Test Voltage :	DC 3.7V		
Test Mode :	3M_CH78 -DH1/DH3/DH5		

Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
DH1	2480 MHz	0.4700	0.1504	0.4000
DH3	2480 MHz	1.7300	0.2768	0.4000
DH5	2480 MHz	2.9800	0.3179	0.4000

CH78-DH1





CH78-DH3



RBW 100 kHz Delta 1 [T1]
*VBW 100 kHz -3.41 dB
SWT 5 ms 1.730000 ms

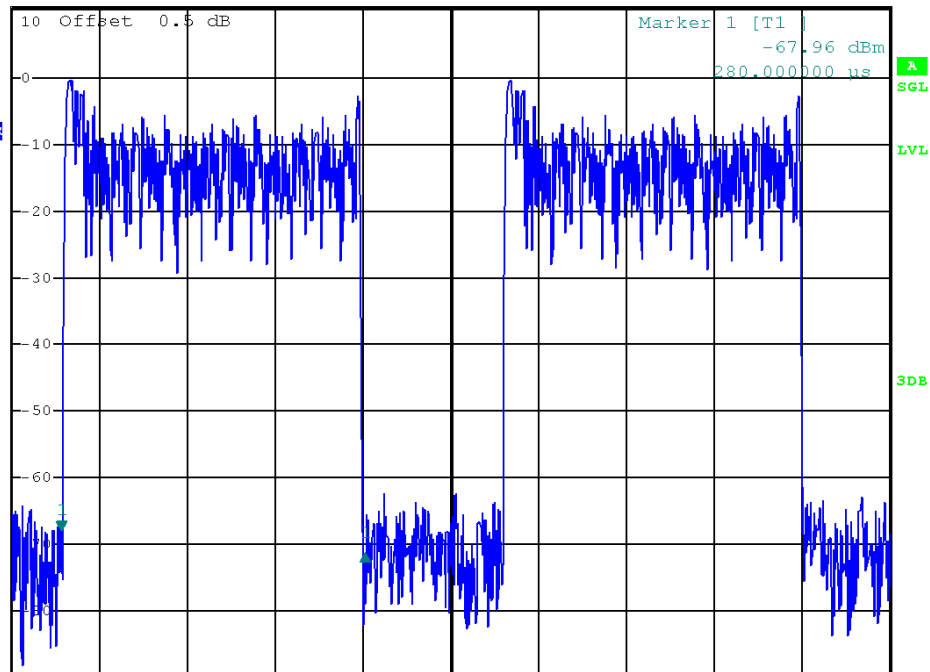
Ref 10.5 dBm

*Att 20 dB

SWT 5 ms

1.730000 ms

1 AB
CLRWR



Center 2.48 GHz

500 μs/

CH78-DH5



RBW 100 kHz Delta 1 [T1]
*VBW 100 kHz -0.89 dB
SWT 5 ms 2.980000 ms

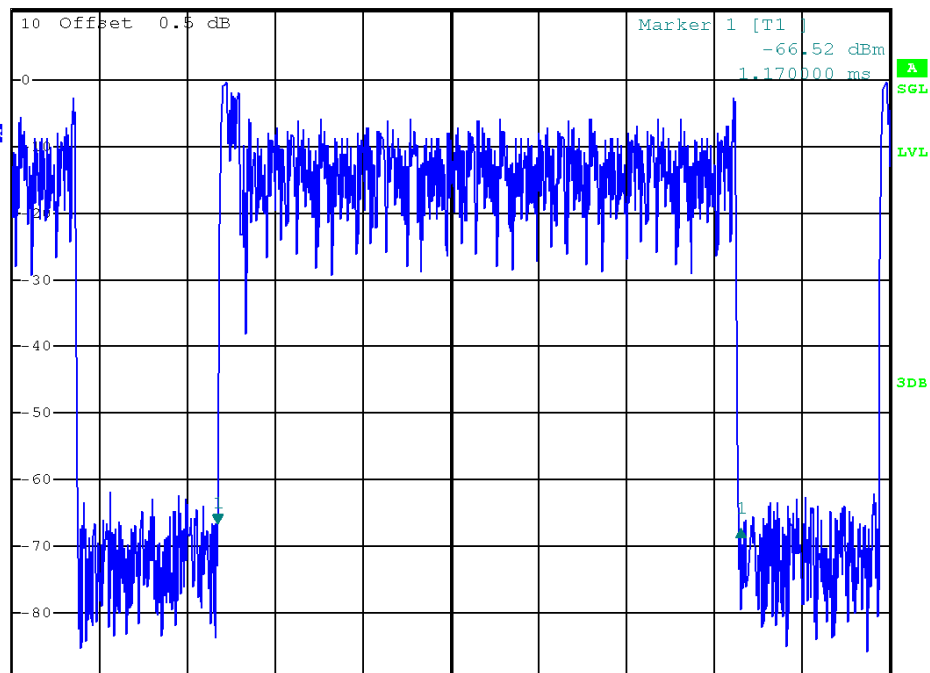
Ref 10.5 dBm

*Att 20 dB

SWT 5 ms

2.980000 ms

1 AB
CLRWR



Center 2.48 GHz

500 μs/



7. HOPPING CHANNEL SEPARATION MEASUREMENT

7.1 APPLIED PROCEDURES / LIMIT

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

7.1.1 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Aug. 31, 2011

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
VB	100 kHz (20dB Bandwidth) / 300 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

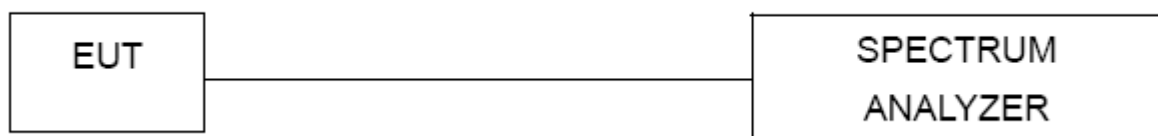
7.1.2 TEST PROCEDURE

- The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
- The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for 20 dB bandwidth measurement.
- The resolution bandwidth of 100 kHz and the video bandwidth of 300 kHz were utilised for channel separation measurement.

7.1.3 DEVIATION FROM STANDARD

No deviation.

7.1.4 TEST SETUP



7.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

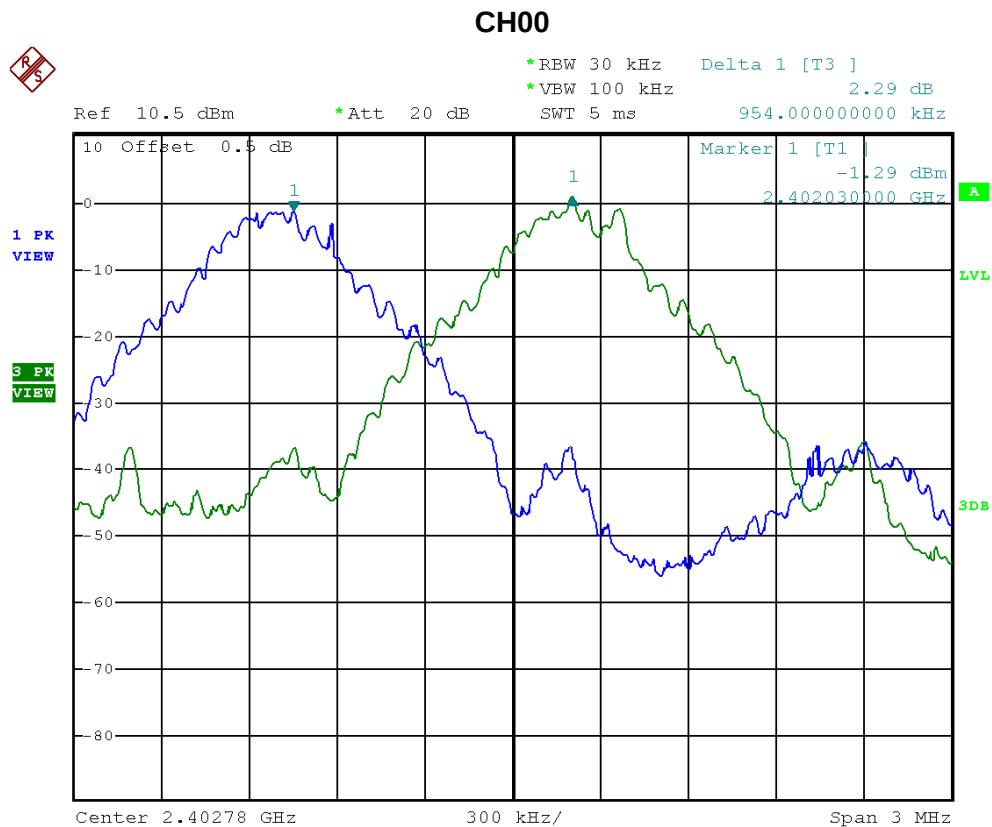


7.1.6 TEST RESULTS

EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	25° C	Relative Humidity :	60%
Test Voltage :	DC 3.7V		
Test Mode :	1M_CH00 / CH39 / CH78		

Frequency	Ch. Separation (MHz)	20d Bandwidth B (MHz)	two-thirds of the 20 dB bandwidth	Result
2402 MHz	0.95	0.940	0.880	PASS
2441 MHz	1.00	0.936	0.880	PASS
2480 MHz	1.00	0.936	0.888	PASS

Ch. Separation Limits: >25 KHz or >2/3 of 20dB bandwidth





CH39



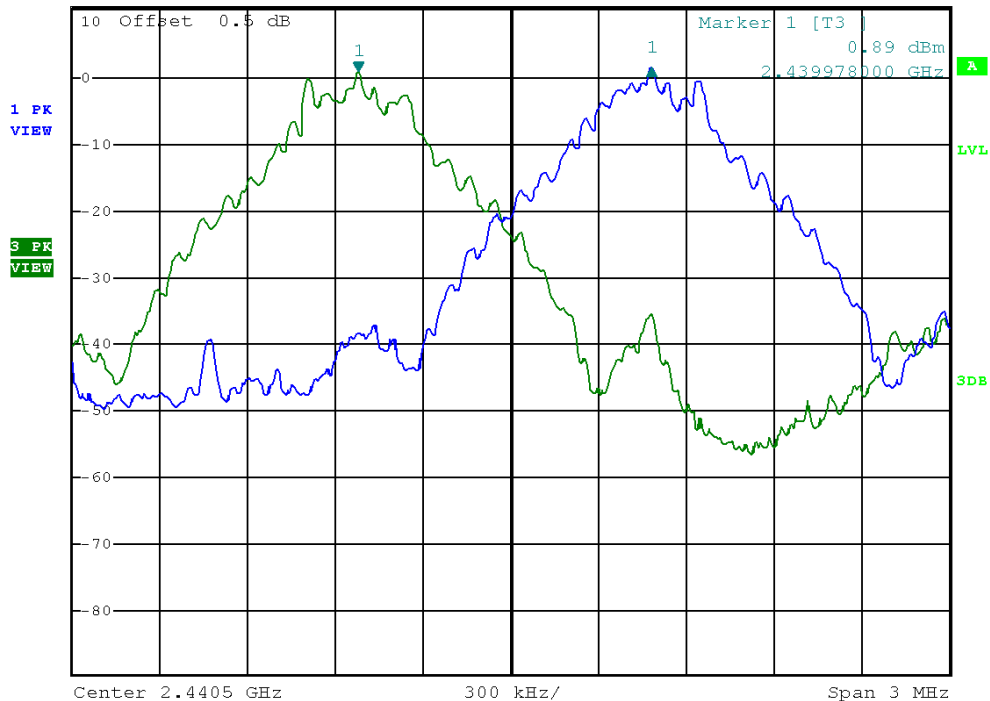
*RBW 30 kHz Delta 1 [T1]
*VBW 100 kHz 0.60 dB
SWT 5 ms 1.000000000 MHz

