

5.7. TRANSMISSION RADIATION ANGLE WIDTH (3DB BEAMWIDTH) MEASUREMENT

5.7.1. LIMIT

Item	Limits
3dB antenna beam width	$360/A$ (If $A < 1$; then $A = 1$) $A = \{\text{EIRP Power [mW]} / 16.36 \text{ for DS, OFDM}\}$ or $A = \{\text{EIRP Power [mW]} / 4.9 \text{ for FH}\}$
Note: This test item is not applied for radio equipment with equivalent isotropic radiation power lower than 12.14dBm/MHz, but Antenna Power(Conducted) limit is 10mW/MHz (10dBm/MHz), So the test item will not be applied to the transmission antenna which has a gain of 2.14dBi or less	

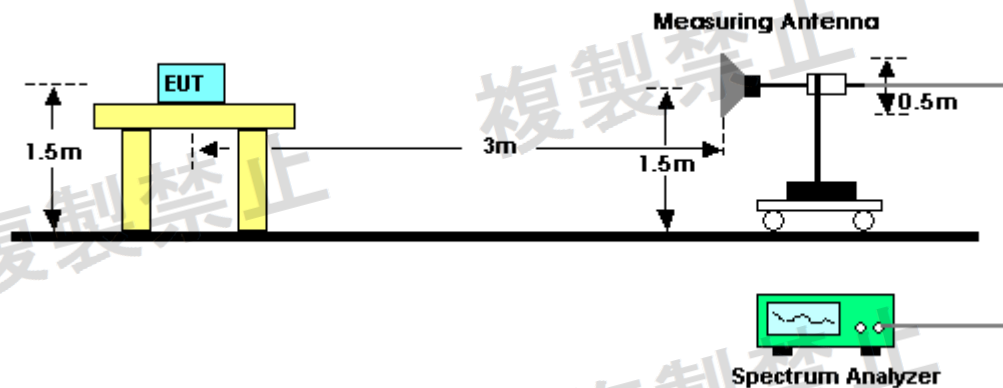
5.7.2. MEASURING INSTRUMENTS AND SETTING

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	0 MHz
RB	1 MHz
VB	1 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.7.3. TEST PROCEDURES

1. Set EUT and measuring antenna at the same height and roughly facing each other.
2. Set spectrum analyzer with condition in section 4.7.2 and tune reference level to observe receiving signal position.
3. Rotate directions of the EUT horizontally and vertically to find the maximum receiving power.
4. Move the measuring antenna height up and down within $\pm 50\text{cm}$ of EUT height and swing it to find the maximum output of measuring antenna. The output level at the spectrum analyzer is read as "E"
5. Calculate permitted radiation angle in horizontal and vertical using EIRP measured in another test method.
6. Calculate 3dB antenna beam width by the formula below $360/A$ (If $A < 1$; then $A = 1$).
 $A = \{\text{EIRP Power [mW]} / 16.36 \text{ for DS, OFDM}\}$ or
 $A = \{\text{EIRP Power [mW]} / 4.9 \text{ for FH}\}$

5.7.4. TEST SETUP LAYOUT



5.7.5. TEST DEVIATION

There is no deviation with the original standard.

5.7.6. EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

5.7.7. TEST RESULT OF TRANSMISSION RADIATION ANGLE WIDTH (3DB BEAMWIDTH)

N/A

Note: This test item will not be applied to the transmission antenna which has a gain of 2.14dBi or less

5.8. RADIO INTERFERENCE PREVENTION CAPABILITY MEASUREMENT

5.8.1. LIMIT

Item	Limits
Identification code	≥ 48 bits

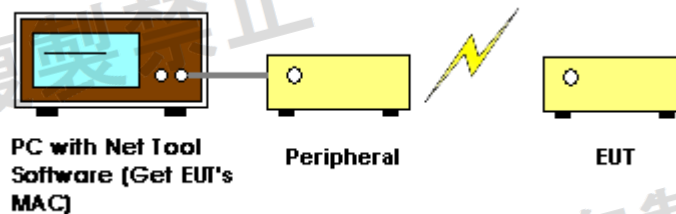
5.8.2. MEASURING ID CODE SOFTWARE

Item	Limits
MAC IP List	MAC Scan

5.8.3. TEST PROCEDURES

1. In the case that the EUT has the function of automatically transmitting the identification code: a. Transmit the predetermined identification codes from EUT. b. Check the transmitted identification codes with the demodulator.
2. In the case of receiving the identification code: a. Transmit the predetermined identification codes from the counterpart. b. Check if communication is normal. c. Transmit the signals other than predetermined ID codes from the counterpart. d. Check if the EUT stops the transmission, or if it displays that identification codes are different from the predetermined ones.

5.8.4. TEST SETUP LAYOUT



5.8.5. TEST DEVIATION

There is no deviation with the original standard.

5.8.6. EUT OPERATION DURING TEST

The EUT was programmed to be in normal transmitting mode.

5.8.7. TEST RESULT OF RADIO INTERFERENCE PREVENTION CAPABILIT

EUT	Soundcore Life 2	Test Date	Oct. 10, 2018
Temperature	25℃	Tested by	Henry
Humidity	55 % RH	Test Voltage	DC 3.7V
Test result	CONFORM		

5.9. HOPPING FREQUENCY DWELL TIME MEASUREMENT

5.9.1. LIMIT

Item	Limits
Hopping Freq. Dwell Time	$\leq 0.4 \text{ sec}$ (In $0.4 \text{ sec} \times \text{spreading rate}$)

5.9.2. MEASURING INSTRUMENTS AND SETTING

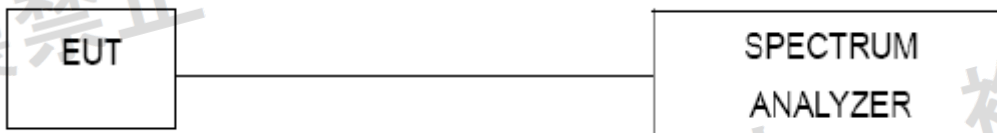
Please refer to section 5 in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
RB	300kHz for Spread BW 1 MHz for duty cycle
VB	300kHz for Spread BW 1 MHz for duty cycle
Detector	Peak
Trace	Max Hold
Sweep	Continuous

5.9.3. TEST PROCEDURES

- The transmitter output (antenna port) was connected to the spectrum analyzer
- Set RBW of spectrum analyzer according above list.
- Sweep Time is more than once pulse time.
- Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- Measure the maximum time duration of one single pulse.
- Set the EUT for DH5, DH3 and DH1 packet transmitting.
- Measure the maximum time duration of one single pulse.
- Dwell time = $[\text{spreading rate}/79] \times \text{duty-cycle} \times 0.4 \text{ seconds}$
(to be determined for each mode, DH1, DH3, DH5)

5.9.4. TEST SETUP LAYOUT



5.9.5. EUT OPERATION DURING TEST

The EUT was programmed to be in DH5/DH3/DH1 transmitting mode.

5.9.6. TEST RESULT OF HOPPING FREQUENCY DWELL TIME

EUT	Soundcore Life 2	Test Date	Oct. 10, 2018
Temperature	25℃	Tested by	Henry
Humidity	55 % RH	Test Voltage	DC 3.7V
Test Mode	CH00		