Ref 10.5 dBm

*Att 20 dB

SWT 5 ms

1.000000000 MHz



CH78



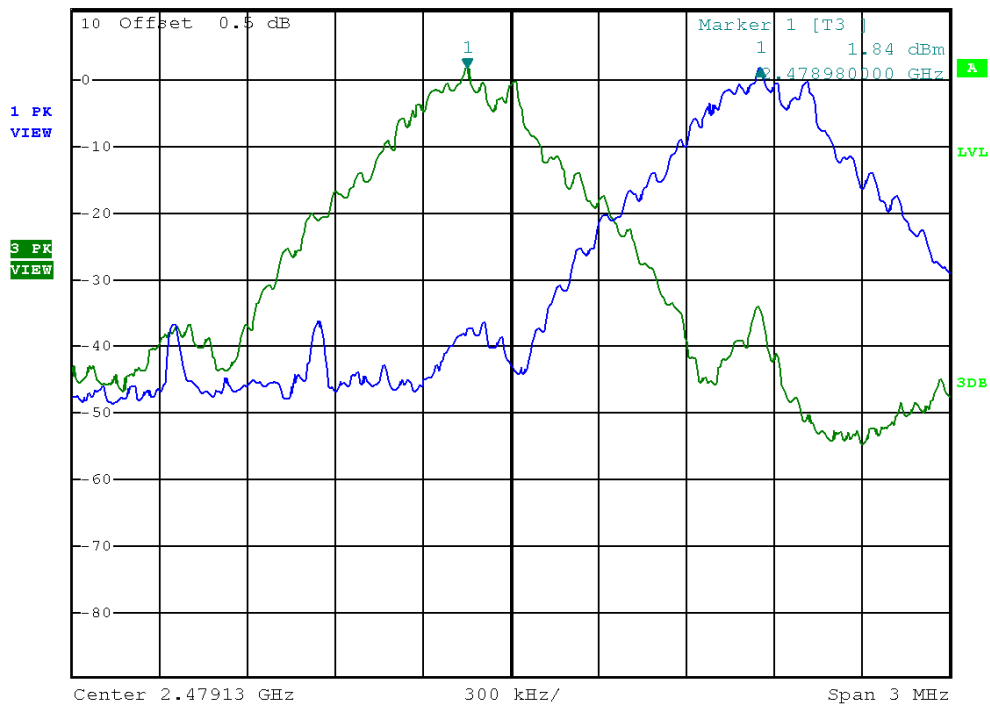
*RBW 30 kHz Delta 1 [T1]
*VBW 100 kHz -0.03 dB
SWT 5 ms 1.002000000 MHz

Ref 10.5 dBm

*Att 20 dB

SWT 5 ms

1.002000000 MHz

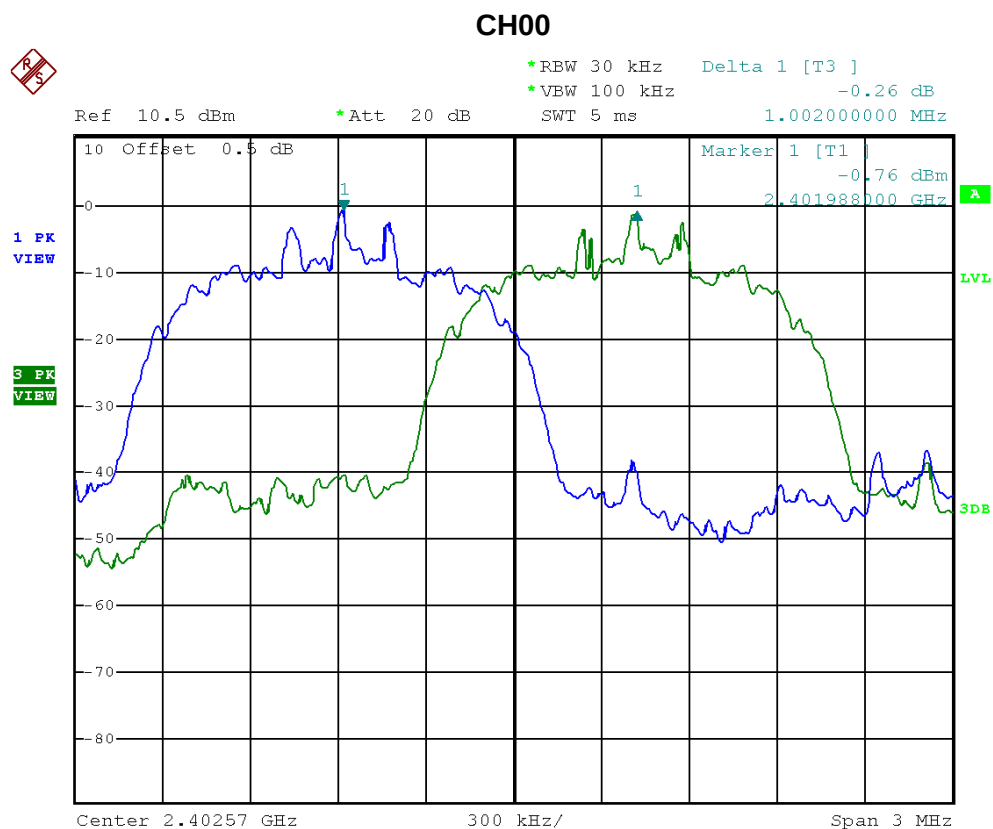




EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	25°C	Relative Humidity :	60%
Test Voltage :	DC 3.7V		
Test Mode :	3M_CH00 / CH39 / CH78		

Frequency	Ch. Separation (MHz)	20d Bandwidth B (MHz)	two-thirds of the 20 dB bandwidth	Result
2402 MHz	1.00	1.268	1.184	PASS
2441 MHz	1.00	1.266	1.182	PASS
2480 MHz	1.00	1.264	1.176	PASS

Ch. Separation Limits: >25 KHz or >2/3 of 20dB bandwidth

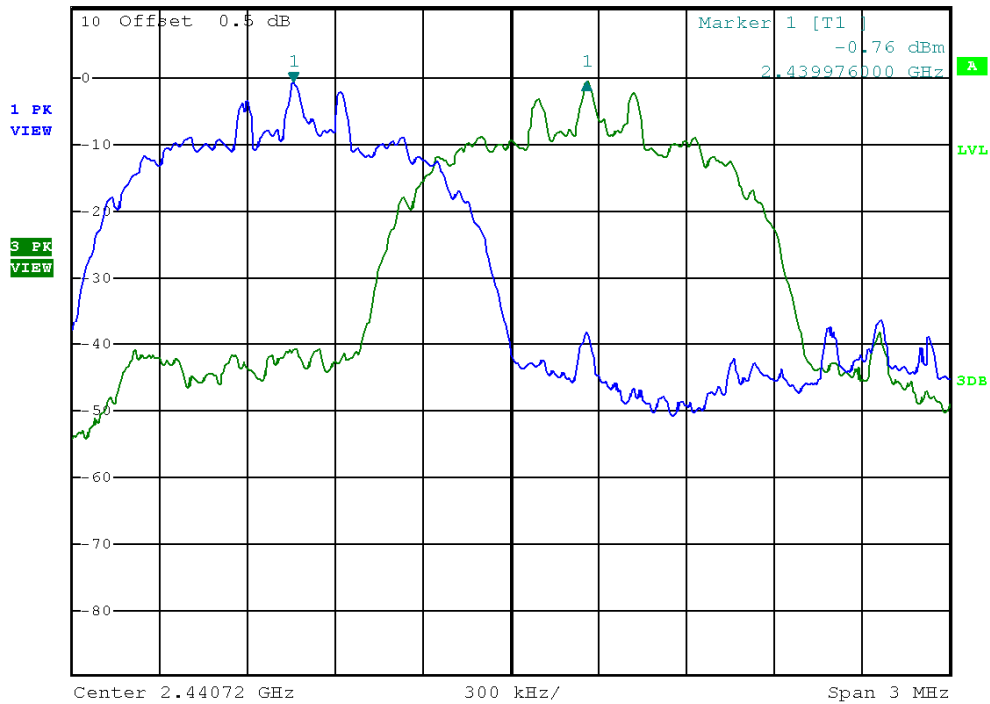




CH39



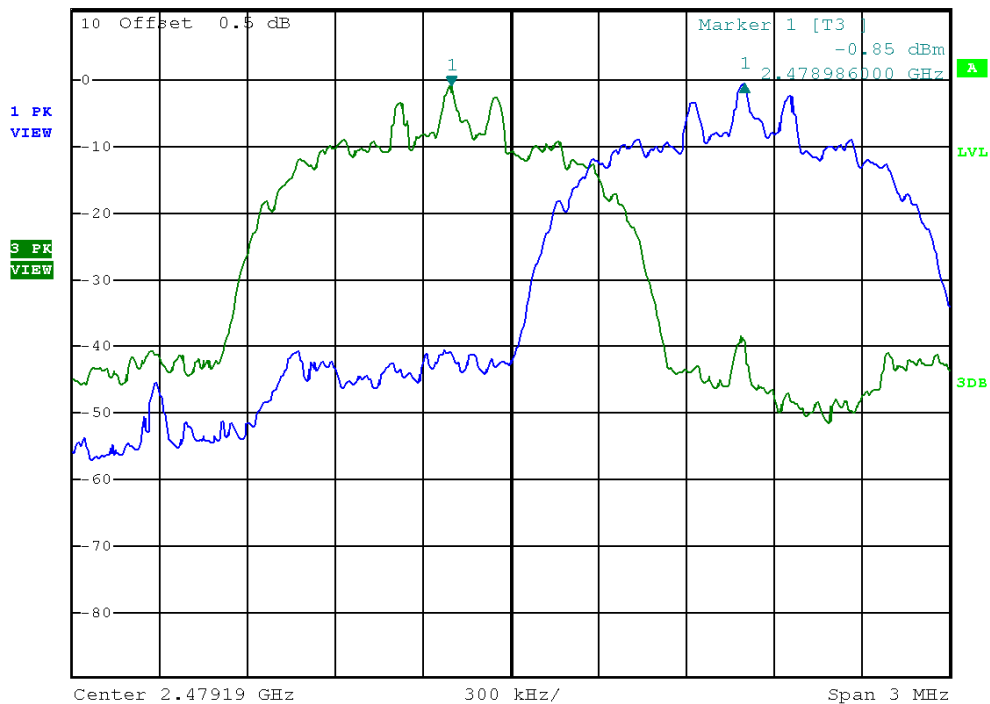
*RBW 30 kHz Delta 1 [T3]
*VBW 100 kHz 0.11 dB
Ref 10.5 dBm *Att 20 dB SWT 5 ms 1.002000000 MHz



CH78



*RBW 30 kHz Delta 1 [T1]
*VBW 100 kHz 0.08 dB
Ref 10.5 dBm *Att 20 dB SWT 5 ms 1.002000000 MHz





8. BANDWIDTH TEST

8.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (a)(2)	Bandwidth	≤ 1 MHz (20dB bandwidth)	2400-2483.5	PASS

8.1.1 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Aug. 31, 2011

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
VB	100 kHz (20dB Bandwidth) / 300 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

8.1.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = Auto.