For 1Mbps

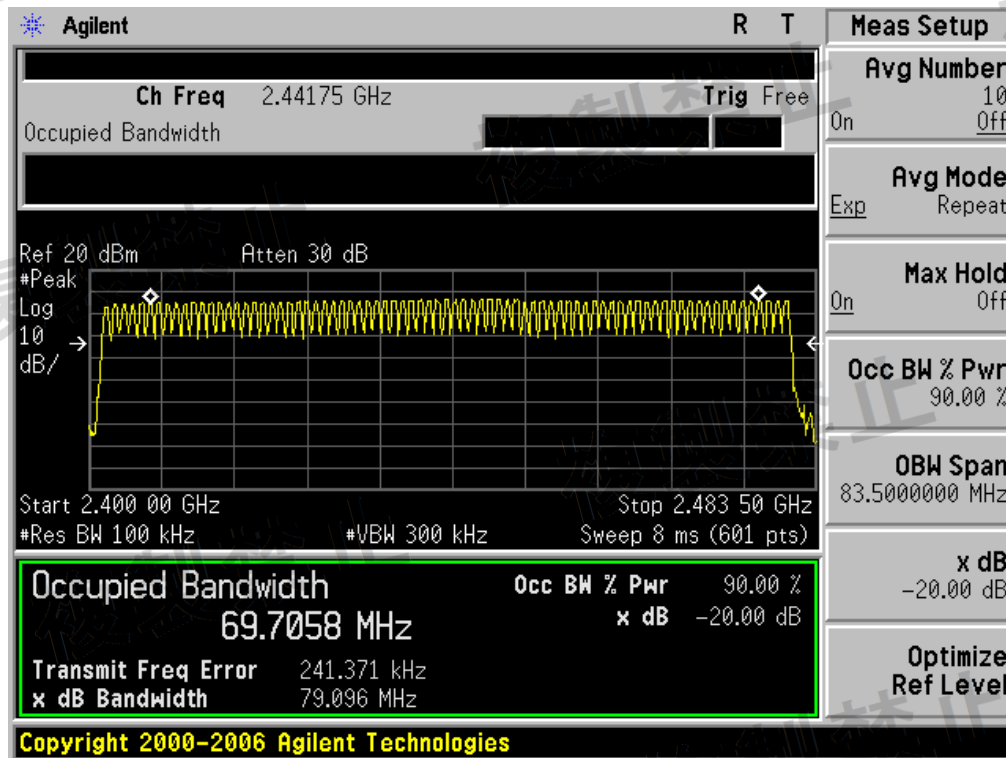
Data Packet	90% Spread BW (MHz)	Duty cycle (%)	Dwell Time (s)	Limits (s)
DH1	69.71	28.87%	0.102	0.4
DH3	69.69	64.99%	0.229	0.4
DH5	69.77	77.32%	0.273	0.4

Duty-cycle = [on time/total time] x 100%

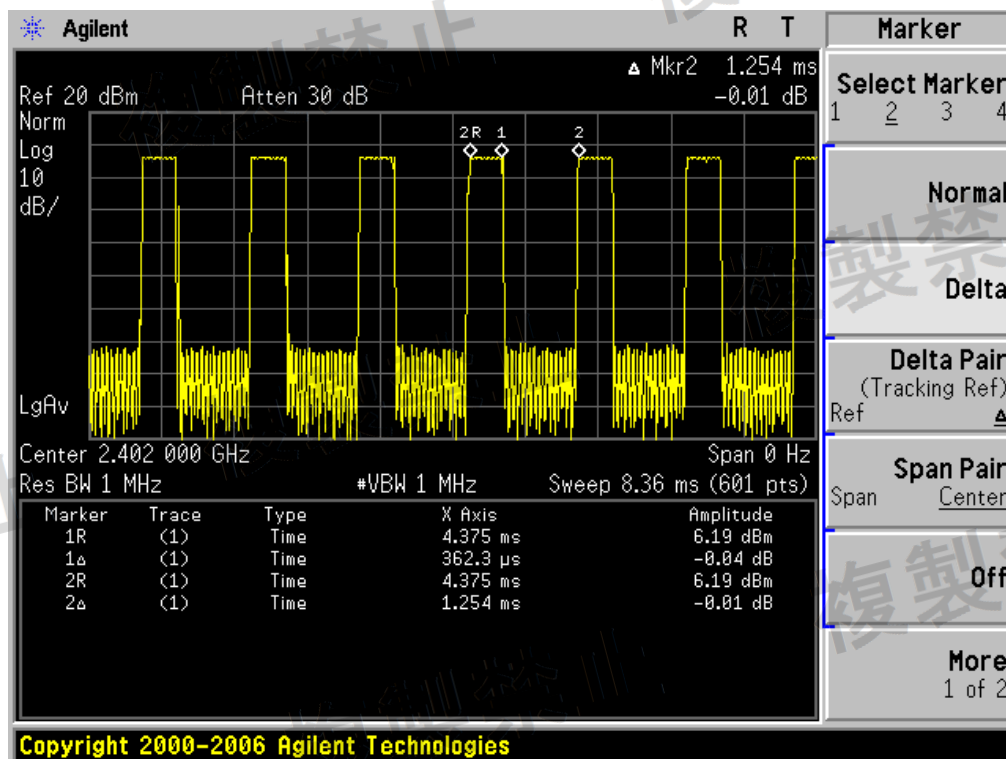
Spreading rate=Spread BW/transmission rate

Dwell time = [spreading rate/79] x duty-cycle x 0.4 seconds

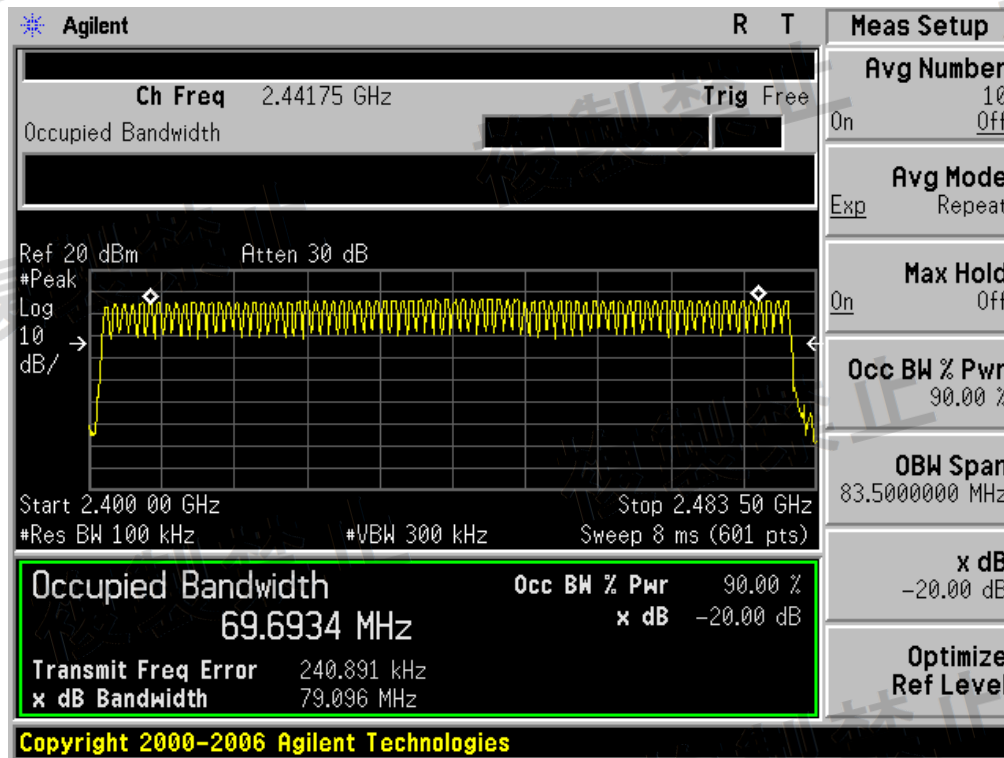
90% Spread BW



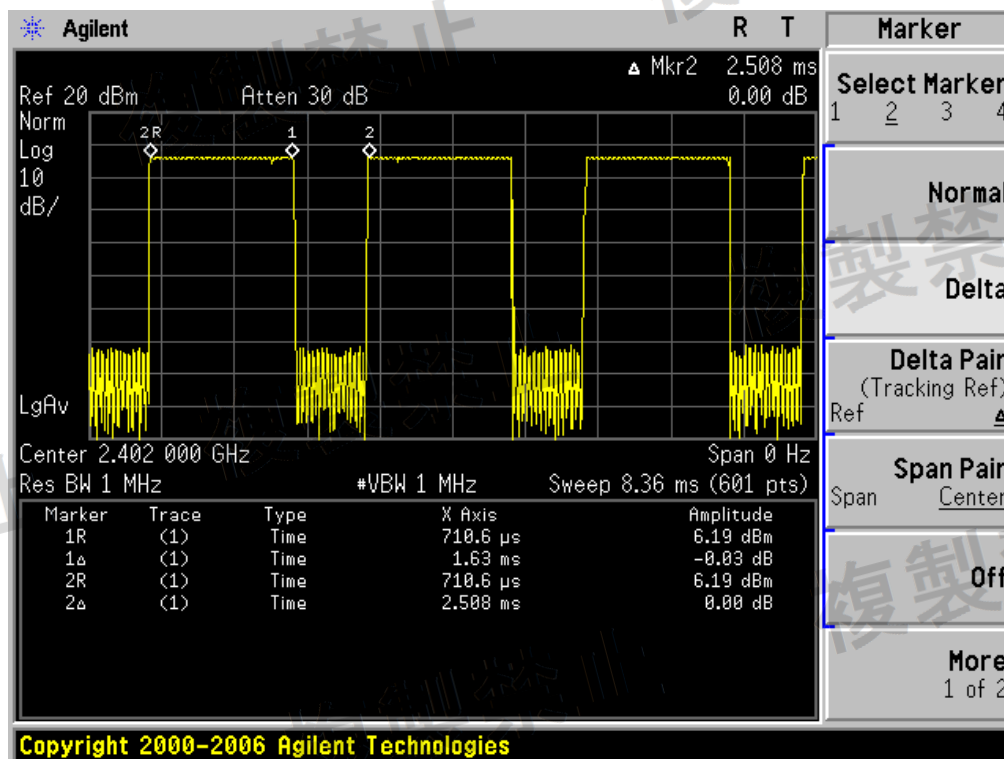
DH1-DUTY CYCLE



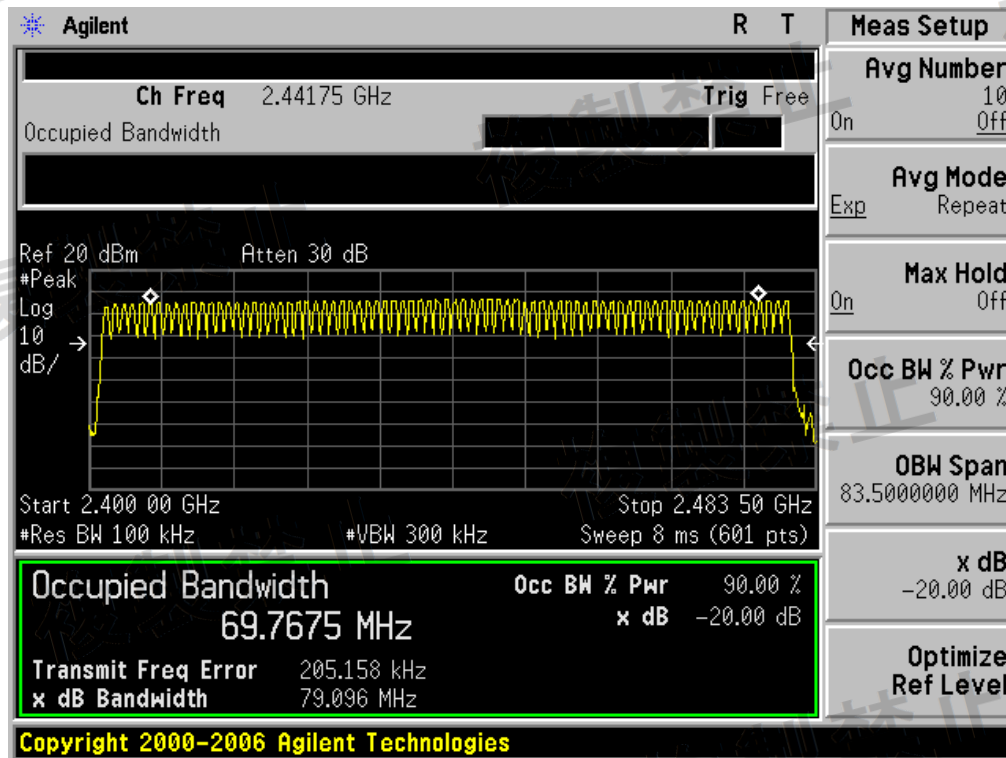
90% Spread BW



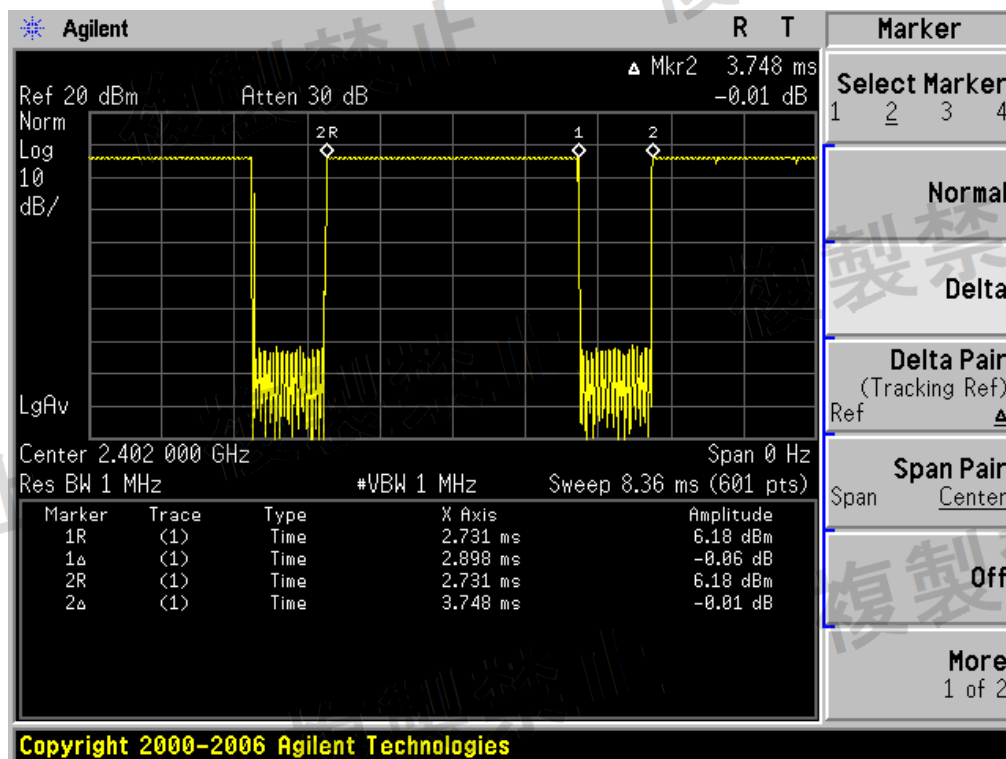
DH3-DUTY CYCLE



90% Spread BW



DH5-DUTY CYCLE



For 2Mbps

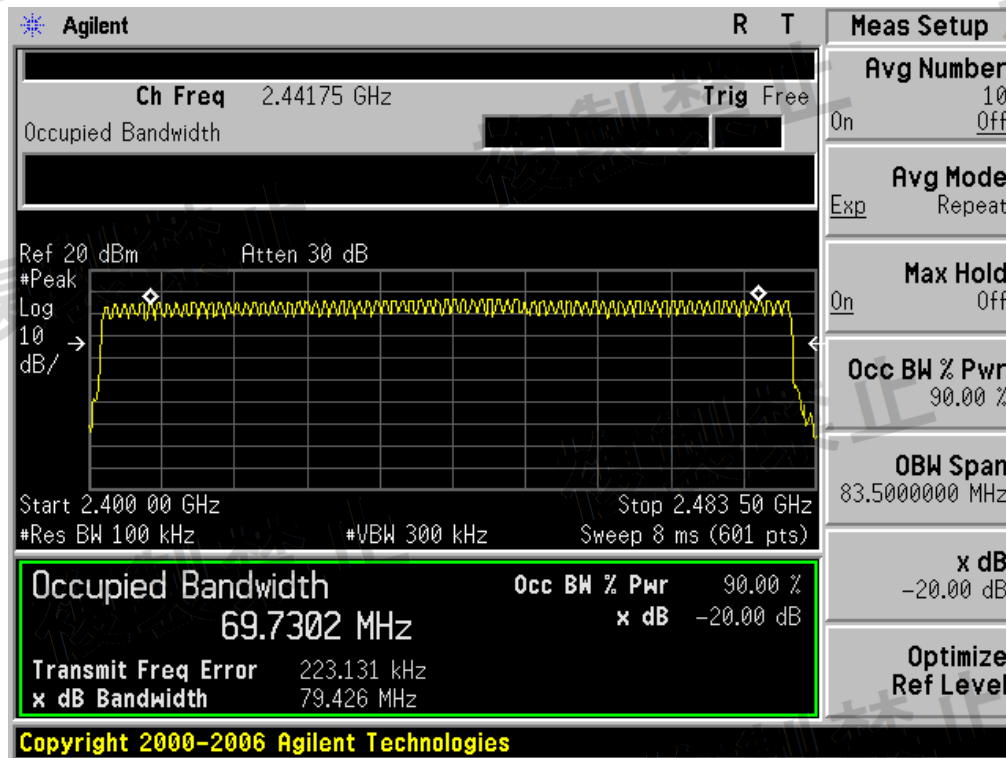
Data Packet	90% Spread BW (MHz)	Duty cycle (%)	Dwell Time (s)	Limits (s)
DH1	69.73	31.10%	0.055	0.4
DH3	69.70	65.55%	0.116	0.4
DH5	69.70	77.32%	0.136	0.4