8.1.3 DEVIATION FROM STANDARD

No deviation.

8.1.4 TEST SETUP



8.1.5 EUT OPERATION CONDITIONS

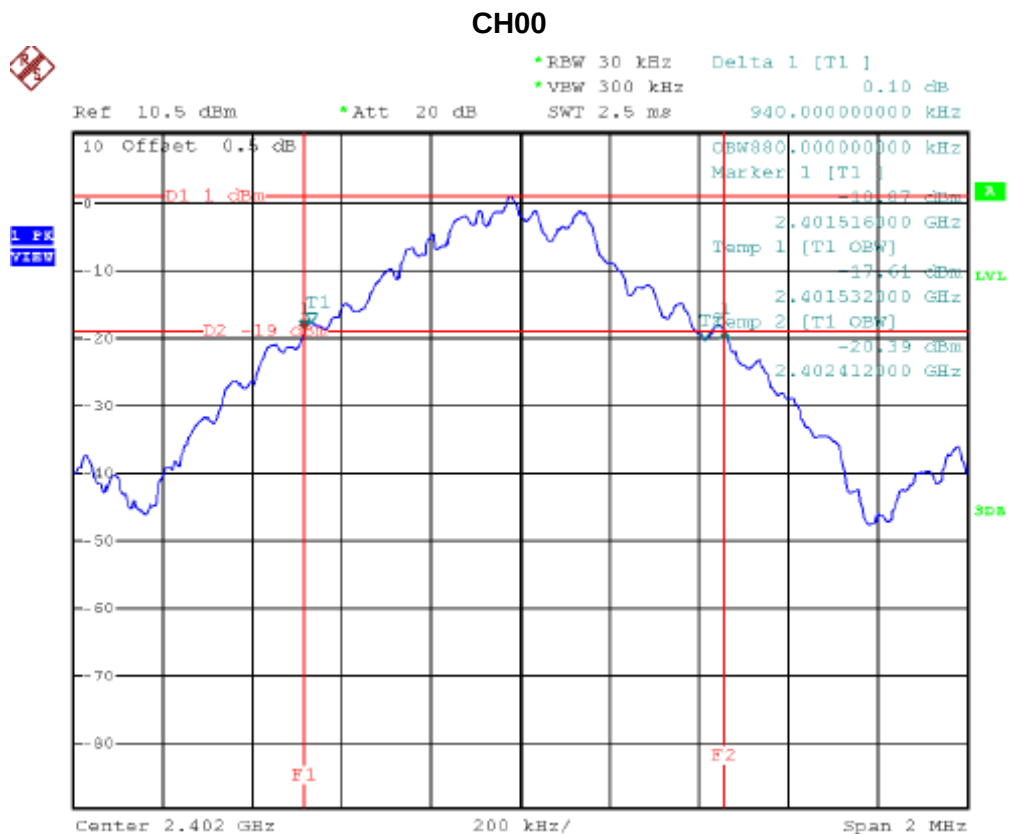
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



8.1.6 TEST RESULTS

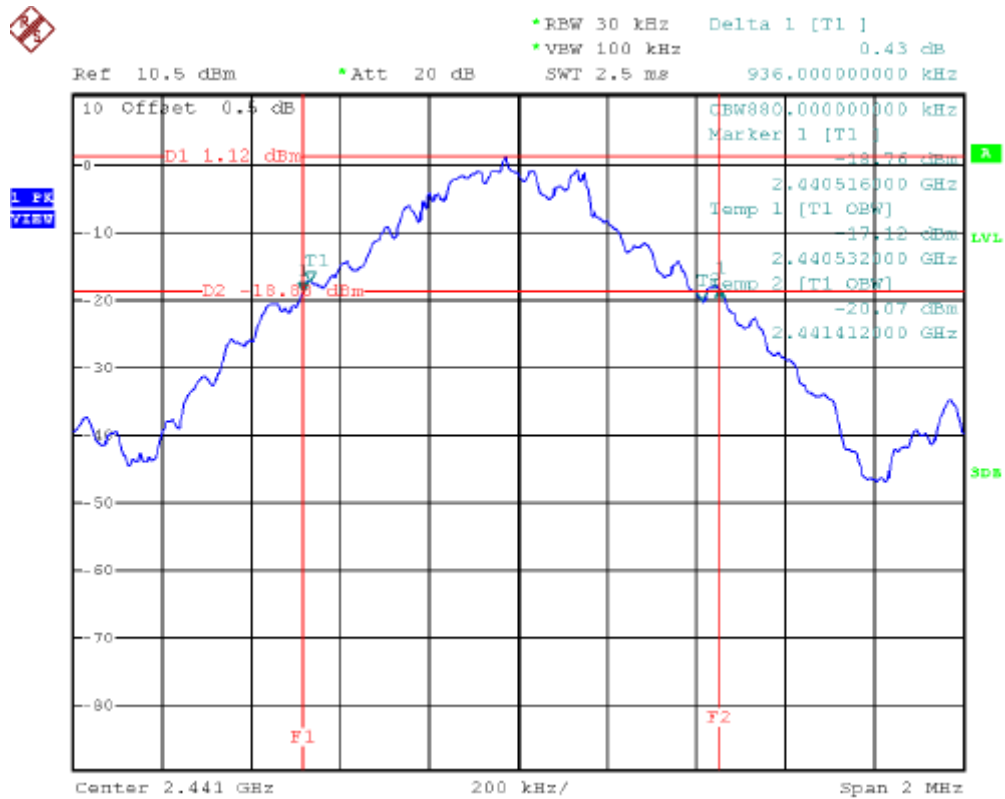
EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	25° C	Relative Humidity :	60%
Test Voltage :	DC 3.7V		
Test Mode :	1M_CH00 / CH39 / CH78		

Frequency	20dB Bandwidth (MHz)	99% Occupied BW (MHz)	Channel Separation (MHz)	Result
2402 MHz	0.940	0.880	<= 1MHz	PASS
2441 MHz	0.936	0.880	<= 1MHz	PASS
2480 MHz	0.936	0.888	<= 1MHz	PASS