Duty-cycle = [on time/total time] x 100%

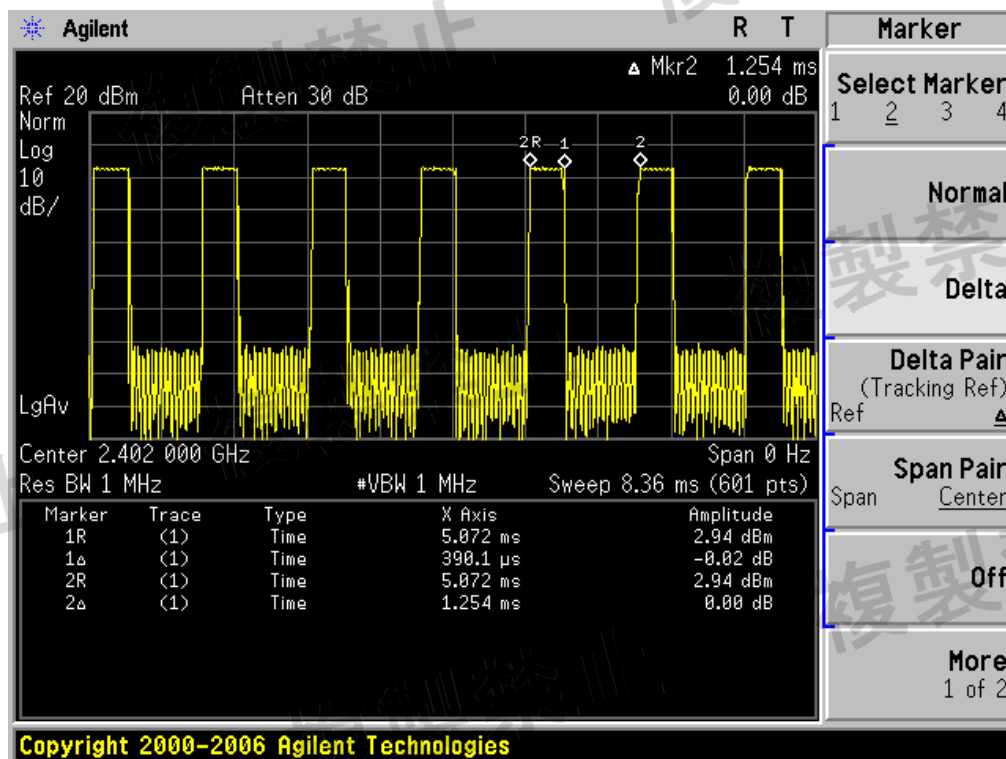
Spreading rate=Spread BW/transmission rate

Dwell time = [spreading rate/79] x duty-cycle x 0.4 seconds

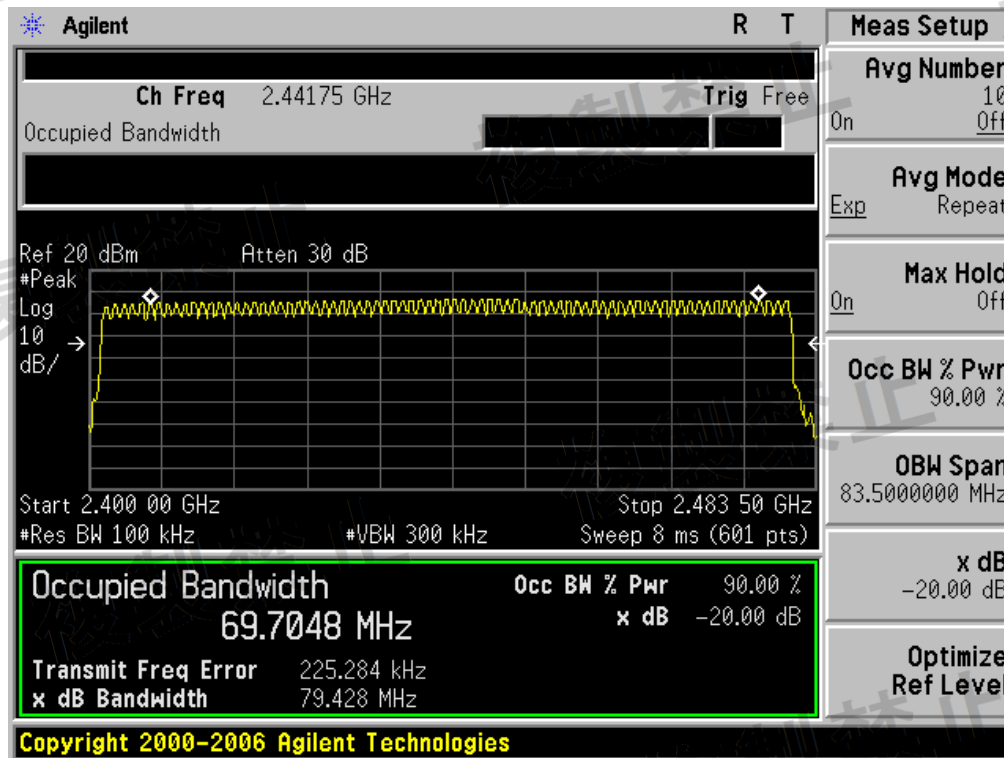
90% Spread BW



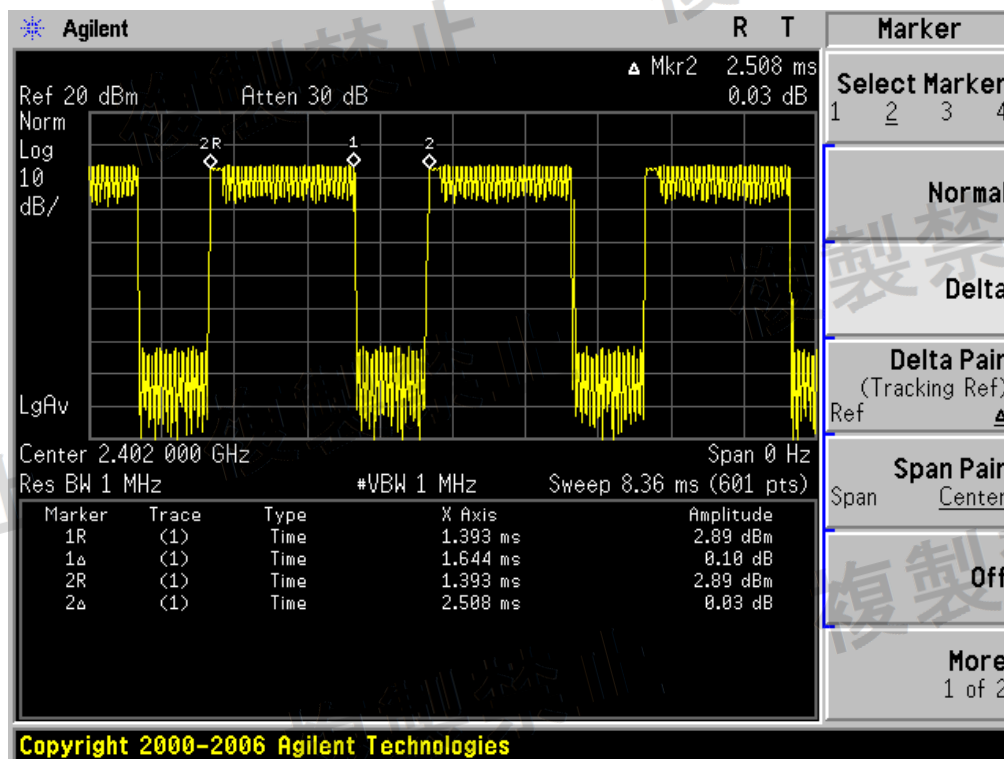
DH1-DUTY CYCLE



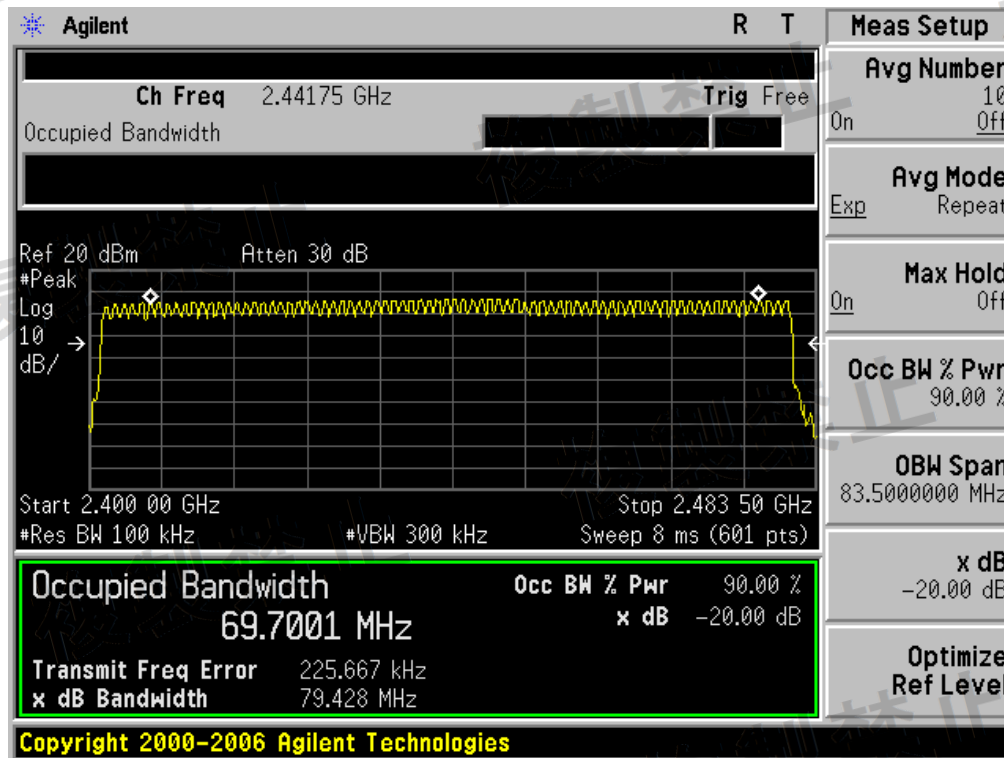
90% Spread BW



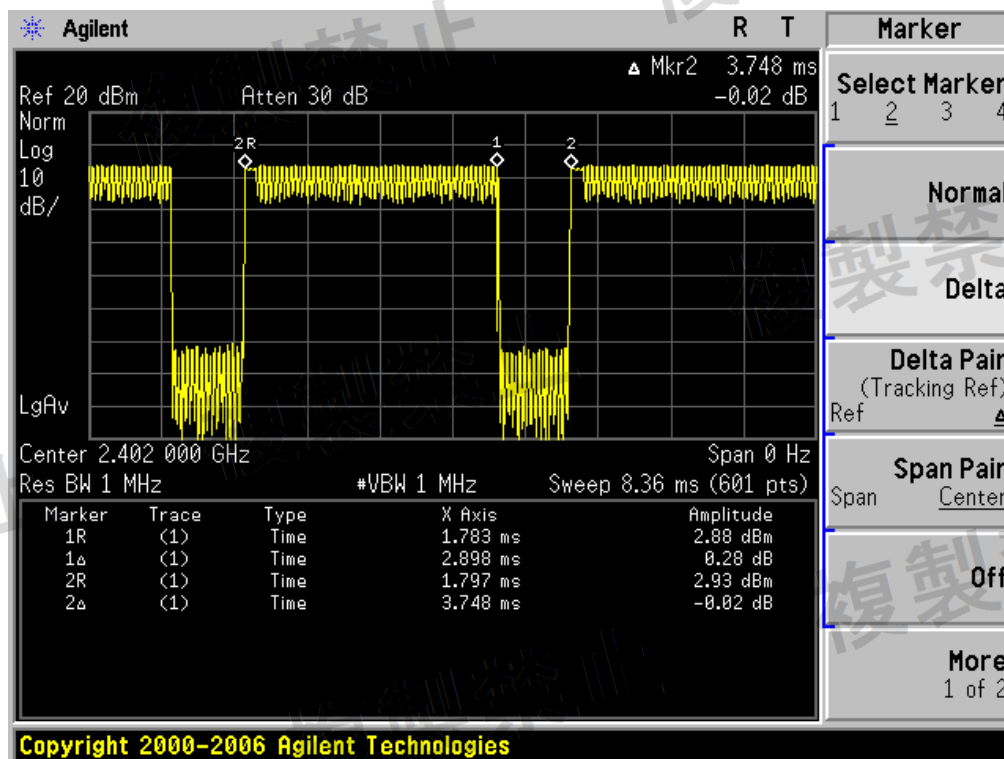
DH3-DUTY CYCLE



90% Spread BW



DH5-DUTY CYCLE



For 3Mbps

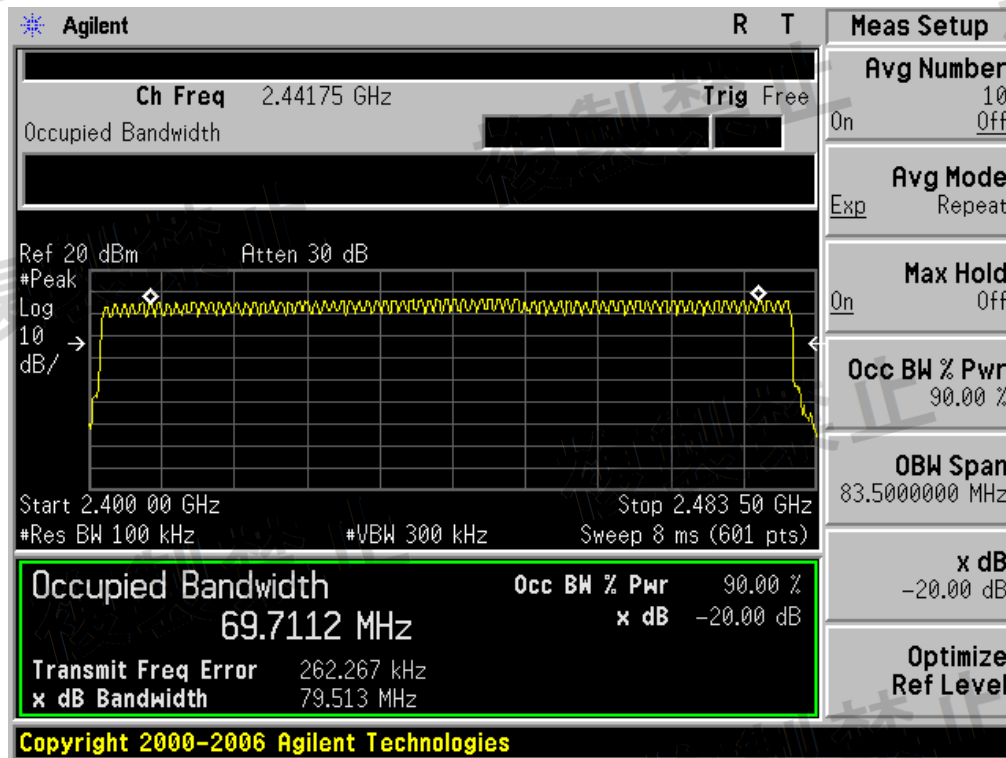
Data Packet	90% Spread BW (MHz)	Duty cycle (%)	Dwell Time (s)	Limits (s)
DH1	69.71	30.76%	0.036	0.4
DH3	69.70	65.55%	0.077	0.4
DH5	69.70	77.78%	0.091	0.4