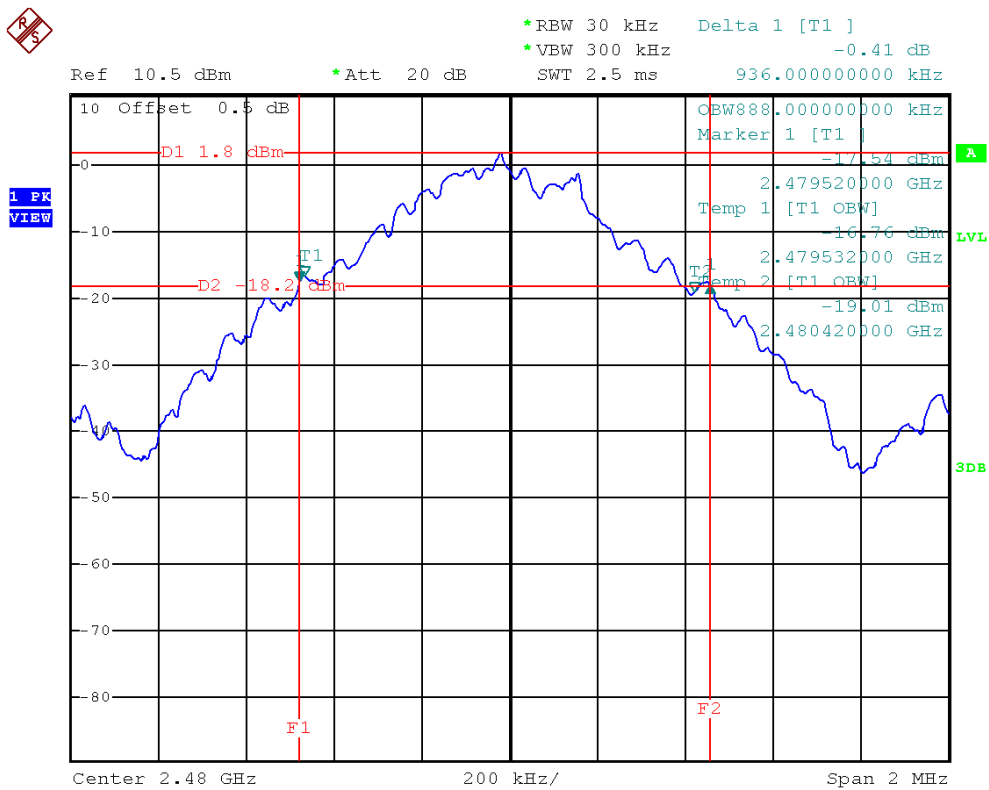




CH39



CH78

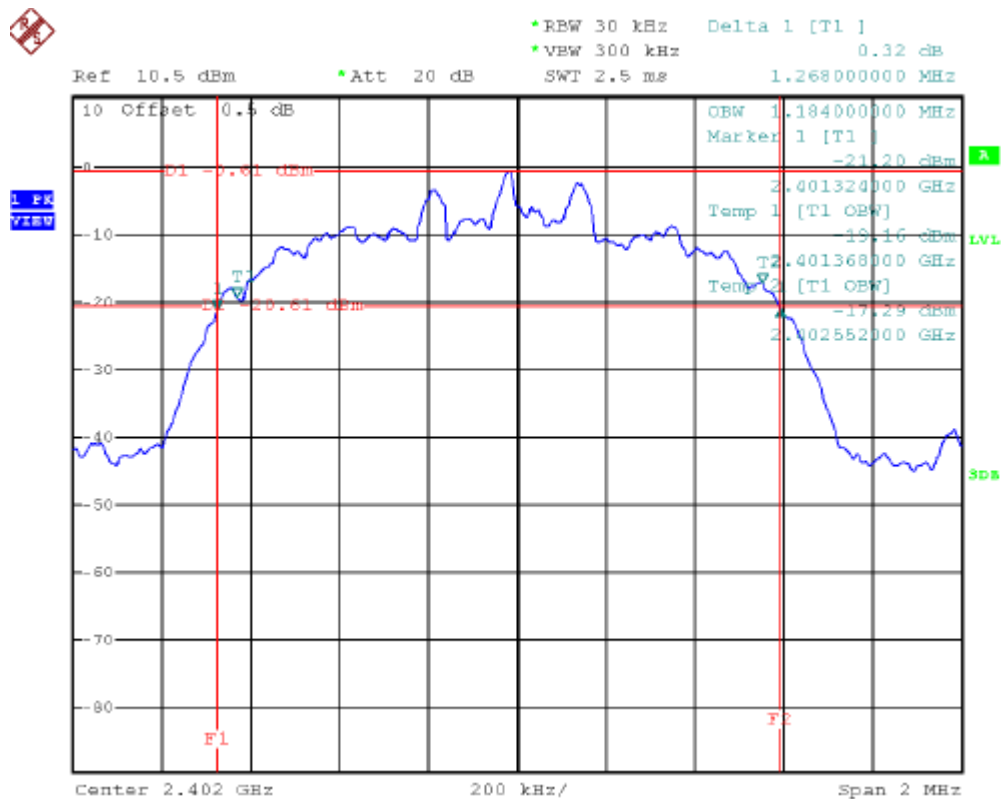




EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	25°C	Relative Humidity :	60%
Test Voltage :	DC 3.7V		
Test Mode :	3M_CH00 / CH39 / CH78		

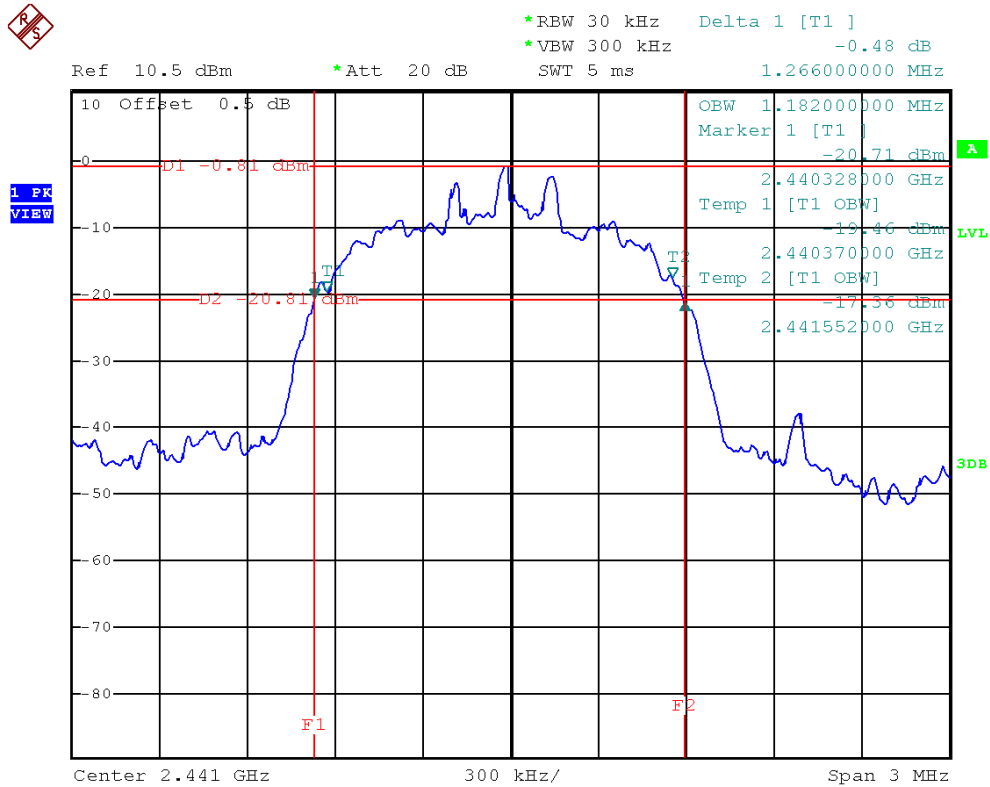
Frequency	20dB Bandwidth (MHz)	99% Occupied BW (MHz)	Channel Separation (MHz)	Result
2402 MHz	1.268	1.184	<= 1MHz	PASS
2441 MHz	1.266	1.182	<= 1MHz	PASS
2480 MHz	1.264	1.176	<= 1MHz	PASS

CH00

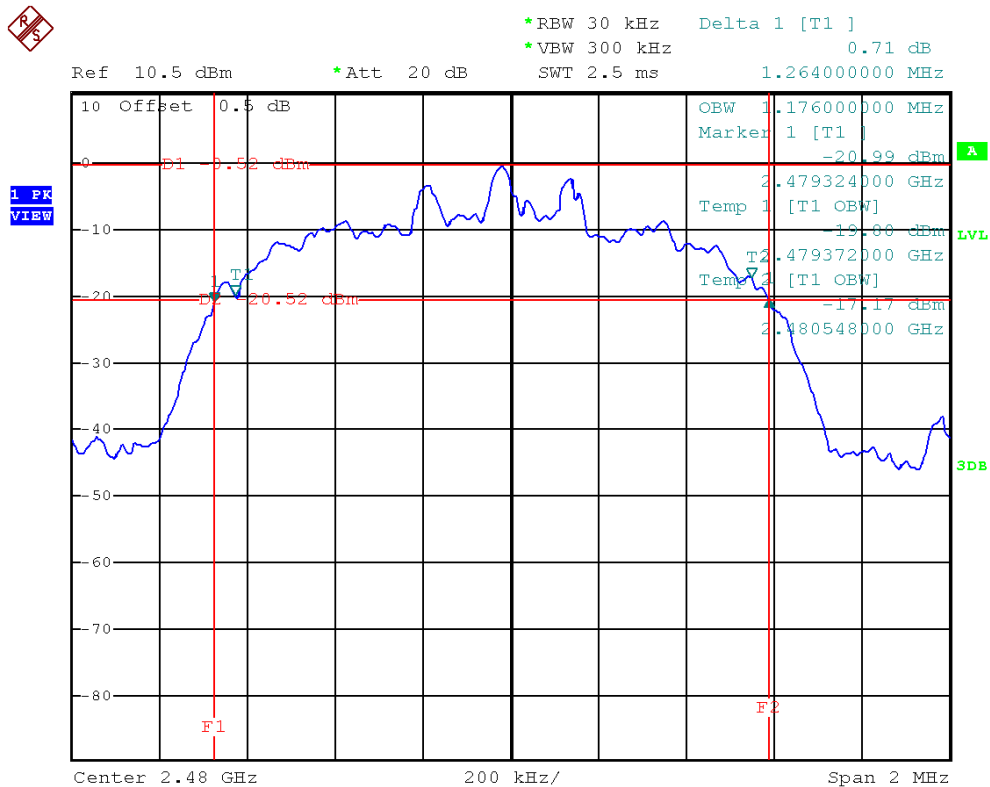




CH39



CH78





9. PEAK OUTPUT POWER TEST

9.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (b)(1)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

9.1.1 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Aug. 31, 2011

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

9.1.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 3MHz, VBW= 3MHz, Sweep time = Auto.

9.1.3 DEVIATION FROM STANDARD

No deviation.

9.1.4 TEST SETUP



9.1.5 EUT OPERATION CONDITIONS

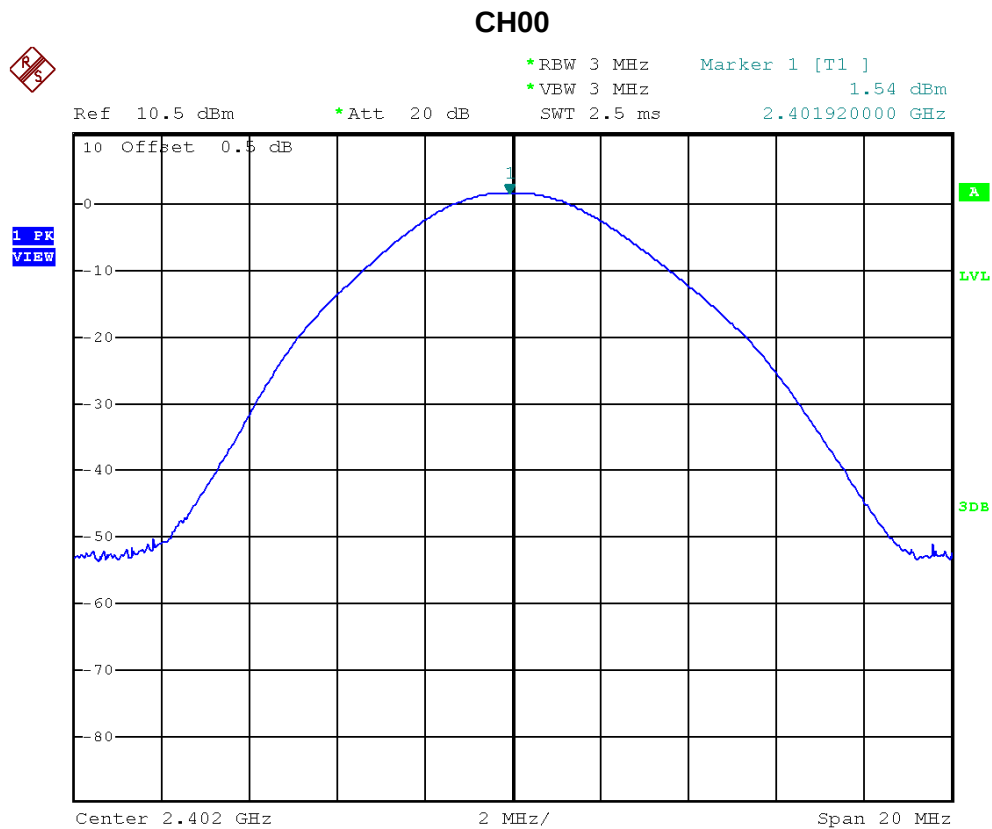
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



9.1.6 TEST RESULTS

EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	25 °C	Relative Humidity :	60%
Test Voltage :	DC 3.7V		
Test Mode :	1M_CH00 / CH39 / CH78		

Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
2402	1.54	30	1
2441	2.03	30	1
2480	2.35	30	1





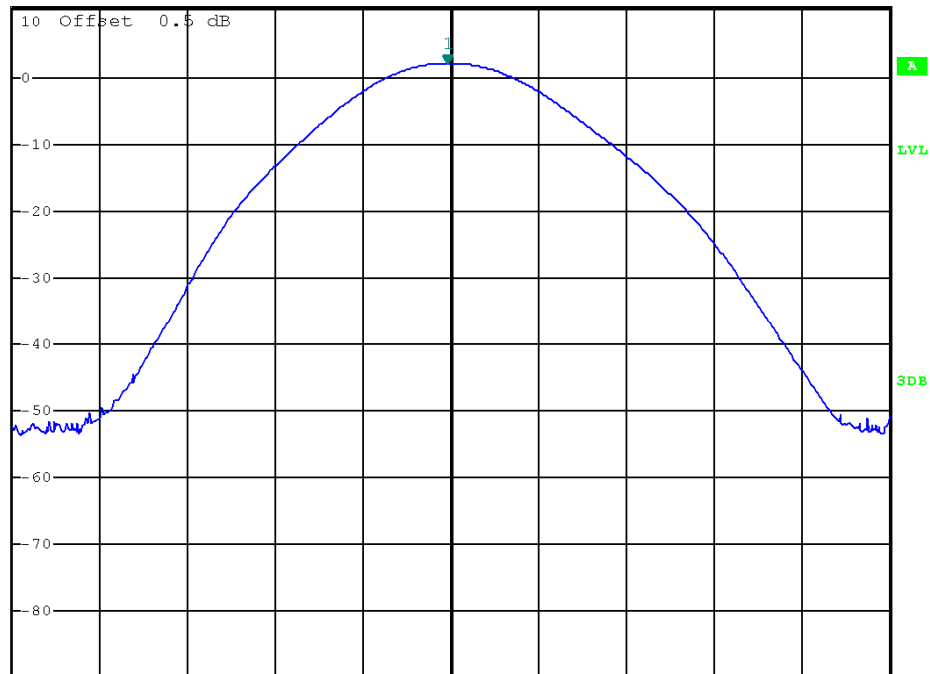
CH39



*RBW 3 MHz Marker 1 [T1]
*VBW 3 MHz 2.03 dBm
*Att 20 dB SWT 2.5 ms 2.440920000 GHz

Ref 10.5 dBm

1 PK
VIEW



Center 2.441 GHz

2 MHz/

Span 20 MHz

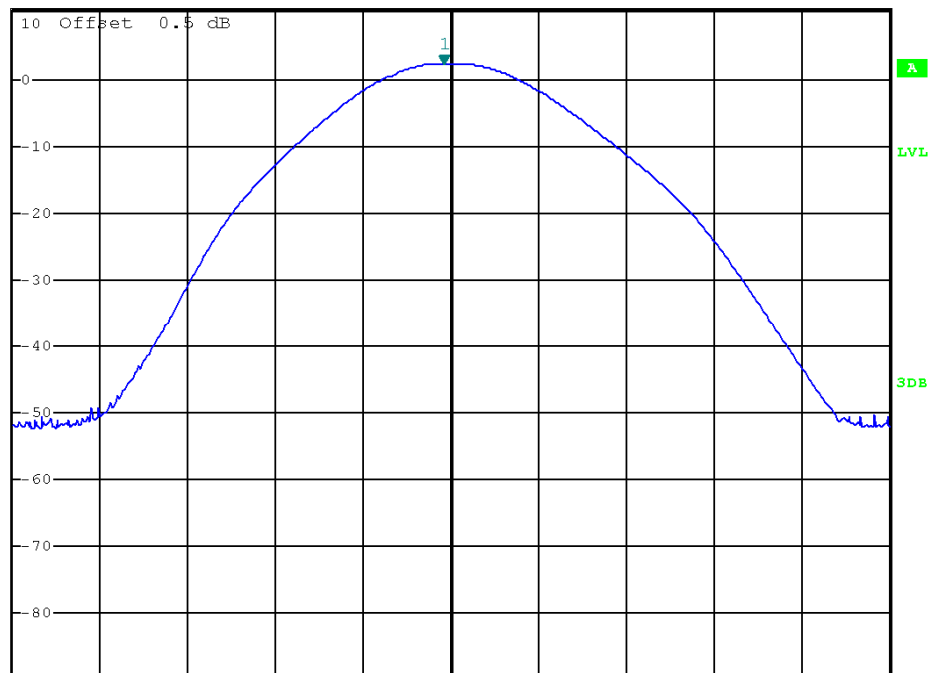
CH78



*RBW 3 MHz Marker 1 [T1]
*VBW 3 MHz 2.35 dBm
*Att 20 dB SWT 2.5 ms 2.479840000 GHz

Ref 10.5 dBm

1 PK
VIEW



Center 2.48 GHz

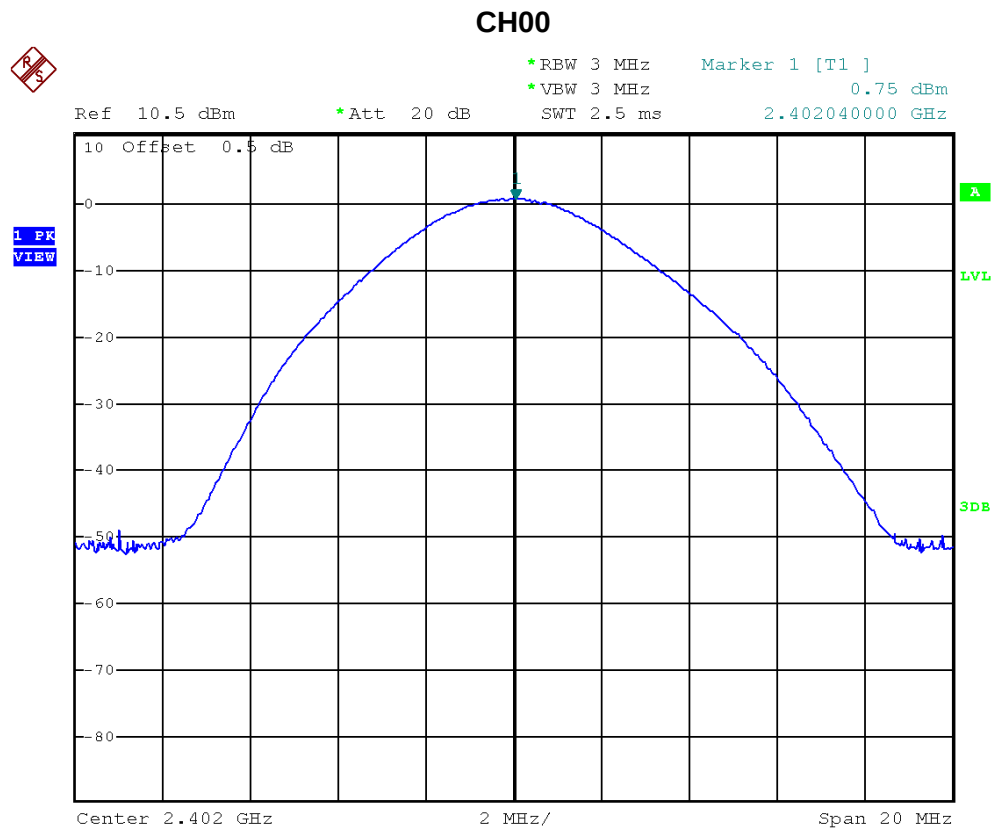
2 MHz/

Span 20 MHz



EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	25°C	Relative Humidity :	60%
Test Voltage :	DC 3.7V		
Test Mode :	3M_CH00 / CH39 / CH78		

Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
2402	0.75	30	1
2441	0.66	30	1
2480	0.70	30	1

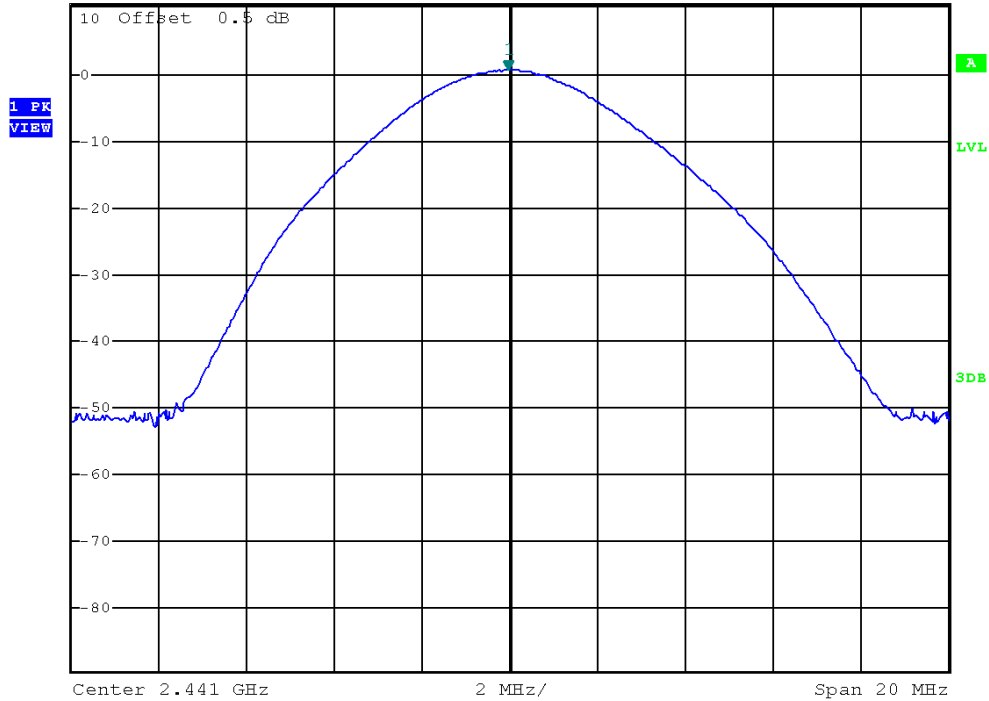




CH39



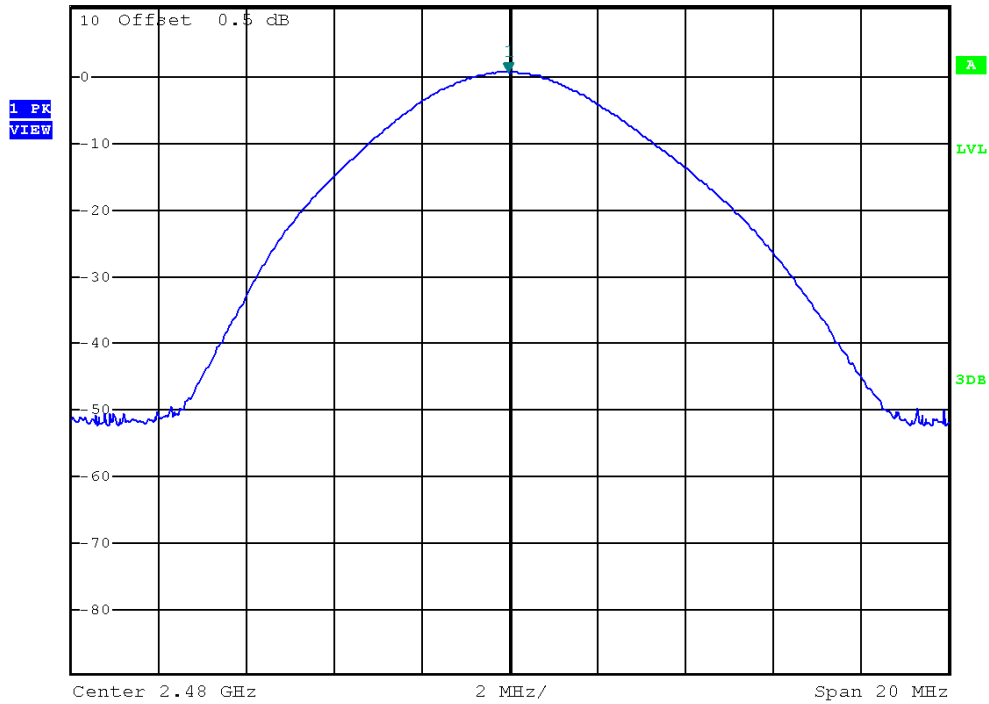
*RBW 3 MHz Marker 1 [T1]
*VBW 3 MHz 0.66 dBm
Ref 10.5 dBm *Att 20 dB SWT 2.5 ms 2.440960000 GHz



CH78



*RBW 3 MHz Marker 1 [T1]
*VBW 3 MHz 0.70 dBm
Ref 10.5 dBm *Att 20 dB SWT 2.5 ms 2.479960000 GHz



**10. ANTENNA CONDUCTED SPURIOUS EMISSION****10.1 APPLIED PROCEDURES / LIMIT**

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/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

10.1.1 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Aug. 31, 2011

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (other emission)	100 KHz /100 KHz for Peak

10.1.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = Auto.

10.1.3 DEVIATION FROM STANDARD

No deviation.



10.1.4 TEST SETUP



10.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



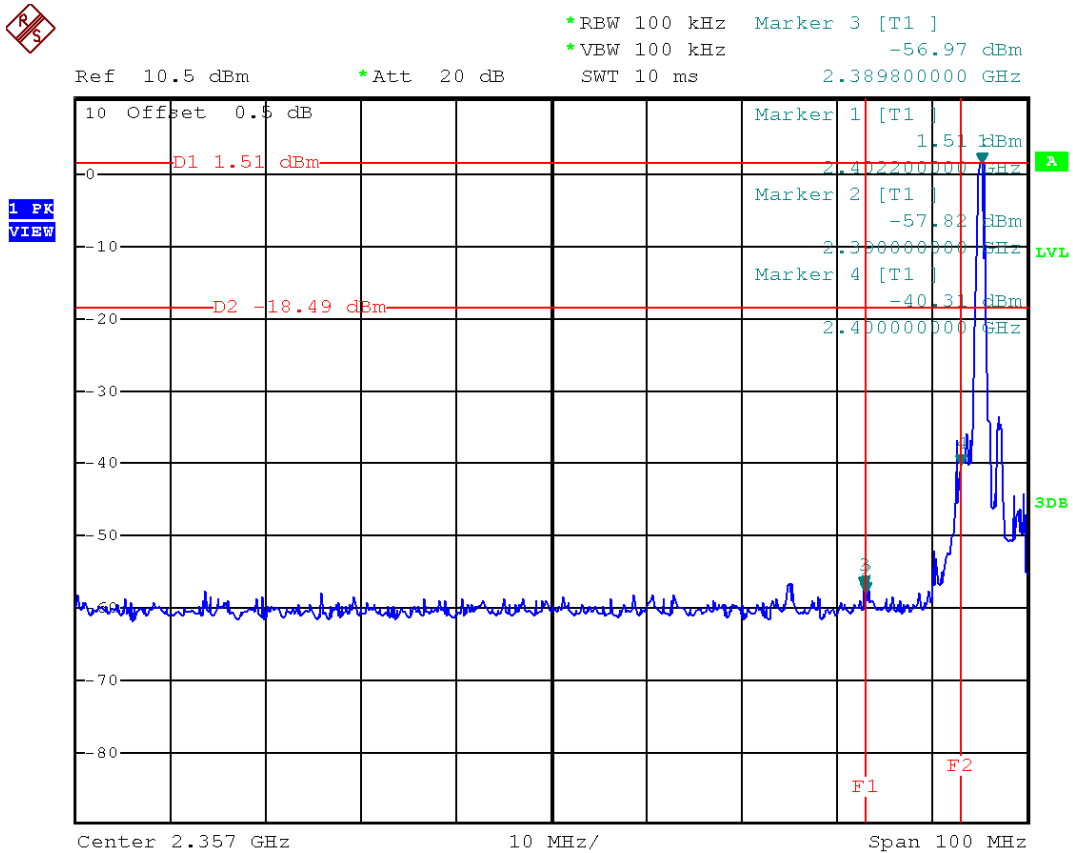
10.1.6 TEST RESULTS

EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	23 ° C	Relative Humidity :	50%
Test Voltage :	DC 3.7V		
Test Mode :	1M_CH00 / CH39 / CH78		

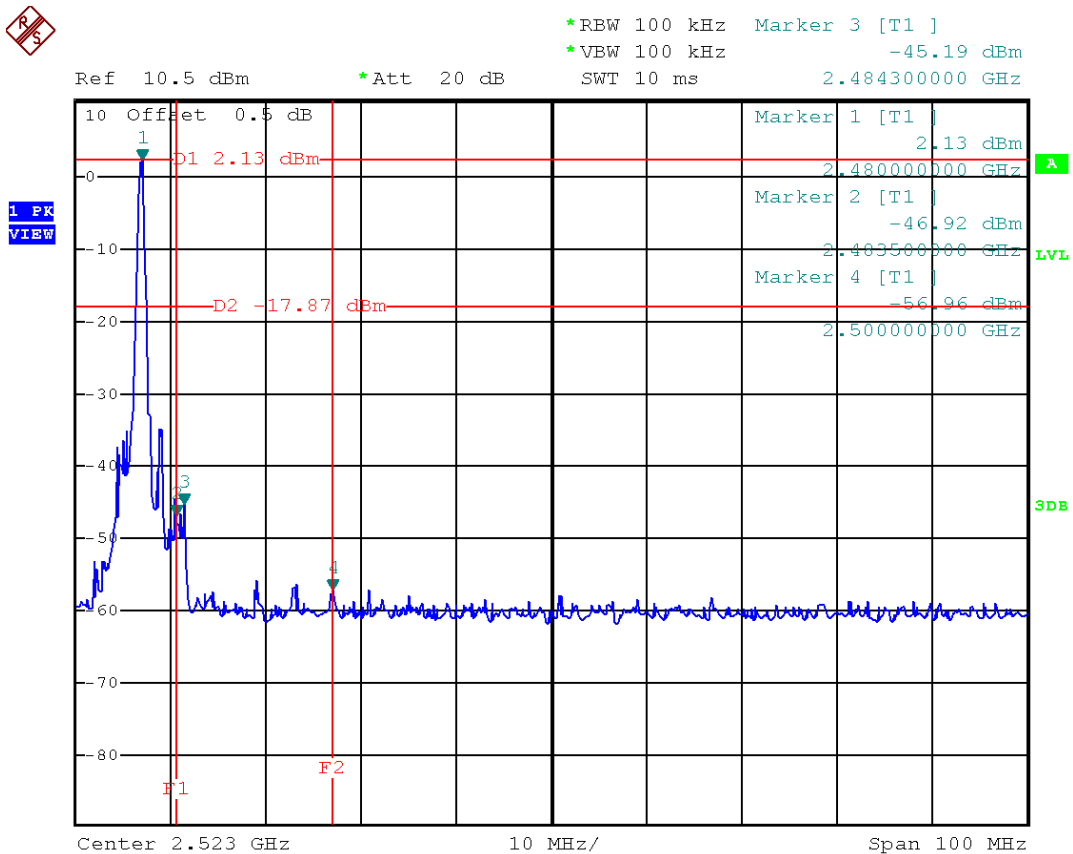
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2389.0	-56.97	2484.3	-45.19
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			



CH00 (Lower)



CH78 (Upper)