Duty-cycle = [on time/total time] x 100%

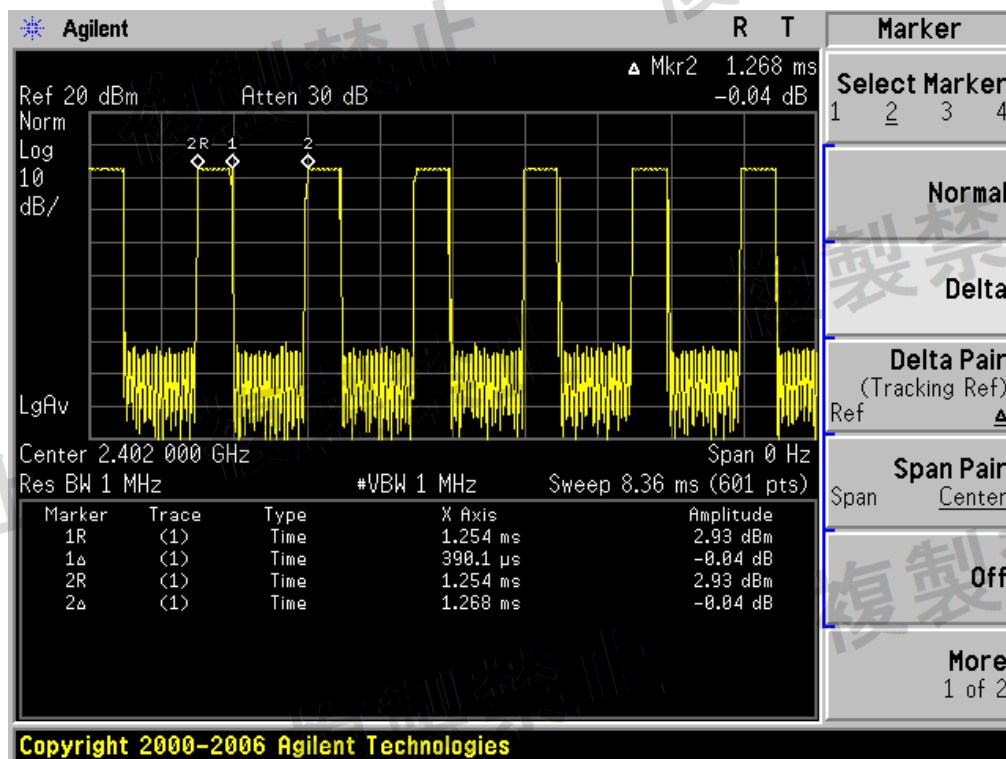
Spreading rate=Spread BW/transmission rate