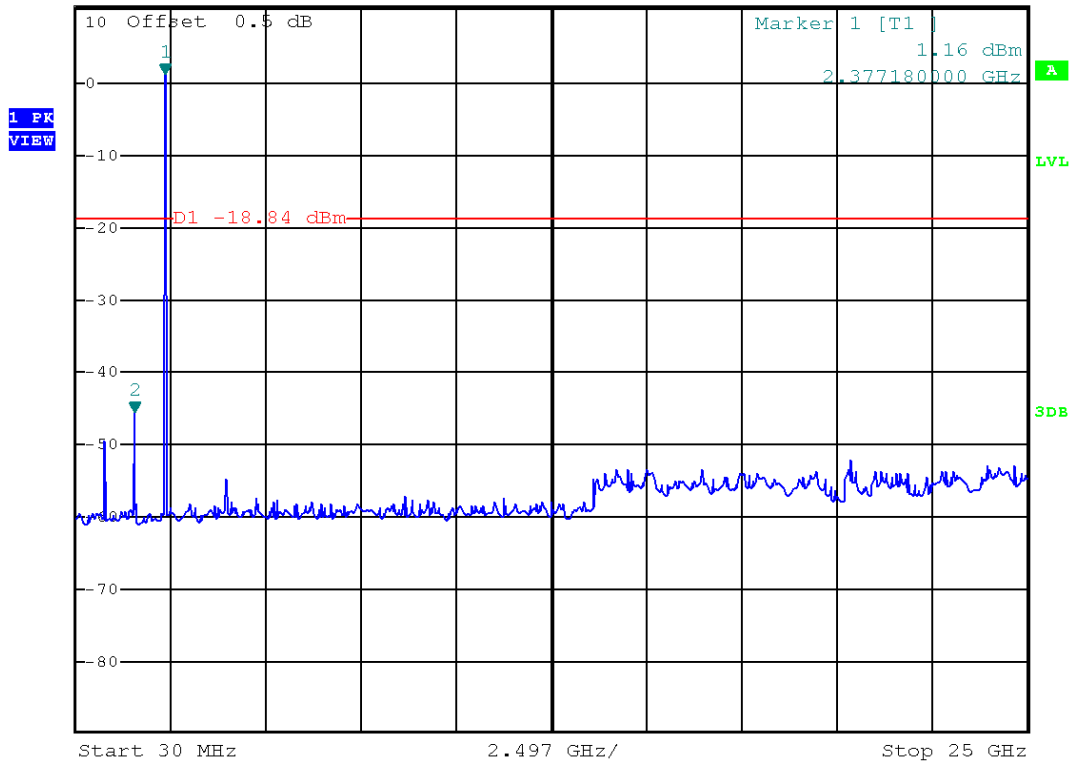




CH00



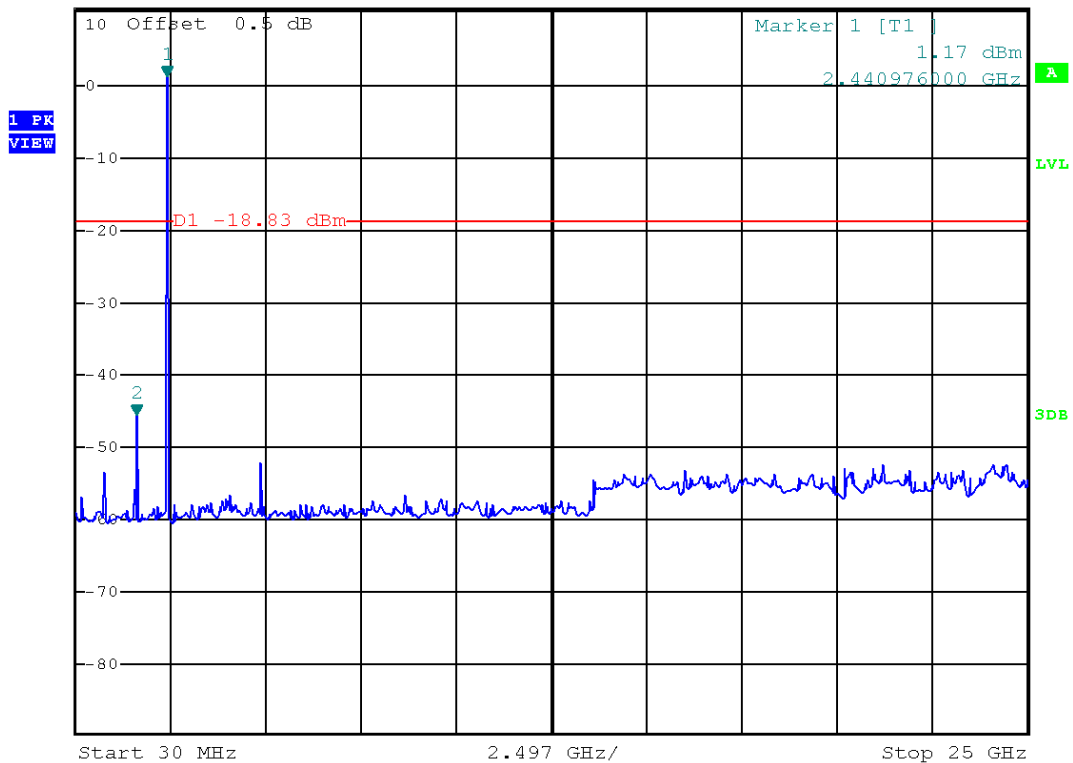
*RBW 100 kHz Marker 2 [T1]
*VBW 100 kHz -45.67 dBm
Ref 10.5 dBm *Att 20 dB SWT 2.5 s 1.578140000 GHz



CH39

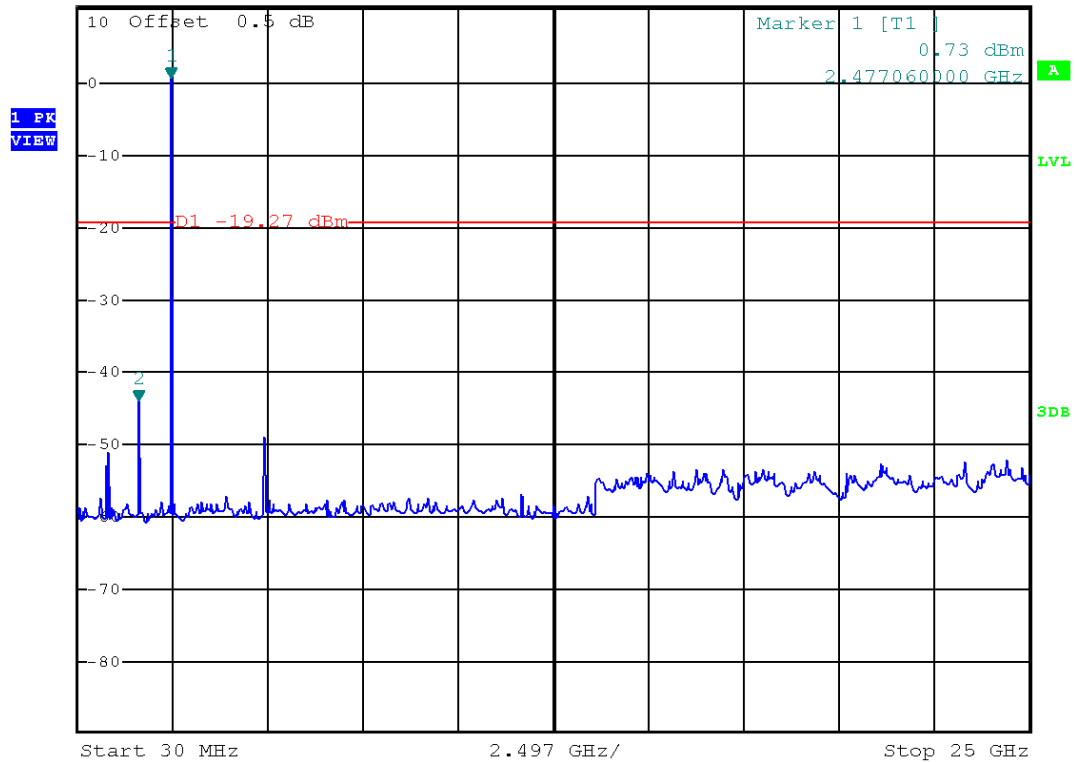


*RBW 100 kHz Marker 2 [T1]
*VBW 100 kHz -45.66 dBm
Ref 10.5 dBm *Att 20 dB SWT 2.5 s 1.628080000 GHz





Ref 10.5 dBm *Att 20 dB SWT 2.5 s 1.628080000 GHz



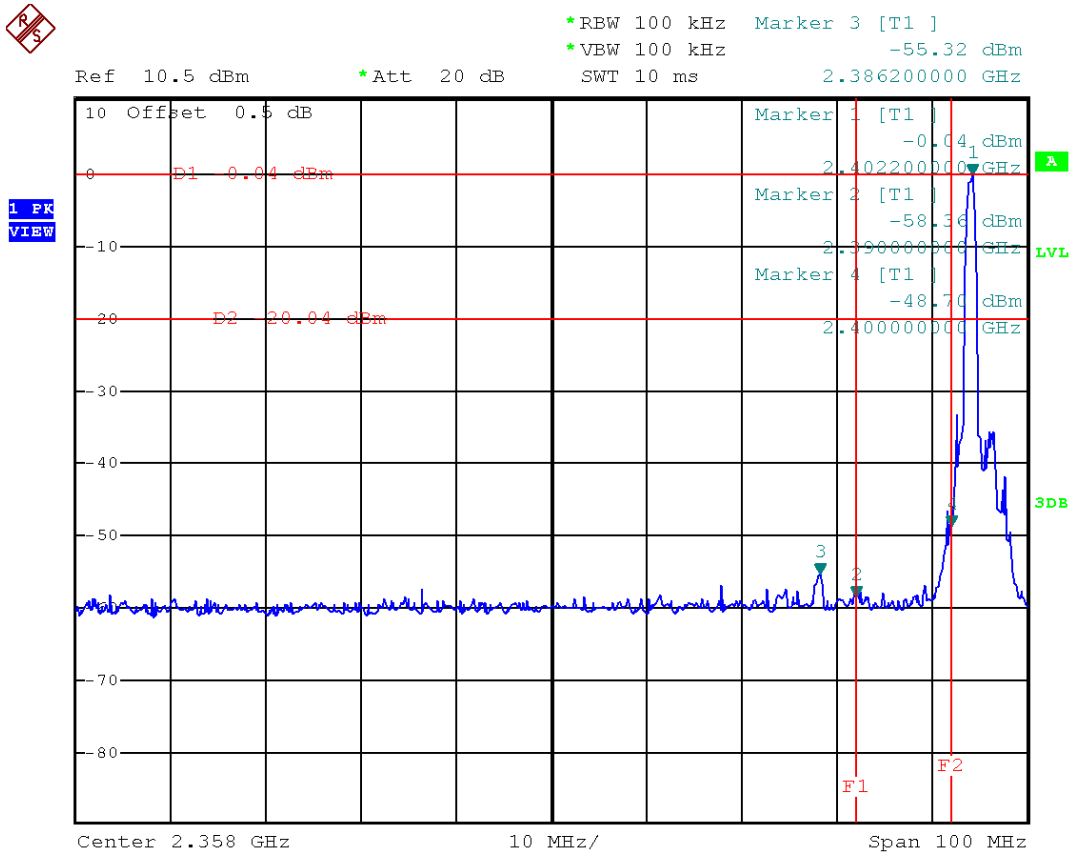


EUT :	BT Barcode Scanner	Model Name :	1661
Temperature :	23 ° C	Relative Humidity :	50%
Test Voltage :	DC 3.7V		
Test Mode :	3M_CH00 / CH39 / CH78		