Dwell time = [spreading rate/79] x duty-cycle x 0.4 seconds

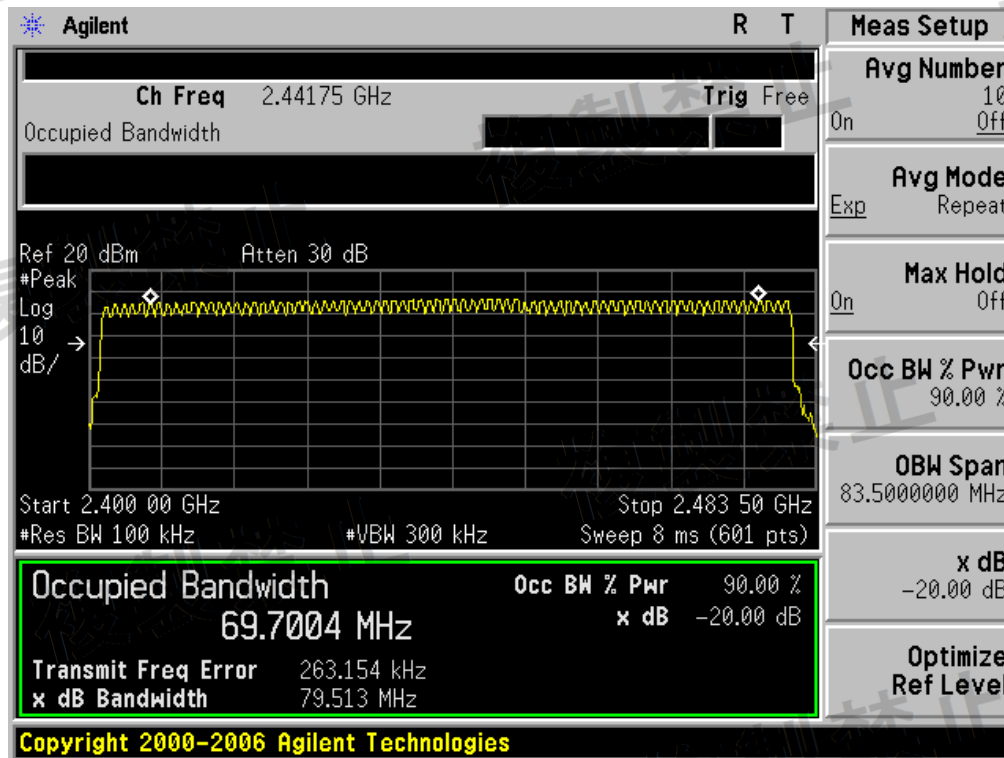
90% Spread BW



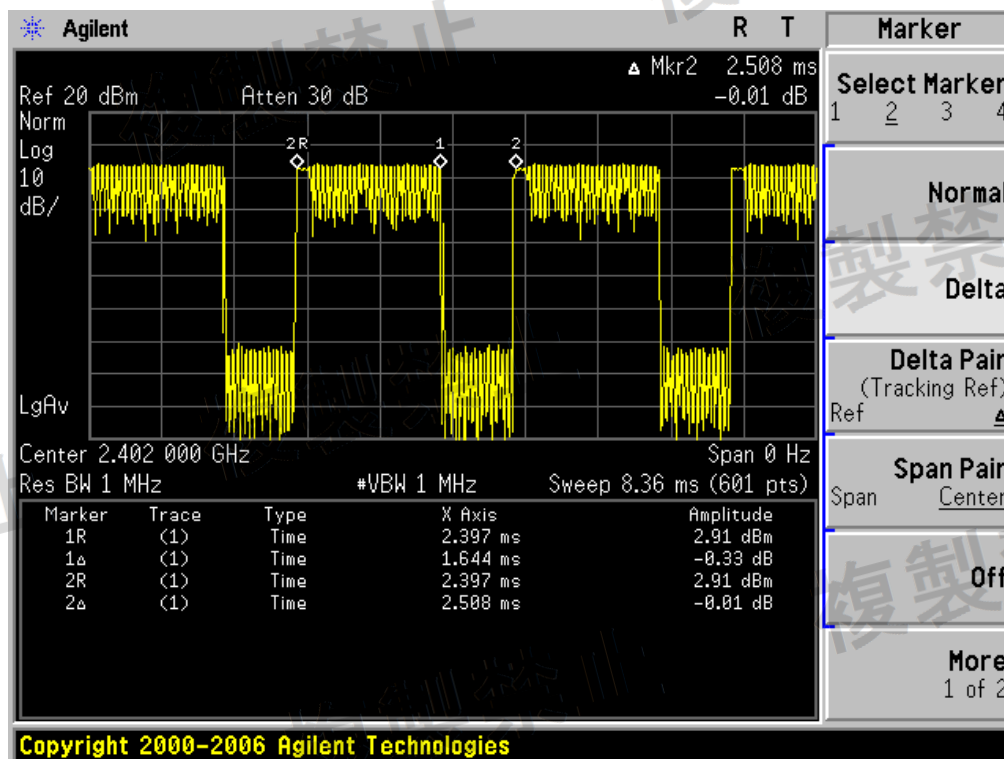
DH1-DUTY CYCLE



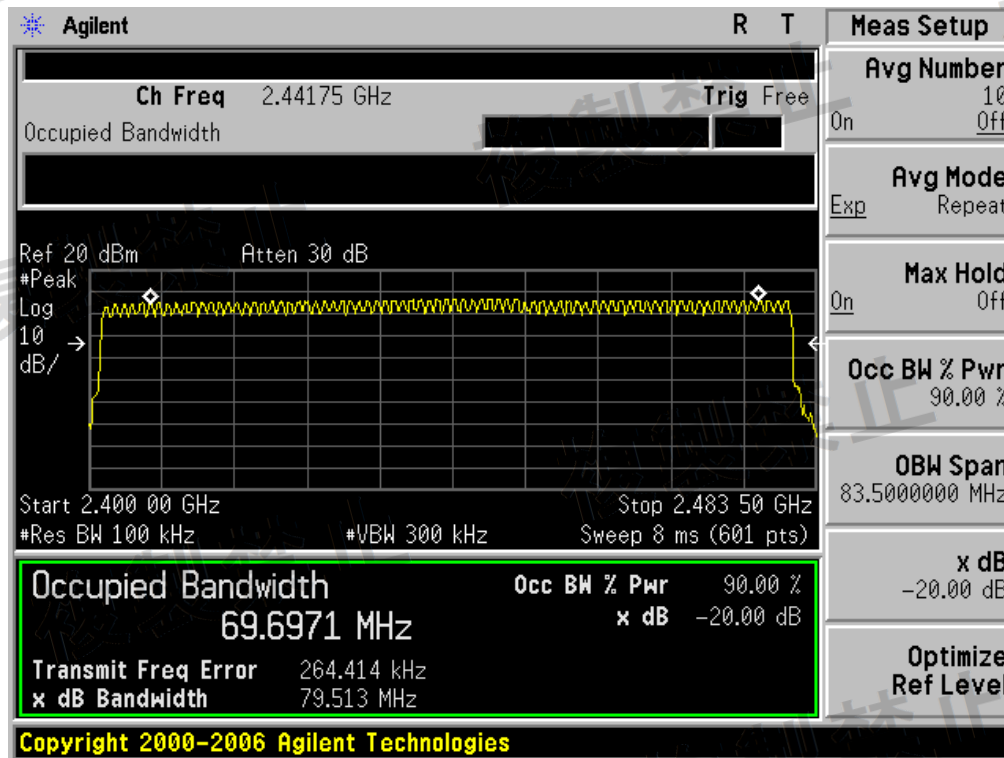
90% Spread BW



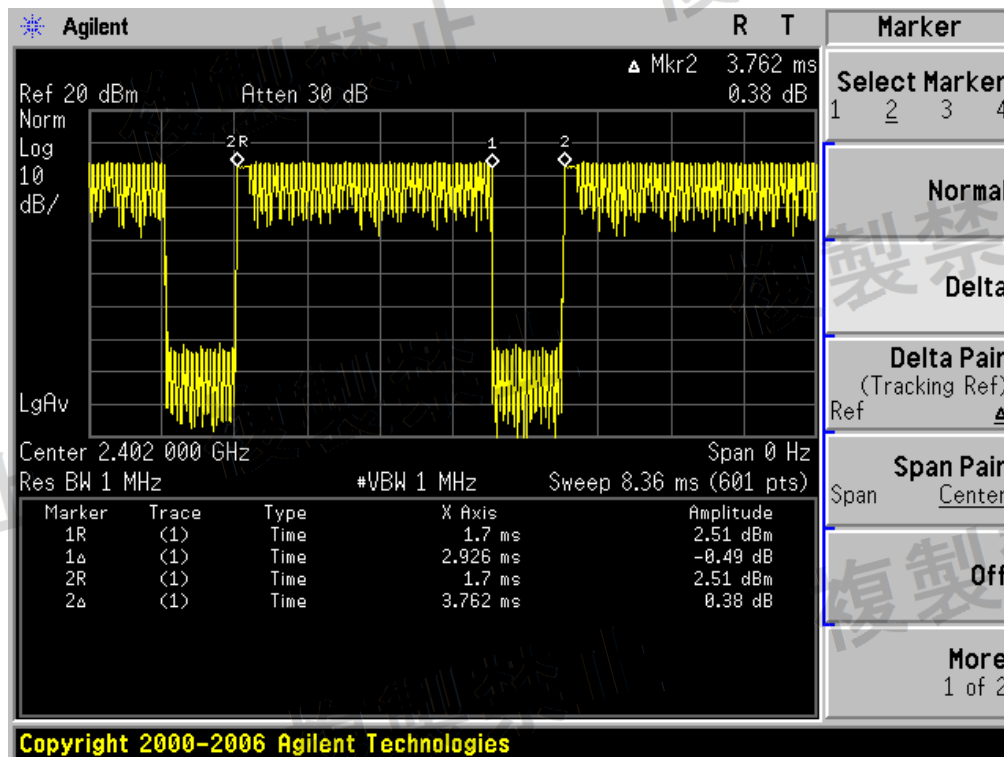
DH3-DUTY CYCLE



90% Spread BW



DH5-DUTY CYCLE



5.10. CONSTRUCTION PROTECTION CONFIRMATION METHOD

5.10.1. LIMIT

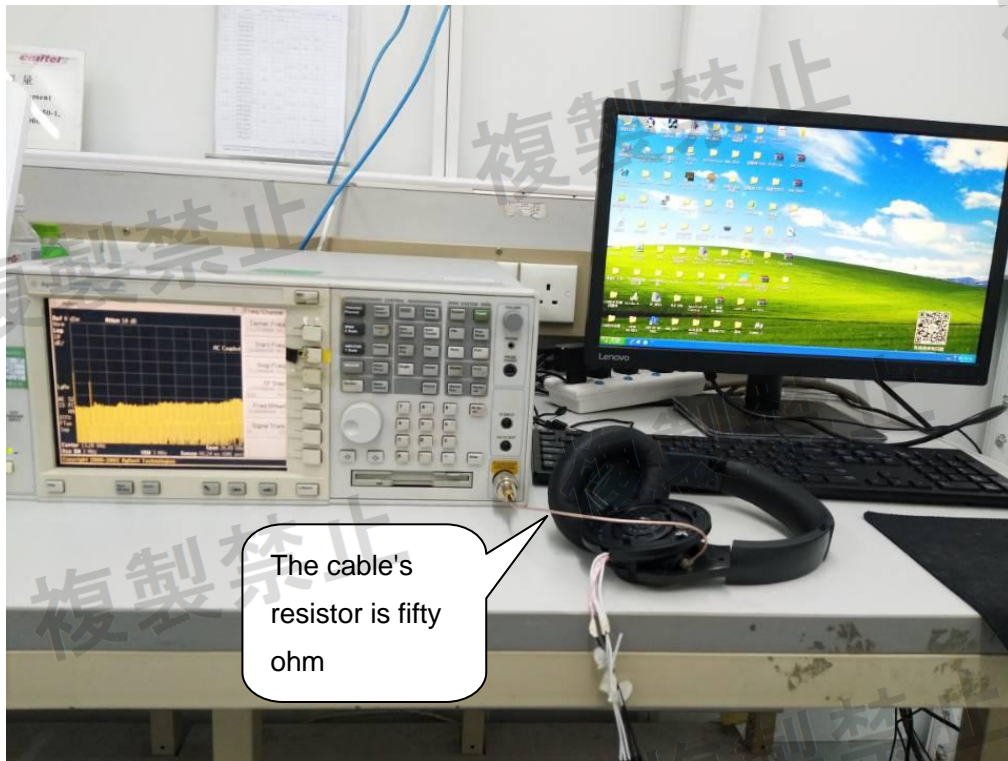
The high-frequency section and modulation section of the radio equipment except for the antenna system shall not be capable of being opened easily.

5.10.2. CONFIRMATION METHOD

The RF and modulation portions are protected against illegal modification as following method:

Protected Method	Description
BT Module Package	BT Module Package of RF (U412; CSR8635) and Modulation (Y5; 26 MHz) portions is QFN type.
Enclosure	The upper enclosure is blocked through buckles, the enclosure is not easily open, otherwise, the device will be damage.
User Manual	we will add some warning statements on the user manual to against illegal modification