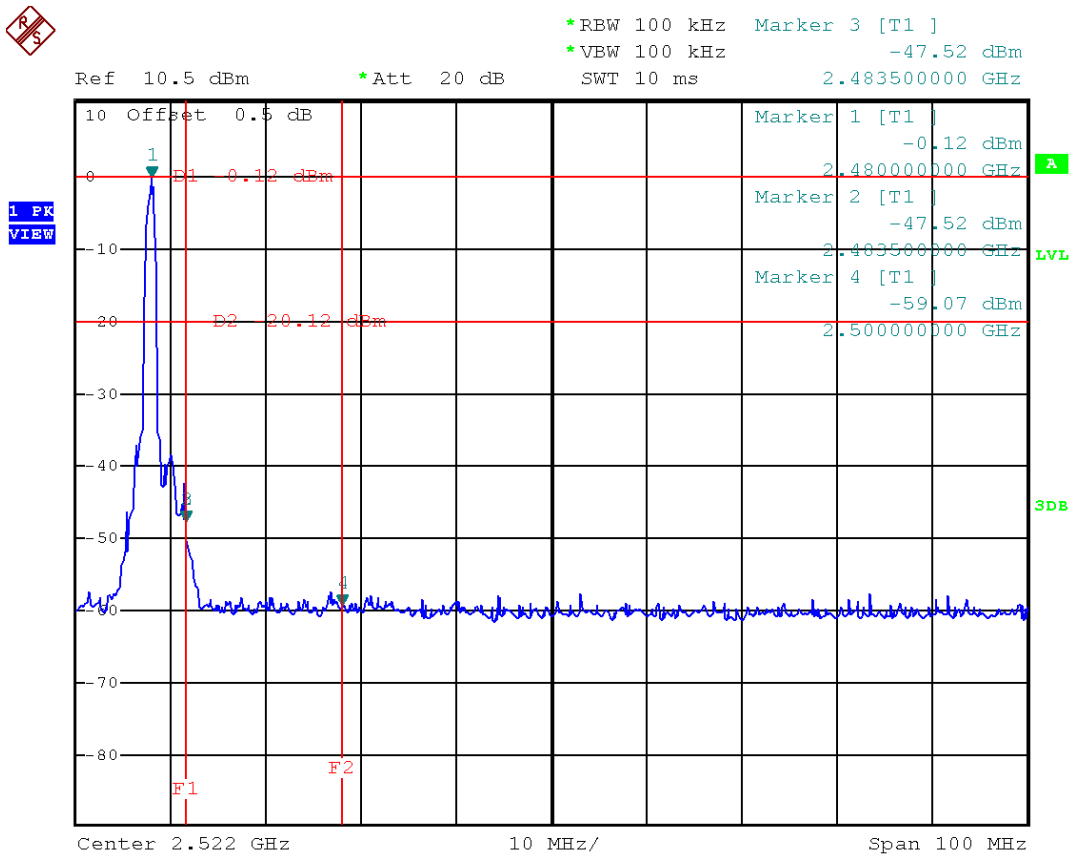
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2386.2	-55.32	2483.5	-47.52
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			



CH00 (Lower)



CH 78(Upper)

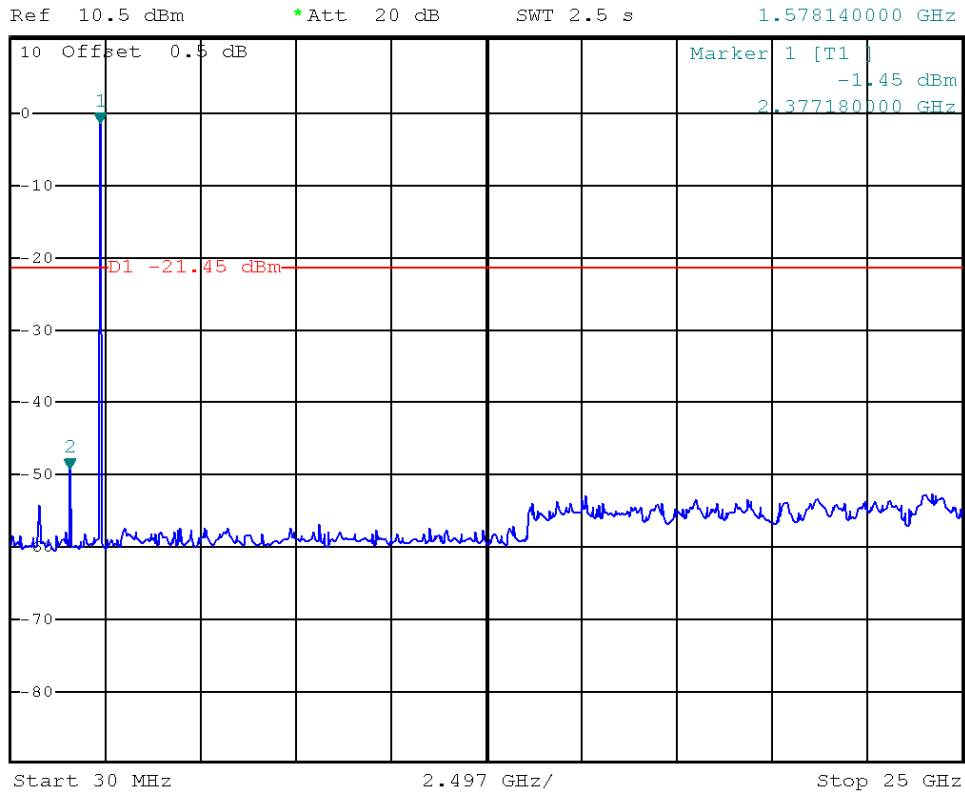




CH00



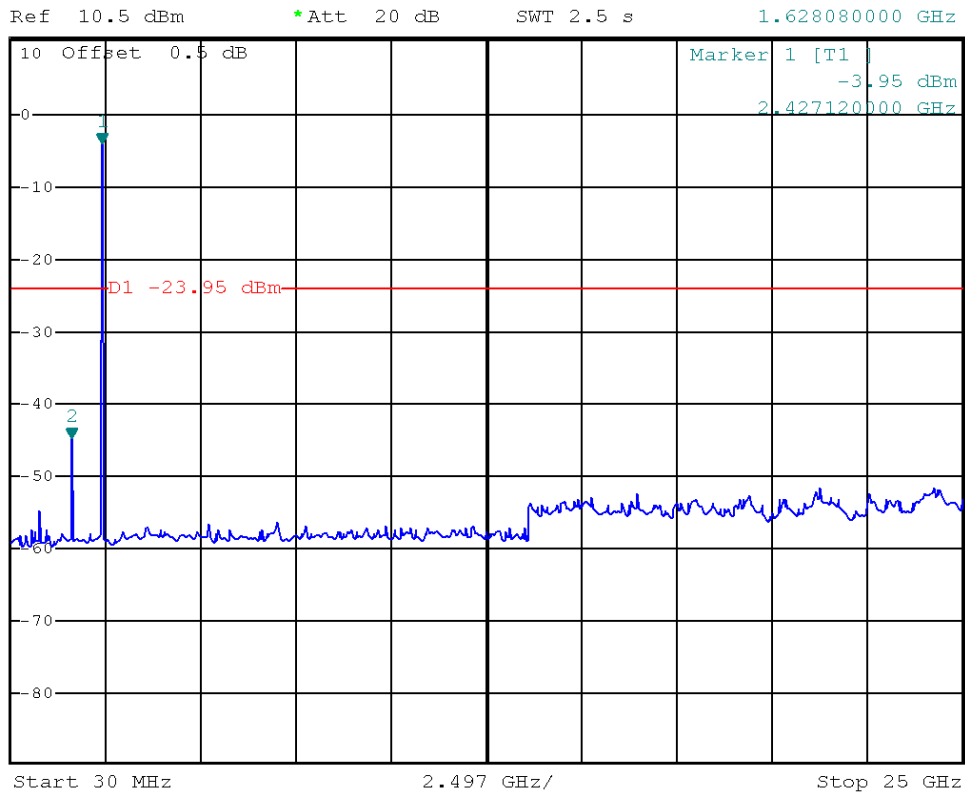
*RBW 100 kHz Marker 2 [T1]
*VBW 100 kHz -49.34 dBm
SWT 2.5 s 1.578140000 GHz



CH39



*RBW 100 kHz Marker 2 [T1]
*VBW 100 kHz -44.80 dBm
SWT 2.5 s 1.628080000 GHz

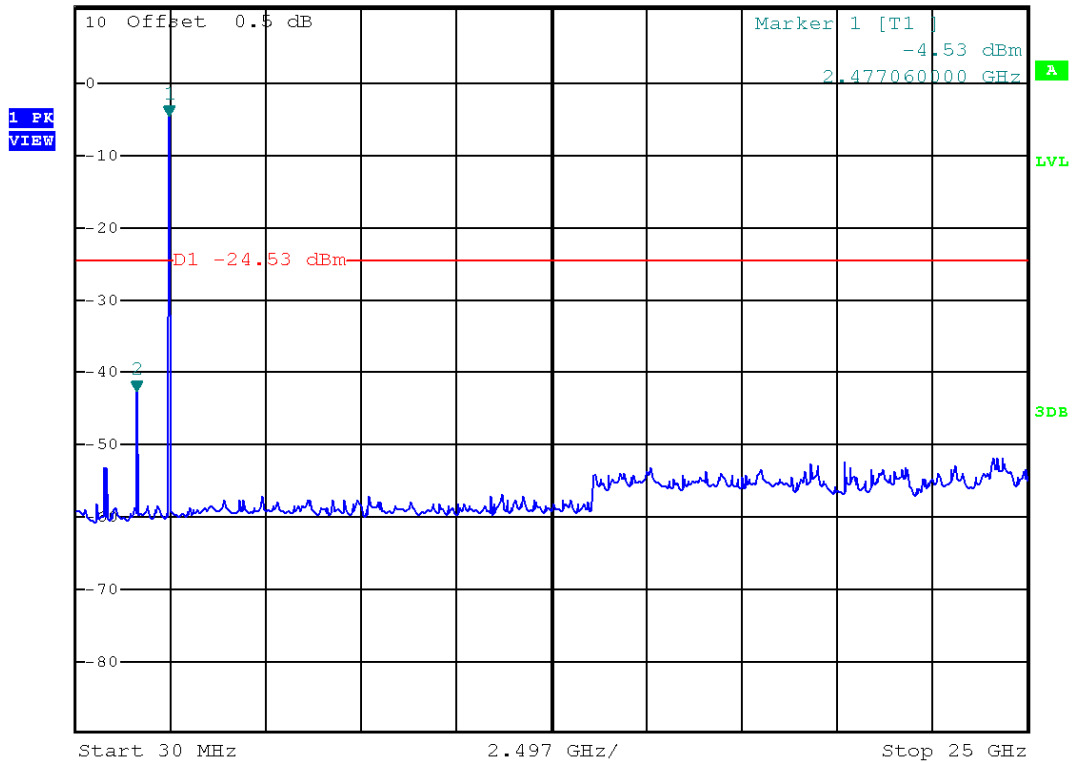




CH78



*RBW 100 kHz Marker 2 [T1]
*VBW 100 kHz -42.66 dBm
Ref 10.5 dBm *Att 20 dB SWT 2.5 s 1.628080000 GHz





11. RF EXPOSURE TEST

11.1 APPLIED PROCEDURES / LIMIT

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

11.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Aug. 31, 2011

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

11.1.2 MPE CALCULATION METHOD

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d}$$

$$\text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = Peak RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained



11.1.3 DEVIATION FROM STANDARD

No deviation.

11.1.4 TEST SETUP



11.1.5 EUT OPERATION CONDITIONS

The power is too low, so no RF calculations are needed.