APPENDIX A: PHOTOGRAPHS OF TEST SETUP



APPENDIX B: PHOTOGRAPHS OF EUT
TOTAL VIEW OF EUT



TOP VIEW OF EUT



BOTTOM VIEW OF EUT



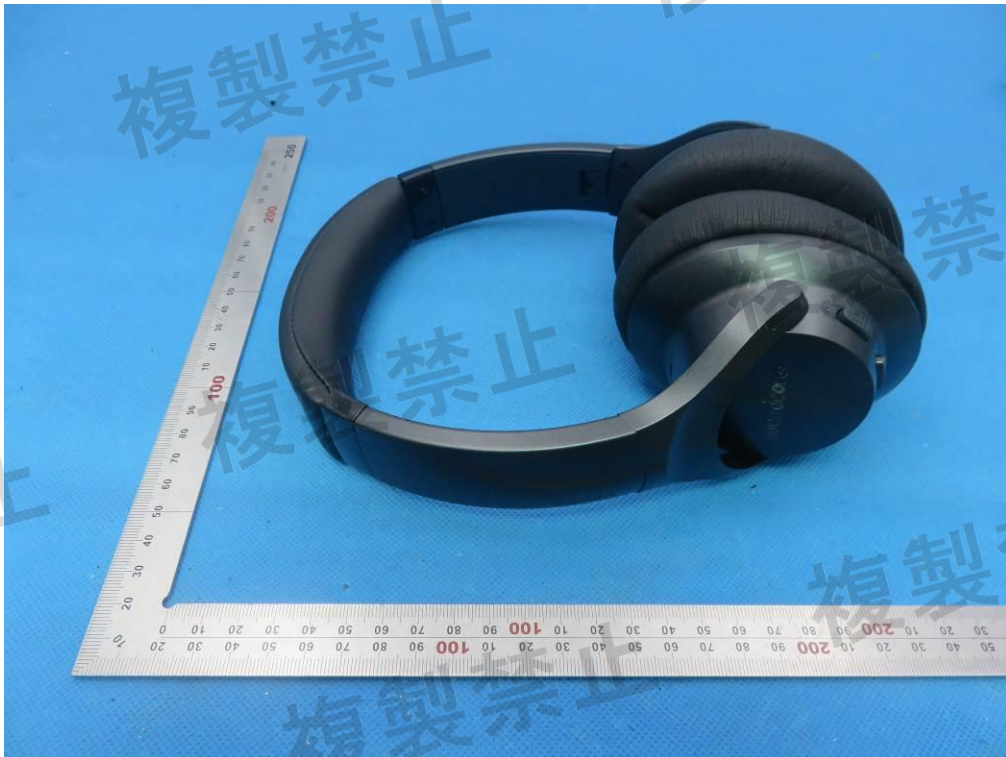
FRONT VIEW OF EUT



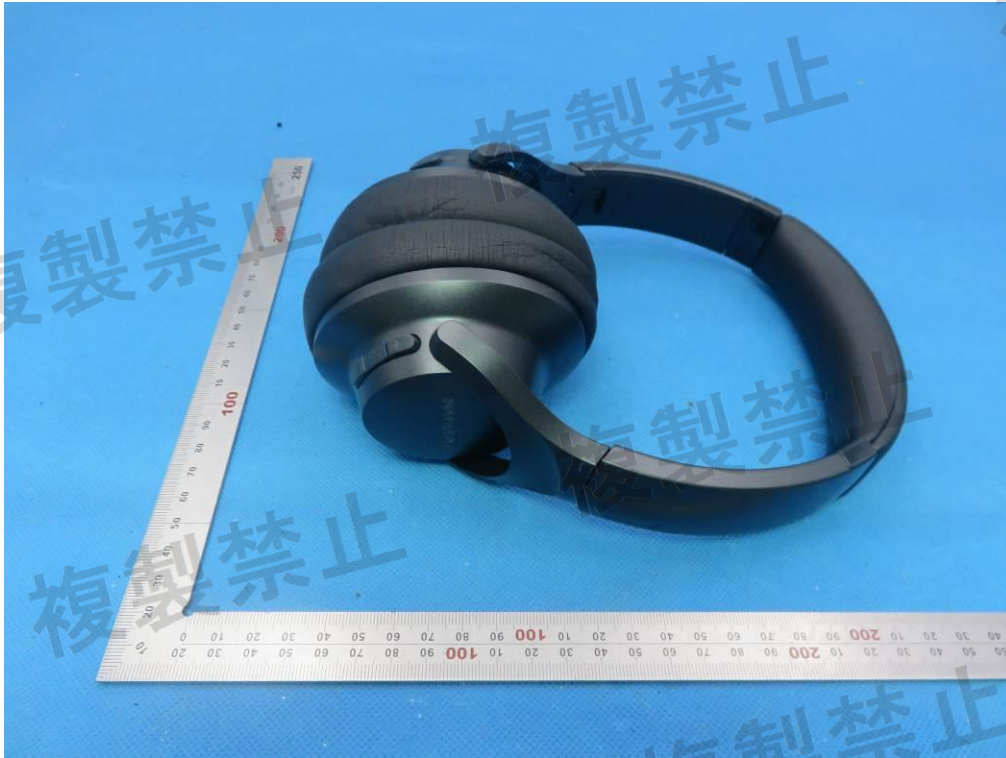
BACK VIEW OF EUT



LEFT VIEW OF EUT



RIGHT VIEW OF EUT



VIEW OF EUT (PORT)



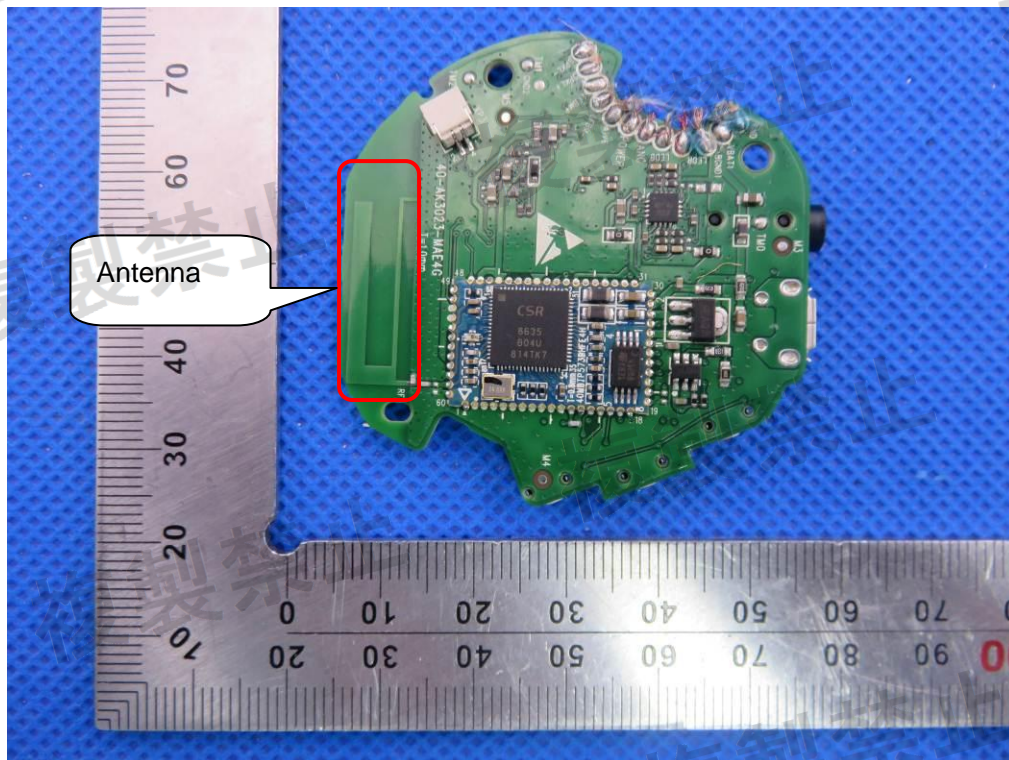
OPEN VIEW OF EUT



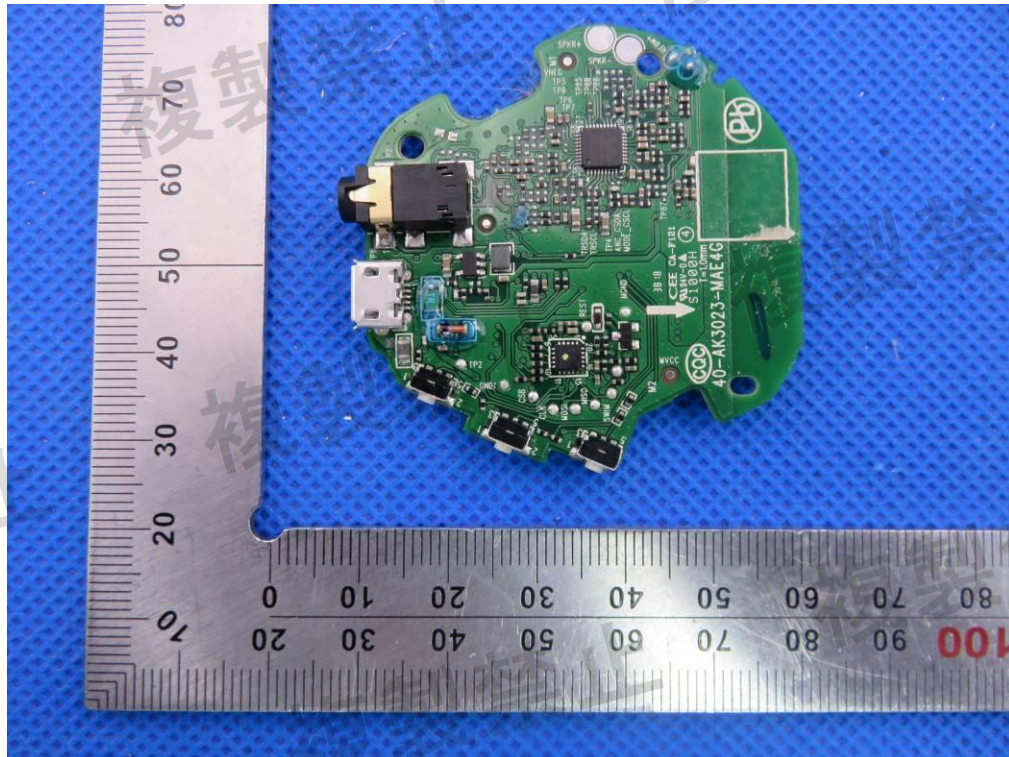
VIEW OF BATTERY



INTERNAL VIEW OF EUT-1



INTERNAL VIEW OF EUT-2



複製禁止



複製



複製禁止

複製禁止

複製禁止

INTERNAL VIEW OF EUT-5



----END OF REPORT----